HPE ProLiant BL460c G7 Server Blade - Parts Support Guide

Part Number: External
Published: 2020
Edition: 1

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Abstract
This document will help you identify parts of the product and also gives a step-by-step instruction on how to remove and replace the components.

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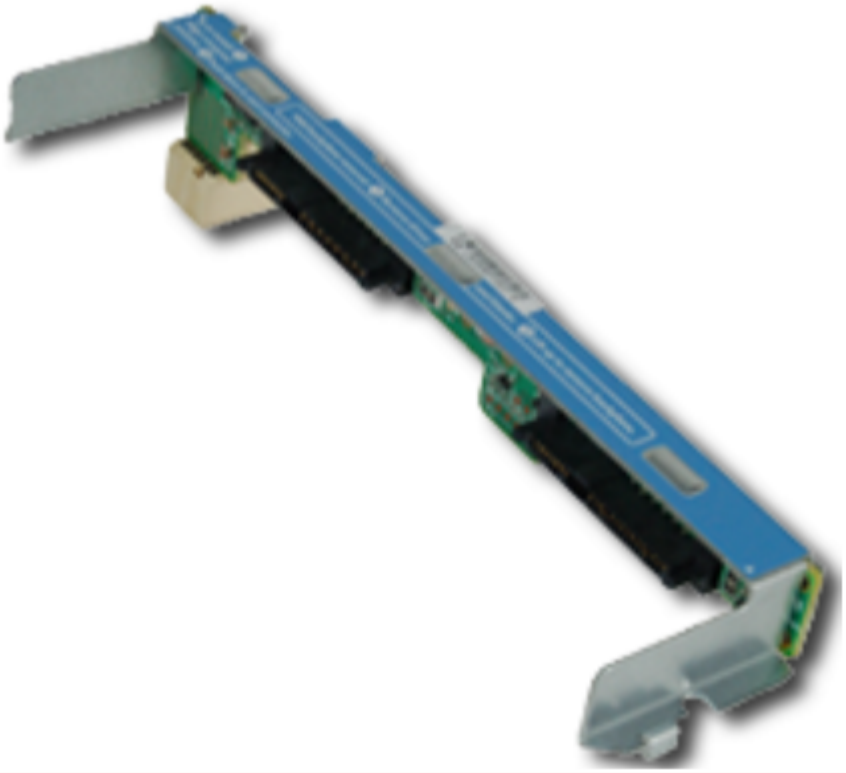
Front view

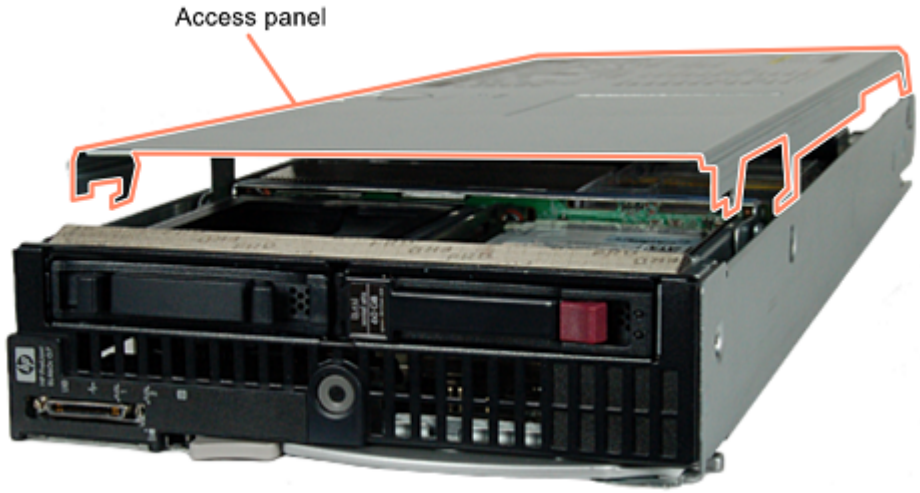




Hard drive backplane



Access panel



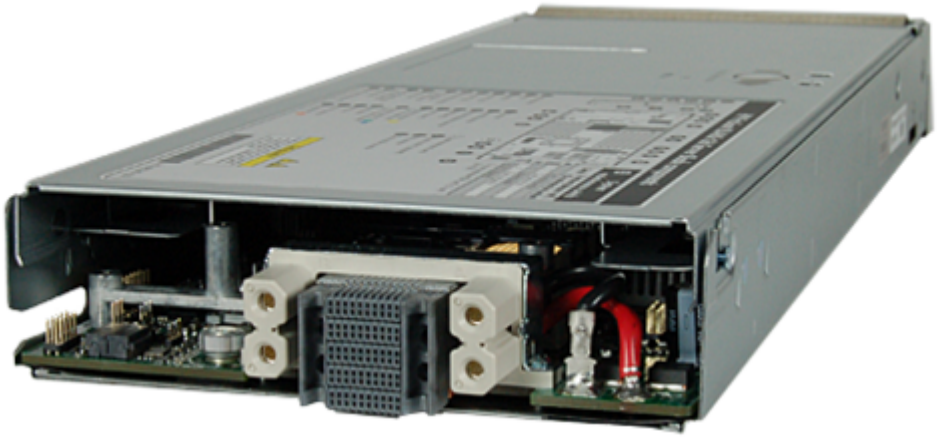
Hard drive



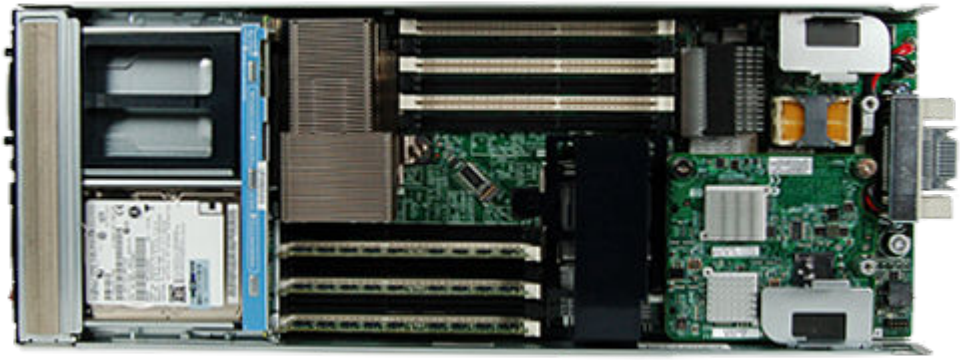
Hard drive blank



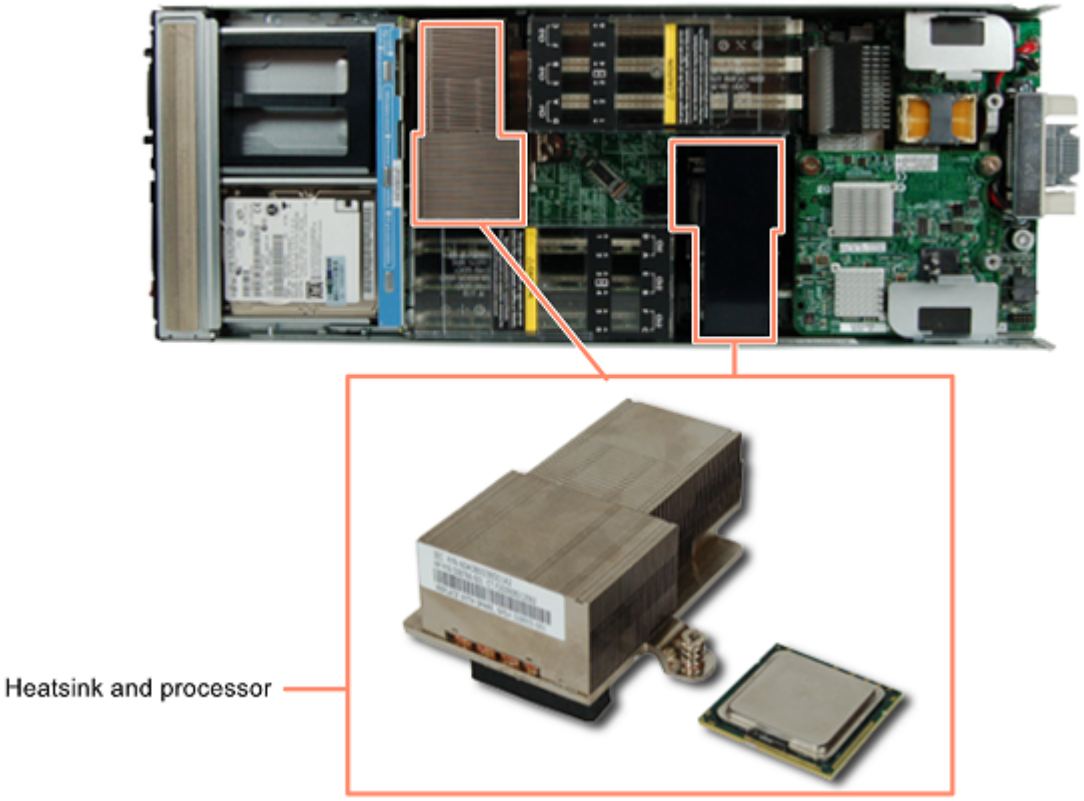
Back view



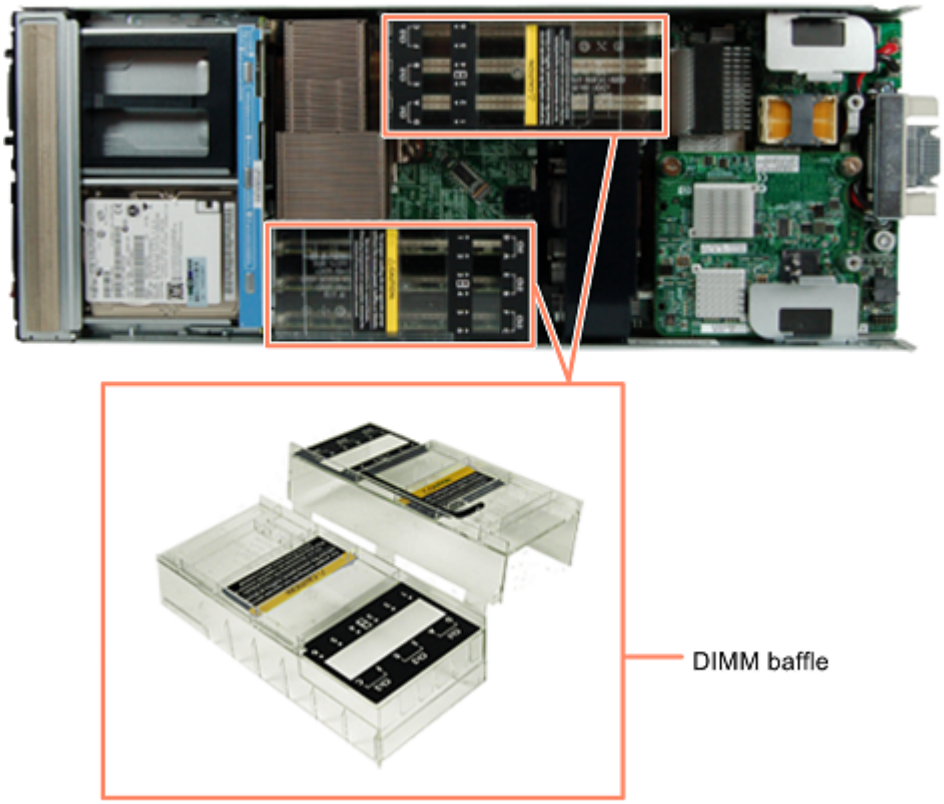
Internal view



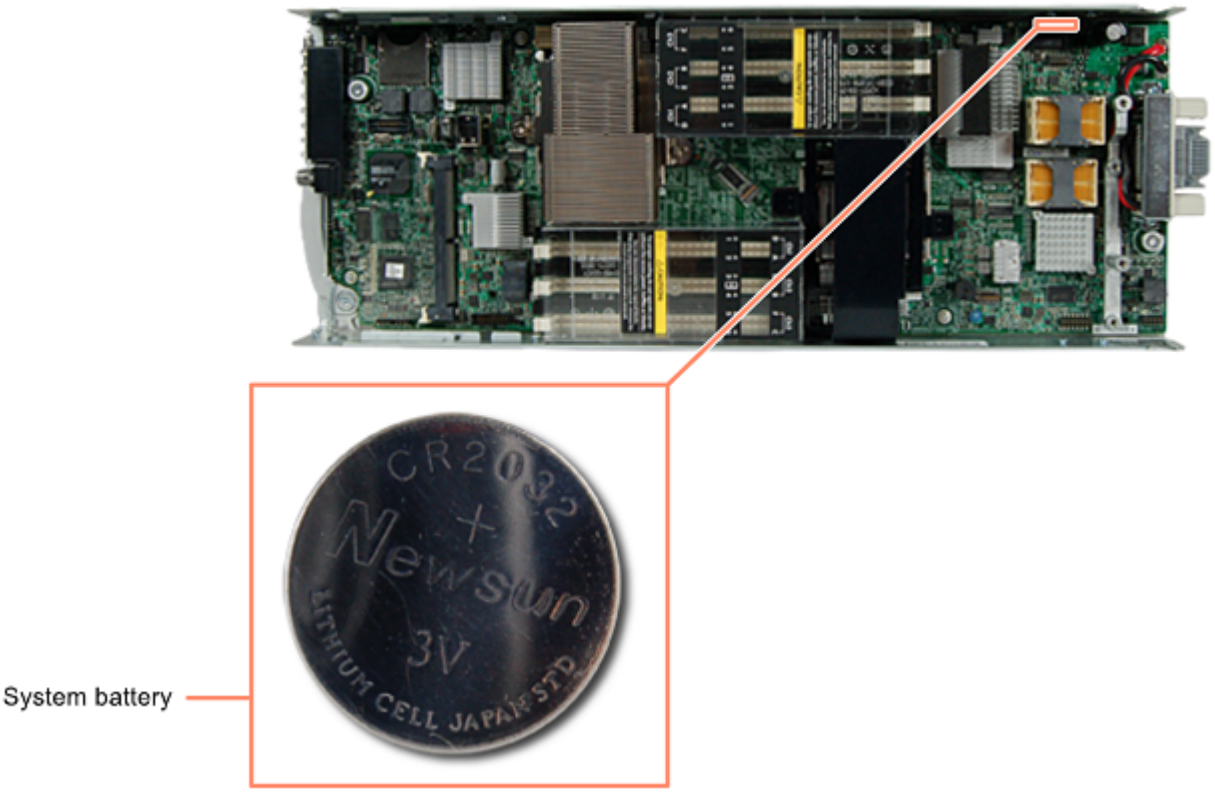
Heatsink and processor



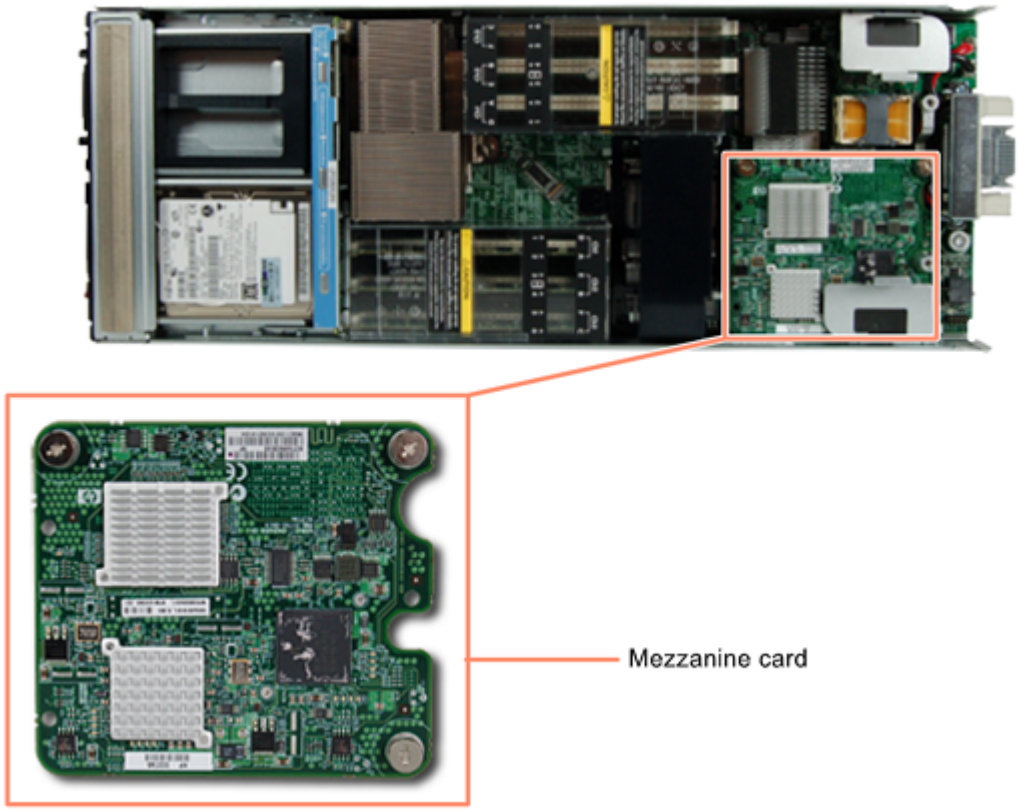
DIMM baffle



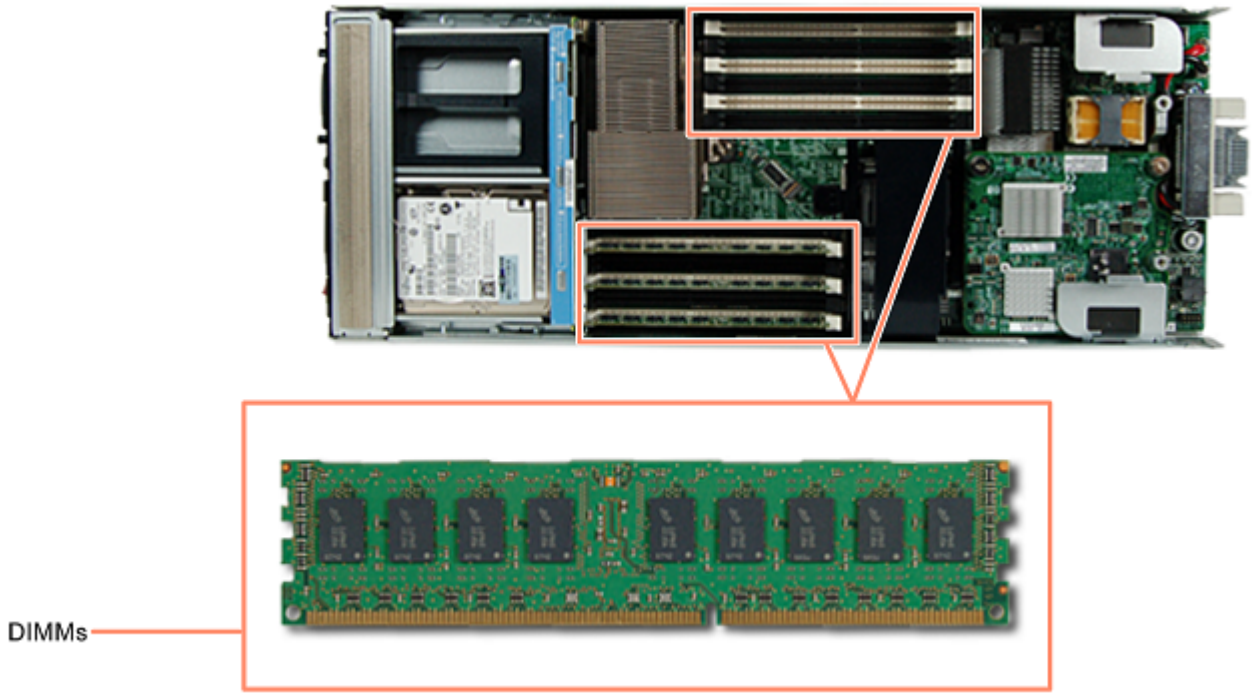
System battery



Mezannine card



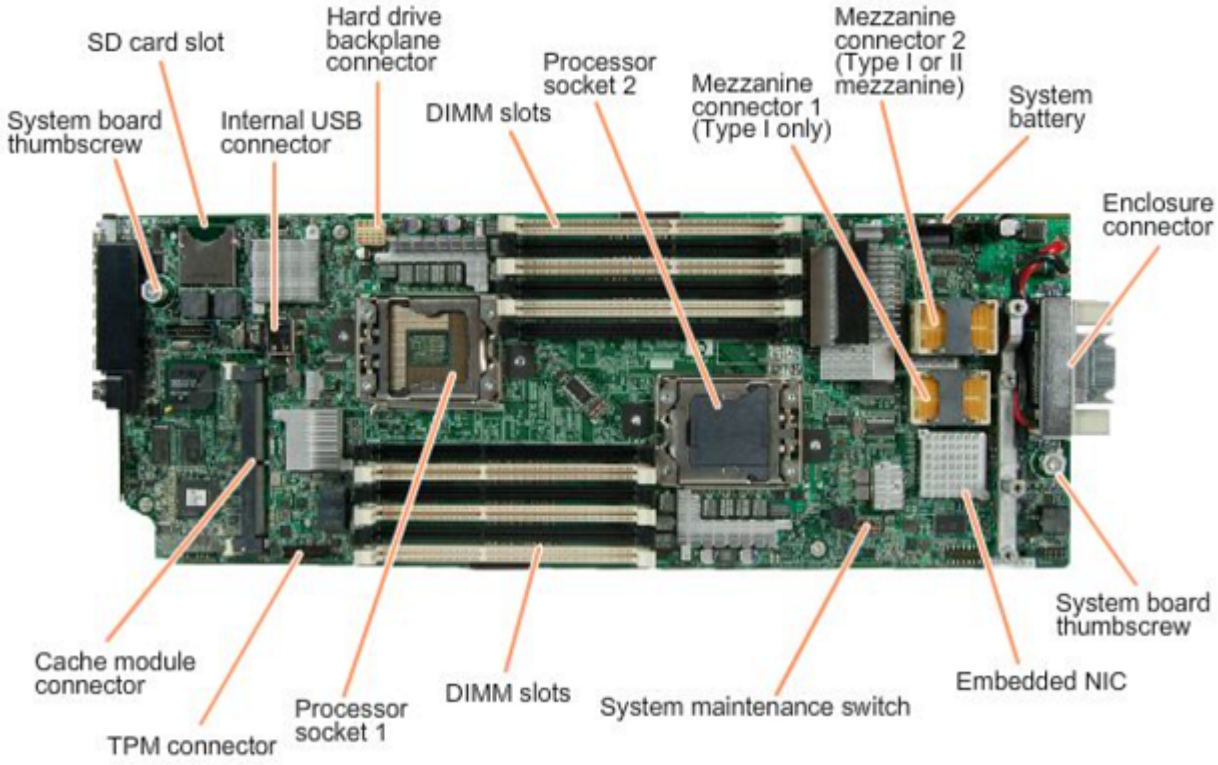
DIMMs



Front panel/hard disk cage assembly



System board



Precautions

Before you begin

1. Review static electricity, disassembly, and safety considerations.
2. Power down the server blade using one of the three methods detailed below.
3. Put on your electrostatic discharge (ESD) wrist strap to avoid damaging any circuitry.
4. Remove the server blade from its enclosure and place on a flat, level surface.

Static electricity

Static electricity can damage electrical components. Before removing or replacing a component, touch a grounded metal object to discharge static electricity. Also observe the following precautions to prevent damage to electric components and accessories:

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Avoid contact with pins, leads, or circuitry.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Disassembly

- During disassembly, label each cable as you remove it, noting its position and routing. This will make the replacement of the cables much easier, and will ensure that the cables are rerouted properly to protect the cables.
- Keep all screws with the units removed. The screws used in the computer are of different thread sizes and lengths; using the wrong screw in a component could damage the unit.

Tools And Materials

Tools used in removal and replacement

- Torx T-15 screwdriver (provided inside the access panel)

Safety Considerations

Safety considerations

Server blade warnings and cautions

Warning! To reduce the risk of shock or injury from high-current electrical energy, do notremove the server blade access panel and then install the server blade into the enclosure.**Warning!** To reduce the risk of personal injury from hot surfaces, allow the drives and theinternal system components to cool before touching them.

Caution! Do not operate the server blade with the access panel removed. Operating the server blade in this manner results in improper airflow and improper cooling that can lead to thermal damage. Caution! When performing non-hot-plug operations, you must power down the server blade and/or the system. However, it may be necessary to leave the server blade powered up when performing other operations, such as hot-plug installations or troubleshooting.

Power Down Procedures

Power down procedures

1. Before powering down the server blade for any upgrade or maintenance procedures, perform a backup of critical server data and programs.
2. Depending on the Onboard Administrator configuration, use one of the following methods to power down the server blade:
    - Use a virtual power button selection through iLO 3.This method initiates a controlled remote shutdown of applications and the OS before the server blade enters standby mode.
    - Press and release the Power On/Standby button.This method initiates a controlled shutdown of applications and the OS before the server blade enters standby mode.
    - Press and hold the Power On/Standby button for more than 4 seconds to force the server blade to shut down.This method forces the server blade to enter standby mode without properly exiting applications andthe OS. It provides an emergency shutdown method in the event of a hung application.
    - Execute one of the following commands using the Onboard Administrator CLI:
      ```
      poweroff server all
      ```
      or
      ```
      poweroff server all force
      ```

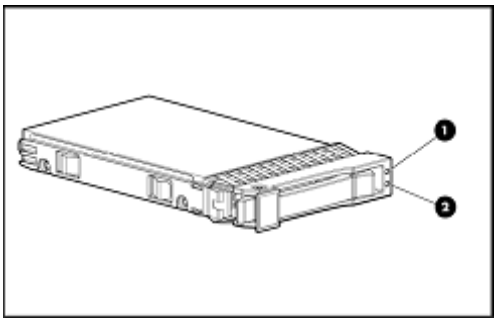
The first command initiates a controlled shutdown of applications and the OS before the server blade enter standby mode. The second form of the command forces the server blade to enter standby mode without exiting applications and the OS. This is an emergency method to force a shutdown in the event of a hung application.

- Use the Onboard Administrator GUI to initiate a shutdown:
-
    1. Select the Enclosure Information tab, then select the Overall checkbox in the Device Bays item.
    2. Initiate a shutdown from the Virtual Power menu:
        - Select Momentary Press to initiate a controlled shutdown of applications and the OS.
        - Select Press and Hold to initiate an emergency shutdown of applications and the OS.

Important! When the server blade is in standby mode, auxiliary power is still being provided. To remove all power from the server blade, remove the server blade from the enclosure.After initiating a virtual power down command, be sure that the server blade goes into standby mode by observing that the system power LED is amber.

SAS Hard Drive LEDs And LED Combinations

SAS hard drive LEDs and LED combinations



1. Fault/UID LED (amber/blue)
2. Online LED (green)**Note: Predictive failure alerts can occur only when the hard drive is connected to a Smart Array controller.**

Online/activityLED (green)	Fault/UID LED (amber/blue)	Interpretation
On, off, or flashing	Alternating amber and blue	The drive has failed, or a predictive failure alert has been received for this drive; it also has been selected by a management application.
On, off, or flashing	Steadily blue	The drive is operating normally, and it has been selected by a management application.
On	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
On	Off	The drive is online, but it is not active currently.
Flashing regularly (1 Hz)	Amber, flashing regularly (1Hz)	**Do not remove the drive. Removing a drive may terminate the current operation and cause data loss.** The drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive. To minimize the risk of data loss, donot replace the drive until the expansion or migration is complete.
Flashing regularly (1 Hz)	Off	**Do not remove the drive. Removing a drive may terminate the current operation and cause data loss.** The dr

		ive is rebuilding, erasing, or it is part of an array that is u ndergoing capacity expansion or stripe migration.
Flashing irregularly	Amber, flashing reg ularly (1Hz)	The drive is active, but a predictive failure alert has been received for this drive. Replace the drive as soon as poss ible.
Flashing irregularly	Off	The drive is active, and it is operating normally.
Off	Steadily amber	A critical fault condition has been identified for this dri ve, and the controller has placed it offline. Replace the dr ive as soon as possible.
Off	Amber, flashing reg ularly (1Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Off	Off	The drive is offline, a spare, or not configured as part of an array.

System Battery Considerations

System battery considerations

Warning! The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

Preparation

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Preparation

Before you begin: Review Safety considerations and Power down procedures .

Remove the server blade from the enclosure

Warning! To reduce the risk of personal injury from hot surfaces, allow the drives and theinternal system components to cool before touching them.**Caution!** To prevent damage to electrical components, properly ground the server blade before beginning any installation procedures. Improper grounding can cause ESD.

1. Press the ejector button.
2. Grasp the handle.
3. Slide the blade out of the enclosure and place it on a flat work surface.

Hard Drive Blank

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Hard drive blank removal

Before you begin: Review Safety considerations .**Caution!** To prevent improper cooling and thermal damage, do not operate the server blade unless all hard drive bays are populated with either a drive or a blank.

1. Pinch the release tabs together.
2. Slide the hard drive blank out of the hard drive bay.

Hard drive blank replacement

1. Slide the hard drive blank into the hard drive bay until it clicks into place.

Hard Drive

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Hard drive removal

Before you begin: Review Safety considerations . Determine the status of the hard drive from the hot-plug SAS hard drive LED combinations (SAS and SATA hard drive LED combinations). Back up all server data on the hard drive.**Caution!** To prevent improper cooling and thermal damage, do not operate the server blade unless all hard drive bays are populated with either a drive or a blank.

1. Press the ejector button to release the handle.
2. Grasp the handle and pull to slide the hard drive out of the hard drive bay.

Hard drive replacement

1. Press the ejector button to release the handle.
2. With the hard drive handle extended, insert the drive into the drive bay.
3. Close the drive handle until it locks under the ejector button.

Access Panel

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Access panel removal

Before you begin: Review Safety considerations . Power down the server blade and remove it from the enclosure.**Warning!** To reduce the risk of personal injury from hot surfaces, allow the drives and theinternal system components to cool before touching them.**Caution!** To prevent damage to electrical components, properly ground the server blade before beginning any installation procedures. Improper grounding can cause ESD.

1. Press and hold the hood release button.
2. Slide the access panel towards the rear of the server blade until it stops.
3. Lift the access panel up and off of the server blade chassis.

Access panel replacement

1. Align the access panel guide pins with the slots on the chassis and lower the access panel into place.
2. Slide the access panel forward until the access panel clicks into place.

Hard Drive Backplane

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Hard drive backplane removal

Before you begin: Review Safety considerations . Remove all hard drives and hard drive blanks, and the access panel.

1. Firmly lift the hard drive backplane straight up, disconnecting it from its connector to the system board.
2. Remove the hard drive backplane.

Hard drive backplane replacement

1. Align the hard drive backplane with the alignment pins and system board connector.
2. Carefully press down to fully seat the connector.**Caution! If the hard drive backplane does not connect with minimum pressure, recheck the alignment. Forcing an unaligned connector could damage the pins inside the connector.**

DIMM Baffle

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DIMM baffle removal

Before you begin: Review Safety considerations . Power down the server blade and remove it from the enclosure. Remove the access panel.**Note:** There are two DIMM baffles, one over each bank of DIMMs. They are removed and replaced in the same way.

1. Lift and remove the DIMM baffle, taking note of how it was oriented.

DIMM baffle replacement

To replace the DIMM baffle, reverse the removal procedure.

DIMMs

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DIMMs removal

Before you begin: Review Safety considerations . Power down the server blade and remove it from the enclosure. Remove the access panel.

Caution! Use only HP DIMMs. DIMMs from other sources may adversely affect data integrity. Note: If the target DIMM is in DIMM bank 1, remove the hard drive backplane.

1. Open the DIMM slot latches.
2. Lift the DIMM up and out of the DIMM slot

DIMMs replacement

1. Ensure that the DIMM slot latches are open.
2. Locate the alignment notch on the DIMM and align it with the key in the DIMM slot.
3. Push the DIMM down firmly into the slot until the DIMM slot latches snap into place.
4. Ensure that the DIMM is fully inserted and properly seated in the slot.**Note : Replace the hard drive backplane, if you removed it earlier.**

Mezzanine Card

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Mezzanine card removal

Before you begin: Review Safety considerations . Power down the server and remove it from the enclosure. Remove the access panel.

1. Loosen the two captive Torx T15 screws that secure the mezzanine card to the system board.
2. Lift the mezzanine card straight up to disconnect it from the mezzanine card connector.

Mezzanine card replacement

Note: Be sure that the Mezzanine card locations support the Mezzanine type that you are installing.**Note:** Because Mezzanine cards are supported on multiple blade servers they often contain three screws. For this server only two screws are required.

1. If necessary, remove the mezzanine connector cover.
2. Align the mezzanine card with the mezzanine card connector and the two standoffs.
3. Press down firmly to fully connect the mezzanine card.**Caution! To prevent damage to the server blade, apply pressure over the mezzanine connector when installing the mezzanine card. Do not apply pressure to the edges of the card.**
4. Tighten the two captive Torx T15 screws.

System Battery

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System battery removal

Before you begin: Review Safety considerations . Review System battery considerations . Power down the server blade and remove it from the enclosure. Remove the access panel.

1. To gain access to the system battery, temporarily lift out the left cache battery holder out of the chassis.
2. Pull the release lever back just enough to allow the system battery to be removed.
3. Lift the system battery up and out of its holder.

System battery replacement

1. With the plus (+) side of the system battery facing the inside of the server blade chassis, press the system battery into its holder.
2. Confirm that the system battery is firmly seated and the release latch is securing the system battery.
3. Replace the left cache battery holder removed earlier.**Important! Replacing the system battery resets the system ROM to its default configuration. After replacing the battery, reconfigure the system through RBSU.**

Front Panel/Hard Drive Cage Assembly

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Front panel/hard drive cage assembly removal

Before you begin: Review Safety considerations . Power down the server and remove it from the enclosure. Remove all hard drives and hard drive blanks, the access panel, and the hard drive backplane.

1. Remove the two Torx T15 screws, one on each side, that secure the front panel/hard drive cage assembly to the chassis.
2. Slide the front panel/hard drive cage assembly forward until is stops.
3. Left the front panel/hard drive cage assembly up and out of the chassis.

Front panel/hard drive cage assembly replacement

1. To replace the front panel/hard drive cage assembly, reverse the removal procedure.

Heatsink And Processor

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Heatsink and processor removal

Caution! To avoid damage to the processor: Handle the processor only by the edges. Do not touch the bottom of the processor, especially the contact area.

Caution! THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the system board:- Never install or remove a processor without using the processor installation tool.- Do not touch the processor socket contacts.- Do not tilt or slide the processor when lowering the processor into the socket.

Before you begin: Review Safety considerations . Power down the server blade and remove it from the enclosure. Remove the all hard drives and hard drive blanks, access panel, and asscociated DIMM baffle. For heatsink 2, also remove the hard drive disk backplane and the front panel/hard drive cage assembly.**Warning! To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.**

1. Loosen both captive Torx T15 screws that secure the heatsink to the system board.
2. Lift the heatsink straight up and out of the chassis, being careful not to touch or spread the remaining thermal grease on the bottom.**Important!** If the processor may be reused in this or any other system, remove the thermal grease with an alcohol swap. Allow the alcohol to evaporate before you continue.
3. If you are replacing the processor, open the processor locking lever and the processor socket retaining bracket.
4. Align the processor installation tool over the processor with the locking lever graphic correctly oriented.
5. Press in on the release tabs on the side of the tool and lower it onto the processor.
6. With the processor in place, release the tabs to firmly grasp the processor into the mouth of the tool.
7. Lift the processor straight up and out of the socket.
8. To help ensure that the processor remains in the tool, carefully rotate the tool, and then push in and release the tabs to secure the processor in the tool.

Heatsink and processor replacement

Caution! To prevent possible server malfunction, do not mix processors of different speeds or cache sizes. Refer to the label on the processor heatsink for a description of the processor. Caution! The pins on the processor socket are very fragile. Any damage to them may require replacing the system board. Caution! Failure to completely open the processor locking lever prevents the processor from seating during installation, leading to hardware damage.

1. Insert the processor into the processor installation tool. Handle the processor by the edges only, and do not touch the bottom of the processor, especially the contact area.**Caution!** Ensure that the alignment pins on the tool are aligned with the cutouts on the processor. If the processor is not inserted correctly, it may be destroyed.**Important! Be sure the processor remains inside the processor installation tool.**
2. Align the processor installation tool with the socket, and then install the processor.
3. Press the tabs on the processor installation tool to separate it from the processor, and then remove the tool.
4. Close the processor socket retaining bracket and the processor locking lever.**Caution!** Be sure to close the processor socket retaining bracket before closing the processor locking lever. The lever should close without resistance. Forcing the lever closed can damage the processor and socket, requiring system board replacement.**Caution! The heatsink thermal interface media is not reusable and must be replaced if the heatsink is removed from the processor after it has been installed.Note : If you are installing new heatsink and it comes with a factory-applied layer of thermal interface media, remove the cover from the bottom and skip the application of thermal grease to the processor.** If

you are reinstalling the old heatsink, use an alcohol wipe to clean off the old thermal grease from the heatsink. Allow the alcohol to evaporate before you continue.

5. Apply thermal grease in an 'S' pattern on the processor.**Note : A thermal grease pattern of five big dots is also acceptable.**
6. Align the heatsink over the two standoffs in the system board.
7. While firmly holding the heatsink in place, tighten the two captive Torx T15 screws to secure the heatsink to the system board.

System Board

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System board removal

Before you begin: Review Safety considerations . Power down the server blade and remove it from the enclosure. Remove all of the hard drives and hard drive blanks, the access panel, hard drive backplane, front panel/hard drive cage assembly, DIMM baffles, DIMMs, heatsinks, processors, and if installed, cache batteries, cache modules, and any mezzanine cards.

1. Remove both cache battery holders
2. Loosen the two captive Torx T-15 thumbscrews that secure the system board to the chassis.
3. Carefully, slide the system board out the rear of the chassis and remove.

System board replacement

1. Carefully, slide the system board from the rear until it is aligned with the front of the chassis.
2. Tighten the two captive Torx T-15 thumbscrews to secure the system board to the chassis.
3. Replace both cache battery holders.
4. Transfer the processor protective covers from the spare system board to old system board.**Important!** After replacing all of the components removed during the process, power up the server and run the procedure to re-enter the server serial number and product ID. Refer the service manual for this procedure.