HPE ProLiant DL120 G6 Server - 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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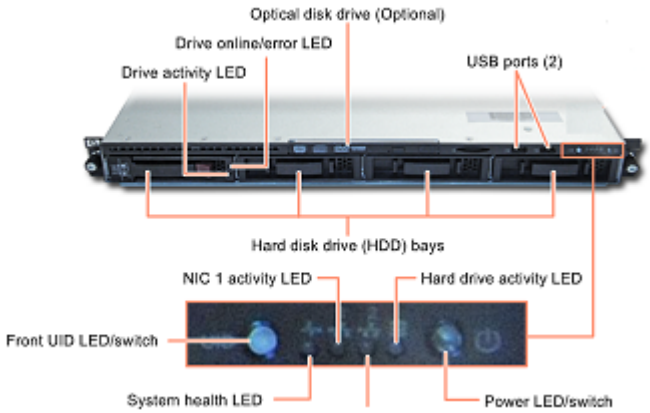
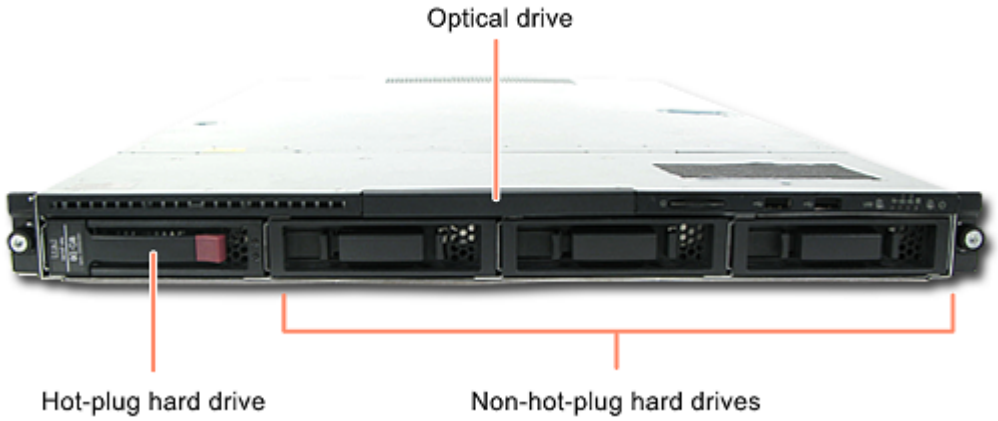
Front View1



Top Cover



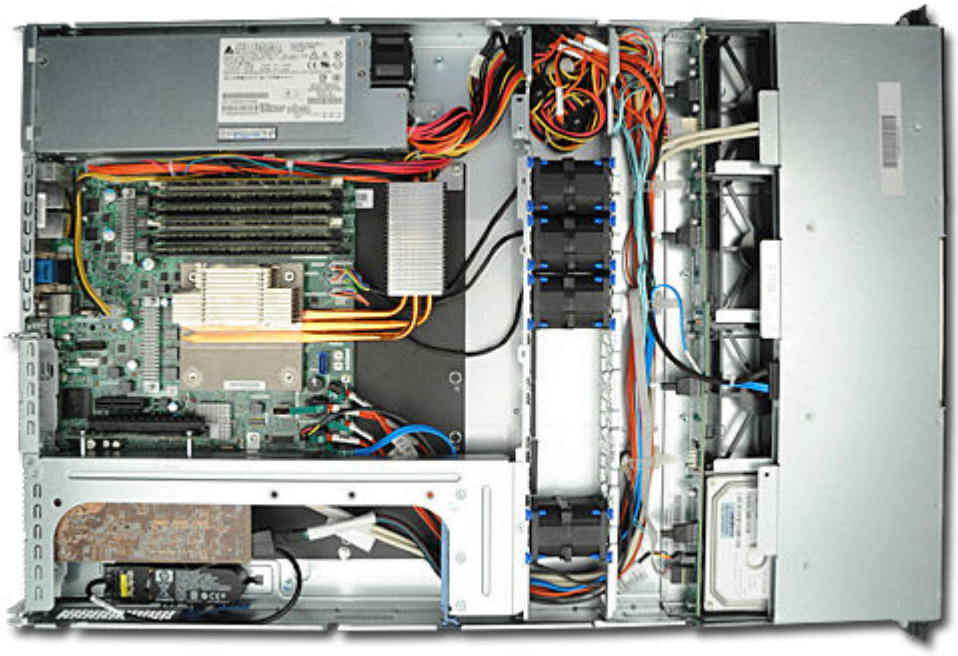
Front View2



Top View



Internal View



System Fans



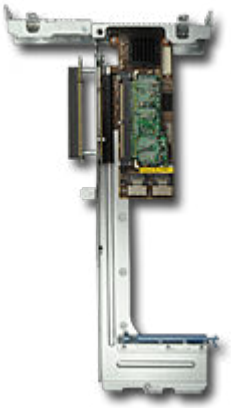
Hot-plug Backplane Board



Hard Drives



PCI Cage



SAS Cache Battery



SAS Cache Board



Expansion Board



SAS Controller Board



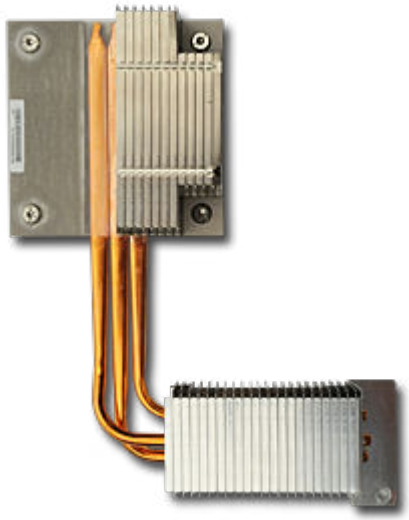
Air Baffle



Processor



Heatsink



Power Supply Unit



Memory



Required Tools

You need the following items for certain procedures:

- T-10/T-15 Torx screwdriver
- Alcohol swab
- Thermal grease

Safety Considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

An electrostatic discharge (ESD) can damage static-sensitive devices or micro circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage. To prevent electrostatic damage, observe the following precautions:

- Transport products in static-safe containers such as conductive tubes, bags, or boxes.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Cover workstations with approved static-dissipating material. Use a wrist strap connected to the work surface, and properly grounded (earthed) tools and equipment.

- Keep work area free of nonconductive materials, such as ordinary plastic assembly aids and foam packing.
- Make sure that you are always properly grounded (earthed) when touching a static-sensitive component or assembly.
- Avoid touching pins, leads, or circuitry.
- Always place drives with the Printed Circuit Board (PCB) assembly-side down.
- Use conductive field service tools.

Server warnings and cautions

Before installing a server, be sure that you understand the following warnings and cautions.

WARNING! To reduce the risk of electric shock or damage to the equipment:

- **Do not disable the power cord grounding plug. The grounding plug is an important safety feature.**
- **Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.**
- **Unplug the power cord from the power supply to disconnect power to the equipment.**
- **Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.**

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

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

WARNING! To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Pre-Installation Procedure

Perform the steps below before you open the server or before you remove or replace any component.

WARNING! Failure to properly turn off the server before you open the server or before your start installing and removing components may cause serious damage as well as bodily harm.

1. **Turn off the server and all the peripherals connected to it.**

2. **Unplug all cables from the power outlet(s) to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry. If necessary, label each one to expedite reassembly.**
3. **Disconnect telecommunication cables to avoid exposure to shock hazard from ringing voltages.**
4. **If server is installed in a rack, remove server and place it on a flat surface.**
5. **Remove the top cover.**
6. **Follow the ESD precautions.**

Important! To streamline the configuration process, read through the entire installation and removal procedures first and make sure you understand them before you begin.

Powering Down The Server

The server does not completely power down when the power button on the front panel is pressed. The button toggles between On and Standby. The standby position removes power from most electronics and the drives, but some internal circuitry remains active. To completely remove all power from the system, disconnect all power cords from the server.

To power down the server:

1. Shut down the server as directed by the operating system documentation.
2. Press the power button to toggle to Standby. This places the server in Standby mode changing the power LED indicator to amber. In this mode, the main power supply output is disabled. Standby does not completely disable or remove power from the system.
3. Disconnect the AC power cord(s) from the power outlet(s) and then from the server.
4. Be sure that the power LED indicator is turned off and that the fan noise has stopped.
5. Disconnect all peripheral devices from the server.

Hot-Plug Devices

Some of the FRUs shown in this video are hot-pluggable. You do NOT have to power down the server prior to removing or replacing them. Powering down the server will increase the repair time for the device. Hot-plug devices are indicated in the menu with an asterisk.(*).

Top Cover

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Top cover removal

To remove the top cover:

1. Loosen the screw on the top cover with a T-10 driver.
2. Press the latch on the top cover.
3. Slide the cover toward the rear of the server and then lift the top cover to remove it from the chassis.

Top cover replacement

To replace the top cover:

1. Align the top cover to the chassis and then slide it towards the front panel to position it into place.
2. Once the cover is attached to the chassis, tighten the screw on the top cover with a T-10 driver.

Air Baffle

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Air baffle removal

To remove the air baffle:

1. Remove the top cover.
2. Lift the air baffle from the chasis.

Air baffle replacement

To replace the air baffle:

1. Reverse the removal procedure.
2. Replace the top cover.

Hot-Plug Backplane Board

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Hot-plug backplane board* installation

To install the hot-plug backplane board:

1. Remove the top cover.
2. Disconnect the SATA optical disk drive (ODD) cable from the optical drive.
3. Disconnect the cables connected to any installed non-hot-plug hard drives, then remove the drives and all the blanks from the server at this time
4. Install the hot-plug backplane board by aligning, then inserting the tabs located behind drive bays 2 and 3 through the backplane board notches.
5. Secure the backplane board with three screws.
6. Connect the following cables to the hot-plug backplane board.
7. Route the 12C and SGPIO cables through the chassis opening beside the system fan 4 and connect them to their system board connectors.
8. Connect the 12C and SGPIO cables to the backplane board.
9. Connect the SATA ODD cables to the optical drive.
10. Connect the backplane boards power cable.
11. Connect the hard drive cables to the backplane board.
12. Replace the top cover.

Hot-Plug Hard Drive

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Hot-plug hard drive* installation

To install a hot-plug hard drive:

Note: This is a hot-pluggable device. You do NOT have to power down the server prior to following these steps.

1. Remove the HDD blank by pressing the release buttons and pulling the blank from the drive bay.
2. Slide the hard drive assembly into the drive bay until it stops and press the hard drive carrier latch inward until it clicks.

Hot-plug hard drive* removal

To remove the hot-plug hard drive, reverse the installation procedures.

Non-Hot-Plug Hard Drive

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Non-hot-plug hard drive installation

To install a non-hot-plug hard drive:

1. Remove the top cover.
2. Remove the HDD carrier from the bay you want to install the new drive into by removing the screw that secures the HDD carrier. Then push the HDD carrier towards the front of the chassis, and then slide it out of the drive bay.
3. Install the new non-hot-plug hard drive module in its carrier by removing four of the five mounting screws from the carrier.
4. Align the hard drive module on the carrier.
5. Secure the hard drive assembly with four mounting screws.
6. Install the new hard drive assembly in the chassis by sliding the hard drive assembly into the drive bay, securing the drive carrier with one screw, and connecting the signal and power cables to the drive.
7. Replace the top cover.

SATA Hard Drive

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SATA hard drive installation

To install a new SATA hard drive:

1. Remove the top cover.
2. Connect the appropriate SATA signal cable to the new hard drive.
3. Connect the appropriate power cable to the new hard drive.
4. Replace the top cover.

SAS Hard Drive

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SAS hard drive removal

To install a SAS hard drive:

1. Remove the top cover.
2. Connect the appropriate SAS signal cable to the new hard drive .
3. Connect the appropriate power cable to the SAS signal cable.
4. Replace the top cover.

Optical Disk Drive (ODD)

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Optical disk drive (ODD) removal

To replace the default optical disk drive (ODD):

1. Remove the top cover.
2. Disconnect the SATA ODD cable from the drive.
3. Remove the two screws that secure the drive to the chassis.**Note: You will reuse these screws when you install the new optical disk drive.**
4. Push the drive towards the front of the chassis, and then slide it out of the drive bay.
5. Remove the ODD bracket by removing the two screws that secure the ODD bracket and detaching the bracket from the drive.**Note: You will reuse this bracket when you install the new optical disk drive.**

Optical disk drive (ODD) replacement

To install the new default optical disk drive (ODD):

1. Attach the ODD bracket to the new optical disc drive by aligning the screw holes on the bracket with those located on the rear of the new drive and securing the bracket with two screws.
2. Install the new optical disk drive by sliding the optical disk drive into the drive bay.
3. Secure the drive to the chassis with two screws.
4. Connect the SATA ODD cable to the new optical disk drive.
5. Replace the top cover.

Heat Sink

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Heat Sink removal

To remove the heat sink:

Note: Prior to removing the heat sink, power on the system for a few minutes to soften the thermal compound, so that the heat sink can easily be removed.

1. Power off the server
2. Remove the top cover
3. Remove the air baffle.

4. Use the T15 wrench to loosen the five spring-loaded screws a few threads out, observing a diagonally opposite pattern, and then loosen them completely to release the heat sink from the processor base.**Caution! To prevent the heat sink from tilting to one side during installation/removal procedures, observe a diagonally opposite pattern (an 'X' pattern) when loosening and tightening the four spring-loaded screws.Note: You may want to rotate the heat sink a few degrees clockwise and counterclockwise to break the thermal compound bond loose.**
5. Remove the heat sink from the system board by lifting upward.

Heat Sink replacement

To replace the heat sink:

Note: Before replacing the heat sink, the thermal grease should be replaced. The thermal grease should be replaced every time the heat sink is removed.

Note: If you are using a new heat sink, remove the cover protecting the preapplied thermal compound. Be careful not to touch or scratch the thermal compound.

1. Insert the heat sinks spring-loaded screws into the system board holes.
2. Use the T15 wrench to tighten the spring-loaded screws.
3. Reinstall the air baffle.
4. Replace the top cover.

Processor

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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.- Your processor installation tool may differ from the one shown here. The general procedures and cautions for removal and replacement still apply.

To remove the processor:

Note: Handle the processor and heat sink with care. Damage to either may prevent the system from functioning properly.

WARNING! To reduce the risk of personal injury from hot surfaces, allow the heat sink and the processor to cool before touching them.

1. Remove the top cover.
2. Remove the air baffle.
3. Remove the heat sink.
4. Open the processor locking lever and the processor socket retaining bracket.
5. Align the processor installation tool over the processor with the locking lever graphic correctly oriented.
6. Press in on the release tabs on the side of the tool and lower it onto the processor.
7. With the processor in place, release the tabs to firmly grasp the processor into the mouth of the tool.
8. Lift the processor straight up and out of the socket.
9. 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.

Processor replacement

To install the new processor:

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.**

5. Use the alcohol pad included in the new processor spare kit to clean the contact surfaces on the new heat sink and the processor. Wipe the contact surfaces several times to make sure no particles or dust contaminants are evident. Allow the alcohol to evaporate before continuing.
6. Apply the thermal grease compound to the processor in a '5 dot' pattern to ensure even distribution.
7. Reinstall the heatsink.
8. Reinstall the air baffle.
9. Replace the top cover.

Memory

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Memory removal

To remove a memory module:

Note: To allow an interleaving memory configuration, the Memory Interleaving field in the Advanced | Advanced Chipset Control of the BIOS Setup must be set to Enabled.

1. Remove the top cover.
2. Remove air baffle.
3. Completely open the holding clips that secure the memory module.
4. Gently pull the memory module upward to remove it from the slot.

Memory replacement

To install a memory module:

1. Locate an empty DIMM slot on the system board.
2. Open the holding clips of the selected DIMM slot.
3. Using both hands to hold the module by the edges, insert it perpendicularly into the slot.**Note: The DIMM slots are structured to ensure proper installation. If you insert a memory module but it does not fit easily into the slot, you may have inserted it incorrectly. Reverse the orientation of the module and insert it again.**

4. Press the module at both ends to seat it fully into the slot. The holding clips will automatically lock into place once the module has been seated properly.
5. Reinstall the air baffle.
6. Replace the top cover.

PCI Cage

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PCI cage removal

To remove the PCI cage:

1. Remove the top cover.
2. Disconnect all cables connected to an existing expansion board.
3. Remove the three PCI cage screws: one T10 screw near the system fan 4 and two T15 screws on the rear panel.
4. Remove the PCI cage from the chassis.

PCI cage replacement

To reinstall the PCI cage:

1. Reconnect all cables connected to the expansion board.
2. Slide the PCI cage into the selected slot and make sure the board is properly seated in the slot.
3. Reconnect the three PCI cage screws: one T10 screw near the system fan 4 and two T15 screws on the rear panel.
4. Replace the top cover.

Expansion Board

https://support.hpe.com/hpesc/public/videoDisplay?videoId=vpsg00001148en_us&noframe

Expansion board removal

To install an expansion board:

Note: The system supports up to two expansion boards at a time. Use only HP supported expansion boards of the following types:

- Full-length/full-height PCI Express x16 expansion board
- Half-length/low-profile riser board PCI Express x8 expansion board

1. Remove the top cover.
2. Remove the PCI cage.
3. Remove the mounting screw from the selected slot. Use this screw to install the expansion board.**Note:** Some expansion boards can only be installed in one slot but other boards can be configured to fit in either slot by replacing the default bracket (attached to the board) with a different sized one. The different sized bracket and instructions on how to attach it to the board is included in the option kit.
4. Verify that the boards default bracket is compatible with the configuration of the selected slot. If it is not compatible, replace the bracket with one that is compatible.
5. Slide the expansion board into the selected slot and make sure the board is properly seated in the slot.
6. Secure the expansion board with the one screw.
7. Connect the cables to the PCI card.
8. Reinstall the PCI cage to the chassis.
9. Replace the top cover.

SAS Controller Board

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SAS controller board installation

To install the SAS controller board:

Note: Remove the SATA HDD cables from the chassis if you intend to switch to a SAS HDD configuration.

1. Remove the two mounting screws from the slot. Use these screws to install the SAS controller board.

2. Slide the controller board into the slot. Make sure the board is properly seated in the slot.
3. Secure the controller board with the two mounting screws.

SAS Cache Board

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SAS cache board removal

To install the SAS cache board:

1. Insert the SAS cache board into its connector on the bottom side of the SAS controller board. Make sure the board is properly seated in the slot.
2. Close the holding clips to secure the board in place.
3. Proceed to the next section to install the SAS controller board.

SAS Cache Battery

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SAS cache battery removal

To install the SAS cache battery:

1. Remove the top cover.
2. Remove the PCI cage.
3. Mount the SAS cache battery on the chassis indentation located near the SAS controller board.
4. Connect the BBWC cable to the SAS controller board.
5. Connect the SAS HDD cable.
6. Reinstall the PCI cage to the chassis.
7. Replace the top cover.

System Battery

https://support.hpe.com/hpesc/public/videoDisplay?videoId=vpsg00001152en_us&noframe

System battery removal

To replace the system battery:

1. Remove the top cover.

WARNINGS:

- **Replace the battery with the same type as the battery recommended by HP. Use of another battery may present a risk of fire or explosion.**
- **A risk of fire and chemical burn exists if the battery is not handled properly. Do not disassemble, crush, puncture, or short external contacts, or expose the battery to temperatures higher than 60 °C (140 °F).**
- **Do not dispose of used batteries in water or fire. Dispose of used batteries according to manufacturer's instructions.**
- **Loss of BIOS settings occurs when the battery is removed. BIOS settings must be reconfigured whenever the battery is replaced.**

1. Locate the system battery.**Important! Do not overbend the battery latch when replacing the battery. For proper operation, the latch must retain contact with the battery.**
2. Disengage the battery latch from the battery.
3. Remove the old battery from its socket by lifting.

System battery replacement

To reinstall the new system battery:

1. Insert the new battery, with the positive polarity (+ side) facing the latch, in the socket. Make sure the battery is seated completely.
2. Replace the top cover.

System Fan

https://support.hpe.com/hpesc/public/videoDisplay?videoId=vpsg00001153en_us&noframe

System fan removal

To replace a system fan:

1. Remove the top cover
2. Remove the air baffle if you are replacing any of the processor fans so you can access the fan cable connectors.**Note: Remove the PCI cage to access the fan cable connector if you are replacing system fan 4.**
3. Disconnect the fan cable from its system board connector.
4. Remove the fan from its cage to release the fan cable.
5. Release the fan cable from the fan cage to completely remove the fan from the chassis.

System fan replacement

To install the new system fan:

1. Route the fan cable through the vacated fan bracket.
2. Insert the fan in the fan bracket.
3. Connect the fan cable to its corresponding board connector.
4. Reinstall the air baffle.
5. Replace the top cover.

Power Supply Unit

https://support.hpe.com/hpesc/public/videoDisplay?videoId=vpsg00001154en_us&noframe

Power supply unit removal

To replace the power supply unit:

WARNINGS:

- **Installation of the power supply unit should be referred to individuals who are qualified to service server systems and are trained to deal with equipment capable of generating hazardous energy levels.**
- **DO NOT open the power supply unit. There are no serviceable parts inside it.**

1. Remove the top cover
2. Remove the air baffle.
3. Remove the PCI cage.
4. Disconnect the following PSU cables if applicable:
    - SATA ODD cable from the system board. Route the SAS ODD cable through the cable routing holes on the chasis.
    - Remove the ODD cable from the ODD
    - Unhook all cable ties on the chasis.
    - P4 power cable from the hot-plug backplane board
    - The individual power cables (P5P8) from the installed hard drives.
    - P1 and P2 ATX power cables from the system board.
1. Release the power cables from the front chassis cable ties and pull them through the chassis opening opposite the PSU fan.
2. Remove the two power supply unit (PSU) screws from the right side of the chassis.
3. Remove the two PSU screws from underneath the chassis.
4. Remove the one PSU screw near the PSU fan.
5. Hold the power supply with both hands and tilt its right side upward to release the two tabs located on its left side from underneath the system board, then remove the power supply from the chassis.

Power supply unit replacement

To install the new power supply unit:

1. Insert the two tabs located on the left side of the power supply underneath the system board. After that make sure the PSU screw holes are aligned with those on the chassis.
2. Insert the following screws:
    - one screw near the PSU fan

- two screws on the right side of the chassis.
- two screws securing the PSU to the chassis base.

1. Reconnect the PSU cables removed earlier.
2. Reinstall the air baffle.
3. Replace the top cover.