# Sun Fire™ X4450
# Volume Configuration Guide

Adobe PostScript™

# How to Add Components to Your Limited Configuration Server

## Test the Current Configuration

Always test the current configuration *before* upgrading the server.

**Testing the Current Configuration**

| | |
|---|---|
| **1** | Ensure that all internal components are properly seated and install the cover. |
| **2** | Boot the server using the server's Tools and Drivers CD/DVD. |
| **3** | The server should pass POST and boot to the Tools and Drivers CD/DVD's main menu. |
| **4** | Troubleshoot any front panel fault indicators before customizing the server. |

## Adding Components to the Server

The component installation procedures in this document contain important installation and validation information that can assist you in successfully configuring the server.

# How to Add Memory (DIMMs)

> **Note –** Sun-approved memory is the *only* memory guaranteed to meet the reliability and quality levels required for optimal performance of Sun Fire servers. Use only DIMMs approved and supported by Sun.

## Install DIMMs in Matched Part Number Pairs Only.

DIMMs *must* be installed in matched part number pairs. Matched part number pair DIMMs have the same *size*, the same *speed*, and the same *manufacturer*.

**Installing DIMMs in Matched Part Number Pairs**

- Inspect the label on the DIMMs to ensure the following:
    - Same manufacturer
    - Same part number

## Install Larger Capacity DIMMs in Lower-Numbered Slots

Larger capacity DIMMs *must* be installed in lower-numbered slots. If the DIMMs that you are installing are larger capacity than the DIMMs already installed in the server, do the following:

**Installing Larger Capacity DIMMs in Lower-Numbered Slots**

1. *Remove* smaller capacity DIMMs from lower-numbered slots and r*eplace* with larger capacity DIMMs.

2. Install smaller capacity DIMMs in the next available higher-numbered slots.

   *For example:*
   If the server is configured with two 2 GB DIMMs in slots A0/B0 and you want to install two additional 4 GB DIMMs:
   - Remove the two 2 GB DIMMs from slots A0/B0
   - Install the two 4 GB DIMMs in slots A0/B0
   - Install the two 2 GB DIMMs in slots C0/D0

## Install DIMMs According to the Following Map

**Installation Order**

| 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | | 15 | 13 | 11 | 9 | 7 | 5 | 3 | 1 | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHANNEL3/DIMM D7 | CHANNEL3/DIMM D6 | CHANNEL3/DIMM D5 | CHANNEL3/DIMM D4 | CHANNEL3/DIMM D3 | CHANNEL3/DIMM D2 | CHANNEL3/DIMM D1 | CHANNEL3/DIMM D0 | CHANNEL2/DIMM C0 | CHANNEL2/DIMM C1 | CHANNEL2/DIMM C2 | CHANNEL2/DIMM C3 | CHANNEL2/DIMM C4 | CHANNEL2/DIMM C5 | CHANNEL2/DIMM C6 | CHANNEL2/DIMM C7 | | CHANNEL1/DIMM B7 | CHANNEL1/DIMM B6 | CHANNEL1/DIMM B5 | CHANNEL1/DIMM B4 | CHANNEL1/DIMM B3 | CHANNEL1/DIMM B2 | CHANNEL1/DIMM B1 | CHANNEL1/DIMM B0 | CHANNEL0/DIMM A0 | CHANNEL0/DIMM A1 | CHANNEL0/DIMM A2 | CHANNEL0/DIMM A3 | CHANNEL0/DIMM A4 | CHANNEL0/DIMM A5 | CHANNEL0/DIMM A6 | CHANNEL0/DIMM A7 |

**BRANCH 1** — **BRANCH 0**

**FRONT OF MEZZANINE BOARD**
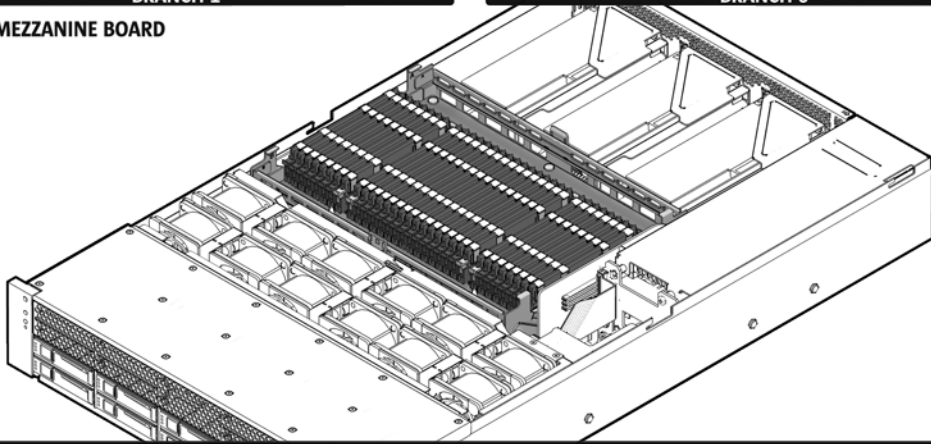


### DIMM Population Sequence

**ATTENTION:** DIMMs must be installed in matched pairs and in the order shown. Highest capacity DIMMs are to be located in the lowest numbered DIMM slots.

| QTY. DIMMS | Slot Location | QTY. DIMMS | Slot Location | QTY. DIMMS | Slot Location | QTY. DIMMS | Slot Location |
|---|---|---|---|---|---|---|---|
| 2 | A0,B0 | 10 | All of above plus: A2, B2 | 18 | All of above plus: A4, B4 | 26 | All of above plus: A6, B6 |
| 4 | All of above plus: C0, D0 | 12 | All of above plus: C2, D2 | 20 | All of above plus: C4, D4 | 28 | All of above plus: C6, D6 |
| 6 | All of above plus: A1, B1 | 14 | All of above plus: A3, B3 | 22 | All of above plus: A5, B5 | 30 | All of above plus: A7, B7 |
| 8 | All of above plus: C1, D1 | 16 | All of above plus: C3, D3 | 24 | All of above plus: C5, D5 | 32 | All of above plus: C7, D7 |

## Insure DIMMs are Properly Seated and Locked

DIMMs that are not properly seated and locked are easily dislodged when shipped or moved.

**Seating and Locking DIMMs**

- Insert DIMMs into the DIMM slots and lock the DIMMs using the two locking levers.
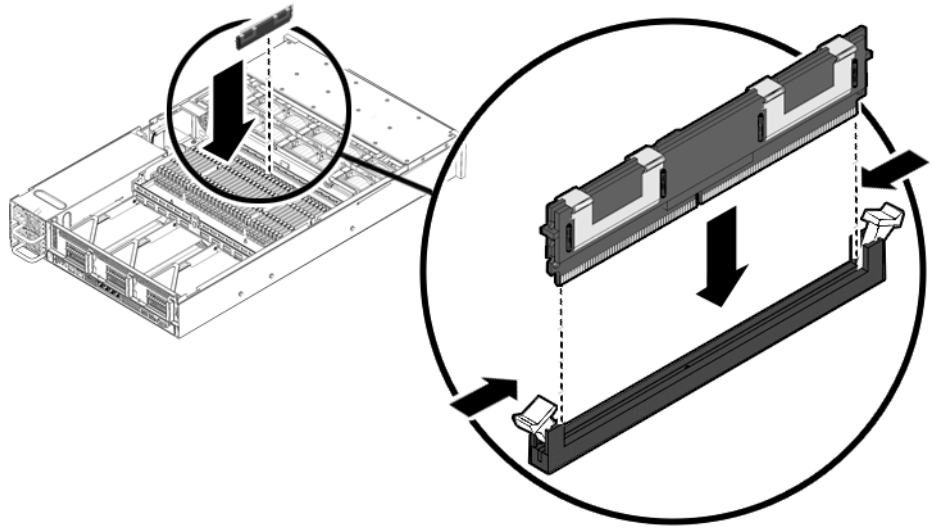
## Fill All Unused DIMM Slots With DIMM Slot Fillers

All unused DIMM slots *must* contain DIMM slot fillers.

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**Filling DIMM Slots With Slot Fillers**

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- Insert and lock DIMM fillers into each unused DIMM slot.

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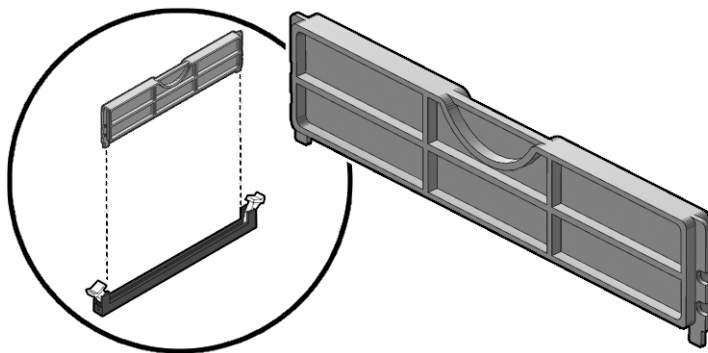
# Lock the Memory Mezzanine Tray

For server systems that use a memory mezzanine tray (for example, the Sun Fire X4450), you *must* lock the mezzanine tray before you install or move the server.

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**Caution –** Unsecured trays or cards are easily dislodged when shipped or moved.

● **See the top cover service label for instructions about securing the mezzanine tray.**

### *Test Installed DIMMs*

Verify that the server can see all installed DIMMs.

| Testing Installed Memory |
| --- |
| • Reassemble the server and use one of the following methods to verify the DIMMs:<br>  • Boot from the Tools and Drivers CD/DVD and access the diagnostics by selecting the option to run hardware diagnostics (option 1).<br>  • Log in to the service processor's (SP) ILOM using ssh or a browser and the IP address of the SP. |

# How to Add a DVD/USB Drive

■ The server ships with filler panels for a vacant DVD drive slot and each vacant HD slot.

■ You *must* install the DVD drive/USB hub *before* you install the hard drives.

| Adding a DVD/USB Drive Unit | |
| --- | --- |
| 1 | Eject all hard drives and HD filler panels. |
| 2 | Remove the DVD filler panel. |
| 3 | Slide the DVD/USB drive[*] unit into the DVD slot and engage the connector on the backplane. |
| 4 | Populate the HD slots with hard drives or hard drive filler panels. |
| 5 | Test the DVD drive by booting the server using the Tools and Drivers DVD and accessing the Pc-Check diagnostics. |

\* Use the -09 (or later) revision of the DVD/USB drive unit.

> **Note –** If the DVD drive hangs during testing, contact Sun service. The issue might be a low-level inter-operability issue between the USB translation device and the system. The issue is usually resolved by replacing an internal board.

# How to Add SAS Hard Drives

See the *Sun Intel Adaptec BIOS RAID Utility User's Manual* (820-4708) at:

http://docs.sun.com

## SAS HD Installation Rules

- Do *not* mix SAS and SATA drives in the same volume.
- SATA hard drives are not supported on the Sun Fire X4450.
- Supported HBA cards:
    - Sun StorageTek PCIe SAS 8-Port Internal HBA, **SGXPCIE8SAS-I-Z**, LSI SAS 1068E (hardware RAID support)
    - Sun StorageTek SAS RAID 8-Port Internal HBA, **SG-XPCIESAS-R-INT-Z**, Adaptec/Intel-based (hardware RAID support)
- If you are also adding a DVD/USB unit, install the unit *before* installing hard drives (see "How to Add a DVD/USB Drive" on page 5).
- Hard drives must be initialized *before* the drives can be seen by the HBA and before an OS can access the disks.

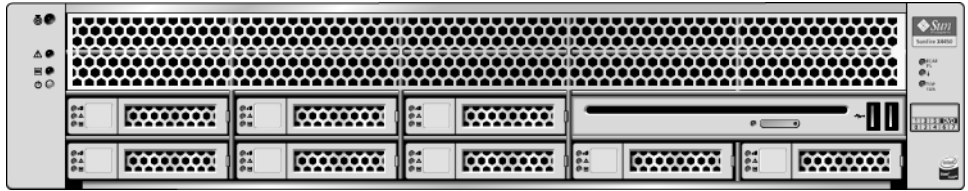**Adding SAS Hard Drives**

1   Install drives according to the following drive map:

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  | HD1 | HD3 | HD7 | DVD/USB Drive |  |
|  | **HD0** | HD2 | HD4 | HD5 | HD6 |

2        Remove protective covers from the connectors on the card and install the HBA (PCIe SAS 8-port internal disk controller)[*].

3        Take the free end of the cable that is attached to the disk backplane on the left-hand side (disks 0-3) and connect it to the Mini-SAS x4 connector on the card labeled Port 0, 0-3.

4        Take the free end of the cable that is attached to the disk backplane on the right-hand side (disks 4-7) and connect it to the Mini-SAS x4 connector on the card labeled Port 1, 4-7.

[*] Supported HBAs: Sun StorageTek PCIe SAS 8-Port Internal HBA, SGXPCIE8SAS-I-Z, LSI SAS 1068E and Sun StorageTek SAS RAID 8-Port Internal HBA, SG-XPCIESAS-R-INT-Z, Adaptec/Intel-based

## Verify Hard Drives

Use the PCIe HBA's BIOS utility to verify that the card sees the hard drives.

- When using the Sun StorageTek (Adaptec) HBA card, you must *first* initialize the hard drives using the card's BIOS (even for single-disk configurations) so the OS can see the drives (use the Adaptec-based procedure below). The LSI card automatically manages this step and does *not* require manual initialization of drives (use the LSI-based procedure below).

- After installation, if you see inconsistent or non-illuminated HD LEDs, you might need to update the backplane and the controller firmware using the server's Tools and Drivers DVD.

**Verifying Hard Drives Using the LSI-Based Sun StorageTek PCIe SAS 8-port Internal HBA**

1        Power on the server and watch the output for the prompt to press Ctrl-C.

2        When the prompt appears, press Ctrl-C.

3        From the main menu, select SAS Topology.

4        Verify that all installed drives are seen by the HBA, and replace any drives that are not seen.

**Verifying Hard Drives Using the Adaptec-based Sun StorageTek PCIe SAS 8-port Internal HBA**

1   Boot the server and watch the output for the prompt to press Ctrl-A to enter the Adaptec RAID Configuration Utility (ARCU).

2   When the prompt appears, press Ctrl-A. *The Adaptec RAID Configuration Utility main menu appears.*

**Initializing the Disks**

1   From the Adaptec RAID Configuration Utility main menu, select Create Array.

2   Select Initialize Disks. *A list appears showing disks seen by the HBA card.*

    If an installed disk does not appear in the list, replace it.

3   Use the Insert key to add each disk to the list on the right.

4   When done adding disks to the list, press Enter.

5   To verify the drives, press the ESC key to exit to the main menu.

**Verify the Hard Disks**

1   Select Disk Utilities.

2   Highlight a drive in the list by using the up or down arrow key, press enter and, from the menu that appears, select Identify Drive and press Enter. *This action blinks the HD LED.*

3   Verify that the selected HD LED blinks.

4   Select Identify Drive for each HD.

5   When done, press ESC to exit to the main menu. *The main menu appears.*

**Creating a Volume for Each Drive**

1   From the utility's main menu, Select Array Configuration Utility.

2   From the main menu, select Create Array to create a volume for *each* disk.

3   Use the arrow key to highlight drive 0.

4   Use the insert key to add drive 0 to the Selected Drives list on the right and press enter.

5   Label the volume (you can use the drive volume number) and press Enter

6   Accept the defaults for Read Caching and Write Caching and press Enter.

7   Select Build for the Create RAID Via option and press Enter

8   Press Enter to build the volume.

9   Repeat the steps to create a volume for each drive.

*Test Hard Drives*

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**Testing Hard Drives Using Pc-Check**

1    Boot the server with the Tools and Drivers CD/DVD to access the diagnostics.

2    Select the option to Run Hardware Diagnostics.

3    Select the option to test hard drives.

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**Note –** To expedite hard drive testing use the 1% test coverage.

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## How to Add and Test PCIe Cards

- Slot 0 and slot 1 can accommodate x16 mechanical cards.

- The disk controller HBA card *must* be inserted into slot 0 (the slot nearest the power supply).

- After installation, update the firmware level for each card as specified by the manufacturer.

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**Adding PCIe Cards**

1    Connect PCIe cards to a riser assembly.

2    Insert the PCIe card and riser assembly into a PCIe slot on the motherboard.

3    Update the firmware level for each card as specified by the manufacturer.

**Testing PCIe Cards**

1    If the self-test option exists, invoke the cards built in self-test.

2    Test the card by performing basic rudimentary activities. *For example, establish network connectivity (for a GigabitEthernet card).*

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## How to Check and Update Your Firmware

Sun frequently provides new firmware updates, so it is possible that a newer version of firmware is available for your server. *Sun recommends that you update to the latest version of firmware.* Firmware versions for your server are described in the *Sun Fire X4450 Server Product Notes*.

# Firmware Update Notes

- The BIOS and SP firmware are matched and, unless specified, should always be updated in unison.
- There are two types of SP firmware, ELOM (Embedded Lights Out Manager) and ILOM (Integrated Lights Out Manager).
- Before updating your server, you *must* know the type of firmware (ELOM or ILOM) installed on the SP.
- Do *not* update an ELOM-based SP using ILOM firmware. If you need to convert an ELOM-based SP to an ILOM-based SP, use the ELOM-to-ILOM migration process, which is described in the *ELOM-to-ILOM Migration Guide*.
- Downgrading firmware is *not* recommended, because downgrading firmware might eliminate important security and functionality updates.
- Recovery procedures for failed updates are described in the product's Service Manual.

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**Checking and Updating Your Firmware**

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|---|---|
| 1 | Reboot the server and watch the screen for the prompt to press F2 to enter the BIOS Setup Utility. |
| 2 | When the prompt appears, press F2. *The BIOS Setup Utility main menu appears.* |
| 3 | From the main menu, make note of the BIOS Version and the SP Firmware Version |
| 4 | Exit the BIOS setup utility. |
| 5 | Access the Sun Fire X4450 server download site at: http://www.sun.com/servers/x64/x4450/downloads.jsp |
| 6 | Compare the most recent BIOS and SP version numbers to the firmware versions of the server. |
| 7 | If necessary, download the firmware and update the server using the ILOM. |