



# Sun Fire™ X4450 Volume Configuration Guide

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Sun Microsystems, Inc.  
[www.sun.com](http://www.sun.com)

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# How to Add Components to Your Limited Configuration Server

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## Test the Current Configuration

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

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### Testing the Current Configuration

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- 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.
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## 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)

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**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.

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### *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*.

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#### **Installing DIMMs in Matched Part Number Pairs**

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- 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:

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

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- 1** *Remove* smaller capacity DIMMs from lower-numbered slots and *replace* 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
-

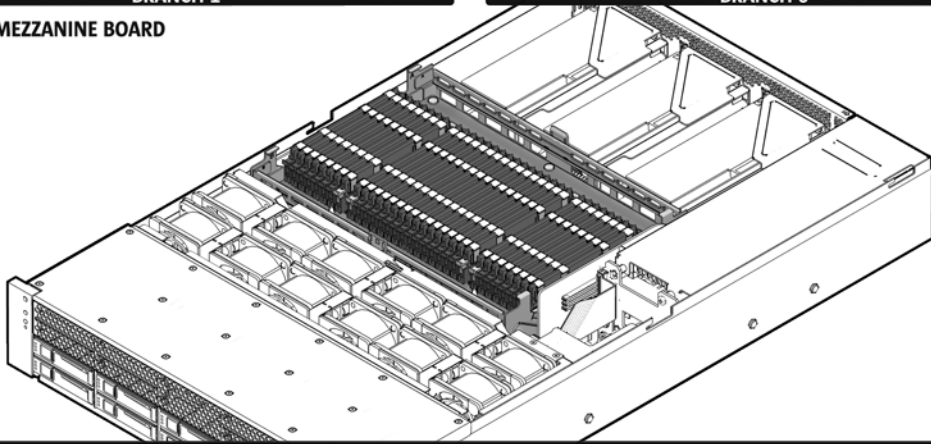
*Install DIMMs According to the Following Map*

**Installation Order**

16	14	12	10	8	6	4	2	2	4	6	8	10	12	14	16
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
<b>BRANCH 1</b>															

15	13	11	9	7	5	3	1	1	3	5	7	9	11	13	15
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
<b>BRANCH 0</b>															

**FRONT OF MEZZANINE BOARD**



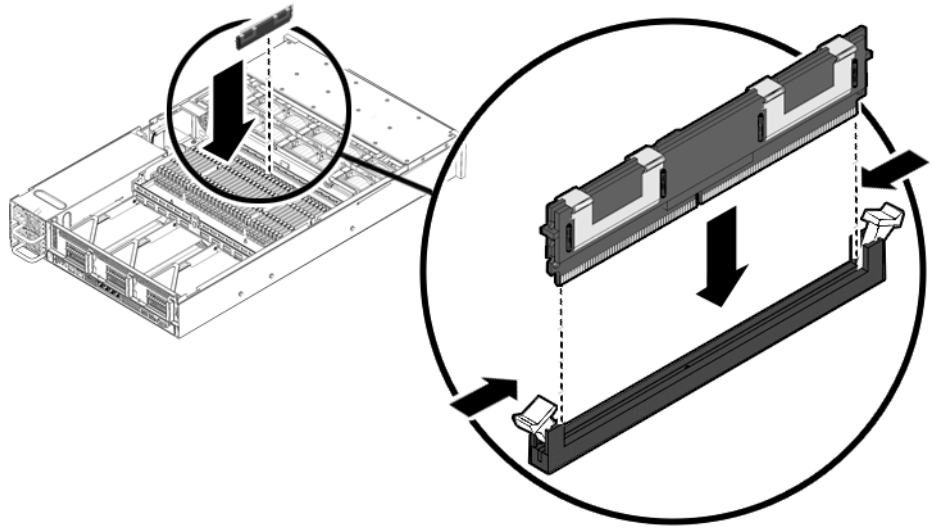
<b>DIMM Population Sequence</b>							
<b>ATTENTION: DIMMs must be installed in matched pairs and in the order shown. Highest capacity DIMMs are to be located in the lowest numbered DIMM slots.</b>							
QTY. DIMMS	Slot Location	QTY. DIMMS	Slot Location	QTY. DIMMS	Slot Location	QTY. DIMMS	Slot Location
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*

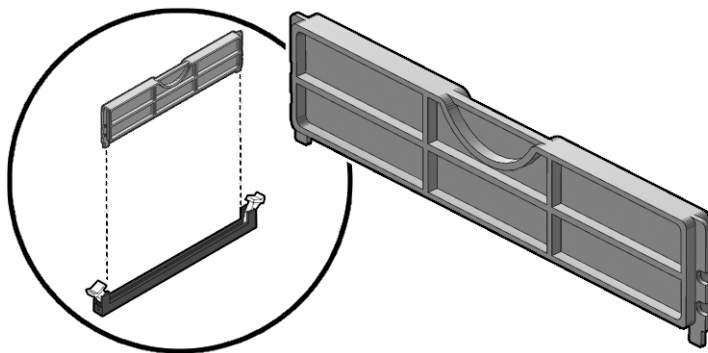
All unused DIMM slots *must* contain DIMM slot fillers.

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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.

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- 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.

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#### **Testing Installed Memory**

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

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#### **Adding a DVD/USB Drive Unit**

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

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**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.

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## 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.

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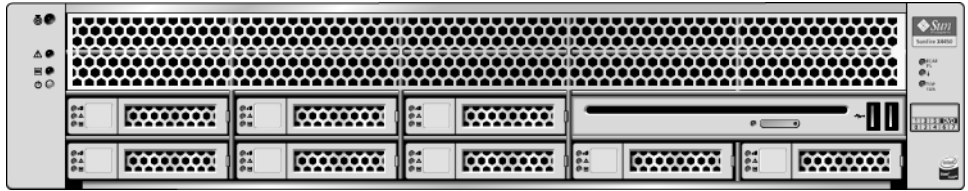
### **Adding SAS Hard Drives**

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- 1 Install drives according to the following drive map:

	HD1	HD3	HD7	DVD/USB Drive		
	<b>HD0</b>	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.

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\* 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.

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

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

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- 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.
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## Test Hard Drives

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### Testing Hard Drives Using Pc-Check

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- 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.
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