



# Sun Fire™ USBRDT 5240 Uniboard Service Manual

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

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# Preface

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This manual provides detailed procedures that describe the installation and removal of the Sun Fire™ USBRDT 5240 Uniboard into the host systems. Also covered is the removal and replacement of the field-replaceable units of the Sun Fire USBRDT 5240 Uniboard. This document also includes information about the use and maintenance of the board. This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have advanced experience troubleshooting and replacing hardware.

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## Who Should Use This Document



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**Caution** – This document is written for qualified service-trained maintenance providers. If you are not a qualified service-trained maintenance provider and you service the system, your warranty on the system will be void.

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## Before You Read This Document

To fully use the information in this document, you must have thorough knowledge of the topics discussed in these documents:

- *Sun Fire Midrange Systems Platform Administration Manual*
- *Sun Fire High-End Systems Software Overview Guide*
- *Sun Fire 6800/4810/4800/3800 Systems Service Manual*
- *Sun Fire E6900/E4900 Systems Service Manual*

- *Sun Fire 15K/12K Systems Service Manual*
  - *Sun Fire E25K/E20K Systems Service Manual*
- <http://www.sun.com/documentation/index.html>

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## How This Document Is Organized

This document contains the following chapters:

[Chapter 1](#) describes the safety precautions and tools you will need.

[Chapter 2](#) describes the Sun Fire USBRDT 5240 Uniboard.

[Chapter 3](#) describes how to install the Sun Fire USBRDT 5240 Uniboard into the host Sun Fire 6800, upgraded Sun Fire 4800 and Sun Fire E6900/E4900 systems.

[Chapter 4](#) describes how to install the Sun Fire USBRDT 5240 Uniboard into the host Sun Fire 15K/12K and Sun Fire E25K/E20K systems.

[Chapter 5](#) describes how to replace the FB-DIMMs (dual inline memory modules), the PCIe board assemblies, the hard disk drives and the SCC PROM.

[Appendix A](#) describes the XVR-50 graphics accelerator graphics chip used on the Sun Fire USBRDT 5240 Uniboard.

[Appendix B](#) describes the pin signal assignments (pinouts) for the three-connector cable dongle.

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## Related Documentation

The following table lists the documentation for this product. The online documentation is available at:

<http://docs.sun.com/app/docs/prod/usbrdt.5240.brd#hic>



The following table lists the documentation that is related to this product.

Application	Title	Part Number	Format	Location
Latest information	<i>Sun Fire USBRDT 5240 Uniboard Product Notes</i>	820-2451	PDF, HTML	Online
Safety information	<i>Important Safety Information for Sun Hardware Systems</i>	816-7190	Printed	Shipping kit
	<i>Sun Fire USBRDT 5240 Uniboard Safety and Compliance Manual</i>	820-2455	PDF, HTML	Online
Installation	<i>Sun Fire USBRDT 5240 Uniboard Installation Guide</i>	820-2452	PDF, HTML	Online
Integrated Lights Out Manager (ILOM)	<i>Sun Integrated Lights Out Manager 2.0 User's Guide</i>	820-1188	PDF, HTML	Online
	<i>Addendum to the Sun Integrated Lights Out Manager 2.0 User's Guide</i>	820-4198	PDF, HTML	Online
	<i>Sun Integrated Lights Out Manager 2.0 Supplement for Sun Fire USBRDT 5240 Uniboard</i>	820-3087	PDF, HTML	Online
Administration	<i>Sun Fire USBRDT 5240 Uniboard Administration Guide</i>	820-2453	PDF, HTML	Online
Service	<i>Sun Fire USBRDT 5240 Uniboard Service Manual</i>	820-2454	PDF, HTML	Online

Application	Location
System Management Services (SMS) firmware	<a href="http://docs.sun.com/app/docs/prod/servers.high">http://docs.sun.com/app/docs/prod/servers.high</a>
System Controller Application (SCApp) firmware	<a href="http://docs.sun.com/app/docs/prod/servers.mid">http://docs.sun.com/app/docs/prod/servers.mid</a>
Sun Management Center software	<a href="http://docs.sun.com/app/docs/prod/sun.mgmt.ctr">http://docs.sun.com/app/docs/prod/sun.mgmt.ctr</a>
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# Documentation, Support, and Training

Sun Function	URL
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Please include the title and part number of your document with your feedback:

*Sun USBRDT 5240 Uniboard Service Manual*, part number 820-2454-10

# Safety and Tools Requirements

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This chapter describes the safety and system precautions you must take when servicing the Sun Fire USBRDT 5240 Uniboard. This chapter also lists the tools and equipment you need.

This chapter contains the following sections:

- [Section 1.1, “Safety Precautions” on page 1-1](#)
- [Section 1.2, “Symbols” on page 1-2](#)
- [Section 1.3, “System Precautions” on page 1-3](#)
- [Section 1.4, “Filler Panels and Filler Boards” on page 1-4](#)
- [Section 1.5, “Handling Boards and Assemblies” on page 1-4](#)
- [Section 1.6, “Periodic Maintenance” on page 1-5](#)
- [Section 1.7, “Tools Required” on page 1-5](#)

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## 1.1 Safety Precautions

For your protection, observe the following safety precautions when servicing your equipment:

- Follow all cautions, warnings, and instructions marked on the equipment.
- Never push objects of any kind through openings in the equipment, as the objects might touch dangerous voltage points or short out components that could result in fire or electric shock.
- Refer servicing of equipment to qualified personnel.

To protect both yourself and the equipment, observe the following safety precautions:

**TABLE 1-1** Safety Precautions

Item	Problem	Precaution
ESD wrist or foot strap	Electrostatic Discharge (ESD)	Connect the ESD connector to your system. Wear the wrist strap or foot strap when handling printed circuit boards. Each system except for the Sun Fire 3800 has an ESD socket.
ESD mat	ESD	Using an approved ESD mat provides protection from static damage when used with a wrist strap or foot strap. The mat also cushions and protects small parts that are attached to printed circuit boards.

## 1.2 Symbols

**TABLE 1-2** Symbols







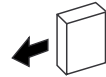
Symbol	Description	Meaning
	<b>Caution</b>	Hazardous voltages are present. To reduce the risk of electrical shock and danger, follow the instructions.
	<b>Caution</b>	Risk of personal injury or equipment damage. To reduce the risk, follow the instructions.
	<b>Caution</b>	Hot surfaces. Avoid contact. Surfaces are hot and might cause personal injury if touched.
	<b>Location</b>	Locator LED with integrated push button (white)

TABLE 1-2 Symbols (Continued)

Symbol	Description	Meaning
	<b>Component Activated</b>	Component is activated when the green LED on the system component is lit.
	<b>Service Required</b>	System has detected a hardware failure. When the Fault LED (amber) is lit, the system has detected hardware failure.
	<b>Ok to Remove</b>	You can safely remove the board or component from the system when the Ok to Remove LED (amber or blue) is lit.

## 1.3 System Precautions

Ensure that the voltage and frequency of the power outlet to be used matches the electrical rating labels on the equipment.

Wear an ESD wrist or foot strap when handling any magnetic storage devices, Sun Fire USBRDT 5240 Uniboards, or other printed circuit boards.

Use only properly grounded power outlets as described in the installation guides.



**Caution** – Do Not make mechanical or electrical modifications to the system or the cabinet. Sun Microsystems is not responsible for regulatory compliance of modified cabinets.



**Caution** – The chassis AC power cords must remain connected to ensure a proper ground.

---

## 1.4 Filler Panels and Filler Boards

Filler boards and filler panels are used for EMI protection, and to ensure proper air flow in order to prevent the system from overheating. When removing PCIe modules, you must install a PCIe filler board in all empty PCIe module slots.

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## 1.5 Handling Boards and Assemblies



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**Caution** – The chassis AC power cords must remain connected to ensure a proper ground.

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**Caution** – The system is sensitive to static electricity. To prevent damage to the board, connect an antistatic wrist strap between you and the system.

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**Caution** – The Sun Fire USBRDT 5240 Uniboards have surface-mount components that can be broken if you flex the boards.

---

To minimize the amount of board flexing, observe the following precautions:

- Hold the board only by the handle and by the edges near the middle of the board, where the board stiffener is located. Do not hold the board *only* at the ends.
- When removing the board from an antistatic bag, keep the board vertical until you place it on the ESD mat.
- Do not place the board on a hard surface. Use a cushioned antistatic mat. The board connectors and components have very thin pins that bend easily.
- Be careful of small component parts located on both sides of the board.
- Do not use an oscilloscope probe on the components. The soldered pins are easily damaged or shorted by the probe point.
- Transport the board in an antistatic bag.



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**Caution** – The Sun Fire USBRDT 5240 Uniboard is heavy and weighs approximately 27 to 30 pounds (12.25 to 13.6 kg). Take care when removing the board from the system.

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**Caution** – The heatsinks on the board can be damaged by incorrect handling. Do not touch the heatsinks while replacing or removing the board. If a heatsink is loose or broken, obtain a replacement board.

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---

**Caution** – The heatsinks on the board can be damaged by improper packaging. When storing or shipping the board, ensure that the heatsinks have sufficient protection.

---

---

**Note** – The Sun Fire USBRDT 5240 Uniboard can be inserted into a powered-on system.

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## 1.6 Periodic Maintenance

The Sun Fire USBRDT 5240 Uniboard requires no special periodic maintenance. However, the host, Sun Fire systems have been designed such that the air intake screens can be cleaned or changed without the need to power off the system.

Refer to the service manual for your host system for more information.

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## 1.7 Tools Required

For the procedures in this document, you need these tools:

- Screwdriver, Phillips No. 1 with six-inch shank
- Screwdriver, Phillips No. 2 with six-inch shank
- Screwdriver, straight slot with six-inch shank
- ESD mat
- ESD grounding wrist strap or foot strap





# Sun Fire USBRDT 5240 Uniboard and Components

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To protect both yourself and the equipment, ensure that you follow the precautions in [Chapter 1](#).

This chapter contains the following sections:

- [Section 2.1, “Handling Boards and Assemblies”](#) on page 2-1
- [Section 2.2, “Sun Fire USBRDT 5240 Uniboard Features”](#) on page 2-2

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## 2.1 Handling Boards and Assemblies



---

**Caution** – The chassis AC power cords must remain connected to ensure a proper ground.

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---

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- Do not place the board on a hard surface. Use a cushioned antistatic mat. The board connectors and components have very thin pins that bend easily.
- Be careful of small component parts located on both sides of the board.
- Do not use an oscilloscope probe on the components. The soldered pins are easily damaged or shorted by the probe point.
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**Caution** – The heatsinks on the board can be damaged by improper packaging. When storing or shipping the board, ensure that the heatsinks have sufficient protection.

---

---

**Note** – The Sun Fire USBRDT 5240 Uniboard can be inserted into a powered-on system.

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## 2.2 Sun Fire USBRDT 5240 Uniboard Features

The Sun Fire USBRDT 5240 Uniboard has two UltraSPARC® CPU processors, each processor is a multi-core, multi-threaded implementation of the SPARC® V9 architecture. Each processor includes:

- 8 SPARC cores, each capable of running 8 threads concurrently
- 8 floating-point units (FPU)
- 2 FB-DIMM memory controllers
- 1 L2 cache, 4 MBytes internal
- 1 central crossbar

- An inter-CPU coherency link
  - supporting four DIMM (dual inline memory module) banks of four DIMMs per bank

All systems support the following:

- DIMM sizes supported are 2 GByte, 4 GByte
- Minimum 16 DIMMs of memory per CPU processor for 32 DIMMs total
- 4 PCI Express modules - front access
- 2 Hard disk drives - front access, hot-swap, 2.5"
- 8 Host RJ-45 1Gigabit Ethernet ports - front access
- 2 USB ports - front access
- Service processor RJ-45 Ethernet connector, front access
- Service processor RJ-45 serial port by means of dongle
- 2 host USB connectors by means of dongle
- Host VGA port connector by means of dongle

## 2.2.1 Sun Fire USBRDT 5240 Uniboard LEDs

At the front of the system are four LED indicators and push buttons. The actual LEDs and button are contained on board within the chassis, and are viewed or actuated through light pipes reaching to the front of the system.

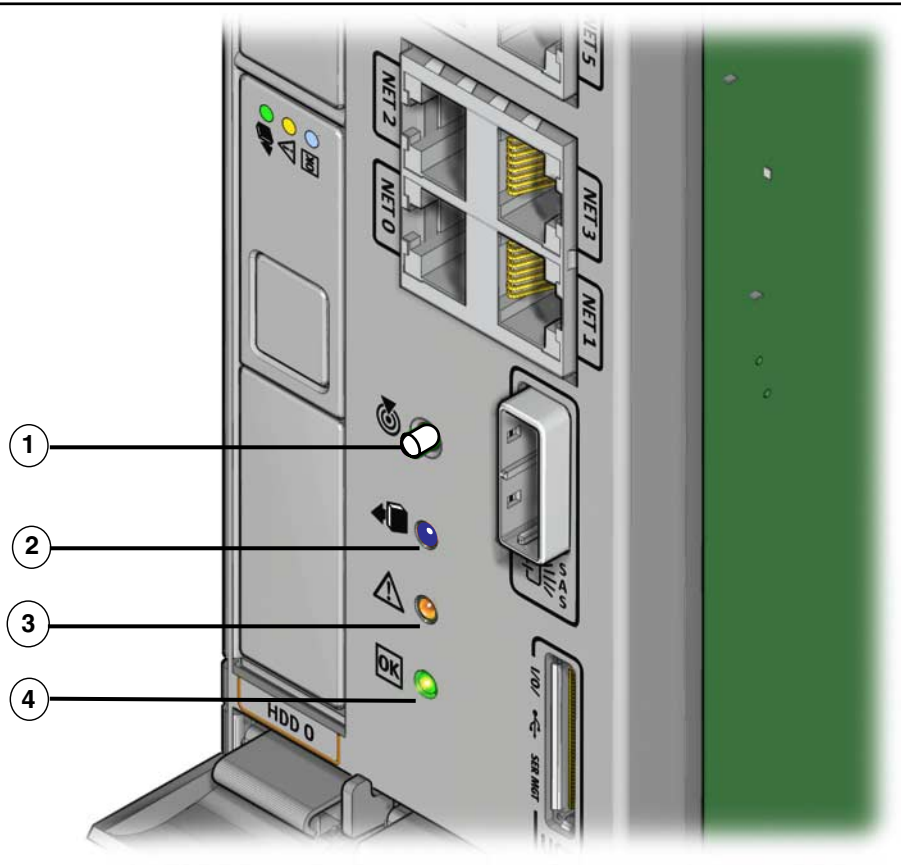
TABLE 2-1 notes the LED functions.

**TABLE 2-1** Sun USBRDT 5240 board LED Functions

LED	On	Off
Locator LED with integrated momentary button (white)	Locates Board.	
Power/Activated LED (green)	Device is activated.	Device is deactivated (Not ready to be removed).
Service Required LED (yellow)	Internal fault.	No internal fault.
OK to Remove (blue)	Board can be removed.	Board cannot be removed.

FIGURE 2-1 illustrates the Sun Fire USBRDT 5240 Uniboard LEDs.

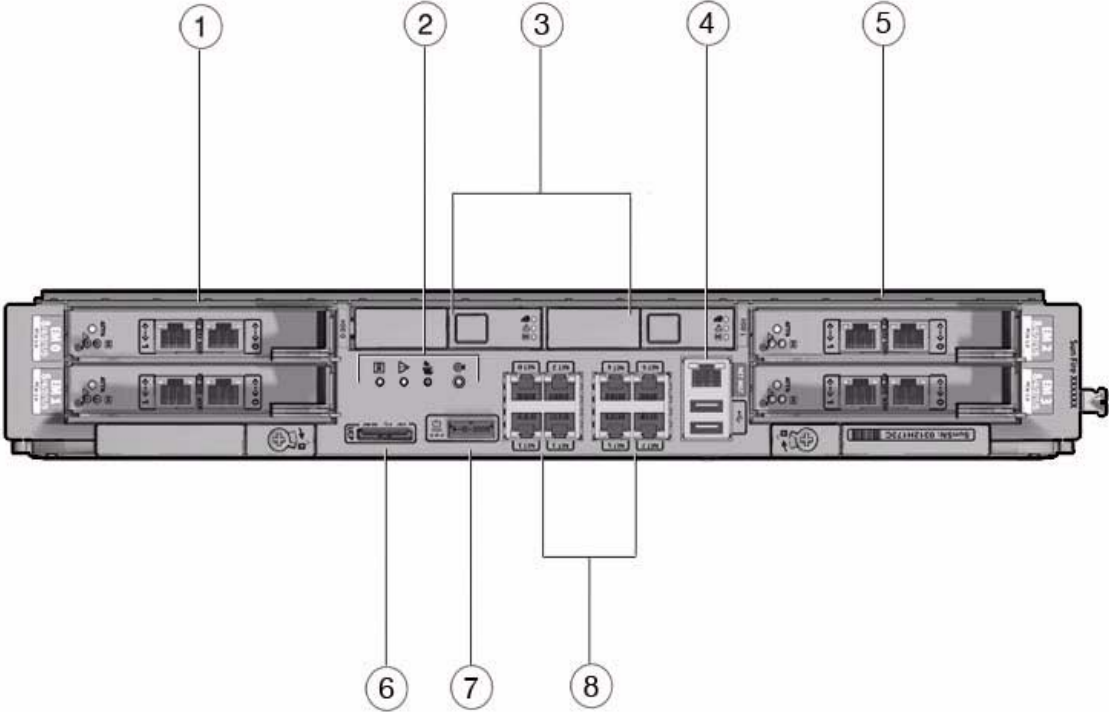
**FIGURE 2-1** Sun Fire USBRDT 5240 Uniboard LEDs



**Figure Legend**

Callout	Description
1	Locator LED with integrated push button (white)
2	OK to remove LED (blue)
3	Service Required LED (amber)
4	Power/Activated LED (green)

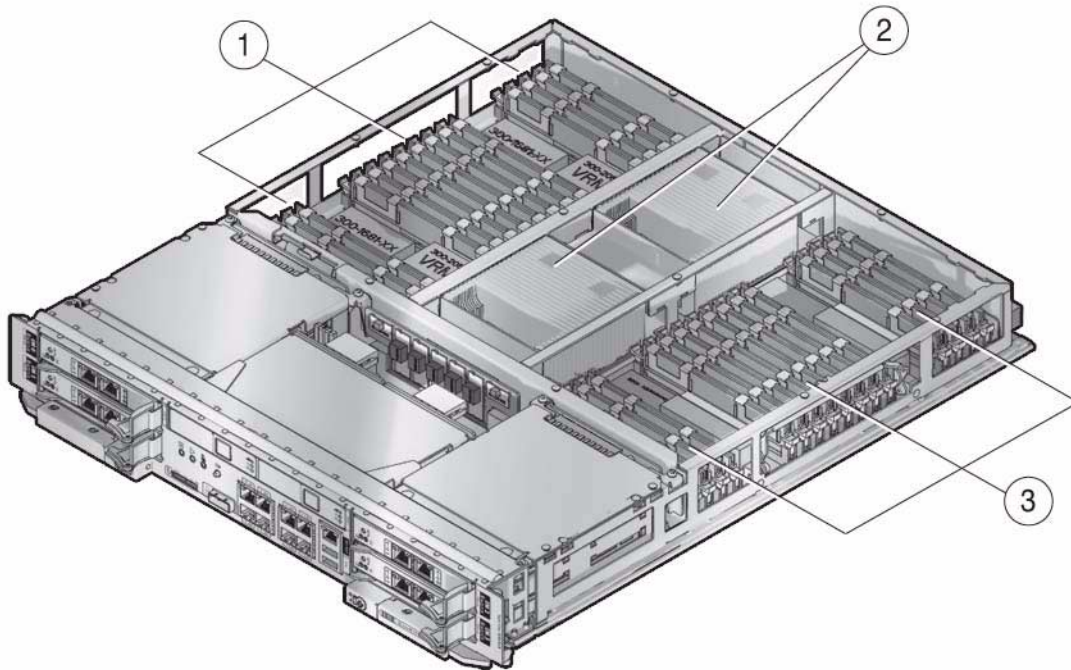
**FIGURE 2-2** Sun Fire USBRDT 5240 Uniboard Front



**Figure Legend**

Callout	Description
1	PCI Express (PCIe) hot-pluggable devices
2	LEDs
3	Hot-pluggable hard disk drives (HDD)
4	RJ-45, 2xUSB (MGMT)
5	PCI Express (PCIe) hot-pluggable devices
6	Dongle (2xUSB, DB-15, RJ-45)
7	SAS (Serial Attached SCSI)
8	2xQuad RJ-45 (Gigabit Ethernet)

**FIGURE 2-3** Sun Fire USBRDT 5240 UniboardBoard - Component View



**Figure Legend**

Callout	Component
1	FB-DIMMs
2	CPUs
3	FB-DIMMs

## 2.2.2 Uniboard Form Factor

The Sun Fire USBRDT 5240 Uniboard uses a form factor which is approximately 17.25 in. (438 mm) wide by 20 in. (508 mm) deep by 2.55 in. (65 mm) tall and weighs approximately 27 - 30 lbs (12.25 - 13.6 kg). Cooling is provided by the system chassis. E25K/E20K/15K/12K air flow is from bottom to top. E6900/E4900/6800/upgraded 4800 air flow is from front to rear.

# Sun Fire USBRDT 5240 Uniboards for Sun Fire E6900/6800/E4900 and Upgraded 4800 Host Systems

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To protect both yourself and the equipment, ensure that you follow the precautions in [Chapter 1](#).

This chapter contains the following sections:

- [Section 3.1, “Slot Location and Slot Numbers for Sun Fire E6900/6800/E4900/Upgraded 4800 Systems” on page 3-2](#)
- [Section 3.2, “Replacing Sun Fire USBRDT 5240 Uniboards in Sun Fire E6900/6800/E4900/Upgraded 4800 Systems” on page 3-5](#)

# 3.1 Slot Location and Slot Numbers for Sun Fire E6900/6800/E4900/Upgraded 4800 Systems

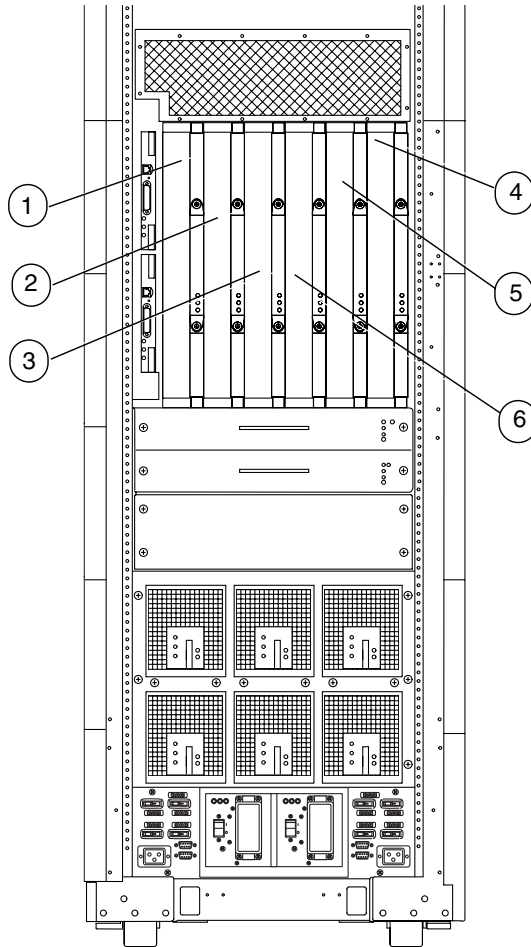
TABLE 3-1 shows the board’s slot locations in E6900/6800/E4900/upgraded 4800 systems.

TABLE 3-1 E6900/6800/E4900/Upgraded 4800 Systems Uniboard Slot Locations

System	Number of Slots	Slot Numbers	Location
Sun Fire E6900/6800	6	SB0, SB1, SB2, SB3, SB4, SB5	Front
Sun Fire E4900/upgraded 4800	3	SB0, SB2, SB4	Rear



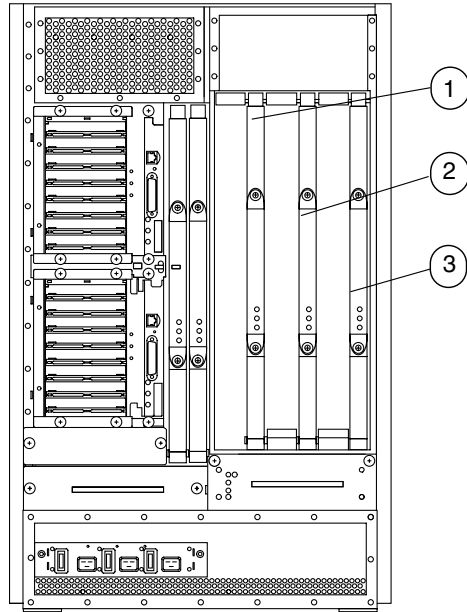
**FIGURE 3-1** Board Slot Assignments for Sun Fire E6900/6800 Systems—Front View



**Figure Legend**

Callout	System Board Slots
1	SB0
2	SB2
3	SB4
4	SB5
5	SB3
6	SB1

**FIGURE 3-2** Board Slot Assignments for Sun Fire E4900/Upgraded 4800 Systems–Rear



**Figure Legend**

Callout	System Board Slots
1	SB0
2	SB2
3	SB4

View

## 3.1.1 Filler Panels and Filler Boards

In order to prevent the system from overheating, see [Section 1.4, “Filler Panels and Filler Boards” on page 1-4](#) for procedures you must follow when removing Sun Fire USBRDT 5240 Uniboards from a system.

---

## 3.2 Replacing Sun Fire USBRDT 5240 Uniboards in Sun Fire E6900/6800/E4900/Upgraded 4800 Systems



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**Caution** – Remove a board from a powered-on host system only after the Solaris™ Operating System has disabled the board. Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete procedures.

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**Note** – Ensure all the fan trays are installed in the system and are operating normally. The fan trays cool the Sun Fire USBRDT 5240 Uniboards.

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**Caution** – When replacing a Sun Fire USBRDT 5240 Uniboard in slot SB5 on E6900/6800 systems or slot SB4 on E4900/upgraded 4800 system, take care inserting the board so as to not damage the EMI spring fingers of the host system chassis.

---

### 3.2.1 Powering Off the Sun Fire USBRDT 5240 Uniboard

1. If the board is powered off go to [Section 3.2.2, “Removing the Sun Fire USBRDT 5240 Uniboard”](#) on page 3-6.
2. If the operating system is running, log into the domain as the domain administrator. Shut down the operating system by typing the following sequence where *seconds* is the amount of time before shutdown:

```
# shutdown -y -g seconds -i 0
```

3. Power off the board.

Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete procedures.

## 3.2.2 Removing the Sun Fire USBRDT 5240 Uniboard

The Sun Fire USBRDT 5240 Uniboard is heavy and weighs approximately 27 to 30 pounds (12.25 to 13.6 kg). Take care when removing the board from the system. See [Section 2.1, “Handling Boards and Assemblies” on page 2-1](#)

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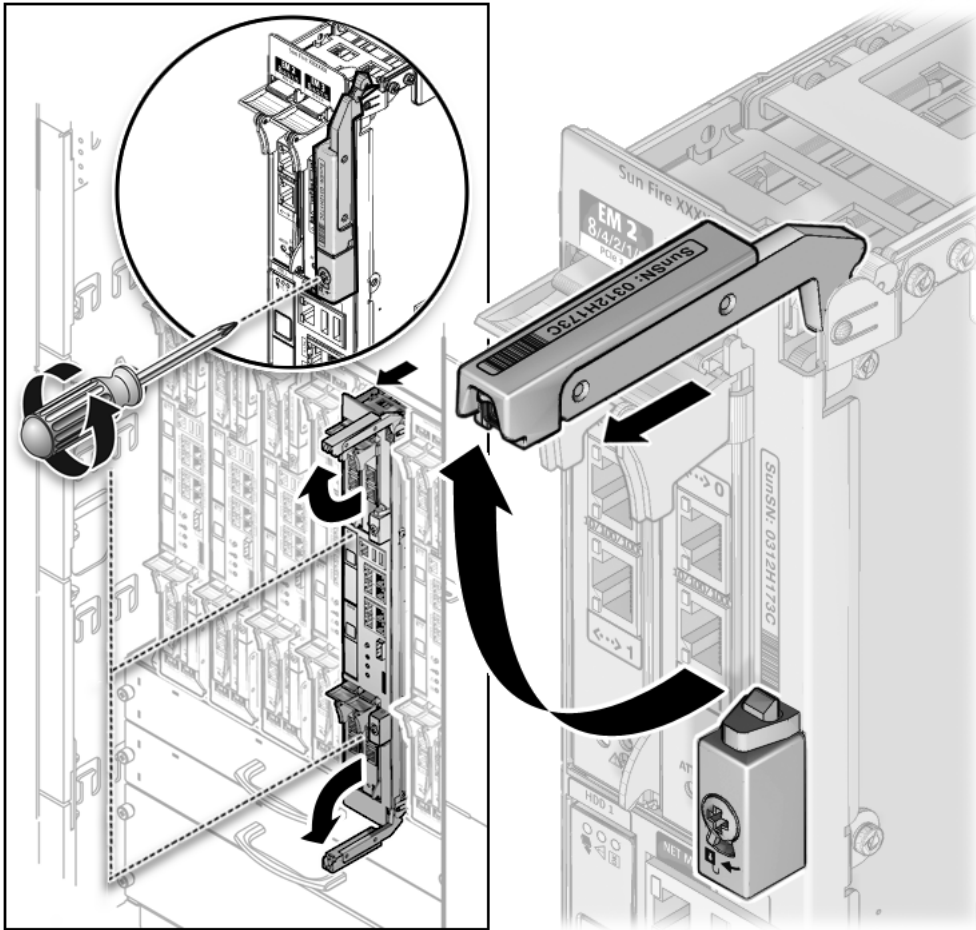
**Note** – Ensure that you have a filler board, filler panel, or replacement board ready.

---

1. **Attach a wrist strap or foot strap.**
2. **Connect the ESD strap to the system.**
3. **Place a grounded ESD mat near the system, or have the Sun Fire USBRDT 5240 Uniboard inner shipping carton open near the system.**
4. **Unlock the ejector levers on the board with a Phillips No. 1 screwdriver (FIGURE 3-3).**

The ejectors pop out slightly.

**FIGURE 3-3** Unlocking the Ejector Levers



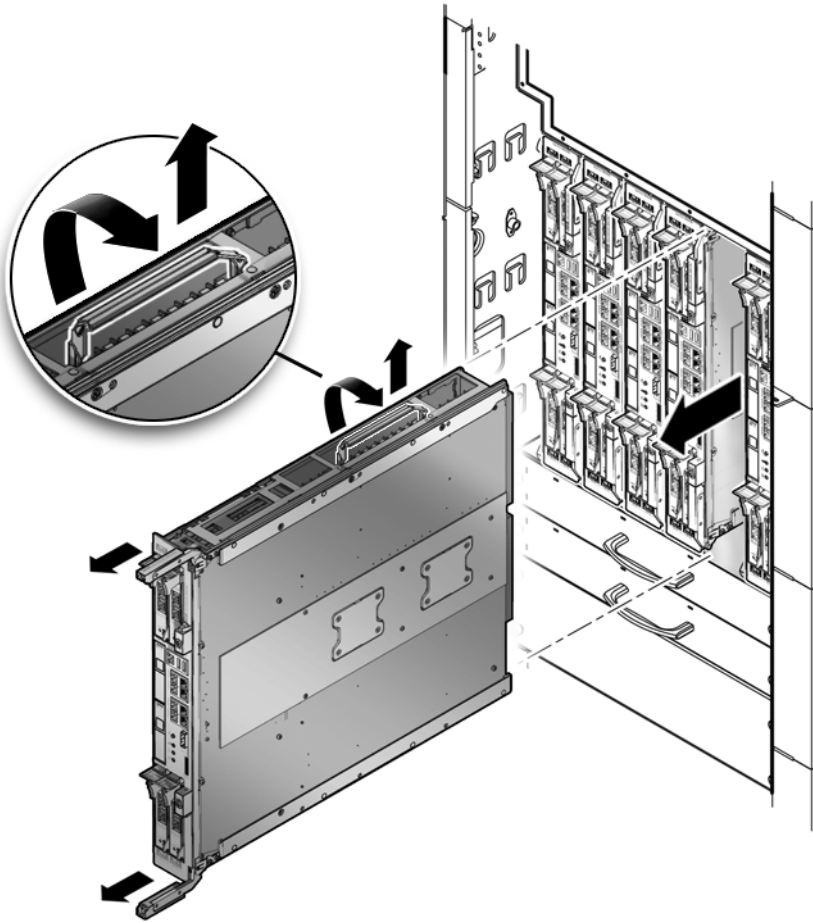
5. **Manually rotate the ejector levers until they are 90 degrees straight out from the board (FIGURE 3-3).**

This action unseats the board from the connector.

6. **Pull the board half way out and close the ejectors.**

Remove the board from the card cage by holding the handle at the top and grasping the bottom rail with your other hand. Slide the board along the track until the board is out of the card cage, being careful not to touch neighboring boards.

**FIGURE 3-4** Removing or Replacing a Sun Fire USBRDT 5240 Uniboard – Sun Fire E6900 System



7. Place the board on a grounded ESD mat or the open inner shipping carton.



**Caution** – To prevent overheating when the system is powered back on, install a filler board or filler panel in the empty slot if no replacement board is going to be installed.

See [Section 1.4, “Filler Panels and Filler Boards”](#) on page 1-4.

### 3.2.3 Preparing to Install the Sun Fire USBRDT 5240 Uniboard

---

**Note** – The board can be inserted into a powered-on system. Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete power on procedures.

---

1. **Attach a wrist strap or foot strap.**
2. **Connect the ESD strap to the system.**  
Place a grounded ESD mat or the open inner shipping carton near the system.
3. **Inspect the new Sun Fire USBRDT 5240 Uniboard before inserting it into the system:**
  - a. **Inspect the connector on the board being installed.**  
Check to see if the plastic is deformed or damaged, including both the pin holes and the pins. Ensure that there are no major (out of the normal) gaps between each pin row.
  - b. **Check the Sun Fire USBRDT 5240 Uniboard for any missing or broken components before continuing.**
  - c. **Check the Sun Fire USBRDT 5240 Uniboard spring fingers for damage.**
  - d. **Check the chassis spring fingers for damage (SB5 for Sun Fire E6900/6800 and SB4 for Sun Fire E4900/4800 systems).**

### 3.2.4 Installing the Sun Fire USBRDT 5240 Uniboard

1. **Remove the filler board or filler panel.**



---

**Caution** – You must insert a Sun Fire USBRDT 5240 Uniboard into the system within one minute of removing the filler board or filler panel or overheating will occur.

---

2. **Inspect the centerplane for any bent or damaged pins before continuing.**



---

**Caution** – *Do not force* any board into a slot. Force can cause damage to the board and system. The board should insert and seat smoothly. If the board binds, remove the board and inspect the card cage slot for any obvious obstructions. Also inspect both the board and the centerplane for bent pins or other damage.

---

3. Gently insert the Sun Fire USBRDT 5240 Uniboard into the grooves into the slot (see [TABLE 3-1](#) for slot locations).

The top of the board is noted by the thin rail. The bottom of the board has a thicker rail.

- a. Hold the board by the top handle with one hand. Place the other hand on the bottom mounting rail, holding the board vertically.
- b. Install the board in the chassis by tipping the handle of the board down so that the bottom rail meets the bottom chassis guide rail.
- c. When the bottom board rail is in the chassis guide rail, tip the board back up and align the top rail into the chassis guide rail.
- d. Slide the board into the chassis slowly about half way.
- e. Ensure that the ejector levers of the Sun Fire USBRDT 5240 Uniboard are in the open position.

The levers should be 90 degrees straight out from the board ([FIGURE 3-3](#)).

- f. Continue to push the board into the system until the ejector levers start to close inward.

Simultaneously close the upper and lower ejectors to fully seat the board.

- g. Verify the board status by ensuring that the OK LED (green) is lit.



# Sun Fire USBRDT 5240 Uniboards for Sun Fire E25K/E20K/15K/12K Host Systems

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The hot-swappable Sun Fire USBRDT 5240 Uniboards for the Sun Fire E25K/E20K/15K/12K systems are inserted into slot 0, expander 0 through 8 (front), and slot 0, expander 9 through 17 (rear). This chapter contains the replacement procedures for the Sun Fire USBRDT 5240 Uniboard.

This chapter contains the following sections:

- [Section 4.1, “Slot Location and Slot Numbers for Sun Fire E25K/E20K/15K/12K Systems” on page 4-2](#)
- [Section 4.2, “Filler Panels and Filler Boards” on page 4-5](#)
- [Section 4.3, “Replacing the Sun Fire USBRDT 5240 Uniboard in Sun Fire E25K/E20K/15K/12K Host Systems” on page 4-5](#)

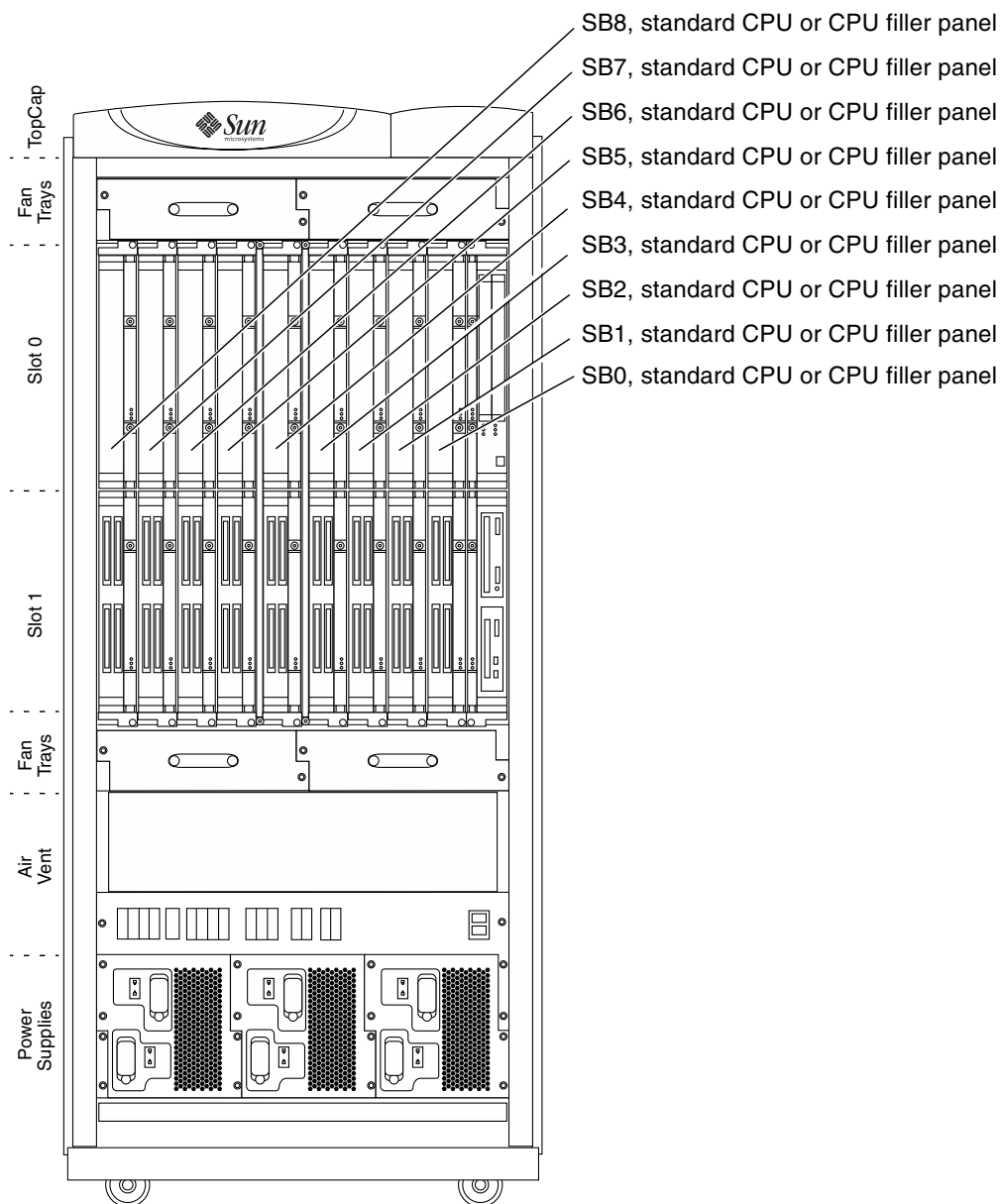
# 4.1 Slot Location and Slot Numbers for Sun Fire E25K/E20K/15K/12K Systems

TABLE 4-1 shows the Sun Fire USBRDT 5240 Uniboard slot locations in Sun Fire E25K/E20K/15K/12K systems. FIGURE 4-1 illustrate the slot numbers for the Sun Fire USBRDT 5240 Uniboards for the Sun Fire E25K/E20K/15K/12K systems.

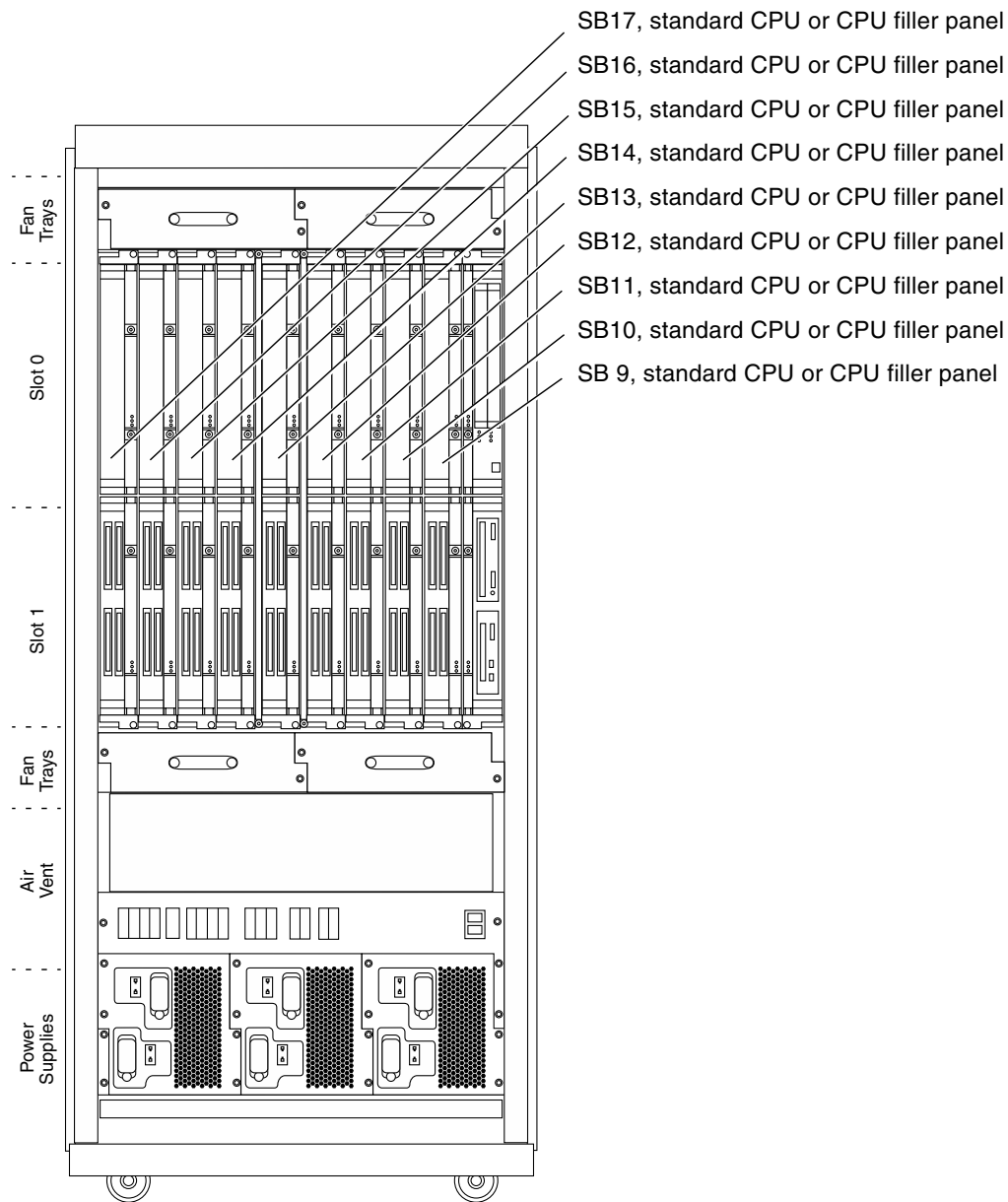
TABLE 4-1 Sun Fire E25K/E20K/15K/12K Systems Sun Fire USBRDT 5240 Uniboard Slot Locations

System	Number of Slots	Slot Numbers	Location
Sun Fire E25K/15K	18	SB0, SB1, SB2, SB3, SB4, SB5, SB6, SB7, SB8	Front
		SB9, SB10, SB11, SB12, SB13, SB14, SB15, SB16, SB17	Rear
Sun Fire E20K/12K	9	SB0, SB1, SB2, SB3, SB4, SB5, SB6, SB7, SB8	Front

**FIGURE 4-1** Board Slot Assignments—Sun Fire E25K/E20K/15K/12K System—Front View



**FIGURE 4-2** Sun Fire USBRDT 5240 Uniboard Slot Assignments, Sun Fire E25K/15K System – Rear View



---

## 4.2 Filler Panels and Filler Boards

In order to prevent the system from overheating, see [Section 1.4, “Filler Panels and Filler Boards” on page 1-4](#) for procedures you must follow when removing Sun Fire USBRDT 5240 Uniboards from a system.

---

## 4.3 Replacing the Sun Fire USBRDT 5240 Uniboard in Sun Fire E25K/E20K/15K/12K Host Systems



---

**Caution** – Remove the board from a powered-on system only after the Solaris Operating System software has disabled the board. Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete procedures.

---

---

**Note** – Ensure all the fan trays are installed in the system and are operating normally. The fan trays cool the Sun Fire USBRDT 5240 Uniboards.

---

### 4.3.1 Powering Off the Sun Fire USBRDT 5240 Uniboard

1. Log into the domain as the domain administrator and shut down the operating system by typing the following sequence where *seconds* is the amount of time before shutdown.:

```
# shutdown -y -g seconds -i 0
```

**2. Power off the Sun Fire USBRDT 5240 Uniboard.**

Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete procedures.

## 4.3.2 Removing the Sun Fire USBRDT 5240 Uniboard

The Sun Fire USBRDT 5240 Uniboard is heavy and weighs approximately 27 to 30 pounds (12.25 to 13.6 kg). Take care when removing the board from the system. See [Section 2.1, “Handling Boards and Assemblies” on page 2-1](#)

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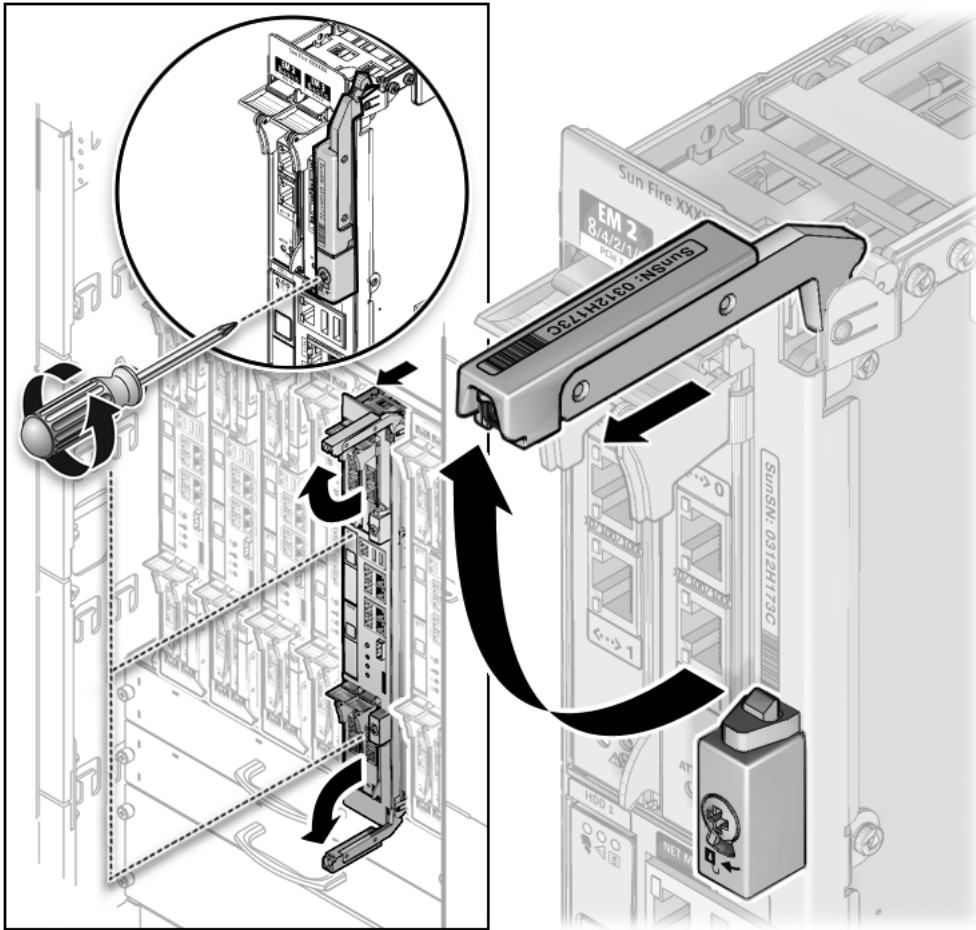
**Note** – Ensure that you have a filler board, filler panel, or replacement board ready.

---

1. **Attach a wrist strap or foot strap.**
2. **Connect the ESD strap to the system.**
3. **Place a grounded ESD mat near the system, or have the Sun Fire USBRDT 5240 Uniboard inner shipping carton open near the system.**
4. **Unlock the ejector levers on the board with a Phillips No. 1 screwdriver** ([FIGURE 4-3](#)).

The ejectors pop out slightly.

**FIGURE 4-3** Unlocking the Ejector Levers



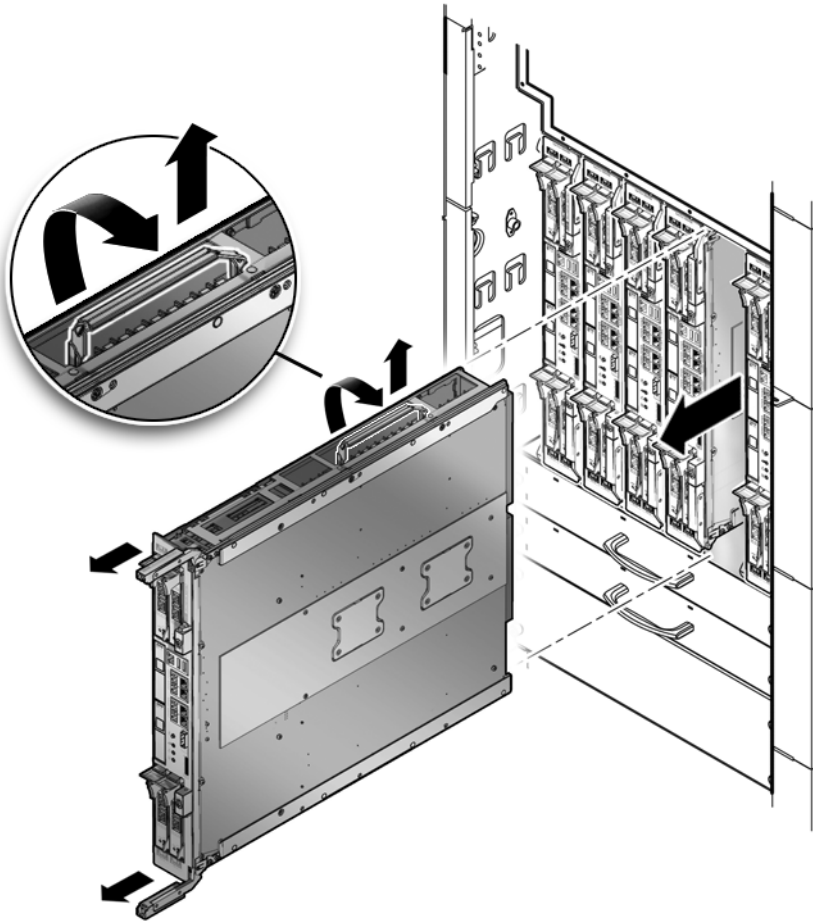
5. **Manually rotate the ejector levers until they are 90 degrees straight out from the board (FIGURE 4-3).**

This action unseats the board from the connector.

6. **Pull the board half way out and close the ejectors.**

Remove the board from the card cage by holding the handle at the top and grasping the bottom rail with your other hand. Slide the board along the track until the board is out of the card cage, being careful not to touch neighboring boards.

**FIGURE 4-4** Removing or Replacing a Sun Fire USBRDT 5240 Uniboard – Sun Fire E6900 System



7. Place the board on a grounded ESD mat or the open inner shipping carton.



**Caution** – To prevent overheating when the system is powered back on, install a filler board or filler panel in the empty slot if no replacement board is going to be installed.

See [Section 1.4, “Filler Panels and Filler Boards”](#) on page 1-4.



### 4.3.3 Preparing to Install the Sun Fire USBRDT 5240 Uniboard

---

**Note** – The board can be inserted into a powered-on system. Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete power on procedures.

---

1. **Attach a wrist strap or foot strap.**
2. **Connect the ESD strap to the system.**  
Place a grounded ESD mat or the open inner shipping carton near the system.
3. **Inspect the new Sun Fire USBRDT 5240 Uniboard before inserting it into the system:**
  - a. **Inspect the connector on the board being installed.**  
Check to see if the plastic is deformed or damaged, including both the pin holes and the pins. Ensure that there are no major (out of the normal) gaps between each pin row.
  - b. **Check the Sun Fire USBRDT 5240 Uniboard for any missing or broken components before continuing.**
  - c. **Check the Sun Fire USBRDT 5240 Uniboard spring fingers for damage.**
  - d. **Check the chassis spring fingers for damage.**

### 4.3.4 Installing the Sun Fire USBRDT 5240 Uniboard



1. **Remove the filler board or filler panel.**

---

**Caution** – You must insert a Sun Fire USBRDT 5240 Uniboard into the system within one minute of removing the filler board or filler panel or overheating will occur.

---

2. **Inspect the centerplane for any bent or damaged pins before continuing.**
3. **Inspect the new board and the mating connector before inserting it into the Sun Fire system.**



---

**Caution** – *Do not force* any board into a slot. Force can cause damage to the board and system. The board should insert and seat smoothly. If the board binds, remove the board and inspect the card cage slot for any obvious obstructions. Also inspect both the board and the centerplane for bent pins or other damage.

---

**4. Gently insert the Sun Fire USBRDT 5240 Uniboard into the grooves into the slot (see [TABLE 4-1](#) for slot locations).**

The top of the board is noted by the thin rail and a handle. The bottom of the board has a thicker rail.

- a. **Hold the board by the top handle with one hand. Place the other hand on the bottom mounting rail, holding the board vertically.**
  - b. **Install the board in the chassis by tipping the handle of the board down so that the bottom rail meets the bottom chassis guide rail.**
  - c. **When the bottom board rail is in the chassis guide rail, tip the board back up and align the top rail into the chassis guide rail.**
  - d. **Slide the board into the chassis slowly about half way.**
- 5. Ensure that the ejector levers of the Sun Fire USBRDT 5240 Uniboard are in the open position.**
- The levers should be 90 degrees straight out from the board ([FIGURE 4-4](#)).
- 6. Continue to push the board into the system until the ejector levers start to close inward.**
- Simultaneously close the upper and lower ejectors to fully seat the board.
- 7. Verify the board status by ensuring that the OK LED (green) is lit.**

# Sun Fire USBRDT 5240 Uniboard FRUs

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To protect both yourself and the equipment, ensure that you follow the precautions in [Chapter 1](#).

This chapter contains the following sections:

- [Section 5.1, “Replacing FB-DIMMs” on page 5-1](#)
- [Section 5.2, “Replacing PCIe Modules” on page 5-9](#)
- [Section 5.3, “Hard Disk Drive Replacement” on page 5-13](#)
- [Section 5.4, “Replacing SCC PROMs” on page 5-16](#)

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## 5.1 Replacing FB-DIMMs

The Sun Fire USBRDT 5240 Uniboard has 32 FB-DIMM sockets, which are divided into eight banks of four FB-DIMMs per bank. Each CPU processor has four corresponding FB-DIMM banks. A CPU processor might not have any FB-DIMMs installed in its corresponding FB-DIMM bank. However, a populated FB-DIMM bank must have a corresponding CPU processor installed.

These types of FB-DIMMs can be used in the FB-DIMM banks:

- 1 Gbyte
- 2 Gbyte
- 4 Gbyte

[FIGURE 5-1](#) illustrates the FB-DIMM numbers for the FB-DIMM banks.

FIGURE 5-1 FB-DIMM Locations

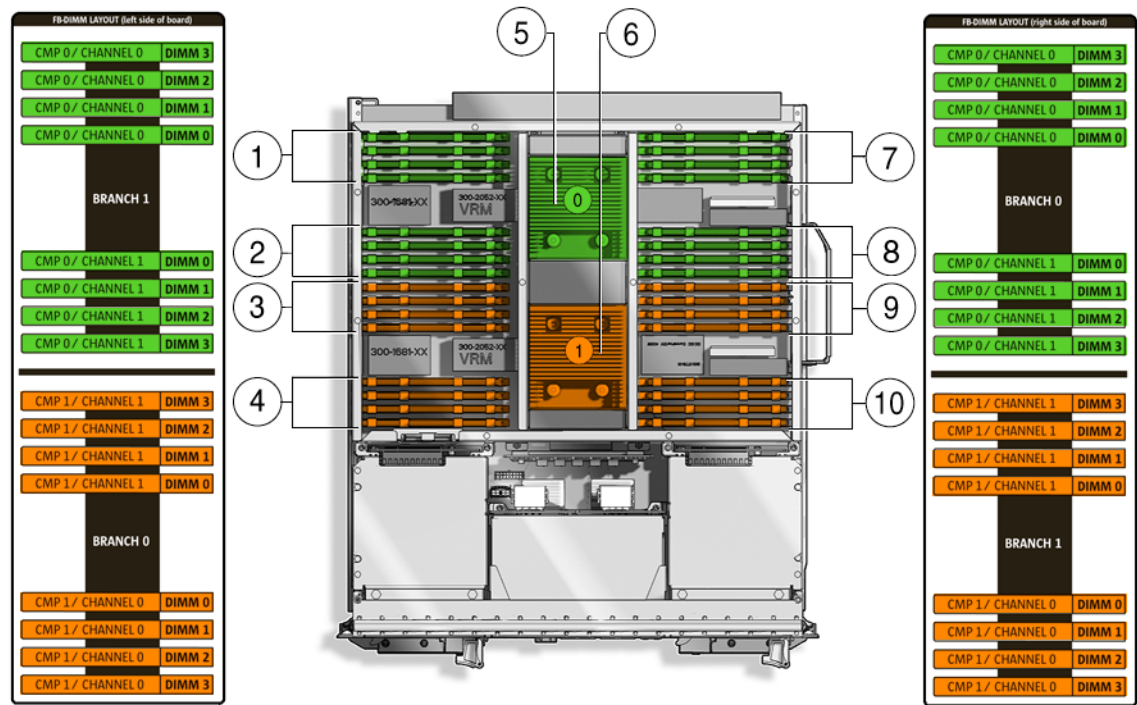


Figure Legend

Location	Branch	Component
1	Branch 1	CMP 0 / CHANNEL 0 DIMM 3
		CMP 0 / CHANNEL 0 DIMM 2
		CMP 0 / CHANNEL 0 DIMM 1
		CMP 0 / CHANNEL 0 DIMM 0
2	Branch 0	CMP 1 / CHANNEL 1 DIMM 0
		CMP 1 / CHANNEL 1 DIMM 1
		CMP 1 / CHANNEL 1 DIMM 2
		CMP 1 / CHANNEL 1 DIMM 3

**Figure Legend**

3	Branch 0	CMP 1 / CHANNEL 1 DIMM 3
		CMP 1 / CHANNEL 1 DIMM 2
		CMP 1 / CHANNEL 1 DIMM 1
		CMP 1 / CHANNEL 1 DIMM 0
4	Branch 0	CMP 1 / CHANNEL 0 DIMM 0
		CMP 1 / CHANNEL 0 DIMM 1
		CMP 1 / CHANNEL 0 DIMM 2
		CMP 1 / CHANNEL 0 DIMM 3
5		CMU #0
6		CMU #1
7	Branch 0	CMP 0 / CHANNEL 0 DIMM 3
		CMP 0 / CHANNEL 0 DIMM 2
		CMP 0 / CHANNEL 0 DIMM 1
		CMP 0 / CHANNEL 0 DIMM 0
8	Branch 0	CMP 0 / CHANNEL 1 DIMM 0
		CMP 0 / CHANNEL 1 DIMM 1
		CMP 0 / CHANNEL 1 DIMM 2
		CMP 0 / CHANNEL 1 DIMM 3
9	Branch 1	CMP 1 / CHANNEL 1 DIMM 3
		CMP 1 / CHANNEL 1 DIMM 2
		CMP 1 / CHANNEL 1 DIMM 1
		CMP 1 / CHANNEL 1 DIMM 0
10	Branch 1	CMP 1 / CHANNEL 0 DIMM 0
		CMP 1 / CHANNEL 0 DIMM 1
		CMP 1 / CHANNEL 0 DIMM 2
		CMP 1 / CHANNEL 0 DIMM 3

The FB-DIMM numbers and bank numbers are noted on the service label on the metal cover.

## 5.1.1 FB-DIMM Bank Configuration Guidelines

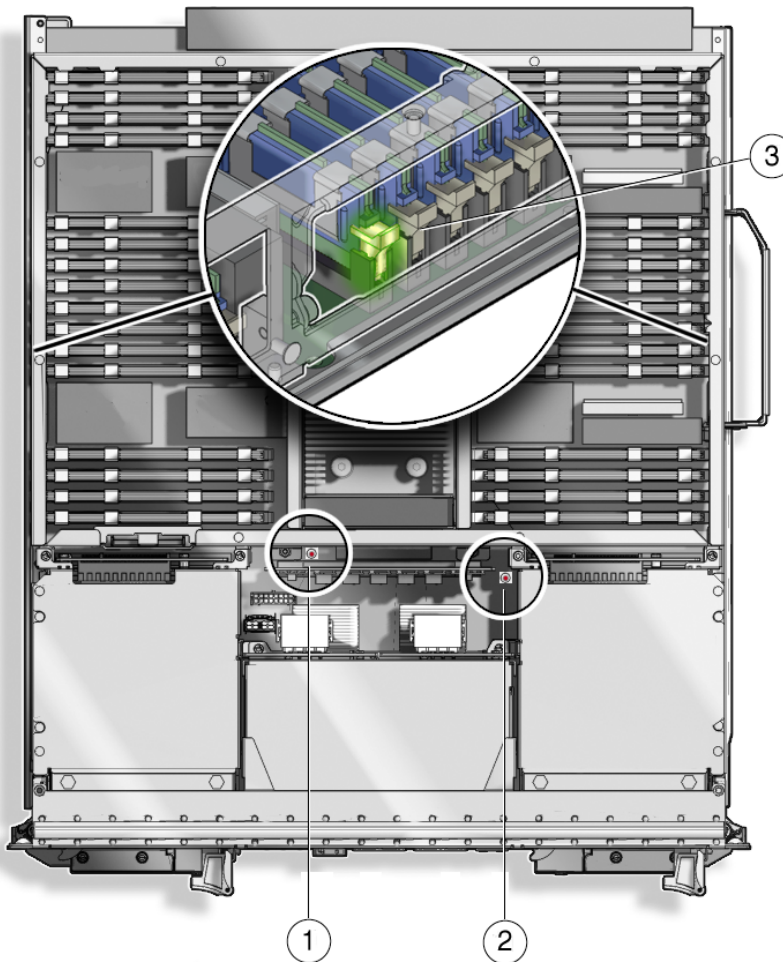
Follow these FB-DIMM configuration guidelines:

- Each FB-DIMM bank must be fully populated with the same capacity FB-DIMM.
- Install the larger capacity FB-DIMMs into banks before installing the smaller capacity FB-DIMMs into banks.
- All FB-DIMMs are installed for both CPUs.

## 5.1.2 Faulty FB-DIMM Identification

Faulty FB-DIMMs can be identified on the system board after it has been removed from the host server. After the cover panel is removed, the two “remind” buttons located on the board (SW8100 and SW6800) can be accessed. See items 1 and 2 of [FIGURE 5-2](#). When pressed, the faulty FB-DIMM module will be identified by the LED on the outer edge of the system board, just below the FB-DIMM ejector. See item 3 in [FIGURE 5-2](#).

**FIGURE 5-2** Remind Button Locations SW8100 (1) and SW6800 (2) and FB-DIMM Faulty LED (3)



### 5.1.2.1 Accessing Remind Buttons



---

**Caution** – The system is sensitive to static electricity. Ensure that you are wearing a grounded wrist strap when handling system components. Always place components on a grounded ESD mat near the system or in a static-safe bag.

---

**1. Remove the applicable Sun Fire USBRDT 5240 Uniboard.**

See [Section 3.2, “Replacing Sun Fire USBRDT 5240 Uniboards in Sun Fire E6900/6800/E4900/Upgraded 4800 Systems”](#) on page 3-5 or [Section 4.3, “Replacing the Sun Fire USBRDT 5240 Uniboard in Sun Fire E25K/E20K/15K/12K Host Systems”](#) on page 4-5.

**2. Place the board on the ESD mat on a work surface.**

**3. Remove the cover plate.**

**4. Locate remind buttons SW6800 and SW8100. See [FIGURE 5-2](#)**

SW6800 controls the top 16 FB-DIMM fault LED's and SW8100 controls the bottom 16 FB-DIMM fault LED's. See [FIGURE 5-1](#)

**5. Press button SW6800 and observe if any of the top 16 FB-DIMM faulty LEDs illuminate.**

If yes, proceed to Section 5.1.3, Step 5. If no, proceed to Step 6.

**6. Press button SW8100 and observe if any of the bottom 16 FB-DIMM faulty LEDs illuminate.**

If yes, proceed to Section 5.1.3, Step 5.

### 5.1.3 Removing FB-DIMMs



---

**Caution** – The system is sensitive to static electricity. Ensure that you are wearing a grounded wrist strap when handling system components. Always place components on a grounded ESD mat near the system or in a static-safe bag.

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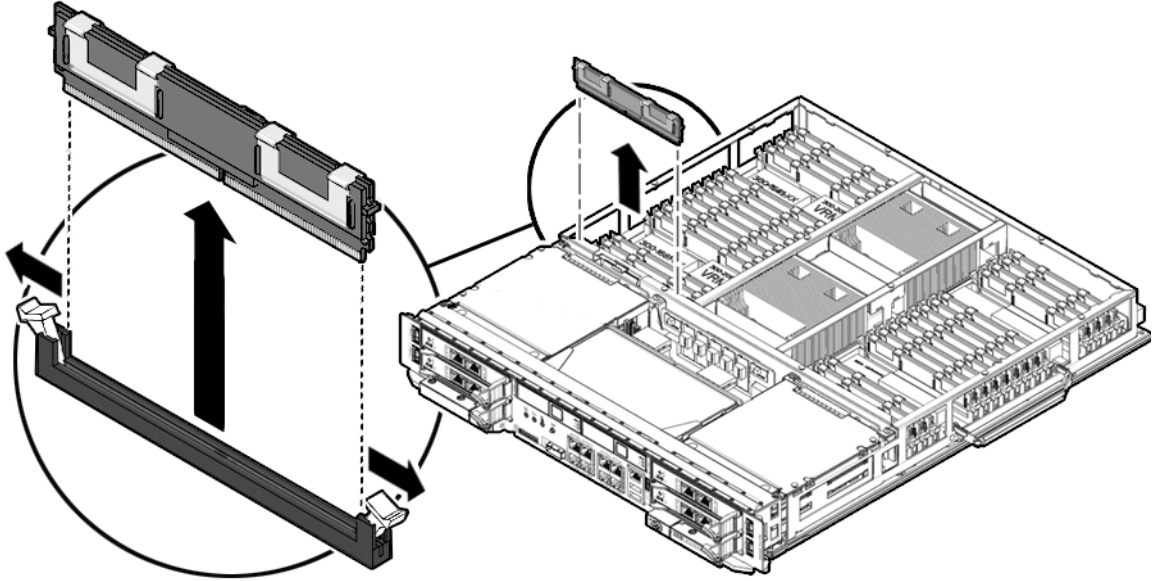
**1. Remove the applicable Sun Fire USBRDT 5240 Uniboard.**

See [Section 3.2, “Replacing Sun Fire USBRDT 5240 Uniboards in Sun Fire E6900/6800/E4900/Upgraded 4800 Systems”](#) on page 3-5 or [Section 4.3, “Replacing the Sun Fire USBRDT 5240 Uniboard in Sun Fire E25K/E20K/15K/12K Host Systems”](#) on page 4-5.

**2. Place the board on the ESD mat on a work surface.**

3. Remove the cover plate.
4. Locate the slot for the FB-DIMM you need to replace.
5. Eject the faulty FB-DIMM by pressing outward on the levers on both sides of the FB-DIMM connector (FIGURE 5-3).

**FIGURE 5-3** Removing a FB-DIMM



6. Holding the FB-DIMM by its edges, remove it from the slot and place it on an antistatic surface.

## 5.1.4 Installing FB-DIMMs

Completely install one bank on each Sun Fire USBRDT 5240 Uniboard before installing the remaining banks on any board.

---

**Note** – All banks must have the same size FB-DIMMs. Sort the FB-DIMMs into banks using the same size FB-DIMMs.

---





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**Caution** – The system and FB-DIMMs are sensitive to static electricity. To prevent damage to the FB-DIMMs, ensure you are wearing a grounded wrist strap when handling them. Always place components on a grounded ESD mat near the system.

---

**1. Remove the Sun Fire USBRDT 5240 Uniboard.**

See [Section 3.2, “Replacing Sun Fire USBRDT 5240 Uniboards in Sun Fire E6900/6800/E4900/Upgraded 4800 Systems”](#) on page 3-5 or [Section 4.3, “Replacing the Sun Fire USBRDT 5240 Uniboard in Sun Fire E25K/E20K/15K/12K Host Systems”](#) on page 4-5.

**2. Place the board on an ESD mat on a work surface.**

**3. Carefully remove the new FB-DIMM from its protective packaging, place the FB-DIMM on an antistatic surface.**

The bag that the FB-DIMM is packed in makes a good antistatic surface.

**4. Press down on the ejector levers at both ends of the FB-DIMM connector slot that will receive the new FB-DIMM.**

The connector slot will not accept the FB-DIMM unless the levers are in the insert (open) position.

**5. Align the short-side key on the FB-DIMM and the long-side key on the FB-DIMM with the short side and long side of the FB-DIMM connector.**

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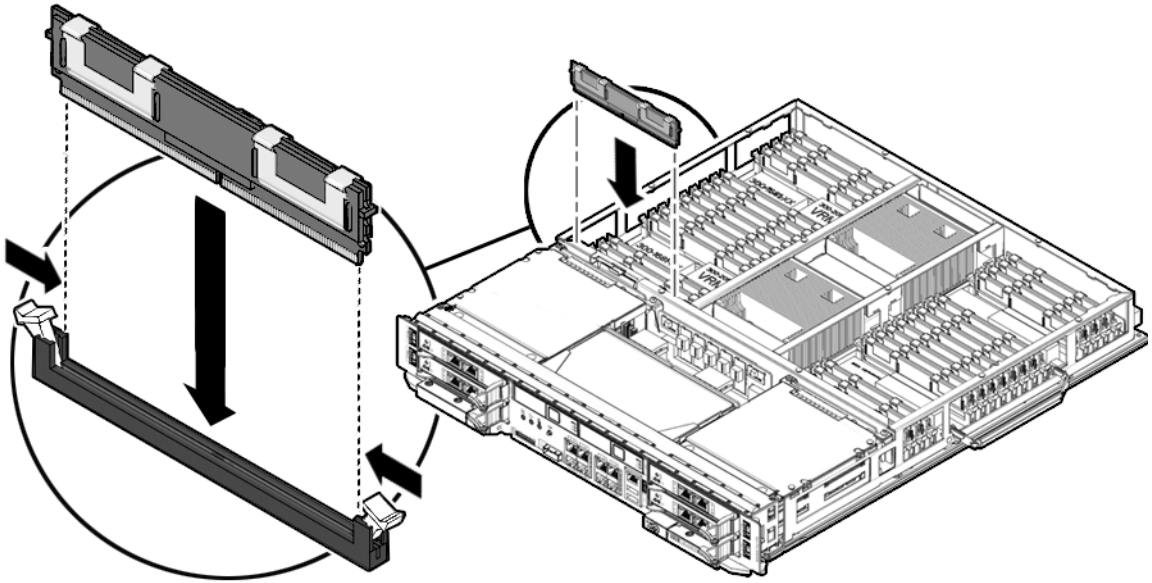
**Note** – If you are installing four FB-DIMMs, insert the FB-DIMMs into the same bank.

---

**6. Place your thumbs on the top edge of the FB-DIMM, and push the FB-DIMM firmly into its connector ([FIGURE 5-4](#)).**

When the FB-DIMMs are installed correctly, the ejector levers will be in the upright position and close by pressing them inward.

**FIGURE 5-4** Installing a FB-DIMM



7. Continue installing FB-DIMMs in the same manner.
8. Replace the cover plate.
9. Reinstall the Sun Fire USBRDT 5240 Uniboard and detach the wrist strap.  
See [Section 3.2.4, “Installing the Sun Fire USBRDT 5240 Uniboard”](#) on page 3-9 or [Section 4.3.4, “Installing the Sun Fire USBRDT 5240 Uniboard”](#) on page 4-9.

---

## 5.2 Replacing PCIe Modules

The PCI Express Module in the Sun Fire USBRDT 5240 Uniboard are hot-pluggable. You can install these modules into the system without halting the operating system. See the *Sun USBRDT 5240 Uniboard Administration Guide* for further instructions.

The PCIe modules are active replacement components.

### 5.2.1 Removing PCIe Modules

1. Prepare the system to remove the PCIe module.

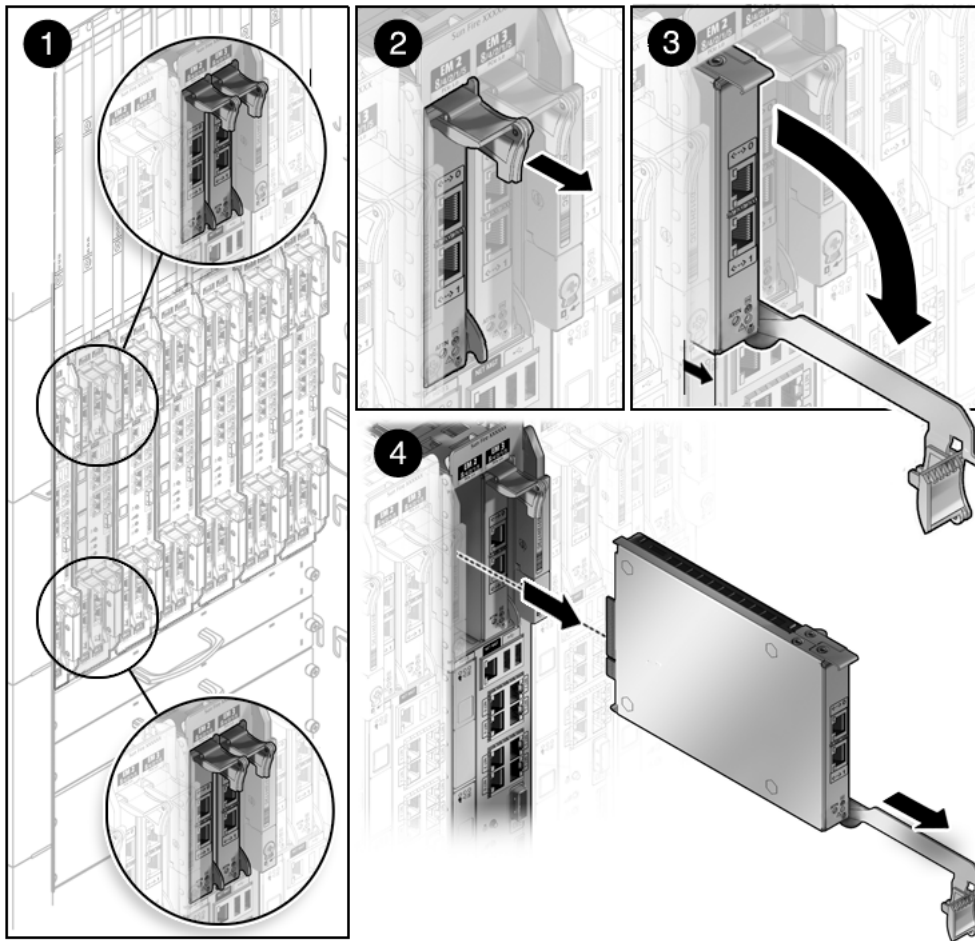
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**Note** – It is safe to continue when the Power/Activated LED on the module is off and the OK to Remove LED is on. Ensure that you have a filler panel or replacement module ready.

---

2. Attach a wrist strap or foot strap.
3. Connect the ESD strap to the system.
4. Place a grounded ESD mat near the system, or have the PCIe shipping carton open near the system.
5. Unlock the ejector lever by pulling the lever out on the end (FIGURE 5-5 panel 2).
6. Rotate the lever down. (FIGURE 5-5 panel 3).

**FIGURE 5-5** Unlocking the Ejector Lever



**7. Remove the PCIe module.**

Remove the module from the Sun Fire USBRDT 5240 Uniboard by holding the handle. Slide the module along the track until the module is out of the module slot.

**8. Place the board on a grounded ESD mat or the open shipping carton.**



---

**Caution** – To prevent overheating when the system is powered back on, install a filler board or filler panel in the empty slot if no replacement board is going to be installed. See [Section 1.4, “Filler Panels and Filler Boards” on page 1-4](#).

---

## 5.2.2 Preparing to Install the PCIe Module

---

**Note** – You can insert the PCIe module into a powered-on system. Refer to the *Sun USBRDT 5240 Uniboard Administration Guide* for complete procedures.

---

1. **Attach a wrist strap or foot strap.**
2. **Connect the ESD strap to the system.**  
Place a grounded ESD mat or the open shipping carton near the system.
3. **Inspect the card edge connector on the new PCIe module before inserting it into the system.**

## 5.2.3 Installing the PCIe Module

1. **Remove the PCIe module filler panel.**



---

**Caution** – You must insert a PCIe module into the system within one minute of removing the filler panel or overheating will occur.

---

2. **Ensure that the ejector lever of the PCIe module is in the open position. The lever should be straight out from the module.**



---

**Caution** – *Do not force* any module into a slot. Force can cause damage to the board. The module should insert and seat smoothly. If the module binds, remove it and inspect the module slot for any obvious obstructions. Also inspect both the module and the backplane for bent pins or other damage.

---

3. **Gently insert the PCIe module into the grooves of the slot.**
4. **Slide the module into the chassis slowly until the lever rotates from an open position where it is stopped by a protrusion from the module base housing.**  
The lever stops the module at the proper displacement to start rotating the lever and start the engagement of the card edge into the system’s connector.

**5. Rotate the lever up until it is flush and in the locked position.**

When the lever is in the vertical orientation, the module is fully inserted into the system.

## 5.2.4 Securing the Server

**1. Add the PCIe module to the domain.**

This step includes using the `cfgadm` command to connect and confirm the PCIe module has been added to the domain. See the *Sun USBRDT 5240 Uniboard Administration Guide*.

**2. Verify the state of the status LEDs on the PCIe module.**

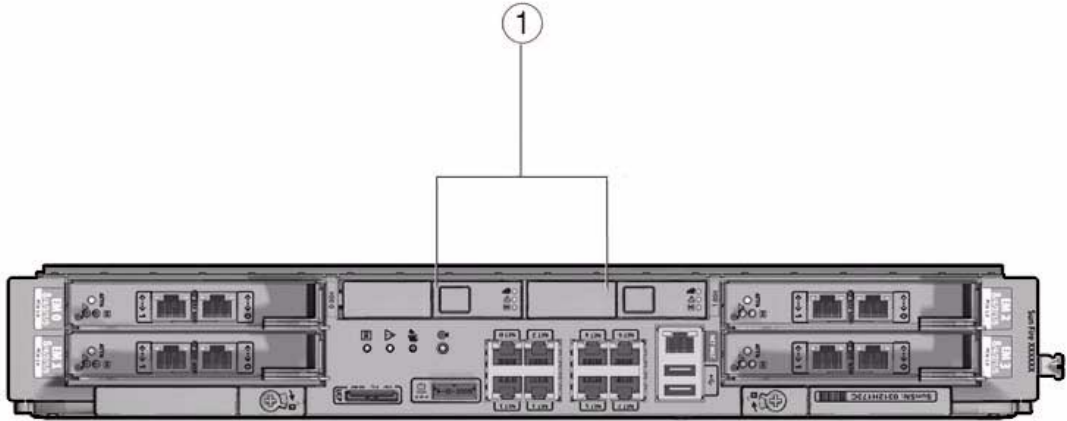
---

## 5.3 Hard Disk Drive Replacement

Hard disk drives are active replacement components.

[FIGURE 5-6](#) shows the locations of the hard disk drives on the Sun Fire USBRDT 5240 Uniboard.

**FIGURE 5-6** Sun Fire USBRDT 5240 Uniboard Hard Disk Drives Locations



### Figure Legend

Callout	Description
1	Hard Disk Drives

### 5.3.1 Removing the Hard Disk Drive

---

**Note** – If the hard disk drive is the boot device, you must replace the hard disk using cold replacement procedures. See the Solaris OS documentation.

---



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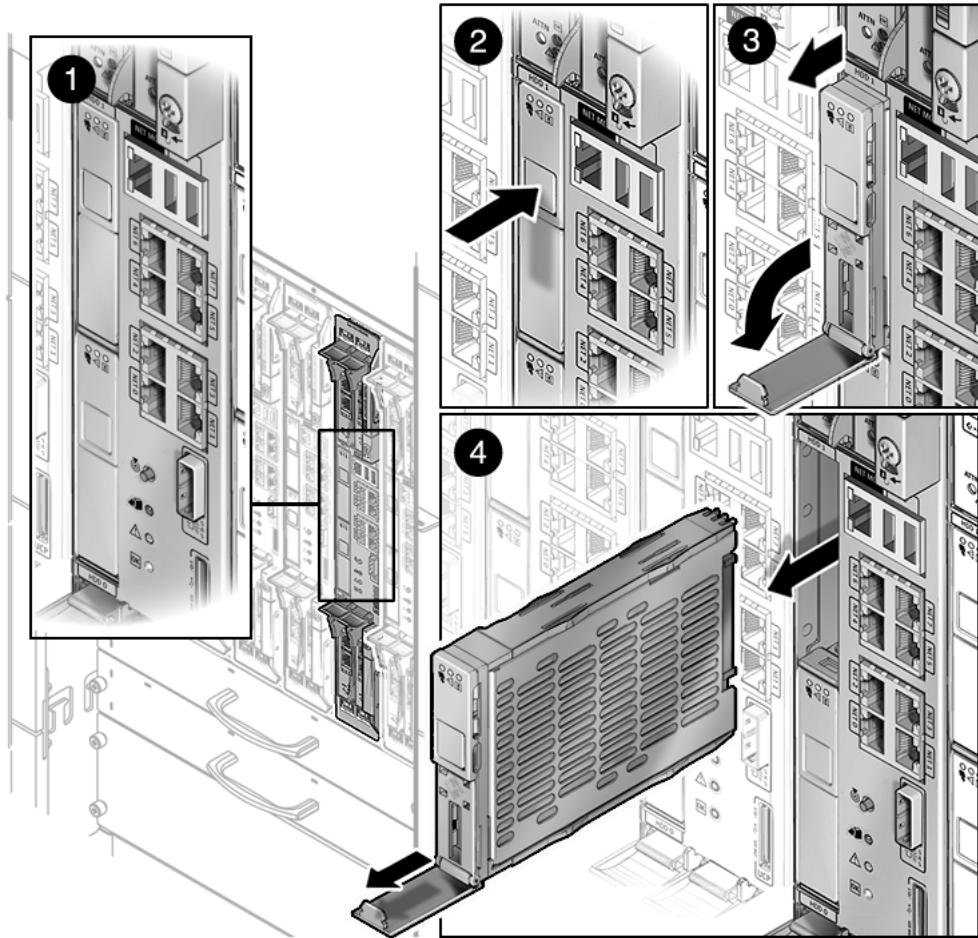
**Caution** – Use proper ESD grounding techniques when handling components. See [Section 1.1, “Safety Precautions” on page 1-1](#).

---

1. Push the button on the front of the hard disk drive to release the drive latch ([FIGURE 5-7 panel 2](#)).
2. Pull the latch so that it is straight out from the hard disk drive to unseat the drive ([FIGURE 5-7 panel 3](#)).
3. Remove the hard disk drive and place it on the ESD mat ([FIGURE 5-7 panel 4](#)).



**FIGURE 5-7** Removing the Hard Disk Drive



## 5.3.2 Installing the Hard Disk Drive

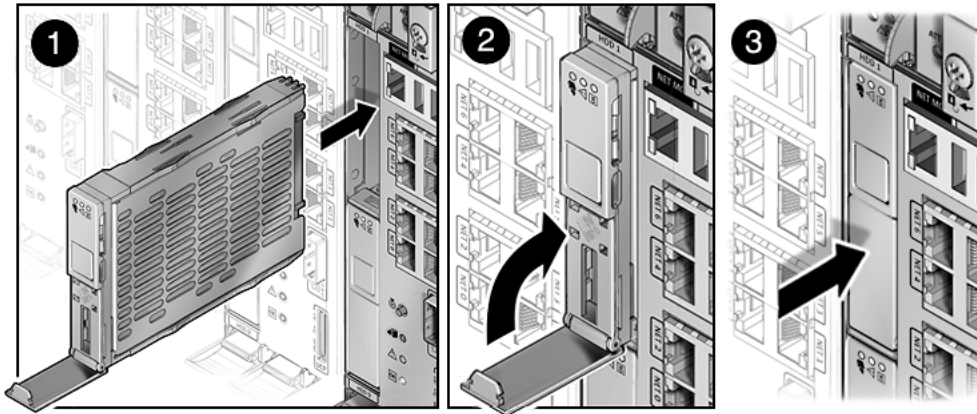


**Caution** – *Do not force* the hard disk drive into the slot. Doing so can cause damage to the component and server.

1. Pull the latch so that it is straight out from the drive (FIGURE 5-8 panel 1).

2. Align the drive in the slot and push it gently into position until it stops (FIGURE 5-8 panel 2).
3. Secure the latch (FIGURE 5-8 panel 3).

**FIGURE 5-8** Installing the Hard Disk Drive



### 5.3.3 Securing the Server

1. Add the hard disk drive to the domain.

This step includes using the `cfgadm` command to connect and confirm the hard disk drive has been added to the domain. See *Sun USBRDT 5240 Uniboard Administration Guide*.

2. Verify the state of the status LEDs on the hard disk drive.

---

## 5.4 Replacing SCC PROMs

The Sun Fire USBRDT 5240 Uniboard has one MAC address PROM which contains the MAC address for this system. Some software when installed have their license attached to this MAC address. When a system board is replaced, the SCC PROM must be removed from the old board and reinstalled onto the new system board.

## 5.4.1 Removing the Sun Fire USBRDT 5240 Uniboard



---

**Caution** – The system is sensitive to static electricity. Ensure you are wearing a grounded wrist strap when handling system components. Always place components on a grounded ESD mat near the system or in a static-safe bag.

---

1. **Remove the applicable Sun Fire USBRDT 5240 Uniboard.**

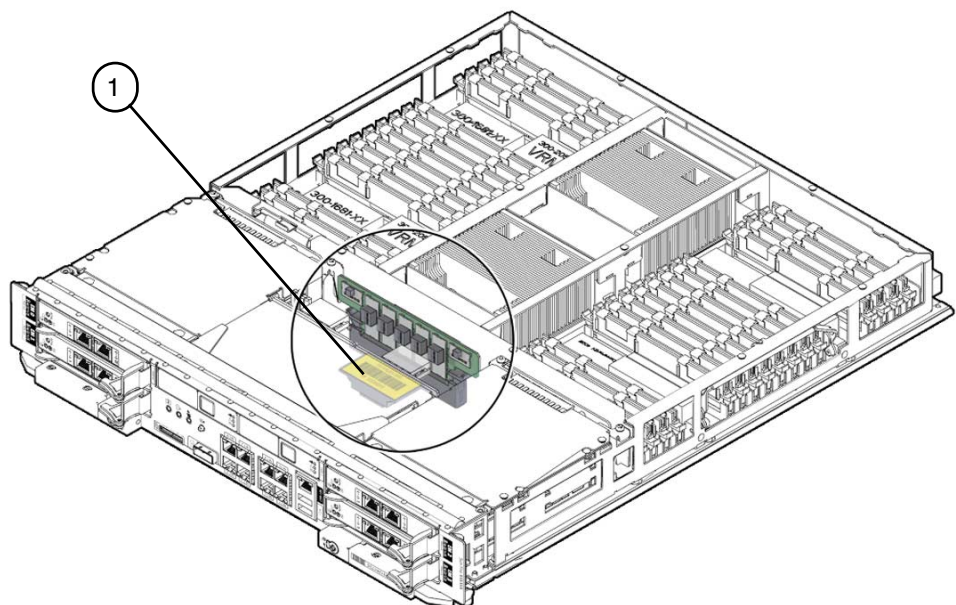
See [Section 3.2, “Replacing Sun Fire USBRDT 5240 Uniboards in Sun Fire E6900/6800/E4900/Upgraded 4800 Systems”](#) on page 3-5. or [Section 4.3, “Replacing the Sun Fire USBRDT 5240 Uniboard in Sun Fire E25K/E20K/15K/12K Host Systems”](#) on page 4-5

2. **Place the Sun Fire USBRDT 5240 Uniboard on the ESD mat on a work surface.**
3. **Remove the cover plate.**

## 5.4.2 Removing the SCC PROM from the Sun Fire USBRDT 5240 Uniboard

The location of the SCC PROM is shown in [FIGURE 5-9](#)

**FIGURE 5-9** SCC PROM Location



**Figure Legend**

Location	Component
1	SCC PROM

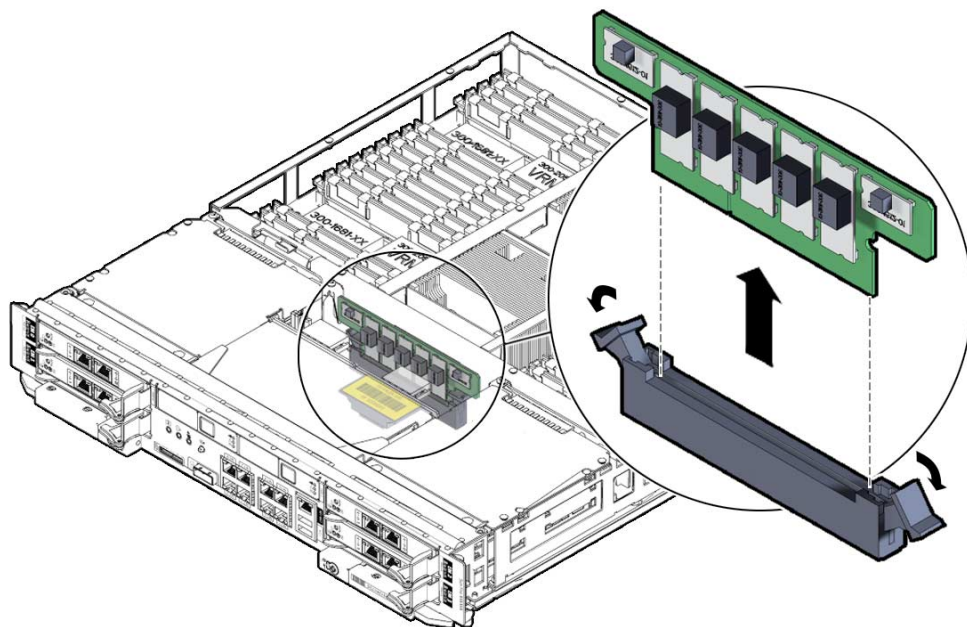


**Caution –** The system is sensitive to static electricity. Ensure you are wearing a grounded wrist strap when handling system components. Always place components on a grounded ESD mat near the system or in a static-safe bag.

### 5.4.2.1 Removing the VRM Board

1. Remove the VRM board for easier access to the SCC PROM. See [FIGURE 5-10](#)

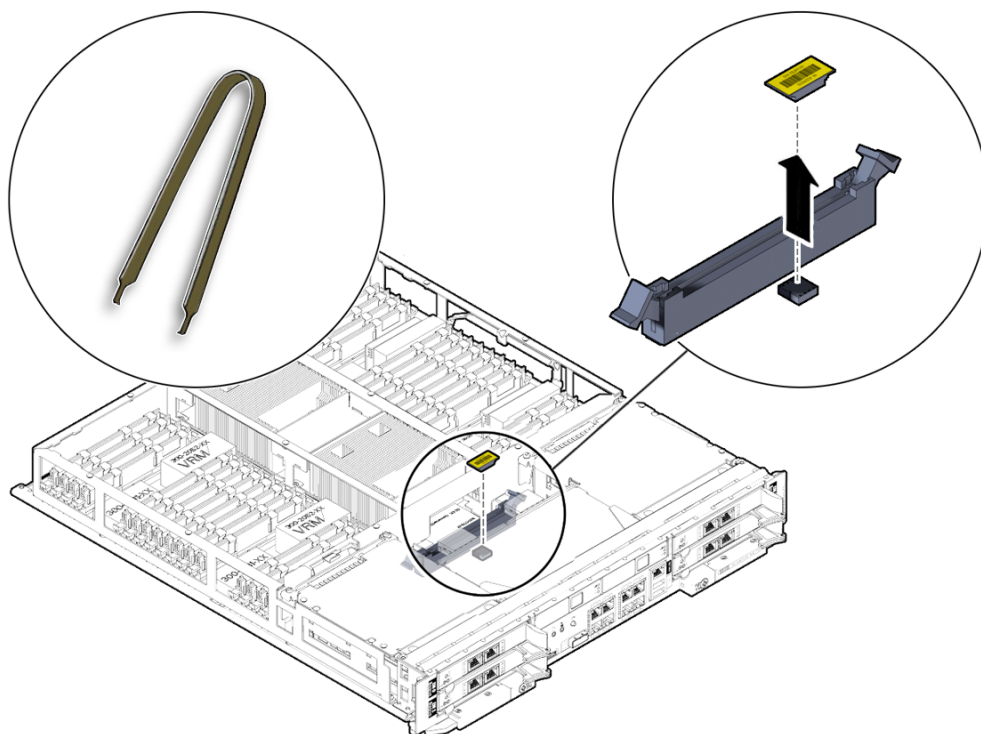
**FIGURE 5-10** Removing the VRM Board



### 5.4.2.2 Removing the SCC PROM

1. Using a chip puller, remove the SCC PROM from the socket and place it on the anti-static mat or bag. See [FIGURE 5-11](#)

**FIGURE 5-11** Removing the SCC PROM



### 5.4.3 Replacing the SCC PROM on the New Sun Fire USBRDT 5240 Uniboard



**Caution** – The system and PROMs are sensitive to static electricity. To prevent damage to the PROMs, ensure you are wearing a grounded wrist strap when handling them. Always place components on a grounded ESD mat near the system.

1. Place the new Sun Fire USBRDT 5240 Uniboard on an ESD mat on a work surface.
2. Remove the cover plate.

### 5.4.3.1 Removing the VRM Board

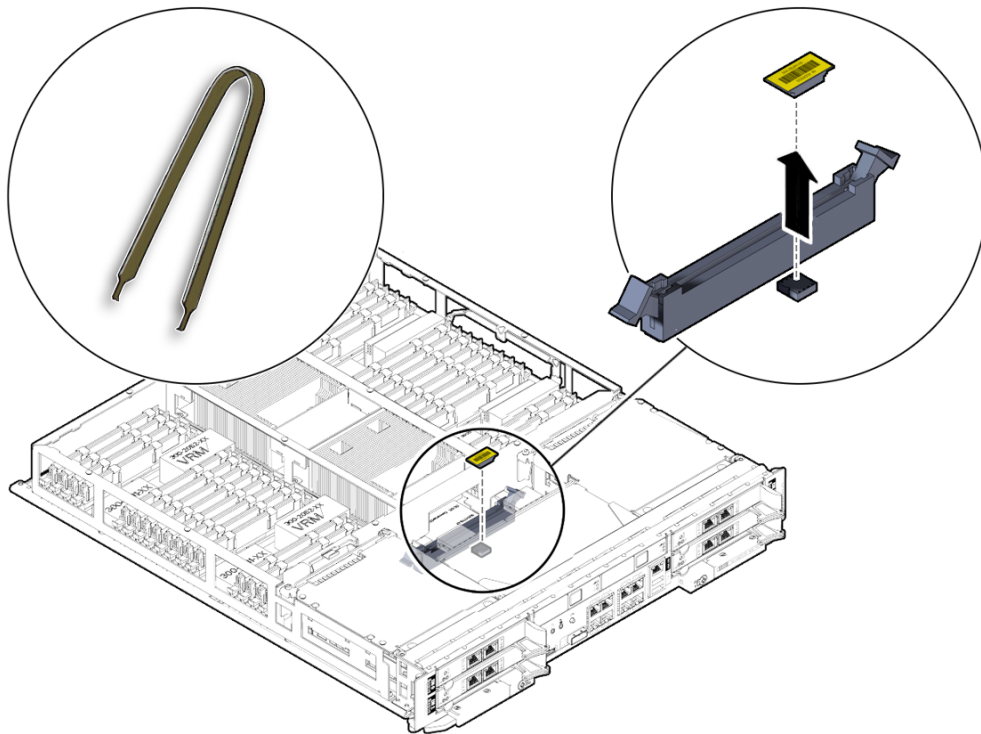
1. **Remove the VRM board for easier access to the SCC PROM. See [FIGURE 5-10](#)**

### 5.4.3.2 Removing the New SCC PROM

1. **Carefully remove the SCC PROM from the new board and place the SCC PROM on an antistatic surface. See [FIGURE 5-12](#)**  
The bags that the FB-DIMMs are packaged in makes a good antistatic surface.



**FIGURE 5-12** Removing the SCC PROM



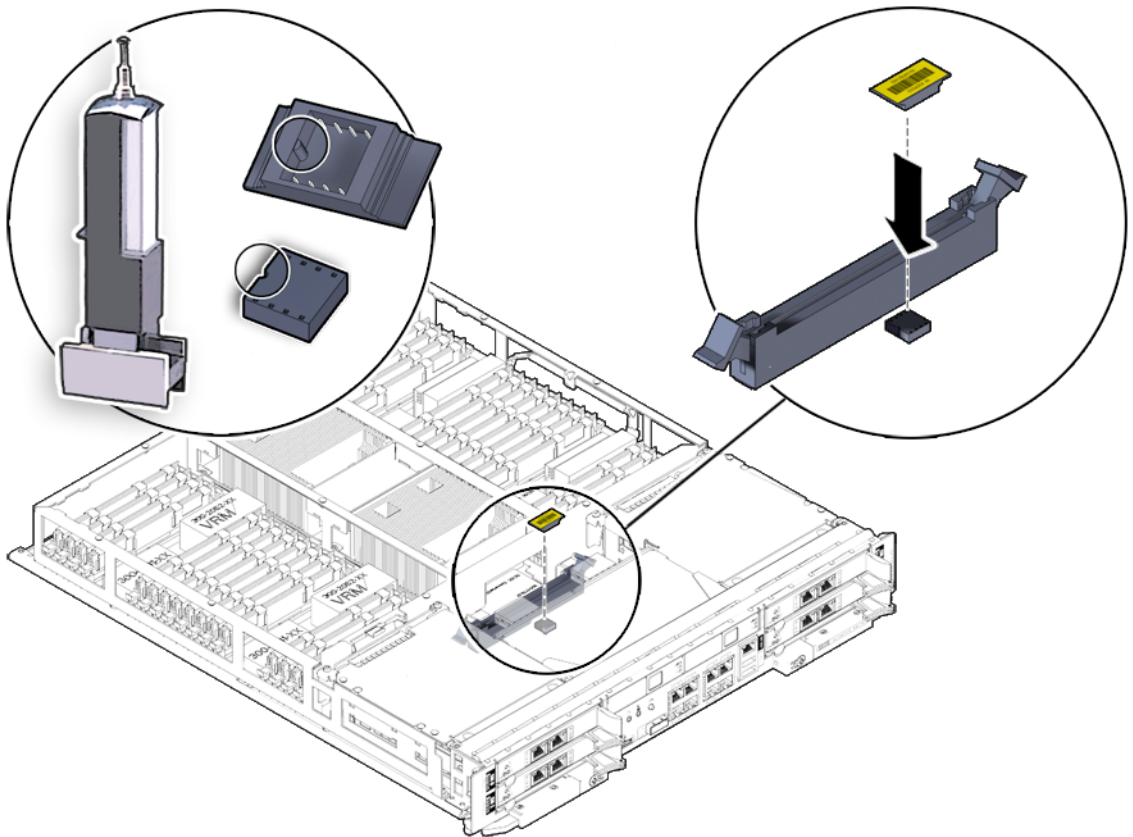
### 5.4.3.3 Installing the Original SCC PROM

1. Using a chip insertion tool, install the original SCC PROM from the old board on to the new board.

Note that the bottom of the SCC PROM carrier is keyed. Ensure that the chip is properly oriented before installing. See [FIGURE 5-13](#).



**FIGURE 5-13** Installing the Original SCC PROM



#### 5.4.3.4 Installing the New SCC PROM onto the Old Sun Fire USBRDT 5240 Uniboard

1. **Using a chip insertion tool, install the new SCC PROM from the new board onto the old board.**

Note that the bottom of the SCC PROM carrier is keyed. Ensure that the chip is properly oriented before installing. See [FIGURE 5-13](#).

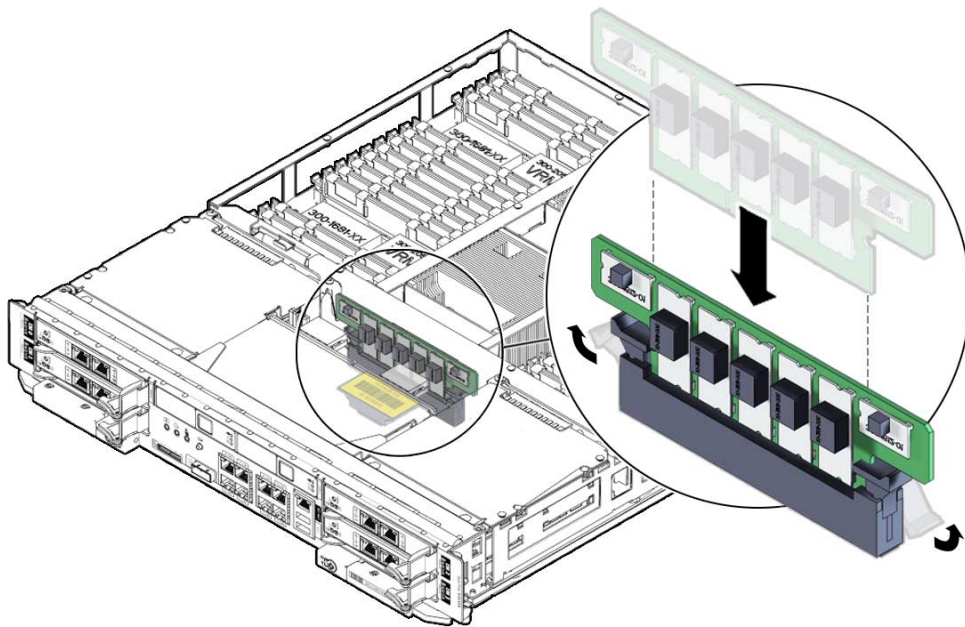
### 5.4.3.5 Reinstall the VRM Boards

1. Reinstall the VRM boards back onto both of the Sun Fire USBRDT 5240 Uniboards. See [FIGURE 5-14](#).

Ensure that the board locks are open away from the board socket before installing the board.

2. Move the board locks up to lock the board into the socket. See [FIGURE 5-14](#)

**FIGURE 5-14** Installing the VRM Board



3. Replace the cover plates.
4. Install the new Sun Fire USBRDT 5240 Uniboard.

See [Section 3.2.4, "Installing the Sun Fire USBRDT 5240 Uniboard" on page 3-9](#) or [Section 4.3.4, "Installing the Sun Fire USBRDT 5240 Uniboard" on page 4-9.](#)



# XVR-50 Graphics Accelerator

---

The XVR-50 graphics accelerator is a 24-bit on board PCI-based graphics frame buffer.

This appendix contains the following sections:

- [Section A.1, “XVR-50 Features” on page A-1](#)
- [Section A.2, “Video Formats” on page A-2](#)
- [Section A.3, “Sun OpenGL for Solaris Software” on page A-3](#)
- [Section A.4, “Optional Video Output” on page A-4](#)
- [Section A.5, “Checking Device Configuration” on page A-5](#)
- [Section A.6, “HD15 Video Output Port” on page A-6](#)

---

## A.1 XVR-50 Features

The XVR-50 graphics accelerator offers the following features:

- 2D 24-bit color graphics
- Flexible 8- and 24-bit color application support
- HD15 monitor connector for a wide range of Sun monitors
- 3D support through Sun OpenGL<sup>®</sup> for Solaris software

# A.2 Video Formats

## A.2.1 Obtaining Available Screen Resolutions

To get a list of available screen resolutions for your display device, type:

```
host% fbconfig -res \?
```

TABLE A-1 lists the monitor video formats supported by the XVR-50 graphics accelerator.

## A.2.2 Supported Video Formats

If you selected a resolution where support for this resolution cannot be verified, fbconfig displays the following output:

```
SUNWpfb_config: Cannot verify that selected resolution is a supported video resolution for this monitor
```

TABLE A-1 lists video formats supported by the HD15 port.

TABLE A-1 XVR-50 Graphics Accelerator HD15 Video Formats

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio Format
1600 x 1200	60 Hz	VESA	4:3
1600 x 1000	66, 76 Hz	Sun	16:10
1440 x 900	60 Hz	VESA	16:10
1440 x 900	76 Hz	Sun	16:10
1280 x 1024	60, 75, 85 Hz	VESA	5:4
1280 x 1024	67, 76 Hz	Sun	5:4
1280 x 800	76 Hz	Sun	16:10
1152 x 900	66, 76 Hz	Sun	5:4
1152 x 864	75 Hz	VESA	4:3

**TABLE A-1** XVR-50 Graphics Accelerator HD15 Video Formats (*Continued*)

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio Format
1024 x 768	60, 70, 75, 85 Hz	VESA	4:3
800 x 600	56, 60, 72, 75 Hz	VESA	4:3
720 x 400	85 Hz	VESA	9:5
640 x 480	60, 72, 75 Hz	VESA	4:3

**Note** – The XVR-50 graphics accelerator video composite sync is an XOR composite sync.

**Note** – Not all resolutions are supported by all monitors. Using resolutions that are not supported by the monitor might damage the monitor. Refer to your monitor manuals for supported resolutions.

The default resolution is dictated either by EDID information from the connected monitor or by the console resolution that is set (see [TABLE A-1](#)). When no monitor is connected to supply EDID information, the default resolution is 1024 x 768 @ 75 Hz.

## A.3 Sun OpenGL for Solaris Software

The Sun OpenGL 1.5 for Solaris software supports the XVR-50 graphics accelerator through software implementation.

### A.3.1 Man Pages

The XVR-50 graphics accelerator man pages describe how you can query and set frame buffer attributes such as screen resolutions and visual configurations.

Use the `fbconfig(1M)` man page for configuring all Sun graphics accelerators. `SUNWpfb_config(1M)` contains XVR-50 device-specific configuration information. To get a list of all graphics devices on your system, type:

```
host% fbconfig -list
```

This example shows a list of graphics devices displayed:

Device-Filename	Specific Config Program
-----	-----
/dev/fbs/pfb0	SUNWpfb_config

Use the `fbconfig -help` option to display the attributes and parameters information of the man page.

```
host% fbconfig -dev pfb0 -help
```

- To access the `fbconfig` man page, type:

```
host% man fbconfig
```

- To access the XVR-50 graphics accelerator man page, type:

```
host% man SUNWpfb_config
```

---

## A.4 Optional Video Output

The default system uses a resolution suggested by the monitor as long as the monitor is connected to power and connected to the XVR-50 video port. This resolution is the default the system uses if no `fbconfig` commands have been given, or after entering `fbconfig -dev pfb0 -defaults`.

To manually set up a video output resolution, do the following:

1. Set the desired screen resolution. For example, type:

```
host% fbconfig -dev pfb0 -res 1280x1024x60
```

2. Log out, then log in.

To find all possible XVR-50 graphics accelerator resolutions, type:

```
host% fbconfig -dev pfb0 -res \?
```

## A.4.1 Default Color Depth

### 1. Set or reset the default color depth.

To set 8 or 24 as the default color depth, use `/usr/sbin/svccfg`.

```
/usr/sbin/svccfg -s x11-server setprop options/default_depth=8
/usr/sbin/svccfg -s x11-server setprop options/default_depth=24
```

The default color depth is 24.

### 2. Log out and then log back in for the change to take effect.

---

## A.5 Checking Device Configuration

Use `fbconfig` to check the X window system (`-propt`) and XVR-50 graphics accelerator (`-prconf`) device configuration values.

The `fbconfig -propt` option displays the values of all options (for the specified device) saved in the `OWconfig` file (see example). The X window system will use these values the next time it starts on that device:

```
host% fbconfig -dev pfb0 -propt

-- Graphics Configuration for /dev/fbs/pfb0 ---

OWconfig: machine
Video Mode: not set

Screen Information:
    Fake8 Rendering: Disable
    Gamma Correction: Disable
```



`fbconfig -prconf` option displays the current XVR-50 graphics accelerator device configuration (see the following example). If certain values differ from those displayed in `-propt`, it is because those values have been configured since the X window system started.

```
host% fbconfig -dev pfb0 -prconf

--- Hardware Configuration for /dev/fb ---

Type: XVR-50
ASIC: version 0x515e                REV: version 0x3000002

Monitor/Resolution Information:
  Monitor Manufacturer: SUN
  Product code: 1431
  Serial #: 0
  Manufacture date: 2006, week 24
  Monitor dimensions: 34x27 cm
  Monitor preferred resolution: SUNW_STD_1280x1024x60
  Separate sync supported: yes
  Composite sync supported: yes
  Gamma: 2.20
  EDID: Version 1, Revision 3
  Supported resolutions: SUNW_STD_1280x1024x60,
    VESA_STD_1280x1024x60, VESA_STD_1280x1024x75,
    SUNW_STD_1152x900x66, VESA_STD_1024x768x75,
    VESA_STD_720x400x70, VESA_STD_640x480x60, VESA_STD_640x480x67,
    VESA_STD_640x480x72, VESA_STD_640x480x75, VESA_STD_800x600x56,
    VESA_STD_800x600x60, VESA_STD_800x600x72, VESA_STD_800x600x75,
    VESA_STD_832x624x75, VESA_STD_1024x768x70,
    VESA_STD_1024x768x75, VESA_STD_1280x1024x75, APPLE_1152x870x75,
    1152x870x75
  Current resolution setting: 1280x1024x60
  Current depth: 24

Depth Information:
  Possible depths: 8, 24
```

---

## A.6 HD15 Video Output Port

The HD15 connector diagram and pinout signals are shown in [Section B.4, “HD15 Video Output Port”](#) on page B-5.

# Three-Connector Cable Dongle Pinouts

---

This appendix shows the pin signal assignments (pinouts) for the three-connector cable dongle.

This appendix contains the following sections:

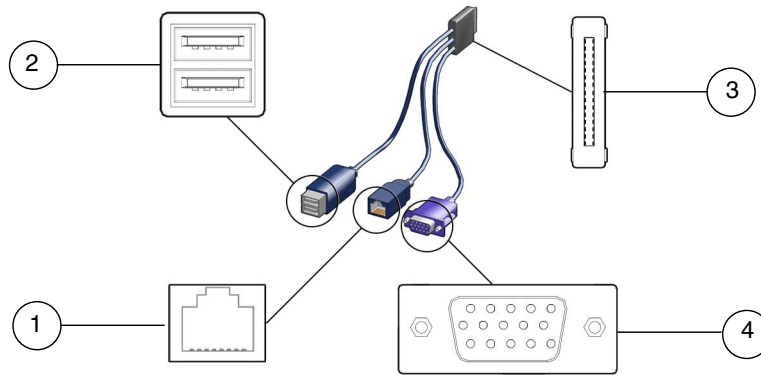
- [Section B.1, “The Three-Connector Cable Dongle” on page B-1](#)
- [Section B.2, “RJ-45 Serial Connector” on page B-3](#)
- [Section B.3, “USB Connectors” on page B-4](#)
- [Section B.4, “HD15 Video Output Port” on page B-5](#)
- [Section B.5, “Using the Cable Dongle” on page B-6](#)

---

## B.1 The Three-Connector Cable Dongle

[FIGURE B-1](#) shows the three-connector dongle and its 4 connectors.

**FIGURE B-1** Three-Connector Cable Dongle



**Figure Legend**

Callout	Description
1	RJ-45 virtual console
2	Two USB 2.0 connectors
3	Universal cable connector to chassis
4	VGA video

## B.2 RJ-45 Serial Connector

**FIGURE B-2** RJ-45 Serial Connector on the Cable Dongle

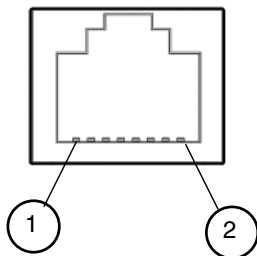


Figure Legend

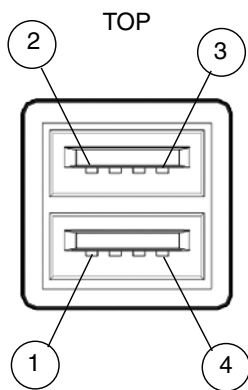
Callout	
1	Pin 8
2	Pin 1

TABLE B-1 RJ-45 Virtual Console Connector Pin Assignments

Pin Number	Signal	Pin Number on Universal Connector
7	DSR	21
6	RxD	22
1	RTS	23
3	TxD	24
8	CTS	25
2	DTR	26
7	DCD	27
4, 5	GND	29

## B.3 USB Connectors

**FIGURE B-3** Dual USB Connector Pin Assignments



**Figure Legend**

Callout	Description
1	Pin 1
2	Pin 5
3	Pin 8
4	Pin 4

**TABLE B-2** Connector Pinout

Pin Number	Signal	Pin Number on Universal Connector
1	USB1 VCC Red	14, 15
2	USB1 DN white	12
3	USB1 DP Green	13
4	USB1 GND Black	11
5	USB2 VCC Orange	16, 17
6	USB2 DN Yellow	18
7	USB2 DP Blue	19
8	USB2 GND Brown	20

# B.4 HD15 Video Output Port

FIGURE B-4 and TABLE B-3 shows the XVR-50 graphics accelerator HD15 connector and pinout signals.

The console video output port connects to the 15-pin connector on the cable dongle. The HD15 video connector supports DDC2 monitor support and Display Power Management Signaling (DPMS).

FIGURE B-4 XVR-50 Graphics Accelerator HD15 Connector Pin Assignments

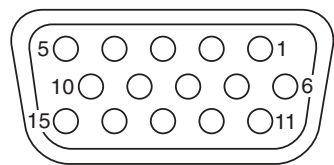


TABLE B-3 XVR-50 Graphics Accelerator HD15 Connector Pinout

Pin Number	Signal	Pin Number on Universal Connector
1	Red analog video	2
2	Green analog video	3
3	Blue analog video	4
4	No connect	-
5	Ground	Shell
6	Ground	
7	Ground	Shell
8	Ground	
9	+5V supply, black	1
10	Ground	
11	No connect	Shell
12	Monitor ID1 (DAT, white)	

**TABLE B-3** XVR-50 Graphics Accelerator HD15 Connector Pinout (*Continued*)

Pin Number	Signal	Pin Number on Universal Connector
13	Horizontal sync, orange	
14	Vertical sync, yellow	
15	Monitor ID2, red	11

---

## B.5 Using the Cable Dongle



---

**Caution** – The cable dongle is for temporary connections only. The cable dongle has not been evaluated for electromagnetic compatibility (EMC). The cable dongle or server module connectors could be damaged by closing rack doors or other impacts. Remove the cable dongle during normal system operation.

---