

Sun™ Enterprise™ 6x00/5x00/ 4x00/3x00 Systems SBus+ and Graphics+ I/O Boards Installation Guide



THE NETWORK IS THE COMPUTER™

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Installation and Component Replacement

This manual provides instructions for the installation or replacement of the Sun™ Enterprise™ SBus+ and Graphics+ I/O boards. Instructions are also provided for the replacement of GBICs mounted on the boards. Refer to your Sun Enterprise system reference manual for the installation or replacement of board mounted SBus or graphics cards.

SBus+ and Graphics+ I/O boards each provide mounting for two Gigabit Interface Converters (GBIC). GBICs support gigabit (100 Mbyte/sec) Fibre Channel storage products, such as the Sun™ StorEdge™ A5000.

The SBus+ and Graphics+ I/O boards differ from SBus and Graphics I/O boards in the interfaces to the peripheral disk arrays. For these boards, the interfaces are Fibre Channel Optical Modules (FC/OMs) that support SPARCstorage™ Arrays.

Requirements

Before installing an SBus+ or Graphics+ I/O board, make sure your system meets the following hardware and software requirements:

- Sun Enterprise 6x00/5x00/4x00/3x00 system
- An available I/O board slot
- OpenBoot™ PROM Version 3.2.10 or later
- Solaris™ 2.5.1 Hardware: 4/97 or Solaris 2.6 or later

Hot-Plug Feature

Sun Enterprise systems have extensive error detection mechanisms and an Automatic System Reconfiguration (ASR) feature that enables the system to be rebooted with failed components.

Once disabled by ASR, one of two results occurs:

- The three LEDs on the board are not lit (board has no power).
- The outer two green LEDs are not lit and the middle yellow LED is lit (board in low-power mode).

When an error is detected, you can reconfigure the system so that the board containing the failed component is placed in low-power mode and is no longer accessible. Consult your Sun service provider for support of this feature.



Caution – If the message: `NOTICE: Hot Plug not supported in this system` is displayed during boot, do NOT attempt hot-plug in this system or damage to the hardware will occur.

The hot-plug feature is the ability to insert a new board into a powered-on system, despite being supplied with electrical power. Once a replacement board is added you must reboot before the system can use the new board.

Flash PROM

Sun Enterprise 6x00/5x00/4x00/3x00 systems I/O boards use flash PROMs that can be updated to the latest firmware code. Refer to the *Sun Enterprise 6x00/5x00/4x00/3x00 Systems Flash PROM Programming Guide* for this procedure.

Note – Boards shipped with a System Flash PROM Update CD-ROM (containing new firmware code) and a *Sun Enterprise 6x00/5x00/4x00/3x00 System Flash PROM Programming Guide* may require updates to the system flash PROM before the board can function properly. Use the CD-ROM and information in the guide to reprogram the flash PROMs, if appropriate.

Installing or Replacing SBus+ or Graphics+ I/O Boards

Note – All empty board slots must have a filler panel (Enterprise 5500/4500/3500 systems) or a load board (Enterprise 6500 system) installed to ensure proper cooling. For information on filler panels or load boards, refer to the system reference manual that came with your system.

Removing a Board

1. **Ensure that the board is in low-power mode and ready for removal.**

If the board is not in low-power mode, halt the system and turn off the power before proceeding. The board is in low-power mode if one of the following is true:

- The three LEDs on the board are not lit (board has no power).
- The outer two green LEDs are not lit and the middle yellow LED is lit.



Caution – Use a grounding wrist strap to prevent static damage.

2. **With a Phillips #1 screwdriver, turn the two quarter-turn access slots to the unlocked position (■).**
3. **Pull the ends of both extraction levers outward, then pull the board out of the card cage.**

Do not let the components on the board catch on any surrounding surfaces.



Caution – The heatsinks on the board may be hot. Handle with care.

4. **Place the board on a padded ESD mat for servicing, or store the board in an antistatic bag.**

Installing a Board

1. **If you are installing a new board, refer to the Enterprise server system reference manual for rules for selecting a board slot.**

2. **Open the extraction levers by pulling the ends of both levers outward.**



Caution – Use a grounding wrist strap to prevent static damage.

3. **Insert the board partway into the card cage slot.**

- For a front slot in a 16- or 8-slot card cage, orient the board component-side down.
- For a rear slot in a 16- or 8-slot card cage, orient the board component-side up.
- For a 4- or 5-slot card cage with vertical slots, orient the board component side to the right.



Caution – When inserting a board into slot 4 or slot 10 of a 16-slot card cage, lift the board slightly to avoid damage to the centerplane connectors.

4. **Push the board into the card cage, then simultaneously press both extraction levers to seat the board on the centerplane.**



Caution – Do not press on the board front panel to seat it—doing so will damage the connector pins.

5. **With a Phillips #1 screwdriver, turn the two quarter-turn access slots to the locked position (🔒).**
6. **Reboot the system now or schedule a later time to reboot when system disruption will be minimized.**

The system cannot use the new board until the system is rebooted

GBICs

Each SBus+ and Graphics+ I/O board has two onboard connectors. Each onboard connector accommodates one GBIC.

Removing a GBIC

1. **Locate the GBIC to be removed (FIGURE 1).**

2. Remove the GBIC from the I/O board by squeezing the locking tabs located on the sides of the GBIC and pulling it straight out from the opening in the I/O board panel (FIGURE 1).

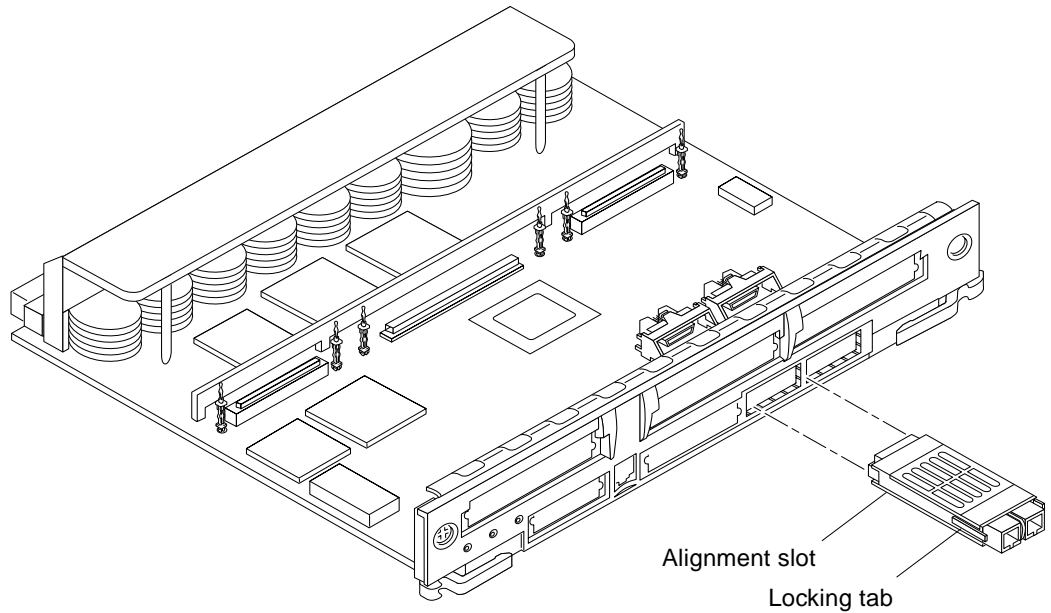


FIGURE 1 Removing or Installing a GBIC

Installing a GBIC

1. Locate the GBIC slot for installation (FIGURE 1).
2. Ensure correct orientation for insertion.
The alignment slots should be on the bottom of the GBIC (FIGURE 1).
3. Insert the GBIC into the I/O board slot and then push in firmly to seat it.
An audible click indicates the GBIC is properly seated to the onboard connector.

Verifying Installation

Once the board has been inserted into your system, you can verify the installation using POST (power-on self-test) output or the `.version` command.

Verifying Installation Using POST Output

1. Boot the system.

Refer to the *Solaris Handbook for SMCC Peripherals* manual or your Solaris documentation for detailed instructions for your system.

2. When POST is complete, you should see an output similar to the following (prior to entering OBP) specific to the device that you installed.

The following example is for a Graphics+ (I/O Type 5) board installed in slot 2, and an SBus+ (I/O Type 4) board installed in slot 4, of a Sun Enterprise 4x00.

CODE EXAMPLE 1

```
.
.
7,0>System Board Status
7,0>-----
7,0> Slot      Board Status      Board Type      Failures
7,0>-----
7,0> 0 | Not installed |                |
7,0> 1 | Normal        | IO Type 3      |
7,0> 2 | Normal        | IO Type 5      |
7,0> 3 | Normal        | Disk Board     |
7,0> 4 | Normal        | IO Type 4      |
7,0> 5 | Not installed |                |
7,0> 6 | Not installed |                |
.
.
```

3. If you do not see your new device(s) listed, check that the I/O board and any cards are properly seated and reinstall the board or cards, if necessary.

Verifying Installation Using the `.version` Command

1. Wait for the `ok` prompt and then enter:

```
ok .version
```

You should see output similar to the following which depicts a Graphics+ (I/O Type 5) board installed in slot 2, and an SBus+ (I/O Type 4) board installed in slot 4, of a Sun Enterprise 4x00.

```
.  
.br/>Slot 1 - I/O Type 3 FCODE 1.8.7 1997/05/09 11:18 iPOST 3.0.2  
1997/05/01 10:56  
Slot 2 - I/O Type 5 FCODE 1.8.2 1997/07/09 11:24 iPOST 3.4.2  
1997/01/10 13:34  
Slot 4 - I/O Type 4 FCODE 1.8.2 1997/05/13 18:45 iPOST 3.4.2  
1997/01/10 13:34  
Slot 7 - CPU/Memory OBP 3.2.9 1997/07/09 13:12 POST 3.6.1  
1997/04/17 13:37  
.br/>.
```

2. If you do not see your new device(s) listed, check that the I/O board and any cards are properly seated and reinstall the board or cards, if necessary.

