

# *Ultra™ Enterprise™ 6000/5000/4000/3000 System Flash PROM Programming Guide*



The Network Is the Computer™

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# *Introduction*

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## *1.1 Who Should Read This Document*

This document accompanies the CD-ROM containing the new firmware code for updating your system's flash PROM. This document is intended for:

- Network administrators
- System administrators
- Network and system service providers

## *1.2 Flash PROM*

Ultra™ Enterprise™ 6000/5000/4000/3000 systems conform to the Sun4u architecture and use flash PROMs. Flash PROMs permit the following:

- Reprogramming of specific code blocks
- Remote reprogramming of the PROM chip by a system administrator over a local area network

## 1.3 Flash PROM Jumper

An Ultra Enterprise 6000/5000/4000/3000 system clock board has a flash PROM jumper identified as P0601.

- With the jumper *installed*, all the flash PROM chips on system boards can be reprogrammed.
- With the jumper *removed*, all the flash PROM chips on system boards *cannot* be reprogrammed.

### 1.3.1 Removing the Jumper

When the power key switch is in the Locked position, the system flash PROMs cannot be reprogrammed. To provide additional flash PROM reprogramming security, the power key switch can be augmented by additionally removing a jumper on the system clock board.

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**Note** – Figures 1-1 and 1-2 show a 16-slot system. Systems also come in 4- and 8-slot configurations.

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#### 1. Turn the power key switch to the Standby position.

See Figure 1-1.

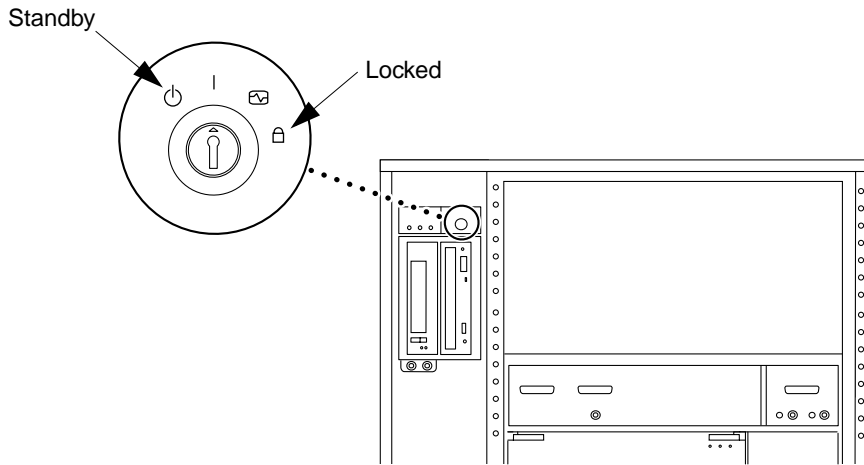
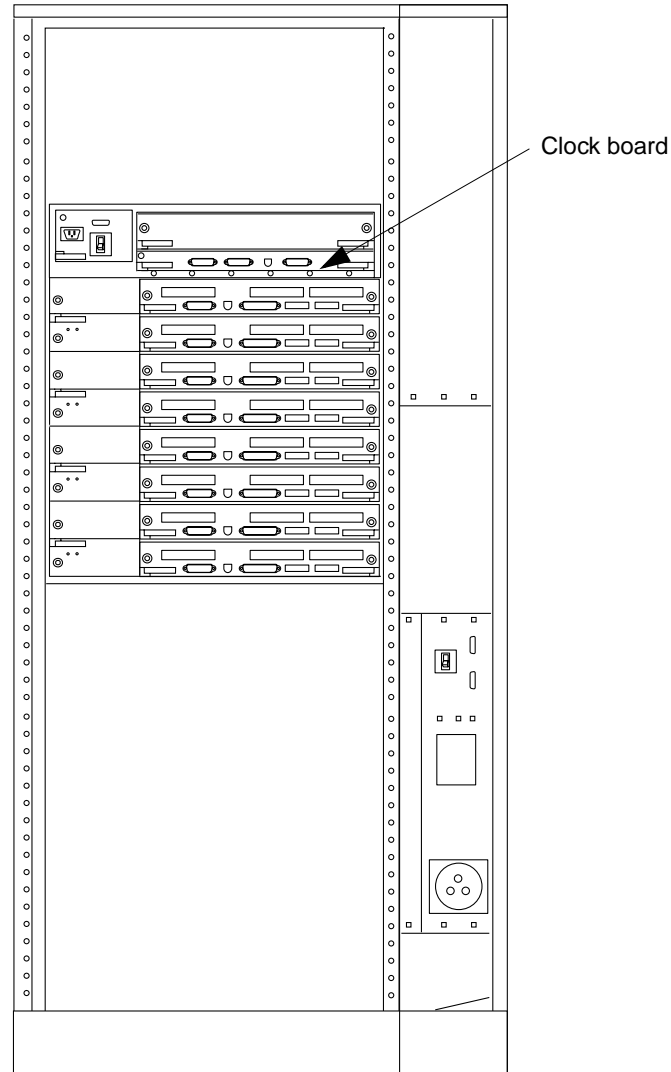


Figure 1-1 Power Key Switch Location

**2. Locate the clock board in the system.**

In 8- and 16-slot systems, it is the top board in the system. See Figure 1-2.  
In 4-slot systems, it is the first slot on the right.



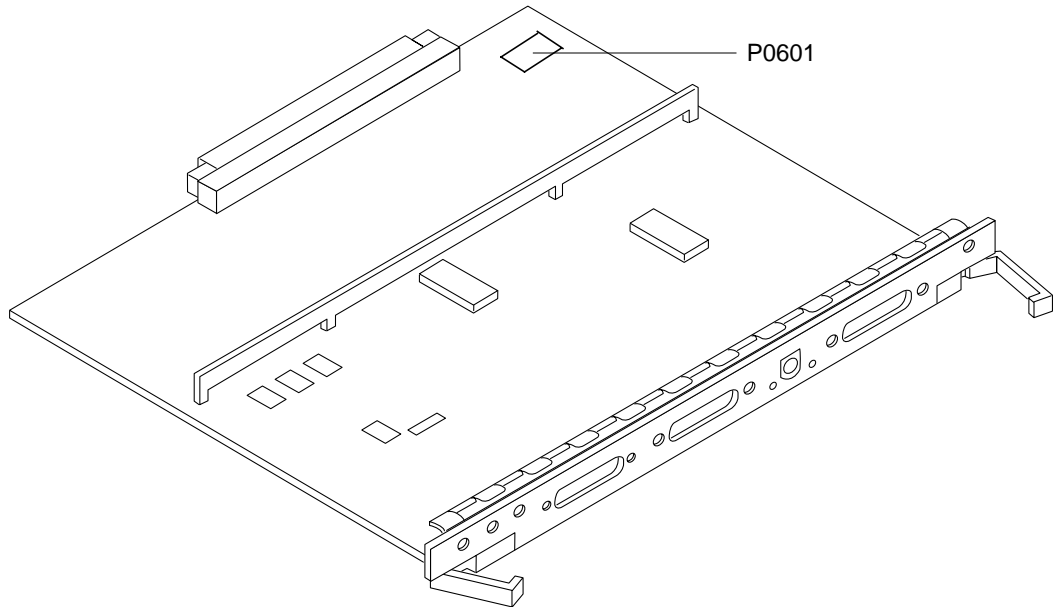
*Figure 1-2* Rear View of Ultra Enterprise System

**3. Remove the clock board from the system.**

See Figure 1-3.

**4. Locate the P0601 jumper on the clock board.**

See Figure 1-3.



*Figure 1-3* Clock Board and Jumper P0601 Location

**5. Remove the P0601 jumper from the clock board. Put it in a safe place for future use.**

**6. Replace the clock board in the system.**

**7. Turn the power key switch to its original position (for example, On or Diagnostics).**



# Reprogramming Flash PROMs

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## 2.1 Reprogramming Scenario



---

**Caution** – Do not interrupt power during flash PROM reprogramming. After the reprogramming utility has been booted, do not remove or insert system boards.

---

---

**Note** – If power is interrupted during flash PROM reprogramming, do one of the following:

- In a single-board system, call your Sun service provider.
  - In a multiple-board system:
    1. Follow the instructions in Section 3.2, “Recovery Scenario.”
    2. If rebooting and/or reprogramming is unsuccessful, call your Sun service provider.
- 

The following flash PROM reprogramming scenario is for Ultra Enterprise 6000/5000/4000/3000 systems.

### 1. Turn on power to the system.

Turn the power key switch to either the On or Diagnostics position. See Figure 2-1. First the Power-On Self-Test (POST) runs. POST completion varies and depends on the number of installed system boards and memory capacity. Then the banner screen appears, and the system may attempt to autoboot, depending on how the system’s non-volatile RAM (NVRAM) configuration variables are set.

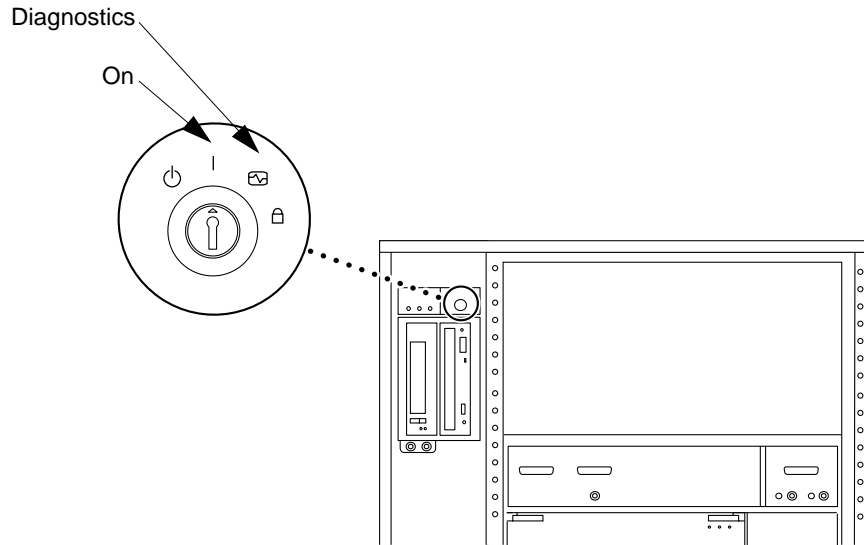
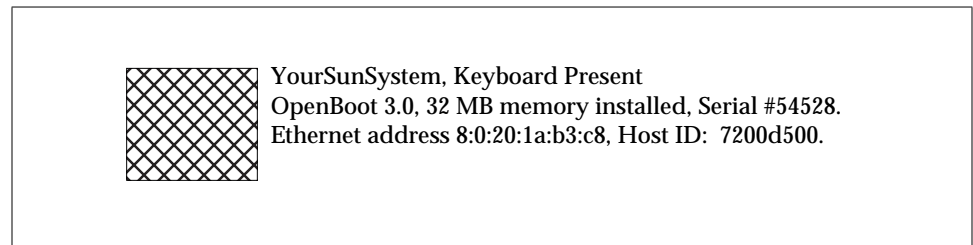


Figure 2-1 Power Key Switch Location

The banner screen identifies the system type, amount of memory installed, hostid, and Ethernet address.



2. **Press Stop-a (or press the Break key if running from a terminal connected to a serial port) to abort the autoboot sequence.**
3. **Insert the compact disc into the CD-ROM drive. At the ok prompt, type `boot cdrom` to start the flash PROM programming utility.**

```
ok boot cdrom
```

```
Now rebooting to load correct binary.
```

```
Resetting ...
```

```
Rebooting with command:
```

```
boot /sbus3,0/SUNW,fas@3,8800000/sd@6,0:f flash/SUNW,501-2557-latest
```

---

**Note** – In the above example, `cdrom` is shown as an example. A hard disk or network are also possible sources of booting depending on your system configuration.

---

The firmware update screen will appear. Figure 2-2 shows an example of a system with boards installed in slot 6 and slot 1. Actual system board installation schemes may vary.

```

UltraSPARC-Server System Flash PROM Update, Rev. 1.0

Bd# Board Type                               Existing Firmware Revisions
=== =====
01 I/O Type 1   FCODE 1.5.0 1996/01/02 11:12   iPOST 1.1.3 1995/12/19 04:28
06 CPU/Memory   OBP 3.0.7 1996/01/02 11:10     POST 2.3.5 1995/12/30 04:45

The available "update" firmware revisions are:

    CPU/Memory   OBP 3.0.7 1996/01/02 11:10     POST 2.3.5 1995/12/30 04:45
    I/O Type 1   FCODE 1.5.0 1996/01/02 11:12   iPOST 1.1.3 1995/12/19 04:28
    I/O Type 2   FCODE 1.5.0 1996/01/02 11:12   iPOST 1.1.3 1995/12/19 04:28

Do you wish to update your system's firmware y/[n] : y

Are you sure y/[n] : y

Updating CPU board in slot# 6
Erasing FLASH PROM Done.
Updating FCODE      Done.
Verifying FCODE    Done.
Updating POST      Done.
Verifying POST     Done.

Updating CPU board in slot# 1
Erasing FLASH PROM Done.
Updating FCODE      Done.
Verifying FCODE    Done.
Updating POST      Done.
Verifying POST     Done.

Programming was successful: Rebooting...

Resetting...

Software Power ON

```

Figure 2-2 Firmware Update Screen

- 4. Type y and press Return when asked**, Do you wish to update your system's firmware **and** Are you sure .  
See Figure 2-2. Your system will proceed to update all installed flash PROMs. The system will normally reboot (autoboot) after programming has completed.

## 2.2 Error Message

If the system clock board flash PROM programming jumper is not manually removed and you attempt to reprogram the flash PROMs, the system will display an error message. See Figure 2-3.

```
UltraSPARC-Server System Flash PROM Update, Rev. 1.0

Bd# Board Type                               Existing Firmware Revisions
=== =====
00 CPU/Memory   OBP 3.0.7 1996/01/02 11:10      POST 2.3.5 1995/12/30 04:45
01 I/O Type 1   FCODE 1.5.0 1996/01/02 11:12      iPOST 1.1.3 1995/12/19 04:28
06 CPU/Memory   OBP 3.0.7 1996/01/02 11:10      POST 2.3.5 1995/12/30 04:45

The available "update" firmware revisions are:

    CPU/Memory   OBP 3.0.8 1996/01/21 15:39      POST 2.4.2 1996/01/20 06:03
    I/O Type 1   FCODE 1.6.0 1996/01/21 15:39      iPOST 1.1.2 1996/01/20 06:03
    I/O Type 2   FCODE 1.6.0 1996/01/21 15:39      iPOST 1.1.2 1996/01/20 06:03

FPROM Write Protected: Check Write Enable jumper or Front Panel Key switch.

Flash-update aborted.

ok
```

Figure 2-3 Flash PROM Programming Error Message



## *Power Interruption Recovery*

---



### *2.1 Power Interruption During Reprogramming*

Power interruption during reprogramming of the flash PROMs aborts the reprogramming at the point of the power interruption. If such interruption occurs, see the system screen display and carefully note which board was being updated when the power interruption occurred. If you have another board of the same type in the system, then follow the scenario presented in this chapter.

If power to the system is interrupted during reprogramming of the flash PROM, turn the power key switch to the Standby position to prevent power surge to the system when power is restored. See Figure 3-1.

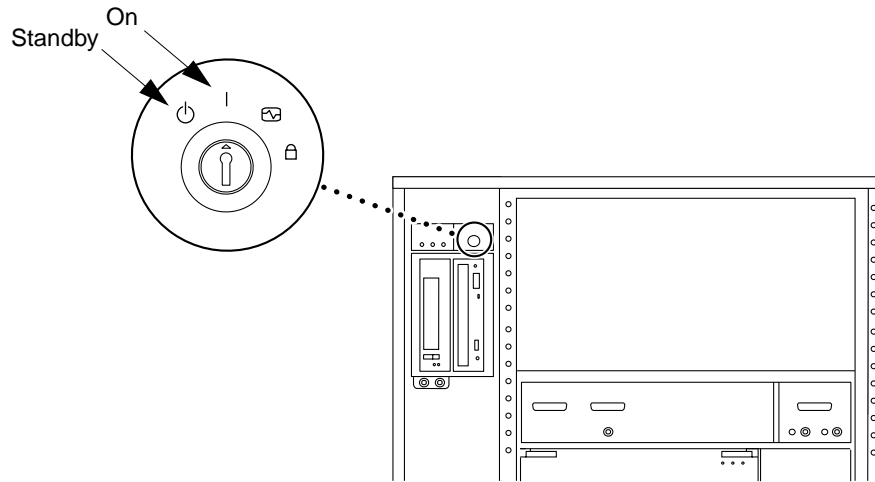


Figure 2-1 Power Key Switch Location

After power has been restored to the system location, turn the power key switch to the On position.

## 2.2 Recovery Scenario

If there is a power interruption to the system while the flash PROMs are being reprogrammed, only one board will have its flash PROMs in an inconsistent state. Only one board is updated at any given time in the flash PROM updating process.

The following scenario requires that there be another board of the same type installed in the system. In this scenario, the flash PROM on board 3 recovers by copying the flash PROM image from board 0.

1. **Connect a serial port cable to port A and to either a terminal or a Sun workstation.**
2. **Set the serial port at 9600 baud, 8-bit word, no parity, and 1 stop bit.**
3. **Remove the board that has the corrupted flash PROMs.**  
It is the board that was being programmed when the power went out.



4. Turn the power key switch to the On position.  
See Figure 3-2.

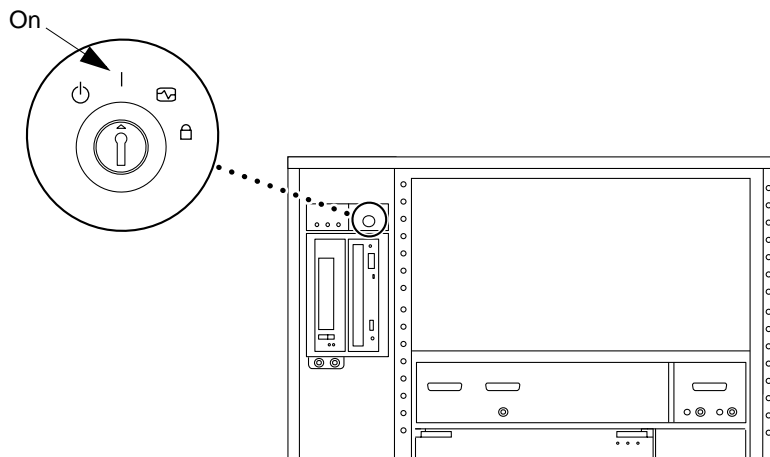


Figure 2-2 Power Key Switch Location

The system responds with the message:

```
Hardware Power ON
```

5. Wait 15 seconds and type `s` on the keyboard terminal or the tip window connected to the serial port.

The system responds:

```
0,0>  
*** Toggle Stop POST Flag = 1 ***
```

This message shows that POST (Power-On Self-Test) has recorded your request to stop after its tests are completed.

When POST stops, it displays its options menu:

```
0,0>Extended POST Menu
0,0>Select one of the following functions
0,0>  '0'      Return
0,0>  '1'      Reset
0,0>  '2'      Peek/Poke device
0,0>  '3'      Environmental Status
0,0>  '4'      Test Menu
0,0>  '5'      State Dump
0,0>  '6'      Frequency Margining
0,0>  '7'      Display System Summary
0,0>  '8'      Display Fatal Reset Info
0,0>  '9'      Scan System Board Ring
0,0>  'a'      Set Memory Test Megs
0,0>  'b'      Print SIMM Info
0,0>  'c'      Focus CPU
0,0>  'd'      CPU State
0,0>  'f'      fcopy
0,0>  'g'      System Power Off
0,0>  'h'      Bounce Patterns
0,0>  'i'      Focus I/O Board
0,0>
```

**6. Type f to select fcopy.**

```
Command ==> f
0,0>Flash PROM Copy Menu
0,0>Select one of the following functions
0,0>  '0'      Return
0,0>  '1'      Copy
0,0>  '2'      Verify
0,0>  '3'      Display Version
0,0>  '4'      Activate System Board
0,0>

Command ==>
```

**7. Plug in the board with the corrupted flash PROM. Be sure its power LED comes on.**

**8. Type 4 to select** Activate System Board.

The system prompts you to enter the board number in hexadecimal notation from 0 through 9 and “a” through “f”. In the example below, board 3 is entered as the board to be activated.

```
Command ==> 4
0,0>Input board number in hex ('0' thru '9' and 'a' thru 'f')
?3
0,0>
0,0>Flash PROM Copy Menu
0,0>  '0'      Return
0,0>  '1'      Copy
0,0>  '2'      Verify
0,0>  '3'      Display Version
0,0>  '4'      Activate System Board
0,0>

Command ==>
```

**9. Type 1 to select** Copy. **Respond to the prompts for source (where to copy from) and destination (where to copy to) board numbers in hexadecimal notation.**

In the example below, board 0 is entered as the source and board 3 is entered as the destination:

```
Command ==> 1
0,0>Input board number in hex ('0' thru '9' and 'a' thru 'f')
0,0>
        from board? 0
        to board? 3
0,0>  Mfg code 04, Dev code a4
0,0>Erasing prom at 000001cc.f8000000
0,0>Copy prom at 000001c0.f8000000 to prom at 000001cc.f8000000
0,0>.....
0
```

**10. Type 3 to select Display Version.**

The system responds by showing all PROM versions in the system.

```

Command ==> 3
0,0>Slot 0 CPU/Memory OBP 3.2.1 1996/3/11 09:57 POST 3.0.1 1996/3/11 18:38
0,0>Slot 1 IO Type 1 FCODE 1.6.0 1996/1/23 13:44 iPOST 1.1.4 1996/3/05 04:06
0,0>Slot 2 CPU/Memory OBP 3.2.1 1996/3/11 09:57 POST 3.0.1 1996/3/11 18:38
0,0>Slot 3 Memory OBP 3.2.1 1996/3/11 09:57 POST 3.0.1 1996/3/11 18:38
0,0>Slot 5 CPU/Memory OBP 3.2.1 1996/3/11 09:57 POST 3.0.1 1996/3/11 18:38
0,0>Slot 7 Memory OBP 3.2.1 1996/3/11 09:57 POST 3.0.1 1996/3/11 18:38
0,0>
  
```

**11. Turn the power key switch to the Standby position. Wait 15 seconds.**

See Figure 3-3.

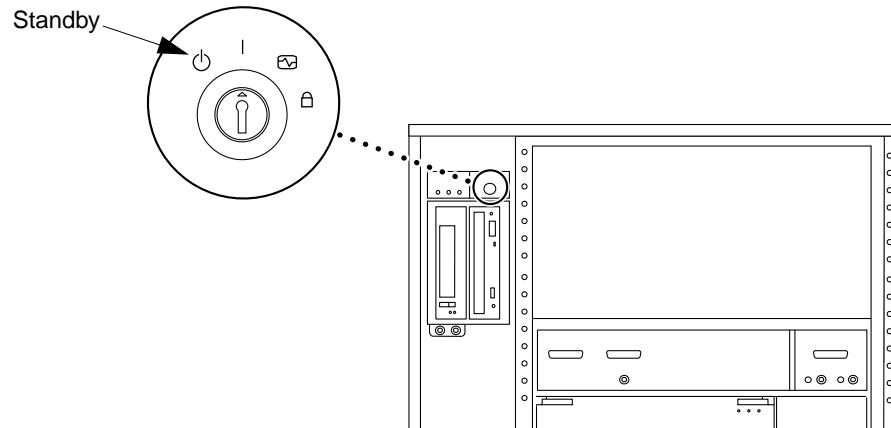


Figure 2-3 Power Key Switch Location

**12. See Section 2.1 of this document, “Reprogramming Scenario.” Follow the procedure therein to attempt the flash PROM updating process again.**