Platform Notes: Ultra™ Enterprise™ 3000, 4000, 5000, and 6000 Systems

Sun Microsystems Computer Company
2550 Garcia Avenue
Mountain View, CA 94043 USA
415 960-1300 fax 415 969-9131

Part No.: 802-6634-10
Revision A, May 1996

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Contents

OpenBoot™ 3.x Commands 1

This chapter includes information about Solaris™ 2.5.1 OpenBoot 3.x commands for the Ultra Enterprise 3000, 4000, 5000, and 6000.

Environmental Monitoring

`disable-environmental-monitor`

Usage: `disable-environmental-monitor` (--)

Purpose: To stop monitoring power supply status, board temperatures, and board hot plug while the screen displays the `ok` prompt.

`enable-environmental-monitor`

Usage: `enable-environmental-monitor` (--)

Purpose: To start monitoring power supply status, board temperatures and board hot plug while the screen displays the `ok` prompt.

Note – This is enabled by default.

Messages Indicating Environmental Conditions

```
PROM NOTICE: Overtemp detected on board <n>.
PROM NOTICE: System has cooled down.
PROM WARNING: Board <n> is too hot.
PROM NOTICE: Insufficient power detected.
```

```
PROM NOTICE: Power supply restored.
PROM NOTICE: Board insert detected.
PROM NOTICE: Reset Initiated...
```

If a board is too hot, then the PROM will initiate a reset resulting in POST disabling the faulty board.

If `Insufficient power detected` is not fixed in 30 seconds, then the OBP will also initiate a reset to allow POST to deconfigure the necessary boards.

If a board insert is detected, the OBP will turn the reset flag on. This will result in the `boot` command resetting the system and causing POST to attach the board to the system.

Externally Initiated Reset `XIR`

If a hard hang occurs on a system, an `XIR` should be used to reset and get information about the state at the time of the hard hang. An `XIR` can be initiated by either using the XIR button on the clock board or the remote console `XIR` sequence.

When an `XIR` occurs, memory is cleared but some CPU state is saved. To display this `XIR` information, enter the following command at the `ok` prompt immediately after the `XIR`:

```
.xir-state-all
```

This will display information similar to the following:

```
#1 ok .xir-state-all
CPU ID#1
TL=1 TT=3
TPC=e0028688 TnPC=e0028688 TSTATE=9900001e06

CPU ID#5
TL=1 TT=3
TPC=e002755c TnPC=e0027560 TSTATE=4477001e03
```

Note that an `XIR` does not override the NVRAM `auto-boot?` variable.

Flash PROM Management

`flash-update-system`

Usage: `flash-update-system` (--)

Purpose: To download the default flash images on all the boards in the system.

Note: The default device used is the one pointed to by ‘net’. The default image names are:

Board Type	Image File Name
cpu board PROMs:	`cpu.flash`
I/O board Type 1:	`io2sbus.flash`
I/O board Type 2:	`io1sbus.flash`

Note – This command does not update boards in low power mode.

`prom-copy`

Usage: `prom-copy` (src dst --)

Purpose: To copy a flash PROM from board 'src' to board 'dst'.

`update-proms`

Usage: `update-proms` (--)

Purpose: To sync up the latest copy of each type of PROM on all other boards of the same type.

This command copies the latest version of each type of PROM (CPU and I/O boards) to all other boards of the same type. This will result in all boards of the same type having the latest (same) PROM.

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POST Status Display

`show-post-results`

Usage: `show-post-results ( -- )`

Purpose: To display POST results at the `ok` prompt. Sample output looks like this:

```
ok show-post-results

Slot  0 - Status=Okay, Type: CPU/Memory

Cpu0=P          Cpu0-OK=P       FailCode=0      Cpu1=Not         x               x
AC=P            FHC=P           SRAM=P          PROM=P           LabCon=Not      Ovtemp=Not
Bank0=0         Bank1=0         DTag0=P         DTag1=P          JTAG=P          CntrPl=P
DC=ff


Slot  1 - Status=Okay, Type: IO board Type 1

Sysio0=P       Sysio1=P        FEPS=P        FEPSFC=0       SOC=P
Sbus0=P        Sbus1=P        Sbus2=P
AC=P            FHC=P         SRAM=***      PROM=P         LabCon=Not Ovtemp=Not
TODC=P         JTAG=P         CntrPl=P      DC=ff


Slot  3 - Status=Okay, Type: IO board Type 2

Sysio0=P       Sysio1=P       FEPS=P         FEPSFC=0       SOC=P          FFB=P
Sbus0=P                       Sbus2=P
AC=P           FHC=P          SRAM=***       PROM=P         LabCon=Not
                                                           Ovtemp=Not
TODC=P         JTAG=P         CntrPl=P       DC=ff


Slot  6 - Status=Low Power Mode, Type: IO board Type 1

Sysio0=P       Sysio1=P       FEPS=P         FEPSFC=0       SOC=P
Sbus0=P        Sbus1=P        Sbus2=P
AC=P           FHC=P          SRAM=***       PROM=P         LabCon=Not Ovtemp=Not
TODC=P         JTAG=P         CntrPl=P       DC=ff


Slot 16 - Status=Fail, Type: Clock
```

```
Clock=P       Serial=P      KbdMse=P      PPS-DC=P      DCReg0=P      DCReg1=P
AC=P          ACFan=P       KeyFan=P      PSFail=0      Ovtemp=Not    TODC=P        RKFan=P


P = Present or Passed
*** = Failed Component
Not = Not present
ok
```

Where:

Table 1-1 CPU/Memory Board

Cpu0/Cpu1	CPU modules on the board
CPU{0,1}-OK	CPU module status
FailCode	Failure code (valid only if CPU failed)
AC	Address Controller
FHC	Fire Hose Controller
SRAM	Static RAM
FPROM	Flash PROM
LabCon	Lab Console
Ovtemp	Overtemp
Bank0	Bank0 status (a bit indicates a missing or failed SIMM)
Bank1	Bank1 status (a bit indicates a missing or failed SIMM)
DTag0	DTags0 status
DTag1	DTags1 status
JTAG	Jtag status
CntrPl	Centerplane status
DC	Data Controllers (0 bit indicates a failed DC)

Table 1-2 I/O Board

Sysio0	SysIO 0 status
Sysio1	SysIO 1 status
FEPS	Onboard FEPS chip
FEPSFC	FEPS fail code (valid only if failed)
SOC	Onboard SOC status
FFB	FFB card status
Sbus0	SBus0 slot status
Sbus1	SBus1 slot status
Sbus2	SBus2 slot status
AC	Address Controller
FHC	Fire Hose Controller
SRAM	Static RAM
FPROM	Flash PROMs
LabCon	Lab Console
Ovtemp	Overtemp
TODC	Time of Day Clock
JTAG	JTAG status
CntrPl	Centerplane status
DC	Data Controllers (0 bit indicates a failed DC)

Table 1-3 Disk Board

Disk0	Disk0 ID (valid only if disk present)
Disk1	Disk1 ID (valid only if disk present)
Disk0P	Disk0 Present
Disk1P	Disk1 Present
VDDOK	SCSI VDD status
Fan	Fan Fail status
JTAG	JTAG status

Table 1-4 Clock Board

Clock	Clock running
Serial	Serial Port
KBytes	Keyboard Mouse status
PPS-DC	Peripheral PS ok (all DC levels OK)
AC	AC power status
ACFan	AC box fan status
KeyFan	KeySwitch fan status
PSFail	Power Supply fail status (bit position indicates which ps failure)
Ovtemp	Overtemp
TODC	Time of Day Clock
V5-P	Peripheral 5V
V12-P	Peripheral 12V
V5-Aux	Auxilary 5V
V5P-PC	Peripheral 5V Precharge
V12-PC	Peripheral 12V Precharge
V3-PC	System 3.3V Precharge
V5-PC	System 5.0V Precharge
RKFan	Rack Fan Status
3.3V	Clock board 3.3 V
5.0V	Clock board 5.0 V

TODC Management

TODC is the acronym for Time Of Day Clock (this includes the NVRAM).

`copy-clock-tod-to-io-boards`

Usage: `copy-clock-tod-to-io-boards`

Purpose: To copy the contents of the clock board NVRAM and the contents of the TOD clock to all good I/O boards in the system.

Note: This is automatic if all the conditions below are true:

1. There is a functioning clock board in the system.

2. Its contents match that of at least one I/O board in the system.

`copy-io-board-tod-to-clock-tod`

Usage: `copy-io-board-tod-to-clock-tod` (src --)

Purpose: To update the contents of a clock board (probably new) with the contents from one of the backup I/O board copies.

Note – This may have to be done if the clock board was replaced and the user wants to restore its original NVRAM.

Ultra Enterprise 3000-, 4000-, 5000-, 6000-Specific NVRAM Variables

`configuration-policy`

Variable Name	Value	Default Value
`configuration-policy`	component	component

This variable determines the configuration policy. When a faulty component is detected, the value options are:

component (default)	Disable only what failed
system	Stop the system in POST if any component failed tests.
board	Disable the entire board that contains the failed component.

`disabled-board-list`

Note – The master board (CPU board in the lowest slot) will not be disabled if it is put in the disabled-board-list. The OS will print a warning as follows:
`WARNING: Disabled board 0 was really active`

Variable Name	Value	Default Value
`disabled-board-list`		

A list of boards which are not to be used by the system. These boards are put in low power mode on the next reset and remain there until they are removed from this list on the following reset.

`disabled-memory-list`

A list of boards with memories to be unused.

Variable Name	Value	Default Value
`disabled-memory-list`		

For both of the above variables, the list is a sequence of any number of boards 0 thru 9 and a thru f.

A valid example would be:

```
setenv disabled-board-list 45      (disable boards in slot 4 and 5)
setenv disabled-board-list 7af     (disable boards in slot 7, 10
                                    and 15)
```

To reset a list to null, enter the following at the ok prompt:

```
ok set-default disabled-board-list
ok set-default disabled-memory-list
```

These variables take effect on the next reset or power-on.

memory-interleave

Variable Name	Value	Default Value
memory-interleave	max	max

This variable determines how the memory on various boards is to be interleaved. The default value is maximum interleaving. When set to "min", no interleaving is required. This takes effect on the next reset or power-on.

sbus-probe-default

Variable Name	Value
sbus-probe-default	d3120

This variable defines the SBus device probe order on an I/O board per SBus, where:

d = On-board SOC

3 = On-board FEPS

0-2 = SBus slots 0, 1, and 2

The 'device' probe order on a Type 1 I/O board will appear as follows, since the five SBus devices are divided between two SBuses:

lo sbus	d, 1, 2
hi sbus	3,0

However, on a Type 2 I/O board, since there is only 1 SBus, the probe order will be:

lo sbus	absent	(UPA/FFB Port in its place)
hi sbus	d, 3, 2, 0	(no slot 1)

To change the default probe order to ‘123d0’, enter the following at the ok prompt:

```
> setenv sbus-probe-default 123d0
```

Remember that this changes the default probe order for all boards in the system. You can also use this to skip over an SBus slot, but don’t include it in the list of devices to probe. To change the probe order for a specific board, use the sbus-specific-probe variable.

sbus-specific-probe

Variable Name	Value	Default Value
sbus-specific-probe	1:d120	

This variable controls the SBus probe order on a given list of boards. To set the probe order as 320 on I/O board 4, enter the following at the ok prompt:

```
> setenv sbus-specific-probe 4:320
```

The number preceding the ‘:’ is the slot number; the numbers following it are the SBus device numbers in the desired probe order. All unlisted I/O boards in the system will use the default probe order as defined by the sbus-default-probe NVRAM variable.

Multiple boards can be defined by this variable as follows:

```
> setenv sbus-specific-probe 4:320 6:d3210 7:0123d
```

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Board Hot Plug Software Procedures 2

This chapter covers procedures to follow when exercising the board hot plug capability. Refer to Chapter 1, “OpenBoot™ 3.x Commands”, for command information and examples.

Disabled System Board

There are three reasons for a system board to be disabled (not used by the operating system):

1. A self-test detected a failure and disabled the board.
2. The board was disabled using `disabled-board-list`. In this case, the operator is telling the system not to use the board. Here is an example of the command usage:

   `setenv disabled-board-list 72` Disable boards in slots seven and two.

   Refer to “disabled-board-list” on page 9 for more information.
3. The board was inserted while the system was running Solaris 2.5.1.

Activated System Board

There are three reasons for the system board to be activated; all three conditions must be met to necessitate activation.

1. During startup, the board exists.

2. The slot has not been disabled by `disabled-board-list`.
3. The board has to pass self-test.

Swapping A Disabled Board

If a board is not used by the system and you want to swap it out:

1. **The board is disabled (not in use by the OS, power light off).**
2. **Remove the disabled board.**
3. **Install a new board**:

Caution – If the yellow light is on, use `prtdiag` to determine the cause before installing a new board .

---

   a. **Verify that system precharge is OK.**
   b. **Verify that hot plug is available**

4. **Reboot the system.**

Swapping An Activated Board

If a board is being used by the system and you want to swap it out:

1. **Halt the system.**
2. **Power the system off.**
3. **Remove and replace the board.**
4. **Reboot the system.**

Disabling Hardware

Disabling Component, Board, System

By using the `configuration-policy` command, you can disable

1. component - disables only the failing component.

2. board - disables the board if any component on it fails.
3. system - stops the system at the POST menu if there is a failure.

   Usage examples:

   ```
   ok setenv configuration-policy board
   # eeprom "configuration-policy board"
   ```

Requesting Board Disable

If you suspect a board is defective and want to request that the system disable the board:

1. **Use the `setenv` command at the `ok` prompt or the `eeprom` command at the # prompt to prohibit the system from using the board. Here are some examples:**

   ```
   ok setenv disable-board-list 3
   ```

   or

   ```
   # eeprom "disable-board-list"=3
   ```

   where 3 = slot 3.

2. **Reboot the system to effect this change.**
3. **Remove the unused board and insert a new board.**
4. **Clear the `disabled-board-list`. Refer to “disabled-board-list” on page 9 for more information.**
5. **Reboot the system.**

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Brief Miscellaneous Notes 3

Hardware Watchdog

The Ultra-Enterprise provides the ability to enable a hardware timer which will hard-reset the system if it times out. To enable the use of this feature, `watchdog_enable` must be set to ‘1’ via `/etc/system`.

History Log Option of `prtdiag` *(1M)*

The `prtdiag`(1M) command is used to display system configuration and diagnostic information. The `-l` option of `prtdiag`(1M) logs its output to `syslogd`(1M) only if failures or errors exist in the system.

Resetting and Power- Cycling the System from a Remote Console

You can reset the system or cycle power from the remote console under these conditions:

- The console must be connected to port A on the clock board.
- The key switch must be in either the On or Diagnostic setting. If it is in the Secure or Off position, the remote key sequences and button resets are ignored.
- Security features (such as OpenBoot `security-mode`) are disabled.

- Type slowly, no slower than 0.5 seconds and no faster than 5 seconds between characters.

Table 3-1 Remote Console Commands

Command	Enter this sequence
Remote power off/on	<CR> <CR> <~> <Control-Shift-p>
Remote system reset	<CR> <CR> <~> <Control-Shift-r>
Remote XIR (CPU) reset	<CR> <CR> <~> <Control-Shift-x>

Key:
<CR> = ASCII 0d hexadecimal,
<~> = ASCII 7e hexadecimal,
<Control-Shift-p> = 10 hexadecimal,
<Control-Shift-r> = 12 hexadecimal,
<Control-Shift-x> = 18 hexadecimal.

Note – The remote console logic circuit continues to receive power, even if you have commanded system power off.

The remote system reset command is useful for resetting the system under general conditions. The remote `XIR` reset command is used for software development and debugging. For a discussion of this command, refer to “Externally Initiated Reset XIR” on page 2.

Note – Since the remote console logic looks for certain patterns on the `ttya` line in the hardware that can be used to reset the machine, it is important that only authorized personnel have access to the `ttya` serial port.