Sun Fire™ 15K/12K Systems System Controller CPU Board Upgrade

Sun Microsystems, Inc.
www.sun.com

Part No. 819-4954-10
February 2005, Revision A

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Upgrading the SC CPU Board

This document contains procedures for upgrading Netra CP1500 System Controller (SC) CPU boards with CP2140 SC CPU boards. This document is divided into the following sections:

- "Safety Precautions"
- "Verifying that the SC CPU Board Should be Upgraded"
- "Removing and Replacing the Spare SC Board"
- "Updating the Software on the New SC CPU Board"
- "Removing and Replacing the Remaining SC Board"

Note – The designation of the main and spare (inactive) SCs changes throughout these procedures. For clarity, the procedures apply to the current status of the SCs at the time that the step is given, and not to the original status of the SCs.

Safety Precautions

For your protection, observe the following safety precautions:

- Follow all cautions and instructions marked on the equipment.
- Always use proper ESD equipment and procedures when handling boards and components.
- Never push objects of any kind through openings in the equipment as they might touch dangerous voltage points or short out components that can result in fire or electric shock.
- Refer servicing of equipment to qualified personnel.

Verifying that the SC CPU Board Should be Upgraded

- **As superuser, at the Solaris OS prompt, type:**

```
# prtdiag | head -1
```

The following output indicates the SCs must be upgraded.

```
System Configuration:  Sun Microsystems  sun4u
SPARCengine(tm)Ultra CP 1500 (UltraSPARC-IIi 440MHz)
```

The following output indicates the SC has already been upgraded.

```
System Configuration:  Sun Microsystems  sun4u
SPARCengine CP2000 model 140 (UltraSPARC-IIi 648MHz)
```

Removing and Replacing the Spare SC Board

This section is divided into the following subsections:

- "Powering Off the Spare SC Board"
- "Removing the Spare SC Board"
- "Removing and Installing the SC CPU Board"
- "Installing the Spare SC Board"
- "Updating the Software on the New SC CPU Board"

Powering Off the Spare SC Board

1. **Synchronize the main SC to the spare SC by typing:**

```
sc% setdatasync backup
```

   If no messages are reported in `/var/opt/SUNWSMS/adm/platform/messages` and the command completes, the `setdatasync` backup was successful.

2. **As `superuser` on the main SC, make a backup copy of the SMS configuration:**

```
sc% smsbackup directory
```

   This `smsbackup` file can be used to recover the SMS configuration in the event of a failure during the upgrade.

3. **On the main SC, disable the failover mechanism:**

```
sc% setfailover off
```

4. **Verify the failover is disabled:**

```
sc% showfailover
SC Failover Status:   DISABLED
```

5. **If the spare SC is running Solaris software, as `superuser`, shut down the spare (inactive) SC:**

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

   where *seconds* is the amount of time before shutdown.

6. **Power off the spare SC by using the Sun™ Management Center software or from the main SC with the following SMS command:**

```
sc% poweroff scx
```

   where `sc`*x* is the SC, either sc0 or sc1. Refer to `poweroff`(1M) for more information.

   The `poweroff` command will query the user to continue.

Note – The `poweroff` command only supports `poweroff` of the other SC (`poweroff` sc0 at sc1 or sc1 at sc0). If the user executes `poweroff` of sc0 from sc0, the command will fail.

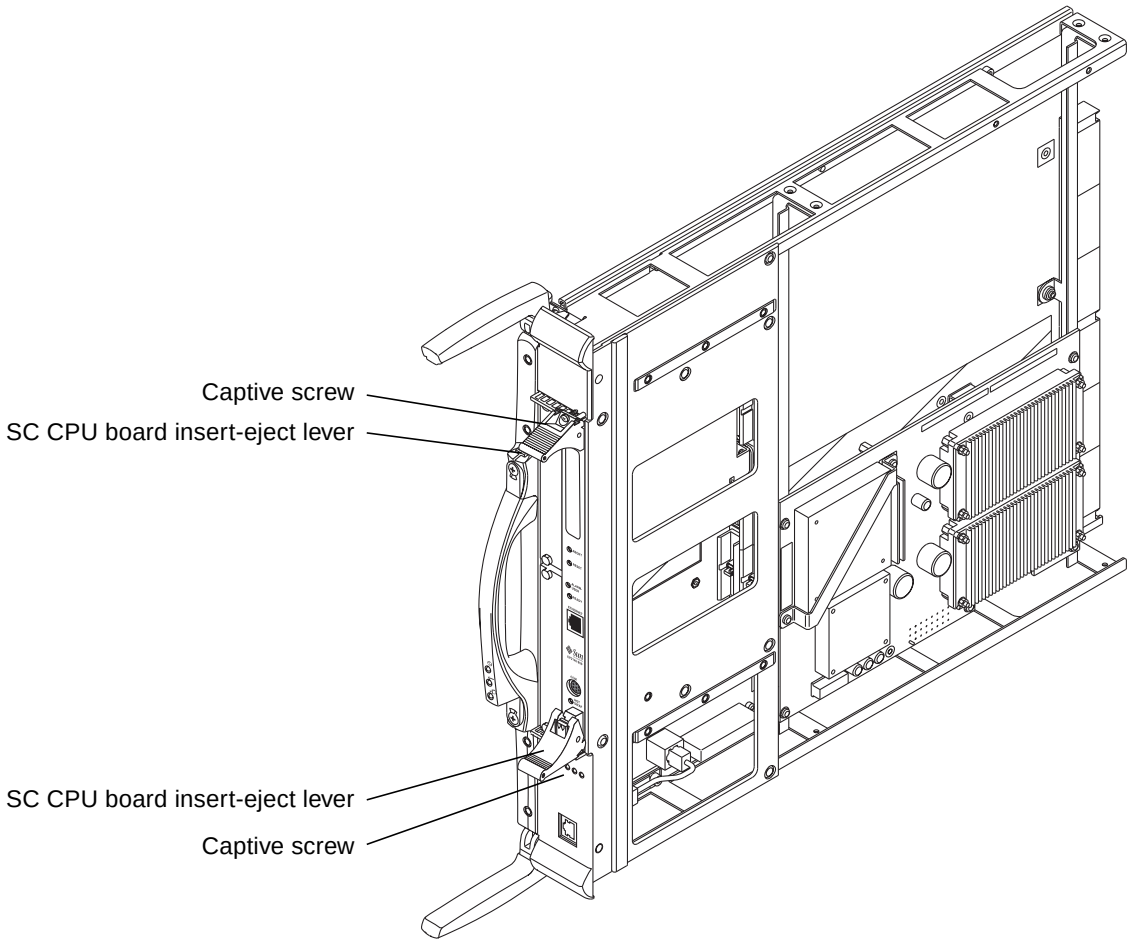
Removing the Spare SC Board

Caution – Before you begin this procedure be sure you are properly grounded. There are ground points at the top left and top right of the cabinet in both front and rear.

1. **Open the cabinet door.**

Caution – Before removing a board from the system, the green activation LED must be off and the amber or blue removal OK LED must be on. If the LEDs are not off repeat the steps in section “Powering Off the Spare SC Board”.

2. **Label and remove the I/O cables from the SC board.**
3. **Insert a Phillips No. 1 screwdriver into the pawl latches and turn counterclockwise to release the insert-eject levers on the SC board.**
4. **Pull the insert-eject levers simultaneously until they stick out horizontal to unseat the SC board.**
5. **Use the handle to extract the SC board, supporting the bottom with the other hand, and place it on a flat, sturdy, ESD-protected surface with the component side up.**



Removing and Installing the SC CPU Board

Caution – Before you begin this procedure be sure you are properly grounded. There are ground points at the top left and top right of the cabinet in both front and rear.

1. **Release the two (2) captive screws holding the SC CPU board Insert-Eject levers in place.**
2. **Push the SC CPU board insert-eject levers outwards to unseat the SC CPU board.**

3. **Pull the SC CPU board from the SC board and place it on a flat, sturdy, ESD-protected surface.**
4. **Remove the connector protective cover from the new SC CPU board.**
5. **Inspect the SC CPU board before installing.**

   Inspect the connector for any damaged or gaps between the pins. Ensure none of the board alignment tabs are bent. Inspect the mating connector before inserting the new board.
6. **Insert the new SC CPU board and lock the insert-eject levers into position.**
7. **Secure the SC CPU to the SC board with the two (2) captive screws.**

Installing the Spare SC Board

1. **Inspect the SC board before inserting it into the Sun Fire 15K/12K systems.**

   Inspect the connector for any damage. Ensure none of the board alignment tabs are bent. Inspect the mating connector before inserting the board.

Caution – Do not force any board into a slot; it can cause damage to the board and the system. The board should insert and seat smoothly. If it binds, remove the board and inspect the card cage slot for any obvious obstructions.

2. **Firmly grasp the SC board by the front handle, supporting the bottom with the other hand, and position it onto the carrier rail.**
3. **Align the guide rails on the SC board with the guide rails on the SC board carrier plate.**
4. **Apply firm pressure on the front panel of the SC board to connect with the connector on the centerplane support board.**
5. **Apply pressure to the top and bottom insert-eject levers simultaneously to ensure the board is properly seated.**

   When the board is fully seated, both insert-eject levers will lock into place automatically.

Note – Failure of the service LED to transition from on to off within 60 seconds after insertion indicates a power-status control fault.

   The SC board is powered on upon insertion; power-on commands are not required.
6. **Close the cabinet door.**

Updating the Software on the New SC CPU Board

This section is divided into the following subsections:

- "Initial Software and Patches Installation"
- "Installing Additional Software and Patches"

Initial Software and Patches Installation

1. **Review the platform message log to verify SMS has received the message that the component has been inserted:**

```
sc% showlogs -F
```

Review the board insertion message. You will see a message similar to the following:

```
Jun 16 14:30:05 2003 sun15-sc0: esmd[7167]: [0 4824421445907014
NOTICE Boards.cc 1646] SC at IOx inserted
```

2. **Log in to the MAIN SC and poweron the SC being replaced:**

```
sc% /opt/SUNWSMS/bin/poweron scx
```

Where `sc`*x* is the SC, either sc0 or sc1. depending upon which board is being updated.

3. **At the OpenBoot™ PROM `ok` prompt, configure the new SC CPU board, type:**

```
ok setsmcenv chassis-type aa
ok setenv probe-delay 0
ok setenv auto-boot? false
```

4. **You can verify the value of chassis-type with the `printsmcenv` command.**

5. **Reset the board, type:**

```
ok dev hsc
ok 80 80 2 70 execute-smc-cmd
```

Note – The **OpenBoot PROM** `reset-all` command will **not** enable this setting.

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6. **Install the Solaris™ 8 Operating System (Solaris OS) or the Solaris 9 Operating System. The Solaris 9 OS is recommended.**

   Refer to the following:

   - Solaris 8 — "*Solaris Advanced Installation Guide*"
   - Solaris 9 — "*Solaris Installation Guide – Basic Installations*"

7. **Check to see that the boot-device is set to the correct device.**

   The two disks in the System Controller Peripheral (SCPER) board have the following paths:

```
disk2   /pci@1f,0/pci@1,1/scsi@2/disk@2,0
disk3   /pci@1f,0/pci@1,1/scsi@2/disk@3,0
```

   By default, the SC CPU board's boot-device is set to `disk net,` which will result in a boot failure. If this is the case, set the boot-device to the proper alias from the `ok` prompt, type:

```
ok setenv boot-device disk2
ok reset-all
```

8. **Upgrade the System Management Controller (SMC) firmware on the SC CPU board.**

Note – The firmware version must be 1.1.8 or higher. Check this at the `ok` prompt:

```
ok version

Firmware version 1.1.8
Firmware CORE Release 1.0.16 created 2004/6/16 16:8
Release 4.0 Version 21 created 2004/05/24 21:32
cPOST version 1.0.4 created 2003/7/21
SMCFW FLASH Code Version 3.5.15 Spec Version 2.5.2, Platform ID 10
SMCFW BOOT  Code Version 3.15.9
FPGA Version 1.2
PLD Version 1.3
```

Note – This firmware is specific to the new board and is different from the power on self-test (POST) and **OpenBoot PROM** firmware.

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9. **If the firmware version is lower than 1.1.8, download patch `116345-07` or higher and follow the README instructions to install it.**

   This patch is NOT OS specific. It is the same for the Solaris 8 OS and the Solaris 9 OS.

Note – Example 2 in the patch README is likely the one you will be using. In the reference made to the `-d disk` option, disk refers to the **OpenBoot PROM** alias for the boot disk. You can obtain this information by running `eeprom | grep boot-device`.

   Refer to the *Sun Management Services (SMS) 1.5 Installation Guide* for instructions. Recommended PTS SC OS patches are at:

   `http://`
   `pts-platform/twiki/bin/view/Products/ProdPatchesFirmwareStarcat`

10. **Install SMS 1.5, and all of the recommended patches.**

    Refer to the *Sun Management Services (SMS) 1.5 Installation Guide* for instructions. Recommended SMS patches are at:

    `http://`
    `pts-platform/twiki/bin/view/Products/ProdPatchesFirmwareStarcat`

Installing Additional Software and Patches

1. **Boot the Solaris OS in single-user mode.**

```
ok boot -s
```

2. **Become superuser and move the Ethernet devices to their new names:**

```
# uname -i
SUNW, UltraSPARCengine_CP-40
```

The output must be `SUNW, UltraSPARCengine_CP-40`.

```
# umask 0
# mv /etc/hostname.hme0 /etc/hostname.eri0
# mv /etc/hostname6.hme0 /etc/hostname6.eri0
# echo "#path_to_inst_bootstrap_1" > /etc/path_to_inst
# touch /reconfigure
```

If the `/etc/hostname.eri1` or `/etc/hostname6.eri1` files exist rename the files:

```
# mv /etc/hostname.eri1 /etc/hostname.eri3
# mv /etc/hostname6.eri1 /etc/hostname6.eri3
```

Check `/etc/system` and `/etc/rc2.d` to make sure that nothing was done to force the speed, or change the type of any of the interfaces. If there are entries or scripts, remove them before rebooting. All interfaces should be left to auto-negotiate.

3. **Compare the date of the new SC CPU board with the date command:**

```
# date
Mon Feb 20 10:12:51 PST 2006
```

- If the date is wrong, correct it with the SMS `/opt/SUNWSMS/bin/setdate` command.
- If SMS is not installed, use the Solaris OS `date` command.

The system network services might not start properly if the date is incorrect.

4. **Install CP2140 specific packages/patches for the Solaris 8 OS or Solaris 9 OS.**

   - For the Solaris 8 7/01 OS

   a. Download the `S8U7_CP2000_4.0` Install Cluster from:

   `http://pts-platform/twiki/bin/view/Products/StarcatCP2140`

   b. Unzip the file:

   ```
   # unzip 8u7_CP2000_4.0.zip
   ```

   c. Run the `install_cluster` script with the `-q` option as superuser from the unzipped directory:

   ```
   # cd 8u7_CP2000_4.0
   # ./install_cluster -q
   ```

   The script takes about 25 minutes to install, depending on your patch level.

   d. Install patches `113263-05` and `116087-05`:

   ```
   # patchrm 113263-05
   # patchadd 116087-05
   ```

   Both patches are now unzipped along with the `8u7_CP2000_4.0.zip` bundle.

   - For the Solaris 9 OS

   a. Download the `S9 CP2000 CD 4.0` Install Cluster from:

   `http://pts-platform/twiki/bin/view/Products/StarcatCP2140`

   b. Unzip the file:

   ```
   # unzip s9_CP2140_4.0.zip
   ```

   c. Run the `install_cluster` script with the `-q` option from the unzipped directory:

   ```
   # cd s9_CP2140_4.0
   # /install_cluster -q
   ```

   This installs packages SUNWcphu, SUNWcph.u, and SUNWcphx.u (in that order), and only takes a minute or two to install.

5. **Ensure that all CP2140 specific SMS patches are installed.**

Note – Check for **CP2140** specific Sun Alerts or FINs that may require patches.

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6. **Update the first CP2140 user PROM with OpenBoot PROM firmware.**

   At the OpenBoot PROM `ok` prompt, using:
   `/net/tftpserver.domain/export/install/tftpboot/othello/SCOBPimg.di`

   type:

```
ok setenv auto-boot? false
ok reset-all
ok add-dropin net:,/othello/SCOBPimg.di userprom1
ok reset-all
ok setenv auto-boot? true
ok setenv local-mac-address? true
```

   Or, at the Solaris OS superuser prompt use the `flashupdate` command:

```
# /opt/SUNWSMS/bin/flashupdate-f/opt/SUNWSMS/firmware/SCOBPimg.di
scx/FP0
```

   where `sc`*x* is the SC, either sc0 or sc1, depending upon which board is being updated.

7. **Update the second CP2140 user PROM with CP2140 POST firmware.**

   At the OpenBoot PROM prompt, using

   `/net/tftpserver.domain/export/install/tftpboot/othello/oSCCPOST.di`

   type:

```
ok setenv auto-boot? false
ok reset-all
ok add-dropin net:,/othello/oSSCPOST.di userprom2
ok reset-all
ok setenv auto-boot? true
ok setenv local-mac-address? true
```

   Or, at the Solaris OS superuser prompt, type:

```
# /opt/SUNWSMS/bin/flashupdate-f/opt/SUNWSMS/firmware/oSSCPOST.di
scx/FP1
```

where `sc`*x* is the SC, either sc0 or sc1, depending upon which board is being updated.

8. **Set the final OpenBoot PROM configuration at the `ok` prompt:**

```
# /sbin/init 0
ok setenv post-on-sir? true
ok setenv diag-switch? true
ok setenv auto-boot? true
ok setenv boot-device selected boot device
ok setenv diag-device selected diag device
ok setenv local-mac-address? true
```

   The value for diag-level should be set to `diag-level pmax-epmax` on sc0 and `diag-level pmax-epvmax` on sc1.

   Refer to SunSolve `InfoDoc 53501` for an explanation of these settings.

9. **Check the OpenBoot PROM aliases:**

```
ok devalias
```

10. **Reset and boot the SC:**

```
ok reset-all
```

Removing and Replacing the Remaining SC Board

Now that the first (spare) SC has been replaced it must be made the main SC so that the remaining SC can be updated as well.

1. **From the main SC, failover (switch over) to the spare SC by typing:**

```
sc% setfailover force
```

2. **Monitor the SMS log at `/var/opt/SUNWSMS/adm/platform/messages` on the spare SC for messages similar to the following:**

```
Jul 25 11:14:30 2001 xc12-sc1 fomd[378]: [8576 361695126570 NOTICE
FailoverMgr.cc 1963] SC configured as Main
```

   This indicates that the failover operation has completed successfully. The spare SC is now the main SC.

3. **Verify that the spare SC has assumed the role of main SC, type:**

```
sc% showfailover -r
MAIN
```

4. **Verify that failover is disabled:**

```
sc% showfailover
SC Failover Status:    DISABLED
```

5. **Remove and replace the board using the instructions in the "Removing and Replacing the Spare SC Board" instructions.**

6. **Update the software using the instructions in the "Updating the Software on the New SC CPU Board" instructions.**

7. **Repeat Step 1 through Step 3 to restore the main/spare SC to the original orientation.**