# Replacing Sun Fire™ V20z or Sun Fire V40z CPUs

This document contains:

- A warning not to mix CPUs of different stepping versions (Sun Fire™ V20z server only).
- "BIOS And Firmware Requirements For CPUs at Stepping Version "CG"" on page 4
- "Replacing a CPU in a Sun Fire V20z Server" on page 5
- "Replacing a CPU in a Sun Fire V40z Server" on page 8

Refer to the Service Label, on the inside of the chassis cover, for the location of the component.

## *Sun Fire V20z Server Only:* No Mixing of CPU Stepping Versions

When the Sun Fire V20z server first shipped, the CPUs were at stepping version "C0". Since then, the CPUs have been stepped up to version "CG".

If you order an CPU X-option to add or replace a CPU in your server, do not mix CPUs of different stepping versions.

Before ordering a new or replacement CPU, verify the stepping version of your CPU(s) and then order the same stepping version.

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**Note –** The CPUs at stepping version "CG" require Sun™ BIOS version 1.27.9 or later and other updated firmware components to be installed on the server. See "Downloading Updated Sun BIOS and Firmware" on page 5.

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## Verifying the Stepping Version In a Local Server

To verify the stepping version of your CPU(s) in a local server (with KVM attached):

1. **Power on or reboot your server.**

   A message similar to the following example appears on the screen, and the memory test begins.

```
-----------------
PhoenixBIOS 4.0 Release 6.0

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Production RELEASE: System BIOS Revision = V1.30.5

SP Interface (PRS) Revision = 92

SP - BIOS Interface Active


xxxxxxxxxxxxxxxxxxxxxxxxxxx
xx    Sun Microsystems    xx

xx      Sun Fire V20z     xx
xxxxxxxxxxxxxxxxxxxxxxxxxxx


CPU = AMD Opteron(tm) Processor 250

2 Processors Detected, CG - CG

PCIX - Slot1: PCIX-66      Slot2: PCIX-133

4031M System RAM Passed

1024K Cache SRAM Passed

ATAPI CD-ROM: CD-224E

Mouse initialized
------------------------
```

2. **During the memory test, hit the Pause key.**

3. **Verify the stepping version of the CPUs in the line similar to the following:**

```
2 Processors Detected, CG - CG
```

4. **To continue with the reboot, hit any key.**

## Verifying the Stepping Version In a Remote Server

To verify the stepping version of your CPU(s) in a remote server:

1. **Log in to the Service Processor (SP).**

2. **Verify that the baud rates for both the BIOS and for the SP are synchronized.**

3. **Run one of the following commands.**

   a. **Assuming that you have not changed the default baud rate in the BIOS settings (9600 baud):**

   ```
   platform get console
   ```

   This command returns the baud rate for the SP.

   b. **If you have changed the default baud rate in the BIOS settings:**

   ```
   platform get console -s sp -e -S baud rate
   ```

   where *baud rate* is the value that you have set in the BIOS settings.

   This command allows you to change the baud rate for the SP so that it matches the baud rate in the BIOS settings.

   ---

   **Note –** This command changes the baud-rate value for the SP. It does not change the baud rate in the BIOS settings.

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4. **If the server is powered off, skip to Step 5.**

   If the server is powered on, you must first power it off so that you can reboot it. Run the following command.

   ```
   platform set power state off -f -W
   ```

5. **Power on the server with the following command:**

   ```
   platform set power state on -f -W
   ```

6. **Run the following command.**

   ```
   platform console
   ```

   The same screen appears, as in Step 1 in the procedure above.

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   **Note –** If you do not see this bootup screen, the baud rates in the BIOS settings and in the SP are not synchronized.

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7. **During the memory test, terminate the remote session in order to pause the screen:**

   a. **Press Control-e.**

   b. **Press the 'c' key.**

   c. **Press the period key (.).**

8. **Verify the stepping version of the CPUs in the line similar to the following:**

   ```
   2 Processors Detected, CG - CG
   ```

# BIOS And Firmware Requirements For CPUs at Stepping Version "CG"

The following CPUs have been upgraded to stepping version "CG" and qualified for the Sun Fire™ V20z server:

- 1.8 GHz AMD CPU (Model #244)
- 2.2 GHz AMD CPU (Model #248)
- 2.4 GHz AMD CPU (Model #250)

These CPUs require Sun™ BIOS version 1.27.9 or later and other updated firmware components to be installed on the server.

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**Caution –** You must first update the BIOS and firmware on your Sun Fire V20z server before you install the new CPU.

If you install the new CPU before updating the BIOS and firmware, the BIOS/firmware will not recognize the new CPU and the server will hang.

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## Identifying your new CPU

The AMD CPU is shipped in a box that has the following AMD and Sun Microsystems part numbers printed on the side:

- **1.8 GHz**: AMD OSA244CEP5AU and Sun 370-6783-xx
- **2.2 GHz**: AMD OSA248CEP5AU and Sun 370-6785-xx
- **2.4 GHz**: AMD OSA250CEP5AU and Sun 370-6786-xx

If the CPU box has these part numbers, you must install the updated Sun BIOS and firmware on the server for the new CPU to function properly.

### Identifying the version of BIOS currently installed

Reboot your server. Once the server reboots, a text message appears; see the sample in Step 1 of the procedure "Verifying the Stepping Version In a Local Server" on page 2.

Ensure that, in the header of this text message, the System BIOS Revision indicates **V1.27.9** or higher. If the BIOS version is lower than v1.27.9, you need to update the BIOS and firmware.

### Downloading Updated Sun BIOS and Firmware

If necessary, you can download the updated Sun BIOS and firmware from the following site:

http://www.sun.com/servers/entry/v20z/downloads.html

To install BIOS and the other firmware components, follow the instructions in the ReadMe file that is found on the download page.

## Replacing a CPU in a Sun Fire V20z Server

### Removing a Sun Fire V20z Heatsink and CPU

1. **Turn off the system, including any attached peripherals.**

2. **While pressing the cover latch release button with your right thumb (A), slide the cover towards the rear of the chassis until it contacts the stop (B).**

3. **Lift the cover up and remove it.**
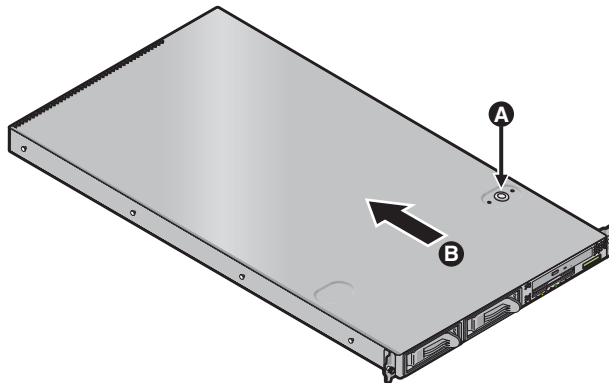


**FIGURE 1**     Removing the Cover

**4. Unfasten the single securing screw and remove the center air baffle.**



**FIGURE 2**    Removing the Center Air Baffle

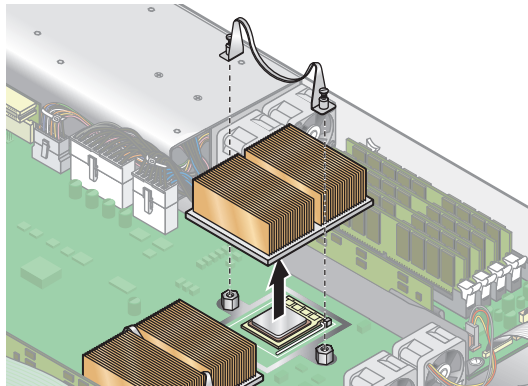**5. Unfasten the two securing screws and remove the heatsink securing clip.**



**FIGURE 3**    Removing the Securing Clip and Heatsink

**6. Twist the heatsink slightly to the right or left, in order to break the seal with the thermal grease.**

**7. Lift the heatsink away from the CPU.**

**Note –** The heatsink can become extremely hot. Be sure it has had sufficient time to cool before handling.

**8. Place the heatsink upside down on a flat surface to prevent the thermal grease from contaminating other components.**

**9. Pull the socket release lever up to the fully open, perpendicular position.**

Replacing Sun Fire V20z or Sun Fire V40z CPUs

10. **Lift the CPU out of the socket, leaving the release lever in the open position.**
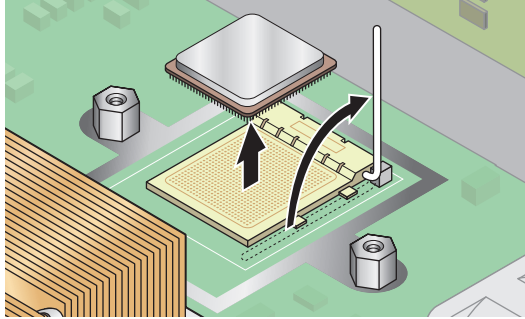


**FIGURE 4** Removing a CPU from its Socket

## Installing a Sun Fire V20z CPU and Heatsink

1. **Unpack the new CPU.**

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**Caution –** Observe the appropriate ESD precautions.

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2. **Ensure that the socket release lever is in the fully open, perpendicular position.**

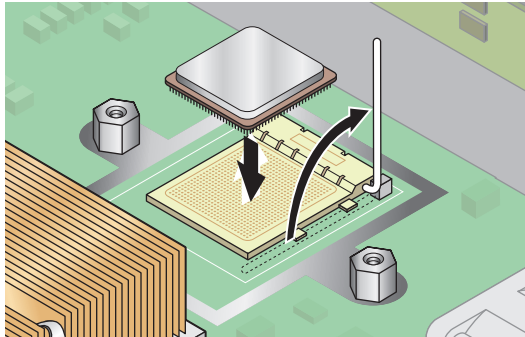3. **Align the small triangle, on the corner of the CPU, with the triangle on the corner of the socket.**



**FIGURE 5** Installing a CPU in its Socket

4. **Insert the CPU into the socket.**

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**Note –** If correctly aligned, the CPU should easily insert into the socket. If more than minimal resistance is felt, stop and recheck the alignment. Forcing a misaligned CPU into the socket will permanently damage the device.

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5. **When the CPU is fully seated in the socket, rotate the socket release lever until it snaps into place, securing the CPU in the socket.**

6. **Use the syringe to apply approximately 0.1 ML/CC of thermal grease in a circular pattern to the top of the CPU.**

7. **Gently distribute the thermal grease and remove any excess so that only an extremely thin, uniform layer remains. If any voids or crevices appear that could lead to air pockets, reapply the grease until you achieve a thin but compact consistency.**

8. **Use an alcohol pad to remove all thermal grease from the bottom of the heatsink.**

9. **Inspect the heatsink for dust and lint. Clean if necessary.**

10. **Ensure the foam strip under the heatsink area is intact and has not been removed, loosened, or damaged. This foam strip is critical to proper air flow.**

11. **Carefully position the heatsink on the CPU, aligning it with the mounting posts to reduce movement after it makes initial contact with the layer of thermal grease.**

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**Caution –** If the heatsink is moved too much during its installation, the layer of thermal grease may become uneven, leading to component damage.

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12. **After the heatsink is correctly aligned, reinstall the heatsink clips so that the longer tab points toward the fans.**

13. **Tighten the clip securing screws.**

14. **Replace the center air duct.**

15. **Check the routing of all cables for obstructions before reinstalling the cover.**

# Replacing a CPU in a Sun Fire V40z Server

The Sun Fire V40z server supports two- or four-CPU configurations. In a two-CPU configuration, you must use the two motherboard positions (CPU0 and CPU1). Four CPUs are supported with two on the motherboard and two on the optional CPU card (CPU2 and CPU3).

After you remove the cover, use the correct procedure in this section:

- "Replacing a CPU on the Sun Fire V40z Motherboard" on page 9
- "Replacing a CPU on the Optional Sun Fire V40z CPU Card" on page 13

1. **Turn off the system, including any attached peripherals.**

   Refer to the *Sun Fire V20z and Sun Fire V40z Servers User Guide* for full instructions on powering off the server.

2. **Loosen the captive screw on the cover latch, then rotate the latch toward the system rear to push back the cover.**
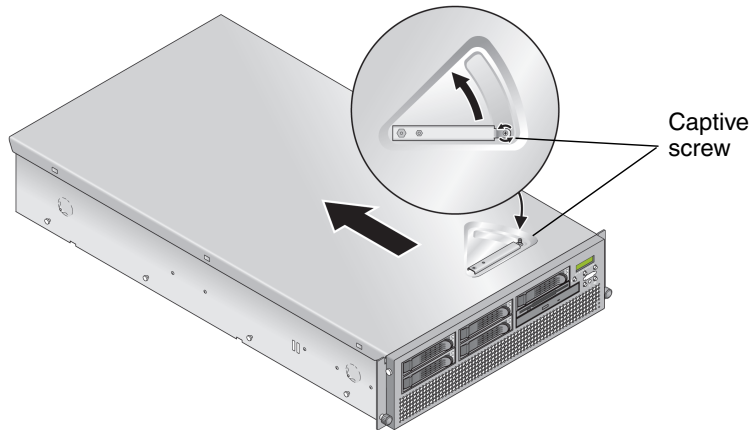
3. **Lift the cover up and remove it.**



Captive
screw

**FIGURE 6**    Removing the Sun Fire V40z Cover

## Replacing a CPU on the Sun Fire V40z Motherboard

*Removing the CPU and Heatsink*

1. **Remove the main air baffle (see** FIGURE 7**).**

   Lift the rear edge of the baffle, then move it toward the server rear to disengage the hooks on the front edge of the baffle.
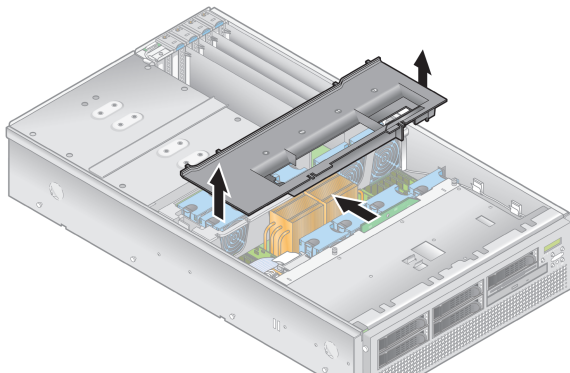


**FIGURE 7**    Removing the Main Air Baffle

2. **Remove fans 9 through 11 from the front fan cage assembly to provide clearance.**

   Squeeze the retainer clip on the edge of the fan, then pull the fan straight up to disengage its connector and remove it from its fan cage.

3. **Remove the rear fan cage assembly to provide clearance.**

   Squeeze the retainer clips on each end of the fan cage (see FIGURE 8), then pull straight up on the fan cage to disengage it from the motherboard connector.
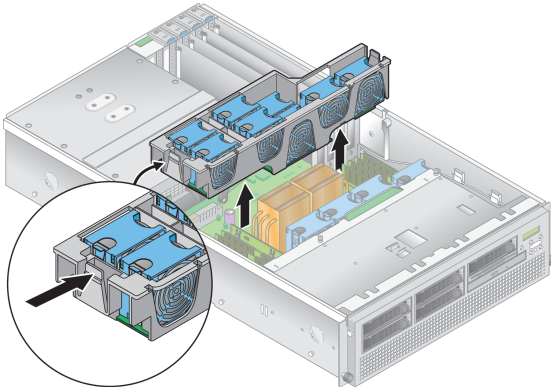


**FIGURE 8**    Removing the Rear Fan Cage Assembly

4. **Loosen the captive screw that secures the heatsink hold-down assembly crossbar, then remove the crossbar from within the heatsink fins (see FIGURE 9).**
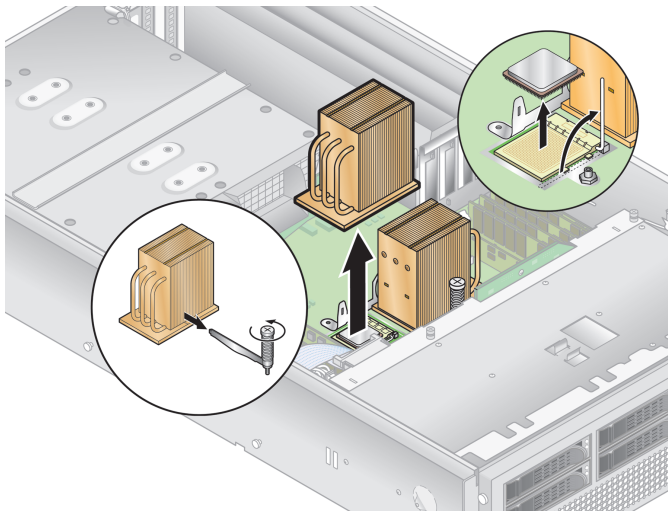


**FIGURE 9**    Removing the Heatsink and CPU

Replacing Sun Fire V20z or Sun Fire V40z CPUs

**Caution –** The heatsink can become extremely hot. Be sure it has had sufficient time to cool before handling.

5. **Twist the heatsink slightly to the right or left to break the seal with the thermal grease, then lift the heatsink away from the CPU.**

6. **Place the heatsink upside-down on a flat surface to prevent the thermal grease from contaminating other components.**

7. **Pull the socket release lever up to the fully open, perpendicular position (see** FIGURE 9**).**

8. **Lift the CPU out of the socket, leaving the release lever in the open position.**

**Note –** Ensure that any thermal grease that might remain from the heatsink does not come into contact with the CPU socket or pins.

*Installing a CPU and Heatsink*

1. **Unpack the new CPU.**

**Caution –** Observe the appropriate ESD precautions.

2. **Ensure that the socket release lever is in the fully open, perpendicular position (see** FIGURE 10**).**

3. **Align the small triangle, on the corner of the CPU, with the triangle on the corner of the socket.**
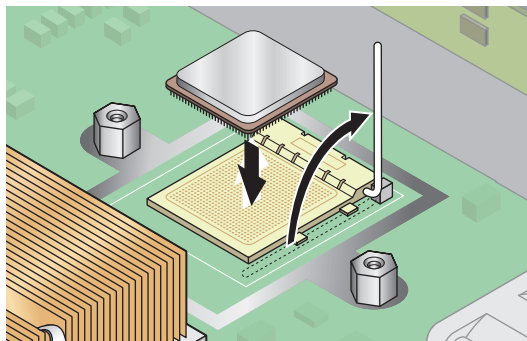


**FIGURE 10**    Installing a CPU in its Socket

4. **Insert the CPU into the socket.**

⚠️ **Caution –** If correctly aligned, the CPU should easily insert into the socket. If more than minimal resistance is felt, stop and recheck the alignment. Forcing a misaligned CPU into the socket will permanently damage the device.

5. **When the CPU is fully seated in the socket, rotate the socket release lever down until it snaps into place, securing the CPU in the socket (see** FIGURE 10**).**

6. **Use the syringe to apply approximately 0.1 ML/CC of thermal grease in a circular pattern to the top of the CPU.**

7. **Gently distribute the thermal grease and remove any excess so that only an extremely thin, uniform layer remains. If any voids or crevices appear that could lead to air pockets, reapply the grease until you achieve a thin but compact consistency.**

8. **Use an alcohol pad to remove all thermal grease from the bottom of the heatsink.**

9. **Inspect the heatsink for dust and lint. Clean if necessary.**

10. **Ensure the foam strip under the heatsink area is intact and has not been removed, loosened, or damaged. This foam strip is critical to proper air flow.**

11. **Carefully position the heatsink on the CPU, aligning it with the mounting posts to reduce movement after it makes initial contact with the layer of thermal grease.**

   The cooling pipes on the heatsink should be facing toward the outside of the machine.

⚠️ **Caution –** If the heatsink is moved too much during its installation, the layer of thermal grease may become uneven, leading to component damage.

12. **After the heatsink is correctly aligned, reinsert the hold-down assembly crossbar through the heatsink fins (see** FIGURE 11**):**

   a. **Insert the crossbar from the front side of the heatsink and align it with the alignment mark on the base of the heatsink.**

   b. **Push the crossbar through the heatsink fins and insert the crossbar end into the tab on the hold-down assembly.**

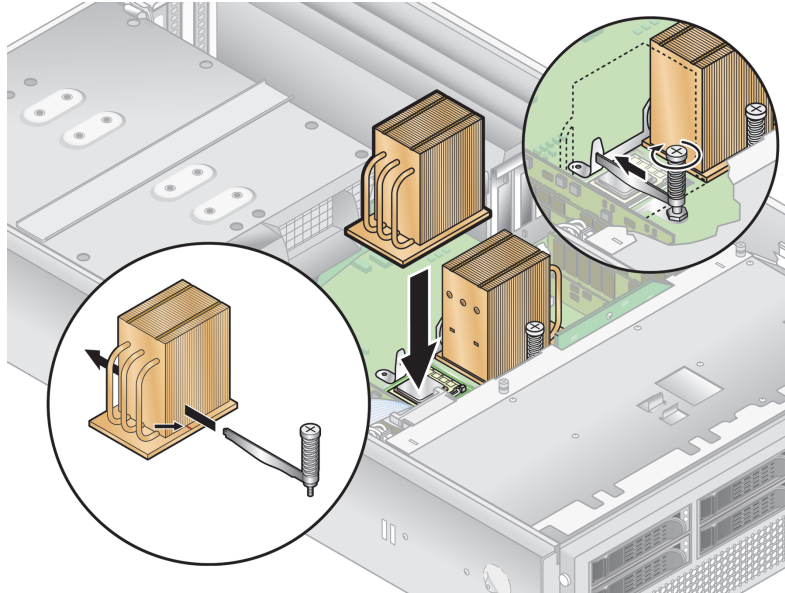   c. **Tighten the captive screw that secures the crossbar.**

**FIGURE 11**    Replacing the Heatsink Hold-Down Assembly Crossbar

13. **Replace the rear fan cage assembly.**

14. **Replace fans 9 through 11 to the front fan cage assembly.**

15. **Replace the main air baffle.**

16. **Check the routing of all cables for obstructions and then reinstall the cover.**

## Replacing a CPU on the Optional Sun Fire V40z CPU Card

*Removing a CPU and Heatsink From the CPU Card*

1. **Remove the front bezel from the server by pressing in on the rubberized buttons on each side of the bezel, then swinging the bezel top downward (see** **).**
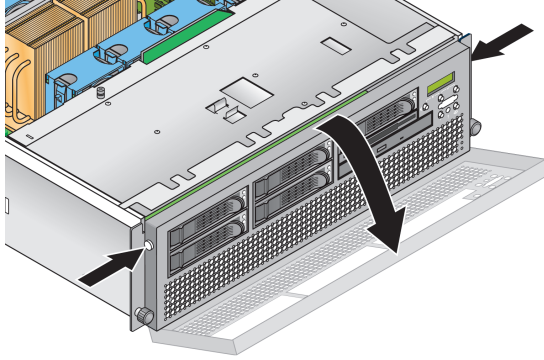
**FIGURE 12**   Removing the Front Bezel

**2. Open the CPU card door, which is located under the hard drive bays, to access the CPU card. Press in the two buttons on the door and swing it downward so that it is open 180-degrees from the closed position (see** FIGURE 13**).**
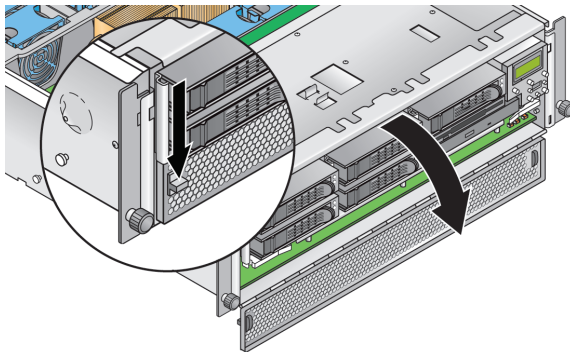


**FIGURE 13**   Opening the CPU Card Door

⚠ **Caution –** The electronic components and solder joints on the bottom of the CPU card are fragile. Use care to avoid scraping the bottom of the CPU card on the chassis or door when removing or installing it.

**3. Open the two plastic levers on the CPU card corners *simultaneously* to release it from its backplane, then carefully pull it out of the server (see** FIGURE 14**).**

Replacing Sun Fire V20z or Sun Fire V40z CPUs
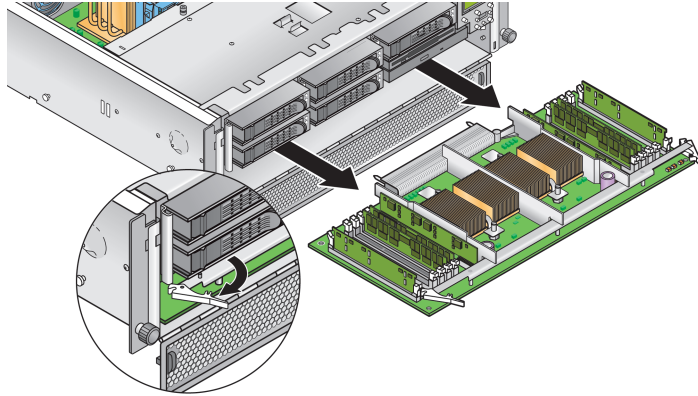
**FIGURE 14**    Removing the CPU Card From the Chassis

4. **Set the CPU card on an ESD-resistant surface.**

5. **Unfasten the two heatsink securing screws and remove the heatsink securing clip (see** FIGURE 15**).**
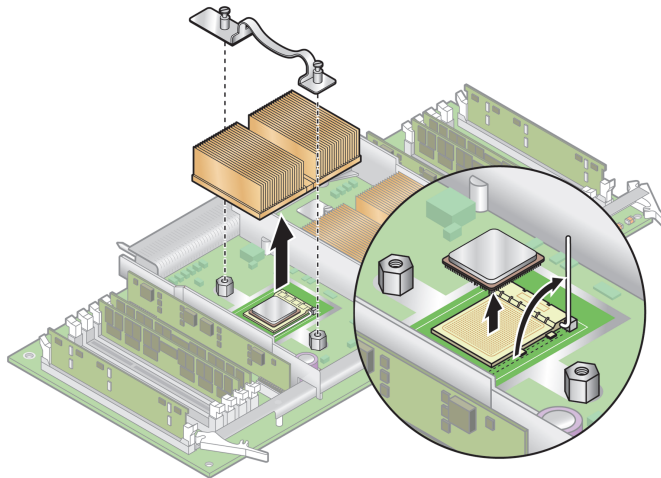


**FIGURE 15**    Removing the Securing Clip and Heatsink

**Caution –** The heatsink can become extremely hot. Be sure it has had sufficient time to cool before handling.

6. **Twist the heatsink slightly to the right or left to break the seal with the thermal grease.**

7. **Lift the heatsink away from the CPU.**

8. **Place the heatsink upside-down on a flat surface to prevent the thermal grease from contaminating other components.**

9. **Pull the socket release lever up to the fully open, perpendicular position (see** **).**

10. **Lift the CPU out of the socket, leaving the release lever in the open position.**

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**Note –** Ensure that any thermal grease that might remain from the heatsink does not come into contact with the CPU socket or pins.

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*Installing a CPU and Heatsink to the CPU Card*

1. **Unpack the new CPU.**

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⚠ **Caution –** Observe the appropriate ESD precautions.

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2. **Ensure that the socket release lever is in the fully open, perpendicular position (see** **).**

3. **Align the small triangle on the corner of the CPU with the triangle on the corner of the socket.**
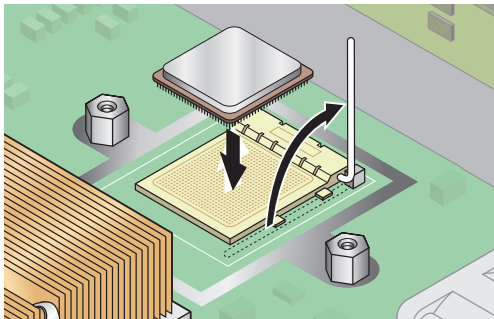


**FIGURE 16**    Installing a CPU in its Socket

4. **Insert the CPU into the socket.**

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⚠ **Caution –** If correctly aligned, the CPU should easily insert into the socket. If more than minimal resistance is felt, stop and recheck the alignment. Forcing a misaligned CPU into the socket will permanently damage the device.

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Replacing Sun Fire V20z or Sun Fire V40z CPUs

5. When the CPU is fully seated in the socket, rotate the socket release lever down until it snaps into place, securing the CPU in the socket.

6. Use the syringe to apply approximately 0.1 ML/CC of thermal grease in a circular pattern to the top of the CPU.

7. Gently distribute the thermal grease and remove any excess so that only an extremely thin, uniform layer remains. If any voids or crevices appear that could lead to air pockets, reapply the grease until you achieve a thin but compact consistency.

8. Use an alcohol pad to remove all thermal grease from the bottom of the heatsink.

9. Inspect the heatsink for dust and lint. Clean if necessary.

10. Ensure the foam strip under the heatsink area is intact and has not been removed, loosened, or damaged. This foam strip is critical to proper air flow.

11. Carefully position the heatsink on the CPU, aligning it with the mounting posts to reduce movement after it makes initial contact with the layer of thermal grease.

**Caution –** If the heatsink is moved too much during its installation, the layer of thermal grease may become uneven, leading to component damage.

12. After the heatsink is correctly aligned, reinstall the heatsink clips so that the longer tab points toward the fans.

13. Tighten the heatsink clip securing screws.

14. Replace the CPU card into the server (see FIGURE 17):

   a. Carefully align the rear corners of the CPU card with the plastic alignment tracks inside the server chassis, then slide the CPU card into the tracks.

   b. Press in firmly and evenly on both corners of the CPU card until it engages the backplane.

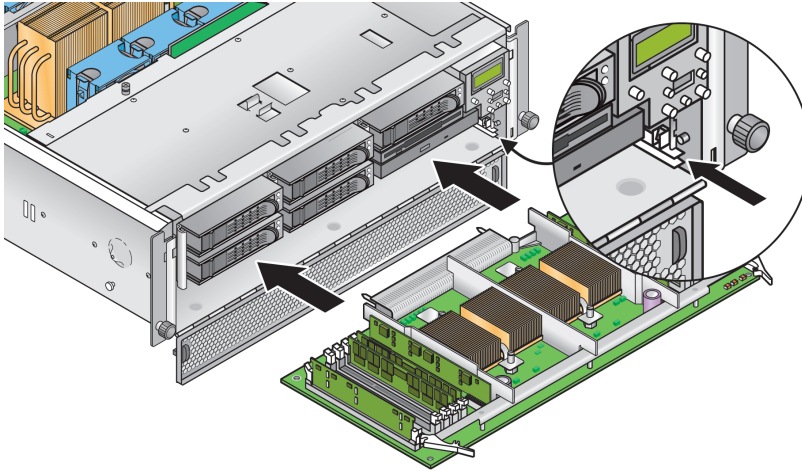   c. Lock down the two plastic latches on the corners of the CPU card to secure it in place.

**FIGURE 17**    Installing the CPU Card Into the Chassis

15. **Close the CPU door.**

16. **Replace the front bezel onto the server.**