Dell™ Systems

Microprocessor Upgrade Installation Guide

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

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CAUTION: Only trained service technicians are authorized to remove the system covers and access any of the components inside the system.

CAUTION: The *System Information* document provides important safety and regulatory information. Read and follow all safety instructions prior to setup, operation, and service of your system.

To take advantage of future options in speed and functionality, you can add additional microprocessors or replace installed microprocessors.

NOTICE: Before you add or replace a microprocessor, check the latest system BIOS information on the Dell Support website at support.dell.com, and upgrade the BIOS if necessary.

NOTICE: The additional microprocessors must be of the same type as the primary microprocessor. All microprocessors must also have the same L2 and L3 cache sizes.

Each microprocessor and its associated cache memory are contained in a PGA package that is installed in a ZIF socket on the microprocessor board.

In a single-microprocessor system, the microprocessor must be installed in the CPU1 socket.

NOTE: A microprocessor and VRM must be installed in the CPU1 and VRM1 sockets, respectively. To identify the CPU1 and VRM1 sockets, see Figure 1-1.

NOTICE: If a microprocessor socket does not have a microprocessor installed, a heat-sink blank must be installed for that socket.

The following items are included in the microprocessor upgrade kit:

- A microprocessor
- A heat sink
- A VRM, if you are adding additional microprocessors

Microprocessor and VRM Mixing

Your system does not support mixing processors or VRMs. If you mix processors or VRMs, the messages in Table 1-1 are displayed during POST.

Table 1-1. System Message

Message	Causes	Corrective Actions
Mismatch VRM*n*	Latest processor revision with out-of-date VRMs, or mixed versions of VRMs	Ensure that you have the correct version of VRMs installed for the processors in your system. Ensure that all VRMs are identical.
VID mismatch *n*	Mixed processors	Ensure that the processors are the same version.

Adding or Replacing a Microprocessor

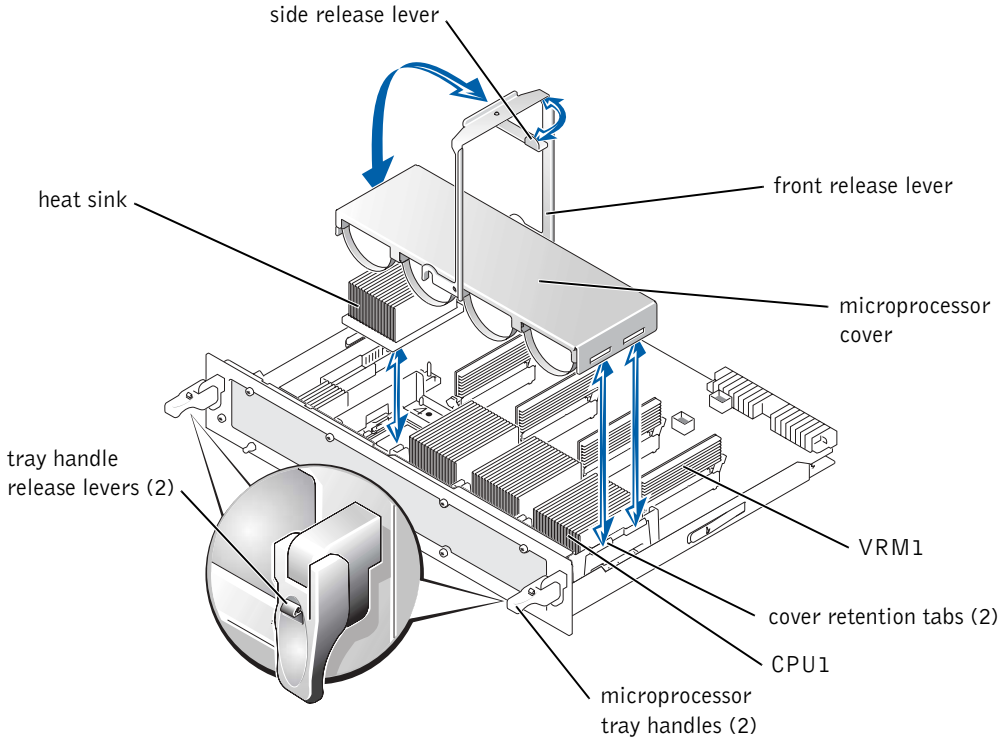
CAUTION: Before you perform this procedure, you must turn off the system and disconnect it from its power source.

NOTICE: See "Protecting Against Electrostatic Discharge" in the safety instructions in your *System Information* document.

NOTE: For steps 1 through 5, see your *Installation and Troubleshooting Guide* for details.

1. Open the bezel.
2. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
3. Remove the back cover.
4. Remove the front cover.
5. Raise the following components to the service position:
   - Memory riser cards
   - Peripheral riser card
   - Fans
6. While grasping the microprocessor tray handles, press the release levers with your thumbs and rotate the tray handles up until the tray is released from the front panel (see Figure 1-1).
7. Slide the microprocessor tray out until the safety latches lock into place.
8. While pressing on the safety latches, pull the microprocessor tray straight out until the tray clears the chassis.
9. Place the microprocessor tray on a flat surface.
10. While holding the tab on the side release lever, rotate the lever up until the cover is released from the side of the enclosure (see Figure 1-1).
11. While holding the front release lever, rotate the lever up until the cover is released from the front of the enclosure (see Figure 1-1).
12. Remove the cover.

Figure 1-1. Removing and Replacing the Microprocessor Cover



CAUTION: The microprocessor and heat sink can become extremely hot. Be sure the microprocessor has had sufficient time to cool before handling.

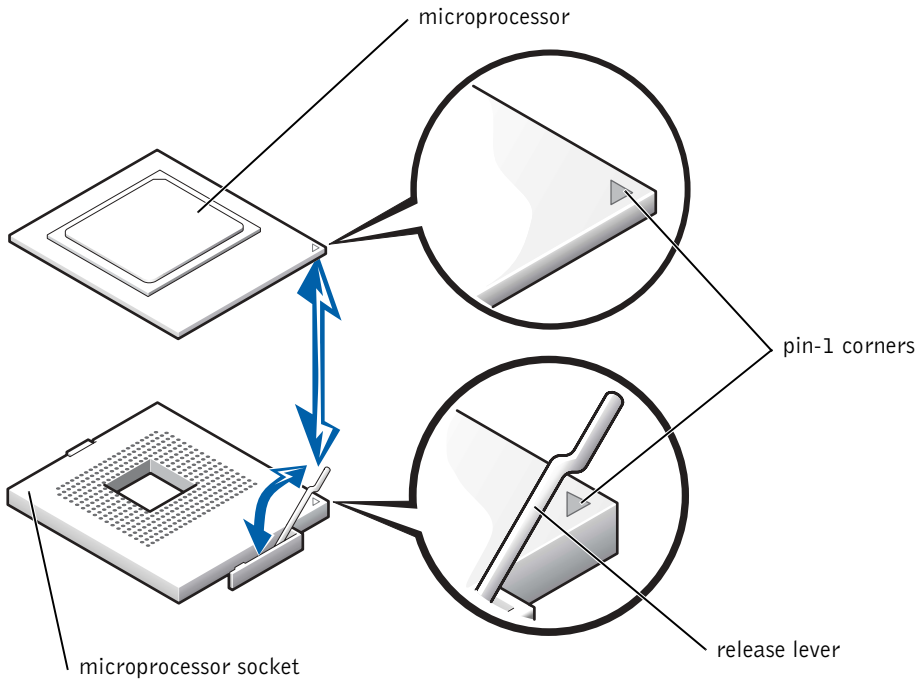
NOTICE: Never remove the heat sink from a microprocessor unless you intend to remove the microprocessor. The heat sink is necessary to maintain proper thermal conditions.

NOTICE: After removing the heat sink, it should be placed upside down on a flat surface to prevent the thermal interface material from being damaged or contaminated.

13 Remove the heat sink (see Figure 1-1).

14 Pull the socket release lever up until the microprocessor is released (see Figure 1-2).

Figure 1-2. Removing and Replacing the Microprocessor



NOTICE: Be careful not to bend any of the pins when removing the microprocessor. Bending the pins can permanently damage the microprocessor.

15 Lift the microprocessor out of the socket and leave the release lever up so that the socket is ready for the new microprocessor (see Figure 1-2).

16 Unpack the new microprocessor.

If any of the pins on the microprocessor appear bent, see "Getting Help" in the *Installation and Troubleshooting Guide* for instructions on obtaining technical assistance.

17 If the release lever on the microprocessor socket is not all the way up, move it to that position now.

18 Align the gold triangle on the microprocessor (see Figure 1-2) with the triangle on the microprocessor socket.

NOTE: Zero insertion force is needed to install the microprocessor. If the microprocessor is aligned correctly, it should drop into the microprocessor socket.

NOTICE: Positioning the microprocessor incorrectly can permanently damage the microprocessor and the system when you turn on the system. When placing the microprocessor in the socket, be sure that all of the pins on the microprocessor go into the corresponding holes. Be careful not to bend the pins.

19 Apply light pressure to the top of the microprocessor while rotating the socket release lever down, securing the microprocessor.

20 Place the new heat sink on top of the microprocessor (see Figure 1-1).

21 Orient the microprocessor cover as shown in Figure 1-1.

NOTICE: Failure to properly install the microprocessor cover can permanently damage the microprocessor(s). When installing the microprocessor cover, ensure that the cover retention tabs on the edge of the microprocessor enclosure are inserted into the slots of the cover.

22 Hook the end of the cover over the retention tabs on the edge of the microprocessor enclosure (see Figure 1-1).

23 Swing the microprocessor cover down.

24 Rotate the front release lever down to secure the cover to the front of the microprocessor enclosure (see Figure 1-1).

25 Rotate the side release lever down to secure the cover to the side of the microprocessor enclosure (see Figure 1-1).

26 If you are adding additional microprocessors, install the VRM in the corresponding VRM socket, pushing down firmly to make sure that the ejectors engage (see Figure 1-3).

27 Slide the microprocessor tray into the chassis until the tray stops.

28 Lift the microprocessor tray handles up and push the tray forward slightly to engage the handle clasps.

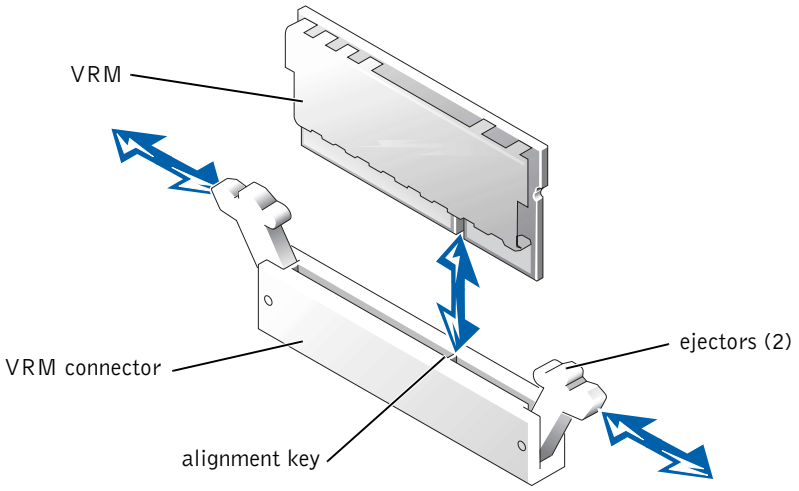
29 Rotate the microprocessor tray handles down until the tray is secured to the front panel.

NOTE: For steps 30 through 33, see your *Installation and Troubleshooting Guide* for details.

30 Reseat the following components:

- Peripheral riser card
- Memory riser cards
- Fans

Figure 1-3. Installing the VRM



31 Replace the front cover.

32 Replace the back cover.

33 Close the bezel.

34 Reconnect your system and peripherals to their electrical outlets, and turn on the system.

As the system boots, it detects the presence of the new microprocessor(s) and automatically changes the system configuration information in the System Setup program and displays the microprocessor ID number, operating speed, processor bus, and cache information.

35 Press <F2> to enter the System Setup program, and check that the microprocessor categories match the new system configuration (see "Using the System Setup Program" in your *User's Guide*).

36 Run the system diagnostics to verify that the new microprocessor is operating correctly.

See "Running the System Diagnostics" in the *Installation and Troubleshooting Guide* for information on running the diagnostics and troubleshooting any problems that may occur.