




Dell™ PowerEdge™ 1655MC Systems

Replacing the Server Module Board



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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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This document provides instructions for replacing a server module board and enabling the mirroring function.

Required Tools

- PS/2 keyboard
- Monitor
- #2 Phillips screwdriver
- Flat-tip screwdriver
- A remote system with HyperTerminal version 6.3
- Null modem cable (PN 7W449)
- USB diskette drive (PN 5M964)
- Planar replacement utility diskette


Parts Kit

- Server module board (PN C1438)
- Server module blank (PN 4P731)
- Spare SCSI cables (PN 4T053)
- Spare processors:
 - 1.13 GHz (PN 6F246)
 - 1.26 GHz (PN 8T137)
 - 1.4 GHz (PN 6T332)
- Spare terminator (PN 2G042)
- Spare memory modules:
 - 128 MB (PN 3K151)
 - 256 MB (PN 3K153)
 - 512 MB (PN 3K154)
 - 1 GB (PN 3K155)
- Spare heat sink (PN 7W270)

Before You Begin

Schedule system maintenance time with the customer and remind them that they may want to back up all files on the hard drives of the affected server modules.

The customer may have mirroring from server module to server module or have a server module communicating with other server modules. Explain that if you bring a server module down for maintenance, errors may occur. This allows the customer to take the necessary steps to deconfigure their system before you begin maintenance.

 **NOTE:** Perform the upgrade on one server module at a time. Do not proceed to another server module until you have completed the upgrade on the current module.

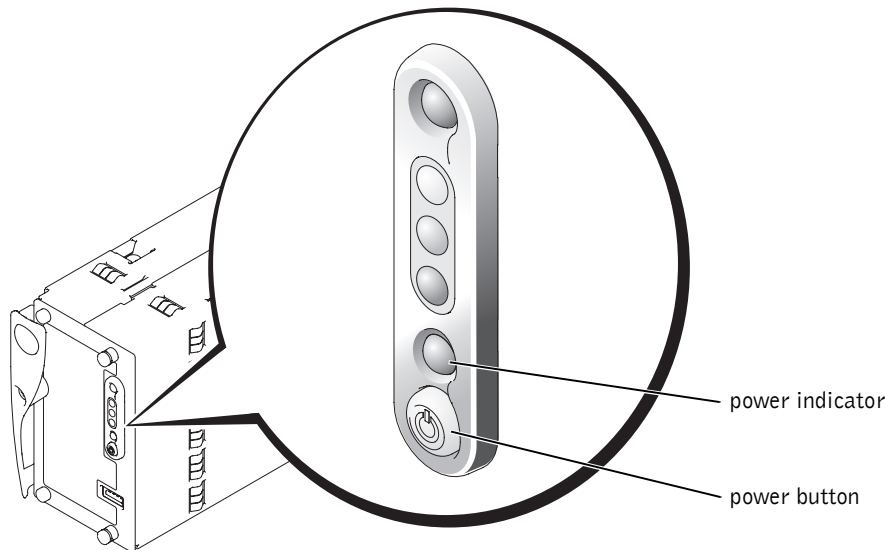
Determine the server module's hard-drive configuration.

- If you do not know the configuration or if the server module has two hard drives and you do not know whether the mirroring function is enabled, see "Verifying the Hard-Drive Mirroring Mode."
- If the server module has only one hard drive, see "Replacing the Server Module Board."

Turning Off the Server Module

- 1 Select the server module to be replaced.
- 2 Ensure that all applications are closed.
- 3 Shut down the operating system and turn off the server module by pressing the power button on the front of the server module. See Figure 1-1.
- 4 Ensure that you have access to a keyboard and monitor (KVM, crash cart, or console redirection).

Figure 1-1. Turning Off the Server Module




Verifying the Hard-Drive Mirroring Mode

- 1 Ensure that the server module is turned on. See Figure 1-1.
- 2 Monitor the POST progress.

When the POST reaches the PERC 4/im, either one or two SCSI drives are listed with their IDs (nonmirrored mode) or one SCSI drive is listed as a virtual disk (mirrored mode).

The following is an example of the display if there are two drives installed in nonmirrored mode. If this display is seen during POST, proceed to "Turning Off the Server Module" and then "Replacing the Server Module Board."

HBA	ID	LUN	VENDOR	PRODUCT	REV	SYNC	WIDE	CAPACITY
0	0	0	Fujitsu	MAN3184MP	5507	160.0	16	18211 MB
0	1	0	Fujitsu	MAN3184MP	5A01	160.0	16	18211 MB
0	7	0	LSI Logic	1020/1030	1000c00	320.0	16	

 **NOTE:** Only one drive is listed if only one drive is installed in the server module.

The following is an example of the display if two drives are installed in mirrored mode:

HBA	ID	LUN	VENDOR	PRODUCT	REV	SYNC	WIDE	CAPACITY
0	0	0	Dell	VIRTUAL DISK	1000		16	18203 MB
0	7	0	LSI Logic	1020/1030	1000c00	320.0	16	

Table 1-1 lists the possible messages displayed for mirrored mode and the actions required.

Table 1-1. Mirrored Mode Messages and Actions


Message	Action
Logical drive optimal	Go to "Replacing the Server Module Board."
Logical drive resynchronizing	Go to "Manually Deconfiguring Mirrored Mode." NOTICE: If this message is displayed, press <Ctrl><Alt><Delete> immediately before the server module boots to the operating system.
Logical drive degraded	A hard drive is faulty. See "Troubleshooting Hard Drives" in your <i>Installation and Troubleshooting Guide</i> .

Manually Deconfiguring Mirrored Mode

- 1 Press <Ctrl><Alt><Delete> to reboot the server module.

The following message is displayed during POST:

```
Press CTRL-M to start LSI logic configuration utility
```


 **NOTE:** If you are using console redirection, you must press <Esc><Ctrl><M>.

- 2 Press <Ctrl><M> or <Esc><Ctrl><M> to access the LSI utility.
- 3 Press <Enter> to access the **Adapter Properties Menu**.


- 4 Select the **Mirroring Properties Menu** and press <Enter> to view or modify the mirroring mode.

The two installed SCSI drives are listed with their SCSI IDs:

SCSI ID	Device	Identifier	Mirrored Pair	Status
0	Fujitsu	MAN3184MP 5507	Primary	
1	Fujitsu	MAN3184MP 5A01	Secondary	

 **NOTE:** SCSI ID 0 may be secondary and SCSI ID 1 may be primary in some cases.

- 5 Write down which SCSI ID is primary and which one is secondary.
- 6 Select the primary drive and press the space bar to change the **Status** field to **No**. Repeat this step for the secondary drive.

 **NOTE:** Both the primary and secondary **Status** fields should be **No**.
- 7 Press <Esc> to exit the Mirroring Properties Menu.
- 8 Select **Save changes and exit this menu** and then press <Enter>.
- 9 Press <Esc> to exit the Adapter Properties Menu.
- 10 Press <Esc> to exit the Main Menu.
- 11 Select **Exit the Configuration Utility** and press <Enter>.

The server module reboots. During POST, the two SCSI drives are displayed as nonmirrored, as shown in the following example:

HBA	ID	LUN	VENDOR	PRODUCT	REV	SYNC	WIDE	CAPACITY
0	0	0	Fujitsu	MAN3184MP	5507	160.0	16	18211 MB
0	1	0	Fujitsu	MAN3184MP	5A01	160.0	16	18211 MB
0	7	0	LSI Logic	1020/1030	1000c00	320.0	16	

- 12 Go to "Replacing the Server Module Board."

Replacing the Server Module Board

The following procedures are required to replace the server module board. You must follow the procedures in the order given.

Removing the Server Module

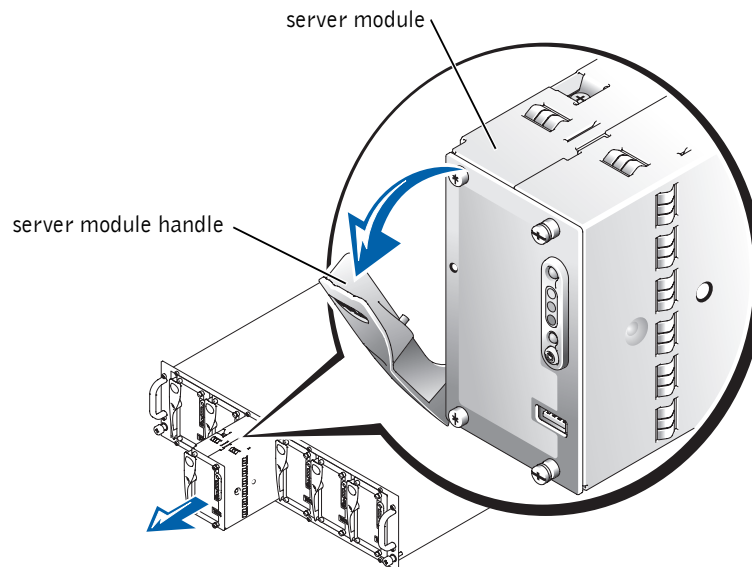
⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Ensure that the server module's power is off.

The blinking green power-on indicator shows that power is available to the system. If the power-on indicator is solid green, press the module's power button to turn off the module. See Figure 1-1.

- 2 Using a #2 Phillips screwdriver, loosen the captive screw that secures the server module's ejector handle to the front of the server module. See Figure 1-2.
- 3 Grasp the server module's handle and rotate the handle down to eject the server module from the chassis. See Figure 1-2.
- 4 Grasp the server module and slide it out of the chassis. See Figure 1-2.

Figure 1-2. Removing and Installing a Server Module

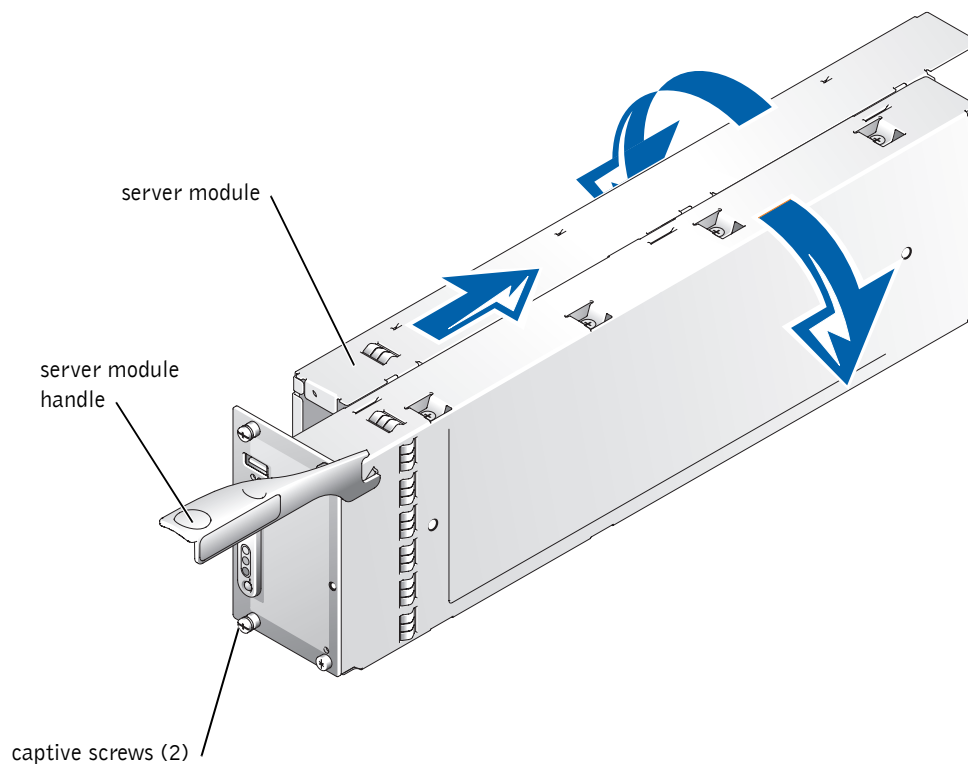


Opening the Server Module

⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

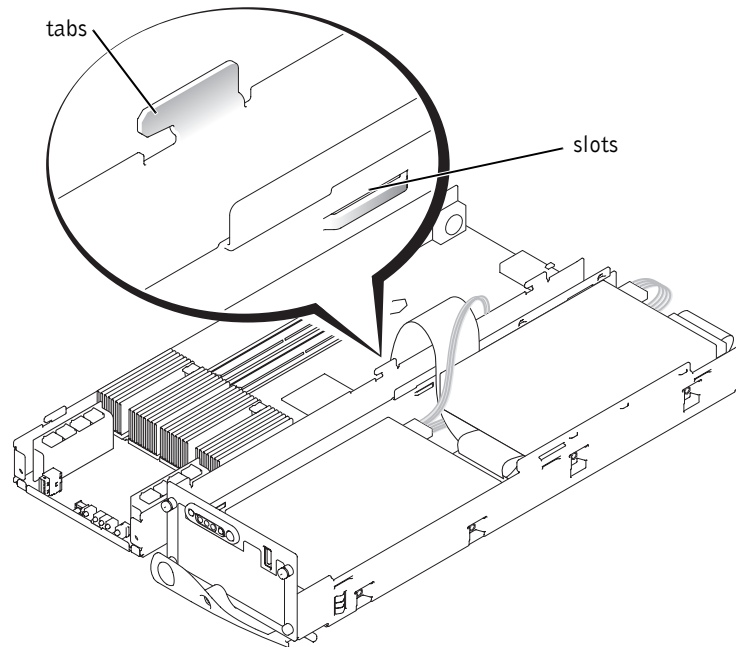
- 1 Orient the server module as shown in Figure 1-3 so that the two captive screws are on the left side of the server module.
- 2 Using a #2 Phillips screwdriver, loosen the two captive screws that secure the front panel to the server module. See Figure 1-3.
- 3 Slide the left side of the server module backward approximately 12.7 mm (0.5 inch) and rotate the two sides down to open the server module. See Figure 1-3.

Figure 1-3. Opening and Closing a Server Module



- 4 Set the two sides of the server module on a flat surface. See Figure 1-4.

Figure 1-4. An Open Server Module



- 5 Disconnect the hard drive SCSI interface and power cables from the server module board. See Figure 1-5.

Removing Memory Modules

⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Locate the memory module connectors from which you will remove memory modules. See Figure 1-5.
- 2 Press down and outward on the ejectors until the memory module pops out of the connector. See Figure 1-6.
- 3 Repeat step 1 and step 2 of this procedure to remove any other memory modules.

Figure 1-5. Server Module Board Connectors

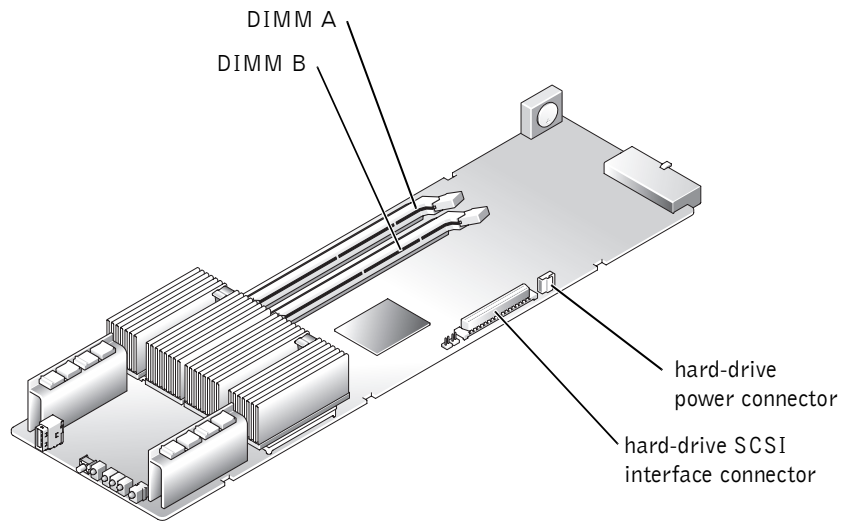
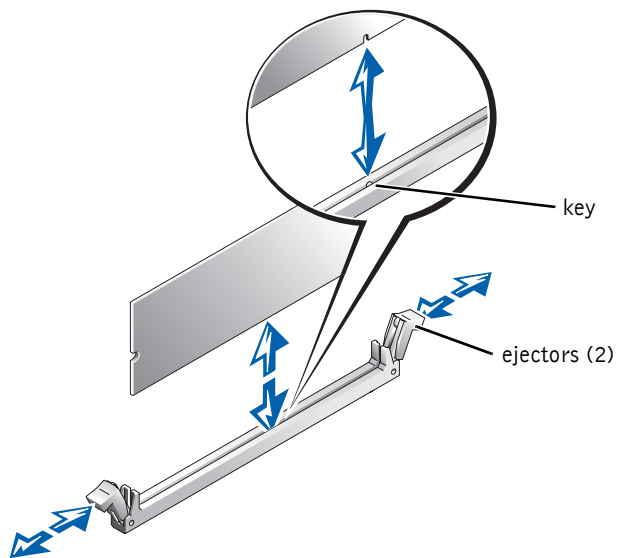


Figure 1-6. Removing and Installing a Memory Module

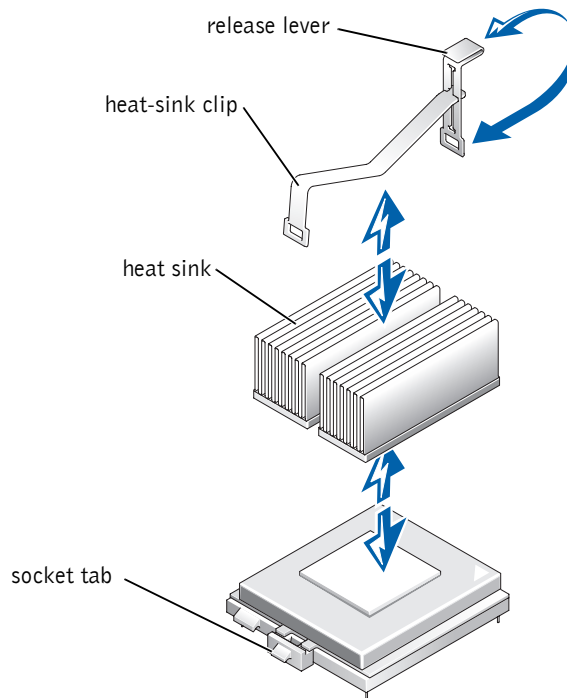


Removing a Processor

⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Press down on the heat-sink release lever and rotate the clip away from the processor socket. See Figure 1-7.
- 2 Remove the heat sink and clip. See Figure 1-7.

Figure 1-7. Removing and Installing the Heat Sink

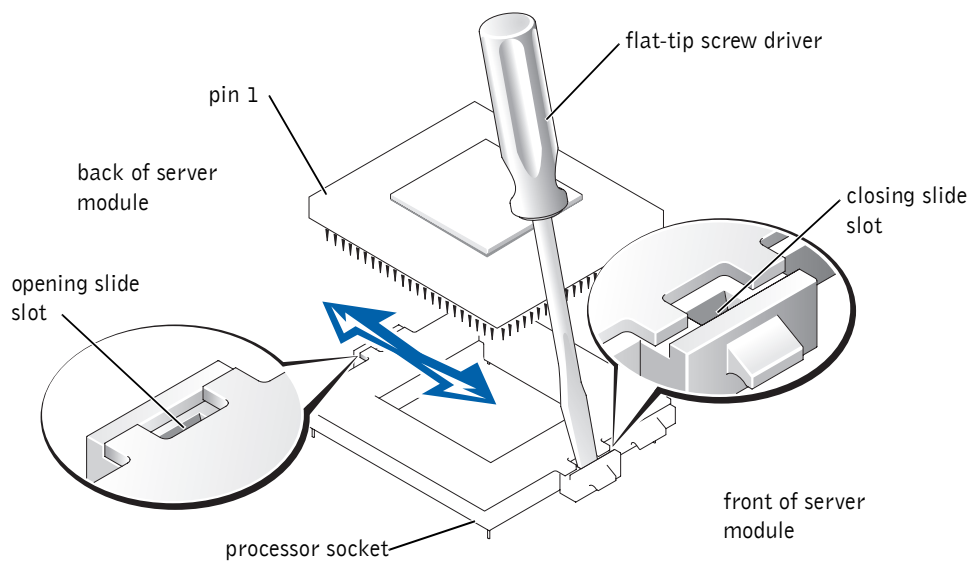


➡ NOTICE: Be careful not to use excessive force when opening the processor socket. Excessive force could damage the socket.

- 3 Using a flat-tip screwdriver, insert the screwdriver into the opening slide slot (toward the back of the server module) and gently pry the processor socket to the fully open position. See Figure 1-8.

- ➡ **NOTICE:** Be careful not to bend any of the pins when removing the processor. Bending the pins can permanently damage the processor.
- 4 Lift the processor out of the socket (see Figure 1-8) and place the processor on a flat surface so that the pins are facing up.
 - 5 Repeat step 1 through step 4 of this procedure for the second processor or the terminator.

Figure 1-8. Removing and Installing a Processor



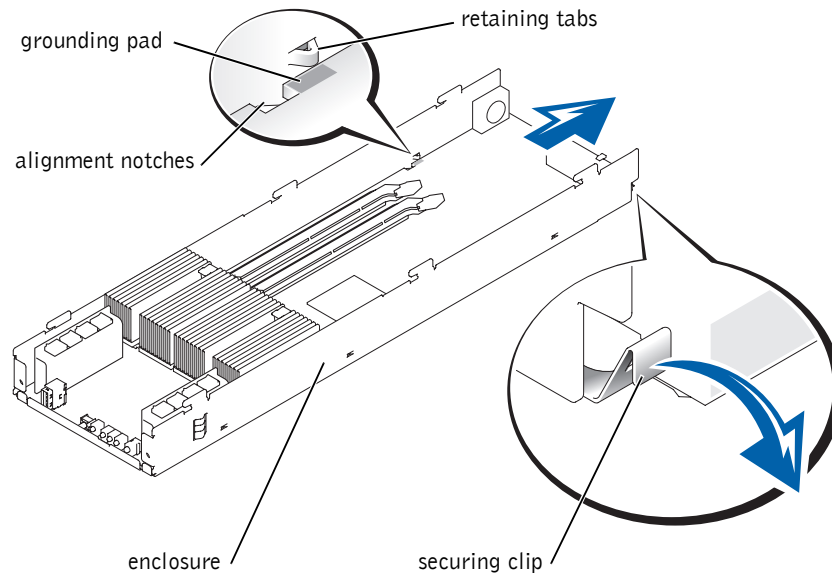
Removing the Server Module Board

The server module board is secured by six retaining tabs and a securing clip on the end of the board near the midplane board connector.

⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

While pulling down on the securing clip, press down on the server module board and slide it backward out of the enclosure. See Figure 1-9.

Figure 1-9. Removing and Installing the Server Module Board



Installing the Server Module Board

⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Unpack the new server module board.
- 2 Align the server module board's alignment notches with the enclosure's retaining tabs. See Figure 1-9.
- 3 Press down on the server module board and slide it backward until the enclosure retaining tabs are resting on the grounding pads and the securing clip snaps over the server module board. See Figure 1-9.


Installing the Processor

⚠ CAUTION: See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Ensure that the processor socket is in the fully open position. See Figure 1-8.
- ➔ **NOTICE:** Positioning the processor incorrectly can permanently damage the processor and the server module when you turn on the server module. When placing the processor in the socket, be sure that all of the pins on the processor go into the corresponding holes. Be careful not to bend the pins.
- 2 Align pin 1 on the processor with pin 1 on the processor socket. See Figure 1-8.
 - ✎ **NOTE:** Force is not needed to install the processor in the socket. When the processor is aligned correctly, it should drop into the socket.
- 3 Install the processor in the socket. See Figure 1-8.

If the original processor or terminator pins were bent or damaged, use the spare processor or terminator from the parts kit.
- ➔ **NOTICE:** Be careful not to use excessive force while closing the processor socket. Excessive force could damage the socket.
- 4 Using a flat-tip screwdriver, insert the screwdriver into the closing slide slot (toward the front of the server module) and gently pry the processor socket to the fully closed position.
- 5 Place the heat sink on the processor.
- 6 Orient the heat-sink clip as shown in Figure 1-7.
- 7 Hook the heat-sink clip over the processor socket tab that is toward the front of the server module.
- 8 Push down on and pivot the heat-sink release lever until it latches onto the processor socket tab.
- 9 Repeat step 1 through step 8 for a second processor or step 1 through step 4 for a terminator.

Connecting the Hard-Drive Module to the Server Module Board


 **CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Place the two sides of the server module on a flat surface as shown in Figure 1-4.
- 2 Ensure that the SCSI interface cable is not damaged.

If the cable is damaged, use the spare SCSI interface cable from the parts kit.

- 3 Ensure that the power cable is not damaged.
If the cable is damaged, use the spare power cable from the parts kit.
- 4 Connect the hard drive SCSI interface and power cables to the server module board.
See Figure 1-5.

Installing Memory Modules


 **CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Locate the memory module connectors in which you will install a memory module.
See Figure 1-5.
- 2 Press down and outward on the ejectors, as shown in Figure 1-6, to allow the memory module to be inserted into the connector.
- 3 Align the notch in the memory module's edge connector with the alignment key in the socket, and insert the memory module in the connector. See Figure 1-6.

The memory module connector has an alignment key that allows the memory module to be installed in the connector in only one way.
- 4 Press down on the memory module with your thumbs while pulling up on the ejectors with your index fingers to lock the memory module into the connector. See Figure 1-6.

When the memory module is properly seated in the connector, the ejectors should align with the ejectors on the other connectors with memory modules installed.
- 5 Repeat step 1 through step 4 of this procedure to install the remaining memory module.

Closing the Server Module

 **CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Insert the tabs on the left side of the server module into the slots on the right side of the server module and rotate the sides up. See Figure 1-3 and Figure 1-4.
- 2 Slide the left side of the server module forward approximately 12.7 mm (0.5 inch). See Figure 1-3.
- 3 Using a #2 Phillips screwdriver, tighten the two captive screws that secure the front panel to the server module. See Figure 1-3.

Installing a Server Module


- 1 Slide the server module into the chassis until it stops.
- 2 Rotate the server module's handle up to fully seat the server module. See Figure 1-2.
- 3 Using a #2 Phillips screwdriver, tighten the captive screw that secures the handle to the front of the server module. See Figure 1-2.

The server module board upgrade is complete.

- 4 If the server module was configured with one hard drive or two hard drives in nonmirrored mode or the server module was configured in mirrored mode and the message `Logical drive optimal` was displayed, go to "Verifying the System Setup Options."

If the server module was configured in mirrored mode and the message `Logical drive resynchronizing` was displayed, go to "Manually Configuring the Mirroring Mode."

Verifying the System Setup Options

 **NOTE:** If you are using the *PERC 4/im DOS Utility* diskette, go to "Running the PERC 4/im DOS Utility." If only one drive or two drives are installed in nonmirrored mode, go to step 1.

- 1 Turn on the server module. See Figure 1-1.


If the server module does not turn on, see "Getting Help" in your *Installation and Troubleshooting Guide*.

- 2 Enter the System Setup program.
- 3 Ensure that the processor, memory, and service tag information is correct.


The service tag should match the service tag written on the server module's handle.

If the service tag information is not correct, see "Programming the Service Tag."

- 4 Press <Esc> to exit the System Setup program.


 **NOTE:** The server module upgrade is complete if only one hard drive was installed or if there were two hard drives installed without the mirror mode enabled.

Running the PERC 4/im DOS Utility

 **NOTICE:** You must run this utility during the first server module boot after replacing the server module board. You must run this utility only once. If you attempt to run the utility after the server module has booted to the operating system or if you attempt to run the utility more than once, the utility will not function properly.


- 1 Attach the USB diskette drive to the front of the server module.
- 2 Insert the *PERC 4/im DOS Utility* diskette.
- 3 Turn on the server module. See Figure 1-1.
- 4 Enter the System Setup program.
- 5 Ensure that the processor, memory, and service tag information is correct.
The service tag should match the service tag written on the server module's handle.
If the service tag information is not correct, see "Programming the Service Tag."
- 6 Select the **Boot Sequence** option and ensure that the USB diskette drive in the boot sequence list is **Enabled**.
- 7 Press <Esc> to exit the System Setup program.
The server module boots from the *PERC 4/im DOS Utility* diskette and the utility starts automatically.
- 8 If there was a mirror, press any key when prompted to create the mirror.
The server module reboots.
- 9 Remove the *PERC 4/im DOS Utility* diskette.
The server module upgrade is complete.

Manually Configuring the Mirroring Mode

 **NOTE:** Perform this procedure only if you received the message `Logical drive resynchronizing` while verifying the mirroring mode and you manually deconfigured the mirrored mode.

- 1 Turn on the server module. See Figure 1-1.
The following message is displayed during POST:

Press CTRL-M to start LSI logic configuration utility


 **NOTE:** If you are using console redirection, you must press <Esc><Ctrl><M>.

- 2 Press <Ctrl><M> or <Esc><Ctrl><M> to access the LSI utility.
- 3 Press <Enter> to access the Adapter Properties Menu.
- 4 Select **Mirroring Properties Menu** and press <Enter> to view or modify the mirroring mode.


The two installed SCSI drives are listed with their SCSI IDs:

SCSI ID	Device	Identifier	Mirrored Pair	Status
0	Fujitsu	MAN3184MP 5507	Primary	
1	Fujitsu	MAN3184MP 5A01	Secondary	

- 5 Select the primary drive and press the space bar to change the **Mirrored Pair** field to **Primary**, and then select the secondary drive and change it to **Secondary**.

 **NOTE:** Ensure that you select the same SCSI ID that you wrote down during the procedure in "Manually Deconfiguring Mirrored Mode."

- 6 Ensure that the drive fields are set to **Primary** and **Secondary**.

 **NOTE:** The secondary drive mirrors the primary drive. All other data on the secondary drive is lost.


- 7 Press <Esc> to exit the Mirroring Properties Menu.
- 8 Select **Save changes and exit this menu** and then press <Enter>.
- 9 Press <Esc> to exit the Adapter Properties Menu.
- 10 Press <Esc> to exit the Main Menu.
- 11 Select **Exit the Configuration Utility** and press <Enter>.

The server module reboots. During POST, only one hard drive, which is reported as a virtual disk, is listed on the screen. This indicates that the drives are in mirrored mode.

HBA	ID	LUN	VENDOR	PRODUCT	REV	SYNC	WIDE	CAPACITY
0	0	0	Dell	VIRTUAL DISK	1000		16	18203 MB
0	7	0	LSI Logic	1020/1030	1000c00	320.0	16	

The server module upgrade is complete.

Programming the Service Tag

 **NOTE:** The service tag is automatically written to a server module that is replaced in the field. This procedure is required only if, for some reason, the service tag is not programmed or is programmed incorrectly.

- 1 Connect a null modem cable to the server management module.
- 2 Open a HyperTerminal session with the following settings:
 - Set **Bits per second** to 115200 (default).
 - Set **Data bits** to 8.
 - Set **Parity** to **None**.
 - Set **Stop bits** to 1.
 - Set **Flow control** to **HW**.
- 3 Log into the server management module (ERA/MC) and type the following commands:

```
racadm setsvctag -m server-x PE1655MC <service_tag>
```

where *x* is the slot number of the server module you are updating and *<service_tag>* is the valid seven-digit service tag of the server module. For example, the command for server module number 2 with a service tag of 1234567 is as follows:

```
racadm setsvctag -m server-2 PE1655MC 1234567
```




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