

Dell™ PowerEdge™
1950 Systems
Information Update



Notes, Cautions, and Warnings



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



CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.



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

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Non-Optimal Memory Configurations

The POST may halt when a non-optimal memory configuration is detected and the following message is displayed:

```
Non-Optimal Memory Configuration  
Press F1 to continue or F2 for Setup
```



NOTE: Mixing DIMMs of different speeds renders the memory configuration non-optimal. The system clocks down the performance to the slowest speed in the DIMM set for the channel.

PowerEdge 1950 III – New System Features

New Performance Features

- Two dual-core or quad-core Intel® Xeon® 5400 Series and 5300 Series processors.
- 8-GB memory module support.

New High-Efficiency Power Supply and Power Monitoring Features

- Higher system efficiency on power conversion across workloads.
- Baseboard Management Control (BMC) power monitoring monitors current, voltage, and power utilization in the system.

New I/O and Storage Features

- Optional Intel quad-port Gigabit Ethernet NIC, capable of supporting 10-Mbps, 100-Mbps, and 1000-Mbps data rates and iSCSI remote boot.
- Support for 10-Gb Ethernet cards.
- One internal USB 2.0-compliant connector supporting an optional bootable USB flash drive or USB memory key.
- Support for optional SAS 6i/R and PERC 6/i adapters.

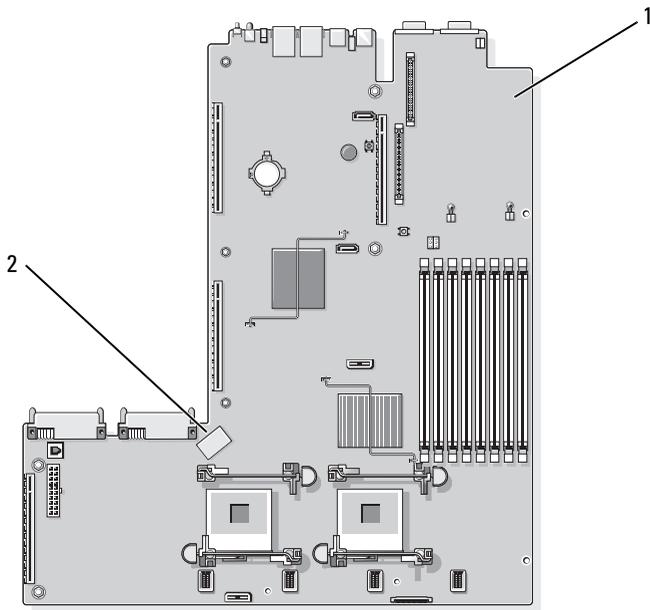
New Security Features

- Trusted Program Module (TPM) support for improved security.
- Optional support for iSCSI boot.

Optional Internal USB Memory Key

The PowerEdge 1950 III system provides an internal USB connector located on the system board for use with a USB flash memory key (see Figure 1-1). The USB memory key can be used as a boot device, security key, or mass storage device. To use the internal USB connector, the **Internal USB Port** option must be enabled in the **Integrated Devices** screen of the System Setup program. See "Integrated Devices Screen" on page 22.

Figure 1-1. Internal USB Connector Location



1 system board 2 internal USB connector location

To boot from the USB memory key, you must configure the USB memory key with a boot image and then specify the USB memory key in the boot sequence in the System Setup program. See "Using the System Setup Program" in the *Hardware Owner's Manual*. For information on creating a bootable file on the USB memory key, see the user documentation that accompanied the USB memory key.



NOTE: USB keys that contain multiple LUNs (Logical Unit Numbers) must be formatted using the format utility provided by the key manufacturer.



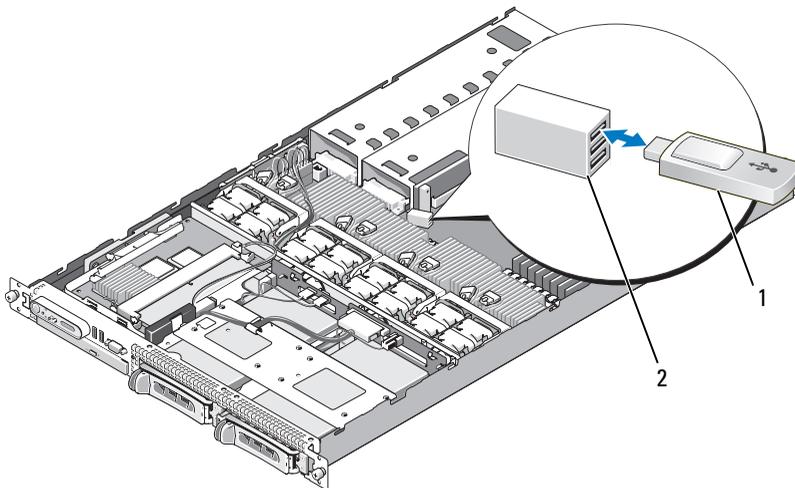
NOTE: To avoid interference with components inside the system, the USB key must conform to the following maximum dimensions: 11.68mm thick (0.46") x 24.89mm width (0.98") x 66.8mm length (2.63").

Installing the Optional Internal USB Memory Key

⚠ WARNING: Only trained service technicians are authorized to remove the system cover and access any of the components inside the system. See your *Product Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

- 1 Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
- 2 Open the system. See "Opening the System" in the *Hardware Owner's Manual*.
- 3 Remove the memory cooling shroud. See "Removing the Memory Cooling Shroud" in the *Hardware Owner's Manual*.
- 4 Locate the USB connector on the system board and insert the USB memory key into the USB connector. See Figure 1-2.

Figure 1-2. Installing an Internal USB Key



1 USB memory key

2 internal USB connector

- 5 Replace the memory cooling shroud.
- 6 Close the system. See "Closing the System" in the *Hardware Owner's Manual*.
- 7 Reconnect the system to power and restart the system.
- 8 Enter the System Setup program and verify that the USB key has been detected by the system. See "Using the System Setup Program" in the *Hardware Owner's Manual*.

Support for 8-GB Memory Modules – PowerEdge 1950 III Systems

PowerEdge 1950 III systems have added support for the following approved 8-GB memory configurations:

- 64 GB — 8 x 8-GB quad-rank memory modules
- 48 GB — 4 x 8-GB quad-rank and 4 x 4-GB dual-rank memory modules

If 64 GB of memory is installed, the system only recognizes and displays 63.75 GB during POST.



NOTE: Prior to upgrading your system, verify that the latest system BIOS version is on your system. Loading the latest BIOS version ensures that your system is fully supported.



NOTE: Some operating systems cannot support more than 4 GB of physical memory. For more information on memory support requirements and restrictions, refer to the operating system documentation that ships with your system.

Processor Upgrades – PowerEdge 1950 II and PowerEdge 1950 III Systems

- If the front of your system chassis is labeled with a "II," your system is upgradeable to the 5100 series of dual-core Intel Xeon processors and the 5300 series of quad-core Intel Xeon processors.
- If the front of your system chassis is labeled with a "III," your system is upgradeable to the 5100 and 5200 series of dual-core Intel Xeon processors and the 5300 and 5400 series of quad-core Intel Xeon processors.

See support.dell.com for information on the latest processor upgrade options for your system.

System Board Replacement – Safeguarding Encrypted Data

On PowerEdge 1950 III systems using Windows Server® 2008, you can use encryption programs, such as the BitLocker utility, to secure the contents of the hard drive.

If you are using the TPM with an encryption application, you are prompted to create a recovery key during system setup. Be sure to store this recovery key. If you replace the system board, you must supply the recovery key when you restart your system before you can access the encrypted files on your hard drive(s).

System Message Update

Table 1-1 lists new system messages for the PowerEdge 1950 III system and the probable cause and corrective action when the message appears.



WARNING: Only trained service technicians are authorized to remove the system cover and access any of the components inside the system. See your *Product Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge

Table 1-1. System Messages

Message	Causes	Corrective Actions
Alert! Node Interleaving disabled! Memory configuration does not support Node Interleaving.	The memory configuration does not support node interleaving, or the configuration has changed (for example, a failed DIMM) so that node interleaving cannot be supported. The system runs but with reduced functionality.	Ensure that the memory modules are installed in a configuration that supports node interleaving. Check other system messages for additional information for possible causes. For memory configuration information, see "General Memory Module Installation Guidelines" in the <i>Hardware Owner's Manual</i> . If the problem persists, see "Troubleshooting System Memory" in the <i>Hardware Owner's Manual</i> .
!!*** Error: Remote Access Controller initialization failure *** RAC virtual USB devices may not be available...	Remote Access Controller initialization failure.	Ensure that the Remote Access Controller is properly installed. See "Installing a RAC Card" in the <i>Hardware Owner's Manual</i> .
Invalid PCIe card found in the Internal_Storage slot!	The system halted because an invalid PCIe expansion card is installed in the dedicated storage controller slot.	Remove the PCIe expansion card and install the internal SAS controller in the dedicated slot.
No boot device available	Faulty or missing optical drive subsystem, hard drive, or hard-drive subsystem, or no bootable USB key installed.	Use a bootable USB key, CD, or hard drive. See "Using the System Setup Program" in the <i>Hardware Owner's Manual</i> for information on setting the order of boot devices.

Table 1-1. System Messages (continued)

Message	Causes	Corrective Actions
PCI BIOS failed to install	PCIe device BIOS (Option ROM) checksum failure detected during shadowing. Cables to expansion card(s) loose; faulty or improperly installed expansion card(s).	Reseat the expansion card(s). Ensure that all appropriate cables are securely connected to the expansion card(s). If the problem persists, see "Troubleshooting System Expansion Cards" in the <i>Hardware Owner's Manual</i> .
PCIe Degraded Link Width Error: Embedded device Expected Link Width is <i>n</i> Actual Link Width is <i>n</i>	Faulty system board or riser board.	See "Getting Help" in the <i>Hardware Owner's Manual</i> .
PCIe Degraded Link Width Error: Integrated device Expected Link Width is <i>n</i> Actual Link Width is <i>n</i>	The specified PCIe device is faulty or improperly installed.	For a SAS controller daughter card, reseat the card in the dedicated PCIe connector. See "Installing a SAS Controller Daughter Card" in the <i>Hardware Owner's Manual</i> . If the problem persists, see "Getting Help" in the <i>Hardware Owner's Manual</i> .
PCIe Degraded Link Width Error: Slot <i>n</i> Expected Link Width is <i>n</i> Actual Link Width is <i>n</i>	Faulty or improperly installed PCIe card in the specified slot.	Reseat the PCIe card in the specified slot number. See "Expansion Cards" in the <i>Hardware Owner's Manual</i> . If the problem persists, see "Getting Help" in the <i>Hardware Owner's Manual</i> .
PCIe Training Error: Embedded device	Faulty system board or riser board.	See "Getting Help" in the <i>Hardware Owner's Manual</i> .

Table 1-1. System Messages (continued)

Message	Causes	Corrective Actions
PCIe Training Error: Integrated <i>device</i>	The specified PCIe device is faulty or improperly installed.	For a SAS controller daughter card, reseal the card in the dedicated PCIe connector. See "Installing a SAS Controller Daughter Card" in the <i>Hardware Owner's Manual</i> . If the problem persists, see "Getting Help" in the <i>Hardware Owner's Manual</i> .
PCIe Training Error: Slot <i>n</i>	Faulty or improperly installed PCIe card in the specified slot.	Reseat the PCIe card in the specified slot number. See "Expansion Cards" in the <i>Hardware Owner's Manual</i> . If the problem persists, see "Getting Help" in the <i>Hardware Owner's Manual</i> .
Remote Access Controller cable error or incorrect card in the RAC slot.	RAC cables not connected, or RAC card installed in wrong expansion slot.	Check that the RAC cables are connected, and that the RAC card is installed in the correct expansion slot. See "Installing a RAC Card" in the <i>Hardware Owner's Manual</i> .
NOTE: All TPM information messages appear after the BMC option ROM has been loaded during POST.		
TPM configuration operation honored.	System now resets.	Information only.
TPM Failure	A Trusted Platform Module (TPM) function has failed.	See "Getting Help" in the <i>Hardware Owner's Manual</i> .

Table 1-1. System Messages (continued)

Message	Causes	Corrective Actions
TPM operation is pending. Press I to Ignore or M to Modify to allow this change and reset the system. WARNING: Modifying could prevent security.	Configuration change has been requested.	Press I to continue system boot. Press M to modify the TPM setting and restart.
Warning: Following faulty DIMMs are disabled: DIMM n_1 n_2 Total memory size is reduced.	Faulty or improperly seated memory module(s). DIMMs are disabled in pairs, as indicated by the n_1 and n_2 . Check both DIMMs for a possible fault.	See "Troubleshooting System Memory" in the <i>Hardware Owner's Manual</i> .
Warning: A fatal error has caused system reset! Please check the system event log!	A fatal system error occurred and caused the system to restart.	Check the SEL for information that was logged during the error. See the applicable troubleshooting section in See "Troubleshooting Your System" in the <i>Hardware Owner's Manual</i> . for any faulty components specified in the SEL.
Warning! No micro code update loaded for processor n	Micro code update failed.	Update the BIOS firmware. See "Getting Help" in the <i>Hardware Owner's Manual</i> .

Table 1-1. System Messages (continued)

Message	Causes	Corrective Actions
Warning: The installed memory configuration is not optimal. For more information on valid memory configurations, please see the system documentation on the technical support web site.	Invalid memory configuration. The system runs but with reduced functionality.	Ensure that the memory modules are installed in a valid configuration. See "General Memory Module Installation Guidelines" in the <i>Hardware Owner's Manual</i> . If the problem persists, see "Troubleshooting System Memory" in the <i>Hardware Owner's Manual</i> .
Write fault Write fault on selected drive	Faulty USB device, USB medium, optical drive assembly, hard drive, or hard-drive subsystem.	Replace the faulty media. Reseat the USB device or USB cable. For hard drive problems, see "Troubleshooting a Hard Drive" in the <i>Hardware Owner's Manual</i> .

LCD Status Messages Update

Table 1-2 lists updates to the LCD status messages that can occur on the PowerEdge 1950 III system and the probable cause for each message. The LCD messages refer to events recorded in the system event log (SEL). For information on the SEL and configuring system management settings, see your systems management software documentation.

Table 1-2. LCD Status Messages

Code	Text	Causes	Corrective Actions
<i>N/A</i>	<i>SYSTEM NAME</i>	<p>A 62-character string that can be defined by the user in the System Setup program.</p> <p>The <i>SYSTEM NAME</i> is displayed under the following conditions:</p> <ul style="list-style-type: none"> • The system is powered on. • The power is off and active errors are displayed. 	<p>This message is for information only.</p> <p>You can change the system ID and name in the System Setup program. See "Using the System Setup Program" in the <i>Hardware Owner's Manual</i>.</p>
E1000	FAILSAFE, Call Support	Check the system event log for critical failure events.	See "Getting Help" in the <i>Hardware Owner's Manual</i> .
E1118	CPU Temp Interface	The BMC is unable to determine the CPU(s) temperature status. Consequently, the BMC increases the CPU fan speed to maximum as a precautionary measure.	Turn off power to the system and restart the system. If the problem persists, see "Getting Help" in the <i>Hardware Owner's Manual</i> .
E1211	ROMB Batt	RAID battery is either missing, bad, or unable to recharge due to thermal issues.	Reseat the RAID battery connector. See the "RAID Battery" and see "Troubleshooting System Cooling Problems" in the <i>Hardware Owner's Manual</i> .

Table 1-2. LCD Status Messages (continued)

Code	Text	Causes	Corrective Actions
E1625	PS AC Current	Power source is out of acceptable range.	Check the AC power source.
E1711	PCI PERR B## D## F##	The system BIOS has reported a PCI parity error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Remove and reseal the PCIe expansion cards. If the problem persists, see "Troubleshooting an Expansion Card" in the <i>Hardware Owner's Manual</i> .
	PCI PERR Slot #	The system BIOS has reported a PCI parity error on a component that resides in the specified PCIe slot.	Reinstall the expansion-card riser. See "Expansion Card Risers" in the <i>Hardware Owner's Manual</i> . If the problem persists, the riser card or system board is faulty. See "Getting Help" in the <i>Hardware Owner's Manual</i> .

Table 1-2. LCD Status Messages (continued)

Code	Text	Causes	Corrective Actions
E1712	PCI SERR B## D## F##	The system BIOS has reported a PCI system error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Remove and reseal the PCIe expansion cards. If the problem persists, see "Troubleshooting Expansion Cards" in the <i>Hardware Owner's Manual</i> .
	PCI SERR Slot #	The system BIOS has reported a PCI system error on a component that resides in the specified slot.	Reinstall the expansion-card riser. See "Expansion Card Risers" in the <i>Hardware Owner's Manual</i> . If the problem persists, the riser card or system board is faulty. See "Getting Help" in the <i>Hardware Owner's Manual</i> .

Table 1-2. LCD Status Messages (continued)

Code	Text	Causes	Corrective Actions
E171F	PCIE Fatal Err B## D## F##	The system BIOS has reported a PCIe fatal error on a component that resides in PCIe configuration space at bus ##, device ##, function ##.	Remove and reseat the PCIe expansion cards. If the problem persists, see "Troubleshooting Expansion Cards" in the <i>Hardware Owner's Manual</i> .
	PCIE Fatal Err Slot #	The system BIOS has reported a PCIe fatal error on a component that resides in the specified slot.	Reinstall the expansion-card riser. See "Expansion Card Risers" in the <i>Hardware Owner's Manual</i> . If the problem persists, the riser card or system board is faulty. See "Getting Help" in the <i>Hardware Owner's Manual</i> .
E1914	DRAC5 Conn2 Cb1	DRAC 5 cable is missing or disconnected.	Reconnect the cable. See "Installing a RAC Card" in the <i>Hardware Owner's Manual</i> .
E1B01	USB# Overcurrent	Device plugged in the specified USB port caused an overcurrent condition.	Reseat the device cable. If the problem persists, replace or remove the device.

Table 1-2. LCD Status Messages (continued)

Code	Text	Causes	Corrective Actions
E2110	MBE DIMM # & #	One of the two indicated DIMMs has had a memory multi-bit error (MBE).	See "Troubleshooting System Memory" in the <i>Hardware Owner's Manual</i> .
E2111	SBE Log Disable DIMM #	The system BIOS has disabled memory single-bit error (SBE) logging, and does not resume logging further SBEs until the system is restarted. "#" represents the DIMM implicated by the BIOS.	See "Troubleshooting System Memory" in the <i>Hardware Owner's Manual</i> .
E2112	Mem Spare DIMM #	The system BIOS has spared the memory because it has determined that the memory had too many errors. "#" & #" represents the DIMM pair implicated by the BIOS.	See "Troubleshooting System Memory" in the <i>Hardware Owner's Manual</i> .
I1915	Video Off (LCD lights with a blue or amber background.)	The video has been turned off by the RAC remote user.	Information only.
I1916	Video Off in ## (LCD lights with a blue or amber background.)	The video was turned off in xx seconds by the RAC remote user.	Information only.

System Setup Program Update

Memory Screen

Table 1-3 lists the descriptions for the information fields that appear on the **Memory Information** screen.

Table 1-3. Memory Information Screen Options

Option	Description
System Memory Size	Displays the amount of system memory.
System Memory Type	Displays the type of system memory.
System Memory Speed	Displays the system memory speed.
Video Memory	Displays the amount of video memory.
System Memory Testing	Specifies whether system memory tests are run at system boot. Options are Enabled and Disabled .
Redundant Memory (Disabled default)	Enables or disables the redundant memory feature. When set to Spare Mode , the first rank of memory on each DIMM is reserved for memory sparing. Redundant memory feature is disabled if the Node Interleaving field is enabled.
Node Interleaving (Disabled default)	If this field is set to Enabled , memory interleaving is supported if a symmetric memory configuration is installed. If this field is set to Disabled , the system can support Non-Uniform Memory architecture (NUMA) (asymmetric) memory configurations. NOTE: The Node Interleaving field must be set to Disabled when using the redundant memory feature.
Low Power Mode (Disabled default)	Enables or disables the low power mode of the memory. When set to Disabled , the memory runs at full speed. When set to Enabled , the memory runs at a reduced speed to conserve energy.

CPU Information Screen

Table 1-4 updates the description for the Demand-Based Power Management option.

Table 1-4. CPU Information Screen

Option	Description
Demand-Based Power Management (Enabled default)	NOTE: Check your operating system documentation to verify if the operating system supports this feature. Enables or disables demand-based power management. When enabled, the CPU Performance State tables are reported to the operating system; when disabled, the CPU Performance State tables are not reported to the operating system. If any of the CPUs do not support demand-based power management, the field becomes read-only, and is automatically set to Disabled .

Integrated Devices Screen

Table 1-5 lists new Integrated Devices screen options.

Table 1-5. Integrated Devices Screen Options

Option	Description
Internal USB Port (On default)	Enables or disables the system's internal USB port. NOTE: You can only enable the internal USB port if the User Accessible USB Ports option on this screen is set to All ports On (the default value).
OS Watchdog Timer (Disabled default)	NOTE: This feature is usable only with operating systems that support WDAT implementations of the Advanced Configuration and Power Interface (ACPI) 3.0b specification. Microsoft® Windows Server® 2008 supports this feature, but Windows Server 2003 does not. Sets a timer that monitors the operating system for activity and aids in recovery if the system stops responding. When this field is set to Enabled , the operating system is allowed to initialize the timer. When set to Disabled , the timer is not initialized.

Table 1-5. Integrated Devices Screen Options (continued)

Option	Description
I/OAT DMA Engine (Disabled default)	Enables or disables the I/O Acceleration Technology (I/OAT) option. When set to Enabled , I/OAT reduces system CPU usage for applications that use TCP by offloading part of TCP receive operation to the DMA engine.
System Interrupts Assignment (Standard default)	This field controls the interrupt assignment for PCI devices in the system. When set to Distributed , interrupt routing is swizzled to minimize IRQ sharing among devices.

System Security Screen

Table 1-6 lists new options for the PowerEdge 1950 III system.



NOTE: Systems that are shipping in China are not equipped with TPM.



CAUTION: Before enabling the TPM Security option, ensure that the operating system supports TPM.

Table 1-6. New System Security Screen Options

Option	Description
TPM Security (Off default)	<p>Sets the reporting of the Trusted Platform Module (TPM) in the system.</p> <p>When set to Off (default), presence of the TPM is not reported to the operating system.</p> <p>When set to On with Pre-boot Measurements, the system reports the TPM to the operating system and stores the pre-boot measurements (compliant with Trusted Computing Group standards) to the TPM during POST.</p> <p>When set to On without Pre-boot Measurements, the system reports the TPM to the operating system and bypasses pre-boot measurements.</p>

Table 1-6. New System Security Screen Options (continued)

Option	Description
TPM Activation	<p>Changes the operational state of the TPM.</p> <p>When set to Activate, the TPM is enabled and activated at default settings.</p> <p>When set to Deactivate, the TPM is disabled and deactivated.</p> <p>The No Change state initiates no action. The operational state of the TPM remains unchanged (all user settings for the TPM are preserved).</p> <p>NOTE: This field is read-only when TPM Security is set to Off.</p>
TPM Clear (No default)	<p> CAUTION: Clearing the TPM causes loss of all encryption keys in the TPM. This prevents booting to the operating system and results in loss of data if the encryption keys cannot be restored. Be sure to back up the TPM keys prior to enabling this option.</p> <p>When set to Yes, all the contents of the TPM are cleared.</p> <p>NOTE: This field is read-only when TPM Security is set to Off.</p>

Table 1-7 lists the updated information on the default Failsafe Baud Rate.

Table 1-7. Serial Communication Screen Option

Option	Description
Failsafe Baud Rate (115200 default)	Displays the failsafe baud rate used for console redirection when the baud rate cannot be negotiated automatically with the remote terminal. This rate should not be adjusted.

Operating System Information

Enumeration of NICs

Linux operating system versions that use the `udev` kernel device manager enumerate the NICs differently than earlier Linux versions that used the `devfs` device manager. Although this does not affect system functionality, when using Red Hat® Enterprise Linux® (version 4 or version 5) or SUSE® Linux Enterprise Server 9 or 10 operating systems, the NICs are enumerated in reverse: NIC1 is configured as `eth1` instead of `eth0`, and NIC2 is configured as `eth0` instead of `eth1`. For information on how to change the default device enumerations, see the "Network Interface Card Naming" white paper available at linux.dell.com.

RHEL – Incorrect Processor Information

- If an Intel Xeon 54xx processor is installed in a system running RHEL Version 4 Update 5 and Demand-Based Switching is enabled in the BIOS, `cat/proc/cpuinfo` and `cat/sys/devices/system/cpu/cpuxx/cpufreq/scaling_cur_freq` displays an incorrect processor frequency. (The actual processor speed is not affected.)
- If an Intel Xeon 54xx processor is installed in a system running RHEL Version 3 Update 9, incorrect processor information is displayed in `/proc/cpuinfo`. (The actual processor speed is not affected.)

This behavior will be corrected in a future RHEL 4 Update.

System Support for Microsoft Windows 2000

If you run the *System Build and Update Utility*, Microsoft® Windows® 2000 is included in the list of operating systems on the **Server OS Install** tab. This operating system is supported by the PowerEdge 1950 and 1950 II systems, but not by the PowerEdge 1950 III system.

Hardware Owner's Manual/Updates

Installing the Processor

When installing the processor, the processor shield must be closed before securing the processor with the socket release lever.

System Diagnostics Custom Test Options

In the **Customize** window of the system diagnostics, the **Log output file pathname** option enables you to specify the diskette drive or USB memory key where the test log file is saved. You cannot save the file to a hard drive.