

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

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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 potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



WARNING: A WARNING indicates a potentially hazardous situation which, if not avoided, may result in severe injury.

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Installing Hard-Disk Drives

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

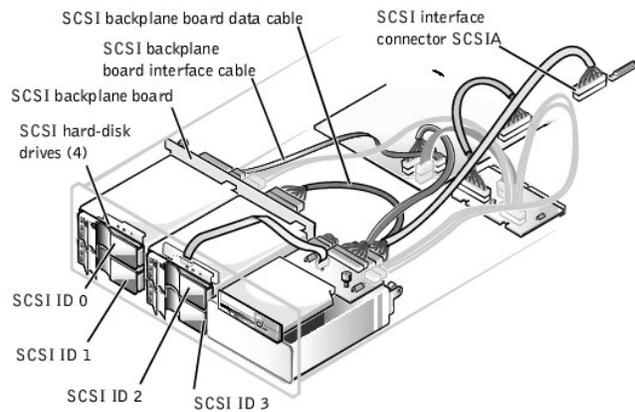
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- [General Information on Cabling](#)
- [Installing SCSI Hard-Disk Drives](#)
- [Installing a Dell PowerEdge Expandable RAID Controller Host Adapter Card](#)
- [Installing a SCSI Backplane Daughter Card](#)
- [Configuring the Boot Device](#)

This section describes how to install and configure small computer system interface (SCSI) hard-disk drives in the system's internal hard-disk drive bays. Instructions are also included for upgrading the system by installing an optional SCSI backplane daughter card for split backplane operation or a Dell™ PowerEdge™ Expandable RAID Controller (PERC) host adapter card.

The hard-disk drive bays provide space for up to four 1-inch hard-disk drives. (You can also install a fifth hard-disk drive in the peripheral bay by purchasing an upgrade kit from Dell. For installation information, see the documentation provided with the upgrade kit.)

[Figure 10-1](#) illustrates the system components associated with the SCSI hard-disk drives.

Figure 10-1. Hard-Disk Drive Hardware



Preparing SCSI Hard-Disk Drives for Installation

NOTE: Dell recommends that you use only drives that Dell has tested and approved for use with the SCSI backplane board.

SCSI Hard-Disk Drive Configuration

The SCSI drives must be configured as follows:

- 1 Disable termination on the drives. The SCSI backplane board provides termination for the SCSI bus.
- 1 Set the SCSI ID on all drives to 0. All SCSI ID numbers for the drives are set by the SCSI backplane board, as shown in [Figure 10-1](#).
- 1 Configure the drives so that the drive motor waits for a start unit command from the SCSI host adapter before spinning.

Partitioning and Formatting SCSI Hard-Disk Drives

You may need to use programs other than those provided with the operating system to partition and format SCSI hard-disk drives. See "Installing and Configuring SCSI Drivers" in the *User's Guide* for information and instructions.

NOTICE: Do not turn off or reboot your system while the drive is being formatted. Turning off or rebooting your system while the drive is being formatted can cause a drive failure.

When you format a high-capacity SCSI hard-disk drive, be sure to allow enough time for the formatting to complete. Long formatting times for these drives are normal.

General Information on Cabling

The four connectors on the SCSI backplane board are designated as SCSI ID 0 through SCSI ID 3 (see [Figure 10-1](#)). If a fifth hard-disk drive is installed in the

peripheral bay, it is identified as SCSI ID 4.

To operate the backplane in a 1 x 4 configuration, attach a single host adapter to connector SCSI A on the backplane board (see [Figure A-4](#) in "Jumpers, Switches, and Connectors"). You can operate the SCSI backplane board in a split 2 x 2 mode if a second, optional SCSI backplane daughter card is installed (see "Installing a SCSI Backplane Daughter Card"). In split mode, a host adapter attached to connector SCSI B on the backplane controls slots SCSI 0 and SCSI 1, while the host adapter connected to SCSI A controls slots SCSI 2, SCSI 3, and the fifth drive slot, SCSI 4 (if installed).

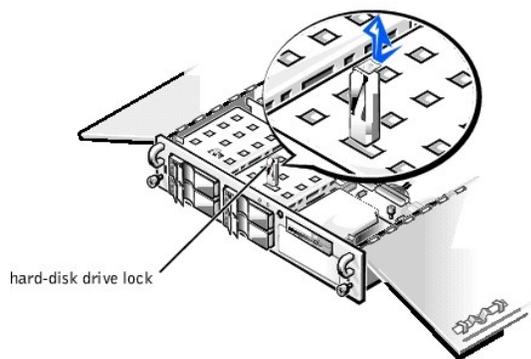
Installing SCSI Hard-Disk Drives

SCSI hard-disk drives are supplied by Dell in special drive carriers that fit in the hard-disk drive bays. To install a SCSI hard-disk drive, perform the following steps.

ⓘ NOTICE: Hot-plug drive installation is not supported for systems without an integrated redundant array of independent disks (RAID) controller or Dell PERC host adapter card.

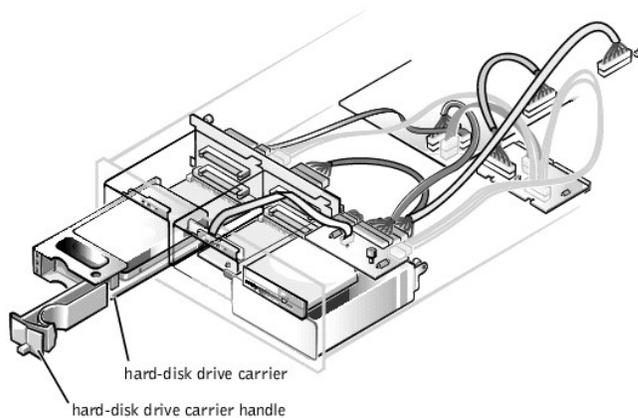
1. If the system does not have a RAID controller installed, shut down the system.
2. If the optional front bezel is installed, remove it. See "[Removing the Front Bezel](#)" in "Checking Inside the System."
3. If you have not already done so, unlock and open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System") and remove the hard-disk drive lock from the hard-disk drive bay where you will install the new drive (see [Figure 10-2](#)).

Figure 10-2. Removing a Hard-Disk Drive Lock



4. For systems with RAID controllers, power down the hard-disk drive bay. If a hard-disk drive is currently installed in the bay, wait until all three SCSI hard-disk drive indicators on the hard-disk drive carrier handle are off before proceeding.
5. Open the drive carrier handle and slide the carrier toward you until it is free of the drive bay (see [Figure 10-3](#)).

Figure 10-3. SCSI Hard-Disk Drive Carrier



6. Open the handle on the new hard-disk drive carrier.
7. Align the edge of the carrier with the notch in the chassis and insert the carrier into the drive bay (see [Figure 10-3](#)).

8. Close the drive carrier handle to lock the new drive carrier in place.
9. If you removed the bezel in step 2, reinstall it now.
10. Install any required SCSI device drivers. For more information, see your operating system documentation.
11. If the hard-disk drive is a new drive, run the Dell Diagnostics to test the new drive.

Installing a Dell PowerEdge Expandable RAID Controller Host Adapter Card

Follow these general guidelines when you install a Dell host adapter card. For specific instructions, refer to the documentation supplied with the PERC host adapter card.

▲ WARNING: Before you install the host adapter card, you must turn off the system and disconnect it from the electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

▲ WARNING: See "Protecting Against Electrostatic Discharge" in the safety instructions in the System Information document.

2. Unpack the host adapter card and prepare it for installation. For instructions, see the documentation accompanying the host adapter card.
3. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").
4. Install the controller card in an expansion slot. See "[Installing System Board Options](#)" for information on installing the card.
5. Detach the interface cable from the SCSI host adapter connector on the system board (labeled "SCSIA") See [Figure 10-1](#) for the location of this connector.
6. Connect the end of the SCSI interface cable to the connector on the host adapter card. To identify the correct connector, see the documentation for the host adapter card.
7. If you are attaching multiple external SCSI devices, daisy-chain the devices to each other using the cables shipped with each device. See each device's documentation for information on cabling that device as part of a daisy chain.
8. Close the system doors, and then reconnect the system and peripherals to their electrical outlets.
9. Connect the external SCSI device(s) to electrical outlet(s).

For each external device, plug the socket end of the power cable into the power receptacle on the back of the device, and plug the other end of the power cable into an electrical outlet.

10. Install any required SCSI device drivers. For more information, see your operating system documentation.
11. Test the SCSI hard-disk drive by running the Dell Diagnostics.

Installing a SCSI Backplane Daughter Card

To operate the SCSI backplane in a 2 x 2 split backplane configuration, you must install a second, optional daughter card. To install the daughter card, perform the following steps.

▲ WARNING: Before you install the daughter card, you must turn off the system and disconnect it from the electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

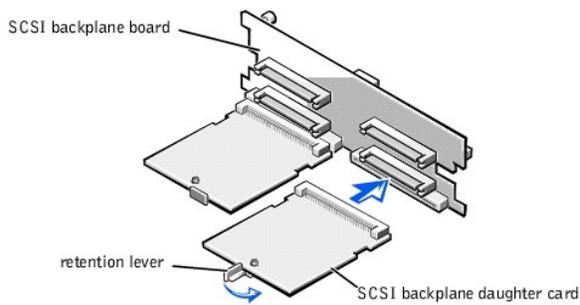
▲ WARNING: See "Protecting Against Electrostatic Discharge" in the safety instructions in the System Information document.

2. Unpack the SCSI backplane board daughter card kit.
3. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").

👉 NOTICE: You must remove all hard-disk drives to avoid damaging the SCSI backplane board when you remove it later in this procedure.

4. Remove the two hard-disk drives from the right-hand drive bay (see "[Installing SCSI Hard-Disk Drives](#)").
5. The daughter card fits between the sides of a card guide on the floor of the drive bay. To install the card in the card guide, perform the following steps:
 - a. Hold the daughter card by its edges with the component side facing up and the card connector facing the SCSI backplane board (see [Figure 10-4](#)).

Figure 10-4. Installing a Daughter Card



- b. Position the card in the drive bay so that the notches on the left and right edges of the card are aligned with the tabs on the card guide in the drive bay.
- c. Lower the card into the card guide.

👉 NOTICE: Ensure that the two connectors are aligned before proceeding.

- d. Slide the daughter card into the drive bay and align the connector on the card with the corresponding connector on the backplane.
 - e. Lock the card into place by closing the retention lever on the card's front edge (see [Figure 10-4](#)).
6. Reinstall the hard-disk drives in the system.
 7. Change the SCSI cable connections to the SCSI backplane as necessary to operate the backplane as a 2 x 2 split backplane.

To configure the drives in a split 2 x 2 configuration (or 1 x 2 and 1 x 3 in a five-drive system), you must connect two SCSI channels to the SCSI backplane board. The channel attached to connector SCSIB on the backplane board controls slots SCSI ID 0 and SCSI ID 1, while the channel connector to connector SCSIA controls slots SCSI ID 2, SCSI ID 3, and the fifth drive slot (if installed), SCSI ID 4 (see [Figure 10-1](#)).

8. Close the system doors, and then reconnect the system and peripherals to their electrical outlets.

Configuring the Boot Device

If you plan to boot the system from a hard-disk drive, the drive must be attached to the primary (or boot) controller or SCSI host adapter card. You can select the primary controller using the System Setup program. See "Using the System Setup Program" in the *User's Guide* for instructions.

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Getting Help

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Help Overview

This section describes the tools Dell provides to help you when you have a problem with your system. It also tells you when and how to contact Dell for technical or customer assistance.

Technical Assistance

If you need assistance with a technical problem, perform the following steps:

1. Complete the troubleshooting procedures provided in this guide.
2. Run the Dell™ Diagnostics.
See "[Running the Dell™ Diagnostics](#)."
3. Make a copy of the [Diagnostics Checklist](#), and fill it out.
4. Use Dell's extensive suite of online services available at Dell's website (<http://www.dell.com>) for help with installation and troubleshooting procedures.
For more information, see "[World Wide Web](#)."
5. If the preceding steps have not resolved the problem, call Dell for technical assistance.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

 NOTE: Dell's Express Service Code system may not be available in all countries.

For instructions on using the technical support service, see "[Technical Support Service](#)" and "[Before You Call](#)."

Help Tools

Dell provides a number of tools to assist you. These tools are described in the following sections.

 NOTE: Some of the following tools are not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

World Wide Web

The Internet is your most powerful tool for obtaining information about your system and other Dell products. Through the Internet, you can access most of the services described in this section, including AutoTech, TechFax, order status, technical support, and product information.

You can access Dell's support website at <http://support.dell.com>. To select your country, click the map that appears. The **Welcome to support.dell.com** page opens. Enter your system information to access help tools and information.

Dell can be accessed electronically using the following addresses:

- 1 World Wide Web

<http://www.dell.com/>

<http://www.dell.com/ap/> (for Asian/Pacific countries only)

<http://www.euro.dell.com> (for Europe only)

<http://www.dell.com/la> (for Latin American countries)

- 1 Anonymous file transfer protocol (FTP)

<ftp.dell.com/>

Log in as user:anonymous, and use your e-mail address as your password.

- 1 Electronic Support Service

support@us.dell.com

apsupport@dell.com (for Asian/Pacific countries only)

support.euro.dell.com (for Europe only)

1 Electronic Quote Service

sales@dell.com

apmarketing@dell.com (for Asian/Pacific countries only)

1 Electronic Information Service

info@dell.com

AutoTech Service

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their portable and desktop systems.

When you call AutoTech, you use your touch-tone telephone to select the subjects that correspond to your questions.

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, see "[Dell Contact Numbers](#)."

TechFax Service

Dell takes full advantage of fax technology to serve you better. Twenty-four hours a day, seven days a week, you can call the Dell TechFax line toll-free for all kinds of technical information.

Using a touch-tone phone, you can select from a full directory of topics. The technical information you request is sent within minutes to the fax number you designate. For the TechFax telephone number to call, see "[Dell Contact Numbers](#)."

Automated Order-Status System

You can call this automated service to check on the status of any Dell products that you have ordered. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, see "[Dell Contact Numbers](#)."

Technical Support Service

Dell's industry-leading hardware technical-support service is available 24 hours a day, seven days a week, to answer your questions about Dell hardware.

Our technical support staff pride themselves on their track record: more than 90 percent of all problems and questions are taken care of in just one toll-free call, usually in less than 10 minutes. When you call, our experts can refer to records kept on your Dell system to better understand your particular question. Our technical support staff use computer-based diagnostics to provide fast, accurate answers to questions.

To contact Dell's technical support service, see "[Before You Call](#)" and then call the number for your country as listed in "[Dell Contact Numbers](#)."

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call, see "[Dell Contact Numbers](#)."

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit Dell's website at <http://www.dell.com/>. For the telephone number to call to speak to a sales specialist, see "[Dell Contact Numbers](#)."

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain an authorization number, and write it clearly and prominently on the outside of the box.

For the telephone number to call, see "[Dell Contact Numbers](#)."

2. Include a copy of the invoice and a letter describing the reason for the return.
3. Include a copy of the [Diagnostics Checklist](#) indicating the tests you have run and any error messages reported by the Dell Diagnostics.
4. Include any accessories that belong with the item(s) being returned (such as power cables, software diskettes, and guides) if the return is for credit.
5. Pack the equipment to be returned in the original (or equivalent) packing materials.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect-on-delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at our receiving dock and returned to you.

Before You Call

 NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the [Diagnostics Checklist](#). If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the system. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the system itself. Make sure that the system documentation is available.

 CAUTION: Before servicing any components inside your system, see "[Safety First—For You and Your Computer](#)."

Diagnostics Checklist	
Name: _____	Date: _____
Address: _____	Phone number: _____
Service tag (bar code on the back of the system): _____	
Express Service Code: _____	
Return Material Authorization Number (if provided by Dell support technician): _____	
Operating system and version: _____	
Peripherals: _____ _____ _____	
Expansion cards: _____ _____ _____	
Are you connected to a network? yes <input type="checkbox"/> no <input type="checkbox"/>	
Network, version, and network card: _____	
Programs and versions: _____ _____ _____	
See your operating system documentation to determine the contents of the system's startup files. Print each file if possible. Otherwise, record the contents of each file before calling Dell.	
Error message, beep code, or diagnostic code: _____	
Description of problem and troubleshooting procedures you performed: _____ _____ _____ _____	

Dell Contact Numbers

The following table provides country-specific access codes and telephone numbers, websites, and email addresses that you can use to contact Dell.

The codes required depend on where you are calling from as well as the destination of your call; in addition, each country has a different dialing protocol. If you need assistance in determining which codes to use, contact a local or an international operator.

 NOTE: Toll-free numbers are for use only within the country for which they are listed. Area codes are most often used to call long distance within your own country (not internationally)—in other words, when your call originates in the same country you are calling.

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-mail Address	Area Codes, Local Numbers, and Toll Free Numbers
Australia (Sydney) International Access Code: 0011 Country Code: 61 City Code: 2	Home and Small Business	1-300-65-55-33
	Government and Business	toll free: 1-800-633-559
	Preferred Accounts Division (PAD)	toll free: 1-800-060-889
	Customer Care	toll free: 1-800-819-339
	Corporate Sales	toll free: 1-800-808-385

	Transaction Sales	toll free: 1-800-808-312
	Fax	toll free: 1-800-818-341
Austria (Vienna) International Access Code: 900 Country Code: 43 City Code: 1	Home/Small Business Sales	01 795 67602
	Home/Small Business Fax	01 795 67605
	Home/Small Business Customer Care	01 795 67603
	Preferred Accounts/Corporate Customer Care	0660 8056
	Home/Small Business Technical Support	01 795 67604
	Preferred Accounts/Corporate Technical Support	0660 8779
	Switchboard	01 491 04 0
	Website: http://support.euro.dell.com	
	E-mail: tech_support_Central_Europe@dell.com	
Belgium (Brussels) International Access Code: 00 Country Code: 32 City Code: 2	Technical Support	02 481 92 88
	Customer Care	02 481 91 19
	Home/Small Business Sales	toll free: 0800 16884
	Corporate Sales	02 481 91 00
	Fax	02 481 92 99
	Switchboard	02 481 91 00
	Website: http://support.euro.dell.com	
	E-mail: tech_be@dell.com	
Brazil International Access Code: 0021 Country Code: 55 City Code: 51	Customer Support, Technical Support	0800 90 3355
	Sales	0800 90 3366
	Website: http://www.dell.com/br	
Brunei Country Code: 673	Customer Technical Support (Penang, Malaysia)	604 633 4966
	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales (Penang, Malaysia)	604 633 4955
Canada (North York, Ontario) International Access Code: 011	Automated Order-Status System	toll free: 1-800-433-9014
	AutoTech (Automated technical support)	toll free: 1-800-247-9362
	Customer Care (From outside Toronto)	toll free: 1-800-387-5759
	Customer Care (From within Toronto)	416 758-2400
	Customer Technical Support	toll free: 1-800-847-4096
	Sales (Direct Sales—from outside Toronto)	toll free: 1-800-387-5752
	Sales (Direct Sales—from within Toronto)	416 758-2200
	Sales (Federal government, education, and medical)	toll free: 1-800-567-7542
	Sales (Major Accounts)	toll free: 1-800-387-5755
TechFax	toll free: 1-800-950-1329	
Chile (Santiago) Country Code: 56 City Code: 2	Sales, Customer Support, and Technical Support	toll free: 1230-020-4823
China (Xiamen) Country Code: 86 City Code: 592	Technical Support	toll free: 800 858 2437
	Customer Experience	toll free: 800 858 2060
	Home and Small Business	toll free: 800 858 2222
	Preferred Accounts Division	toll free: 800 858 2062
	Large Corporate Accounts	toll free: 800 858 2999
Czech Republic (Prague) International Access Code: 00 Country Code: 420 City Code: 2	Technical Support	02 22 83 27 27
	Customer Care	02 22 83 27 11
	Fax	02 22 83 27 14
	TechFax	02 22 83 27 28
	Switchboard	02 22 83 27 11
	Website: http://support.euro.dell.com	
	E-mail: czech_dell@dell.com	
Denmark (Horsholm)	Technical Support	45170182

International Access Code: 009 Country Code: 45	Relational Customer Care	45170184
	Home/Small Business Customer Care	32875505
	Switchboard	45170100
	Fax Technical Support (Upplands Vasby, Sweden)	859005594
	Fax Switchboard	45170117
	Website: http://support.euro.dell.com	
	E-mail: den_support@dell.com	
Finland (Helsinki) International Access Code: 990 Country Code: 358 City Code: 9	Technical Support	09 253 313 60
	Technical Support Fax	09 253 313 81
	Relational Customer Care	09 253 313 38
	Home/Small Business Customer Care	09 693 791 94
	Fax	09 253 313 99
	Switchboard	09 253 313 00
	Website: http://support.euro.dell.com	
	E-mail: fin_support@dell.com	
France (Paris/Montpellier) International Access Code: 00 Country Code: 33 City Code: (1) (4)	Home and Small Business	
	Technical Support	0825 387 270
	Customer Care	0825 823 833
	Switchboard	0825 004 700
	Switchboard (Alternative)	04 99 75 40 00
	Sales	0825 004 700
	Fax	0825 004 701
	Website: http://support.euro.dell.com	
	E-mail: web_fr_tech@dell.com	
	Corporate	
	Technical Support	0825 004 719
	Customer Care	0825 338 339
	Switchboard	01 55 94 71 00
	Sales	01 55 94 71 00
	Fax	01 55 94 71 99
	Website: http://support.euro.dell.com	
	E-mail: web_fr_tech@dell.com	
Germany (Langen) International Access Code: 00 Country Code: 49 City Code: 6103	Technical Support	06103 766-7200
	Home/Small Business Customer Care	0180-5-224400
	Global Segment Customer Care	06103 766-9570
	Preferred Accounts Customer Care	06103 766-9420
	Large Accounts Customer Care	06103 766-9560
	Public Accounts Customer Care	06103 766-9555
	Switchboard	06103 766-7000
	Website: http://support.euro.dell.com	
	E-mail: tech_support_Central_Europe@dell.com	
Hong Kong International Access Code: 001 Country Code: 852	Technical Support	toll free: 800 96 4107
	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales	toll free: 800 96 4109
	Corporate Sales	toll free: 800 96 4108
Ireland (Cherrywood) International Access Code: 16 Country Code: 353 City Code: 1	Technical Support	0870 908 0800
	Customer Care	01 204 4026
	Sales	01 286 0500
	SalesFax	01 204 0144
	Fax	0870 907 5590
	Switchboard	01 286 0500
	Website: http://support.euro.dell.com	
E-mail: dell_direct_support@dell.com		
Italy (Milan)	Home and Small Business	

International Access Code: 00 Country Code: 39 City Code: 02	Technical Support	02 577 826 90
	Customer Care	02 696 821 14
	Fax	02 696 824 13
	Switchboard	02 696 821 12
	Website: http://support.euro.dell.com	
	E-mail: web_it_tech@dell.com	
	Corporate	
	Technical Support	02 577 826 90
	Customer Care	02 577 825 55
	Fax	02 575 035 30
	Switchboard	02 577 821
	Website: http://support.euro.dell.com	
	E-mail: web_it_tech@dell.com	
	Japan (Kawasaki) International Access Code: 001 Country Code: 81 City Code: 44	Technical Support (Server)
Technical Support (Dimension™ and Inspiron™)		toll free: 0120-1982-26
Technical Support Outside of Japan (Dimension and Inspiron)		81-44-520-1167
Technical Support (OptiPlex™, Dell Precision™, and Latitude™)		toll free: 0120-1984-33
Technical Support Outside of Japan (OptiPlex, Dell Precision, and Latitude)		81-44-556-3894
24-Hour Automated Order Service		044 556-3801
Customer Care		044 556-4240
Home and Small Business Group Sales		044 556-3344
Preferred Accounts Division Sales		044 556-3433
Large Corporate Accounts		044 556-3430
Faxbox Service		044 556-3490
Switchboard		044 556-4300
Website: http://support.jp.dell.com		
Korea (Seoul) International Access Code: 001 Country Code: 82 City Code: 2	Technical Support	toll free: 080-200-3800
	Sales	toll free: 080-200-3777
	Customer Service (Seoul, Korea)	2194-6220
	Customer Service (Penang, Malaysia)	604 633 4949
	Fax	2194-6202
	Switchboard	2194-6000
Latin America	Customer Technical Support (Austin, Texas, U.S.A.)	512 728-4093
	Customer Service (Austin, Texas, U.S.A.)	512 728-3619
	Fax (Technical Support and Customer Service)(Austin, Texas, U.S.A.)	512 728-3883
	Sales (Austin, Texas, U.S.A.)	512 728-4397
	SalesFax (Austin, Texas, U.S.A.)	512 728-4600 or 512 728-3772
Luxembourg International Access Code: 00 Country Code: 352	Technical Support (Brussels, Belgium)	02 481 92 88
	Home/Small Business Sales (Brussels, Belgium)	toll free: 080016884
	Corporate Sales (Brussels, Belgium)	02 481 91 00
	Customer Care (Brussels, Belgium)	02 481 91 19
	Fax (Brussels, Belgium)	02 481 92 99
	Switchboard (Brussels, Belgium)	02 481 91 00
	Website: http://support.euro.dell.com	
E-mail: tech_be@dell.com		
Macau Country Code: 853	Technical Support	toll free: 0800 582
	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales	toll free: 0800 581
Malaysia (Penang) International Access Code: 00 Country Code: 60	Technical Support	toll free: 1 800 888 298
	Customer Service	04 633 4949
	Transaction Sales	toll free: 1 800 888 202

City Code: 4	Corporate Sales	toll free: 1 800 888 213
Mexico International Access Code: 95 Country Code: 52 City Code: 5	Automated Order-Status System (Austin, Texas, U.S.A.)	512 728-0685
	AutoTech (Automated technical support) (Austin, Texas, U.S.A.)	512 728-0686
	Customer Technical Support	525 228-7870
	Sales	525 228-7811 or toll free: 91-800-900-37 or toll free: 91-800-904-49
	Customer Service	525 228-7878
	Main	525 228-7800
	Netherlands (Amsterdam) International Access Code: 00 Country Code: 31 City Code: 20	Technical Support
Customer Care		020 581 8740
Home/Small Business Sales		toll free: 0800-0663
Home/Small Business Sales Fax		020 682 7171
Corporate Sales		020 581 8818
Corporate Sales Fax		020 686 8003
Fax		020 686 8003
Switchboard		020 581 8818
Website: http://support.euro.dell.com		
E-mail: tech_nl@dell.com		
New Zealand International Access Code: 00 Country Code: 64	Home and Small Business	0800 446 255
	Government and Business	0800 444 617
	Sales	0800 441 567
	Fax	0800 441 566
Norway (Lysaker) International Access Code: 095 Country Code: 47	Technical Support	671 16882
	Relational Customer Care	671 17514
	Home/Small Business Customer Care	23162298
	Switchboard	671 16800
	Fax Technical Support (Upplands Vasby, Sweden)	590 05 594
	Fax Switchboard	671 16865
	Website: http://support.euro.dell.com	
	E-mail: nor_support@dell.com	
Poland (Warsaw) International Access Code: 011 Country Code: 48 City Code: 22	Technical Support	22 57 95 700
	Customer Care	22 57 95 999
	Sales	22 57 95 999
	Fax	22 57 95 998
	Switchboard	22 57 95 999
	Website: http://support.euro.dell.com	
	E-mail: pl_support@dell.com	
Portugal International Access Code: 00 Country Code: 35	Technical Support	35 800 834 077
	Customer Care	34 902 118 540 or 35 800 834 075
	Sales	35 800 834 075
	Fax	35 121 424 01 12
	E-mail: es_support@dell.com	
Singapore (Singapore) International Access Code: 005 Country Code: 65	Technical Support	toll free: 800 6011 051
	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales	toll free: 800 6011 054
	Corporate Sales	toll free: 800 6011 053
South Africa (Johannesburg) International Access Code: 09/091 Country Code: 27 City Code: 11	Technical Support	011 709 7710
	Customer Care	011 709 7707
	Sales	011 709 7700
	Fax	011 706 0495
	Switchboard	011 709 7700
	Website: http://support.euro.dell.com	

	E-mail: dell_za_support@dell.com	
Southeast Asian and Pacific Countries	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)	604 633 4810
Spain (Madrid)	Home and Small Business	
International Access Code: 00	Technical Support	902 100 130
Country Code: 34	Customer Care	902 118 540
City Code: 91	Sales	902 118 541
	Switchboard	902 118 541
	Fax	902 118 539
	Website: http://support.euro.dell.com	
	E-mail: web_esp_tech@dell.com	
	Corporate	
	Technical Support	902 100 130
	Customer Care	902 118 546
	Switchboard	91 722 92 00
	Fax	91 722 95 83
	Website: http://support.euro.dell.com	
	E-mail: web_esp_tech@dell.com	
Sweden (Upplands Vasby)	Technical Support	08 590 05 199
International Access Code: 009	Relational Customer Care	08 590 05 642
Country Code: 46	Home/Small Business Customer Care	08 587 70 527
City Code: 8	Fax Technical Support	08 590 05 594
	Sales	08 590 05 185
	Website: http://support.euro.dell.com	
	E-mail: swe_support@dell.com	
Switzerland (Geneva)	Technical Support (Home and Small Business)	0844 811 411
International Access Code: 00	Technical Support (Corporate)	0844 822 844
Country Code: 41	Customer Care (Home and Small Business)	0848 802 202
City Code: 22	Customer Care (Corporate)	0848 821 721
	Fax	022 799 01 90
	Switchboard	022 799 01 01
	Website: http://support.euro.dell.com	
	E-mail: swisstech@dell.com	
Taiwan	Technical Support	toll free: 0080 60 1255
International Access Code: 002	Technical Support (Servers)	toll free: 0080 60 1256
Country Code: 886	Transaction Sales	toll free: 0080 651 228 or 0800 33 556
	Corporate Sales	toll free: 0080 651 227 or 0800 33 555
Thailand	Technical Support	toll free: 0880 060 07
International Access Code: 001	Customer Support (Penang, Malaysia)	604 633 4949
Country Code: 66	Sales	toll free: 0880 060 09
U.K. (Bracknell)	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870 908 0500
International Access Code: 010	Technical Support (Direct/PAD and General)	0870 908 0800
Country Code: 44	Global Accounts Customer Care	01344 723186
City Code: 1344	Corporate Customer Care	01344 723185
	Preferred Accounts (500-5000 employees) Customer Care	01344 723196
	Central Government Customer Care	01344 723193
	Local Government Customer Care	01344 723194
	Home/Small Business Sales	0870 907 4000
	Corporate/Public Sector Sales	01344 860456
	Website: http://support.euro.dell.com	
	E-mail: dell_direct_support@dell.com	

U.S.A. (Austin, Texas)

International Access Code:
011

Country Code: 1

Automated Order-Status System	toll free: 1-800-433-9014
AutoTech (for portable and desktop systems)	toll free: 1-800-247-9362
Dell Home and Small Business Group (for portable and desktop systems):	
Customer Technical Support (Return Material Authorization Numbers)	toll free: 1-800-624-9896
Customer Technical Support (Home sales purchased via http://www.dell.com)	toll free: 1-877-576-3355
Customer Service (Credit Return Authorization Numbers)	toll free: 1-800-624-9897
National Accounts (systems purchased by established Dell national accounts [have your account number handy], medical institutions, or value-added resellers [VARs]):	
Customer Service and Technical Support (Return Material Authorization Numbers)	toll free: 1-800-822-8965
Public Americas International (systems purchased by governmental agencies [local, state, or federal] or educational institutions):	
Customer Service and Technical Support (Return Material Authorization Numbers)	toll free: 1-800-234-1490
Dell Sales	toll free: 1-800-289-3355 or toll free: 1-800-879-3355
Spare Parts Sales	toll free: 1-800-357-3355
DellWare™	toll free: 1-800-753-7201
Desktop and Portable Fee-Based Technical Support	toll free: 1-800-433-9005
Server Fee-Based Technical Support	toll free: 1-800-967-0765
Sales (Catalogs)	toll free: 1-800-426-5150
Fax	toll free: 1-800-727-8320
TechFax	toll free: 1-800-950-1329
Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired	toll free: 1-877-DELLTTY (1-877-335-5889)
Switchboard	512 338-4400
Dellnet Technical Support	toll free: 1-877-Dellnet (1-877-335-5638)

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Jumpers, Switches, and Connectors

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [Jumpers and Switches—A General Explanation](#)
- [System Board Jumpers](#)
- [System Board Connectors](#)
- [SCSI Backplane Board Connectors](#)
- [Disabling a Forgotten Password](#)

This section provides specific information about the jumpers on the system board. It also provides some basic information on jumpers and switches and describes the connectors and sockets on the various boards in the system.

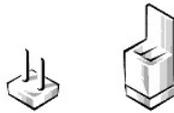
Jumpers and Switches—A General Explanation

Jumpers and switches provide a convenient and reversible way of reconfiguring the circuitry on a printed circuit board. When reconfiguring the system, you may need to change jumper settings on the system board. You may also need to change jumper and/or switch settings on expansion cards or drives.

Jumpers

Jumpers are small blocks on a circuit board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit. To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.

Figure A-1. Example Jumpers



⚠ WARNING: Make sure the system is turned off before you change a jumper setting. Otherwise, damage to the system or unpredictable results may occur.

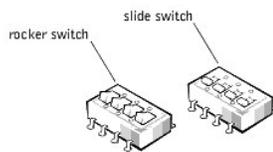
A jumper is referred to as open or unjumpered when the plug is pushed down over only one pin or if there is no plug at all. When the plug is pushed down over two pins, the jumper is referred to as jumpered. The jumper setting is often shown in text as two numbers, such as 1-2. The number 1 is printed on the circuit board so that you can identify each pin number based on the location of pin 1.

[Figure A-3](#) shows the location and default settings of the jumper blocks on the system board. See [Table A-1](#) for the designations, default settings, and functions of the system's jumpers.

Switches

Switches control various circuits or functions in the system. The switches that you are most likely to encounter are dual in-line package (DIP) switches, which are normally packaged in groups of two or more switches in a plastic case. Two common types of DIP switches are slide switches and rocker switches (see [Figure A-2](#)).

Figure A-2. Example Switches



Each of these switches has two positions or settings (usually on and off). To change the setting of a slide switch, use a small, pointed object such as a small screwdriver or a straightened paper clip to slide the switch to the proper position. To change the setting of a rocker switch, use the screwdriver or paper clip to press down on the appropriate side of the switch. In either case, do not use a pen, pencil, or other object that might leave a residue on the switch.

System Board Jumpers

[Figure A-3](#) shows the location of the configuration jumpers on the system board. [Table A-1](#) lists the function of these jumpers.

Figure A-3. System Board Jumpers

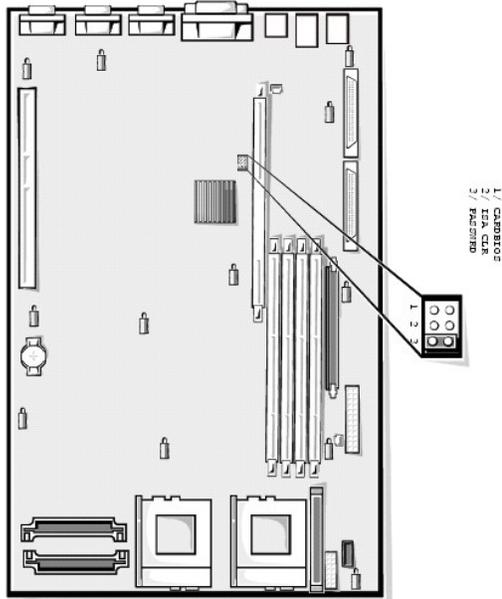


Table A-1. System-Board Jumper Settings

Jumper	Setting	Description
CARDBIOS		Reserved (<i>do not change</i>).
ISA_CLR		(default) The configuration settings are retained at system boot.
		The configuration settings are cleared at next system boot. (If the configuration settings become corrupted to the point where the system will not boot, install the jumper plug and boot the system. Remove the jumper before restoring the configuration information.)
PASSWRD		(default) The password feature is enabled.
		The password feature is disabled.
jumpered unjumpered		
NOTE: For the full name of an abbreviation or acronym used in this table, see " Abbreviations and Acronyms ."		

System Board Connectors

[Table A-2](#) lists the connectors and sockets located on the system board. See [Figure 8-1](#) for the location of these connectors and sockets.

Table A-2. System Board Connectors and Sockets

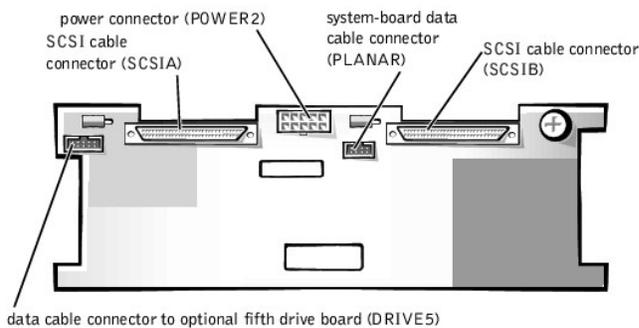
Connector or Socket	Description
BACKPLANE	Hot-pluggable SCSI backplane board interface cable connector
BATTERY	Battery connector
COMn	Serial port connectors; sometimes referred to as COM1 and COM2
DIMM_x	memory module sockets
DIMM_RAID	memory module socket for integrated RAID controller
INTRUS	Intrusion-alarm switch connectors
KYBD	Keyboard connector
MOUSE	Mouse connector

NIC _n	NIC connectors
PANEL	System control panel connector
PARALLEL	Parallel port connector; sometimes referred to as LPT1
POWER _n	Power connectors
PROC_ _n	Microprocessor connectors
RAID_KEY	Socket for integrated RAID controller hardware key
RISER	PCI riser board connector
SCSIA, SCSIB	SCSI host adapter connectors
USB _n	USB connectors
VGA	Video connector
VRM _n	Primary and secondary VRM connectors
NOTE: For the full name of an abbreviation or acronym used in this table, see " Abbreviations and Acronyms ."	

SCSI Backplane Board Connectors

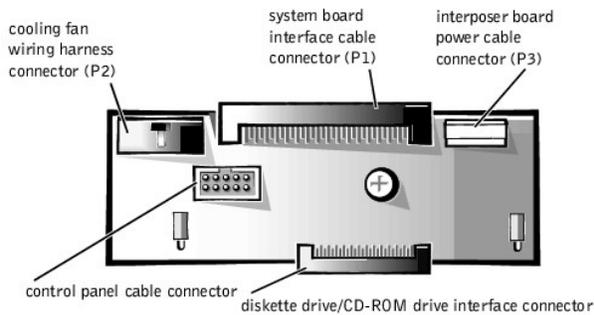
[Figure A-4](#) shows the location of the connectors on the back of the small computer system interface (SCSI) backplane board.

Figure A-4. Connectors on the SCSI Backplane Board



[Figure A-5](#) shows the connectors and sockets located on the interposer board.

Figure A-5. Connectors on the Interposer Board



Disabling a Forgotten Password

The system's software security features include a system password and a setup password, which are discussed in detail in "Using the System Setup Program" in the *User's Guide*. A password jumper on the system board enables these password features or disables them and clears any password(s) currently in use.

To disable a forgotten system password or setup password, perform the following steps.

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

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
2. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").

3. Refer to [Figure A-3](#) for the location of the password jumper (labeled "PASSWRD") on the system board.
4. Remove the jumper plug from the PASSWRD jumper.
5. Close the system doors, and then reconnect the system and peripherals to their electrical outlets, and turn them on.

The existing passwords are not disabled (erased) until the system boots with the PASSWRD jumper plug removed. However, before you assign a new system and/or setup password, you must install the jumper plug.

 NOTE: If you assign a new system and/or setup password with the jumper plug still removed, the system disables the new password(s) the next time it boots.

6. Repeat steps 1 and 2.
7. Install the jumper plug on the PASSWRD jumper.
8. Close the system doors, reconnect the system and peripherals to their electrical outlets, and turn them on.
9. Assign a new system and/or setup password.

To assign a new system password using the System Setup program, see "Assigning a System Password" in the *User's Guide*. To assign a new setup password using the System Setup program, see "Assigning a Setup Password" in the *User's Guide*.

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Abbreviations and Acronyms

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

A

ampere(s)

AC

alternating current

ACPI

Advanced Configuration and Power Interface

ADC

analog-to-digital converter

ADI

Autodesk Device Interface

AI

artificial intelligence

ANSI

American National Standards Institute

APIC

Advanced Peripheral Interrupt Controller

ASCII

American Standard Code for Information Interchange

ASIC

application-specific integrated circuit

BBS

bulletin board service

BIOS

basic input/output system

bpi

bits per inch

bps

bits per second

BTU

British thermal unit

C

Celsius

CCFT

cold cathode fluorescent tube

CD

compact disc

CD-ROM

compact disc read-only memory

CGA

color graphics adapter

cm

centimeter(s)

CMOS

complementary metal-oxide semiconductor

C.O.D.

collect on delivery

cpi

characters per inch

cpl

characters per line

CPU

central processing unit

DAC

digital-to-analog converter

DAT

digital audio tape

dB

decibel(s)

dB(A)

adjusted decibel(s)

DC

direct current

DIMM

dual in-line memory module

DIN

Deutsche Industrie Norm

DIP

dual in-line package

DMA

direct memory access

DOC

Department of Communications (in Canada)

dpi

dots per inch

DRAC

Dell OpenManage™ Remote Assistant Card

DRAM

dynamic random-access memory

DS/DD

double-sided double-density

DS/HD

double-sided high-density

ECC

error checking and correction

EDO

extended-data out

EGA

enhanced graphics adapter

EIDE

enhanced integrated drive electronics

EMI

electromagnetic interference

EMM

expanded memory manager

EMS

Expanded Memory Specification

EPP

Enhanced Parallel Port

EPROM

erasable programmable read-only memory

ESD

electrostatic discharge

ESDI

enhanced small-device interface

ESM

embedded server management

F

Fahrenheit

FAT

file allocation table

FCC

Federal Communications Commission

FC-PGA

Flip Chip Pin Grid Array

FIFO

first-in first-out

ft

feet

g

gram(s)

G

gravities

GB

gigabyte(s)

GUI

graphical user interface

h

hexadecimal

HIP

Hardware Instrumentation Package

HMA

high memory area

HPFS

High Performance File System

Hz

hertz

I/O

input/output

ICBM

inter-chassis management bus

ID

identification

IDE

integrated drive electronics

IRQ

interrupt request

ISA

Industry-Standard Architecture

JEIDA

Japanese Electronic Industry Development Association

K

kilo- (1024)

KB

kilobyte(s)

KB/sec

kilobyte(s) per second

Kb

kilobit(s)

Kbps

kilobit(s) per second

kg

kilogram(s)

kHz

kilohertz

LAN

local area network

lb

pound(s)

LCD

liquid crystal display

LED

light-emitting diode

LIF

low insertion force

LN

load number

lpi

lines per inch

LVD

low voltage differential

m

meter(s)

mA

milliampere(s)

mAh

milliampere-hour(s)

MB

megabyte(s)

Mb

megabit(s)

Mbps

megabit(s) per second

MBR

master boot record

MDA

monochrome display adapter

MGA

monochrome graphics adapter

MHz

megahertz

MMX™

MultiMedia eXtensions

mm

millimeter(s)

ms

millisecond(s)

MS-DOS®

Microsoft Disk Operating System

MTBF

mean time between failures

mV

millivolt(s)

NIC

network interface controller

NiCad

nickel cadmium

NiMH

nickel-metal hydride

NMI

nonmaskable interrupt

NNM

Network Node Manager

ns

nanosecond(s)

NTFS

NT File System

NVRAM

nonvolatile random-access memory

OTP

one-time programmable

PAL

programmable array logic

PCI

Peripheral Component Interconnect

PCMCIA

Personal Computer Memory Card International Association

PGA

pin grid array

POST

power-on self-test

ppm

pages per minute

PQFP

plastic quad flat pack

PSDB

power-supply distribution board

PS/2

Personal System/2

PVC

polyvinyl chloride

QIC

quarter-inch cartridge

RAID

redundant arrays of independent disks

RAM

random-access memory

RAMDAC

random-access memory digital-to-analog converter

REN

ringer equivalence number

RFI

radio frequency interference

RGB

red/green/blue

ROM

read-only memory

rpm

revolutions per minute

RTC

real-time clock

SCA

Single Controller Architecture

SCSI

small computer system interface

sec

second(s)

SEC

single-edge contact

SDRAM

synchronous dynamic random-access memory

SIMM

single in-line memory module

SMB

server management bus

SNMP

Simple Network Management Protocol

SRAM

static random-access memory

SSU

system setup utility

SVGA

super video graphics array

TFT

thin film transistor

tpi

tracks per inch

TSR

terminate-and-stay-resident

UMB

upper memory block

UPS

uninterruptible power supply

USOC

Universal Service Ordering Code

V

volt(s)

VAC

volt(s) alternating current

VDC

volt(s) direct current

VGA

video graphics array

VLSI

very-large-scale integration

VRAM

video random-access memory

W

watt(s)

WH

watt-hour(s)

XMM

extended memory manager

XMS

eXtended Memory Specification

ZIF

zero insertion force

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Introduction

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

Dell™ PowerEdge™ 2550 systems are compact, high-speed servers that offer significant service and upgrade features. These systems include the following service features to make troubleshooting and repair easy and effective:

- 1 Dell Diagnostics, which checks for hardware problems (if the system can boot)
- 1 Embedded server management hardware, which monitors temperatures and voltages throughout the system and notifies you if the system overheats, a system cooling fan malfunctions, or a power supply fails

The chassis simplifies removing and replacing system components. The Dell-designed small computer system interface (SCSI) backplane board and hard-disk drive carriers eliminate the extensive cabling and drive configuration usually required for a SCSI subsystem.

The following upgrade options are offered for your PowerEdge system:

- 1 An additional microprocessor
- 1 Additional memory
- 1 An optional redundant power supply
- 1 An integrated redundant array of independent disks (RAID) controller that supports RAID levels 0, 1, 5, and 10
- 1 An optional SCSI backplane daughter card for split SCSI backplane support
- 1 A SCSI backplane extender board to support a fifth SCSI hard-disk drive in the peripheral bay
- 1 A variety of expansion-card options
- 1 A Dell OpenManage™ Remote Assistant Card for system management

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Checking the Basics

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [Backing Up Files](#)
- [Basic Checks](#)
- [Checking Connections and Switches](#)
- [Look and Listen](#)
- [The System Setup Program](#)

If your system is not working as expected, begin troubleshooting using the following procedures. They will guide you through some initial checks and procedures that can solve basic system problems. These procedures can also direct you to more detailed troubleshooting information and procedures to solve more complex problems.

 **NOTE:** When you see the question "Is the problem resolved?" in a troubleshooting procedure, perform the operation that caused the problem.

Backing Up Files

If the system is behaving erratically, back up the files on the hard-disk drives immediately. See the documentation that came with the operating system for instructions on how to back up the files.

Basic Checks

The following procedure leads you through the checks necessary to solve some basic system problems:

1. Was an alert message issued by the server management software?
Yes. See the information on alert log messages in your server management documentation.
No. Go to step 2.
 2. Is the system wet or damaged?
Yes. Go to "[Checking Inside the System.](#)"
No. Go to step 3.
 3. Perform the steps in "[Checking Connections and Switches.](#)"
Is the problem resolved?
Yes. The power to the system was faulty, or the connections to the system were loose. You have fixed the problem.
No. Go to step 4.
 4. Follow the procedures described in "[Look and Listen.](#)"
Did the system complete the boot routine?
Yes. Go to step 5.
No. A serious malfunction may have occurred. Go to "[Getting Help.](#)"
 5. Did you receive a system message or beep code?
Yes. Go to "[Messages and Codes.](#)"
No. Go to step 6.
 6. Verify the settings in the System Setup program. See "Using the System Setup Program" in your *User's Guide*.
Is the problem resolved?
Yes. The system configuration information was incorrect. You have fixed the problem.
No. Go to step 7.
 7. Run the Dell™ Diagnostics. See "[Running the Dell™ Diagnostics.](#)"
-

Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the system, monitor, or other peripherals (such as a printer, keyboard, mouse, or other external equipment). A quick check of all the switches, controls, and cable connections can easily solve these problems.

[Figure 2-1](#) shows the back-panel connections on the system. [Figure 2-2](#) shows the front-panel controls and indicators on the system.

Figure 2-1. Back-Panel Features

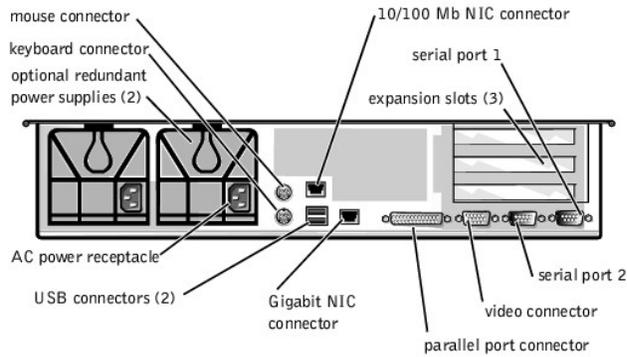
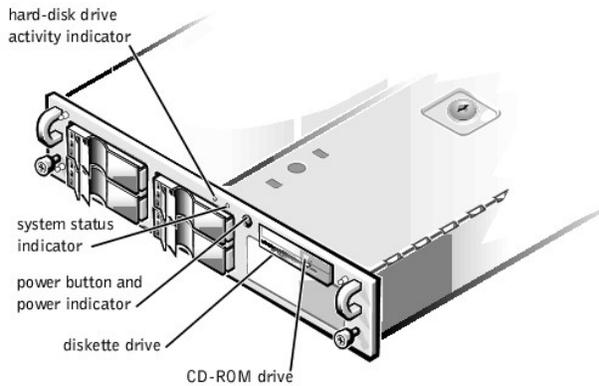


Figure 2-2. Front-Panel Features



To check all connections and switches, perform the following steps:

1. Turn off the system, including any attached peripherals (such as the monitor, keyboard, printer, external drives, scanners, and plotters). Disconnect all AC power cables from their electrical outlets.
2. If the system is connected to a power strip (or power distribution unit), turn the power strip off and then on again.

Is the power strip receiving power?
Yes. Go to step 5.
No. Go to step 3.
3. Plug the power strip into another electrical outlet.

Is the power strip receiving power?
Yes. The original electrical outlet probably does not function. Use a different electrical outlet.
No. Go to step 4.
4. Plug the system directly into the electrical outlet.

Does the system receive power?
Yes. The power strip is probably not functioning properly. Use another power strip.
No. Go to step 5.

5. Reconnect the system to the electrical outlet or power strip. Make sure that all connections fit tightly together.
6. Turn on the system.

Is the problem resolved?

Yes. The connections were loose. You have fixed the problem.

No. Go to step 7.
7. Is the monitor operating properly?

Yes. Go to step 8.

No. Go to "[Troubleshooting the Monitor](#)" in "Checking the Equipment."
8. Is the keyboard operating properly?

Yes. Go to step 9.

No. Go to "[Troubleshooting the Keyboard](#)" in "Checking the Equipment."
9. Are the mouse and printer operating properly?

Yes. See "[Look and Listen](#)."

No. Go to "[Troubleshooting the Basic I/O Functions](#)" in "Checking the Equipment."

Look and Listen

Looking at and listening to the system is important in determining the source of a problem. Look and listen for the indications described in [Table 2-1](#).

Table 2-1. Boot Routine Indications

Look/Listen For	Action
An error message	See " Messages and Codes ."
Alert messages from the server management software	See the information on alert log messages in your server management documentation.
The monitor's power indicator	Most monitors have a power indicator (usually on the front bezel). If the monitor's power indicator does not come on, see " Troubleshooting the Monitor " in "Checking the Equipment."
The keyboard indicators	Most keyboards have one or more indicators (usually in the upper-right corner). Press the <Num Lock> key, the <Caps Lock> key, or the <Scroll Lock> key to toggle their respective keyboard indicators on and off. If the indicators do not light up, see " Troubleshooting the Keyboard " in "Checking the Equipment."
The diskette-drive access indicator	The diskette-drive access indicator should quickly flash on and off when you access data on the diskette drive. If the diskette-drive access indicator does not light up, see " Troubleshooting the Diskette Drive Subsystem " in "Checking Inside the System."
The hard-disk drive activity indicators	The hard-disk drive activity indicators should quickly flash on and off when you access data on the hard-disk drives. On a system running the Microsoft® Windows NT® operating system, you can test the drive by opening Windows® Explorer and clicking the icon for drive C. If the hard-disk drive access indicator does not come on, see " Troubleshooting SCSI Hard-Disk Drives " in "Checking Inside the System."
A series of beeps	See " System Beep Codes " in "Messages and Codes."

NOTE: For the full name of an abbreviation or acronym used in this table, see "[Abbreviations and Acronyms](#)."

The System Setup Program

You can easily correct certain system problems by verifying the correct settings in the System Setup program. When you boot the system, the system checks the system configuration information and compares it with the current hardware configuration. If the system hardware configuration does not match the information recorded by the System Setup program, an error message may appear on the screen.

This problem can happen if you changed the system's hardware configuration and forgot to run the System Setup program. To correct this problem, enter the System Setup program, correct the corresponding System Setup setting, and reboot the system. See "Using the System Setup Program" in the *User's Guide* for detailed instructions on using the System Setup program.

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Messages and Codes

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [System Messages](#)
- [System Beep Codes](#)
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- [Diagnostics Messages](#)
- [Alert Log Messages From the Dell OpenManage™ Server Agent](#)
- [SCSI Hard-Disk Drive Indicator Codes](#)

Application programs, operating systems, and the system itself are capable of identifying problems and alerting you to them. When a problem occurs, a message may appear on the monitor screen or a beep code may sound.

Several different types of messages can indicate when the system is not functioning properly:

- 1 System messages
- 1 System beep codes
- 1 Warning messages
- 1 Diagnostics messages
- 1 Alert messages
- 1 Small computer system interface (SCSI) hard-disk drive indicator codes

This section describes each type of message and lists the possible causes and actions you can take to resolve any problems indicated by a message. To determine what type of message you have received, read the following sections.

System Messages

System messages alert you to a possible operating system problem or to a conflict between the software and hardware. [Table 3-1](#) lists the system error messages that can occur and the probable cause for each message.

 NOTE: If you receive a system message that is not listed in [Table 3-1](#), check the documentation for the application program that is running when the message appears or the operating system documentation for an explanation of the message and recommended action.

Table 3-1. System Messages

Message	Cause	Corrective Action
Address mark not found	Faulty diskette drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Alert! Single-bit memory error previously detected in xxxx xxxhx	Improperly seated or faulty memory modules	Remove and reseat the memory modules. If the problem persists, replace the memory modules. See " Getting Help " for instructions on obtaining technical assistance.
Alert! Unsupported memory in DIMM slot(s)	Unsupported memory module(s) installed in specified slot(s)	Replace one or more memory modules so that all memory modules are the same type.
Alert! Uncorrectable memory error previously detected in xxxx xxxhx	Improperly seated or faulty memory modules	Remove and reseat the memory modules. If the problem persists, replace the memory modules. See " Getting Help " for instructions on obtaining technical assistance.
Attachment failed to respond	Diskette drive or hard-disk drive controller cannot send data to associated drive	Replace the drive. See " Getting Help " for instructions on obtaining technical assistance.
Auxiliary device failure	Mouse cable connector loose or improperly connected, or defective mouse	Check the mouse cable connection. If the problem persists, replace the mouse.
Bad error-correction code(ECC) on disk read Controller has failed	Faulty diskette drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
CD-ROM drive not found	Improperly connected CD-ROM drive	Check that the diskette drive/CD-ROM drive unit is seated properly against the interposer board on the peripheral cage. See " Installing a Drive in the Peripheral Bay ." Replace the drive. See " Getting Help " for instructions on obtaining technical assistance.
CPUs with different level 2 cache sizes detected	Two different types of microprocessors are installed	Install a correct version of the microprocessor so that both micro-processors have the same level 2 cache size.
Data error	Faulty diskette, diskette drive, or hard-disk drive	Replace the diskette, diskette drive, or hard-disk drive.
Decreasing available memory	One or more memory modules improperly seated or faulty	Remove and reseat the memory modules. If the problem persists, replace the memory modules. See " Getting Help " for

		instructions on obtaining technical assistance.
Diskette drive 0 seek failure	Faulty or improperly inserted diskette, incorrect configuration settings in System Setup program, loose diskette drive interface cable, or loose power cable	Replace the diskette. Run the System Setup program to correct the diskette drive type. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions. Check that the diskette drive/CD-ROM drive unit is seated properly against the interposer board on the peripheral cage. See " Installing a Drive in the Peripheral Bay ."
Diskette read failure	Faulty diskette, faulty or improperly connected diskette drive, or loose power cable	Check that the diskette drive/CD-ROM drive unit is seated properly against the interposer board on the peripheral cage. See " Installing a Drive in the Peripheral Bay ."
Diskette subsystem reset failed	Faulty diskette drive controller (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Diskette write protected	Diskette write-protect feature activated	Move the write-protect tab on the diskette.
Drive not ready	Diskette missing from or improperly inserted in diskette drive	Reinsert or replace the diskette.
Embedded server management error Embedded server management is not present	Embedded server management memory may be temporarily corrupted	Shut down the system to clear the memory, and then restart the system. If the problem persists, see " Getting Help " for instructions on obtaining technical assistance.
Gate A20 failure	Faulty keyboard controller (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
General failure	Operating system corrupted or not installed properly	Reinstall the operating system.
Hard disk controller failure	Incorrect configuration settings in System Setup program, improperly connected hard-disk drive, faulty hard-disk drive controller subsystem (defective system board), or loose power cable	Check the hard-disk drive configuration settings in the System Setup program. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board. See " Installing Hard-Disk Drives ."
Invalid configuration information - please run SETUP program	Incorrect ISA_CLR jumper configuration, incorrect configuration settings in System Setup program, or faulty battery	Remove the plug from the ISA_CLR jumper. See " Jumpers, Switches, and Connectors " for instructions. Check the System Setup configuration settings. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions. Replace the battery. See " Installing System Board Options ."
Invalid CPU speed detected	Microprocessor not supported by system	Install a correct version of the microprocessor in the specified microprocessor connector.
Invalid NVRAM configuration, resource reallocated	System detected and corrected a resource conflict when system resources were allocated using the Resource Configuration Utility	No action is required.
I/O parity interrupt at address	Expansion card improperly installed or faulty	Reinstall the expansion card. See " Installing System Board Options ." If the problem persists, replace the expansion card.
Keyboard failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Keyboard controller failure	Defective keyboard/mouse controller (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Keyboard data line failure Keyboard stuck key failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Memory address line failure at address, read value expecting value Memory double word logic failure at address, read value expecting value Memory odd/even logic failure at address, read value expecting value Memory write/read failure at address, read value expecting value	Faulty or improperly seated memory modules or defective system board	Remove and reseat the memory modules. If the problem persists, replace the memory modules. If the problem still persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Memory allocation error	Faulty application program	Restart the application program.
Memory parity interrupt at address	Improperly seated or faulty memory modules	Remove and reseat the memory modules. If the problem persists, replace the memory modules. See " Getting Help " for instructions on obtaining technical assistance.
Memory tests terminated by keystroke	POST memory test terminated by pressing the spacebar	No action is required.
No boot device available	Faulty diskette, diskette drive subsystem, CD-ROM drive, hard-disk drive, or hard-disk drive subsystem, or no boot disk in drive A	Replace the diskette drive, CD-ROM, or hard-disk drive. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
No boot sector on hard-disk drive	Incorrect configuration settings in the System Setup program	Check the hard-disk drive configuration settings in the System Setup program. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions.
No timer tick interrupt	Defective system board	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.

Non-system disk or disk error	Faulty diskette, diskette drive subsystem, or hard-disk drive subsystem	Replace the diskette, CD-ROM, or hard-disk drive. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Not a boot diskette	No operating system on diskette	Use a bootable diskette.
Processor with different speed detected	The microprocessors have different speeds	Install a microprocessor with the same speed.
Processor in socket 1 not installed!	No microprocessor is installed in the primary socket	Remove the microprocessor from the secondary socket and install it in the primary socket
Read fault Requested sector not found	Faulty diskette, diskette/CD-ROM drive subsystem, or hard-disk drive subsystem (defective system board)	Replace the diskette, CD-ROM, or hard-disk drive. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Reset failed	Improperly connected diskette drive, CD-ROM drive, hard-disk drive, or power cable	Check that the diskette drive/CD-ROM drive unit is seated properly against the interposer board on the peripheral cage. See " Installing a Drive in the Peripheral Bay ." Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board. See " Installing Hard-Disk Drives ."
ROM bad checksum = address	Expansion card improperly installed or faulty	Reinstall the expansion card. See " Installing System Board Options ." If the problem persists, replace the expansion card.
Sector not found	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek error	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek operation failed	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Shutdown failure	Defective system board	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
System backplane cable error	Improperly attached interface cables	Check the primary and secondary SCSI interface cable connections to the backplane board. See " Installing Hard-Disk Drives ."
System backplane error	Improperly attached or missing backplane	Check the interface cable connections to the backplane board. See " Installing Hard-Disk Drives ."
Time-of-day clock stopped	Defective battery or faulty chip (defective system board)	Replace the system battery. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Time-of-day not set - please run SETUP program	Incorrect Time or Date settings or defective system battery	Check the Time and Date settings. See "Using the System Setup Program" in the User's Guide for instructions. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Timer chip counter 2 failed	Defective system board	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Unexpected interrupt in protected mode	Improperly seated memory modules or faulty keyboard/mouse controller chip (defective system board)	Remove and reseat the memory modules. If the problem persists, replace the memory modules. If the problem still persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
Unsupported CPU detected in SLOT n Unsupported CPU speed detected!	Microprocessor not supported by system	Install a correct version of the microprocessor in the specified microprocessor connector.
Unsupported CPU speed in CMOS	Microprocessor not supported by BIOS	Upgrade the BIOS. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions.
Unsupported CPU stepping detected	Microprocessor's stepping is not supported	Install a correct version of the microprocessor in the specified microprocessor connector.
Unsupported DIMM installed in the RAID DIMM slot!	RAID DIMM not supported by system	Install a correct version of the RAID memory module.
Unsupported RAID key detected!	RAID hardware key not supported by system	Install the RAID hardware key for your specific system.
Utility partition not available	The <F10> key was pressed during POST, but no utility partition exists on the boot hard-disk drive	Create a utility partition on the boot hard-disk drive. See "Using the <i>Dell OpenManage Server Assistant</i> CD" in your <i>User's Guide</i> .
Warning! Detected mode switch from RAID to SCSI on the onboard RAID channel. Data loss will occur! Press Y to confirm the change; press any other key to cancel.	Type of controller has changed since previous system boot	Back up information on the drives before changing the type of controller used with the hard-disk drives.
Write fault Write fault on selected drive	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.
NOTE: For the full name of an abbreviation or acronym used in this table, see " Abbreviations and Acronyms ."		

System Beep Codes

When an error that cannot be reported on the monitor occurs during a boot routine, the system may emit a series of beeps that identify the problem. The beep code is a pattern of sounds; for example, one beep followed by a second beep and then a burst of three beeps (code 1-1-3) means that the system was

unable to read the data in nonvolatile random-access memory (NVRAM). This information is valuable to the Dell technical support representative if you need to call for technical assistance.

 NOTE: If the system boots without a keyboard, mouse, or monitor attached, the system will not issue beep codes related to these peripherals.

When a beep code is emitted, record it on a copy of the Diagnostics Checklist in "Getting Help," and then look it up in [Table 3-2](#). If you are unable to resolve the problem by looking up the meaning of the beep code, use the Dell Diagnostics to identify a more serious cause. If you are still unable to resolve the problem, see "Getting Help" for instructions on obtaining technical assistance.

Table 3-2. System Beep Codes

Code	Cause	Corrective Action
1-1-3	CMOS write/read failure	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
1-1-4	BIOS checksum failure	This fatal error usually requires that you replace the BIOS firmware. See " Getting Help " for instructions on obtaining technical assistance.
1-2-1	Programmable interval-timer failure	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
1-2-2	DMA initialization failure	Remove and reseal the memory modules. If the problem persists, replace the memory modules. If the problem still persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
1-2-3	DMA page register write/read failure	
1-3-1	Main-memory refresh verification failure	
1-3-2	No memory installed	Check that memory modules are installed in matched pairs. Remove and reseal the memory modules. If the problem persists, replace the memory modules. If the problem still persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
1-3-3	Chip or data line failure in the first 64 KB of main memory	Remove and reseal the memory modules. If the problem persists, replace the memory modules. If the problem still persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
1-3-4	Odd/even logic failure in the first 64 KB of main memory	Remove and reseal the memory modules. If the problem persists, replace the memory modules. If the problem still persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
1-4-	Address line failure in the first 64 KB of main memory	
1-4-2	Parity failure in the first 64 KB of main memory	
2-1-1 through 2-4-4	Bit failure in the first 64 KB of main memory	
3-1-1	Slave DMA-register failure	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
3-1-2	Master DMA-register failure	
3-1-3	Master interrupt-mask register failure	
3-1-4	Slave interrupt-mask register failure	
3-2-4	Keyboard-controller test failure	Check the keyboard cable and connector for proper connections. If the problem persists, run the keyboard test in the Dell Diagnostics to determine whether the keyboard or keyboard controller is faulty. If the keyboard controller is faulty, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
3-3-1	CMOS failure	Run the system board test in the Dell Diagnostics to isolate the problem.
3-3-2	System configuration check failure	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
3-3-3	Keyboard controller not detected	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
3-3-4	Screen initialization failure	Run the video test in the Dell Diagnostics.
3-4-2	Screen-retrace test failure	
3-4-3	Search for video ROM failure	
4-2-1	No timer tick	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
4-2-2	Shutdown failure	
4-2-3	Gate A20 failure	
4-2-4	Unexpected interrupt in protected mode	Ensure that all expansion cards are properly seated, and then reboot the system.
4-3-1	Improperly seated or faulty memory modules	Remove and reseal the memory modules. If the problem persists, replace the memory modules. See " Getting Help " for instructions on obtaining technical assistance.
4-3-3	Defective system board	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
4-3-4	Time-of-day clock stopped	Replace the battery. If the problem persists, replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
4-4-1	Super I/O chip failure (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.
4-4-2	Parallel-port test failure (defective system board)	Replace the system board. See " Getting Help " for instructions on obtaining technical assistance.

4-4-3	Math coprocessor failure (defective microprocessor)	Remove and reseat the specified microprocessor. If the problem still persists, replace the microprocessor. "Getting Help" for instructions on obtaining technical assistance.
4-4-4	Cache test failure (defective microprocessor)	Remove and reseat the specified microprocessor. If the problem still persists, replace the microprocessor. See "Getting Help" for instructions on obtaining technical assistance.
NOTE: For the full name of an abbreviation or acronym used in this table, see "Abbreviations and Acronyms."		

Warning Messages

A warning message alerts you to a possible problem and asks you to take corrective action before the system continues a task. For example, before you format a diskette, a message may warn you that you may lose all data on the diskette as a way to protect against inadvertently erasing or writing over the data. These warning messages usually interrupt the procedure and require you to respond by typing y (yes) or n (no).

 NOTE: Warning messages are generated by either the application program or the operating system. See "Finding Software Solutions" and the documentation that accompanied the operating system and application program for more information on warning messages.

Diagnostics Messages

When you run a test group or subtest in the Dell Diagnostics, an error message may result. These particular error messages are not covered in this section. Record the message on a copy of the Diagnostics Checklist (see ["Getting Help"](#)), and then follow the instructions in that section for obtaining technical assistance.

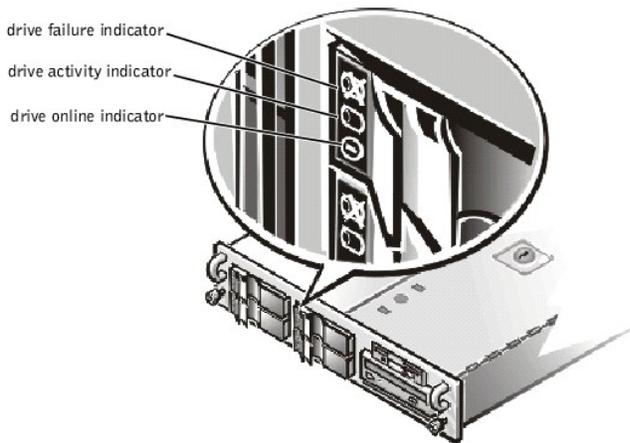
Alert Log Messages From the Dell OpenManage™ Server Agent

The optional Dell OpenManage Server Agent management application program generates alert messages that appear in the Simple Network Management Protocol (SNMP) trap log file. To see the trap log, select any enterprise under the SNMP trap log icon. Alert log messages consist of information, status, warning, and failure messages for drive, temperature, fan, and power conditions. More information about the **Alert Log** window and options is provided in the Dell OpenManage Server Agent documentation found on the *Dell OpenManage Server Assistant Applications CD*.

SCSI Hard-Disk Drive Indicator Codes

If a redundant arrays of independent disks (RAID) controller such as the optional PowerEdge™ Expandable RAID Controller (PERC) 3/Di is installed in the system, three light-emitting diode (LED) indicators on each of the hard-disk drive carriers provide information on the status of the SCSI hard-disk drives (see [Table 3-3](#)). The SCSI backplane firmware controls the drive online and drive failure indicators.

Figure 3-1. Hard-Disk Drive Indicators



[Table 3-3](#) lists the drive indicator patterns established by the SCSI backplane firmware. Different patterns are displayed as drive events occur in the system. For example, in the event of a hard-disk drive failure, the "drive failed" pattern appears. After the drive is selected for removal, the "drive being prepared for removal" pattern appears, followed by the "drive ready for insertion or removal" pattern. After the replacement drive is installed, the "drive being prepared for operation" pattern appears, followed by the "drive online" pattern.

 NOTE: If you have not enabled the integrated RAID controller or installed a RAID controller card, you will see only the "drive online" and "drive bay empty" indicator patterns.

Table 3-3. SCSI Hard-Disk Drive Indicator Patterns

Condition	Indicator Code
Identify drive	All three drive status indicators blink simultaneously.
Drive being prepared for removal	The three drive status indicators flash sequentially.

Drive ready for insertion or removal	All three drive status indicators are off.
Drive being prepared for operation	The drive online indicator is on. The drive activity indicator may flash briefly.
Drive bay empty	All three drive status indicators are off.
Drive predicted failure	The drive online indicator is on. The drive failure indicator blinks on briefly each second.
Drive failed	The drive online indicator turns off. The drive failure indicator blinks off briefly each second.
Drive rebuilding	The drive online indicator blinks rapidly.
Drive online	The drive online indicator is on.

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Finding Software Solutions

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

● [Installing and Configuring Software](#)

● [Using Software](#)

Because most systems have several application programs installed in addition to the operating system, isolating a software problem can be confusing. Software errors can also appear to be hardware malfunctions at first.

Software problems can result from the following circumstances:

- 1 Improper installation or configuration of a program
- 1 Input errors
- 1 Device drivers that may conflict with certain application programs
- 1 Interrupt conflicts between devices

You can confirm that a system problem is caused by software by running the system board tests in the Dell™ Diagnostics (see "[Running the Dell™ Diagnostics](#)"). If all tests in the test group are completed successfully, the problem is most likely caused by software.

This section provides some general guidelines for analyzing software problems. For detailed troubleshooting information on a particular program, see the documentation that accompanied the software or consult the support service for the software.

Installing and Configuring Software

Use virus-scanning software to check newly acquired application programs and files for viruses before you install the programs on the system's hard-disk drive. Viruses can quickly use all available system memory, damage or destroy data stored on the hard-disk drive, and permanently affect the performance of the programs they infect. Several commercial virus-scanning programs are available for purchase.

Before you install a program, read its documentation to learn how the program works, what hardware it requires, and what its defaults are. A program usually includes installation instructions in its accompanying documentation and a software installation routine.

The software installation routine assists you in transferring the appropriate program files to the system's hard-disk drive. Installation instructions may provide details about how to configure the operating system to successfully run the program. Always read the installation instructions before running a program's installation routine.

When you run the installation routine, be prepared to respond to prompts for information about how the operating system is configured, what type of system you have, and what peripheral devices are connected to the system.

Using Software

The following subsections discuss errors that can occur as a result of software operation or configuration.

Error Messages

Error messages can be produced by an application program, the operating system, or the system. "[Messages and Codes](#)" provides information about the error messages that are generated by the system. If you receive an error message that is not listed in "[Messages and Codes](#)," check the operating system or application program documentation.

Input Errors

If you press a specific key or set of keys at the wrong time, a program may give you unexpected results. See the documentation that came with the application program to make sure that the values or characters you are entering are valid.

Make sure that the operating environment is set up to accommodate the programs you use. Keep in mind that whenever you change the parameters of the system's operating environment, you may affect the successful operation of the programs. Sometimes, after modifying the operating environment, you may need to reinstall a program that no longer runs properly.

Program Conflicts

Some programs may leave portions of their setup information behind, even though you have exited from them. As a result, other programs cannot run. Rebooting the system can confirm whether these programs are the cause of the problem.

Device drivers, which are programs that use specialized subroutines, can cause problems with the system. For example, a variation in the way the data is sent to the monitor may require a special screen driver program that expects a certain kind of video mode or monitor. In such cases, you may have to develop an alternate method of running that particular program—by creating a start-up file made especially for that program, for example. Call the support service for the software you are using to help you with this problem.

Avoiding Interrupt Assignment Conflicts

Problems can arise if two devices attempt to use the same interrupt request (IRQ) line. To avoid this type of conflict, check the documentation for the IRQ line's default for each installed expansion card. Then consult [Table 4-1](#) to configure the card for one of the available IRQ lines.

Table 4-1. IRQ Line Assignment Defaults

IRQ Line	Used By/Available
IRQ0	Used by the system timer
IRQ1	Used by the keyboard to signal that the output buffer is full
IRQ2	Used by interrupt controller 2
IRQ3	Used by serial port 2 (COM2 and COM4) or a PCI device
IRQ4	Used by serial port 1 (COM1 and COM3) or a PCI device
IRQ5	Available unless used by a secondary parallel port
IRQ6	Used by the diskette drive controller
IRQ7	Used by the primary parallel port or a PCI device
IRQ8	Used by the RTC
IRQ9	Used by ACPI
IRQ10	Available
IRQ11	Available
IRQ12	Used by the PS/2 mouse port, unless the mouse option is disabled in System Setup program
IRQ13	Reserved for floating-point errors
IRQ14	Available
IRQ15	Used by ESM

NOTE: For the full name of an abbreviation or acronym used in this table, see "[Abbreviations and Acronyms](#)."

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Running the Dell™ Diagnostics

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- [Features of the Dell Diagnostics](#)
- [When to Use the Dell Diagnostics](#)
- [Starting the Dell Diagnostics](#)
- [How to Use the Dell Diagnostics](#)
- [How to Use the Device Groups Menu](#)
- [Error Messages](#)

Unlike many diagnostic programs, the Dell Diagnostics helps you check the system's hardware without any additional equipment and without destroying any data. By using the diagnostics, you can have confidence in the system's operation. If you find a problem that you cannot solve by yourself, the diagnostic tests can provide you with important information you will need when talking to Dell's technical assistance representative.

-  **NOTICE:** Use the Dell Diagnostics to test only Dell systems. If you use this program with other systems, incorrect system responses or error messages may result.
-

Features of the Dell Diagnostics

The Dell Diagnostics provides a series of menus and options from which you choose particular device groups or devices. You can also control the sequence in which the tests are run. The diagnostic menus also have these helpful features:

- 1 Options that let you run tests individually or collectively
 - 1 An option that allows you to choose the number of times a test is repeated
 - 1 The ability to display or print test results or to save them in a file
 - 1 Options to temporarily suspend testing if an error is detected or to terminate testing when an adjustable error limit is reached
 - 1 Help messages that briefly describe each test and its parameters
 - 1 Status messages that inform you whether device group or device tests are completed successfully
 - 1 Error messages that appear if any problems are detected
-

When to Use the Dell Diagnostics

Whenever a major component or device in the system does not function properly, you may have a component failure. As long as the microprocessor and the input and output components of the system (the monitor, keyboard, and diskette drive) are working, you can use the Dell Diagnostics. If you know what component(s) you need to test, simply select the appropriate diagnostic device group(s) or subtest(s). If you are unsure about the scope of the problem, read the rest of the information in this section.

Starting the Dell Diagnostics

You can run the Dell Diagnostics from either the utility partition on your hard-disk drive or from a set of diskettes that you create from the *Dell OpenManage Server Assistant* CD.

To run the diagnostics from the utility partition, perform the following steps:

1. Start the utility partition by pressing <F10> during the power-on self-test (POST).
2. From the utility partition's main menu, select the **Run System Diagnostics** option from **Run System Utilities**.

To run the Dell Diagnostics from the diskettes, perform the following steps:

1. Create a set of diagnostics diskettes using the *Dell OpenManage Server Assistant* CD.
2. Boot the system from the first diagnostics diskette.

See your system *User's Guide* for additional information about using the *Dell OpenManage Server Assistant* CD.

If the system fails to boot, see "[Getting Help](#)" for instructions on obtaining technical assistance.

When you start the diagnostics, the Dell logo screen appears, followed by a message telling you that the diagnostics is loading. Before the diagnostics loads into memory, a program tests the random-access memory (RAM) that will be used by the diagnostics.

If no errors are found in the RAM, the diagnostics loads, and the **Diagnostics** menu appears. The menu allows you to run all or specific diagnostic tests or to exit the Dell Diagnostics.

-  **NOTE:** Before you read the rest of this section, you may want to start the Dell Diagnostics so that you can see it on your monitor screen.

For a quick check of the system, select **Quickly Test All Devices**. This option runs only the device tests that do not require user interaction and that do not take a long time to run. Dell recommends that you choose this option first to increase the chance of tracing the source of the problem quickly. For a complete check of the system, select **Fully Test All Devices**. To check a particular area of the system, choose **Select Devices to Test**.

Selecting **Exit to MS-DOS** exits the diagnostics and returns you to your operating system environment.

To select an option from the **Diagnostics** menu, highlight the option and press <Enter>, or press the key that corresponds to the highlighted letter in the option you choose.

How to Use the Dell Diagnostics

When you select **Select Devices to Test** from the **Diagnostics** menu, the main screen of the diagnostics appears.

Information on the main screen of the diagnostics is presented in the following areas:

- 1 Two lines at the top of the main screen identify the diagnostics and give its version number.
- 1 On the left side of the screen, the **Device Groups** area lists the diagnostic device groups in the order they will run if you select **All** under the **Run Tests** submenu. Press the up- or down-arrow key to highlight a device group.
- 1 On the right side of the screen, the **Devices for Highlighted Group** area lists the specific devices within a particular test group.
- 1 Two lines at the bottom of the screen make up the menu area. The first line lists the menu options you can select; press the left- or right-arrow key to highlight an option. The second line gives information about the highlighted option.

How to Use the Device Groups Menu

The **Device Groups** menu at the bottom of the screen provides options that enable you to select and run specific diagnostic tests from the diagnostics main screen. Press the left- and right-arrow keys to select the options on the menu. As you move from one menu option to another, a brief explanation of the highlighted option appears on the bottom line of the screen.

If you want more information about a device group or device, highlight the **About** option and press <Enter>. After you read the information, press <Esc> to return to the previous screen.

Device Groups Menu Options

Five options are listed at the bottom of the diagnostics main screen: **Run Tests**, **Devices**, **Select**, **Config**, and **Help**.

There are two ways to select a menu option:

- 1 Look on the screen to see which letter in the option is capitalized, and type that letter (for example, type r to select the **Run** option).
- 1 Use the left- or right-arrow key to highlight the option you want to select, and then press <Enter>.

Whenever one of the options is selected, additional choices become available.

The following subsections explain the menu options as listed from left to right in the **Device Groups** menu.

Run Tests

Run Tests displays multiple options that allow you to select devices to test and to set parameters to control your testing. The **Help** options displays information about the **Run Tests** options.

Devices

Most of the device groups consist of several devices. Use the **Devices** option to select individual devices within the device group(s). [Table 5-1](#) lists all of the possible values for each option.

Table 5-1. Devices Options

Option	Functions
Run Tests	Displays five options: Run Tests , Tests , Select , Parameters , and Help .
Tests	Allows you to select individual devices to tailor the testing process to your particular needs. You can choose one or more devices from the list. When you choose Tests , four options are displayed: Run Tests , Select , Parameters , and Help .
Select	Allows you to choose one or more devices from a particular device group. Three options are displayed: One , All , and Help .
Parameters	Determines how a particular test will be run. Table 5-2 lists all of the possible values for each option. To change Parameters options, press the spacebar, the left- and right-arrow keys, or the plus (+) and minus (-) keys.
Help	Displays a list of help topics.

Table 5-2. Parameters Options

Option	Possible Values
Number of Times to Repeat Test(s)	0001 through 9999 or 0000, which loops indefinitely until you press <Ctrl><Break>. The default is 0001.
Maximum Errors Allowed	0000 through 9999, where 0000 means that there is no error limit. The default is 0001.
Pause for User Response	Yes, No Allows you to decide whether tests will wait for user input. The default is Yes to wait for user input.
Message Logging	None, Errors, All Determines if any test results are saved to a file. The default is None.
Message Logging File Name	Specifies the name of the logging file if the Message Logging option is selected. The default is A: RESULT .

Select

The **Select** option in the **Device Groups** menu allows you to choose one or more devices from a particular device group.

Config

Choosing **Config** from the **Device Groups** menu displays information about the particular device that is highlighted.

Error Messages

When you run a test in the diagnostics, error messages may result. Record the messages on a copy of the Diagnostics Checklist; see "[Getting Help](#)" for instructions on obtaining technical assistance and informing the technical assistance representative of these messages.

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Checking the Equipment

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [Troubleshooting the Monitor](#)
- [Troubleshooting the Keyboard](#)
- [Troubleshooting the Basic I/O Functions](#)
- [Troubleshooting a Parallel Printer](#)
- [Troubleshooting a Serial I/O Device](#)
- [Troubleshooting a USB Device](#)
- [Troubleshooting the Integrated NICs](#)

This section provides troubleshooting procedures for equipment that connects directly to the input/output (I/O) panel of the system, such as the monitor, keyboard, mouse, or printer. Before you perform any of the procedures in the present section, see "[Checking Connections and Switches](#)" in "Checking the Basics." Then follow the troubleshooting procedures for the equipment that is malfunctioning.

You need the following items to perform the procedures in this section:

- 1 The *Dell OpenManage Server Assistant* CD
- 1 A blank, formatted diskette
- 1 The system documentation

 **NOTE:** When you see the question "Is the problem resolved?" in a troubleshooting procedure, perform the operation that caused the problem.

Troubleshooting the Monitor

Troubleshooting video problems involves determining which of the following items is the source of the problem:

- 1 Monitor and monitor interface cable
- 1 Video memory
- 1 Video logic of the system or a video expansion card

If information on the monitor screen is displayed incorrectly or not at all, perform the following steps to solve the problem:

1. Adjust the switches and controls including the horizontal and vertical position and size, as specified in the monitor's documentation, to correct the video image.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 2.
2. **Run the video tests in the Dell™ Diagnostics.**

Is the monitor displaying text properly?

Yes. Go to step 3.

No. If a video expansion card is installed in the system, see "[Troubleshooting Expansion Cards](#)" in "Checking Inside the System." If no video expansion card is installed, the integrated video controller is faulty; see "[Getting Help](#)" for instructions on obtaining technical assistance.
3. **Run the video tests in the Dell Diagnostics.**

Did the tests run successfully?

Yes. You have fixed the problem, or the problem is software-related. For information about installing video drivers, see "Using the *Dell OpenManage Server Assistant* CD" in the *User's Guide*.

No. Go to step 4.
4. Turn off the system and disconnect it from the electrical outlet.
5. Swap the monitor with one of the same type that is working, and reconnect the system to the electrical outlet.
6. Run the video tests in the Dell Diagnostics again.

Did the tests run successfully?

Yes. The monitor must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. If a video expansion card is installed in the system, see "[Troubleshooting Expansion Cards](#)" in "Checking Inside the System." If no video expansion card is installed, the integrated video controller is faulty; see "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting the Keyboard

This procedure determines what kind of keyboard problem you may have. If a system error message indicates a keyboard problem when you start the system or while the Dell Diagnostics is running, perform the following steps:

1. Look at the keyboard and the keyboard cable for any signs of damage.

Press and release each key on the keyboard.

Do the keyboard and its cable appear to be free of physical damage, and do the keys work?

Yes. Go to step 3.

No. Go to step 2.

2. Swap the faulty keyboard with a working keyboard. To swap a faulty keyboard, unplug the keyboard cable from the system's back panel and plug in a working keyboard.

Is the problem resolved?

Yes. The keyboard must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 3.

3. Run the keyboard test in the Dell Diagnostics.

Can you use the keyboard to select the keyboard test?

Yes. Go to step 5.

No. Go to step 4.

4. Swap the faulty keyboard with a working keyboard.

5. Did the keyboard test run successfully?

Yes. The keyboard must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. The keyboard controller on the system board is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting the Basic I/O Functions

This procedure determines whether the system's basic I/O functions are operational. If a system error message indicates an I/O port problem or the device connected to the port does not function properly, perform the following steps:

1. Enter the System Setup program, and check the serial port, parallel port, and mouse settings.

Are the communications and mouse ports enabled?

Yes. Go to step 3.

No. Go to step 2.

2. Enable the communications and mouse ports; then reboot the system.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 3.

3. Check the contents of the start-up files. See "[Installing and Configuring Software](#)" in "Finding Software Solutions."

Are the port configuration commands correct?

Yes. Go to step 5.

No. Go to step 4.

4. Change the necessary statements in the start-up files. If the port problem is confined to a particular application program, see the application program's documentation for specific port configuration requirements.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 5.

5. Reboot the system from the diagnostics diskette, and run the serial ports test and/or the parallel ports test in the Dell Diagnostics.

Did the tests run successfully?

Yes. Go to step 6.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

6. If the problem persists, go to "[Troubleshooting a Parallel Printer](#)" or "[Troubleshooting a Serial I/O Device](#)," depending on which device appears to be malfunctioning.
-

Troubleshooting a Parallel Printer

If the procedure in "[Troubleshooting the Basic I/O Functions](#)" indicates that the problem is with a parallel printer, perform the following steps:

1. Turn off the parallel printer and system.

2. Swap the parallel printer interface cable with a known working cable.

3. Turn on the parallel printer and system.

4. Attempt a print operation on the parallel printer.

Did the print operation run successfully?

Yes. The interface cable must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 5.

5. Run the parallel printer's self-test.

Did the self-test run successfully?

Yes. Go to step 6.

No. The printer is probably defective. If the printer was purchased from Dell, see "[Getting Help](#)" for instructions on obtaining technical assistance.

6. Attempt another print operation on the parallel printer.

Did the print operation run successfully?

Yes. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting a Serial I/O Device

If the procedure in "[Troubleshooting the Basic I/O Functions](#)" indicates that the problem is with a device connected to one of the serial ports, perform the following steps:

1. Turn off the system and any peripheral devices connected to the serial ports.

Are two serial devices connected to the system?

Yes. Go to step 2.

No. Go to step 4.

2. Disconnect the devices from serial ports 1 and 2, and connect the malfunctioning serial device to the opposite port.

3. Turn on the system and the reconnected serial device.

Is the problem resolved?

Yes. The serial port may be defective. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 4.

4. Swap the interface cable that connects the device to the serial port with a known working cable.

Is the problem resolved?

Yes. The interface cable must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 5.

5. Turn off the system and the serial device, and swap the device with a comparable working device.

For example, if you are troubleshooting a serial mouse, swap it with a serial mouse that you know is working properly.

6. Turn on the system and the serial device.

Is the problem resolved?

Yes. The serial device must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting a USB Device

If a system error message indicates a problem with the Universal Serial Bus (USB) ports or a device connected to the port does not function properly, perform the following steps:

1. Enter the System Setup program, and check that the USB ports are enabled.

2. Turn off the system and any devices connected to the USB ports.

Are two USB devices connected to the system?

Yes. Go to step 3.

No. Go to step 5.

3. Disconnect the devices from both USB ports, and connect the malfunctioning device to the opposite port.

4. Turn on the system and the reconnected device.

Is the problem resolved?

Yes. The USB port may be defective. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 5.

5. If possible, swap the interface cable that connects the device to the USB port with a known working cable.

Is the problem resolved?

Yes. The interface cable must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 6.

6. Turn off the system and the USB device, and swap the device with a comparable working device.

7. Turn on the system and the USB device.

Is the problem resolved?

Yes. The USB device must be replaced. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting the Integrated NICs

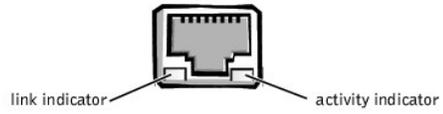
If you encounter problems with one of the system's integrated network interface controllers (NICs), the following actions may help you to diagnose the problem:

1. Enter the System Setup program and confirm that the NICs are enabled.

See "Using the System Setup Program" in the *User's Guide* for instructions.

1. Check the light-emitting diodes (LEDs) on the corners of the NIC connectors on the system's back panel (see [Figure 6-1](#)).

Figure 6-1. NIC Connector



The green link indicator (the indicator on the left) lights if the adapter is connected to a valid link partner. The amber activity indicator lights if network data is being sent or received.

- o If the link indicator is not on, check all connections at the adapter and link partner.
 - o Try changing the auto-negotiation setting on the link partner, if possible.
 - o Try another port on the network switch.
- 1 If the activity indicator does not light, the network driver files may be damaged or deleted. Reinstall the drivers.

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Checking Inside the System

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [Safety First—For You and Your Computer](#)
- [Opening the System Doors](#)
- [Removing the Front Bezel](#)
- [Removing and Replacing the Expansion-Card Cage](#)
- [Inside the Chassis](#)
- [Troubleshooting a Wet System](#)
- [Troubleshooting a Damaged System](#)
- [Troubleshooting the Battery](#)
- [Troubleshooting Redundant Power Supplies](#)
- [Troubleshooting a Cooling Fan](#)
- [Troubleshooting Expansion Cards](#)
- [Troubleshooting System Memory](#)
- [Troubleshooting the Video Subsystem](#)
- [Troubleshooting the System Board](#)
- [Troubleshooting the Diskette Drive Subsystem](#)
- [Troubleshooting a SCSI Tape Drive](#)
- [Troubleshooting SCSI Hard-Disk Drives](#)
- [Troubleshooting the Optional Integrated RAID Controller](#)

This section provides troubleshooting procedures for components inside the system. Before you start any of the procedures in this section, take the following steps:

- 1 Perform the procedures described in "[Checking Connections and Switches](#)" and "[The System Setup Program](#)" in "Checking the Basics."
- 1 Read the safety instructions in "[Safety First—For You and Your Computer](#)."

You need the following items to perform the procedures in this section:

- 1 The system's *User's Guide*
- 1 The *Dell OpenManage Server Assistant* CD and several blank, formatted 3.5-inch diskettes. (If you cannot run the Dell™ Diagnostics from the utility partition on your system's hard-disk drive, you can create a set of diagnostics diskettes using the *Dell OpenManage Server Assistant* CD. See your system's *User's Guide* for additional information about using the *Dell OpenManage Server Assistant* CD.)
- 1 The key to the system keylock

 NOTE: When you see the question "Is the problem resolved?" in a troubleshooting procedure, perform the operation that caused the problem.

Safety First—For You and Your Computer

The procedures in this guide require that you open the computer doors and work inside the computer. While working inside the computer, do not attempt to service the computer except as explained in this guide and elsewhere in Dell documentation. Always follow the instructions closely.

 **WARNING: FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT**

 **WARNING:** Before starting to work on the computer, perform the following steps in the sequence listed:

1. Turn off and disconnect your computer and peripherals from their power sources (unless you are installing or removing a hard-disk drive). Also, disconnect any telephone or telecommunication lines from the computer.
2. Ground yourself by touching an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside your computer.
3. While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

In addition, Dell recommends that you periodically review the safety instructions in the *System Information* document provided with your computer.

Opening the System Doors

The system has two doors on the top of the system that provide access to the system board and expansion cards. The doors interlock so that the keylock on the right-side door secures both doors.

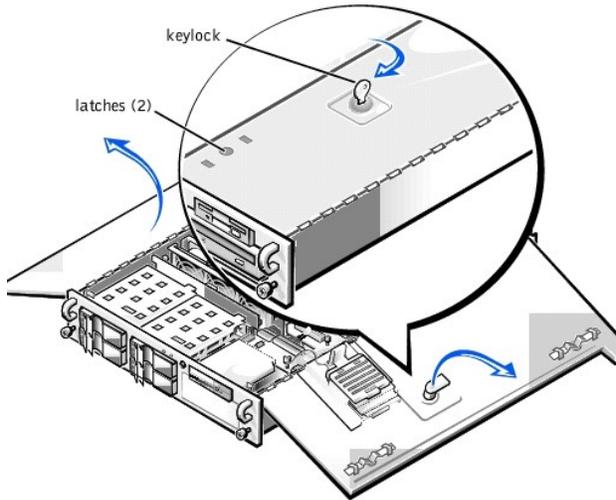
To open the system doors, perform the following steps:

1. Observe the precautions in "[Safety First—For You and Your Computer](#)" found earlier in this section. Also observe the safety instructions in the *System Information* document.
2. Slide the system out of the rack.

3. Using the system key, turn the keylock on the top of the chassis to the unlocked position (see [Figure 7-1](#)).
4. Press the two latches to release the right door (see [Figure 7-1](#)).
5. Lift the right door.
6. Lift the left door.

When closing the doors, be sure to close the left door first and then the right door.

Figure 7-1. Opening the System Doors



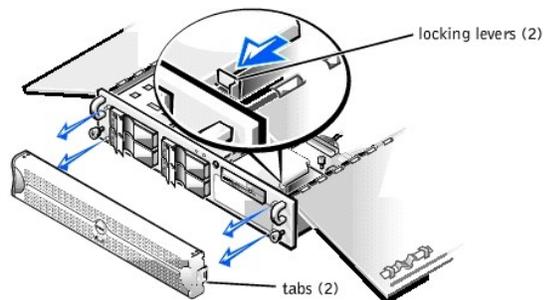
Removing the Front Bezel

You must remove the system's front bezel before installing or removing a hard-disk drive or using the diskette or CD-ROM drive.

To remove the front bezel, perform the following steps:

1. Unlock and open the system doors (see "[Opening the System Doors](#)").
2. Pivot the two locking levers towards the front of the chassis (see [Figure 7-2](#)).
3. Press the tab on each end of the bezel and remove the bezel from the chassis (see [Figure 7-2](#)).

Figure 7-2. Removing the System Bezel



Removing and Replacing the Expansion-Card Cage

Your Dell system has a removable expansion-card cage, which simplifies many installation procedures by allowing you to remove the riser board and all

installed expansion cards in a single step.

Removing the Expansion-Card Cage

To remove the expansion-card cage, perform the following steps:

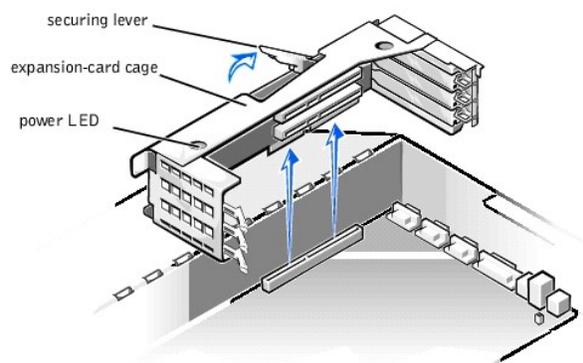
1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

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

2. Open the system doors (see "[Opening the System Doors](#)").
3. Check any cables connected to expansion cards through the back-panel openings. Disconnect any cables that will not reach to where the cage must be placed upon removal from the chassis.

🔍 NOTE: To prevent damage to the system board or riser board, verify that the power LED on the riser board (see [Figure 7-3](#)) is off before removing the expansion-card cage.

Figure 7-3. Removing the Expansion-Card Cage



4. Locate the expansion-card cage securing lever (see [Figure 7-3](#)), and rotate the lever upward until it stops in an upright position.
5. Lift the expansion-card cage up and away from the chassis.

Replacing the Expansion-Card Cage

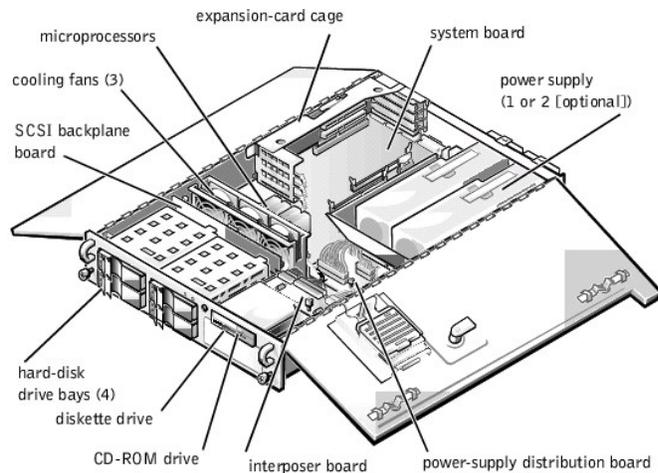
To replace the expansion-card cage, perform the following steps:

1. With the securing lever in the upright position, lower the expansion-card cage into place until it is aligned.
2. Rotate the securing lever downward until it is flush with the top of the chassis. Make sure that the riser board is fully seated in the RISER connector on the system board.
3. Reconnect any cables you removed in step 3 of the previous procedure, "[Removing the Expansion-Card Cage](#)."

Inside the Chassis

In [Figure 7-4](#), the system doors are open to provide an interior view. Refer to this illustration to locate interior features and components discussed later in this guide.

Figure 7-4. Inside the System



The system board holds the system's control circuitry and other electronic components. Several hardware options, such as the microprocessors and memory, are installed directly on the system board. The expansion-card cage accommodates up to three full-length Peripheral Component Interconnect (PCI) expansion cards. The two peripheral bays provide space for a 3.5-inch diskette drive, CD-ROM drive, and an additional 5.25-inch device such as a tape drive.

The hard-disk drive bays provide space for up to four 1-inch small computer system interface (SCSI) hard-disk drives. These hard-disk drives are connected to a SCSI host adapter on the system board or on an expansion card, via the SCSI backplane board.

The power cables leading from the power-supply distribution board (PSDB) provide power to the system board, SCSI backplane board, and drives in the peripheral bays.

For non-SCSI drives such as the diskette drive and CD-ROM drive, an interface cable connects each drive to the interposer board or to an expansion card. For SCSI devices, interface cables connect the SCSI backplane board to a SCSI host adapter on the system board or on an expansion card. For more information, see "[Installing a Drive in the Peripheral Bay](#)" and "[Installing Hard-Disk Drives](#)."

During an installation or troubleshooting procedure, you may be required to change a jumper or switch setting. For information on the system board jumpers, see Appendix A, "[Jumpers, Switches, and Connectors](#)."

Troubleshooting a Wet System

Liquid spills, splashes, and excessive humidity can cause damage to the system. If an external device (such as a printer or an external drive) gets wet, contact the device manufacturer for instructions. If the system gets wet, perform the following steps:

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

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

2. Open the system doors (see "[Opening the System Doors](#)").
3. Let the system dry for at least 24 hours.
Make sure that the system is thoroughly dry before proceeding.
4. Remove all expansion cards installed in the system.
5. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.
Does the system have power?
Yes. Go to step 6.
No. See "[Getting Help](#)" for instructions on obtaining technical assistance.
6. Turn off the system, disconnect it from the electrical outlet, open the system doors, and reinstall all expansion cards you removed in step 4.
7. Close the system doors and reconnect the system to the electrical outlet.

8. Run the Dell Diagnostics and test the system.
Did the tests run successfully?
Yes. The system is operating properly.
No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting a Damaged System

If the system was dropped or damaged while being moved, you should check the system to see if it functions properly. If an external device attached to the system is dropped or damaged, contact the manufacturer of the device for instructions or see ["Getting Help"](#) for information on obtaining technical assistance from Dell.

To troubleshoot a damaged system, perform the following steps:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

2. Open the system doors (see ["Opening the System Doors"](#)).

3. Check the following connections:

- 1 Expansion-card connections to the expansion-card cage
- 1 Drive carrier connections to the SCSI backplane board

4. Verify all internal cable and component connections.

Make sure that all cables are properly connected and that all components are properly seated in their connectors and sockets. Pay particular attention to the interposer board and PSDB (if installed).

5. Close the system doors and reconnect the system to the electrical outlet.

6. Run the system board tests in the Dell Diagnostics.

Did the tests run successfully?

Yes. The system is operating properly.

No. See ["Getting Help"](#) for instructions on obtaining technical assistance.

Troubleshooting the Battery

If an error message indicates a problem with the battery or if the System Setup program loses the system configuration information when the system is turned off, the battery may be defective.

To troubleshoot the battery, perform the following steps:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

2. Open the system doors (see ["Opening the System Doors"](#)).

3. Check the connection of the coin cell battery to the system board.

See ["Replacing the Battery"](#) in "Installing System Board Options" for information on gaining access to the battery socket.

4. Is the battery firmly installed in the battery socket on the system board?

Yes. Go to step 7.

No. Go to step 6.

5. Reseat the battery in its socket.

6. Close the system doors and reconnect the system to the electrical outlet.

Is the problem resolved?

Yes. The battery was loose. You have fixed the problem.

No. Continue with this procedure.

 **CAUTION:** There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

7. Repeat steps 1 and 2.

8. Replace the battery.

Is the problem resolved?

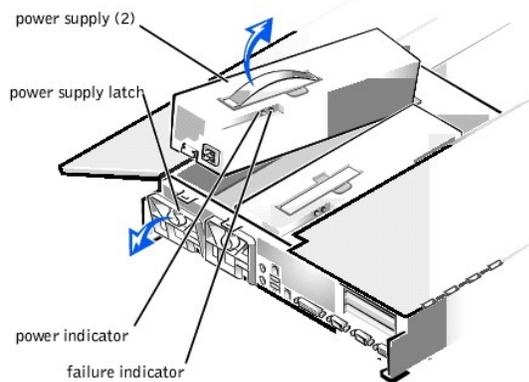
Yes. The battery's charge was low. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting Redundant Power Supplies

Your system may contain two optional, redundant power supplies. The two indicators on the back of each power supply (see [Figure 7-5](#)) signal the power supply's current status. If the red (forwardmost) failure indicator lights up, replace the power supply as described in the following procedure.

Figure 7-5. Power Supply Features and Removal



Removing and Replacing a Power Supply

To replace a power supply, perform the following steps.

▲ WARNING: The power supply is heavy. Support it with both hands when installing or removing it.

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
2. Unplug the AC power cable from the faulty power supply.

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

3. Open the system doors (see "[Opening the System Doors](#)").
4. Remove the power supply:
 - a. The power supply is secured by a latch on the back panel of the system.

Rotate the top of the power supply latch downward.

- b. Grasp the handle on the top of the power supply and lift the power supply straight up from the system.
5. Lower the new power supply into the chassis.
 6. Close the power supply latch.

▣ NOTE: The power supply will not function until the latch is engaged.

7. Close the system doors.
8. Connect the AC power cable to the new power supply.

Troubleshooting a Cooling Fan

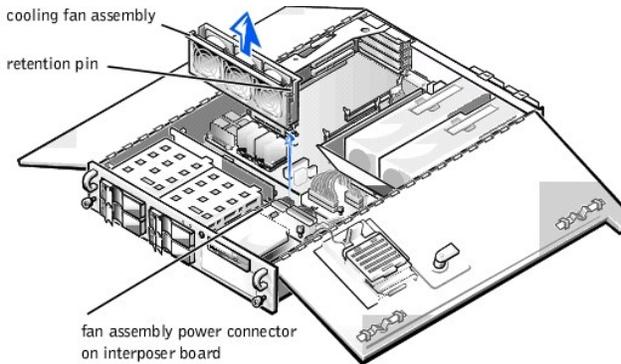
Three cooling fans are installed in the system chassis. (Fan 1 is the outermost fan in the fan assembly.) If you observe that one of the cooling fans is not operating or if the server management application issues a fan-related error message, perform the following steps to troubleshoot the problem:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

2. Open the system doors (see "[Opening the System Doors](#)").
3. Unplug the cooling fan wiring harness from the interposer board by pressing the release tab on the power cable connector.
4. Loosen the fan assembly retention pin and lift the fan assembly out of the system (see [Figure 7-6](#)).

Figure 7-6. Removing the Cooling Fan Assembly



5. To replace an individual fan, perform the following steps:
 - a. Separate the two halves of the fan assembly by pressing the locking tabs at each end of the assembly.
 - b. Remove the faulty fan and disconnect it from the cooling fan wiring harness.
 - c. Install a new fan in the assembly and connect it to the fan power wiring harness.
 - d. Join the two halves of the fan assembly.
6. Slide the fan assembly back into the system and reinstall the retention pin.
7. Connect the cooling fan wiring harness to the interposer board.
8. Close the system doors and reconnect the system to the electrical outlet.
9. Turn on the system.

Do the fans operate properly?

Yes. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting Expansion Cards

If an error message indicates an expansion-card problem or if an expansion card seems to perform incorrectly or not at all, the problem could be a faulty connection, a conflict with software or other hardware, or a faulty expansion card. To troubleshoot expansion cards, perform the following steps:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

2. Open the system doors (see "[Opening the System Doors](#)").
3. Remove the expansion-card cage (see "[Removing and Replacing the Expansion-Card Cage](#)").
4. Reinstall the expansion-card cage (see "[Removing and Replacing the Expansion-Card Cage](#)").

5. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.
Is the problem resolved?
Yes. The PCI riser board connection was loose. You have fixed the problem.
No. Go to step 6.
 6. Repeat steps 1 through 3 to remove the expansion-card cage.
 7. Verify that each expansion card is firmly seated in its connector.
Are the expansion cards properly seated in their connectors?
Yes. Go to step 9.
No. Go to step 8.
 8. Reseat the expansion cards in their connectors, then repeat steps 4 and 5.
Is the problem resolved?
Yes. The connection was loose. You have fixed the problem.
No. Go to step 9.
 9. Verify that any appropriate cables are firmly connected to their corresponding connectors on the expansion cards.
For instructions on which cables should be attached to specific connectors on an expansion card, see the expansion card's documentation.
Are the appropriate cables firmly attached to their connectors?
Yes. Go to step 10.
No. Go to step 11.
 10. Reconnect the cable connectors to the appropriate connectors on the expansion cards.
Is the problem resolved?
Yes. The cable connections were loose. You have fixed the problem.
No. Go to step 11.
 11. Remove all expansion cards from the system (see "[Removing an Expansion Card](#)").
 12. Run the system memory test in the Dell Diagnostics.
Did the test run successfully?
Yes. Go to step 13.
No. See "[Getting Help](#)" for information on obtaining technical assistance.
 13. Turn off the system, disconnect it from its electrical outlet, and open the system doors.
 14. Reinstall one of the expansion cards you removed in step 11.
 15. Run the system memory test in the Dell Diagnostics.
Did the test run successfully?
Yes. Go to step 16.
No. See "[Getting Help](#)" for information on obtaining technical assistance.
 16. Repeat steps 13 through 15 for each of the expansion cards that you removed in step 11.
Have you reinstalled all of the expansion cards without encountering a test failure?
Yes. You have fixed the problem.
No. See "[Getting Help](#)" for information on obtaining technical assistance.
-

Troubleshooting System Memory

A system memory problem can be caused by a faulty memory module or a faulty system board. If a random-access memory (RAM) error message appears, the system probably has a memory problem.

When you turn on or reboot the system, the Caps Lock and Scroll Lock indicators on the keyboard should flash momentarily and then turn off. If the **Num Lock** category in the System Setup program is set to **On**, the Num Lock indicator should flash momentarily and then remain on; otherwise, it should turn off. Abnormal operation of these indicators can result from a defective memory module in socket DIMM_A or DIMM_B.

To troubleshoot system memory, perform the following steps:

1. Turn on the system, including any attached peripherals.

Is there an error message indicating invalid system configuration information after the memory count is completed?

Yes. Go to step 2.

No. Go to step 7.

2. Enter the System Setup program to check the system memory value. See "Using the System Setup Program" in the *User's Guide* for instructions.

Does the amount of memory installed match the system memory value?

Yes. Go to step 8.

No. Go to step 3.

3. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

4. Open the system doors (see "[Opening the System Doors](#)").

5. Reseat the memory modules in their sockets.

6. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.

7. Enter the System Setup program and check the system memory value again.

Does the amount of memory installed match the system memory value?

Yes. Go to step 8.

No. Go to step 9.

8. Reboot the system, and observe the monitor screen and the Num Lock, Caps Lock, and Scroll Lock indicators on the keyboard.

Does the monitor screen remain blank, and do the Num Lock, Caps Lock, and Scroll Lock indicators on the keyboard remain on?

Yes. Go to step 9.

No. Go to step 13.

9. Repeat steps 3 and 4.

10. Swap the memory modules in sockets DIMM_A and DIMM_B with a pair of DIMMs of the same capacity.

11. Close the system doors and reconnect the system to the electrical outlet.

12. Reboot the system, and observe the monitor screen and the indicators on the keyboard.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 13.

13. Run the system memory test in the Dell Diagnostics.

Did the test run successfully?

Yes. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting the Video Subsystem

Troubleshooting video problems involves determining which of the following items is the source of the problem: the monitor, the monitor interface cable, the video memory, or the video logic of the system. You can also have a high-resolution video expansion card installed, which overrides the video logic of the system.

The following procedure troubleshoots problems with the video memory and video logic only. Before you begin, perform the procedure found in "[Troubleshooting the Monitor](#)" in "Checking the Equipment" to determine whether the monitor is the source of the problem.

If you have a high-resolution video expansion card, first complete the steps in "[Troubleshooting Expansion Cards](#)" to verify that the card is configured and installed correctly.

To troubleshoot the video subsystem, perform the following steps:

1. Run the video tests in the Dell Diagnostics.

Did the tests run successfully?

Yes. The problem is not related to video hardware. Go to "[Finding Software Solutions](#)."

No. Go to step 2.

2. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

3. Open the system doors (see "[Opening the System Doors](#)").

4. Determine whether a video expansion card is installed.

Is a video expansion card installed?

Yes. Go to step 5.

No. The integrated video controller is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.

5. Remove the video expansion card, and connect the monitor interface cable to the video connector on the system's back panel.

6. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.

Did the tests run successfully?

Yes. The video expansion card is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. See "[Getting Help](#)" for instructions on obtaining assistance.

Troubleshooting the System Board

A system board problem can result from a defective system board component, a faulty power supply, or a defective component connected to the system board. If an error message indicates a system board problem, perform the following steps to troubleshoot the problem:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

2. Open the system doors (see "[Opening the System Doors](#)").

3. Remove all expansion cards except the SCSI host adapter card and the video expansion card (if they are installed).

4. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.

5. Run the system board tests in the Dell Diagnostics.

Did the tests run successfully?

Yes. Go to step 10.

No. Go to step 11.

6. Turn off the system, disconnect it from the electrical outlet, and open the system doors.

7. Reinstall one of the expansion cards that you removed in step 3, repeat step 4, and continue with step 8.

8. Run the system board tests again.

Did the tests run successfully?

Yes. Go to step 8.

No. Go to step 10.

9. Repeat steps 6 through 8 for each of the remaining expansion cards that you removed in step 3.

Have you reinstalled all of the expansion cards without a test failure?

Yes. Go to step 10.

No. One of the expansion cards is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.

10. Disconnect the keyboard and reboot the system.

Does the system boot successfully to the operating system?

Yes. Go to step 11.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

11. Swap the keyboard with a comparable working keyboard and run the system board tests again.

Did the tests run successfully?

Yes. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting the Diskette Drive Subsystem

If the monitor displays a system error message indicating a diskette drive problem during execution of either the boot routine or the Dell Diagnostics, the problem may be caused by any of the following conditions:

- 1 The system configuration settings do not match the physical diskette subsystem configuration.
- 1 An expansion card is interfering with proper drive operations.
- 1 The diskette drive/CD-ROM drive unit is improperly seated against the interposer board.
- 1 The diskette drive is faulty.
- 1 The interposer board is faulty.
- 1 The system's power supply is not providing sufficient power for the drive.
- 1 The system's diskette drive logic is faulty.

To troubleshoot the diskette drive subsystem, perform the following steps:

1. Enter the System Setup program, and verify that the diskette drive setting is configured correctly. See "Using the System Setup Program" in the *User's Guide* for instructions.
2. If the system configuration settings are incorrect, make the necessary corrections in the System Setup program, and then reboot the system.
3. Run the diskette drive test in the Dell Diagnostics to determine whether the diskette drive subsystem now works correctly.
Do the tests complete successfully?
Yes. You have fixed the problem.
No. Go to step 4.
4. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
5. Open the system doors (see "[Opening the System Doors](#)").

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

6. Remove all expansion cards from the system.
7. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.
8. Run the diskette drive test in the Dell Diagnostics to determine whether the diskette drive subsystem now works correctly.
Do the tests complete successfully?
Yes. An expansion card may be conflicting with the diskette drive logic, or you may have a faulty expansion card. Go to step 9.
No. The diskette drive subsystem is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.
9. Repeat steps 4 and 5, and reinstall one of the expansion cards that you removed in step 6.
10. Close the system doors, reconnect the system to the electrical outlet, and turn on the system.
11. Run the diskette drive test in the Dell Diagnostics to determine whether the diskette drive subsystem now works correctly.

12. Repeat steps 9 through 11 until all expansion cards have been reinstalled or until one of the expansion cards prevents the system from booting from the diagnostics diskette.
 13. Has an expansion card prevented the system from booting from the diagnostics diskette?
Yes. An expansion card is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.
No. The diskette drive subsystem is faulty. See "[Getting Help](#)" for instructions on obtaining technical assistance.
-

Troubleshooting a SCSI Tape Drive

A SCSI tape drive can be an internal device installed in the externally accessible drive bay or an external device that attaches to a SCSI host adapter connector on the back panel of the system. The SCSI tape drive is controlled by a SCSI host adapter card installed in the system, which may also control other SCSI devices connected to one or more SCSI cables. SCSI devices often require device drivers for the particular operating system being used by the system.

Tape drive problems often result from a defective tape drive, a defective tape cartridge, or software. To troubleshoot a SCSI tape drive, perform the following steps:

1. Remove the tape that was in use when the problem occurred, and replace it with a tape that you know is not defective.

Is the problem resolved?
Yes. The original tape was defective. Replace it with a new tape. You have fixed the problem.
No. Go to step 2.
2. Reboot the system and press <F2> to enter the System Setup program.

Is **Secondary SCSI** set to **Enabled**?
Yes. Go to step 4.
No. Go to step 3.
3. Verify that any required SCSI device drivers are installed on the hard-disk drive and are configured correctly. See "Installing and Configuring SCSI Drivers" in the *User's Guide* for instructions on installing and configuring the SCSI device drivers for the system's integrated SCSI host adapter or Dell PowerEdge™ Expandable RAID Controller (PERC) SCSI host adapter card. For any other type of SCSI host adapter card, see the documentation that accompanied the SCSI host adapter card.

Is the problem resolved?
Yes. The SCSI device drivers were installed or configured incorrectly or were corrupted. You have fixed the problem.
No. Go to step 4.
4. Reinstall the tape backup software as instructed in the tape-backup software documentation.

Is the problem resolved?
Yes. The tape backup software was corrupted. You have fixed the problem.
No. Go to step 5.
5. Reboot the system and check for the presence of the tape drive during the ROM scan sequence.

Is the tape drive detected?
Yes. The drive is correctly cabled and is receiving power. Go to step 10.
No. Go to step 6.
6. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

 **WARNING:** See "Protecting Against Electrostatic Discharge" in the safety instructions in your *System Information* document.
7. Open the system doors (see "[Opening the System Doors](#)").
8. Check the SCSI cable connections to the tape drive and to the SCSI host adapter connector. If the tape drive is an internal device, check the DC power cable connection to the tape drive.

Are the cables firmly connected?
Yes. Go to step 10.
No. Go to step 9.
9. Reseat the cable connectors and close the system doors. Reconnect the system to the electrical outlet and turn it on.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 10.

10. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet. Then open the system doors.

11. Remove the tape drive. Then verify that the tape drive is configured for a unique SCSI ID number and that the tape drive is terminated or not terminated as appropriate. See the documentation for the tape drive for instructions on selecting the SCSI ID and enabling or disabling termination.

Is the tape drive configured correctly?

Yes. Go to step 14.

No. Go to step 12.

12. Reconfigure the tape drive's SCSI ID and termination settings as appropriate. Reinstall the tape drive, close the system doors, reconnect the system to the electrical outlet, and turn it on.

Is the problem resolved?

Yes. The tape drive was configured incorrectly. You have fixed the problem.

No. Go to step 13.

13. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet. Then open the system doors.

14. Replace the SCSI cable that connects the tape drive to the SCSI host adapter. Close the system doors, reconnect the system to the electrical outlet, and turn it on.

Is the problem resolved?

Yes. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting SCSI Hard-Disk Drives

Hard-disk drive problems can be caused by a number of conditions, including problems with the drive itself, the SCSI backplane board, the optional SCSI daughter boards, or a cable connected to the SCSI backplane board.

The SCSI backplane board monitors the SCSI hard-disk drives connected to the backplane board. In the event of a drive failure, systems using the optional integrated redundant array of independent disks (RAID) controller or optional PERC controller card will issue the following signals using the drive indicator lights adjacent to each SCSI hard-disk drive:

1. If a drive shows signs of imminent failure, the drive online indicator stays on and the drive failure indicator blinks on briefly each second.
1. If a drive has failed, the drive online indicator turns off. The drive failure indicator turns on, and blinks off briefly each second.

Other drive indicator patterns are listed in [Table 3-3](#), "SCSI Hard-Disk Drive Indicator Patterns."

To troubleshoot a hard-disk drive problem, perform the following steps.

 **WARNING:** This troubleshooting procedure can destroy data stored on the hard-disk drive. Before you proceed, make sure you have backed up all files on the hard-disk drive.

1. If the integrated SCSI host adapter is being used to control the SCSI backplane board, reboot the system and press <F2> to enter the System Setup program.

Is the integrated SCSI controller enabled?

Yes. Go to step 3.

No. Go to step 2.

2. Enable the integrated SCSI controller, and reboot the system.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 3.

3. Verify that the SCSI device drivers are installed and configured correctly. See "Installing and Configuring SCSI Drivers" in the *User's Guide* to determine which drivers are required and how they should be installed and configured.

Are the required SCSI device drivers installed and configured correctly?

Yes. Go to step 5.

No. Go to step 4.

4. Reinstall and/or reconfigure the required SCSI device drivers, and then reboot the system.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 5.

5. Remove the drive carrier and install it in another drive bay.

Is the problem resolved?

Yes. The SCSI backplane board has a defective connector. See "[Getting Help](#)" for instructions on obtaining technical assistance.

No. Go to step 6.

6. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

7. Open the system doors (see "[Opening the System Doors](#)").

8. Remove all hard-disk drives from the four hard-disk drive bays.

9. Remove and replace the SCSI backplane daughter board(s).

10. Reinstall the hard-disk drives.

11. Check the SCSI cable connections to the SCSI backplane board and to the SCSI host adapter. Check the DC power cable connection to the SCSI backplane board. The SCSI cable may be connected to the SCSI host adapter on the system board or to a SCSI host adapter card in an expansion slot. See "[Installing Hard-Disk Drives](#)" for the location of the cable connectors on the SCSI backplane board and the system board.

Are the cables firmly connected?

Yes. Go to step 12.

No. Go to step 11.

12. Reseat the cable connectors, and then reconnect the system and peripherals to their electrical outlets and turn them on.

Is the problem resolved?

Yes. The cable connections were faulty. You have fixed the problem.

No. Go to step 12.

13. Partition and logically format the hard-disk drive. If possible, restore the files to the drive. To partition and logically format the drive, see the operating system's documentation.

Is the problem resolved?

Yes. The hard-disk drive format was corrupted. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

Troubleshooting the Optional Integrated RAID Controller

If you encounter problems with your system's optional integrated RAID controller, perform the following steps to help determine the problem:

1. Enter the System Setup program and check the setting for the integrated RAID controller. See "Using the System Setup Program" in the *User's Guide* for instructions.

Is the controller enabled?

Yes. Go to step 8.

No. Go to step 2.

2. Enable the integrated RAID controller, and then reboot the system. See "[Activating the Integrated RAID Controller](#)" in "Installing System Board Options."

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 3.

3. Refer to the documentation provided with the RAID controller software and check the software settings.

Is the problem resolved?

Yes. You have fixed the problem.

No. Go to step 4.

4. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

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

5. Open the system doors (see "[Opening the System Doors](#)").

6. Reseat the RAID memory module in its socket. See "[Adding Memory](#)" in "Installing System Board Options" for general instructions on removing and replacing memory modules.

7. Reseat the RAID hardware key in its socket.

See [Figure 8-1](#), "System Board Features," for the location of the RAID hardware key.

8. Close the system doors, reconnect the system to the electrical outlet, and reboot the system.

Is the problem resolved?

Yes. You have fixed the problem.

No. See "[Getting Help](#)" for instructions on obtaining technical assistance.

[Back to Contents Page](#)

Installing System Board Options

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [Expansion Cards](#)
- [Adding Memory](#)
- [Upgrading the Microprocessor or Installing a Secondary Microprocessor](#)
- [Activating the Integrated RAID Controller](#)
- [Replacing the Battery](#)

This section describes how to install expansion cards, memory, and microprocessors and how to activate the system's integrated redundant array of independent disks (RAID) controller. Instructions for replacing the system battery are also included.

▲ WARNING: Before you perform the procedures in this section, you must turn off the system and disconnect it from its electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

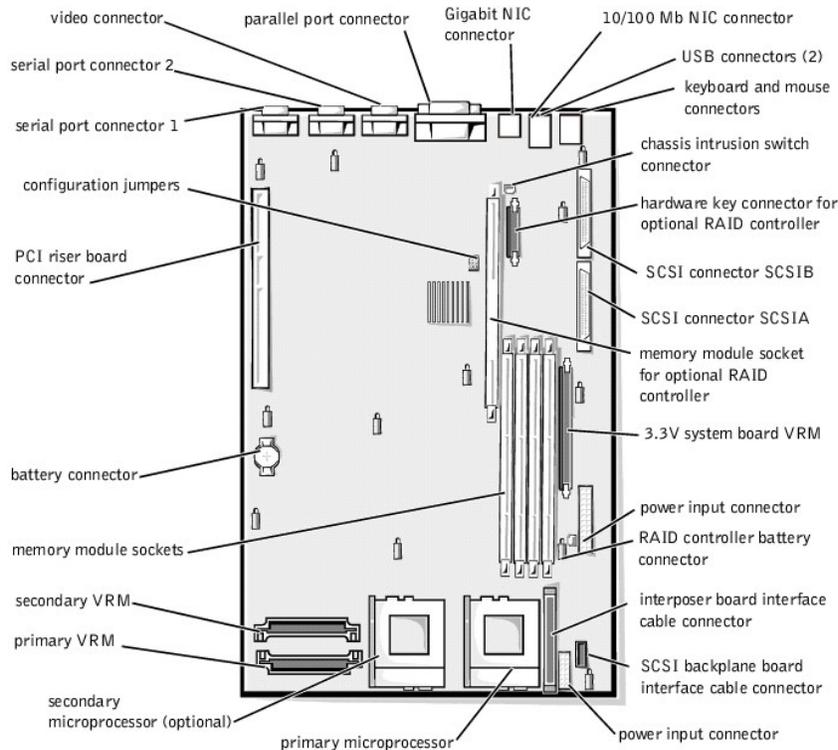
Use [Table 8-1](#) and [Figure 8-1](#) to locate the system board features.

Table 8-1. System Board Connectors and Sockets

Connector or Socket	Description
BACKPLANE	SCSI backplane board interface cable connector
BATTERY	Battery connector
COM n	Serial port connectors
DIMM_x	Memory module sockets
DIMM_RAID	Memory module socket for integrated RAID controller
INTRUS	Intrusion-alarm switch connector
KYBD	Keyboard connector
MOUSE	Mouse connector
NIC n	NIC connector
PANEL	System control panel connector
PARALLEL	Parallel port connector
POWER n	Power connectors
PROC_ n	Microprocessor connectors
RAID_KEY	Socket for integrated RAID controller hardware key
RAID_BATTERY	Connector for integrated RAID controller battery
RISER	PCI riser board connector
SCSIA, SCSIB	SCSI host adapter connectors
USB n	USB connectors
VGA	Video connector
VRM n	Primary and secondary VRM connectors

NOTE: For the full name of an abbreviation or acronym used in this table, see "[Abbreviations and Acronyms](#)."

Figure 8-1. System Board Features

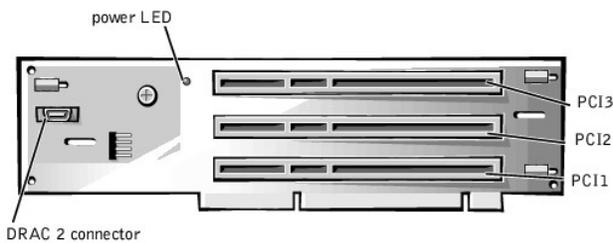


Expansion Cards

Expansion cards are installed on the system's riser board (see [Figure 8-2](#)). The riser board plugs into the RISER connector on the system board (see [Figure 8-1](#)) and is considered an extension of the system board.

The riser board contains three full-length 64-bit, 33-megahertz (MHz), Peripheral Component Interconnect (PCI) expansion-card connectors. All three expansion card connectors support 5-V or universal PCI cards. Connector PCI2 supports an optional Dell OpenManage™ Remote Assistant Card 2 (DRAC 2).

Figure 8-2. Riser-Board Expansion-Card Connectors



Installing an Expansion Card

To install an expansion card, perform the following steps.

▲ WARNING: Before you perform this procedure, you must turn off the system and disconnect it from its AC power source. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
2. Prepare the expansion card for installation, and open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").

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

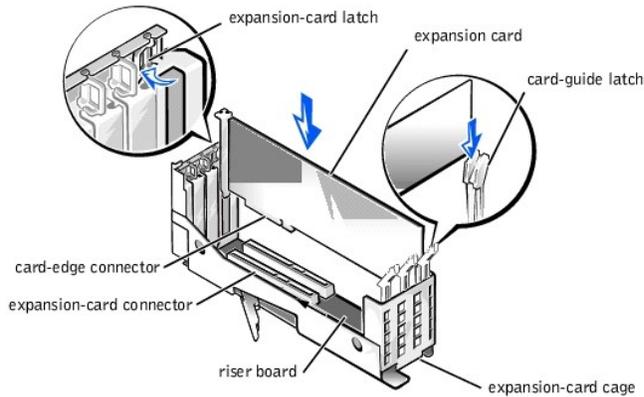
See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing the card for your system.

3. Remove the expansion-card cage (see ["Removing and Replacing the Expansion-Card Cage"](#) in "Checking Inside the System").

NOTE: Verify that the power LED on the riser board (see [Figure 8-2](#)) is off before removing the expansion-card cage.

4. Open the expansion-card latch (see [Figure 8-3](#)) and remove the filler bracket from the expansion slot.

Figure 8-3. Installing an Expansion Card



5. Install the new expansion card (see [Figure 8-3](#)).

Position the expansion-card cage so that the riser board lies horizontally on your work surface. Insert the card-edge connector firmly into the expansion-card connector on the riser board until the card is fully seated.

6. When the card is seated in the connector and the card-mounting bracket is aligned with the brackets on either side of it, close the expansion-card latch.
7. If the expansion card is a full-length card, secure the inner end of the card by closing the latch on the card guide over the top edge of the card (see [Figure 8-3](#)).
8. Replace the expansion-card cage in the chassis (see ["Removing and Replacing the Expansion-Card Cage"](#) in "Checking Inside Your System").
9. Connect any cables that should be attached to the card. See the documentation that came with the card for information about its cable connections.
10. Close the system doors, reconnect the system and peripherals to their electrical outlets, and turn them on.

Removing an Expansion Card

To remove an expansion card, perform the following steps.

WARNING: Before you perform this procedure, you must turn off the system and disconnect it from its electrical outlet. For more information, see ["Safety First—For You and Your Computer"](#) in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
2. Open the system doors (see ["Opening the System Doors"](#) in "Checking Inside the System").
3. Disconnect any cables connected to the card.
4. Remove the expansion-card cage (see ["Removing and Replacing the Expansion-Card Cage"](#) in "Checking Inside the System").
5. Position the expansion-card cage so that the riser board lies horizontally on your work surface.
6. To release the expansion card from the card cage, rotate the latch away from the expansion-card bracket.
7. If the expansion card is a full-length card, release the card's inner end by opening the latch on the card guide (see [Figure 8-3](#)).
8. Grasp the expansion card by its top corners, and carefully remove it from the expansion-card connector.
9. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

NOTE: Installing a filler bracket over an empty expansion slot is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

10. Replace the expansion-card cage in the chassis (see ["Removing and Replacing the Expansion-Card Cage"](#) in "Checking Inside the System").
11. Close the system doors, reconnect the system and peripherals to their electrical outlets, and turn them on.

Adding Memory

The four dual in-line memory module (DIMM) sockets on the system board (see [Figure 8-1](#)) can accommodate from 128 megabytes (MB) to 4 gigabytes (GB) of registered synchronous dynamic random-access memory (SDRAM).

Memory Upgrade Kits

The system is upgradable to 4 GB by installing combinations of 64-, 128-, 256-, 512-MB, or 1-GB registered memory modules. You can purchase memory upgrade kits from Dell as needed.

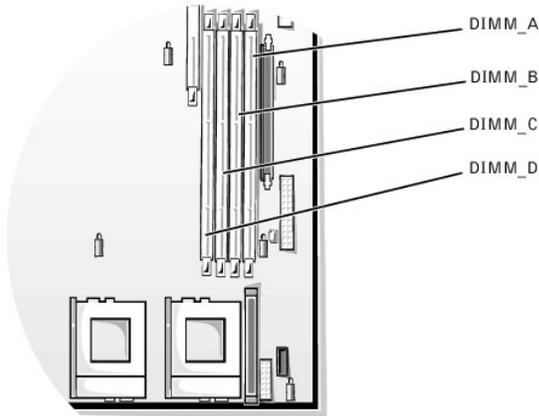
 **NOTE:** The memory modules must be PC-133 compliant.

Memory Module Installation Guidelines

Starting with the socket nearest to the system power supply (or supplies), the memory module sockets are labeled "DIMM_A" through "DIMM_D" (see [Figure 8-4](#)). When you install memory modules, follow these guidelines:

- 1 You must install memory modules in matched pairs.
- 1 Install a pair of memory modules in socket DIMM_A and DIMM_B before installing a second pair in sockets DIMM_C and DIMM_D.
- 1 If you install different-sized pairs of memory modules, install them in order of descending capacity, beginning with the highest-capacity memory modules in sockets DIMM_A and DIMM_B.

Figure 8-4. Memory Module Sockets



[Table 8-2](#) illustrates several sample memory configurations based on these guidelines.

Table 8-2. Sample Memory Module Configurations

Total Desired Memory	Memory Module Sockets			
	DIMM_A	DIMM_B	DIMM_C	DIMM_D
128 MB	64 MB	64 MB	none	none
256 MB	128 MB	128 MB	none	none
512 MB	256 MB	256 MB	none	none
1 GB	256 MB	256 MB	256 MB	256 MB
4 GB	1 GB	1 GB	1 GB	1 GB

Performing a Memory Upgrade

To perform a memory upgrade to the system board, perform the following steps.

 **WARNING:** Before you perform this procedure, you must turn off the system and disconnect it from its electrical outlet. For more information, see ["Safety First—For You and Your Computer"](#) in "Checking Inside the System."

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

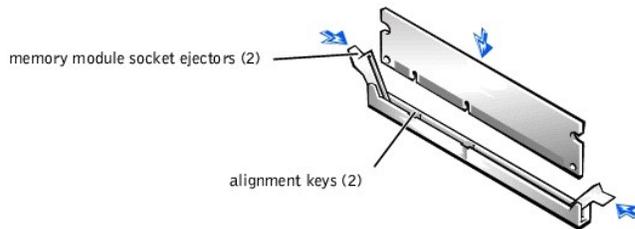
1. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").
2. Locate the memory module sockets in which you will install or replace memory modules.
[Figure 8-1](#) shows the general location of the memory module sockets on the system board. [Figure 8-4](#) shows the order of the memory module sockets.
3. Install or replace the memory modules as necessary to reach the desired memory total (see "[Installing Memory Modules](#)" or "[Removing Memory Modules](#)").
4. Close the system doors, reconnect the system to the electrical outlet, and turn on the system. After the system completes the power-on self-test (POST) routine, it runs a memory test. The system detects that the new memory does not match the system configuration information and displays an error message.
5. Press <F2> to enter the System Setup program, and check the **System Memory** setting on the System Setup screens. The system should have already changed the value in the **System Memory** setting to reflect the newly installed memory.
6. If the **System Memory** value is incorrect, one or more of the memory modules may not be installed properly. Repeat steps 1 through 5, checking to make sure that the memory modules are firmly seated in their sockets.
7. Run the system memory test in the Dell™ Diagnostics.

Installing Memory Modules

To install a memory module, perform the following steps:

1. Press down and outward on the ejectors on the memory module socket, as shown in [Figure 8-5](#), to allow the memory module to be inserted into the socket.

Figure 8-5. Installing a Memory Module



2. Align the memory module's edge connector with the slot in the center of the memory module socket, and insert the memory module into the socket (see [Figure 8-5](#)).

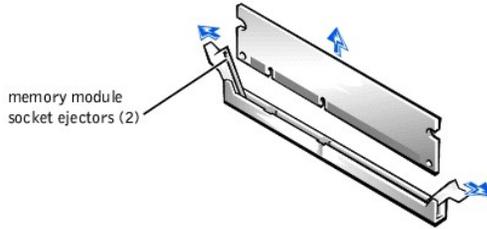
The memory module socket has two alignment keys that allow the memory module to be installed in the socket in only one way.

3. 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 socket (see [Figure 8-5](#)).
4. When the memory module is properly seated in the socket, the ejectors on the memory module socket should align with the ejectors on the other sockets with memory modules installed.
5. Repeat steps 1 through 3 of this procedure to install the remaining memory modules.
6. Perform steps 4 through 7 of "[Performing a Memory Upgrade](#)."

Removing Memory Modules

To remove a memory module, press down and outward on the ejectors on each end of the socket until the memory module pops out of the socket (see [Figure 8-6](#)).

Figure 8-6. Removing a Memory Module



Upgrading the Microprocessor or Installing a Secondary Microprocessor

To take advantage of future options in speed and functionality, you can add a second processor or replace either the primary or secondary processor.

➡ NOTICE: The second processor must be of the same type and speed as the first processor.

Each processor and its associated level 2 (L2) cache memory are contained in a Flip Chip Pin Grid Array (FC-PGA) package that is installed in a zero insertion force (ZIF) socket on the system board. The following subsection describes how to install or replace the microprocessor in either the primary or secondary processor connector.

Adding or Replacing a Microprocessor

In addition to the ZIF socket for the primary microprocessor on the system board, there is a second ZIF socket to accommodate a secondary microprocessor. The secondary microprocessor must have the same operating frequency as the primary micro-processor.

The following items are included in the microprocessor upgrade kit:

- 1 A microprocessor chip
- 1 A heat sink
- 1 A retention clip
- 1 A voltage regulator module (VRM), used if adding a second processor

➡ NOTICE: Dell recommends that only a technically knowledgeable person perform this procedure.

1. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").

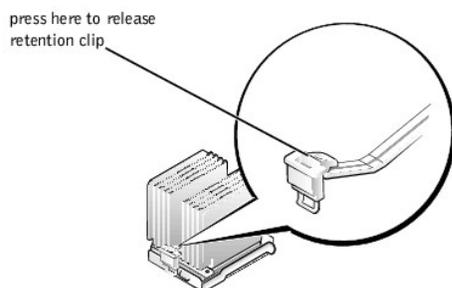
➡ NOTICE: See "Protecting Against Electrostatic Discharge" in the safety instructions in the *System Information* document.

2. To remove the retention clip that secures the heat sink to the microprocessor socket, press down firmly on the tab on the retention clip, and then remove the clip from the heat sink (see [Figure 8-7](#)).

➡ 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.

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

Figure 8-7. Retention Clip



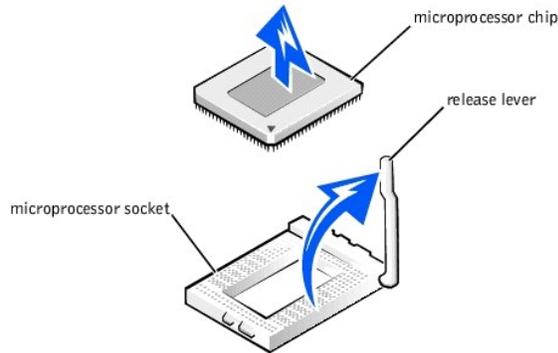
3. Remove the heat sink.

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

4. Remove the microprocessor chip from the socket by pulling the socket release lever straight up until the chip is released (see [Figure 8-8](#)) and then lift the chip out of the socket.

Leave the release lever up so that the socket is ready for the new microprocessor.

Figure 8-8. Removing the Microprocessor



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

5. Unpack the new microprocessor.

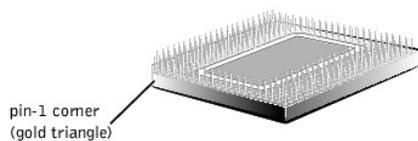
If any of the pins on the microprocessor appear bent, see ["Getting Help"](#) for instructions on obtaining technical assistance from Dell.

👉 NOTICE: Identifying the pin-1 corners is critical to positioning the chip correctly.

6. Identify the pin-1 corner of the microprocessor by turning the chip over and locating the tiny gold triangle that extends from one corner of the large central rectangular area. The gold triangle points toward pin 1, which is also uniquely identified by a square pad.

7. Align the pin-1 corner of the microprocessor chip (see [Figure 8-9](#)) with the pin-1 corner of the microprocessor socket.

Figure 8-9. Pin-1 Identification



👉 NOTICE: Positioning the microprocessor incorrectly can permanently damage the chip and the system when you turn on the system.

8. Install the microprocessor chip in the socket (see [Figure 8-10](#)).

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

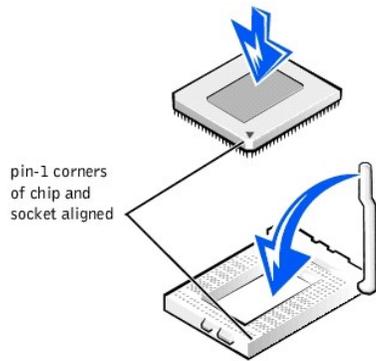
👉 NOTICE: When placing the microprocessor chip in the socket, be sure that all of the pins on the chip go into the corresponding holes of the socket. Be careful not to bend the pins.

b. With the pin-1 corners of the chip and socket aligned, set the chip lightly in the socket and make sure that all pins are matched with the correct holes in the socket.

Because the system uses a ZIF microprocessor socket, *there is no need to use force* (which could bend the pins if the chip is misaligned). When the chip is positioned correctly, it should drop down into the socket with minimal pressure.

c. When the chip is fully seated in the socket, rotate the socket release lever back down until it snaps into place, securing the chip.

Figure 8-10. Installing the Microprocessor Chip

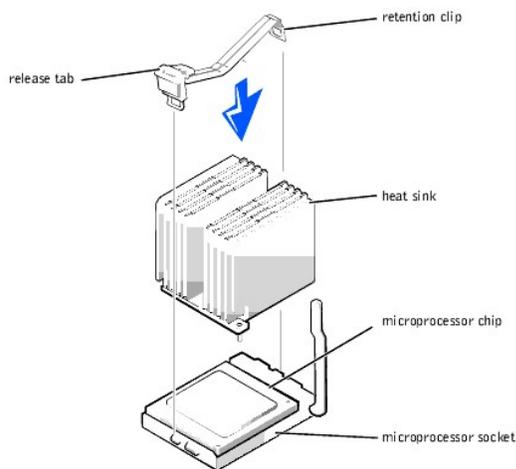


9. Place the new heat sink on top of the microprocessor chip (see [Figure 8-11](#)).

NOTE: To avoid possible damage to the microprocessor, you must align the heat sink so that the triangular mark on the heat sink points toward the triangular mark on the system board.

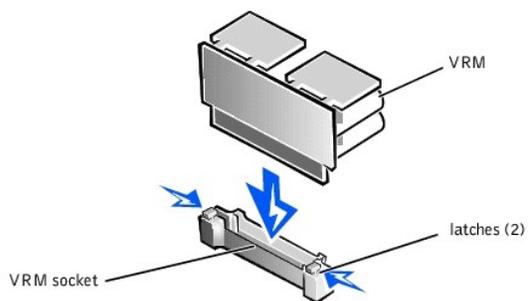
10. To replace the retention clip, orient the clip so that the release tab is adjacent to the triangular marks on the heat sink and the system board. Hook the unfolded end of the clip over the tab on the edge of the socket closest to the cooling fans; then press down on the release tab on the free end of the clip to snap the clip over the tab on the socket (see [Figure 8-11](#)).

Figure 8-11. Installing the Heat Sink



11. If you are adding a second microprocessor, insert the VRM in the secondary VRM socket as shown in [Figure 8-12](#), making sure that the latches at each end of the socket engage.

Figure 8-12. Installing the VRM



12. Close the system doors.
13. Reconnect your system and peripherals to their electrical outlets, and turn them on.
14. Press <F2> to enter the System Setup program, and check that the microprocessor categories match the new system configuration. See the system's *User's Guide* for instructions.
15. As the system boots, it detects the presence of the new processor and automatically changes the system configuration information in the System Setup program.

 NOTE: After you remove and replace the cover, the chassis intrusion detector will cause an alert message to be displayed at the next system start-up.

16. Enter the System Setup program, and confirm that the top line in the system data area correctly identifies the installed processor(s). See "Using the System Setup Program" in your *User's Guide*.

17. While in the System Setup program, reset the chassis intrusion detector.

 NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

18. Run the Dell Diagnostics to verify that the new microprocessor is operating correctly. See "[Running the Dell™ Diagnostics](#)," for information on running the diagnostics and troubleshooting any problems that may occur.

Activating the Integrated RAID Controller

To activate the integrated PowerEdge™ Expandable RAID Controller (PERC) 3/Di, perform the following steps.

 **WARNING:** Before you perform this procedure, you must turn off the system and disconnect it from its electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

 NOTICE: To avoid possible data loss, back up all data on the hard-disk drives before changing the mode of operation of the integrated SCSI controller from SCSI to RAID.

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

1. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").
2. Remove the expansion-card cage (see "[Removing and Replacing the Expansion-Card Cage](#)" in "Checking Inside the System").

 NOTE: Verify that the power LED on the riser board (see [Figure 8-2](#)) is off before removing the card cage.

3. Open the ejectors on the RAID controller memory module socket by pressing down and outward, as shown in [Figure 8-5](#), to allow the memory module to be inserted into the socket.

See [Figure 8-1](#) for the location of the socket on the system board.

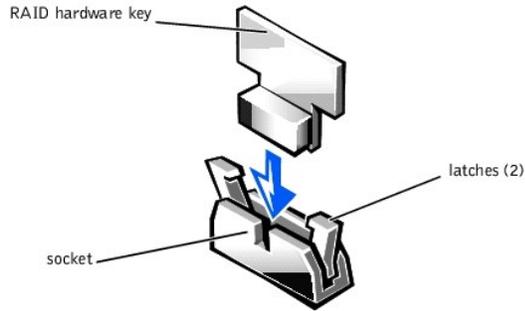
4. Align the memory module's edge connector with the slot in the center of the memory module socket, and insert the memory module into the socket (see [Figure 8-5](#)).

The memory module socket has two alignment keys that allow the memory module to be installed in the socket in only one way.

 NOTE: The RAID controller memory module must be an unbuffered memory module, rated to run at 100 MHz or faster. Do not substitute registered memory modules such as those used for system memory.

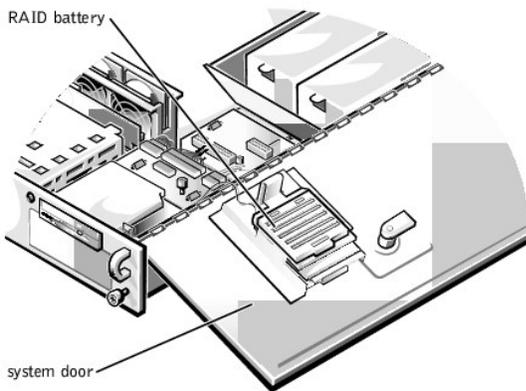
5. Press on the memory module with your thumbs while pulling on the ejectors with your index fingers to lock the memory module into the socket (see [Figure 8-5](#)).
6. Examine the RAID hardware key (see [Figure 8-13](#)) to ensure that it is labeled "PE25X0." Hardware keys intended for use in other systems will not enable the RAID controller. If the key is the correct type, install the key in its socket on the system board (see [Figure 8-1](#)) and secure the key with the latches on each end of the socket (see [Figure 8-13](#)).

Figure 8-13. Installing the RAID Hardware Key



7. Insert the RAID battery into the bracket on the underside of the system door (see [Figure 8-14](#)).

Figure 8-14. Installing the RAID Battery



8. Connect the battery cable to the RAID battery connector on the system board (see [Figure 8-1](#)).
9. Close the system doors, reconnect the system and peripherals to their electrical outlets, and turn them on.
10. Install the RAID software. For details, see the RAID controller documentation.
11. Enter the System Setup program and check that the setting for the SCSI controller has changed to reflect the presence of the RAID hardware. See "Using the System Setup Program" in the *User's Guide* for instructions.

Replacing the Battery

The system battery maintains system configuration, date, and time information in a special section of memory when you turn off the system. The operating life of the battery ranges from 2 to 5 years, depending on how you use the system (for example, if you keep the system on most of the time, the battery gets little use and thus lasts longer). You may need to replace the battery if an incorrect time or date is displayed during the boot routine along with the following or similar message:

```
Time-of-day not set -- please run SETUP program
Strike the F1 key to continue, F2 to run the setup utility
```

or

```
System CMOS checksum bad -- Run SETUP
Strike the F1 key to continue, F2 to run the setup utility
```

or

```
Invalid configuration information -- please run SETUP program
Strike the F1 key to continue, F2 to run the setup utility
```

To determine if the battery needs to be replaced, re-enter the time and date through the System Setup program (see "Using the System Setup Program" in the *User's Guide* for instructions). Turn off and disconnect the system from the electrical outlet for a few hours, and then reconnect and turn the system on again. Enter the System Setup program. If the date and time are not correct in the System Setup program, replace the battery.

- ☒ NOTE: Some software may cause the system time to speed up or slow down. If the system seems to operate normally except for the time kept in the System Setup program, the problem may be caused by software rather than by a defective battery.
- ☒ NOTE: If the system is turned off for long periods of time (for weeks or months), the nonvolatile random-access memory (NVRAM) may lose its system configuration information. This situation is not caused by a defective battery.

You can operate the system without a battery; however, the system configuration information maintained by the battery in NVRAM is erased each time you shut down the system. Therefore, you must re-enter the system configuration information and reset the options each time the system boots until you replace the battery.

The battery is a 3.0-volt (V), coin-cell CR2032-type battery. To remove the battery, perform the following steps.

▲ WARNING: Before you perform this procedure, you must turn off the system and disconnect it from its electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

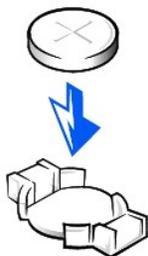
▲ WARNING: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

1. Enter the System Setup program and, if possible, make a printed copy of the System Setup screens. See "Using the System Setup Program" in the *User's Guide* for instructions.
2. Shut down the system, including any attached peripherals, and disconnect the system from the electrical outlet.

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

3. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").
4. To remove the battery, pry the battery out of its socket with your fingers or with a blunt, nonconductive object such as a plastic screwdriver.
5. Install the new battery with the side labeled "+" facing up (see [Figure 8-15](#)).

Figure 8-15. Installing the Battery



6. Close the system doors, reconnect the system and peripherals to their electrical outlets, and turn them on.
7. Enter the System Setup program to confirm that the battery is operating properly.
8. Enter the correct time and date through the System Setup program's **Time** and **Date** settings. Also re-enter any system configuration information that is no longer displayed on the System Setup screens, and then exit the System Setup program.
9. To test the newly installed battery, turn off and disconnect the system from the electrical outlet for at least an hour.
10. After an hour, plug in and turn on the system and enter the System Setup program. If the time and date are still incorrect, see "[Getting Help](#)" for instructions on obtaining technical assistance.

Installing a Drive in the Peripheral Bay

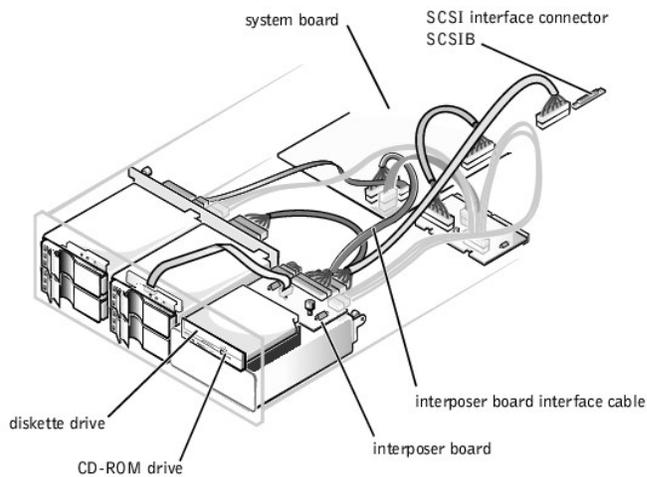
Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

- [Before You Begin](#)
- [Installing a Device That Uses the System's Integrated SCSI Controller](#)
- [Installing a Tape Drive That Uses a Controller Card](#)
- [Connecting an External Tape Drive](#)

The open peripheral bay at the front of your system can accommodate a user-accessible, half-height 5.25-inch device, such as a tape drive. This peripheral bay is contained in a removable peripheral cage. The top of the peripheral cage accommodates a standard 3.5-inch diskette drive and CD-ROM drive. These two drives connect to the system board via an interposer board mounted on top of the peripheral bay. See [Figure 9-1](#) for a general view of the various drives and cables associated with the peripheral bay.

 NOTE: You can also install a fifth hard-disk drive in the peripheral bay using an upgrade kit available from Dell.

Figure 9-1. Peripheral Bay Hardware



Before You Begin

This section describes how to install the following options:

- 1 Devices that use the system's integrated small computer system interface (SCSI) host adapter
- 1 Tape drives that use a controller card

 NOTE: If you are installing a SCSI hard-disk drive, see "[Installing Hard-Disk Drives](#)."

To remove or install drives in the peripheral bay, you must open the system doors.

 **WARNING:** Before you perform the procedures in this section, you must turn off the system and disconnect it from its electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

Interface Cables

If you install a SCSI device, you will connect it to the secondary SCSI interface connector (SCSIB [Channel B]) on the system board (see [Figure 9-1](#)) or to a SCSI host adapter on an expansion card.

These interface connectors are keyed for correct insertion. Keying ensures that the pin-1 wire on both ends of the cable goes to the pin-1 ends of the connectors.

When you disconnect an interface cable, take care to grasp the cable connector, rather than the cable itself, to avoid stress on the cable.

SCSI Configuration Information

Although SCSI devices are installed essentially the same way as other devices, their configuration requirements are different. To configure a SCSI device installed in the peripheral bay, follow the guidelines in the following subsections.

SCSI ID Numbers

Each device attached to a SCSI host adapter must have a unique SCSI ID number from 1 to 7.

When SCSI devices are shipped from Dell, the default SCSI ID numbers are assigned as follows:

- 1 A SCSI tape drive is configured as SCSI ID 6 (the default ID number for a tape drive).
- 1 A SCSI CD-ROM drive is usually configured as SCSI ID 5.

 **NOTE:** *There is no requirement that SCSI ID numbers be assigned sequentially or that devices be attached to the cable in order by ID number.*

Device Termination

SCSI logic requires that the two devices at opposite ends of the SCSI chain be terminated and that all devices in between be unterminated. The SCSI cable included in the upgrade kit has an active terminator installed at the end of the cable. Therefore, you should disable the termination on all SCSI devices you attach to this cable.

Installing a Device That Uses the System's Integrated SCSI Controller

To install a peripheral device (such as a tape drive) that uses the system's integrated SCSI controller, perform the following steps.

 **WARNING:** Before you perform the procedures in this section, you must turn off the system and disconnect it from its electrical outlet. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
2. Prepare the drive for installation.

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

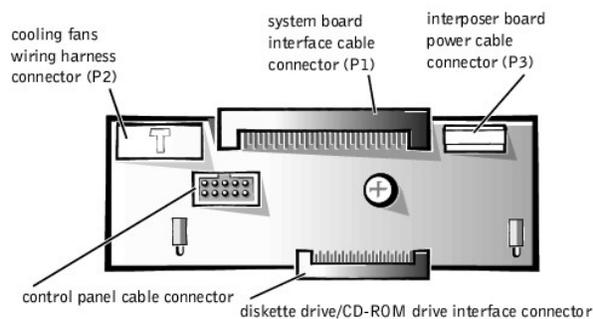
Ground yourself by touching an unpainted metal surface on the back of the system, unpack the drive, and compare the jumper and switch settings with those in the drive documentation. (See "[SCSI Configuration Information](#)" for information on setting the drive's SCSI ID number and enabling termination, if required.) Change any settings necessary for this system's configuration.

If the drive does not already have drive rails attached, attach a drive rail to each side of the drive with a screw in each of the lower slotted screw holes on the drive rail.

3. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").
4. Disconnect all cables connected to the interposer board on top of the peripheral bay (see [Figure 9-2](#) and [Figure 9-3](#)).

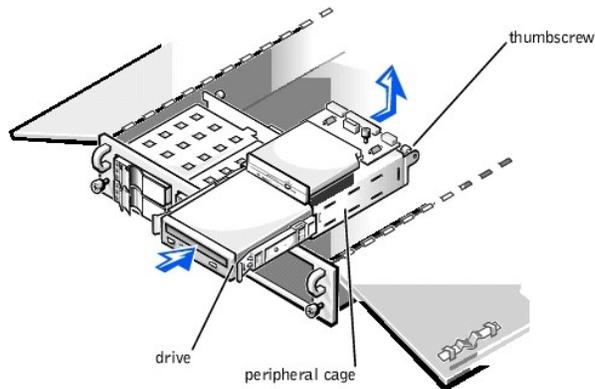
These cables include the system board interface cable, cooling fan wiring harness, interposer board power cable, and control panel cable.

Figure 9-2. Connectors on the Interposer Board



5. Loosen the thumbscrew at the back corner of the peripheral cage (see [Figure 9-3](#)).

Figure 9-3. Installing a Drive in the Peripheral Cage



6. Slide the peripheral cage toward the back of the system approximately 2.5 cm (1 inch), and then lift the peripheral cage upward and set it aside.
7. Remove the plastic insert from the front of the peripheral cage.
From the inside of the chassis, push outward on the center of the insert to release the insert from the chassis.
8. Slide the new drive into the peripheral cage until it snaps securely into place.
If necessary, you can adjust the drive's alignment by repositioning one or both rails.
9. Lower the peripheral cage back into the chassis, and then slide the cage forward into position.
Be careful to not trap power or interface cables underneath the cage when reinstalling it.
10. Secure the peripheral cage by tightening the thumbscrew at the back corner of the cage.
11. Connect the tape drive or other peripheral SCSI device to the SCSI cable provided with the device. Attach the other end of the SCSI cable to the SCSI interface connector SCSIB (Channel B) on the system board.
12. Reconnect the power cable, cooling fan wiring harness, and interposer board interface cable to the interposer board.
13. Plug the DC power cable connector into the 4-pin power input connector on the back of the SCSI device.
14. Check all cable connections that may have been loosened during this procedure. Arrange cables so that they will not catch on the system doors or block the airflow of the fans or cooling vents.
15. Close the system doors.
16. Reconnect the system and peripherals to their electrical outlets, and turn them on.
17. Test the device. To test a tape drive, see the documentation for the tape drive software to perform a tape drive backup and verification test.

Installing a Tape Drive That Uses a Controller Card

Tape drives that require their own separate controller cards are shipped with the controller card and an interface cable.

To install the drive in the peripheral bay, perform the following steps.

▲ WARNING: Before you perform the procedures in this section, you must turn off the system and disconnect it from its AC power source. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
2. Prepare the controller card and drive for installation.

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

Ground yourself by touching an unpainted metal surface on the back of the system, unpack the drive and controller card, and compare the jumper and switch settings with those in the drive documentation. (See "[SCSI Configuration Information](#)" for information on setting the drive's SCSI ID number and enabling termination, if required.) Change any settings necessary for this system's configuration.

3. If the drive does not already have drive rails attached, attach a drive rail to each side of the drive with a screw in each of the lower slotted screw holes on the drive rail.
4. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").

5. Disconnect all cables connected to the interposer board on top of the peripherals bay (see [Figure 9-2](#) and [Figure 9-3](#)).
These cables include the interposer board interface cable, cooling fan wiring harness, and power cable.
 6. Loosen the thumbscrew at the back corner of the peripheral cage (see [Figure 9-3](#)).
 7. Slide the peripheral cage toward the back of the system approximately 2.5 cm (1 inch), and then lift the peripheral cage upward and set it aside.
 8. Remove the plastic insert from the front of the peripheral cage.
From the inside of the chassis, push outward on the center of the insert to release the insert from the chassis.
 9. Slide the new drive into the peripheral cage until it snaps securely into place.
If necessary, you can adjust the drive's alignment by repositioning one or both rails.
 10. Lower the peripheral cage back into the chassis, and then slide the cage forward into position.
Be careful to not trap power or interface cables underneath the cage when reinstalling it.
 11. Secure the peripheral cage by tightening the thumbscrew at the back corner of the cage.
 12. Reconnect the power cable, cooling fan wiring harness, and interposer board interface cable to the interposer board.
 13. Plug the DC power cable connector into the 4-pin power input connector on the back of the drive.
 14. Install the controller card in an expansion slot. See "[Installing System Board Options](#)" for information on installing the card.
 15. Attach the interface cable that came with the drive kit to the interface connector on the back of the drive.
 16. Connect the interface cable to the controller connector on the controller card.
See the controller card's documentation to identify the controller connector on the card.
 17. Connect the SCSI device to the SCSI cable provided with the device, and attach the other end of the SCSI cable to interface connector SCSIB (Channel B) on the system board.
 18. Check all cable connections that may have been loosened during this procedure. Arrange cables so that they will not catch on the system doors or block the airflow of the fans or cooling vents.
 19. Close the system doors.
 20. Reconnect the system and peripherals to their electrical outlets, and turn them on.
 21. Perform a tape backup and verification test with the drive as instructed in the tape-drive software documentation that came with the drive.
-

Connecting an External Tape Drive

To connect a stand-alone tape drive to the system using a controller card and shielded interface/DC power cable, perform the following steps.

▲ WARNING: Before you perform the procedures in this section, you must turn off the system and disconnect it from its AC power source. For more information, see "[Safety First—For You and Your Computer](#)" in "Checking Inside the System."

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
2. Prepare the tape drive and controller card for installation.

Ground yourself by touching an unpainted metal surface on the back of the system, unpack the tape drive and controller card, and configure them for the system according to the instructions in the documentation that came with the tape drive.

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

3. Open the system doors (see "[Opening the System Doors](#)" in "Checking Inside the System").
 4. Install the controller card in an expansion slot. See "[Installing System Board Options](#)" for information on installing the card.
 5. Close the system doors.
 6. Connect the tape drive's interface/DC power cable to the external connector on the controller card, and secure the connection by tightening the screws on the connector.
 7. Reconnect the system and peripherals to their electrical outlets, and turn them on.
 8. Perform a tape backup and verification test with the drive as instructed in the software documentation that came with the drive.
-

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Preface

Dell™ PowerEdge™ 2550 Systems Installation and Troubleshooting Guide

About This Guide

This guide is intended for anyone who wants to upgrade or troubleshoot a Dell™ PowerEdge™ 2550 system. Before calling Dell for technical assistance, follow the recommended procedure(s) in this guide to solve most hardware and software problems yourself.

Other Documentation You May Need

In addition to this *Installation and Troubleshooting Guide*, the following documentation is included with your system:

- 1 The *User's Guide*, which describes system features and technical specifications, the *Dell OpenManage Server Assistant* CD, and the System Setup program.
- 1 The *Setting Up Your System* sheet provides general instructions for setting up your system.
- 1 The Dell OpenManage™ Server Agent documentation describes the server management software, including alert messages issued by the software.
- 1 *Dell PowerEdge System Information* document contains important safety, regulatory, and warranty information.

You may also have one or more of the following documents.

 NOTE: Documentation updates are sometimes included with the system to describe changes to the system or software. Always read these updates before consulting any other documentation because the updates often contain information that supersedes the information in the other documents.

- 1 Operating system documentation is included with the system if you ordered the operating system software from Dell. This documentation describes how to install (if necessary), configure, and use the operating system software.
- 1 Documentation is included with any options you purchase separately from the system. This documentation includes information that you need to configure and install these options in your Dell system.
- 1 Technical information files—sometimes called "readme" files—may be installed on the hard-disk drive to provide last-minute updates about technical changes to the system or advanced technical reference material intended for experienced users or technicians.

Typographical Conventions

The following list defines (where appropriate) and illustrates typographical conventions used as visual cues for specific elements of text throughout this document:

- 1 *Interface components* are window titles, button and icon names, menu names and selections, and other options that appear on the monitor screen or display. They are presented in bold.

Example: Click **OK**.

- 1 *Keycaps* are labels that appear on the keys on a keyboard. They are enclosed in angle brackets.

Example: <Enter>

- 1 *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.

Example: <Ctrl><Alt><Enter>

- 1 *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed when referenced.

Example: "Use the **format** command to . . ."

In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

Example: "Type format a: to format the diskette in drive A."

- 1 *Filenames* and *directory names* are presented in lowercase bold.

Examples: **autoexec.bat** and **c:\windows**

- 1 *Syntax lines* consist of a command and all its possible parameters. Commands are presented in lowercase bold; variable parameters (those for which you substitute a value) are presented in lowercase italics; constant parameters are presented in lowercase bold. The brackets indicate items that are optional.

Example: **del** [*drive:*] [*path*] **filename** [*/p*]

- 1 *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

Example: del c:\myfile.doc

1 *Screen text* is a message or text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.

Example: The following message appears on your screen:

No boot device available

Example: "Type md c:\programs and press <Enter>."

1 *Variables* are placeholders for which you substitute a value. They are presented in italics.

Example: DIMM_x (where x represents the DIMM socket designation).

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