



Dell™ Latitude™ E6400

Setup and Quick Reference Guide



Model PP27L

Notes, Notices, and Cautions



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



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



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

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Model PP27L

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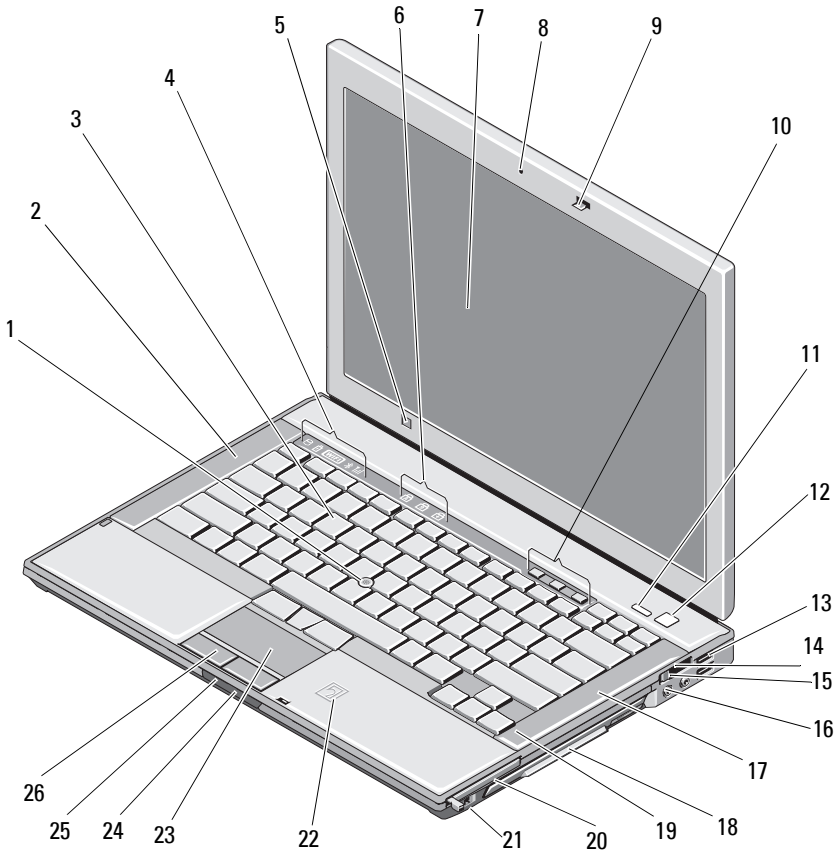
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About Your Computer

Front and Right Side View



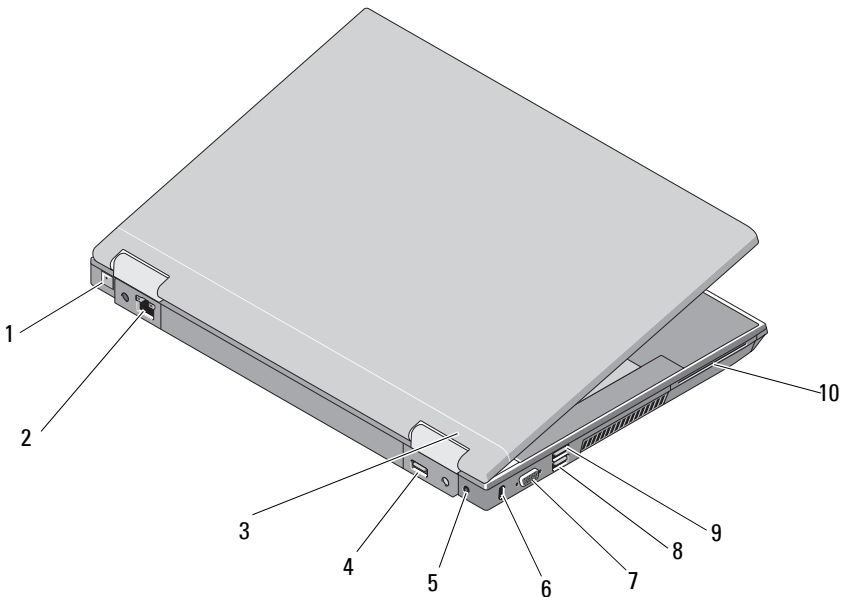
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Template Last Updated - 2/7/2007

About Your Computer | 7

1	track stick	2	left speaker
3	keyboard	4	device status lights
5	ambient light sensor (ALS)	6	keyboard status lights
7	display	8	microphone/camera (optional)
9	display latch	10	volume controls
11	Dell Control Point (DCP)	12	power button
13	USB ports (2)	14	WiFi Catcher™
15	wireless switch	16	audio connectors (2)
17	right speaker	18	optical drive
19	fingerprint swipe reader	20	ExpressCard slot
21	firewire (IEEE 1394a) port	22	contactless SmartCard reader
23	touch pad	24	Secure Digital (SD) memory card reader
25	latch button	26	touch pad buttons

Back and Left Side View

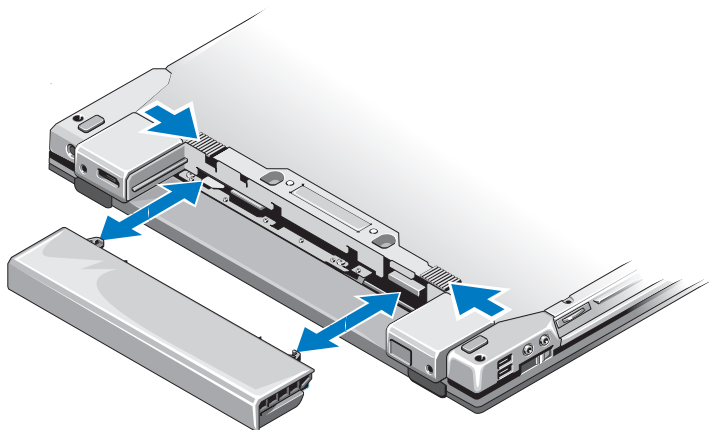


1	RJ-11 port	2	RJ-45 network port
3	power, HDD indicators	4	multimode DisplayPort
5	AC adapter	6	security cable slot
7	VGA	8	eSATA/PowerShare™ USB port
9	PowerShare™ USB port	10	SmartCard Reader



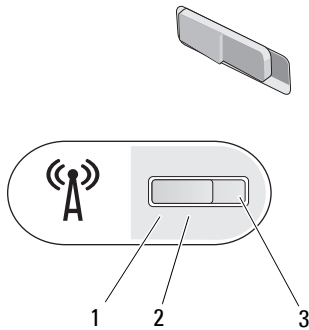
CAUTION: Do not block, push objects into, or allow dust to accumulate in the air vents. Do not store your Dell computer in a low-airflow environment, such as a closed briefcase, while it is running. Restricting the airflow can damage the computer or cause a fire. The computer turns on the fan when the computer gets hot. Fan noise is normal and does not indicate a problem with the fan or the computer.

Battery Removal



Remove the battery by sliding the battery tabs inward and moving the battery away from the notebook. Install the battery by pushing the battery inward until it clicks into place.

Wireless Switch



1	"off" position	Disables wireless devices
2	"on" position	Enables wireless devices
3	Wi-Fi Catcher	Scans for WLAN networks

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Setting Up Your Computer

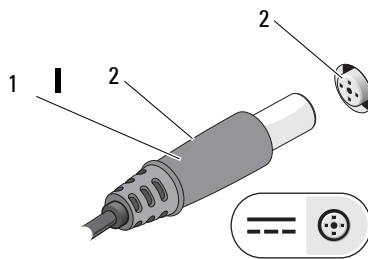
Quick Setup

! **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

- 1 Unpack the accessories box if you have not done so already.
- 2 You will need the contents of the accessories box to complete the setup of your computer.

The accessories box also contains user documentation and any software or additional hardware (such as PC Cards, drives, or batteries) that you have ordered.

- 3 Connect the AC adapter to the AC adapter connector on the computer and to the electrical outlet.

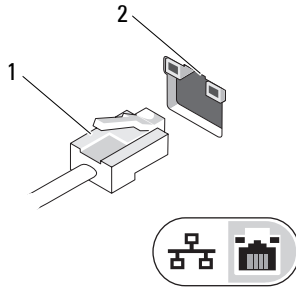


- 1 power LED
- 2 AC adapter cable
- 3 AC adapter connector

! **CAUTION:** The AC adapter works with electrical outlets worldwide. However, power connectors and power strips vary among countries. Using an incompatible cable or improperly connecting the cable to the power strip or electrical outlet may cause fire or equipment damage.

➔ NOTICE: When you disconnect the AC adapter cable from the computer, grasp the connector, not the cable itself, and pull firmly but gently to avoid damaging the cable. When you wrap the AC adapter cable, ensure that you follow the angle of the connector on the AC adapter to avoid damaging the cable.

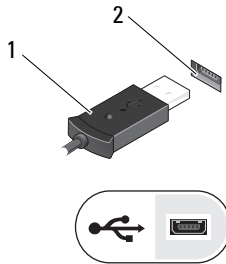
4 (Optional). Connect the network cable (available at dell.com if required).



1 Network (ethernet) cable

2 Network (ethernet) connector

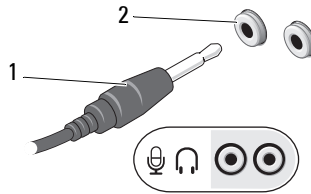
5 (Optional). Connect USB devices (such as a mouse).





1 USB cable

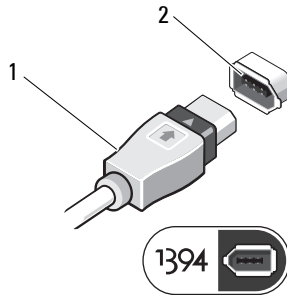
2 USB connector

6 (Optional). Connect headphones and/or a microphone.



- | | | | |
|---|-----------------------------------|---------------------------------------|---|
| 1 | Headphone or microphone cable | Attach headphones to the connector. |  |
| 2 | Headphone or microphone connector | Attach a microphone to the connector. |  |

7 (Optional). Connect a 1394 (4-pin firewire) device. (diagram to be replaced with correct 4-pin 1394a connector).




- | | | | |
|---|------------|---|----------------|
| 1 | 1394 cable | 2 | 1394 connector |
|---|------------|---|----------------|

8 (Optional). Connect an eSATA device. (diagram to be added)

9 (Optional). Connect a Dell external media module. (diagram to be added)

- 10 Open the computer display and press the power button to turn on the computer.



 **NOTE:** It is recommended that you turn on and shut down your computer at least once before you install any cards or connect the computer to a docking device or other external device, such as a printer.

- 11 (Optional). If your computer is equipped with a backlit keyboard, turn it on by pressing the <Fn> and left-arrow key combination.
- 12 (Optional). The ambient light sensor (ALS) is located on the bottom of the computer display panel. The ALS senses the light levels in the area and automatically adjusts the screen brightness to match. Only the internal display is adjusted, not any monitor or projector that may be connected to the system. If the sensor window is blocked, it does not work correctly. You can enable or disable the ambient light sensor by pressing the <Fn> and left-arrow key combination.
- 13 (Optional). Using the Dell™ ControlPoint (DCP). Activate DCP by pressing the DCP button just left of the power button. The Dell ControlPoint icon appears on the taskbar. Click the icon to access Dell


ControlPoint Help and additional features and options. For more information about DCP, see the Dell Technology Guide on your computer or at support.dell.com.

- 14** (Optional). (For discussion). How to implement all-day battery capability.
- 15** (Optional). Connect to the Internet. See "Connecting to the Internet" on page 18 for more information.



- 1 Internet service
- 2 cable or DSL modem
- 3 wireless router
- 4 desktop computer with network adapter
- 5 portable computer with wireless network card

Connecting to the Internet

 **NOTE:** ISPs and ISP offerings vary by country.

To connect to the Internet, you need a modem or network connection and an Internet service provider (ISP). Your ISP will offer one or more of the following Internet connection options:

- DSL connections that provide high-speed Internet access through your existing telephone line or cellular telephone service. With a DSL connection, you can access the Internet and use your telephone on the same line simultaneously.
- Cable modem connections that provide high-speed Internet access through your local cable TV line.
- Satellite modem connections that provide high-speed Internet access through a satellite television system.
- Dial-up connections that provide Internet access through a telephone line. Dial-up connections are considerably slower than DSL, cable, and satellite modem connections.
- Wireless Wide Area Network (WWAN) or Mobile Broadband technology provides a connection to the Internet using cellular technology at broadband rates.
- Wireless Local Area Network (WLAN) connections use high-frequency radio waves to communicate. Typically, a wireless router is connected to the broadband cable or DSL modem that broadcasts the Internet signal to your computer.

If you are using a dial-up connection, connect a telephone line to the modem connector on your computer and to the telephone wall connector before you set up your Internet connection. If you are using a DSL, cable, or satellite modem connection, contact your ISP or cellular telephone service for setup instructions.

Setting Up Your Internet Connection

To set up an Internet connection with a provided ISP desktop shortcut:

- 1 Save and close any open files, and exit any open programs.
- 2 Double-click the ISP icon on the Microsoft® Windows® desktop.
- 3 Follow the instructions on the screen to complete the setup.

If you do not have an ISP icon on your desktop or if you want to set up an Internet connection with a different ISP, perform the steps in the following section that corresponds to the operating system your computer is using.



NOTE: If you are using an operating system different from Microsoft Windows, see the documentation for that operating system for connecting to the Internet.

Windows XP®



NOTE: Have your ISP information ready. If you do not have an ISP, the **Connect to the Internet** wizard can help you get one.

- 1 Save and close any open files, and exit any open programs.
- 2 Click **Start** → **Internet Explorer**.
The **New Connection Wizard** appears.
- 3 Click **Connect to the Internet**.
- 4 In the next window, click the appropriate option:
 - If you do not have an ISP and want to select one, click **Choose from a list of Internet service providers (ISPs)**.
 - If you have already obtained setup information from your ISP but you did not receive a setup CD, click **Set up my connection manually**.
 - If you have a CD, click **Use the CD I got from an ISP**.
- 5 Click **Next**.

If you selected **Set up my connection manually**, continue to step 6. Otherwise, follow the instructions on the screen to complete the setup.




NOTE: If you do not know which type of connection to select, contact your ISP.

- 6 Click the appropriate option under **How do you want to connect to the Internet?**, and then click **Next**.
- 7 Use the setup information provided by your ISP to complete the setup.


Windows Vista®



NOTE: Have your ISP information ready. If you do not have an ISP, the **Connect to the Internet** wizard can help you get one.

- 1 Save and close any open files, and exit any open programs.
- 2 Click the Windows Vista Start button , and click **Control Panel**.
- 3 Under **Network and Internet**, click **Connect to the Internet**.
The **Connect to the Internet** window appears.
- 4 Click either **Broadband (PPPoE)** or **Dial-up**, depending on how you want to connect:


- Choose **Broadband** if you will use a DSL, satellite modem, cable TV modem, or Bluetooth wireless technology connection.
- Choose **Dial-up** if you will use a dial-up modem or ISDN.

 **NOTE:** If you do not know which type of connection to select, click **Help me choose** or contact your ISP.

- 5 Follow the instructions on the screen and use the setup information provided by your ISP to complete the setup.

Transferring Information to a New Computer

You can use your operating system "wizards" to help you transfer files and other data from one computer to another—for example, from an *old* computer to a *new* computer. For instructions, see the following section that corresponds to the operating system that your computer is running.


 **NOTE:** If you are using an operating system different from Microsoft Windows, see the documentation for that operating system for transferring information to a new computer.

Microsoft Windows XP

The Microsoft Windows XP operating system provides the Files and Settings Transfer Wizard to move data from a source computer to a new computer. You can transfer data, such as:

- E-mail messages
- Toolbar settings
- Window sizes
- Internet bookmarks

You can transfer the data to the new computer over a network or serial connection, or you can store it on removable media, such as a writable CD, for transfer to the new computer.

 **NOTE:** You can transfer information from an old computer to a new computer by directly connecting a serial cable to the input/output (I/O) ports of the two computers. To transfer data over a serial connection, you must access the Network Connections utility from the Control Panel and perform additional configuration steps, such as setting up an advanced connection and designating the host computer and the guest computer.

For instructions on setting up a direct cable connection between two computers, see Microsoft Knowledge Base Article #305621, titled *How to Set Up a Direct Cable Connection Between Two Computers in Windows XP*. This information may not be available in certain countries.

For transferring information to a new computer, you must run the Files and Settings Transfer Wizard. You can use the optional *Operating System* media for this process or you can create a wizard disk with the Files and Settings Transfer Wizard.

Running the Files and Settings Transfer Wizard With the Operating System Media



NOTE: This procedure requires the *Operating System* media. This media is optional and may not be included with certain computers.

To prepare a new computer for the file transfer:

- 1 Open the Files and Settings Transfer Wizard: click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **Files and Settings Transfer Wizard**.
- 2 When the **Files and Settings Transfer Wizard** welcome screen appears, click **Next**.
- 3 On the **Which computer is this?** screen, click **New Computer**→ **Next**.
- 4 On the **Do you have a Windows XP CD?** screen, click **I will use the wizard from the Windows XP CD**→ **Next**.
- 5 When the **Now go to your old computer** screen appears, go to your old or source computer. Do *not* click **Next** at this time.

To copy data from the old computer:

- 1 On the old computer, insert the Windows XP *Operating System* media.
- 2 On the **Welcome to Microsoft Windows XP** screen, click **Perform additional tasks**.
- 3 Under **What do you want to do?**, click **Transfer files and settings**→ **Next**.
- 4 On the **Which computer is this?** screen, click **Old Computer**→ **Next**.
- 5 On the **Select a transfer method** screen, click the transfer method you prefer.
- 6 On the **What do you want to transfer?** screen, select the items you want to transfer and click **Next**.

After the information has been copied, the **Completing the Collection Phase** screen appears.

7 Click **Finish**.

To transfer data to the new computer:

1 On the **Now go to your old computer** screen on the new computer, click **Next**.

2 On the **Where are the files and settings?** screen, select the method you chose for transferring your settings and files and click **Next**.

The wizard reads the collected files and settings and applies them to your new computer.

When all of the settings and files have been applied, the **Finished** screen appears.

3 Click **Finished** and restart the new computer.

Running the Files and Settings Transfer Wizard Without the Operating System Media

To run the Files and Settings Transfer Wizard without the *Operating System* media, you must create a wizard disk that will allow you to create a backup image file to removable media.

To create a wizard disk, use your new computer with Windows XP and perform the following steps:

1 Open the Files and Settings Transfer Wizard: click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **Files and Settings Transfer Wizard**.

2 When the **Files and Settings Transfer Wizard** welcome screen appears, click **Next**.

3 On the **Which computer is this?** screen, click **New Computer**→ **Next**.

4 On the **Do you have a Windows XP CD?** screen, click **I want to create a Wizard Disk in the following drive**→ **Next**.

5 Insert the removable media, such as a writable CD, and click **OK**.

6 When the disk creation completes and the **Now go to your old computer** message appears, *do not* click **Next**.

7 Go to the old computer.

To copy data from the old computer:

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- 1 On the old computer, insert the wizard disk.
- 2 Click **Start**→ **Run**.
- 3 In the **Open** field on the **Run** window, browse to the path for **fastwiz** (on the appropriate removable media) and click **OK**.
- 4 On the **Files and Settings Transfer Wizard** welcome screen, click **Next**.
- 5 On the **Which computer is this?** screen, click **Old Computer**→ **Next**.
- 6 On the **Select a transfer method** screen, click the transfer method you prefer.
- 7 On the **What do you want to transfer?** screen, select the items you want to transfer and click **Next**.

After the information has been copied, the **Completing the Collection Phase** screen appears.

- 8 Click **Finish**.

To transfer data to the new computer:

- 1 On the **Now go to your old computer** screen on the new computer, click **Next**.
- 2 On the **Where are the files and settings?** screen, select the method you chose for transferring your settings and files and click **Next**. Follow the instructions on the screen.

The wizard reads the collected files and settings and applies them to your new computer.

When all of the settings and files have been applied, the **Finished** screen appears.

- 3 Click **Finished** and restart the new computer.




NOTE: For more information about this procedure, search support.dell.com for document #154781 (*What Are The Different Methods To Transfer Files From My Old Computer To My New Dell™ Computer Using the Microsoft® Windows® XP Operating System?*).



NOTE: Access to the Dell™ Knowledge Base document may not be available in certain countries.

Microsoft Windows Vista™

- 1** Click the Windows Vista Start button , and then click **Transfer files and settings**→ **Start Windows Easy Transfer**.
- 2** In the **User Account Control** dialog box, click **Continue**.
- 3** Click **Start a new transfer** or **Continue a transfer in progress**.

Follow the instructions provided on the screen by the Windows Easy Transfer wizard.

Specifications



NOTE: Offerings may vary by region. For more information regarding the configuration of your computer, click **Start**→ **Help and Support** and select the option to view information about your computer.

Processor

Processor type	Intel® Core™ 2 Duo
L1 cache	L1 Cache 64KB, 16-way 32KB, 8-way 32KB iL1/24KB (info from web, yet to be verified)
L2 cache	Shared 3 MB or 6 MB L2 cache (info from web, yet to be verified)
Front side bus frequency	1067 MHz

System Information

System chipset	Intel GM45 or PM 45
Data bus width	64 bit
DRAM bus width	64 bit
Processor address bus width	36 bit
Flash EPROM	SPI 32 mbit
PCI bus (discrete graphics only)	x16 PCIe

PC Card (optional)

CardBus controller	Ricoh R5C847
PC Card connector	one (supports one Type I or Type II card)
Cards supported	PC Card: 3.3 V and 5 V
PC Card connector size	80 pins

Express Card (optional)

NOTE: The Express Card slot is designed only for Express Cards. It does NOT support PC Cards.

Express Card connector	54 mm Express Card slot (supports both USB and PCIe based interfaces)
Cards supported	Express Card/54 (54 mm)

Secure Digital (SD) Memory Card Reader

Cards supported	SD, SDIO, SD HC, Mini SD (w/adapter) MMC, MMC+, Mini MMC (w/adapter)
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Memory

Memory module connector	2 DIMM slots
Memory configurations	1 GB (1 DIMM or 2 DIMMs) 2 GB (1 DIMM or 2 DIMMs) 3 GB (2 DIMMs) 4 GB (1 DIMM or 2 DIMMs, Vista only) 8 GB (2 DIMMS, Vista only)
Memory type	DDR II 667 MHz and 800 MHz (if supported by chipset and/or processor combinations). Non-ECC memory only.
Minimum memory	1 GB
Maximum memory	8 GB (supported by Vista only)

NOTE: In order to take advantage of the dual-channel bandwidth capability, both memory slots must be populated and must match in size.

NOTE: The available memory displayed does not reflect the complete maximum memory installed because some memory is reserved for system files.

Ports and Connectors

Audio	Microphone connector, stereo headphone/speakers connector
IEEE 1394a	4-pin connector
Consumer IR	
Mini-Card Support (internal expansion slots)	One dedicated Half-Mini Card slot for WLAN One dedicated Full-Mini Card slot for WWAN (mobile broadband) One dedicated Full-Mini Card slot for WPAN (Bluetooth® or ultra wideband [UWB]) The WWAN or WPAN Full-Mini Card slot can also be used for the Intel® Flash Cache
Modem	RJ-11
Network adapter	RJ-45 port
USB	1 PowerShare™ USB port 2 USB ports
eSATA	eSATA/PowerShare USB port
Video	VGA DisplayPort

Communications

Modem:	internal modem optional
Network adapter	10/100 Ethernet LAN on system board
Wireless	WLAN Half-Mini Card, WWAN, WPAN Full-Mini Cards Bluetooth® wireless technology UWB technology
Mobile Broadband	Full-Mini Card
GPS	Supported by Mobile Broadband Full-Mini Card

Video

NOTE: Your Dell™ computer has both integrated and discrete video options.

Video type	integrated and discrete on system board, hardware accelerated
Data bus	integrated video or PCI-E graphics x16
Video controller	integrated video: Intel Extreme discrete video: nVIDIA Quadro NVS 160M
Video memory	integrated video: up to 128 MB discrete video: 256 MB dedicated memory
Video output	VGA, DisplayPort, Advanced E-Port, and E-Port capability
Support	VGA DisplayPort DVI (DisplayPort adapter or through E-Port) HDMI (DisplayPort adapter)

Audio

Audio type	two-channel high definition audio (Azalia)
Audio controller	IDT 92HD71B
Stereo conversion	24-bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	internal high definition audio (Azalia) codec
External	external microphone-in connector, stereo headphones/speakers connector
Speakers	two 1W 4-ohm speakers
Internal speaker amplifier	1W per channel, 4 ohms
Internal microphone	single digital microphone
Volume controls	volume control buttons

Display

Type (active-matrix TFT)	WXGA, WXGA+
Active X/Y	303.36 x 189.84
Dimensions:	
Height	207 mm (8.15 inches)
Width	320 mm (12.6 inches)
Diagonal	358.14 mm (14.1 inches)
Maximum resolutions	
WXGA CCFL	1280 x 800 at 262 K colors
WXGA+	1440 x 900 at 262 K colors
Refresh rate	60 Hz
Operating angle	0° (closed) to 160° (except when docked)
Viewing angles:	
Horizontal	40/40°
Vertical	15/30°
Pixel pitch:	
WXGA CCFL	0.2373
WXGA+	0.2109
Typical power consumption (panel with backlight):	
WXGA CCFL	6.2 W (max) with no inverter losses
WXGA+	7.5 W (max)

Keyboard

Number of keys	83 (U.S. and Canada); 84 (Europe); 87 (Japan)
Layout	QWERTY/AZERTY/Kanji
Size	Full sized (19 mm key pitch)

Touch Pad

X/Y position resolution (graphics table mode) 240 cpi

Size:

Width 73.0-mm (2.9-inch) sensor-active area

Height 42.9-mm (1.7-inch) rectangle

Battery

Type 12-cell "smart" lithium ion slice
 9-cell "smart" lithium ion
 6-cell "smart" lithium ion
 4-cell "smart" lithium ion

Dimensions, 4-cell and 6-cell lithium-ion batteries:

Depth 206 mm (8.11 inches)

Height 19.8 mm (0.78 inches)

Width 47.0 mm (1.85 inch)

Dimensions, 9-cell lithium-ion batteries:

Depth 208 mm (8.67 inches)

Height 22.3 mm (0.88 inch)

Width 68.98 mm (2.70 inches)

Dimensions, 12-cell lithium-ion slice batteries:

Depth 14.48 mm

Height 217.24 mm

Width 322.17 mm

Weight:

4-cell primary battery 0.24 kg (0.53 lb)

6-cell Primary battery 0.33 kg (0.73 lb)

9-cell high capacity battery 0.51 kg (1.12 lb)

12-cell slice battery TBD

Battery (continued)

Voltage:

4-cell battery	14.8 VDC
6-cell and 9-cell	11.1 VDC
12-cell slice battery	11.1 VDC

Watt hours:

4-cell primary battery	35Whr
6-cell Primary battery	56Whr
9-cell high capacity battery	85Whr
12-cell slice battery	84Whr

NOTE: Battery operating time varies depending on operating conditions and can be significantly reduced under certain power-intensive conditions.

Charge time (approximate): Approximately 1 hour to 80% in Express charge mode

 Computer off Approximately 1 hour to 80% in Express charge mode

Operating Time Battery operating time varies depending on operating conditions and can be significantly reduced under certain power-intensive conditions.

Life span (approximate) 1 year

Temperature range:

 Operating 0° to 40°C (32° to 104°F)

 Storage -10° to 65°C (14° to 149°F)

Coin-cell battery CR-2032

AC Adapter

Input voltage 100–240 VAC

Input current (maximum) 1.5 A

Input frequency 50–60 Hz

AC Adapter (continued)

Output current	4.34 A (maximum at 4-second pulse) 3.34 A (continuous)
Output power	90 W
Rated output voltage	19.5 +/-1.0 VDC
Dimensions	
Height	70.22 mm
Width	146.64 mm
Depth	16.3 mm
Weight (with cables)	TBD
Temperature range:	
Operating	0° to 35°C (32° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)

Fingerprint reader (optional)

Type	UPEK TCS3 TouchStrip™ strip sensor with CMOS active capacitive pixel-sensing technology
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Physical

Height	25.4 mm (1.00 inches)
Width	335 mm (13.189 inches)
Depth	238.3 mm (9.382 inches)
Weight	2.16 kg (4.75 lbs) with UMA graphics, 6-cell battery and DVD 1.95 kg (4.30 lbs) with UMA graphics; 6-cell battery and Travel Module
Configurable to less than	1.95 kg (4.3 lbs)

Environmental

Temperature range:

Operating	0° to 35°C (32° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)

Relative humidity (maximum):

Operating	10% to 90% (noncondensing)
Storage	5% to 95% (noncondensing)

Maximum vibration (using a random vibration spectrum that simulates user environment):

Operating	0.66 GRMS
Storage	1.3 GRMS

Maximum shock (Measured with hard drive in operating status and a 2-ms half-sine pulse for operating. Also measured with hard drive in head-parked position and a 2-ms halfsine pulse for storage):

Operating	143 G
Storage	163 G

Altitude (maximum):

Operating	-15.2 to 3048 m (-50 to 10,000 ft)
Storage	-15.2 to 3048 m (-50 to 10,000 ft)

Camera (Optional)

Resolution	640 x 480 (VGA)
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FILE LOCATION: C:\00_Windchill\systems\Roush\QRG\A00\EN\specs.fm

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Reinstalling Software

Drivers

What Is a Driver?

A driver is a program that controls a device such as a printer, mouse, or keyboard. All devices require a driver program.

A driver acts like a translator between the device and any other programs that use the device. Each device has its own set of specialized commands that only its driver recognizes.

CAUTION: Dell ships your computer to you with required drivers already installed—no further installation or configuration is needed.



NOTE: If you are using an operating system different from Microsoft Windows, refer to the software documentation for that operating system about drivers.



NOTICE: The *Drivers and Utilities* media may contain drivers for operating systems that are not on your computer. Ensure that you are installing software appropriate for your operating system.

Many drivers, such as the keyboard driver, come with your Microsoft Windows operating system. You may need to install drivers if you:

- Upgrade your operating system.
- Reinstall your operating system.
- Connect or install a new device.


Identifying Drivers

If you experience a problem with any device, identify whether the driver is the source of your problem and, if necessary, update the driver.

Windows XP:

- 1 Click **Start**→ **Control Panel**.
- 2 Under **Pick a Category**, click **Performance and Maintenance**, and click **System**.
- 3 In the **System Properties** window, click the **Hardware** tab, and click **Device Manager**.

Windows Vista:

- 1 Click the Windows Vista™ Start button , and right-click **Computer**.
- 2 Click **Properties**→ **Device Manager**.



NOTE: The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue.

Scroll down the list to see if any device has an exclamation point (a yellow circle with a [!]) on the device icon.

If an exclamation point is next to the device name, you may need to reinstall the driver or install a new driver (see "Reinstalling Drivers and Utilities" on page 38).

Reinstalling Drivers and Utilities



NOTICE: The Dell Support website at support.dell.com and your *Drivers and Utilities* media provide approved drivers for Dell™ computers. If you install drivers obtained from other sources, your computer might not work correctly.



Using Windows Device Driver Rollback

If a problem occurs on your computer after you install or update a driver, use Windows Device Driver Rollback to replace the driver with the previously installed version.

Windows XP:

- 1 Click **Start**→ **My Computer**→ **Properties**→ **Hardware**→ **Device Manager**.
- 2 Right-click the device for which the new driver was installed and click **Properties**.
- 3 Click the **Drivers** tab→ **Roll Back Driver**.


Windows Vista:

- 1 Click the Windows Vista Start button , and right-click **Computer**.
- 2 Click **Properties**→ **Device Manager**.
 -  **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.
- 3 Right-click the device for which the new driver was installed and click **Properties**.
- 4 Click the **Drivers** tab→ **Roll Back Driver**.

If Device Driver Rollback does not resolve the problem, then use System Restore (see "Restoring the Microsoft® Windows® XP Operating System" on page 41) to return your computer to the operating state that existed before you installed the new driver.

Using the Drivers and Utilities Media

If using Device Driver Rollback or System Restore (see "Restoring the Microsoft® Windows® XP Operating System" on page 41) does not resolve the problem, reinstall the driver from your *Drivers and Utilities* media.

- 1 With the Windows desktop displayed, insert your *Drivers and Utilities* media.
 - If this is your first time to use the *Drivers and Utilities* media, go to step 2. If not, go to step 5.
- 2 When the *Drivers and Utilities* media installation program starts, follow the prompts on the screen.
 -  **NOTE:** In most cases, the *Drivers and Utilities* program starts running automatically. If it does not, start Windows Explorer, click your media drive directory to display the media contents, and then double-click the **autorcd.exe** file.
- 3 When the **InstallShield Wizard Complete** window appears, remove the *Drivers and Utilities* media and click **Finish** to restart the computer.
- 4 When you see the Windows desktop, reinsert the *Drivers and Utilities* media.
- 5 At the **Welcome Dell System Owner** screen, click **Next**.



NOTE: The *Drivers and Utilities* program displays drivers only for hardware that came installed in your computer. If you installed additional hardware, the drivers for the new hardware might not be displayed. If those drivers are not displayed, exit the *Drivers and Utilities* program. For drivers information, see the documentation that came with the device.

A message stating that the Resource media is detecting hardware in your computer appears.

The drivers that are used by your computer are automatically displayed in the **My Drivers—The ResourceCD has identified these components in your system** window.

- 6 Click the driver that you want to reinstall and follow the instructions on the screen.

If a particular driver is not listed, then that driver is not required by your operating system.


Manually Reinstalling Drivers

Before manually reinstalling a driver, extract the driver files to your hard drive using the procedure described in "Using the Drivers and Utilities Media" on page 39.

Windows XP:

- 1 Click **Start**→ **My Computer**→ **Properties**→ **Hardware**→ **Device Manager**.
- 2 Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).
- 3 Double-click the name of the device for which you are installing the driver.
- 4 Click the **Driver** tab→ **Update Driver**.
- 5 Click **Install from a list or specific location (Advanced)**→ **Next**.
- 6 Click **Browse** and browse to the location to which you previously copied the driver files.
- 7 When the name of the appropriate driver appears, click **Next**.
- 8 Click **Finish** and restart your computer.

Windows Vista:

- 1 Click the Windows Vista Start button , and right-click **Computer**.
- 2 Click **Properties**→ **Device Manager**.

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NOTE: The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

- 3 Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).
- 4 Double-click the name of the device for which you are installing the driver.
- 5 Click the **Driver** tab→ **Update Driver**→ **Browse my computer for driver software**.
- 6 Click **Browse** and browse to the location to which you previously copied the driver files.
- 7 When the name of the appropriate driver appears, click the name of the driver→ **OK**→ **Next**.
- 8 Click **Finish** and restart your computer.


Restoring the Microsoft® Windows® XP Operating System


System Restore returns your computer to an earlier operating state without affecting data files. Use System Restore as the first solution for restoring your operating system and preserving data files.

- Dell PC Restore by Symantec returns your hard drive to the operating state it was in when you purchased the computer. It permanently deletes all data on the hard drive and removes any programs installed after you received the computer. Use Dell PC Restore only if System Restore did not resolve your operating system problem.
- If you received an *Operating System* disc with your computer, you can use it to restore your operating system. However, using the *Operating System* disc also deletes all data on the hard drive. Use the disc *only* if System Restore did not resolve your operating system problem.


Using Microsoft Windows System Restore (Windows XP)

The Windows operating system provides System Restore to allow you to return your computer to an earlier operating state (without affecting data files) if changes to the hardware, software, or other system settings have left the computer in an undesirable operating state. See the Windows Help and Support Center for information on using System Restore.

 **NOTICE:** Make regular backups of your data files. System Restore does not monitor your data files or recover them.

 **NOTE:** The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell computer to the Windows Classic view.


Starting System Restore (Windows XP)

 **NOTICE:** Before you restore the computer to an earlier operating state, save and close any open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

- 1 Click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **System Restore**.
- 2 Click either **Restore my computer to an earlier time** or **Create a restore point**.
- 3 Click **Next** and follow the remaining prompts on the screen.


In the event that System Restore did not resolve the issue, you may undo the last system restore.

Undoing the Last System Restore (Windows XP)

 **NOTICE:** Before you undo the last system restore, save and close all open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

- 1 Click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **System Restore**.
- 2 Click **Undo my last restoration** and click **Next**.

Enabling System Restore (Windows XP)


 **NOTE:** If you reinstall Windows XP with less than 200 MB of free hard-disk space available, System Restore is automatically disabled.


To see if System Restore is enabled:

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- 1 Click **Start**→ **Control Panel**→ **Performance and Maintenance**→ **System**.
- 2 Click the **System Restore** tab and ensure that **Turn off System Restore** is unchecked.

Using Dell™ PC Restore (Windows XP)

 **NOTICE:** Using Dell PC Restore permanently deletes all data on the hard drive and removes any programs or drivers installed after you received your computer. If possible, back up the data before using these options. Use PC Restore only if System Restore did not resolve your operating system problem.

 **NOTE:** Dell PC Restore by Symantec may not be available in certain countries or on certain computers.

Use Dell PC Restore only as the last method to restore your operating system. These options restore your hard drive to the operating state it was in when you purchased the computer. Any programs or files added since you received your computer—including data files—are permanently deleted from the hard drive. Data files include documents, spreadsheets, e-mail messages, digital photos, music files, and so on. If possible, back up all data before using PC Restore.


To use PC Restore:

- 1 Turn on the computer.

During the boot process, a blue bar with **www.dell.com** appears at the top of the screen.

- 2 Immediately upon seeing the blue bar, press <Ctrl><F11>.


If you do not press <Ctrl><F11> in time, let the computer finish booting (starting), and then restart the computer again.

 **NOTICE:** If you do not want to proceed with PC Restore, click **Reboot**.

- 3 Click **Restore** and click **Confirm**.

The restore process takes approximately 6 to 10 minutes to complete.

- 4 When prompted, click **Finish** to reboot the computer.

 **NOTE:** Do not manually shut down the computer. Click **Finish** and let the computer completely reboot.

- 5 When prompted, click **Yes**.

The computer restarts. Because the computer is restored to its original operating state, the screens that appear, such as the End User License Agreement, are the same ones that appeared the first time the computer was turned on.

- 6 Click **Next**.

The **System Restore** screen appears and the computer restarts.

- 7 After the computer restarts, click **OK**.

To remove PC Restore from the hard drive:



NOTICE: Removing Dell PC Restore from the hard drive permanently deletes the PC Restore utility from your computer. After you have removed Dell PC Restore, you will not be able to use it to restore your computer operating system.

Dell PC Restore enables you to restore your hard drive to the operating state it was in when you purchased your computer. It is recommended that you *do not* remove PC Restore from your computer, even to gain additional hard-drive space. If you remove PC Restore from the hard drive, you cannot ever recall it, and you will never be able to use PC Restore to return your computer operating system to its original state.

- 1 Log on to the computer as a local administrator.
- 2 In Microsoft Windows Explorer, go to c:\dell\utilities\DSR.
- 3 Double-click the filename **DSRIRRemv2.exe**.



NOTE: If you do not log on as a local administrator, a message appears stating that you that you must log on as administrator. Click **Quit**, and then log on as a local administrator.



NOTE: If the partition for PC Restore does not exist on your computer hard drive, a message appears stating that the partition was not found. Click **Quit**; because there is no partition to delete.

- 4 Click **OK** to remove the PC Restore partition on the hard drive.
- 5 Click **Yes** when a confirmation message appears.


The PC Restore partition is deleted and the newly available disk space is added to the free space allocation on the hard drive.

- 6 Right-click **Local Disk (C)** in Windows Explorer, click **Properties**, and verify that the additional disk space is available as indicated by the increased value for **Free Space**.
- 7 Click **Finish** to close the **PC Restore Removal** window and restart the computer.

Using the Windows XP Operating System Media


Before You Begin (Windows XP)

If you are considering reinstalling the Windows operating system to correct a problem with a newly installed driver, first try using Windows Device Driver Rollback (see "Using Windows Device Driver Rollback" on page 38). If Device Driver Rollback does not resolve the problem, then use System Restore to return your operating system to the operating state it was in before you installed the new device driver (see "Using Microsoft Windows System Restore (Windows XP)" on page 42).

 **NOTICE:** Before performing the installation, back up all data files on your primary hard drive. For conventional hard drive configurations, the primary hard drive is the first drive detected by the computer.


To reinstall Windows, you need the following items:

- Dell *Operating System* media
- Dell *Drivers and Utilities* media

 **NOTE:** Your *Drivers and Utilities* media contains drivers that were installed during assembly of the computer. Use your *Drivers and Utilities* media to load any required drivers, including the drivers required if your computer has a RAID controller.

Reinstalling Windows XP

The reinstallation process can take 1 to 2 hours to complete. After you reinstall the operating system, you must also reinstall the device drivers, virus protection program, and other software.

 **NOTICE:** The *Operating System* media provides options for reinstalling Windows. The options can overwrite files and possibly affect programs that are installed on your hard drive. Therefore, do not reinstall Windows unless a Dell technical support representative instructs you to do so.

- 1 Save and close any open files and exit any open programs.

- 2 Insert the *Operating System* media.
- 3 Click **Exit** if the **Install Windows** message appears.
- 4 Restart the computer.

When the **DELL** logo appears, press <F12> immediately.



NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the **Microsoft Windows** desktop, then shut down your computer and try again.



NOTE: The next steps change the boot sequence for one time only. On the next start-up, the computer boots according to the devices specified in the system setup program.

- 5 When the boot device list appears, highlight **CD/DVD/CD-RW Drive**, and then press <Enter>.
- 6 Press any key to **Boot from CD-ROM**.
- 7 Follow the instructions on the screen to complete the installation.



NOTE: You cannot reinstall **Dell MediaDirect** if you voluntarily reformat the hard drive. You need the installation software to reinstall **Dell MediaDirect**. See "Contacting Dell" on page 83.

Restoring the Microsoft Windows Vista Operating System

You can restore your Windows Vista operating system in the following ways:


- Windows Vista includes the **Backup and Restore Center** to create backups of important files on your computer or to back up the entire hard drive. You can then restore your operating system or files if needed.
- **Microsoft Windows System Restore** returns your hard drive to an earlier operating state without affecting data files. Use **System Restore** as the first solution for restoring your operating system and preserving data files. For instructions, see "Using Microsoft Windows System Restore (Windows XP)" on page 42.
- **Dell Factory Image Restore** restores your hard drive to the operating state it was in when you purchased the computer. **Dell Factory Image Restore** permanently deletes all data on the hard drive and removes any

applications installed after you received the computer. Use Factory Image Restore only if System Restore did not resolve your operating system problem.

- If you received an *Operating System* disc with your computer, you can use it to restore your operating system. However, using the *Operating System* disc also deletes all data on the hard drive. Use the disc *only* if System Restore did not resolve your operating system problem.

Using Windows Vista System Restore

The Windows Vista operating system provides System Restore to allow you to return your computer to an earlier operating state (without affecting data files) if changes to the hardware, software, or other system settings have left the computer in an undesirable operating state. See the Windows Help and Support Center for information on using System Restore.

To access the Windows Help and Support Center, click the Windows Vista Start button  → **Help and Support**.




NOTICE: Make regular backups of your data files. System Restore does not monitor your data files or recover them.



NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell computer to the Windows Classic view.

Creating a Restore Point (Windows Vista)


You can either automatically or manually create a restore point from the Windows Vista Back Up and Restore Center. To access the Windows Vista Backup and Restore Center:

- Click the Windows Vista Start button  → **Welcome Center**. In the **Get started with Windows** section, click **Show all 14 items...** → **Back Up and Restore Center**.

OR

- Click the Windows Vista Start button  → **All Programs** → **Maintenance** → **Back Up and Restore Center**. Under **Tasks**, click **Create a restore point or change settings**.

For more information:


- 1 Click the Windows Vista Start button  → **Help and Support**.
- 2 Type `System Restore` in the search field and press <Enter>.

Restoring the Computer to an Earlier Operating State (Windows Vista)

If problems occur after you install a device driver, use Device Driver Rollback (see "Using Windows Device Driver Rollback" on page 38) to resolve the problem. If Device Driver Rollback does not resolve the problem, then use System Restore.




NOTICE: Before you restore the computer to an earlier operating state, save and close all open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.


- 1 Click the Windows Vista Start button  → **Control Panel** → **System and Maintenance** → **Back Up and Restore Center**.
- 2 In the **Tasks** list, click **Repair Windows using System Restore**.
- 3 Click **Continue** in the **User Account Control (UAC)** dialog box asking for permission to run the application.
- 4 Click **Next** in the **System Restore** window to view the most recent restore points in chronological order.
- 5 Select the **Show restore points older than 5 days** check box to view the complete list of restore points.
- 6 Select a restore point. Try to restore from the most recent restore point. If this restore point fails to correct the problem, try the next oldest restore point until the issue is resolved. Any software installed after the selected restore point will need to be reinstalled.
- 7 Click **Next** → **Finish**.
- 8 When prompted, click **Yes**.
- 9 After System Restore finishes collecting data, the computer restarts.
- 10 After the computer restarts, click **OK**.

To change the restore point, you can either repeat the steps using a different restore point, or you can undo the restoration.

If you encounter any error messages during the restore process, follow the prompts on the screen to correct the error.


Undoing the Last System Restore (Windows Vista)



 **NOTICE:** Before you undo the last system restore, save and close all open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.


- 1 Click the Windows Vista Start button  → **Help and Support**.
- 2 Type **System Restore** in the search field and press <Enter>.
- 3 Click **Undo my last restoration**, and then click **Next**.

Restoring the Windows Vista Computer to the Default Factory Configuration

The **Dell Factory Image Restore** option allows you to restore your hard drive back to its original factory configuration as when you first purchased it from Dell. This option appears on Dell computers that were originally pre-installed with the Windows Vista operating system and does not include computers purchased through the Express Upgrade promotion or computers that were upgraded to Windows Vista from a previous version of the Windows operating systems.

 **NOTICE:** When you restore the computer to the default factory configuration, all data on the hard drive is deleted. Before performing this procedure, back up personal files. If you do not back up personal files, the data is lost.

- 1 Restart the computer. To do this, click the Windows Vista Start button  →  → **Restart**.
- 2 As the computer restarts, press <F8> until the **Advanced Boot Options** menu appears on the screen.

 **NOTE:** You must press the <F8> key before the Windows logo appears on the screen. If you press <F8> after the Windows logo appears on the screen, the **Advanced Boot Options** menu will not appear on the screen. If you do not see the **Advanced Boot Options** menu, restart the computer, and then repeat this step until you see the menu on the screen.

- 3 Press <Down Arrow> to select **Repair Your Computer** on the **Advanced Boot Options** menu, and then press <Enter>.
- 4 Specify the language settings that you want, and then click **Next**.
- 5 Log in as a user who has administrative credentials, and then click **OK**.
- 6 Click **Dell Factory Image Restore**.

- 7 In the **Dell Factory Image Restore** window, click **Next**.
- 8 Select the **Yes, reformat hard drive and restore system software to factory condition** check box.
- 9 Click **Next**. The computer is restored to the default factory configuration.
- 10 When the restore operation is completed, click **Finish** to restart the computer.

Using the Windows Vista Operating System Media

Before You Begin (Windows Vista)

If you are considering reinstalling the Windows operating system to correct a problem with a newly installed driver, first try using Windows Device Driver Rollback (see "Using Windows Device Driver Rollback" on page 38). If Device Driver Rollback does not resolve the problem, then use System Restore to return your operating system to the operating state it was in before you installed the new device driver (see "Using Microsoft Windows System Restore (Windows XP)" on page 42).



NOTICE: Before performing the installation, back up all data files on your primary hard drive. For conventional hard drive configurations, the primary hard drive is the first drive detected by the computer.

To reinstall Windows, you need the following items:


- Dell *Operating System* media
- Dell *Drivers and Utilities* media



NOTE: Your *Drivers and Utilities* media contains drivers that were installed during assembly of the computer. Use your *Drivers and Utilities* media to load any required drivers, including the drivers required if your computer has a RAID controller.


Reinstalling Windows Vista


The reinstallation process can take 1 to 2 hours to complete. After you reinstall the operating system, you must also reinstall the device drivers, virus protection program, and other software.

 **NOTICE:** The *Operating System* media provides options for reinstalling Windows. The options can overwrite files and possibly affect programs that are installed on your hard drive. Therefore, do not reinstall Windows unless a Dell technical support representative instructs you to do so.


- 1 Save and close any open files and exit any open programs.
- 2 Insert the *Operating System* media.
- 3 Click **Exit** if the **Install Windows** message appears.
- 4 Restart the computer.

When the DELL logo appears, press <F12> immediately.

 **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

 **NOTE:** The next steps change the boot sequence for one time only. On the next start-up, the computer boots according to the devices specified in the system setup program.

- 5 When the boot device list appears, highlight **CD/DVD/CD-RW Drive**, and then press <Enter>.
- 6 Press any key to **Boot from CD-ROM**.
- 7 Follow the instructions on the screen to complete the installation.

 You cannot reinstall Dell MediaDirect if you voluntarily reformat the hard drive. You need the installation software to reinstall Dell MediaDirect. See "Contacting Dell" on page 83.

FILE LOCATION: C:\00_Windchill\systems\Roush\QRG\A00\EN\software.fm

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Troubleshooting

Troubleshooting Software and Hardware Problems

Hardware Troubleshooter

If a device is either not detected during the operating system setup or is detected but incorrectly configured, you can use the Hardware Troubleshooter to resolve the incompatibility.



NOTE: If you are using an operating system different from Microsoft® Windows®, see the documentation for that operating system for troubleshooting.

To start the Hardware Troubleshooter:

Windows XP:

- 1 Click **Start** → **Help and Support**.
- 2 Type `hardware troubleshooter` in the search field and press <Enter> to start the search.
- 3 In the **Fix a Problem** section, click **Hardware Troubleshooter**.
- 4 In the **Hardware Troubleshooter** list, select the option that best describes the problem and click **Next** to follow the remaining troubleshooting steps.

Windows Vista:

- 1 Click the Windows Vista Start button  and click **Help and Support**.
- 2 In the **Find an answer** section, click **Troubleshooting**.

OR

Type `hardware troubleshooter` in the search field, and then press <Enter>.

- 3 In the search results, select the option that best describes the problem and follow the remaining troubleshooting steps.



NOTE: If you do not find the answer in the items categorized in **Troubleshooting**, you can get online help by typing your question in the **Search Help** field at the top of the window.

Dell Diagnostics



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

When to Use the Dell Diagnostics

If you experience a problem with your computer, perform the checks in "Lockups and Software Problems" on page 68 and run the Dell Diagnostics before you contact Dell for technical assistance.

It is recommended that you print these procedures before you begin.



NOTE: The Dell Diagnostics only operates on Dell computers.

Enter the system setup program, review your computer's configuration information, and ensure that the device you want to test displays in the system setup program and is active. See the *Service Manual* for this computer for more information.

Start the Dell Diagnostics from your hard drive or from your *Drivers and Utilities* media (see "Starting the Dell Diagnostics From the Drivers and Utilities Media" on page 55).

Starting the Dell Diagnostics From Your Hard Drive

The Dell Diagnostics is located on a hidden diagnostic utility partition on your hard drive.




NOTE: If your computer cannot display a screen image, see "Contacting Dell" on page 83.

- 1 Ensure that the computer is connected to an electrical outlet that is known to be working properly.
- 2 Turn on (or restart) your computer.
- 3 Start the Dell Diagnostics in one of the following two ways.




NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop; then, shut down your computer and try again.

- When the DELL™ logo appears, press <F12> immediately. Select **Diagnostics** from the boot menu and press <Enter>.

 **NOTE:** Before attempting the following option, the computer must be powered down completely.

- Press and hold the <Fn> key while powering the computer on.

 **NOTE:** If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from the *Drivers and Utilities* media.

The computer runs the Pre-boot System Assessment (PSA), a series of initial tests of your system board, keyboard, display, memory, and hard drive.

- During the assessment, answer any questions that appear.
- If failures are detected, the computer stops and beeps. To stop the assessment and restart the computer, press <n>; to continue to the next test, press <y>; to retest the component that failed, press <r>.
- If failures are detected during the Pre-boot System Assessment, write down the error codes and contact Dell (see "Contacting Dell" on page 83).


If the Pre-boot System Assessment completes successfully, you receive the message **Booting Dell Diagnostic Utility Partition**. Press any key to continue.


- 4 Press any key to start the Dell Diagnostics from the diagnostics utility partition on your hard drive.


Starting the Dell Diagnostics From the Drivers and Utilities Media

- 1 Insert your *Drivers and Utilities* media.
- 2 Shut down and restart the computer.


When the DELL logo appears, press <F12> immediately.

 **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop; then, shut down your computer and try again.


 **NOTE:** The next steps change the boot sequence for one time only. On the next start-up, the computer boots according to the devices specified in the system setup program.

 **NOTE:** Keyboard failure may result when a key on the keyboard is held down for extended periods of time. To avoid possible keyboard failure, press and release the <F12> key in even intervals until the boot device menu appears.

- 3 At the boot device menu, use the up- and down-arrow keys to highlight CD/DVD/CD-RW, and then press <Enter>.

 **NOTE:** The Quickboot feature changes the boot sequence for the current boot only. Upon restart, the computer boots according to the boot sequence specified in the system setup program.


- 4 Select the **Boot from CD-ROM** option from the menu that appears and then press <Enter>.
- 5 Type 1 to start the *Drivers and Utilities* menu and then press <Enter>.
- 6 Select **Run the 32 Bit Dell Diagnostics** from the numbered list. If multiple versions are listed, select the version appropriate for your computer.
- 7 At the Dell Diagnostics **Main Menu**, select the test you want to run.

 **NOTE:** Write down any error codes and problem descriptions exactly as they appear and follow the instructions on the screen.

- 8 After all tests have completed, close the test window to return to the Dell Diagnostics **Main Menu**.
- 9 Remove your *Drivers and Utilities* media and then close the **Main Menu** window to exit the Dell Diagnostics and restart the computer.

Dell Diagnostics Main Menu

After the Dell Diagnostics loads and the **Main Menu** screen appears, click the button for the option you want.

 **NOTE:** It is recommended that you select **Test System** to run a complete test on your computer.

Option	Function
Test Memory	Run the stand-alone memory test
Test System	Run System Diagnostics
Exit	Exit the Diagnostics

After you have selected the **Test System** option from the main menu, the following menu appears.



NOTE: It is recommended that you select **Extended Test** from the menu to run a more thorough check of the devices in the computer.

Option	Function
Express Test	Performs a quick test of system devices. The test typically takes 10 to 20 minutes and requires no interaction on your part. Run Express Test first to increase the possibility of tracing the problem quickly.
Extended Test	Performs a thorough check of system devices. The test typically takes an hour or more and periodically requires your input to answer specific questions.
Custom Test	Tests a specific device in the system and can be used to customize the tests you want to run.
Symptom Tree	Lists a number of common symptoms and allows you to select a test based on the symptom of the problem you are having.

For any problem encountered during a test, a message appears with an error code and a description of the problem. Write down the error code and problem description exactly as it appears and follow the instructions on the screen. If you cannot resolve the problem, contact Dell (see "Contacting Dell" on page 83).



NOTE: The Service Tag for your computer is located at the top of each test screen. When contacting Dell support, have your Service Tag ready.

The following tabs provide additional information for tests run from the **Custom Test** or **Symptom Tree** option:

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and the problem description.
Help	Describes the test and any requirements for running the test.
Configuration	<p>Displays your hardware configuration for the selected device.</p> <p>The Dell Diagnostics obtains configuration information for all devices from the system setup program, memory, and various internal tests, and it displays the information in the device list in the left pane of the screen. The device list may not display the names of all the components installed on your computer or all devices attached to your computer.</p>
Parameters	Allows you to customize the test by changing the test settings.

Error Messages

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

If the message is not listed, see the documentation for the operating system or the program that was running when the message appeared.

AUXILIARY DEVICE FAILURE — The touch pad or external mouse may be faulty. For an external mouse, check the cable connection. Enable the **Pointing Device** option in the system setup program. See the *Service Manual* for this computer for more information. If the problem persists, contact Dell (see "Contacting Dell" on page 83).

BAD COMMAND OR FILE NAME — Ensure that you have spelled the command correctly, put spaces in the proper place, and used the correct pathname.

CACHE DISABLED DUE TO FAILURE — The primary cache internal to the microprocessor has failed. Contact Dell (see "Contacting Dell" on page 83).

CD DRIVE CONTROLLER FAILURE — The CD drive does not respond to commands from the computer (see "Drive Problems" on page 64).

DATA ERROR — The hard drive cannot read the data (see "Drive Problems" on page 64).

DECREASING AVAILABLE MEMORY — One or more memory modules may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

DISK C: FAILED INITIALIZATION — The hard drive failed initialization. Run the hard drive tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

DRIVE NOT READY — The operation requires a hard drive in the bay before it can continue. Install a hard drive in the hard drive bay. See the *Service Manual* for this computer for more information.

ERROR READING PCMCIA CARD — The computer cannot identify the ExpressCard. Reinsert the card or try another card. See the *Service Manual* for this computer for more information.

EXTENDED MEMORY SIZE HAS CHANGED — The amount of memory recorded in nonvolatile memory (NVRAM) does not match the memory installed in the computer. Restart the computer. If the error appears again, contact Dell (see "Contacting Dell" on page 83).

THE FILE BEING COPIED IS TOO LARGE FOR THE DESTINATION DRIVE — The file that you are trying to copy is too large to fit on the disk, or the disk is full. Try copying the file to a different disk or use a larger capacity disk.

A FILENAME CANNOT CONTAIN ANY OF THE FOLLOWING CHARACTERS: \ / : * ? " < > | — Do not use these characters in filenames.

GATE A20 FAILURE — A memory module may be loose. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

GENERAL FAILURE — The operating system is unable to carry out the command. The message is usually followed by specific information—for example, `Printer out of paper`. Take the appropriate action.

HARD-DISK DRIVE CONFIGURATION ERROR — The computer cannot identify the drive type. Shut down the computer, remove the hard drive (see the *Service Manual* for this computer), and boot the computer from a CD. Then, shut

down the computer, reinstall the hard drive, and restart the computer. Run the Hard Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

HARD-DISK DRIVE CONTROLLER FAILURE 0 — The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive (see the *Service Manual* for this computer), and boot the computer from a CD. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

HARD-DISK DRIVE FAILURE — The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive (see the *Service Manual* for this computer), and boot the computer from a CD. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

HARD-DISK DRIVE READ FAILURE — The hard drive may be defective. Shut down the computer, remove the hard drive (see the *Service Manual* for this computer), and boot the computer from a CD. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

INSERT BOOTABLE MEDIA — The operating system is trying to boot to nonbootable media, such as a floppy disk or CD. Insert bootable media.

INVALID CONFIGURATION INFORMATION-PLEASE RUN SYSTEM SETUP PROGRAM — The system configuration information does not match the hardware configuration. The message is most likely to occur after a memory module is installed. Correct the appropriate options in the system setup program. See the *Service Manual* for this computer for more information.

KEYBOARD CLOCK LINE FAILURE — For external keyboards, check the cable connection. Run the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

KEYBOARD CONTROLLER FAILURE — For external keyboards, check the cable connection. Restart the computer, and avoid touching the keyboard or the mouse during the boot routine. Run the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

KEYBOARD DATA LINE FAILURE — For external keyboards, check the cable connection. Run the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

KEYBOARD STUCK KEY FAILURE — For external keyboards or keypads, check the cable connection. Restart the computer, and avoid touching the keyboard or keys during the boot routine. Run the Stuck Key test in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

LICENSED CONTENT IS NOT ACCESSIBLE IN MEDIADIRECT — Dell MediaDirect™ cannot verify the Digital Rights Management (DRM) restrictions on the file, so the file cannot be played (see "Dell MediaDirect problems" on page 69).

MEMORY ADDRESS LINE FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

MEMORY ALLOCATION ERROR — The software you are attempting to run is conflicting with the operating system, another program, or a utility. Shut down the computer, wait 30 seconds, and then restart it. Try to run the program again. If the error message still appears, see the software documentation.

MEMORY DATA LINE FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

MEMORY DOUBLE WORD LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

MEMORY ODD/EVEN LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

MEMORY WRITE/READ FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them. See the *Service Manual* for this computer for more information.

NO BOOT DEVICE AVAILABLE — The computer cannot find the hard drive. If the hard drive is your boot device, ensure that the drive is installed, properly seated, and partitioned as a boot device.

NO BOOT SECTOR ON HARD DRIVE — The operating system may be corrupted. Contact Dell (see "Contacting Dell" on page 83).

NO TIMER TICK INTERRUPT — A chip on the system board may be malfunctioning. Run the System Set tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

NOT ENOUGH MEMORY OR RESOURCES. EXIT SOME PROGRAMS AND TRY AGAIN — You have too many programs open. Close all windows and open the program that you want to use.

OPERATING SYSTEM NOT FOUND — Reinstall the hard drive (see the *Service Manual* for this computer). If the problem persists, contact Dell (see "Dell Diagnostics" on page 54).


OPTIONAL ROM BAD CHECKSUM — The optional ROM has failed. Contact Dell (see "Dell Diagnostics" on page 54).

A REQUIRED .DLL FILE WAS NOT FOUND — The program that you are trying to open is missing an essential file. Remove and then reinstall the program.

Windows XP:

- 1 Click **Start** → **Control Panel** → **Add or Remove Programs** → **Programs and Features**.
- 2 Select the program you want to remove.
- 3 Click **Uninstall**.
- 4 See the program documentation for installation instructions.

Windows Vista:

- 1 Click the Windows Vista Start button  → **Control Panel** → **Programs** → **Programs and Features**.
- 2 Select the program you want to remove.
- 3 Click **Uninstall**.
- 4 See the program documentation for installation instructions.

SECTOR NOT FOUND — The operating system cannot locate a sector on the hard drive. You may have a defective sector or corrupted FAT on the hard drive. Run the Windows error-checking utility to check the file structure on

the hard drive. See Windows Help and Support for instructions (click **Start**→**Help and Support**). If a large number of sectors are defective, back up the data (if possible), and then reformat the hard drive.

SEEK ERROR — The operating system cannot find a specific track on the hard drive.

SHUTDOWN FAILURE — A chip on the system board may be malfunctioning. Run the System Set tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

TIME-OF-DAY CLOCK LOST POWER — System configuration settings are corrupted. Connect your computer to an electrical outlet to charge the battery. If the problem persists, try to restore the data by entering the system setup program, then immediately exit the program (see the *Service Manual* for this computer). If the message reappears, contact Dell (see "Contacting Dell" on page 83).

TIME-OF-DAY CLOCK STOPPED — The reserve battery that supports the system configuration settings may require recharging. Connect your computer to an electrical outlet to charge the battery. If the problem persists, contact Dell (see "Contacting Dell" on page 83).

TIME-OF-DAY NOT SET-PLEASE RUN THE SYSTEM SETUP PROGRAM — The time or date stored in the system setup program does not match the system clock. Correct the settings for the **Date** and **Time** options. See the *Service Manual* for this computer for more information.

TIMER CHIP COUNTER 2 FAILED — A chip on the system board may be malfunctioning. Run the System Set tests in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

UNEXPECTED INTERRUPT IN PROTECTED MODE — The keyboard controller may be malfunctioning, or a memory module may be loose. Run the System Memory tests and the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics" on page 54).

X:\ IS NOT ACCESSIBLE. THE DEVICE IS NOT READY — Insert a disk into the drive and try again.

WARNING: BATTERY IS CRITICALLY LOW — The battery is running out of charge. Replace the battery, or connect the computer to an electrical outlet; otherwise, activate hibernate mode or shut down the computer.

Solving Problems

Drive Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.




NOTE: If you are using an operating system different from Microsoft Windows, see the documentation for that operating system for solving problems.

ENSURE THAT MICROSOFT WINDOWS RECOGNIZES THE DRIVE —

Windows XP:

- Click **Start** and click **My Computer**.

Windows Vista®:

- Click the Windows Vista Start button  and click **Computer**.

If the drive is not listed, perform a full scan with your antivirus software to check for and remove viruses. Viruses can sometimes prevent Windows from recognizing the drive.

TEST THE DRIVE —

- Insert another floppy disk, CD, or DVD to eliminate the possibility that the original media is defective.
- Insert a bootable floppy disk and restart the computer.

CLEAN THE DRIVE OR DISK — See the *Service Manual* for this computer for more information.

ENSURE THAT THE CD OR DVD MEDIA IS SNAPPED ONTO THE SPINDLE

CHECK THE CABLE CONNECTIONS

CHECK FOR HARDWARE INCOMPATIBILITIES — See "Hardware Troubleshooter" on page 53.

RUN THE DELL DIAGNOSTICS — See "Dell Diagnostics" on page 54.

Optical drive problems



NOTE: High-speed optical drive vibration is normal and may cause noise, which does not indicate a defect in the drive or the media.



NOTE: Because of different regions worldwide and different disc formats, not all DVD titles work in all DVD drives.

Problems writing to a CD-RW or DVD+/-RW drive

CLOSE OTHER PROGRAMS — CD-RW and DVD+/-RW drives must receive a steady stream of data when writing. If the stream is interrupted, an error occurs. Try closing all programs before you write to the drive.

TURN OFF SLEEP STATE IN WINDOWS BEFORE WRITING TO A CD/DVD DISC —

See the *Service Manual* for this computer for more information.

CHANGE THE WRITE SPEED TO A SLOWER RATE — See the help files for your CD or DVD creation software.

The drive tray cannot eject

- 1 Ensure that the computer is shut down.
- 2 Straighten a paper clip and insert one end into the eject hole at the front of the drive, then push firmly until the tray is partially ejected.
- 3 Gently pull out the tray until it stops.

The drive makes an unfamiliar scraping or grinding sound

- Ensure that the sound is not caused by the program that is running.
- Ensure that the disc is inserted properly.


Hard drive problems

ALLOW THE COMPUTER TO COOL BEFORE TURNING IT ON — A hot hard drive may prevent the operating system from starting. Try allowing the computer to return to room temperature before turning it on.

Windows XP:

- 1 Click **Start** and click **My Computer**.
- 2 Right-click **Local Disk C:**.
- 3 Click **Properties**→**Tools**→**Check Now**.
- 4 Click **Scan for and attempt recovery of bad sectors** and click **Start**.

Windows Vista:

- 1 Click the Windows Vista Start button  and click **Computer**.
- 2 Right-click **Local Disk C:**.

3 Click Properties→Tools→ Check Now.

The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue the desired action.

4 Follow the instructions on the screen.

Memory Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

IF YOU RECEIVE AN INSUFFICIENT MEMORY MESSAGE —

- Save and close any open files and exit any open programs you are not using to see if that resolves the problem.
- See the software documentation for minimum memory requirements. If necessary, install additional memory. See the *Service Manual* for this computer for more information.
- Reseat the memory modules to ensure that your computer is successfully communicating with the memory. See the *Service Manual* for this computer for more information.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 54).

IF YOU EXPERIENCE OTHER MEMORY PROBLEMS —

- Reseat the memory modules to ensure that your computer is successfully communicating with the memory. See the *Service Manual* for this computer for more information.
- Ensure that you are following the memory installation guidelines. See the *Service Manual* for this computer for more information.
- Ensure that the memory you are using is supported by your computer. For more information about the type of memory supported by your computer, see the *Service Manual* for this computer.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 54).

Power Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

CHECK THE POWER LIGHT — When the power light is lit or blinking, the computer has power. If the power light is blinking, the computer is in Sleep state—press the power button to exit Sleep state. If the light is off, press the power button to turn on the computer.



NOTE: For information on the Sleep power state, see the *Service Manual* for this computer.

CHARGE THE BATTERY — The battery charge may be depleted.

- 1 Reinstall the battery.
- 2 Use the AC adapter to connect the computer to an electrical outlet.
- 3 Turn on the computer.



NOTE: Battery operating time (the time the battery can hold a charge) decreases over time. Depending on how often the battery is used and the conditions under which it is used, you may need to purchase a new battery during the life of your computer.

CHECK THE BATTERY STATUS LIGHT — If the battery status light flashes amber or is a steady amber, the battery charge is low or depleted. Connect the computer to an electrical outlet.

If the battery status light flashes blue and amber, the battery is too hot to charge. Shut down the computer, disconnect the computer from the electrical outlet, and then let the battery and computer cool to room temperature.

If the battery status light rapidly flashes amber, the battery may be defective. See "Contacting Dell" on page 83.

CHECK THE BATTERY TEMPERATURE — If the battery temperature is below 0°C (32°F), the computer will not start.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

CHECK THE AC ADAPTER — Check the AC adapter cable connections. If the AC adapter has a light, ensure that the light is on.

CONNECT THE COMPUTER DIRECTLY TO AN ELECTRICAL OUTLET — Bypass power protection devices, power strips, and extension cables to verify that the computer turns on.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, halogen lamps, or other appliances.

ADJUST THE POWER PROPERTIES — See the *Service Manual* for this computer for more information.

RESET THE MEMORY MODULES — If the computer power light turns on, but the display remains blank, reinstall the memory modules. See the *Service Manual* for this computer for more information.

Lockups and Software Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

The computer does not start

CHECK THE AC ADAPTER — Ensure that the AC adapter is firmly connected to the computer and to the electrical outlet.

The AC adapter shuts down when there is a fault. The green light turns off when this happens. To bring it back on, disconnect the AC adapter from the power source for 10 seconds, and then connect it back on.

The computer stops responding



NOTICE: You might lose data if you are unable to perform an operating system shutdown.

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds until the computer turns off, then restart your computer.

A program stops responding or crashes repeatedly

END THE PROGRAM —

- 1 Press <Ctrl><Shift><Esc> simultaneously to access the Task Manager.
- 2 Click the **Applications** tab.
- 3 Click to select the program that is no longer responding.
- 4 Click **End Task**.



NOTE: The chkdsk program may run when you restart the computer. Follow the instructions on the screen.

CHECK THE SOFTWARE DOCUMENTATION — If necessary, uninstall and then reinstall the program. Software usually includes installation instructions in its documentation or on a floppy disk or CD.

A program is designed for an earlier Microsoft® Windows® operating system

RUN THE PROGRAM COMPATIBILITY WIZARD —


Windows XP:

The Program Compatibility Wizard configures a program so that it runs in an environment similar to non-XP operating system environments.

- 1 Click Start → All Programs → Accessories → Program Compatibility Wizard → Next.
- 2 Follow the instructions on the screen.

Windows Vista:

The Program Compatibility Wizard configures a program so that it runs in an environment similar to non-Windows Vista operating system environments.

- 1 Click Start  → Control Panel → Programs → Use an older program with this version of Windows.
- 2 In the welcome screen, click Next.
- 3 Follow the instructions on the screen.

A solid blue screen appears

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds until the computer turns off, then restart your computer.

Dell MediaDirect problems

CHECK THE DELL MEDIADIRECT HELP FILE FOR INFORMATION — Use the Help menu to access Dell MediaDirect Help.

TO PLAY MOVIES WITH DELL MEDIADIRECT, YOU MUST HAVE A DVD DRIVE AND THE DELL DVD PLAYER — If you purchased a DVD drive with your computer, this software should already be installed.

VIDEO QUALITY PROBLEMS — Turn off the **Use Hardware Acceleration** option. This feature takes advantage of the special processing in some graphics cards to reduce processor requirements when playing DVDs and certain types of video files.

CANNOT PLAY SOME MEDIA FILES — Because Dell MediaDirect provides access to media files outside the Windows operating system environment, access to licensed content is restricted. Licensed content is digital content that has Digital Rights Management (DRM) applied to it. The Dell MediaDirect environment cannot verify the DRM restrictions, so the licensed files cannot be played. Licensed music and video files have a lock icon next to them. You can access licensed files in the Windows operating system environment.

ADJUSTING THE COLOR SETTINGS FOR MOVIES THAT CONTAIN SCENES THAT ARE TOO DARK OR TOO BRIGHT — Click **EagleVision** to use a video enhancement technology that detects video content and dynamically adjusts the brightness/contrast/saturation ratios.



NOTICE: You cannot reinstall the Dell MediaDirect feature if you voluntarily reformat the hard drive. Contact Dell for assistance (see "Contacting Dell" on page 83).

Other software problems

CHECK THE SOFTWARE DOCUMENTATION OR CONTACT THE SOFTWARE MANUFACTURER FOR TROUBLESHOOTING INFORMATION —

- Ensure that the program is compatible with the operating system installed on your computer.
- Ensure that your computer meets the minimum hardware requirements needed to run the software. See the software documentation for information.
- Ensure that the program is installed and configured properly.
- Verify that the device drivers do not conflict with the program.
- If necessary, uninstall and then reinstall the program.

BACK UP YOUR FILES IMMEDIATELY

USE A VIRUS-SCANNING PROGRAM TO CHECK THE HARD DRIVE, FLOPPY DISKS, OR CDS

SAVE AND CLOSE ANY OPEN FILES OR PROGRAMS AND SHUT DOWN YOUR

COMPUTER THROUGH THE START MENU

SCAN THE COMPUTER FOR SPYWARE — If you are experiencing slow computer performance, you frequently receive pop-up advertisements, or you are having problems connecting to the Internet, your computer might be infected with spyware. Use an anti-virus program that includes anti-spyware protection (your program may require an upgrade) to scan the computer and remove spyware. For more information, go to support.dell.com and search for the keyword *spyware*.

RUN THE DELL DIAGNOSTICS — If all tests run successfully, the error condition is related to a software problem (see "Dell Diagnostics" on page 54).

Video and Display Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

If the display is blank



NOTE: If you are using a program that requires a higher resolution than your computer supports, it is recommended that you attach an external monitor to your computer.

CHECK THE BATTERY — If you are using a battery to power your computer, the battery charge may be depleted. Connect the computer to an electrical outlet using the AC adapter, and then turn on the computer.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

CHECK THE AC ADAPTER — Check the AC adapter cable connections. If the AC adapter has a light, ensure that the light is on.

CONNECT THE COMPUTER DIRECTLY TO AN ELECTRICAL OUTLET — Bypass power protection devices, power strips, and extension cables to verify that the computer turns on.

ADJUST THE POWER PROPERTIES — Search for the keyword *sleep* in Windows Help and Support.

SWITCH THE VIDEO IMAGE — If your computer is attached to an external monitor, press <Fn><F8> to switch the video image to the display.

If the display is difficult to read

ADJUST THE BRIGHTNESS — Press <Fn> and the up- or down-arrow key.

MOVE THE EXTERNAL SUBWOOFER AWAY FROM THE COMPUTER OR MONITOR — If your external speaker system includes a subwoofer, ensure that the subwoofer is at least 60 cm (2 ft) away from the computer or external monitor.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, halogen lamps, or other appliances.

ROTATE THE COMPUTER TO FACE A DIFFERENT DIRECTION — Eliminate sunlight glare, which can cause poor picture quality.

ADJUST THE WINDOWS DISPLAY SETTINGS —

Windows XP:

- 1 Click **Start**→ **Control Panel**→ **Appearance and Themes**.
- 2 Click the area you want to change or click the **Display** icon.
- 3 Try different settings for **Color quality** and **Screen resolution**.

Windows Vista:

- 1 Click the Windows Vista Start button  → **Control Panel**→ **Hardware and Sound**→ **Personalization**→ **Display Settings**.
- 2 Adjust **Resolution** and **Colors** settings, as needed.

RUN THE VIDEO DIAGNOSTICS TESTS — If no error message appears and you still have a display problem, but the display is not completely blank, run the **Video** device group in the "Dell Diagnostics" on page 54, then contact Dell (see "Contacting Dell" on page 83).

SEE "ERROR MESSAGES" — If an error message appears, see "Error Messages" on page 58.

If only part of the display is readable

CONNECT AN EXTERNAL MONITOR —

- 1 Shut down your computer and connect an external monitor to the computer.
- 2 Turn on the computer and the monitor, and then adjust the monitor brightness and contrast controls.

If the external monitor works, the computer display or video controller may be defective. Contact Dell (see "Contacting Dell" on page 83).

Sound and Speaker Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the safety information that shipped with your computer.

No sound from integrated speakers

ADJUST THE WINDOWS VOLUME CONTROL — Double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted. Adjust the volume, bass, or treble controls to eliminate distortion.

ADJUST THE VOLUME USING KEYBOARD SHORTCUTS — Press <Fn><End> to disable (mute) or re-enable the integrated speakers.

REINSTALL THE SOUND (AUDIO) DRIVER — See "Reinstalling Software" on page 37.

No sound from external speakers

ENSURE THAT THE SUBWOOFER AND THE SPEAKERS ARE TURNED ON — See the setup diagram supplied with the speakers. If your speakers have volume controls, adjust the volume, bass, or treble to eliminate distortion.

ADJUST THE WINDOWS VOLUME CONTROL — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

DISCONNECT HEADPHONES FROM THE HEADPHONE CONNECTOR — Sound from the speakers is automatically disabled when headphones are connected to the headphone connector.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, or halogen lamps to check for interference.

REINSTALL THE AUDIO DRIVER — See "Reinstalling Software" on page 37.

RUN THE DELL DIAGNOSTICS — See "Dell Diagnostics" on page 54.



NOTE: The volume control in some MP3 players overrides the Windows volume setting. If you have been listening to MP3 songs, ensure that you did not turn the player volume down or off.


No sound from headphones


CHECK THE HEADPHONE CABLE CONNECTION — Ensure that the headphone cable is securely inserted into the headphone connector. See the *Service Manual* for this computer for more information.

ADJUST THE WINDOWS VOLUME CONTROL — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

6

Finding Information

 **NOTE:** Some features or media may be optional and may not ship with your computer. Some features or media may not be available in certain countries.

 **NOTE:** Additional information may ship with your computer.

Document/Media/Label	Contents
<p>Service Tag/Express Service Code Label The Service Tag/Express Service Code is located on your computer.</p>	<ul style="list-style-type: none"> • Use the Service Tag to identify your computer when you use support.dell.com or contact support. • Enter the Express Service Code to direct your call when contacting support
<p>Drivers and Utilities Media The <i>Drivers and Utilities</i> media is a CD or DVD that may have shipped with your computer.</p>	<ul style="list-style-type: none"> • A diagnostic program for your computer • Drivers for your computer <p>NOTE: Drivers and documentation updates can be found at support.dell.com.</p> <ul style="list-style-type: none"> • Desktop System Software (DSS) • Readme files <p>NOTE: Readme files may be included on your media to provide last-minute updates about technical changes to your computer or advanced technical-reference material for technicians or experienced users.</p>
<p>Operating System Media The Operating System media is a CD or DVD that may have shipped with your computer.</p>	<p>Reinstall your operating system</p>

Document/Media/Label	Contents
<p>Dell™ Product Information Guide</p> <p>The <i>Dell Product Information Guide</i> is a hardcopy document that may have shipped with your computer.</p>	<ul style="list-style-type: none">• Warranty information• Terms and Conditions (U.S. only)• Safety instructions• Regulatory information• Ergonomics information• End User License Agreement
<p>Service Manual</p> <p>The <i>Service Manual</i> for your computer can be found at support.dell.com.</p>	<ul style="list-style-type: none">• How to remove and replace parts• How to configure system settings• How to troubleshoot and solve problems
<p>Dell Technology Guide</p> <p>The <i>Dell Technology Guide</i> is available on your hard drive.</p>	<ul style="list-style-type: none">• About your operating system• Using and maintaining peripherals• Understanding technologies such as RAID, Internet, Bluetooth®, E-mail, and so on.
<p>Microsoft Windows License Label</p> <p>Your Microsoft Windows License is located on your computer.</p>	<ul style="list-style-type: none">• Provides your operating system product key.

Getting Help


Obtaining Assistance

 **CAUTION:** If you need to remove the computer cover, first disconnect the computer power and modem cables from all electrical outlets.

If you experience a problem with your computer, you can complete the following steps to diagnose and troubleshoot the problem:

- 1 See "Solving Problems" on page 64 for information and procedures that pertain to the problem your computer is experiencing.
- 2 See "Dell Diagnostics" on page 54 for procedures on how to run Dell Diagnostics.
- 3 Fill out the "Diagnostics Checklist" on page 82.
- 4 Use Dell's extensive suite of online services available at Dell Support (support.dell.com) for help with installation and troubleshooting procedures. See "Online Services" on page 78 for a more extensive list of Dell Support online.
- 5 If the preceding steps have not resolved the problem, see "Contacting Dell" on page 83.

 **NOTE:** Call Dell Support from a telephone near or at the computer so that the support staff can assist you with any necessary procedures.

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

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.

For instructions on using the Dell Support, see "Technical Support and Customer Service" on page 78.



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

Technical Support and Customer Service

Dell's support service is available to answer your questions about Dell™ hardware. Our support staff uses computer-based diagnostics to provide fast, accurate answers.

To contact Dell's support service, see "Before You Call" on page 80, and then see the contact information for your region or go to support.dell.com.

DellConnect

DellConnect is a simple online access tool that allows a Dell service and support associate to access your computer through a broadband connection, diagnose your problem and repair it all under your supervision. For more information, go to support.dell.com and click **DellConnect**.

Online Services

You can learn about Dell products and services on the following websites:

www.dell.com

www.dell.com/ap (Asian/Pacific countries only)

www.dell.com/jp (Japan only)

www.euro.dell.com (Europe only)

www.dell.com/la (Latin American and Caribbean countries)

www.dell.ca (Canada only)

You can access Dell Support through the following websites and e-mail addresses:

- Dell Support websites
 - support.dell.com
 - support.jp.dell.com (Japan only)
 - support.euro.dell.com (Europe only)
- Dell Support e-mail addresses

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mobile_support@us.dell.com

support@us.dell.com

la-techsupport@dell.com (Latin America and Caribbean countries only)

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

- Dell Marketing and Sales e-mail addresses
apmarketing@dell.com (Asian/Pacific countries only)
sales_canada@dell.com (Canada only)
- Anonymous file transfer protocol (FTP)
ftp.dell.com

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

AutoTech Service

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

When you call AutoTech, use your touch-tone telephone to select the subjects that correspond to your questions. For the telephone number to call for your region, see "Contacting Dell" on page 83.

Automated Order-Status Service

To check on the status of any Dell products that you have ordered, you can go to support.dell.com, or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call for your region, see "Contacting Dell" on page 83.

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 for your region, see "Contacting Dell" on page 83.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at www.dell.com. For the telephone number to call for your region or to speak to a sales specialist, see "Contacting Dell" on page 83.

Returning Items for Warranty Repair or Credit

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

- 1 Call Dell to obtain a Return Material Authorization Number, and write it clearly and prominently on the outside of the box.

For the telephone number to call for your region, see "Contacting Dell" on page 83. Include a copy of the invoice and a letter describing the reason for the return.

- 2 Include a copy of the Diagnostics Checklist (see "Diagnostics Checklist" on page 82), indicating the tests that you have run and any error messages reported by the Dell Diagnostics (see "Contacting Dell" on page 83).
- 3 Include any accessories that belong with the item(s) being returned (power cables, software floppy disks, guides, and so on) if the return is for credit.
- 4 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 Dell's 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. You may also be asked for your Service Tag (located on the back or bottom of your computer).

Remember to fill out the Diagnostics Checklist (see "Diagnostics Checklist" on page 82). If possible, turn on your computer before you call Dell for assistance and call from a telephone at or near the computer. 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 computer itself. Ensure that the computer documentation is available.



CAUTION: Before working inside your computer, follow the safety instructions in your the safety information that shipped with your computer.

Diagnostics Checklist

Name:

Date:

Address:

Phone number:

Service Tag (bar code on the back or bottom of the computer):

Express Service Code:

Return Material Authorization Number (if provided by Dell support technician):

Operating system and version:

Devices:

Expansion cards:

Are you connected to a network? Yes No

Network, version, and network adapter:

Programs and versions:

See your operating system documentation to determine the contents of the system's start-up files. If the computer is connected to a printer, print each file. 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:

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Contacting Dell

For customers in the United States, call 800-WWW-DELL (800-999-3355).



NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

- 1 Visit support.dell.com.
- 2 Verify your country or region in the **Choose A Country/Region** drop-down menu at the bottom of the page.
- 3 Click **Contact Us** on the left side of the page.
- 4 Select the appropriate service or support link based on your need.
- 5 Choose the method of contacting Dell that is convenient for you.

FILE LOCATION: C:\00_Windchill\systems\Roush\QRG\A00\EN\help.fm

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Appendix

FCC Notice (U.S. Only)

FCC Class B

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.



NOTICE: The FCC regulations provide that changes or modifications not expressly approved by Dell Inc. could void your authority to operate this equipment.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the system with respect to the receiver.
- Move the system away from the receiver.
- Plug the system into a different outlet so that the system and the receiver are on different branch circuits.

If necessary, consult a representative of Dell Inc. or an experienced radio/television technician for additional suggestions.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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The following information is provided on the device or devices covered in this document in compliance with the FCC regulations:

Product name: Dell™ Latitude™ E6400
Model number: PP27L
Company name: Dell Inc.
Worldwide Regulatory Compliance & Environmental
Affairs
One Dell Way
Round Rock, TX 78682 USA
512-338-4400

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FCC Radiation Exposure Statement



WARNING: The radiated output power of the Dell Mobile Broadband device is far below the FCC radio frequency exposure limits. Nevertheless, the Dell Mobile Broadband device should be used in such a manner that the potential for human contact during normal operation is minimized. This device has been evaluated for and shown compliant with the FCC RF exposure limits under portable exposure conditions (antennas are within 20 cm of a person's body) when installed in certain specific OEM configurations. This device has also been evaluated and shown compliant with the FCC RF Exposure limits under mobile exposure conditions (antennas are greater than 20cm from a person's body). Details of the authorized configurations can be found at <https://fjallfoss.fcc.gov/oetcf/eas/reports/GenericSearch.cfm> by entering the FCC ID number on the device.

Interference Statement

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:


- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

Notice: The FCC regulations provide that changes or modifications not expressly approved by Dell Inc. could void your authority to operate this equipment.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the system with respect to the receiver.
- Move the system away from the receiver.
- Plug the system into a different outlet so that the system and the receiver are on different branch circuits.

If necessary, consult a representative of Dell Inc. or an experienced radio/television technician for additional suggestions.

 NOTE: This Dell Mobile Broadband device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations. Modifications not expressly approved by Dell could void your authority to operate the equipment.