Dell™ Latitude™ L400 User's Guide

Model PP01S

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AC Adapter: Dell™ Latitude™ L400 User's Guide

Using the AC Adapter

The AC adapter converts AC power from an electrical outlet to the DC power used by the computer. The AC adapter kit includes the AC adapter with its attached DC cable (which connects to the computer) as well as an AC power cable that connects the adapter to an electrical outlet.

You can connect the AC adapter with your computer either turned on or off.

The AC adapter works with electrical outlets worldwide. However, power connectors vary among countries. Before you use AC power in a foreign country, you may need to obtain a new power cable designed for use in that country.

If the computer is docked to the Dell Latitude L400 Advanced Port Replicator (APR), it obtains power through the APR, which must be connected to an electrical outlet through the AC adapter.

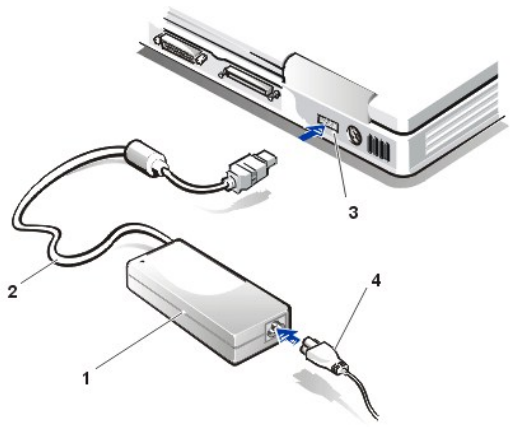
NOTE: If you are running your computer on AC power with a battery installed, the AC adapter charges the battery (if needed) and then maintains the battery's charge.

NOTICE: The AC adapter should be in a ventilated area, such as on a desktop or on the floor, when used to power the computer or charge the battery. Do not use the AC adapter in a poorly ventilated environment, such as inside a carrying case.

Connecting the AC Adapter

1. Connect the AC adapter's attached cable into the computer's AC adapter connector (see Figure 1).
2. Plug the AC adapter power cable into the other end of the AC adapter.
3. Plug the AC adapter power cable into an electrical outlet.

Figure 1. Connecting the AC Adapter



1 AC adapter
2 AC adapter's attached cable
3 AC adapter connector
4 AC adapter power cable

Turning On the Computer

To turn on the computer, press the power button.

NOTES: If your computer's operating system is "locked up"—that is, it does not respond to commands—press and hold down the power button for at least five seconds to turn off the computer.

If the operating system locks up and does not respond to the power button, you can restart the computer using the reset switch on the bottom of the computer. To do so, straighten a paper clip and press it into the reset switch access hole for about one second.

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Power Management Settings: Dell™ Latitude™ L400 User's Guide

Experimenting With Power Conservation

In general, the lower the value you set for each power conservation feature, the longer the battery's charge lasts. On the other hand, setting high values tends to optimize the computer's performance.

To evaluate the way that different settings affect how long you can operate the computer on battery power versus the relative efficiency of how the software performs, experiment as follows:

- Use the computer with all the options set at their default values.
- Use the computer with all the options disabled or set to **Off**.
- Use the computer with all the options set to their minimum or maximum values.

*NOTE: For Advanced Configuration and Power Interface (ACPI) compliant systems, power management settings, such as key combinations and standby or hibernate mode, are controlled exclusively by the Power Management Properties or Power Options Properties window in the Control Panel. See Power Management Properties for Windows 98 and Power Options Properties for Windows 2000 and Windows Me. In other operating systems, power management settings can be controlled from the **Power** screen in the system setup program.*

Using Key Combinations

Table 1 identifies the power management key combinations.

*NOTE: The key combinations in Table 1 can be used from an external keyboard by enabling the **External Hot-Key** option on the **Advanced** screen in the system setup program, and then pressing <Scroll Lock> instead of <Fn>.*

Table 1. Key Combinations

Feature	Activate/Deactivate
Turn off display	To activate, press <Fn><F1>. To deactivate, move the cursor or press a key on the integrated or external keyboard. (If nothing happens, the computer may be in suspend or standby mode. Press the power button to resume normal operation.)
Suspend (or standby) mode	To activate, press <Fn><Esc>. To deactivate, press the power button.
Suspend-to-disk mode*	To activate, press <Fn><a>. (On a French keyboard, press <Fn><q>.) To deactivate, press the power button.
View battery status icon	Press <Fn><F3>.

** This key combination does not function under an operating system with the ACPI, such as Microsoft® Windows® 98, Windows 2000, or Windows Me.*

Closing the Display

One way to conserve power on the computer is to close the display when the computer is not in use. When you close the display and an external monitor is *not* connected, the computer's display shuts off and, depending on how you set the **Lid Close** option on the **Power** screen in the system setup program, the computer may enter suspend mode (standby mode in Windows 98, Windows 2000, and Windows Me).

NOTE: If an external monitor is connected when you close the display, the computer does not activate suspend (or standby) mode. You can still use the external monitor.

To resume work, open the display. (The computer may take several seconds to resume operation.)

Suspend Mode

If your computer is running the Microsoft Windows NT® operating system, suspend mode stops almost all computer activity, but leaves the computer ready to resume operations immediately in about 20 to 30 seconds. Use suspend mode whenever you leave the computer unattended.

NOTICE: Windows NT saves data to random-access memory (RAM), not to your hard-disk drive, before entering suspend mode. If the computer enters suspend mode while running on battery power, data loss from RAM can occur if the battery discharges completely.

Suspend mode conserves battery power by turning off the microprocessor clock; the display; the hard-disk drive; the CD-ROM, DVD-ROM, or Zip 250 drive module (if installed); the external monitor connector; the external keyboard (if attached); the parallel port; the serial port; the touch pad; and the diskette drive.

You can enter suspend mode immediately by pressing <Fn><Esc> (or <Scroll Lock><Esc> on an external keyboard if the **External Hot-Key** option on the **Power** screen of the system setup program is enabled).

When you enter suspend mode, the power indicator is not lit.

Resume from suspend mode by pressing the power button. The computer may take several seconds to return to normal operation.

NOTES: On resumption from suspend mode, if a password is set, the computer displays the password prompt screen.

Suspend mode is known as standby mode under the Microsoft Windows 98 operating system.

Standby Mode

If your computer is running the Microsoft Windows 98, Windows 2000, or Windows Me operating system, standby mode turns off the display, stops the hard-disk drive, and turns off other internal devices so that the computer uses less battery power. When the computer resumes operation from standby mode, the desktop is restored exactly as it was before entering standby mode.

NOTICE: These operating systems save data to random-access memory (RAM), not to your hard-disk drive, before entering standby mode. If the computer enters standby mode while running on battery power, data loss from RAM can occur if the battery discharges completely.

You can enter standby mode by pressing <Fn><Esc>.To resume operation from standby mode, press the power button.

Suspend-to-Disk Mode for Windows NT

NOTE: The ACPI-compliant Windows 98, Windows 2000, and Windows Me operating systems use a similar feature called hibernate mode.

Suspend-to-disk (S2D) mode copies all system data to a reserved area—the S2D file—on the hard-disk drive and then turns off all power to the computer. When you resume normal operation, the same programs will be running and the same files will be open that were loaded before you activated this mode.

Place the computer in S2D mode if you intend to store the computer for a month or more. S2D mode preserves the configuration information stored in nonvolatile random-access memory (NVRAM). The reserve battery maintains this information, but it may run out of energy after about a month.

NOTE: S2D mode helps preserve system data by quickly saving it to the hard-disk drive if you are about to run out of battery power.

If the **External Hot-Key** option is enabled on the **Power** screen in the system setup program, you can enter S2D mode by pressing <Fn><a> (or <Scroll Lock><a> on an external keyboard). On a French keyboard, press <Fn><q> or <Scroll Lock><q>.

NOTE: These key combinations do not function under an operating system with ACPI, such as Windows 98, Windows 2000, or Windows Me.

Resume operation from S2D mode by pressing the power button.

Some PC Cards may not operate correctly after resuming from S2D mode. If you encounter problems with a card, remove and reinsert the card.

NOTE: Dell creates an appropriately sized S2D file before shipping the computer to you. Use the Suspend-to-Disk Utility to remove the file, to increase the size of the file, or to add the S2D file if you removed it. For information on creating a S2D file, see "Suspend-to-Disk Utility."

Hibernate Mode for Windows 98, Windows 2000, and Windows Me

NOTE: Hibernate mode is similar to the suspend-to-disk mode used with Windows NT.

Through the **Power Options Properties** (for Windows 2000 and Windows Me) or **Power Management Properties** (for Windows 98) in the **Control Panel** for ACPI-compliant systems, you can enable the computer's hibernate mode.

Hibernate mode copies everything in memory to the hard-disk drive and then turns off all power to the computer. When you resume normal operation, the same programs will be running and the same files will be open that were loaded before you activated this mode.

NOTE: Hibernate mode helps preserve system data by saving it to the hard-disk drive if you are about to run out of battery power.

To enable hibernate mode:

1. Click the **Start** button. Point to **Settings** and then **Control Panel**.
2. Double-click the **Power Options** (or **Power Management** for Windows 98) icon.

   The **Power Options Properties** window appears.
3. Click the **Hibernate** tab.
4. Select **Enable Hibernate Support**.
5. Click **Apply**.
6. Click the **Advanced** tab.

   In the options list on the **Advanced** tab, set one or more of the options to **Hibernate** as desired.
7. Click **Apply**.

When you shut down your computer, you will see a new option in the **Start** menu called **Hibernate**. See your operating system documentation or help for more information on hibernate mode.

Resume from hibernate mode by pressing the power button.

NOTICE: With systems running ACPI, you cannot remove devices or undock your computer while in hibernate mode.

Some PC Cards may not operate correctly after resuming from hibernate mode. If you encounter problems with a card, remove and reinsert the card.

Power Management Properties for Windows 98

Windows 98 provides the **Power Management Properties** window for setting power conservation features.

*NOTE: Set timeouts and enable hibernate mode through the **Power Management Properties** window rather than through the **Power** screen in the system setup program.*

To access the **Power Management Properties** window and set the power management features, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **Power Management Properties** icon.

   The **Power Management Properties** window contains the following tabs:

   - **Power Scheme** — allows you to change individual power management settings or select one of three power mode settings (**Always On**, **Home/Office Desk**, or **Portable/Laptop**) that each provide a set of default power management settings.
   - **Alarms** — allows you to set the **Low Battery** and **Critical Battery** alarms to alert you when the battery charge falls below a certain percentage. When you received your computer, the **Low Battery** and **Critical Battery** alarm options were not checked. Dell recommends that you do not select these options.

- **Power Meter** — allows you to view the percentage of battery life remaining when your computer is operating on battery power. If your computer is operating on AC power, the computer displays a message.
- **Advanced** — allows you to display the **Power Meter** on the Windows 98 taskbar and to display a password prompt when the computer resumes operation from standby mode. **Advanced** also allows you to define the action of the Power buttons.
- **Hibernate** — allows you to enable hibernate mode in Windows 98.

Power Management Properties for Windows NT

Dell provides Softex software compatible with the Power Management Controller, which allows you to suspend and resume your portable computer without affecting your ability to use the Dell Latitude L400 Advanced Port Replicator (APR).

Power Options Properties for Windows 2000 and Windows Me

The ACPI-compliant Windows 2000 and Windows Me operating systems provide the **Power Options Properties** window for setting power conservation features. By allowing you to create your own power schemes, the power options feature allows you to reduce the power consumption of your computer devices.

To access the **Power Options Properties** window and set the power management features, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **Power Options Properties** icon.

   The **Power Options Properties** window contains the following tabs:

   - **Power Scheme** — allows you to select one of three power mode settings.

     *NOTE: With systems running ACPI, select the **Notebook/Portable** setting as the **Power Scheme** to conserve battery life while the system is in standby mode. If the **Always On** setting is selected, the battery life may be much shorter when in standby mode.*

   - **Alarms** — allows you to set the **Low Battery** and **Critical Battery** alarms to alert you when the computer battery falls below a certain percentage. When you received your computer, the **Low Battery** and **Critical Battery** alarms check boxes were not checked. Dell recommends that you do not select these options.
   - **Power Meter** — allows you to view the percentage of battery life remaining when your computer is operating on battery power.
   - **Advanced** — allows you to specify the actions (standby, hibernate, or power off) of the power button, the sleep button, and closing the display. You can enable the hibernate mode through the **Advanced** tab.
   - **Hibernate** (ACPI only) — allows you to enable the hibernate feature.

   See the Microsoft Windows 2000 Help for more information on **Power Options Properties**.

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Batteries: Dell™ Latitude™ L400 User's Guide

About the Batteries

Your computer includes a 4-cell or 6-cell lithium ion battery that provides power when an electrical outlet is not available. The battery is installed on the underside of the computer and forms part of the bottom of the computer. Lithium ion batteries are longer lived than conventional batteries and do not require replacement as often. You do not need to drain a lithium ion battery completely before recharging it.

Do not place spent batteries with common household waste products. See Battery Disposal for more information.

Keep the following information in mind when you are running your computer from the battery:

- Battery performance (life between charges) varies, depending on which power management features are enabled and which application programs you are using.
- The integrated battery charge gauge lets you check the charge status of an installed or uninstalled battery at any time.
- The battery's self-test capability alerts you to battery conditions such as low charge.

NOTE: If the battery is totally drained the alert functions will not operate.

- The Battery Auto-Learning utility helps maintain battery gauge accuracy.
- A battery has a life span of up to 300 full charges, provided it is charged at normal room temperature. The battery degrades with time and at that point should be operating at approximately 80 percent of its original capacity.

NOTICE: The batteries are designed to work only with Dell Latitude L400 computers. Do not use Latitude L400 batteries with other computers, and do not use batteries from other computers with Dell Latitude L400 computers.

Using the Battery

The battery is partially charged when you receive it. Dell recommends that you charge your battery to full capacity before using it to power the computer.

If you are powering the computer from a battery, try to conserve battery power. A number of factors affect battery operating time:

- Power conservation features that you use
- Type of display and microprocessor installed
- Brightness setting of the display
- Use of storage media
- Number and type of external devices and type of PC Cards that you use

NOTE: You can extend battery life by removing PC Cards when they are not being used.

- Kinds of application programs that you run
- Capacity of the memory module installed (the higher the capacity, the more power used)

When you activate standby mode (known as suspend in Microsoft® Windows NT®), the computer can remain in standby mode on battery power for approximately one week (if the battery was fully charged before activating suspend or standby mode).

If you are going to store the computer, disconnect all devices and turn off the computer. Remove the battery when you store your computer for an extended period of time. A battery will drain when not in use during prolonged storage. After a long storage period, recharge the battery fully before you attempt to run your computer from battery power.

NOTE: To extend battery life, store batteries at room temperature.

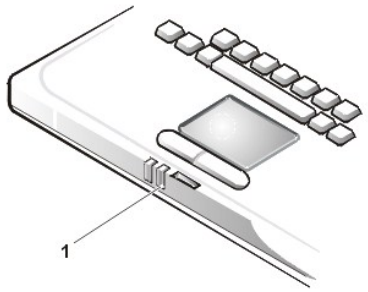
Charging the Battery

Each time you connect the computer to an electrical outlet or install a battery in a computer that is connected to an electrical outlet, the computer checks the battery's charge. The AC adapter charges the battery (if needed) and then maintains the battery's charge.

NOTE: For maximum battery performance, charge the battery only at room temperature.

The battery status indicator (see Figure 1) normally turns green while the battery is charging and then flashes green when the charge cycle is complete. It takes about 1.5 hours to completely charge the battery, whether the computer is turned on or off.

Figure 1. Battery Status Indicator



1 Battery status indicator

NOTE: You can leave the battery in the computer as long as you like. The battery's integrated circuitry prevents the battery from overcharging.

Charging a Hot Battery

If your battery is hot from being used in your computer or being in a hot environment, take note of the following precautions:

- A hot battery will not charge when you connect the AC adapter to the computer. This safety feature is important because charging a hot battery shortens the battery's life span and may damage the battery and the computer.
- If the computer is not allowed to return to room temperature, the battery stops charging before it reaches its full capacity.

Replacing the Battery

To replace a battery in the battery bay (see Figure 2), perform the following steps .

NOTES: If necessary, print these instructions for reference before proceeding.

Dell recommends that you turn the computer off before replacing the battery.

If you want to replace the battery while the computer is running, you must first connect the computer to an electrical outlet or enter standby (or suspend) mode or hibernate (S2D) (or suspend-to-disk [S2D]) mode. You cannot replace the battery while the computer is running on battery power.

1. If the computer is docked, undock it. (See the documentation that came with your docking device.)

NOTICE: If you choose to replace the battery with the computer in suspend (or standby) mode, you have up to 2 minutes to complete the battery replacement.

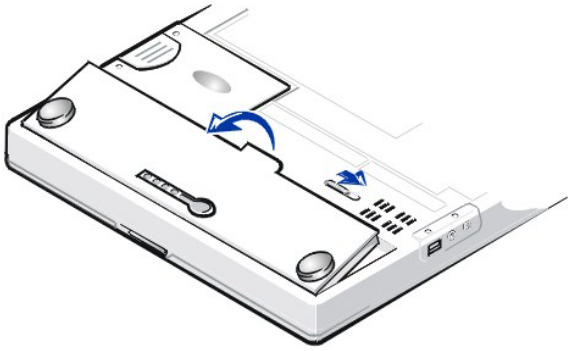
2. Connect the computer to an electrical outlet and then preserve your data by placing the computer in standby (or suspend) mode.

   Press <Fn><Esc> (or <Scroll Lock><Esc> on an external keyboard if the **External Hot Key** option is enabled in the system setup program).

3. Remove the battery from the battery bay.

   Close the computer display and turn the computer over. Slide the battery bay latch to the unlock position (see Figure 2), causing the battery to pop up slightly on one side. While keeping the latch in the unlock position, pivot the battery up and out of the bay. Release the latch.

Figure 2. Removing a Battery



4. Position the new battery as shown in Figure 2, and lower the outside edge of the battery into the battery compartment.

   Four small tabs on the battery fit into four slots in the side wall of the computer.

5. Press the battery firmly into place, flush with the surrounding surface.

   Make sure that the battery latch is completely closed before turning the computer right-side up.

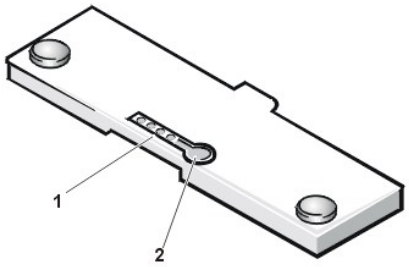
6. If you put the computer into standby (or suspend) mode in step 2, press the power button to resume normal operation.

Battery Charge Gauge

The battery charge gauge, located on the battery and accessible on the underside of the computer, consists of four indicators and a test button. Each indicator represents 25 percent of full charge. If only one indicator lights up, recharge the battery before using it.

To check the charge level, press the battery test button (see Figure 3). The appropriate number of indicators lights up for a few seconds to indicate the amount of charge remaining in the battery.

Figure 3. Battery Charge Gauge



1 Battery charge indicators (4)

2 Battery test button

NOTES: A charge indicator that blinks rapidly indicates a temporary failure or a potentially recoverable failure such as overheating. Allow the battery to cool for several minutes before checking the charge level again.

If the battery has permanently failed or completely discharged, no charge indicators will light when you press the battery test button. If you install a failed or completely discharged battery in the computer and the battery status indicator turns red, the battery has failed. If the battery status indicator turns red, allow the battery to charge overnight and check it the next day. If the battery is fully discharged, it takes a much longer time than usual to recharge it.

To purchase a new battery, call Dell or access the Dell World Wide Web site at ***http://www.dell.com****. Dispose of the old battery properly.*

Percentage of Charge

The battery charge gauge uses its four indicator lights to show the percent of charge remaining in the battery:

- If one indicator lights up, the battery has 1 to 25 percent of its charge remaining.
- If two indicators light up, the battery has 26 to 50 percent of its charge remaining.
- If three indicators light up, the battery has 51 to 75 percent of its charge remaining.
- If four indicators light up, the battery has 76 to 100 percent of its charge remaining.

First Low-Battery Warning

Low-battery operation differs depending on your operating system:

- For Advanced Configuration and Power Interface (ACPI) compliant systems such as Windows® 98, Windows 2000, and Windows Me, you can configure low-battery notifications and actions through the **Power Management Properties** window (Windows 98) or the **Power Options Properties** window (Windows 2000 or Windows Me).
- For Advanced Power Management (APM) compliant systems such as Windows NT, the first low-battery warning occurs when the battery has about 20 minutes of life remaining under current conditions and the computer is not connected to an electrical outlet. The first low-battery warning is indicated in three ways: a battery warning icon appears on the screen, a triple beep sounds from the speaker, and the battery status indicator (see Figure 1) flashes amber.

NOTICE: When you receive a low-battery warning, save your work immediately. Then replace the battery or connect your computer to an electrical outlet.

Second Low-Battery Warning

Low-battery operation differs depending on your operating system:

- For ACPI compliant systems such as Windows 98, Windows 2000, and Windows Me, you can configure low-battery notifications and actions through the **Power Management Properties** window (Windows 98) or the **Power Options Properties** window (Windows 2000 and Windows Me).
- For APM compliant systems such as Windows NT, the second low-battery warning occurs when the battery has about 15 minutes of life remaining under current conditions and the computer is not connected to an electrical outlet. The second low-battery warning is indicated in three ways: the battery status indicator (see Figure 1) turns solid amber, a triple beep sounds from the speaker, and the computer enters suspend mode immediately after the beep.

  If no further input/output (I/O) activity occurs within a few seconds, the computer enters S2D mode. If the computer has no S2D file, it stays in suspend mode, in which it can preserve data for several hours.

  If the computer is already in suspend mode when the second low-battery warning occurs, the computer enters S2D mode immediately. If S2D mode has been disabled, the computer reenters suspend mode.

NOTICE: To avoid losing data and possibly corrupting data areas on your hard-disk drive, save your work immediately after a second low-battery warning. Then connect your computer to an electrical outlet, or place the computer in suspend (or standby) mode. If the battery runs completely out of power, the computer turns off without properly closing any open files.

Detecting Battery Problems

A battery problem may prevent the battery from being charged to its full potential and can lead to unpredictable operation. To obtain a new battery, call Dell or access the Dell World Wide Web site at **http://www.dell.com**.

To avoid installing a defective battery in your computer, first check the battery's charge, indicated by the battery charge indicators on the battery itself, by pressing the battery test button (see Figure 3).

NOTE: If the battery has 0 (zero) percent charge, you cannot use the battery test button to check the battery's capacity. The battery charge indicators will not light if the battery is completely drained.

Battery Disposal

CAUTION: Do not puncture or incinerate the battery.

*NOTE: To purchase a new battery, call Dell or access the Dell World Wide Web site at **http://www.dell.com**.*

Your computer system uses both a lithium-ion battery pack and a nickel-metal hydride (NiMH) coin cell battery. For instructions about replacing the lithium-ion battery pack in your computer, see "Replacing the Battery." The NiMH battery is a long-life battery, and it is very possible that you will never need to replace it. However, if this battery ever needs to be replaced, the procedure must be performed by an authorized service technician.

Do not dispose of these batteries along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

About Battery Power

You automatically conserve battery power each time you connect the computer to an electrical outlet. The battery is even being recharged when you use AC power. The battery's life expectancy is largely determined by the number of charges it receives, so use an electrical outlet to run the computer whenever possible.

You can customize power management by individually controlling the computer's power conservation features. These features reduce power consumption by monitoring application programs and computer devices for inactivity and slowing down or stopping some of the computer's internal devices.

NOTES: When you use power conservation features, you often trade some of the performance of the computer for increased battery operating time. For example, if you turn off the hard-disk drive, you may experience a delay the next time the computer tries to access the hard-disk drive.

Other power conservation features, such as suspend (or standby) mode, stop almost all system activity. They allow you to maximize power conservation when your work is interrupted.

Experiment with power conservation features to achieve the optimum power conservation for your work environment.

Battery Auto-Learning Utility

The Battery Auto-Learning utility, available through the system setup program, helps maintain battery gauge accuracy on your Latitude L400 computer.

The utility allows the battery to learn its full charge capacity. The computer uses the full charge capacity value to determine the length of time that the battery can operate on a single charge. An incorrect full charge capacity value causes the computer to report the remaining battery life incorrectly to the operating system, which may result in shorter than expected battery life.

NOTE: The full charge capacity may vary among batteries and may decrease as the battery goes through multiple charge and discharge cycles.

To run the utility, use the **Run Battery Learning** option on the **Power** screen of the system setup program.

NOTES: The learning process may take up to six hours to complete. You can stop the process at any time by pressing <Esc>.

Use the utility if you suspect that the accuracy of the gauge is incorrect. However, do not run the utility more than once every two months—running the utility more often reduces the service life of the battery.

Turning On the Computer

To turn on the computer, press the power button.

NOTES: If your computer's operating system is "locked up"—that is, it does not respond to commands—press and hold down the power button for at least five seconds to turn off the computer.

If the operating system locks up and does not respond to the power button, you can restart the computer using the reset switch on the bottom of the computer. To do so, straighten a paper clip and press it into the reset switch access hole for about one second.

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CD-ROM, DVD-ROM, and CD-RW Drives: Dell™ Latitude™ L400 User's Guide

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Using the Drives

CD-ROM and DVD-ROM drives are read-only devices that can play most commercially available 8- or 12-centimeter (cm) sound and video CDs. CD-rewritable (CD-RW) drives can write to and play CD-RWs and can play CDs. Dell has installed the appropriate CD-ROM and CD-RW device drivers on your hard-disk drive. Dell also installed the drivers that will allow a DVD-ROM drive to play most CDs and read data from a DVD.

To use one of these devices, install it in the computer's external media bay.

NOTICE: Protect the drives when they are not in the external media bay. Do not squeeze a drive or place objects on top of it; doing so could damage the drive motor. Keep the drive as clean as possible.

To play a disc, press the eject button on the face of the drive or press <Fn><e>. When the tray slides out, place the disc into the tray, label side up. Make sure that the disc is seated correctly on the spindle by pressing down on the disc until it clicks in place. Then gently push in the tray.

NOTICE: If the disc is not seated correctly, the disc or drive can be damaged.

NOTICE: Do not use the drive while the computer is in motion. Doing so could interrupt the flow of data between the drive and the hard-disk or diskette drive.

When the drive is in use, the drive access indicator blinks.

If you are using the Microsoft® Windows® 98 operating system, disable the autoplay feature while you use the CD-ROM or DVD-ROM drive. (The autoplay feature can interfere with the computer's power management functions.) If Dell installed the operating system, the autoplay feature has been disabled. If you reinstall the operating system or if you install it yourself, be sure to disable the autoplay feature if you want to use the CD-ROM or DVD-ROM drive.

For instructions on changing the **Auto Insert Notification** option, see the operating system user's guide.

Caring for CD, DVD, and CD-RW Discs

When handling and using discs, follow these precautions:

- Never use a damaged or warped disc.
- Always hold the disc by its edges. Do not touch the surface of the disc.
- Use a clean, dry cloth to remove dust, smudges, or fingerprints from the surface of the disk. When cleaning, wipe from the center of the disc to the edge.
- Never use solvents, such as benzene, record cleaners, or antistatic sprays, to clean the disc.
- Do not write on the surface of the disc.
- Store discs in their containers, placing them in a cool, dry place. Extreme temperatures may damage discs.
- Do not bend or drop a disc.
- Do not place objects on top of a disc.

Types of Supported Discs

Your computer's CD-ROM, DVD-ROM, and CD-RW drives are able to play the following disc formats:

- CD-ROM red-book audio discs (CD-DA)
- CD-ROM yellow-book mode-1 and mode-2 data discs
- CD-ROM XA (mode-2 form 1 and form 2; without Adaptive Differential Pulse Code modulation [ADPCM])

- CD-I (mode-2 form 1 and form 2)
- CD-I Ready
- CD-Bridge
- Photo CD, CD-recordable (CD-R) (single and multisession)
- Video CD
- CD-RW (The 24x CD-ROM and DVD-ROM drives can read, but not write to, CD-RWs; only the CD-RW drive can write to this type of disc.)
- DVD-5 (the DVD-ROM drive supports the DVD-5 format)

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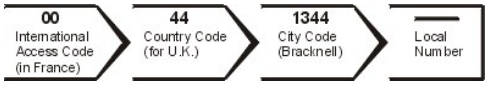
Contacting Dell: Dell™ Latitude L400 User's Guide

Overview

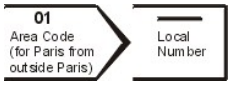
When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in the following sections. "International Dialing Codes" provides the various codes required to make long-distance and international calls. "Americas Contact Numbers," "Europe Contact Numbers," and "Asia and Other Regions Contact Numbers" provide local telephone numbers, area codes, toll-free numbers, and e-mail addresses, if applicable, for each department or service available in various countries around the world.

If you are making a direct-dialed call to a location outside of your local telephone service area, determine which codes to use (if any) in "International Dialing Codes," in addition to the local numbers provided in the other sections.

For example, to place an international call from Paris, France to Bracknell, England, dial the international access code for France followed by the country code for the U.K., the city code for Bracknell, and then the local number as shown in the following illustration:



To place a long-distance call within your own country, use area codes instead of international access codes, country codes, and city codes. For example, to call Paris, France from Montpellier, France, dial the area code plus the local number as shown in the following illustration:



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

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

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

International Dialing Codes

Click a listed country to obtain the appropriate contact numbers.

Country (City)	International Access Code	Country Code	City Code
Australia (Sydney)	0011	61	2
Austria (Vienna)	900	43	1
Belgium (Brussels)	00	32	2
Brazil	0021	55	51
Brunei	—	673	—
Canada (North York, Ontario)	011	—	Not required
Chile (Santiago)	—	56	2
China (Xiamen)	—	86	592
Czech Republic (Prague)	00	420	2
Denmark (Horsholm)	009	45	Not required
Finland (Helsinki)	990	358	9
France (Paris) (Montpellier)	00	33	(1) (4)

Germany (Langen)	00	49	6103
Hong Kong	001	852	Not required
Ireland (Bray)	16	353	1
Italy (Milan)	00	39	02
Japan (Kawasaki)	001	81	44
Korea (Seoul)	001	82	2
Luxembourg	00	352	—
Macau	—	853	Not required
Malaysia (Penang)	00	60	4
Mexico (Colonia Granada)	95	52	5
Netherlands (Amsterdam)	00	31	20
New Zealand	00	64	—
Norway (Lysaker)	095	47	Not required
Poland (Warsaw)	011	48	22
Portugal	00	35	—
Singapore (Singapore)	005	65	Not required
South Africa (Johannesburg)	09/091	27	11
Spain (Madrid)	00	34	91
Sweden (Upplands Vasby)	009	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

Americas Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Brazil	Customer Support, Technical Support		toll free: 0800 90 3355
	Sales		toll free: 0800 90 3366
	Web site: **http://www.dell.com/br**		
Canada (North York, Ontario)	Automated Order-Status System		toll free: 1-800-433-9014
	AutoTech (Automated technical support)		toll free: 1-800-247-9362
	Customer Care (From outside Toronto)		toll free: 1-800-387-5759
	Customer Care (From within Toronto)	416	758-2400
	Customer Technical Support		toll free: 1-800-847-4096
	Sales (Direct Sales—from outside Toronto)		toll free: 1-800-387-5752
	Sales (Direct Sales—from within Toronto)	416	758-2200
	Sales (Federal government, education, and medical)		toll free: 1-800-567-7542
	Sales (Major Accounts)		toll free: 1-800-387-5755
	TechFax		toll free: 1-800-950-1329
Chile (Santiago) *NOTE: Customers in*	Sales, Customer Support, and Technical Support		toll free: 1230-020-4823

Chile call the U.S.A. for sales, customer, and technical assistance			
Latin America *NOTE: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.*	Customer Technical Support (Austin, Texas, U.S.A.)	512	728-4093
	Customer Service (Austin, Texas, U.S.A.)	512	728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512	728-3883
	Sales (Austin, Texas, U.S.A.)	512	728-4397
	SalesFax (Austin, Texas, U.S.A.)	512	728-4600 728-3772
Mexico *NOTE: Customers in Mexico call the U.S.A. for access to the Automated Order-Status System and AutoTech.*	Automated Order-Status System (Austin, Texas, U.S.A.)	512	728-0685
	AutoTech (Automated technical support) (Austin, Texas, U.S.A.)	512	728-0686
	Customer Technical Support	525	228-7870
	Sales	525	228-7811 toll free: 91-800-900-37 toll free: 91-800-904-49
	Customer Service	525	228-7878
	Main	525	228-7800
U.S.A. (Austin, Texas)	Automated Order-Status System		toll free: 1-800-433-9014
	AutoTech (for portable and desktop computers)		toll free: 1-800-247-9362
	Dell Home and Small Business Group (for portable and desktop computers):		
	Customer Technical Support (Return Material Authorization Numbers)		toll free: 1-800-624-9896
	Customer Technical Support (Home sales purchased via **http://www.dell.com**)		toll free: 1-877-576-3355
	Customer Service (Credit Return Authorization Numbers)		toll free: 1-800-624-9897
	National Accounts (systems purchased by established Dell national accounts [have your account number handy], medical institutions, or value-added resellers [VARs]):		
	Customer Service and Technical Support (Return Material Authorization Numbers)		toll free: 1-800-822-8965
	Public Americas International (systems purchased by governmental agencies [local, state, or federal] or educational institutions):		
	Customer Service and Technical Support (Return Material Authorization Numbers)		toll free: 1-800-234-1490
	Dell Sales		toll free: 1-800-289-3355 toll free: 1-800-879-3355
	Spare Parts Sales		toll free: 1-800-357-3355
	DellWare™		toll free: 1-800-753-7201
	Fee-Based Technical Support		toll free: 1-800-433-9005
	Server Fee-Based Technical Support		toll free: 1-800-967-0765
	Sales (Catalogs)		toll free: 1-800-426-5150
	Fax		toll free: 1-800-727-8320
	TechFax		toll free: 1-800-950-1329
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired		toll free: 1-877-DELLTTY (1-877-335-5889)
	Switchboard	512	338-4400

Europe Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Austria (Vienna) *NOTE: Customers in Austria call Langen, Germany for Technical Support and Customer Care.*	Switchboard	01	491 040
	Home/Small Business Sales	01	795676-02
	Home/Small Business Sales Fax	01	795676-05
	Home/Small Business Customer Care	01	795676-03
	Preferred Accounts/Corporate Customer Care		0660-8056
	Home/Small Business Technical Support	01	795676-04
	Preferred Accounts/Corporate Technical Support		0660-8779
	Web site: **http://support.euro.dell.com**		
	E-mail: tech_support_germany@dell.com		
Belgium (Brussels)	Technical Support	02	481 92 88
	Customer Care	02	481 91 19
	Home/Small Business Sales		toll free: 0800 16884
	Corporate Sales	02	481 91 00
	Fax	02	481 92 99
	Switchboard	02	481 91 00
	Web site: **http://support.euro.dell.com**		
	E-mail: tech_be@dell.com		
Czech Republic (Prague)	Technical Support	02	22 83 27 27
	Customer Care	02	22 83 27 11
	Fax	02	22 83 27 14
	TechFax	02	22 83 27 28
	Switchboard	02	22 83 27 11
	Web site: **http://support.euro.dell.com**		
	E-mail: czech_dell@dell.com		
Denmark (Horsholm) *NOTE: Customers in Denmark call Sweden for fax technical support.*	Technical Support		45170182
	Relational Customer Care		45170184
	Home/Small Business Customer Care		32875505
	Switchboard		45170100
	Fax Technical Support (Upplands Vasby, Sweden)		859005594
	Fax Switchboard		45170117
	Web site: **http://support.euro.dell.com**		
	E-mail: den_support@dell.com		
Finland (Helsinki)	Technical Support	09	253 313 60
	Technical Support Fax	09	253 313 81
	Relational Customer Care	09	253 313 38
	Home/Small Business Customer Care	09	693 791 94
	Fax	09	253 313 99
	Switchboard	09	253 313 00
	Web site: **http://support.euro.dell.com**		
	E-mail: fin_support@dell.com		
France (Paris/Montpellier)	**Home and Small Business**		
	Technical Support	0825	387 270

	Customer Care	0825	823 833
	Fax	0825	004 701
	Switchboard	0825	004 700
	Switchboard (Alternative)	04	99 75 40 39
	Sales	0825	004 700
	Web site: **http://support.euro.dell.com**		
	E-mail: web_fr_tech@dell.com		
	Corporate		
	Technical Support	0825	004 719
	Customer Care	0825	338 339
	Fax	01	55 94 71 99
	Switchboard	01	55 94 71 00
	Sales	01	55 94 71 00
	Web site: **http://support.euro.dell.com**		
	E-mail: web_fr_tech@dell.com		
Germany (Langen)	Technical Support	06103	766-7200
	Technical Support Fax	06103	766-9222
	Home/Small Business Customer Care		0180-5-224400
	Global Segment Customer Care	06103	766-9570
	Preferred Accounts Customer Care	06103	766-9420
	Large Accounts Customer Care	06103	766-9560
	Public Accounts Customer Care	06103	766-9555
	Switchboard	06103	766-7000
	Web site: **http://support.euro.dell.com**		
	E-mail: tech_support_germany@dell.com		
Ireland (Cherrywood)	Technical Support		0870 908 0800
	Customer Care	01	204 4026
	Sales	01	286 0500
	SalesFax	01	204 0144
	Fax		0870 907 5590
	Switchboard	01	286 0500
	Web site: **http://support.euro.dell.com**		
	E-mail: dell_direct_support@dell.com		
Italy (Milan)	**Home and Small Business**		
	Technical Support	02	577 826 90
	Customer Care	02	696 821 14
	Fax	02	696 824 13
	Switchboard	02	696 824 12
	Web site: **http://support.euro.dell.com**		
	E-mail: web_it_tech@dell.com		
	Corporate		
	Technical Support	02	577 826 90
	Customer Care	02	577 825 55
	Fax	02	575 035 30
	Switchboard	02	577 821
	Web site: **http://support.euro.dell.com**		

	E-mail: web_it_tech@dell.com		
Luxembourg *NOTE: Customers in Luxembourg call Belgium for sales, customer, and technical assistance.*	Technical Support (Brussels, Belgium)	02	481 92 88
	Home/Small Business Sales (Brussels, Belgium)		toll free: 080016884
	Corporate Sales (Brussels, Belgium)	02	481 91 00
	Customer Care (Brussels, Belgium)	02	481 91 19
	Switchboard (Brussels, Belgium)	02	481 91 00
	Fax (Brussels, Belgium)	02	481 92 99
	Web site: **http://support.euro.dell.com**		
	E-mail: tech_be@dell.com		
Netherlands (Amsterdam)	Technical Support	020	581 8838
	Customer Care	020	581 8740
	Home/Small Business Sales		toll free: 0800-0663
	Home/Small Business Sales Fax	020	682 7171
	Corporate Sales	020	581 8818
	Corporate Sales Fax	020	686 8003
	Fax	020	686 8003
	Switchboard	020	581 8818
	Web site: **http://support.euro.dell.com**		
	E-mail: tech_nl@dell.com		
Norway (Lysaker) *NOTE: Customers in Norway call Sweden for fax technical support.*	Technical Support		671 16882
	Relational Customer Care		671 17514
	Home/Small Business Customer Care		231 62298
	Switchboard		671 16800
	Fax Technical Support (Upplands Vasby, Sweden)		590 05 594
	Fax Switchboard		671 16865
	Web site: **http://support.euro.dell.com**		
	E-mail: nor_support@dell.com		
Poland (Warsaw)	Technical Support	22	57 95 700
	Customer Care	22	57 95 999
	Sales	22	57 95 999
	Switchboard	22	57 95 999
	Fax	22	57 95 998
	Web site: **http://support.euro.dell.com**		
	E-mail: pl_support@dell.com		
Portugal	Technical Support	35	800 834 077
	Customer Care	34 35	902 118 540 or 800 834 075
	Sales	35	800 834 075
	Switchboard	34	917 229 200
	Fax	35	121 424 01 12
	E-mail es_support@dell.com		
Spain (Madrid)	**Home and Small Business**		
	Technical Support		902 100 130
	Customer Care		902 118 540
	Switchboard		902 118 541
	Fax		902 118 539

	Web site: **http://support.euro.dell.com**		
	E-mail: web_esp_tech@dell.com		
	Corporate		
	Technical Support		902 100 130
	Customer Care		902 118 546
	Switchboard	91	722 92 00
	Fax	91	722 95 83
	Web site: **http://support.euro.dell.com**		
	E-mail: web_esp_tech@dell.com		
Sweden (Upplands Vasby)	Technical Support	08	590 05 199
	Relational Customer Care	08	590 05 642
	Home/Small Business Customer Care	08	587 70 527
	Fax Technical Support	08	590 05 594
	Sales	08	590 05 185
	Web site: **http://support.euro.dell.com**		
	E-mail: swe_support@dell.com		
Switzerland (Geneva)	Technical Support (Home and Small Business)		0844 811 411
	Technical Support (Corporate)		0844 822 844
	Customer Care		0848 802 802
	Switchboard	022	799 01 01
	Fax	022	799 01 90
	Web site: **http://support.euro.dell.com**		
	E-mail: swisstech@dell.com		
U.K. (Bracknell)	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])		0870 908 0500
	Technical Support (Direct/PAD and General)		0870 908 0800
	Global Accounts Customer Care	01344	723186
	Corporate Customer Care	01344	723185
	Preferred Accounts (500-5000 employees) Customer Care	01344	723196
	Central Government Customer Care	01344	723193
	Local Government Customer Care	01344	723194
	Home/Small Business Sales		0870 907 4000
	Corporate/Public Sector Sales	01344	860456
	Web site: **http://support.euro.dell.com**		
	E-mail: dell_direct_support@dell.com		

Asia and Other Regions Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Australia (Sydney)	Home and Small Business		1-300-65-55-33
	Government and Business		toll free: 1-800-633-559
	Preferred Accounts Division (PAD)		toll free: 1-800-060-889
	Customer Care		toll free: 1-800-819-339
	Corporate Sales		toll free: 1-800-808-385
	Transaction Sales		toll free: 1-800-808-312
	Fax		toll free: 1-800-818-341

Brunei *NOTE: Customers in Brunei call Malaysia for customer assistance.*	Customer Technical Support (Penang, Malaysia)		633 4966
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales (Penang, Malaysia)		633 4955
China (Xiamen)	Technical Support		toll free: 800 858 2437
	Customer Experience		toll free: 800 858 2060
	Home and Small Business		toll free: 800 858 2222
	Preferred Accounts Division		toll free: 800 858 2062
	Large Corporate Accounts		toll free: 800 858 2999
Hong Kong *NOTE: Customers in Hong Kong call Malaysia for customer assistance.*	Technical Support		toll free: 800 96 4107
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales		toll free: 800 96 4109
	Corporate Sales		toll free: 800 96 4108
Japan (Kawasaki)	Technical Support (Server)		toll free: 0120-1984-35
	Technical Support (Dimension™ and Inspiron™)		toll free: 0120-1982-56 or 0088-25-3355
	Technical Support (WorkStation, OptiPlex™, and Latitude™)		toll free: 0120-1984-39 or 0088-22-7890
	Customer Care	044	556-4240
	24-Hour Automated Order Status Service	044	556-3801
	Home and Small Business Group Sales	044	556-3344
	Preferred Accounts Division Sales	044	556-3433
	Large Corporate Accounts	044	556-3430
	Faxbox Service	044	556-3490
	Switchboard	044	556-4300
	Web site: **http://support.jp.dell.com**		
Korea (Seoul)	Technical Support		toll free: 080-200-3800
	Sales		toll free: 080-200-3777
	Customer Service (Penang, Malaysia)		604-633-4949
	Customer Service (Seoul, Korea)		2194-6220
	Fax		2194-6202
	Switchboard		2194-6000
Macau *NOTE: Customers in Macau call Malaysia for customer assistance.*	Technical Support		toll free: 0800 582
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales		toll free: 0800 581
Malaysia (Penang)	Technical Support		toll free: 1 800 888 298
	Customer Service	04	633 4949
	Transaction Sales		toll free: 1 800 888 202
	Corporate Sales		toll free: 1 800 888 213
New Zealand	Home and Small Business		0800 446 255
	Government and Business		0800 444 617
	Sales		0800 441 567
	Fax		0800 441 566
Singapore (Singapore) *NOTE: Customers in Singapore call Malaysia*	Technical Support		toll free: 800 6011 051
	Customer Service (Penang, Malaysia)	04	633 4949
	Transaction Sales		toll free: 800 6011 054

for customer assistance.	Corporate Sales		toll free: 800 6011 053
South Africa (Johannesburg)	Technical Support	011	709 7710
	Customer Care	011	709 7707
	Sales	011	709 7700
	Fax	011	709 0495
	Switchboard	011	709 7700
	Web site: **http://support.euro.dell.com**		
	E-mail: dell_za_support@dell.com		
Southeast Asian/Pacific Countries (excluding Australia, Brunei, China, Hong Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—refer to individual listings for these countries)	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)		60 4 633-4810
Taiwan	Technical Support		toll free: 0080 60 1225
	Technical Support (Servers)		toll free: 0080 60 1256
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales		toll free: 0080 651 228/0800 33 556
	Corporate Sales		toll free: 0080 651 227/0800 33 555
Thailand *NOTE: Customers in Thailand call Malaysia for customer assistance.*	Technical Support		toll free: 088 006 007
	Customer Service (Penang, Malaysia)		633 4949
	Sales		toll free: 088 006 009

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Dell™ Diagnostics: Dell Latitude™ L400 User's Guide

Overview

Unlike many diagnostic programs, the Dell Diagnostics helps you check your computer's hardware without any additional equipment and without destroying any data. By using the diagnostics, you can have confidence in your computer's operation. And if you find a problem you cannot solve by yourself, the diagnostic tests can provide you with important information you will need when talking to Dell's service and support personnel.

NOTICE: Use the Dell Diagnostics to test only your Dell computer. Using this program with other computers may cause incorrect computer responses or result in error messages.

Features of the Dell Diagnostics

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

- Options that let you run tests individually or collectively
- An option that allows you to choose the number of times a test group or subtest is repeated
- The ability to display or print out test results, or to save them in a file
- Options to temporarily suspend testing if an error is detected, or to terminate testing when an adjustable error limit is reached
- A **Devices** menu that briefly describes each test and its parameters
- A **Config** menu that describes the configuration of the devices in the selected device group
- Status messages that inform you whether test groups or subtests were completed successfully
- Error messages that appear if any problems are detected

When to Use the Dell Diagnostics

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

Starting the Dell Diagnostics

Perform the following steps to start the diagnostics.

NOTE: Before booting from the Dell Latitude L400 ResourceCD, you may want to print this section so that you can refer to it while running the diagnostics.

1. Turn off the computer.
2. Undock the computer if you have it docked.
3. Turn on the computer and press <F2> as soon as you see the Dell logo screen. If you wait too long and the operating system begins to load into memory, *let the computer complete the load operation*. Then shut down the system and try again.
4. In the system setup program, go to the **Boot** screen and set the following boot sequence:

1. **Removable Devices**
2. **ATAPI CD-ROM Drive**
3. **Hard Disk**
4. **Boot to LAN**

5. Save the changes and exit the system setup program.
6. Insert your *ResourceCD* into the CD-ROM or DVD-ROM drive.
7. Turn the computer off.
8. Turn the computer on. The computer restarts and automatically begins to run the Dell Diagnostics.
9. When you have completed running diagnostics, remove your *ResourceCD* from the CD-ROM or DVD-ROM drive.

To return to the boot sequence you use for normal operation, repeat steps 1 through 5, customizing the boot sequence to fit your needs. Then restart your computer.

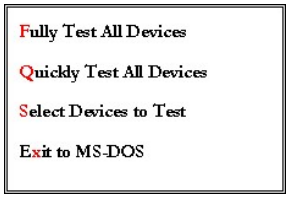
When you start the diagnostics, the Dell logo screen appears, followed by a message telling you that the diagnostics is loading.

After the diagnostics loads, the **Diagnostics Menu** appears (see Figure 1). The menu allows you to run all or specific diagnostic tests or to exit to the MS-DOS® prompt.

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

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

Figure 1. Diagnostics Menu



Dell Diagnostics Main Screen Overview

When you select **Select Devices to Test** from the **Diagnostics Menu**, the main screen of the diagnostics appears (see Figure 2). The main screen lists the diagnostic test device groups, lists the devices of the selected device group, and allows you to select categories from a menu. From this screen, you can enter two other types of screens.

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

- Two lines at the top of the screen identify the version number of the Dell Diagnostics.
- On the left side of the screen, the **Device Group**s area lists the diagnostic test groups in the order they will run if you select **All** from the **Run tests** menu. Press the up- or down-arrow key to highlight a test device group.
- On the right side of the screen, the **Devices for Highlighted Group** area lists the computer's currently detected hardware and some of the relevant settings.
- The lower-right side of the screen displays information about your drive(s).
- Two lines at the bottom of the screen make up the menu area. The first line lists the categories you can select; press the left- or right-arrow key to highlight a menu category. The second line gives information about the category currently highlighted.

NOTE: The options displayed on your screen should reflect the hardware configuration of your computer.

Figure 2. Dell Diagnostics Main Screen

Confirming the System Configuration Information

When you boot your computer from the *Dell Latitude L400 ResourceCD*, the diagnostics checks your system configuration information and displays it in the **Device Groups** area on the main screen.

The following sources supply this configuration information for the diagnostics:

- The system configuration information settings (stored in nonvolatile random-access memory [NVRAM]) that you selected while using the system setup program
- Identification tests of the microprocessor, the video controller, the keyboard controller, and other key components
- Basic input/output system (BIOS) configuration information temporarily saved in RAM

Do not be concerned if the **Device Groups** area does not list the names of all the components or devices you know are part of your computer. For example, you may not see a printer listed, although you know one is attached to your computer. Because your printer is a parallel communications device, the computer recognizes the printer by its LPT1 address and identifies it as a parallel port. You can test your printer connection in the **Parallel Ports** tests.

How to Use Dell Diagnostics

Six comprehensive, menu-driven, online Help categories provide instructions on how to use the program and explain each menu item, test group, subtest, and test and error result. To enter the **Help** menu, perform the following steps:

1. Highlight **Select Devices to Test** in the **Diagnostics Menu**.
2. Press <Enter>.
3. Press <h>.

The **Help** menu categories are **Menu**, **Keys**, **Device Group**, **Device**, **Test**, and **Versions**. The online Help also provides detailed descriptions of the devices that you are testing. The **Help** categories are explained in the following subsections.

Menu Category

Menu describes the main menu screen area, the **Device Groups**, and the different diagnostic menus and commands and instructions on how to use them.

Keys Category

Keys explains the functions of the all of the keystrokes that can be used in Dell Diagnostics.

Device Group Category

Device Group describes the test group that is presently highlighted in the **Device Groups** list on the main menu screen. It also provides reasoning for using some tests.

Device Category

Device is the educational section of online Help. It describes the function and purpose of the highlighted device in the **Device Groups**.

For example, the following information appears when you select **Device** for **Diskette** in the **Device Groups** list:

Diskette drive A:

The diskette disk drive device reads and writes data to and from diskettes. Diskettes are flexible recording media, sometimes contained in hard shells. Diskette recording capacities are small and access times are slow relative to hard disk drives, but they provide a convenient means of storing and transferring data.

Test Category

Test provides a thorough explanation of the subtest for each selected device group. For example, the following description is provided for the **Diskette Drive Seek Test**:

Diskette drive A: - Diskette Drive Seek Test

This test verifies the drive's ability to position its read/write heads. The test operates in two passes: first, seeking from the beginning to ending cylinders inclusively, and second, seeking alternately from the beginning to ending cylinders with convergence towards the middle.

Versions Category

Versions lists the version numbers of the subtests that are used by the Dell Diagnostics.

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Diskette Drive: Dell™ Latitude™ L400 User's Guide

Your computer was shipped with a 3.5-inch diskette drive installed in the external media bay. For more information on using and installing devices in the external media bay, see "External Media Bay."

The diskette drive lets you install programs and transfer data using 3.5-inch diskettes.

To use the diskette drive, insert a 3.5-inch diskette into the drive (label side up and metal end first). Push the diskette into the drive until the eject button extends outside the drive casing.

NOTICE: Do not travel with a diskette in the diskette drive. Doing so could break the eject button and damage the drive.

To remove a diskette from the drive, press the eject button to release the diskette, and then pull the diskette out of the drive.

When data is being accessed from the diskette drive, the drive access indicator blinks.

NOTES: As an alternative diskette drive configuration, you can connect the diskette drive to the parallel connector on the back of the computer using an optional cable available from Dell.

If you are running Softex BayManager under the Microsoft® Windows® 98, Windows NT®, or Windows Me operating system, you can use BayManager to connect the diskette drive to the computer or to the L400 Advanced Port Replicator (if the computer is docked) without having to reboot the computer before you can use the drive. (Windows 2000 supports device swapping, which allows you to remove and replace drives without shutting down the computer.)

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Display: Dell™ Latitude™ L400 User's Guide

Adjusting the Brightness

To adjust the brightness of the display, you can use the key combinations shown in Table 1.

NOTE: When you run the computer on battery power, set your computer's brightness control to the lowest setting that affords comfortable viewing. You can extend your battery life by using the minimum brightness setting.

Table 1. Brightness Key Combinations and Their Functions

Key Combinations	Function
<Fn> + down arrow	Decreases brightness
<Fn> + up arrow	Increases brightness

Expanded Video Mode

When working in MS-DOS® text mode, you can select the font used to display text. Press<Fn><F7> to toggle between regular video mode (serif font) and expanded video mode (a serif font with extra leading). In expanded video mode, items in resolutions other than 800 x 600 expand to fill the screen.

NOTE: You may have difficulty using the display fonts feature with MS-DOS programs that use downloaded fonts. For optimum video performance in these cases, do not use expanded video mode.

Video Drivers and Video Resolution

The Dell-installed video drivers work with the operating system to let you customize the video resolution, number of screen colors, and refresh rate of your display.

NOTE: The Dell-installed video drivers are designed to offer the best performance on your computer. Dell recommends that you use only these drivers with your factory-installed operating system.

Table 2 lists the combinations of resolutions and colors supported using one controller with a computer display only or an external monitor only.

Table 2. Resolutions and Colors Supported Using A Single Controller and Single Display

Resolution	Bits of Color Depth Per Pixel (bpp)			
640 x 480	8	16	24	32
800 x 600	8	16	24	32
1024 x 768	8	16	24	32
1280 x 1024	8	16	24	N/A

NOTES: The display will always pan at 1280 x 1024.

Numbers of colors per bpp rating:

8 bpp = 256 colors

16 bpp = 65,536 colors
24 bpp = 16,777,256 colors
32 bpp = 4,294,967,296 colors

Multiple-Display Operation Using a Single Controller

With a single controller supporting multiple displays (computer display and external monitor), operation reflects Table 2 with the difference that the 1280 x 1024 resolution will cause both displays to pan at 24, 16, or 8 bpp.

Using 1280 x 1024 Resolution With an External Monitor Under Windows 98

To use the 1280 x 1024 or the 1024 x 768 resolution on an external monitor for a system running the Microsoft® Windows® 98 operating system, set the external monitor to **Plug and Play Monitor** as described in the following procedure.

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Display** icon.
3. Click the **Settings** tab, click **Advanced...**, and click the **Monitor** tab.
4. Click **Change...**, click **Next**, and click **Display a list of all the drivers**.
5. Click **Next**, and click **Show all hardware**.
6. Under **Manufacturers**, click **(Standard monitor types)**.
7. Under **Models**, click **Plug & Play Monitor**, and click **Next**.
8. Click **Next** again, click **Finish**, and click **Close**.
9. At the **Display Properties** screen, set **Screen area** to **1280 x 1024** or **1024 x 768**, and click **Apply**.
10. Click **OK**, click **Yes**, and click **OK**.

To display more colors, select a lower resolution. If you select a resolution and color combination that the computer does not support, the computer automatically selects the next supported combination.

Customizing Video Resolution

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.

   The **Control Panel** window appears.

2. Double-click the **Display** icon.

   The **Display Properties** window appears.

3. Click the **Settings** tab, and then set the resolution by dragging the slider in the **Screen Area** box. In the **Colors** box, choose the number of colors from the menu provided. For more information, see your operating system documentation.

   If you choose a resolution or color palette that is higher than is supported, the settings adjust automatically to the closest possible setting.

4. To change the refresh rate, click the **Advanced** button and then the **Adapter** tab. Choose a new rate from the **Refresh Rate** drop-down menu and click **OK**.

   NOTE: You can adjust the refresh rate only on an external monitor.

Dual-Display Mode

With Windows 98 and Windows Me, you can use an external monitor as an extension of your display (see your operating system documentation for more information). To set up your computer for dual-display mode, perform the following steps:

1. Connect the external monitor.
2. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
3. In the **Control Panel** window, double-click the **Display** icon.
4. In the **Display Properties** window, click the **Settings** tab.
5. Click **Advanced...**.

6. Click the **ATI Displays** tab.
7. Set either the monitor or the display to **Primary**, and set the other viewing device to **Secondary**. (The primary viewing device will display the system icons and task bar.)
8. Click **Apply**.
9. Click **Yes** to confirm the settings.
10. Click **OK** to return to the **Display Properties** box.

    Two display icons appear in the window.
11. Select the secondary viewing device by double-clicking the display icon marked "**2**."
12. When asked if you want to enable this monitor, click **Yes** and then click **Apply**.
13. If desired, change the **Screen Area** and/or **Colors** options for the secondary device, and click **Apply**.
14. Enable the primary viewing device by double-clicking the display icon marked "**1**" and repeating steps 12 and 13.
15. Click **OK**.

If You Have Display Problems

If your computer is receiving power, but nothing appears on your display (such as light, text, or graphics) or the display image does not appear as you would expect, try the following measures to resolve the problem:

1. If the display is blank, you may be in suspend, standby, or suspend-to-disk (S2D) mode. Press the power button to resume.

   If the display is blank and the power indicator is on, the display may have timed out. In this case, press any key on the keyboard to resume normal operation.
2. If the low-battery warning occurs, connect the AC adapter to the computer or replace the battery.
3. Adjust the brightness.
4. If your computer is attached to an external monitor, press <Fn><F8> to switch the video image to the display.

   NOTE: It takes several seconds to switch the video image.

Cleaning the Display and Touch Pad

If the display or touch pad become smudged from use, they can be cleaned using a soft, clean cloth slightly dampened with water. Always turn off the computer before cleaning the display or touch pad.

To clean the display, stroke the cloth across the display in one direction, moving from the top of the display to the bottom.

To clean the touch pad, stroke the cloth gently across the surface of the touch pad. Do not allow water from the cloth to seep between the touch pad and the top cover of the computer.

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Installing Drivers and Utilities: Dell™ Latitude™ L400 User's Guide

Overview

All of your computer's utilities and all drivers for Dell-installed devices are operative when you receive the computer—no further installation or configuration is needed. However, if you ever need to reinstall any of the drivers or utilities, use the *Dell Latitude L400 ResourceCD* that you received with your computer. Your *ResourceCD* also contains the Dell Diagnostics and system documentation for your system.

You can also access system tools and documentation from Dell's support Web site at **http://support.dell.com**. Select your country by clicking on the map that appears. At the **Welcome to support.dell.com** page, enter your system information to access the help tools and information available for your system.

Installing Drivers and Utilities From the *Dell Latitude L400 ResourceCD*

To install a driver or utility from your *ResourceCD*, perform the following steps:

1. Save your work in all open application programs.
2. Insert your *ResourceCD* into the CD-ROM or DVD-ROM drive.

   In most cases the CD should start running automatically. If it does not, start Windows® Explorer, click your CD-ROM drive directory to display the CD contents, and then click the **Start.htm** file.
3. Select your preferred user interface language.

   The **System Software** screen appears, displaying a list of operating systems (**Software by Operating System**) and an **All Software** category.
4. Under **Software by Operating System**, click your operating system to display a list of drivers, a **Utilities** subdirectory, and a **Documentation** subdirectory.
5. Click **Documentation**, and then click **Dell System Update**.
6. Select the language in which you want to view the document.
7. Click **Click to view documentation**.

   Follow the instructions in the *Dell System Update* to install the desired utilities or drivers.

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Error Messages, IRQs, and Memory Assignments: Dell™ Latitude™ L400 User's Guide

Error Messages

Your application programs, operating system, and the computer itself can identify problems and alert you to them. When this occurs, a message may appear on the computer's display or on an external monitor (if one is attached).

If an error message appears on the display or external monitor, make a note of the message. For an explanation of the message and suggestions for correcting any errors, see Table 1. The messages are listed alphabetically.

NOTE: If the message is not listed in Table 1, see the documentation for the application programs that were running at the time the message appeared or the operating system documentation for an explanation of the message and a recommended action.

Table 1. System Error Messages

Message	Cause	Action
`0271: Check date and time settings`	The real-time clock has reverted to a default date and time.	Enter the system setup program and change the date and time back to the correct settings. If the problem persists, call Dell for technical assistance.
`02B0:Diskette drive A error`	A connector may be loose or the diskette may be faulty.	If the diskette-drive access indicator lights up when you access a file on the diskette, but you still get this error message, try a different diskette. If the message reappears, shut down the computer, remove the drive from the external media bay, and then reinsert it. Turn the computer back on, and check for the error message. If the problem persists, run the **Diskette Drive** test in the Dell Diagnostics. If the problem still persists, call Dell for technical assistance.
`0232:Extended RAM Failed at address line: nnnn`	Extended memory is not configured properly or has failed at memory address *nnnn*.	Call Dell for technical assistance.
`0200:Failure Fixed Disk`	The hard-disk drive failed to initialize.	Remove and reseat the hard-disk drive and reboot the computer. If the problem persists, run the **Hard-Disk Drive** tests in the Dell Diagnostics.
`02B2:Incorrect drive A type—run Setup`	The diskette drive is not identified properly in the system setup program.	Shut down the computer, remove the drive from the external media bay, and then reinsert it. Turn the computer back on and check for the error message. If the problem persists, reboot the computer and press <F2> as soon as you see either the system information screen or the Dell logo screen to enter the system setup program. Write down the setting for **Diskette A** on the **Main** screen. Then call Dell for technical assistance.
`0212:Keyboard controller failed`	The keyboard controller is faulty.	Call Dell for technical assistance.
`0211:Keyboard error`	If an external keyboard is being used, a cable or connector may be loose or the keyboard may be faulty. If the built-in keyboard is being used, it may be faulty. A key on the built-in keyboard may have been pressed while the computer was booting.	If using an external keyboard, check and reseat the keyboard cable. Check and reseat the diskette drive cable. If the problem persists, run the **Stuck Key** test in the Dell Diagnostics. If the problem cannot be corrected, call Dell for technical assistance.
`0270:Real time clock error`	The CMOS battery that supports data stored in NVRAM may be dead.	Call Dell for technical assistance.
`0231:Shadow RAM failed at offset: nnnn`	Shadow RAM failed at address *nnnn*.	Call Dell for technical assistance.
`0210:Stuck Key`	If the built-in keyboard is being used,	Run the **Stuck Key** test in the Dell Diagnostics. If the problem cannot

	it may be faulty. A key on the built-in keyboard may have been pressed while the computer was booting.	be corrected, call Dell for technical assistance.
`0250:System battery is dead–Replace and run Setup`	The system battery does not have enough charge to power the computer.	Connect the computer to electrical power to recharge the battery, or replace the battery. Then check your system setup program settings.
`02D0:System cache error–cache disabled`	The primary cache internal to the microprocessor has failed.	Call Dell for technical assistance.
`0251:System CMOS checksum bad–default configuration used`	The BIOS has been changed. CMOS has been corrupted or modified, possibly by an application program that changes data stored in CMOS.	Reboot the computer. As soon as you see the Dell logo screen, press <F2> to enter the system setup program and reconfigure the system. If the problem persists, call Dell for technical assistance.
`0230:System RAM failed at offset: nnnn`	System RAM failed at address *nnnn* in the 64-KB block at which the error was detected.	Call Dell for technical assistance.
`0260:System timer error`	A chip on the system board may be malfunctioning.	Run the **System Set** test group and the **Keyboard Controller** Test in the Dell Diagnostics.

Avoiding IRQ Assignment Conflicts

Problems can arise if two devices attempt to use the same interrupt request (IRQ) line. To avoid this type of conflict, check the documentation for the default IRQ line setting for each installed device. Then consult Table 2 to configure the device for one of the available IRQ lines.

NOTES: Installed devices cannot share the same COM port address. The default address of your computer's serial port is COM1.

*To view IRQ line assignments in the Microsoft® Windows® 98 and Windows Me operating systems, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Select the **Device Manager** tab, and then double-click **Computer**.*

Windows 2000 handles IRQ assignments automatically. Refer to your Windows 2000 documentation for more information.

Table 2. IRQ Line Assignments

IRQ Line	Assigned Device
IRQ0	Reserved; generated by the system timer
IRQ1	Reserved, generated by the keyboard controller
IRQ2	Cascade from the secondary interrupt controller
IRQ3	PCI IRQC
IRQ4	Serial port; available if serial port is not configured for COM1 or COM3
IRQ5	Available
IRQ6	Generated by the diskette drive controller to indicate that the diskette drive requires the attention of the microprocessor
IRQ7	Parallel port; available if parallel port is disabled
IRQ8	Reserved; generated by the real time clock
IRQ9	PCI IRQA and SCI in ACPI mode
IRQ10	PCI IRQB, D
IRQ11	Available
IRQ12	Reserved; generated by the keyboard controller to indicate that the output buffer of the touch pad or PS/2 mouse is full
IRQ13	Reserved; generated by the math coprocessor
IRQ14	Reserved; generated by the hard-disk drive to indicate that the drive requires the attention of the microprocessor
IRQ15	Reserved; generated by the CD-ROM or DVD-ROM drive in the external media bay to indicate that the drive requires the attention of the microprocessor

Memory Allocations

Table 3 provides a map of the conventional memory area. When the microprocessor or a program addresses a location within the conventional memory range, it is physically addressing a location in main memory.

*NOTE: To view memory allocations in Windows 98, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Click the **Device Manager** tab, and then double-click **Computer**.*

Windows 2000 handles memory allocations automatically. Refer to your Windows 2000 documentation for more information.

Table 3. Conventional Memory Map

Address Range	Use
0000h-003FFh	Interrupt vector table
00400h-004FFh	BIOS data area
00500h-005FFh	MS-DOS® and BASIC work area
00600h-9FBFFh	User memory

Table 4 provides a map of the upper memory area. Some of these addresses are dedicated to various system devices, such as the system/video basic input/output system (BIOS). Others are available for use by expansion cards and/or an expanded memory manager (EMM).

When the microprocessor or a program addresses a location within the upper memory area, it is physically addressing a location within one of these devices.

Table 4. Upper Memory Map

Address Range	Use
0009FC00-0009FFFF	PS/2-mouse data area
000A0000-000BFFFF	Video RAM
000C0000-000CFFFF	Video BIOS
000D0000-000D07FF	3Com boot ROM
000D0800-000D3FFF	Unavailable
000DC000-000DFFFF	SMBIOS data area
000E8000-000FFFFF	System BIOS
00100000-03FFFFFF	High memory area
FD000000-FDFFFFFF (approximate; not a fixed location)	Video RAM
FE000000-FE01FFFF (approximate; not a fixed location)	Video RAM
FECFE000-FECFEFFF (approximate; not a fixed location)	Video RAM
FFF80000-FFFFFFFF	BIOS ROM

I/O Memory Map

Table 5 provides a map of memory addresses reserved by the computer for peripheral input/output (I/O) devices. Use the information in Table 5 to determine if the memory address of an external device (such as a PC Card) conflicts with a memory address reserved by the computer.

Check the documentation of the external I/O device to determine its memory address. If a device's memory address conflicts with a memory address reserved by the computer, change the address of the device.

*NOTE: To view I/O addresses in Windows 98, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Click the **Device Manager** tab, and then double-click **Computer**.*

Windows 2000 handles memory allocations automatically. Refer to your Windows 2000 documentation for more information.

Table 5. I/O Memory Map

Address	Device
0000-001F	DMA controller #1
0020-003F	Interrupt controller #1
0040-005F	System timers
0060-0060	Keyboard controller
0061-0061	System speaker

0062-0062	ACPI-compliant embedded controller
0064-0064	Keyboard controller
0066-0066	ACPI-compliant embedded controller
0070-007F	RTC and NMI enable
0080-009F	DMA page registers
00A0-00BF	Interrupt controller #2
00C0-00DF	DMA controller #2
00F0-00FF	Math coprocessor
0170-0177	CD-ROM drive controller
01F0-01F7	Hard-disk drive controller
0376-0376	IDE controller
0378-037F	LPT1
0398-0399	System board resources
03B0-03BB	VGA
03C0-03DF	VGA
03E0-03E1	PC Card controller
03F2-03F5; 03F7-03F7	Diskette controller
03F8-03FF	COM1

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Connecting External Devices: Dell™ Latitude™ L400 User's Guide

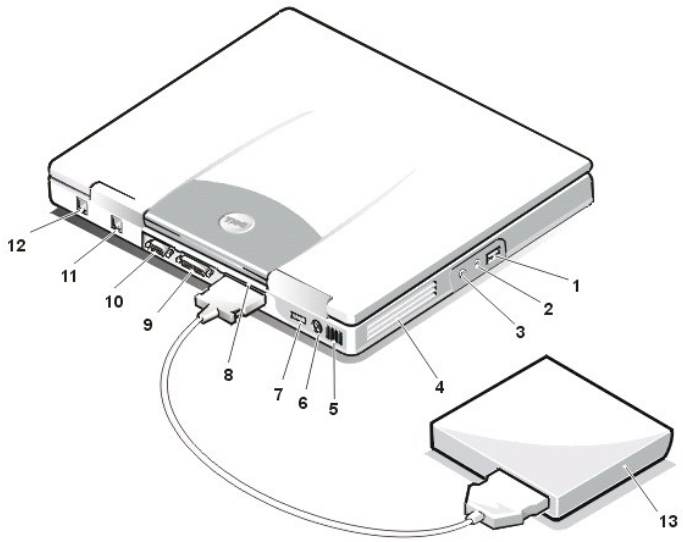
About the I/O Connectors

You can connect external devices to the input/output (I/O) connectors on the back and left side of the computer (see Figure 1). The computer's basic input/output system (BIOS) detects the presence of the external devices when you boot (start) or reboot your computer. You can connect to the Dell Latitude L400 Advanced Port Replicator (APR) through the docking connector on the bottom of the computer.

NOTES: Some external devices require you to load software called device drivers into system memory before using the devices. These device drivers help your computer recognize the external device and direct its operation. Instructions for installing this software are usually included in the upgrade kits.

The APR provides the same I/O connectors as your computer and, in addition, provides a serial port and one additional PS/2 port. For more information on the APR, see the documentation that came with it.

Figure 1. I/O Connectors On the Computer



1. USB connector
2. Speakers and headphones (line-out/speaker-out) jack
3. Microphone (MIC IN) jack
4. Fan intake/exhaust vents
5. Air inlet
6. PS/2 (mini-DIN) connector
7. AC adapter connector
8. External media bay connector
9. Parallel connector
10. Video connector
11. Modem connector
12. NIC connector
13. External media bay

Mouse, Keyboard, and External Numeric Keypad

You can attach a Personal System (PS)/2-compatible device such as a mouse, 101- or 102-key keyboard, or external numeric keypad to the mini-DIN PS/2 connector.

Mouse

NOTE: If the computer is in suspend (or standby) or suspend-to-disk (S2D) (or hibernate) mode when you attach a mouse, you can use the mouse when the computer resumes normal operation. However, programs that were already running may need to be restarted to recognize the mouse. If the computer is not in suspend (or standby) or S2D (or hibernate) mode when you attach the mouse, you must reboot the computer to use the mouse.

When you attach a PS/2 mouse to the computer, the touch pad is automatically disabled if the **Internal Touchpad** option in the system setup program is set to **Auto Disabled** (the default). To keep the touch pad enabled while an external pointing device is attached to the computer, go to the **Advanced** screen of the system setup program and set **Internal Touchpad** to **Enabled**.

If you are using a PS/2-compatible mouse that is not made by Microsoft and the mouse does not work properly, reboot the computer. If the mouse still does not work, install the drivers from the diskette that came with the mouse and reboot the computer.

Keyboard

NOTE: If the computer is in suspend (or standby) mode or S2D (or hibernate) mode when you attach an external keyboard, the device is recognized immediately by the computer when it resumes normal operation.

You can use the computer's keyboard and an external keyboard at the same time. When you attach a keyboard to the computer, the embedded numeric keypad is automatically disabled.

On an external keyboard, the <Scroll Lock> key acts the same way as the <Fn> key on the computer's keyboard (if the **External Hot-Key** option on the **Advanced** screen of the system setup program is enabled) for certain key combinations.

External Numeric Keypad

NOTE: If the computer is in suspend (or standby) mode or S2D (or hibernate) mode when you attach an external numeric keypad, the device is recognized immediately by the computer when it resumes normal operation.

When you attach an external numeric keypad to the computer, the numeric keypad on the computer keyboard is automatically disabled. The indicators on the integrated keyboard track the operation of an external numeric keypad.

USB Devices

You can attach a USB hub device to the USB connector. The USB hub device can support multiple USB devices (typically low-speed peripherals such as mice, keyboards, printers, and computer speakers).

Parallel Devices

You can attach a parallel device (usually a printer) to the 25-pin parallel connector. You can also connect the diskette drive to the parallel connector.

The parallel port sends and receives data in parallel format, where eight data bits (one byte) are sent simultaneously over eight separate lines. The port can be configured as a unidirectional (output-only) port for devices such as a printer or as a bidirectional port for devices such as a network adapter.

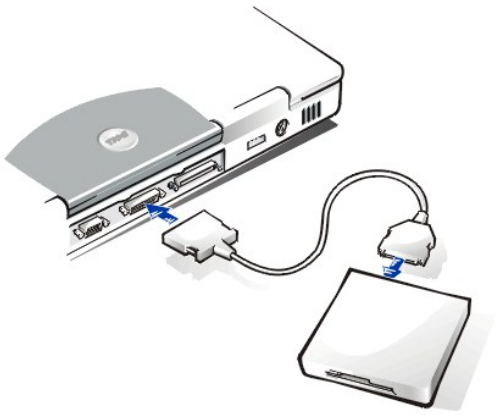
The computer's integrated parallel port is designated as LPT1. The Microsoft® Windows® 98, Windows 2000, and Windows Me operating systems automatically recognize the parallel device and configure it correctly. The parallel port can also be configured for compatibility with the PS/2 standard.

Connecting a Diskette Drive to the Parallel Connector

You can use the diskette drive as a second external device if you already have a device connected to the media bay connector. The diskette drive letter is A, unless a diskette drive is already installed in the external media bay, in which case the drive connected to the parallel connector is drive B.

To connect the drive to the parallel connector on the I/O panel, use the optional parallel diskette-drive cable (available from Dell), as shown in Figure 2.

Figure 2. Connecting a Diskette Drive to the Parallel Connector



NOTICE: When the diskette drive is not being used externally, remove the parallel diskette-drive cable from the parallel connector.

NOTICE: Use the parallel diskette-drive cable only with the diskette drive. Do not try to connect any other device to the computer with this cable.

The drive access indicator does not blink when data is being accessed from the diskette drive connected to the parallel connector.

NOTICE: Protect the diskette drive when it is not in the external media bay. Do not squeeze the drive or place objects on top of it; doing so could damage the drive motor.

Advanced Port Replicator

You can attach your computer to the Dell APR through the docking connector on the bottom of the computer. For information on docking your computer, see the documentation that came with the APR.

External Monitor

You can use the 15-pin video connector to attach an external monitor to the computer.

Connecting an External Monitor

To attach an external monitor, perform the following steps.

NOTICE: Do not place the monitor directly on top of your portable computer, even if it is closed. Doing so can crack the computer case, the display, or both.

1. Make sure that the external monitor is turned off. Set the monitor on a monitor stand, desk top, or other level surface near your computer.
2. Connect the external monitor's video cable to the computer.

   Plug the video cable connector into the matching video connector on the back of the computer. If the video cable is not permanently attached to the monitor, connect it to the monitor.

   Be sure to tighten all the screws on the video cable connector(s) to eliminate radio frequency interference (RFI).
3. Connect your external monitor to a grounded electrical outlet.

   Plug the three-prong connector on one end of the monitor's power cable into a grounded power strip or some other grounded power source. If the cable is not permanently attached to the monitor, connect it to the monitor.

   You can also connect an external monitor to the APR.

   NOTE: If you are using the Microsoft Windows 98 or Windows Me operating system, you can use an external monitor as an extension of your display. For more information, see your operating system documentation or "Dual-Display Mode."

Using an External Monitor

When an external monitor is connected to the computer, the video image automatically appears on the external monitor's screen when you boot your computer.

To toggle the video image between the display, an external monitor, or both simultaneously, press <Fn><F8> on the keyboard. Press <Scroll Lock><F8> on an external keyboard if the **External Hot-Key** option on the **Advanced** screen in the system setup program is enabled.

If the external monitor is turned off when you boot your computer, the computer still sends the video image to the external monitor, but you will not see an image on either the computer's display or the external monitor. To see an image, turn on the external monitor or switch the video image to the computer's display by pressing <Fn><F8> on the keyboard or <Scroll Lock><F8> on an external keyboard if the **External Hot-Key** option is enabled.

NOTE: If you are using your external monitor at a resolution greater than the display supports, the simultaneous display feature is disabled. To use the display, switch to a resolution that the computer supports, or disconnect the external monitor and restart your computer.

AC Adapter

You can attach the AC adapter to the computer by using the AC adapter connector. The AC adapter converts AC power to the DC power required by the computer.

You can connect the AC adapter with your computer turned either on or off.

The AC adapter works with electrical outlets worldwide. However, power connectors vary among countries. Before using AC power in a foreign country, you may need to obtain a new power cable designed for use in that country.

Audio Devices

You can connect audio devices such as speakers, microphones, and headphones to the two audio jacks, as follows:

- Connect the audio cable from a microphone to the microphone jack, also called the MIC IN jack.
- Connect the audio cable from speakers to the headphones/speakers jack, also called the line-out/speaker-out jack.

Modem Connector

You can connect a telephone line to the integrated modem through the RJ11 modem connector on the back of the computer.

NOTICE: Do not confuse the modem and NIC connectors on your computer. Do *not* plug a telephone line into the NIC connector.

NIC Connector

You can connect to the integrated network interface controller (NIC) through the RJ45 connector on the back of the computer.

NOTICE: Do not confuse the modem and NIC connectors on your computer. Do *not* plug a telephone line into the NIC connector.

NOTE: If you are running Microsoft Windows 98, Windows NT®, Windows 2000, or Windows Me and you intend to install a PC Card NIC, you should disable the system's integrated NIC to avoid problems.

External Media Options

You can connect external media options such as CD-ROM, CD-RW, DVD-ROM, Zip 250, and diskette drives to the external media bay connector. You can also connect a second (nonbootable) hard-disk drive.

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Help Overview: Dell™ Latitude™ L400 User's Guide

Technical Assistance

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

1. Run the Dell Diagnostics.
2. Make a copy of the Diagnostics Checklist and fill it out.
3. Use Dell's extensive suite of online services available at Dell's World Wide Web site (**http://www.dell.com**) for help with installation and troubleshooting procedures.
4. If the preceding steps have not resolved the problem, call Dell for technical assistance.

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

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

For instructions on using the technical support service, see "Technical Support Service" and "Before You Call."

Help Tools

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

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

World Wide Web

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

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

You can contact Dell electronically by using the following addresses:

- World Wide Web

  http://www.dell.com/

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

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

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

- Anonymous file transfer protocol (FTP)

  ftp.dell.com/

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

- Electronic Support Service

  mobile_support@us.dell.com

support@us.dell.com

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

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

- Electronic Quote Service

  sales@dell.com

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

- Electronic Information Service

  info@dell.com

AutoTech Service

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

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

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, see the contact numbers for your region.

TechFax Service

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

Using a touch-tone phone, you can select from a full directory of topics. The technical information you request is sent within minutes to the fax number you designate. For the TechFax telephone number to call, see the contact numbers for your region.

Automated Order-Status System

You can call this automated service to check on the status of any Dell products that you have ordered. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, see the contact numbers for your region.

Technical Support Service

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

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

To contact Dell's technical support service, see "Before You Call" and then call the number for your country as listed in "Contacting Dell."

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call, see the contact numbers for your region.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit Dell's World Wide Web site at **http://www.dell.com**. For the telephone number to call to speak to a sales specialist, see "Contacting Dell."

Returning Items for Warranty Repair or Credit

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

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

   For the telephone number to call, see the contact numbers for your region.

2. Include a copy of the invoice and a letter describing the reason for the return.

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

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

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

Before You Call

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

Remember to fill out the Diagnostics Checklist. If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the 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 system itself. Make sure the system documentation is available.

CAUTION: If you need to remove the computer covers, be sure to first disconnect the computer system's power and modem cables from all electrical outlets.

Diagnostics Checklist

Date:
Name:
Address:
Phone number:
Service tag (bar code on the back of the computer):
Express Service Code:
Return Material Authorization Number (if provided by Dell support technician):
Operating system and version:
Peripherals:
Expansion cards:
Are you connected to a network? Yes No
Network, version, and network card:
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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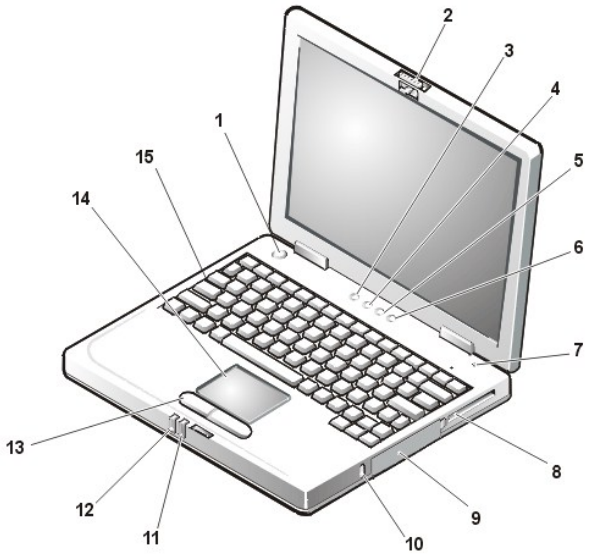
Introduction: Dell™ Latitude™ L400 User's Guide

Overview

Dell Latitude L400 portable computers are expandable multimedia systems designed around an Intel® Mobile Pentium® III microprocessor that includes Peripheral Component Interconnect (PCI) and Intel SpeedStep™ technologies. This section describes the major hardware and software features of your computer. Figure 1, Figure 2, and Figure 3 show the front/right, back/left, and bottom views of the computer.

Figure 1. Front/Right View of the Computer

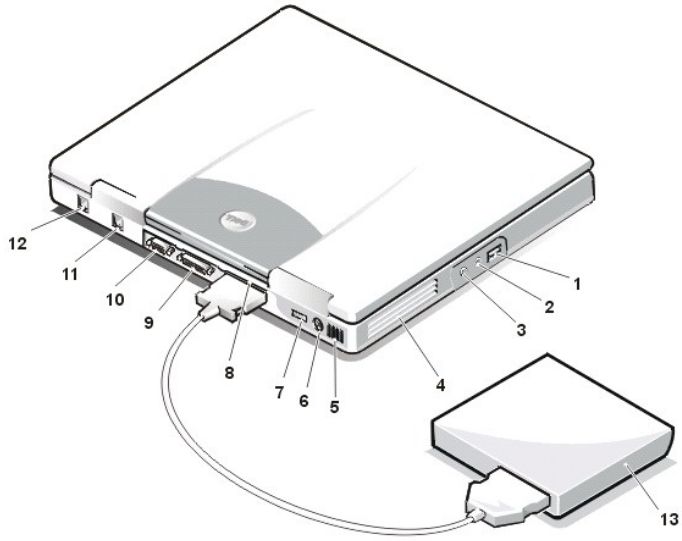


1 Power button
2 Display latch
3 Drive access indicator
4 Pad Lock (Num Lock) indicator
5 Caps Lock indicator
6 Scroll Lock indicator
7 Integrated microphone
8 PC Card slot
9 Hard-disk drive
10 Security cable slot
11 Battery status indicator
12 Power indicator
13 Touch pad buttons
14 Touch pad
15 Keyboard

NOTICE: To avoid overheating the computer, do not place the external media bay close to the air inlet or fan intake/exhaust vents (see Figure 2).

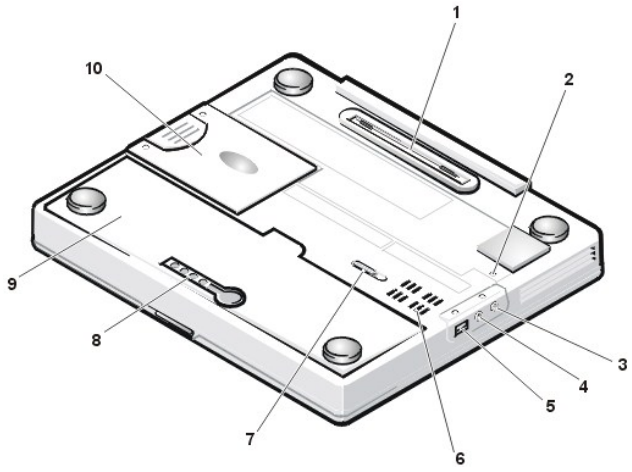
NOTICE: Do not confuse the modem and NIC connectors on your computer. Do *not* plug a telephone line into the NIC connector (see Figure 2).

Figure 2. Back/Left View of the Computer



1. USB connector
2. Speakers and headphones (line-out/speaker-out) jack
3. Microphone (MIC IN) jack
4. Fan intake/exhaust vents
5. Air inlet
6. PS/2 connector
7. AC adapter connector
8. External media bay connector
9. Parallel connector
10. Video connector
11. Modem connector
12. NIC connector
13. External media bay

Figure 3. Bottom View of the Computer



1. Docking connector
2. Reset switch access hole
3. Microphone (MIC IN) jack
4. Speakers and headphones (line-out/speaker-out) jack
5. USB connector
6. Speaker
7. Battery latch
8. Battery charge gauge
9. Battery
10. Hard-disk drive bay

Features

Your Dell computer provides the following features:

- Full multimedia capability through the following standard features:
  - A 12.1-inch extended graphics array (XGA), 1024 X 768 thin film transistor (TFT) active-matrix color display
  - An external media bay that supports storage devices such as a DVD-ROM, CD-RW, CD-ROM, diskette, or Zip 250 drive; it also supports a second, nonbootable hard-disk drive

    NOTE: For information on installing devices in the external media bay, see "External Media Bay."
  - 4 megabytes (MB) of video memory
  - Accelerated graphics port (AGP) architecture that increases the computer's video performance
  - Support for a zoomed video (ZV) PC Card in the PC Card slot
  - Two audio jacks for connecting a microphone and external stereo speakers or headphones
  - Integrated microphone and speaker
  - Software wavetable support and Sound Blaster software-emulation capability

- System memory consisting of 64, 128, or 256 MB (optional at time of purchase) of synchronous dynamic random-access memory (SDRAM) small outline, dual-inline memory modules (SODIMMs).
- Two power conservation modes—*suspend (or standby) mode* and *suspend-to-disk (S2D) mode*—that help you conserve battery power. If the batteries run out of power, S2D mode prevents data loss by copying all system data to the hard-disk drive and turning off the computer.
- Connector for one 3.3-volt (V) or 5-V PC Card. The PC Card slot supports Type I and Type II PC Cards, including ZV PC Cards.

  NOTE: The PC Card controller supports the CardBus standard for 32-bit data transfer on the PC Card.

- Hardware and software support for the Dell Latitude L400 Advanced Port Replicator (APR).
- A touch pad pointing device positioned for both left- and right-handed users. The left and right touch pad buttons mimic mouse buttons; you can also perform many pointing functions by tapping the touch pad itself. Click-and-drag buttonless functions are supported.
- A lithium ion battery in the battery bay. A 4-cell battery is standard, with a 6-cell battery optional at the time of purchase, or as post-sale customer kit.

NOTICE: The batteries are designed to work only with Dell Latitude L400 computers. Do not use these batteries with other computers, and do not use batteries from other computers with Latitude L400 computers.

CAUTION: Do not puncture or incinerate the battery. When your battery no longer holds a charge, call your local waste disposal agency or environmental agency for advice on disposing of the computer's lithium ion battery.

- A high-performance parallel port and a multipurpose Personal System/2 (PS/2) connector for attaching external devices, a monitor connector for attaching an external monitor to your computer, and a Universal Serial Bus (USB) connector that supports stand-alone and hub devices.
- An integrated 56-kilobits per second (Kbps) v.90 controllerless modem with support for telephone hardware worldwide.
- An integrated 3Com® 10/100-BASETX PCI bus master Ethernet network interface controller (NIC).
- A reset switch (accessible though the reset switch access hole on the bottom of the computer) for restarting the computer without turning the power off and on.

NOTE: To restart the computer using the reset switch, straighten a paper clip and press it into the reset switch access hole for about one second.

- An automatic thermal management system that uses a fan and microprocessor speed changes to keep the computer running at an optimum temperature.

CAUTION: Do not allow your portable computer to operate with the base resting directly on your body. With extended operation, heat can potentially build up in the base. Allowing sustained contact with the skin could cause discomfort or, eventually, a burn.

The following software is included with your Dell computer:

- The Microsoft® Windows® 98 Second Edition, Windows NT® 4.0, Windows 2000, or Windows Me operating system installed on your hard-disk drive. For more information, see your operating system documentation.
- The system setup program that lets you view and change the system configuration.
- The *Dell Latitude L400 ResourceCD*, which allows you to run the Dell Diagnostics and reinstall, if necessary, the device drivers and utilities that Dell installed on your computer's hard-disk drive.
- Dell Diagnostics for evaluating the computer's components and devices.

NOTE: If Dell did not install an operating system on your hard-disk drive, the drivers, system utilities, and diagnostics are available separately from Dell. To order them, see "Getting Help" for the appropriate telephone number in your location.

Available Options

Dell offers the following devices and upgrade options:

- Latitude L400 APR
- Additional batteries
- External keyboards and keypads
- External monitors

- External pointing devices
- External speakers, headphones, and microphones
- Printers
- Dell Latitude storage devices such as hard-disk drives, CD-ROM drives, CD-RW drives, DVD-ROM drives, and Zip 250 drives
- AC adapter
- PC Cards
- Carrying cases

Instructions for connecting or installing these options are included in the upgrade kit you receive from Dell. For more information on options available for your computer, visit the Dell World Wide Web site at **http://support.dell.com**.

Getting Help

If at any time you don't understand a procedure described in this guide, or if your computer does not perform as expected, Dell provides a number of tools to help you. For more information on these help tools, see "Getting Help."

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Keyboard: Dell™ Latitude™ L400 User's Guide

Embedded Numeric Keypad

As you work, you may want to use the embedded numeric keypad (see Figure 1) to enter numbers in spreadsheet or financial programs. The embedded numeric keypad shares some of the keys on your computer's keyboard. On these keys, the number and symbol characters of the numeric keypad appear in blue to the right of the main keypad characters. To activate the embedded numeric keypad, press <Fn><Pad Lock> (the Pad Lock indicator lights up while the embedded numeric keypad is active).

Figure 1. Embedded Numeric Keypad

Some key combinations can be used whether or not the keypad is activated.

Use the numeric keypad combinations in Table 1 to enable and disable several numeric keypad functions.

Table 1. Embedded Numeric Keypad Key Combinations

When Keypad Is On	Function
<Fn><F9>	Toggles the embedded numeric keypad off
When Keypad Is Off	**Function**
<Fn><F9>	Toggles the embedded numeric keypad on

Display Key Combinations

Use the key combinations in Table 2 to adjust the computer's display.

Table 2. Display Key Combinations

Key Combinations	Function
<Fn> + down arrow	Incrementally decreases brightness
<Fn> + up arrow	Incrementally increases brightness
<Fn><F7>	Toggles the computer's display between expanded video mode and regular video mode
<Fn><F8>	Switches the video image to the next display in the following sequence: the display, an external monitor, or both displays simultaneously
<Fn><F1>	Turns off the display

NOTES: Contrast cannot be changed on an active-matrix (thin film transistor [TFT]) display, such as the display in your computer.

*The <Fn><F1> and <Fn><F8> key combinations can be used from an external keyboard by enabling the **External Hot-Key** option on the **Advanced** screen in the system setup program, and then pressing <Scroll Lock> instead of <Fn>.*

Power Conservation Key Combinations

*NOTE: The key combinations in Table 3 can be used from an external keyboard by enabling the **External Hot-Key** option on the **Advanced** screen in the system setup program, and then pressing <Scroll Lock> instead of <Fn>.*

Use the key combinations in Table 3 to activate or turn off the computer's power conservation features.

Table 3. Power Conservation Key Combinations

Key Combinations	Function
<Fn><F1>	Turns off the display
<Fn><F3>	Displays the battery status icon
<Fn><Esc>	Activates suspend or standby mode
<Fn><a>* or <Fn><q>* on French keyboards	Activates suspend-to-disk (S2D) mode

** This key combination does not function under an operating system with the Advanced Configuration and Power Interface (ACPI), such as Microsoft® Windows® 98, Windows 2000, or Windows Me.*

Speaker Key Combinations

Use the key combinations in Table 4 to adjust the computer's speaker volume and to enable and disable the speakers.

Table 4. Speaker Key Combinations

Key Combinations	Function
<Fn><F5>	Increases the volume of the integrated speaker and the external speakers, if attached
<Fn><F6>	Decreases the volume of the integrated speaker and the external speakers, if attached

---

System Function Key Combinations

Use the key combinations in Table 5 to boot the computer in MS-DOS® mode and enter the system setup program.

Table 5. System Function Key Combinations

Key Combinations	Function
<Ctrl><Alt><Del>	Restarts (reboots) the computer in MS-DOS mode. In Windows 98, Windows NT®, Windows 2000, and Windows Me, click the **Start** button and click **Shut Down**.
<F2>	Enters the system setup program (at system start-up only).

CD-ROM and DVD-ROM Drive Key Combinations

To eject the CD-ROM or DVD-ROM tray, press <Fn><e>.

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External Media Bay: Dell™ Latitude™ L400 User's Guide

You can use the external media bay (see Figure 1) for the diskette drive that comes with your system. Alternatively, you can install an optional device (such as a CD-ROM, CD-RW, DVD-ROM, Zip 250, or non-bootable second hard-disk drive) in the bay.

NOTE: If desired, you can use the media bay cable to connect a device directly to the external media bay connector, without using the external media bay.

To install a device in the external media bay, perform the following steps:

1. If your computer is running the Dell-installed Microsoft® Windows® 98, Windows NT®, or Windows Me operating system with Softex BayManager installed: Right-click the Softex icon (the icon looks like an open portable computer) in the Windows system tray on the taskbar. Then click either **Remove or Swap Devices** or **Insert Bay Devices**, either of which causes the system to enter suspend (or standby) mode.

   If you have Windows NT, Windows 98, or Windows Me and it is not running one of the Softex programs: Save your work, close all open files and application programs, and turn off the computer.

   If you have Windows 2000: Device swapping in the media bay is supported by the operating system. Although you can physically remove and install devices as described in the following subsections, refer to the information on unplugging or ejecting hardware in your Windows 2000 documentation instead of following the Softex-related steps in this section.

NOTICE: When a device is not inside the external media bay, it is fragile and must be handled carefully to avoid damage. Do not press down on it or place a heavy object on top of it. Place extra devices in a travel case to keep them free of dust and liquids. Store devices in a safe place.

2. If the external media bay contains a device, remove the device as follows:

   a. Remove the media bay cable from the back of the bay.

   b. Turn the media bay over.

   c. Slide the release latch on the bottom of the bay toward the unlock icon.

   d. Hold the latch in the unlock position with one hand and pull the device out of the bay with the other hand.

   e. Release the latch, and then turn the media bay back over.

3. Slide the new device firmly into the external media bay.

   You should hear a click when the device is fully seated.

NOTICE: To avoid overheating the computer, do not place the external media bay close to the air inlet or fan intake/exhaust vents (see Figure 1).

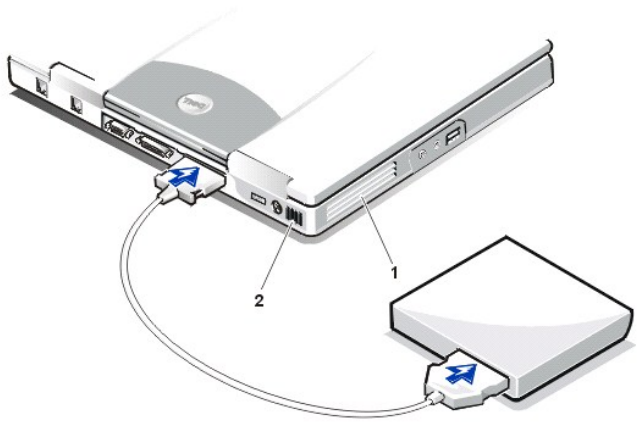
4. Connect the media bay cable as follows:

   a. Position the larger of the cable connectors with its shiny metal lip down, and connect it firmly to the device through the slot in the back of the bay.

   b. Make sure that the securing clips are fully engaged and the connector is fully seated.

   c. Connect the other end of the cable to the media bay connector at the back of the computer (see Figure 1).

Figure 1. External Media Bay



1 Fan intake/exhaust vents

2 Air inlet

5. *If your computer is running Softex Bay Manager:* Click **OK** at the **Softex Bay Manager** screen. Click **OK** at the **Device Removal** screen (if it appears), and then click **OK** at the **Device Configured** screen.

   If you turned off the computer in step 1: Press the power button to turn the computer back on.

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PC Cards: Dell™ Latitude™ L400 User's Guide

About PC Cards

On the right side of the computer is a PC Card slot in which you can install PC Cards that comply with Release 2.01 of the Personal Computer Memory Card International Association (PCMCIA) standard and Release 4.2 of the Japanese Electronic Industry Development Association (JEIDA) standard.

The computer supports Type I and Type II PC Cards, such as modems, local area network (LAN) cards, wireless LAN cards, and small computer system interface (SCSI) cards. Also supported are such memory devices as static random-access memory (SRAM) cards that emulate diskettes, random-access memory (RAM) cards, and one-time programmable (OTP) ROM cards, and advanced technology attachment (ATA) cards that emulate integrated drive electronics (IDE) hard-disk drives.

If you are using the Microsoft® Windows® 98, Windows 2000, or Windows Me operating system, you can use a zoomed video (ZV) PC Card, such as a hardware Moving Picture Experts Group (MPEG) decoder. (The Microsoft Windows NT® 4.0 operating system does not support ZV.)

NOTES: A PC Card is not a boot device.

The "type" of a card refers to its thickness, not its functionality.

Your computer recognizes most input/output (I/O) cards and automatically loads the device driver associated with that card.

NOTICE: Take extra precautions if you use extended PC Cards in your computer. Extended cards are longer versions of standard PC Cards. They fit into, and operate correctly with, your computer. However, they extend beyond the edge of the computer when installed. If something strikes the exposed end of an installed card, your system board can be damaged. Always remove an extended PC Card before you pack the computer in its carrying case.

Using a PC Card NIC

If you are running Windows 98, Windows NT, Windows 2000, or Windows Me and you intend to install a PC Card network interface controller (NIC), to avoid problems you should disable the system's integrated NIC as follows:

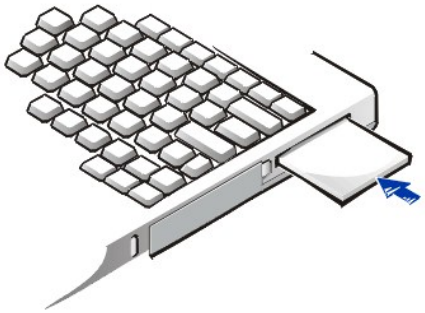
1. Press <F2> during the system boot routine to enter the system setup program.
2. At the Main screen, click the **Advanced** tab.
3. At the Advanced screen, highlight **I/O Device Configuration** and press <Enter> .
4. At the I/O Device Configuration screen, highlight the **LAN** option, press <Enter>, and select the **Disabled** setting.
5. Press <F10> to save the new setting and exit the program.

Installing PC Cards

PC Cards are generally marked with a symbol, such as a triangle or an arrow, to indicate which end should be inserted into the slot. The cards are keyed to prevent incorrect insertion. If card orientation is not clear, see the documentation that came with the card.

You do not need to turn off your computer or exit suspend or standby mode before you install a PC Card. To install a PC Card (see Figure 1), perform the following steps.

Figure 1. Installing a PC Card



1. If necessary, remove the blank from the PC Card slot. Press the eject button once to pop the button out, press it again to eject the blank partway, and then pull the blank out.
2. Make sure that the eject button is pressed all the way in. Hold the card with its orientation symbol pointing into the slot and the top side of the card facing up.
3. Insert the card into the slot and press in firmly until the card is completely seated in the internal PC Card connector.
4. If you encounter too much resistance when inserting it, do not force the card. Check the card's orientation and try again.

PC Card Blanks

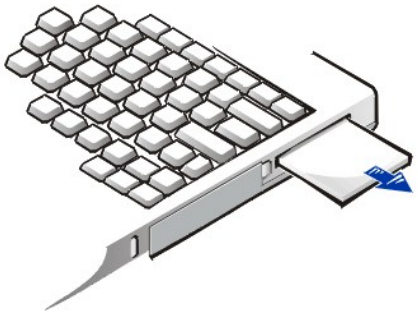
Save the blank to use whenever you do not have a PC Card installed. The blank protects the PC Card slot from dust and other particles.

Removing PC Cards

NOTICE: If you are using Windows 98, use the PC Card configuration utility on the taskbar to select and stop a card before you remove it. If you do not stop the card using the configuration utility, you could lose data from open application programs.

To remove a PC Card (see Figure 2), perform the following steps.

Figure 2. Removing a PC Card



1. Press the PC Card eject button once to pop the button out, and then press the button in again to eject the card partway. (The button may or may not pop out again when you eject the card.)
2. Gently remove the card.

To protect the PC Card slot, install a blank if you are not going to use the slot.

Configuring PC Cards

The PC Card configuration utility performs the following functions:

- Notifies you whenever a PC Card is inserted and tells you how the card is configured
- Automatically loads the proper device driver if it is available on the hard-disk drive

- If drivers are not available on the hard-disk drive, prompts you to install them by using the device driver diskette that came with the card

The operating system automatically detects a PC Card and opens the **Add New Hardware** menu from the **Control Panel**. For information, see the PC Card operating system documentation.

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Preface: Dell™ Latitude™ L400 User's Guide

About This Guide

This guide is intended for anyone who uses a Dell Latitude L400 portable computer. It can be used by both first-time and experienced computer users who want to learn about the features of the computer. This guide also provides basic troubleshooting procedures and instructions for using the Dell Diagnostics to test your computer and its components. The sections are summarized as follows:

- "Introduction" — overview of the computer features and available upgrades
- "Setup and Operation" — instructions on operating your computer
- "Powering Your Computer" — instructions and options on how to power your computer
- "Intel SpeedStep Options" — instructions on setting the performance level of your microprocessor
- "Traveling With Your Computer" — suggestions on how to travel safely with your computer
- "Installing Drivers and Utilities" — information on using the *Dell Latitude L400 ResourceCD*
- "Customizing Your Computer" — instructions on accessing the system setup program, power management software, and the Suspend-to-Disk utility, all of which allow you to change system settings affecting your computer's power conservation features
- "Replacing the Hard-Disk Drive" — instructions on how to remove and install hard-disk drives
- "Troubleshooting Your Computer" — initial checks and procedures that can be used to solve basic computer problems; general guidelines on analyzing software problems and messages
- "Technical Specifications" — reference material about the details of your computer
- "Getting Help" — help tools Dell provides to assist you if you have a problem with the computer; information on how and when to call Dell for technical assistance.

Warranty and Return Policy Information

Dell manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices.

For information about the Dell warranty and return policy, see your Dell Latitude *System Information* guide.

Other Documents You May Need

Besides this *User's Guide*, the following documentation is included with your computer.

*NOTE: Documentation updates are sometimes included with your computer to describe changes to your computer or software. Always read these updates **before** consulting any other documentation because the updates contain the latest information.*

- The operating system *Setup Guide*, which describes how to set up the Dell-installed operating system on your computer.
- Microsoft® Windows® 98 Second Edition (SE), Windows NT® 4.0, Windows 2000, or Windows Millennium Edition (Me) operating system documentation is included if you ordered your operating system from Dell. This documentation describes how to configure and use your operating system software.
- Online documentation is included for your computer devices (such as the modem) and for any options you purchase separately from your computer. To access this supplemental documentation, double-click the **Dell Documents** icon on the Windows desktop, click **System Information**, and then click **System Documentation**.
- "Readme" files may be installed on your hard-disk drive to provide last-minute updates about technical changes to your computer or

advanced technical reference material intended for experienced users or technicians.

Notational Conventions

The following subsections list notational conventions used in this document.

Notes, Notices, and Cautions

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, notices, and cautions, and they are used as follows:

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 the potential for bodily harm and tells you how to avoid the problem.

Typographical Conventions

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

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

  Example: Click **OK**.

- *Keycaps*, the labeling that appears on the keys on a keyboard, are enclosed in angle brackets.

  Example: <Enter>

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

  Example: <Ctrl><Alt><Enter>

- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed at that particular point in the discussion.

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

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

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

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

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

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

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

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

  Example: `del c:\myfile.doc`

- *Screen text* is text that appears on the screen of your display or external monitor. It can be a system message, for example, or it can be text that you are instructed to type as part of a command (referred to as a *command line)*. Screen text is presented in the Courier New font.

  Example: The following message appears on your screen:

  ```
  No boot device available
  ```

- *Variables* are symbols for which you substitute a value. They are presented in italics.

  Example: module *n* (where *n* represents the memory module number)

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Replacing the Hard-Disk Drive: Dell™ Latitude™ L400 User's Guide

Read the following notices carefully before attempting to replace your hard-disk drive:

NOTICE: To prevent data loss, turn off your computer before you remove the hard-disk drive. Do not remove the hard-disk drive if the computer is in suspend (or standby) mode or if the drive access indicator is lit. Removing the drive under these conditions will lead to loss of data.

NOTICE: Hard-disk drives are extremely fragile and must be handled carefully to avoid damage. Follow these guidelines:

- **Handle the hard-disk drive only by its carrier; do not touch the drive itself. The drive comes in a metal carrier for protection and easy installation. The drive is vulnerable to static electricity and scratches when outside the computer because the drive carrier protects only the sides of the drive, leaving the top and bottom of the drive exposed.**
- **Never press down on the top of the drive.**
- **Do not drop the drive. Even a slight jar or bump can damage the drive heads and spinning plates, thus rendering the drive inoperable.**

CAUTION: The hard-disk drive may be hot to the touch under extreme environmental conditions. If the drive is hot, allow it to cool before you replace it.

To replace a hard-disk drive, perform the following steps:

1. Save any open files, turn off the computer, and remove the system battery (see step 3 in "Replacing the Battery").

NOTICE: To avoid scratching the top of the computer, make sure that your work surface is clean. You may want to put down a protective mat before turning over the computer.

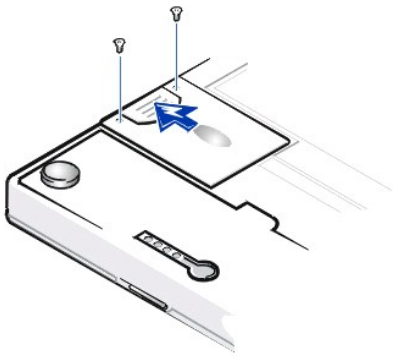
NOTICE: When the hard-disk drive is not in the computer, protect the drive by following the guidelines at the beginning of this section.

2. Remove the old hard-disk drive carrier assembly from the drive bay.

   Close the display and turn the computer over. Using a #0 (very small) Phillips-head screwdriver, remove the two screws that secure the drive carrier assembly (see Figure 1). Save the screws for use later in this procedure.

   With the computer still upside-down, press down on the drive carrier assembly's three grip lines and pull the assembly straight out to the side to remove it.

Figure 1. Removing a Hard-Disk Drive



3. Remove the new hard-disk drive carrier assembly from its packaging.

   Save the original packaging to use when you store or ship the hard-disk drive.

NOTICE: If the hard-disk drive carrier assembly does not slide in easily, pull it out and try again. To avoid damage, do not force the drive carrier assembly into the bay.

4. Install the new hard-disk drive in the computer.

   Insert the hard-disk drive carrier assembly into the drive bay, connector first and label facing down (toward the top of the computer). Push the

assembly straight in until it snaps into place, with the assembly flush with the computer case.

5. Replace the screws you removed in step 2. Be careful not to overtighten the screws.

If you have installed a new hard-disk drive, follow the directions that came with the drive to partition and logically format the drive and to create a suspend-to-disk (S2D) file.

Preparing a New Primary Drive

Every primary hard-disk drive must be physically formatted, partitioned, and logically formatted before it can be used to store data. Every primary hard-disk drive from Dell is physically formatted before it is sent to you. Use the program(s) provided by your operating system to partition and logically format the hard-disk drive. For more information, see both your operating system and your drive documentation.

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Suspend-to-Disk Utility: Dell™ Latitude™ L400 User's Guide

Overview

If you are installing a new hard-disk drive or rebuilding one and you want to be able to use suspend-to-disk (S2D) mode (called *hibernate* in the Microsoft® Windows® 98 operating system), you must create an S2D file on the hard-disk drive. This allows all system data to be stored in the S2D file whenever you activate S2D mode.

NOTE: Microsoft Windows 2000 and Windows Me also provide hibernate (S2D) functionality, but these operating systems automatically create their own hibernate files.

Creating an S2D File for Windows 98 or Windows NT

NOTE: The following procedure assumes that your hard-disk drive is already partitioned and formatted. For information on partitioning and formatting your drive, see both your operating system and your drive documentation.

To create the S2D file for computers running the Windows 98 or Windows NT operating system, perform the following steps:

1. Insert the *Dell Latitude L400 ResourceCD* into the CD-ROM or DVD-ROM drive.
2. Turn on or restart the computer.
3. Press <F2> as soon as you see the Dell logo screen to enter the system setup program. If you wait too long and the operating system begins to load into memory, *let the computer complete the load operation*. Then shut down the computer and try again.
4. Enter the **Boot** screen, select **ATAPI CD-ROM Drive**, and move it to the first position in the boot sequence.
5. Press <F10> to save the settings and exit the system setup program.

   The computer restarts and automatically begins to run the Dell Diagnostics.
6. Type `x` to exit to MS-DOS® mode.
7. At the MS-DOS prompt, type *d*`:\`, where *d* is the drive letter for your CD-ROM or DVD-ROM drive, and press <Enter>.

   Your MS-DOS prompt changes from `A:\>` to *D*`:\>`, assuming that *D* is your drive letter.
8. Type `cd \utility\r9018` and press <Enter>.
9. Type `phdisk /create /file` and press <Enter>.

   NOTE: Include a space before each forward slash.

   The utility calculates the size of the file in megabytes (MB), based on the amount of system memory in your computer, plus 2 MB to handle video memory and additional system requirements.
10. Follow the instructions on your screen to create the S2D file.

To check the size of the S2D file, at an MS-DOS prompt type `phdisk /info` and press<Enter>.

If you need to delete the S2D file, at an MS-DOS prompt type `phdisk /delete /file` and press <Enter>.

NOTICE: The S2D file is placed in your computer's root directory, where it may be a hidden file, depending on how you set up your operating system. Do not delete the file inadvertently.

To restore the default boot sequence, perform the following steps:

1. Turn on or restart the computer.
2. Press <F2> as soon as you see the Dell logo screen to enter the system setup program. If you wait too long and the operating system begins to load into memory, *let the computer complete the load operation*. Then shut down the computer and try again.
3. Enter the **Boot** screen and press <F9> to restore the default boot sequence.

4. Press <F10> to save the settings and exit the system setup program.

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Securing Your Computer: Dell™ Latitude™ L400 User's Guide

About Passwords

A user password prevents unauthorized access to the computer at start-up. A supervisor password controls access to the system setup program. A hard-disk drive password helps prevent the unauthorized access of data on the hard-disk drive, even when the device is placed in another computer.

NOTES: All three passwords are disabled when you receive your computer. You need to assign those passwords if you require password security for your computer. Some companies may assign any or all of these passwords before distributing the computer.

Use the system setup program to assign all passwords.

NOTICE: The password features provide a high level of security for the data in your computer or hard-disk drive. However, they are not foolproof. If your data requires more security, you should obtain and use additional forms of protection, such as data encryption programs or PC Cards with encryption features.

If you forget any of your passwords, call Dell. For your protection, Dell's technical support staff will ask you for proof of your identity to make sure that an unauthorized person is not trying to use the computer.

Using a Supervisor Password

A supervisor password can be assigned to give system administrators or service technicians in large companies access to computers for repair or reconfiguration. The administrators or technicians can assign identical supervisor passwords to groups of computers as they are unpacked and configured, leaving the user password free to be assigned by the user.

A supervisor password overrides the user password. Whenever you are prompted to enter the user password, you can enter the supervisor password instead.

NOTES: A supervisor password must be assigned before you can assign a user password.

The supervisor password protects, and provides access to, the system setup program; however, it does not provide access to the hard-disk drive when the drive is protected by a hard-disk drive password.

If you forget your passwords, call Dell.

NOTICE: Disabling the supervisor password disables the user password.

Using a User Password

The user password allows you to protect the computer from unauthorized access.

NOTE: Before assigning a user password, a supervisor password must be set.

After assigning a user password, you must enter it each time you turn on your computer. During the boot routine the following message appears in the middle of the screen:

```
Enter Password
```

To continue, type your password and press <Enter>.

If you assigned a supervisor password, you can use it instead of the user password. The computer does not specifically prompt you for the supervisor password.

NOTICE: Disabling the supervisor password disables the user password.

Using a Hard-Disk Drive Password

The hard-disk drive password helps protect the data on your hard-disk drive from unauthorized access, even if the drive is moved to another system.

NOTE: Hard-disk drives that are not purchased from Dell for use with your computer may not support the hard-disk drive password option.

After assigning a hard-disk drive password, you must enter it each time you turn on the computer and each time you resume normal operation from suspend mode or standby mode.

If the hard-disk drive password is enabled, the following message appears each time you turn on the computer:

```
Enter HD1 Password
```

To continue, enter the hard-disk drive password.

If you enter the wrong password, the following message appears:

```
Invalid password
[Continue]
```

If the correct password is not entered in three attempts, you receive a message stating that the hard-disk drive cannot be accessed. If the hard-disk drive is inaccessible and the **Boot** screen options in the system setup program are set to allow booting from another device, the computer tries to boot from another device. If all boot attempts are unsuccessful, the computer prompts you to enter the system setup program and modify the boot options.

NOTE: The supervisor password provides does not provide access to the hard-disk drive when the drive is protected by a password.

Physically Securing the Computer and the Hard-Disk Drive

To prevent unauthorized removal of the computer, you can use a security cable to attach the computer to an immovable object. Your computer has a security cable slot located on the right side of the computer next to the hard-disk drive (see Figure 1).

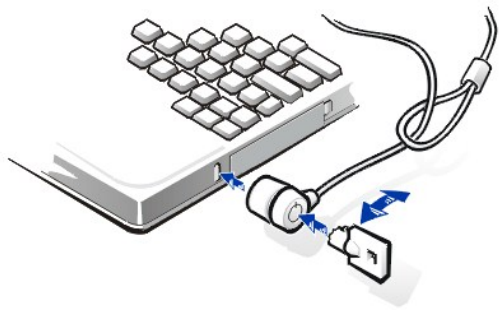
Description of Security Cable Slots

The security cable slot allows you to attach a commercially available antitheft device to the computer. Antitheft devices for portable computers usually include a segment of metal-stranded cable with an attached locking device and associated key. You can use a security cable on your computer whether it is undocked or docked in a Dell Latitude L400 Advanced Port Replicator (APR).

Basic Instructions for Using Security Cable Slots

To prevent unauthorized removal of your computer, loop the cable around an immovable object, insert the locking device into the security cable slot, and lock the device. See Figure 1 for an example of how to secure your computer. Complete instructions for installing this kind of antitheft device are usually included with the device.

Figure 1. Securing the Computer



NOTE: Antitheft devices are of differing designs. Before purchasing such a device, make sure that it will work with the security cable slot in your computer.

Asset Tag Utility

Dell has installed the Asset Tag utility on your computer. The Asset Tag utility allows you to perform the following actions:

- View the computer's service tag

The non-modifiable service tag, which is viewable in the system setup program, is set by Dell at the factory. It is used to identify your computer to Dell for service and warranty purposes.

- Set, view, and modify the computer's asset tag

  The asset tag, which can be set by you or your company, is optional and is not required or used by Dell. The asset tag can be used in any way desired; typically it is used by a company to differentiate and identify multiple computers that use an internally assigned identifier.

Viewing Existing Asset and Service Tags

To view existing asset and service tags, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `cd c:\Dell\Util` and press <Enter>.
3. Type `asset` and press <Enter>.

Assigning an Asset Tag

An asset tag can have up to ten characters; any combination of characters is valid except those that begin with a forward slash (/) or a question mark (?). Spaces count as characters. To assign or change an asset tag, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `cd c:\Dell\Util` and press <Enter>.
3. Type `asset` and a space followed by the new tag, and press <Enter>.

   For example, type the following command line and press <Enter>:

   ```
   asset 1234 $AB&C
   ```

4. When the computer prompts you to verify that you want to change the asset tag, type `y` and press <Enter>.

   The computer displays the new or modified asset tag and the service tag.

NOTE: For security reasons, you cannot set, change, or delete the asset tag if either the USER or SUPERVISOR password is set.

Deleting an Asset Tag

To delete the asset tag without assigning a new one, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `cd c:\Dell\Util` and press <Enter>.
3. Type `asset /d` and press <Enter>.

Table 1 lists the command-line options you can use with the Asset Tag utility. To use one of these options, open an MS-DOS® prompt, type `asset` and a space followed by the option, and then press <Enter>.

Table 1. Asset Tag Utility Commands

Asset Tag Command	**Function**
`asset`	Displays the asset, service, and owner tags
`asset <tag>`	Sets a new asset tag
`asset /d`	Deletes the asset tag
`asset /?`	Displays the **Asset Tag** utility help screen

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Using the System Setup Program: Dell™ Latitude™ L400 User's Guide

NOTE: This section provides general information on using the system setup program. For detailed information on options and settings, see "Using the System Setup Program" in the computer User's Guide at the Dell support Web site at ***http://support.dell.com****.*

Overview

Each time you turn on your computer, it compares the installed hardware with the system configuration information stored in nonvolatile random-access memory (NVRAM). If the system detects a discrepancy, it generates an error message for each incorrect configuration setting.

- To adjust the configuration settings for APM operating systems, such as Microsoft® NT®, you can use the system setup program.
- ACPI operating systems, such as Windows® 98, Windows 2000, and Windows Me, automatically configure most of the setup options available in the system setup program. In such cases, the operating system overrides system setup options entered through the system setup program. One exception is the **External Hot Key** option, which you can disable or enable only through the system setup program. For more information on configuring features for these operating systems, see your Microsoft Windows Help.

You can use the system setup program as follows:

- To set or change user-selectable features — for example, your password or power management features
- To verify information about your computer's current configuration, such as the amount of system memory

After you set up your computer, run the system setup program to familiarize yourself with your system configuration information and optional settings. Dell recommends that you write down the information for future reference.

Entering the System Setup Program

To enter the system setup program, turn on the computer and press <F2> as soon as you see either the system information screen or the Dell logo screen, and before the Microsoft Windows logo screen appears.

NOTE: If the ***Quiet Boot*** *option on the main screen of the system setup program is set to* ***Enabled*** *(the default), the Dell logo screen appears at system boot (to achieve a faster boot); if* ***Quiet Boot*** *is set to* ***Disabled****, the system information screen appears at system boot. To enter the system setup program, press <F2> immediately when one of these screens appears.*

The computer reboots automatically when you exit the system setup program.

The system setup screens display the current setup and configuration information and optional settings for your computer. Information on the screens is organized in four areas:

- The menu across the top of each screen lists the six top-level screens (**Main**, **Advanced**, **Security**, **Power**, **Boot**, and **Exit**) to aid you in moving from screen to screen.
- The large box on the left two-thirds of each screen lists options that define the installed hardware and the power conservation and security features of your computer.
- The smaller box on the right third of the screen provides item-specific help information about the currently selected option.
- The information across the bottom of all screens lists keys and their functions within the system setup program.

To exit the system setup program, press <Esc> and select one of the exit options.

NOTE: To reset the default values for each option in a menu, press <F9> and then press <Enter> to confirm. To save the current values and exit the system setup program, press <F10> and then press <Enter> to confirm.

Following are brief overviews of some of the more commonly used system setup options. For more information on using these and other options, see the item-specific help provided on the right side of each screen.

Changing the Boot Sequence

The **Boot Screen** lets you define the order of the devices from which the computer attempts to boot (see Table 1). When you turn on the computer, it attempts to boot from the first option on the list. If no bootable files are present on the first option, the computer tries to boot from the second option, and so on down the list (except where noted in Table 1).

To arrange the boot sequence, use the up- or down-arrow key to select a device, and then press <F6> to move the device up the list or <F5> to move it down the list. For example, if you want to boot from your CD-ROM drive, highlight **ATAPI CD-ROM Drive** and use the <F6> key to move it to the top of the list.

Table 1. Boot Screen Options

Option	Function
Removable Devices	If this option appears first on the list, the computer attempts to boot first from a bootable diskette. If there is a diskette present but it does not contain the required boot files, an error message appears.
Hard Disk	If this option appears first on the list, the computer boots only from the hard-disk drive.
ATAPI CD-ROM Drive	If this option appears first on the list, the computer attempts to boot first from a bootable CD. If it does not detect a bootable CD in the CD-ROM or DVD-ROM drive, the computer tries to boot from the next device on the list. If there is a CD present but it does not contain the required boot files, an error message appears.
Boot to LAN	If this option appears first on the list, the computer to attempt to boot first from a local area network (LAN).

Assigning Passwords

To help secure system data, you can assign different levels of passwords at the **Security** screen of the system setup program. A *user password* prevents unauthorized access to the computer at start-up. A *supervisor password* controls access to the system setup program. A *hard-disk drive password* helps prevent the unauthorized access of data on the hard-disk drive, even when the device is placed in another computer.

Set User Password
Set Supervisor Password
Set Internal HD Password

NOTE: Before assigning a user password, you must set a supervisor password. The user and supervisor passwords can be the same.

To input, change, or disable a user, supervisor, or HD password, highlight the password, press <Enter>, and follow the instructions in the dialog box.

*NOTE: To disable an existing user, supervisor, or HD password, press <Enter> in the **Enter new password** field of the dialog box.*

NOTICE: Disabling the supervisor password disables the user password.

Password Status Options

The **User Password** and **Supervisor Password** options show the status (**Clear** — the default — or **Set**) of the user and supervisor passwords.

The **HD password** option may display a setting of **Clear**, **Set**, or **Locked**. When the **HD Password** option is **Locked**, it cannot be changed or disabled during that computer session. You must first turn off the computer and then reenter system setup program during the boot routine, after providing password identification.

Using the Battery Auto-Learning Utility

You can run the Battery Auto-Learning utility to help maintain the accuracy of your battery gauge by keeping the battery aware of its full charge capacity. Run the utility when you suspect that the accuracy of the gauge may have diminished. However, do not run it more than once every two months, or you risk reducing the service life of the battery.

To run the utility, go to the **Power** screen and change the **Run Battery Learning** setting to **Enabled**. Then, at the **Exit** screen, select **Save Changes and Exit**. The learning process may take up to six hours to complete. You can stop the process at any time by pressing <Esc>.

After learning is complete, the **Run Battery Learning** option automatically reverts to its default setting of **Disabled**.

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Intel® SpeedStep™ Options: Dell™ Latitude™ L400 User's Guide

Using Intel SpeedStep

The Intel SpeedStep technology included with your system allows you to set the performance level of the processor whether the computer is running on battery or AC power. You can only use the Intel SpeedStep technology when Microsoft® Windows® operating system is running. You cannot control the processor's speed when running in MS-DOS® mode. You can verify the processor's maximum speed by checking the processor information in the system setup program.

To access the Intel SpeedStep properties window, perform the following steps:

1. Right-click the flag icon in the system tray on the Windows taskbar to access further performance level options. The following three options appear:
   - **Maximum Performance option** — switches your computer to the highest possible performance level even if the computer is running on battery
   - **Battery Optimized Performance option** — lets your computer run on performance level optimized for battery power even if the computer is connected to an electrical outlet
   - **Adjust Properties** — lets you change additional performance options
2. To change the performance level, click the desired option.

To access the Intel SpeedStep options when the flag icon is not visible on the taskbar and your computer is running under ACPI (Microsoft Windows 98, Windows 2000, or Windows Me), perform the following steps:

1. Click the **Start** button and point to **Settings**.
2. Click **Control Panel**.
3. Click **Power Management**.
4. Select the **Intel SpeedStep** tab and select the options desired.
5. After you make any changes, click **OK** to accept the settings and close the Intel SpeedStep window.

Using the Adjust Properties Option

1. To access the Intel SpeedStep option window, either right-click the flag icon and click the **Adjust Properties** option or double-click the flag icon.

   The **Intel SpeedStep technology** options window opens.
2. You can adjust the following performance options:
   - **Automatically change performance when the power source changes** (the default) — changes the performance level of your computer automatically when it is running on battery or connected to an electrical outlet.
   - **Ask me before automatically changing performance** — when selected, the computer prompts you for confirmation before the computer changes performance level.
   - **Running on batteries** and **Plugged in** pull-down menus — change performance level options.
3. Click **Apply** to accept the settings.
4. Click **OK** to close the **Intel SpeedStep technology** options window.

Setting the Advanced Options

The **Advanced** options lets you disable various options. To set **Advanced** options, perform the following steps:

1. Click the flag icon in the Windows system tray on the taskbar.
2. Click the **Adjust Properties** option.

   The **Intel SpeedStep** window opens.
3. Click the **Advanced** button.

   The **Advanced** window opens.
4. Click any of the following options:

   - **Disable Intel SpeedStep technology control.**

     If you disable Intel SpeedStep through the **Advanced** options, you will be able to change processor speed only through the system setup program.
   - **Remove flag icon.**
   - **Disable audio notification when performance changes.**
5. Click **Apply** to accept the settings.
6. Click **OK** to close the **Intel SpeedStep technology** window.

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Technical Specifications: Dell™ Latitude™ L400 User's Guide

Chip Set and Bus

System microprocessor and chip set	Intel® Mobile Pentium® III microprocessor that includes Intel SpeedStep™ technology.
Microprocessor data bus width	64 bits
DRAM bus width	64 bits
Address bus width	32 bits
Flash EPROM	4 megabits (Mb)
AGP bus	66 MHz
PCI bus	33 MHz

PC Cards

CardBus controller	Texas Instruments TI1410 CardBus controller
PC Card slots	one (supports Type I and Type II cards, including ZV cards on computers running the Microsoft® Windows® 98, Windows 2000, or Windows Me operating systems)
Cards supported	3.3-V and 5-V
PC Card connector size	68 pins
Data width (maximum):	
PCMCIA	16 bits
CardBus	32 bits

Memory

Architecture	SDRAM
Memory module socket	144-pin industrial standard SODIMM socket
Memory module capacities and type	64, 128, or 256 MB 3.3-V SDRAM[1] module
Standard RAM	64-MB memory module
Maximum RAM	256 MB
Memory clock speed	100 MHz

Connectors

Parallel	unidirectional, bidirectional, or ECP connector
IDE	IDE connector for external media bay
Video	SVGA connector
PS/2	mini-DIN connector
Audio	microphone-in jack; headphones/speakers jack
USB	USB-compliant connector
Docking	connector for the Dell Latitude L400 Advanced Port Replicator (APR)
Modem	RJ-11 connector
NIC	RJ-45 connector

Audio

Audio type	Sound Blaster (software emulation-capable)
Audio controller	Crystal CS4281 + CS4297A (AC97 CODEC)
Stereo conversion	20-bit digital-to-analog and 18-bit analog-to-digital
Interfaces:	
Internal	PCI bus/AC97
External	microphone-in minijack; headphones/speakers-out minijack
Speaker	4-ohm speaker
Internal speaker amplifier	1.75 W
Controls	volume can be controlled through key combinations, application program menus, or the **Speaker** window in the Dell Control Center (Windows 95 only)

Video

Data bus	AGP
Video controller	ATI Mobility M
Video memory	4 MB

Display

Type	12.1" XGA TFT
Dimensions (active area):	
Height	184.3 mm (7.25 inches)
Width	245.76 mm (9.67 inches)
Diagonal	307.3 mm (12.1 inches)
Maximum resolution/colors	1024 x 768; 262,144 colors
Response time (typical)	10 – 30 ms
Viewing angles:	
Horizontal	± 45°
Vertical	+15°/–30°
Dot pitch	0.24 mm
Power consumption:	
Panel (typical)	891 mW

Backlight	3.3 W
Controls	brightness can be controlled through a key combination

Network Interface Controller

Integrated network interface chip	3Com® 3C920 10/100-BASETX PCI bus master Ethernet

Integrated Modem

DataFax Modem	Worldwide 56-Kbps v.90 Lucent 1646 controllerless Data Access Arrangement (DAA) modem. For more information, see the online documentation for the modem.

Keyboard

Number of keys	84, 85, and 87 keys for US, Europe, and Japan, respectively
Key travel	2.5 mm (.098 inch) ± .2mm (.008 inches)
Key spacing	18 mm (.70 inch)

Battery

Type	lithium ion
Dimensions:	
Height	12.7 mm (0.5 inch)
Depth	57.25 mm (2.25 inches)
Width	262.49 mm (10.33 inches)
Weight	220 g (.485 lb) for 4-cell version; 293 g (.645 lb) for 6-cell version
Voltage	14.8 for 4-cell version;11.10 VDC for 6-cell version
Capacity	23 WH for 4-cell version; 34 WH for 6-cell version
Charge time (approximate):[2]	
Computer on	About 1.75 hours for the 4-cell; about 2 hours for the 6-cell
Computer off	About 1.5 hours for the 4-cell; about 1.75 hours for the 6-cell
Life span (approximate)[2]	300 discharge/charge cycles before battery will be operating at approximately 80 percent of original capacity
Temperature range:	
Charge	0° to 45°C (32° to 113°F)
Discharge	0° to 60°C (32° to 140°F)
Storage	-20° to 35°C (–4° to 95°F) for up to a year; –20° to 50°C (–4° to 122°F) for less than one month

AC Adapter

Input voltage	100 to 240 VAC
Input current (maximum)	1.5 A

Input frequency	50 to 60 Hz
Output current	2.64 A (maximum)
Rated output voltage	19.0 VDC
Height	29 mm (1.14 inches)
Width	46.3 mm (1.82 inches)
Depth	108 mm (4.25 inches)
Weight (with cables)	355 g (0.78 lb)
Temperature range:	
Operating	0° to 40°C (32° to 104°F)
Storage	–20° to 60°C (–4° to 140°F)

Physical

Height	25.7 mm (1.01 inches)
Width	272 mm (10.7 inches)
Depth	220.0 mm (8.66 inches)
Weight	1.63 kg (3.6 lb) with 6-cell battery 1.56 kg (3.4 lb) with 4-cell battery

Environmental (Computer)

Temperature:	
Operating	5° to 35°C (41° to 95°F)
Storage	– 20° to 60°C (– 4° to 140°F)
Relative humidity (maximum):	
Operating	20 % to 80% (noncondensing)
Storage	8% to 90% (noncondensing)
Maximum vibration:	
Operating	0.9 GRMS using a random-vibration spectrum that simulates user environment
Storage	1.3 GRMS using a random-vibration spectrum that simulates air/truck shipment
Maximum shock:[3]	
Operating	152.4 cm/sec (60.0 inches/sec) (equal to a half-sine pulse 2 ms in width)
Storage	203.2 cm/sec (80 inches/sec) (equal to a half-sine pulse 2 ms in width)
Altitude (maximum):	
Operating	–18 to 3048 m (– 59 to 10,000 ft)
Storage	–18 to 10,600 m (– 59 to 35,000 ft)

Touch Pad

Interface	PS/2 (compatible with Microsoft mouse driver)
X/Y position resolution	Minimum 20 points/mm (500 points/inch) (graphics tablet mode)

Size:	
Thickness	0.69 ± 0.15-mm (0.027 ± 0.006-inch) printed-circuit board (PCB) thickness (including mylar cover)
Width	64.88 mm (2.55-inch)
Height	48.88 mm (1.92 inches)
Weight	6.0 ± 0.5g (0.21 oz)
Power:	
Supply voltage	5 V ± 10%
Supply current	4.0 mA (nominal operating)
ESD	15 kV applied to front surface (when properly mounted)

NOTES:

[1] The Dell Latitude L400 computer supports only 100-MHz SDRAM SODIMMs. It does not support EDO memory modules.

[2] Battery performance features such as charge time and life span can vary according to the conditions under which the computer and battery are used.

[3] Measured with the hard-disk drive in head-parked position.

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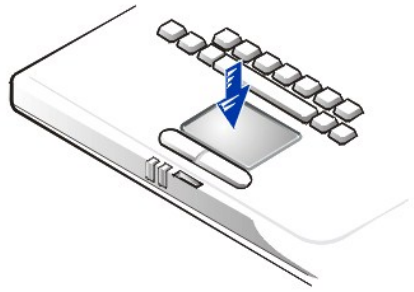
Using the Touch Pad

The touch pad (see Figure 1) detects the position of your finger over a touch-sensitive area and provides the computer full mouse functionality. The touch pad's two buttons correspond to the left and right buttons on a standard mouse.

Figure 1. Touch Pad



To best use the touch pad, follow these techniques:

- To move the cursor, lightly slide your finger over the smooth sensor area.
- To select an object, gently tap once on the surface of the touch pad.
- To select and move (or drag) an object, position the cursor on the object and tap down-up-down on the touch pad. On the second down motion, leave your finger on the touch pad and move the selected object by sliding your finger across the surface.
- To double-click an object, position the cursor on the object and then tap twice.

NOTES: When enabled, the touch pad uses interrupt request (IRQ) 12. No other device can use IRQ12 while the touch pad is enabled.

When you attach an external Personal System (PS)/2 mouse to the computer, the touch pad is automatically disabled.

Customizing the Touch Pad

To customize the touch pad, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **Mouse** icon to open the **Mouse Properties** window and click the **Touch** tab.
3. Select the settings that work best for you and click **Apply**.
4. Check the **Button Configuration, Pointers, Motion, Touch, Edge Motion, Scrolling, Button Actions** and **More Features** tabs and make any desired changes to those settings.
5. Click **OK** to save the settings and close the window.

You can also click the touch pad icon on the taskbar and click **TouchPad Properties** to open the **Mouse Properties** control panel.

Cleaning the Touch Pad and Display

If the touch pad or display become smudged from use, it can be cleaned using a soft, clean cloth slightly dampened with water. Always turn off the computer before cleaning the display or touch pad.

To clean the touch pad, stroke the cloth gently across the surface of the touch pad. Do not allow water from the cloth to seep between the touch pad and the top cover of the computer.

To clean the display, stroke the cloth across the display in one direction, moving from the top of the display to the bottom.

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Identifying Your Computer

As an antitheft measure, assign a primary password and a hard-disk drive password to prohibit unauthorized access to the computer.

Dell recommends that you follow these precautions before you travel with your computer:

- Write down your service tag and put it in a safe place separate from the computer or carrying case. If the computer is lost or stolen, use the service tag number when reporting to law enforcement officials and to Dell.
- Use a text editor (such as Microsoft® Windows® Notepad) to create a file called **if_found** in your root directory. Place information such as your name, address, and telephone number in this file. (For instructions on using the appropriate text editor, see the documentation that came with your operating system.)
- Attach your business card or other name tag to the computer.
- Contact your credit-card company and ask if it offers coded identification tags that allow your property to be returned to you without the risk of revealing your name, address, or telephone number.
- Use a permanent marking or stenciling device to write your driver's license number or some other unique identifying mark on the computer. If a lost or stolen computer is recovered, such marking identifies the computer as your property.

Service Tag

The service tag is an alphanumeric sequence on a bar code label located on the bottom of the computer. The service tag is unique to your computer and allows Dell technical assistance personnel to identify the computer and its configuration quickly if you call for assistance.

If Your Computer Is Lost or Stolen

If your computer is lost or stolen, Dell suggests that you perform the following steps:

1. Call a law enforcement agency to report the lost or stolen computer.

   Include the service tag in your description of the computer. Ask that a case number be assigned, and write it down. Also write down the name, address, and telephone number of the law enforcement agency. If possible, obtain the name of the investigating officer.

   If you know where the computer was lost or stolen, call a law enforcement agency in that area. If you do not know, call a law enforcement agency where you live.
2. If the computer belongs to a company, notify the security office of the firm.
3. Call Dell technical assistance to report the missing computer.

   Provide the computer's service tag, the case number, and the name, address, and telephone number of the law enforcement agency to which you reported the missing computer. If possible, give the name of the investigating officer.

   The Dell support technician will log your report under the computer's service tag and flag the computer as missing or stolen. If someone calls Dell for technical assistance and gives your service tag, the computer is identified automatically as missing or stolen. The technician will attempt to get the phone number and address of the caller. Dell will then contact the law enforcement agency to which you made the report of the missing or stolen computer.

Preparing Your Computer for Travel

To prepare your computer for travel, perform the following steps:

1. Detach any external devices attached to the computer, and store them in a safe place. Remove any cables attached to installed PC Cards (you do not have to remove the PC Card itself).
2. To maximize battery life, check the charge on your battery. Then fully charge the battery and any spares you plan to carry with you. For more information, see "Batteries."

3. For systems running Windows® NT, turn off the computer or press <Fn><a> to enter suspend-to-disk (S2D) mode. (On a French keyboard, press <Fn><q>.) For ACPI-compliant systems (Windows 98, Windows 2000, or Windows Me), turn off the computer or, if hibernate mode has been enabled for the sleep button, press <Fn><Esc> to enter hibernate mode.

NOTICE: When you disconnect the AC adapter from the computer, grasp the adapter cable's connector, not the cable itself, and pull gently but firmly to avoid damaging the cable.

4. Disconnect the AC adapter.

NOTICE: When the display is closed, items left on the keyboard could damage the display.

5. Make sure that there is nothing on the keyboard and palmrest that can damage the display when you close it. Then close the display.
6. Pack all your computing accessories.

   With an optional Dell carrying case, you can pack the computer and its accessories together. A lightweight portfolio travel case without storage space is also available.

NOTE: Follow the travel tips and take special precautions if you are planning to travel by air.

Accessories

You may want to take some of the following accessories with you when you travel:

- Spare batteries
- Cables for PC Cards (if necessary)
- AC adapter and AC power cable
- Power adapters for foreign electrical outlets and modem cable adapters for foreign telephone networks
- Appropriate printer driver files if you will be using a printer
- External media bay and its cable
- Additional storage devices such as the CD-ROM and diskette drives
- Backup diskettes
- *Dell Latitude L400 ResourceCD*

Traveling by Air

You may want to take the following precautions when you are traveling by air with your computer:

- Notify airport security in advance that you are bringing a portable computer.
- Be sure to have a charged battery or the AC adapter and power cable available in case you are asked to turn on the computer.
- Do not check the computer as baggage.

NOTICE: Have airport security personnel check the computer by hand. If the computer passes through a metal detector, data loss may occur. If you must pass the computer through a metal detector, first remove the hard-disk drive.

- Do not put the computer through a metal detector. (The computer can safely go through an airport X-ray security machine.)
- Before you use the computer on an airplane, check the in-flight magazine or ask the flight crew to verify that such use is permitted. Some airlines forbid the use of electronic devices during the flight. All airlines forbid the use of electronic devices during takeoff and landing.
- Use a carrying case (available from Dell) to protect the computer and accessories during travel.
- If you pack the computer in a suitcase, do not pack so tightly that the computer display breaks or so loosely that the computer slides around.
- Avoid packing the computer with items such as shaving cream, colognes, perfumes, or food.
- Protect the computer, the battery, and the hard-disk drive from hazards such as extreme temperatures; overexposure to sunlight; and exposure to dirt, dust, or liquids.
- Pack the computer so that it does not slide around in the trunk of your car or in an overhead storage compartment.
- If you are carrying a hard-disk drive separately from your computer, protect the drive from exposure to static electricity by placing it in the case you received it in or in an antistatic bag, or wrapping it in a nonconductive fabric.

NOTICE: Carefully handle the hard-disk drive only by its carrier; do not touch the drive itself. The drive comes in a metal carrier for protection and easy installation. The drive is vulnerable to static electricity and scratches when outside the computer because the drive carrier protects only the sides of the drive, leaving the top and bottom of the drive exposed.

Travel Tips

- Consider changing the settings of your power management options to maximize battery life if you will be using battery power for extended periods.
- If you are traveling internationally, carry proof of ownership to speed your passage through customs. If the computer is provided by your employer, carry documentation of your right to use the computer. Investigate the customs regulations of the countries you plan to visit, and consider acquiring an international carnet from your government if you travel through many different countries.
- Power interruptions can occur frequently in some countries. Always have a charged battery available if traveling abroad.
- Credit card holders should check with their credit card companies for information about the kinds of emergency travel assistance they offer to users of portable computers. Many companies provide services that help you solve problems, such as quickly locating 3.5-inch diskettes or providing a direct-dial telephone line for your modem connection.

NOTICE: Do not use a device in the external media bay while the computer is in motion. Doing so could interrupt the flow of data between the device and the hard-disk drive.

Carnet

A carnet is an international customs document (also known as a *merchandise passport*) that facilitates temporary imports into foreign countries and is valid for up to 1 year.

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Troubleshooting Your Computer: Dell™ Latitude™ L400 User's Guide

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