Troubleshooting and Maintenance Guide

Understanding hard disk drive space

The hard disk drive on the Hewlett-Packard and Compaq computers with the Microsoft® Windows® operating system preinstalled may appear to be smaller than the size stated in the product specifications, in the documentation, or on the box. Hard disk drives are described and advertised by manufacturers in terms of decimal (base 10) capacity. Microsoft Windows and other programs, such as FDISK, use the binary (base 2) numbering system.

In decimal notation, one megabyte (MB) is equal to 1,000,000 bytes, and one gigabyte (GB) is equal to 1,000,000,000 bytes. In the binary numbering system, one megabyte is equal to 1,048,576 bytes, and one gigabyte is equal to 1,073,741,824 bytes. Because of the different measuring systems, you may see a difference between the size reported by Microsoft Windows and the size advertised. The storage capacity of the hard disk drive is as advertised.

Microsoft Windows reports smaller capacity in the Windows Explorer tool and in the computer window because it shows information about one partition on the hard disk drive at a time. One of the partitions contains the System Recovery information.

Note about systems configured with 4 GB of memory

For computers with a 32-bit operating system, all memory above 3 GB may not be available because of system resource requirements.

This limitation is not limited to HP and Compaq systems. The memory above 3 GB is used for system resources.

Confirming total memory

The system BIOS displays the full 4 GB of installed memory.

1. Turn on the PC.

2. Press F10. The BIOS menu is displayed. Confirm the Total Installed Memory.

Part Number: 671281-001

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1 Protecting your computer

Your computer contains features that help protect the integrity of your system and its data from unauthorized access. Review these features to ensure proper use.

Computer security features

Computer risk	Computer feature
Unauthorized use of the computer or user account	User password A *password* is a group of characters that you choose to secure computer information.
Unauthorized access to Setup Utility, BIOS settings, and other system identification information	Administrator password
Computer viruses	Antivirus software The free trial antivirus software that is preinstalled on your computer can detect most viruses, remove them, and, in most cases, repair damage caused by viruses. For protection against new viruses beyond the trial period, purchase an extended update service.
Unauthorized access to data and ongoing threats to the computer	Firewall software ● Windows 7 includes firewall software preinstalled on the computer. ● The antivirus software, which is preinstalled on the computer, includes firewall software.
	Windows 7 critical security updates Microsoft continually updates the Windows 7 operating system.

2 Troubleshooting

Refer to the documentation provided by the product manufacturer for information about peripheral-specific problems, such as issues with a monitor or a printer. The following tables present some issues you might encounter while installing, starting up, or using your computer and possible solutions.

For more information or for additional troubleshooting options, see the Quick Setup Guide that accompanies your computer, or visit http://www.hp.com/support and search for your computer model.

Computer does not start

Symptom	Possible solution
Error message: Hard disk drive error.	Restart the computer.
	1. Press the Ctrl+Alt+Delete keys on the keyboard simultaneously.
	2. Click the **Arrow** button next to the red **Shut Down** button, and then click **Restart**.
	Or, press and hold the **Power** button on the computer for 5 or more seconds to turn off the computer, and then press the **Power** button to restart the computer.
	3. If Windows opens, immediately back up all important data to a backup hard disk drive.
	4. Contact Support, whether it was possible or not to start up Windows.
	Either the hard disk drive or the system board may need to be replaced.
Computer will not turn on or start.	Ensure that the cables connecting the computer to the external power source are plugged in properly. When the cables connecting the computer to the external power source are plugged in properly, and the wall outlet is functioning, the green power supply light on the back of the computer should be on; if it is not, contact Support.
	If the display (monitor) is blank, the monitor might not be properly connected. Connect the monitor to the computer, plug it in, and turn it on. See Display (monitor) on page 4.
	Test the wall outlet by connecting a different electrical device to it.

Symptom	Possible solution
Computer seems to be locked up and is not responding.	Use the **Windows Task Manager** to close any programs not responding, or restart the computer: 1. Press the Ctrl+Alt+Delete keys on the keyboard simultaneously. 2. Click **Start Task Manager**. 3. Select the program that is not responding, and then click **End Task**. If closing programs does not work, restart the computer: 1. Press the Ctrl+Alt+Delete keys on the keyboard simultaneously. 2. Click the **Arrow** button next to the red **Shut Down** button, and then click **Restart**. *Or*, press and hold the **Power** button on the computer for 5 or more seconds to turn off the computer, and then press the **Power** button to restart the computer.
Error message: Invalid system disk or Non-System disk or Disk error.	When drive activity stops, remove the disc and press the spacebar on the keyboard. The computer should start up.

Power

Symptom	Possible solution
Computer does not turn off when the Power button is pressed.	Press and hold the **Power** button until the computer turns off. Check Power Settings.
Computer shuts down automatically.	- The computer might be in an exceedingly hot environment. Let it cool down. - Ensure that computer air vents are not blocked and that the internal fan is running — see _Keeping the computer free of dust, dirt, and heat on page 15_. (Your computer might not have an internal fan.)

Display (monitor)

Symptom	Possible solution
Screen is blank, and monitor power light is not lit.	Reconnect the power plug to the back of the monitor and to the wall outlet.
	Press the **Power** button on the monitor.
Screen is blank.	Press the space bar on the keyboard or move the mouse to make the screen display visible again.
	Press the **Sleep** button (select models only), or Esc on the keyboard, to resume from Sleep mode.
	Press the **Power** button to turn on the computer.
	Inspect the monitor video connector for bent pins: - If any of the pins are bent, replace the monitor connector cable. - If no pins are bent, reconnect the monitor connector cable to the computer.
Images on the screen are too large or too small, or the images are fuzzy.	Adjust the monitor resolution setting in Windows 7: 1. Click **Start**, and then click **Control Panel**. 2. Under **Appearance and Personalization**, click **Adjust Screen Resolution**. 3. Adjust resolution as necessary, and then click **Apply**.
NOTE: In addition to the information listed here, also refer to the documentation that came with your monitor.	

Keyboard and mouse (with cable)

Symptom	Possible solution
Keyboard commands and typing are not recognized by the computer.	Use the mouse to turn off the computer, unplug and reconnect the keyboard to the back of your computer, and then restart your computer.

Symptom	Possible solution
Mouse (with cable) does not work or is not detected.	Unplug and reconnect the mouse cable to your computer.
	If the mouse is still not detected, turn off the computer, unplug and reconnect the mouse cable, and then restart the computer.
Cursor does not move using the arrow keys on the number keypad.	Press Num Lock on the keyboard to turn off Num Lock, so that the arrow keys on the number keypad can be used.
Cursor does not respond to mouse movement.	Use the keyboard to save changes in all open programs, and then restart your computer:

For the "Cursor does not respond to mouse movement" entry:

1. Press the Alt+Tab keys simultaneously to navigate to an open program.

2. Press Ctrl+S simultaneously to save your changes in the selected program (Ctrl+S is the keyboard shortcut for Save on most—not all—programs).

3. Repeat step 1 and step 2 to save changes in all open programs.

4. After saving changes in all open programs, press the Ctrl+Esc keys on the keyboard simultaneously to display the Windows Start menu.

5. Use the arrow keys to select the Arrow button that is next to Shut Down. Select **Shut Down**, and then press Enter.

6. After the shutdown is complete, unplug and reconnect the mouse connector to the back of your computer, and then restart your computer.

Keyboard and mouse (wireless)

Symptom	Possible solution
Wireless keyboard or mouse does not work or is not detected.	• Ensure that you are using the wireless keyboard or wireless mouse within range of the receiver, approximately 10 meters (32 feet) for normal use, and within 30 cm (12 inches) during initial setup or for re-synchronization.
	• Ensure that the mouse is not in Suspend mode, which occurs after 20 minutes of inactivity. Click the left mouse button to reactivate it.
	• Replace the batteries in the keyboard and mouse.
	• Re-synchronize the keyboard and mouse to the receiver using the following steps.

The receiver, wireless keyboard, and wireless mouse shown in the following illustrations are examples; your models might vary. **IMPORTANT:** During these steps, place the wireless keyboard and wireless mouse on the same level as the receiver, within 30 cm (12 inches) of the receiver, and away from interference from other devices.

1. Unplug the receiver from a USB connector on the computer, and then reconnect it. Your computer model might have a connector dedicated to the receiver. If you have a choice, use a USB connector on the front of the computer.

2. Check that the mouse is on (**A**), and push and hold the **Connect** button (**B**) on the underside of the mouse for 5 to 10 seconds until the LED on the receiver lights or stops flashing. The receiver connection session times out after 60 seconds. To ensure that the connection was established, and that the receiver did not time out instead, move the mouse and check for response on the screen.

3. After the mouse connection is established, continue by using the steps that follow to repeat the procedure for the keyboard.

4. Push and hold the **Connect** button (**C**) on the underside of the keyboard for 5 to 10 seconds until the LED on the receiver lights or stops flashing.

Speakers and sound

Symptom	Possible solution
Volume is very low or unsatisfactory.	Ensure that you connected the speakers to the Audio Out (lime green) connector on the back of the computer. (Additional audio connectors are used for multiple-channel speakers.) Detached non-powered speakers (speakers without a separate power source, such as batteries or a power cord) do not produce satisfactory sound. Replace the non-powered speakers with powered speakers.

Symptom	Possible solution
No sound is produced.	For Windows 7:
	1. Click **Start**, click **Control Panel**, click **Action Center**, and then click **Troubleshooting**.
	2. Under **Hardware and Sound**, click **Troubleshoot and audio playback**.
	If you use a High-Definition Multimedia Interface (HDMI) connector on the graphics card (select models only) to connect your monitor to the computer, you should also connect analog speakers to the computer Audio Line Out connector if you want to hear sound during the initial setup of the computer. Refer to the Quick Setup booklet to connect analog speakers.
	If you are using built-in monitor speakers, use the monitor front-panel Volume button to adjust volume. Use the front-panel buttons to enter the on-screen display (OSD) and ensure that audio is enabled and that the volume is set appropriately.
	Ensure that you connected powered (active) speakers and that they are turned on.
	Turn off your computer, and then unplug and reconnect the speakers. Ensure that the speakers are connected to an audio connector, not a Line In or headphone connector.
	To resume from Sleep mode, press the **Sleep** button (select models only), or press Esc.
	Unplug headphones if they are connected to your computer (or speaker system).

Internet access

Symptom	Possible solution
Internet programs do not start automatically.	Log in to your ISP, and start the desired program.
I cannot connect to the Internet.	For Windows 7:
	1. Click **Start**, click **Control Panel**, click **Action Center**, and then click **Troubleshooting**.
	2. Under **Network and Internet**, click **Connect to the Internet**.
	Verify that you are using the proper cables for your Internet connection type. Your computer might have a dial-up modem and an Ethernet network adapter (also called a network interface card, or NIC). A modem uses a standard telephone cable, whereas the network adapter uses a network cable, to connect to a local area network (LAN). Do not connect a telephone cable to the network adapter, and do not plug a network cable into a telephone service line; doing so might damage the network adapter.
	Run the **wireless setup wizard**:
	1. Click **Start**, click **Control Panel**, click **Network and Internet**, and then click **Network and Sharing Center**.
	2. In the **Network and Sharing Center** window, click **Set up a connection or network** to open the wizard, and then follow the on-screen instructions.
	If your system has an external antenna, try to move the antenna to a better position. If the antenna is internal, try to move the computer.
	Try to connect again later, or contact your Internet service provider (ISP) for assistance.

Software troubleshooting

To repair software problems, try these methods:	• Turn the computer off completely and then turn it on again. This is the easiest (and sometimes the best) way. • Update the drivers (see Updating device drivers, following). • Use Microsoft System Restore Software program and hardware driver reinstallation (see Microsoft System Restore, later in this table). — Restores your computer to a configuration that was in use before the software was installed. • Reinstall the software program or hardware driver (see Software program and hardware driver reinstallation, later in this table). — Restores the software (if it came with the product) or hardware driver to factory defaults. • System Recovery (see System recovery on page 10) — Erase and reformat the hard disk drive, and then reinstall the operating system, programs, and drivers. This erases all data files you have created.
Updating device drivers	Complete the following procedure to update a driver, or to revert to an earlier version of the driver if the new one does not solve your problem: 1. Click **Start**. 2. Type `Device Manager` into the **Start Search** box, and then click **Device Manager** to open the **Device Manager** window. 3. Click the plus sign (+) to expand the type of device you want to update or rollback. (For example, DVD/CD-ROM drives). 4. Double-click the specific item (for example, HP DVD Writer 640b). 5. Click the **Driver** tab. 6. To update a driver, click **Update Driver**, and then follow the on-screen instructions. *Or*, to revert to an earlier version of a driver, click **Rollback Driver**, and then follow the on-screen instructions.
Microsoft System Restore	If you have a problem that might be due to software that was installed on your computer, use System Restore to return the computer to a previous restore point. You can also set restore points manually. **NOTE:** Always use this System Restore procedure before you use the System Recovery program. Some features might not be available on systems that are shipped without a version of Microsoft Windows. To start a **System Restore**: 1. Close all open programs. 2. Click **Start**, right-click **Computer**, and then click **Properties**. 3. Click **System protection**, **System Restore**, click **Next**, and then follow the on-screen instructions. To add restore points manually: 1. Close all open programs. 2. Click **Start**, right-click **Computer**, click **Properties**, and then click **System protection**. 3. Under **Protection Settings**, select the disk for which you want to create a restore point. 4. Click **Create**, and then follow the on-screen instructions.

Software program and hardware driver reinstallation	If any of your factory-installed software programs or hardware drivers are damaged, you can reinstall it by using the Recovery Manager program (select models only).
	NOTE: Do not use the Recovery Manager program to reinstall software programs that came on CDs or DVDs included in the computer box. Reinstall these programs directly from the CDs or DVDs.
	Before you uninstall a program, be sure you have a way to reinstall it. Check to be sure that it is still available from where you initially installed it (for example, discs or the Internet). Or check to be sure that the program is in the list of programs you can reinstall from the Recovery Manager.
	NOTE: Some features might not be available on systems that are shipped without a version of Microsoft Windows.
	To check the list of installable programs in the Recovery Manager:
	1. Click **Start**, **All Programs**, **Recovery Manager**, and then click **Recovery Manager**. If prompted, click **Yes** to allow the program to continue.
	2. Under **I need help immediately**, click **Software Program Reinstallation**.
	3. Click **Next** at the Welcome screen. A list of programs opens. Check whether your program is there.
	To reinstall a program using the **Recovery Manager**:
	1. Click **Start**, click **All Programs**, click **Recovery Manager**, and then click **Recovery Manager**.
	2. Click **Software Program Reinstallation**, and then click **Next** at the **Welcome** screen.
	3. Choose the program you want to install, click **Next**, and follow the on-screen instructions.
	4. When you have finished reinstalling, restart the computer. **Do not skip this last step.** You must restart the computer after recovering software programs or hardware drivers.
	To uninstall a program:
	1. Close all software programs and folders.
	2. Click **Start**, and then click **Control Panel**.
	3. Under **Programs**, click **Uninstall a program**.
	4. Select the program you want to remove, and then click **Uninstall**.

3   System recovery

System Recovery completely erases and reformats the hard disk drive, deleting all data files you have created, and then reinstalls the operating system, programs, and drivers. However, you must reinstall any software that was not installed on the computer at the factory. This includes software that came on media included in the computer accessory box, and any software programs you installed after purchase.

NOTE: Always use the System Restore procedure before you use the System Recovery program — see *Microsoft System Restore* under <u>Software troubleshooting on page 8</u>.

Some features might not be available on systems that are shipped without a version of Microsoft Windows.

Choosing a system recovery method

You must choose one of the following methods to perform a System Recovery:

- Recovery Image — Run the System Recovery from a recovery image stored on your hard disk drive. The recovery image is a file that contains a copy of the original factory-shipped software. To perform a System Recovery from a recovery image, see *System Recovery from the Windows 7 Start Menu on page 10*.

  NOTE: The recovery image uses a portion of the hard disk drive that cannot be used for data storage.

- Recovery Media — Run the System Recovery from recovery media that you create from files stored on your hard disk drive or purchased separately. To create recovery media, see *Creating recovery media on page 13*.

System Recovery options

You should attempt a **System Recovery** in the following order:

1. Through the hard disk drive, from the Windows 7 Start menu.

2. Through the hard disk drive, by pressing F11 on the keyboard during system startup.

3. Through recovery media that you create.

4. Through recovery discs purchased from HP Support. To purchase recovery discs, visit <u>http://www.hp.com/support</u>.

System Recovery from the Windows 7 Start Menu

CAUTION: System Recovery deletes all data and programs you created or installed. Back up any important data to a removable disc or USB flash drive.

If the computer is working and Windows 7 is responding, use these steps to perform a **System Recovery**.

1. Turn off the computer.

2. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.

3. Turn on the computer.

4. Click **Start**, click **All Programs**, click **Recovery Manager**, and then click **Recovery Manager**. If prompted, click **Yes** to allow the program to continue.

5. Under **I need help immediately**, click **System Recovery**.

6. Select **Yes**, and then click **Next**. Your computer restarts.

> **NOTE:** If your system does *not* detect a recovery partition, it prompts you to insert recovery media. Insert the disc or USB flash drive, select **Yes**, and then click **Next** to restart the computer and run Recovery Manager from the recovery disc or USB flash drive. If using discs, insert the next system-recovery disc when prompted.

7. When the computer restarts, you see the Recovery Manager welcome screen again. Under **I need help immediately**, select **System Recovery**. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.

8. System Recovery begins. After System Recovery is complete, click **Finish** to restart the computer.

9. Complete the registration process, and wait until you see the desktop.

10. Turn off the computer, reconnect all peripheral devices, and turn the computer back on.

System Recovery at system startup

> **CAUTION:** System Recovery deletes all data and programs you created or installed. Back up any important data to a removable disc or USB flash drive.

If Windows 7 is not responding, but the computer is working, follow these steps to perform a **System Recovery**.

1. Turn off the computer. If necessary, press and hold the **Power** button until the computer turns off.

2. Disconnect all peripheral devices from the computer, except the monitor, keyboard, and mouse.

3. Press the **Power** button to turn on the computer.

4. As soon as you see the initial company logo screen appear, repeatedly press F11 on your keyboard until the **Windows is Loading Files...** message appears on the screen.

5. Under **I need help immediately**, click **System Recovery**.

6. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.

7. System Recovery begins. After System Recovery is complete, click **Finish** to restart the computer.

8. Complete the registration process, and wait until you see the desktop.

9. Turn off the computer, reconnect all peripheral devices, and turn the computer back on.

System Recovery from recovery media

⚠ **CAUTION:** System Recovery deletes all data and programs you created or installed. Back up any important data to a removable disc or USB flash drive.

To create recovery media, see *Creating recovery media on page 13*.

To perform a **System Recovery** using recovery media:

1. If the computer is working, create a backup DVD or backup USB flash drive containing all the data files you want to save, and then remove the backup media from the drive tray.

2. If using recovery DVDs, insert recovery disc #1 into the DVD drive tray, and close the tray. If using a recovery USB flash drive, insert it into a USB port.

3. If the computer works, click **Start**, click the Arrow button next to Shut Down, and then click **Shut Down**. Or, if the computer is not responding, press and hold the **Power** button for approximately 5 seconds, or until the computer turns off.

4. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.

5. Press the **Power** button to turn on the computer. If you are using a recovery DVD, the computer automatically runs Recovery Manager from the disc. Skip to step 7.

6. If you are running System Recovery from a USB flash drive, press Esc as the computer is powering on to bring up the boot menu. Use the arrow keys to select the USB device and press Enter to boot from that device.

7. If you are prompted to choose between running System Recovery from media or from hard drive, select media, and then click **Next**.

8. Under **I need help immediately**, click **Factory Reset**.

9. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.

10. If you are prompted to insert the next recovery disc, do so.

11. When the Recovery Manager is finished, remove all recovery media from the system.

12. Click **Finish** to restart the computer.

Recovery media

Recovery media can be created on either blank DVD discs or a USB flash drive (one or the other, but not both). Create recovery media from the recovery image stored on your hard disk drive. This image contains the operating system and software program files that were originally installed on your computer at the factory. You can create only one set of recovery media for your computer, and the media can be used *only* with this computer. Store the recovery media in a safe place.

📝 **NOTE:** Some features might not be available on systems that are shipped without a version of Microsoft Windows.

Choosing recovery media

- To create recovery discs, your computer must have a DVD writer, and you must use only high-quality blank DVD+R or DVD-R discs.

  NOTE: You *cannot* use CDs or DVD+RW, DVD-RW, DVD+RW DL, DVD-RW DL, DVD+R DL, or DVD-R DL discs to create recovery discs.

- If you are creating recovery discs, be sure to use high-quality discs to create your set of recovery discs. It is normal for discs to be rejected if they are not defect-free. You will be prompted to insert a new blank disc to try again.

- The number of discs in the recovery-disc set depends on your computer model (typically 1–3 DVD discs). The Recovery Disc Creator program will tell you the specific number of blank discs needed to make the set.

- You may choose to create a recovery USB flash drive instead, using a high-quality blank USB drive. If you are using a USB flash drive, the program will tell you the size of the drive required to store all the data (minimum of 8 GB).

NOTE: The process of creating recovery media takes some time to verify that the information written on the media is correct. You can quit the process at any time. The next time you run the program, it will resume where it left off.

Creating recovery media

To create recovery discs:

1. Close all open programs.

2. Click **Start** > **All Programs**, select **Recovery Manager**, and then select **Recovery Media Creation**. If prompted, click **Yes** to allow the program to continue.

3. Select **Create recovery media using blank DVD(s)**, and then click **Next**.

4. Follow the on-screen instructions. Label each disc as you make it (for example, Recovery 1, Recovery 2).

To create a recovery USB flash drive:

1. Close all open programs.

2. Insert the USB flash drive into a USB port on the computer.

3. Click **Start** > **All Programs**, select **Recovery Manager**, and then select **Recovery Media Creation**.

4. Select **Create recovery media with a USB flash drive**, and then click **Next**.

5. Select the USB flash drive from the list of media. The program lets you know how much storage is required to create the recovery drive. If the USB flash drive does not have enough storage capacity (8 GB is the minimum), it is grayed out on the screen. Click **Next**.

> **NOTE:** Recovery Media Creation formats the flash drive and deletes all on files on it.

6. Follow the on-screen instructions. Be sure to label the USB flash drive and store it in a secure place.

> **NOTE:** Do not use media cards for creating recovery media. The system may not be able to boot up from a media card and you may not be able to run system recovery.

4 Maintenance

It is important that you perform simple maintenance of your computer to ensure that it works at peak performance.

Schedules and tasks

Follow these instructions at the recommended intervals for proper maintenance.

Weekly	Software cleanup	Use **Disk Cleanup** or safe third-party cleaning tools to remove junk files and temporary files that accumulate and slow down your system. Also, check for programs you no longer need and uninstall them.
	Defragmentation	Run **Disk Defragmenter** to keep your hard disk in good condition and improve system performance. Frequently performing this task does not harm your system.
	Virus scan	Perform a full virus scan every week to catch viruses that might have slipped through unnoticed. Most antivirus products have a scheduling feature to keep track of this automatically.
Monthly	Hardware cleanup	Thoroughly clean the inside and outside of your computer.
	Software updates	Use **Windows Update** to fix operating system bugs and improve performance. Also, be sure to check for driver updates for your hardware and new versions of your favorite programs.
	Windows Update	Run **Windows Update** monthly to install updates.
	Hard disk diagnostic	Sometimes a failing hard disk can be caught beforehand by using **Hard Disk Diagnostic**.
Yearly	System Recovery	In time, your system might still get bogged down, depending on the computer usage. Use **System Recovery** to wipe your Windows operating system installation clean, restoring it to the original configuration when you first started your system. **Make a backup of important data files before proceeding with a System Recovery.** See System recovery on page 10 for further details.
As needed	Backing up your data	Use CD or DVD recording software that is installed on your computer to create (or "burn") backup discs of important information, including personal files, e-mail messages, and website bookmarks. You can also move data to an external hard disk drive.

Keeping the computer free of dust, dirt, and heat

Keeping your computer system free of dust, dirt, and heat will prolong its life. Dust, pet hair, and other particles can build up, creating a blanket effect; as a result, components can overheat, or, in the case of the keyboard and mouse, not work smoothly and effectively. Check your system once a month for visible signs of dust and debris, and clean it about once every three months. Visit www.hp.com/support for additional cleaning instructions.

Cleaning the computer and monitor

Follow these steps to clean the computer and monitor:

1. Unplug the power to the computer and the monitor.

2. To clean the monitor screen, use a clean, dry cloth. **Do not use water on the monitor screen.** For more thorough cleaning, use a clean cloth and antistatic screen cleaner.

3. Use a clean, dry cloth to dust the computer case and the monitor case.

    NOTE: To remove sticker residue or a spill on the computer or monitor case, use isopropyl (rubbing) alcohol and a lint-free cloth.

Cleaning the computer vents

Air vents keep the computer cool. Keep these vents clean by using a small, battery-powered vacuum cleaner. (A battery-powered vacuum cleaner eliminates the risk of electric shock.)

1. Vacuum the vents on the computer case.

2. Remove any debris that has accumulated in and around the computer connectors (for example, the Ethernet and USB connectors).

Cleaning the keyboard and mouse

When cleaning the keyboard keys, use a low setting on a battery-powered vacuum cleaner, to avoid removing key caps and springs.

1. Vacuum between the keys of the keyboard and along the grooves.

2. Use a clean, dry cloth and isopropyl (rubbing) alcohol to clean buildup on the keyboard keys and along its edges.

3. Wipe the body of the mouse and the mouse cord by using cleaning wipes.

If you have a roller-ball mouse, clean the ball and rollers inside:

1. Turn the mouse upside down, and rotate the ball-cover ring counterclockwise to remove the ring and release the roller ball.

2. Rinse the roller ball with soap and warm water.

3. Clean the rollers inside the mouse with a cotton swab dampened with isopropyl (rubbing) alcohol.

4. After the roller ball and rollers are completely dry, replace the ball and ball-cover ring.

Cleaning the touch screen (select models only)

CAUTION: Do not spray or place the cleaner directly on the screen; spray the cleaner into the cloth, and then wipe the sides and surface of the touch screen.

Do not use an abrasive cleaner or cloth when cleaning the sides or the surface of the screen, because this could cause damage to the touch screen.

Follow these steps to clean the touch screen:

1. Turn off the computer. Tap the **Start** button, and then tap **Shut Down**.

2. Disconnect the power cord from the wall.

3. Spray a small amount of mild glass cleaner on a soft cloth to clean the touch screen.

4. Wipe the surface and left and right side of the touch screen to remove any dirt, fingerprints, or other debris that could hinder the touch recognition of the screen.

The power to make a change

Thank you for your purchase. HP is dedicated to producing the highest quality, best performing, and easiest to use computers in the world. HP also designed this product with the environment in mind. But to reduce its impact even further, we need your help.

Let's work together to make a change.

How you can help	What we do
Recycle your old computer.	We design with the environment in mind.
Disposing of electronic waste responsibly has been an HP priority for more than 20 years. If this computer is a replacement for an older computer you no longer need, go to www.hp.com/go/recycle to find out if HP can help you dispose of your old computer with minimum impact on the planet.	While we want you to enjoy this computer for many years to come, we recognize that you will eventually dispose of it. We have designed it so it can be easily dismantled and recycled as much as possible. The packaging that came with your computer is also designed for maximum recyclability.
Don't use a screen saver.	We design to be more energy efficient.
Screen savers can prevent your HP computer from going to sleep and thereby waste power. Screen savers can also reduce the life of your monitor by increasing the number of hours the LCD backlight is on.	This computer has HP Power Management Technology, which can reduce computer energy use up to 45% compared to computers without power management. HP computers keep energy needs to a minimum, saving you money and reducing your carbon footprint.
Don't disable the power settings.	We design our products to use better and fewer materials.
The power management tools on this computer are set to minimize energy use without impacting performance. Please do not disable them.	Ensuring the health of you, your family, and our planet is a key priority at HP. We are committed to using the safest materials in the production of this and all our other products.