

# Troubleshooting Guide

## HP Business PCs

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## **Troubleshooting Guide**

HP Business PCs

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## About This Book

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- ⚠ **WARNING!** Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.
  - ⚠ **CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.
  - 📝 **NOTE:** Text set off in this manner provides important supplemental information.
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# 1 Computer Diagnostic Features

## Hewlett-Packard Vision Field Diagnostics

 **NOTE:** HP Vision Field Diagnostics is included on CD with some computer models only.


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The Hewlett-Packard Vision Field Diagnostics utility allows you to view information about the hardware configuration of the computer and perform hardware diagnostic tests on the subsystems of the computer. The utility simplifies the process of effectively identifying, diagnosing, and isolating hardware issues.

The Survey tab is displayed when you invoke HP Vision Field Diagnostics. This tab shows the current configuration of the computer. From the Survey tab, there is access to several categories of information about the computer. Other tabs provide additional information, including diagnostic test options and test results. The information in each screen of the utility can be saved as an html file and stored on a diskette or USB flash drive.

Use HP Vision Field Diagnostics to determine if all the devices installed on the computer are recognized by the system and functioning properly. Running tests is optional but recommended after installing or connecting a new device.


You should run tests, save the test results, and print them so that you have printed reports available before placing a call to the Customer Support Center.

 **NOTE:** Third party devices may not be detected by HP Vision Field Diagnostics.

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### Accessing HP Vision Field Diagnostics

To access HP Vision Field Diagnostics, you must burn the utility onto a CD or copy it onto a USB flash drive then boot to the CD or USB flash drive. It can also be downloaded from <http://www.hp.com> and either burned to CD or installed to a USB flash drive. See [Downloading the Latest Version of HP Vision Field Diagnostics on page 5](#) for more information.

 **NOTE:** HP Vision Field Diagnostics is included with some computer models only.


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If you have already downloaded HP Vision Field Diagnostics to either a CD or USB Flash drive, then begin the following procedure at step 2.

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1. In Windows Explorer, go to **C:\SWSetup\ISOs** and burn the file **Vision Diagnostics.ISO** to a CD or copy it to a USB flash drive.
2. While the computer is on, insert the CD in the Optical Drive or USB flash drive in a USB port on the computer.
3. Shut down the operating system and turn off the computer.
4. Turn on the computer. The system will boot into HP Vision Field Diagnostics.

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 **NOTE:** If the system does not boot to the CD in the optical drive or to the USB flash drive, you may need to change the boot order in the Computer Setup (F10) utility. Refer to the *Computer Setup (F10) Utility Guide* for more information.

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5. At the boot menu, select either the **HP Vision Field Diagnostics** utility to test the various hardware components in the computer or the **HP Memory Test** utility to test memory only.

 **NOTE:** The HP Memory Test is a comprehensive memory diagnostic utility that is run as a stand-alone application, outside of HP Vision Field Diagnostics.

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6. If running **HP Vision Field Diagnostics**, select the appropriate language and click **Continue**.
7. In the End User License Agreement page, select **Agree** if you agree with the terms. The HP Vision Field Diagnostics utility launches with the Survey tab displayed.

## Survey Tab

The Survey tab displays important system configuration information.

In the **View level** field, you can select the **Summary** view to see limited configuration data or select the **Advanced** view to see all the data in the selected category. By default, the View Level is set to **Overview** which displays general information about all of the component categories.

In the **Category** field, you can select the following categories of information to display:

**All**—Gives a listing of all categories of information about the computer.

**Architecture**—Provides system BIOS and PCI device information.

**Asset Control**—Shows product name, system serial number, asset tag and universal unique ID information.

**Audio**—Displays information about the audio controllers present in the system, including PCI audio cards.

**Communication**—Shows information about the computer parallel (LPT) and serial (COM) port settings, plus USB and network controller information.

**Graphics**—Shows information about the graphics controller of the computer.

**Input Devices**—Shows information about the keyboard, mouse, and other input devices connected to the computer.

**Memory**—Shows information about all memory in the computer. This includes memory slots on the system board and any memory modules installed.

**Processors**—Shows information about the processor(s) installed in the computer, including clock speeds and cache sizes.

**Storage**—Shows information about storage media connected to the computer. This list includes all hard drives, diskette drives, and optical drives.

**System**—Shows information about the computer model, internal fans, chassis, and BIOS.

## Test Tab

The Test tab allows you to choose various parts of the system to test. You can also choose the type of test and testing mode.




There are three types of tests to choose from:

- **Quick Test**—Provides a predetermined script where a sample of each hardware component is exercised. You may further modify which of the Quick tests are executed by selecting or deselecting individual tests in the hardware component check list.
- **Complete Test**—Provides a predetermined script where each hardware component is fully tested. You may further modify which of the Complete tests are executed by selecting or deselecting individual tests in the hardware component check list.
- **Custom Test**—Provides the most flexibility in controlling the testing of a system. The Custom Test mode allows you to specifically select which devices, tests, and test parameters are run.

By default, the three test modes do not display prompts and require no interaction. If errors are found, they are displayed when testing is complete.

However, for each test type, you may also optionally add interactive tests by clicking the **Include interactive tests** box under **Test mode**. Selecting interactive tests provides the maximum control over the testing process. The diagnostic software will prompt you for input during tests.

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 **NOTE:** Memory can not be tested from within the HP Vision Field Diagnostics application. To test the memory in your computer, you must exit HP Vision Field Diagnostics, boot to either the CD or USB flash drive and select **HP Memory Test** from the boot menu.

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To begin testing:

1. Select the Test tab.
2. Select the type of tests you want to run: **Quick**, **Complete**, or **Custom**.
3. Include optional interactive tests by selecting **Include interactive tests**.
4. Choose how you want the test to be executed, either **Number of Loops** or **Total Test Time**. When choosing to run the test over a specified number of loops, enter the number of loops to perform. If you want the diagnostic test for a specified time period, enter the amount of time in minutes.
5. Click the **Start Test** button to start the testing. The Status tab, which allows you to monitor the progress of the tests, is automatically displayed during the testing process. When the tests are complete, the Status tab shows whether the devices passed or failed.
6. If errors are found, go to the Errors tab to display detailed information and recommended actions.

## Status Tab

The Status tab displays the status of the selected tests. The main progress bar displays the percent complete of the current set of tests. While testing is in progress, a **Cancel Testing** button is displayed for use if you want to cancel the test.

The Status tab also shows:

- The devices being tested
- The test status (running, waiting, passed, or failed) of each device being tested
- The overall test progress of all devices being tested
- The test progress for each device being tested
- The elapsed test times for each device being tested

## History Tab

The History tab contains information on past test executions.

The History Log displays all tests that have been executed, the number of times of execution, the number of times failed, the date each test was executed, and the time it took to complete each test. The **Clear History** button will clear the contents of the History Log.

The contents of the History Log may be saved as a HTML file to either floppy or USB flash drive by clicking the **Save** button.

## Errors Tab

The Errors tab displays detailed information about any errors found, as well as any recommended actions.

The Error Log displays the tests for devices that have failed during the diagnostic testing and includes the following columns of information.

- The **Device** section displays the device tested.
- The **Test** section displays the type of test run.
- The **Times Failed** is the number of times the device has failed a test.
- The **Defect Code** provides a numerical code for the failure. The error codes are defined in the Help tab.
- The **Description** section describes the error that the diagnostic test found.
- The **Reason** section describes the likely cause of the error.
- The **Recommended Repair** will give a recommended action that should be performed to resolve the failed hardware.
- The **Warranty ID** is a unique error code associated with the specific error on your computer. When contacting the HP Support Center for assistance with a hardware failure, please be prepared to provide the Warranty ID.

The **Clear Errors** button will clear the contents of the Error Log.

The contents of the Error Log may be saved as a HTML file to either floppy or USB flash drive by clicking the **Save** button.

## Help Tab

The Help tab contains a **Vision Help** section, and a **Test Components** section. This tab includes search and index features. You may also review the HP End User License Agreement (EULA), as well as the HP Vision Field Diagnostic application version information on this tab.

The **Vision Help** section contains information on the major functions of Hewlett-Packard Vision Field Diagnostics.

The **Test Components** section provides a description of each test, as well as the parameters that may be adjusted when running in Custom test mode.

The **Defect codes** section contains information on the numerical error code that may appear in the Errors tab.

The **Memory test tab** section provides information on the **HP Memory Test** application that may be launched from the boot menu.


The **HP Support** section provides information on obtaining technical support from HP.

## Saving and Printing Information in HP Vision Field Diagnostics

You can save the information displayed in the HP Vision Field Diagnostics **Survey**, **History** and **Errors** tabs to a diskette or a USB flash drive. You can not save to the hard drive. The system will automatically create an html file that has the same appearance as the information displayed on the screen.

1. Insert a diskette or USB flash drive if running HP Vision Field Diagnostics from CD.
2. Click **Save** in the bottom on any of the **Survey**, **History** or **Errors** tabs. All three log files will be saved regardless of from which tab the Save button was clicked.
3. Select the drive onto which you will save the log files and click the **Save** button. Three html files will be saved to the inserted diskette or USB flash drive.


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 **NOTE:** Do not remove the diskette or USB flash drive until you see a message indicating that the html files have been written to the media.

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4. Print the desired information from the storage device used to save it.

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 **NOTE:** To exit HP Vision Field Diagnostics, click the **Exit Diagnostics** button at the bottom of the screen. Be sure to remove the USB flash drive or CD from the optical drive.

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## Downloading the Latest Version of HP Vision Field Diagnostics

1. Go to <http://www.hp.com>.
2. Click the **Software & Drivers** link.
3. Select **Download drivers and software (and firmware)**.
4. Enter your product name in the text box and press the **Enter** key.
5. Select your specific computer model.
6. Select your OS.
7. Click the **Diagnostic** link.
8. Click the **Hewlett-Packard Vision Field Diagnostics** link.
9. Click the **Download** button.

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 **NOTE:** The download includes instructions on how to create the bootable CD or the bootable USB flash drive.

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## Protecting the Software

To protect software from loss or damage, you should keep a backup copy of all system software, applications, and related files stored on the hard drive. See the operating system or backup utility documentation for instructions on making backup copies of data files.

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## 2 Troubleshooting Without Diagnostics

This chapter provides information on how to identify and correct minor problems, such as hard drive, optical drive, graphics, audio, memory, and software problems. If you encounter problems with the computer, refer to the tables in this chapter for probable causes and recommended solutions.

 **NOTE:** For information on specific error messages that may appear on the screen during Power-On Self-Test (POST) at startup, refer to Appendix A, [POST Error Messages on page 45](#).

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### Safety and Comfort

 **WARNING!** Misuse of the computer or failure to establish a safe and comfortable work environment may result in discomfort or serious injury. Refer to the *Safety & Comfort Guide* at <http://www.hp.com/ergo> for more information on choosing a workspace and creating a safe and comfortable work environment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. For more information, refer to the *Safety & Regulatory Information* guide.

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### Before You Call for Technical Support

If you are having problems with the computer, try the appropriate solutions below to try to isolate the exact problem before calling for technical support.

- Run the HP diagnostic tool.
- Run the hard drive self-test in Computer Setup. Refer to the *Computer Setup (F10) Utility Guide* for more information.
- Check the Power LED on the front of the computer to see if it is flashing red. The flashing lights are error codes that will help you diagnose the problem. Refer to Appendix A, [POST Error Messages on page 45](#) for more information.
- If the screen is blank, plug the monitor into a different video port on the computer if one is available. Or, replace the monitor with a monitor that you know is functioning properly.
- If you are working on a network, plug another computer with a different cable into the network connection. There may be a problem with the network plug or cable.
- If you recently added new hardware, remove the hardware and see if the computer functions properly.
- If you recently installed new software, uninstall the software and see if the computer functions properly.

- Boot the computer to the Safe Mode to see if it will boot without all of the drivers loaded. When booting the operating system, use “Last Known Configuration.”
- Refer to the comprehensive online technical support at <http://www.hp.com/support>.
- Refer to [Helpful Hints on page 7](#) in this guide.


To assist you in resolving problems online, HP Instant Support Professional Edition provides you with self-solve diagnostics. If you need to contact HP support, use HP Instant Support Professional Edition's online chat feature. Access HP Instant Support Professional Edition at: <http://www.hp.com/go/ispe>.

Access the Business Support Center (BSC) at <http://www.hp.com/go/bizsupport> for the latest online support information, software and drivers, proactive notification, and worldwide community of peers and HP experts.

If it becomes necessary to call for technical assistance, be prepared to do the following to ensure that your service call is handled properly:

- Be in front of your computer when you call.
- Write down the computer serial number, product ID number, and monitor serial number before calling.
- Spend time troubleshooting the problem with the service technician.
- Remove any hardware that was recently added to your system.
- Remove any software that was recently installed.

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 **NOTE:** For sales information and warranty upgrades (Care Packs), call your local authorized service provider or dealer.

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## Helpful Hints

If you encounter problems with the computer, monitor, or software, see the following list of general suggestions before taking further action:

- Check that the computer and monitor are plugged into a working electrical outlet.
- Check that the computer is turned on and the green power light is on.
- Check that the monitor is turned on and the green monitor light is on.
- Check the Power LED on the front of the computer to see if it is flashing red. The flashing lights are error codes that will help you diagnose the problem. Refer to Appendix A, [POST Error Messages on page 45](#) for more information.
- Turn up the brightness and contrast controls of the monitor if the monitor is dim.
- Press and hold any key. If the system beeps, then the keyboard should be operating correctly.
- Check all cable connections for loose connections or incorrect connections.
- Wake the computer by pressing any key on the keyboard or pressing the power button. If the system remains in suspend mode, shut down the computer by pressing and holding the power button for at least four seconds then press the power button again to restart the computer. If the system will not shut down, unplug the power cord, wait a few seconds, then plug it in again. The computer will

restart if it is set to automatic start after power loss in Computer Setup as soon as power is restored. If it does not restart, press the power button to start the computer.

- Reconfigure the computer after installing a non-plug and play expansion board or other option. See [Solving Hardware Installation Problems on page 29](#) for instructions.
  - Be sure that all the needed device drivers have been installed. For example, if you are using a printer, you need a driver for that model printer.
  - Remove all bootable media (CD or USB device) from the system before turning it on.
  - If you have installed an operating system other than the factory-installed operating system, check to be sure that it is supported on the system.
  - If the system has multiple video sources (embedded, PCI, or PCI-Express adapters) installed (embedded video on some models only) and a single monitor, the monitor must be plugged into the monitor connector on the source selected as the primary VGA adapter. During boot, the other monitor connectors are disabled and if the monitor is connected into these ports, the monitor will not function. You can select which source will be the default VGA source in Computer Setup.
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- △ **CAUTION:** When the computer is plugged into an AC power source, there is always voltage applied to the system board. You must disconnect the power cord from the power source before opening the computer to prevent system board or component damage.
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# Solving General Problems

You may be able to easily resolve the general problems described in this section. If a problem persists and you are unable to resolve it yourself or if you feel uncomfortable about performing the operation, contact an authorized dealer or reseller.

- ⚠ **WARNING!** When the computer is plugged into an AC power source, voltage is always applied to the system board. To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before touching.

**Table 2-1 Solving General Problems**

**Computer appears locked up and will not turn off when the power button is pressed.**

Cause	Solution
Software control of the power switch is not functional.	<ol style="list-style-type: none"><li>1. Press and hold the power button for at least four seconds until the computer turns off.</li><li>2. Disconnect the power cord from the electrical outlet.</li></ol>

**Computer will not respond to USB keyboard or mouse.**

Cause	Solution
Computer is in <b>standby</b> mode.	To resume from <b>standby</b> mode, press the power button or press any key.  <b>CAUTION:</b> When attempting to resume from <b>standby</b> mode, do not hold down the power button for more than four seconds. Otherwise, the computer will shut down and you will lose any unsaved data.
System has locked up.	Restart computer.

**Computer date and time display is incorrect.**

Cause	Solution
RTC (real-time clock) battery may need to be replaced.  <b>NOTE:</b> Connecting the computer to a live AC outlet prolongs the life of the RTC battery.	First, reset the date and time under <b>Control Panel</b> (Computer Setup can also be used to update the RTC date and time). If the problem persists, replace the RTC battery. See the <i>Hardware Reference Guide</i> for instructions on installing a new battery, or contact an authorized dealer or reseller for RTC battery replacement.

**Cursor will not move using the arrow keys on the keypad.**

Cause	Solution
The <b>Num Lock</b> key may be on.	Press the <b>Num Lock</b> key. The Num Lock light should not be on if you want to use the <b>arrow</b> keys. The <b>Num Lock</b> key can be disabled (or enabled) in Computer Setup.

**Table 2-1 Solving General Problems (continued)****There is no sound or sound volume is too low.**

Cause	Solution
System volume may be set low or muted.	<ol style="list-style-type: none"> <li>1. Check the F10 BIOS settings to make sure the internal system speaker is not muted (this setting does not affect the external speakers).</li> <li>2. Make sure the external speakers are properly connected and powered on and that the speakers' volume control is set correctly.</li> <li>3. Use the system volume control available in the operating system to make sure the speakers are not muted or to increase the volume.</li> </ol>
The audio device may be connected to the wrong jack on the rear of the computer.	Ensure that the device is connected to the correct jack on the rear of the computer.

**Cannot remove computer cover or access panel.**

Cause	Solution
Smart Cover Lock, featured on some computers, is locked.	<p>Unlock the Smart Cover Lock using Computer Setup.</p> <p>The Smart Cover FailSafe Key, a device for manually disabling the Smart Cover Lock, is available from HP. You will need the FailSafe Key in case of forgotten password, power loss, or computer malfunction. Order PN 166527-001 for the wrench-style key or PN 166527-002 for the screwdriver bit key.</p>

**Poor performance is experienced.**

Cause	Solution
Processor is hot.	<ol style="list-style-type: none"> <li>1. Make sure airflow to the computer is not blocked. Leave a 10.2-cm (4-inch) clearance on all vented sides of the computer and above the monitor to permit the required airflow.</li> <li>2. Make sure fans are connected and working properly (some fans only operate when needed).</li> <li>3. Make sure the processor heatsink is installed properly.</li> </ol>
Hard drive is full.	Transfer data from the hard drive to create more space on the hard drive.
Low on memory.	Add more memory.
Hard drive fragmented.	Defragment hard drive.
Program previously accessed did not release reserved memory back to the system.	Restart the computer.
Virus resident on the hard drive.	Run virus protection program.
Too many applications running.	<ol style="list-style-type: none"> <li>1. Close unnecessary applications to free up memory.</li> <li>2. Add more memory. Some applications run in the background and can be closed by right-clicking on their corresponding icons in the task tray. To prevent these</li> </ol>



**Table 2-1 Solving General Problems (continued)**

Cause	Solution
	<p>applications from launching at startup, go to <b>Start &gt; Run</b> (Windows XP) or <b>Start &gt; Accessories &gt; Run</b> (Windows Vista) and type <code>msconfig</code>. On the <b>Startup</b> tab of the System Configuration Utility, clear applications that you do not want to launch automatically.</p>
<p>Some software applications, especially games, are stressful on the graphics subsystem</p>	<ol style="list-style-type: none"> <li>1. Lower the display resolution for the current application or consult the documentation that came with the application for suggestions on how to improve performance by adjusting parameters in the application.</li> <li>2. Add more memory.</li> <li>3. Upgrade the graphics solution.</li> </ol>
<p>Cause unknown.</p>	<p>Restart the computer.</p>

**Computer powered off automatically and the Power LED flashes Red two times, once every second, followed by a two second pause, and the computer beeps two times. (Beeps stop after fifth iteration but LEDs continue flashing).**

Cause	Solution
<p>Processor thermal protection activated: A fan may be blocked or not turning. OR The heatsink is not properly attached to the processor.</p>	<ol style="list-style-type: none"> <li>1. Ensure that the computer air vents are not blocked and the processor cooling fan is running.</li> <li>2. Open hood, press power button, and see if the processor fan spins. If the processor fan is not spinning, make sure the fan's cable is plugged onto the system board header.</li> <li>3. If fan is plugged in, but is not spinning, then replace the heatsink/fan assembly.</li> <li>4. Contact an authorized reseller or service provider.</li> </ol>

**System does not power on and the LEDs on the front of the computer are not flashing.**

Cause	Solution
<p>System unable to power on.</p>	<p>Press and hold the power button for less than 4 seconds. If the hard drive LED turns green, then:</p> <ol style="list-style-type: none"> <li>1. Remove the expansion cards one at a time until the 5V_aux light on the system board turns on.</li> <li>2. Replace the system board.</li> </ol> <p>OR</p> <p>Press and hold the power button for less than 4 seconds. If the hard drive LED does not turn on green then:</p> <ol style="list-style-type: none"> <li>1. Check that the unit is plugged into a working AC outlet.</li> <li>2. Open hood and check that the power button harness is properly connected to the system board.</li> </ol>

**Table 2-1 Solving General Problems (continued)**

**System does not power on and the LEDs on the front of the computer are not flashing.**

Cause	Solution
	<ol style="list-style-type: none"><li data-bbox="858 275 1442 331">3. Check that both power supply cables are properly connected to the system board.</li><li data-bbox="858 352 1442 436">4. Check to see if the 5V_aux light on the system board is turned on. If it is turned on, then replace the power button harness.</li><li data-bbox="858 457 1442 514">5. If the 5V_aux light on the system board is off, then replace the power supply.</li><li data-bbox="858 535 1442 562">6. Replace the system board.</li></ol>

# Solving Power Problems

Common causes and solutions for power problems are listed in the following table.

**Table 2-2 Solving Power Problems**

**Power supply shuts down intermittently.**

Cause	Solution
Power supply will not turn on because of internal power supply fault.	Contact an authorized service provider to replace the power supply.

**Computer powered off automatically and the Power LED flashes Red two times, once every second, followed by a two second pause, and the computer beeps two times. (Beeps stop after fifth iteration but LEDs continue flashing.)**

Cause	Solution
Processor thermal protection activated: A fan may be blocked or not turning. OR The heatsink is not properly attached to the processor.	<ol style="list-style-type: none"><li>1. Ensure that the computer air vents are not blocked and the processor cooling fan is running.</li><li>2. Open hood, press power button, and see if the processor fan spins. If the processor fan is not spinning, make sure the fan's cable is plugged onto the system board header.</li><li>3. If fan is plugged in, but is not spinning, then replace the heatsink/fan assembly.</li><li>4. Contact an authorized reseller or service provider.</li></ol>

**Power LED flashes Red four times, once every second, followed by a two second pause, and the computer beeps four times. (Beeps stop after fifth iteration but LEDs continue flashing.)**

Cause	Solution
Power failure (power supply is overloaded).	<ol style="list-style-type: none"><li>1. Open the hood and ensure the 4- or 6-wire power supply cable is seated into the connector on the system board.</li><li>2. Check if a device is causing the problem by removing ALL attached devices (such as hard or optical drives and expansion cards). Power on the system. If the system enters the POST, then power off and replace one device at a time and repeat this procedure until failure occurs. Replace the device that is causing the failure. Continue adding devices one at a time to ensure all devices are functioning properly.</li><li>3. Replace the power supply.</li><li>4. Replace the system board.</li></ol>

# Solving Hard Drive Problems

**Table 2-3 Solving Hard Drive Problems**

**Hard drive error occurs.**

Cause	Solution
Hard disk has bad sectors or has failed.	<ol style="list-style-type: none"><li>1. In Microsoft Windows XP, right-click <b>Start</b>, click <b>Explore</b>, and select a drive. Select <b>File &gt; Properties &gt; Tools</b>. Under <b>Error-checking</b>, click <b>Check Now</b>.  In Microsoft Windows Vista, right-click <b>Start</b>, click <b>Explore</b>, and right-click on a drive. Select <b>Properties</b> then select the <b>Tools</b> tab. Under <b>Error-checking</b> click <b>Check Now</b>.</li><li>2. Use a utility to locate and block usage of bad sectors. If necessary, reformat the hard disk.</li></ol>

**Disk transaction problem.**

Cause	Solution
Either the directory structure is bad or there is a problem with a file.	<p>In Microsoft Windows XP, right-click <b>Start</b>, click <b>Explore</b>, and select a drive. Select <b>File &gt; Properties &gt; Tools</b>. Under <b>Error-checking</b>, click <b>Check Now</b>.</p> <p>In Microsoft Windows Vista, right-click <b>Start</b>, click <b>Explore</b>, and right-click on a drive. Select <b>Properties</b> then select the <b>Tools</b> tab. Under <b>Error-checking</b> click <b>Check Now</b>.</p>

**Drive not found (identified).**

Cause	Solution
Cable could be loose.	Check cable connections.
The system may not have automatically recognized a newly installed device.	<p>See reconfiguration directions in the <a href="#">Solving Hardware Installation Problems on page 29</a>. If the system still does not recognize the new device, check to see if the device is listed within Computer Setup. If it is listed, the probable cause is a driver problem. If it is not listed, the probable cause is a hardware problem.</p> <p>If this is a newly installed drive, run the Computer Setup utility and try adding a POST delay under <b>Advanced &gt; Power-On Options</b>.</p>
The device is attached to a SATA port that has been hidden in Computer Setup.	Run the Computer Setup utility and ensure <b>Device Available</b> is selected for the device's SATA port in <b>Security &gt; Device Security</b> .
Drive responds slowly after initial power up.	Run Computer Setup and increase the POST Delay in <b>Advanced &gt; Power-On Options</b> .

**Table 2-3 Solving Hard Drive Problems (continued)**

<b>Nonsystem disk/NLDR missing message.</b>	
<b>Cause</b>	<b>Solution</b>
The system is trying to start from a media device that is not bootable.	Remove the media device from the drive.
The system is trying to start from the hard drive but the hard drive may have been damaged.	<ol style="list-style-type: none"> <li>1. Insert a bootable media device into the drive and restart the computer.</li> <li>2. Check the hard drive format using fdisk: If NTFS formatting, use a third party reader to evaluate the drive. If FAT32 formatting, the hard drive cannot be accessed.</li> </ol>
System files missing or not properly installed.	<ol style="list-style-type: none"> <li>1. Insert a bootable media device into the drive and restart the computer.</li> <li>2. Check the hard drive format using Fdisk: If NTFSS formatting, use a third party reader to evaluate the drive. If FAT32 formatting, the hard drive cannot be accessed.</li> <li>3. Install system files for the appropriate operating system.</li> </ol>
Hard drive boot has been disabled in Computer Setup.	Run the Computer Setup utility and enable the hard drive entry in the <b>Storage &gt; Boot Order</b> list.
Bootable hard drive is not attached as first in a multi-hard drive configuration.	If attempting to boot from a hard drive, ensure it is attached to the system board connector labeled SATA 0.
Bootable hard drive's controller is not listed first in the Boot Order.	Run the Computer Setup utility and select <b>Storage &gt; Boot Order</b> and ensure the bootable hard drive's controller is listed immediately under the <b>Hard Drive</b> entry.
<b>Computer will not boot from hard drive.</b>	
<b>Cause</b>	<b>Solution</b>
The device is attached to a SATA port that has been hidden in Computer Setup.	Run the Computer Setup utility and ensure <b>Device Available</b> is selected for the device's SATA port in <b>Security &gt; Device Security</b> .
Boot order is not correct.	Run the Computer Setup utility and change boot sequence in <b>Storage &gt; Boot Order</b> .
Hard Drive's "Emulation Type" is set to "None."	Run the Computer Setup utility and change the "Emulation Type" to "Hard Disk" in the device's details under <b>Storage &gt; Device Configuration</b> .
Hard drive is damaged.	<p>Observe if the front panel Power LED is blinking RED and if any beeps are heard. See Appendix A, <a href="#">POST Error Messages on page 45</a> to determine possible causes for the blinking red and beep codes.</p> <p>See the Worldwide Limited Warranty for terms and conditions.</p>
<b>Computer seems to be locked up.</b>	
<b>Cause</b>	<b>Solution</b>
Program in use has stopped responding to commands.	Attempt the normal Windows "Shut Down" procedure. If this fails, press the power button for four or more seconds to turn

**Table 2-3 Solving Hard Drive Problems (continued)**

**Computer seems to be locked up.**

Cause	Solution
	off the power. To restart the computer, press the power button again.

**The removable hard drive has no power to the hard drive enclosure.**

Cause	Solution
The lock on the enclosure is not turned to the "ON" position.	Insert the key and turn the lock clockwise 90 degrees. The green LED on the front of the enclosure should be on.
Power cable from the computer power supply to the enclosure frame is not properly connected.	Check the power supply to make sure it is properly connected to the rear of the enclosure frame.

**The removable hard drive is not recognized by the computer.**

Cause	Solution
The removable hard drive carrier is not fully seated in the enclosure frame or the hard drive is not fully seated in the carrier.	Push the carrier into the enclosure frame so that the connector on the rear of the frame is properly seated. If this does not solve the problem, turn off the computer, remove the carrier, and check to see if the connector on the hard drive is properly seated in the carrier.

**The removable hard drive enclosure is beeping and the green LED is flashing.**

Cause	Solution
Fan failure alarm on the removable hard drive enclosure has been activated.	Shut down the computer and contact HP for a replacement enclosure.

# Solving Media Card Reader Problems

**Table 2-4 Solving Media Card Reader Problems**

**Media card will not work in a digital camera after formatting it in Microsoft Windows XP or Microsoft Windows Vista.**

Cause	Solution
By default, Windows XP and Windows Vista will format any media card with a capacity greater than 32MB with the FAT32 format. Most digital cameras use the FAT (FAT16 & FAT12) format and can not operate with a FAT32 formatted card.	Either format the media card in the digital camera or select FAT file system to format the media card in a computer with Windows XP or Windows Vista.

**A write-protected or locked error occurs when attempting to write to the media card.**

Cause	Solution
Media card is locked. Locking the media card is a safety feature that prevents writing to and deleting from an SD/Memory Stick/PRO card.	If using an SD card, make sure that the lock tab located on the right of the SD card is not in the locked position. If using a Memory Stick/PRO card, make sure that the lock tab located on the bottom of the Memory Stick/PRO card is not in the locked position.

**Can not write to the media card.**

Cause	Solution
The media card is a read-only memory (ROM) card.	Check the manufacturer's documentation included with your card to see if it writable. Refer to the previous section for a list of compatible cards.
Media card is locked. Locking the media card is a safety feature that prevents writing to and deleting from an SD/Memory Stick/PRO card.	If using an SD card, make sure that the lock tab located on the right of the SD card is not in the locked position. If using a Memory Stick/PRO card, make sure that the lock tab located on the bottom of the Memory Stick/PRO card is not in the locked position.

**Unable to access data on the media card after inserting it into a slot.**

Cause	Solution
The media card is not inserted properly, is inserted in the wrong slot, or is not supported.	Ensure that the card is inserted properly with the gold contact on the correct side. The green LED will light if inserted properly.

**Do not know how to remove a media card correctly.**

Cause	Solution
The computer's software is used to safely eject the card.	Open <b>My Computer</b> (Windows XP) or <b>Computer</b> (Windows Vista), right-click on the corresponding drive icon, and select <b>Eject</b> . Then pull the card out of the slot.  <b>NOTE:</b> Never remove the card when the green LED is flashing

**Table 2-4 Solving Media Card Reader Problems (continued)**

After installing the media card reader and booting to Windows, the reader and the inserted cards are not recognized by the computer.

Cause	Solution
The operating system needs time to recognize the device if the reader was just installed into the computer and you are turning the PC on for the first time.	Wait a few seconds so that the operating system can recognize the reader and the available ports, and then recognize whatever media is inserted in the reader.

After inserting a media card in the reader, the computer attempts to boot from the media card.

Cause	Solution
The inserted media card has boot capability.	If you do not want to boot from the media card, remove it during boot or do not select the option to boot from the inserted media card during the boot process.



# Solving Display Problems

If you encounter display problems, see the documentation that came with the monitor and to the common causes and solutions listed in the following table.

**Table 2-5 Solving Display Problems**

Blank screen (no video).

Cause	Solution
Monitor is not turned on and the monitor light is not on.	Turn on the monitor and check that the monitor light is on.
Bad monitor.	Try a different monitor.
The cable connections are not correct.	Check the cable connection from the monitor to the computer and to the electrical outlet.
You may have a screen blanking utility installed or energy saver features are enabled.	Press any key or click the mouse button and, if set, type your password.
System ROM is corrupted; system is running in Boot Block Emergency Recovery Mode (indicated by eight beeps).	Reflash the system ROM with the latest BIOS image. See the "Boot Block Emergency Recovery Mode" section of the <i>Desktop Management Guide</i> for more information
You are using a fixed-sync monitor and it will not sync at the resolution chosen.	Be sure that the monitor can accept the same horizontal scan rate as the resolution chosen.
Computer is in <b>standby</b> mode.	Press the power button to resume from <b>standby</b> mode.  <b>CAUTION:</b> When attempting to resume from <b>standby</b> mode, do not hold down the power button for more than four seconds. Otherwise, the computer will shut down and you will lose any unsaved data.
Monitor cable is plugged into the wrong connector.	If the computer system has both an integrated graphics connector and an add-in graphics card connector, plug the monitor cable into the graphics card connector on the back of the computer.
Monitor settings in the computer are not compatible with the monitor.	<ol style="list-style-type: none"><li>1. In Windows XP Control Panel, double-click the <b>Display</b> icon and select the <b>Settings</b> tab.  In Windows Vista Control Panel, under <b>Appearance and Personalization</b>, select <b>Adjust screen resolution</b>.</li><li>2. Use the sliding control to reset the resolution.</li></ol>
Monitor is configured to use an input that is not active.	Use the monitor's on-screen menu controls to select the input that is being driven by the system. Refer to the monitor's user documentation for more information on the on-screen controls and settings.

**Table 2-5 Solving Display Problems (continued)**

**Cannot enable integrated graphics after installing a PCI Express graphics card.**

Cause	Solution
On systems with Intel integrated graphics, the integrated graphics cannot be enabled after installing a PCI Express x16.	The integrated graphics can be enabled in Computer Setup if a PCI or PCI Express x1 graphics card is installed, but it cannot be enabled if there is a graphics card in the PCI Express x16 slot.
On systems with AMD integrated graphics, the integrated graphics can be enabled in Computer Setup only if an AMD PCI Express x16 graphics card is installed.	On systems with AMD integrated graphics, install an AMD PCI Express x16 graphics card and enable the integrated graphics in Computer Setup.

**Blank screen and the power LED flashes Red five times, once every second, followed by a two second pause, and the computer beeps five times. (Beeps stop after fifth iteration but LEDs continue flashing.)**

Cause	Solution
Pre-video memory error.	<ol style="list-style-type: none"><li>1. Reseat DIMMs. Power on the system.</li><li>2. Replace DIMMs one at a time to isolate the faulty module.</li><li>3. Replace third-party memory with HP memory.</li><li>4. Replace the system board.</li></ol>

**Blank screen and the power LED flashes Red six times, once every second, followed by a two second pause, and the computer beeps six times. (Beeps stop after fifth iteration but LEDs continue flashing.)**

Cause	Solution
Pre-video graphics error.	For systems with a graphics card: <ol style="list-style-type: none"><li>1. Reseat the graphics card. Power on the system.</li><li>2. Replace the graphics card.</li><li>3. Replace the system board.</li></ol> For systems with integrated graphics, replace the system board.

**Blank screen and the power LED flashes Red seven times, once every second, followed by a two second pause, and the computer beeps seven times. (Beeps stop after fifth iteration but LEDs continue flashing.)**

Cause	Solution
System board failure (ROM detected failure prior to video).	Replace the system board.

**Monitor does not function properly when used with energy saver features.**

Cause	Solution
Monitor without energy saver capabilities is being used with energy saver features enabled.	Disable monitor energy saver feature.

**Table 2-5 Solving Display Problems (continued)**

**Dim characters.**

Cause	Solution
The brightness and contrast controls are not set properly.	Adjust the monitor brightness and contrast controls.
Cables are not properly connected.	Check that the graphics cable is securely connected to the graphics card and the monitor.

**Blurry video or requested resolution cannot be set.**

Cause	Solution
If the graphics controller was upgraded, the correct graphics drivers may not be loaded.	Install the video drivers included in the upgrade kit.
Monitor is not capable of displaying requested resolution.	Change requested resolution.
Graphics card is bad.	Replace the graphics card.

**The picture is broken up, rolls, jitters, or flashes.**

Cause	Solution
The monitor connections may be incomplete or the monitor may be incorrectly adjusted.	<ol style="list-style-type: none"><li>1. Be sure the monitor cable is securely connected to the computer.</li><li>2. In a two-monitor system or if another monitor is in close proximity, be sure the monitors are not interfering with each other's electromagnetic field by moving them apart.</li><li>3. Fluorescent lights or fans may be too close to the monitor.</li></ol>
Monitor needs to be degaussed.	Degauss the monitor. Refer to the documentation that came with the monitor for instructions.

**Image is not centered.**

Cause	Solution
Position may need adjustment.	Press the monitor's Menu button to access the OSD menu. Select <b>ImageControl/ Horizontal Position</b> or <b>Vertical Position</b> to adjust the horizontal or vertical position of the image.

**"No Connection, Check Signal Cable" displays on screen.**

Cause	Solution
Monitor video cable is disconnected.	Connect the video cable between the monitor and computer.  <b>CAUTION:</b> Ensure that the computer power is off while connecting the video cable.

**Table 2-5 Solving Display Problems (continued)**

**“Out of Range” displays on screen.**

Cause	Solution
Video resolution and refresh rate are set higher than what the monitor supports.	Restart the computer and enter Safe Mode. Change the settings to a supported setting then restart the computer so that the new settings take effect.

**Vibrating or rattling noise coming from inside a CRT monitor when powered on.**

Cause	Solution
Monitor degaussing coil has been activated.	None. It is normal for the degaussing coil to be activated when the monitor is powered on.

**Clicking noise coming from inside a CRT monitor.**

Cause	Solution
Electronic relays have been activated inside the monitor.	None. It is normal for some monitors to make a clicking noise when turned on and off, when going in and out of standby mode, and when changing resolutions.

**High pitched noise coming from inside a flat panel monitor.**

Cause	Solution
Brightness and/or contrast settings are too high.	Lower brightness and/or contrast settings.

**Fuzzy focus; streaking, ghosting, or shadowing effects; horizontal scrolling lines; faint vertical bars; or unable to center the picture on the screen (flat panel monitors using an analog VGA input connection only).**

Cause	Solution
Flat panel monitor's internal digital conversion circuits may be unable to correctly interpret the output synchronization of the graphics card.	<ol style="list-style-type: none"><li>1. Select the monitor's Auto-Adjustment option in the monitor's on-screen display menu.</li><li>2. Manually synchronize the Clock and Clock Phase on-screen display functions. To download a SoftPaq that will assist you with the synchronization, go to the following Web site, select the appropriate monitor, and download either SP32347 or SP32202: <a href="http://www.hp.com/support">http://www.hp.com/support</a></li></ol>
Graphics card is not seated properly or is bad.	<ol style="list-style-type: none"><li>1. Reseat the graphics card.</li><li>2. Replace the graphics card.</li></ol>

**Certain typed symbols do not appear correct.**

Cause	Solution
The font you are using does not support that particular symbol.	Use the Character Map to locate and select the appropriate symbol. Click <b>Start &gt; All Programs &gt; Accessories &gt; System</b>

**Table 2-5 Solving Display Problems (continued)**

Certain typed symbols do not appear correct.

Cause	Solution
	<b>Tools &gt; Character Map.</b> You can copy the symbol from the Character Map into a document.

# Solving Audio Problems

If the computer has audio features and you encounter audio problems, see the common causes and solutions listed in the following table.

**Table 2-6 Solving Audio Problems**

## Sound cuts in and out.

Cause	Solution
Processor resources are being used by other open applications.	Shut down all open processor-intensive applications.
Direct sound latency, common in many media player applications.	In Windows XP only: <ol style="list-style-type: none"><li>1. From the <b>Control Panel</b>, select <b>Sounds and Audio Devices</b>.</li><li>2. On the <b>Audio</b> tab, select a device from the <b>Sound Playback</b> list.</li><li>3. Click the <b>Advanced</b> button and select the <b>Performance</b> tab.</li><li>4. Set the <b>Hardware acceleration</b> slider to <b>None</b> and the <b>Sample rate conversion quality</b> slider to <b>Good</b> and retest the audio.</li><li>5. Set the <b>Hardware acceleration</b> slider to <b>Full</b> and the <b>Sample rate conversion quality</b> slider to <b>Best</b> and retest the audio.</li></ol>

## Sound does not come out of the speaker or headphones.

Cause	Solution
Software volume control is turned down or muted.	Double-click the <b>Speaker</b> icon on the taskbar, then make sure that <b>Mute</b> is not selected and use the volume slider to adjust the volume.
Audio is hidden in Computer Setup.	Enable the audio in Computer Setup: <b>Security &gt; Device Security &gt; System Audio</b> .
The external speakers are not turned on.	Turn on the external speakers.
The audio device may be connected to the wrong jack.	Ensure that the device is connected to the correct jack on the computer. The speakers should be plugged into the rear line-out jack and the headphones should be plugged into the front headphone jack.
External speakers plugged into the wrong audio jack on a recently installed sound card.	See the sound card documentation for proper speaker connection.
Digital CD audio is not enabled.	Enable digital CD audio. In the Device Manager, right-click on the CD/DVD device and select <b>Properties</b> . Make sure <b>Enable digital CD audio for this CD-ROM device</b> is checked.
Headphones or devices connected to the line-out connector mute the internal speaker.	Turn on and use headphones or external speakers, if connected, or disconnect headphones or external speakers.
Computer is in <b>standby</b> mode.	Press the power button to resume from <b>standby</b> mode.

**Table 2-6 Solving Audio Problems (continued)**

**Sound does not come out of the speaker or headphones.**

Cause	Solution
	<b>CAUTION:</b> When attempting to resume from <b>standby</b> mode, do not hold down the power button for more than four seconds. Otherwise, the computer will shut down and you will lose any unsaved data.
Internal speaker is disabled in Computer Setup.	Enable the internal speaker in Computer Setup. Select <b>Advanced &gt; Device Options &gt; Internal Speaker</b> .
One or more audio solutions are installed in the system.	Ensure that your application is set to use the correct audio device.

**Sound from headphones is not clear or muffled.**

Cause	Solution
Headphones are plugged into the rear audio output connector. The rear audio output connector is for powered audio devices and is not designed for headphone use.	Plug the headphones into the headphone connector on the front of the computer.

**Computer appears to be locked up while recording audio.**

Cause	Solution
The hard disk may be full.	Before recording, make sure there is enough free space on the hard disk. You can also try recording the audio file in a compressed format.

**Line-in jack is not functioning properly.**

Cause	Solution
Jack has been reconfigured in the audio driver or application software.	In the audio driver or application software, reconfigure the jack or set the jack to its default value.

**Headphone/Microphone jack on the front of the computer is not functioning properly.**

Cause	Solution
Jack has been reconfigured in the audio driver or application software.	In the audio driver or application software, reconfigure the jack or set the jack to its default value.

# Solving Printer Problems

If you encounter printer problems, see the documentation that came with the printer and to the common causes and solutions listed in the following table.

**Table 2-7 Solving Printer Problems**

## Printer will not print.

Cause	Solution
Printer is not turned on and online.	Turn the printer on and make sure it is online.
The correct printer drivers for the application are not installed.	<ol style="list-style-type: none"><li>1. Install the correct printer driver for the application.</li><li>2. Try printing using the MS-DOS command: <pre>DIR C:\ &gt; [printer port]</pre>where [printer port] is the address of the printer being used. If the printer works, reload the printer driver.</li></ol>
If you are on a network, you may not have made the connection to the printer.	Make the proper network connections to the printer.
Printer may have failed.	Run printer self-test.

## Printer will not turn on.

Cause	Solution
The cables may not be connected properly.	Reconnect all cables and check the power cord and electrical outlet.

## Printer prints garbled information.

Cause	Solution
The correct printer driver for the application is not installed.	Install the correct printer driver for the application.
The cables may not be connected properly.	Reconnect all cables.
Printer memory may be overloaded.	Reset the printer by turning it off for one minute, then turn it back on.

## Printer is offline.

Cause	Solution
The printer may be out of paper.	Check the paper tray and refill it if it is empty. Select online.



# Solving Keyboard and Mouse Problems

If you encounter keyboard or mouse problems, see the documentation that came with the equipment and to the common causes and solutions listed in the following table.

**Table 2-8 Solving Keyboard Problems**

**Keyboard commands and typing are not recognized by the computer.**

Cause	Solution
Keyboard connector is not properly connected.	<ol style="list-style-type: none"><li>1. On the Windows XP Desktop, click <b>Start &gt; Shut Down</b>.  On the Windows Vista Desktop, click <b>Start</b>, click the arrow on the lower right corner of the Start menu, then select <b>Shut Down</b>.</li><li>2. After the shutdown is complete, reconnect the keyboard to the back of the computer and restart the computer.</li></ol>
Program in use has stopped responding to commands.	Shut down your computer using the mouse and then restart the computer.
Keyboard needs repairs.	See the Worldwide Limited Warranty for terms and conditions.
Computer is in <b>standby</b> mode.	Press the power button to resume from <b>standby</b> mode.  <b>CAUTION:</b> When attempting to resume from <b>standby</b> mode, do not hold down the power button for more than four seconds. Otherwise, the computer will shut down and you will lose any unsaved data.

**Cursor will not move using the arrow keys on the keypad.**

Cause	Solution
The <b>Num Lock</b> key may be on.	Press the <b>Num Lock</b> key. The Num Lock light should not be on if you want to use the <b>arrow</b> keys. The <b>Num Lock</b> key can be disabled (or enabled) in Computer Setup.

**Table 2-9 Solving Mouse Problems**

**Mouse does not respond to movement or is too slow.**

Cause	Solution
Mouse connector is not properly plugged into the back of the computer.	Shut down the computer using the keyboard. <ol style="list-style-type: none"><li>1. Press the <b>Ctrl</b> and <b>Esc</b> keys at the same time (or press the <b>Windows logo</b> key) to display the <b>Start</b> menu.</li><li>2. Use the <b>arrow</b> keys to select <b>Shut Down</b> and then press the <b>Enter</b> key.</li><li>3. After the shutdown is complete, plug the mouse connector into the back of the computer (or the keyboard) and restart.</li></ol>
Program in use has stopped responding to commands.	Shut down the computer using the keyboard then restart the computer.

**Table 2-9 Solving Mouse Problems (continued)**

**Mouse does not respond to movement or is too slow.**

<b>Cause</b>	<b>Solution</b>
Mouse may need cleaning.	Remove the roller ball cover on the mouse and clean the internal components.
Mouse may need repair.	See the Worldwide Limited Warranty for terms and conditions.
Computer is in <b>standby</b> mode.	Press the power button to resume from <b>standby</b> mode.  <b>CAUTION:</b> When attempting to resume from <b>standby</b> mode, do not hold down the power button for more than four seconds. Otherwise, the computer will shut down and you will lose any unsaved data.

**Mouse will only move vertically, horizontally, or movement is jerky.**

<b>Cause</b>	<b>Solution</b>
Mouse roller ball or the rotating encoder shafts that make contact with the ball are dirty.	Remove roller ball cover from the bottom of the mouse and clean the internal components with a mouse cleaning kit available from most computer stores.

# Solving Hardware Installation Problems

You may need to reconfigure the computer when you add or remove hardware, such as an additional drive or expansion card. If you install a plug and play device, Windows automatically recognizes the device and configures the computer. If you install a non–plug and play device, you must reconfigure the computer after completing installation of the new hardware. In Windows, use the **Add Hardware Wizard** and follow the instructions that appear on the screen.

⚠ **WARNING!** When the computer is plugged into an AC power source, voltage is always applied to the system board. To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before touching.

**Table 2-10 Solving Hardware Installation Problems**

**A new device is not recognized as part of the system.**

Cause	Solution
Device is not seated or connected properly.	Ensure that the device is properly and securely connected and that pins in the connector are not bent down.
Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected and that pins in the cable or connector are not bent down.
Power switch of new external device is not turned on.	Turn off the computer, turn on the external device, then turn on the computer to integrate the device with the computer system.
When the system advised you of changes to the configuration, you did not accept them.	Reboot the computer and follow the instructions for accepting the changes.
A plug and play board may not automatically configure when added if the default configuration conflicts with other devices.	Use Windows Device Manager to deselect the automatic settings for the board and choose a basic configuration that does not cause a resource conflict. You can also use Computer Setup to reconfigure or disable devices to resolve the resource conflict.
USB ports on the computer are disabled in Computer Setup.	Enter Computer Setup (F10) and enable the USB ports.

**Computer will not start.**

Cause	Solution
Wrong memory modules were used in the upgrade or memory modules were installed in the wrong location.	<ol style="list-style-type: none"><li>1. Review the <i>Hardware Reference Guide</i> for your system to determine if you are using the correct memory modules and to verify the proper installation.</li><li>2. Observe the beeps and LED lights on the front of the computer. Beeps and flashing LEDs are codes for specific problems.</li><li>3. If you still cannot resolve the issue, contact Customer Support.</li></ol>

**Table 2-10 Solving Hardware Installation Problems (continued)**

Power LED flashes Red five times, once every second, followed by a two second pause, and the computer beeps five times. (Beeps stop after fifth iteration but LEDs continue flashing.)

Cause	Solution
Memory is installed incorrectly or is bad.	<p><b>CAUTION:</b> To avoid damage to the DIMMs or the system board, you must unplug the computer power cord before attempting to reseat, install, or remove a DIMM module.</p> <ol style="list-style-type: none"><li>1. Reseat DIMMs. Power on the system.</li><li>2. Replace DIMMs one at a time to isolate the faulty module.</li></ol> <p><b>NOTE:</b> Refer to the <i>Hardware Reference Guide</i> for your system for proper DIMM installation instructions.</p> <ol style="list-style-type: none"><li>3. Replace third-party memory with HP memory.</li><li>4. Replace the system board.</li></ol>

Power LED flashes Red six times, once every second, followed by a two second pause, and the computer beeps six times. (Beeps stop after fifth iteration but LEDs continue flashing.)

Cause	Solution
Graphics card is not seated properly or is bad, or system board is bad.	<p>For systems with a graphics card:</p> <ol style="list-style-type: none"><li>1. Reseat the graphics card. Power on the system.</li><li>2. Replace the graphics card.</li><li>3. Replace the system board.</li></ol> <p>For systems with integrated graphics, replace the system board.</p>

Power LED flashes Red ten times, once every second, followed by a two second pause, and the computer beeps ten times. (Beeps stop after fifth iteration but LEDs continue flashing.)

Cause	Solution
Bad option card.	<ol style="list-style-type: none"><li>1. Check each option card by removing the cards one at time (if multiple cards), then power on the system to see if fault goes away.</li><li>2. Once bad card is identified, remove and replace bad option card.</li><li>3. Replace the system board.</li></ol>

# Solving Network Problems

Some common causes and solutions for network problems are listed in the following table. These guidelines do not discuss the process of debugging the network cabling.

**Table 2-11 Solving Network Problems**

**Wake-on-LAN feature is not functioning.**

Cause	Solution
Wake-on-LAN is not enabled.	<p>To enable Wake-on-LAN in Windows XP:</p> <ol style="list-style-type: none"><li>1. Select <b>Start &gt; Control Panel</b>.</li><li>2. Double-click <b>Network Connections</b>.</li><li>3. Double-click <b>Local Area Connection</b>.</li><li>4. Click <b>Properties</b>.</li><li>5. Click <b>Configure</b>.</li><li>6. Click the <b>Power Management</b> tab, then select the check box to <b>Allow this device to bring the computer out of standby</b>.</li></ol> <p>To enable Wake-on-LAN in Windows Vista:</p> <ol style="list-style-type: none"><li>1. Select <b>Start &gt; Control Panel</b>.</li><li>2. Under <b>Network and Internet</b>, select <b>View network status and tasks</b>.</li><li>3. In the <b>Tasks</b> list, select <b>Manage network connections</b>.</li><li>4. Double-click <b>Local Area Connection</b>.</li><li>5. Click the <b>Properties</b> button.</li><li>6. Click the <b>Configure</b> button.</li><li>7. Click the <b>Power Management</b> tab, then select the check box to <b>Allow this device to wake the computer</b>.</li></ol>

**Network driver does not detect network controller.**

Cause	Solution
Network controller is disabled.	<ol style="list-style-type: none"><li>1. Run Computer Setup and enable network controller.</li><li>2. Enable the network controller in the operating system via Device Manager.</li></ol>
Incorrect network driver.	Check the network controller documentation for the correct driver or obtain the latest driver from the manufacturer's Web site.

**Table 2-11 Solving Network Problems (continued)**

**Network status link light never flashes.**

**NOTE:** The network status light is supposed to flash when there is network activity.

Cause	Solution
No active network is detected.	Check cabling and network equipment for proper connection.
Network controller is not set up properly.	Check for the device status within Windows, such as Device Manager for driver load and the Network Connections applet within Windows for link status.
Network controller is disabled.	<ol style="list-style-type: none"><li>1. Run Computer Setup and enable network controller.</li><li>2. Enable the network controller in the operating system via Device Manager.</li></ol>
Network driver is not properly loaded.	Reinstall network drivers.
System cannot autosense the network.	Disable auto-sensing capabilities and force the system into the correct operating mode.

**Diagnostics reports a failure.**

Cause	Solution
The cable is not securely connected.	Ensure that the cable is securely attached to the network connector and that the other end of the cable is securely attached to the correct device.
The cable is attached to the incorrect connector.	Ensure that the cable is attached to the correct connector.
There is a problem with the cable or a device at the other end of the cable.	Ensure that the cable and device at the other end are operating correctly.
Network controller interrupt is shared with an expansion board.	Under the Computer Setup <b>Advanced</b> menu, change the resource settings for the board.
The network controller is defective.	Contact an authorized service provider.

**Diagnostics passes, but the computer does not communicate with the network.**

Cause	Solution
Network drivers are not loaded, or driver parameters do not match current configuration.	Make sure the network drivers are loaded and that the driver parameters match the configuration of the network controller.  Make sure the correct network client and protocol is installed.
The network controller is not configured for this computer.	Select the <b>Network</b> icon in the <b>Control Panel</b> and configure the network controller.

**Network controller stopped working when an expansion board was added to the computer.**

Cause	Solution
Network controller interrupt is shared with an expansion board.	Under the Computer Setup <b>Advanced</b> menu, change the resource settings for the board.

**Table 2-11 Solving Network Problems (continued)**

**Network controller stopped working when an expansion board was added to the computer.**

Cause	Solution
The network controller requires drivers.	Verify that the drivers were not accidentally deleted when the drivers for a new expansion board were installed.
The expansion board installed is a network card (NIC) and conflicts with the embedded NIC.	Under the Computer Setup <b>Advanced</b> menu, change the resource settings for the board.

**Network controller stops working without apparent cause.**

Cause	Solution
The files containing the network drivers are corrupted.	Reinstall the network drivers.
The cable is not securely connected.	Ensure that the cable is securely attached to the network connector and that the other end of the cable is securely attached to the correct device.
The network controller is defective.	Contact an authorized service provider.

**New network card will not boot.**

Cause	Solution
New network card may be defective or may not meet industry-standard specifications.	Install a working, industry-standard NIC, or change the boot sequence to boot from another source.

**Cannot connect to network server when attempting Remote System Installation.**

Cause	Solution
The network controller is not configured properly.	Verify Network Connectivity, that a DHCP Server is present, and that the Remote System Installation Server contains the NIC drivers for your NIC.

**System setup utility reports unprogrammed EEPROM.**

Cause	Solution
Unprogrammed EEPROM.	Contact an authorized service provider.

# Solving Memory Problems

If you encounter memory problems, some common causes and solutions are listed in the following table.

- △ **CAUTION:** Power may still be supplied to the DIMMs when the computer is turned off (depending on the Management Engine (ME) settings on some models). To avoid damage to the DIMMs or the system board, you must unplug the computer power cord before attempting to reseat, install, or remove a DIMM module.

For those systems that support ECC memory, HP does not support mixing ECC and non-ECC memory. Otherwise, the computer will not boot the operating system.

- 📄 **NOTE:** On some models, the memory count will be affected by configurations with the Management Engine (ME) enabled. The ME uses 8MB of system memory in single channel mode or 16MB of memory in dual-channel mode to download, decompress, and execute the ME firmware for Out-of-Band (OOB), third-party data storage, and other management functions.

**Table 2-12 Solving Memory Problems**

**System will not boot or does not function properly after installing additional memory modules.**

Cause	Solution
On Intel systems, A memory module is not installed in the DIMM1 socket.	Ensure that a memory module is installed in the black DIMM1 socket on the system board. This socket must be populated with a memory module. Populate DIMM sockets in the following order for Intel systems: DIMM1, DIMM3, DIMM2, DIMM4.
On AMD systems, a memory module is not installed in the system board memory socket.	The sockets must be populated with at least one memory module. Install memory modules in the following order: XMM4, XMM3, XMM2, XMM1.
Memory module is not the correct type or speed grade for the system or the new memory module is not seated properly.	Replace module with the correct industry-standard device for the computer. On some models, ECC and non-ECC memory modules cannot be mixed.

**Out of memory error.**

Cause	Solution
Memory configuration may not be set up correctly.	Use the Device Manager to check memory configuration.
You have run out of memory to run the application.	Check the application documentation to determine the memory requirements.

**Memory count during POST is wrong.**

Cause	Solution
The memory modules may not be installed correctly.	Check that the memory modules have been installed correctly and that proper modules are used.
Integrated graphics may use system memory.	No action required.



**Table 2-12 Solving Memory Problems (continued)**

**Insufficient memory error during operation.**

Cause	Solution
Too many Terminate and Stay Resident programs (TSRs) are installed.	Delete any TSRs that you do not need.
You have run out of memory for the application.	Check the memory requirements for the application or add more memory to the computer.

**Power LED flashes Red five times, once every second, followed by a two second pause, and the computer beeps five times. (Beeps stop after fifth iteration but LEDs continue flashing.)**

Cause	Solution
Memory is installed incorrectly or is bad.	<ol style="list-style-type: none"><li>1. Reseat DIMMs. Power on the system.</li><li>2. Replace DIMMs one at a time to isolate the faulty module.</li><li>3. Replace third-party memory with HP memory.</li><li>4. Replace the system board.</li></ol>

# Solving Processor Problems

If you encounter processor problems, common causes and solutions are listed in the following table.

**Table 2-13 Solving Processor Problems**

Poor performance is experienced.

Cause	Solution
Processor is hot.	<ol style="list-style-type: none"><li>1. Make sure the airflow to the computer is not blocked.</li><li>2. Make sure the fans are connected and working properly (some fans only operate when needed).</li><li>3. Make sure the processor heatsink is installed properly.</li></ol>

Power LED flashes Red three times, once every second, followed by a two second pause.

Cause	Solution
Processor is not seated properly or not installed.	<ol style="list-style-type: none"><li>1. Check to see that the processor is present.</li><li>2. Reseat the processor.</li></ol>

Power LED flashes Red eleven times, once every second, followed by a two second pause.

Cause	Solution
The current processor does not support a feature previously enabled on this system.	<ol style="list-style-type: none"><li>1. Install a TXT capable processor.</li><li>2. Disable TXT in the Computer Setup (F10) utility.</li><li>3. Reinstall the original processor.</li></ol>

# Solving CD-ROM and DVD Problems

If you encounter CD-ROM or DVD problems, see the common causes and solutions listed in the following table or to the documentation that came with the optional device.

**Table 2-14 Solving CD-ROM and DVD Problems**

**System will not boot from CD-ROM or DVD drive.**

Cause	Solution
The device is attached to a SATA port that has been hidden in the Computer Setup utility.	Run the Computer Setup utility and ensure <b>Device Available</b> is selected for the device's SATA port in <b>Security &gt; Device Security</b> .
Removable Media Boot is disabled in the Computer Setup utility.	Run the Computer Setup utility and enable booting to removable media in <b>Storage &gt; Storage Options</b> . Ensure CD-ROM is enabled in <b>Storage &gt; Boot Order</b> .
Network Server Mode is enabled in Computer Setup.	Run the Computer Setup utility and disable Network Server Mode in <b>Security &gt; Password Options</b> .
Non-bootable CD in drive.	Try a bootable CD in the drive.
Boot order not correct.	Run the Computer Setup utility and change boot sequence in <b>Storage &gt; Boot Order</b> .

**Drive not found (identified).**

Cause	Solution
Cable could be loose.	Check cable connections.
The system may not have automatically recognized a newly installed device.	See reconfiguration directions in the <a href="#">Solving Hardware Installation Problems on page 29</a> . If the system still does not recognize the new device, check to see if the device is listed within Computer Setup. If it is listed, the probable cause is a driver problem. If it is not listed, the probable cause is a hardware problem.  If this is a newly installed drive, run the Computer Setup utility and try adding a POST delay under <b>Advanced &gt; Power-On Options</b> .
The device is attached to a SATA port that has been hidden in Computer Setup.	Run the Computer Setup utility and ensure <b>Device Available</b> is selected for the device's SATA port in <b>Security &gt; Device Security</b> .
Drive responds slowly immediately after power-up.	Run Computer Setup and increase the POST Delay in <b>Advanced &gt; Power-On Options</b> .

**CD-ROM or DVD devices are not detected or driver is not loaded.**

Cause	Solution
Drive is not connected properly or not properly configured.	See the documentation that came with the optional device.

**Table 2-14 Solving CD-ROM and DVD Problems (continued)**

**Movie will not play in the DVD drive.**

Cause	Solution
Movie may be regionalized for a different country.	See the documentation that came with the DVD drive.
Decoder software is not installed.	Install decoder software.
Damaged media.	Replace media.
Movie rating locked out by parental lock.	Use DVD software to remove parental lock.
Media installed upside down.	Reinstall media.

**Cannot eject compact disc (tray-load unit).**

Cause	Solution
Disc not properly seated in the drive.	Turn off the computer and insert a thin metal rod into the emergency eject hole and push firmly. Slowly pull the tray out from the drive until the tray is fully extended, then remove the disc.

**CD-ROM, CD-RW, DVD-ROM, or DVD-R/RW drive cannot read a disc or takes too long to start.**

Cause	Solution
Media has been inserted upside down.	Re-insert the media with the label facing up.
The DVD-ROM drive takes longer to start because it has to determine the type of media played, such as audio or video.	Wait at least 30 seconds to let the DVD-ROM drive determine the type of media being played. If the disc still does not start, read the other solutions listed for this topic.
CD or DVD disc is dirty.	Clean CD or DVD with a CD cleaning kit, available from most computer stores.
Windows does not detect the CD-ROM or DVD-ROM drive.	<ol style="list-style-type: none"><li>1. Use Device Manager to remove or uninstall the device.</li><li>2. Restart the computer and let Windows detect the CD or DVD driver.</li></ol>

**Recording or copying CDs is difficult or impossible.**

Cause	Solution
Wrong or poor quality media type.	<ol style="list-style-type: none"><li>1. Try using a slower speed when recording.</li><li>2. Verify that you are using the correct media for the drive.</li><li>3. Try a different brand of media. Quality varies widely between manufacturers.</li></ol>

# Solving USB Flash Drive Problems

If you encounter USB flash drive problems, common causes and solutions are listed in the following table.

**Table 2-15 Solving USB Flash Drive Problems**

**USB flash drive is not seen as a drive letter in Windows.**

Cause	Solution
The drive letter after the last physical drive is not available.	Change the default drive letter for the flash drive in Windows.

**USB flash drive not found (identified).**

Cause	Solution
The device is attached to a USB port that has been hidden in Computer Setup.	Run the Computer Setup utility and ensure that "Device Available" is selected for the USB Ports under <b>Security &gt; Device Security</b> .
The device was not properly seated before power-up.	Ensure the device is fully inserted into the USB port before applying power to the system

**System will not boot from USB flash drive.**

Cause	Solution
Boot order is not correct.	Run the Computer Setup utility and change boot sequence in <b>Storage &gt; Boot Order</b> .
Removable Media Boot is disabled in the Computer Setup utility.	Run the Computer Setup utility and enable booting to removable media in <b>Storage &gt; Storage Options</b> . Ensure USB is enabled in <b>Storage &gt; Boot Order</b> .
The image on the device is not bootable.	Follow the procedures described in the "ROM Flash: Replicating the Setup: Creating a Bootable Device: Supported USB Flash Media Device" section of the <i>Service Reference Guide</i> .

**The computer boots to DOS after making a bootable flash drive.**

Cause	Solution
Flash drive is bootable.	Install the flash drive only after the operating system boots.

# Solving Front Panel Component Problems

If you encounter problems with devices connected to the front panel, refer to the common causes and solutions listed in the following table.

**Table 2-16 Solving Front Panel Component Problems**

**A USB device, headphone, or microphone is not recognized by the computer.**

Cause	Solution
Device is not properly connected.	<ol style="list-style-type: none"><li>1. Turn off the computer.</li><li>2. Reconnect the device to the front of the computer and restart the computer.</li></ol>
The device does not have power.	If the USB device requires AC power, be sure one end is connected to the device and one end is connected to a live outlet.
The correct device driver is not installed.	<ol style="list-style-type: none"><li>1. Install the correct driver for the device.</li><li>2. You might need to reboot the computer.</li></ol>
The cable from the device to the computer does not work.	<ol style="list-style-type: none"><li>1. If possible, replace the cable.</li><li>2. Restart the computer.</li></ol>
The device is not working.	<ol style="list-style-type: none"><li>1. Replace the device.</li><li>2. Restart the computer.</li></ol>
USB ports on the computer are disabled in Computer Setup.	Enter Computer Setup (F10) and enable the USB ports.

# Solving Internet Access Problems

If you encounter Internet access problems, consult your Internet Service Provider (ISP) or refer to the common causes and solutions listed in the following table.

**Table 2-17 Solving Internet Access Problems**

Cause	Solution
Internet Service Provider (ISP) account is not set up properly.	Verify Internet settings or contact your ISP for assistance.
Modem is not set up properly.	Reconnect the modem. Verify the connections are correct using the quick setup documentation.
Web browser is not set up properly.	Verify that the Web browser is installed and set up to work with your ISP.
Cable/DSL modem is not plugged in.	Plug in cable/DSL modem. You should see a "power" LED light on the front of the cable/DSL modem.
Cable/DSL service is not available or has been interrupted due to bad weather.	Try connecting to the Internet at a later time or contact your ISP. (If the cable/DSL service is connected, the "cable" LED light on the front of the cable/DSL modem will be on.)
The CAT5 UTP cable is disconnected.	Connect the CAT5 UTP cable between the cable modem and the computers's RJ-45 connector. (If the connection is good, the "PC" LED light on the front of the cable/DSL modem will be on.)
IP address is not configured properly.	Contact your ISP for the correct IP address.
Cookies are corrupted. (A "cookie" is a small piece of information that a Web server can store temporarily with the Web browser. This is useful for having the browser remember some specific information that the Web server can later retrieve.)	<p><b>Windows Vista</b></p> <ol style="list-style-type: none"><li>1. Select <b>Start &gt; Control Panel</b>.</li><li>2. Click <b>Network and Internet</b>.</li><li>3. Click <b>Internet Options</b>.</li><li>4. In the <b>Browsing history</b> section on the <b>General</b> tab, click the <b>Delete</b> button.</li><li>5. Click the <b>Delete cookies</b> button.</li></ol> <p><b>Windows XP</b></p> <ol style="list-style-type: none"><li>1. Select <b>Start &gt; Control Panel</b>.</li><li>2. Double-click <b>Internet Options</b>.</li><li>3. On the <b>General</b> tab, click the <b>Delete Cookies</b> button.</li></ol>

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**Cannot automatically launch Internet programs.**

Cause	Solution
You must log on to your ISP before some programs will start.	Log on to your ISP and launch the desired program.

**Table 2-17 Solving Internet Access Problems (continued)**

**Internet takes too long to download Web sites.**

Cause	Solution
Modem is not set up properly.	<p data-bbox="855 275 1385 327">Verify that the modem is connected and communicating properly.</p> <p data-bbox="855 352 986 378"><b>Windows XP</b></p> <ol data-bbox="855 403 1437 863" style="list-style-type: none"><li>1. Select <b>Start &gt; Control Panel</b>.</li><li>2. Double-click <b>System</b>.</li><li>3. Click the <b>Hardware</b> tab.</li><li>4. In the <b>Device Manager</b> area, click the <b>Device Manager</b> button.</li><li>5. Double-click <b>Modems</b>.</li><li>6. Double-click <b>Agere Systems PCI-SV92PP Soft Modem</b>.</li><li>7. On the <b>General</b> tab, click <b>Diagnostics</b>.</li><li>8. Click <b>Query Modem</b>. A "Success" response indicates the modem is connected and working properly.</li></ol> <p data-bbox="855 888 1007 913"><b>Windows Vista</b></p> <ol data-bbox="855 938 1437 1367" style="list-style-type: none"><li>1. Select <b>Start &gt; Control Panel</b>.</li><li>2. Click on <b>System and Maintenance</b>.</li><li>3. Click on <b>System</b>.</li><li>4. In the <b>Tasks</b> list, select <b>Device Manager</b>.</li><li>5. Double-click <b>Modems</b>.</li><li>6. Double-click <b>Agere Systems PCI-SV92PP Soft Modem</b>.</li><li>7. On the <b>General</b> tab, click <b>Diagnostics</b>.</li><li>8. Click <b>Query Modem</b>. A "Success" response indicates the modem is connected and working properly.</li></ol>



# Solving Software Problems

Most software problems occur as a result of the following:

- The application was not installed or configured correctly.
- There is insufficient memory available to run the application.
- There is a conflict between applications.
- Be sure that all the needed device drivers have been installed.
- If you have installed an operating system other than the factory-installed operating system, check to be sure it is supported on the system.

If you encounter software problems, see the applicable solutions listed in the following table.

**Table 2-18 Solving Software Problems**

**Computer will not continue and no HP logo screen has appeared.**

Cause	Solution
POST error has occurred.	Observe the beeps and LED lights on the front of the computer. See Appendix A, <a href="#">POST Error Messages on page 45</a> to determine possible causes.  See the Restore Kit or the Worldwide Limited Warranty for terms and conditions.

**Computer will not continue after HP logo screen has appeared.**

Cause	Solution
System files may be damaged.	Press the <b>F11</b> key at startup to boot into the recovery partition and run a factory restore.  <b>CAUTION:</b> Restoring the system will erase all data on the hard drive. Be sure to back up all data files before running the restore process.


**“Illegal Operation has Occurred” error message is displayed.**

Cause	Solution
Software being used is not Microsoft-certified for your version of Windows.	Verify that the software is certified by Microsoft for your version of Windows (see program packaging for this information).
Configuration files are corrupt.	If possible, save all data, close all programs, and restart the computer.

## Contacting Customer Support

For help and service, contact an authorized reseller or dealer. To locate a reseller or dealer near you, visit <http://www.hp.com>.

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 **NOTE:** If you take the computer to an authorized reseller, dealer, or service provider for service, remember to provide the setup and power-on passwords if they are set.

Refer to the number listed in the warranty or in the *Support Telephone Numbers* guide for technical assistance.

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# A POST Error Messages

This appendix lists the error codes, error messages, and the various indicator light and audible sequences that you may encounter during Power-On Self-Test (POST) or computer restart, the probable source of the problem, and steps you can take to resolve the error condition.


POST Message Disabled suppresses most system messages during POST, such as memory count and non-error text messages. If a POST error occurs, the screen will display the error message. To manually switch to the POST Messages Enabled mode during POST, press any key (except **F10** or **F12**). The default mode is POST Message Disabled.

The speed at which the computer loads the operating system and the extent to which it is tested are determined by the POST mode selection.

Quick Boot is a fast startup process that does not run all of the system level tests, such as the memory test. Full Boot runs all of the ROM-based system tests and takes longer to complete.

Full Boot may also be enabled to run every 1 to 30 days on a regularly scheduled basis. To establish the schedule, reconfigure the computer to the Full Boot Every x Days mode, using Computer Setup.


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 **NOTE:** For more information on Computer Setup, see the *Computer Setup (F10) Utility Guide*.

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# POST Numeric Codes and Text Messages

This section covers those POST errors that have numeric codes associated with them. The section also includes some text messages that may be encountered during POST.

 **NOTE:** The computer will beep once after a POST text message is displayed on the screen.

**Table A-1 Numeric Codes and Text Messages**

Control panel message	Description	Recommended action
101-Option ROM Checksum Error	System ROM or expansion board option ROM checksum.	<ol style="list-style-type: none"> <li>1. Verify the correct ROM.</li> <li>2. Flash the ROM if needed.</li> <li>3. If an expansion board was recently added, remove it to see if the problem remains.</li> <li>4. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> <li>5. If the message disappears, there may be a problem with the expansion card.</li> <li>6. Replace the system board.</li> </ol>
103-System Board Failure	DMA or timers.	<ol style="list-style-type: none"> <li>1. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> <li>2. Remove expansion boards.</li> <li>3. Replace the system board.</li> </ol>
110-Out of Memory Space for Option ROMs	Recently added PCI expansion card contains an option ROM too large to download during POST.	<ol style="list-style-type: none"> <li>1. If a PCI expansion card was recently added, remove it to see if the problem remains.</li> <li>2. In Computer Setup, set <b>Advanced &gt; Device Options &gt; NIC PXE Option ROM Download</b> to <b>DISABLE</b> to prevent PXE option ROM for the internal NIC from being downloaded during POST to free more memory for an expansion card's option ROM. Internal PXE option ROM is used for booting from the NIC to a PXE server.</li> </ol>
162-System Options Not Set	<p>Configuration incorrect.</p> <p>RTC (real-time clock) battery may need to be replaced.</p>	<p>Run Computer Setup and check the configuration in <b>Advanced &gt; Onboard Devices</b>.</p> <p>Reset the date and time under <b>Control Panel</b>. If the problem persists, replace the RTC battery. See the <i>Hardware Reference Guide</i> for instructions on installing a new battery, or contact an authorized dealer or reseller for RTC battery replacement.</p>
163-Time & Date Not Set	<p>Invalid time or date in configuration memory.</p> <p>RTC (real-time clock) battery may need to be replaced.</p>	<p>Reset the date and time under <b>Control Panel</b> (Computer Setup can also be used). If the problem persists, replace the RTC battery. See the <i>Hardware Reference Guide</i></p>

**Table A-1 Numeric Codes and Text Messages (continued)**

Control panel message	Description	Recommended action
		for instructions on installing a new battery, or contact an authorized dealer or reseller for RTC battery replacement.
163-Time & Date Not Set	CMOS jumper may not be properly installed.	Check for proper placement of the CMOS jumper if applicable.
164-Memory Size Error	Memory amount has changed since the last boot (memory added or removed).	Press the <b>F1</b> key to save the memory changes.
164-Memory Size Error	Memory configuration incorrect.	<ol style="list-style-type: none"> <li>1. Run Computer Setup or Windows utilities.</li> <li>2. Make sure the memory module(s) are installed properly.</li> <li>3. If third-party memory has been added, test using HP-only memory.</li> <li>4. Verify proper memory module type.</li> </ol>
201-Memory Error	RAM failure.	<ol style="list-style-type: none"> <li>1. Ensure memory modules are correctly installed.</li> <li>2. Verify proper memory module type.</li> <li>3. Remove and replace the identified faulty memory module(s).</li> <li>4. If the error persists after replacing memory modules, replace the system board.</li> </ol>
213-Incompatible Memory Module in Memory Socket(s) X, X, ...	A memory module in memory socket identified in the error message is missing critical SPD information, or is incompatible with the chipset.	<ol style="list-style-type: none"> <li>1. Verify proper memory module type.</li> <li>2. Try another memory socket.</li> <li>3. Replace DIMM with a module conforming to the SPD standard.</li> </ol>
214-DIMM Configuration Warning	Populated DIMM Configuration is not optimized.	Rearrange the DIMMs so that each channel has the same amount of memory.
215-DIMM Configuration Error	Populated DIMM configuration is not optimized.	Remove power from the system and reinstall memory modules. On AMD systems, populate modules starting with slot XMM4, then XMM3, followed by slots XMM2 and XMM1. On Intel systems, populate modules starting with slot DIMM1, then DIMM3, followed by slots DIMM2 and DIMM4.
219-ECC Memory Module Detected ECC Modules not supported on this Platform	Recently added memory module(s) support ECC memory error correction.	<ol style="list-style-type: none"> <li>1. If additional memory was recently added, remove it to see if the problem remains.</li> <li>2. Check product documentation for memory support information.</li> </ol>
301-Keyboard Error	Keyboard failure.	<ol style="list-style-type: none"> <li>1. Reconnect keyboard with computer turned off.</li> <li>2. Check connector for bent or missing pins.</li> </ol>

**Table A-1 Numeric Codes and Text Messages (continued)**

Control panel message	Description	Recommended action
		<ol style="list-style-type: none"> <li>3. Ensure that none of the keys are depressed.</li> <li>4. Replace keyboard.</li> </ol>
303-Keyboard Controller Error	I/O board keyboard controller.	<ol style="list-style-type: none"> <li>1. Reconnect keyboard with computer turned off.</li> <li>2. Replace the system board.</li> </ol>
304-Keyboard or System Unit Error	Keyboard failure.	<ol style="list-style-type: none"> <li>1. Reconnect the keyboard with computer turned off.</li> <li>2. Ensure that none of the keys are depressed.</li> <li>3. Replace the keyboard.</li> <li>4. Replace the system board.</li> </ol>
501-Display Adapter Failure	Graphics display controller.	<ol style="list-style-type: none"> <li>1. Reseat the graphics card (if applicable).</li> <li>2. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> <li>3. Verify monitor is attached and turned on.</li> <li>4. Replace the graphics card (if possible).</li> </ol>
510-Flash Screen Image Corrupted	Flash Screen image has errors.	Reflash the system ROM with the latest BIOS image.
511-CPU Fan not detected	CPU fan is not connected or may have malfunctioned.	<ol style="list-style-type: none"> <li>1. Reseat CPU fan.</li> <li>2. Reseat fan cable.</li> <li>3. Replace CPU fan.</li> </ol>
512-Rear Chassis Fan not detected	Rear chassis fan is not connected or may have malfunctioned.	<ol style="list-style-type: none"> <li>1. Reseat rear chassis fan.</li> <li>2. Reseat fan cable.</li> <li>3. Replace rear chassis fan.</li> </ol>
513-Front Chassis Fan not detected	Front chassis fan is not connected or may have malfunctioned.	<ol style="list-style-type: none"> <li>1. Reseat front chassis fan.</li> <li>2. Reseat fan cable.</li> <li>3. Replace front chassis fan.</li> </ol>
515-Power Supply Fan not detected	Power supply fan is not connected or may have malfunctioned.	<ol style="list-style-type: none"> <li>1. Reseat power supply fan.</li> <li>2. Reseat fan cable.</li> <li>3. Replace power supply fan.</li> </ol>
605-Diskette Drive Type Error	Mismatch in drive type.	<ol style="list-style-type: none"> <li>1. Disconnect any other diskette controller devices (tape drives).</li> <li>2. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> </ol>

**Table A-1 Numeric Codes and Text Messages (continued)**

Control panel message	Description	Recommended action
660-Display cache is detected unreliable	Integrated graphics controller display cache is not working properly and will be disabled.	Replace system board if minimal graphics degrading is an issue.
912-Computer Cover Has Been Removed Since Last System Startup	Computer cover was removed since last system startup.	No action required.
917-Front Audio Not Connected	Front audio harness has been detached or unseated from motherboard.	Reconnect or replace front audio harness.
921-Front USB 1 Not Connected	Front USB harness has been detached or unseated from motherboard.	Reconnect or replace front USB harness.
922-Front USB 1 Not Connected	Front USB harness has been detached or unseated from motherboard.	Reconnect or replace front USB harness.
921-Device in PCI Express slot failed to initialize	There is an incompatibility/problem with this device and the system or PCI Express Link could not be retrained to an x1.	Try rebooting the system. If the error reoccurs, the device may not work with this system
1151-Serial Port A Address Conflict Detected	Both external and internal serial ports are assigned to COM1.	<ol style="list-style-type: none"> <li>1. Remove any serial port expansion cards.</li> <li>2. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> <li>3. Reconfigure card resources and/or run Computer Setup or Windows utilities.</li> </ol>
1152-Serial Port B Address Conflict Detected	Both external and internal serial ports are assigned to COM2.	<ol style="list-style-type: none"> <li>1. Remove any serial port expansion cards.</li> <li>2. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> <li>3. Reconfigure card resources and/or run Computer Setup or Windows utilities.</li> </ol>
1155-Serial Port Address Conflict Detected	Both external and internal serial ports are assigned to same IRQ.	<ol style="list-style-type: none"> <li>1. Remove any serial port expansion cards.</li> <li>2. Clear CMOS. (See Appendix B, <a href="#">Password Security and Resetting CMOS on page 55.</a>)</li> <li>3. Reconfigure card resources and/or run Computer Setup or Windows utilities.</li> </ol>
1720-SMART Hard Drive Detects Imminent Failure	Hard drive is about to fail. (Some hard drives have a hard drive firmware patch that will fix an erroneous error message.)	<ol style="list-style-type: none"> <li>1. Determine if hard drive is giving correct error message. Enter Computer Setup and run the Drive Protection System test under <b>Storage &gt; DPS Self-test.</b></li> <li>2. Apply hard drive firmware patch if applicable. (Available at <a href="http://www.hp.com/support">http://www.hp.com/support</a>.)</li> <li>3. Back up contents and replace hard drive.</li> </ol>
1796-SATA Cabling Error	One or more SATA devices are improperly attached. For optimal performance, the SATA 0 and SATA 1 connectors must be used before SATA 2 and SATA 3.	Ensure SATA connectors are used in ascending order. For one device, use SATA 0. For two devices, use SATA 0 and SATA 1.

**Table A-1 Numeric Codes and Text Messages (continued)**

Control panel message	Description	Recommended action
		For three devices, use SATA 0, SATA 1, and SATA 2.
1797-SATA Drivelock is not supported in RAID mode.	Drivelock is enabled on one or more SATA hard drives, and they cannot be accessed while the system is configured for RAID mode.	Either remove the Drivelocked SATA device or disable the Drivelock feature. To disable the Drivelock feature, enter Computer Setup, change <b>Storage &gt; Storage Options &gt; SATA Emulation</b> to <b>IDE</b> , and select <b>File &gt; Save Changes and Exit</b> . Reenter Computer Setup and select <b>Security &gt; Drivelock Security</b> . For each listed Drivelock-capable SATA device, ensure Drivelock is <b>Disabled</b> . Lastly, change <b>Storage &gt; Storage Options &gt; SATA Emulation</b> back to <b>RAID</b> and select <b>File &gt; Save Changes and Exit</b> .
1801-Microcode Patch Error	Processor is not supported by ROM BIOS.	<ol style="list-style-type: none"> <li>1. Upgrade BIOS to proper version.</li> <li>2. Change the processor.</li> </ol>
2200-PMM Allocation Error during MEBx Download	Memory error during POST execution of the Management Engine (ME) BIOS Extensions option ROM.	<ol style="list-style-type: none"> <li>1. Reboot the computer.</li> <li>2. Unplug the power cord, re-seat the memory modules, and reboot the computer.</li> <li>3. If the memory configuration was recently changed, unplug the computer, restore the original memory configuration, and reboot the computer.</li> <li>4. If the error persists, replace the system board.</li> </ol>
2201-MEBx Module did not checksum correctly	Memory error during POST execution of the Management Engine (ME) BIOS Extensions option ROM.	<ol style="list-style-type: none"> <li>1. Reboot the computer.</li> <li>2. Unplug the power cord, re-seat the memory modules, and reboot the computer.</li> <li>3. If the memory configuration was recently changed, unplug the power cord, restore the original memory configuration, and reboot the computer.</li> <li>4. If the error persists, replace the system board.</li> </ol>
2202-PMM Deallocation Error during MEBx cleanup	Memory error during POST execution of the Management Engine (ME) BIOS Extensions option ROM.	<ol style="list-style-type: none"> <li>1. Reboot the computer.</li> <li>2. Unplug the power cord, re-seat the memory modules, and reboot the computer.</li> <li>3. If the memory configuration was recently changed, unplug the power cord, restore the original memory configuration, and reboot the computer.</li> <li>4. If the error persists, replace the system board.</li> </ol>



**Table A-1 Numeric Codes and Text Messages (continued)**

Control panel message	Description	Recommended action
2203-Setup error during MEBx execution	MEBx selection or exit resulted in a setup failure.	<ol style="list-style-type: none"> <li>1. Reboot the computer.</li> <li>2. Unplug the power cord, re-seat the memory modules, and reboot the computer.</li> <li>3. If the memory configuration was recently changed, unplug the power cord, restore the original memory configuration, and reboot the computer.</li> <li>4. If the error persists, replace the system board.</li> </ol>
2204-Inventory error during MEBx execution	BIOS information passed to the MEBx resulted in a failure.	<ol style="list-style-type: none"> <li>1. Reboot the computer.</li> <li>2. If the error persists, update to the latest BIOS version.</li> <li>3. If the error still persists, replace the system board.</li> </ol>
2205-Interface error during MEBx execution	MEBx operation experienced a hardware error during communication with ME.	<ol style="list-style-type: none"> <li>1. Reboot the computer.</li> <li>2. If the error persists, update to the latest BIOS version.</li> <li>3. If the error still persists, replace the system board.</li> </ol>
2211-Memory not configured correctly for proper MEBx execution.	DIMM1 is not installed.	Make sure there is a memory module in the black DIMM1 socket and that it is properly seated.
Invalid Electronic Serial Number	Electronic serial number is missing.	Enter the correct serial number in Computer Setup.
Memory Parity Error	Parity RAM failure.	Run Computer Setup and Diagnostic utilities.
	Third-party graphics card may be causing a problem.	Remove third-party graphics card to see if the problem goes away.
Network Server Mode Active and No Keyboard Attached	Keyboard failure while Network Server Mode enabled.	<ol style="list-style-type: none"> <li>1. Reconnect keyboard with computer turned off.</li> <li>2. Check connector for bent or missing pins.</li> <li>3. Ensure that none of the keys are depressed.</li> <li>4. Replace keyboard.</li> </ol>
Parity Check 2	Parity RAM failure.	Run Computer Setup and Diagnostic utilities.
	Third-party graphics card may be causing a problem.	Remove third-party graphics card to see if the problem goes away.

# Interpreting POST Diagnostic Front Panel LEDs and Audible Codes

This section covers the front panel LED codes as well as the audible codes that may occur before or during POST that do not necessarily have an error code or text message associated with them.

**⚠ WARNING!** When the computer is plugged into an AC power source, voltage is always applied to the system board. To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before touching.

**📖 NOTE:** If you see flashing LEDs on a PS/2 keyboard, look for flashing LEDs on the front panel of the computer and refer to the following table to determine the front panel LED codes.

Recommended actions in the following table are listed in the order in which they should be performed.

Not all diagnostic lights and audible codes are available on all models.

**Table A-2 Diagnostic Front Panel LEDs and Audible Codes**

Activity	Beeps	Possible Cause	Recommended Action
Green Power LED On.	None	Computer on.	None
Green Power LED flashes every two seconds.	None	Computer in Suspend to RAM mode (some models only) or normal Suspend mode.	None required. Press any key or move the mouse to wake the computer.
Red Power LED flashes two times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	2	Processor thermal protection activated:  A fan may be blocked or not turning.  OR  The heatsink/fan assembly is not properly attached to the processor.	<ol style="list-style-type: none"> <li>1. Ensure that the computer air vents are not blocked and the processor cooling fan is running.</li> <li>2. Open hood, press power button, and see if the processor fan spins. If the processor fan is not spinning, make sure the fan's cable is plugged onto the system board header.</li> <li>3. If fan is plugged in, but is not spinning, then replace heatsink/fan assembly.</li> <li>4. Contact an authorized reseller or service provider.</li> </ol>
Red Power LED flashes three times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	3	Processor not installed (not an indicator of bad processor).	<ol style="list-style-type: none"> <li>1. Check to see that the processor is present.</li> <li>2. Reseat the processor.</li> </ol>

**Table A-2 Diagnostic Front Panel LEDs and Audible Codes (continued)**

Activity	Beeps	Possible Cause	Recommended Action
Red Power LED flashes four times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	4	Power failure (power supply is overloaded).	<ol style="list-style-type: none"> <li>1. Open the hood and ensure the 4 or 6-wire power supply cable is seated into the connector on the system board.</li> <li>2. Check if a device is causing the problem by removing ALL attached devices (such as hard or optical drives and expansion cards). Power on the system. If the system enters the POST, then power off and replace one device at a time and repeat this procedure until failure occurs. Replace the device that is causing the failure. Continue adding devices one at a time to ensure all devices are functioning properly.</li> <li>3. Replace the power supply.</li> <li>4. Replace the system board.</li> </ol>
Red Power LED flashes five times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	5	Pre-video memory error.	<p><b>CAUTION:</b> To avoid damage to the DIMMs or the system board, you must unplug the computer power cord before attempting to reseat, install, or remove a DIMM module.</p> <ol style="list-style-type: none"> <li>1. Reseat DIMMs.</li> <li>2. Replace DIMMs one at a time to isolate the faulty module.</li> <li>3. Replace third-party memory with HP memory.</li> <li>4. Replace the system board.</li> </ol>
Red Power LED flashes six times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	6	Pre-video graphics error.	<p>For systems with a graphics card:</p> <ol style="list-style-type: none"> <li>1. Reseat the graphics card.</li> <li>2. Replace the graphics card.</li> <li>3. Replace the system board.</li> </ol> <p>For systems with integrated graphics, replace the system board.</p>
Red Power LED flashes seven times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	7	System board failure (ROM detected failure prior to video).	Replace the system board.
Red Power LED flashes eight times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	8	Invalid ROM based on bad checksum.	<ol style="list-style-type: none"> <li>1. Reflash the system ROM with the latest BIOS image. See the "Boot Block Emergency Recovery Mode" section of the <i>Desktop Management Guide</i> for more information.</li> <li>2. Replace the system board.</li> </ol>
Red Power LED flashes nine times, once every second, followed by a two second pause. Beeps stop after fifth	9	System powers on but is unable to boot.	<ol style="list-style-type: none"> <li>1. Check that the voltage selector, located on the rear of the power supply (some models), is set to the appropriate voltage. Proper voltage setting depends on your region.</li> <li>2. Unplug the AC power cord from the computer, wait 30 seconds, then plug the power cord back in to the computer.</li> </ol>

**Table A-2 Diagnostic Front Panel LEDs and Audible Codes (continued)**

Activity	Beeps	Possible Cause	Recommended Action
iteration but LEDs continue until problem is solved.			<ol style="list-style-type: none"> <li>3. Replace the system board.</li> <li>4. Replace the processor.</li> </ol>
Red Power LED flashes ten times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	10	Bad option card.	<ol style="list-style-type: none"> <li>1. Check each option card by removing the card (one at a time if multiple cards), then power on the system to see if fault goes away.</li> <li>2. Once a bad card is identified, remove and replace the bad option card.</li> <li>3. Replace the system board.</li> </ol>
Red Power LED flashes eleven times, once every second, followed by a two second pause. Beeps stop after fifth iteration but LEDs continue until problem is solved.	11	The current processor does not support a feature previously enabled on this system.	<ol style="list-style-type: none"> <li>1. Install a TXT capable processor.</li> <li>2. Disable TXT in the Computer Setup (F10) utility.</li> <li>3. Reinstall the original processor.</li> </ol>
System does not power on and LEDs are not flashing.	None	System unable to power on.	<p>Press and hold the power button for less than 4 seconds. If the hard drive LED turns green, the power button is working correctly. Try the following:</p> <ol style="list-style-type: none"> <li>1. Check that the voltage selector (some models), located on the rear of the power supply, is set to the appropriate voltage. Proper voltage setting depends on your region.</li> <li>2. Replace the system board.</li> </ol> <p>OR</p> <p>Press and hold the power button for less than 4 seconds. If the hard drive LED does not turn on green then:</p> <ol style="list-style-type: none"> <li>1. Check that the unit is plugged into a working AC outlet.</li> <li>2. Open hood and check that the power button harness is properly connected to the system board.</li> <li>3. Check that both power supply cables are properly connected to the system board.</li> <li>4. Check to see if the 5V_aux light on the system board is turned on. If it is turned on, then replace the power button harness. If the problem persists, replace the system board.</li> <li>5. If the 5V_aux light on the system board is not turned on, remove the expansion cards one at a time until the 5V_aux light on the system board turns on. If the problem persists, replace the power supply.</li> </ol>

---

# B Password Security and Resetting CMOS

This computer supports security password features, which can be established through the Computer Setup Utilities menu.

This computer supports two security password features that are established through the Computer Setup Utilities menu: setup password and power-on password. When you establish only a setup password, any user can access all the information on the computer except Computer Setup. When you establish only a power-on password, the power-on password is required to access Computer Setup and any other information on the computer. When you establish both passwords, only the setup password will give you access to Computer Setup.

When both passwords are set, the setup password can also be used in place of the power-on password as an override to log in to the computer. This is a useful feature for a network administrator.

If you forget the password for the computer, you can clear that password so you can gain access to the information on the computer by resetting the password jumper.

---

△ **CAUTION:** Pushing the CMOS button will reset CMOS values to factory defaults. It is important to back up the computer CMOS settings before resetting them in case they are needed later. Back up is easily done through Computer Setup. See the *Computer Setup (F10) Utility Guide* for information on backing up the CMOS settings.

---

## Resetting the Password Jumper

To disable the power-on or setup password features, or to clear the power-on or setup passwords, complete the following steps:

1. Shut down the operating system properly, then turn off the computer and any external devices, and disconnect the power cord from the power outlet.
2. With the power cord disconnected, press the power button again to drain the system of any residual power.

---

⚠ **WARNING!** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching.

⚠ **CAUTION:** When the computer is plugged in, the power supply always has voltage applied to the system board even when the unit is turned off. Failure to disconnect the power cord can result in damage to the system.

Static electricity can damage the electronic components of the computer or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. See the *Safety & Regulatory Information* guide for more information.

---

3. Remove the computer cover or access panel.
4. Locate the header and jumper.

📄 **NOTE:** The password jumper is green so that it can be easily identified. For assistance locating the password jumper and other system board components, see the Illustrated Parts & Service Map (IPSM) for that particular system. The IPSM can be downloaded from <http://www.hp.com/support>.

---

5. Remove the jumper from pins 1 and 2. Place the jumper on either pin 1 or 2, but not both, so that it does not get lost.
6. Replace the computer cover or access panel.
7. Reconnect the external equipment.
8. Plug in the computer and turn on power. Allow the operating system to start. This clears the current passwords and disables the password features.
9. To establish new passwords, repeat steps 1 through 4, replace the password jumper on pins 1 and 2, then repeat steps 6 through 8. Establish the new passwords in Computer Setup. Refer to the *Computer Setup (F10) Utility Guide* for Computer Setup instructions.

# Clearing and Resetting the CMOS

The computer's configuration memory (CMOS) stores information about the computer's configuration.

The CMOS button resets CMOS but does not clear the power-on and setup passwords.

Clearing CMOS will clear the Active Management Technology (AMT) settings in the Management Engine BIOS Extension (MEBx), including the password. The password will default to "admin" and will need to be reset. The AMT settings will also need to be reset. To access the MEBx, press **Ctrl+P** during POST.

1. Turn off the computer and any external devices, and disconnect the power cord from the power outlet.
2. Disconnect the keyboard, monitor, and any other external equipment connected to the computer.

---

⚠ **WARNING!** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching.

⚠ **CAUTION:** When the computer is plugged in, the power supply always has voltage applied to the system board even when the unit is turned off. Failure to disconnect the power cord can result in damage to the system.

Static electricity can damage the electronic components of the computer or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. See the *Safety & Regulatory Information* guide for more information.

---


3. Remove the computer cover or access panel.

---

⚠ **CAUTION:** Pushing the CMOS button will reset CMOS values to factory defaults. It is important to back up the computer CMOS settings before resetting them in case they are needed later. Back up is easily done through Computer Setup. See the *Computer Setup (F10) Utility Guide* for information on backing up the CMOS settings.

---


4. Locate, press, and hold the CMOS button in for five seconds.

 **NOTE:** Make sure you have disconnected the AC power cord from the wall outlet. The CMOS button will not clear CMOS if the power cord is connected.

---


**Figure B-1** CMOS button



 **NOTE:** For assistance locating the CMOS button and other system board components, see the Illustrated Parts & Service Map (IPSM) for that particular system.

---

5. Replace the computer cover or access panel.
6. Reconnect the external devices.
7. Plug in the computer and turn on power.

 **NOTE:** You will receive POST error messages after clearing CMOS and rebooting advising you that configuration changes have occurred. Use Computer Setup to reset any special system setups along with the date and time.

---

For instructions on Computer Setup, see the *Computer Setup (F10) Utility Guide*.



---

# C Drive Protection System (DPS)

The Drive Protection System (DPS) is a diagnostic tool built into the hard drives installed in some computers. DPS is designed to help diagnose problems that might result in unwarranted hard drive replacement.

When these systems are built, each installed hard drive is tested using DPS, and a permanent record of key information is written onto the drive. Each time DPS is run, test results are written to the hard drive. Your service provider can use this information to help diagnose conditions that caused you to run the DPS software.

Running DPS will not affect any programs or data stored on the hard drive. The test resides in the hard drive firmware and can be executed even if the computer will not boot to an operating system. The time required to execute the test depends on the manufacturer and size of the hard drive; in most cases, the test will take approximately two minutes per gigabyte.


Use DPS when you suspect a hard drive problem. If the computer reports a SMART Hard Drive Detect Imminent Failure message, there is no need to run DPS; instead, back up the information on the hard drive and contact a service provider for a replacement hard drive.

## Accessing DPS Through Computer Setup

When the computer does not power on properly you should use Computer Setup to access the DPS program. To access DPS, perform the following steps:

1. Turn on or restart the computer.
2. When the F10 Setup message appears in the lower-right corner of the screen, press the **F10** key.

---

 **NOTE:** If you do not press the **F10** key while the message is displayed, you must turn the computer off, then on again, to access the utility.


---

A choice of five headings appears in the Computer Setup Utilities menu: **File**, **Storage**, **Security**, **Power**, and **Advanced**.

3. Select **Storage > DPS Self-Test**.

The screen will display the list of DPS-capable hard drives that are installed on the computer.

---

 **NOTE:** If no DPS-capable hard drives are installed, the **DPS Self-Test** option will not appear on the screen.

---

4. Select the hard drive to be tested and follow the screen prompts to complete the testing process.

When the test has been completed, one of three messages will be displayed:

- Test Succeeded. Completion Code 0.
- Test Aborted. Completion Code 1 or 2.
- Test Failed. Drive Replacement Recommended. Completion Code 3 through 14.

If the test failed, the completion code should be recorded and reported to your service provider for help in diagnosing the computer problem.

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