



ENVY¹⁷ 3D

GETTING STARTED

HP ENVY¹⁷ 3D Getting Started

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Second Edition: May 2011

First Edition: February 2011

Document Part Number: 635440-002

Product notice

This guide describes features that are common to most models. Some features may not be available on your computer.

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User Guides

HP is committed to reducing the environmental impact of our products. As part of this effort, we provide user guides and learning centers on your computer hard drive in Help and Support. Additional support and updates to the user guides are available on the Web.

Safety warning notice


 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Welcome

The following sections are included in this chapter:

- [What's new](#)
- [Finding information](#)

After you set up and register the computer, it is important to take the following steps:

- **Connect to the Internet**—Set up your wired or wireless network so that you can connect to the Internet. For more information, refer to [Networking on page 39](#).
- **Update your antivirus software**—Protect your computer from damage caused by viruses. The software is preinstalled on the computer and includes a limited subscription for free updates. For more information, refer to the *HP Notebook Reference Guide*.
- **Get to know your computer**—Learn about your computer features. Refer to [Getting to know your computer on page 26](#) and [Keyboard and pointing devices on page 43](#) for additional information.
- **Create recovery discs or a recovery flash drive**—Recover the operating system and software to factory settings in case of system instability or failure. For instructions, refer to [Backup and recovery on page 69](#).
- **Find installed software**—Access a list of the software preinstalled on the computer. Select **Start > All Programs**. For details about using the software included with the computer, refer to the software manufacturer's instructions, which may be provided with the software or on the manufacturer's Web site.

What's new

HP 3D Cinema Technology

You will enjoy an exceptional cinema-quality experience of stereoscopic 3D Blu-ray movies, stereo 3D game play, and vivid 3D photos and videos. The integrated 3D features, along with the 3D glasses, provide everything you need for an outstanding 3D sensory experience. For more information, refer to [Using HP 3D Cinema Technology on page 9](#).



NOTE: Before using 3D Cinema Technology and the 3D glasses, read the 3D safety information. Consult a physician if you suspect that you may have a physical problem seeing stereoscopic 3D. Refer to [3D safety information on page 9](#) for more information.

Intel Wireless Display

Intel® Wireless Display allows you to share your computer content wirelessly on your TV. To experience wireless display, a wireless third-party TV adapter (purchased separately) is required. Content that asserts output protection, such as DVD and Blu-ray discs, will not play on Intel Wireless Display. For details about using the wireless adapter, refer to the device manufacturer's instructions.



NOTE: Be sure that wireless is enabled on your computer before using the wireless display.



NOTE: Intel Wireless Display does not support 3D playback on external display devices.

Beats Audio



Beats™ Audio is an enhanced audio profile that provides a deep, controlled bass while maintaining a clear sound. Beats Audio is enabled by default.

▲ To increase or decrease the Beats Audio bass settings, press **fn+b**.



NOTE: You can also view and control the bass settings through the Windows® operating system. Select **Start > Control Panel > Hardware and Sound > HP Beats Audio Control Panel > Equalization** to view and control the bass properties.

The following table describes the Beats Audio icons that appear when you press **fn+b**.

Icon	Description
 A dark gray square icon containing a white lowercase letter 'b' inside a white circle.	Indicates that Beats Audio is enabled.
 A dark gray square icon containing a white lowercase letter 'b' inside a white circle, with a white diagonal slash running from the top-left to the bottom-right across the circle.	Indicates that Beats Audio is disabled.

Switching between graphics modes

The computer is equipped with switchable graphics and has two modes for processing graphics. When you switch from AC power to battery power, the computer can switch from using the high-performance mode to using the power-saving mode to conserve battery life. Similarly, when you switch from battery power to AC power, the computer can switch back to the high-performance mode.



NOTE: 3D playback on the computer display requires high-performance GPU.



NOTE: In some instances, in order to optimize performance of the computer, the system does not allow you to switch modes, or it may prompt you to switch. It may also be necessary to close all programs before switching.

When you switch between AC and battery power, you are notified that the computer is about to switch graphics modes. If you prefer, you can choose to continue using the same graphics mode. While the computer switches modes, the screen goes blank for a few seconds. When the switch is complete, a notification appears in the notification area, and the screen image reappears.

Stardock (select models only)

Stardock includes the following features:

- **Stardock MyColors**—Offers a customizable desktop theme that transforms the look and feel of your basic Windows desktop. The new desktop includes custom icons, visual styles (Start button and taskbar), and a corresponding wallpaper.

To change back to the standard Windows theme, open the Stardock MyColors program and select the standard Windows theme.

- **Stardock Fences**—Organizes the icons on your desktop. When the custom theme has been applied, all of the icons on the desktop are moved to a vertical column or “fence” in the lower left corner of the screen, with the Recycle Bin at the top. To customize Fences or to refer to the software Help for Fences, select **Start > All Programs > Stardock > Fences Pro**, and then click **Fences Pro**.

ATI Eyefinity Multi-Display technology

Your computer supports the new ATI™ Eyefinity technology that provides the following features:

- You can now have up to 3 external displays, as long as one of the displays is connected to the Mini DisplayPort on the computer.
- Provides a new display configuration by spanning the image across a group of external displays into a massive single large surface (SLS).



NOTE: 3D playback is not supported on ATI Eyefinity technology.

Example display configuration for single large surface (SLS)

When you use 3 external displays and span the image across them as an SLS, the computer display is turned off. The 3 external displays are connected to the computer using the external monitor port (VGA), the Mini DisplayPort, and the HDMI port.



NOTE: Identical resolution is required among all displays to form the SLS mode. Displays with different native resolutions can still form an SLS mode by using non-native resolutions.



NOTE: Windows 7 only supports 2 external displays. To configure 3 external displays in Windows 7, refer to [Using the ATI Catalyst Control Center on page 6](#).

Switching the screen image

Press the [switch screen image](#) action key to open a dialog box that shows the 4 configuration choices, independent of the number of connected display devices.

- Computer only mode—Turns off the external display and displays the image only on the computer display.
- Duplicate mode—Clones the computer display onto an external display that is connected to the external monitor port (VGA) on the computer.
- Extend mode—Extends the desktop to all connected external displays along with the computer display.
- Projector only mode—Turns off the computer display and sets all connected external displays to extended desktop.



NOTE: You can manage the video output and default output devices using the ATI Catalyst™ Control Center.

Using the ATI Catalyst Control Center

To configure desktops and displays and to manage ATI Eyefinity, you must use the ATI Catalyst Control Center.

To access the ATI Catalyst Control Center:

1. Select **Start > All Programs > Catalyst Control Center**.
2. Click the **Graphics** arrow, and then select **Desktops and Displays**.



NOTE: For additional information on using the ATI Catalyst Control Center, refer to the software Help.

Finding information

The computer comes with several resources to help you perform various tasks.

Resources	For information about
<i>Quick Setup</i> poster	<ul style="list-style-type: none"> • How to set up the computer • Help to identify computer components
<i>HP Notebook Reference Guide</i>	<ul style="list-style-type: none"> • Power management features
To access this guide:	<ul style="list-style-type: none"> • How to maximize battery life
Select Start > Help and Support > User Guides .	<ul style="list-style-type: none"> • How to use the multimedia features of the computer
– or –	<ul style="list-style-type: none"> • How to protect the computer
Select Start > All Programs > HP > HP Documentation .	<ul style="list-style-type: none"> • How to care for the computer • How to update the software

Resources	For information about
<p>Help and Support</p> <p>To access Help and Support, select Start > Help and Support.</p> <p>NOTE: For country- or region-specific support, go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.</p>	<ul style="list-style-type: none"> • Operating system information • Software, driver, and BIOS updates • Troubleshooting tools • How to access technical support
<p><i>Regulatory, Safety, and Environmental Notices</i></p> <p>To access the notices:</p> <p>Select Start > Help and Support > User Guides.</p> <p>– or –</p> <p>Select Start > All Programs > HP > HP Documentation.</p>	<ul style="list-style-type: none"> • Regulatory and safety information • Battery disposal information
<p><i>Safety & Comfort Guide</i></p> <p>To access this guide, do one of the following:</p> <ul style="list-style-type: none"> • Select Start > Help and Support > User Guides. • Select Start > All Programs > HP > HP Documentation. • Go to http://www.hp.com/ergo. 	<ul style="list-style-type: none"> • Proper workstation setup, posture, health, and work habits • Electrical and mechanical safety information
<p><i>Worldwide Telephone Numbers</i> booklet</p> <p>This booklet is provided with your computer.</p>	<p>HP support telephone numbers</p>
<p>HP Web site</p> <p>To access this Web site, go to http://www.hp.com/support.</p>	<ul style="list-style-type: none"> • Support information • Ordering parts and finding additional help • Software, driver, and BIOS (Setup Utility) updates • Accessories available for the device

Resources	For information about
<i>Limited Warranty*</i>	Warranty information
To access the warranty, do one of the following:	
<ul style="list-style-type: none">• Select Start > Help and Support > User Guides > View Warranty Information.• Select Start > All Programs > HP > HP Documentation > View Warranty Information.• Go to http://www.hp.com/go/orderdocuments.	
*You may find the expressly provided HP Limited Warranty applicable to your product located with the electronic guides on your computer and/or on the CD/DVD provided in the box. Some countries/regions may provide a printed HP Limited Warranty in the box. In countries/regions where the warranty is not provided in printed format, you may request a printed copy at http://www.hp.com/go/orderdocuments or write to:	
<ul style="list-style-type: none">• North America: Hewlett-Packard, MS POD, 11311 Chinden Blvd, Boise, ID 83714, USA• Europe, Middle East, Africa: Hewlett-Packard, POD, Via G. Di Vittorio, 9, 20063, Cernusco s/ Naviglio (MI), Italy• Asia Pacific: Hewlett-Packard, POD, P.O. Box 200, Alexandra Post Office, Singapore 911507	
Please include your product number, warranty period (found on your serial number label), name, and postal address.	


2 Using HP 3D Cinema Technology

The following sections are included in this chapter:

- [3D safety information](#)
- [What are stereoscopic vision and 3D](#)
- [What is HP 3D Cinema Technology](#)
- [Using the HP 3D Active Shutter Glasses](#)
- [Using 3D Cinema Technology](#)
- [Understanding 3D formats](#)
- [Using CyberLink PowerDVD](#)
- [Playing 3D games](#)
- [Viewing 3D content on a 3D TV](#)
- [Caring for the 3D glasses](#)
- [Troubleshooting and frequently asked questions](#)

3D safety information

Carefully read all of the following safety precautions before using the 3D glasses and 3D Cinema Technology.

 **WARNING!** If you cannot see 3D content after you set up 3D Cinema Technology, HP recommends that you discontinue use. Consult a physician if you suspect a physical problem seeing stereoscopic 3D.

Photosensitive Epileptic Seizures—Some individuals may experience a seizure or other complications when exposed to certain visual images, including flashing lights or patterns that may appear in 3D content. If you or any of your relatives have a history of seizures or epilepsy, consult a physician before using the 3D glasses and 3D Cinema Technology. Even those without a personal family history of epilepsy or stroke may have an undiagnosed condition that can cause photosensitive epileptic seizures.

If you experience any of the following symptoms, immediately stop watching 3D content and consult a physician: **altered vision, light-headedness, dizziness, involuntary movements such as eye or muscle twitching, convulsions, nausea, loss of awareness, confusion, cramps, and/or disorientation.** Parents should monitor and

ask their children if they have any of the above symptoms. Children and teenagers may be more likely than adults to experience these symptoms.

Do not watch 3D content when you feel sleepy, tired, or sick. Watching 3D with the 3D glasses for an extended period of time may cause a headache or fatigue. If you feel headache, fatigue, or dizziness, stop using the 3D glasses and rest.

Your vision can change to accommodate viewing through the 3D glasses. After removing the 3D glasses, wait several minutes before resuming regular activities.

Some 3D content may startle viewers. People who are pregnant, elderly, or epileptic, and those suffering from severe physical conditions are advised to avoid using the computer's 3D functionality.

The vision of young children (especially children under the age of 6) is still under development. Consult your doctor (such as a pediatrician or eye doctor) before allowing young children to watch 3D video images or play 3D videos games. Parents or guardians should supervise young children to ensure they follow these recommendations.

Choking Hazard—The 3D glasses contain small parts and are not intended for babies and small children.

Do not use the 3D glasses near water.

The lenses in the 3D glasses contain glass. To prevent damage to the lenses, use caution when using the glasses and properly store them when not in use. Do not use the glasses if there is any sign of damage or cracking in the lenses.

The 3D glasses are not prescription eyewear, sunglasses, or protective goggles. To prevent personal injury, do not use the glasses for any general eyewear purposes.

What are stereoscopic vision and 3D

When you see the world through both eyes, you are actually looking at two pictures merged into one. Your right eye and your left eye each deliver a separate image to your brain, which meshes these two images into one three-dimensional picture.

Most movies in the past were only able to provide one image on the screen, and 3D effects had to be simulated by other means. However, the HP 3D Active Shutter Glasses provide a different view for each eye, which more closely simulates 3D vision.

Each scene of the 3D content has two images, one drawn from the right eye view and the other from the left eye view. The computer display shows these alternating views so fast that your eyes cannot see the change.

The 3D glasses are equipped with shutters in each lens. When the right eye image is displayed on the screen, the left lens of the 3D glasses is closed, allowing only the right eye to see the image. When the left eye image is displayed, the process is reversed and only the left eye can see the image. These images alternate so quickly that the eyes only see one smooth picture, making it look like you are actually inside a 3D environment.

What is HP 3D Cinema Technology

3D Cinema Technology delivers a vivid, immersive 3D experience. When you watch Blu-ray 3D movies, stereo 3D games, or 3D photos or videos on the computer with your 3D glasses, the images appear to leap from the screen. 3D creates an entirely new viewing experience. With 3D Cinema Technology, you have all the necessary components for an exceptional 3D experience. No additional software is required to experience the 3D cinema-quality visuals.

The following items are provided for your 3D experience:

- 3D technology specifically designed and optimized for 3D Blu-ray content
- 3D Active Shutter Glasses that wirelessly synchronize with the 3D computer display
- 3D full high-definition 1080p display
- TriDef 3D Experience Ignition Game Player
- CyberLink PowerDVD



NOTE: Select computer models may include 3D content so you can immediately begin enjoying 3D.

The computer supports both 2D and 3D formats. The computer operates in standard 2D mode until stereoscopic 3D is detected and the 3D glasses are activated.

Using the HP 3D Active Shutter Glasses

Your 3D experience begins with active 3D content and the 3D glasses. The 3D glasses are battery powered and linked wirelessly to the infrared (IR) emitters in your 3D computer.

WARNING! Before using the 3D glasses, read the 3D safety information.

NOTE: For optimal 3D viewing, you should be no more than approximately **1.5 meters** (5 feet) from the computer display. Depending on the viewing angle, the operational distance from the display can vary.

When watching stereoscopic 3D images, do not incline your head relative to the horizontal direction of the images.

Keep the areas immediately around the IR emitters free from obstructions. For information on the location of the IR emitters, refer to [Getting to know your computer on page 26](#).

NOTE: Before using the glasses, remove the clear protective film from both sides of the lenses (select models only).

Identifying the 3D glasses components



Component

- (1) Battery compartment

NOTE: The battery is preinstalled and may have a protective tab. If the tab is attached, simply pull the tab to remove it.

- (2) Nose pieces (3)

NOTE: There are 3 nose pieces in different sizes. One nose piece is installed on the glasses and two additional nose pieces ship with the glasses.

Turning the 3D glasses on and off

Your 3D glasses are easy to use:

- The 3D glasses turn on and off automatically. There is no on or off switch.
- When 3D content begins to play, the glasses detect an IR signal from the computer and turn on automatically.
- Once the 3D content begins to play, the lenses may appear to darken and you may see some flickering as the glasses begin to turn on.
- The battery installed in the glasses provides approximately 150 hours of 3D viewing time. To help conserve battery power, the glasses enter Standby if no IR signal is detected for 5 seconds.

Using 3D Cinema Technology

After you set up your 3D computer, you are ready to verify that you can properly view the 3D content.



NOTE: Be sure that your computer is connected to AC power when viewing 3D content. 3D playback on the computer display requires high-performance GPU.



NOTE: The stereoscopic 3D effect works best in a darkened room. For optimal 3D viewing, the screen brightness controls are also disabled when watching 3D content.

1. To access 3D content, do one of the following:

- Double-click the 3D demo icon on the computer desktop and select a 3D clip from the menu.
- Insert a Blu-ray 3D movie (purchased separately) into the slot-load optical drive on the computer and follow the on-screen instructions.



NOTE: Insert the disc into the optical drive until it clicks into place. To eject the disc, press the optical drive eject key located at the top right of the keyboard.

2. Put on your 3D glasses. If needed, adjust the glasses using the nose pieces provided.
3. The 3D glasses turn on automatically when the 3D content begins to play and the infrared (IR) signal is detected. Your lenses may darken, or you may see flickering while the glasses start operation.

If you can see clearly in 3D, the setup is complete and you can begin viewing 3D cinema content!



NOTE: Differences in the frequencies at which the lighting in your room and 3D Cinema Technology operate may cause flickering or interfere with the operation of the glasses. This can be avoided by dimming or turning off the lights.



WARNING! If you still cannot see 3D content, remove the 3D glasses and stop using 3D Cinema Technology. Refer to the 3D safety information and consult a physician if you suspect a physical problem seeing stereoscopic 3D.

Understanding 3D formats

Your computer supports the following 3D formats:

- Blu-ray 3D movies
- Stereoscopic 3D games
- 3D MPEG 4 MVC files for 3D video playback
- 3D H.264 MVC and Fujifilm AVI dual-stream video file formats for 3D video playback
- 3D Fujifilm MPO for 3D photo viewing



NOTE: 3D playback is only supported in full-screen mode.

Using CyberLink PowerDVD

CyberLink PowerDVD supports the playback of 3D Blu-ray DVDs, 3D video files, and native 3D photos. When you insert a native 3D Blu-ray DVD, or play a native 3D video or photo file, it automatically plays back in 3D if 3D mode is enabled.

During playback, you can also manually adjust the 3D configuration settings for improved stereoscopic 3D viewing. For information on using CyberLink PowerDVD, refer to the software Help.

- ▲ To open CyberLink PowerDVD, select **Start > All Programs > CyberLink PowerDVD**, and then click **CyberLink PowerDVD**.

Playing 3D games

You can play stereo 3D games on your computer using TriDef 3D Experience Ignition Game Player.

- ▲ To access the game player, select **Start > TriDef 3D > TriDef 3D Ignition**.

Viewing 3D content on a 3D TV

The HDMI 1.4 connector allows you to play back Blu-ray 3D movies on an external 3D HDTV or 3D projector (purchased separately). To view content on a 3D TV, the computer must be in Projector only mode and connected to the TV with a high-speed HDMI cable. You must use the 3D glasses that came with your TV, not the glasses that came with your computer.



NOTE: Only Checkerboard, Row-Interleave, and HDMI 1.4 Time-sequential 3D TVs are supported.



NOTE: 3D playback of photos and videos is only supported on the computer display.

Caring for the 3D glasses

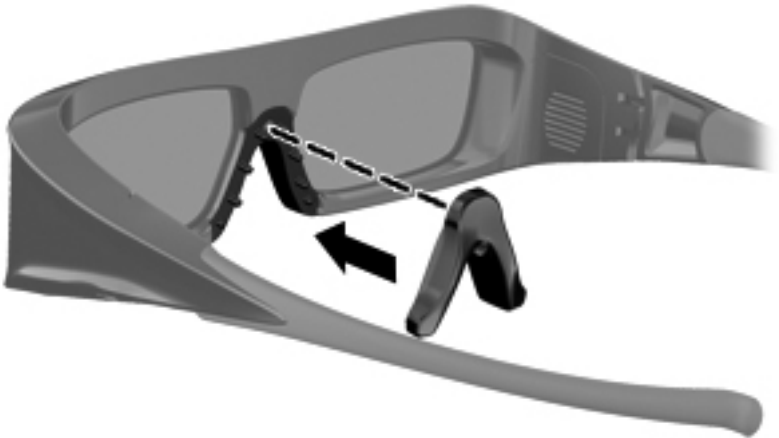
Using the nose pieces

The 3D glasses come with 3 nose pieces in different sizes. One nose piece is installed at the factory and two additional nose pieces ship with the glasses. Try on the glasses, and change the nose piece if needed to find a comfortable fit. You can also wear the glasses without a nose piece if needed.



NOTE: The 3D glasses are designed to fit over most standard prescription glasses.

- ▲ To add a nose piece, insert the nose piece onto the glasses. To remove a nose piece, pull the nose piece away from the glasses.



Replacing the battery

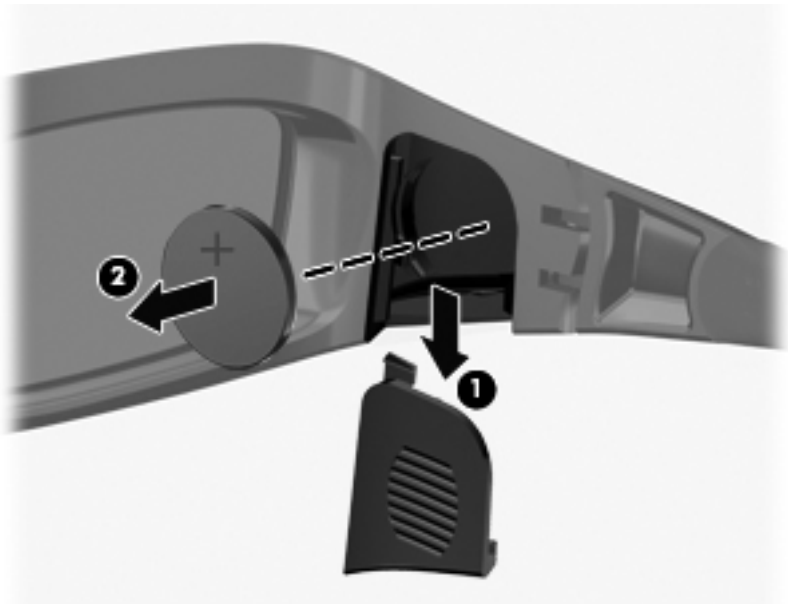
The battery in the 3D glasses ships preinstalled in the battery compartment and provides approximately 150 hours of 3D viewing time. HP recommends that the battery be replaced once a year. The glasses can stay in Standby mode for up to one year. The 3D glasses use a basic CR2032 type battery. These batteries can easily be replaced and can be purchased anywhere batteries are sold.

⚠ WARNING! Replace the battery with only a CR2032 type battery. Use of another battery may cause fire or explosion.

Dispose of the used battery promptly and according to local regulations. Be sure to keep the battery away from children.

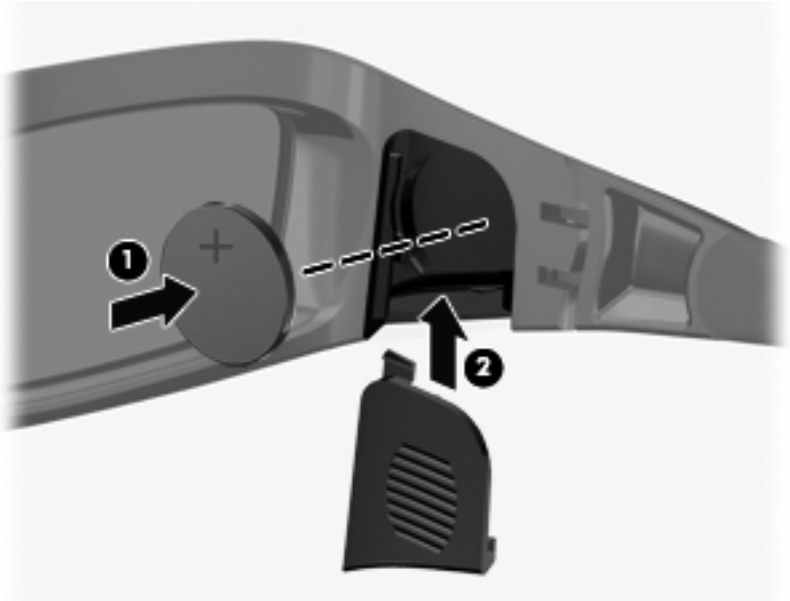
To replace the battery:

1. Slide the battery compartment cover (1) down, and then remove the used battery (2).



- Carefully insert the new battery (1) with the positive (+) side facing the battery compartment cover, and then replace the battery compartment cover (2).

⚠ CAUTION: To prevent damage to the glasses, use caution when inserting the battery.



Cleaning the 3D glasses

To remove smudges and lint, clean the 3D glasses with a soft, damp, lint-free cloth as needed. The cloth can be dampened with mild cleaning agents with less than 10% alcohol.

⚠ CAUTION: To prevent permanent damage to the 3D glasses:


Do not use paper-based towels, because they can scratch the lenses.

Do not spray cleaning fluids or chemicals directly on the lenses.

Do not use ammonia-based cleaning products.

Handling the glasses

The 3D glasses are durable but sensitive to physical pressure, and need to be handled with care. The 3D glasses should be held by the frame in order to avoid getting fingerprints on the lenses. When you are not using the 3D glasses, store them in the protective pouch.

 **CAUTION:** To prevent the lenses from cracking, never twist or rotate the 3D glasses.

Troubleshooting and frequently asked questions

I cannot see 3D content

If you are watching in 3D mode and cannot see 3D content, HP recommends that you not use the 3D glasses. Refer to the information below and [3D safety information on page 9](#). Consult a physician if you suspect a physical problem seeing stereoscopic 3D.

- You may be trying to watch 3D content in 2D mode.
- The clear protective film on both sides of the glasses lenses (select models only) may need to be removed.
- The battery in the 3D glasses may need to be replaced. Refer to [Replacing the battery on page 20](#) for additional information.
- The IR emitters on the computer display may be obstructed. For optimal transmission, keep the areas immediately around the IR emitters free from obstructions. For information on the location of the IR emitters, refer to [Getting to know your computer on page 26](#).
- You may be sitting too far from the computer display. You should be no more than approximately **1.5 meters** (5 feet) from the display when viewing 3D content.



NOTE: Depending on your viewing angle, the operational distance from the display can vary.

What 3D formats are supported on my computer

The following 3D formats are supported on your computer:

- Blu-ray 3D movies
- Stereoscopic 3D games
- 3D MPEG 4 MVC files for 3D video playback
- 3D H.264 MVC and Fujifilm AVI dual-stream video file formats for 3D video playback
- 3D Fujifilm MPO for 3D photo viewing

Can I play stereoscopic 3D games on my computer

Yes, you can play stereo 3D games on your computer using TriDef® 3D Experience Ignition Game Player.

- ▲ To access the game player, select **Start > TriDef 3D > TriDef 3D Ignition**.

Can I wear the 3D glasses to a 3D movie in a movie theater

The 3D glasses are optimized to work with the HP ENVY¹⁷ 3D computer and integrated IR emitters. The 3D glasses are not guaranteed to work optimally in any other 3D environment.

Can I wear my 3D glasses over my prescription glasses

Yes. The 3D glasses are designed to fit over most prescription glasses. If you normally wear glasses when viewing the computer screen, keep them on and put the 3D glasses on over your eyewear. You can use the additional replaceable nose pieces to find a comfortable fit. Refer to [Using the HP 3D Active Shutter Glasses on page 13](#) for more information.

How do I clean my 3D glasses

Use a soft, damp, lint-free cloth to clean your 3D glasses. Refer to [Caring for the 3D glasses on page 19](#) for more information.

How close do I need to be to the computer to view 3D content

The effective range of the integrated IR emitters is approximately **1.5 meters** (5 feet) from the computer display. Depending on the viewing angle, the operational distance from the display can vary.

I see flickering when watching 3D content

Flickering in your 3D glasses can be caused by one of the following:

- Differences in the frequencies at which the lighting in your room and 3D Cinema Technology operate may cause flickering or interfere with the operation of the glasses. This can be avoided by dimming or turning off the lights.
- Low battery in the glasses. You should try replacing the battery.

Can I use the 3D glasses in bright sunlight next to a window

The stereoscopic 3D effect works best in a darkened room.

What type of batteries do I need for the 3D glasses

The 3D glasses use a basic CR2032 type battery. These batteries can easily be replaced and can be purchased anywhere batteries are sold. Refer to [Replacing the battery on page 20](#) for more information.

Can I use my computer to watch 3D content on my external 3D TV

Yes, you can watch 3D content on your external 3D TV (purchased separately) using a high-speed HDMI 1.4 cable connected to the computer and the 3D TV.



NOTE: Only Checkerboard, Row-Interleave, and HDMI 1.4 Time-sequential 3D TVs are supported.



NOTE: To watch 3D content on your external 3D TV, you must use the 3D glasses that came with your TV, not the glasses that came with your computer.

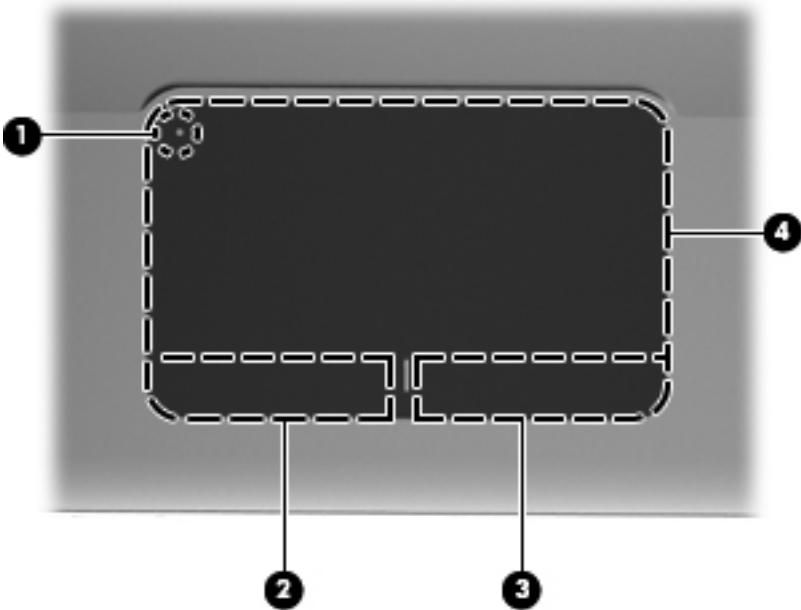
3 Getting to know your computer


The following sections are included in this chapter:

- [Top](#)
- [Front](#)
- [Right-side](#)
- [Left-side](#)
- [Display](#)
- [Bottom](#)

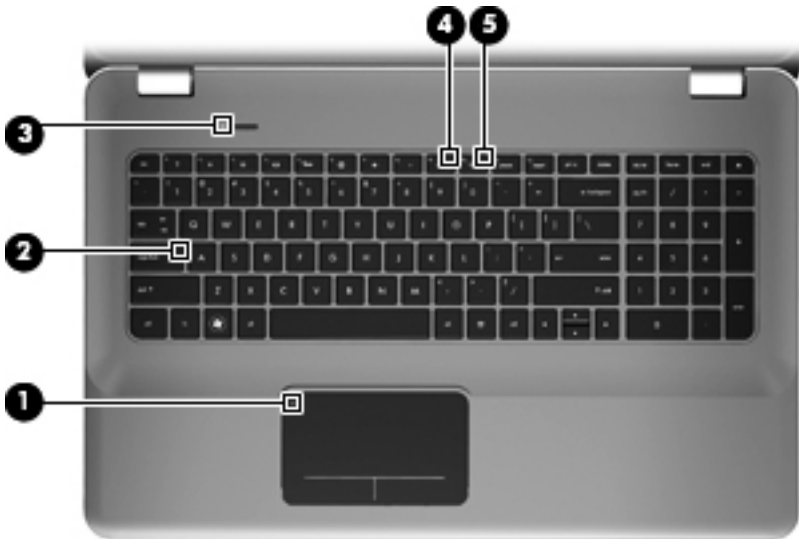
Top


TouchPad






Component	Description
(1)  TouchPad light	Turns the TouchPad on and off. Quickly double-tap the TouchPad light to turn the TouchPad on and off.
(2) Left TouchPad button	Functions like the left button on an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.
(4) TouchPad zone	Moves the pointer and selects or activates items on the screen.

Lights




Component	Description
(1)  TouchPad light	<ul style="list-style-type: none"> Amber: The TouchPad is off. Off: The TouchPad is on.
(2) Caps lock light	<ul style="list-style-type: none"> White: Caps lock is on. Off: Caps lock is off.

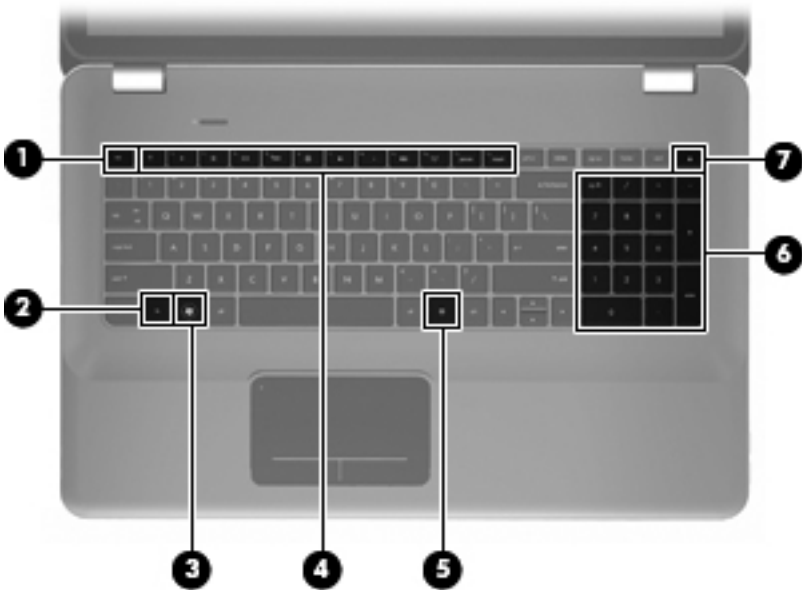
Component	Description
(3)  Power light	<ul style="list-style-type: none">• White: The computer is on.• Blinking white: The computer is in the Sleep state.• Off: The computer is off or in Hibernation.
(4)  Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.
(5)  Wireless light	<ul style="list-style-type: none">• White: An integrated wireless device, such as a wireless local area network (WLAN) device, is on. <p>NOTE: Wireless devices are enabled at the factory.</p> <ul style="list-style-type: none">• Amber: All wireless devices are off.




Button



Component	Description
 Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Security > Power Options, or refer to the <i>HP Notebook Reference Guide</i>.</p>



Keys



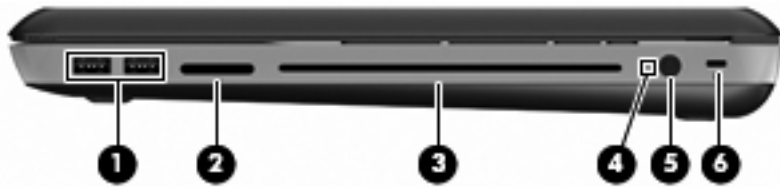
Component	Description
(1) esc key	Displays system information when pressed in combination with the fn key.
(2) fn key	Executes frequently used system functions when pressed in combination with the b key or the esc key.
(3)  Windows logo key	Displays the Windows Start menu.
(4) Action keys	Execute frequently used system functions.
(5)  Windows applications key	Displays a shortcut menu for items beneath the pointer.
(6) Integrated numeric keypad	Can be used like an external numeric keypad.
(7)  Optical drive eject key	Ejects the optical disc from the optical drive.




Front



Component	Description
(1)  Power light	<ul style="list-style-type: none">• White: The computer is on.• Blinking white: The computer is in the Sleep state.• Off: The computer is off or in Hibernation.
(2)  Drive light	<ul style="list-style-type: none">• Blinking white: The hard drive is being accessed.• Amber: HP ProtectSmart Hard Drive Protection has temporarily parked the hard drive. <p>NOTE: For information on HP ProtectSmart Hard Drive Protection, refer to the <i>HP Notebook Reference Guide</i>.</p>
(3) Speakers (2)	Produce sound.








Right-side





Component	Description
(1)  USB ports (2)	Connect optional USB devices.
(2) Digital Media Slot	Supports the following digital card formats: <ul style="list-style-type: none">• Memory Stick• Memory Stick Pro• MultiMediaCard• Secure Digital (SD) Memory Card• Secure Digital High Capacity Memory Card• xD-Picture Card
(3) Optical drive	Reads and writes to an optical disc. CAUTION: Do not insert 8-cm optical discs into the optical drive. This can cause damage to the computer.
(4) Battery light	<ul style="list-style-type: none">• Off: The computer is running on battery power.• Blinking amber: The battery has reached a low battery level, a critical battery level, or there is a battery error.• Amber: A battery is charging.• White: The computer is connected to external power and the battery is fully charged.
(5)  Power connector	Connects an AC adapter.
(6)  Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

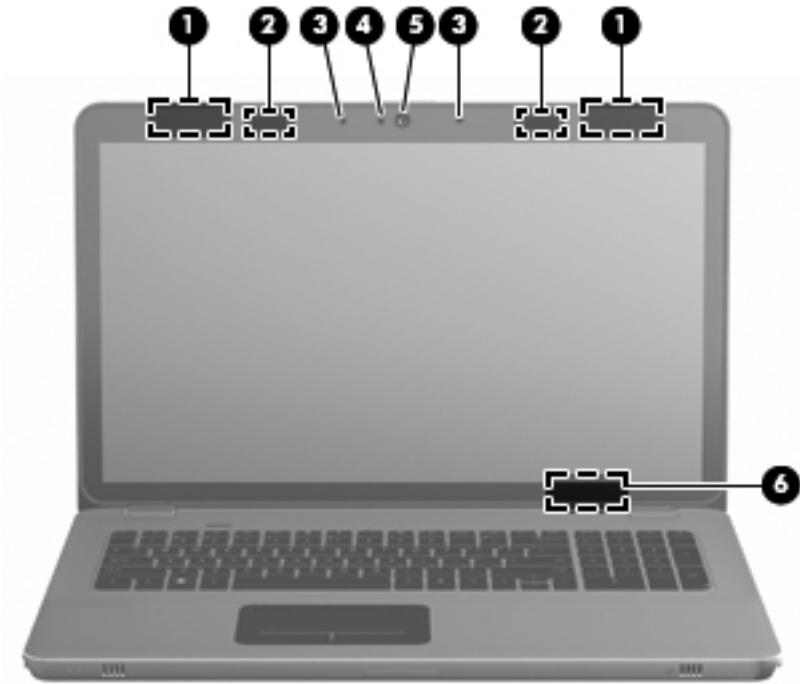
Left-side



Component	Description
(1)  Vent	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)  External monitor port	Connects an external VGA monitor or projector.
(3)  RJ-45 (network) jack	Connects a network cable.
(4)  Mini DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.
(5)  HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI 1.4 device.
(6)  eSATA/USB port	Connects a high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB 2.0 device.
(7)  SuperSpeed USB port	Connects an optional USB 3.0 device and provides enhanced USB power performance. NOTE: The SuperSpeed USB port is also compatible with USB 1.0 and 2.0 devices.

Component	Description
<p>(8)  Audio-out (headphone) jack/ Audio-in (microphone) jack</p>	<p>Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
<p>(9)  Audio-out (headphone) jack</p>	<p>Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>

Display

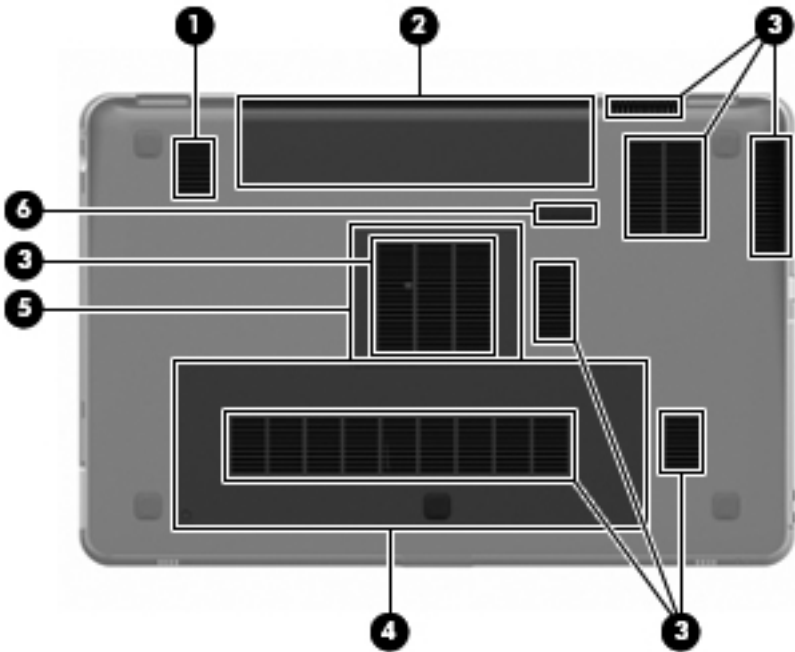



Component	Description
(1) WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLAN).
(2) IR emitters (2)*	Wirelessly synchronize the 3D glasses with the computer display.
(3) Internal microphones (2)	Record sound.
(4) Webcam light	On: The webcam is in use.
(5) Webcam	Records video and captures still photographs. To access the webcam, select Start > All Programs > CyberLink YouCam .



Component	Description
(6) Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on.
	NOTE: The internal display switch is not visible from the outside of the computer.

*The antennas and IR emitters are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas and IR emitters free from obstructions. To see wireless regulatory notices, refer to the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

Bottom



Component	Description
(1) Subwoofer	Provides superior bass sound.
(2) Battery bay	Holds the battery. NOTE: The battery is preinstalled in the battery bay at the factory.
(3) Vents (7)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)  Hard drive bay	Holds the hard drive.

Component	Description
(5)  Memory module compartment	Holds the memory modules.
(6)  Battery release latch	Releases the battery from the battery bay.

4 Networking

- [Using an Internet service provider \(ISP\)](#)
- [Connecting to a wireless network](#)



NOTE: Internet hardware and software features vary depending on computer model and your location.

Your computer may support one or both of the following types of Internet access:

- **Wireless**—For mobile Internet access, you can use a wireless connection. Refer to [Connecting to an existing WLAN on page 41](#) or [Setting up a new WLAN network on page 41](#).
- **Wired**—You can access the Internet by connecting to a wired network. For information on connecting to a wired network, refer to the *HP Notebook Reference Guide*.

Using an Internet service provider (ISP)

Before you can connect to the Internet, you must establish an ISP account. Contact a local ISP to purchase Internet service and a modem. The ISP will help set up the modem, install a network cable to connect your wireless computer to the modem, and test the Internet service.



NOTE: Your ISP will give you a user ID and password to access the Internet. Record this information and store it in a safe place.

The following features will help you set up a new Internet account or configure the computer to use an existing account:

- **Internet Services & Offers (available in some locations)**—This utility assists with signing up for a new Internet account and configuring the computer to use an existing account. To access this utility, select **Start > All Programs > Online Services > Get Online**.
- **ISP-provided icons (available in some locations)**—These icons may be displayed either individually on the Windows desktop or grouped in a desktop folder named Online Services. To set up a new Internet account or configure the computer to use an existing account, double-click an icon, and then follow the on-screen instructions.
- **Windows Connect to the Internet Wizard**—You can use the Windows Connect to the Internet Wizard to connect to the Internet in any of these situations:
 - You already have an account with an ISP.
 - You do not have an Internet account and want to select an ISP from the list provided within the wizard. (The list of ISP providers is not available in all regions.)
 - You have selected an unlisted ISP, and the ISP has provided you with information such as a specific IP address and POP3 and SMTP settings.

To access the Windows Connect to the Internet Wizard and instructions for using it, select **Start > Control Panel > Network and Internet > Network and Sharing Center**.



NOTE: If you are prompted within the wizard to choose between enabling or disabling Windows Firewall, choose to enable the firewall.

Connecting to a wireless network

Wireless technology transfers data across radio waves instead of wires. Your computer may be equipped with one or more of the following wireless devices:

- Wireless local area network (WLAN) device
- HP Mobile Broadband Module, a wireless wide area network (WWAN) device
- Bluetooth® device

For more information on wireless technology and connecting to a wireless network, refer to the *HP Notebook Reference Guide* and information and Web site links provided in Help and Support.

Connecting to an existing WLAN

1. Turn on the computer.
2. Be sure that the WLAN device is on.
3. Click the network icon in the notification area, at the far right of the taskbar.
4. Select a network to connect to.
5. Click **Connect**.
6. If required, enter the security key.

Setting up a new WLAN network

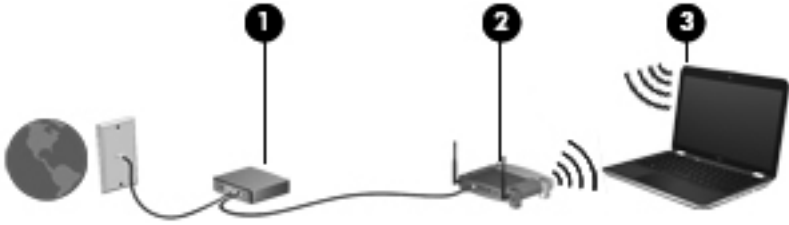
Required equipment:

- A broadband modem (either DSL or cable) **(1)** and high-speed Internet service purchased from an Internet service provider (ISP)
- A wireless router (purchased separately) **(2)**
- Your new wireless computer **(3)**



NOTE: Some modems have a built-in wireless router. Check with your ISP to determine what type of modem you have.

The illustration shows an example of a completed WLAN network installation that is connected to the Internet. As your network grows, additional wireless and wired computers can be connected to the network to access the Internet.



Configuring a wireless router

For help in setting up a WLAN, refer to the information provided by your router manufacturer or your ISP.

The Windows operating system also provides tools to help you set up a new wireless network. To use the Windows tools to set up your network, select **Start > Control Panel > Network and Internet > Network and Sharing Center > Set up a new connection or network > Set up a new network**. Then follow the on-screen instructions.



NOTE: It is recommended that you initially connect your new wireless computer to the router by using the network cable provided with the router. When the computer successfully connects to the Internet, you can disconnect the cable, and then access the Internet through your wireless network.

Protecting your WLAN

When you set up a WLAN or access an existing WLAN, always turn on security features to protect your network from unauthorized access.

For information on protecting your WLAN, refer to the *HP Notebook Reference Guide*.

5 Keyboard and pointing devices

The following sections are included in this chapter:

- [Using the keyboard](#)
- [Using pointing devices](#)

Using the keyboard

Using the action keys

Action keys are used for performing customized actions that are assigned to specific keys at the top of the keyboard.






The icons on the **f1** through **f11** keys represent the action key functions. To use an action key, press and hold this key to activate the assigned function.



NOTE: The action key feature is enabled at the factory. You can disable this feature in Setup Utility. If this feature is disabled in Setup Utility, you must press **fn** and an action key to activate the assigned function.



Icon	Action	Description
	Help and Support	Opens Help and Support. Help and Support provides tutorials, answers to questions, and product updates.
	Screen brightness down	Decreases the screen brightness level.
	Screen brightness up	Increases the screen brightness level.

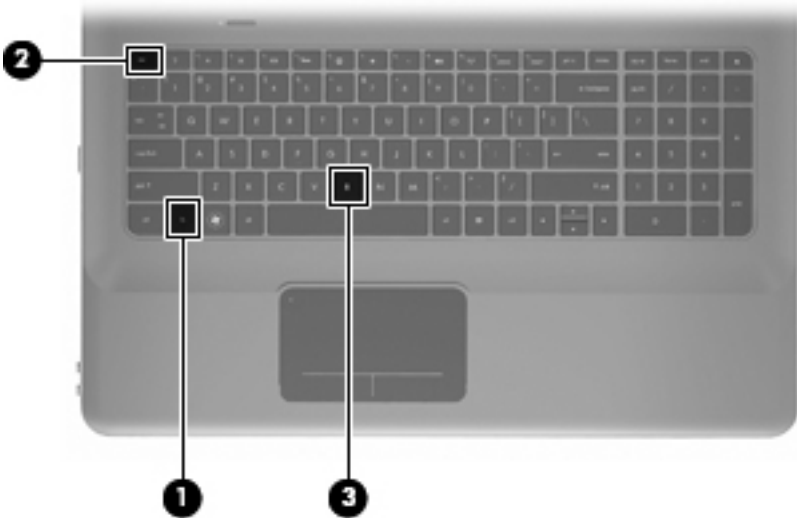
Icon	Action	Description
	Switch screen image	<p>Switches the screen image among display devices connected to the system. For example, if a monitor is connected to the computer, this key alternates the screen image from computer display to monitor display to simultaneous display on both the computer and the monitor.</p> <p>Most external monitors receive video information from the computer using the external VGA video standard. The switch screen image key can also alternate images among other devices that are receiving video information from the computer.</p> <p>The computer also supports multiple display outputs. When you press the switch screen image key, you can select from four different video outputs:</p> <ul style="list-style-type: none"> • Computer only mode • Duplicate mode • Extend mode • Projector only mode
	Keyboard backlight	<p>Turns the keyboard backlight on and off.</p> <p>NOTE: The keyboard backlight is turned on at the factory. To extend battery power, turn off the keyboard backlight.</p>
	Web	<p>Opens a Web browser.</p> <p>NOTE: Until you set up your Internet or network services, this key opens the Internet Connection Wizard.</p>
	Volume down	Decreases speaker volume.
	Volume up	Increases speaker volume.
	Mute	Mutes or restores speaker sound.
	Wireless	<p>Turns the wireless feature on or off.</p> <p>NOTE: This key does not establish a wireless connection. To establish a wireless connection, a wireless network must be set up.</p>
	Print screen	Takes a snapshot or picture of your computer screen and copies it to the clipboard.

Using the hotkeys

A hotkey is a combination of the **fn** key (1) and either the **esc** key (2) or the **b** key (3).

To use a hotkey:

- ▲ Briefly press the **fn** key, and then briefly press the second key of the hotkey combination.



Function	Hotkey	Description
Display system information.	fn+esc	Displays information about system hardware components and the system BIOS version number.
Control the bass settings.	fn+b	Increases or decreases the Beats Audio bass settings. Beats Audio is an enhanced audio profile that provides a deep, controlled bass while maintaining a clear sound. Beats Audio is enabled by default. You can also view and control the bass settings through the Windows operating system. Select Start > Control Panel > Hardware and Sound > HP Beats Audio Control Panel > Equalization to view and control the bass properties.


Using the keypad

Using the integrated numeric keypad



Component	Description
Integrated numeric keypad	Can be used like an external numeric keypad. NOTE: The computer does not have a num lock key.

Using pointing devices

 **NOTE:** In addition to the pointing devices included with your computer, you can use an external USB mouse (purchased separately) by connecting it to one of the USB ports on the computer.

Setting pointing device preferences

Use Mouse Properties in Windows® to customize settings for pointing devices, such as button configuration, click speed, and pointer options.


To access Mouse Properties, select **Start > Devices and Printers**. Then right-click the device representing your computer, and select **Mouse settings**.

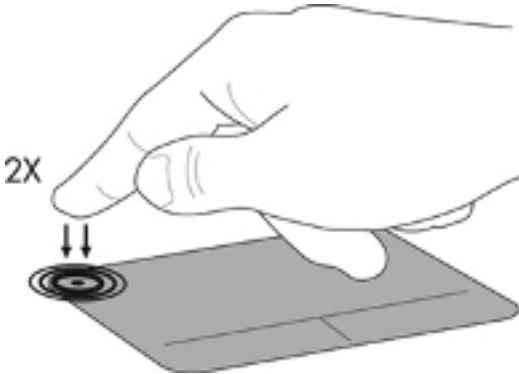
Using the TouchPad

To move the pointer, slide one finger across the TouchPad in the direction you want the pointer to go. Use the left and right TouchPad buttons like the corresponding buttons on an external mouse.

Turning the TouchPad off and on

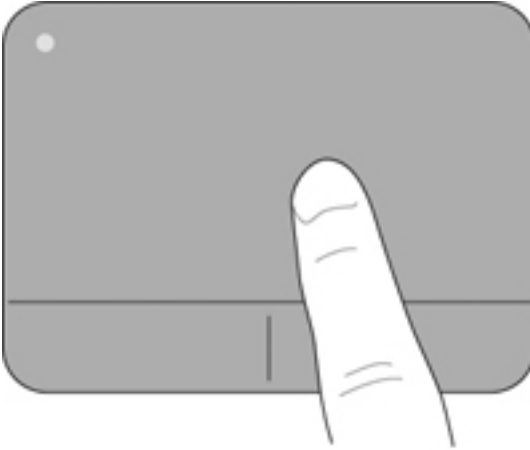
To turn the TouchPad off and on, quickly double-tap the TouchPad light.

 **NOTE:** The TouchPad light is off when the TouchPad is on.



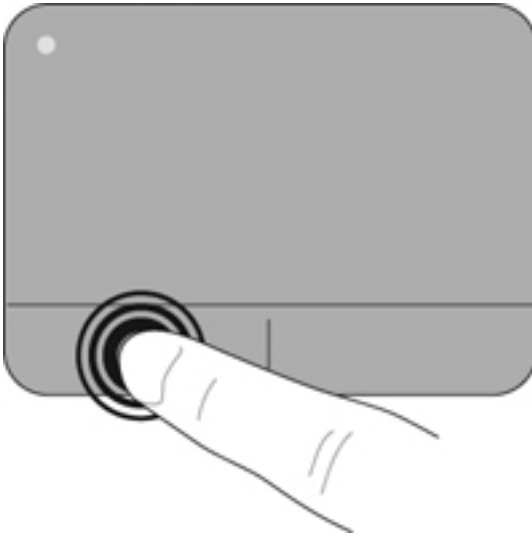
Navigating

To move the pointer, slide one finger across the TouchPad in the direction you want the pointer to go.



Selecting

Use the left and right TouchPad buttons like the corresponding buttons on an external mouse.



Using TouchPad gestures

The TouchPad supports a variety of gestures. To use TouchPad gestures, place two fingers on the TouchPad at the same time.




NOTE: TouchPad gestures are not supported in all programs.

To view the demonstration of a gesture:

1. Right-click the Synaptics icon  in the notification area, at the far right of the taskbar, and then click **TouchPad Properties**.
2. Click a gesture to activate the demonstration.

To turn the gestures on and off:

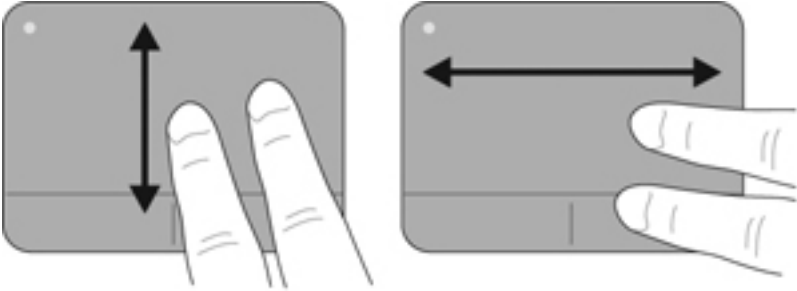
1. Right-click the Synaptics icon  in the notification area, at the far right of the taskbar, and then click **TouchPad Properties**.
2. Select the gesture that you want to turn on or off.
3. Click **Apply**, and then click **OK**.

Scrolling

Scrolling is useful for moving up, down, or sideways on a page or image. To scroll, place two fingers slightly apart on the TouchPad, and then drag them across the TouchPad in an up, down, left, or right motion.



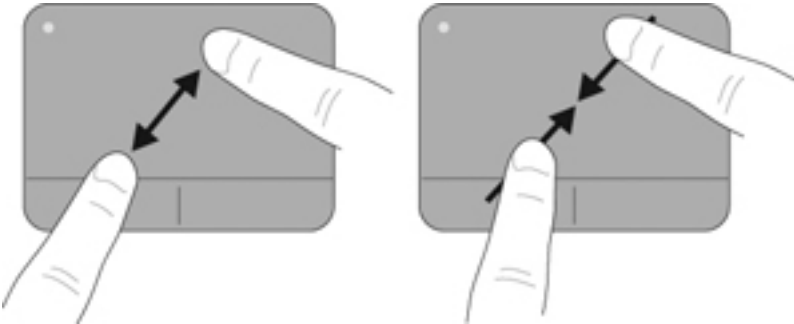
NOTE: Scrolling speed is controlled by finger speed.



Pinching/Zooming

Pinching allows you to zoom in or out on images or text.

- Zoom in by placing two fingers together on the TouchPad, and then moving them apart.
- Zoom out by placing two fingers apart on the TouchPad, and then moving them together.



6 Maintenance

The following sections are included in this chapter:

- [Removing or inserting the battery](#)
- [Replacing or upgrading the hard drive](#)
- [Adding or replacing memory modules](#)
- [Cleaning your computer](#)
- [Updating programs and drivers](#)

Removing or inserting the battery



NOTE: The battery is preinstalled in the battery bay at the factory.



NOTE: For additional information on using the battery, refer to the *HP Notebook Reference Guide*.

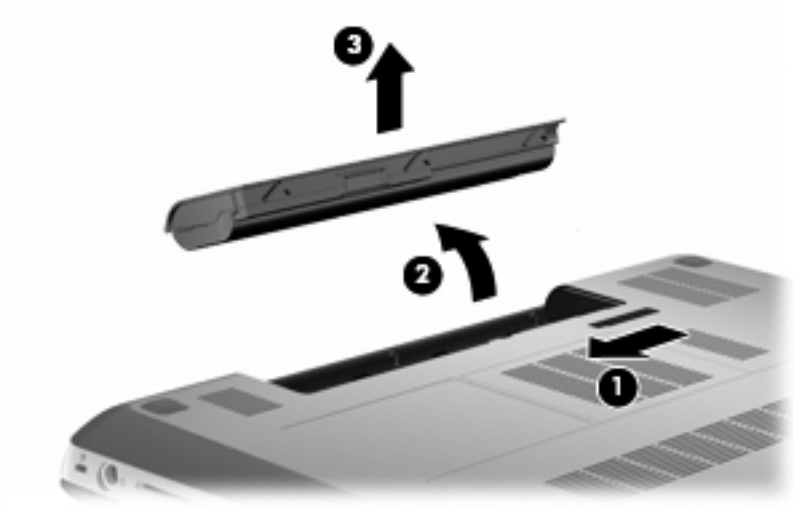
Removing the battery



CAUTION: Removing a battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work and initiate Hibernation or shut down the computer through Windows before removing the battery.

1. Slide the battery release latch **(1)** to release the battery.

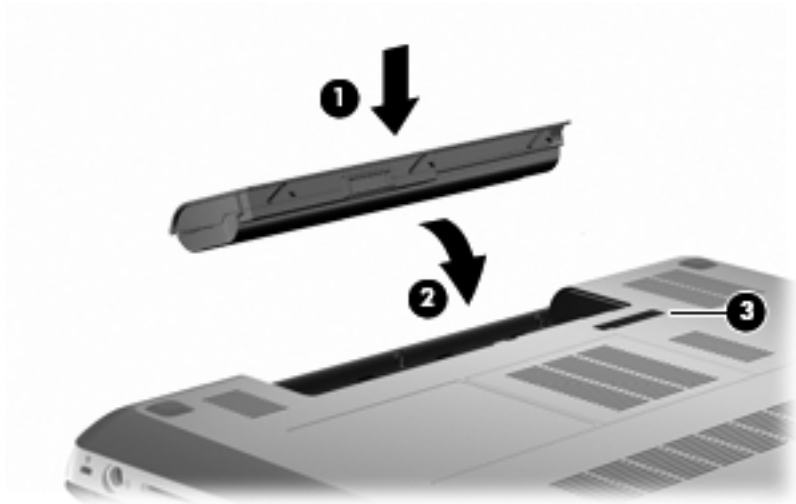
2. Pivot the battery (2) upward and remove it from the computer (3).




Inserting the battery

- ▲ Align the tabs on the battery **(1)** with the notches on the outer edge of the battery bay, and rotate the battery **(2)** into the battery bay until it is seated.

The battery release latch **(3)** automatically locks the battery into place.




Replacing or upgrading the hard drive

 **CAUTION:** To prevent information loss or an unresponsive system:

Shut down the computer before removing the hard drive from the hard drive bay. Do not remove the hard drive while the computer is on, in the Sleep state, or in Hibernation.

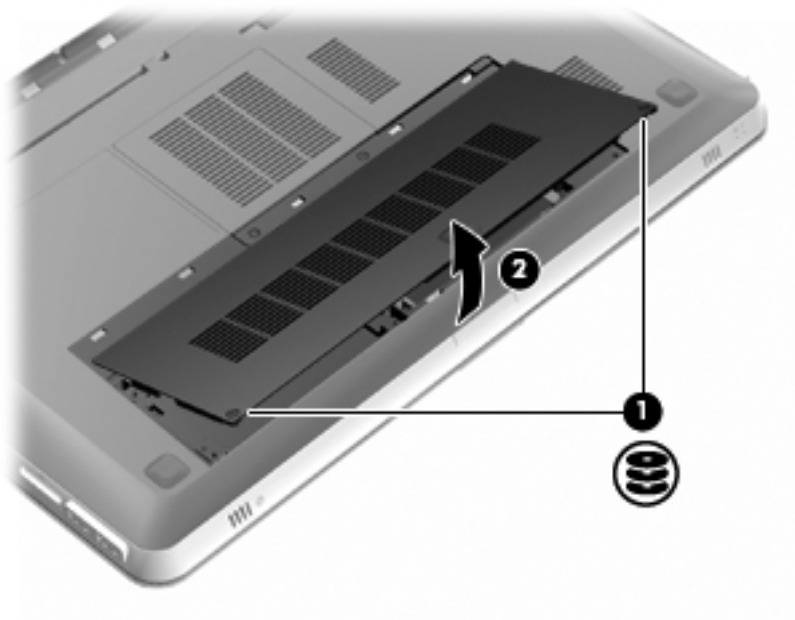
If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

 **NOTE:** Select computer models can support up to two drives. To view the drives installed on the computer, select **Start > Computer**.

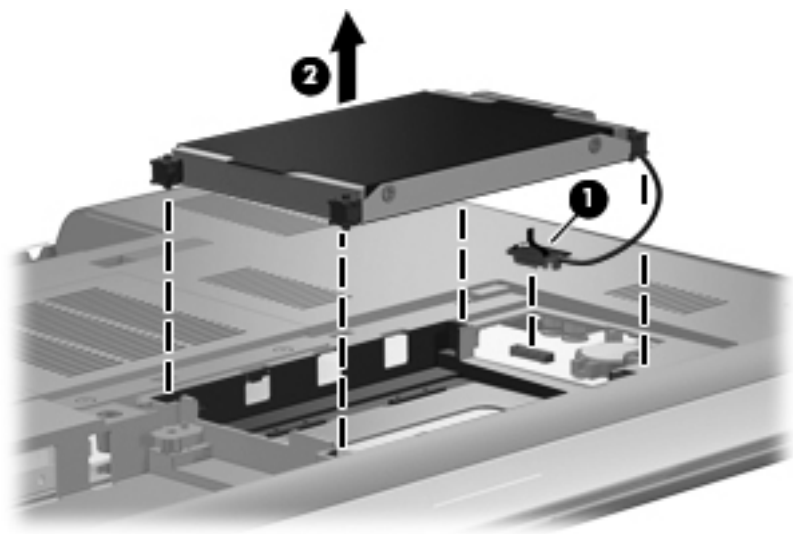
Removing the hard drive

1. Save your work and shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Remove external power from the AC outlet and remove the battery.
4. Loosen the 2 hard drive cover screws **(1)**.

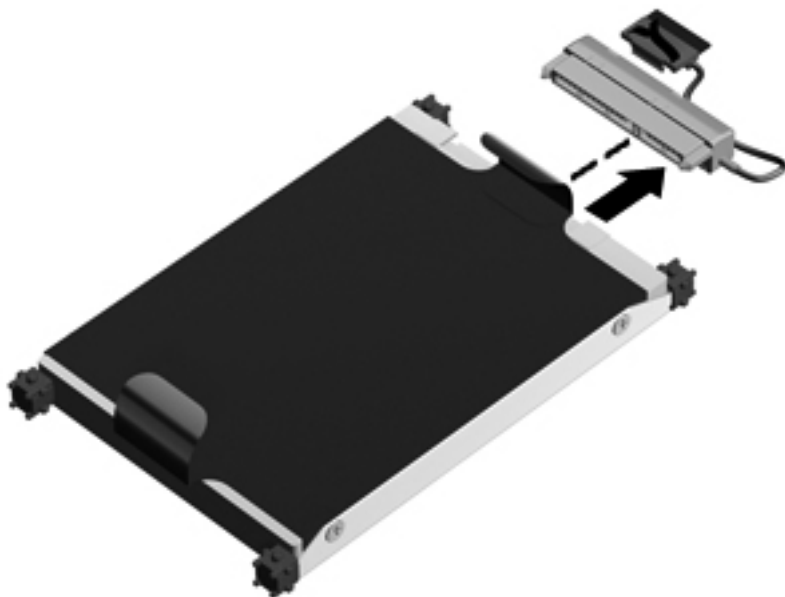
5. Remove the hard drive cover (2).



6. Disconnect the hard drive cable (1) from the computer, and then lift the hard drive (2) out of the hard drive bay.

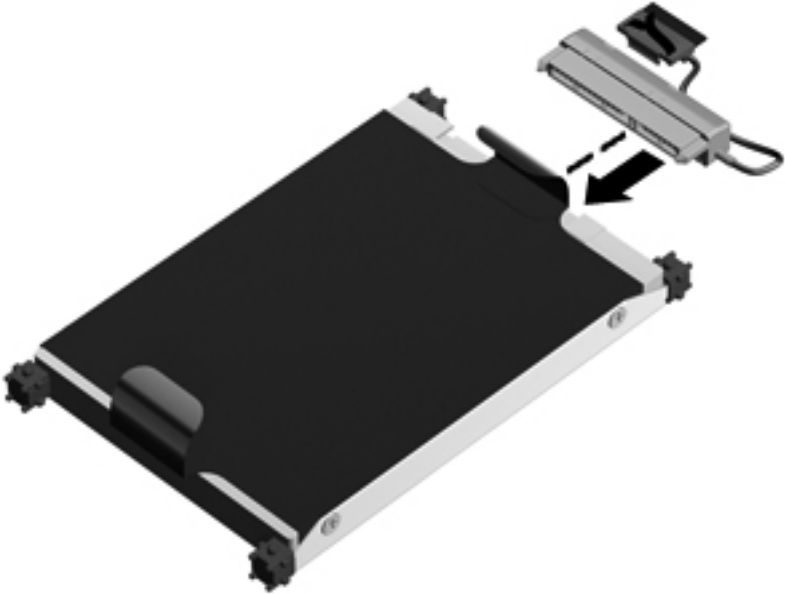


7. Disconnect the hard drive cable from the hard drive.

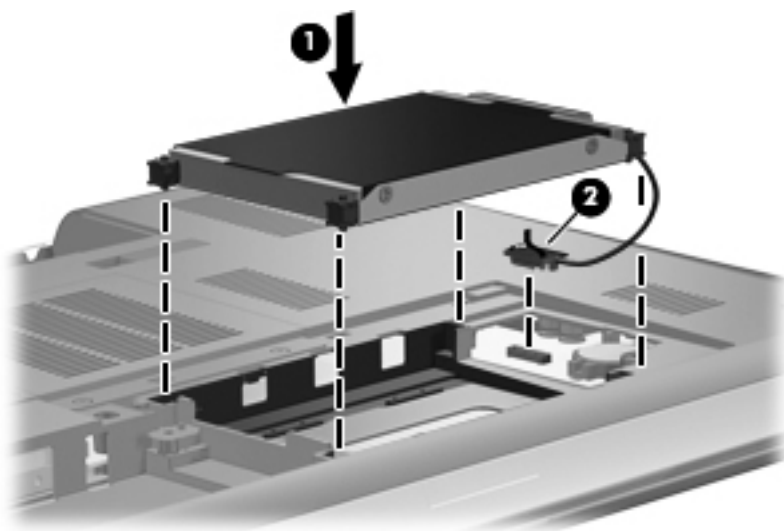


Installing a hard drive

1. Connect the hard drive cable to the hard drive.

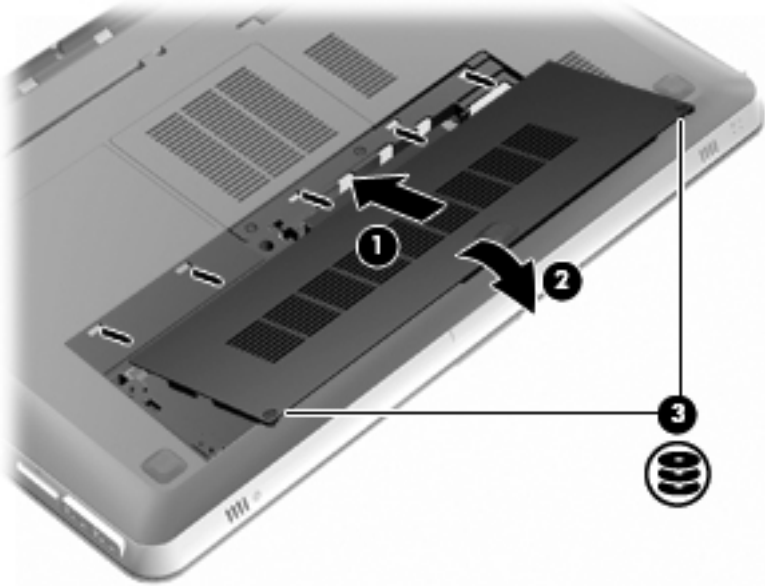


2. Insert the hard drive (1) into the hard drive bay, and then connect the hard drive cable (2) to the computer.



3. Align the tabs (1) on the hard drive cover with the notches on the computer.
4. Close the cover (2).

5. Tighten the hard drive cover screws (3).



6. Replace the battery.
7. Reconnect external power and external devices.
8. Turn on the computer.

Adding or replacing memory modules

The computer has two memory module slots. The memory module slots are located on the bottom of the computer under the hard drive cover. The memory capacity of the computer can be upgraded by adding a memory module or replacing the existing memory module in one of the memory module slots.

-
- ⚠ WARNING!** To reduce the risk of electric shock and damage to the equipment, unplug the power cord and remove all batteries before installing a memory module.
 - ⚠ CAUTION:** Electrostatic discharge (ESD) can damage electronic components. Before beginning any procedure, ensure that you are discharged of static electricity by touching a grounded metal object.



NOTE: To use a dual-channel configuration when adding a second memory module, be sure that both memory modules are the same capacity.

To add or replace a memory module:



CAUTION: To prevent information loss or an unresponsive system:

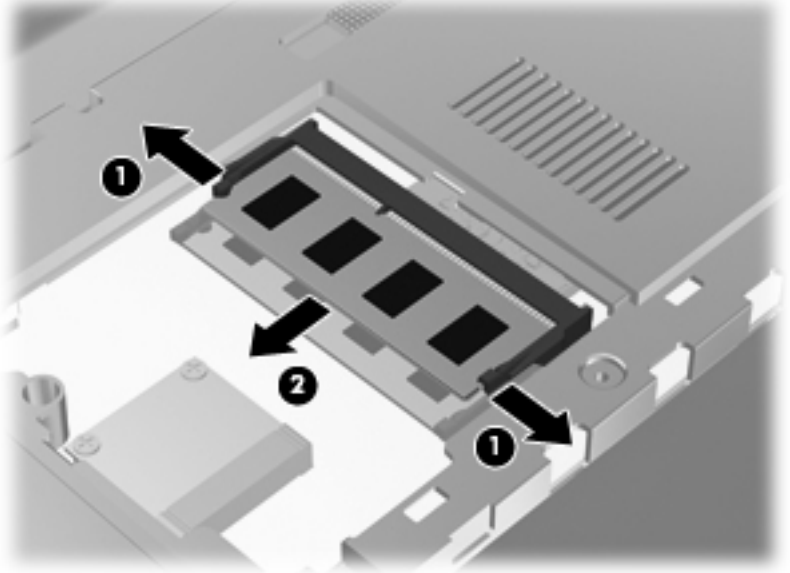
Shut down the computer before removing a memory module from the computer. Do not remove a memory module while the computer is on, in the Sleep state, or in Hibernation.

If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

1. Save your work and shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Remove external power from the AC outlet and remove the battery.
4. Remove the hard drive cover.
 - a. Loosen the 2 hard drive cover screws (1).

- b. Grasp the edge of the memory module **(2)**, and then gently pull the module out of the memory module slot.

⚠ CAUTION: To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module. To protect a memory module after removal, place it in an electrostatic-safe container.

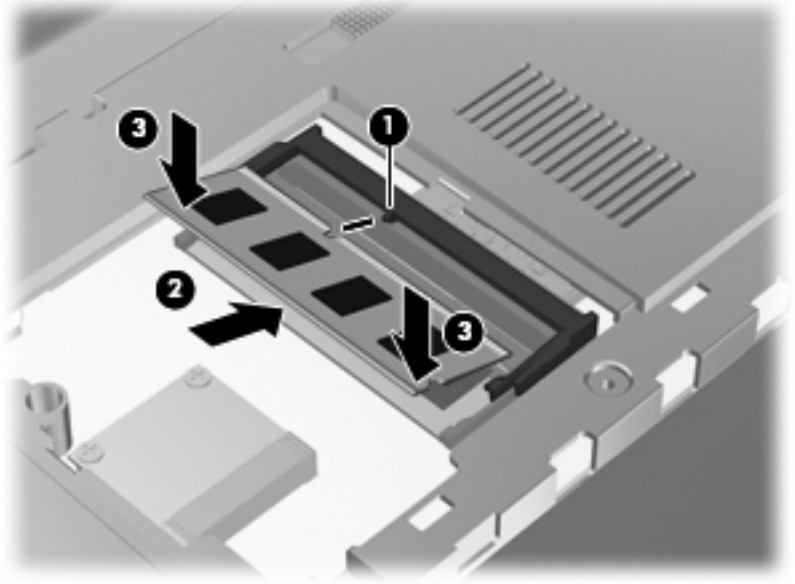


7. Insert a new memory module:

⚠ CAUTION: To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module, and do not bend the memory module.

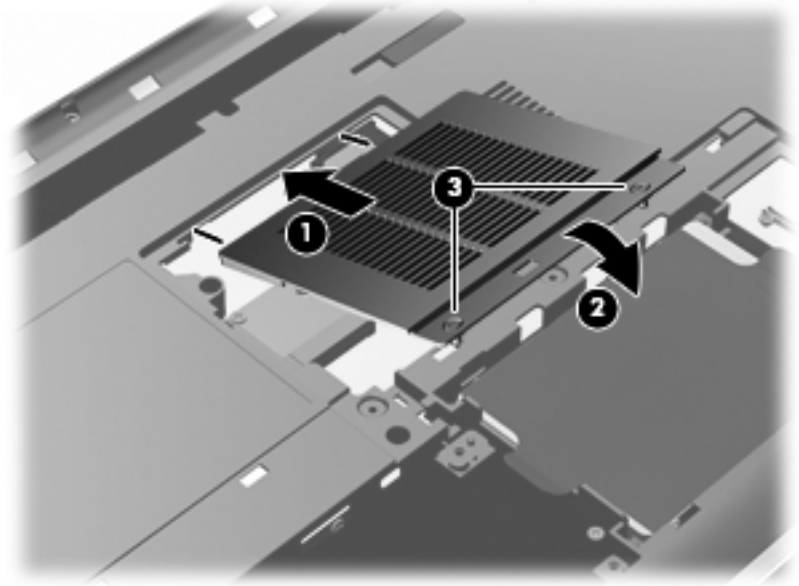
- a. Align the notched edge **(1)** of the memory module with the tab in the memory module slot.
- b. With the memory module at a 45-degree angle from the surface of the memory module compartment, press the module **(2)** into the memory module slot until it is seated.

- c. Gently press the memory module **(3)** down, applying pressure to both the left and right edges of the memory module, until the retention clips snap into place.



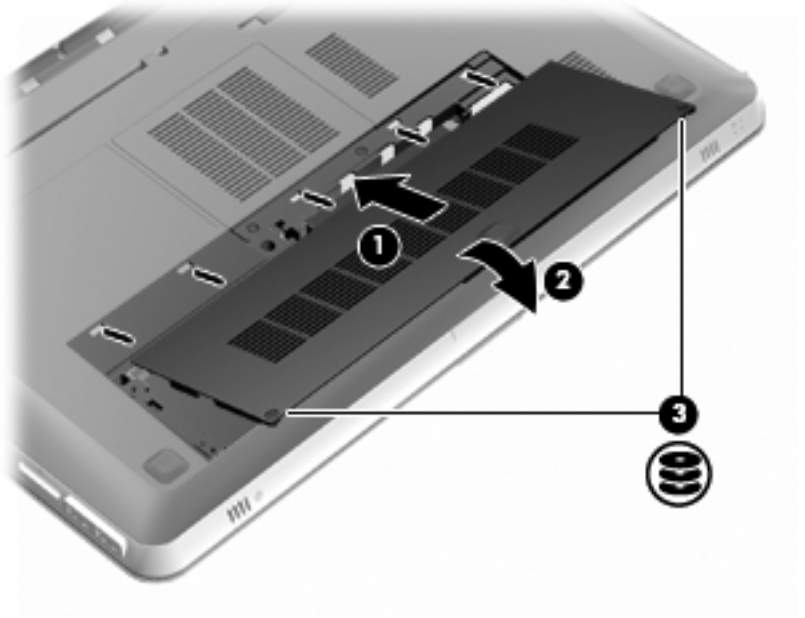
8. Replace the memory module compartment cover.
 - a. Align the tabs **(1)** on the memory module compartment cover with the notches on the computer.
 - b. Close the cover **(2)**.

- c. Tighten the 2 memory module compartment cover screws (3).



9. Replace the hard drive cover.
 - a. Align the tabs (1) on the hard drive cover with the notches on the computer.
 - b. Close the cover (2).


- c. Tighten the 2 hard drive cover screws (3).



10. Replace the battery.
11. Reconnect external power and external devices.
12. Turn on the computer.

Cleaning your computer


Cleaning the display

 **CAUTION:** To prevent permanent damage to the computer, never spray water, cleaning fluids, or chemicals on the display.

To remove smudges and lint, frequently clean the display with a soft damp, lint-free cloth. If the screen requires additional cleaning, use premoistened antistatic wipes or an antistatic screen cleaner.

Cleaning the TouchPad and keyboard

Dirt and grease on the TouchPad can cause the pointer to jump around on the screen. To avoid this, clean the TouchPad with a damp cloth, and wash your hands frequently when using the computer.

 **WARNING!** To reduce the risk of electric shock or damage to internal components, do not use a vacuum cleaner attachment to clean the keyboard. A vacuum cleaner can deposit household debris on the keyboard surface.

Clean the keyboard regularly to prevent keys from sticking, and to remove dust, lint, and particles that can become trapped beneath the keys. A can of compressed air with a straw extension can be used to blow air around and under the keys to loosen and remove debris.

Updating programs and drivers

HP recommends that you update your programs and drivers on a regular basis with the latest versions. Go to <http://www.hp.com/support> to download the latest versions. You can also register to receive automatic update notifications when they become available.

7 Backup and recovery

- [Restore](#)
- [Creating restore media](#)
- [Performing a system restore](#)
- [Backing up and recovering your information](#)

Your computer includes tools provided by the operating system and HP to help you safeguard your information and restore it if ever needed.


This chapter provides information on the following topics:


- Creating a set of recovery discs or a recovery flash drive (Recovery Manager software feature)
- Performing a system restore (from the partition, recovery discs, or a recovery flash drive)
- Backing up your information
- Recovering a program or driver

Restore

In the event of hard drive failure, to restore your system to its factory image you will need a set of recovery discs or a recovery flash drive that you can create using HP Recovery Manager. HP recommends that you use this software to create either a set of recovery discs or a recovery flash drive immediately after software setup.


If for some other reason you need to restore your system, this can be achieved using the HP Recovery partition (select models only), without the need for recovery discs or a recovery flash drive. To check for the presence of a recovery partition, click **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**. If the recovery partition is present, a Recovery drive is listed in the window.


 **CAUTION:** HP Recovery Manager (partition or discs/flash drive) restores only software that was preinstalled at the factory. Software not provided with this computer must be reinstalled manually.

 **NOTE:** Recovery discs have been included if your computer does not have a recovery partition.

Creating restore media

HP recommends that you create either a set of recovery discs or a recovery flash drive to be sure that you can restore your computer to its original factory state if the hard drive fails, or if for any reason you cannot restore using the recovery partition tools. Create these discs or the flash drive after setting up the computer for the first time.

 **NOTE:** HP Recovery Manager allows the creation of only one set of recovery discs or one recovery flash drive. Handle these discs or the flash drive carefully and keep them in a safe place.

 **NOTE:** If your computer does not include an integrated optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can purchase recovery discs for your computer from the HP Web site. If you use an external optical drive, it must be connected directly to a USB port on the computer, not to a USB port on an external device, such as a USB hub.

Guidelines:

- Purchase high-quality DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs.



NOTE: Read-write discs, such as CD-RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs, are not compatible with the Recovery Manager software.

- The computer must be connected to AC power during this process.
- Only one set of recovery discs or one recovery flash drive can be created per computer.



NOTE: If you are creating recovery discs, number each disc before inserting it into the optical drive.

- If necessary, you can exit the program before you have finished creating the recovery discs or recovery flash drive. The next time you open Recovery Manager, you will be prompted to continue the backup creation process.

To create a set of recovery discs or a recovery flash drive:

1. Select **Start > All Programs > Recovery Manager > Recovery Media Creation**.
2. Follow the on-screen instructions.

Performing a system restore

Recovery Manager software allows you to repair or restore the computer to its original factory state. Recovery Manager works from recovery discs or a recovery flash drive, or from a dedicated recovery partition (select models only) on the hard drive.



NOTE: A system restore needs to be performed if the computer hard drive has failed or if all attempts to correct any functional computer issues fail. A system restore should be used as a final attempt to correct computer issues.

Note the following when performing a system restore:

- You can restore only the system that you have previously backed up. HP recommends that you use HP Recovery Manager to create either a set of recovery discs or a recovery flash drive as soon as you set up the computer.
- Windows has its own built-in repair features, such as System Restore. If you have not already tried these features, try them before using Recovery Manager.
- Recovery Manager restores only software that was preinstalled at the factory. Software not provided with this computer must be downloaded from the manufacturer's Web site or reinstalled from the disc provided by the manufacturer.

Restoring using the dedicated recovery partition (select models only)

When using the dedicated recovery partition, there is an option to back up pictures, music and other audio, videos and movies, recorded TV shows, documents, spreadsheets and presentations, e-mails, and Internet favorites and settings during this process.

To restore the computer from the recovery partition, follow these steps:

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or –
 - Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then, press **f11** while the “F11 (System Recovery)” message is displayed on the screen.
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

Restoring using the restore media

1. If possible, back up all personal files.
2. Insert the first recovery disc into the optical drive on your computer or an optional external optical drive, and then restart the computer.

– or –

Insert the recovery flash drive into a USB port on your computer, and then restart the computer.



NOTE: If the computer does not automatically restart in Recovery Manager, the computer boot order needs to be changed.

3. Press **f9** at system bootup.
4. Select the optical drive or the flash drive.
5. Follow the on-screen instructions.

Changing the computer boot order

To change the boot order for recovery discs:

1. Restart the computer.
2. Press **esc** while the computer is restarting, and then press **f9** for boot options.
3. Select **Internal CD/DVD ROM Drive** from the boot options window.

To change the boot order for a recovery flash drive:

1. Insert the flash drive into a USB port.
2. Restart the computer.
3. Press **esc** while the computer is restarting, and then press **f9** for boot options.
4. Select the flash drive from the boot options window.

Backing up and recovering your information

It is very important to back up your files and keep any new software in a safe place. As you add new software and data files, continue to create backups on a regular basis.

How completely you are able to recover your system depends on how recent your backup is.



NOTE: A recovery from your most recent backup needs to be performed if the computer has a virus attack or if any major system components fail. In order to correct computer issues, a recovery should first be attempted before a system restore is attempted.

You can back up your information to an optional external hard drive, a network drive, or discs. Back up your system at the following times:

- At regularly scheduled times



TIP: Set reminders to back up your information periodically.

- Before the computer is repaired or restored
- Before you add or modify hardware or software

Guidelines:

- Create system restore points using the Windows® System Restore feature, and periodically copy them to an optical disc or an external hard drive. For more information on using system restore points, refer to [Using Windows system restore points on page 75](#).
- Store personal files in the Documents library and back up this folder periodically.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to re-enter your preferences.

To create a screen shot:

1. Display the screen you want to save.
2. Copy the screen image:
To copy only the active window, press **alt+fn+prt sc**.
To copy the entire screen, press **fn+prt sc**.
3. Open a word-processing document, and then select **Edit > Paste**. The screen image is added to the document.
4. Save and print the document.


Using Windows Backup and Restore

Guidelines:

- Be sure that the computer is connected to AC power before you start the backup process.
- Allow enough time to complete the backup process. Depending on file sizes, it may take over an hour.


To create a backup:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to schedule and create a backup.

 **NOTE:** Windows® includes the User Account Control feature to improve the security of the computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

Using Windows system restore points


A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes.

 **NOTE:** Recovering to an earlier restore point does not affect data files saved or e-mails created since the last restore point.

You also can create additional restore points to provide increased protection for your files and settings.

When to create restore points

- Before you add or modify software or hardware
- Periodically, whenever the computer is functioning optimally

 **NOTE:** If you revert to a restore point and then change your mind, you can reverse the restoration.

Create a system restore point

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Follow the on-screen instructions.

Restore to a previous date and time

To revert to a restore point (created at a previous date and time), when the computer was functioning optimally, follow these steps:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**.
5. Follow the on-screen instructions.

8 Customer support

The following sections are included in this chapter:

- [Contacting customer support](#)
- [Labels](#)

Contacting customer support

If the information provided in this user guide, in the *HP Notebook Reference Guide*, or in Help and Support does not address your questions, you can contact HP Customer Support at:

<http://www.hp.com/go/contactHP>



NOTE: For worldwide support, click **Contact HP worldwide** on the left side of the page, or go to http://welcome.hp.com/country/us/en/wwcontact_us.html.

Here you can:

- Chat online with an HP technician.



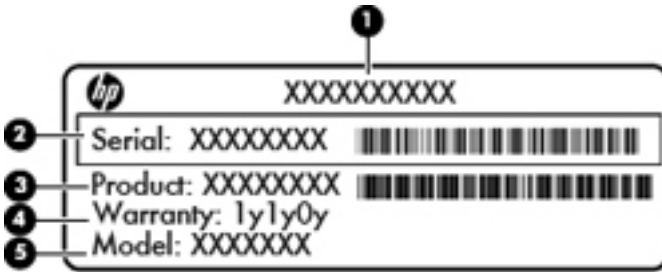
NOTE: When technical support chat is not available in a particular language, it is available in English.

- E-mail HP Customer Support.
- Find HP Customer Support worldwide telephone numbers.
- Locate an HP service center.

Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer:

- Serial number label—Provides important information, including the following:



Component

- | | |
|-----|----------------------------------|
| (1) | Product name |
| (2) | Serial number (s/n) |
| (3) | Part number/Product number (p/n) |
| (4) | Warranty period |
| (5) | Model description |
-

Have this information available when you contact technical support. The serial number label is affixed inside the battery bay.

- Microsoft® Certificate of Authenticity—Contains the Windows Product Key. You may need the Product Key to update or troubleshoot the operating system. The Microsoft Certificate of Authenticity is located on the bottom of the computer.
- Regulatory label—Provides regulatory information about the computer. The regulatory label is affixed inside the battery bay.
- Wireless certification label or labels (select models only)—Provide information about optional wireless devices and the approval markings of some of the countries or regions in which the devices have been approved for use. If your computer model includes one or more wireless devices, one or more certification labels are included

with your computer. You may need this information when traveling internationally. Wireless certification labels are affixed inside the battery bay.

9 Specifications

- [Input power](#)
- [Operating environment](#)

Input power

The power information in this section may be helpful if you plan to travel internationally with the computer.

The computer operates on DC power, which can be supplied by an AC or a DC power source. The AC power source must be rated at 100–240 V, 50–60 Hz. Although the computer can be powered from a standalone DC power source, it should be powered only with an AC adapter or a DC power source supplied and approved by HP for use with this computer.

The computer can operate on DC power within the following specifications.

Input power	Rating
Operating voltage and current	19.5 V dc @ 6.5 A - 120 W



NOTE: This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.



NOTE: The computer operating voltage and current can be found on the system regulatory label.

Operating environment


Factor	Metric	U.S.
Temperature		
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft

A RAID 0 (select models only)

Select computer models with two hard drives ship in a RAID 0 configuration. RAID benefits users who frequently work with large files and want to improve the storage performance of their computer. With RAID 0, data is distributed across both drives. This allows data, especially large files, to be read faster, because data is read simultaneously from both drives. However, RAID 0 offers no fault tolerance, which means that the entire array fails if one drive fails.

To enhance the write performance of RAID 0, Intel® Rapid Storage Technology has implemented a volume write-back cache. The volume write-back cache allows writes to be buffered and improves coalescing. The cache is enabled by default and can be disabled or reenabled in Intel Rapid Storage Technology. An Uninterrupted Power Supply (UPS) is recommended for use if the cache is enabled.

Disabling RAID 0

 **CAUTION:** Disabling RAID 0 completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. Before you disable RAID 0, be sure to back up your information and create a set of recovery discs. Refer to [Backup and recovery on page 69](#) for additional information.

To disable RAID 0:

1. Create a set of recovery discs. The hard drive contents will be completely erased after disabling RAID 0. Refer to [Backup and recovery on page 69](#) for more information. For a full image recovery, be sure that you have the service recovery discs. For a minimized factory image recovery, be sure that you have the set of recovery discs you created with Recovery Manager.



NOTE: Be sure that you back up all personal files. Software not provided with this computer must be downloaded from the manufacturer's Web site or reinstalled from the disc provided by the manufacturer.

2. Turn on or restart the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
3. Use the arrow keys to select **System Configuration**, and then change **RAID OROM UI** to **enable**.
4. Use the arrow keys to select **Exit > Exit Saving Changes**, and then click **Yes** to save your change and restart the computer.
5. When the **POST** screen opens, press **ctrl+l** to enter the configuration utility.
6. In the **Main** menu, use the up or down arrow key to select **3. Reset Disks to Non-RAID**, and then press **enter**. The Reset RAID Data window is displayed.
7. Press the space bar to select the first hard drive, and then press the down arrow key and the space bar to select the second hard drive.

8. Press **enter**, and then press **Y** to confirm the selection.



CAUTION: Once you confirm the selection, your hard drive contents are completely erased and the hard drive is reformatted.

9. Use the down arrow key to select **5. Exit**.
10. Press **enter**, and then press **Y**. You will see the "No bootable device" message displayed on the screen.
11. Insert the first service recovery disc or the first recovery disc you created into the optical drive, and then restart the computer.
12. Press **f9** for the boot option menu, and then select **Internal CD/DVD ROM Drive** as the boot device.
13. If you used the set of service recovery discs, follow the on-screen instructions to complete the recovery.

–or–

If you used the set of recovery discs you created, select **Minimized System Recovery**, and then follow the on-screen instructions to complete the recovery.

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