

# 1 Knowing the parts

## Identifying the hardware

Components included with the device may vary by region and model. The illustrations in this chapter identify the standard features on most device models.

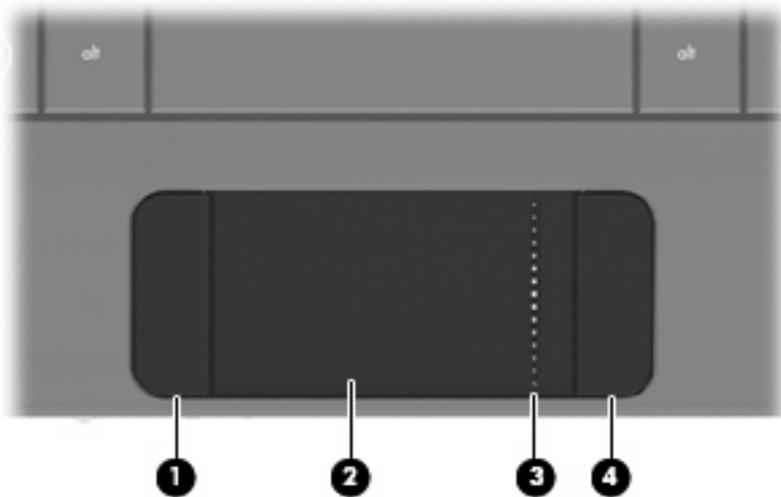
To see a list of hardware installed in the device, follow these steps:

1. Select **Start > My Computer**.
2. In the left pane of the System Tasks window, select **View system information**.
3. Select **Hardware tab > Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

## Top components

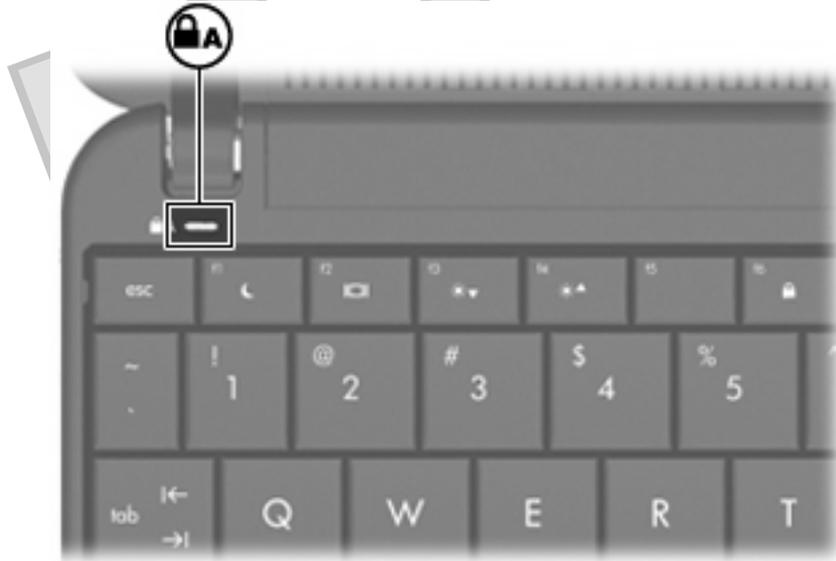
### TouchPad



Component	Description
(1) Left TouchPad button*	Functions like the left button on an external mouse.
(2) TouchPad*	Moves the pointer and selects or activates items on the screen.
(3) TouchPad scroll zone	Scrolls up or down.
(4) Right TouchPad button*	Functions like the right button on an external mouse.

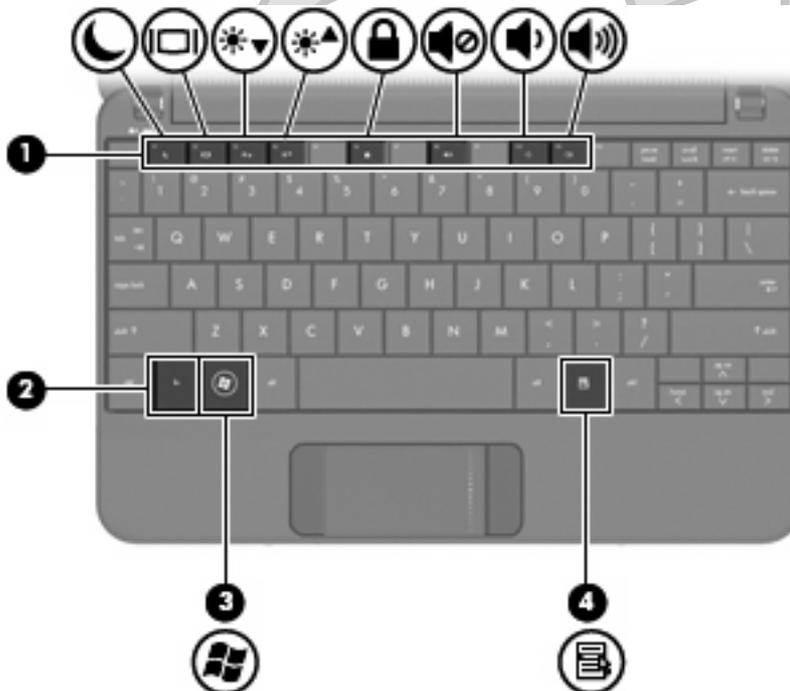
\*This table describes factory settings. To view or change pointing device preferences, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

## Light



Component	Description
Caps lock light	On: Caps lock is on.

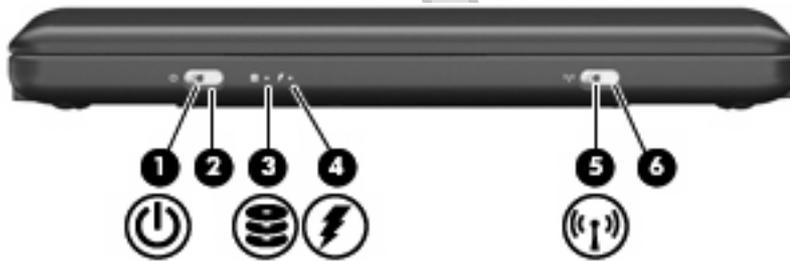
## Keys



Component	Description
(1)	Function keys

Component	Description
(2)  fn key	Executes frequently used system functions when pressed in combination with a function key.
(3)  Windows® logo key	Displays the Windows Start menu.
(4)  Windows applications key	Displays a shortcut menu for items beneath the pointer.

## Front components



Component	Description
(1)  Power light	<ul style="list-style-type: none"> <li>On: The device is on.</li> <li>Blinking: The device is in Standby.</li> <li>Off: The device is off or in Hibernation.</li> </ul>
(2) Power switch	<ul style="list-style-type: none"> <li>When the device is off, slide the switch to turn on the device.</li> <li>When the device is on, briefly slide the switch to initiate Hibernation.</li> <li>When the device is in Standby, briefly slide the switch to exit Standby.</li> <li>When the device is in Hibernation, briefly slide the switch to exit Hibernation.</li> </ul> <p>If the device has stopped responding and Windows shutdown procedures are ineffective, slide and hold the power switch for at least 5 seconds to turn off the device.</p> <p>To learn more about your power settings, select <b>Start &gt; Control Panel &gt; Performance and Maintenance &gt; Power Options</b>.</p>
(3)  Drive light	Blinking: The hard drive or flash drive is being accessed.

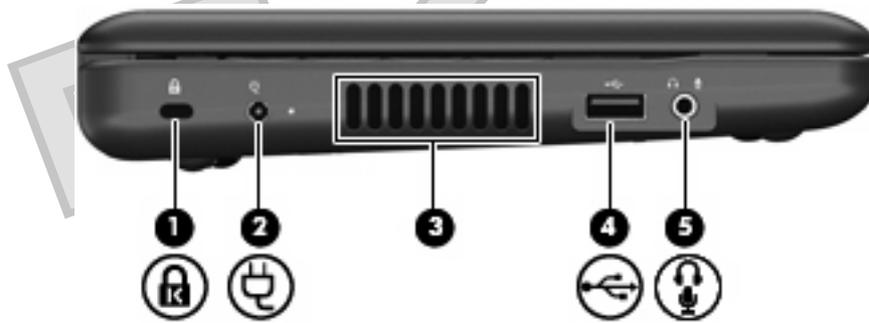
Component	Description
(4)  Battery light	<ul style="list-style-type: none"> <li>On: A battery is charging.</li> <li>Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly.</li> <li>Off: If the device is plugged into an external power source, the light turns off when all batteries in the device are fully charged. If the device is not plugged into an external power source, the light stays off until the battery reaches a low battery level.</li> </ul>
(5)  Wireless light	<ul style="list-style-type: none"> <li>Blue: An integrated wireless device, such as a wireless local area network (WLAN) device, is on.</li> <li>Amber: All wireless devices are off.</li> </ul>
(6)  Wireless switch	<p>Turns the wireless feature on or off, but does not establish a wireless connection.</p> <p><b>NOTE:</b> A wireless network must be set up in order to establish a wireless connection.</p>

## Right-side components



Component	Description
(1)  USB ports (2)	Connect optional USB devices.
(2)  Digital Media Slot	<p>Supports the following optional digital card formats:</p> <ul style="list-style-type: none"> <li>Memory stick (MS)</li> <li>MS/Pro</li> <li>MultiMediaCard (MMC)</li> <li>Secure Digital (SD) Memory Card</li> <li>xD-Picture card</li> </ul>
(3)  External monitor port	Connects an optional external display, such as a monitor or projector, to the device.
(4)  RJ-45 (network) jack	Connects a network cable.

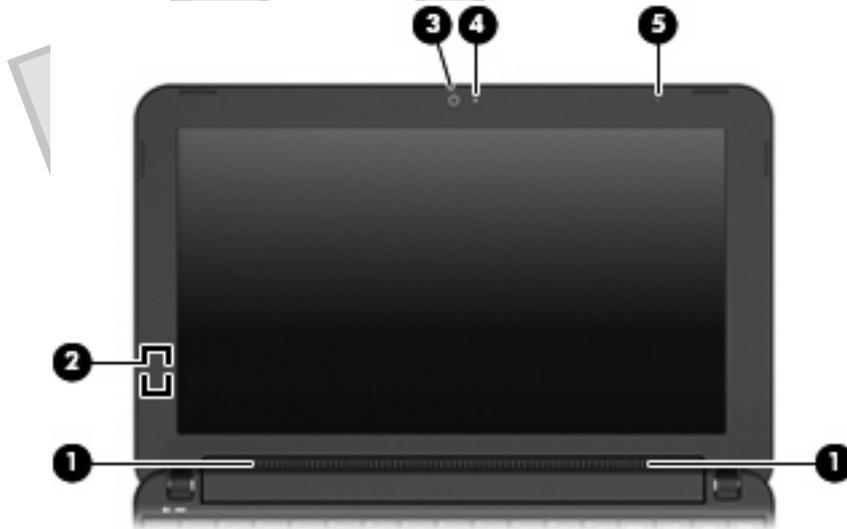
## Left-side components



Component	Description
(1)  Security cable slot	Attaches an optional security cable to the device. <b>NOTE:</b> The security cable is designed to act as a deterrent, but it may not prevent the device from being mishandled or stolen.
(2)  Power connector	Connects an AC adapter.
(3) Vent	Enables airflow to cool internal components. <b>NOTE:</b> The device 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)  USB port	Connects an optional USB device.
(5)  Audio-out (headphones) jack/Audio-in (microphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. <b>WARNING!</b> 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> . <b>NOTE:</b> When an audio component is connected to the jack, the device speakers are disabled.

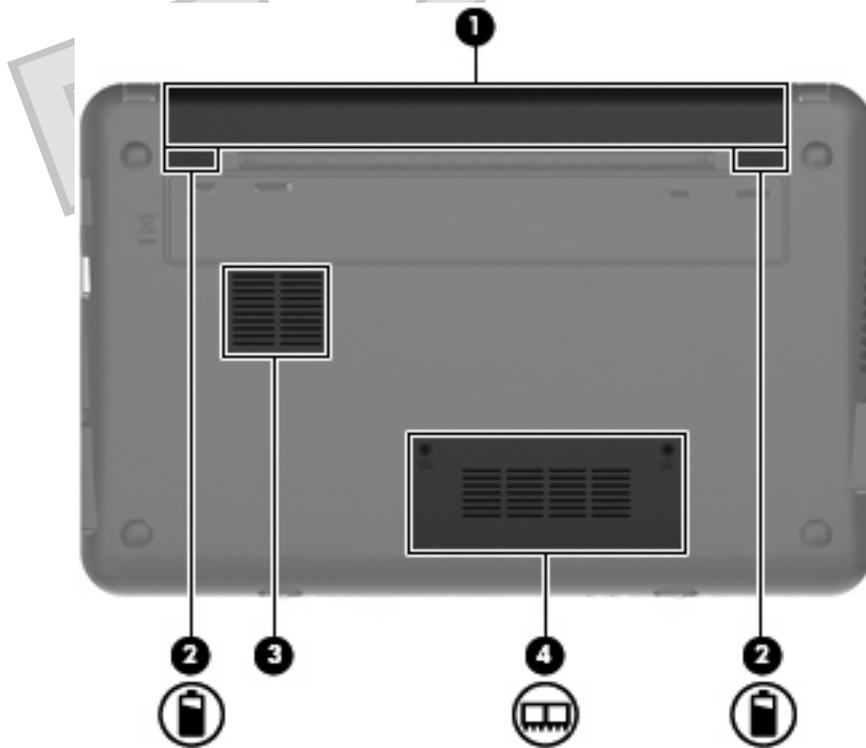
The audio component cable must have a 4-conductor connector.

## Display components



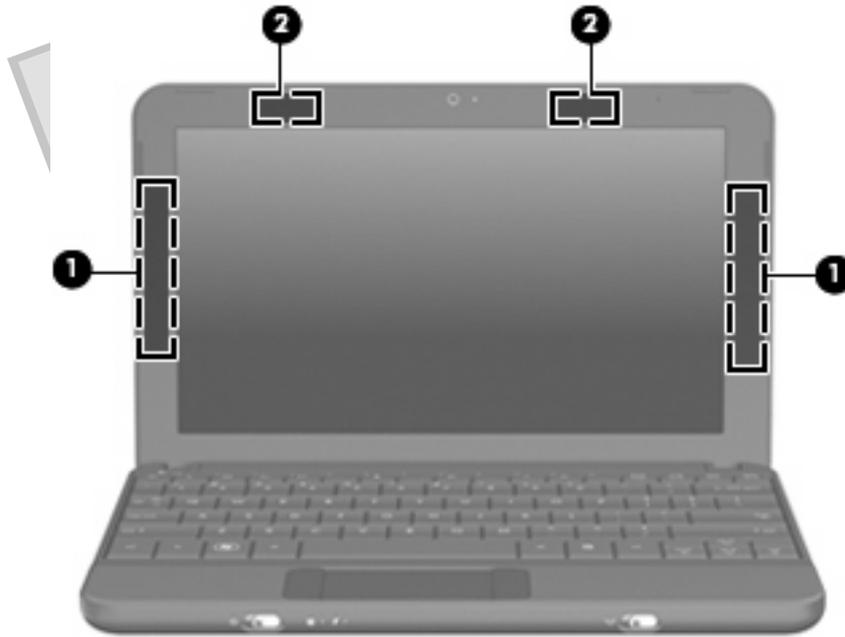
Component	Description
(1) Speakers (2)	Produce sound.
(2) Internal display switch	Turns off the display if the display is closed while the power is on. <b>NOTE:</b> The display switch is not visible from the outside of the device.
(3) Webcam	Captures still photographs and videos. <b>NOTE:</b> To capture videos, you will need to install additional webcam software.
(4) Webcam light	On: The webcam is in use.
(5) Internal microphone	Records sound.

## Bottom components



Component	Description
(1) Battery bay	Holds the battery.
(2)  Battery release latches (2)	Release the battery from the battery bay.
(3)  Vent	Enables airflow to cool internal components. <b>NOTE:</b> The device 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)  Memory module compartment	Contains the memory module slot.

## Wireless antennas



Component	Description
(1) WWAN antennas (2) (select models only)*	Send and receive wireless signals to communicate with wireless wide-area networks (WWANs).
(2) WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).

\*The antennas are not visible from the outside of the device. For optimal transmission, keep the areas immediately around the antennas 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. To access these notices, click **Start > Help and Support > User Guides**.

## Additional hardware components



Component	Description
(1) Power cord*	Connects an AC adapter to an AC outlet.
(2) AC adapter	Converts AC power to DC power.
(3) Battery*	Powers the device when the device is not plugged into external power.

\*Batteries and power cords vary in appearance by region and country.

## Identifying the labels

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

- Service tag—Provides important information including the following:



- Product name **(1)**. This is the product name affixed to the front of your device.
- Serial number (s/n) **(2)**. This is an alphanumeric identifier that is unique to each product.
- Part Number/Product number (p/n) **(3)**. This number provides specific information about the hardware components of the product. The part number helps a service technician to determine what components and parts are needed.
- Model description **(4)**. This is the alphanumeric identifier you use to locate documents, drivers, and support for your device.
- Warranty period **(5)**. This number describes the duration (in years) of the warranty period for this device.

Have this information available when you contact technical support. The service tag label is affixed to the bottom of the device.

- Microsoft® Certificate of Authenticity—Contains the Windows® Product Key. You may need the Product Key to update or troubleshoot the operating system. This certificate is affixed to the bottom of the device.
- Regulatory label—Provides regulatory information about the device, including the following:
  - 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. An optional device may be a wireless local area network (WLAN) device. You may need this information when traveling internationally.
  - The serial number of your HP Mobile Broadband Module (select models only).

The regulatory label is affixed inside the battery bay.

Is the reg label located inside the battery bay or on the bottom of the unit?

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## 2 Power management

### Setting power options

#### Using power-saving states

The device has two power-saving states enabled at the factory: Standby and Hibernation.

When Standby is initiated, the power light blinks and the screen clears. Your work is saved to memory. Exiting Standby is faster than exiting Hibernation. If the device is in Standby for an extended period or if the battery reaches a critical battery level while in Standby, the device initiates Hibernation.

When Hibernation is initiated, your work is saved to a hibernation file on the hard drive and the device turns off.

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△ **CAUTION:** To prevent possible audio and video degradation, loss of audio or video playback functionality, or loss of information, do not initiate Standby or Hibernation while reading from or writing to a disc or an external media card.

📝 **NOTE:** You cannot initiate any type of networking connection or perform any device functions while the device is in Standby or in Hibernation.

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#### Initiating and exiting Standby

The system is set at the factory to initiate Standby after 10 minutes of inactivity when running on battery power and 25 minutes of inactivity when running on external power.

Power settings and timeouts can be changed using Power Options in Windows Control Panel.

With the device on, you can initiate Standby in any of the following ways:

- Press **fn+f1**.
- Click **Start > Turn Off Computer > Stand By**.

To exit Standby:

- ▲ Briefly slide the power switch.

When the device exits Standby, the power light turns on and your work returns to the screen where you stopped working.

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📝 **NOTE:** If you have set a password to be required when the device exits Standby, you must enter your Windows password before your work will return to the screen.

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#### Initiating and exiting Hibernation

The system is set at the factory to initiate Hibernation after 30 minutes of inactivity when running on battery power or when the battery reaches a critical battery level.

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📝 **NOTE:** The system will not initiate Hibernation when running on external power.

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**NOTE:** To reduce the risk of information loss, periodically save your work.

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Power settings and timeouts can be changed using Power Options in Windows Control Panel.

To initiate Hibernation:

1. Select **Start > Turn Off Computer**.
  2. Hold down the **shift** key and select **Hibernate**.
- or –
- ▲ If the device is on, briefly slide the power switch.

To exit Hibernation:

- ▲ Briefly slide the power switch.

When the device exits Hibernation, the power light turns on and your work returns to the screen where you stopped working.

 **NOTE:** If you have set a password to be required when the device exits Hibernation, you must enter your Windows password before your work will return to the screen.

## Using power schemes

A power scheme is a collection of system settings that manages how the device uses power. Power schemes can help you conserve power and maximize device performance.

The following power schemes are available:

- Portable/Laptop (recommended)
- Home/Office Desk
- Presentation
- Always On
- Minimal Power Management
- Max Battery

You can change the settings of these power plans through Power Options.

## Viewing the current scheme

- ▲ Click the **Power Meter** icon in the notification area, at the far right of the taskbar.

– or –

Select **Start > Control Panel > Performance and Maintenance > Power Options**.

## Selecting a different power scheme

- ▲ Click the **Power Meter** icon in the notification area, at the far right of the taskbar, and then select a power scheme from the list.

– or –

- a. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
- b. Select a power scheme from the **Power schemes** list.
- c. Click **OK**.

## Customizing power schemes

1. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Select a power scheme from the **Power schemes** list.
3. Modify the **Plugged in** and **Running on batteries settings** as needed.
4. Click **OK**.

## Setting password protection upon exiting Standby

To set the device to prompt for a password when the device exits Standby, follow these steps:

1. Right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
2. Click the **Advanced** tab.
3. Select the **Prompt for password when computer resumes from standby** check box.
4. Click **Apply**.

## Using external AC power

External AC power is supplied through one of the following devices:

**⚠ WARNING!** To reduce potential safety issues, use only the AC adapter provided with the device, a replacement AC adapter provided by HP, or a compatible AC adapter purchased from HP.

- Approved AC adapter
- Optional docking device or optional expansion product

Connect the device to external AC power under any of the following conditions:

**⚠ WARNING!** Do not charge the device battery while you are onboard aircraft.

- When you are charging or calibrating a battery
- When you are installing or modifying system software
- When you are writing information to a CD or DVD

When you connect the device to external AC power, the following events occur:

- The battery begins to charge.
- If the device is turned on, the battery meter icon in the notification area changes appearance.

When you disconnect external AC power, the following events occur:

- The device switches to battery power.
- The display brightness is automatically decreased to save battery life. To increase display brightness, press the **fn+f4** hotkey or reconnect the AC adapter.

## Connecting the AC adapter

⚠ **WARNING!** To reduce the risk of electric shock or damage to the equipment:

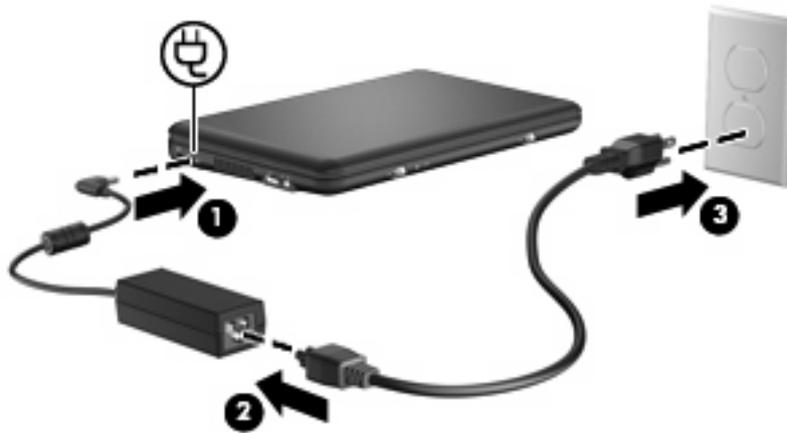
Plug the power cord into an AC outlet that is easily accessible at all times.

Disconnect power from the device by unplugging the power cord from the AC outlet (not by unplugging the power cord from the device).

If provided with a 3-pin attachment plug on the power cord, plug the cord into a grounded (earthed) 3-pin outlet. Do not disable the power cord grounding pin, for example, by attaching a 2-pin adapter. The grounding pin is an important safety feature.

To connect the device to external AC power, follow these steps:

1. Plug the AC adapter into the power connector (1) on the device.
2. Plug the power cord into the AC adapter (2).
3. Plug the other end of the power cord into an AC outlet (3).



## Using battery power

When a charged battery is in the device and the device is not plugged into external power, the device runs on battery power. When the device is plugged into external AC power, the device runs on AC power.

If the device contains a charged battery and is running on external AC power supplied through the AC adapter, the device switches to battery power if the AC adapter is disconnected from the device.

📝 **NOTE:** The display brightness is decreased to save battery life when you disconnect AC power. To increase display brightness, use the **fn+f4** hotkey or reconnect the AC adapter.

You can keep a battery in the device or in storage, depending on how you work. Keeping the battery in the device whenever the device is plugged into AC power charges the battery and also protects your work in case of a power outage. However, a battery in the device slowly discharges when the device is off and unplugged from external power.

⚠ **WARNING!** To reduce potential safety issues, use only the battery provided with the device, a replacement battery provided by HP, or a compatible battery purchased from HP.

Device battery life varies, depending on power management settings, programs running on the device, display brightness, external devices connected to the device, and other factors.

## Displaying the remaining battery charge

▲ Double-click the **Power Meter** icon in the notification area, at the far right of the taskbar.

– or –

Select **Start > Control Panel > Performance and Maintenance > Power Options > Power Meter** tab.

Most charge indicators report battery status as both a percentage and as the number of minutes of charge remaining:

- The percentage indicates the approximate amount of charge remaining in the battery.
- The time indicates the approximate running time remaining on the battery *if the battery continues to provide power at the current level*. For example, the time remaining will decrease when a DVD is playing and will increase when a DVD stops playing.

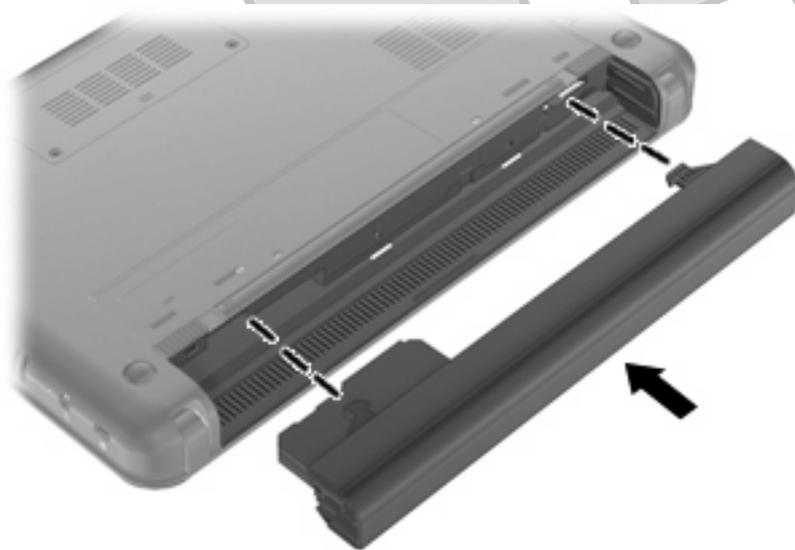
When a battery is charging, a lightning bolt icon may be superimposed over the battery icon on the Power Meter screen.

## Inserting or removing the battery

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

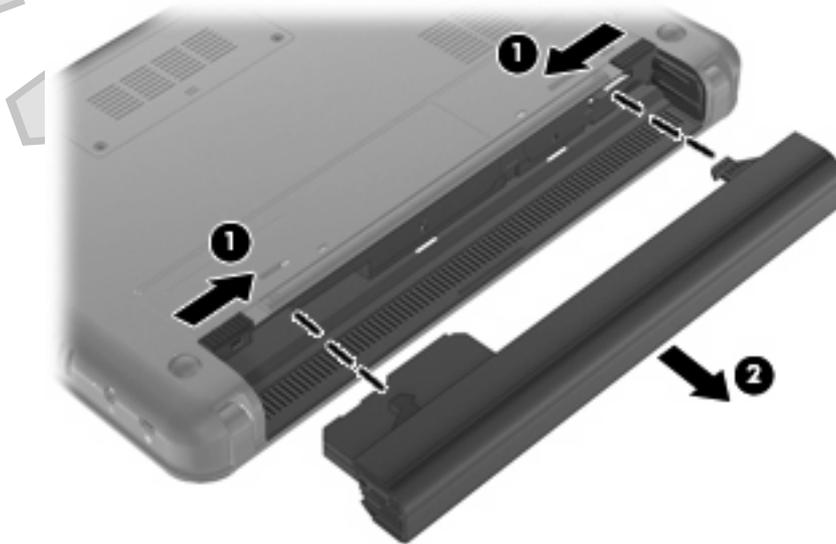
To insert the battery:

1. Disconnect all external devices.
2. If the device is connected to AC power, unplug the power cord from the AC outlet.
3. Turn the device upside down on a flat surface.
4. Align the tabs on the battery with the notches on the device, and then insert the battery into the battery bay. The battery release latches automatically lock the battery into place.



To remove the battery:

1. Disconnect all external devices.
2. If the device is connected to AC power, unplug the power cord from the AC outlet.
3. Turn the device upside down on a flat surface.
4. Slide the battery release latches (1) to release the battery, and then remove the battery (2).



## Charging a battery

⚠ **WARNING!** Do not charge the device battery while you are onboard aircraft.

The battery charges whenever the device is plugged into external power through an AC adapter, an optional power adapter, an optional docking device, or an optional expansion product.

The battery charges whether the device is off or in use, but it charges faster when the device is off.

Charging may take longer if a battery is new, has been unused for 2 weeks or more, or is much warmer or cooler than room temperature.

To prolong battery life and optimize the accuracy of battery charge displays, follow these recommendations:

- If you are charging a new battery, charge it fully before turning on the device.
- Charge the battery until the battery light turns off.

📄 **NOTE:** If the device is on while the battery is charging, the battery meter in the notification area may show 100 percent charge before the battery is fully charged.

- Allow the battery to discharge below 5 percent of a full charge through normal use before charging it.
- If the battery has been unused for one month or more, calibrate the battery instead of simply charging it.

The battery light displays charge status:

- On: The battery is charging.
- Blinking: The battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly.
- Off: The battery is fully charged, in use, or not installed.

## Maximizing battery discharge time

Battery discharge time varies depending on the features you use while on battery power. Maximum discharge time gradually shortens, as the battery storage capacity naturally degrades.

Tips for maximizing battery discharge time:

- Lower the brightness on the display.
- Remove the battery from the device when it is not being used or charged.
- Store the battery in a cool, dry location.

## Managing low battery levels

The information in this section describes the alerts and system responses set at the factory. Some low-battery alerts and system responses can be changed using Power Options in Windows Control Panel. Preferences set using Power Options do not affect lights.

### Identifying low battery levels

When a battery that is the sole power source for the device reaches a low battery level, the battery light blinks.

If a low battery level is not resolved, the device enters a critical battery level, and the battery light blinks rapidly.

The device takes the following actions for a critical battery level:

- If Hibernation is enabled and the device is on or in Standby, the device initiates Hibernation.
- If Hibernation is disabled and the device is on or in Standby, the device remains briefly in Standby, and then shuts down and loses any unsaved information.

## Resolving a low battery level

△ **CAUTION:** To reduce the risk of losing information when the device reaches a critical battery level and has initiated Hibernation, do not restore power until the power lights turn off.

### Resolving a low battery level when external power is available

- ▲ Connect one of the following devices:
  - AC adapter
  - Optional expansion product or docking device
  - Optional power adapter

### Resolving a low battery level when a charged battery is available

1. Turn off the device or initiate Hibernation.
2. Remove the discharged battery, and then insert a charged battery.
3. Turn on the device.

### Resolving a low battery level when no power source is available

- ▲ Initiate Hibernation.
  - or –
  - Save your work and shut down the device.

### Resolving a low battery level when the device cannot exit Hibernation

When the device lacks sufficient power to exit Hibernation, follow these steps:

1. Insert a charged battery or plug the device into external power.
2. Exit Hibernation by briefly sliding the power switch.

## Calibrating a battery

Calibrate a battery under the following conditions:

- When battery charge displays seem inaccurate
- When you observe a significant change in battery run time

Even if a battery is heavily used, it should not need to be calibrated more than once a month. It is also not necessary to calibrate a new battery.

### Step 1: Fully charge the battery

△ **WARNING!** Do not charge the device battery while you are onboard aircraft.

📄 **NOTE:** The battery charges whether the device is off or in use, but it charges faster when the device is off.

To fully charge the battery:

1. Insert the battery into the device.
2. Connect the device to an AC adapter, optional power adapter, optional expansion product, or optional docking device, and then plug the adapter or device into external power.  
The battery light on the device turns on.
3. Leave the device plugged into external power until the battery is fully charged.  
The battery light on the device turns off.

## Step 2: Disable Hibernation and Standby

1. Right-click the **Power Meter** icon in the notification area, at the far right of the taskbar, and then click **Adjust Power Properties**.  
– or –  
Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Record the 4 settings listed in the **Running on batteries** column and the **Plugged in** column so that you can reset them after the calibration.
3. Set the 4 options to **Never**.
4. Click **OK**.

## Step 3: Discharge the battery

The device must remain on while the battery is being discharged. The battery can discharge whether or not you are using the device, but the battery will discharge faster while you are using it.

- If you plan to leave the device unattended during the discharge, save your information before beginning the discharge procedure.
- If you use the device occasionally during the discharge procedure and have set energy-saving timeouts, expect the following performance from the system during the discharge process:
  - The monitor will not turn off automatically.
  - Hard drive speed will not decrease automatically when the device is idle.
  - System-initiated Hibernation will not occur.

To discharge a battery:

1. Unplug the device from its external power source, but do *not* turn off the device.
2. Run the device on battery power until the battery is discharged. The battery light begins to blink when the battery has discharged to a low battery level. When the battery is discharged, the battery light turns off and the device shuts down.

## Step 4: Fully recharge the battery

To recharge the battery:

1. Plug the device into external power and maintain external power until the battery is fully recharged. When the battery is recharged, the battery light on the device turns off.

You can use the device while the battery is recharging, but the battery will charge faster if the device is off.

2. If the device is off, turn it on when the battery is fully charged and the battery light has turned off.

## Step 5: Reenable Hibernation and Standby

△ **CAUTION:** Failure to reenable Hibernation after calibration may result in a full battery discharge and information loss if the device reaches a critical battery level.

1. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Reenter the settings that you recorded for the items in the **Plugged in** column and the **Running on batteries** column.
3. Click **OK**.

## Conserving battery power

- Select low power-use settings through Power Options in Windows Control Panel.
- Turn off wireless and local area network (LAN) connections and exit modem applications when you are not using them.
- Disconnect external devices that are not plugged into an external power source, when you are not using them.
- Stop, disable, or remove any external media cards that you are not using.
- Use the **fn+f3** and **fn+f4** hotkeys to adjust screen brightness as needed.
- If you leave your work, initiate Standby or Hibernation, or shut down the device.

## Storing a battery

△ **CAUTION:** To prevent damage to a battery, do not expose it to high temperatures for extended periods of time.

If a device will be unused and unplugged from external power for more than 2 weeks, remove the battery and store it separately.

To prolong the charge of a stored battery, place it in a cool, dry place.

📖 **NOTE:** A stored battery should be checked every 6 months. If the capacity is less than 50 percent, recharge the battery before returning it to storage.

Calibrate a battery before using it if it has been stored for one month or more.

## Disposing of a used battery

△ **WARNING!** To reduce the risk of fire or burns, do not disassemble, crush, or puncture; do not short external contacts; do not dispose of in fire or water.

Refer to the *Regulatory, Safety and Environmental Notices* for battery disposal information.

## Shutting down the device

△ **CAUTION:** Unsaved information will be lost when the device is shut down.

The Shut Down command closes all open programs, including the operating system, and then turns off the display and device.

Shut down the device under any of the following conditions:

- When you need to replace the battery or access components inside the device
- When you are connecting an external hardware device that does not connect to a USB port
- When the device will be unused and disconnected from external power for an extended period

To shut down the device, follow these steps:

📝 **NOTE:** If the device is in Standby or in Hibernation, you must first exit Standby or Hibernation before shutdown is possible.

1. Save your work and close all open programs.
2. Select **Start > Turn Off Computer > Turn Off**.

If the device is unresponsive and you are unable to use the preceding shutdown procedures, try the following emergency procedures in the sequence provided:

- Press **ctrl+alt+delete**. Then, click **Shut Down > Turn Off**.
- Slide and hold the power switch for at least 5 seconds.
- Disconnect the device from external power and remove the battery.

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## 3 Internet

Your device supports the following types of Internet access:

- **Wired**—You can access the Internet by connecting to a broadband network using the RJ-45 (network) jack.
- **Wireless**—For mobile Internet access, you can use a wireless connection. To learn about setting up a wireless network or adding your device to an existing network, refer to the “Connecting to a wireless network” section.

### Connecting to a wired network

Connecting to a local area network (LAN) requires an 8-pin, RJ-45 network cable (purchased separately). If the network cable contains noise suppression circuitry **(1)**, which prevents interference from TV and radio reception, orient the circuitry end of the cable **(2)** toward the device.



To connect the network cable:

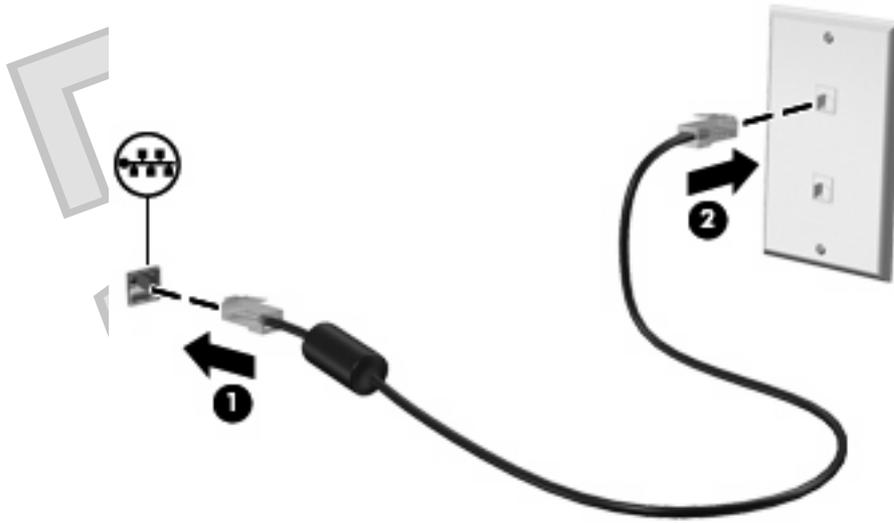
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⚠ **WARNING!** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem cable or telephone cable into an RJ-45 (network) jack.

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1. Plug the network cable into the network jack **(1)** on the device.

2. Plug the other end of the cable into a network wall jack (2).



## Connecting to a wireless network

### Using wireless devices

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

- Wireless local area network (WLAN) device—Connects the device to wireless local area networks (commonly referred to as Wi-Fi networks, wireless LANs, or WLANs) in corporate offices, your home, and public places such as airports, restaurants, coffee shops, hotels, and universities. In a WLAN, each mobile wireless device communicates with a wireless router or a wireless access point.
- HP Mobile Broadband Module (select models only)—A wireless wide area network (WWAN) device that provides access to information wherever mobile network operator service is available. In a WWAN, each mobile device communicates to a mobile network operator's base station. Mobile network operators install networks of base stations (similar to cell phone towers) throughout large geographic areas, effectively providing coverage across entire states, regions, or even countries.

The device supports the following IEEE industry standards:

- 802.11b, the first popular standard, supports data rates of up to 11 Mbps and operates at a frequency of 2.4 GHz.
- 802.11g supports data rates of up to 54 Mbps and operates at a frequency of 2.4 GHz. An 802.11g WLAN device is backward compatible with 802.11b devices, so they can operate on the same network.

For more information on wireless technology, refer to the information and Web site links provided in Help and Support.

### Identifying wireless and network status icons

Icon	Name	Description
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	Wireless (connected)	Identifies the location of the wireless light and the wireless switch on the device. Also identifies that one or more of the wireless devices are on.
	Wireless (disconnected)	Indicates that all of the wireless devices are off.
	Wireless network connection (connected)	Indicates that one or more of your WLAN devices are connected to the network.
	Wireless network connection (disconnected)	Indicates that one or more of your WLAN devices are not connected to a network.
	Network status (connected)	Indicates that one or more of your LAN drivers are installed and one or more LAN devices are connected to the network.
	Network status (disconnected)	Indicates that one or more of your LAN drivers are installed but no LAN devices are connected to the network.

Will be updated with XP Home icon for final doc.

## Using the wireless controls

You can control the wireless devices in your device using these features:

- Wireless switch
- Operating system controls

## Using the wireless switch

The device has a wireless switch, one or more wireless devices, and one wireless light. All of the wireless devices on your device are enabled at the factory, so the wireless light is on (blue) when you turn on the device.

The wireless light indicates the overall power state of your wireless devices, not the status of individual devices. If the wireless light is blue, at least one wireless device is on. If the wireless light is amber, all wireless devices are off.

Because the wireless devices are enabled at the factory, you can use the wireless switch to turn on or turn off all of the wireless devices simultaneously.

## Using HP Connection Manager software (select models only)

Connection Manager allows you to manage your Internet profiles, SMS (Short Message Service) messaging, connection devices and methods, and edit additional settings.

To start Connection Manager:

1. Click the **HP Connection Manager** icon in the notification area, at the far right of the taskbar.
2. Click **Connect** to turn on the wireless wide area network (WWAN) feature and use HP Mobile Broadband.

 **NOTE:** Connection time varies. After the connection is established, a notification message is displayed in the Connection Manager window.

 **NOTE:** Connection Manager is minimized when first opened. To maximize the Connection Manager window and view more information on connectivity status, click **Details**.

For more details about using Connection Manager, refer to the Connection Manager Help.

## Using HP Wireless Assistant software

A wireless device can be turned on or off using the Wireless Assistant software. If a wireless device is disabled by the Setup Utility, it must be reenabled by the Setup Utility before it can be turned on or off using Wireless Assistant.

 **NOTE:** Enabling or turning on a wireless device does not automatically connect the device to a network.

To view the state of the wireless devices, position the mouse pointer over the wireless icon in the notification area, at the far right of the taskbar.

 **NOTE:** To display the wireless icon, click the **Show hidden icons** icon (< or <<) in the notification area.

If the wireless icon is not displayed in the notification area, complete the following steps to change Wireless Assistant properties:

1. Click **Start > Control Panel > Network and Internet Connections > HP Wireless Assistant**.
2. Click **Properties**.
3. Select the check box next to **Wireless Assistant icon in notification area**.
4. Click **Apply**.

For more information, refer to the Wireless Assistant software Help:

1. Open Wireless Assistant by double-clicking the icon in the notification area.
2. Click the **Help** button.

You can use the properties dialog box in Wireless Assistant to show the on/off controls for each installed wireless device and control the devices separately. To show the on/off controls:

1. Double-click the **Wireless Assistant** icon in the notification area, at the far right of the taskbar.
2. Click **Properties**.
3. Select the **Independent controls for installed wireless devices** check box, and then click **Apply**.
4. Click **Turn off** or **Turn on** to control each wireless device separately.

## Using a WLAN

With a WLAN device, you can access a wireless local area network (WLAN), which is composed of other devices and accessories that are linked by a wireless router or a wireless access point.

 **NOTE:** The terms *wireless router* and *wireless access point* are often used interchangeably.

- A large-scale WLAN, such as a corporate or public WLAN, typically uses wireless access points that can accommodate a large number of devices and accessories and can separate critical network functions.
- A home or small office WLAN typically uses a wireless router, which allows several wireless and wired devices to share an Internet connection, a printer, and files without requiring additional pieces of hardware or software.

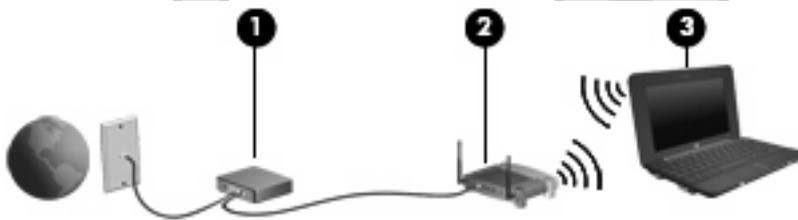
To use the WLAN device in your device, you must connect to a WLAN infrastructure (provided through a service provider or a public or corporate network).

## Setting up a WLAN

To set up a WLAN and connect to the Internet, you need the following 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)**
- The wireless device **(3)**

The illustration below shows an example of a wireless network installation that is connected to the Internet.



As your network grows, additional wireless and wired devices can be connected to the network to access the Internet.

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

## Protecting your WLAN

It is essential to understand that because the WLAN standard was designed with only limited security capabilities—basically to foil casual eavesdropping rather than more powerful forms of attack—WLANs are vulnerable to well-known and well-documented security weaknesses.

WLANs in public areas, or “hotspots,” like coffee shops and airports may not provide any security. New technologies are being developed by wireless manufacturers and hotspot service providers that make the public environment more secure and anonymous. If you are concerned about the security of your device in a hotspot, limit your network activities to noncritical e-mail and basic Internet surfing.

When you set up a WLAN or access an existing WLAN, always enable security features to protect your network from unauthorized access. The common security levels are Wi-Fi Protected Access (WPA)-Personal and Wired Equivalent Privacy (WEP). Because wireless radio signals travel outside the network, other WLAN devices can pick up unprotected signals and either connect to your network

(uninvited) or capture information being sent across it. However, you can take precautions to protect your WLAN:

- **Use a wireless transmitter with built-in security**

Many wireless base stations, gateways, or routers provide built-in security features such as wireless security protocols and firewalls. With the correct wireless transmitter, you can protect your network from the most common wireless security risks.

- **Work behind a firewall**

A firewall is a barrier that checks both data and requests for data that are sent to your network, and discards any suspicious items. Firewalls are available in many varieties, both software and hardware. Some networks use a combination of both types.

- **Use wireless encryption**

A variety of sophisticated encryption protocols is available for your WLAN. Find the solution that works best for your network security:

- **Wired Equivalent Privacy (WEP)** is a wireless security protocol that encodes or encrypts all network data before it is transmitted using a WEP key. Usually, you can allow the network to assign the WEP key. Alternatively, you can set up your own key, generate a different key, or choose other advanced options. Without the correct key, others will not be able to use the WLAN.
- **WPA (Wi-Fi Protected Access)**, like WEP, uses security settings to encrypt and decrypt data that is transmitted over the network. However, instead of using one static security key for encryptions as WEP does, WPA uses “temporal key integrity protocol” (TKIP) to dynamically generate a new key for every packet. It also generates different sets of keys for each device on the network.

- **Close your network**

If possible, prevent your network name (SSID) from being broadcast by the wireless transmitter. Most networks initially broadcast the name, telling any device nearby that your network is available. By closing the network, other devices are less likely to know that your network exists.

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 **NOTE:** If your network is closed and the SSID is not broadcast, you will need to know or remember the SSID to connect new devices to the network. Write down the SSID and store it in a secure place before closing the network.

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## Connecting to a WLAN

To connect to the WLAN, follow these steps:

1. Be sure that the WLAN device is on. If it is on, the wireless light is blue. If the wireless light is amber, slide the wireless switch.
2. Select **Start > Connect to**.
3. Select your WLAN from the list, and then type the network security key, if required.
  - If the network is unsecured, meaning that anyone can access the network, a warning is displayed. Click **Connect Anyway** to accept the warning and complete the connection.
  - If the network is a security-enabled WLAN, you are prompted to enter a network security key, which is a security code. Type the code, and then click **Connect** to complete the connection.

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 **NOTE:** If no WLANs are listed, you are out of range of a wireless router or access point.

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**NOTE:** If you do not see the network you want to connect to, click **Set up a connection or network**. A list of options is displayed. You can choose to manually search for and connect to a network or to create a new network connection.

4. After the connection is made, place the mouse pointer over the wireless network connection icon in the notification area, at the far right of the taskbar, to verify the name, speed, strength, and status of the connection.

 **NOTE:** The functional range (how far your wireless signals travel) depends on WLAN implementation, router manufacturer, and interference from other electronic devices or structural barriers such as walls and floors.

More information about using a WLAN is available through the following resources:

- Information from your ISP and the user guides included with your wireless router and other WLAN equipment
- Information and Web site links provided in Help and Support

For a list of public WLANs near you, contact your ISP or search the Web. Web sites that list public WLANs include Cisco Internet Mobile Office Wireless Locations, Hotspotlist, and Geektools. Check with each public WLAN location for cost and connection requirements.

## Roaming to another network

When you move your device within range of another WLAN, Windows attempts to connect to that network. If the attempt is successful, your device is automatically connected to the new network. If Windows does not recognize the new network, follow the same procedure you used initially to connect to your WLAN.

## Using HP Mobile Broadband (select models only)

An HP Mobile Broadband Module is a wireless wide area network (WWAN) device that provides access to information wherever mobile network operator service is available. Using HP Mobile Broadband requires a network service provider (called a *mobile network operator*), which in most cases is a mobile phone network operator. Coverage for HP Mobile Broadband is similar to mobile phone voice coverage.

When used with mobile network operator service, HP Mobile Broadband gives you the freedom to stay connected to the Internet, send e-mail, or connect to your corporate network whether you are on the road or outside the range of Wi-Fi hotspots.

HP Mobile Broadband supports the following technologies:

- HSPA (High Speed Packet Access) module, which provides access to networks based on the Global System for Mobile Communications (GSM) telecommunications standard.
- EV-DO (Evolution Data Optimized), which provides access to networks based on the code division multiple access (CDMA) telecommunications standard.

You may need the HP Mobile Broadband Module serial number to activate mobile broadband service. The serial number is printed on a label inside the battery bay of your device. Some mobile network operators require the use of a subscriber identity module (SIM). A SIM contains basic information about you, such as a personal identification number (PIN), as well as network information. Some devices include a SIM that is preinstalled in the battery bay. If the SIM is not preinstalled, it may be provided in the packet of HP Mobile Broadband information provided with your device, or the mobile network operator may provide it separately from the device.

For information on inserting and removing the SIM, refer to the “Inserting a SIM” and “Removing a SIM” sections in this chapter.

For information on HP Mobile Broadband and how to activate service with a preferred mobile network operator, refer to the HP Mobile Broadband information included with your device. For additional information, see the HP Web site at <http://www.hp.com/go/mobilebroadband> (US only).

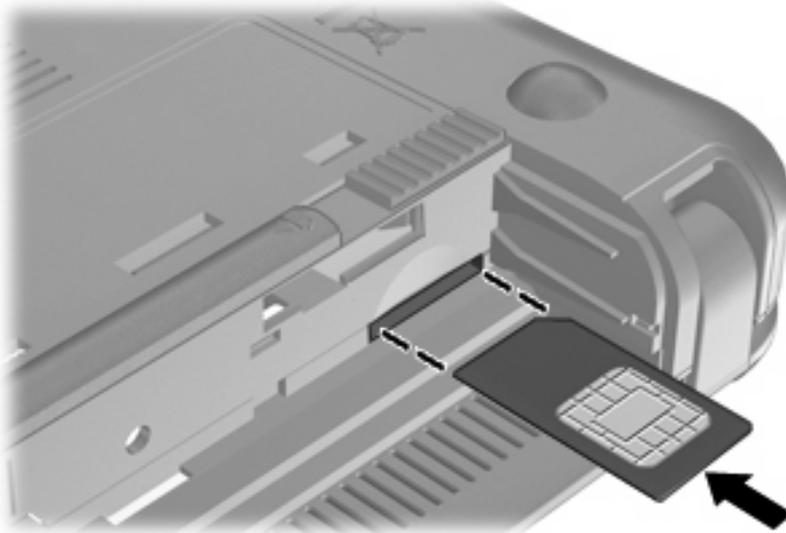
## Inserting a SIM

△ **CAUTION:** To prevent damage to the connectors, use minimal force when inserting a SIM.

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To insert a SIM:

1. Shut down the device. If you are not sure whether the device is off or in Hibernation, turn the device on by pressing the power button. Then shut down the device through the operating system.
2. Close the display.
3. Disconnect all external devices connected to the device.
4. Unplug the power cord from the AC outlet.
5. Turn the device upside down on a flat surface, with the battery bay toward you.
6. Remove the battery.
7. Insert the SIM into the SIM slot, and gently push the SIM into the slot until it is firmly seated.



8. Replace the battery.

📄 **NOTE:** HP Mobile Broadband will be disabled if the battery is not replaced.

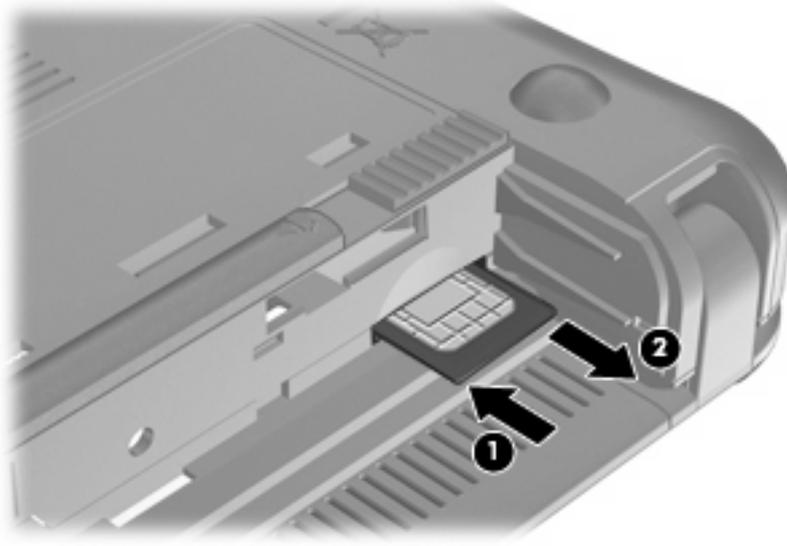
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9. Reconnect external power.
10. Reconnect external devices.
11. Turn on the device.

## Removing a SIM

To remove a SIM:

1. Shut down the device. If you are not sure whether the device is off or in Hibernation, turn the device on by pressing the power button. Then shut down the device through the operating system.
2. Close the display.
3. Disconnect all external devices connected to the device.
4. Unplug the power cord from the AC outlet.
5. Turn the device upside down on a flat surface, with the battery bay toward you.
6. Remove the battery.
7. Press in on the SIM (1), and then remove it from the slot (2).



8. Replace the battery.
9. Reconnect external power.
10. Reconnect external devices.
11. Turn on the device.

## Using the HP Mobile Broadband Setup Utility (select models only)

The HP Mobile Broadband Setup Utility provides basic information about setting up HP Mobile Broadband.

 **NOTE:** The HP Mobile Broadband Setup Utility is not available in all regions.

When you first turn on HP Mobile Broadband, the **Getting Started with HP Mobile Broadband** page opens.

# 4 Multimedia

## Multimedia features

Your device includes multimedia features that allow you to listen to music, watch movies, and view pictures. Your device may include the following multimedia components:

- Integrated speakers for listening to music
- Integrated webcam that allows you to capture photographs and videos
- Preinstalled multimedia software that allows you to play and manage your music, movies, and pictures

**NOTE:** Your device may not include all of the components listed.

The following sections explain how to identify and use the multimedia components included with your device.

## Identifying your multimedia components

The following illustration and table describe the multimedia features of the device.

