Upgrading and Servicing Guide
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The *Upgrading and Servicing Guide* provides instructions on how to remove and replace the following hardware components in your computer:

- Optical disc drives
- Hard disk drives
- Memory modules
- Add-in cards
- Battery
- Power supply
Safety Information

Please read the following important safety information before performing any procedure. This product has not been evaluated for connection to an “IT” power system (an AC distribution system with no direct connection to earth, according to IEC 60950).

WARNING: Please read “Additional Safety Information” in your Limited Warranty and Support Guide before installing and connecting your system to the electrical power system.

WARNING: Keep your hands away from the moving fan. Keep fingers and tools clear of the fan when power is applied. Never open the cover with the power cord attached or power applied. You may damage your computer or be injured from the spinning fan blades.

WARNING: Avoid touching sharp edges inside the computer.

Prerequisites

Following is what you need to know before you add or replace components.

- **Disconnecting and connecting cables** — Never force a cable out of or into its connector. Many cables have locks that release by pressing down on a top tab, or by squeezing side tabs. Do not force it; if the tabs break, the cable cannot be replaced securely. The illustration here shows two kinds of release tabs; there are other types.

All connectors are keyed to fit in one orientation. If it connects, you can be confident it is the right connection.
- **Hard drives** — A hard drive is very sensitive to shock or mishandling. It is delicate and must be treated with care when you handle it, because it holds all your files and data. Handle hard drives according to the manufacturing guidelines. Do not drop or bang the drive. It is shock-sensitive and electrostatic-sensitive. Do not touch the circuit board.

- **Phillips and flathead screwdrivers** — Various screws within the chassis require a Phillips or a flathead screwdriver. Hewlett-Packard recommends using a magnetic-tipped screwdriver. A flathead screwdriver can be used with the screw seen here.

### Components—Front View

The following shows locations of parts from the front, with the doors open. These are available bays and components; not all drive bays are populated necessarily.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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<tr>
<td>A</td>
<td>Optical disc drive bays (3). The top slot holds an optical drive with a maximum depth of 17.15 centimeters (6 3/4 inches). The other two bays do not have this limitation.</td>
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<td>B</td>
<td>Personal media drive bay</td>
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Opening the Computer

Before you upgrade any component in your computer, prepare the computer so you can safely handle it and its components.

Read the following before attempting to upgrade or service the computer:

- Print out this document before attempting any removal/replacement procedures.
- These procedures assume familiarity with the general terminology associated with computers and with safety practices and regulatory compliance required for using and modifying electronic equipment.
- Write down and save the system model number and serial number, all installed options, and other information about the system. If you need this information later, you will not need to open and examine the computer.

![CAUTION: Static electricity can damage the electronic components of the computer or optional equipment. Ensure that you are discharged of static electricity by briefly touching a grounded metal object.]

- HP recommends that you use an antistatic wrist strap and a conductive foam pad when working on system electronic components.
- Have a Phillips and flathead screwdriver on hand (magnetic-tipped head is optimal).

Preparing the Computer

To avoid injury and equipment damage, always follow this procedure before opening the computer:

1. Remove any of the following:
   - Memory card from the memory card reader
   - Optical disc (CD or DVD) from the optical drive
   - Personal Media Drive
   - Pocket Media Drive from the Pocket Media Drive bay

2. Turn off the computer. Click the Windows Vista start button, click the Arrow button next to the Lock button, and then click Shut Down.

3. Disconnect the modem/telephone cable, if present.

![CAUTION: Always disconnect the modem cord from the telephone system before opening the cover.]

4. Upgrading and Servicing Guide
4 Disconnect the power cord from the electrical outlet and then from the computer.

**WARNING:** To reduce the risk of personal injury from electrical shock or hot surfaces, disconnect the power cord from the electrical outlet, and then disconnect from the computer. Failure to do so before you open the computer or do any procedures can result in personal injury or equipment damage.

5 Disconnect all other attached cables (such as the keyboard, mouse, Ethernet, and monitor).

6 Disconnect all external devices.

**Removing the Side Computer Cover**

This procedure applies to every upgrading and servicing section in this guide. Whenever you remove, replace, add, or upgrade a part, start by removing the side cover.

**WARNING:** Turn off power before opening the computer cover. Allow the internal system components to cool before touching.

1 Complete the procedure “Preparing the Computer” on page 4.

2 Use a screwdriver to remove the two shipping screws (A) on the back cover.

These screws are for shipping only.

3 Pull the handle (B) on the side panel, and slide the side cover toward the rear until it falls open. Set the cover aside.

The cover slides only about 2.5 centimeters (1 inch).
Locating Components Inside the Computer

Computer component configurations vary by model:

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<th>Component</th>
<th>See:</th>
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<td>B</td>
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<td>C</td>
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The following illustration shows component locations:
Closing the Computer

Replacing the Computer Cover

In this procedure, you start by positioning the side panel on the computer frame so that you still need to slide it forward about 2.5 centimeters (1 inch) toward the front of the computer.

1. Holding the side panel, place the lower edge of the panel onto the computer frame at an angle, as shown.
   Tabs on the lower part of the side panel fit into grooves on the frame, and lock into place as the door slides forward and shut.

2. With the panel tabs aligned in the computer slots, move the rest of the panel toward the computer frame until it shuts.
3 Slide the side panel toward the front of the computer until it snaps closed with a click.

4 Complete the following procedure “After Replacing the Cover.”

After Replacing the Cover

To avoid injury and equipment damage, always follow this procedure in this order after closing the computer:

**WARNING:** To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications or telephone connectors into the Ethernet network interface connector.

1. Reconnect the modem/telephone cable and all other attached cables, such as the keyboard, mouse, Ethernet, and monitor cables.
2. Reconnect external devices, such as a printer.
3. Reconnect the power cord.
4. Turn on the computer and all peripherals, such as the monitor.
Adding or Replacing an Optical Disc Drive

Your computer has three optical drive bays for replacing or adding disc drives. The connections will vary depending on the optical drive. See “Locating Components Inside the Computer” on page 6.

**WARNING: Avoid touching sharp edges inside the computer.**

Removing an Optical Disc Drive

1. Prepare the computer, and remove the side cover. Complete the “Opening the Computer” on page 4.

2. From the side of the computer, slide the green plastic drive lock toward the front of the computer to unlock the drive (lock and unlock positions are marked).
3 Disconnect the power and data cables. Press down on the cable release tabs (1), if present. The cables should disconnect easily (2).

⚠️ **CAUTION:** Never force a connector. Do not push or pull too hard. Many connectors have release tabs that must be pressed before disconnecting.

⚠️ **CAUTION:** Pull the connector by the handle (cable housing) only.

4 From the inside of the computer, push the drive toward the front of the computer.
5 From the front of the computer, continue pulling out the disc drive the rest of the way.

**Removing the Front Bezel**

This procedure is required only when you are adding an optical disc drive or a 3 1/2 inch floppy or pocket media drive. Otherwise, the front bezel can be left intact.

1 First, remove the side cover. See “Removing the Side Computer Cover” on page 5.
2 From the inside of the chassis, release the three tabs (2) forward through the slots (1).
3 Swing open the front bezel, and lift it off the chassis.

Replacing or Adding an Optical Disc Drive

1 If you are replacing a drive, first complete the procedure “Removing an Optical Disc Drive” on page 9.

2 If you are adding a new, or upgrading an existing, optical drive:
   a Complete the procedure “Removing the Front Bezel” on page 11.
   b Remove the blank plate from the front bezel by holding it so the back side of the bezel is toward you. Then squeeze the two tabs on either side of the plate you want to remove, and push the plate forward, away from you, until it snaps out of the bezel.
   c Remove the metal shield from the chassis bay by prying it out of the chassis. If necessary, insert the tip of a flat screwdriver between the chassis and the shield, and pry the shield free.
3 Ensure the orientation of the disc drive is correct (see the illustration; the top of the disc drive should look similar).

4 From the front of the chassis, gently push the optical disc drive into one of the three top bays on the front of the chassis, until it is flush with the other bay fronts.

**NOTE:** The top optical bay holds an optical drive with a maximum depth of 17.15 centimeters (6 3/4 inches). The other two bays do not have this limitation.
5 From the side of the chassis, be sure the drive is in its proper position. The two small holes in the bay align with holes on the side of the drive as shown in the following illustration.

6 Slide the plastic drive lock toward the back of the computer until it is firmly locked and the optical drive cannot be pushed forward.

The lock travels over two raised bumps on the chassis and all the way back. It does not go into position properly if the drive is not aligned.

7 Connect the power and data cables gently but firmly into the back of the optical drive. Some drive models may have a sound cable. If so, connect the sound cable.
8 If you removed it, replace the front bezel; see “Replacing the Front Bezel” on page 15.

9 Replace the computer side cover as described in “Replacing the Computer Cover” on page 7.

Replacing the Front Bezel

1 Align the hooks on the right side of the front panel with the slots on the right side of the chassis front, and press the right side of the front panel into place.

2 Swing the front panel closed, and then press the left side of the front panel to latch it into place.
Adding or Replacing a Hard Disk Drive

Your computer includes one or more hard disk drives that can be upgraded. There is room for up to four hard disk drives. See “Locating Components Inside the Computer” on page 6.

The original hard disk drive is preloaded with the computer system recovery partition. If you remove this hard disk drive, store it in a properly sealed antistatic bag.

This is very important: treat a hard disk drive with extreme care. It is easy to damage it even before you insert it into the computer. A hard disk drive is not like other removable parts. It is extremely sensitive to shock impact. Do not bang or drop it. Do not touch the circuit board. Static electricity can damage the drive. Be gentle and attentive.

Before You Begin

Observe the following requirements before removing and replacing a hard drive:

**CAUTION:** Before you remove the hard disk drive, back up your personal files on the hard disk drive to an external storage device, such as a DVD, CD, or USB drive. Failure to do so will result in data loss.

After you replace the hard disk drive, perform the System Recovery procedure. Use the recovery discs to load the factory-installed files. Refer to the Troubleshooting and Maintenance Guide for detailed System Recovery steps.

**IMPORTANT:** Before upgrading a hard disk drive, make sure a recovery disc is available.
Removing a Hard Disk Drive

1 Prepare the computer and remove the side computer cover. See “Opening the Computer” on page 4.

2 Carefully disconnect the power and data cables. Press down on the latch (A) on the top of the data cable before you disconnect it.

CAUTION: Pull the connectors straight out so as not to bend or damage the pins or connector.

3 Using your thumb, squeeze the tab on the green hard drive carrier (1) and pull the hard drive out of the bay (2).
4 Pop the hard drive from its flexible carrier by twisting one of the carrier ends outward (circled) until it peels away from the drive.

CAUTION: Handle hard disk drives with care. Dropping or banging the hard disk drive can result in data loss.
Adding or Replacing a Hard Disk Drive

During this procedure, handle the hard disk drive gently. It is sensitive to shock impact and easily damaged. Do not drop or bang it. Do not touch the circuit board.

1 If you are replacing a hard drive, complete the procedure “Removing a Hard Disk Drive” on page 17.

2 Place the hard drive into its carrier by aligning the four pins and holes, first on one side, and then on the other. Ensure the drive is oriented correctly, so the cable connectors are toward the green handle.

3 Now that the hard drive is in its carrier, align the carrier with the correct bay. Slide the carrier all the way back until it is seated and clicks into place.

4 Ensuring the cables are aiming straight into the connections so as not to bend or damage pins, reconnect the power and data cables.

   The cables click into place. Never force the connection; they should connect easily.

5 Complete the procedures to replace the computer cover and close the computer. See “Replacing the Computer Cover” on page 7.

6 Perform a System Recovery, as required. Use the recovery discs to replace the factory-installed files. Refer to the Troubleshooting and Maintenance Guide for detailed System Recovery procedures.

   The other bays can be used for adding more hard drives. Follow this same procedure.
Removing and Replacing Memory

The motherboard contains memory module sockets for DDR DIMMs (double data rate dual in-line memory modules).

Before You Begin

Observe the following requirements before removing and replacing the component:

To determine which type and speed of memory module your computer uses, and for specific memory module information and specifications:

2. Select your country/region and language.
3. From the Support and Drivers page, click See support and troubleshooting information, enter the model number of your computer, and then click Search.

**CAUTION:** Using the wrong type of memory module could damage the system.

**CAUTION:** Handle the memory module by its edges only. Be careful to not touch any memory module contacts. Touching the gold contacts may damage the module. Avoid touching the memory chips.
Removing a Memory Module

1 Prepare the computer and remove the side computer cover. See “Opening the Computer” on page 4.

2 Remove the optical disc drive. See “Removing an Optical Disc Drive” on page 9.

3 Locate the memory socket on the motherboard.

4 Without disconnecting any cables, move any cabling out of the way, if necessary.

CAUTION: Do not pull the memory module out of the socket. Use the retaining clips to eject the module.
5 Push down the two retaining clips on the ends of the socket until the memory module pops out of the socket. Push down one at a time if it is easier. Hold the memory module by its edges only, as you lift it away from the socket.

6 Store the memory module in antistatic packaging.

Replacing a Memory Module

Upgrade the memory in your computer with memory of the same type and speed as the memory originally installed in your computer.

1 Complete the procedure “Replacing a Memory Module” on page 22.
2 Open both latches of the memory module socket.

⚠️ CAUTION: Handle the memory module by its edges only. Be careful to not touch any memory module contacts. Touching the gold contacts may damage the module. Avoid touching the memory chips.
3 Remove the new memory module from the antistatic packaging. Hold it by its edges only.

4 You can install the memory module in only one orientation. Match the notch (A) on the memory module with the tab (B) on the memory socket. Push the module carefully and firmly into the slot, ensuring that the latches on both ends snap into place.

5 Repeat steps 1 to 4 for the second memory slot, as required.

6 Replace any cabling that was moved.

7 Complete the procedures to replace the computer side cover. See “Replacing the Computer Cover” on page 7.
Adding or Replacing an Add-in or a Graphics Card

Your computer contains several graphics or add-in card slots that can be used to add components to your computer, such as a TV tuner (select models only). You can also replace these cards with new cards.

Modem card

Graphics card
Removing a Graphics Card

This procedure requires a screwdriver.

1. Prepare the computer and remove the computer cover. Complete the procedure “Opening the Computer” on page 4.

2. Inside the computer, locate the card slot to be replaced.

3. Make a note of any internal cables attached to the card, and then disconnect them.
   You may have to pull out the card first to get access to the cables, and then disconnect them. In this case, follow the next steps to pull out the card.

   **CAUTION: Familiarize yourself with how the cables disconnect. Some cables have metal tabs that have to be pressed to unlock the cable. Other cables have side tabs that need to be squeezed before you pull. Do not force a cable.**

4. Remove the screw or screws that hold the card to the frame (1).
5 If it is a graphics card, unlock it by releasing the latch connecting the card to the motherboard.

The latch may be hidden behind the card. The following illustration shows an example tab.

![Warning: Take care with sharp edges around the graphics card slots.](image)

**WARNING:** Take care with sharp edges around the graphics card slots.
6 While pressing the plastic tab down, grasp the card at the top, and carefully pull it straight out of the slot.

**CAUTION:** Handle the graphics card by its edges only. Be careful not to touch any memory module contacts. Touching the gold contacts may damage the module. Avoid touching the memory chips.
Removing an Add-in Card

The procedure for removing other add-in cards is the same as for the graphics card, but there is no release tab.

1. Remove the screw or screws that hold the card to the frame.
2. Make a note of any internal cables attached to the card, and then disconnect them.
3. Hold the top of the card, and carefully pull it straight out of the card slot.
Replacing a Graphics or Add-in Card

When adding a card, you first have to force out the blank PCI faceplate. Be careful not to bend the EMI shields. The following figure shows a bent shield.

⚠️ CAUTION: A bent EMI shield could cause an electrical short.
1. Align the card tab (A) with the slot on the chassis (B), and gently but firmly press the card straight down into the card slot. The whole card should be properly seated in the slot.

With the graphics card, the locking tab will click as the card seats properly.

2. Replace the screw on the card slot.

Removing and Replacing the Battery

A lithium battery on the motherboard provides backup power for the computer’s timekeeping capability.

When the battery starts to weaken, the date and time may be incorrect. If the battery fails, replace it with a CR2032 lithium battery (3-volt, 220 mAh rating) or its equivalent.

Before You Begin

Observe the following requirements before removing and replacing the battery:

- **WARNING:** There is danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type of battery. Discard used batteries according to the manufacturer’s instructions.

- **CAUTION:** Never use metal objects, such as pliers, to remove or replace the battery. Metal contact may cause a battery short and damage the battery.
Procedure

1. Prepare the computer, and remove the computer cover. Complete the procedure “Opening the Computer” on page 4.

2. Gently lay the computer on its side on a soft, protective surface.

3. If an add-in or graphics card is in the way of the battery, remove the graphics card first. See “Removing a Graphics Card” on page 25.

4. Remove any cabling, if necessary, to reach the battery.

5. Move the retaining tab (1) away from the battery. Lift the battery from the socket.

6. Install the new CR2032 battery in the socket, with the positive (+) side facing up.
7 Replace any cables that you removed.
8 If necessary, complete the procedure “Replacing a Graphics or Add-in Card” on page 29.
9 Complete the procedures to replace the computer cover and close the computer. See “Replacing the Computer Cover” on page 7.

**NOTE:** You may have to manually set the time and date on the computer after startup.

### Removing and Replacing the Power Supply

Your computer comes with a 460W or 700W power supply. You can replace the power supply with an equivalent one.

1 Prepare the computer, and remove the computer cover. Complete the procedure “Opening the Computer” on page 4.
2 Make note of all cables plugged into the power supply, and where they are connected within the chassis, to ensure everything will be reconnected.
3 Methodically release the cables from the cable organizers.
4 Disconnect the cables at the point they attach to the computer, one by one.

**NOTE:** Do not cut cable rings. The cables are routed in reusable cable rings, which can be opened to remove the cables, and closed to secure the cables in their routing path.

5 If it is a 700W power supply, remove the additional shipping screw as shown in the figure.
6 Remove the four screws holding the power supply to the back panel of the computer.

7 Pull out the power supply carefully:
   - a Move it to the right (toward the front of the chassis) until it clears its left-most brackets.
   - b Move it up to clear the bottom brackets.
   - c Angle the power supply by rotating the right side down as far as you can.
   - d Move the whole component to the right.
   - e Lift the power supply out of the chassis.
Replacing the Power Supply

After the power supply is in place, take time to organize cables, using the cable organizers.

1. Replace the new power supply into the same placement it was originally.
2. Reinsert the four screws that hold the power supply in place.
3. Reconnect each cable to its component.

   It can be difficult to see where some cables reconnect, if other components or cables are in the way. Do not force connections.

---

WARNING: Be careful of sharp edges inside the chassis. It can be difficult to see where some cables reconnect, if other components or cables are in the way.