

# V530S-07ICB User Guide and Hardware Maintenance Manual



**Energy Star Machine Types:** 10TX, 10TY, 10XV, and 10XW

**Note:** Before using this information and the product it supports, be sure to read and understand the *Important Product Information Guide* and Appendix A “Notices” on page 47.

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## Chapter 1. Overview

This chapter provides basic information to help you get familiar with your computer.

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### Front view

**Note:** Your computer model might look slightly different from the illustration.

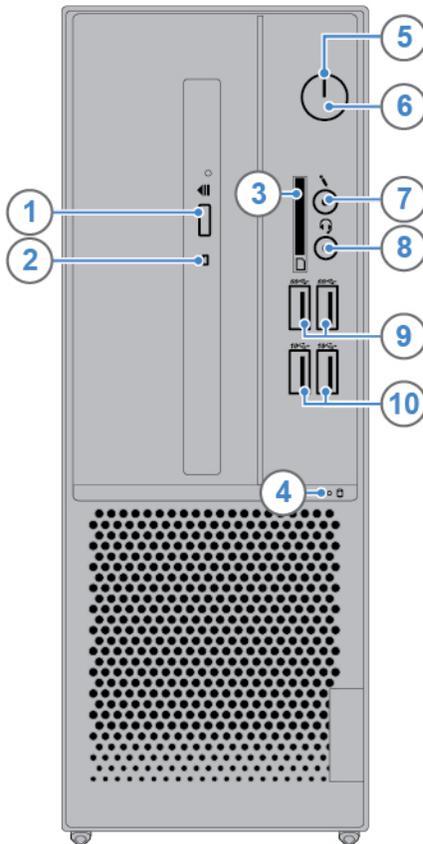


Figure 1. Front view

<b>1</b> Optical drive eject/close button	<b>2</b> Optical drive activity indicator
<b>3</b> Card reader slot (optional)	<b>4</b> Storage drive activity indicator
<b>5</b> Power indicator	<b>6</b> Power button
<b>7</b> Microphone connector	<b>8</b> Headset connector (also known as combo audio jack)
<b>9</b> USB 3.1 Gen 1 connectors (2)	<b>10</b> USB 3.1 Gen 2 connectors (2)

#### **1** Optical drive eject/close button

Used to eject the tray of the optical drive. After you insert a disc into the tray, press the eject/close button to close the tray.

## **2 Optical drive activity indicator**

This indicator is on when the optical drive is in use.

## **3 Card reader slot**

Used to read data from a supported memory card.

## **4 Storage drive activity indicator**

This indicator is on when the storage drive is in use.

## **5 Power indicator**

This indicator is on when the computer is on.

## **6 Power button**

Used to turn on your computer. When you cannot shut down the computer from the operating system, press and hold the power button for four or more seconds to turn off the computer.

## **7 Microphone connector**

Used to connect a microphone to your computer when you want to record sound or interact with the computer using speech recognition software.

## **8 Headset connector**

Used to connect a headset or headphones to your computer.

## **9 USB 3.1 Gen 1 connector**

Used to connect a USB-compatible device. For optimal data transfer, connect a USB 3.1 Gen 1 device to a USB 3.1 Gen 2 or USB 3.1 Gen 1 connector instead of a USB 2.0 connector.

## **10 USB 3.1 Gen 2 connector**

Used to connect a USB-compatible device. For optimal data transfer, connect a USB 3.1 Gen 2 device to a USB 3.1 Gen 2 connector instead of a USB 3.1 Gen 1 or USB 2.0 connector.

## Rear view

**Note:** Your computer model might look slightly different from the illustration.

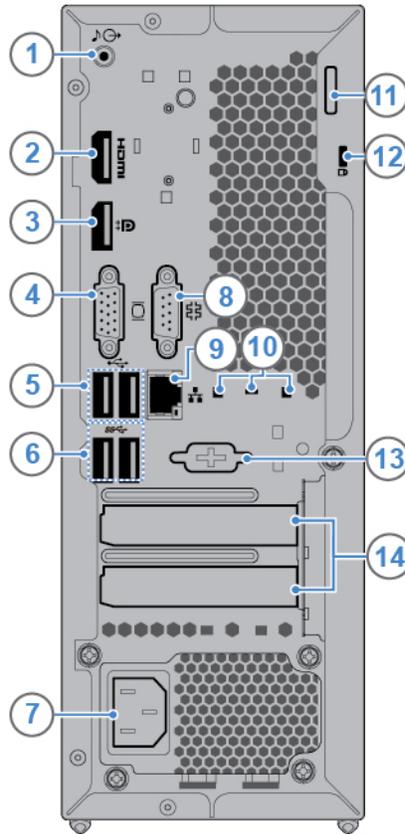


Figure 2. Rear view

<b>1</b> Audio line-out connector	<b>2</b> HDMI™ 1.4 out connector
<b>3</b> DisplayPort® 1.2 out connector	<b>4</b> VGA-out connector
<b>5</b> USB 2.0 connectors (2)	<b>6</b> USB 3.1 Gen 1 connectors (2)
<b>7</b> Power cord connector	<b>8</b> Serial connector
<b>9</b> Ethernet connector	<b>10</b> Smart cable clip slots (3)
<b>11</b> Padlock loop	<b>12</b> Security-lock slot
<b>13</b> Serial connector (optional)	<b>14</b> PCI-Express card area

### **1** Audio line-out connector

Used to send audio signals from the computer to external devices, such as powered stereo speakers, headphones, or multimedia keyboards. To connect a stereo system or other external recording device, connect a cable between the audio line-in connector of the device and the audio line-out connector of the computer.

**Note:** If your computer has both an audio line-out connector and a headset or headphone connector, always use the headset or headphone connector for earphones, headphones, or a headset. The headphone connector does not support headset microphones.

**2 HDMI 1.4 out connector**

Used to send audio and video signals from the computer to another audio or video device, such as a high-performance monitor.

**3 DisplayPort 1.2 out connector**

Used to send audio and video signals from the computer to another audio or video device, such as a high-performance monitor.

**4 VGA-out connector**

Used to send video signals from the computer to another video device, such as a monitor.

**5 USB 2.0 connector**

Used to connect a device that requires a USB 2.0 connection.

**6 USB 3.1 Gen 1 connector**

Used to connect a USB-compatible device. For optimal data transfer, connect a USB 3.1 Gen 1 device to a USB 3.1 Gen 2 or USB 3.1 Gen 1 connector instead of a USB 2.0 connector.

**7 Power cord connector**

Used to connect the power cord to your computer for power supply.

**8 Serial connector**

Used to connect an external modem, a serial printer, or other devices that use a serial connector.

**9 Ethernet connector**

Used to connect an Ethernet cable for network access.

**10 Smart cable clip slots**

Used to secure a smart cable clip.

**11 Padlock loop**

Used to secure a padlock.

**12 Security-lock slot**

Used to secure a Kensington-style cable lock.

**13 Serial connector**

Used to connect an external modem, a serial printer, or other devices that use a serial connector.

**14 PCI-Express card area**

To improve the operating performance of the computer, you can connect PCI-Express cards into this area. Depending on the computer model, the connectors in this area vary.

## System board

**Note:** See “Front view” and “Rear view” for additional component descriptions.

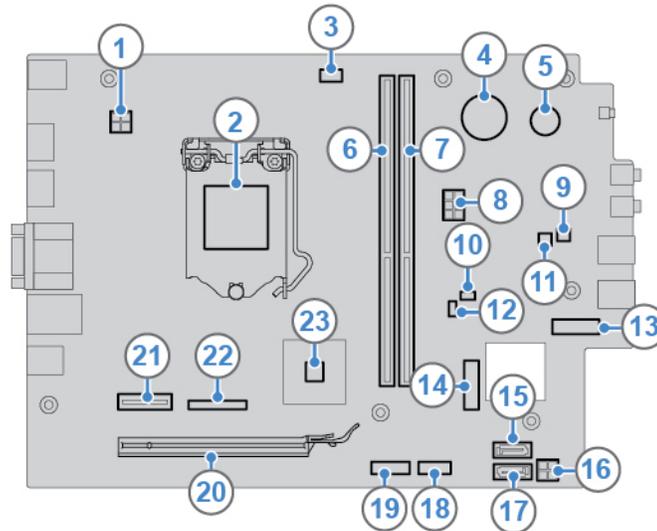


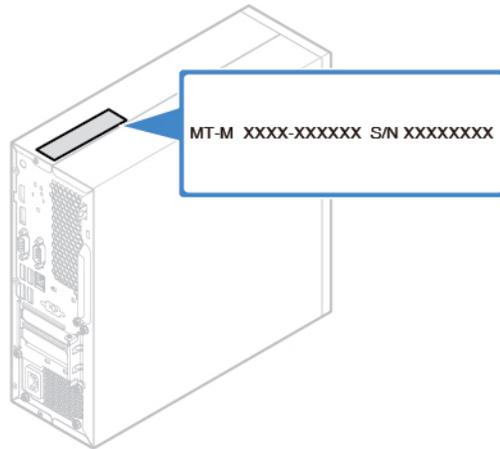
Figure 3. System board

<b>1</b> 4-pin power connector	<b>2</b> Microprocessor socket
<b>3</b> Microprocessor fan connector	<b>4</b> Coin-cell battery
<b>5</b> Buzzer	<b>6</b> Memory slot (DIMM1)
<b>7</b> Memory slot (DIMM2)	<b>8</b> 6-pin power connector
<b>9</b> Internal speaker connector	<b>10</b> Clear CMOS /Recovery jumper
<b>11</b> Storage drive activity indicator connector	<b>12</b> Thermal sensor connector
<b>13</b> M.2 solid-state drive slot	<b>14</b> M.2 Wi-Fi card slot
<b>15</b> SATA connector (connecting to the storage drive)	<b>16</b> SATA power connector
<b>17</b> SATA connector (connecting to the optical drive)	<b>18</b> Card reader connector
<b>19</b> Serial (COM2) connector	<b>20</b> PCI Express x16 graphics card slot
<b>21</b> PCI Express x1 card slot	<b>22</b> Parallel connector
<b>23</b> PCH	

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## Machine type and model label

The machine type and model label identifies the computer. When you contact Lenovo for help, the machine type and model information helps support technicians to identify the computer and provide faster service. The machine type and model label is attached on the computer as shown.



*Figure 4. Machine type and model label*

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## Chapter 2. Specifications

### Power supply

180-watt automatic voltage-sensing power supply

### Storage drives

- 3.5-inch storage drive (optional)
- 2.5-inch storage drive (optional)
- M.2 solid-state drive (optional)

### Video features

- The integrated graphics card supports the following:
  - DisplayPort 1.2 out connector
  - HDMI 1.4 out connector
  - VGA-out connector
- The optional discrete graphics card provides an enhanced video experience and extended capabilities.

### Audio features

- The integrated audio card supports the following:
  - Audio line-out connector
  - Headset connector
  - Internal speaker (optional)
  - Microphone connector
- The optional discrete audio card provides an enhanced audio experience and extended capabilities.

### Input/Output (I/O) features

- Audio connectors (audio line-out, headset, and microphone)
- Card reader slot (optional)
- Display connectors (DisplayPort 1.2 out, HDMI 1.4 out, and VGA-out)
- Ethernet connector
- Serial connector
- USB connectors

### Expansion

- Card reader
- Memory slots
- Optical drive (optional)
- PCI Express x1 card slot
- PCI Express x16 graphics card slot
- Storage drive bay

### Network features

- Ethernet LAN

- Wireless LAN (optional)
- Bluetooth (optional)

**Physical dimensions**

- Width: 100.0 mm (3.9 inches)
- Height: 274.8 mm (10.8 inches)
- Depth: 304.4 mm (12.0 inches)

**Weight (without the package)**

Maximum configuration as shipped: 4.2 kg (9.3 lb)

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## Chapter 3. Computer locks

### Locking the computer cover

Locking the computer cover helps prevent unauthorized access to the inside of your computer. Your computer features a padlock loop so that the computer cover cannot be removed when a padlock is installed.

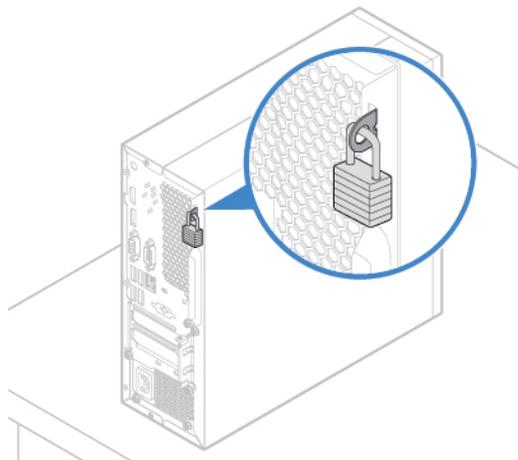


Figure 5. Locking the computer cover

### Attaching a Kensington-style cable lock

You can use a Kensington-style cable lock to secure your computer to a desk, table, or another nonpermanent fixture. The cable lock connects to the security-lock slot at the rear of your computer. Depending on the type selected, the cable lock can be operated with a key or a combination. The cable lock also locks the buttons used to open the computer cover. This is the same type of lock used with many notebook computers. You can order such a cable lock directly from Lenovo by searching for *Kensington* at: <http://www.lenovo.com/support>

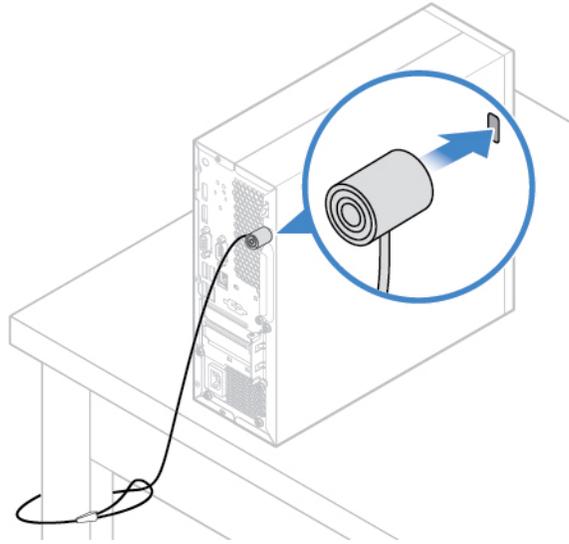


Figure 6. Attaching a Kensington-style cable lock

### Attaching a smart cable clip

A smart cable clip can be used to secure devices, such as the keyboard and the mouse, by locking the device cables to the computer. The smart cable clip connects to the cable-lock slots on the rear of the computer. To install a smart cable clip, do the following:

1. Insert the clip **1** into the cable-lock slot **4**.
2. Pull the cables you want to lock through the dents in the smart cable clip.
3. Press the clip **2** into the cable-lock slot **3** until it snaps into position.

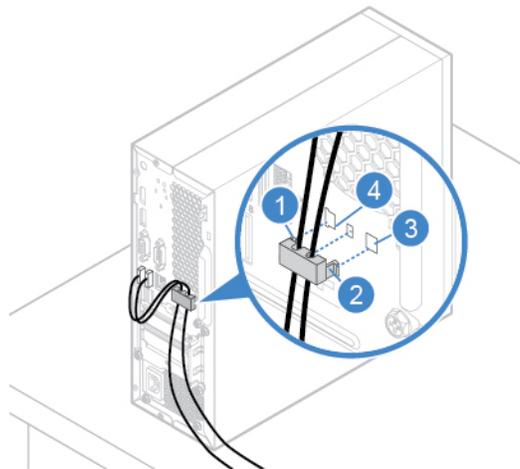


Figure 7. Attaching a smart cable clip

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## Chapter 4. Replacing hardware

This chapter provides instructions on how to replace hardware for your computer.

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### Before replacing hardware

**Attention:** Do not open your computer or attempt any repairs before reading this section and the *Important Product Information Guide*.

#### Notes before replacing hardware

- Use computer components provided only by Lenovo.
- When installing or replacing an option, use the appropriate instructions explained in this manual along with the instructions that come with the option.
- In most areas of the world, Lenovo requires the return of defective CRUs. Information about this will come with the CRU or will come a few days after the CRU arrives.

#### Notes when handling static-sensitive devices

Do not open the static-protective package containing the new part until the defective part has been removed and you are ready to install the new part. Static electricity, although harmless to you, can seriously damage computer components and options.

When you handle options and other computer components, take these precautions to avoid static-electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle options and other computer components carefully. Handle PCI/PCIe cards, memory modules, system boards, and microprocessors by the edges. Never touch any exposed circuitry.
- Prevent others from touching the options and other computer components.
- Touch the static-protective package containing the part to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity from the package and your body before you install or replace a new part.
- When possible, remove the new part from the static-protective package, and install it directly in the computer without setting the part down. When this is not possible, place the static-protective package on a smooth, level surface and place the part on the package.
- Do not place the part on the computer cover or other metal surface.

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### Knowing FRUs (including CRUs)

- Field Replaceable Units (FRUs) are computer parts that a trained technician can upgrade or replace. FRUs include all CRUs. For detailed FRU information, such as the FRU part numbers and supported computer models, go to:  
<http://www.lenovo.com/serviceparts-lookup>
- Customer Replaceable Units (CRUs) are computer parts that a user can upgrade or replace.
  - Self-service CRUs: You can install self-service CRUs easily. These CRUs might be stand-alone, latched, or secured by up to two screws. Examples of self-service CRUs include the keyboard, mouse, and any USB device. You are responsible for replacing all self-service CRUs.
  - Optional-service CRUs: Handling optional-service CRUs requires some technical skills and simple tools (such as a screwdriver). These CRUs are isolated parts within the computer. They are usually

concealed by an access panel that is secured by more than two screws. You must remove the screws and panel to access the specific CRU. Optional-service CRUs can be removed and installed by users or, during the warranty period, by a Lenovo service technician.

### **Before replacing FRUs**

Before replacing any FRU, read the following:

- Only certified and trained personnel can service the computer.
- Before replacing an FRU, read the entire section about replacing the part.
- Be extremely careful during writing operations such as copying, saving, or formatting.

The sequence of the drives in the computer that you are servicing might have been altered. If you select an incorrect drive, data or programs might be overwritten.

- Replace an FRU only with another FRU of the correct model.

When you replace an FRU, ensure that the model of the machine and the FRU part number are correct.

- An FRU should not be replaced because of a single, unreproducible failure.

Single failures can occur for a variety of reasons that have nothing to do with a hardware defect, such as cosmic radiation, electrostatic discharge, or software errors. Consider replacing an FRU only when a problem recurs. If you suspect that an FRU is defective, clear the error log and run the test again. If the error does not recur, do not replace the FRU.

- Only replace a defective FRU.

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## **Locating FRUs (including CRUs)**

### **Notes:**

- Some of the following components are optional.
- To replace a component that is not in the list below, contact a Lenovo service technician. For a list of Lenovo Support phone numbers, go to:  
<http://www.lenovo.com/support/phone>

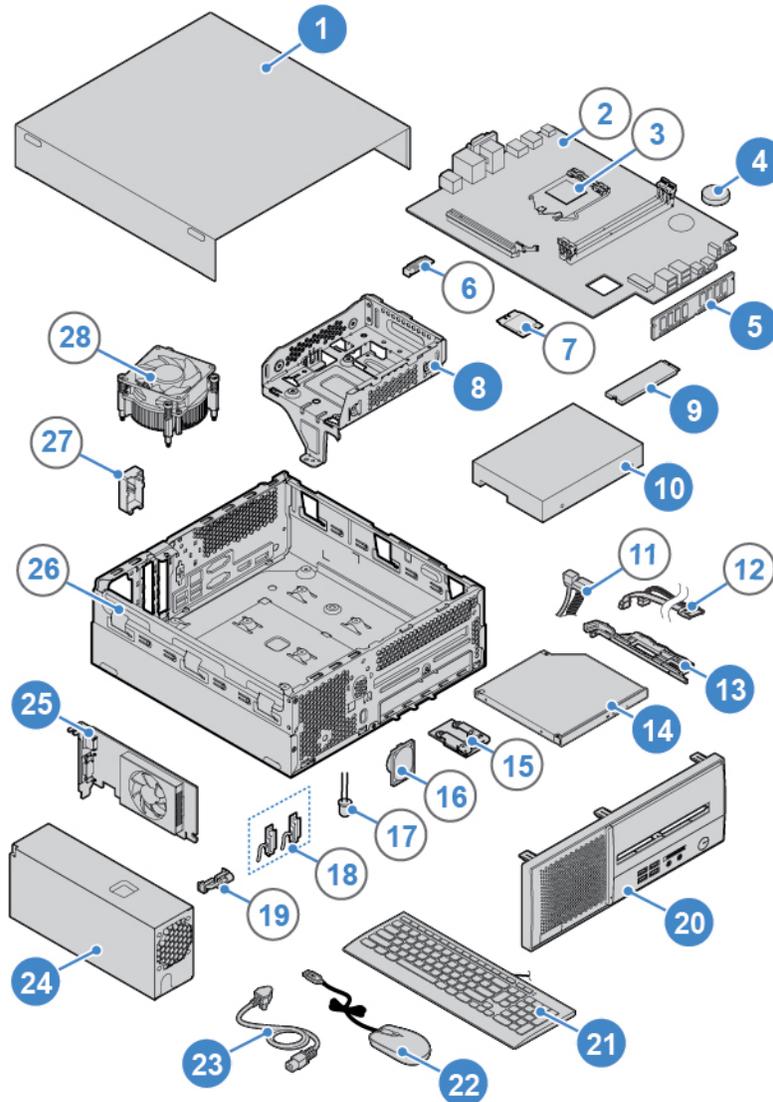


Figure 8. Locating FRUs (including CRUs)

Self-service CRUs	Optional-service CRUs	Non-CRUs
<b>1</b> Computer cover	<b>4</b> Coin-cell battery	<b>2</b> System board
<b>5</b> Memory module	<b>24</b> Power supply assembly	<b>3</b> Microprocessor
<b>8</b> Storage drive bracket		<b>6</b> Wi-Fi card shield
<b>9</b> M.2 solid-state drive		<b>7</b> Wi-Fi card
<b>10</b> Storage drive (a 2.5-inch or 3.5-inch storage drive)		<b>11</b> Storage drive cable
<b>13</b> Optical drive bracket		<b>12</b> Optical drive cable
<b>14</b> Optical drive		<b>15</b> Card reader
<b>20</b> Front bezel		<b>16</b> Internal speaker

Self-service CRUs	Optional-service CRUs	Non-CRUs
<ul style="list-style-type: none"> <li><b>21</b> Keyboard</li> <li><b>22</b> Mouse</li> <li><b>23</b> Power cord</li> <li><b>25</b> PCI Express card</li> </ul>		<ul style="list-style-type: none"> <li><b>17</b> Storage drive activity indicator</li> <li><b>18</b> Wi-Fi antennas (2)</li> <li><b>19</b> Thermal sensor</li> <li><b>26</b> Chassis</li> <li><b>27</b> Rear Wi-Fi antenna cover</li> <li><b>28</b> Heat sink and fan assembly</li> </ul>

## Removing the computer cover

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

**CAUTION:**



**Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.**

1. Remove any media from the drives and turn off all connected devices and the computer.
2. Disconnect all power cords from electrical outlets and disconnect all cables from the computer.
3. Unlock any locking device that secures the computer cover.
4. Remove the computer cover.

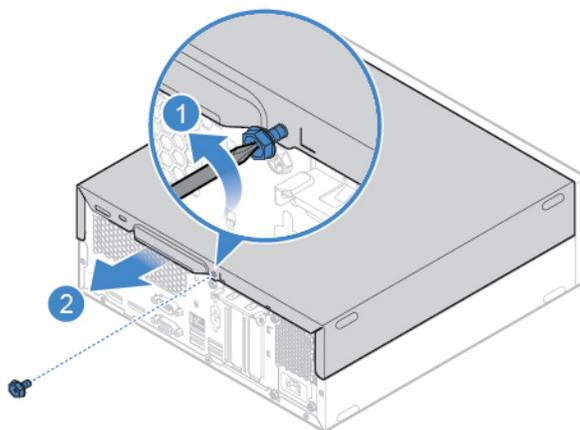


Figure 9. Removing the computer cover

5. Complete the replacement. See “Completing the parts replacement” on page 45.

## Replacing the front bezel

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Replace the front bezel.

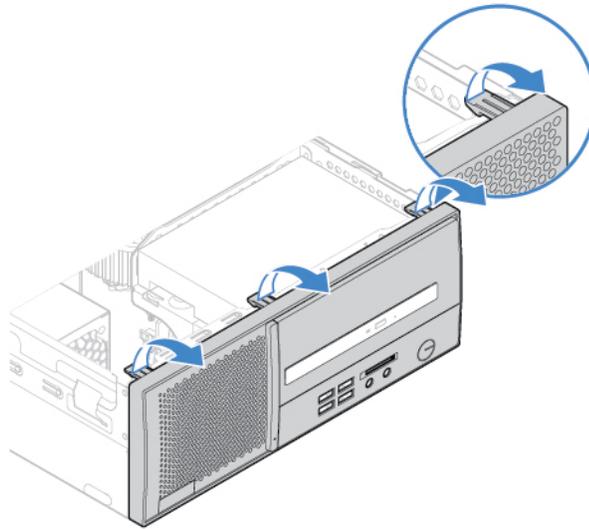


Figure 10. Removing the front bezel

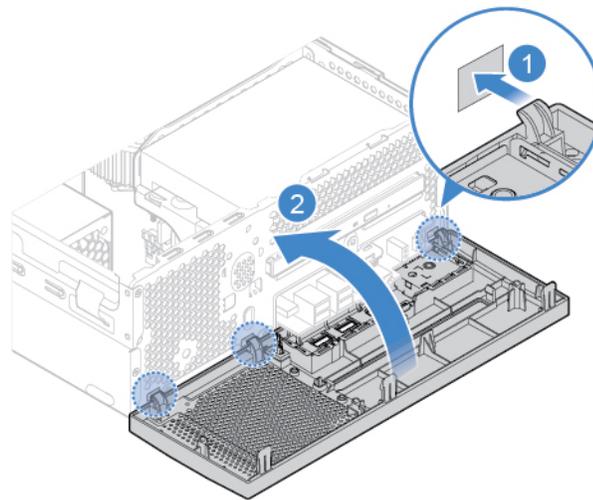


Figure 11. Installing the front bezel

3. Complete the replacement. See “Completing the parts replacement” on page 45.

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## Replacing the optical drive

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Disconnect the signal cable and the power cable from the optical drive.
4. Replace the optical drive.

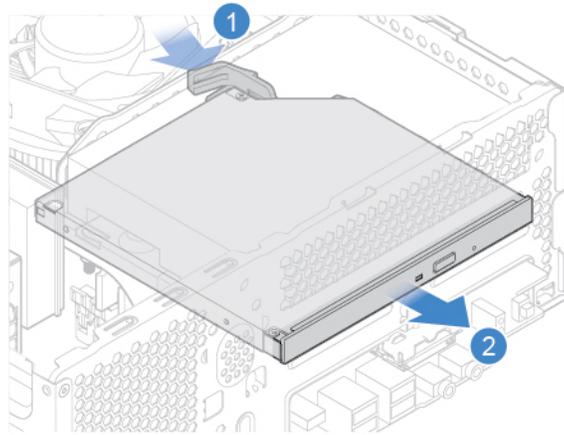


Figure 12. Removing the optical drive

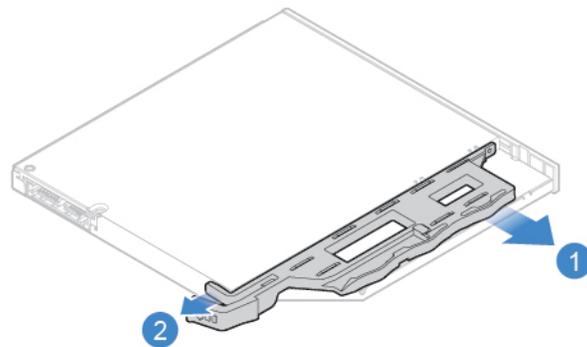


Figure 13. Removing the optical drive bracket

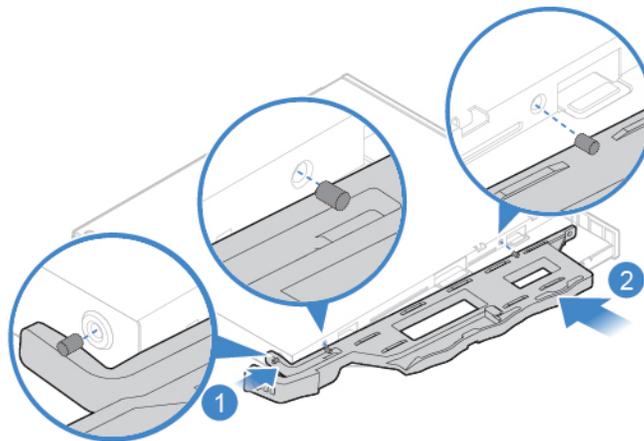


Figure 14. Installing the optical drive bracket

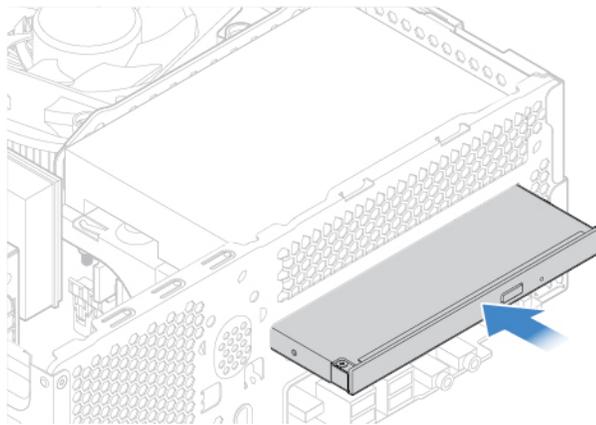


Figure 15. Installing the optical drive

5. Connect the signal cable and the power cable to the new optical drive.
6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the storage drive

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Disconnect the signal cable and the power cable from the storage drive.
5. Replace the storage drive.
  - 3.5-inch storage drive

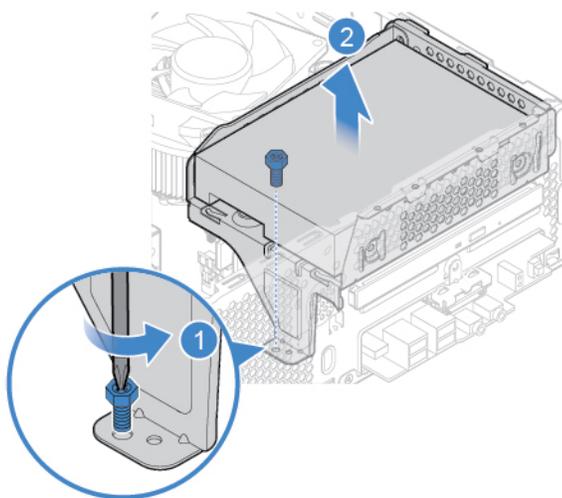


Figure 16. Removing the storage drive bracket

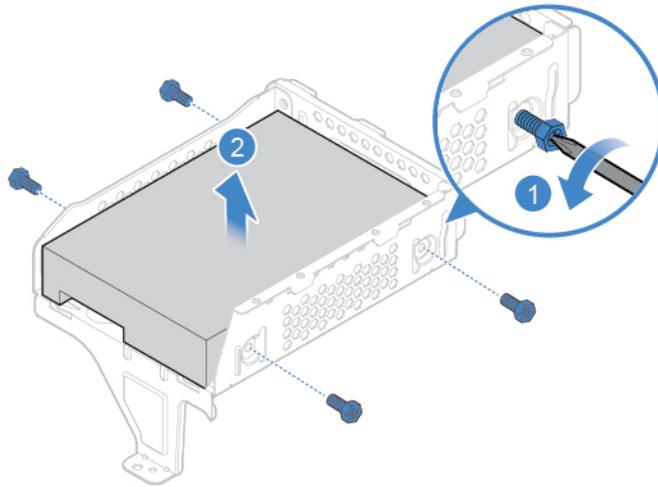


Figure 17. Removing the 3.5-inch storage drive

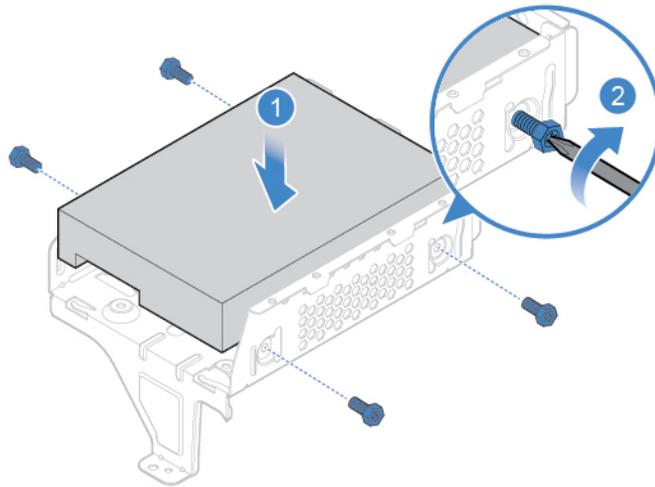


Figure 18. Installing the 3.5-inch storage drive

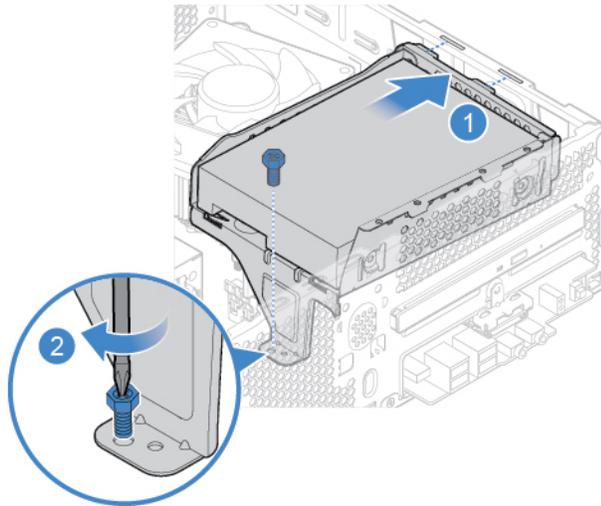


Figure 19. Installing the storage drive bracket

- 2.5-inch storage drive

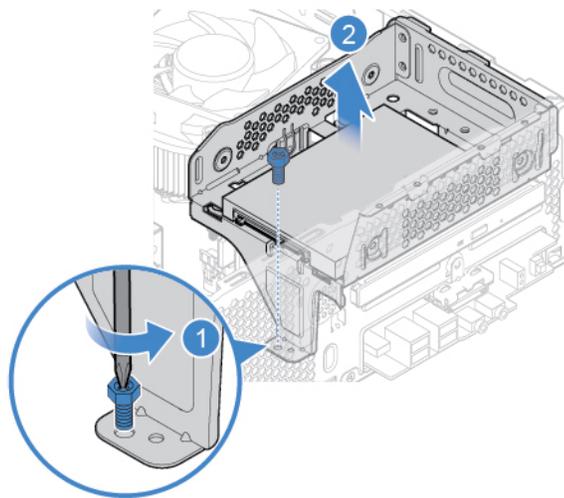


Figure 20. Removing the storage drive bracket

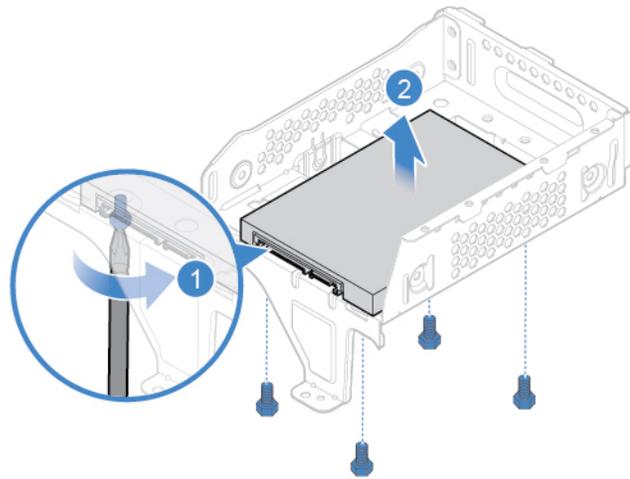


Figure 21. Removing the 2.5-inch storage drive

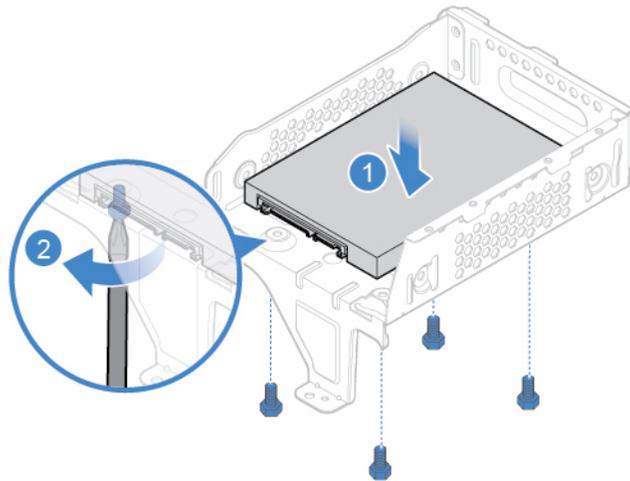


Figure 22. Installing the 2.5-inch storage drive

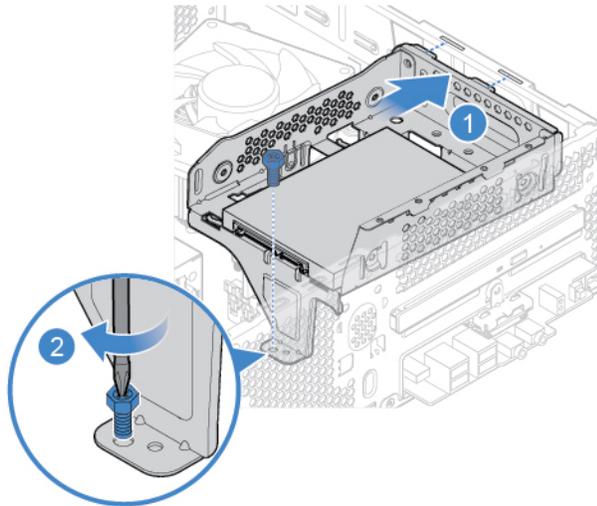


Figure 23. Installing the storage drive bracket

6. Connect the signal cable and the power cable to the new storage drive.
7. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

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## Replacing the card reader

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Disconnect the card reader cable from the system board.
6. Replace the card reader.

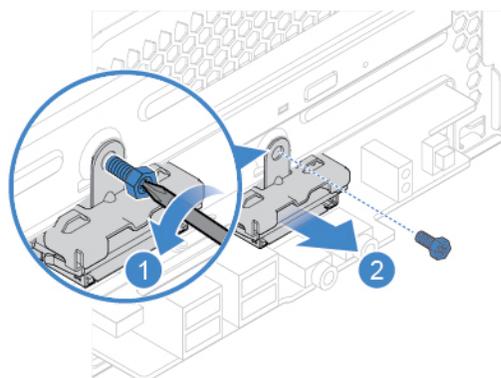


Figure 24. Removing the card reader bracket

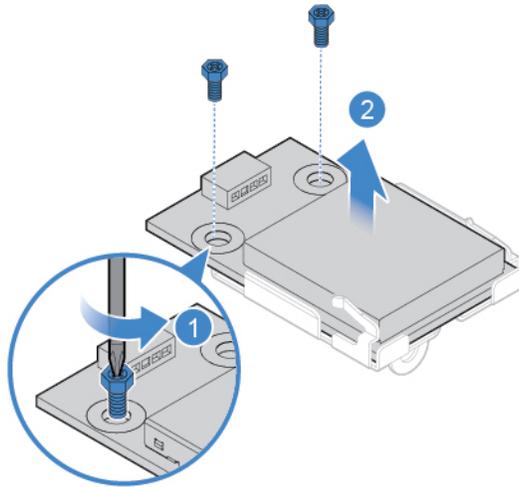


Figure 25. Removing the card reader

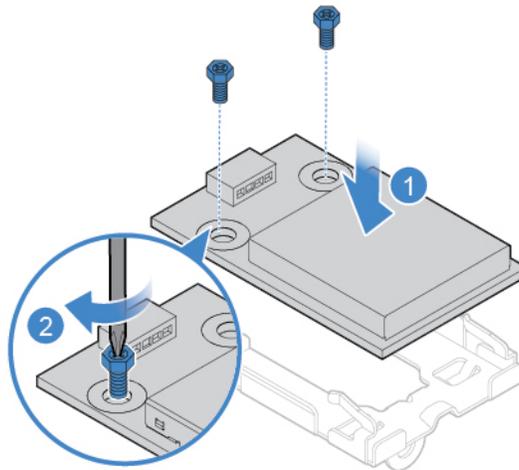


Figure 26. Installing the card reader

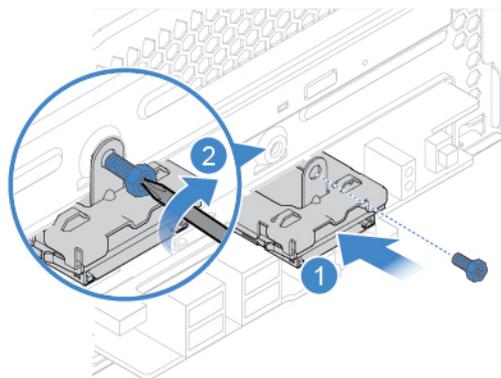


Figure 27. Installing the card reader bracket

7. Connect the new card reader cable to the system board.

8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

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## Replacing the storage drive activity indicator

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Disconnect the storage drive activity indicator cable from the system board.
6. Replace the storage drive activity indicator.

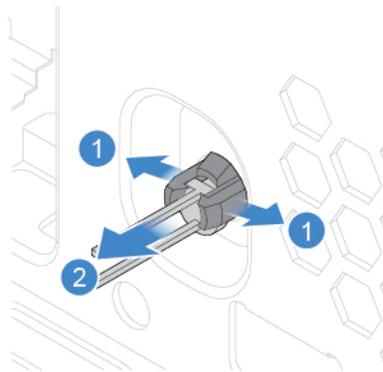


Figure 28. Removing the storage drive activity indicator

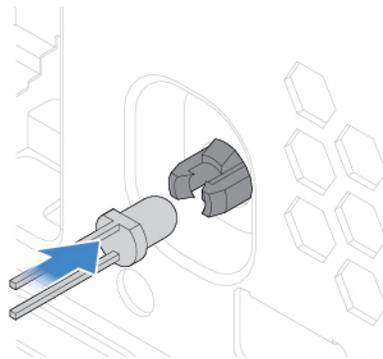


Figure 29. Installing the storage drive activity indicator

7. Connect the new storage drive activity indicator cable to the system board.
8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the internal speaker

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.

2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Disconnect the internal speaker cable from the system board.
6. Replace the internal speaker.

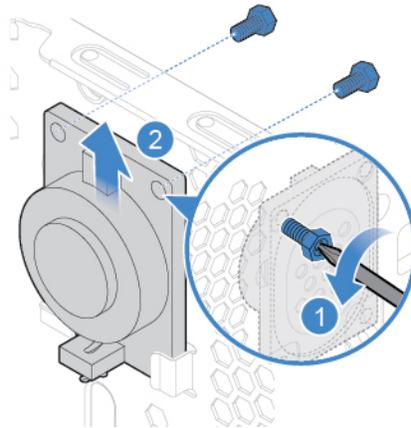


Figure 30. Removing the internal speaker

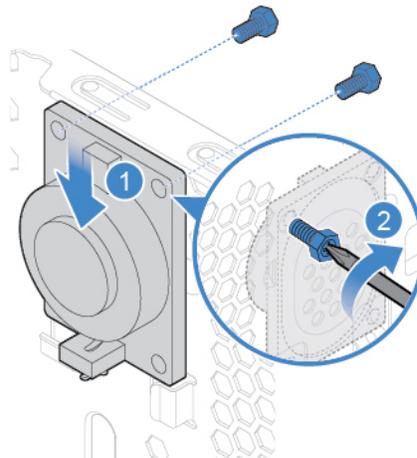


Figure 31. Installing the internal speaker

7. Connect the new internal speaker cable to the system board.
8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the thermal sensor

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.

3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Disconnect the thermal sensor cable from the system board.
6. Replace the thermal sensor.

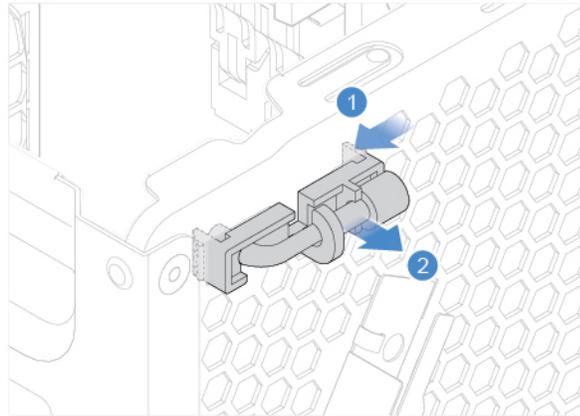


Figure 32. Removing the thermal sensor

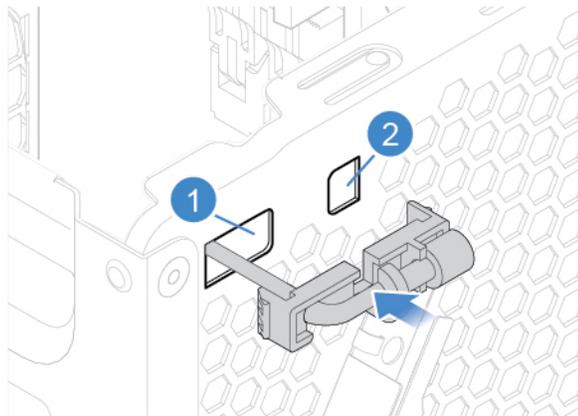


Figure 33. Installing the thermal sensor

7. Connect the new thermal sensor cable to the system board.
8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the Wi-Fi card

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.

3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Replace the Wi-Fi card.

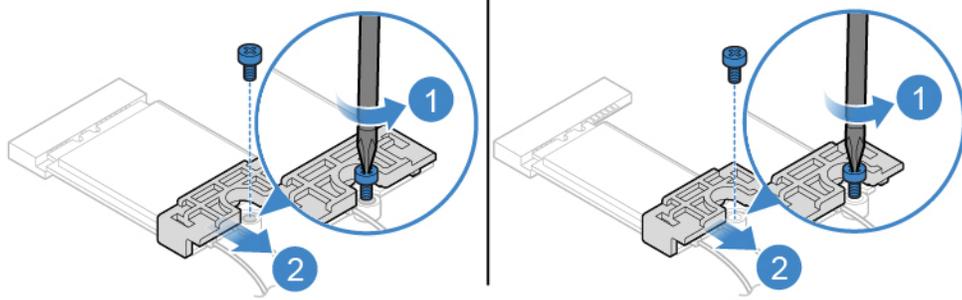


Figure 34. Removing the Wi-Fi card shield

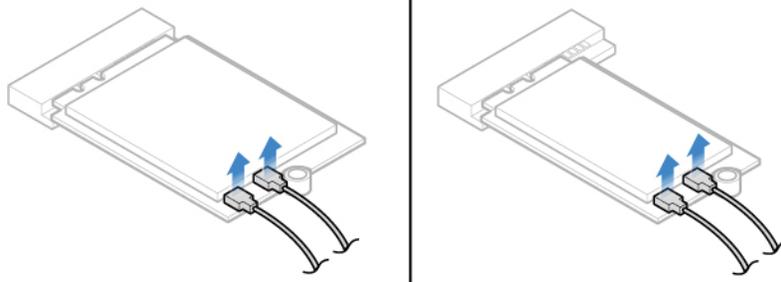


Figure 35. Disconnecting the Wi-Fi antenna cables

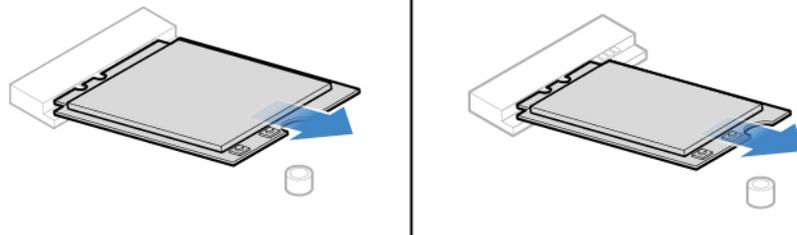


Figure 36. Removing the Wi-Fi card

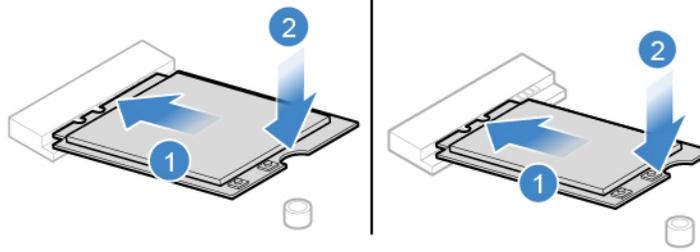


Figure 37. Installing the Wi-Fi card

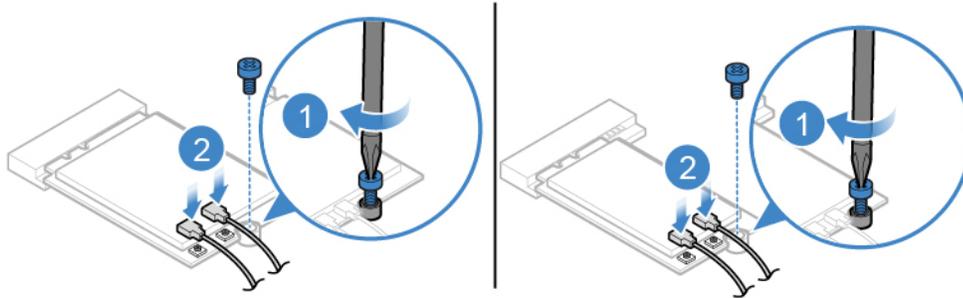


Figure 38. Connecting the Wi-Fi antenna cables

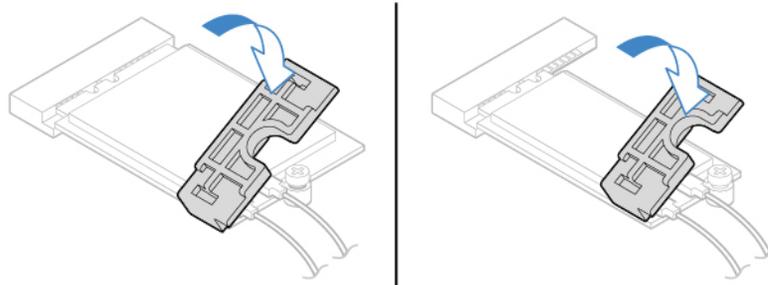


Figure 39. Installing the Wi-Fi card shield

6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

## Replacing the Wi-Fi antennas

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Disconnect the Wi-Fi antenna cables from the Wi-Fi card. See “Replacing the Wi-Fi card” on page 25.
6. Depending on your computer model, refer to one of the following to replace the Wi-Fi antennas.

- Front Wi-Fi antenna

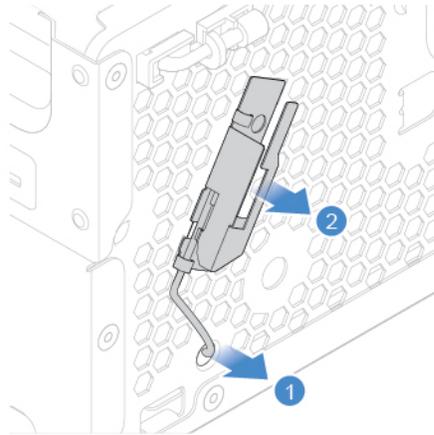


Figure 40. Removing the front Wi-Fi antenna

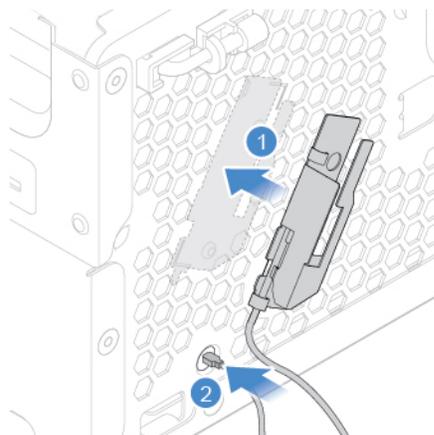


Figure 41. Installing the front Wi-Fi antenna

- Rear Wi-Fi antenna

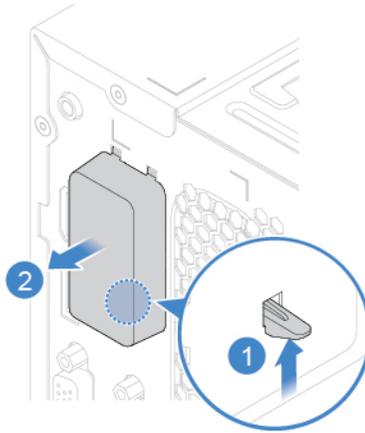


Figure 42. Removing the rear Wi-Fi antenna cover

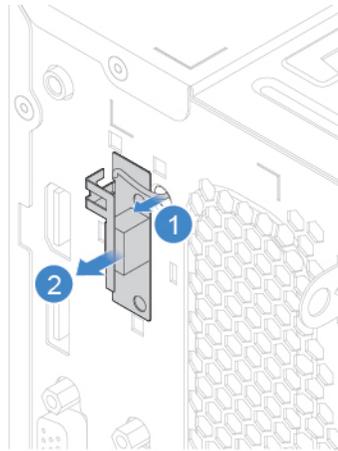


Figure 43. Removing the rear Wi-Fi antenna

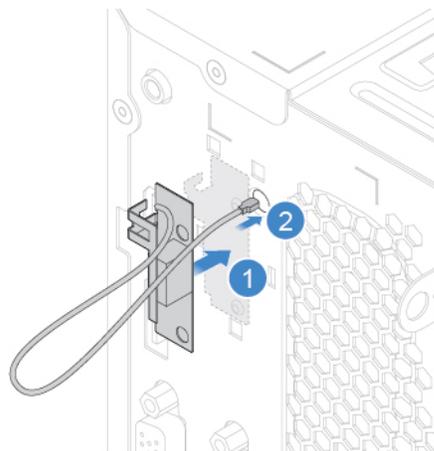


Figure 44. Installing the rear Wi-Fi antenna

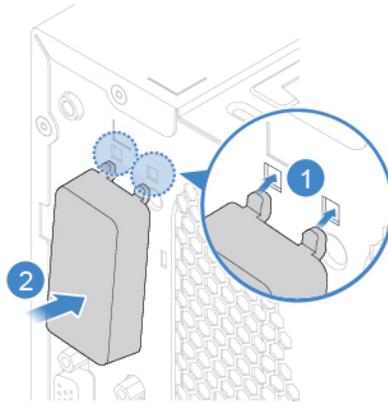


Figure 45. Installing the rear Wi-Fi antenna cover

7. Connect the new Wi-Fi antenna cables to the Wi-Fi card.
8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

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## Replacing the M.2 solid-state drive

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Depending on your computer model, refer to one of the following to replace the M.2 solid-state drive.
  - Type 1

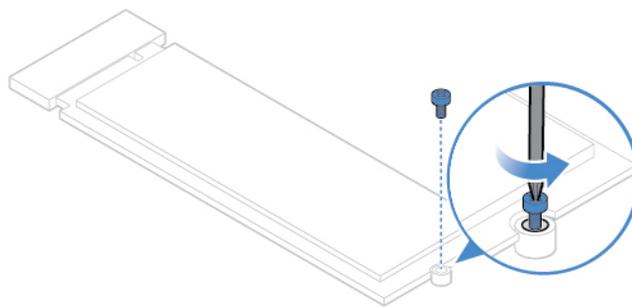


Figure 46. Removing the screw

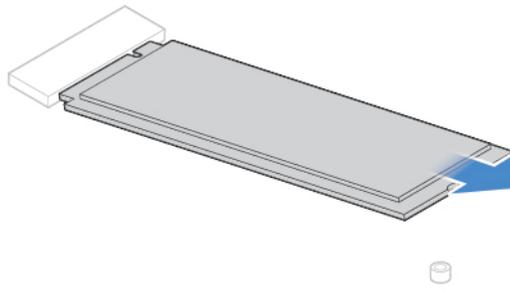


Figure 47. Removing the M.2 solid-state drive

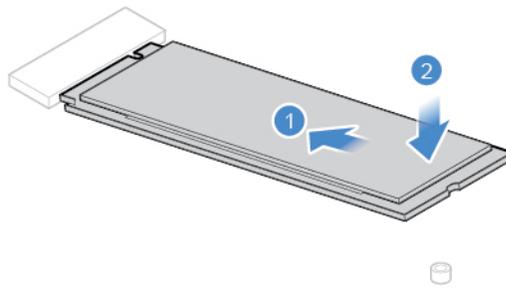


Figure 48. Installing the M.2 solid-state drive

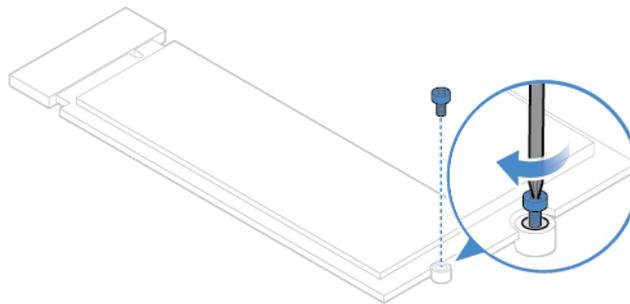


Figure 49. Installing the screw

- Type 2

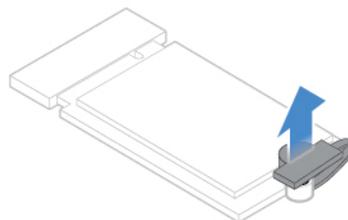


Figure 50. Pulling out the stopper

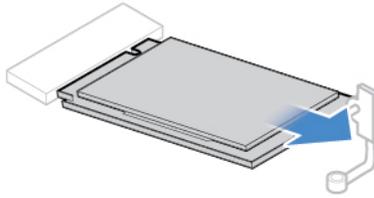


Figure 51. Removing the M.2 solid-state drive

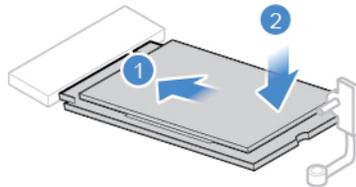


Figure 52. Installing the M.2 solid-state drive

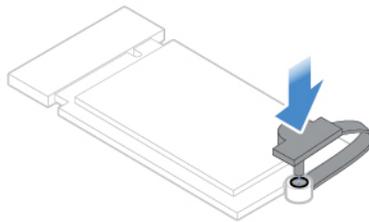


Figure 53. Inserting the stopper

6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the coin-cell battery

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

**Note:** To dispose of the coin-cell battery, refer to “Lithium coin-cell battery notice” in the *Safety and Warranty Guide*.

Your computer has a special type of memory that maintains the date, time, and settings for built-in features, such as parallel connector assignments (configurations). A coin-cell battery keeps this information active when you turn off the computer.

The coin-cell battery normally requires no charging or maintenance throughout its life; however, no coin-cell battery lasts forever. If the coin-cell battery fails, the date, time, and configuration information (including passwords) are lost. An error message is displayed when you turn on the computer.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.

5. Replace the coin-cell battery.

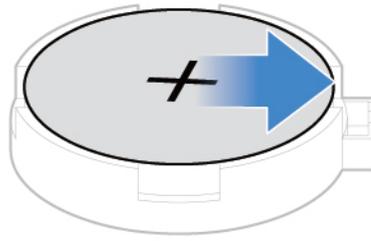


Figure 54. Disengaging the latch

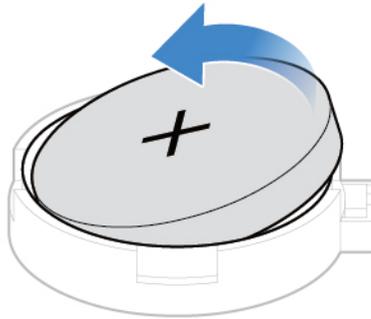


Figure 55. Removing the coin-cell battery

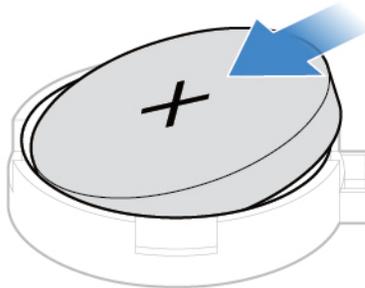


Figure 56. Installing the coin-cell battery

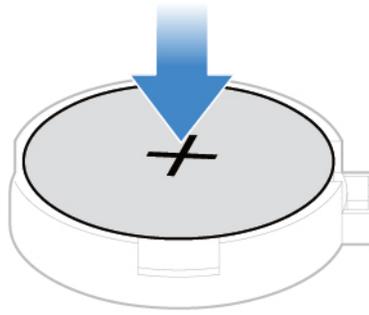


Figure 57. Securing the coin-cell battery with the latch

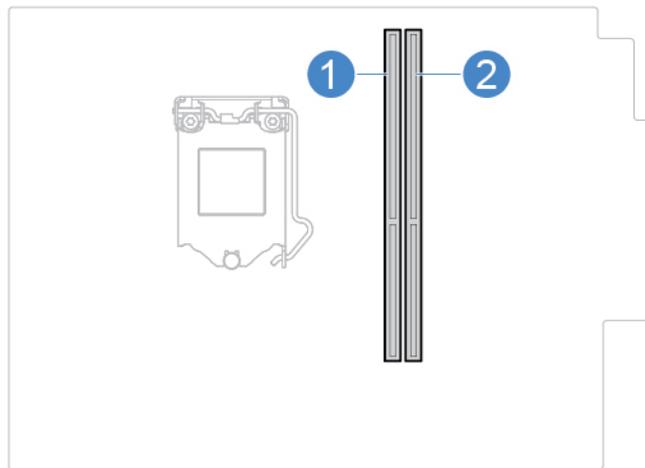
6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing a memory module

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

Ensure that you follow the installation order for memory modules shown in the following figure.



1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Replace a memory module.

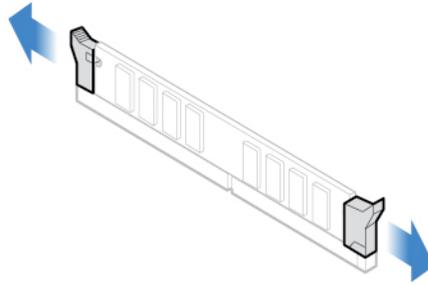


Figure 58. Disengaging the latches

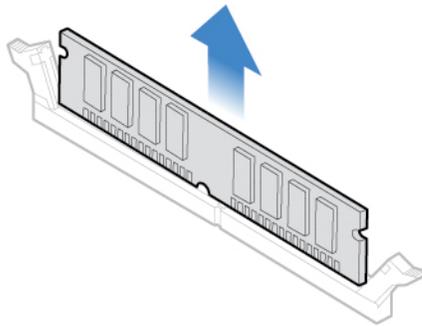


Figure 59. Removing a memory module

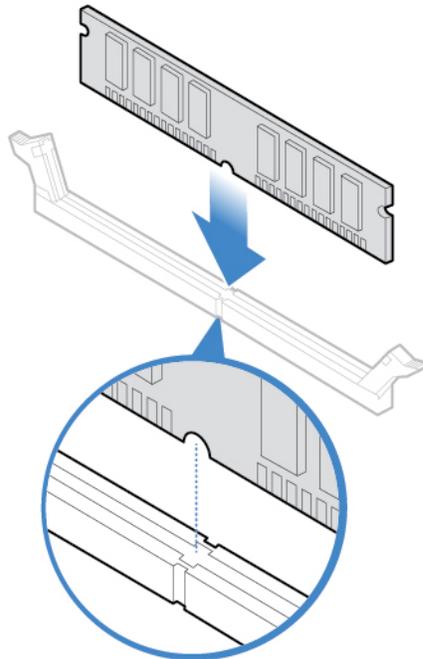


Figure 60. Installing a memory module

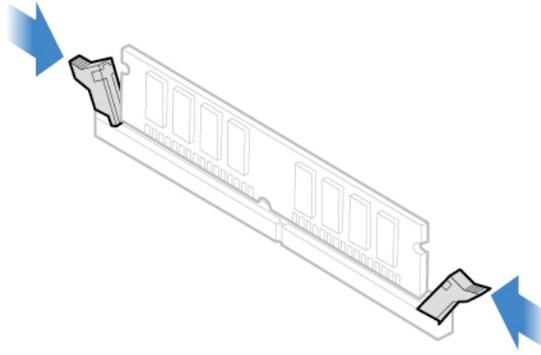


Figure 61. Securing a memory module with the latches

6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the heat sink and fan assembly

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

**CAUTION:**



**The heat sink and microprocessor might be very hot. Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.**

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Disconnect the microprocessor fan cable from the system board.
3. Replace the heat sink and fan assembly.

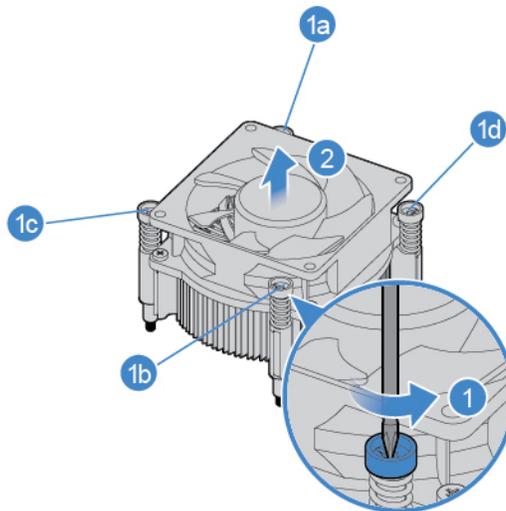


Figure 62. Removing the heat sink and fan assembly

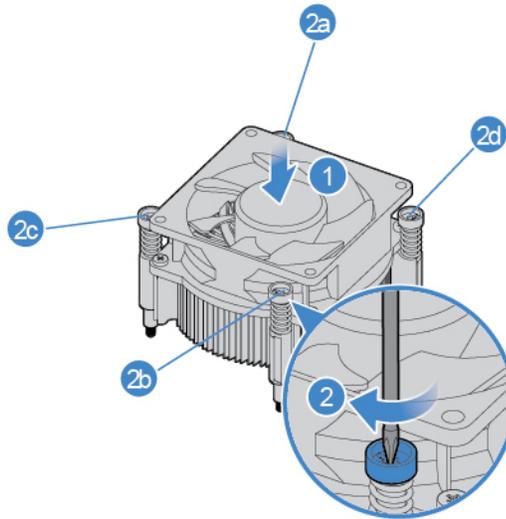


Figure 63. Installing the heat sink and fan assembly

4. Connect the new microprocessor fan cable to the system board.
5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

---

## Replacing the microprocessor

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

**CAUTION:**



**The heat sink and microprocessor might be very hot. Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.**

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the heat sink and fan assembly. See “Replacing the heat sink and fan assembly” on page 36.
3. Record the cable routing and cable connections, and then disconnect all cables from the system board. See “System board” on page 5.
4. Replace the microprocessor.

**Notes:**

- Your microprocessor and socket might look different from the one illustrated.
- Touch only the edges of the microprocessor. Do not touch the gold contacts on the bottom.
- Do not drop anything onto the microprocessor socket while it is exposed. The socket pins must be kept as clean as possible.

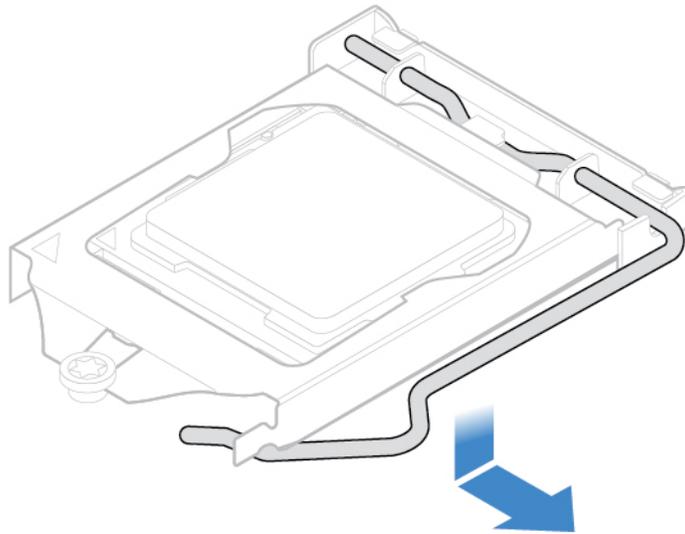


Figure 64. Releasing the handle

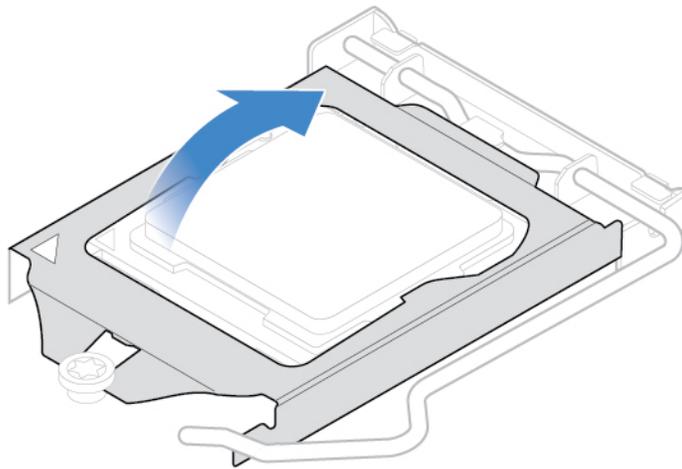


Figure 65. Opening the retainer

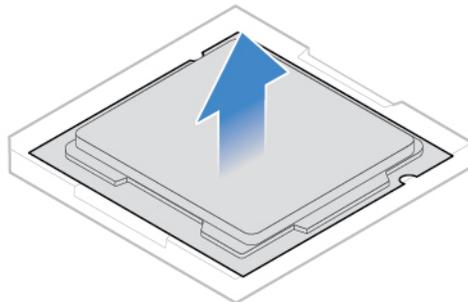


Figure 66. Removing the microprocessor

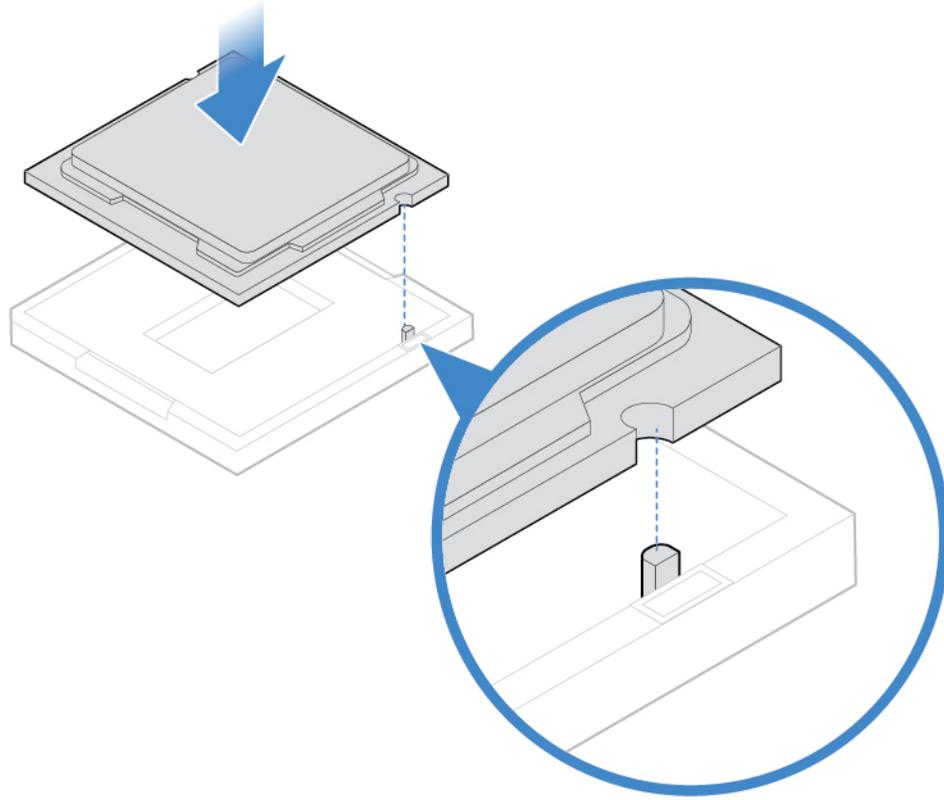


Figure 67. Installing the microprocessor

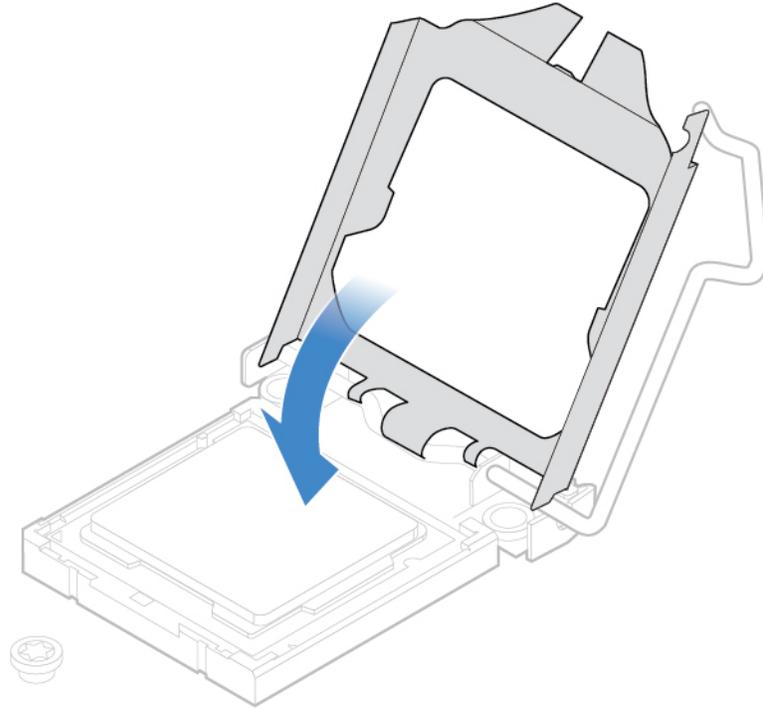


Figure 68. Closing the retainer

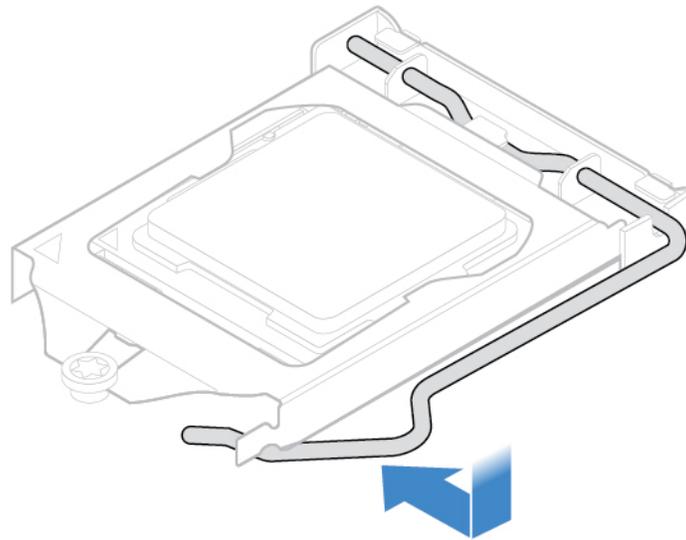


Figure 69. Securing the retainer with the handle

5. Route all the cables that you disconnected from the system board, and then reconnect the cables to the system board.
6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

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## Replacing a PCI Express card

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Replace a PCI Express card.

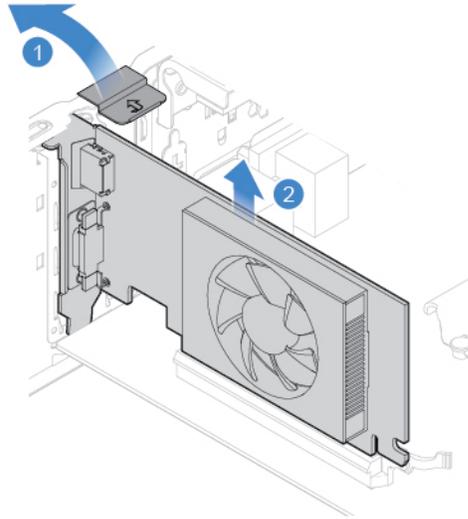
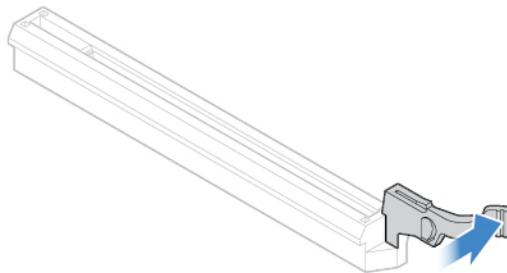


Figure 70. Removing a PCI Express card

**Note:** If the card is held in place by a retaining latch, press the latch as shown to disengage the latch. Then, gently remove the card from the slot.



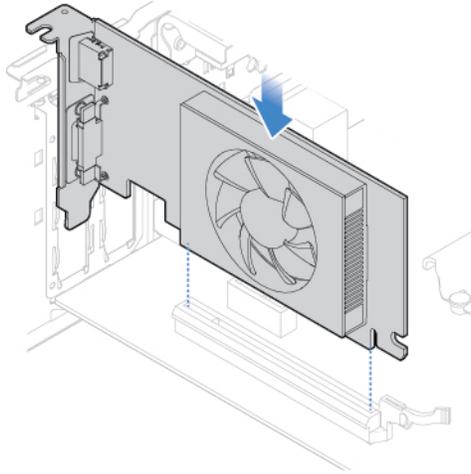


Figure 71. Installing a PCI Express card

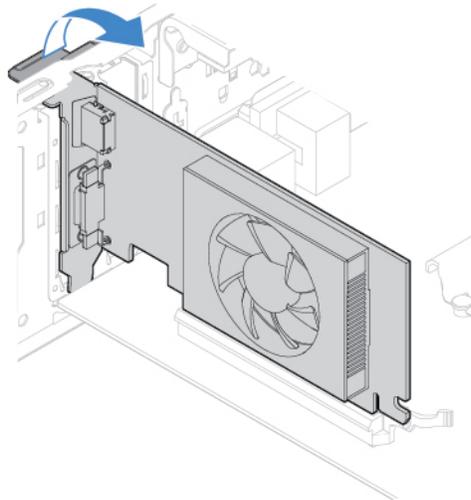


Figure 72. Securing a PCI Express card with the latch

3. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

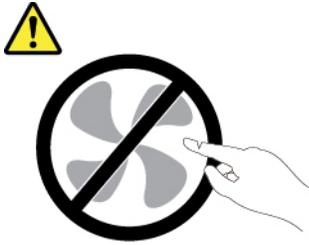
---

## Replacing the power supply assembly

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

Although there are no moving parts in the computer after the power cord has been disconnected, the following warnings are required for your safety and proper Underwriters Laboratories (UL) certification.

**CAUTION:**



**Hazardous moving parts. Keep fingers and other body parts away.**

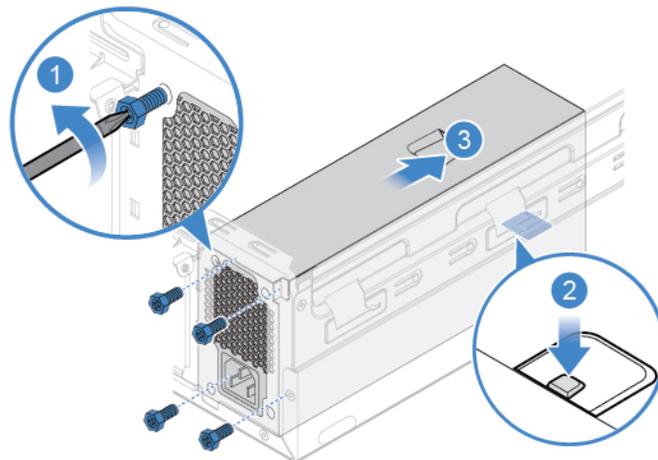
**CAUTION:**

**Never remove the cover on a power supply or any part that has the following label attached.**



**Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.**

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Disconnect the power supply assembly cables from the system board.
6. Replace the power supply assembly.



*Figure 73. Removing the power supply assembly*

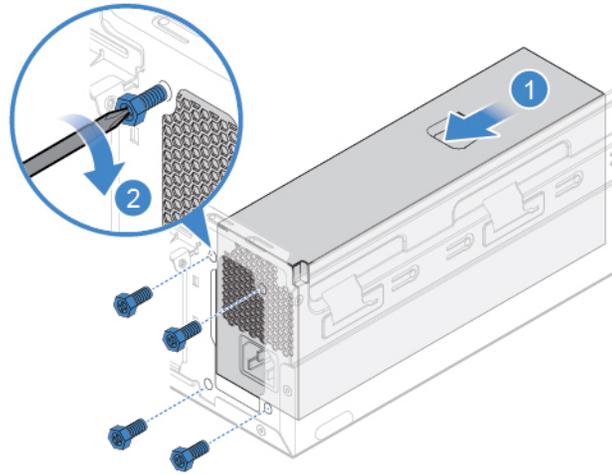


Figure 74. Installing the power supply assembly

7. Connect the new power supply assembly cables to the system board.
8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

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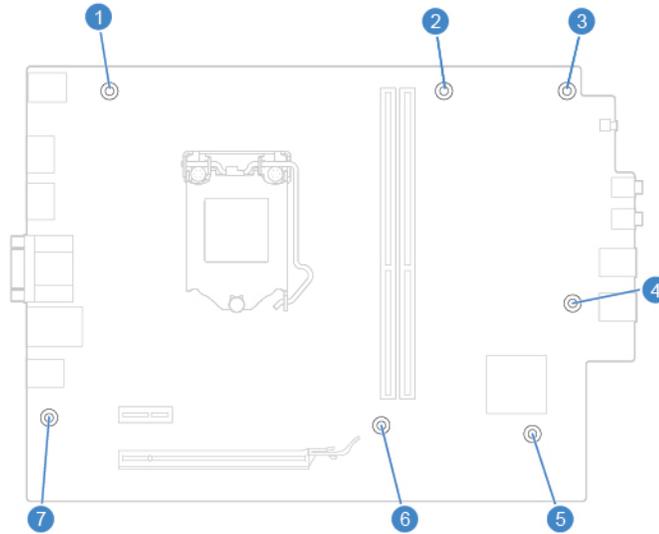
## Replacing the system board

**Attention:** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer cover. See “Removing the computer cover” on page 14.
2. Remove the front bezel. See “Replacing the front bezel” on page 14.
3. Remove the optical drive. See “Replacing the optical drive” on page 15.
4. Remove the storage drive bracket. See “Replacing the storage drive” on page 17.
5. Remove the card reader. See “Replacing the card reader” on page 21.
6. Remove the Wi-Fi card. See “Replacing the Wi-Fi card” on page 25.
7. Remove the M.2 solid-state drive. See “Replacing the M.2 solid-state drive” on page 30.
8. Remove all memory modules. See “Replacing a memory module” on page 34.
9. Remove the heat sink and fan assembly. See “Replacing the heat sink and fan assembly” on page 36.
10. Remove the microprocessor. See “Replacing the microprocessor” on page 37.
11. Remove all PCI Express cards. See “Replacing a PCI Express card” on page 41.
12. Record the cable routing and cable connections, and then disconnect all cables from the system board. See “System board” on page 5.
13. Replace the system board.

### Notes:

- The numbers in the following figure show the locations of the screws instead of a specific order for removing and reinstalling the screws.
- Handle the system board carefully by its edges.
- The failing system board must be returned with a microprocessor socket cover to protect the pins during shipping and handling.



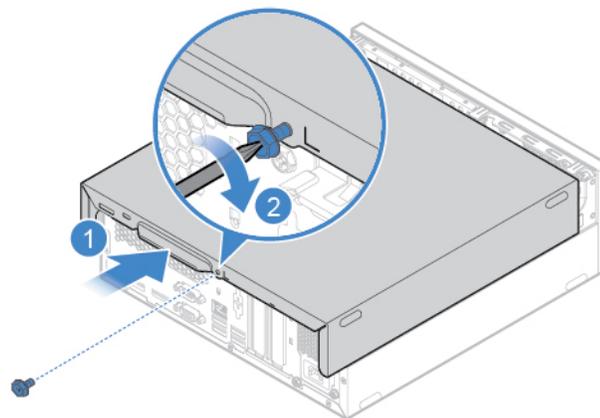
14. Route and connect all the cables to the new system board.
15. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 45.

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## Completing the parts replacement

After completing the installation or replacement for all parts, reinstall the computer cover and reconnect the cables.

1. Ensure that all components have been reassembled correctly and that no tools or loose screws are left inside your computer.
2. Ensure that the cables are routed correctly before reinstalling the computer cover. Keep cables clear of the hinges and sides of the computer chassis to avoid interference when reinstalling the computer cover.
3. Reinstall the computer cover.



*Figure 75. Reinstalling the computer cover*

4. Place the computer in an upright position.
5. If a locking device is available, use it to lock the computer.
6. Reconnect the external cables and power cords to the corresponding connectors on the computer.



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## Appendix A. Notices

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