ThinkCentre M720s User Guide and Hardware Maintenance Manual

Energy Star Machine Types: 10ST, 10SU, 10SV, 10TR, 10U6, and 10U7
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 71.
## Contents

### Chapter 1. Overview
- Front view  ............................................ 1
- Rear view ............................................ 3
- System board ....................................... 5
- Machine type and model label .................. 7

### Chapter 2. Specifications

### Chapter 3. Computer locks
- Locking the computer cover ...................... 11
- Enabling or disabling the E-lock ............... 11
- Attaching a Kensington-style cable lock ........ 12
- Attaching a smart cable clip .................... 12

### Chapter 4. Replacing hardware
- Before replacing hardware ...................... 15
- Knowing FRUs (including CRUs) ................ 15
- Locating FRUs (including CRUs) ............... 16
- Replacing the keyboard or wireless keyboard ..... 18
- Replacing the mouse or wireless mouse .......... 19
- Replacing the power cord ........................ 21
- Replacing the dust shield ....................... 22
- Replacing the vertical stand .................... 23
- Removing the computer cover ................... 24
- Replacing the front bezel ....................... 25
- Replacing the optical drive ..................... 25
- Replacing the storage drive .................... 27
- Replacing a memory module .................... 33
- Replacing a PCI Express card ................... 35
- Replacing the Wi-Fi card ....................... 37
- Replacing the M.2 solid-state drive ............. 39
- Replacing the M.2 solid-state drive bracket .... 46
- Replacing the power supply assembly ........... 46
- Replacing the Wi-Fi antennas ................... 48
- Replacing the internal speaker .................. 50
- Replacing the illuminated red dot cable ........ 52
- Replacing the thermal sensor .................... 54
- Replacing the front I/O bracket ................. 56
- Replacing the power button ..................... 57
- Replacing the card reader board ............... 58
- Replacing the heat sink and fan assembly ...... 59
- Replacing the microprocessor ................... 61
- Replacing the coin-cell battery ................. 63
- Replacing the E-lock .............................. 65
- Replacing the cover presence switch .......... 66
- Replacing the system board and chassis ........ 67
- Completing the parts replacement .............. 68

### Appendix A. Notices .................................. 71
### Appendix B. Trademarks ............................ 73
Chapter 1. Overview

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

Front view

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

Figure 1. Front view
1 Optical drive eject/close button (optional)

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 (optional)

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

3 Storage drive activity indicator

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

4 Card reader slot (optional)

Used to read data from a supported memory card.

5 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.

6 Power indicator

This indicator is on when the computer is on.

7 Microphone connector (optional)

Used to connect a microphone to your computer. You can use the microphone to record sounds or interact with the computer using speech-recognition software.

8 Headset connector

Used to connect a headset or headphones to your computer.

9 Type-C USB 3.1 Gen 1 connector

Used to connect a Type-C USB 3.1 compatible device.

10 USB 3.1 Gen 1 connectors

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.

11 USB 3.1 Gen 2 connectors

12 Illuminated red dot

13 Internal speaker
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.

12 Illuminated red dot

This indicator is on when the computer is on.

13 Internal speaker

Used to listen to the sounds from your computer without using a headset or headphones.

Rear view

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

Figure 2. Rear view
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 VGA-out connector

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

3 DisplayPort® 1.2 out connectors

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

4 USB 2.0 connector

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

**Note:** The USB 2.0 connector supports the smart power on feature. If you connect a Lenovo-recommended USB 1.1 keyboard to this connector, you can power on the computer or wake it up from S4 hibernation mode by pressing Alt+P on the keyboard. Ensure that you use a Lenovo-recommended keyboard that supports the smart power on feature.

5 USB 2.0 connectors

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

6 Serial connector

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

7 PS/2 keyboard and mouse connectors (optional)

Used to connect a keyboard, a mouse, or trackball, or other pointing devices that uses a Personal System/2 (PS/2) connector.

8 Ethernet connector

Used to connect an Ethernet cable for network access.


### Security-lock slot

Used to secure a Kensington-style cable lock.

### Padlock loop

Used to secure a padlock.

### 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.

### Smart cable clip slots (optional)

Used to secure a smart cable clip.

### Power cord connector

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

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#### System board

**Note:** See “Front view” and “Rear view” for additional component descriptions.
Figure 3. System board

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4-pin power connector</td>
</tr>
<tr>
<td>2</td>
<td>Microprocessor fan connector</td>
</tr>
<tr>
<td>3</td>
<td>Power button connector</td>
</tr>
<tr>
<td>4</td>
<td>Internal speaker connector</td>
</tr>
<tr>
<td>5</td>
<td>Auxiliary fan connector 2</td>
</tr>
<tr>
<td>6</td>
<td>10-pin power connector</td>
</tr>
<tr>
<td>7</td>
<td>Auxiliary fan connector 1</td>
</tr>
<tr>
<td>8</td>
<td>SATA power connectors (2)</td>
</tr>
<tr>
<td>9</td>
<td>Clear CMOS (Complementary Metal Oxide Semiconductor) / Recovery jumper</td>
</tr>
<tr>
<td>10</td>
<td>SATA 3.0 connectors (3)</td>
</tr>
<tr>
<td>11</td>
<td>M.2 solid-state drive slot</td>
</tr>
<tr>
<td>12</td>
<td>M.2 Wi-Fi card slot</td>
</tr>
<tr>
<td>13</td>
<td>Thermal sensor connector</td>
</tr>
<tr>
<td>14</td>
<td>Illuminated red dot connector</td>
</tr>
<tr>
<td>15</td>
<td>Front USB 2.0 connector</td>
</tr>
<tr>
<td>16</td>
<td>Parallel connector</td>
</tr>
<tr>
<td>17</td>
<td>Serial (COM2) connector</td>
</tr>
<tr>
<td>18</td>
<td>PCI Express x16 graphics card slot</td>
</tr>
<tr>
<td>19</td>
<td>PCI Express x1 card slots (2)</td>
</tr>
<tr>
<td>20</td>
<td>System fan connector</td>
</tr>
<tr>
<td>21</td>
<td>E-lock connector</td>
</tr>
<tr>
<td>22</td>
<td>Microprocessor socket</td>
</tr>
<tr>
<td>23</td>
<td>Cover presence switch connector (Intrusion switch connector)</td>
</tr>
<tr>
<td>24</td>
<td>Coin-cell battery</td>
</tr>
<tr>
<td>25</td>
<td>Memory slot (DIMM1)</td>
</tr>
<tr>
<td>26</td>
<td>Memory slot (DIMM2)</td>
</tr>
</tbody>
</table>
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
Chapter 2. Specifications

Power supply
• 180-watt automatic voltage-sensing power supply
• 210-watt automatic voltage-sensing power supply
• 260-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
• VGA-out connector

Audio features
• The integrated audio card supports the following:
  – Audio line-out connector
  – Headset connector
  – Internal speaker
  – Microphone connector (optional)
• 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)
• VGA-out connector
• Ethernet connector
• PS/2 keyboard connector (optional)
• PS/2 mouse connector (optional)
• Serial connectors
• USB connectors (USB 2.0, USB 3.1, and Type-C USB 3.1)
• VGA-out connector

Expansion
• Card reader (optional)
• Memory slots
• M.2 solid-state drive slot
• Optical drive (optional)
• PCI Express x1 card slots
• PCI Express x16 graphics card slot
• Storage drive bay

**Network features**
• Ethernet LAN
• Wireless LAN (optional)
• Bluetooth (optional)

**Physical dimensions**
• Width: 92.5 mm (3.6 inches)
• Height: 343.5 mm (13.5 inches)
• Depth: 290.5 mm (11.4 inches)

**Weight (without the package)**
Maximum configuration as shipped: 6 kg (13.2 lb)
Chapter 3. Computer locks

This chapter provides instructions on how to lock your computer with the locking devices to keep your computer safe.

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](image)

Enabling or disabling the E-lock

Your computer may have a security lock solution installed to protect the computer from unauthorized tampering of the internal components. Using the E-Lock, you can mechanically lock or unlock the computer cover.

To enable or disable the E-Lock, do the following:

1. Turn on or restart the computer.
2. Before Windows starts up, repeatedly press and release the F1 or Fn+F1 key until the Setup Utility program opens.
3. Click **Security ➔ Electronic Lock** to enable or disable the E-lock.
4. Press F10 or Fn+F10 to save the changes and reboot the computer.

*Note*: Changes do not take effect until the setting is saved and the system is rebooted.
Attaching a Kensington-style cable lock

You can use a Kensington-style cable lock to secure your computer to a desk, table, or other 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 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

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 8. Attaching a smart cable clip
Chapter 4. Replacing hardware

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

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.

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/PCle 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.

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.

Locating FRUs (including CRUs)

Notes:

• Some of the 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 9. Locating FRUs

<table>
<thead>
<tr>
<th>Self-service CRUs</th>
<th>Optional-service CRUs</th>
<th>Non-CRUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Computer cover</td>
<td>11 Wi-Fi card</td>
<td>1 heat sink and fan assembly</td>
</tr>
<tr>
<td>2 PCI Express card</td>
<td>12 Wi-Fi card shield</td>
<td>2 microprocessor</td>
</tr>
<tr>
<td>3 Memory module</td>
<td>13 Power supply assembly</td>
<td>3 System board</td>
</tr>
<tr>
<td>4 M.2 solid-state drive heat sink</td>
<td>14 E-lock</td>
<td>4 Coin-cell battery</td>
</tr>
<tr>
<td>5 M.2 solid-state drive</td>
<td></td>
<td>5 Power button</td>
</tr>
</tbody>
</table>
### Self-service CRUs
- 12 M.2 solid-state drive bracket
- 13 Optical drive bracket
- 14 Optical drive
- 23 Front bezel
- 24 Dust shield
- 25 Keyboard
- 26 Mouse
- 27 Vertical stand
- 28 Power cord
- 29 Secondary storage drive
- 30 Secondary storage drive bezel
- 31 Secondary storage drive bracket
- 32 Primary storage drive
- 33 Storage converter
- 34 Primary storage drive bracket

### Optional-service CRUs
- 16 Front I/O bracket
- 17 Storage drive cable
- 18 Card reader
- 19 Optical drive cable
- 20 Internal speaker
- 21 Thermal sensor
- 22 Illuminated red dot cable
- 23 Keyboard shield
- 24 Internal speaker cable
- 25 Optical drive cable
- 26 Mouse
- 27 Vertical stand
- 28 Power cord
- 29 Secondary storage drive
- 30 Secondary storage drive bezel
- 31 Secondary storage drive bracket
- 32 Primary storage drive
- 33 Storage converter
- 34 Primary storage drive bracket

### Non-CRUs
- 35 Chassis
- 36 Cover presence switch (intrusion switch)
- 37 Wi-Fi antennas

---

**Replacing the keyboard or wireless keyboard**

*Note:* The wireless keyboard is available only on some models.

**Replacing the keyboard**

1. Turn off the computer and disconnect all power cords from electrical outlets.
2. Disconnect the old keyboard cable from the computer.
3. Connect a new keyboard to the appropriate connector on the computer.

![Figure 10. Replacing the keyboard](image)

**Replacing the wireless keyboard**

1. Disconnect the USB dongle from your computer and remove your old wireless keyboard.
2. Take out the new wireless keyboard from the package.
3. Open the battery compartment cover, and install two AAA batteries according to the polarity indicators.
4. Take out the USB dongle from the keyboard compartment or from the wireless mouse compartment and connect it to an available USB connector on the computer.
5. Close the compartment cover. The keyboard is ready for use.

---

**Replacing the mouse or wireless mouse**

**Note:** The wireless mouse is available only on some models.

**Replacing the mouse**
1. Turn off the computer and disconnect all power cords from electrical outlets.
2. Disconnect the old mouse cable from the computer.
3. Connect a new mouse to the appropriate connector on the computer.

---

**Replacing the wireless mouse**
1. Disconnect the USB dongle from your computer. Then, remove your old wireless mouse.
2. Take out the new wireless mouse from the package.
3. Open the battery compartment cover, and install two AAA batteries according to the polarity indicators.
Figure 13. Opening the battery compartment

Figure 14. Taking out the USB dongle

Figure 15. Connecting the USB dongle to a USB connector

Figure 16. Installing the mouse batteries
Figure 17. Closing the battery compartment cover

Figure 18. Pushing the power switch to the ON position

Notes:
- The green LED indicates that the mouse is ready for use.
- The flashing amber LED indicates a low battery level.
- Slide the power switch to the OFF position when you are not using the mouse to extend the battery life.
- After disconnecting the USB dongle from your computer, store it in the wireless mouse compartment or in the wireless keyboard compartment.

Replacing the power cord

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

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 that are connected to the computer.
3. Replace the power cord.

Note: Your power cord might look different from the one illustrated.
Replacing the dust shield

**Note:** The dust shield is optional.

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

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 that are connected to the computer.
3. Replace the dust shield.
Replacing the vertical stand

**Note:** The vertical stand is available only on some models.

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

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 that are connected to the computer.
3. Replace the vertical stand.
Removing the computer cover

**Note:** Before you open the computer cover, ensure that the E-lock has been unlocked in the Setup Utility program. See “Computer locks”.

**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 cooled down.

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 that are connected to the computer.
3. Unlock any locking device that secures the computer cover.
4. Remove the dust shield. See “Replacing the dust shield” on page 22.
5. Remove the computer cover.

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*Figure 24. Installing the vertical stand*

*Figure 25. Removing the computer cover*
6. Complete the replacement. See “Completing the parts replacement” on page 68.

**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 24.
2. Replace the front bezel.

![Figure 26. Removing the front bezel](image1)

3. Complete the replacement. See “Completing the parts replacement” on page 68.

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the signal and power connector from the optical drive.
4. Replace the optical drive.

Figure 28. Removing the optical drive assembly

Figure 29. Removing the optical drive bracket

Figure 30. Installing the optical drive bracket
5. Connect the signal and power connector to the new optical drive.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the storage drive

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

**Replacing the 3.5-inch primary storage drive**

1. Remove the computer cover. See “Removing the computer cover” on page 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the storage drive cables from the system board.
4. Replace the 3.5-inch primary storage drive.

**Note:** Ensure that you disconnect or reconnect the storage drive cables during the replacement.
Figure 33. Removing the 3.5-inch primary storage drive

Figure 34. Removing the 3.5-inch primary storage drive bracket

Figure 35. Installing the 3.5-inch primary storage drive bracket
5. Connect the storage drive cables to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the 2.5-inch primary storage drive
1. Remove the storage converter with the 2.5–inch primary storage drive. See “Replacing the 3.5–inch primary storage drive”.
2. Replace the 2.5–inch primary storage drive in the storage converter.
3. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the 2.5-inch secondary storage drive

1. Remove the computer cover. See “Removing the computer cover” on page 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Replace the 2.5-inch secondary storage drive.

Note: Ensure that you disconnect or reconnect the storage drive cables during the replacement.
Figure 40. Opening the drive bay

Figure 41. Removing the 2.5-inch secondary storage drive

Figure 42. Removing the 2.5-inch secondary storage drive bracket
Figure 43. Removing the 2.5-inch secondary storage drive bezel

Figure 44. Installing the 2.5-inch secondary storage drive bezel

Figure 45. Installing the 2.5-inch secondary storage drive bracket
4. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing a memory module

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

**Notes:**
- Before the installation, ensure that the memory slot latches are open.
- During the installation, 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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Replace a memory module.

**Note:** During the installation, ensure that you align the memory module to the slot and press down on both ends until the latches are fully engaged with a click.
4. Complete the replacement. See “Completing the parts replacement” on page 68.

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Replace a PCI Express card.

**Note:** When you remove the PCI Express card, press the latch to disengage it from the slot. Then, gently remove the card from the slot.

*Figure 53. Opening the drive bay*

**Note:** When you install the PCI Express card, press down on the rear end of the card until the latch is engaged with a click.

*Figure 54. Removing the PCI Express card*
4. Complete the replacement. See “Completing the parts replacement” on page 68.

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Replace the Wi-Fi card.
Figure 57. Opening the drive bay

Figure 58. Removing the Wi-Fi card shield (type 1 and type 2)

Figure 59. Disconnecting the Wi-Fi antennas and removing the Wi-Fi card (type 1 and type 2)
4. Complete the replacement. See “Completing the parts replacement” on page 68.

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Depending on your computer model, refer to one of the following to replace the M.2 solid-state drive.
   - Type 1
Figure 63. Opening the drive bay

Figure 64. Removing the M.2 solid-state drive heat sink
Figure 65. Unlocking the M.2 solid-state drive clip

Figure 66. Removing the M.2 solid-state drive

Figure 67. Installing the M.2 solid-state drive
Figure 68. Locking the M.2 solid-state drive clip

Figure 69. Installing the M.2 solid-state drive heat sink

Figure 70. Closing the drive bay

- Type 2
Figure 71. Opening the drive bay

Figure 72. Removing the M.2 solid-state drive heat sink
Figure 73. Unlocking the M.2 solid-state drive clip

Figure 74. Removing the M.2 solid-state drive

Figure 75. Installing the M.2 solid-state drive
4. Complete the replacement. See “Completing the parts replacement” on page 68.
Replacing the M.2 solid-state drive bracket

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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Remove the M.2 solid-state drive. See “Replacing the M.2 solid-state drive” on page 39.
4. Replace the M.2 solid-state drive bracket.

Figure 79. Removing the M.2 solid-state drive bracket

Figure 80. Installing the M.2 solid-state drive bracket

5. Complete the replacement. See “Completing the parts replacement” on page 68.

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 your 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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Replace the power supply assembly.

Note: Ensure that you disconnect or reconnect the power supply assembly cables during the replacement.

Figure 81. Opening the drive bay
4. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the Wi-Fi antennas

Attention: Do not open your computer or attempt any repairs before reading the Important Product Information Guide.
Replacing the front Wi-Fi antenna

1. Remove the computer cover. See “Removing the computer cover” on page 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Remove the storage drive if necessary. See “Replacing the storage drive” on page 27.
4. Replace the front Wi-Fi antenna.

5. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the rear Wi-Fi antenna

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 that are connected to the computer.
3. Replace the rear Wi-Fi antenna.

Figure 87. Removing the rear Wi-Fi antenna

Figure 88. Installing the rear Wi-Fi antenna

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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the internal speaker cable from the system board.
4. Replace the internal speaker.
Figure 89. Opening the drive bay

Figure 90. Removing the internal speaker

Figure 91. Installing the internal speaker
5. Connect the internal speaker cable to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the illuminated red dot cable

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the illuminated red dot cable from the system board.
4. Replace the illuminated red dot.
Figure 94. Removing the sleeve

Figure 95. Removing the illuminated red dot cable

Figure 96. Installing the illuminated red dot cable
5. Connect the new illuminated red dot cable to the system board.

6. Complete the replacement. See “Completing the parts replacement” on page 68.

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the thermal sensor cable from the system board.
4. Replace the thermal sensor.
Figure 99. Opening the drive bay

Figure 100. Removing the thermal sensor

Figure 101. Installing the thermal sensor
5. Connect the new thermal sensor cable to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the front I/O bracket

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the power button cable and the card reader cable from the system board.
4. Replace the front I/O bracket.
5. Connect the power button cable and the card reader cable to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the power button

**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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Remove the front I/O bracket. See “Replacing the front I/O bracket” on page 56.
4. Replace the power button.
5. Connect the power button cable to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the card reader 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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Remove the front I/O bracket. See “Replacing the front I/O bracket” on page 56.
4. Replace the card reader board.
5. Connect the card reader cable to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

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 fan assembly might be very hot. Turn off the computer and wait three to five minutes to let the computer cool before removing the computer cover.
1. Remove the computer cover. See “Removing the computer cover” on page 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the microprocessor fan cable from the system board.
4. Replace the heat sink and fan assembly.
5. Connect the microprocessor fan cable to the system board.
6. Complete the replacement. See “Completing the parts replacement” on page 68.

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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Disconnect the E-lock cable from the system board if necessary.
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 115. Unlocking the microprocessor socket retainer

Figure 116. Pivoting the microprocessor socket upward

Figure 117. Removing the microprocessor
5. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the coin-cell battery

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

To replace the coin-cell battery,
1. Remove the computer cover. See “Removing the computer cover” on page 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Replace the coin-cell battery.
Figure 124. Placing the coin-cell battery

Figure 125. Pressing the coin-cell battery downward until it is fully engaged with a click

Figure 126. Closing the drive bay

4. Complete the replacement. See “Completing the parts replacement” on page 68.

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

Replacing the E-lock

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

Note: To remove the screws, you need a special tool (T15 star wrench).

1. Remove the computer cover. See “Removing the computer cover” on page 24.
2. Disconnect the E-lock cable from the system board.
3. Replace the E-lock.
4. Connect the E-lock cable to the system board.
5. Complete the replacement. See “Completing the parts replacement” on page 68.

**Replacing the cover presence switch**

**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 24.
2. Disconnect the cover presence switch cable from the system board.
3. Replace the cover presence switch.
4. Connect the new cover presence switch cable to the system board.
5. Complete the replacement. See “Completing the parts replacement” on page 68.

Replacing the system board and chassis

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 24.
2. Remove the front bezel. See “Replacing the front bezel” on page 25.
3. Remove the front I/O bracket. See “Replacing the front I/O bracket” on page 56.
4. Remove all memory modules. See “Replacing a memory module” on page 33.
5. Remove the heat sink and fan assembly. See “Replacing the heat sink and fan assembly” on page 59.
6. Remove the microprocessor. See “Replacing the microprocessor” on page 61.
7. Remove all PCI Express cards. See “Replacing a PCI Express card” on page 35.
8. Remove the Wi-Fi card. See “Replacing the Wi-Fi card” on page 37.
9. Remove the M.2 solid-state drive. See “Replacing the M.2 solid-state drive” on page 39.
10. Record the cable routing and cable connections, and then disconnect all cables from the system board. See “System board” on page 5.
11. Replace the system board and chassis.

Note: Carefully handle the system board by its edges.
12. Route all the cables that you disconnected from the failing system board, and then reconnect the cables to the new system board.

13. Complete the replacement. See “Completing the parts replacement” on page 68.

Completing the parts replacement

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

To reinstall the computer cover and reconnect the cables to your computer, do the following:

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 133. Reinstalling the computer cover](image)

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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