ThinkCentre®
M910s

User Guide and Hardware Maintenance Manual

Machine Type (MT):
10MK, 10ML, 10QM

Energy Star MT:
10MK, 10ML, 10QM

Lenovo

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Replacing instructions for Field Replaceable Units (FRUs) (for technicians only)

Contents

Overview

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 status indicator (optional)**	This indicator is on when the optical drive is in use.
3	**Storage drive status 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**	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	**Headphone connector**	Used to connect headphones to your computer.
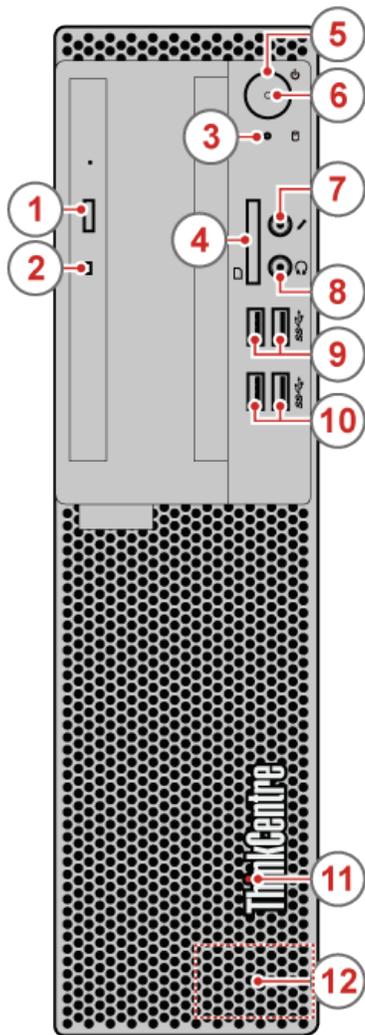
9 USB 3.0 connectors (2)

Used to connect a USB-compatible device. For optimal data transfer, connect a USB 3.0 device to a USB 3.0 connector instead of a USB 2.0 connector.

10 USB 3.0 connectors (2)

Used to connect a USB-compatible device. For optimal data transfer, connect a USB 3.0 device to a USB 3.0 connector instead of a USB 2.0 connector.

11 Illuminated red dot

This indicator is on when the computer is on.
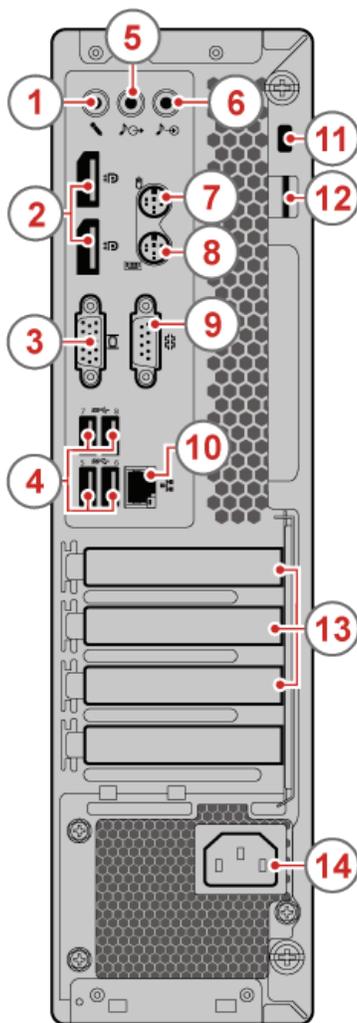
12 Internal speaker (optional)

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

Rear view

① **Microphone connector**

Used to connect a microphone to your computer when you want to record sound or use speech recognition software.

② **DisplayPort®-out connectors (2)**

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

③ **VGA-out connector**

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

④ **USB 3.0 connectors (4)**

Used to connect a USB-compatible device. For optimal data transfer, connect a USB 3.0 device to a USB 3.1 or USB 3.0 connector instead of a USB 2.0 connector.

⑤ **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 connector or headphone connector for earphones, headphones, or a headset. The headphone connector does not support headset microphones.

⑥ **Audio line-in connector**

Used to receive audio signals from an external audio device, such as a stereo system. To attach an external audio device, connect a cable between the audio line-out connector of the device and the audio line-in connector of the computer.
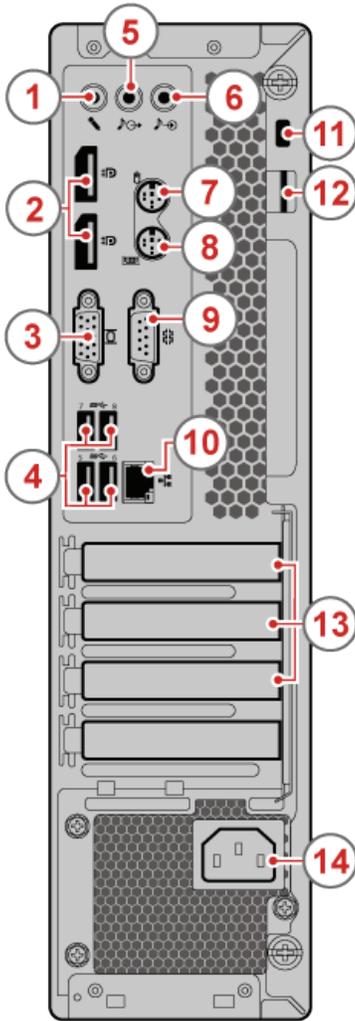
7 PS/2 mouse connector (optional)

Used to connect a mouse, a trackball, or other pointing devices that use a PS/2 mouse connector.

8 PS/2 keyboard connector (optional)

Used to connect a keyboard that uses a Personal System/2 (PS/2) keyboard connector.

9 Serial connector

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

10 Ethernet connector

Used to connect an Ethernet cable for network access.

11 Security-lock slot

Used to secure a Kensington-style cable lock.

12 Padlock loop

Used to secure a padlock.

13 PCI-Express card area (different cards provide different connectors)

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 might vary.

14 Power cord connector

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

System board
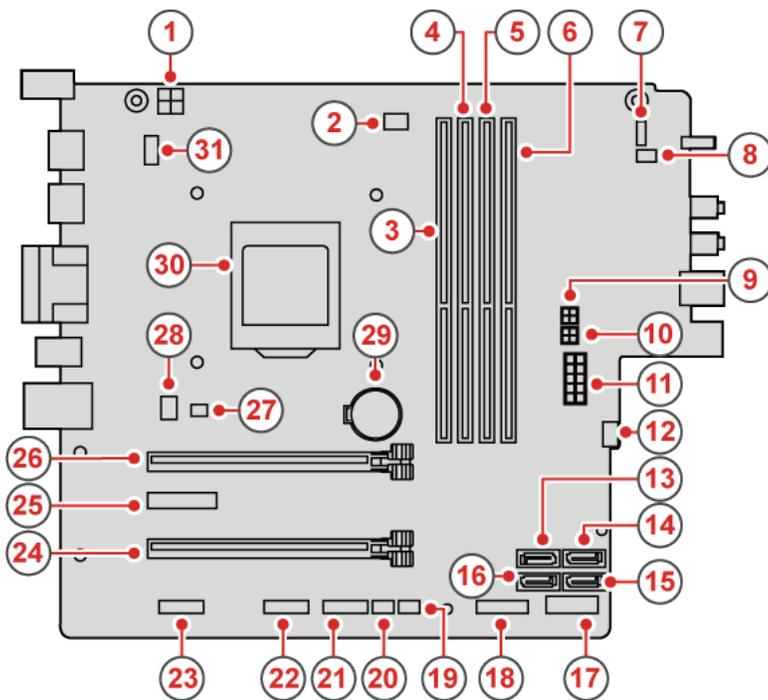
1	4-pin power connector
2	Microprocessor fan connector
3	Memory slot (DIMM1)
4	Memory slot (DIMM2)
5	Memory slot (DIMM3)
6	Memory slot (DIMM4)
7	Power button board connector
8	Internal speaker connector
9	SATA power connector
10	SATA power connector
11	10-pin power connector
12	Auxiliary fan connector
13	SATA 3.0 connector
14	eSATA connector
15	SATA 3.0 connector
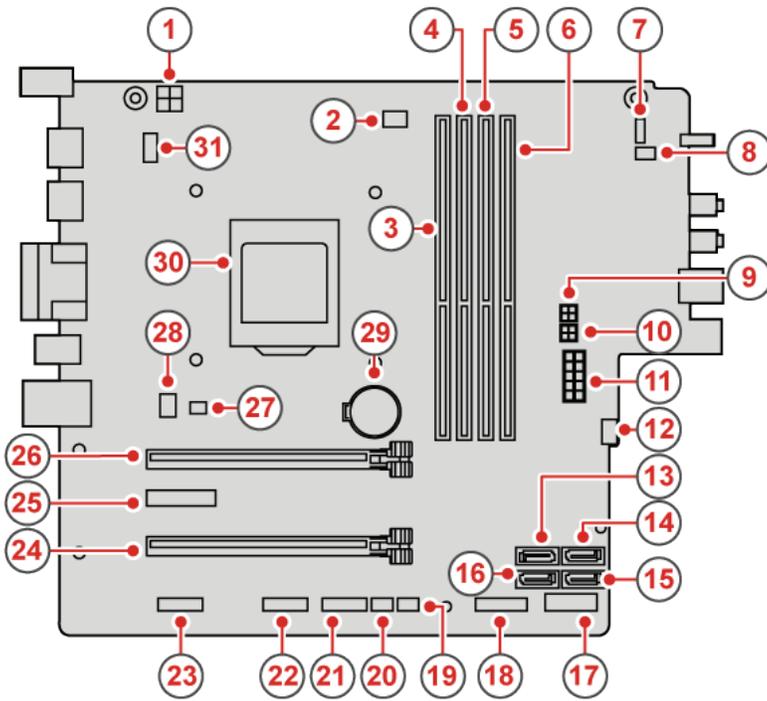
16	SATA 3.0 connector
17	M.2 Wi-Fi card slot
18	M.2 storage drive slot
19	Illuminated red dot connector
20	Thermal sensor connector
21	Front USB 2.0 connector
22	Front USB 2.0 connector
23	Serial (COM2) connector
24	PCI Express card slot (physical link width x16; negotiable link width x4, x1)
25	PCI Express x1 card slot
26	PCI Express x16 graphics card slot
27	Cover presence switch connector (Intrusion switch connector)
28	System fan connector
29	Coin-cell battery
30	Microprocessor socket
31	PS/2 keyboard and mouse connector

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 side of the computer as shown.
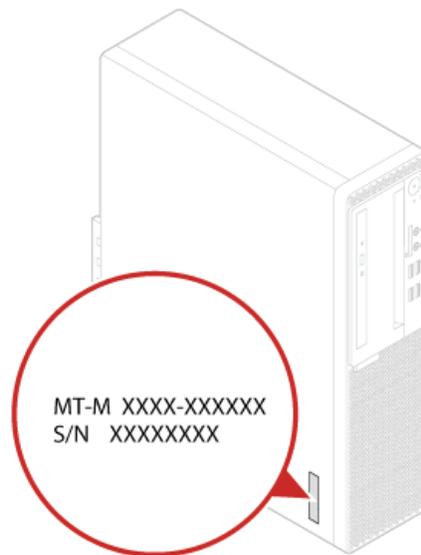
Specifications

Power supply	• 180 watt automatic voltage-sensing power supply • 210 watt automatic voltage-sensing power supply
Storage drives	Up to two SATA storage drives and one M.2 storage drive
Video features	The integrated graphics card supports the following: • DisplayPort-out connector • VGA-out connector The optional discrete graphics card provides an enhanced display experience and extended capabilities.
Audio features	The integrated audio card supports the following: • Audio line-in connector • Audio line-out connector • Headphone connector • Internal speaker (optional) • Microphone connector
Input/Output (I/O) features	• Audio connectors (audio line-in connector, audio line-out connector, headphone connector, and microphone connector) • Card reader slot (optional) • Display connectors (DisplayPort-out connector and VGA-out connector) • Ethernet connector • PS/2 keyboard connector (optional) • PS/2 mouse connector (optional) • Serial connector • USB connector

Expansion	• Card reader (optional)
	• Memory slot
	• Optical drive (optional)
	• PCI Express card slot (physical link width x16; negotiable link width x4, x1)
	• 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: 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: 6.0 kg (13.2 lb)

Computer locks

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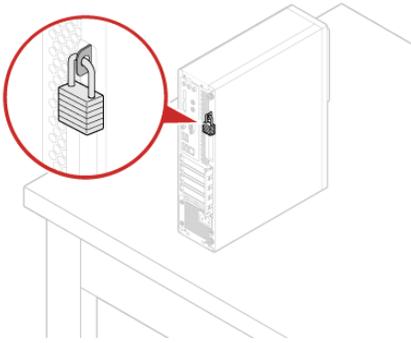
Locking the computer cover helps prevent unauthorized access to the inside of your computer. Your computer features a padlock loop so that the computer cover cannot be removed when a padlock is installed.

Attaching a Kensington-style cable lock
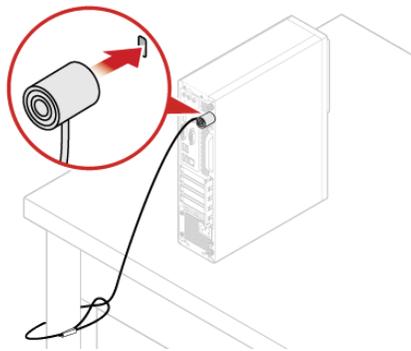
You can use a Kensington-style cable lock to secure your computer to a desk, table, or other nonpermanent fixture. The cable lock connects to the security-lock slot at the rear of your computer. Depending on the type selected, the cable lock can be operated with a key or combination. The cable lock also 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 cable lock
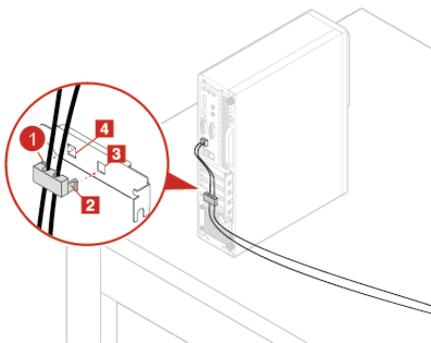
A cable lock can be used to secure devices, such as the keyboard and the mouse, by locking the device cables to the computer. The cable lock connects to the cable-lock slots on the rear of the computer.

To install a cable lock, do the following:

1 Insert the clip **1** into the cable-lock slot **4**.

2 Guide the cables you want to lock into the grooves of the cable lock.

3 Press the clip **2** into the cable-lock slot **3** until it snaps into position.

Replacing hardware

Before replacing hardware

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

Read these notes before replacing hardware:

- Some of the hardware components explained in this manual are optional.

- 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 component until the defective component has been removed and you are ready to install the new component. Static electricity, although harmless to you, can seriously damage computer components.

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

- Limit your movement. Movement can cause static electricity to build up around you.

- Always handle parts and other computer components carefully. Handle PCI/PCI-Express cards, memory modules, system boards, and microprocessors by the edges. Never touch any exposed circuitry.

- Prevent others from touching the parts 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 that the part came in 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 replaceable parts

Customer Replaceable Units (CRUs)

CRUs are computer parts that a user can upgrade or replace. There are two types of CRUs: self-service and optional-service.

Self-service CRUs   You can install self-service CRUs easily. These CRUs might be standalone, latched, or secured by up to two screws.

Examples of self-service CRUs include the keyboard, mouse, any USB device, and the power cord. Other self-service CRUs might include memory modules, adapter cards, hard disk drives, and optical drives.

> **Note**   Users 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.

Field Replaceable Units (FRUs)

FRUs are computer parts that a trained technician can upgrade or replace.

For detailed FRU information, such as the FRU part numbers and supported computer models, go to: http://www.lenovo.com/serviceparts-lookup

CRUs and FRUs locations

Refer to the following illustrations to check the locations of CRUs and FRUs within the computer.

> 📝 **Note**   Some of the following parts are optional on some models.

Self-service CRU
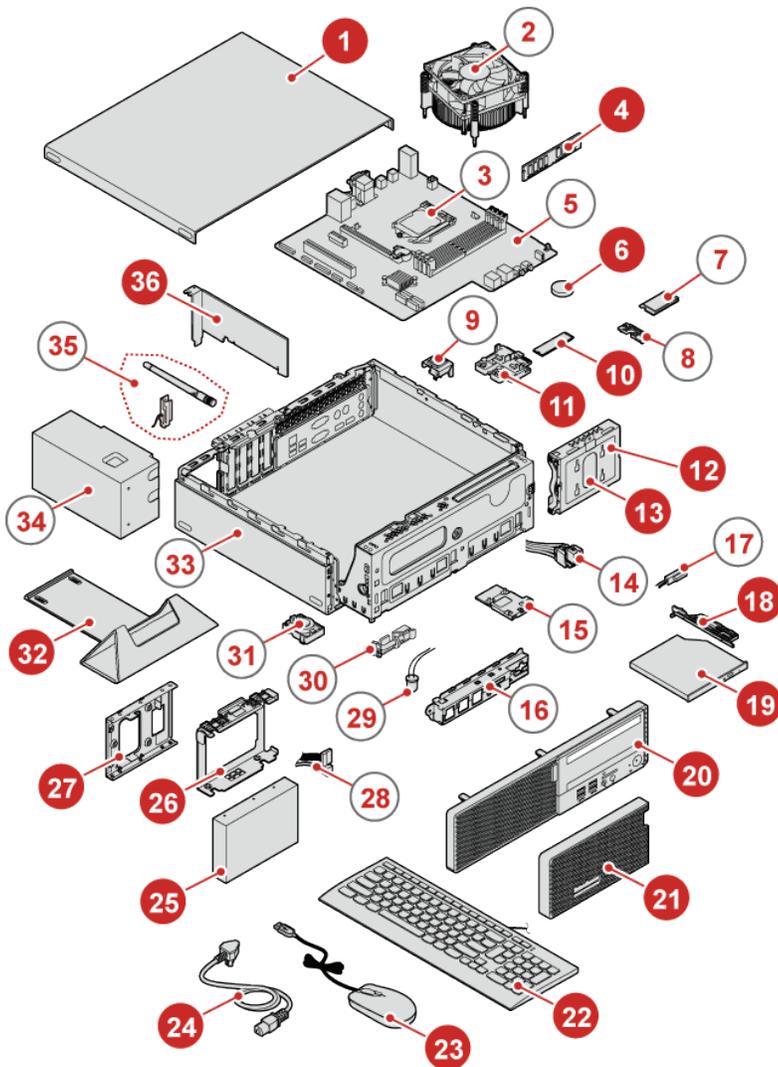
1	Computer cover `p. 27`
4	Memory module `p. 34`
6	Coin-cell battery `p. 38`
10	M.2 storage drive `p. 39`
11	M.2 storage drive bracket `p. 41`
12	Secondary storage drive bracket `p. 32`
13	Secondary storage drive (a 2.5-inch storage drive) `p. 32`
18	Optical drive bracket `p. 29`
19	Optical drive `p. 29`
20	Front bezel `p. 28`
21	Dust shield `p. 26`
22	Keyboard `p. 21`
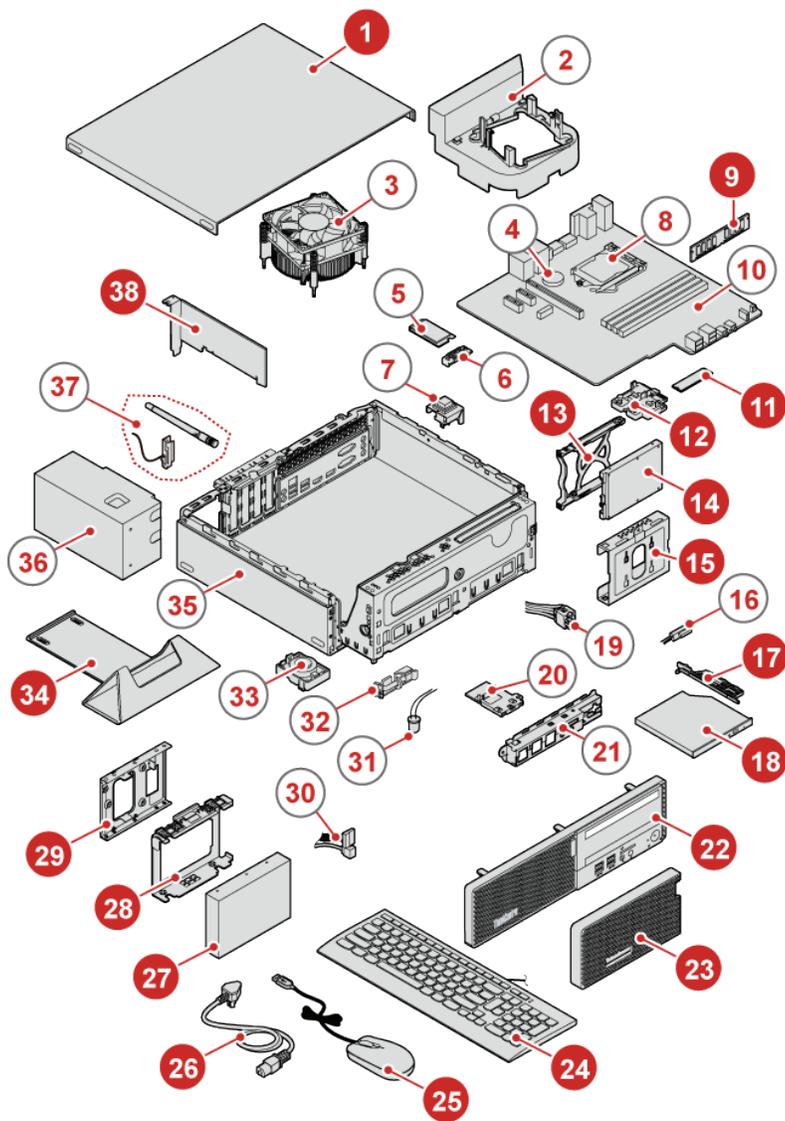
23	Mouse *p. 22*
24	Power cord *p. 24*
25	Primary storage drive (a 2.5-inch or 3.5-inch storage drive) *p. 31*
26	Primary storage drive bracket *p. 31*
27	Storage converter *p. 31*
32	Vertical stand *p. 25*
36	PCI Express card *p. 35*
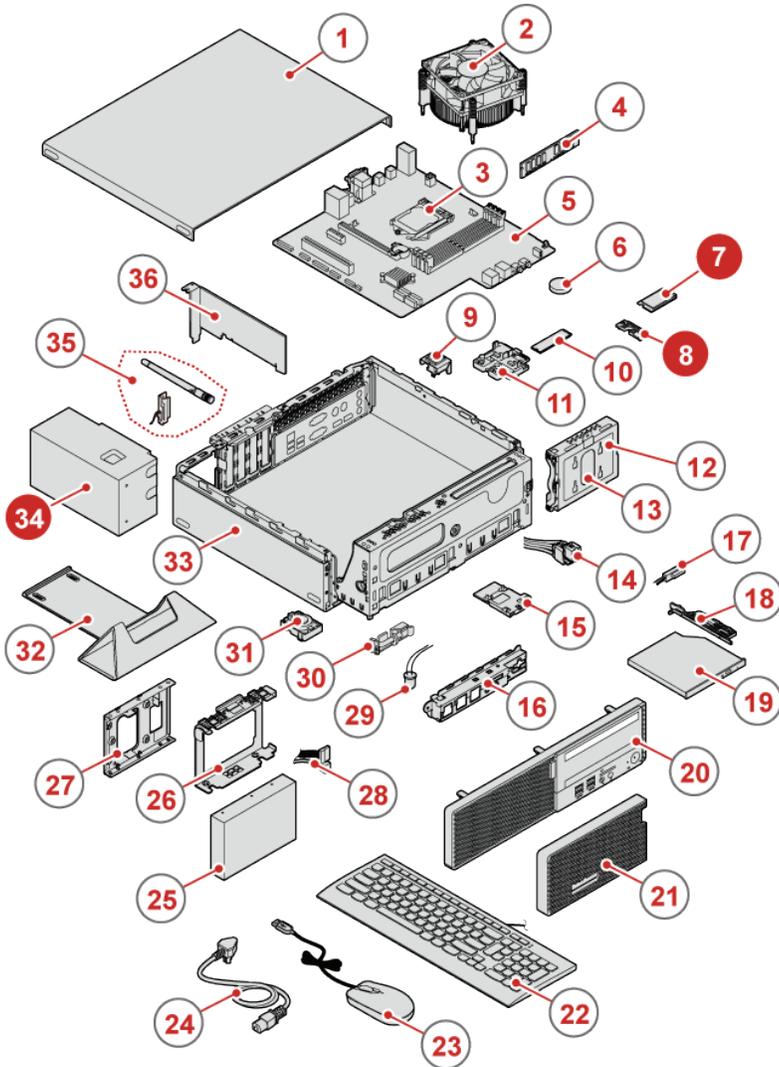
7	Wi-Fi card `p. 36`
8	Wi-Fi card shield `p. 36`
34	Power supply assembly `p. 42`
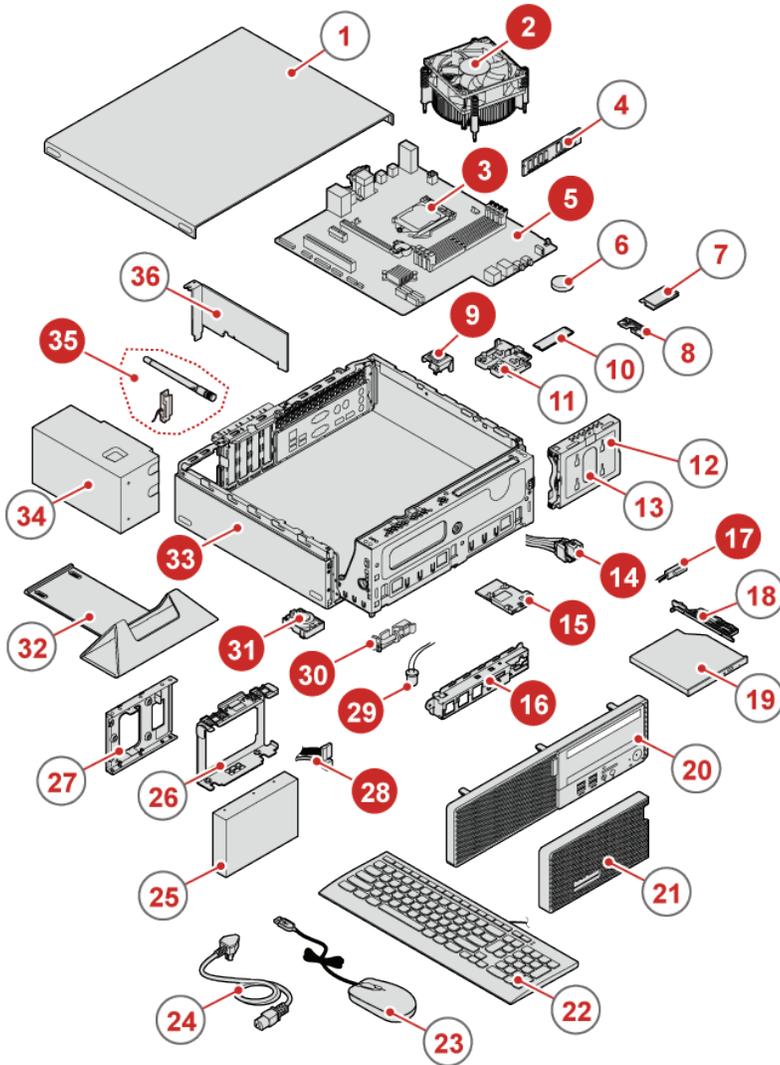
2	**Heat sink and fan assembly** *p. 54*
3	**Microprocessor** *p. 55*
5	**System board** *p. 58*
9	**Cover presence switch (Intrusion switch)** *p. 57*
14	**Power button** *p. 52*
15	**Card reader** *p. 52*
16	**Front I/O bracket** *p. 52*
17	**Optical drive cable** *p. 29*
28	**Storage drive cable** *p. 31*
29	**Illuminated red dot** *p. 49*
30	**Thermal sensor** *p. 50*
31	**Internal speaker** *p. 47*
33	**Chassis**
35	**Wi-Fi antennas** *p. 46*

Replacing CRUs

Before replacing CRUs

To check the locations of CRUs, see `CRUs and FRUs locations.`

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

Before replacing a CRU, click the illustration of the part to check the brief procedures.

Keyboard >	Mouse >	Power cord >
External options >	Computer cover >	Front bezel >
Optical drive >	Drive bay assembly >	Storage drive >
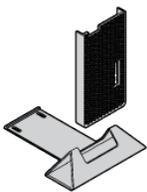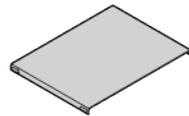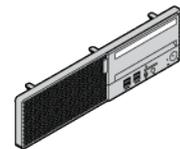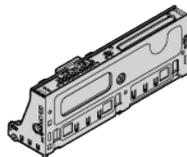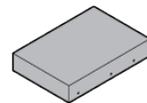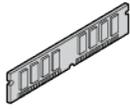
Memory module >	PCI Express card >	Wi-Fi card >
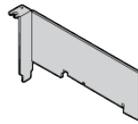
Coin-cell battery >	M.2 storage drive >	M.2 storage drive bracket >
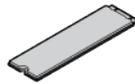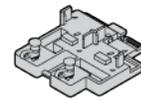
Power supply assembly >
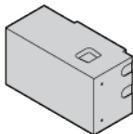
📝 **Note** To replace a component that is not in the list above, contact a Lenovo service technician. The support phone numbers are available at: http://www.lenovo.com/support/phone

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.
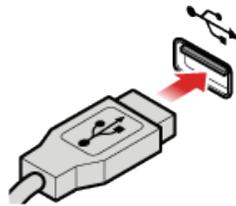
Replacing the wireless keyboard

1   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.
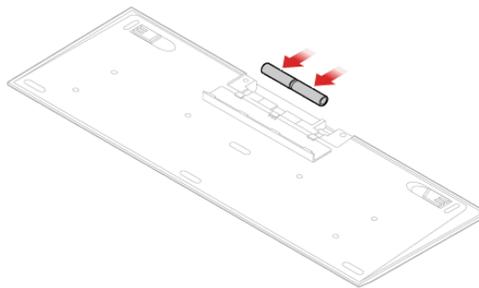
4   Remove the USB dongle from the keyboard compartment or from the wireless mouse compartment and connect it to an available USB connector on the computer.

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.
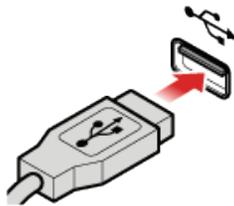
Replacing the wireless mouse

1   Disconnect the USB dongle from your computer. Then, remove your old wireless mouse.

2   Remove the new wireless mouse from the package.

3 Replace the wireless mouse.

1
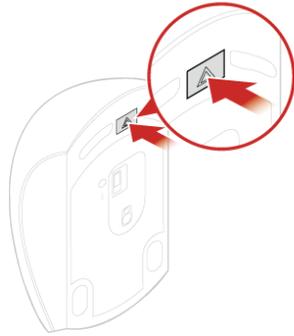
2
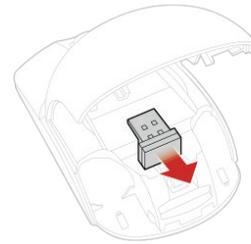
3
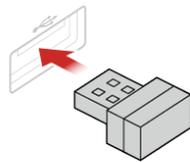
4
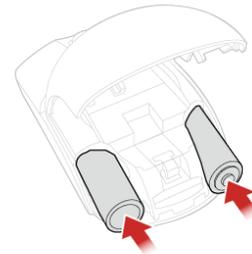
5

6

| 📝 Note	• The green LED indicates that the mouse is ready for use.
	• The flashing amber LED indicates a low battery level.
	• Push 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. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.

2   Replace the power cord.
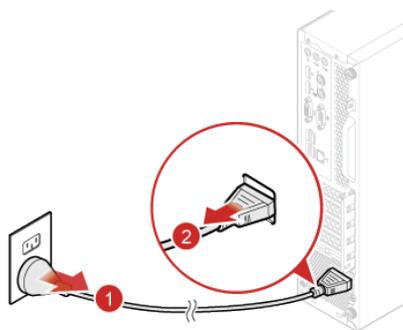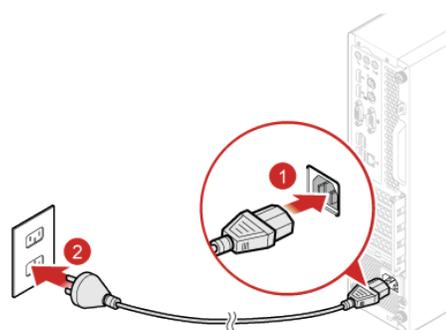
Replacing external options

> ⚠️ **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 from the computer.

3   Refer to the following to replace external options.

  • Vertical stand
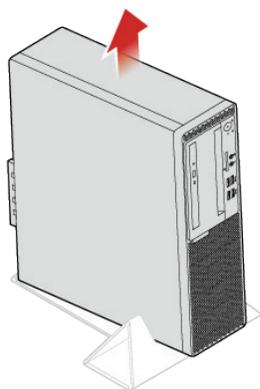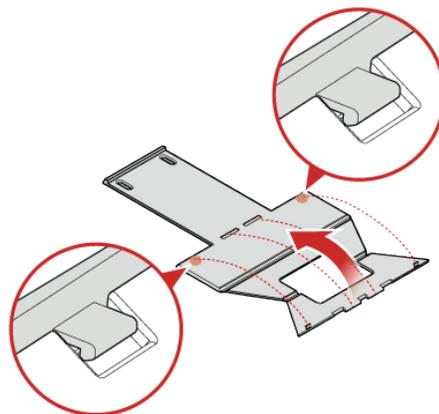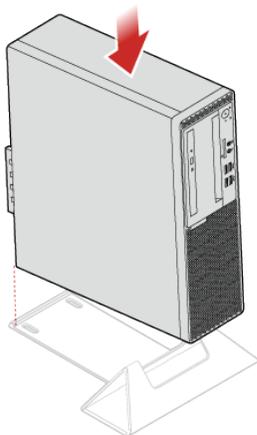
- Dust shield
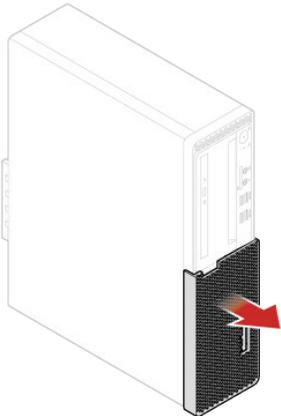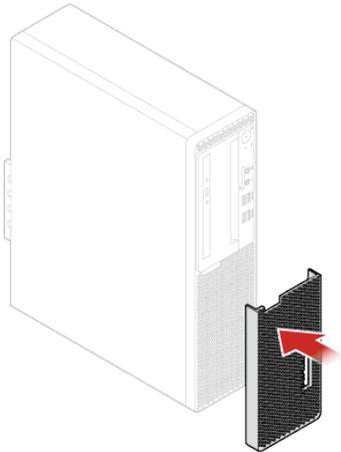
4   Reconnect all cables.

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.
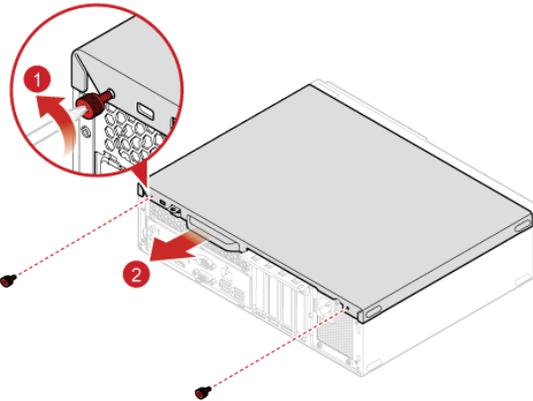
5   Complete the replacement. For details, see `Completing the parts replacement.`

Replacing the front bezel
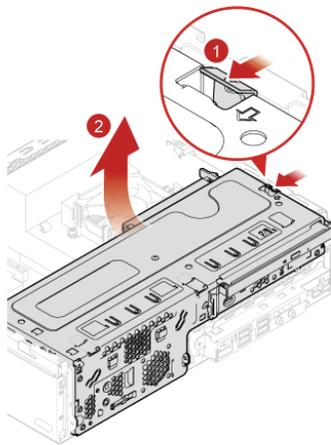
> ⚠️ **Attention** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*

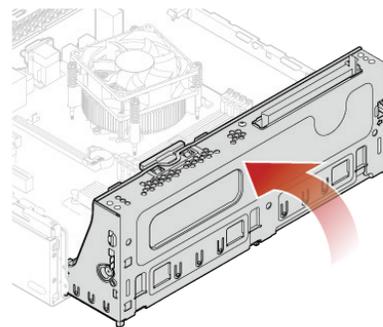1   Remove the computer cover. For details, see *Removing the computer cover.*

2   Replace the front bezel.
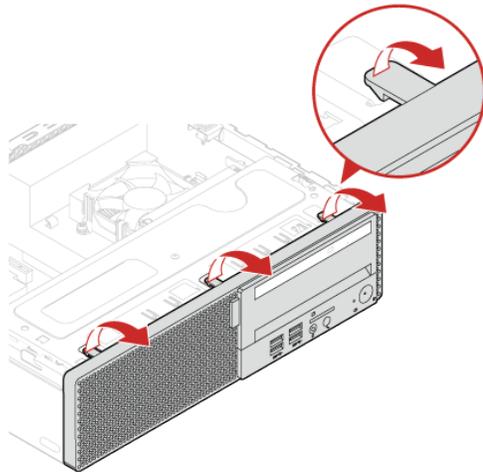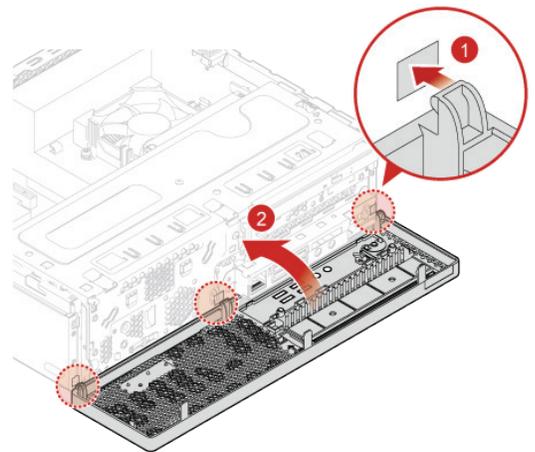
Replacing the optical drive

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

1 Remove the computer cover. For details, see `Removing the computer cover.`

2 Remove the front bezel. For details, see `Replacing the front bezel.`

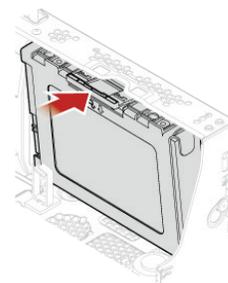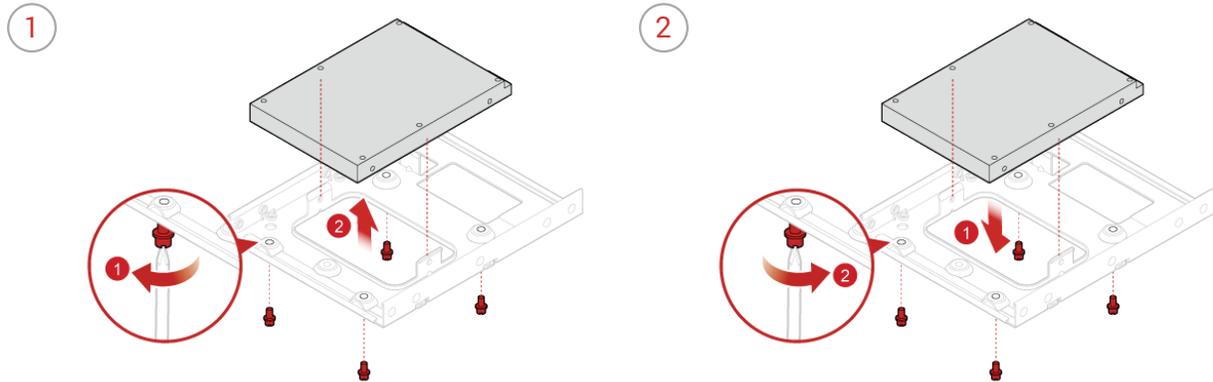*3* Disconnect the signal cable and the power cable from the optical drive.

4 Replace the optical drive.
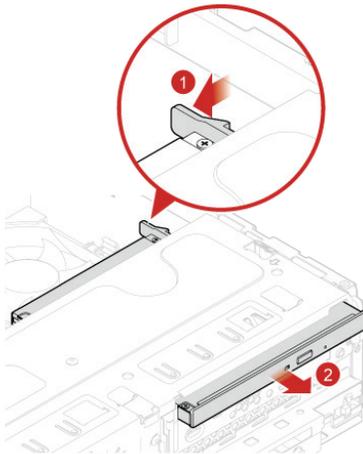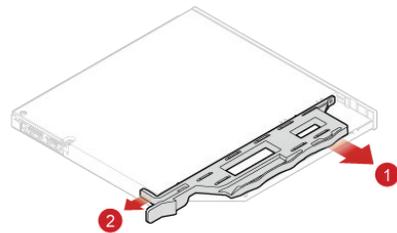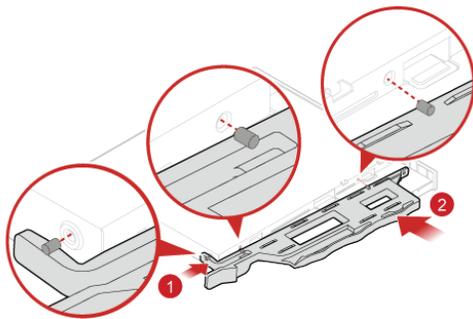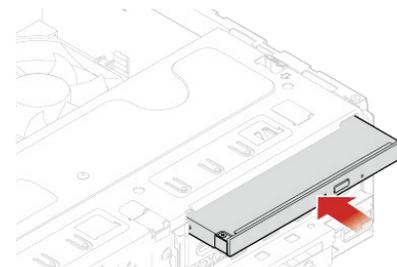
5 Connect the signal cable and the power cable to the new optical drive.

6 Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`

Pivoting the drive bay assembly upward and downward

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

1   Remove the computer cover. For details, see *Removing the computer cover.*

2   Remove the front bezel. For details, see *Replacing the front bezel.*

3   Pivot the drive bay assembly upward and downward.

4   Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

Replacing the storage drive

> ⚠️ **Attention**   Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*
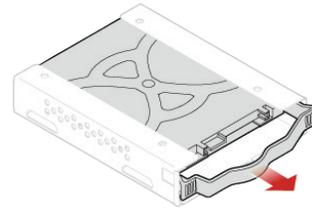
Replacing the 3.5-inch primary storage drive

1 Remove the computer cover. For details, see *Removing the computer cover.*

2 Remove the front bezel. For details, see *Replacing the front bezel.*

3 Pivot the drive bay assembly upward. For details, see *Pivoting the drive bay assembly upward and downward.*

4 Disconnect the signal cable and the power cable from the 3.5-inch primary storage drive.

5 Replace the 3.5-inch primary storage drive.
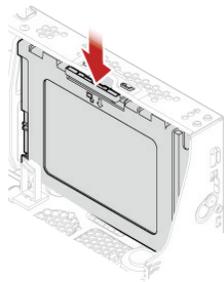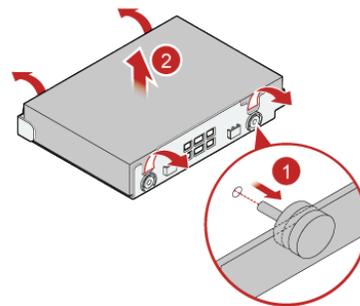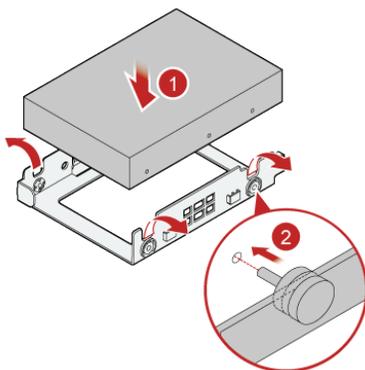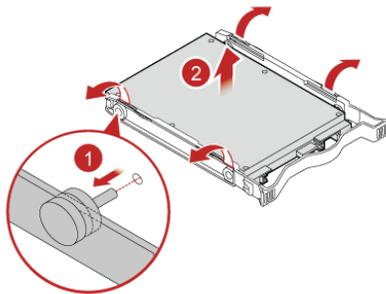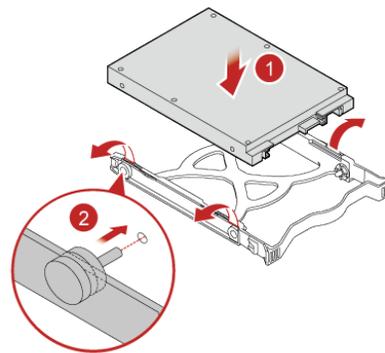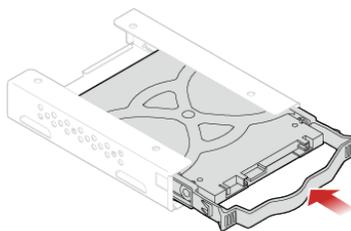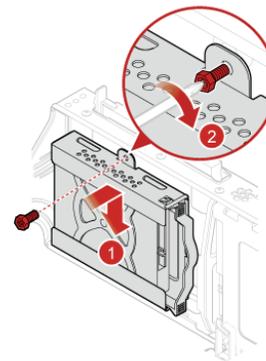

6 Connect the signal cable and the power cable to the new 3.5-inch primary storage drive.

7 Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

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. Reinstall the storage converter with the 2.5-inch primary storage drive. See *Replacing the 3.5-inch primary storage drive.*

Replacing the 2.5-inch secondary storage drive

1. Remove the computer cover. For details, see *Removing the computer cover.*

2. Remove the front bezel. For details, see *Replacing the front bezel.*

3. Pivot the drive bay assembly upward. For details, see *Pivoting the drive bay assembly upward and downward.*

4. Disconnect the signal cable and the power cable from the 2.5-inch secondary storage drive.

5 Replace the 2.5-inch secondary storage drive.
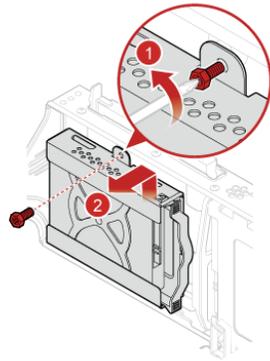
6 Connect the signal cable and the power cable to the new 2.5-inch secondary storage drive.

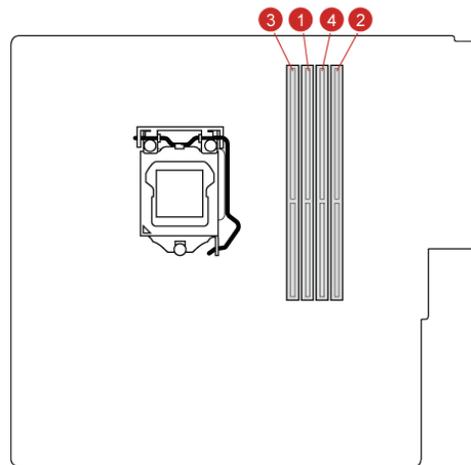7 Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*
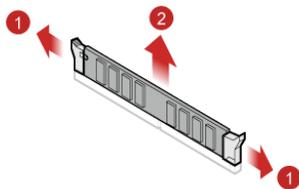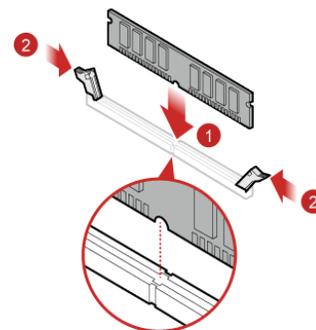
Replacing a memory module

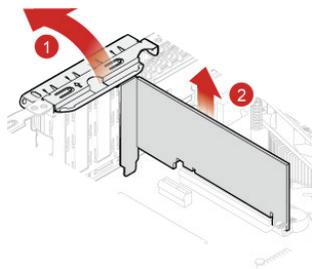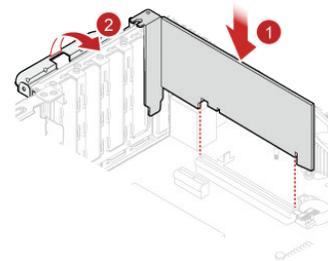> ⚠️ **Attention**   Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*

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

1   Remove the computer cover. For details, see `Removing the computer cover.`

2   Remove the front bezel. For details, see `Replacing the front bezel.`

3   Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4   Replace a memory module.

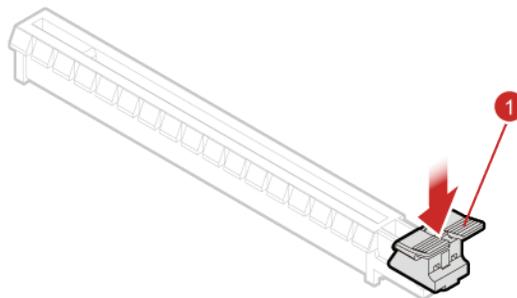5   Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`
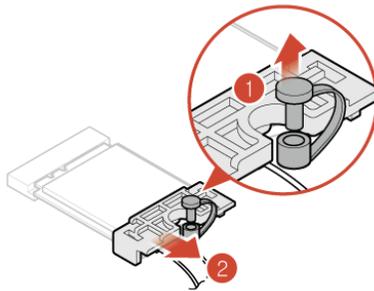
Replacing a PCI Express card

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

1   Remove the computer cover. For details, see `Removing the computer cover.`

2   Remove the front bezel. For details, see `Replacing the front bezel.`

3   Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4   Replace a PCI Express card.

> **📝 Note** If the card is held in place by a retaining latch, press the latch **1** as shown to disengage the latch. Then, gently remove the card from the slot.
>
>

5   Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`

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. For details, see Removing the computer cover.

2   Remove the front bezel. For details, see Replacing the front bezel.

3   Pivot the drive bay assembly upward. For details, see Pivoting the drive bay assembly upward and downward.

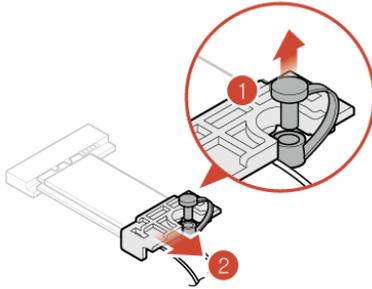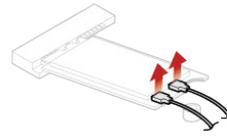*4*   Depending on your computer model, refer to one of the following to replace the Wi-Fi card.
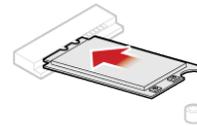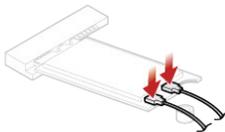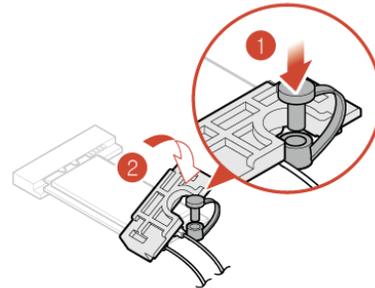
- Type 1
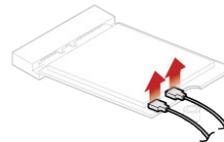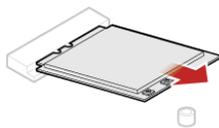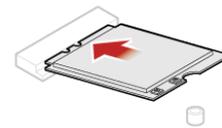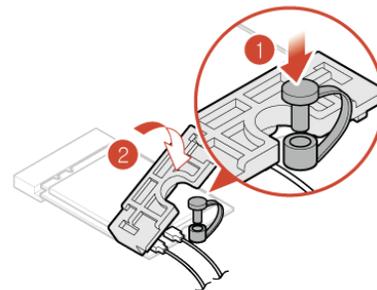
- Type 2

5 Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

Replacing the coin-cell battery

> ⊗ **Attention**   Do not open your computer or attempt any repairs before reading the *Important Product Information 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.
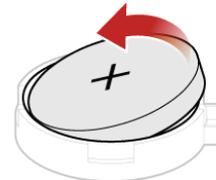
To replace the coin-cell battery,

1   Remove the computer cover. For details, see Removing the computer cover.

2   Remove the front bezel. For details, see Replacing the front bezel.

3   Pivot the drive bay assembly upward. For details, see Pivoting the drive bay assembly upward and downward.

4   Replace the coin-cell battery.
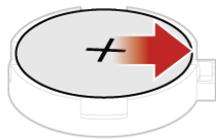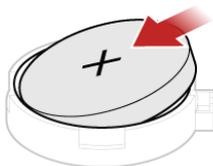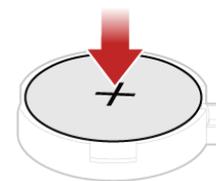
①

②

③

④

5   Reinstall the removed parts. To complete the replacement, see Completing the parts replacement.

To dispose of the coin-cell battery, refer to "Lithium coin-cell battery notice" in the *Safety and Warranty Guide.*
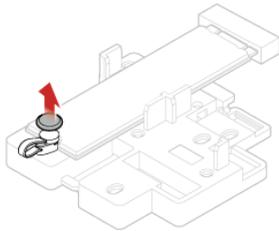
Replacing the M.2 storage drive

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

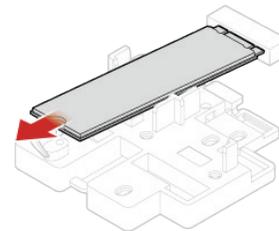*1*   Remove the computer cover. For details, see `Removing the computer cover.`

2   Remove the front bezel. For details, see `Replacing the front bezel.`

3   Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4   Depending on your computer model, refer to one of the following to replace the M.2 storage drive.
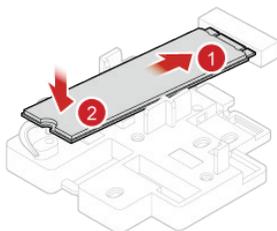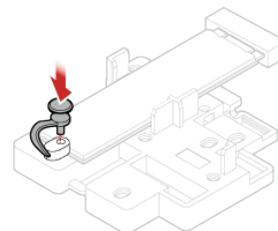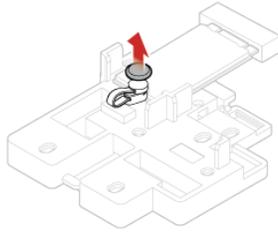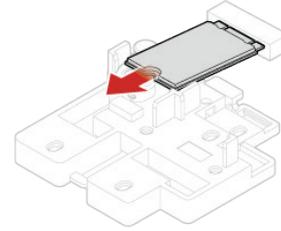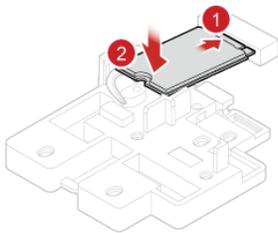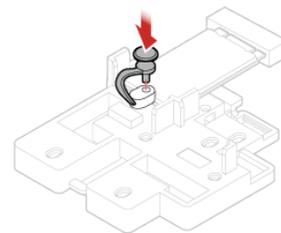
- Type 1

- Type 2

1

2

3

4

5   Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*
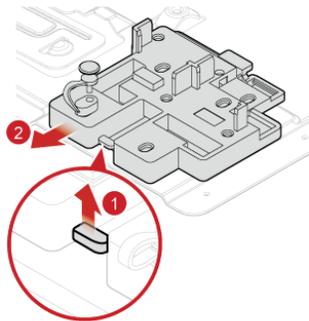
Replacing the M.2 storage drive bracket

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

1　Remove the computer cover. For details, see `Removing the computer cover.`

2　Remove the front bezel. For details, see `Replacing the front bezel.`

3　Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4　Remove the M.2 storage drive. For details, see `Replacing the M.2 storage drive.`

5　Replace the M.2 storage drive bracket.

6　Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`
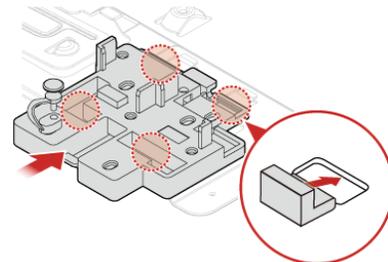
Replacing the power supply assembly

> ⓘ **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**   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. For details, see Removing the computer cover.

2   Remove the front bezel. For details, see Replacing the front bezel.

3   Pivot the drive bay assembly upward. For details, see Pivoting the drive bay assembly upward and downward.

4   Disconnect the power supply assembly cables from the system board.

5   Replace the power supply assembly.
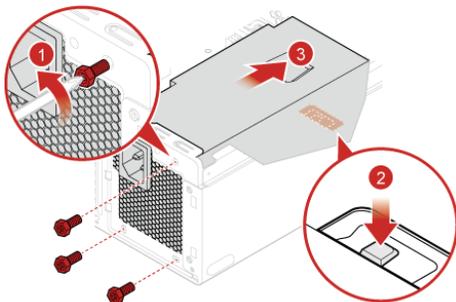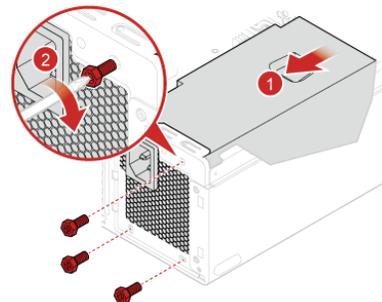
6   Connect the new power supply assembly cables to the system board.

7   Reinstall the removed parts. To complete the replacement, see Completing the parts replacement.

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.
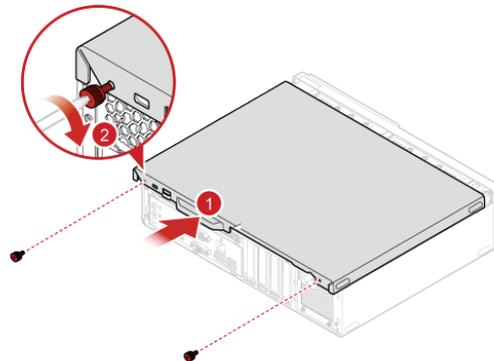
4. Place the computer in an upright position.

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.

Replacing FRUs

Before replacing FRUs

Before replacing any Field Replaceable Units (FRUs), 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 by referring to the website http://www.lenovo.com/serviceparts-lookup.

- **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.**

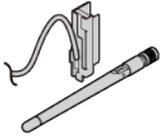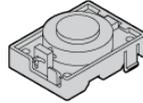To check the locations of FRUs, see CRUs and FRUs locations.

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

Before replacing an FRU, click the illustration of the part to check the brief procedures.
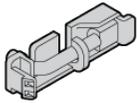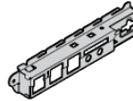
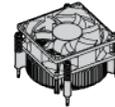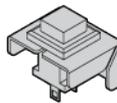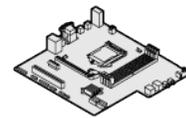| Wi-Fi antennas ❯	Internal speaker ❯	Illuminated red dot ❯
Thermal sensor ❯	Front I/O options ❯	Heat sink and fan assembly ❯
Microprocessor ❯	Cover presence switch ❯	System board ❯
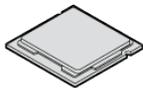
📝 **Note**   To replace a component that is not in the list above, contact a Lenovo service technician. The support phone numbers are available at: http://www.lenovo.com/support/phone
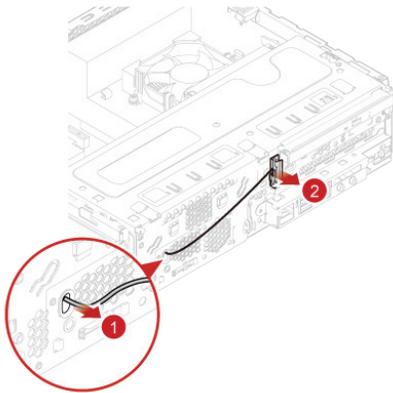
Replacing the Wi-Fi antennas

> ⚠ **Attention** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*
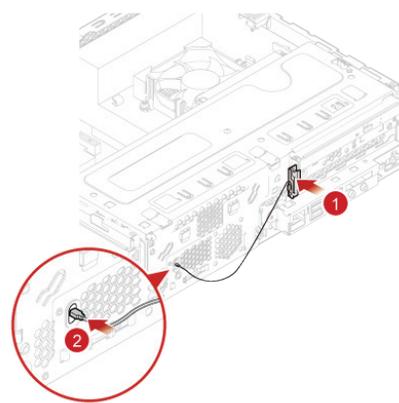
1   Remove the computer cover. For details, see `Removing the computer cover.`

2   Remove the front bezel. For details, see `Replacing the front bezel.`

3   Disconnect the Wi-Fi antenna cables from the Wi-Fi card.

4   Refer to the following to replace the Wi-Fi antennas.
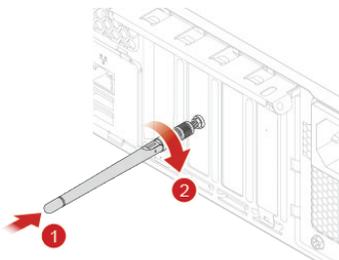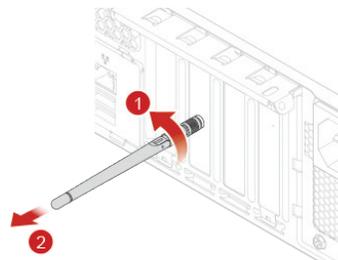
    • Front Wi-Fi antenna

    • Rear Wi-Fi antenna

5   Connect the new Wi-Fi antenna cables to the Wi-Fi card.

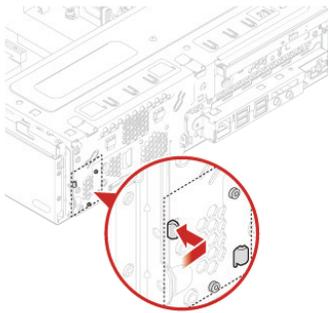*6*   Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`

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. For details, see Removing the computer cover.

2 Remove the front bezel. For details, see Replacing the front bezel.

3 Disconnect the internal speaker cable from the system board.

4 Replace the internal speaker.

5   Connect the new internal speaker cable to the system board.

6   Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

Replacing the illuminated red dot
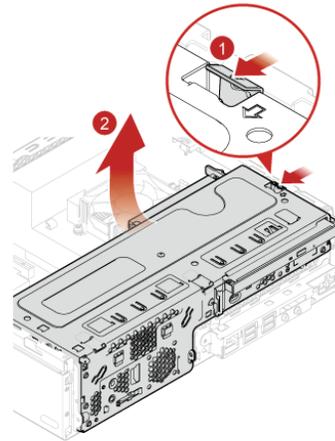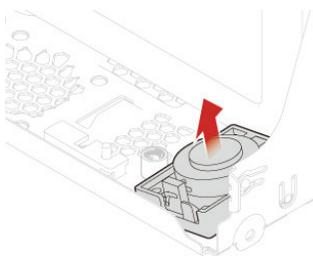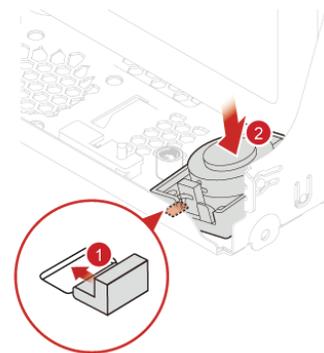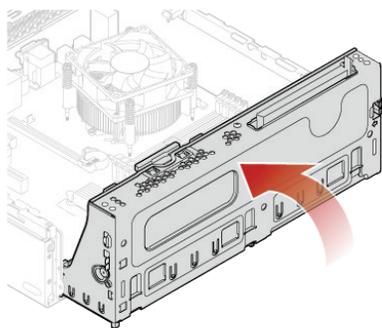
> ⚠️ **Attention** Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*

1 Remove the computer cover. For details, see `Removing the computer cover.`

2 Remove the front bezel. For details, see `Replacing the front bezel.`

3 Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4 Disconnect the illuminated red dot cable from the system board.

5 Replace the illuminated red dot.

①

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6 Connect the new illuminated red dot cable to the system board.

7 Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`
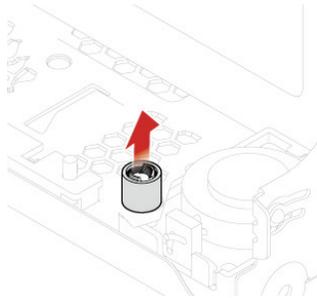
Replacing the thermal sensor

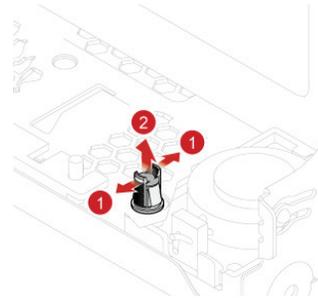> ⚠️ **Attention**   Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*

1 Remove the computer cover. For details, see *Removing the computer cover.*

2 Remove the front bezel. For details, see *Replacing the front bezel.*

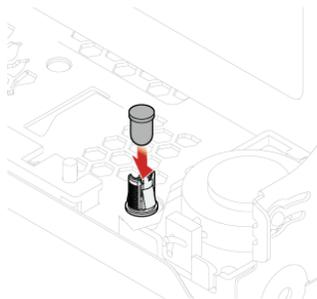3 Disconnect the thermal sensor cable from the system board.

4 Replace the thermal sensor.
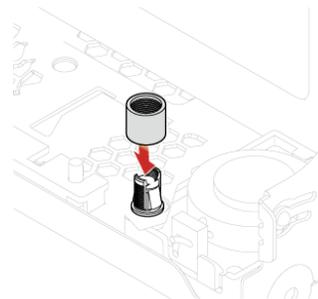
5

5 Connect the new thermal sensor cable to the system board.

6 Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

Replacing front I/O options

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

1. Remove the computer cover. For details, see `Removing the computer cover.`

2. Remove the front bezel. For details, see `Replacing the front bezel.`

3. Disconnect the power button board cable, card reader cable, and the USB 3.1 Type-C connector cable from the system board.

4. Replace front I/O options.
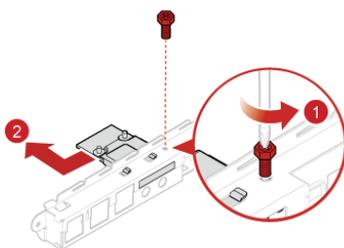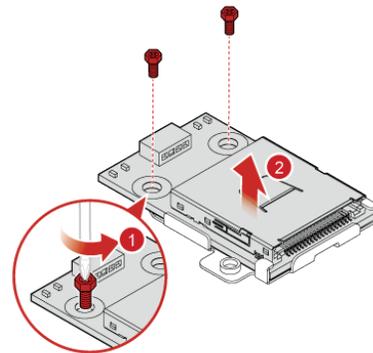
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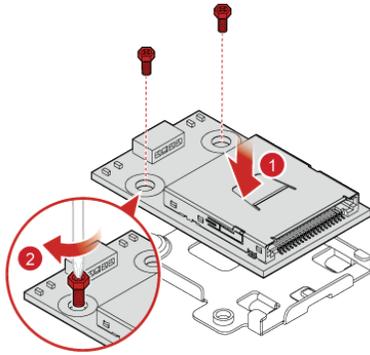
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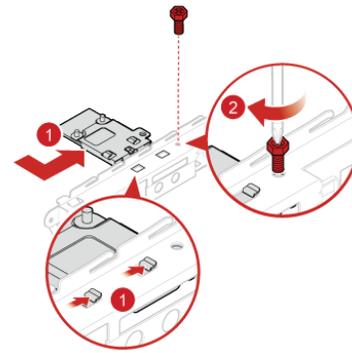
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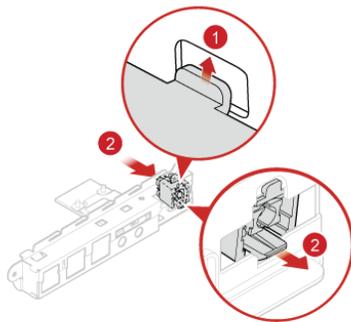
8
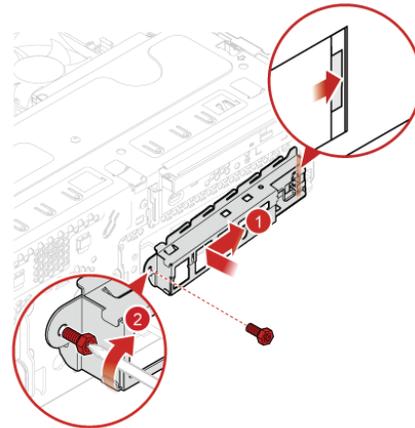
5   Connect the new power button board cable, card reader cable, and the USB 3.1 Type-C connector
     cable to the system board.

6   Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

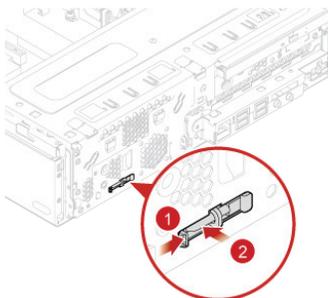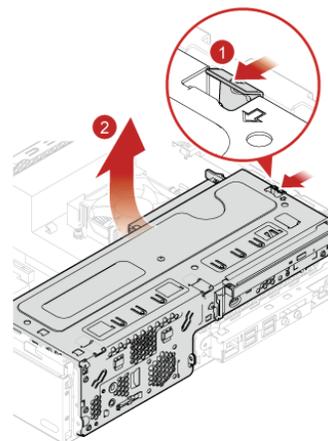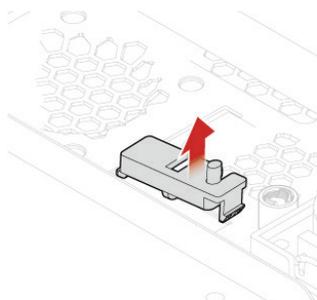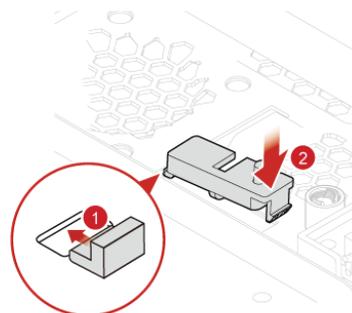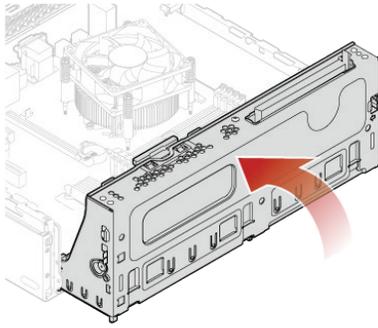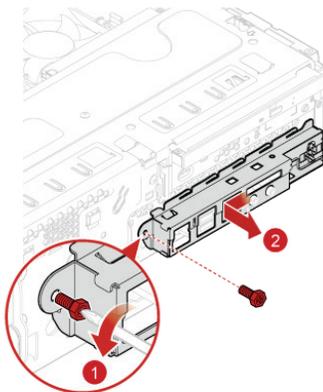# Replacing the heat sink and fan assembly

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

1   Remove the computer cover. For details, see `Removing the computer cover.`

2   Remove the front bezel. For details, see `Replacing the front bezel.`

3   Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4   Replace the heat sink and fan assembly.

5   Reinstall the removed parts. To complete the replacement, see `Completing the parts replacement.`

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. For details, see `Removing the computer cover.`

2 Remove the front bezel. For details, see `Replacing the front bezel.`

3 Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

4 Remove the heat sink and fan assembly. For details, see `Replacing the heat sink and fan assembly.`

5 Disconnect all cables connected to the system board.

6 Replace the microprocessor.

> 📝 **Note**
> - 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.

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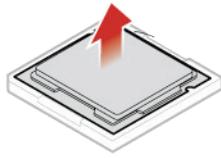
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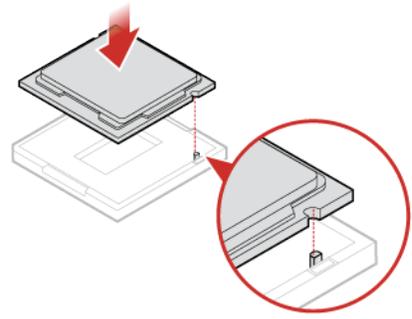
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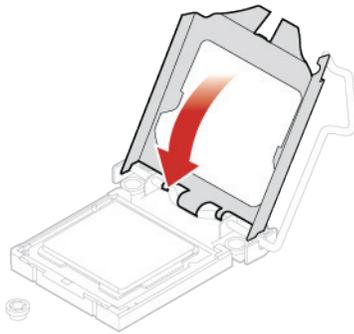
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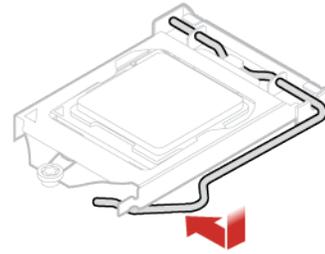
7   Reconnect all cables that were disconnected from the system board.

8   Reinstall the removed parts. To complete the replacement, see Completing the parts replacement.
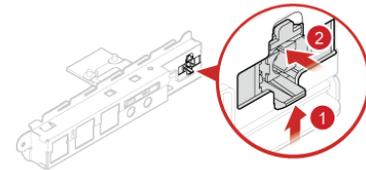
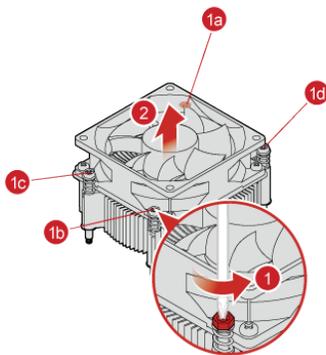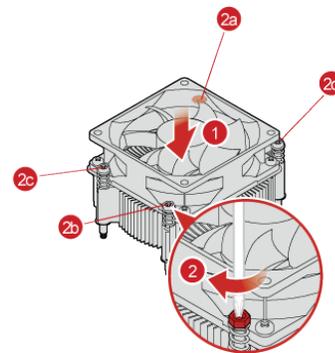# Replacing the cover presence switch

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

1. Remove the computer cover. For details, see `Removing the computer cover.`

2. Disconnect the cover presence switch cable from the system board.

3. Replace the cover presence switch.
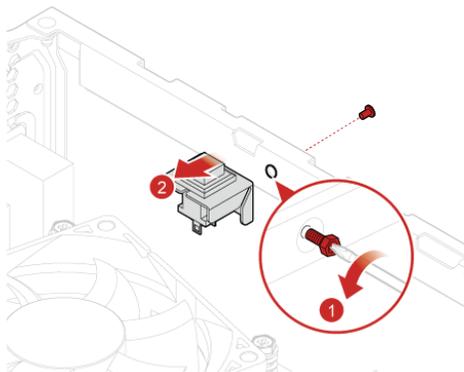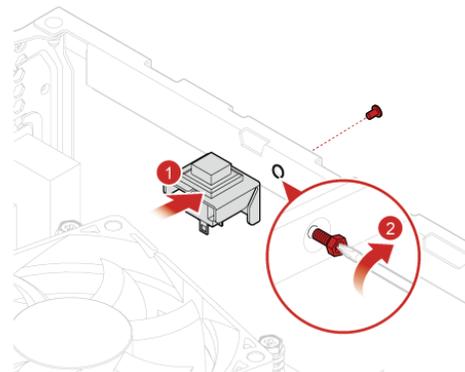
4. Connect the new cover presence switch cable to the system board.

5. Complete the replacement. For details, see `Completing the parts replacement.`

Replacing the system board

> ⚠️ **Attention** — Do not open your computer or attempt any repairs before reading the *Important Product Information Guide.*
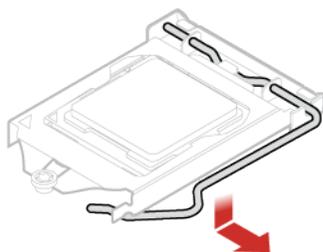
1   Remove the computer cover. For details, see `Removing the computer cover.`

2   Remove the front bezel. For details, see `Replacing the front bezel.`

3   Remove the front I/O bracket. For details, see `Replacing front I/O options.`

4   Pivot the drive bay assembly upward. For details, see `Pivoting the drive bay assembly upward and downward.`

5   Remove all memory modules. For details, see `Replacing a memory module.`

6   Remove the heat sink and fan assembly. For details, see `Replacing the heat sink and fan assembly.`

7   Remove the microprocessor. For details, see `Replacing the microprocessor.`

8   Remove all PCI Express cards. For details, see `Replacing a PCI Express card.`

9   Remove the Wi-Fi card. For details, see `Replacing the Wi-Fi card.`

10   Remove the M.2 storage drive. For details, see `Replacing the M.2 storage drive.`

11   Record the cable routing and cable connections, and then disconnect all cables from the system board. See `System board.`

12 Replace the system board.

> **Note**
> - The numbers in the following figure show the locations of the screws instead of the removing and reinstalling order of the screws.
> - Handle the system board carefully by its edges.
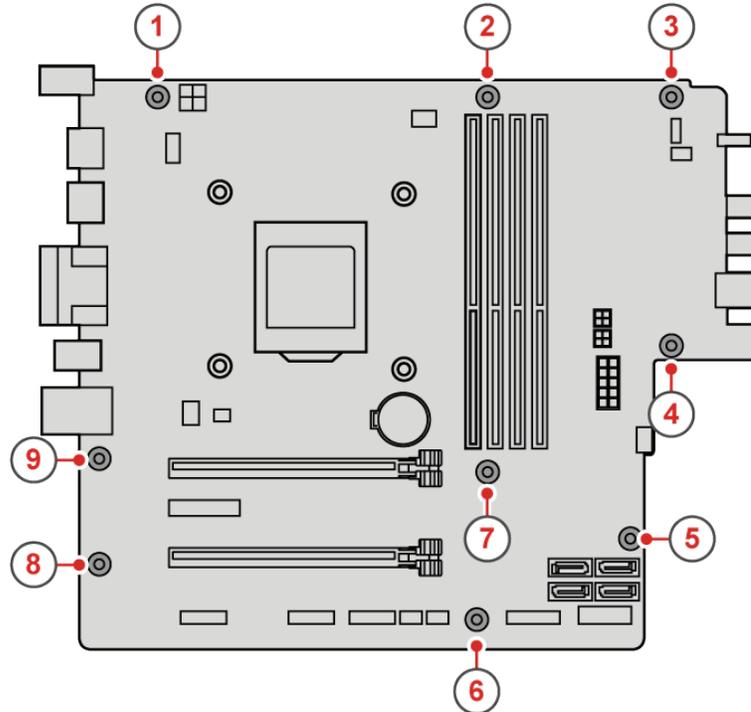
13 Route all the cables that you disconnected from the failing system board, and then reconnect the cables to the new system board. See System board.

14 Reinstall the removed parts. To complete the replacement, see *Completing the parts replacement.*

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