Lenovo V330-20ICB AIO User Guide and Hardware Maintenance Manual

Energy Star Machine Types: 10UK and 10UL

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 49.

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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.

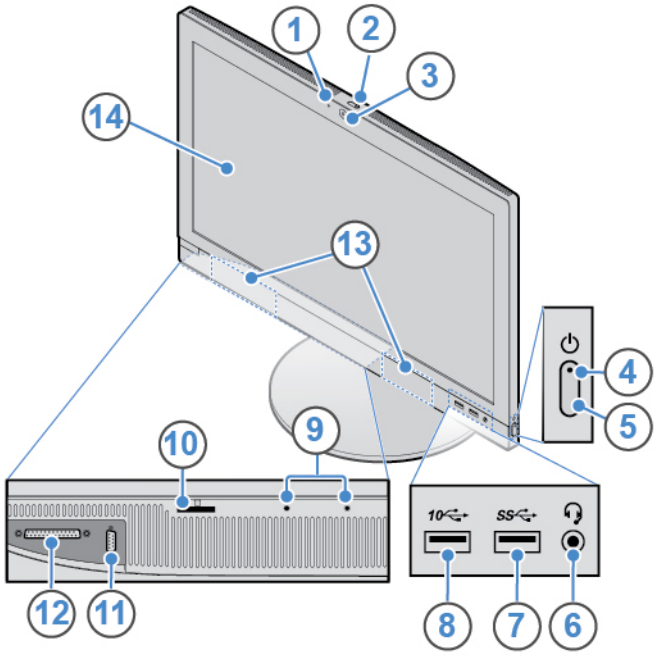

Figure 1. Front view

1 Internal camera activity indicator (optional)	2 Internal camera shield control slider (optional)
3 Internal camera (optional)	4 Power indicator
5 Power button	6 Headset connector (also known as combo audio jack)
7 USB 3.1 Gen 1 connector	8 USB 3.1 Gen 2 connector
9 Internal microphones (2)	10 Card reader slot (optional)
11 Serial connector (optional)	12 Parallel connector (optional)
13 Internal speakers (2)	14 Screen

1 Internal camera activity indicator

When the indicator is on, the camera is in use.

2 Internal camera shield control slider

Used to cover the camera lens.

3 Internal camera

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Used to take pictures or hold a video conference.

4 Power indicator

This indicator is on when the computer is on.

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 Headset connector

Used to connect a headset or headphones to your computer.

7 USB 3.1 Gen 1 connector

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

8 USB 3.1 Gen 2 connector

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

9 Internal microphones

Used to record sounds or use speech-recognition software without using a microphone.

10 Card reader slot

Used to read data from a supported memory card.

11 Serial connector

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

12 Parallel connector

Used to connect a parallel printer, a scanner, or other devices that use a parallel connector.

13 Internal speakers

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

14 Screen

Depending on the computer model, your computer screen might support the multi-touch feature. This feature enables you to use one or two fingers to interact with the computer.

Rear view

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

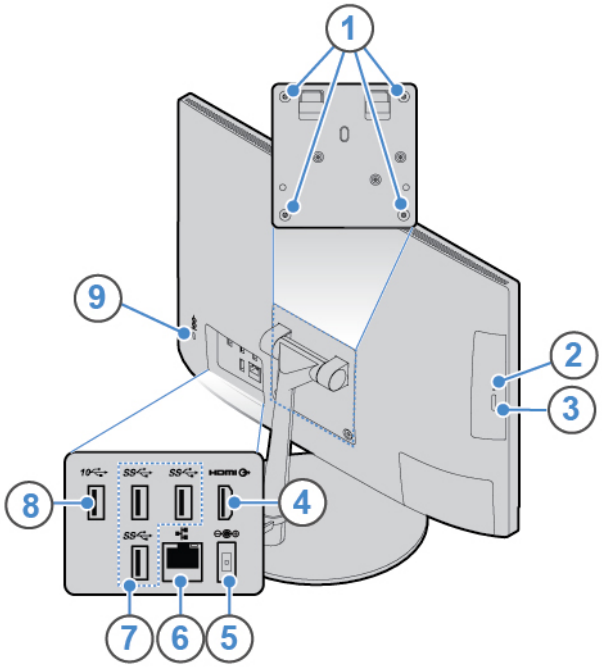

Figure 2. Rear view

1 VESA threaded holes (screws: M4 x 8 mm x 4 pcs)	2 Optical drive activity indicator (optional)
3 Optical drive eject/close button (optional)	4 HDMI™ 1.4 out connector
5 Power adapter connector	6 Ethernet connector
7 USB 3.1 Gen 1 connectors (3)	8 USB 3.1 Gen 2 connector
9 Security-lock slot	

1 VESA threaded holes

Used to connect the matched VESA mount with the matched screws when you install the computer on a wall.

2 Optical drive activity indicator

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

3 Optical drive eject/close button

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

4 HDMI 1.4 out connector

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

5 Power adapter connector

Used to connect the power adapter to the computer for power supply.

6 Ethernet connector

Used to connect an Ethernet cable for network access.

7 USB 3.1 Gen 1 connector

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

8 USB 3.1 Gen 2 connector

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

9 Security-lock slot

Used to secure a Kensington-style cable lock.

System board

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

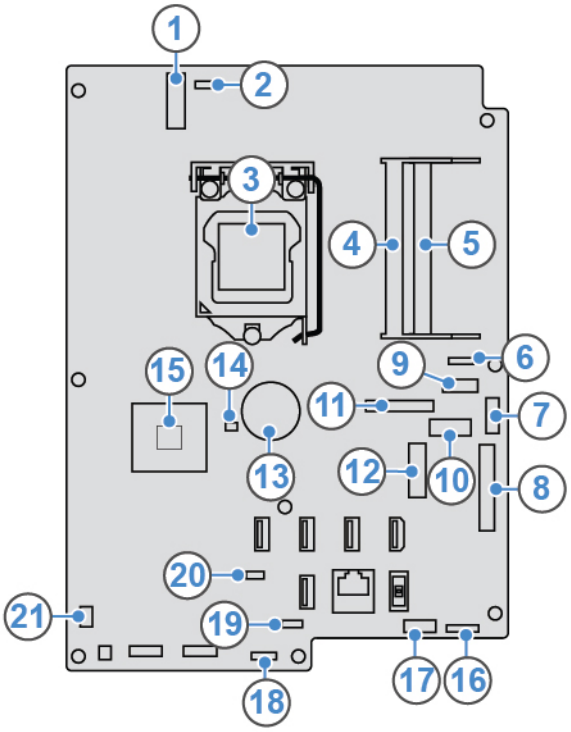

Figure 3. System board

1 M.2 Wi-Fi card slot	2 Internal camera connector
3 Microprocessor socket	4 Memory slot (DIMM1)

5 Memory slot (DIMM2)	6 System fan connector
7 SATA connector (connecting to the optical drive)	8 LCD LVDS connector
9 Serial (COM1) connector	10 SATA connector (connecting to the storage drive)
11 Parallel connector	12 M.2 solid-state drive slot
13 Coin-cell battery	14 CLR1 button
15 PCH	16 LCD power connector
17 SATA power connector (connecting to the storage drive)	18 Internal speaker connector
19 Internal microphone board connector	20 Card reader connector
21 Power button board 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 computer as shown.

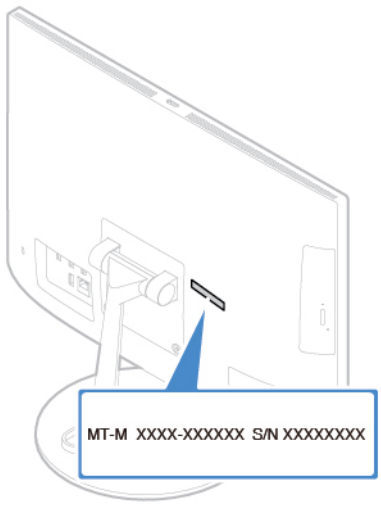

Figure 4. Machine type and model label

Adjusting the computer stand

Note: The computer stand is optional.

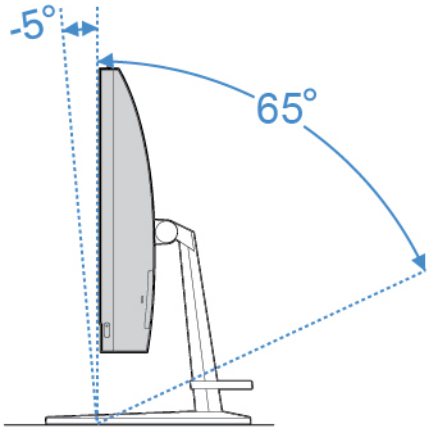

Figure 5. Tilting the screen forward and back

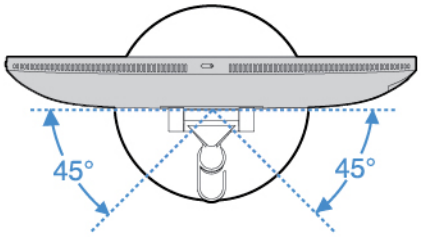

Figure 6. Turning the screen to the left and right

Chapter 2. Specifications

Power supply

120-watt automatic voltage-sensing power supply

Storage drives

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

Video features

HDMI 1.4 out connector

Audio features

- Headset connector
- Internal microphones
- Internal speaker

Input/Output (I/O) features

- Card reader slot (optional)
- Ethernet connector
- HDMI 1.4 out connector
- Headset connector
- USB connectors

Expansion

- Card reader
- Memory slots
- M.2 solid-state drive slot
- Optical drive (optional)
- Storage drive bay

Network features

- Ethernet LAN
- Wireless LAN (optional)
- Bluetooth (optional)

Physical dimensions (without the computer stand)

- Width: 477.2 mm (18.8 inches)
- Height: 313.7 mm (12.4 inches)
- Depth: 59.5 mm (2.3 inches)

Weight (with the computer stand) (without the package)

Maximum configuration as shipped: 6.4 kg (14.1 lb)

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Chapter 3. Computer locks

Attaching a Kensington-style cable lock

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

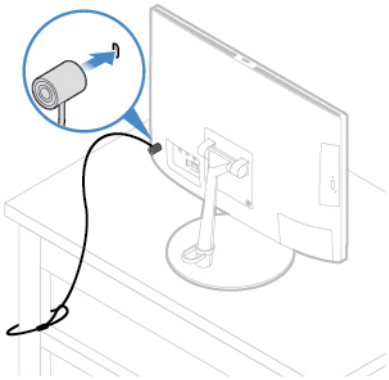

Figure 7. Attaching a Kensington-style cable lock

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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.

Notes when handling static-sensitive devices

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

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

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

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

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

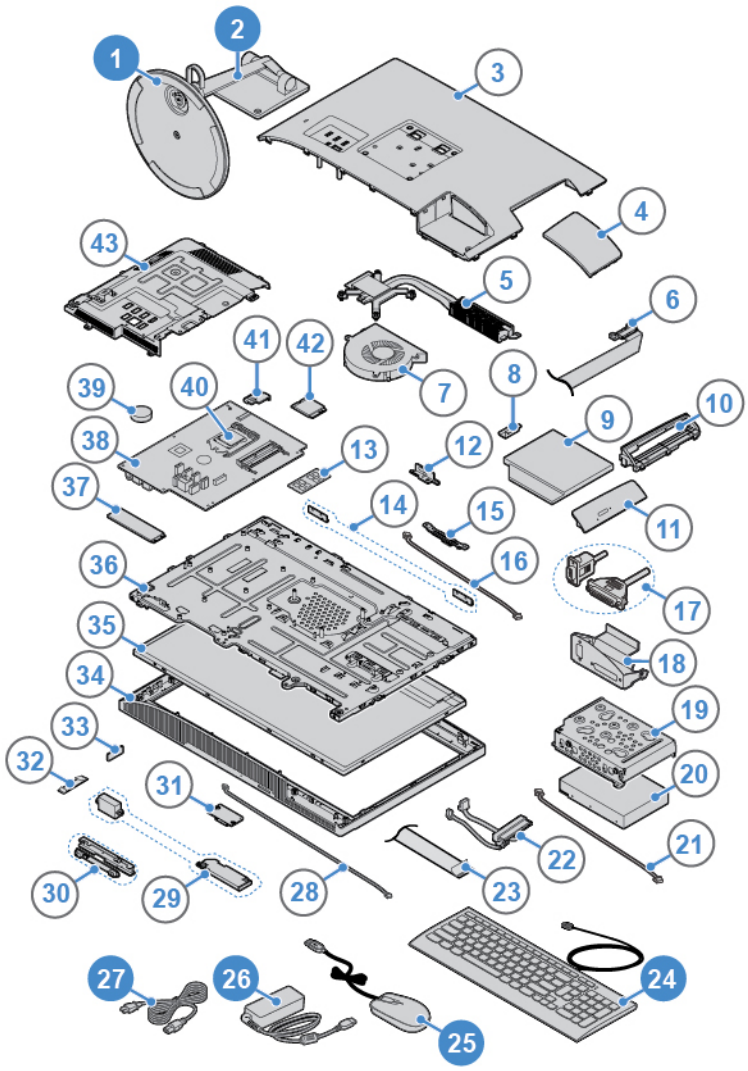


Figure 8. Locating FRUs (including CRUs)

Self-service CRUs	**Non-CRUs**
1 Computer stand base	3 Computer cover
2 Computer stand bar	4 Serial connector and parallel connector module cover
24 Keyboard	5 Heat sink
25 Mouse	6 Optical drive cable
26 Power adapter	7 System fan
27 Power cord	8 Optical drive holder
	9 Optical drive
	10 Optical drive bracket
	11 Optical drive bezel
	12 Internal camera shield control slider
	13 Memory module

Self-service CRUs	Non-CRUs
	14 Wi-Fi antennas (2)
	15 Internal camera
	16 Internal camera cable
	17 Serial connector and parallel connector module
	18 Serial connector and parallel connector module bracket
	19 Storage drive bracket
	20 Storage drive
	21 Backlight cable
	22 Storage drive cables (2)
	23 LVDS cable
	28 Card reader cable
	29 Internal speakers (2)
	30 Internal microphone board
	31 Card reader
	32 Power button board cable
	33 Power button board
	34 LCD panel frame
	35 LCD panel
	36 Chassis
	37 M.2 solid-state drive
	38 System board
	39 Coin-cell battery
	40 Microprocessor
	41 Wi-Fi card shield
	42 Wi-Fi card
	43 System board shield

Replacing the computer stand

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. Place a soft, clean towel or cloth on the desk or surface. Hold the sides of your computer and gently lay it down so that the screen is against the surface and the computer cover is facing up.
4. Replace the computer stand.

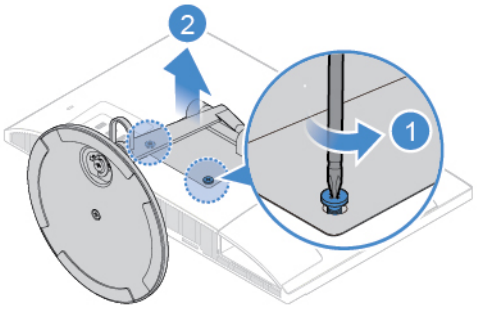


Figure 9. Removing the computer stand

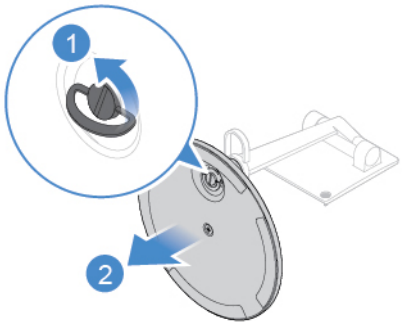


Figure 10. Removing the stand base from the stand bar

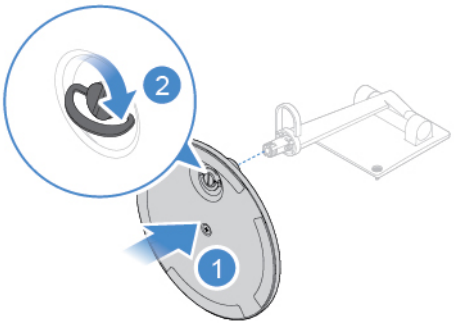


Figure 11. Installing the stand base to the stand bar

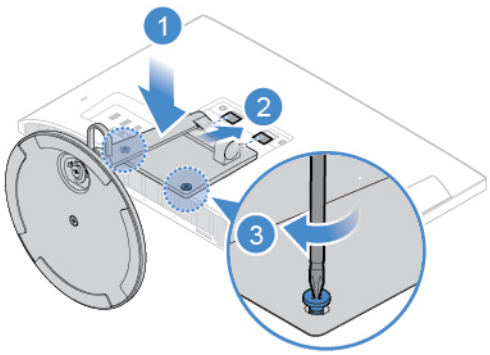


Figure 12. Installing the computer stand

5. Place the computer in an upright position.
6. Reconnect the external cables and power cords to the corresponding connectors on the computer.

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. Place a soft, clean towel or cloth on the desk or surface. Hold the sides of your computer and gently lay it down so that the screen is against the surface and the computer cover is facing up.
5. Remove the computer stand. See “Replacing the computer stand” on page 14.
6. Remove the computer cover.

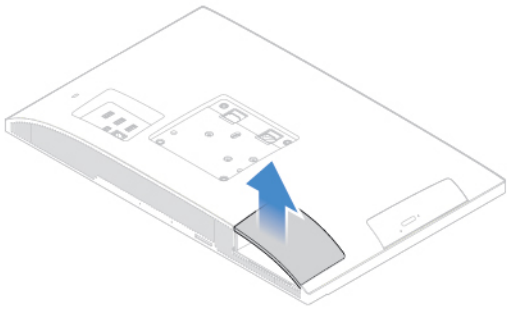


Figure 13. Removing the cover of the serial connector and parallel connector module

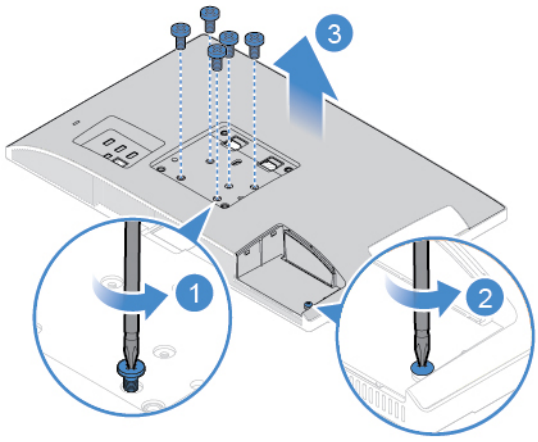


Figure 14. Removing the computer cover

7. Complete the replacement. See “Completing the parts replacement” on page 47.

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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Replace the optical drive.

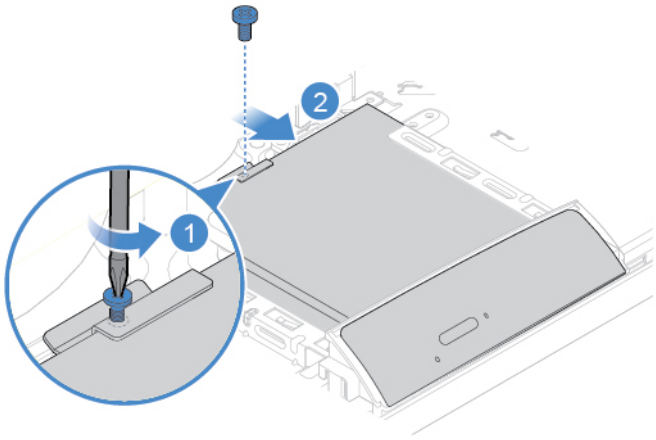


Figure 15. Removing the optical drive

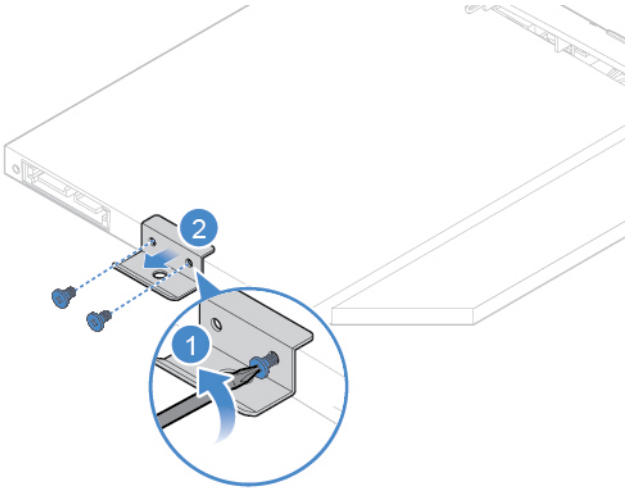


Figure 16. Removing the optical drive holder

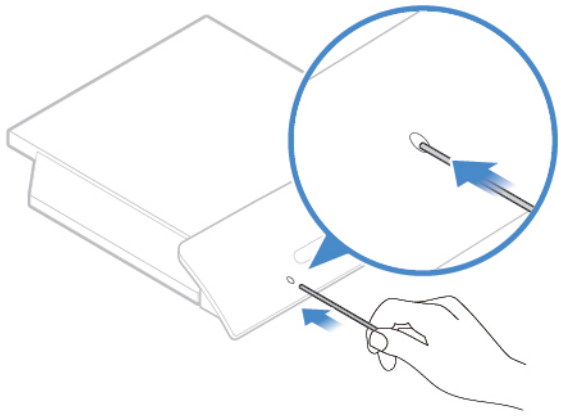


Figure 17. Inserting a straightened paper clip into the emergency-eject hole until the tray slides out

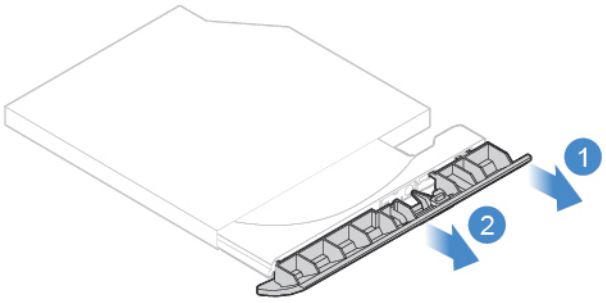


Figure 18. Removing the optical drive bezel

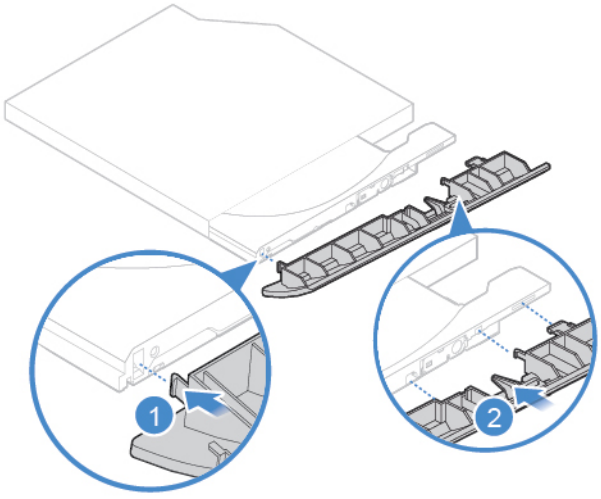


Figure 19. Installing the optical drive bezel

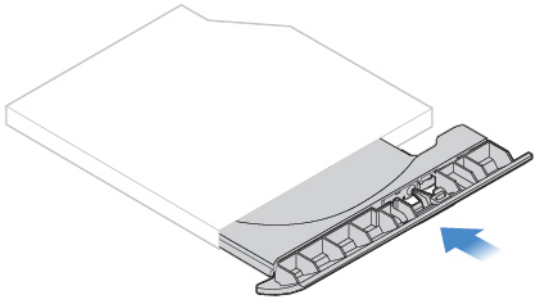


Figure 20. Closing the tray

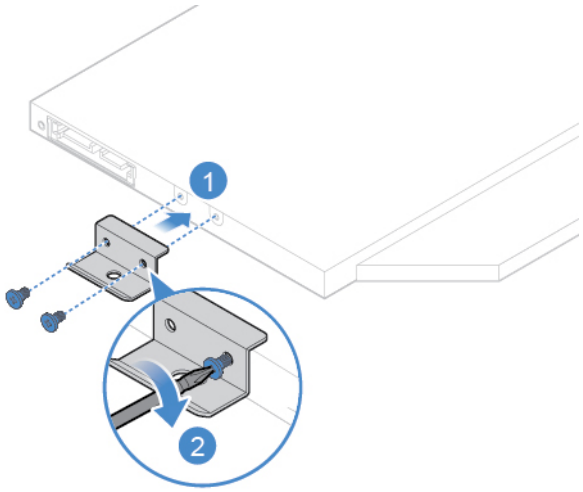


Figure 21. Installing the optical drive holder

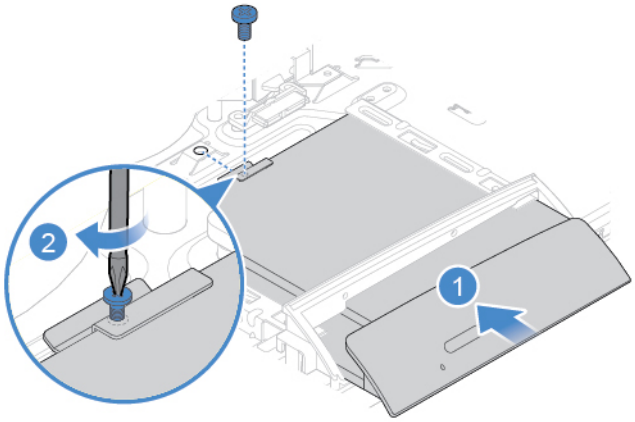


Figure 22. Installing the optical drive

4. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the system board shield

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Replace the system board shield.

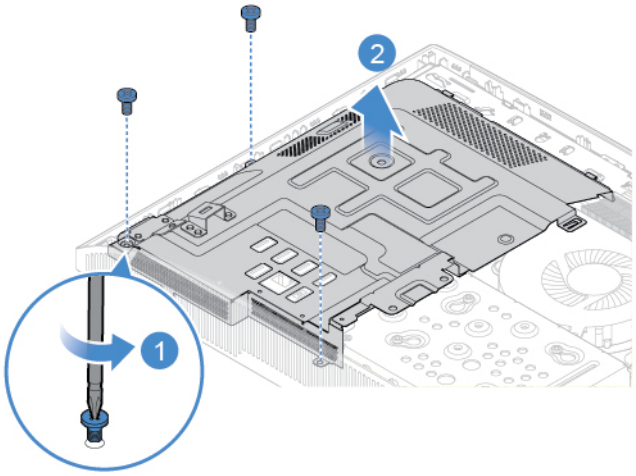


Figure 23. Removing the system board shield

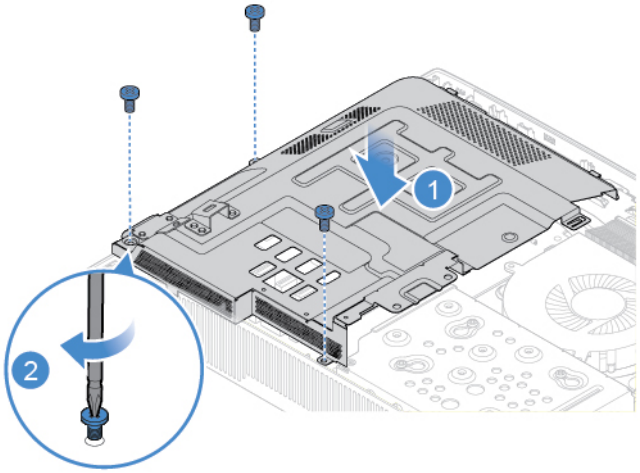


Figure 24. Installing the system board shield

4. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the storage drive

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Replace the storage drive.

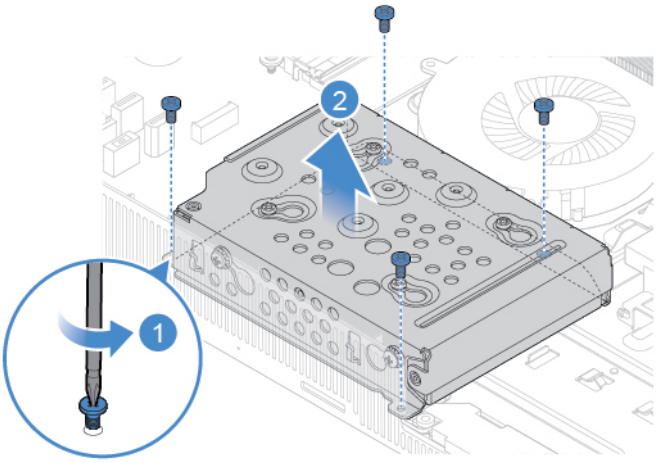


Figure 25. Removing the storage drive and the bracket

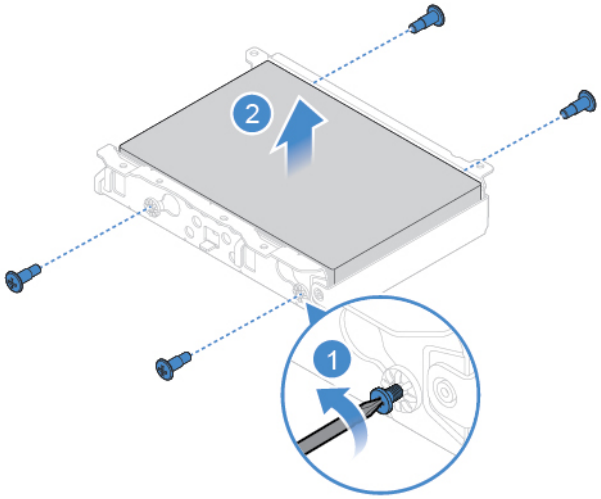


Figure 26. Removing the storage drive from the bracket

Note: Before you install the new storage drive, ensure that you disconnect the signal cable and the power cable from the failing storage drive and connect them to the new one.

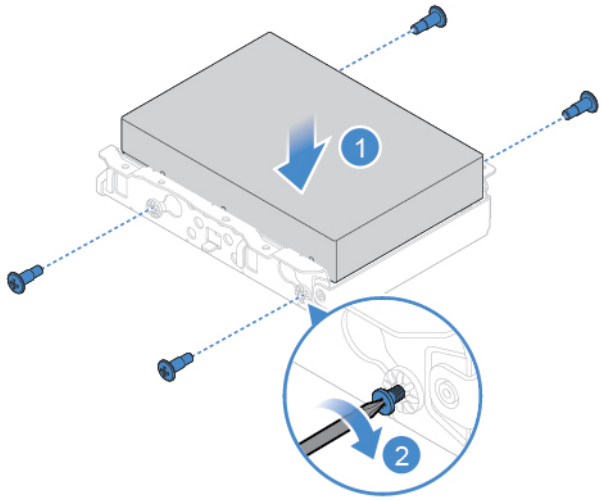


Figure 27. Installing the storage drive into the bracket

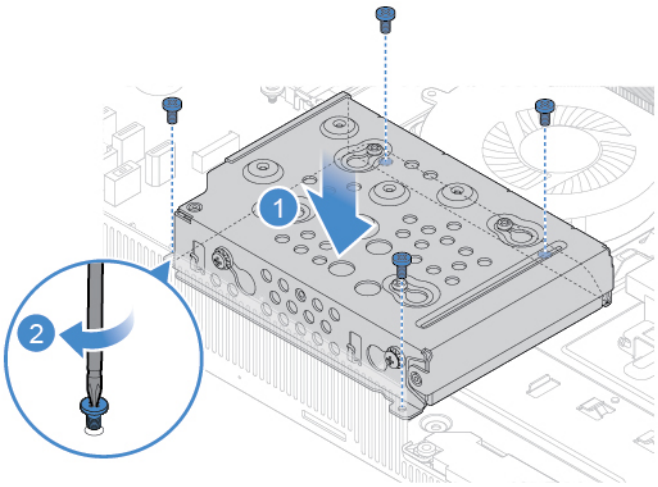


Figure 28. Installing the storage drive and the bracket

4. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the internal microphone board

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the storage drive. See “Replacing the storage drive” on page 20.
4. Replace the internal microphone board.

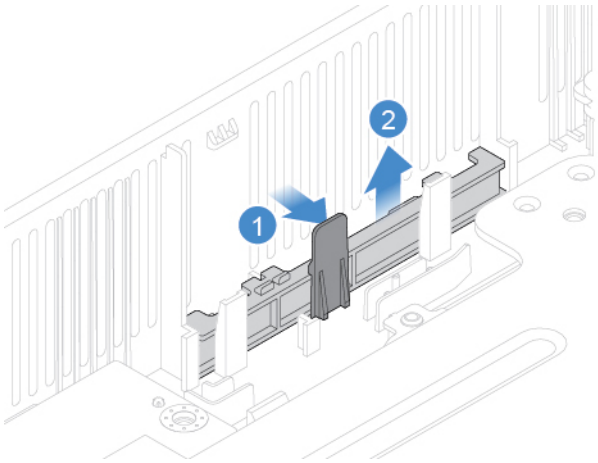


Figure 29. Removing the internal microphone board

Note: Before you install the new internal microphone board, ensure that you disconnect the cable from the failing internal microphone board and connect it to the new one.

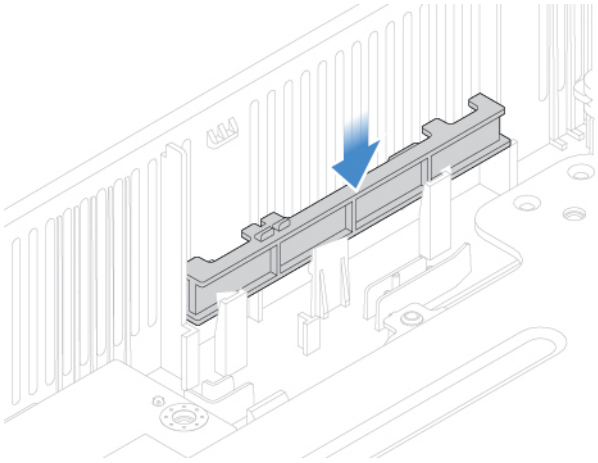


Figure 30. Installing the internal microphone board

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the card reader

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the storage drive. See “Replacing the storage drive” on page 20.
4. Replace the card reader.

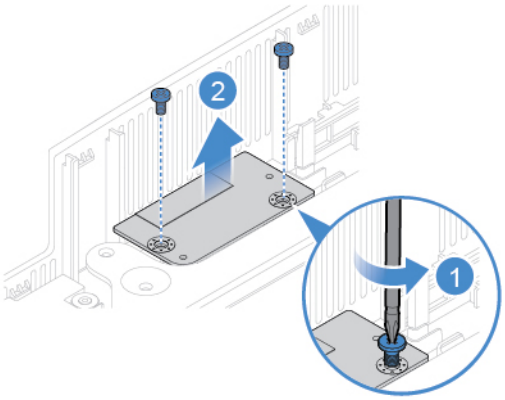


Figure 31. Removing the card reader

Note: Before you install the new card reader, ensure that you disconnect the cable from the failing card reader and connect it to the new one.

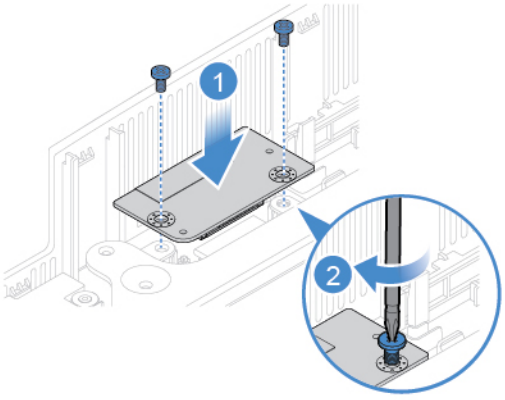


Figure 32. Installing the card reader

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the internal speakers

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Remove the storage drive. See “Replacing the storage drive” on page 20.
5. Record the routing of the internal speaker cable, and then disconnect the cable from the system board.
6. Replace the internal speakers.

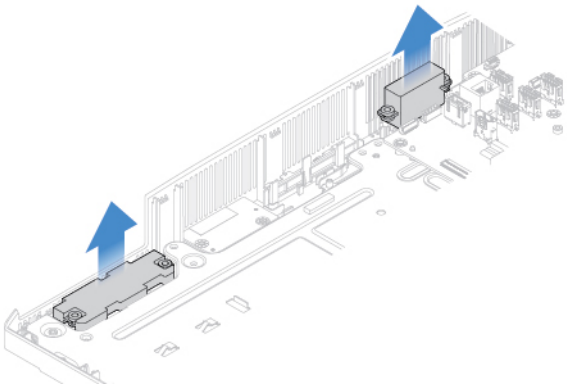


Figure 33. Removing the internal speakers

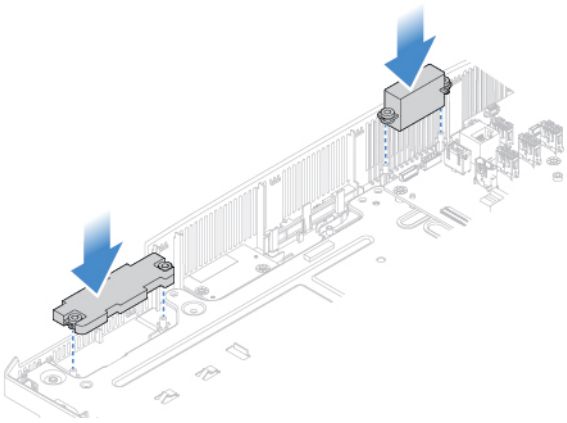


Figure 34. Installing the internal speakers

7. Route the new internal speaker cable, and then connect the cable to the system board.
8. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the serial connector and parallel connector module

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Disconnect the serial connector cable and the parallel connector cable from the system board.
5. Replace the serial connector and parallel connector module.

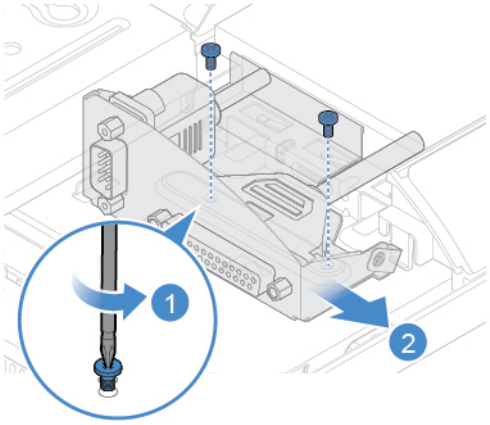


Figure 35. Removing the serial connector and parallel connector module and the bracket

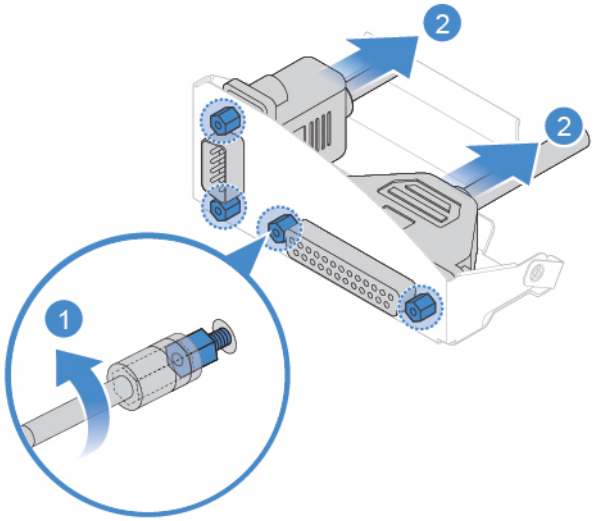


Figure 36. Removing the serial connector and parallel connector module from the bracket

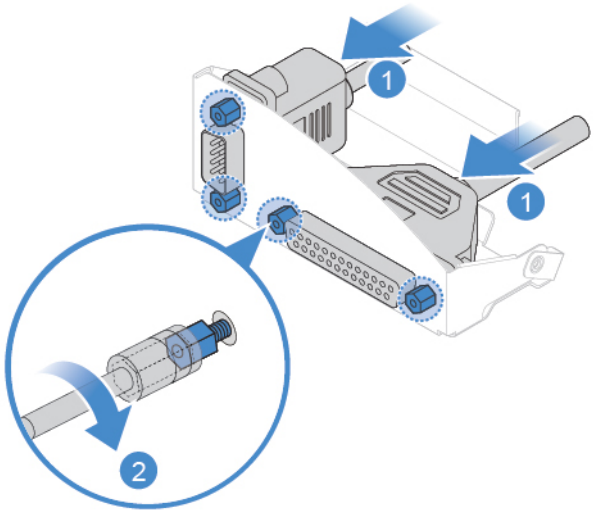


Figure 37. Installing the serial connector and parallel connector module into the bracket

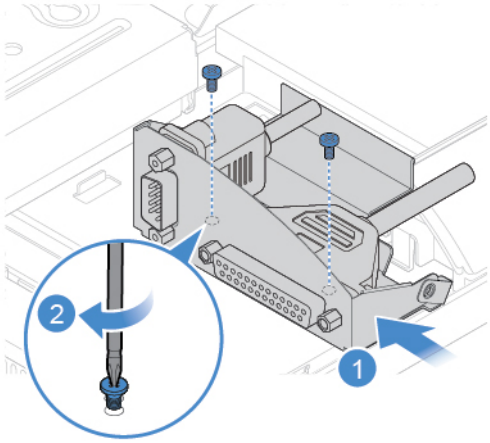


Figure 38. Installing the serial connector and parallel connector module and the bracket

6. Connect the new serial connector cable and the parallel connector cable to the system board.
7. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the system fan

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Disconnect the system fan cable from the system board.
5. Replace the system fan.

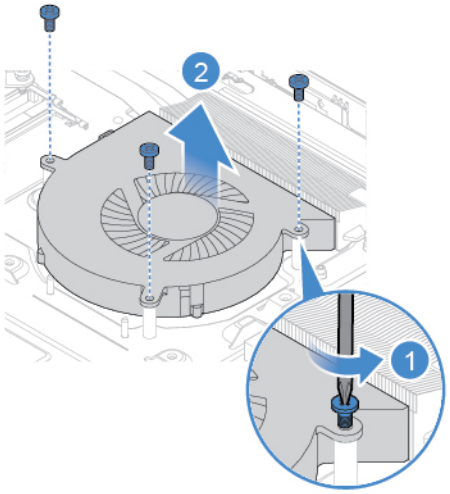


Figure 39. Removing the system fan

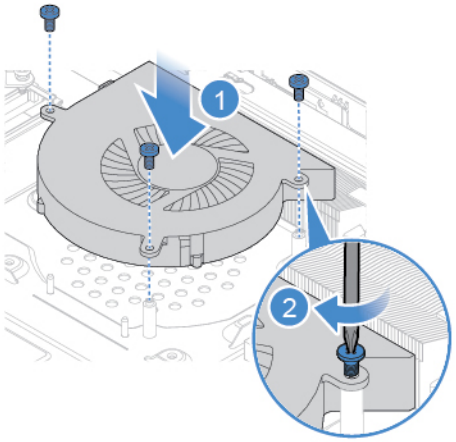


Figure 40. Installing the system fan

6. Connect the new system fan cable to the system board.
7. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the power button board

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Replace the power button board.

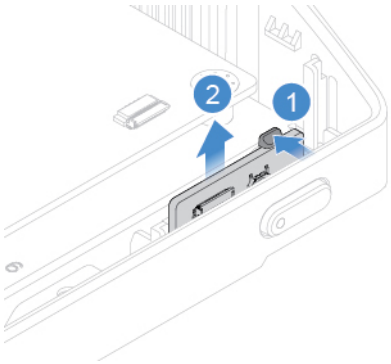


Figure 41. Removing the power button board

Note: Before you install the new power button board, ensure that you disconnect the cable from the failing power button board and connect it to the new one.

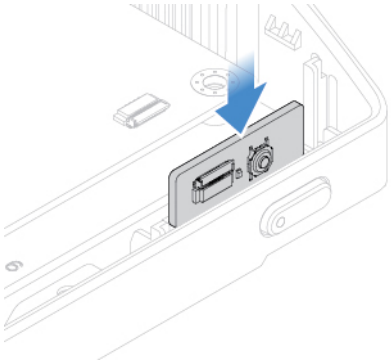


Figure 42. Installing the power button board

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Depending on your computer model, refer to one of the following to replace the M.2 solid-state drive.
   - Type 1

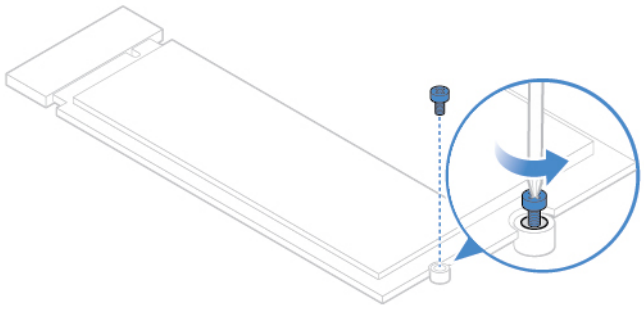


Figure 43. Removing the screw

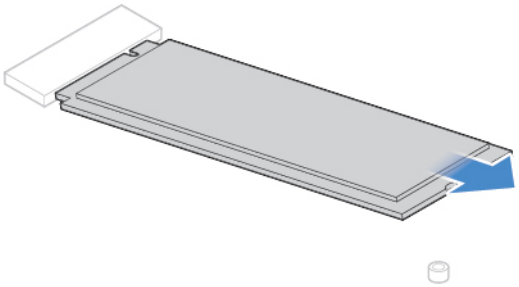


Figure 44. Removing the M.2 solid-state drive

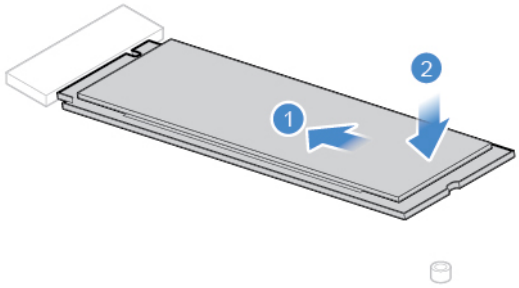


Figure 45. Installing the M.2 solid-state drive

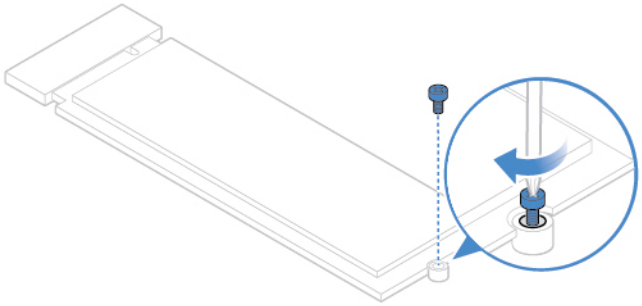


Figure 46. Installing the screw

- Type 2

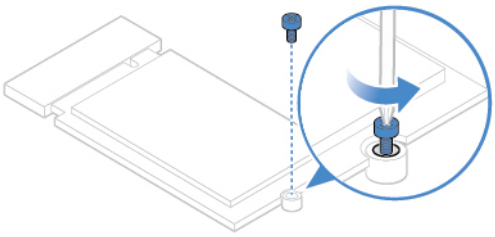


Figure 47. Removing the screw

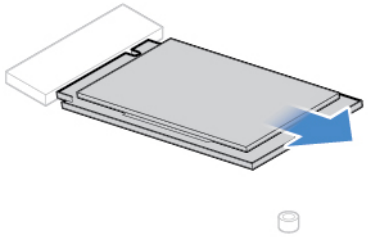


Figure 48. Removing the M.2 solid-state drive

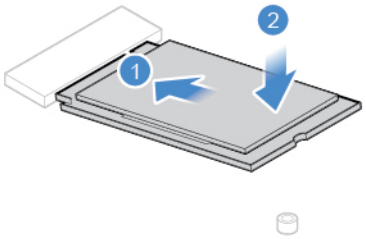


Figure 49. Installing the M.2 solid-state drive

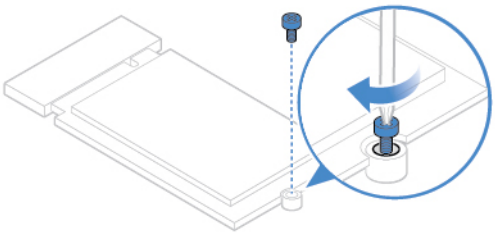


Figure 50. Installing the screw

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the coin-cell battery

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

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

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

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Remove the M.2 solid-state drive. See “Replacing the M.2 solid-state drive” on page 29.
5. Replace the coin-cell battery.

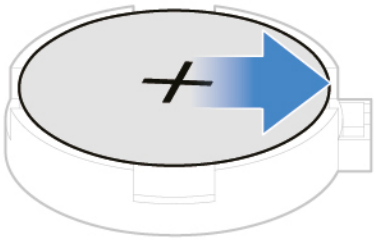


Figure 51. Disengaging the latch

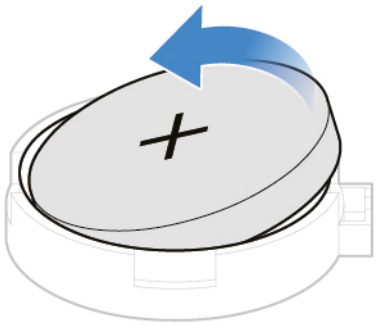


Figure 52. Removing the coin-cell battery

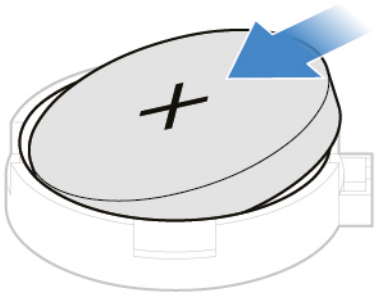


Figure 53. Installing the coin-cell battery

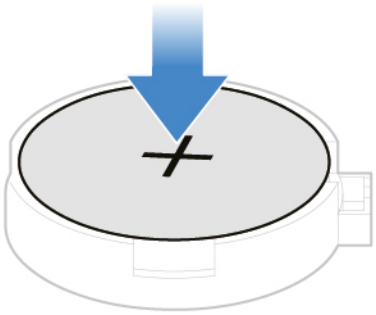


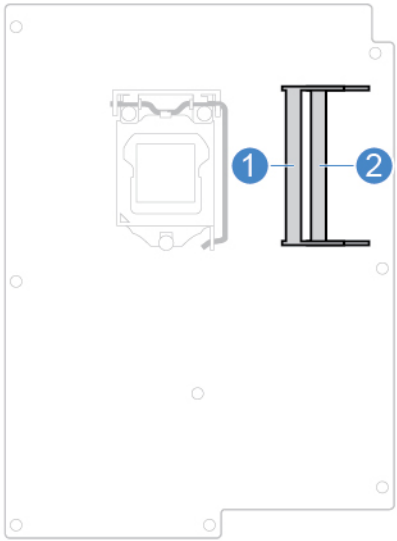
Figure 54. Securing the coin-cell battery with the latch

6. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Replace a memory module.

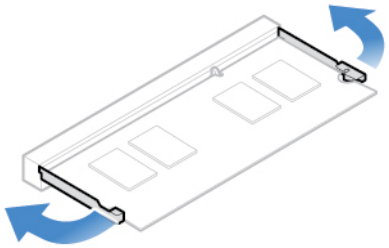


Figure 55. Disengaging the latches

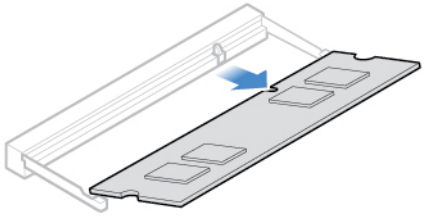


Figure 56. Removing a memory module

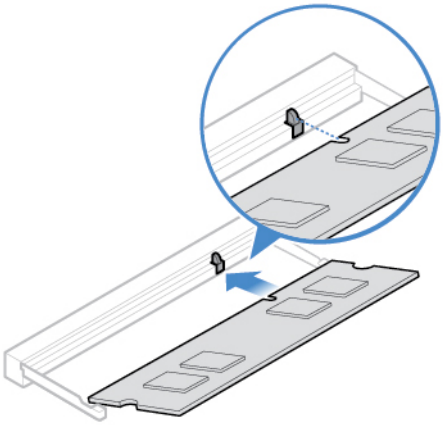


Figure 57. Installing a memory module

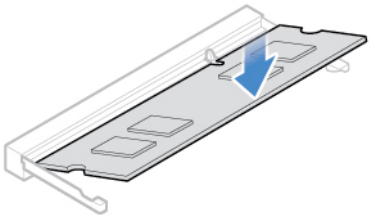


Figure 58. Securing a memory module with the latches

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Replace the Wi-Fi card.

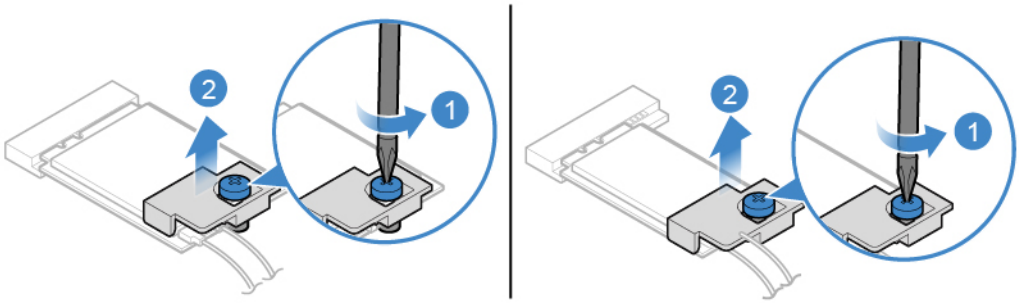


Figure 59. Removing the Wi-Fi card shield

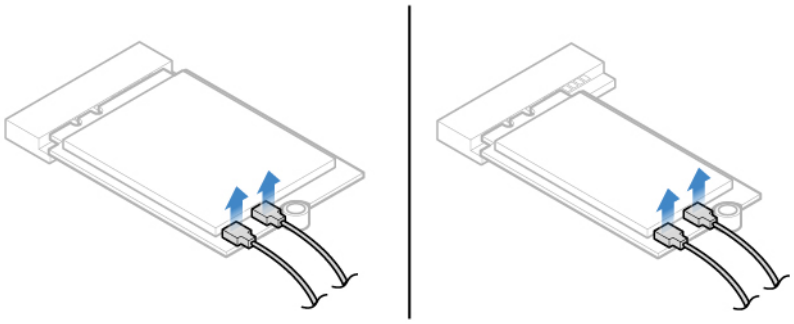


Figure 60. Disconnecting the Wi-Fi antenna cables

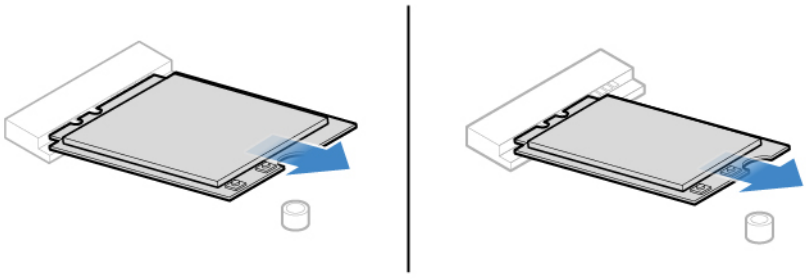


Figure 61. Removing the Wi-Fi card

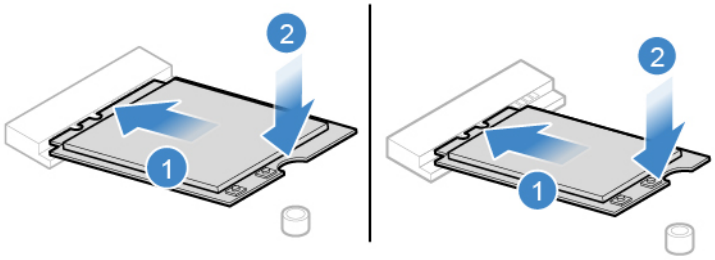


Figure 62. Installing the Wi-Fi card

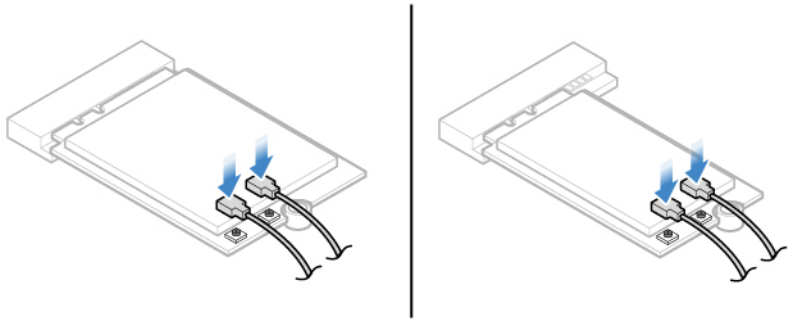


Figure 63. Connecting the Wi-Fi antenna cables

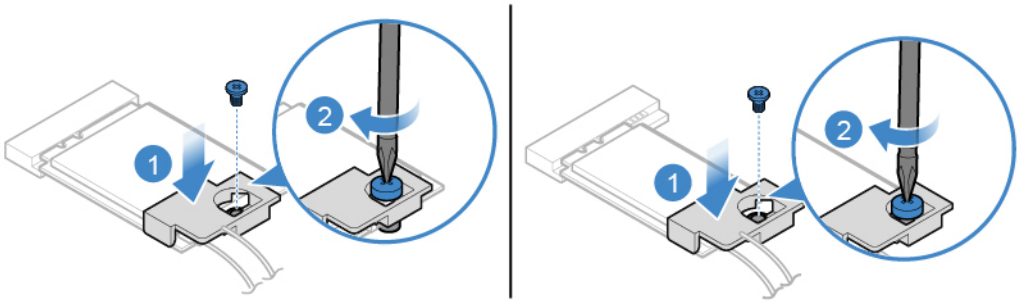


Figure 64. Installing the Wi-Fi card shield

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the heat sink

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

CAUTION:

The heat sink 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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.

3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Replace the heat sink.

   Notes:

   - Carefully remove the screws from the system board to avoid any possible damage to the system board. The screws cannot be removed from the heat sink.
   - You might have to gently twist the heat sink to free it from the microprocessor.
   - Do not touch the thermal grease while handling the heat sink.

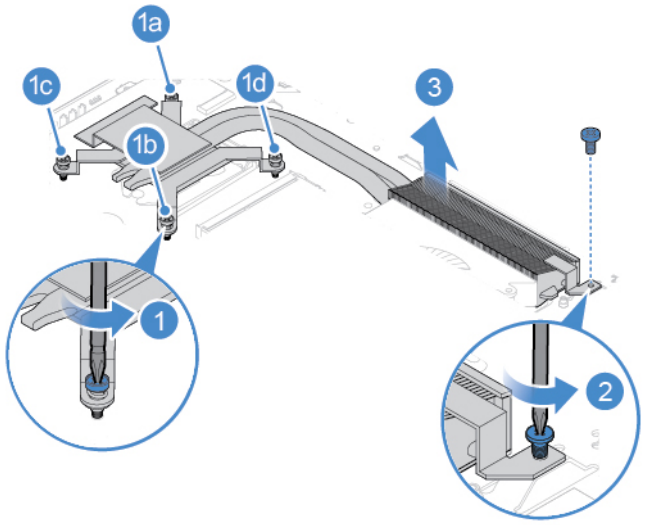


Figure 65. Removing the heat sink

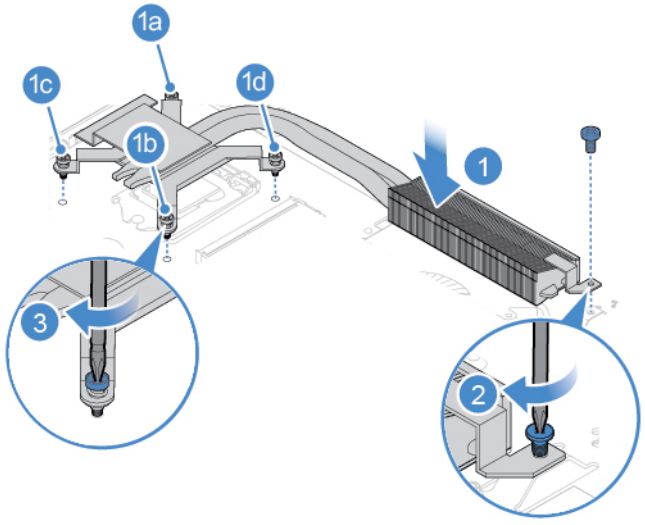


Figure 66. Installing the heat sink

5. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the microprocessor

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

CAUTION:

The heat sink 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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Remove the heat sink. See “Replacing the heat sink” on page 37.
5. Record the cable routing and cable connections, and then disconnect all cables from the system board. See “System board” on page 4.
6. 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.

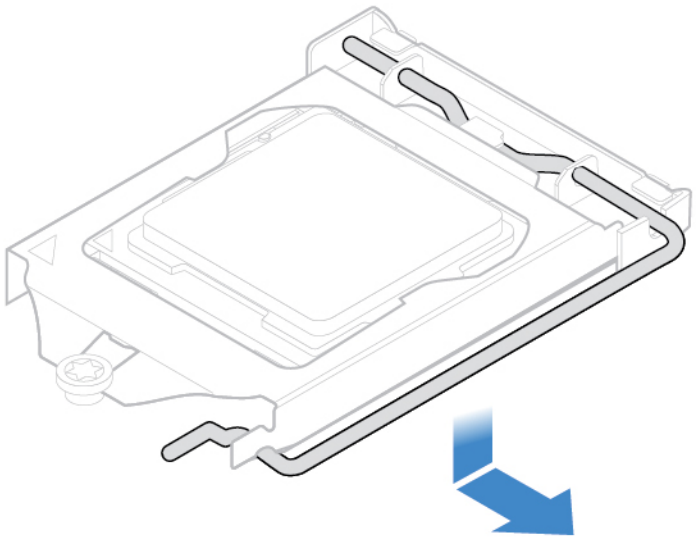


Figure 67. Releasing the handle

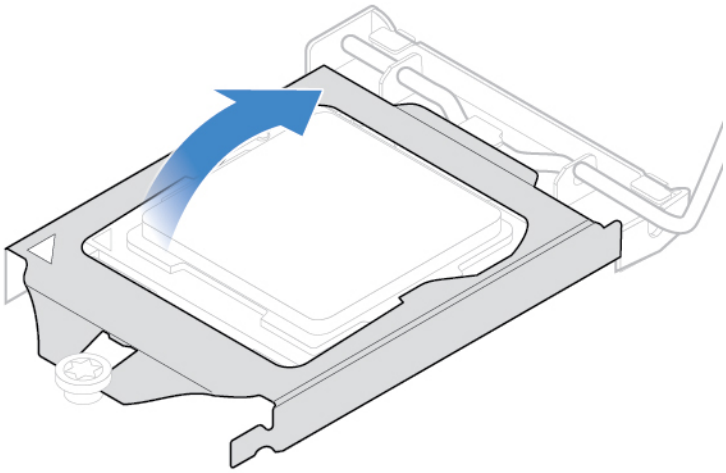


Figure 68. Opening the retainer

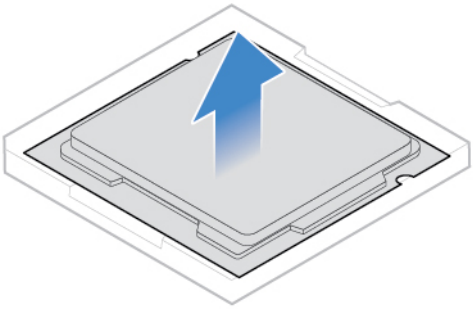


Figure 69. Removing the microprocessor

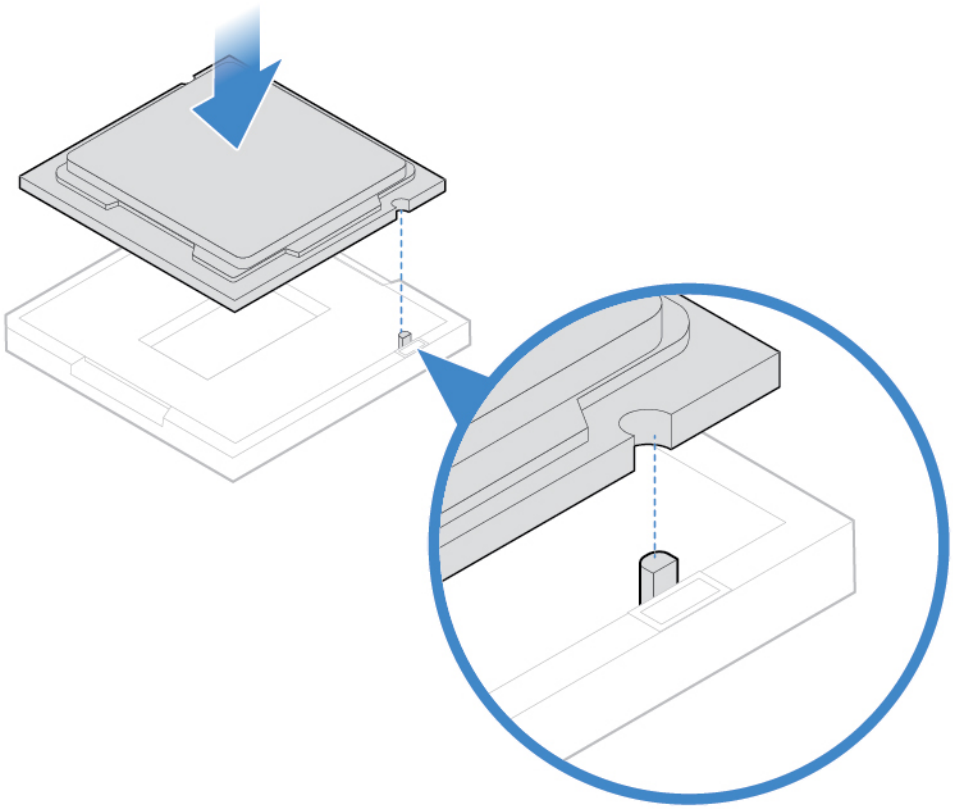


Figure 70. Installing the microprocessor

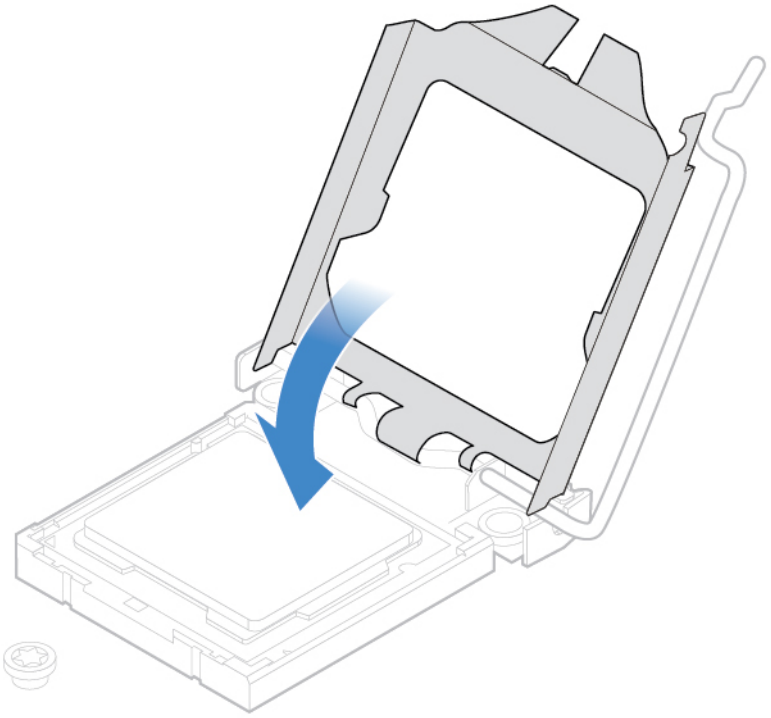


Figure 71. Closing the retainer

7.

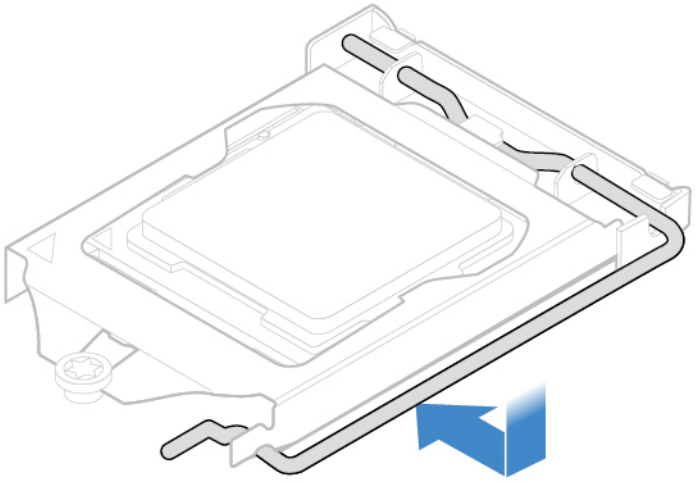


Figure 72. Securing the retainer with the handle

8. Route all the cables that you disconnected from the system board, and then reconnect the cables to the system board.
9. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the internal camera

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Replace the internal camera.

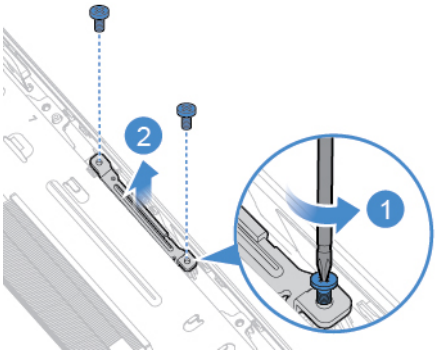


Figure 73. Removing the internal camera

Note: Before you install the new internal camera, ensure that you disconnect the cable from the failing internal camera and connect it to the new one.

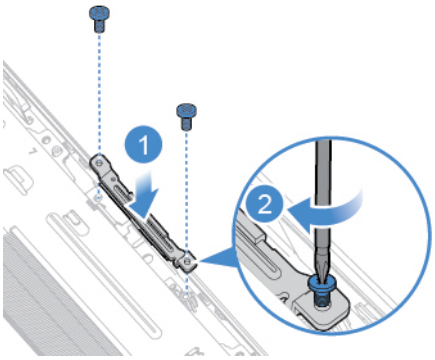


Figure 74. Installing the internal camera

4. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

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 stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Record the routing of the Wi-Fi antenna cables, and then disconnect the cables from the Wi-Fi card. See “Replacing the Wi-Fi card” on page 36.
5. Replace the Wi-Fi antennas.

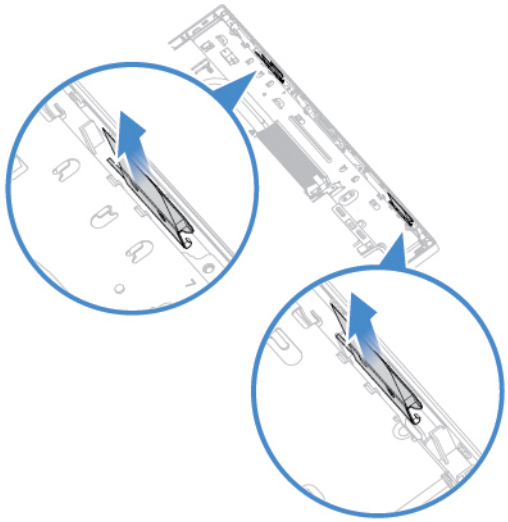


Figure 75. Removing the Wi-Fi antennas

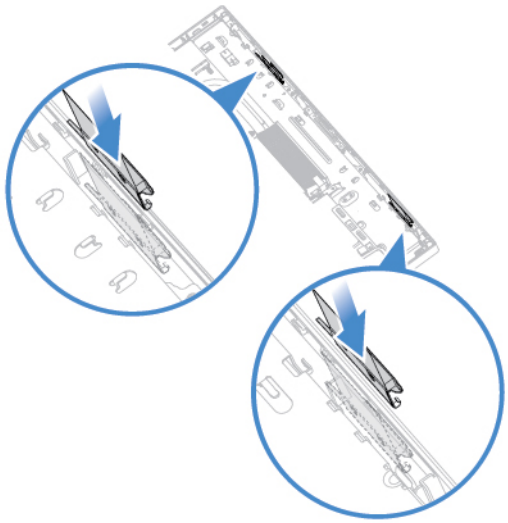


Figure 76. Installing the Wi-Fi antennas

6. Route the new Wi-Fi antenna cables, and then connect the cables to the Wi-Fi card.
7. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the system board

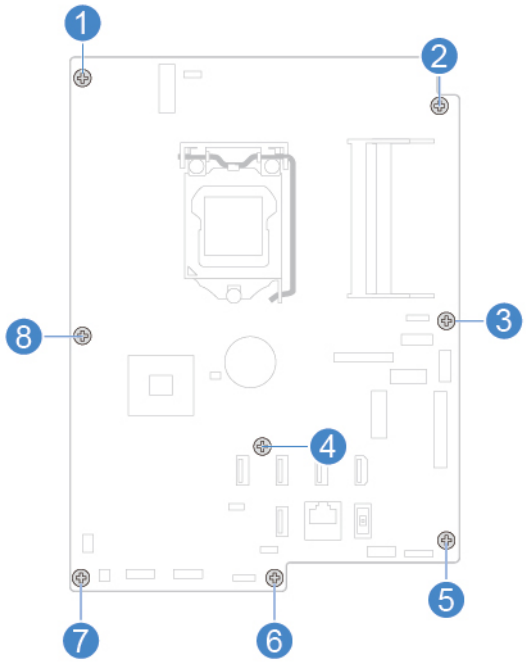
Attention: Do not open your computer or attempt any repairs before reading the *Important Product Information Guide*.

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the system board shield. See “Replacing the system board shield” on page 20.
4. Remove the M.2 solid-state drive. See “Replacing the M.2 solid-state drive” on page 29.
5. Remove all memory modules. See “Replacing a memory module” on page 34.

6. Remove the Wi-Fi card. See “Replacing the Wi-Fi card” on page 36.
7. Remove the heat sink. See “Replacing the heat sink” on page 37.
8. Remove the microprocessor. See “Replacing the microprocessor” on page 39.
9. Record the cable routing and cable connections, and then disconnect all cables from the system board. See “System board” on page 4.
10. Replace the system board.

    Notes:

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



11. Route and connect all the cables to the new system board.
12. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Replacing the LCD panel

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

1. Remove the computer stand. See “Replacing the computer stand” on page 14.
2. Remove the computer cover. See “Removing the computer cover” on page 16.
3. Remove the optical drive. See “Replacing the optical drive” on page 17.
4. Remove the system board shield. See “Replacing the system board shield” on page 20.
5. Remove the storage drive. See “Replacing the storage drive” on page 20.
6. Remove the internal microphone board. See “Replacing the internal microphone board” on page 22.
7. Remove the card reader. See “Replacing the card reader” on page 23.

8. Remove the internal speakers. See “Replacing the internal speakers” on page 24.
9. Remove the serial connector and parallel connector module. See “Replacing the serial connector and parallel connector module” on page 25.
10. Remove the system fan. See “Replacing the system fan” on page 27.
11. Remove the power button board. See “Replacing the power button board” on page 28.
12. Remove the heat sink. See “Replacing the heat sink” on page 37.
13. Remove the internal camera. See “Replacing the internal camera” on page 43.
14. Remove the Wi-Fi antennas. See “Replacing the Wi-Fi antennas” on page 43.
15. Remove the system board. See “Replacing the system board” on page 44.
16. Record the routing of the LCD panel cables, and then disconnect the cables from the system board.
17. Replace the LCD panel.

Note: Ensure that you remove and reinstall the screws in order of the numbers as shown.

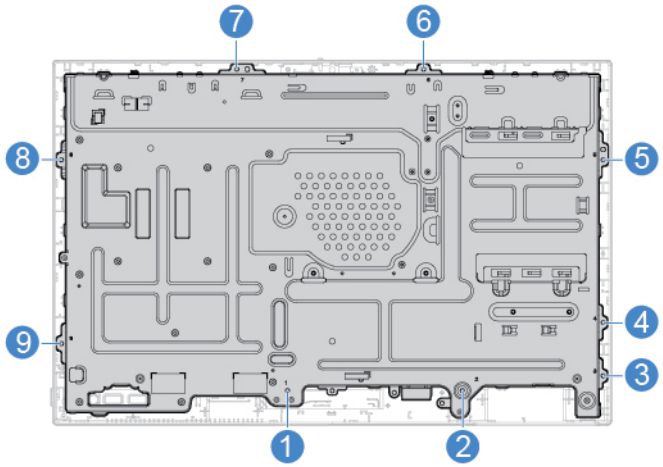


Figure 77. Removing the LCD panel and the chassis from the frame

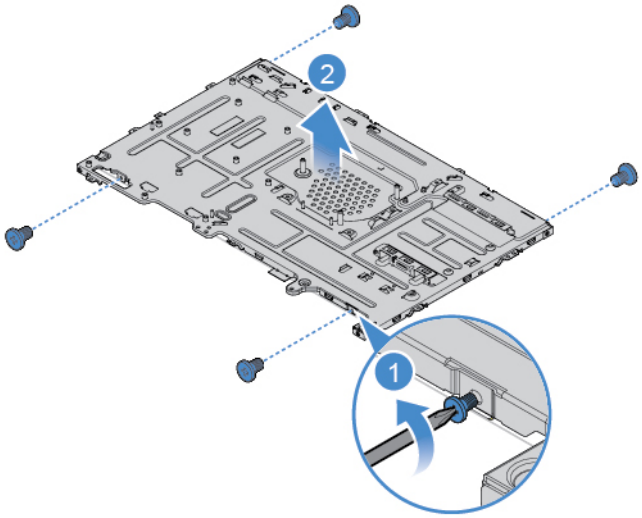


Figure 78. Removing the LCD panel from the chassis

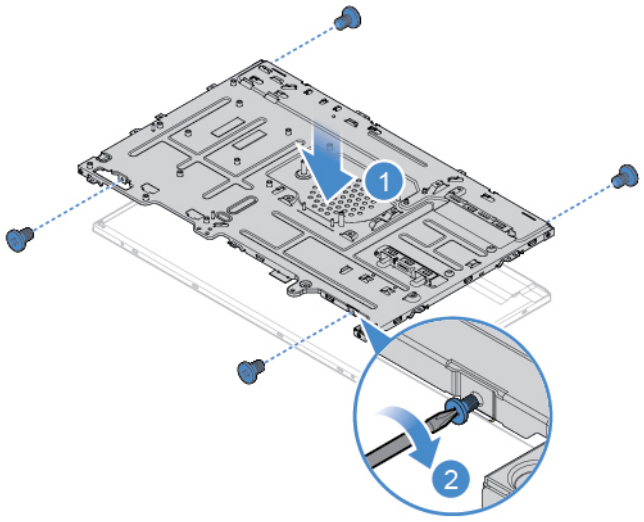


Figure 79. Installing the LCD panel into the chassis

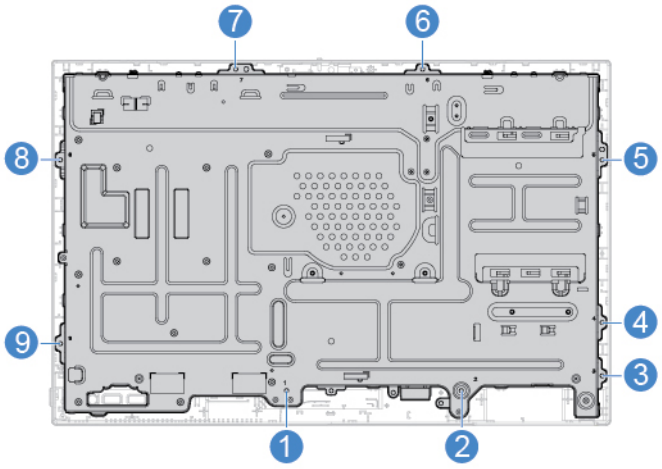


Figure 80. Installing the LCD panel and the chassis into the frame

18. Route the new LCD panel cables, and then connect the cables to the system board.
19. Reinstall the removed parts. To complete the replacement, see “Completing the parts replacement” on page 47.

Completing the parts replacement

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

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

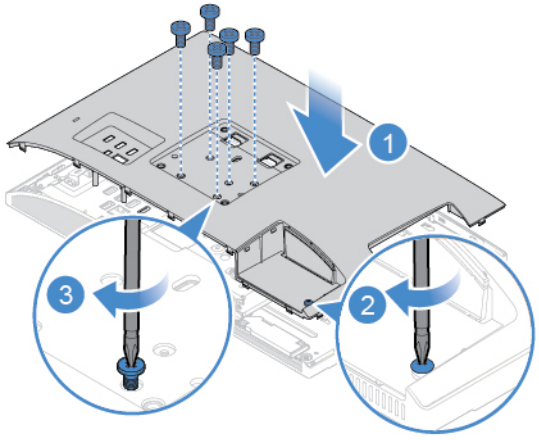


Figure 81. Installing the computer cover

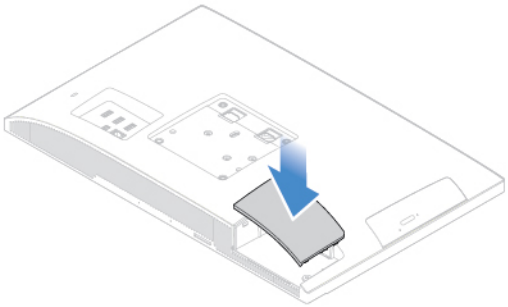


Figure 82. Installing the cover of the serial connector and parallel connector module

4. Reinstall the computer stand. See “Replacing the computer stand” on page 14.
5. Place the computer in an upright position.
6. If a locking device is available, use it to lock the computer.
7. Reconnect the external cables and power cords to the corresponding connectors on the computer.

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