# M90a Gen 5
# User Guide

**Read this first**

Before using this documentation and the product it supports, ensure that you read and understand the following:

- *Safety and Warranty Guide*
- *Generic Safety and Compliance Notices*
- *Setup Guide*

**First Edition (January 2024)**

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# About this documentation

- This guide applies to the Lenovo product models listed below. Illustrations in this guide may look slightly different from your product model.

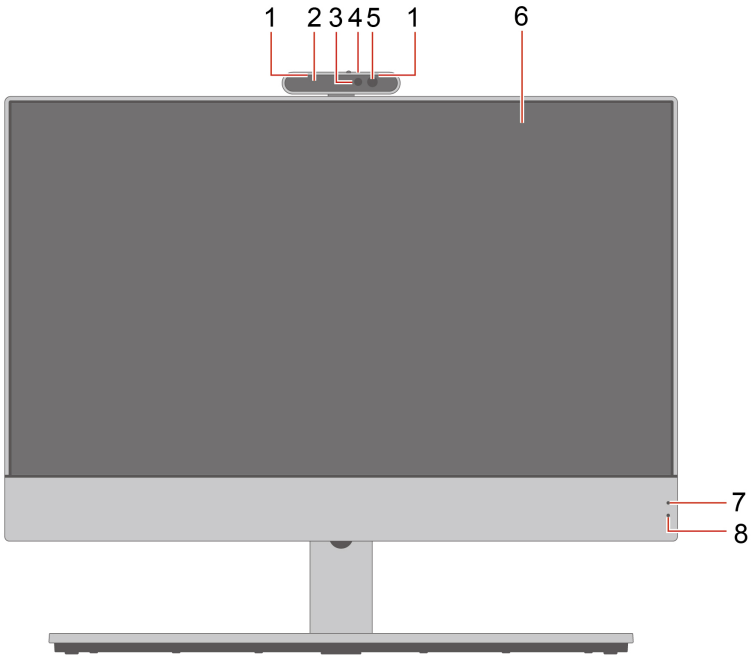
| Model name | Machine types (MT) |
| --- | --- |
| ThinkCentre M90a Gen 5 | 12SH, 12SK, 12SL, 12SM, 12SN |

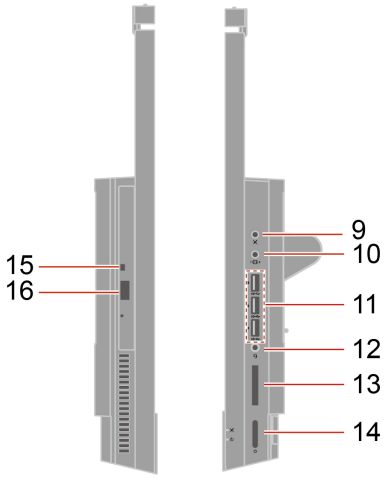
- For further compliance information, refer to the Generic Safety and Compliance Notices at https://pcsupport.lenovo.com/docs/generic_notices.
- Depending on the model, some optional accessories, features, and software programs might not be available on your computer.
- Depending on the version of the operating systems and programs, some user interface instructions might not be applicable to your computer.
- Documentation content is subject to change without notice. Lenovo makes constant improvements to the documentation of your computer, including this *User Guide*. To get the latest documentation, go to https://pcsupport.lenovo.com.
- Microsoft® makes periodic feature changes to the Windows® operating system through Windows Update. As a result, some information in this documentation might become outdated. Refer to Microsoft resources for the latest information.

# Chapter 1. Meet your computer

This computer is equipped with an extensive selection of ports, providing convenient connectivity options for multiple devices.

## Front




| | |
|---|---|
| 1. Microphones* | 2. Radar card* |
| 3. Integrated camera or Infrared (IR) camera* | 4. Integrated camera or Infrared (IR) camera shield* |
| 5. IR camera activity indicator* | 6. Multi-touch screen* |

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| | |
|---|---|
| 7. Microphone mute/unmute indicator* | 8. System status indicator |
| 9. Microphone mute/unmute control | 10. Monitor/computer mode switch |
| 11. USB 3.2 connectors Gen 2 | 12. Headset connector |
| 13. SD-card slot* | 14. Power button |
| 15. Optical drive activity indicator* | 16. Optical drive eject button* |

* for selected models

### Statement on USB transfer rate

Depending on many factors such as the processing capability of the host and peripheral devices, file attributes, and other factors related to system configuration and operating environments, the actual transfer rate using the various USB connectors on this device will vary and will be slower than the data rate listed below for each corresponding device.

| USB device | Data rate (Gbit/s) |
|---|---|
| 3.2 Gen 1 | 5 |
| 3.2 Gen 2 | 10 |
| 3.2 Gen 2 × 2 | 20 |
| Thunderbolt 3 | 40 |
| Thunderbolt 4 | 40 |

### System status indicator

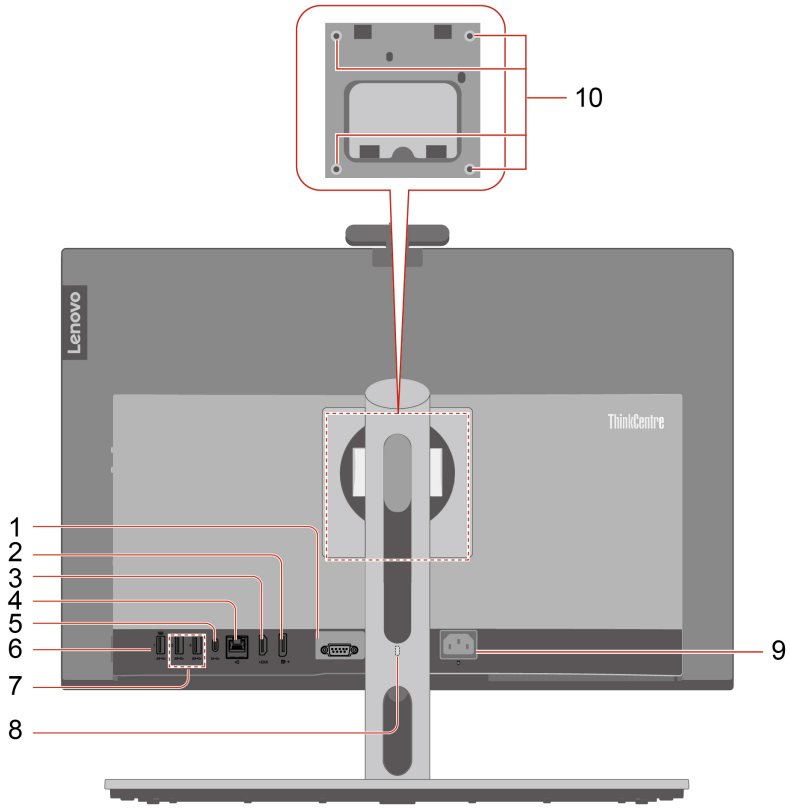
Show the system status of your computer.

- **Blinking for three times:** The computer is initially connected to power.
- **On:** The computer is starting up or working.
- **Off:** The computer is off or in hibernation mode.
- **Blinking rapidly:** The computer is entering sleep or hibernation mode.
- **Blinking slowly:** The computer is in sleep mode.

### Related topics

- “USB specifications” on page 6.

## Rear




| | |
|---|---|
| 1. Serial connector* | 2. DisplayPort™ out connector |
| 3. HDMI™ in 1.4/out 2.1 TMDS combo connector | 4. Ethernet connector |
| 5. USB-C® (3.2 Gen 2) connector | 6. USB 3.2 connector Gen 1 (with smart power-on feature) |
| 7. USB 3.2 connectors Gen 1 | 8. Security-lock slot |
| 9. Power cord connector | 10. VESA® threaded holes (screws: M4 x 8 mm, 4 pcs) |

* for selected models

**Note:** When mounting the computer on a VESA mount, position the computer monitor either horizontally (with the screen facing forward and the side I/O ports facing right) or vertically (with the screen facing forward and the side I/O ports facing down).

### Serial connector

Connect an external modem, a serial printer, or other devices that use a serial connector.

### HDMI in 1.4/out 2.1 TMDS combo connector

This connector will work after 10 seconds after connection as an HDMI in or an HDMI out connector, depending on whether the connected device is a computer or a monitor.

**Related topics**

- “Lock the computer” on page 18.
- “Connect an external display” on page 14.
- “USB specifications” on page 6.

## Specifications

| Specification | Description |
|---|---|
| **Dimensions** | • Width: 539.6 mm(21.2 inches)<br>• Height: 352 mm (13.9 inches)<br>• Depth: 49.6 mm (2.0 inches) |
| **Weight (without packaging)** | Maximum configuration as shipped: 8.1 kg (17.9 lb) |
| **Hardware configuration** | Type `Device Manager` in the Windows search box and then press Enter. Type the administrator password or provide confirmation, if prompted. |
| **Power supply** | • 180-watt automatic voltage-sensing power supply<br>• 230-watt automatic voltage-sensing power supply |
| **Electrical input** | • Input voltage: From 100 V ac to 240 V ac<br>• Input frequency: 50/60 Hz |
| **Adaptability for power supply** | • Mainland China: 220 V±22 V, 50 Hz±1 Hz<br>• Adaptive voltage positioning: 90 V to 264 V, 50/60 Hz<br>• With voltage selection switch: 90 V to 264 V, 50 Hz±1 Hz |
| **Memory** | Double data rate 5 (DDR5) small outline dual in-line memory module (SODIMM)<br><br>Maximum memory capacity: 64 GB |
| **Storage device** | • M.2 solid-state drive*<br><br>To view the storage drive capacity of your computer, type `Disk Management` in the Windows search box and then press Enter.<br><br>**Note:** The storage drive capacity indicated by the system is less than the nominal capacity. |
| **Video features** | • Color display with White Light Emitting Diode (WLED) technology<br>• Color display with Full High Definition (FHD) technology<br>• Display size: 604.5 mm (23.8 inches)<br>• Display resolution: 1920 x 1080 pixels<br>• Multi-touch technology*<br>• The integrated graphics card supports the following:<br>– DisplayPort out connector<br>– HDMI out connector<br>• The optional discrete graphics card provides an enhanced video experience and extended capabilities. |

| Specification | Description |
| --- | --- |
| **Expansion** | • Card reader*<br>• Memory slots<br>• M.2 solid-state drive slot<br>• Optical drive*<br>• Storage drive bay |
| **Network features** | • Bluetooth*<br>• Ethernet LAN<br>• Wireless LAN* |

* for selected models

**Operating environment**

**Maximum altitude (without pressurization)**

- Operating: From 0 m (0 ft) to 3048 m (10 000 ft)
- Storage: From 0 m (0 ft) to 12192 m (40 000 ft)

**Temperature**

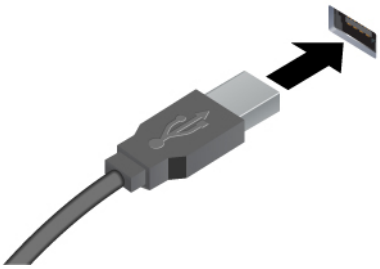
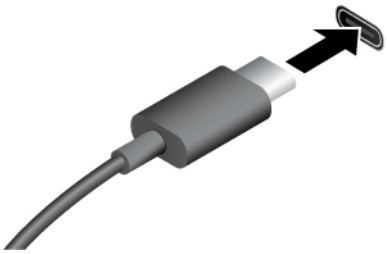
- Operating: From 5°C (41°F) to 35°C (95°F)
- Storage:
  - For common desktop computers: From -40°C (-40°F) to 60°C (140°F)
  - For all-in-one desktop computers: From -20°C (-4°F) to 60°C (140°F)

**Relative humidity**

- Operating: 20%-80% (non-condensing)
- Storage: 10%-90% (non-condensing)

## USB specifications

**Note:** Depending on the model, some USB connectors might not be available on your computer.

| Connector name | Description |
| --- | --- |
|  <br>• USB-A 2.0 connector<br>• SS USB-A 3.2 Gen 1 connector<br>• 10 USB-A 3.2 Gen 2 connector | Connect USB-A compatible devices, such as a USB-A keyboard, USB-A mouse, USB-A storage device, or USB-A printer. |
|  <br>• SS USB-C (3.2 Gen 1) connector<br>• 10 USB-C (3.2 Gen 2) connector<br>• USB-C (Thunderbolt 3) connector<br>• USB-C (Thunderbolt 4) connector | • Charge USB-C compatible devices with the output voltage and current of 5 V and 3 A.<br>• Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to https://www.lenovo.com/accessories. |

## The Vantage app

The Vantage app is a customized one-stop solution to help you maintain your computer with automated updates and fixes, configure hardware settings, and get personalized support.

To access the Vantage app, type `Vantage` in the Windows search box.

**Notes:**

- The available features vary depending on the computer model.
- The Vantage app makes periodic updates of the features to keep improving your experience with your computer. The description of features might be different from that on your actual user interface. You can download the latest version of Vantage app from Microsoft Store.

The Vantage app enables you to:

- Know the device status easily and customize device settings.
- Download and install UEFI BIOS, firmware, and driver to keep your computer up-to-date.
- Monitor your computer health, and secure your computer against outside threats.
- Scan your computer hardware and diagnose hardware problems.
- Look up warranty status (online).

- Access *User Guide* and helpful articles.

# Chapter 2. Get started with your computer

## Access networks

This section helps you connect to a wireless or wired network.

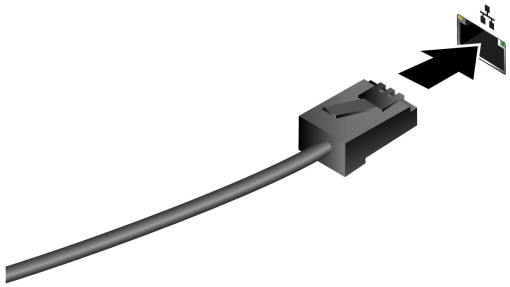
### Connect to Wi-Fi networks

Click the network icon on the bottom right of your display to connect to an available network. Provide required information, if needed.

**Note:** The wireless LAN module on your computer may support different standards. For some countries or regions, use of 802.11ax may be disabled according to local regulations.

### Connect to the wired Ethernet

Connect your computer to a local network through the Ethernet connector on your computer with an Ethernet cable.



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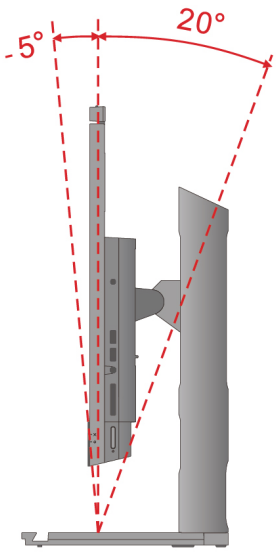
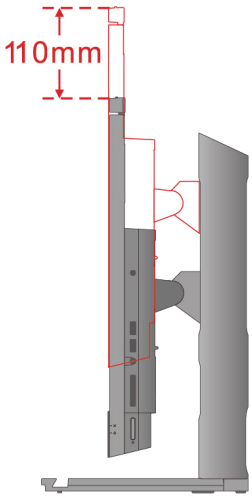
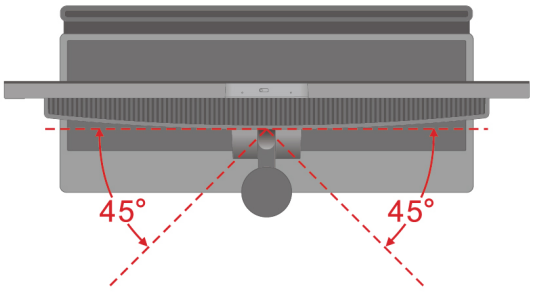
## Adjust the computer stand (for selected models)

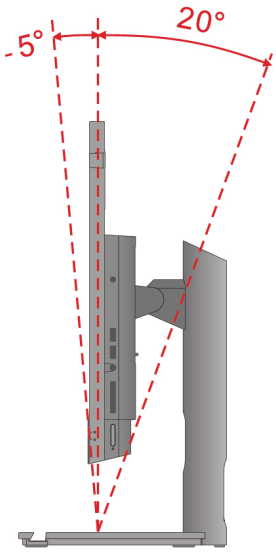
### For full-function monitor stand



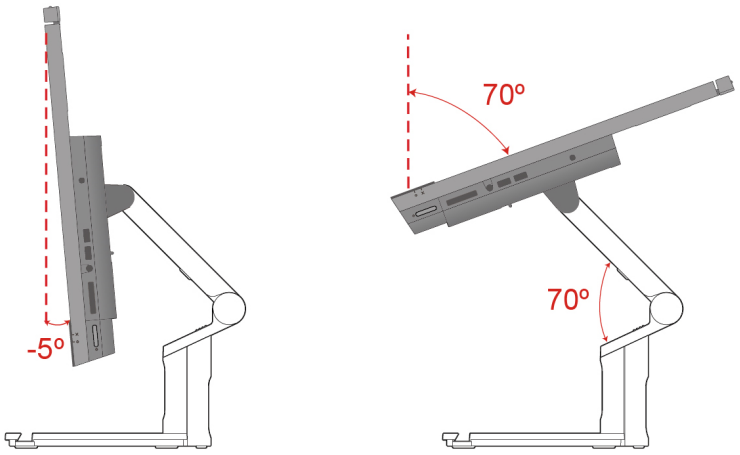




### For tilt-only stand



**For UltraFlex V Stand**




## Rotate the monitor (for selected models)

The full function stand supports rotating the computer monitor from horizontal to vertical in certain usage scenario. Before rotating, you must adjust the monitor to the highest point (110 mm) and the tilt angle to maximum (backward 20 degrees).

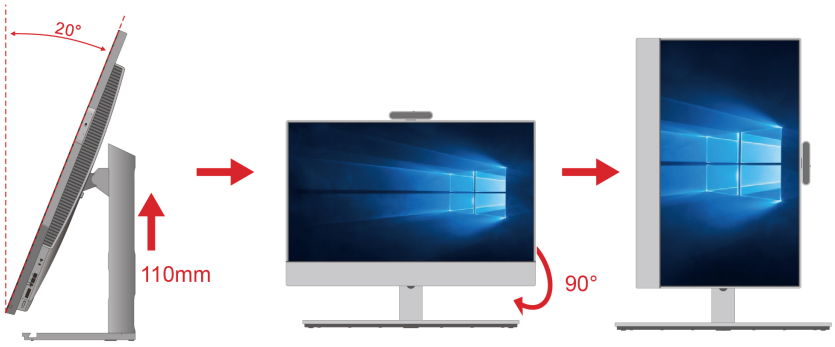
### Adjust the desktop settings

Before rotating the computer monitor direction, you might need to adjust the desktop direction accordingly for better use experience. The preinstalled Intel Graphics Command Center app (IGCC) helps you enable and customize system hotkeys so that you can use shortcuts to personalize your desktop settings. To download the latest version of IGCC, go to https://www.microsoft.com/store/productId/9PLFNLNT3G5G.

1. To access the IGCC app, type `Intel Graphics Command Center` in the Windows search box.
2. Accept the license of IGCC.
3. Turn on the **Enable System Hotkeys** switch. Customize the **landscape** and **Portrait** hotkeys according to your preference.
4. Press Ctrl + Alt + Left ( by default) to change the desktop from horizontal to vertical.
5. Press Ctrl + Alt + Up (by default) to change the desktop from vertical to horizontal.

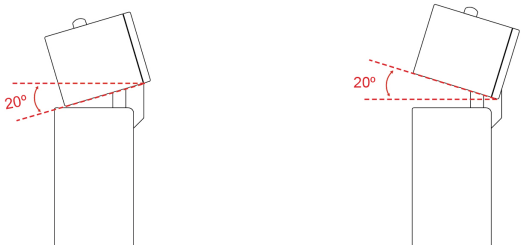
### Rotate the monitor

Rotate the computer monitor clockwise from horizontal to vertical. You also can rotate the monitor counterclockwise from vertical to horizontal when needed.




## Adjust the tiltable camera (for selected models)

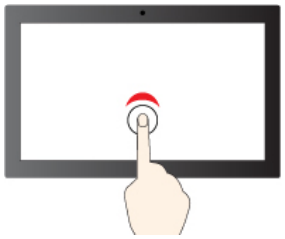
You can adjust the camera angle by tilting the camera forward or backward for better usage experience.

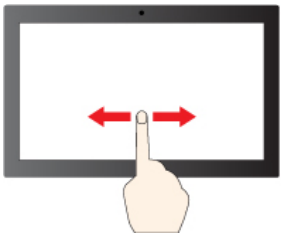
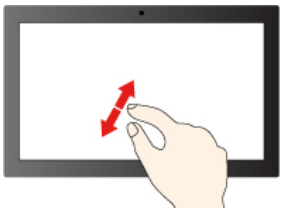
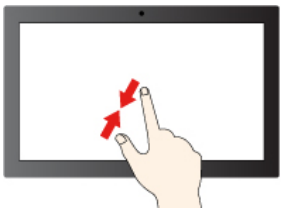
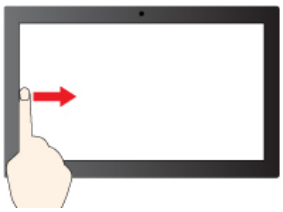
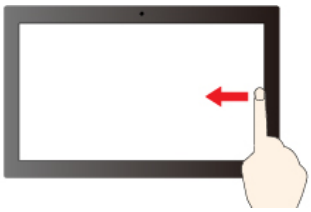
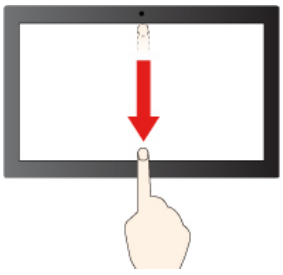
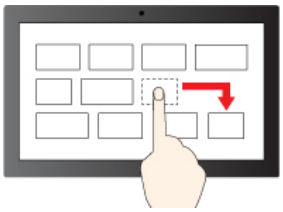



## Use the touch screen (for selected models)

If your computer display supports the multi-touch function, you can navigate the screen with simple touch gestures. For more touch gestures, refer to https://support.microsoft.com/windows.

**Note:** Some gestures might not be applicable when you use certain apps.

| Illustrations and description | Illustrations and description |
| --- | --- |
|  | |
| Tap once to single click | Tap twice quickly to double-click |

| Illustrations and description | Illustrations and description |
| --- | --- |
| Tap and hold to right-click |  Slide to scroll through items |
|  Zoom in |  Zoom out |
|  Swipe from the left: view all open windows (Windows 10)<br>Swipe from the left: open widget panel (Windows 11) |  Swipe from the right: open action center (Windows 10)<br>Swipe from the right: open notification center (Windows 11) |
|  Swipe downwards shortly: show title bar<br>Swipe downwards: close the current app |  Drag |

### Maintenance tips

- Turn off the computer before cleaning the touch screen.
- Use a dry, soft, and lint-free cloth or a piece of absorbent cotton to remove fingerprints or dust from the touch screen. Do not apply solvents to the cloth.
- The touch screen is a glass panel covered with a plastic film. Do not apply pressure or place any metallic object on the screen, which might damage the touch panel or cause it to malfunction.

- Do not use fingernails, gloved fingers, or inanimate objects for input on the screen.
- Regularly calibrate the accuracy of the finger input to avoid a discrepancy.

## Connect an external display

Connect a projector or a monitor to your computer to give presentations or expand your workspace.

### Connect a wireless display

Ensure that both your computer and the wireless display support Miracast®.

Press Windows logo key + K and then select a wireless display to connect.

### Change display settings

1. Right-click a blank area on the desktop and select display settings.
2. Select the display that you want to configure and change display settings of your preference.

## Transfer data

You can install a disc or media card to transfer data.

### Use the optical drive (for selected models)

If your computer has an optical drive, read the following information.

### Know the type of your optical drive

1. Type `Device Manager` in the Windows search box and then press Enter. Type the administrator password or provide confirmation, if prompted.
2. Select an optical drive, and then follow the on-screen instructions.

### Install or remove a disc

1. With the computer on, press the eject button on the optical drive. The tray slides out of the drive.
2. Insert a disc into the tray or remove a disc from the tray, and then push the tray back into the drive.

**Note:** If the tray does not slide out of the drive when you press the eject button, turn off the computer. Then, insert a straightened paper clip into the emergency-eject hole adjacent to the eject button. Use the emergency eject only in an emergency.

### Record a disc

1. Insert a recordable disc into the optical drive that supports recording.
2. Do one of the following:
   - Type `AutoPlay` in the Windows search box and then press Enter. Turn on **Use AutoPlay for all media and devices**.
   - Open Windows Media Player.
   - Double-click the ISO file.
3. Follow the on-screen instructions.

### Use a media card (for selected models)

If your computer has a SD-card slot, read the following information.

### Install a media card

1. Locate the SD-card slot.
2. Ensure that the metal contacts on the card are facing the ones in the SD-card slot. Insert the card firmly into the SD-card slot until it is secured in place.

### Remove a media card

**Attention:** Before removing the card:

1. Click the triangular icon in the Windows notification area to show hidden icons. Right-click the icon prompting you to safely remove hardware and eject media.
2. Select the corresponding item to eject the card from the Windows operating system.
3. Press the card and remove it from your computer. Store the card safely for future use.

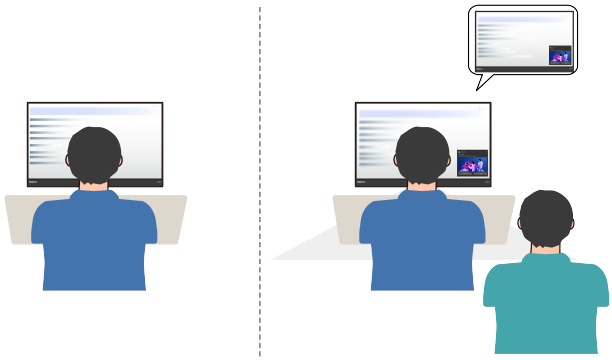
## Privacy (for selected models)

### Privacy protection

When peeping behavior is detected, it triggers an alert message to display within seconds and blurs your computer screen to protect your privacy.

**Notes:**

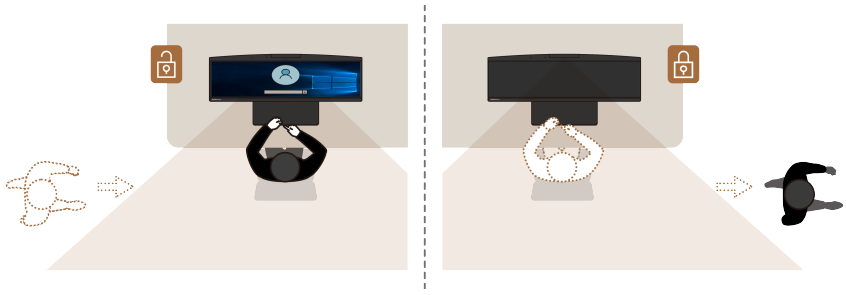
- If the privacy protection feature is enabled, screen blurring is enabled by default while an alert message needs to be further enabled. You can customize the warning interval based on your preference.
- For Windows 10 operating system, the privacy protection is enabled automatically after the startup of the operating system. For Windows 11 operating system, the privacy protection is enabled automatically 1 hour the startup of the operating system.



### Human presence detection

The radar card detects user presence. This feature awakens your computer when you are facing the screen. And when you leave, it automatically locks the computer according to the screen-off timer settings, which can be customized. The default screen-off timer is 10 seconds.

**Note:** Ensure that you have enabled the human presence detection feature and registered your face identification. Lenovo does not collect any personal data.



## Connect to a Bluetooth device

You can connect all types of Bluetooth-enabled devices to your computer, such as a keyboard, a mouse, a smartphone, or speakers. To ensure successful connection, place the devices at most 10 meters (33 feet) from the computer.

## Conventional pair

This topic helps you connect to a Bluetooth device by conventional pair.

Step 1. Type `Bluetooth` in the Windows search box and then press Enter.

Step 2. Turn on both the Bluetooth on your computer and the Bluetooth device. Make sure the device is discoverable.

Step 3. Select the device when it is displayed on the **Add a device** list, and then follow the on-screen instructions.

**Notes:** If the Bluetooth connection failed, do the following:

1. Type `Device Manager` in the Windows search box and then press Enter.
2. Locate the Bluetooth adapter. Right-click and select **Update driver**.
3. Select **Search automatically for drivers**, and then follow the on-screen instructions.

## Swift pair

This topic helps you connect to a Bluetooth device by swift pair.

If your Bluetooth device supports swift pair, do the following:

Step 1. Enable swift pair notification on Bluetooth settings page.

Step 2. Turn on both the Bluetooth on your computer and the Bluetooth device. Make sure the device is discoverable.

Step 3. Click **Connect** when a swift pair notification appears on your computer.

**Notes:** If the Bluetooth connection failed, do the following:

1. Type `Device Manager` in the Windows search box and then press Enter.
2. Locate the Bluetooth adapter. Right-click and select **Update driver**.
3. Select **Search automatically for drivers**, and then follow the on-screen instructions.

# ICE performance mode

The ICE performance mode helps you adjust the acoustic and thermal performance of your computer. Three options are available:

- **Balance mode**: The computer works at the balance mode with balanced noise and better performance.
- **Performance mode** (default setting): The computer works at the best performance with normal acoustic level.

  **Note:** The term “best” only refers to the best effect among different settings of the product itself.
- **Full Speed**: All fans in the computer will run at full speed.

#### Change the ICE performance mode

To change the ICE performance mode:

Step 1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
Step 2. Select **Power → Intelligent Cooling** and press Enter.
Step 3. Select **Performance Mode** and press Enter.
Step 4. Set the performance mode as desired.
Step 5. Press F10 or Fn+F10 to save the changes and exit.

## Smart power-on feature (for selected models)

The smart power-on feature helps you start up or wake up the computer from the hibernation mode simply by pressing Alt+P.

**Note:** Ensure that the keyboard is connected to a USB connector supporting the smart power-on feature.

#### Enable or disable the smart power-on feature

To enable or disable the smart power-on feature:

Step 1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
Step 2. Select **Power → Smart Power On** and press Enter.
Step 3. Enable or disable the feature as desired.
Step 4. Press F10 or Fn+F10 to save the changes and exit.

## Set the power plan

For ENERGY STAR® compliant computers, the following power plan takes effect when your computers have been idle for a specified duration:

- Turn off the display: After 10 minutes
- Put the computer to sleep: After 25 minutes

To awaken the computer from Sleep mode, press any key on your keyboard.

To reset the power plan:

1. Type `Power Options` in the Windows search box and then press Enter.
2. Choose or customize a power plan of your preference.

## Security

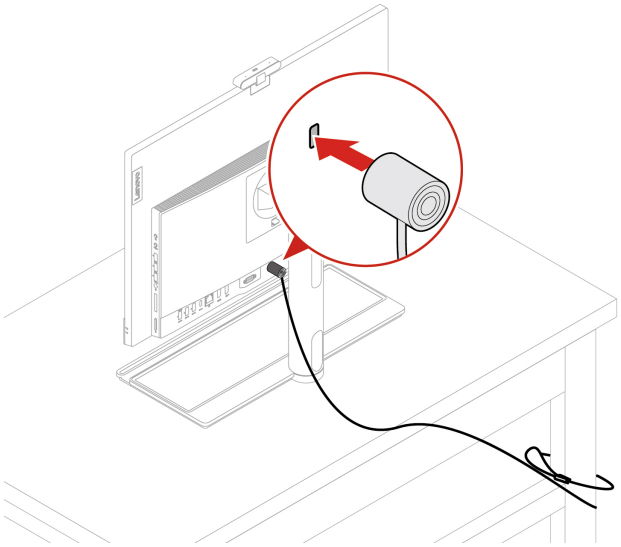
This computer offers a wealth of security measures to protect both the device and data safety.

## Lock the computer

**Note:** Lenovo makes no comments, judgments, or warranties about the function, quality, or performance of the locking device and security feature. You can purchase computer locks from Lenovo.

### Security lock

Lock your computer to a desk, table, or other fixtures through a security lock.



## Smart USB protection

The Smart USB Protection function is a security function that helps prevent data from being copied from the computer to USB storage devices connected to the computer. You can set the Smart USB Protection function to one of the following modes:

- **Disabled** (default setting): You can use the USB storage devices without limitation.
- **Read Only**: You cannot copy data from the computer to the USB storage devices. However, you can access data on the USB storage devices.
- **No Access**: You cannot access the USB storage devices from the computer.

To configure the Smart USB Protection function:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security** → **Smart USB Protection** and press Enter.
3. Select the desired setting and press Enter.
4. Press F10 or Fn+F10 to save the changes and exit.

## Use software security solutions

The following software solutions help secure your computer and information.

- **Windows Security**

  Windows Security is a software built-in to the operating system. It continually scans for malicious software, viruses, and other security threats. Besides, Windows updates are downloaded automatically to help keep your computer safe. Windows Security also enables you to manage tools including firewall, account protection, application and browser control, and so on.
- **Antivirus programs**

Lenovo preinstalls a full-version antivirus software on selected models of computer. It helps defend the computer against viruses, safeguard your identity, and keep your personal information secured.

- **Absolute Persistence**

  Absolute Persistence technology is embedded in firmware. It detects changes that happen on the hardware, software, or the call-in location. It keeps you always knowing what condition the computer is in. To activate the technology, you have to purchase a subscription to Absolute.

**Note:** For more information about how to use these software solutions, refer to their help systems respectively.

# Chapter 3. UEFI BIOS

## Enter the UEFI BIOS menu

Turn on or restart the computer. When the logo screen is displayed, press F1 or Fn+F1 to enter the UEFI BIOS menu.

**Note:** If you have set UEFI BIOS passwords, enter the correct passwords when prompted. You also can select **No** or press Esc to skip the password prompt and enter the UEFI BIOS menu. However, you cannot change the system configurations that are protected by passwords.

## Navigate the UEFI BIOS menu

Follow the on-screen instructions to navigate in the UEFI BIOS menu.

The table below introduces the available settings of the UEFI BIOS menu. You can follow the on-screen instruction to navigate in the UEFI BIOS menu.

**Note:** The UEFI BIOS menu might vary depending on system configurations.

| Menu | Introduction |
|---|---|
| Main | This category provides the general product-related and firmware information including system summary, machine type, product serial number, UUID number, etc. |
| Devices | This category introduces how to configure various devices such as USB ports and audio controllers. |
| Advanced | This category provides advanced information about the computer such as the CPU features. |
| Power | This category introduces power and thermal management solutions. |
| Security | This category introduces various passwords, locks, and software to protect your computer. |
| Startup | This category introduces how to set the boot priority order. |
| Exit | This category introduces how to exit as you prefer. |

You can go to Lenovo BIOS Simulator Center https://download.lenovo.com/bsco/index.html to explore the detailed settings by your product name.

**Note:** The Lenovo BIOS Simulator Center makes periodic updates of the settings. The UEFI BIOS simulator interface and description of settings might be different from that on your actual user interface.

## Enable or disable the ErP LPS compliance mode

Lenovo computers meet the eco-design requirements of the ErP Lot 3 regulation. Follow the instruction to enable or disable the ErP LPS compliance mode.

For more information about the eco-design requirements, go to: https://www.lenovo.com/us/en/compliance/eco-declaration.

You can enable the ErP LPS compliance mode to reduce the consumption of electricity when the computer is off. To enable or disable the ErP LPS compliance mode:

Step 1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.

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Step 2. Select **Power → Enhanced Power Saving Mode** and press Enter.

Step 3. Enable or disable the feature as desired.

**Note:** Please note that when the Enhanced Power Saving Mode is disabled, the power consumption might be increased when the computer is off.

Step 4. Press F10 or Fn+F10 to save the changes and exit.

When the ErP LPS compliance mode is enabled, you can wake up the computer by doing one of the following:

- Press the power button.
- Enable the Wake Up on Alarm feature to make the computer wake up at a set time.

To meet the requirement of ErP compliance, you need to disable the Fast Startup function.

1. Go to **Control Panel** and view by large icons or small icons.
2. Click **Power Options → Choose what the power buttons do → Change settings that are currently unavailable**.
3. Clear the **Turn on fast startup (recommended)** option from the **Shutdown settings** list.

## Update the UEFI BIOS

When you install a new program, device driver, or hardware component, you might need to update the UEFI BIOS.

Download and install the latest UEFI BIOS update package by one of the following methods:

### From the Vantage app

Follow the instructions to update the UEFI BIOS from the Vantage app.

Step 1. Open the Vantage app, and then click **Device → System Update**.

Step 2. If the latest UEFI BIOS update package is available, follow the on-screen instructions to download and install the package.

### From the Lenovo Support Web site

Follow the instructions to update the UEFI BIOS from the Lenovo Support Web site.

Step 1. Go to https://pcsupport.lenovo.com and select the entry for your computer.

Step 2. Click **Drivers & Software → Manual Update → BIOS/UEFI**.

Step 3. Follow the on-screen instructions to download and install the latest UEFI BIOS update package.

### From the Windows Update

Follow the instructions to update the UEFI BIOS from the Windows Update.

Step 1. Type `Settings` in the Windows search box and press Enter.

Step 2. Click **Update & Security → Windows Update → Check for Updates**.

Step 3. If a BIOS update package appears in your update list, click **Download or Install** to initiate the update.

# Chapter 4. CRU replacement

Customer Replaceable Units (CRUs) are parts that can be replaced by the customer. Lenovo computers contain the following types of CRUs:

- **Self-service CRUs:** Refer to parts that can be replaced easily by customer themselves or by trained service technicians at an additional cost.
- **Optional-service CRUs:** Refer to parts that can be replaced by customers with a greater skill level. Trained service technicians can also provide service to replace the parts under the type of warranty designated for the customer's machine.

If you intend on installing the CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You might be required to return the defective part that is replaced by the CRU. When return is required: (1) return instructions, a prepaid shipping label, and a container will be included with the replacement CRU; and (2) you might be charged for the replacement CRU if Lenovo does not receive the defective CRU within thirty (30) days of your receipt of the replacement CRU. For full details, see the Lenovo Limited Warranty documentation at:
https://www.lenovo.com/warranty/llw_02

## CRU list

The following is the CRU list of your computer.

### Self-service CRUs

- Computer stand*
- Keyboard*
- Mouse*
- Power cord
- Conference Call Base*
- USB-C to USB-C cable for Conference Call Base*
- Power cord for Conference Call Base*
- 65 W ac power adapter for Conference Call Base*

### Optional-service CRUs

- Hard disk drive*
- Hard disk drive bracket (for the secondary hard disk drive only)*
- M.2 solid-state drive*
- Memory module
- Optical drive*
- Optical drive bezel*
- Optical drive bracket*
- Rear I/O cover
- System board shield

* for selected models

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# Computer stand

### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

For access, do the following:

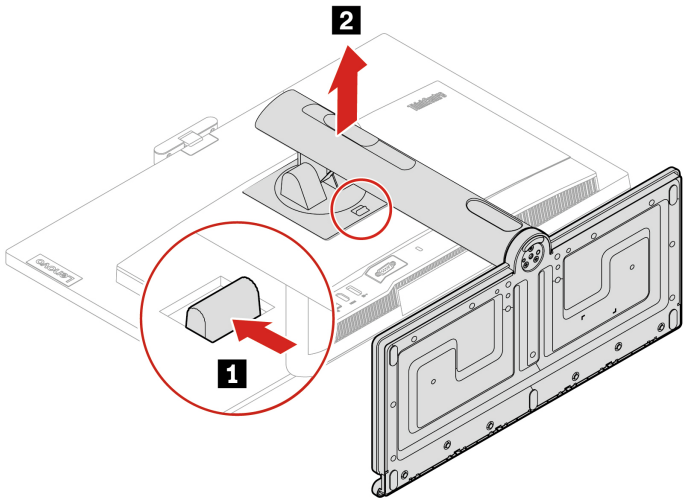
1. Turn off the computer and remove all connected devices and cables.
2. Disconnect the computer from ac power and all connected cables.
3. Place a soft, clean towel or cloth on the desk or surface. Hold the sides of your computer and gently lay it down so that the screen is against the surface and the computer cover is facing up.

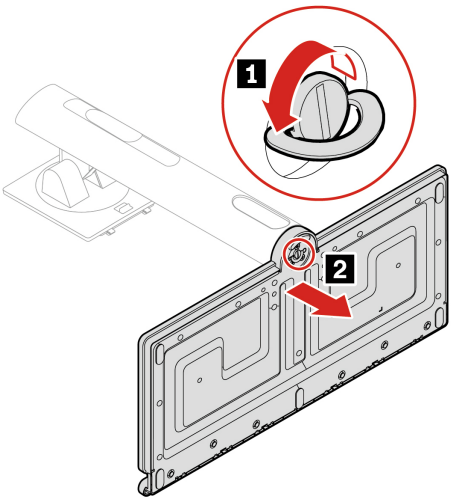
### Replacement procedure

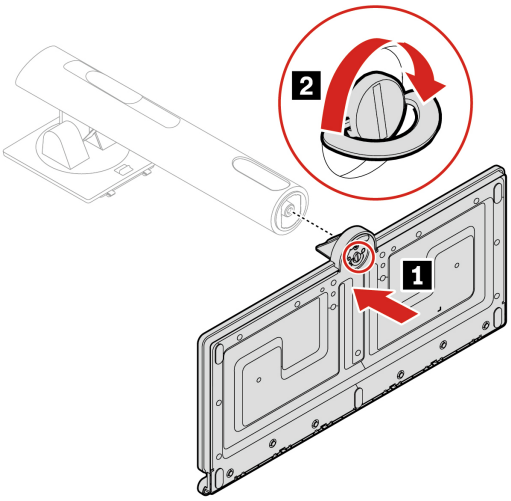
**Note:** Some computer models might not be shipped with a computer stand. In this case, remove the mylar over the computer stand hole first if you want to install a new computer stand.

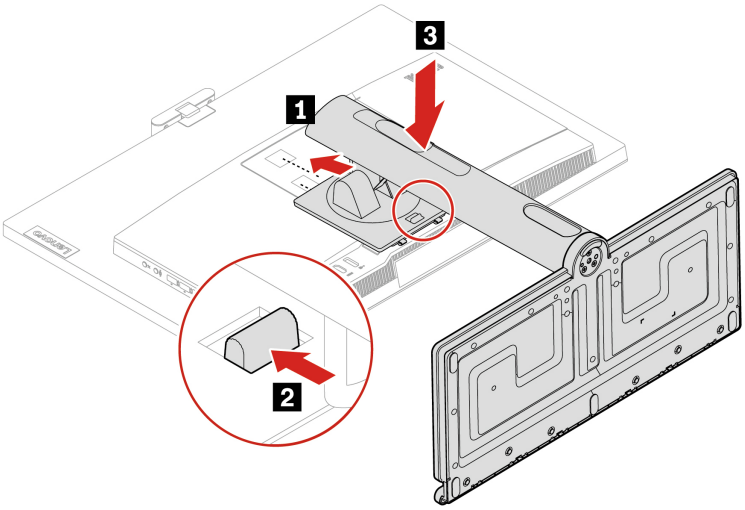
Depending on your computer stand, refer to one of the following to replace the computer stand.

- Full-function monitor stand

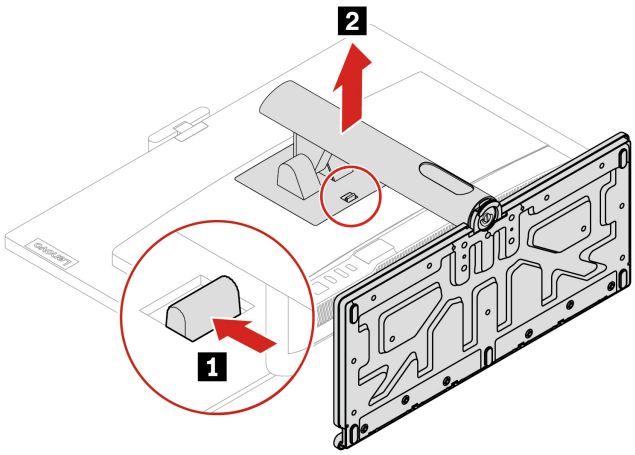





- Tilt-only stand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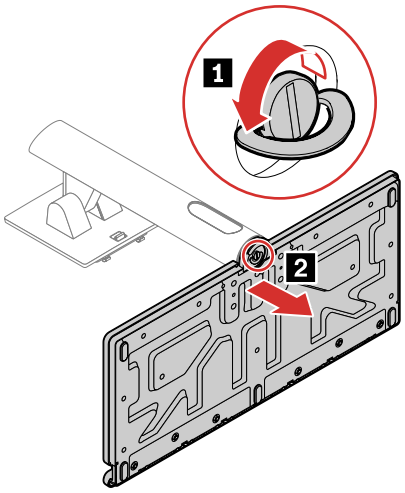
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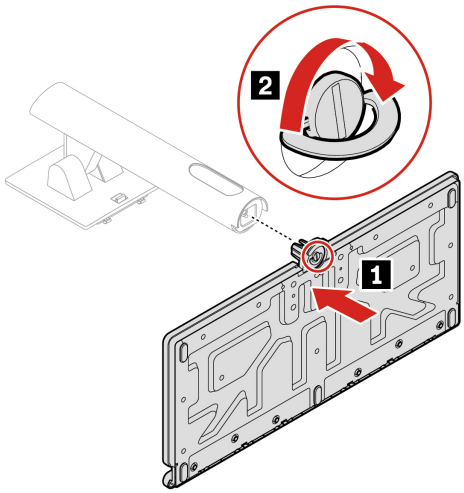
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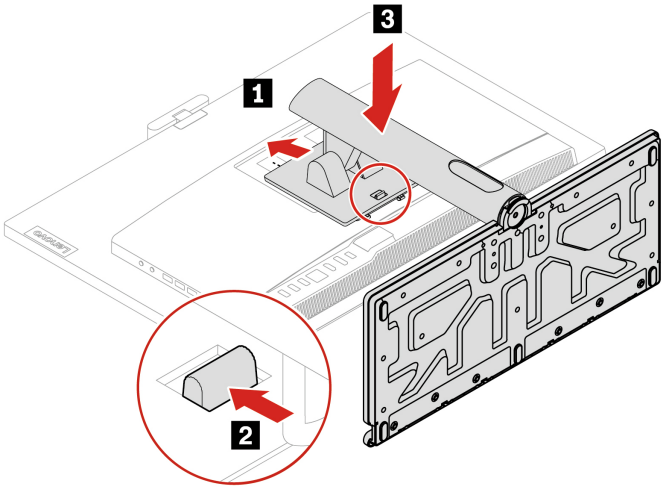
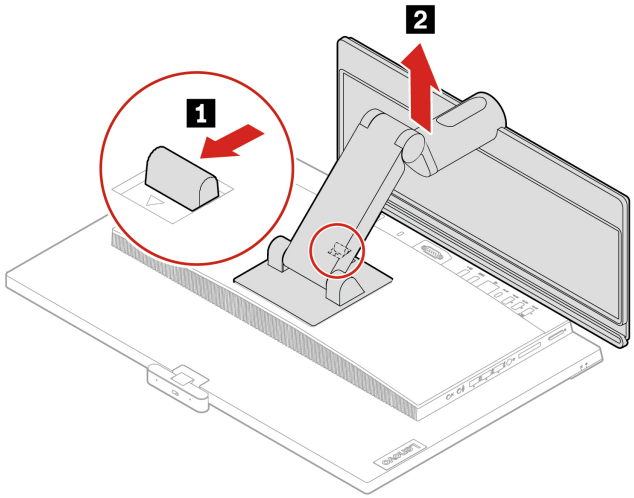
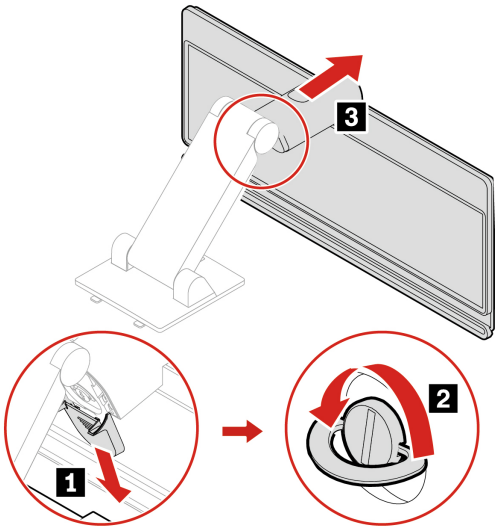
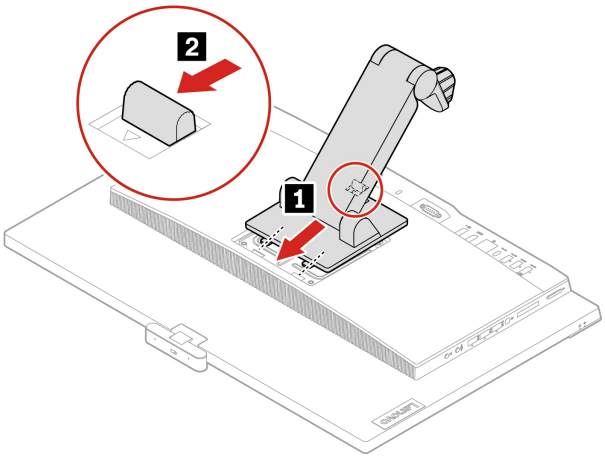



- UltraFlex V Stand

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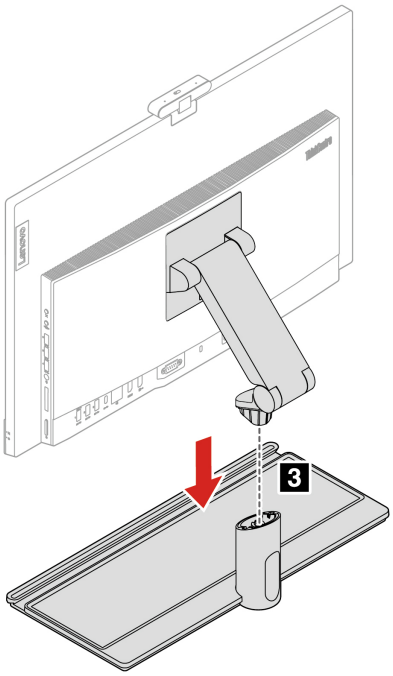
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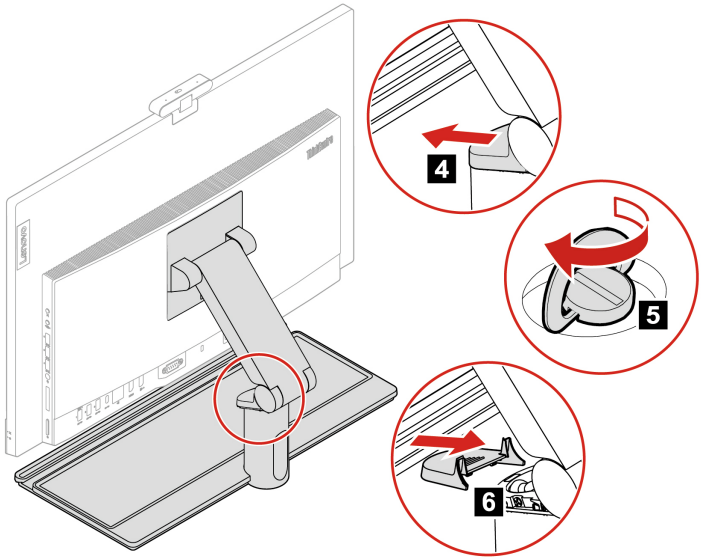



## Rear I/O cover

### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

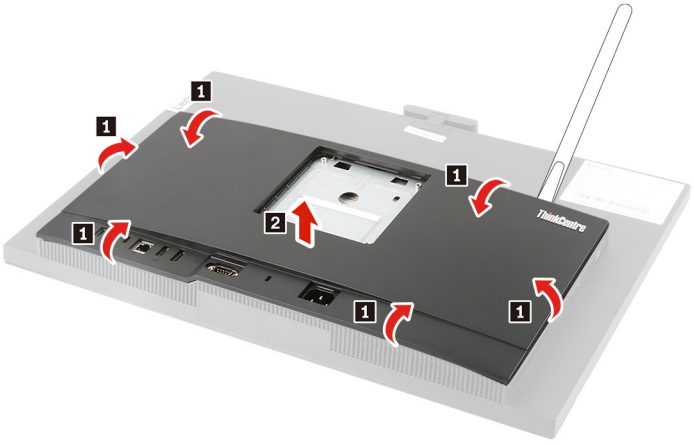
Before you open the rear cover, turn off the computer and wait several minutes until the computer is cool.

For access, do the following:

1. Turn off the computer and remove all connected devices and cables.
2. Unlock any locking device that secures the computer cover.
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. Remove the computer stand, if any. See “Computer stand” on page 24.

### Removal procedure

**Note:** Some computer models might not be shipped with a serial connector module. In this case, remove the dummy cover for serial connector module first.




## System board shield

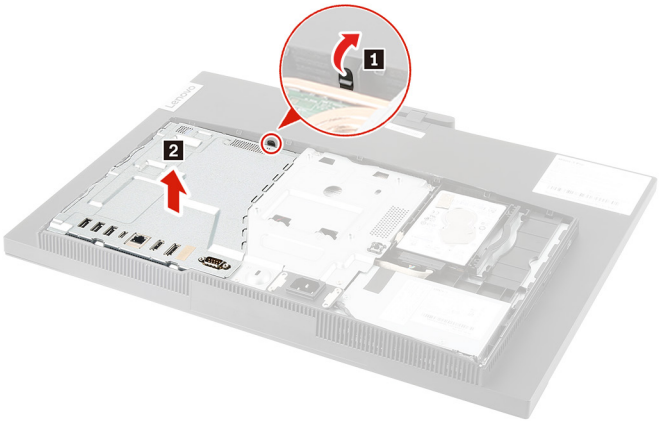
### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

For access, remove the following parts in order, if any:

- “Computer stand” on page 24.
- “Rear I/O cover” on page 29.

### Removal procedure



## Primary hard disk drive

### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

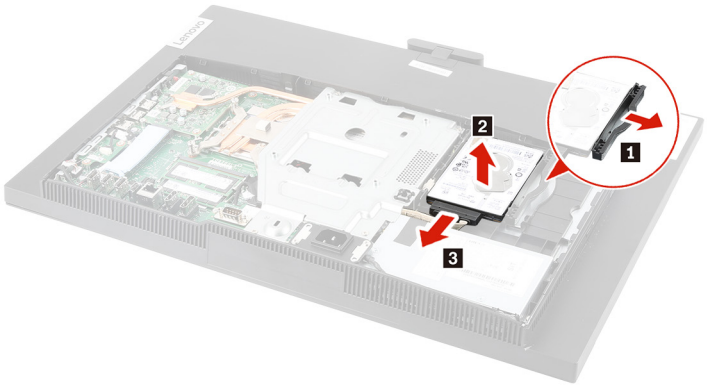
**Attention:** The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:

- Replace the internal storage drive only for upgrade or repair. The internal storage drive is not designed for frequent changes or replacement.
- Before replacing the internal storage drive, make a backup copy of all the data that you want to keep.
- Do not touch the contact edge of the internal storage drive. Otherwise, the internal storage drive might get damaged.
- Do not apply pressure to the internal storage drive.
- Do not make the internal storage drive subject to physical shocks or vibration. Put the internal storage drive on a soft material, such as cloth, to absorb physical shocks.

For access, remove the following parts in order, if any:

- “Computer stand” on page 24.
- “Rear I/O cover” on page 29.
- “System board shield” on page 30.

### Removal procedure




## Optical drive

### Prerequisite

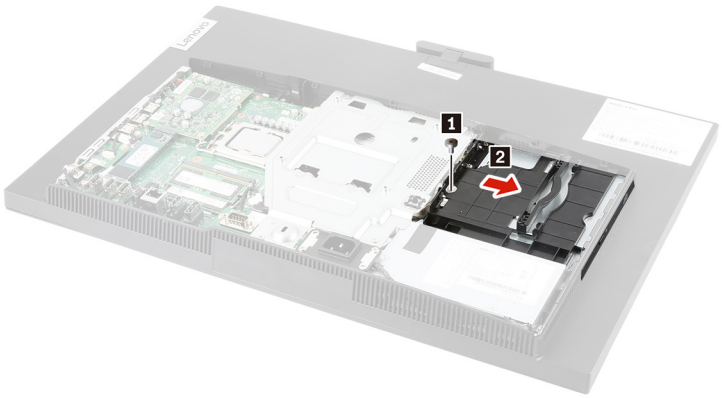
Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

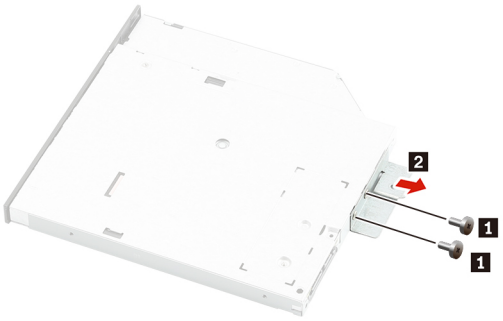
For access, remove the following parts in order, if any:

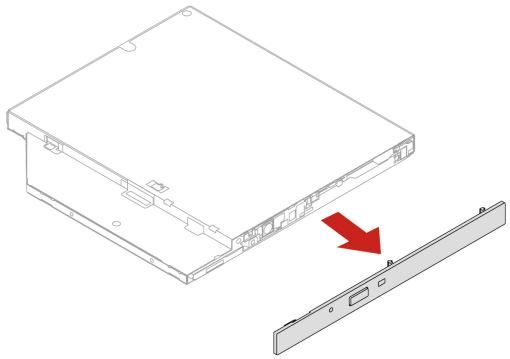
- “Computer stand” on page 24.
- “Rear I/O cover” on page 29.
- “System board shield” on page 30.
- “Primary hard disk drive” on page 31.

### Removal steps

**Note:** Some computer models might not be shipped with an optical drive. In this case, remove the dummy optical drive bezel first if you want to install a new optical drive.





## Secondary hard disk drive and bracket

### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

**Attention:** The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:

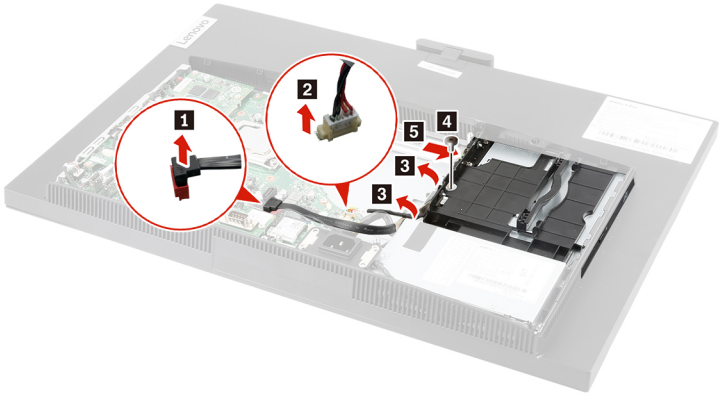
- Replace the internal storage drive only for upgrade or repair. The internal storage drive is not designed for frequent changes or replacement.
- Before replacing the internal storage drive, make a backup copy of all the data that you want to keep.
- Do not touch the contact edge of the internal storage drive. Otherwise, the internal storage drive might get damaged.
- Do not apply pressure to the internal storage drive.
- Do not make the internal storage drive subject to physical shocks or vibration. Put the internal storage drive on a soft material, such as cloth, to absorb physical shocks.

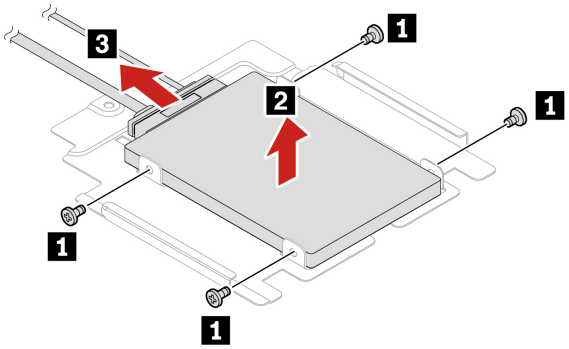
For access, remove the following parts in order, if any:

- “Computer stand” on page 24.
- “Rear I/O cover” on page 29.
- “System board shield” on page 30.
- “Primary hard disk drive” on page 31.

### Removal procedure

**Note:** The secondary hard disk drive is installed in the same location as the optical drive.




## M.2 solid-state drive

### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

**Attention:** The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:

- Replace the internal storage drive only for upgrade or repair. The internal storage drive is not designed for frequent changes or replacement.
- Before replacing the internal storage drive, make a backup copy of all the data that you want to keep.
- Do not touch the contact edge of the internal storage drive. Otherwise, the internal storage drive might get damaged.
- Do not apply pressure to the internal storage drive.

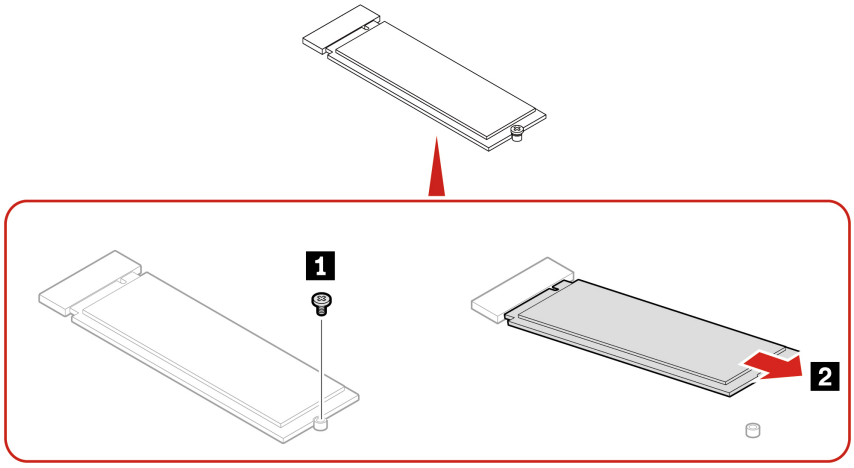
- Do not make the internal storage drive subject to physical shocks or vibration. Put the internal storage drive on a soft material, such as cloth, to absorb physical shocks.

For access, remove the following parts in order:

- “Computer stand” on page 24.
- “Rear I/O cover” on page 29.
- “System board shield” on page 30.

### Removal procedure

**Note:** A thermal pad might cover the M.2 solid-state drive. To access the M.2 solid-state drive, peel off the thermal pad first.

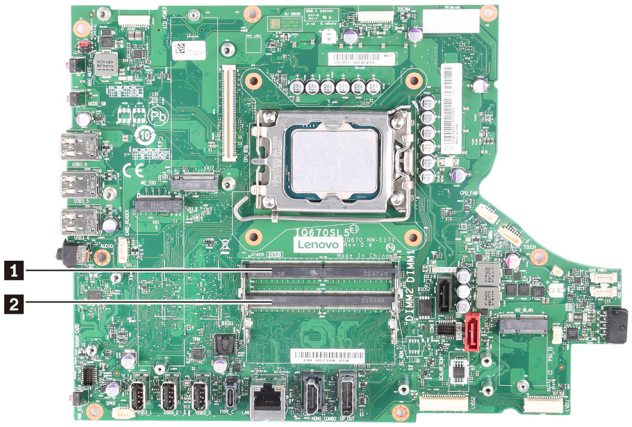



## Memory module

### Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

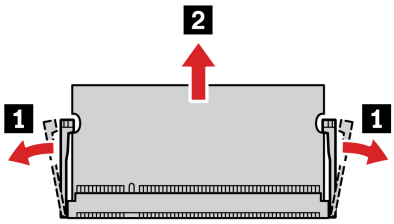
Ensure that you follow the installation order for memory modules shown in the following illustration.

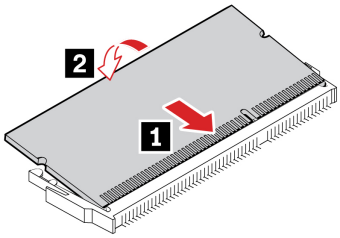



For access, remove the following parts in order, if any:

- “Computer stand” on page 24.
- “Rear I/O cover” on page 29.
- “System board shield” on page 30.

**Removal procedure**



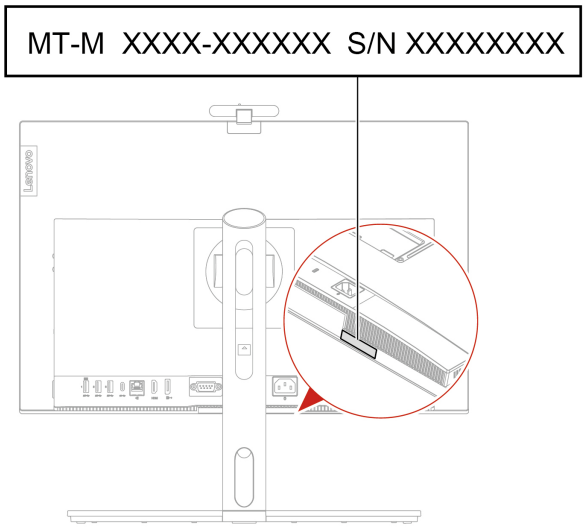
# Chapter 5. Help and support

## Find your serial number

This topic helps you find computer serial number.

You can find your serial number via:

- **Dashboard** or **Device** in the **Vantage** app
- Serial number and machine type label of your computer (shown as below illustration)




## Diagnose and troubleshoot your computer

This section provides introduction to a set of diagnostics and troubleshooting tools at Lenovo Support Web site and the Vantage app. They can help you diagnose common software and hardware issues.

The following table lists these diagnostics tools and the recommended conditions for each tool.

| Diagnostics tool | Recommended scenario |
|---|---|
| Troubleshoot and diagnose at Lenovo Support Web site | You want to have an online troubleshooting or scan of hardware and drivers on your computer. |
| Hardware scan | • Your computer is installed with the Vantage app.<br>• You want to perform basic examinations of the hardware components. |

## Troubleshoot and diagnose at Lenovo Support Web site

Lenovo provides two different diagnosing solutions to help you identify and resolve problems on your computer.

1. Go to https://www.pcsupport.lenovo.com/ and enter your product name in the search box.
2. Click **Troubleshoot & Diagnose** and select the option that fits your need.

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**Notes:**

- Before launching any automatic diagnosing process, a pop-up window will be prompted to install Lenovo Service Bridge. Lenovo Service Bridge helps to connect your computer with Lenovo diagnosing tools.
- Lenovo Support Web site makes periodic updates of the sections to keep improving your experience with your computer. The Web site interface and descriptions of sections might be different from that on your actual interface.

- If you are unaware of what problem your computer goes with, it is recommended that you select **Easy** and follow on-screen instructions to get your firmware updated and obtain the hardware status.
- If you have identified the problem on your computer, you can select **Custom** and follow on-screen instructions to resolve the problem.

If solutions can not resolve problems on your computer, you can follow on-screen instructions to submit an e-ticket or contact Lenovo for professional assistance.

## Hardware scan

Hardware scan is an effective hardware testing tool to help you identify existing hardware issues.

To run the Hardware scan:

Step 1. Type `Vantage` in the Windows search box and then press Enter.

Step 2. Click **Hardware scan** or **Support → Hardware scan**.

Step 3. Select **QUICK SCAN** or **CUSTOMIZE** and then follow the on-screen instructions to run the hardware scan.

**Notes:**

- The Quick Scan tool contains a pre-selected suite of tests that performs basic examinations of the hardware components found in the system. The Customize tool enables you to select one or several hardware components to perform the examinations.
- Before selecting **QUICK SCAN**, click **Refresh Modules** to ensure that the list of hardware components is the components currently available for the computer.

Step 4. If any hardware failure is detected, the result varies depending on the warranty status and varies by country or region. Follow the on-screen instructions to resolve the issue.

## Recover Windows operating system

This topic provides the instructions of recovering a Windows operating system.

Use the following recovery options to reset or restore your computer when your computer comes with issues. It is recommended that you select Lenovo recovery options to reset your operating system to original factory conditions.

- Use Lenovo recovery options: Connect the drive that contains the operating system installation program to the computer. To create the Lenovo recovery media, refer to https://support.lenovo.com/HowToCreateLenovoRecovery.
- Use Windows recovery options:
  1. Microsoft constantly makes updates to the Windows operating system. Before installing a particular Windows version, check the compatibility list for the Windows version. For details, go to https://support.lenovo.com/us/en/solutions/ht512575.

2. Connect the drive that contains the operating system installation program to the computer. To create the installation media, refer to https://support.microsoft.com/windows.

## Call Lenovo

If you have tried to correct the problem yourself and still need help, you can call Lenovo Customer Support Center.

## Before you contact Lenovo

Prepare the needed information before you contact Lenovo.

1. Record the problem symptoms and details:
   - What is the problem? Is it continuous or intermittent?
   - Any error message or error code?
   - What operating system are you using? Which version?
   - Which software applications were running at the time of the problem?
   - Can the problem be reproduced? If so, how?
2. Record the system information:
   - Product name
   - Machine type and serial number.

## Self-help resources

Use the following self-help resources to learn more about the computer and troubleshoot problems.

| Resources | How to access? |
|---|---|
| Lenovo Support Web Site | https://pcsupport.lenovo.com |
| Tips | https://www.lenovo.com/tips |
| Lenovo Community | https://forums.lenovo.com |
| Accessibility information | https://www.lenovo.com/accessibility |
| Windows help information | • Open the Start menu and click **Get Help** or **Tips**.<br>• Use Windows Search or the Cortana® personal assistant.<br>• Microsoft support Web site: https://support.microsoft.com |

## Purchase accessories or additional services

This topic provides instructions on how to purchase accessories or additional services.

### Accessories

Lenovo has a number of hardware accessories and upgrades to help expand the functionalities of your computer. Accessories include memory modules, storage devices, network cards, power adapters, keyboards, mice, and so on.

To shop at Lenovo, go to https://www.lenovo.com/accessories.

### Additional services

During and after the warranty period, you can purchase additional services from Lenovo at https://pcsupport.lenovo.com/warrantyupgrade.

Service availability and service names might vary by country or region.

# Appendix A. Notices and trademarks

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For the latest information or any questions or comments, contact or visit the Lenovo Web site:

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