User Guide

ThinkStation P3 Ultra SFF G2

First Edition (June 2025)

Contents

About this documentation

This documentation applies to the ThinkStation® product models listed below.

Model name	Machine types (MT)
ThinkStation P3 Ultra SFF G2	30J5, 30J6, 30J8, 30J9, 30JA, 30J3, 30J4, 30JC

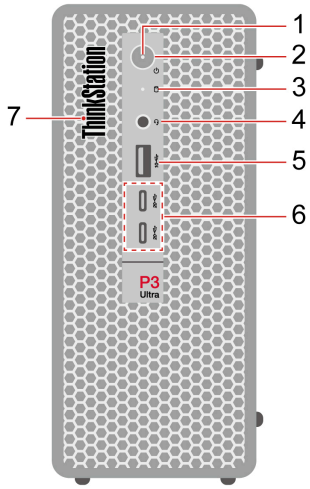
Further compliance information related to your product is available at https://www.lenovo.com/compliance.

Before using this documentation, please read the following information:

- *Setup Guide*
- *Safety and Warranty Guide*
- For more compliance information, refer to *Regulatory Notice* at https://pcsupport.lenovo.com and *Generic Safety and Compliance Notices* at https://pcsupport.lenovo.com/docs/generic_notices.
- Illustrations in this documentation might look different from your product.
- Depending on the model, some optional accessories, features, software programs, and user interface instructions might not be applicable to your computer.
- Documentation content is subject to change without notice. To get the latest documentation, go to https://pcsupport.lenovo.com.

Chapter 1. Overview

Front



Item	Description	Item	Description
1	Power indicator	2	Power button
3	Storage drive activity indicator	4	Headset connector
5	USB-A connector (USB 10Gbps)	6	USB-C® connectors (USB 20Gbps)
7	ThinkStation LED		

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 in the connector name or below for each corresponding device.

USB device	Data rate (Gbit/s)
Thunderbolt 3	40
Thunderbolt 4	40

Power indicator

Show the system status of your computer.

- **On:** The computer is starting up or working.
- **Off:** The computer is off or in hibernation mode.
- **Blinking:** The computer is in sleep mode.

Headset connector

The headset connector is compatible with:

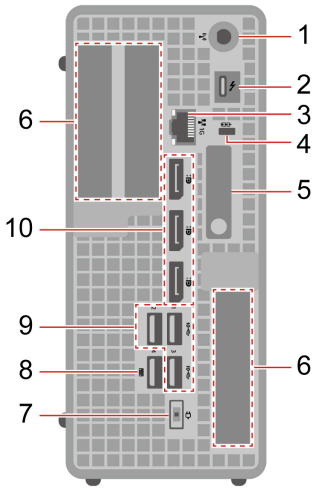
- Headphones or earphones with a 3.5mm (0.14 inch), TRS (3-pole) plug
- Headsets with a 3.5mm (0.14 inch), CTIA-compliant TRRS (4-pole) plug

Note: This headset connector does not support standalone external microphones with a TRS (3-pole) plug or headsets with an OMTP-compliant TRRS (4-pole) plug.

Related topics

- “USB specifications” on page 5.
- “Connect to a Bluetooth-enabled device” on page 8.

Rear



Item	Description	Item	Description
1	Wi-Fi® antenna slot	2	USB-C connector (Thunderbolt™ 4)*
3	Ethernet connector (1 GbE)	4	Security-lock slot
5	Chassis latch	6	PCI-Express card area
7	Power cord connector	8	USB-A connector (USB 10Gbps, smart power on)
9	USB-A connector (USB 10Gbps)	10	DisplayPort™ out connectors

Related topics

- “USB specifications” on page 5.
- “Use physical locks” on page 12.
- “Initial setup” on page 7.
- “Smart power-on feature (for selected models)” on page 9.

Specifications

Specification	Description
Dimensions	• Width: 87 mm (3.43 inches) • Height: 202 mm (7.95 inches) • Depth: 223 mm (8.78 inches)
Weight (without packaging)	Maximum configuration as shipped: 3.5 kg (7.72 lb)
Hardware configuration	1. Open the system menu from the top-right corner and click ⚙. 2. Click **System → About**.

Specification	Description
Power supply	• 170-watt automatic voltage-sensing power supply • 230-watt automatic voltage-sensing power supply • 330-watt automatic voltage-sensing power supply
Electrical input	• Input voltage: From 100 V ac to 240 V ac • Input frequency: 50/60 Hz
Microprocessor	To view the microprocessor information of your computer: 1. Open the system menu from the top-right corner and click ⚙. 2. Click **System → About**.
Memory	Up to two double data rate 5 (DDR5) small outline dual in-line memory module (SODIMM) Maximum memory capacity: 128 GB
Storage device	• 3.5-inch hard disk drive* • On-board M.2 solid-state drive* • PCI-Express M.2 solid-state drive* Type `Disks` in the search box and use the **Disks** application to view the storage drive capacity of your computer. **Note:** The storage drive capacity indicated by the system is less than the nominal capacity.
Video features	• The integrated graphics card supports the following: – DisplayPort out connector – USB-C connector (Thunderbolt 4) • The optional discrete graphics card provides an enhanced video experience and extended capabilities.
Expansion	• Memory slots • M.2 solid-state drive slot • Storage drive bay • PCI Express slots
Network features	• Bluetooth* • Ethernet LAN • 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 10°C (50°F) to 35°C (95°F)
- Storage: From -40°C (-40°F) to 60°C (140°F)

Relative humidity

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

System memory speed

Your computer can come with the following types of memory modules and will run up to the following speed:

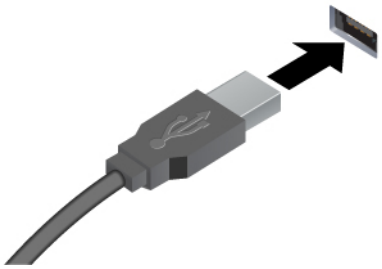
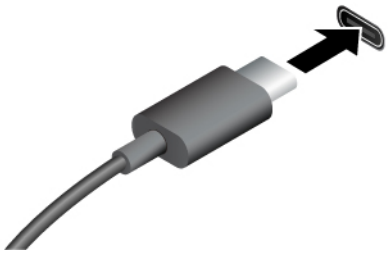
Memory module type	Memory module speed
DDR5 ECC 6400 SoDIMMs	6400 MT/s
DDR5 non-ECC 6400 SoDIMMs	
DDR5 ECC 5600 SoDIMMs	5600 MT/s
DDR5 non-ECC 5600 SoDIMMs	

Notes:

- The actual system memory speed of the memory modules varies depending on the microprocessor model. For example, your computer comes with 4800 MT/s memory modules, but the microprocessor only supports up to 4000 MT/s memory modules. Then the system memory speed will be no faster than 4000 MT/s.
- The microprocessor models supported in your computer might vary. For a list of supported microprocessor models, contact the Lenovo Customer Support Center.
- The ECC memory modules are not supported on the computer models with Intel Ultra 5 225T or Intel Ultra 5 225 microprocessors.

USB specifications

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

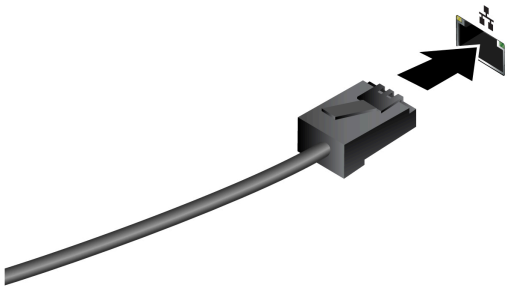
Connector name	Description
 • USB-A connector (USB 10Gbps)	Connect USB-A compatible devices, such as a USB-A keyboard, USB-A mouse, USB-A storage device, or USB-A printer.
 • USB-C connector (USB 20Gbps) • USB-C connector (Thunderbolt 4)	• Charge USB-C compatible devices with the output voltage and current of 5 V and 3 A. • Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to https://www.lenovo.com/accessories.

Chapter 2. Get started

Initial setup

This section helps you set up your computer.

1. Connect the cables of external displays to appropriate connectors on the graphics card installed in the computer.
2. Connect the mouse and the keyboard to the computer respectively.
3. Connect the cables of other devices according to the devices' instructions.
4. Connect the power cord to the power adapter. Then connect the power cord to the power cord connector on the computer and connect it to a properly-grounded electrical outlet.
5. Press the power button to turn on the computer.
6. Follow the on-screen instructions to complete the setup procedures.
7. Connect to a wired or wireless network:
   - Wired network: connect Ethernet cable of local network to the Ethernet connector on the computer.



Note: For models with an Intel X710-T2L Ethernet adapter, it's recommended to prepare a Shielded Twisted Pair (STP) Category 6A Ethernet cable for Ethernet connection on the adapter.

   - Wireless network: connect your computer to Wi-Fi®networks.
     a. Open the system menu from the top-right corner and expand the Wi-Fi section of the menu.
     b. Click **Select Network**. A list of available wireless networks is displayed.
     c. Select a network available for connection. 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.

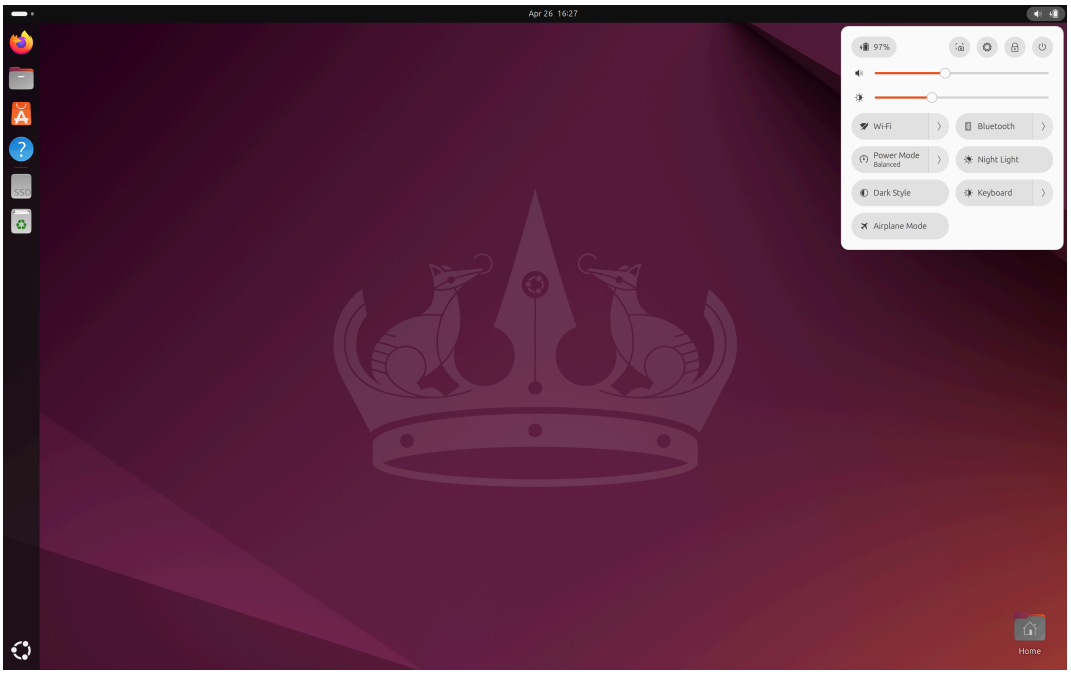
Change display settings

Right-click a blank area on the desktop and select **Display settings**. Then, you can change display settings as you prefer.

Get started with Ubuntu Desktop

Learn the basics of Ubuntu and start working with it right away. For more information about Ubuntu, see the Ubuntu documentation site at: https://help.ubuntu.com/lts/ubuntu-help/index.html.

The Gnome desktop is installed by default and is designed to be simple and easy to use. Details on using Gnome are available by launching the Help application or online at https://help.gnome.org/users/.



Launch an app

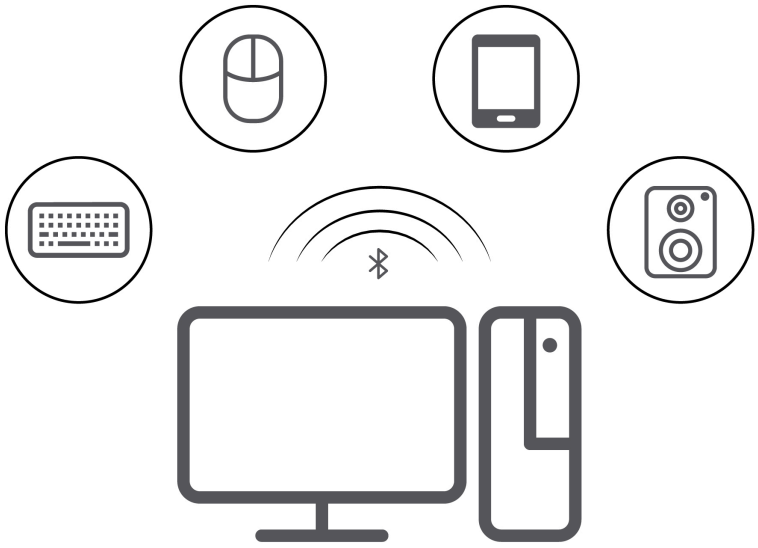
- Press the Super key (with the Windows logo) or open the Activities menu on the top left and type in the name of the application you want to launch.
- Click the **Show Apps** button on the lower left, and select the application you want to launch.

Launch settings

Open the system menu from the top-right corner and click ⚙.

Connect to a Bluetooth-enabled device (for selected models)

You can connect all types of Bluetooth-enabled devices to your computer, such as a keyboard, a mouse, a smartphone, or speakers. Place the device that you are attempting to connect to less than 10 meters (33 feet) from the computer.



1. Turn on Bluetooth on the computer.
   a. Open the system menu from the top-right corner and then click **Settings → Bluetooth**.
   b. In the Bluetooth section enable Bluetooth with the toggle button at the top.
2. Any discoverable devices will be shown in the **Devices** list.
3. Select a Bluetooth device, and then follow the on-screen instructions.

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 5 minutes
- Put the computer to sleep: After 20 minutes

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

To set the power plan:

1. Go to **Settings → Power**.
2. Choose or customize a power plan of your preference.

Note: Disabling automatic suspend will result in higher power consumption. It is recommended to keep automatic suspend enabled.

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.

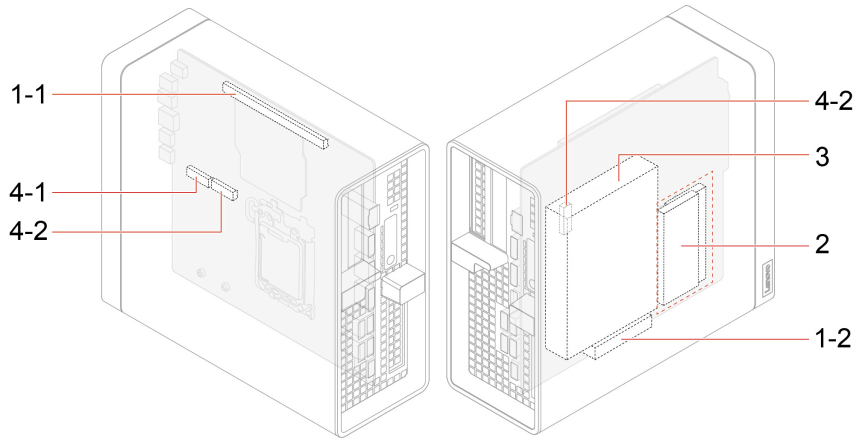
Step 3. Enable or disable the feature as desired.

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

Chapter 3. Features

Expand your computer

You can enhance your computer capacity and performance by adding various devices according to the following rules:



Item	Description	Expansion
1-1	Gen 4 PCI-Express x16 slot	You can install the following compatible PCI-Express cards in the PCI-Express cards slots: • DisplayPort graphics card (2-port) • Mini-DisplayPort graphics card (4-port) • USB-C connector (USB 20Gbps) expansion card (1-port) • USB-C connector (USB 5Gbps) expansion card (2-port) • USB-C connector (USB 10Gbps) expansion card (2-port) • Ethernet expansion card (2-port or 4-port) • Serial expansion card (4-port) • Baseboard Management Controller (BMC) card
1-2	Gen 3 PCI-Express x4 slot (physical link width x8; negotiable link width x4)	
2	Memory slots	You can install up to two memory cards in the memory slots.
3	Storage drive bay*	You can install one 3.5-inch hard disk drive in the storage drive bay.

Item	Description	Expansion
4-1	Gen 5 M.2 solid-state drive slot	You can install one Gen 5 M.2 solid-state drive in the M.2 solid-state drive slots.
4-2	Gen 4 M.2 solid-state drive slots	You can install up to two Gen 4 M.2 solid-state drives in the M.2 solid-state drive slots.

* for selected models

Related topics

- “PCI-Express card (including graphics card)” on page 38
- “Memory module” on page 35
- “3.5-inch hard disk drive” on page 33
- “M.2 solid-state drive” on page 27

Security solutions

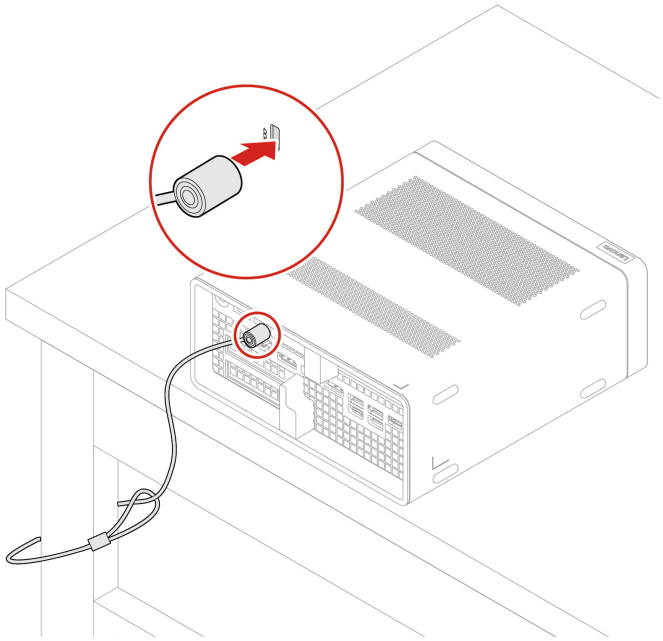
Lenovo values your information security. Your computer can be secured by physical locks, software solutions, and BIOS solutions. They can protect your computer from harm, theft, or unauthorized use.

Use physical locks

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.

MicroSaver® lock

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



Use BIOS security solutions

This section provides BIOS solutions to secure your computer and information.

Wipe the storage drive data (for selected models)

It is recommended that you wipe the storage drive data before recycling the storage drive or the computer.

To wipe the storage drive data:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security → secure wipe → Enabled**.
3. Press F10 or Fn+F10 to save the changes and exit.
4. Restart the computer. When the logo screen is displayed, press F12 or Fn+F12.
5. Select **App Menu → secure wipe** and press Enter.
6. Select the storage drive you will wipe and click **NEXT**.
7. Select the entire storage drive or partition to wipe as desired.
8. Select the method as desired and click **NEXT**.
9. Click **Yes** to confirm your option when the prompting window is displayed.
10. If you have set a hard disk password for the storage drive, enter the password. Otherwise, set a temporary password following the on-screen instructions. Then, click **NEXT**. The wiping process begins.

    Note: Duration of the wiping process varies depending on the storage drive capacity.
11. Click **Reboot** when you are prompted to reset the system, and then one of the following will happen:
    - If the system storage drive data is wiped, you will be prompted that no operating system is found.
    - If the non-system storage drive data is wiped, the computer restarts automatically.

Cover presence switch

The cover presence switch prevents the computer from logging in to the operating system when the computer cover is not properly installed or closed.

To enable or disable the cover presence switch connector on the system board:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security → Cover Tamper Detected** and press Enter.
3. Select **Enabled** or **Disabled** and press Enter.
4. Press F10 or Fn+F10 to save the changes and exit.

If the cover presence switch is enabled and the computer cover is not correctly installed or closed, an error message will be displayed when you turn on the computer. To bypass the error message and log in to the operating system, properly install and close the computer cover, and then enable the cover presence switch connector again in the BIOS menu.

Intel BIOS guard

The Intel® BIOS Guard module cryptographically verifies all BIOS updates. This hardware-based security helps prevent software and malware attacks on the computers BIOS.

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.

Absolute Persistence (for computers purchased outside mainland China)

Absolute Persistence technology is embedded in BIOS. 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.

UEFI BIOS passwords

You can set passwords in UEFI (Unified Extensible Firmware Interface) BIOS (Basic Input/Output System) to strengthen the security of your computer.

Password types

You can set a power-on password, supervisor password, system management password, or hard disk password in UEFI BIOS to prevent unauthorized access to your computer. However, you are not prompted to enter any UEFI BIOS password when your computer resumes from sleep mode.

- Power-on password

  When a power-on password is set, you are prompted to enter a valid password each time the computer is turned on.

- Supervisor password

  Setting a supervisor password deters unauthorized users from changing configuration settings. If you are responsible for maintaining the configuration settings of several computers, you might want to set a supervisor password.

  When a supervisor password is set, you are prompted to enter a valid password each time you try to enter the BIOS menu.

  If both the power-on password and supervisor password are set, you can enter either password. However, you must use your supervisor password to change any configuration settings.

- Hard disk password

  Setting a hard disk password prevents unauthorized access to the data on the storage drive. When a hard disk password is set, you are prompted to enter a valid password each time you try to access the storage drive.

  Note: After you set a hard disk password, your data on the storage drive is protected even if the storage drive is removed from one computer and installed in another.

- System management password (for selected models)

  You can enable the system management password to have the same authority as the supervisor password to control security related features. To customize the authority of the system management password through the UEFI BIOS menu:

  1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
  2. Select **Security → System Management Password Access Control**.
  3. Follow the on-screen instructions.

If you have set both the supervisor password and the system management password, the supervisor password overrides the system management password.

Set, change, and remove a password

Before you start, print these instructions.

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security**.
3. Depending on the password type, select **Set Supervisor Password**, **Set Power-On Password**, **Set System Management Password**, or **Hard Disk Password** and press Enter.
4. Follow the on-screen instructions to set, change, or remove a password.
5. Press F10 or Fn+F10 to save the changes and exit.

You should record your passwords and store them in a safe place. If you forget the passwords, contact a Lenovo-authorized service provider.

Note: If the hard disk password is forgotten, Lenovo cannot remove the password or recover data from the storage drive.

Chapter 4. UEFI BIOS

UEFI BIOS is the first program that the computer runs. When the computer turns on, the UEFI BIOS performs a self test to make sure that various devices in the computer are functioning properly.

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.

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:

Using the built-in software update service

Ubuntu software update will check the LVFS site for any firmware updates and notify you when updates are available.

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.

Chapter 5. CRU replacement

Before CRU replacement

Before replacing hardware of your computer, read this section first. You will get to know what is CRU, the CRU list, system board connectors, and prerequisites for CRU replacement.

What is CRU

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

- ac power adapter
- Chassis
- Dust filter*
- Keyboard*
- Mouse*
- PCI-Express card bracket
- Power cord

Optional-service CRUs

- LED cable
- LED cable holder
- Memory
- M.2 solid-state drive*
- M.2 solid-state drive thermal kit with thermal pad*
- COM cable kit
- PCI-Express card*

- PCI-Express card converter*
- Graphics card*
- 3.5-inch HDD*
- HDD bracket kit*
- HDD cable*
- HDD Fan*

* for selected models

System board illustration

Note: The system board might look slightly different from the illustration.

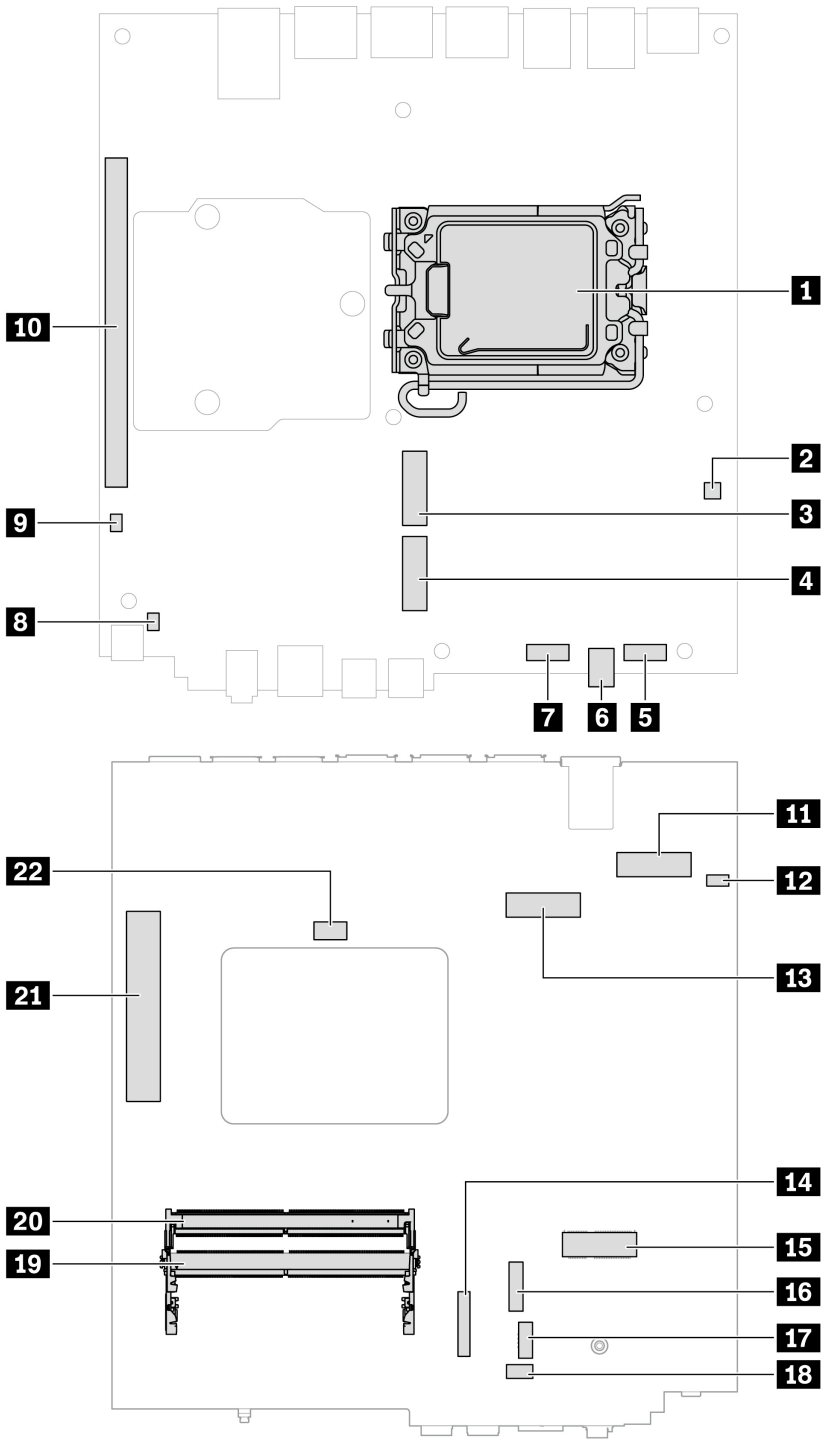


Figure 1. System board part locations

Item	Item
1 Microprocessor	2 Clear CMOS/Recovery jumper
3 Gen 4 M.2 solid-state drive slot 2	4 Gen 5 M.2 solid-state drive slot 1

Item	Item
5 System fan connector 1	6 Cover presence switch
7 System fan connector 2	8 Internal speaker connector
9 Power button connector	10 PCI-Express x16 card slot
11 Thunderbolt 4 board to board connector	12 Coin-cell battery connector
13 Gen 4 M.2 solid-state drive slot 3	14 BMC connector
15 M.2 Wi-Fi card slot	16 SATA connector
17 Auxiliary fan connector	18 ThinkStation LED connector
19 DIMM slot 1	20 DIMM slot 2
21 PCI-Express x4 slot (physical link width x8; negotiable link width x4)	22 COM port connector

Prerequisites for hardware replacement

General prerequisites

Read *Generic Safety and Compliance Notices*.

Prerequisites for opening computer chassis

During operation, some components become hot enough to burn the skin. Before you open the computer cover, do the following：

- Turn off the computer and remove all connected devices and cables.
- Disconnect the computer from ac power and all connected cables.
- Unlock any locking device that secures the chassis.
- Wait approximately 10 minutes until the computer is cool.

Prerequisites for storage drive replacement

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

- Replace the internal storage drive only for repair. The internal storage drive is not designed for frequent changes or replacement.
- Before replacing the internal storage drive, make 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 soft material, such as a cloth, to absorb physical shocks.

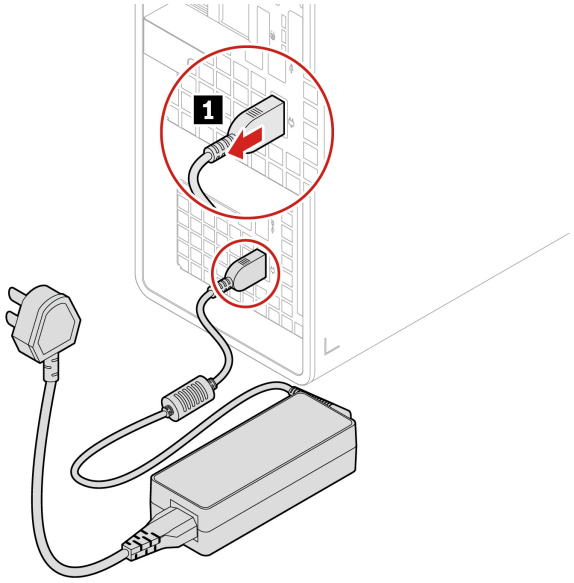
Power adapter and power cord

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

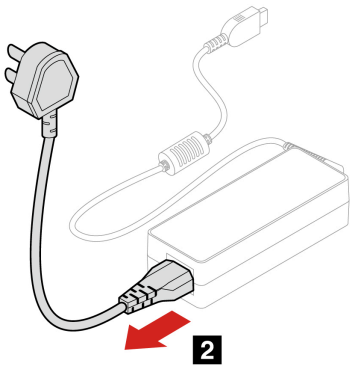
For access, turn off the computer and remove all connected devices and cables.

Removal steps

1. Remove the power adapter.



2. Remove the power cord.

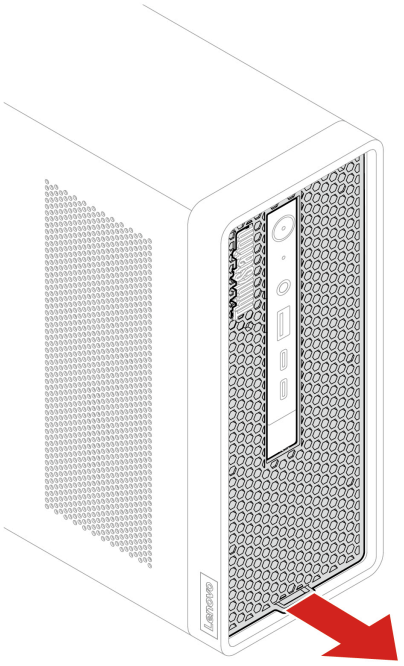


Dust filter

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

Removal steps

Pull the dust filter to remove it from the chassis.

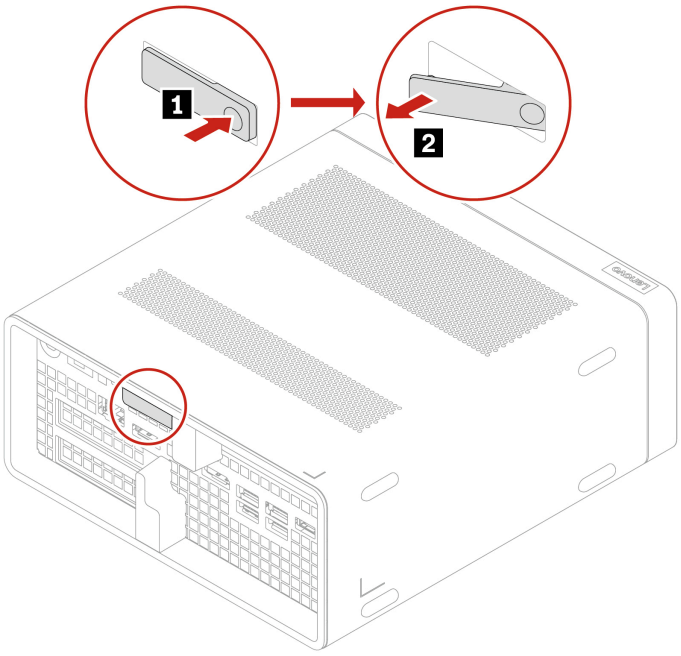


Chassis

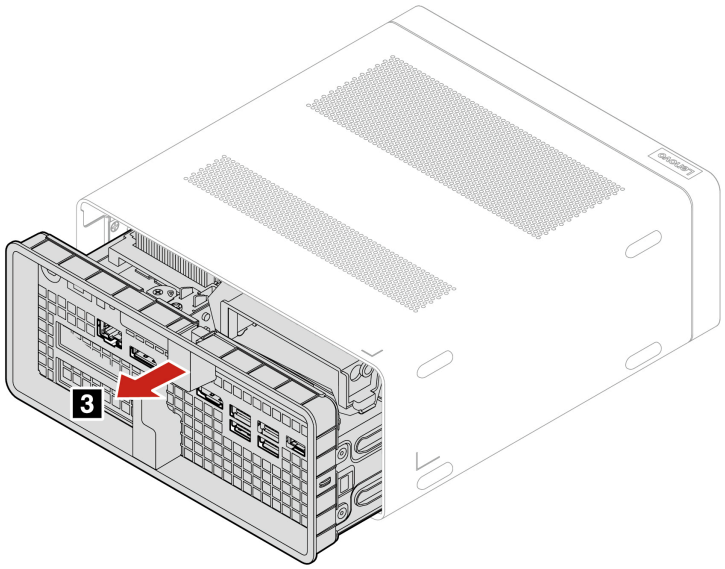
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

Removal steps

1. Push and open the chassis latch.



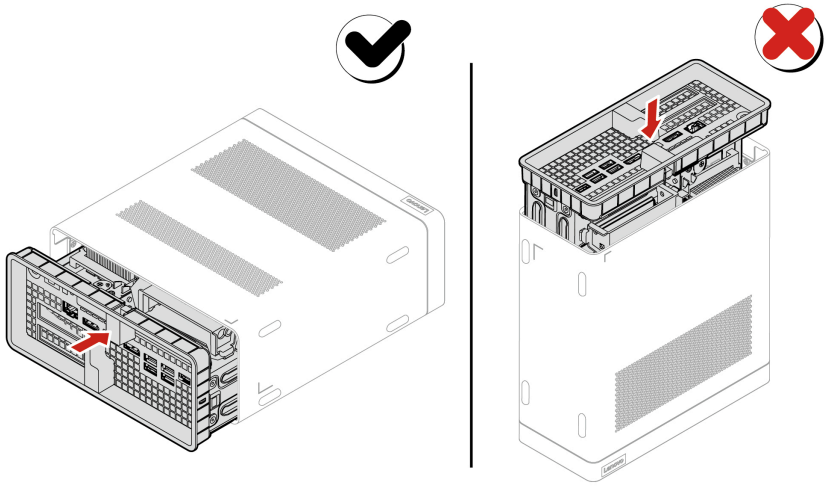
2. Pull the latch to remove the chassis.



Installation steps

Install the chassis.

Note: Push the parts into place until you hear a clicking sound.



M.2 solid-state drive thermal kit

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

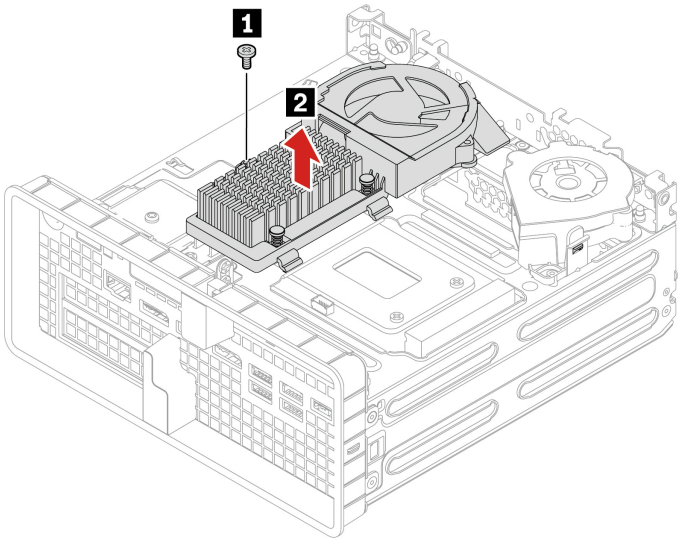
1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Remove the 3.5-inch hard disk drive bracket kit. See “3.5-inch hard disk drive bracket kit” on page 32
4. Disconnect the power cable from the thermal kit.

Removal steps

1. Remove the screw which secures the M.2 solid-state drive thermal kit to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 x L5, hex screw	1	3 ± 0.5 lb/in

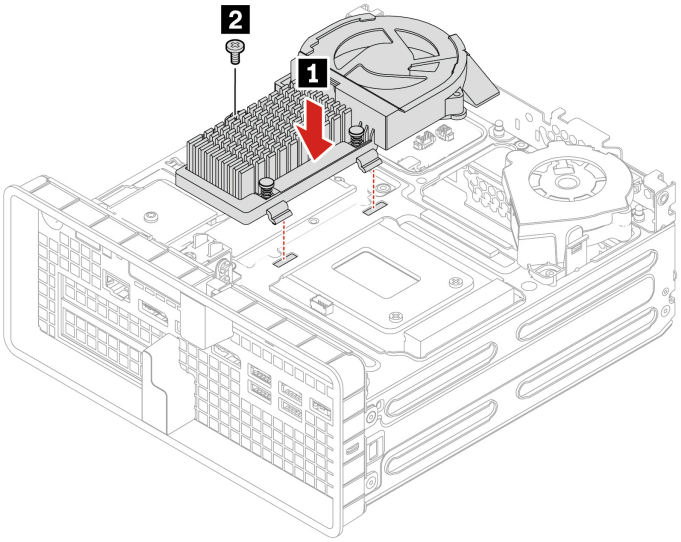
2. Remove the M.2 solid-state drive thermal kit.



Installation steps

1. Align the two hooks on the M.2 solid-state drive thermal kit with the holes on the chassis.
2. Secure the M.2 solid-state drive thermal kit with a screw. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 x L5, hex screw	1	3 ± 0.5 lb/in



Attention: Use the screws provided by Lenovo to avoid any unpredictable damage to your computer.

M.2 solid-state drive

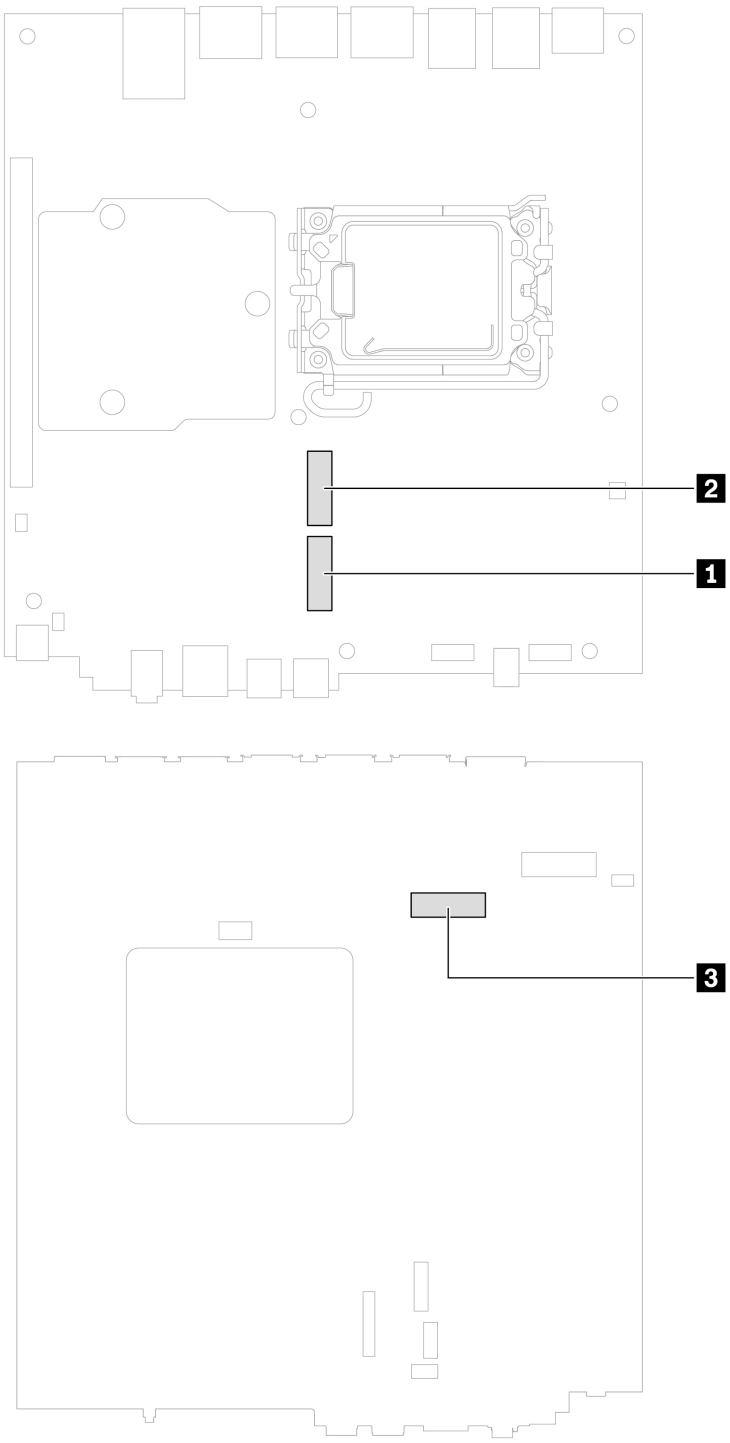
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Remove the 3.5-inch hard disk drive bracket kit. See “3.5-inch hard disk drive bracket kit” on page 32.
4. Remove the M.2 solid-state drive thermal kit. See “M.2 solid-state drive thermal kit” on page 25.

Notes:

- Ensure that you follow the installation order for M.2 solid-state drives shown in the following illustration.
- Install Gen 5 M.2 solid-state drive only in slot 1.

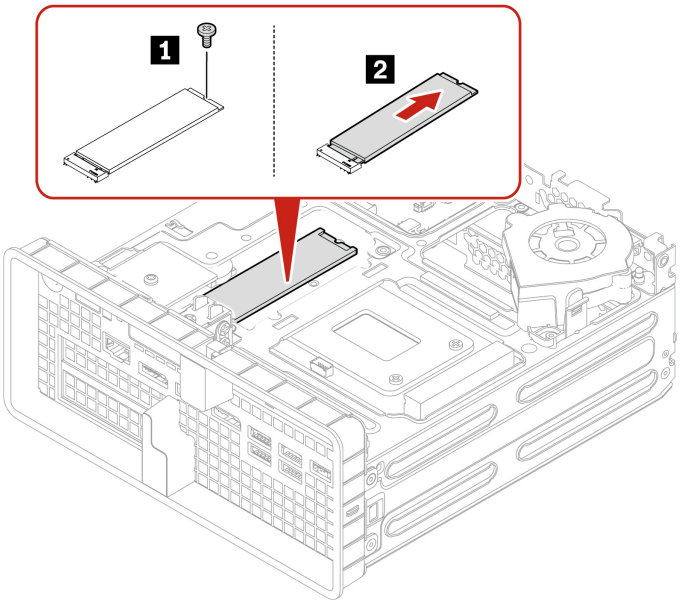


Removal steps for M.2 solid-state drive in slot 3

1. Remove the screw which secures the M.2 solid-state drive to the system board. Find screw specification in the following screw table.

Screw	Quantity	Torque
M2 x L3, flat head	1	1.5 ± 0.2 lb/in

2. Remove the M.2 solid-state drive.

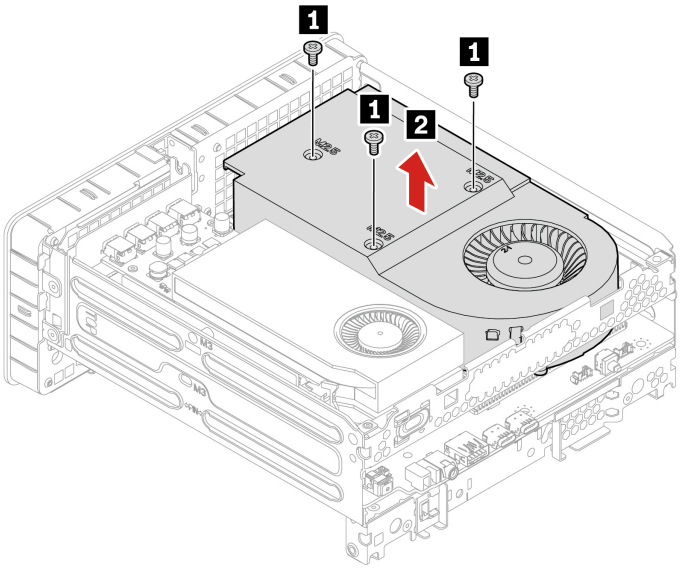


Removal steps for M.2 solid-state drive in slot 1 and slot 2

1. Remove the system fan.
   - Remove the 65-watt system fan.
     a. Remove the three screws which secure the 65-watt system fan. Find screw specification in the following screw table.

Screw	Quantity	Torque
M2.5 x L4.5, flat head	3	1.5 ± 0.2 lb/in

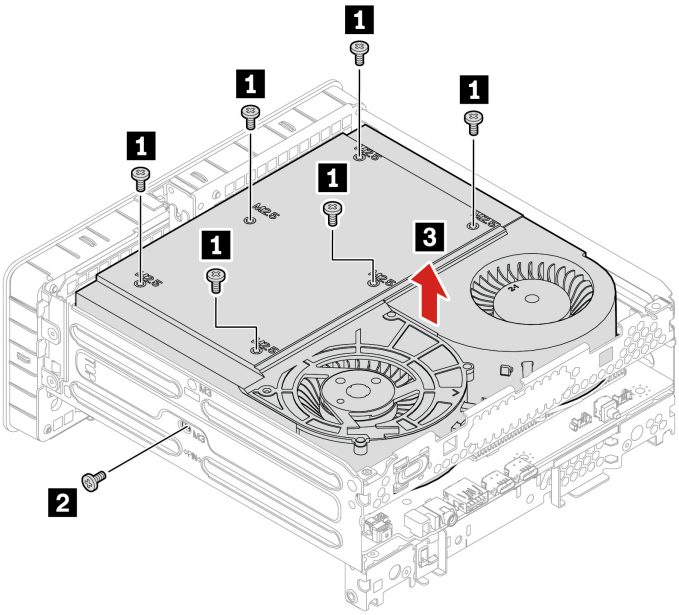
     b. Lift the system fan.



- Remove the 125-watt system fan.
  a. Remove the seven screws which secure the 125-watt system fan. Find screw specification in the following screw table.

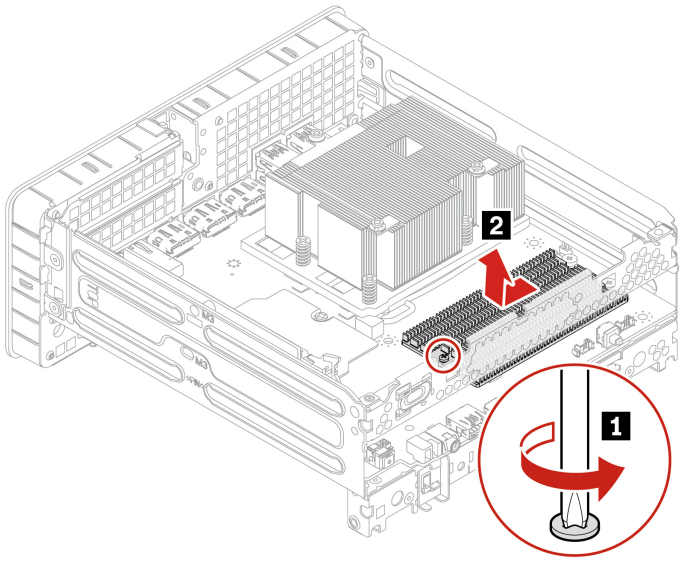
Screw	Quantity	Torque
M2.5 x L4.5, flat head	6	1.5 ± 0.2 lb/in
M3 x L5, coutersunk	1	5.0 ± 0.5 lb/in

  b. Lift the system fan.



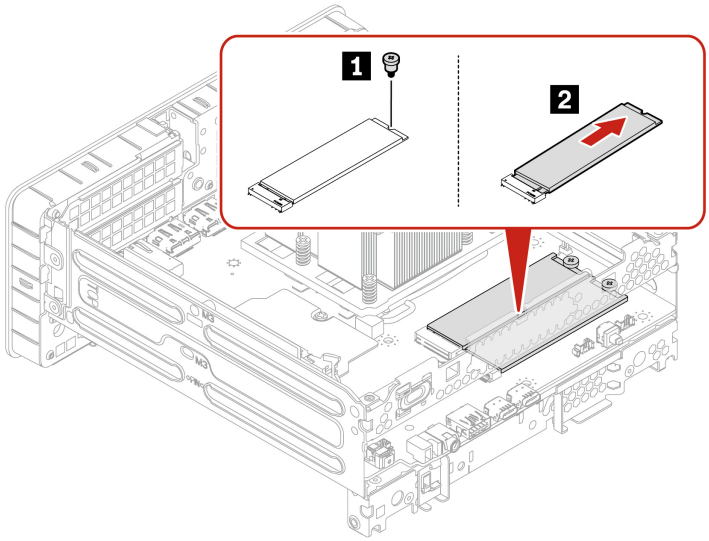
2. Remove the M.2 solid-state drive heatsink. Find screw specification in the following screw table.

Screw	Quantity	Torque
M2 x L3, flat head	1	1.5 ± 0.2 lb/in



3. Remove the M.2 solid-state drive. Find screw specification in the following screw table.

Screw	Quantity	Torque
M2 x L3, flat head	1	1.5 ± 0.2 lb/in



Hard disk drive fan

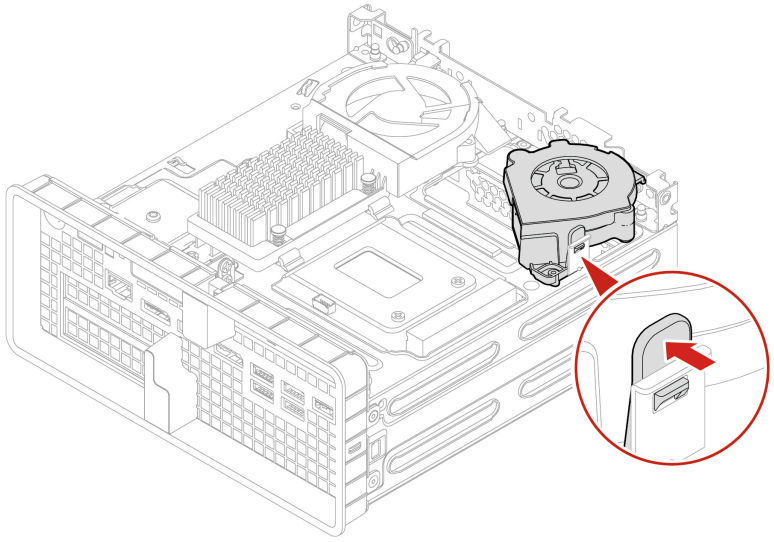
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Disconnect the cable from the hard disk drive fan.

Removal steps

Press the tab to release the hard disk drive fan from the chassis.



3.5-inch hard disk drive bracket kit

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

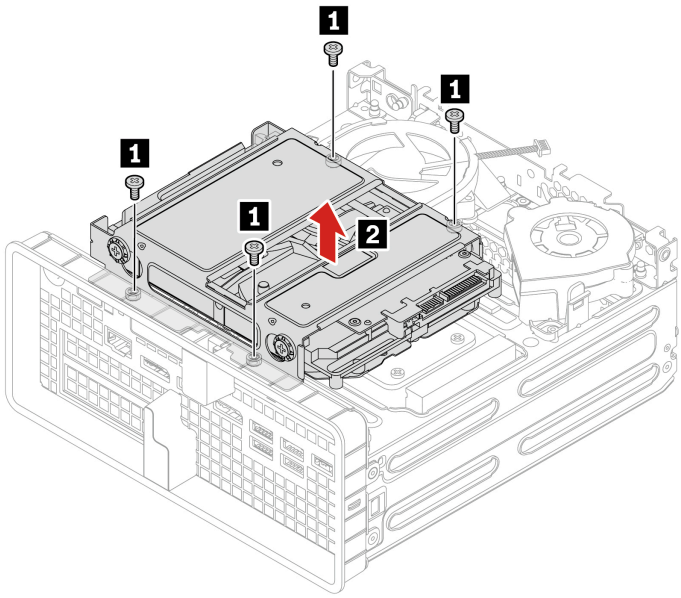
1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Disconnect the signal cable and the power cable from the storage drive.

Removal steps

1. Remove the four screws which secure the 3.5-inch hard disk drive bracket kit to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 x L5, hex screw	4	5 ± 0.5 lb/in

2. Lift the 3.5-inch hard disk drive bracket kit.



3.5-inch hard disk drive

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

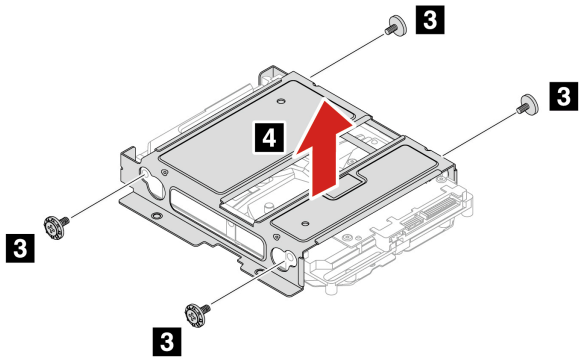
1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Remove the 3.5-inch hard disk drive bracket kit. See “3.5-inch hard disk drive bracket kit” on page 32.
4. Disconnect the signal cable and the power cable from the storage drive.

Removal steps

1. Remove the four screws which secure the 3.5-inch hard disk drive to the bracket kit. Find screw specification in the following screw table.

Screw	Quantity	Torque
#6-32 x L11, flat head	4	5 ± 0.5 lb/in

2. Remove the 3.5-inch hard disk drive from the bracket kit.



LED cable and holder

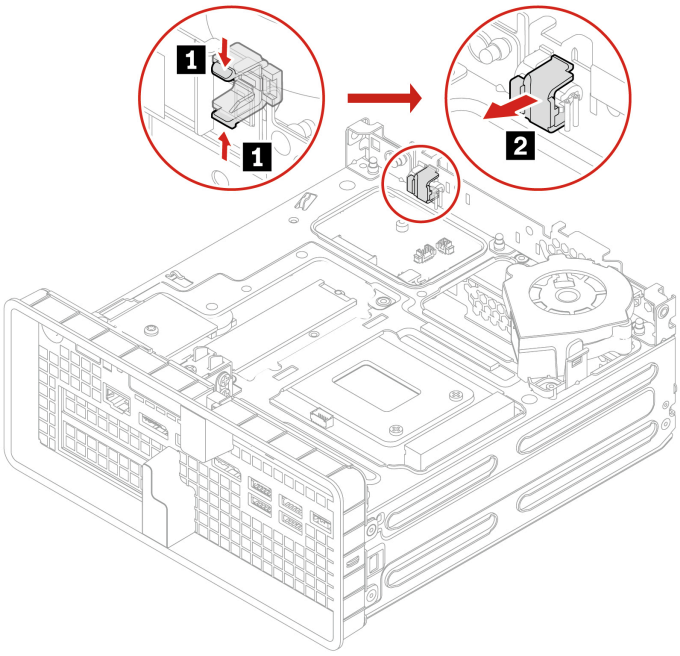
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.

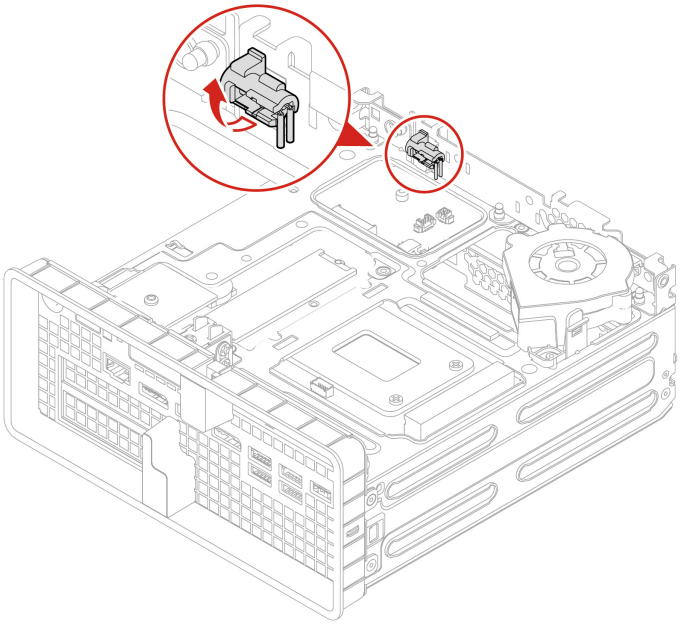
Removal steps for LED holder

Pinch the two tabs of the LED holder and pull to remove it from the chassis.



Removal steps for LED cable

Twirl to remove the LED cable.

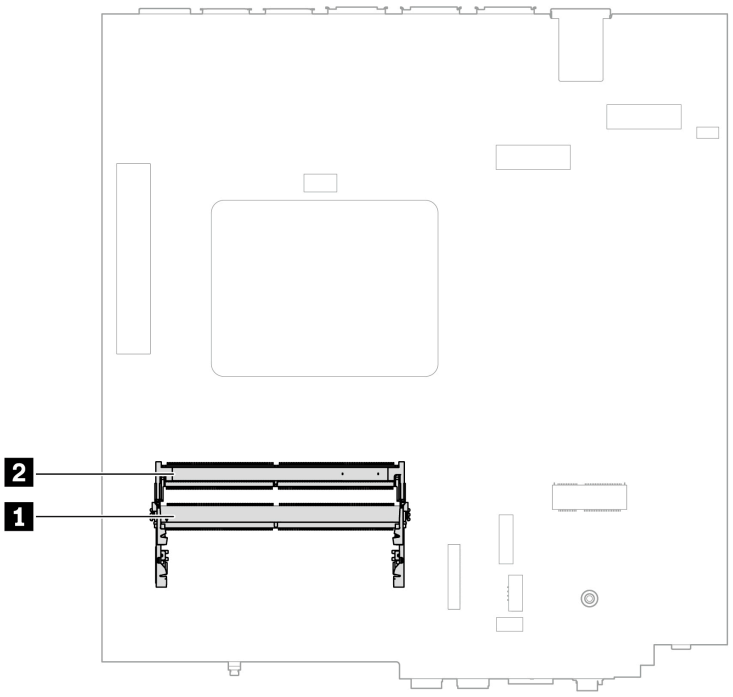


Memory module

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

Notes:

- To remove or install the memory module, wait at least 20 seconds after disconnecting power cords from the system. It allows the system to be completely discharged of electricity.
- Ensure that you follow the installation order for memory modules shown in the following illustration.

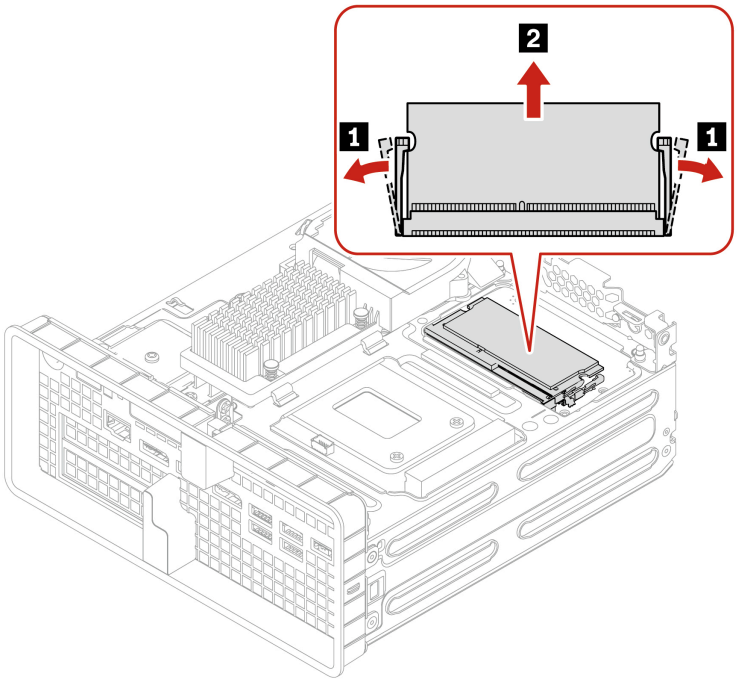


For access, do the following:

1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Remove the hard disk drive fan. See “Hard disk drive fan” on page 32.

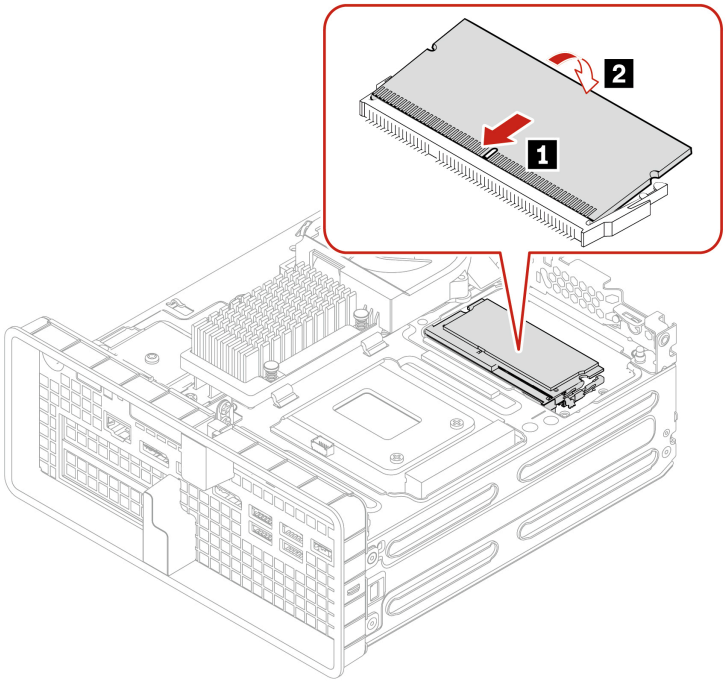
Removal steps

1. Open the two retaining tabs.
2. Lift the memory module out of the slot.



Installation steps

Align the memory module to the slot and push until the latches are fully engaged with a click.



PCI-Express bracket

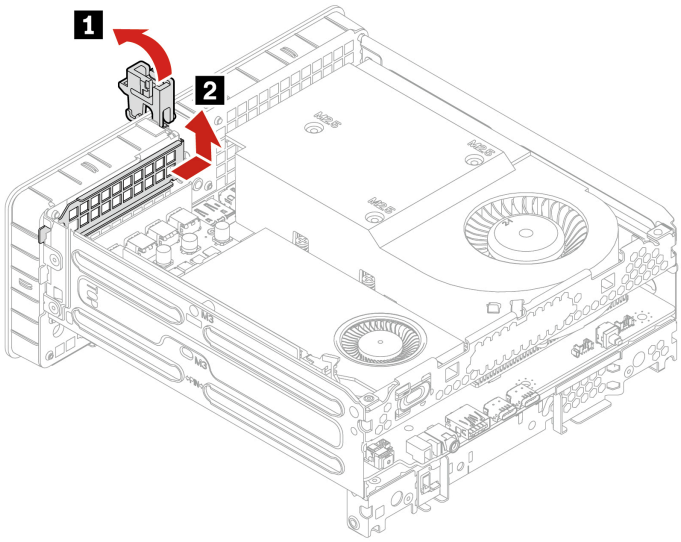
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.

Removal steps

Open the latch and remove the PCI-Express bracket.



PCI-Express card (including graphics card)

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Remove the PCI-Express bracket. See “PCI-Express bracket” on page 37.

Note: Before installing a new PCI-Express card, remove any PCI-Express connector cables that impede the installation.

PCI-Express card installation rule

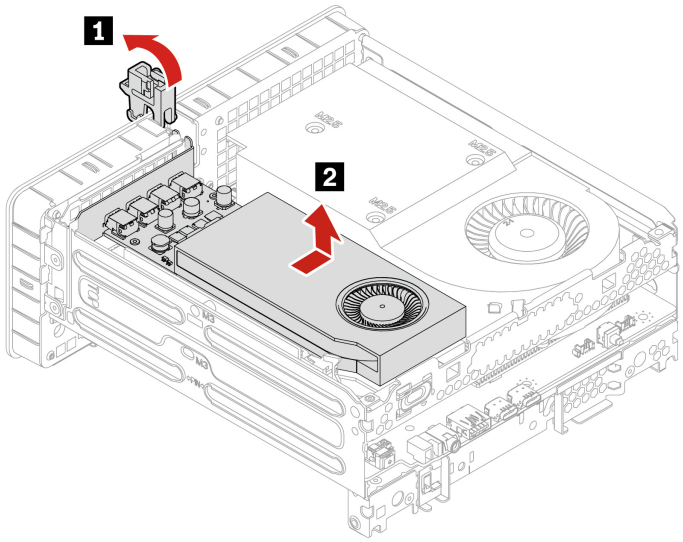
- For graphics cards installation, the PCI-Express x16 slot is the primary slot, and the PCI-Express x4 slot is the secondary slot.
- For other PCI-Express cards installation, the PCI-Express x4 slot is the primary slot, and the PCI-Express x16 slot is the secondary slot.
- Before installing a new PCI-Express card, ensure your power supply has adequate capacity and verify the microprocessor’s power requirements to maintain system stability. You can refer to the table bellow for detailed power requirement.

Power supply	Microprocessor	PCI-Express card
230 watt	35 watt	You can install a graphics card and a PCI-Express card with power consumption below 30 watt. **Note:** You are recommended to install one graphics card only.
230 watt	65 watt	You can install a graphics card with power consumption below 50 watt only.
330 watt	35 watt / 65 watt	330-watt power supply can support higher-consumption PCI-Express cards and graphics cards.

- To install a dual-slot graphics card, such as RTX 2000E Ada or RTX 4000 SFF Ada, a single-slot PCI-Express card converter is required.

Removal steps

Open the latch and pull to remove the PCI-Express card.



PCI-Express card converter

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 22.

For access, do the following:

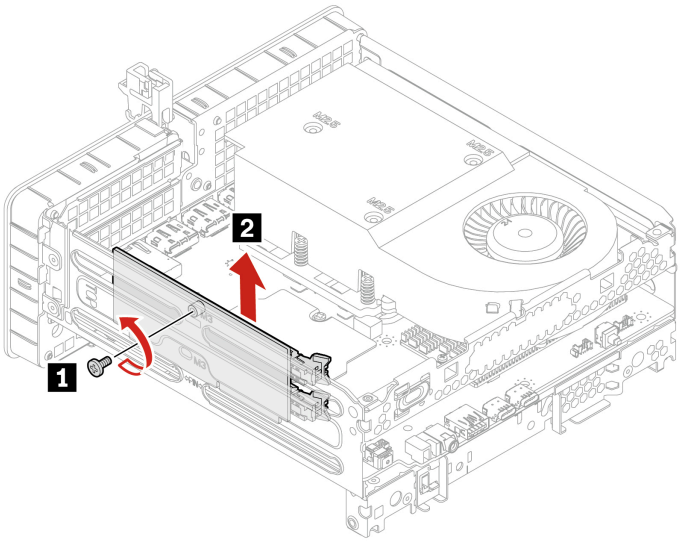
1. Remove the power adapter and cord. See “Power adapter and power cord” on page 22.
2. Remove the chassis. See “Chassis” on page 24.
3. Remove the PCIe bracket. See “PCI-Express bracket” on page 37.
4. Remove the PCIe card. See “PCI-Express card (including graphics card)” on page 38

Removal steps for dual-slot PCI-Express card converter

1. Remove the screw that secure the converter to the chassis. Find screw specification in the following screw table.

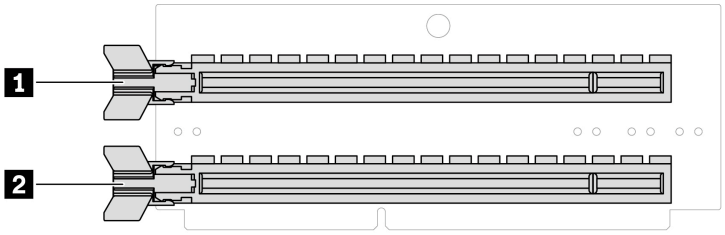
Screw	Quantity	Torque
M3 x L5, coutersunk	1	3 ± 0.5 lb/in

2. Pull the PCI-Express card converter out of the PCI-Express slot.



Notes: Ensure that you follow the installation order for dual-slot PCI-Express card converter:

- For graphics cards installation, slot 1 is the primary slot.
- For other PCI-Express cards installation, slot 2 is the primary slot and slot 1 is the secondary slot.

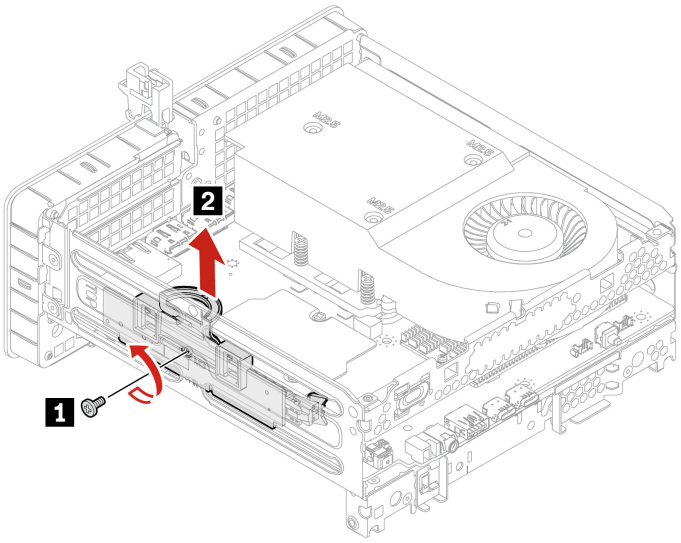


Removal steps for single-slot PCI-Express card converter

1. Remove the screw that secure the converter to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 x L5, coutersunk	1	3 ± 0.5 lb/in

2. Pull the PCI-Express card converter out of the PCI-Express slot.


2
1

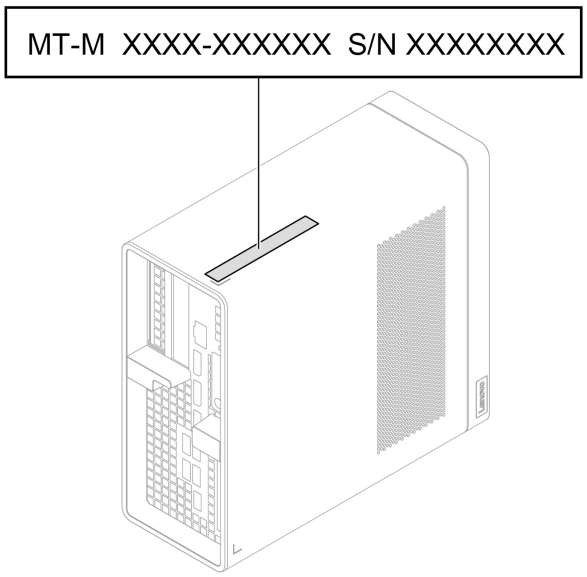
Chapter 6. Help and support

Find your serial number

This topic helps you find computer serial number.

You can find your serial number via:

- **Dashboard**
- Machine-type and serial-number 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. 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.
Use ThinkStation diagnostic tool	You want to use diagnostic solutions to test hardware components and report operating-system-controlled settings that interfere with the correct operation of your computer.

Troubleshoot and diagnose at Lenovo Support Web site

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

Step 1. Go to https://www.pcsupport.lenovo.com/ and enter your product name in the search box.

Step 2. Click **Troubleshoot & Diagnose** and select the option that fits your need.

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.

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” on page 43.

Lenovo Customer Support Center

During the warranty period, you can call Lenovo Customer Support Center for help.

Telephone numbers

For a list of the Lenovo Support phone numbers for your country or region, go to:
https://pcsupport.lenovo.com/supportphonelist

Note: Phone numbers are subject to change without notice. If the number for your country or region is not provided, contact your Lenovo reseller or Lenovo marketing representative.

Services available during the warranty period

- Problem determination - Trained personnel are available to assist you with determining if you have a hardware problem and deciding what action is necessary to fix the problem.
- Lenovo hardware repair - If the problem is determined to be caused by Lenovo hardware under warranty, trained service personnel are available to provide the applicable level of service.
- Engineering change management - Occasionally, there might be changes that are required after a product has been sold. Lenovo or your reseller, if authorized by Lenovo, will make selected Engineering Changes (ECs) that apply to your hardware available.

Services not covered

- Replacement or use of parts not manufactured for or by Lenovo or nonwarranted parts
- Identification of software problem sources
- Configuration of UEFI BIOS as part of an installation or upgrade
- Changes, modifications, or upgrades to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of programs

For the terms and conditions of the Lenovo Limited Warranty that apply to your Lenovo hardware product, see *Safety and Warranty Guide* that comes with your computer.

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
Ubuntu help information	https://help.ubuntu.com/lts/ubuntu-help/index.html

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.

Accessibility features

Lenovo is committed to making information technology accessible to everyone, including individuals with hearing, vision, mobility, cognitive, or speech disabilities. To get the most up-to-date and detailed accessibility features information for the product, go to https://support.lenovo.com/docs/product_accessibility_features.

Supplemental information about the Ubuntu operating system

In limited countries or regions, Lenovo offers customers an option to order computers with the preinstalled Ubuntu® operating system.

If the Ubuntu operating system is available on your computer, read the following information before you use the computer. Ignore any information related to Windows-based programs, utilities, and Lenovo preinstalled applications in this documentation.

Access the Lenovo Limited Warranty

This product is covered by the terms of the Lenovo Limited Warranty (LLW), version L505-0010-02 08/2011. You can view the LLW in a number of languages from the following Web site. Read the Lenovo Limited Warranty at:
https://www.lenovo.com/warranty/llw_02

The LLW also is preinstalled on the computer. To access the LLW, go to the following directory:

```
/opt/Lenovo
```

If you cannot view the LLW either from the Web site or from your computer, contact your local Lenovo office or reseller to obtain a printed version of the LLW.

Access the Ubuntu help system

The Ubuntu help system provides information about how to use the Ubuntu operating system. To access the help system from Home Screen, move your pointer to the Launch bar, and then click the **Help** icon. If you cannot find the **Help** icon from the Launch bar, click the **Search** icon on the bottom left, and type Help to search it.

To learn more about the Ubuntu operating system, go to:
https://www.ubuntu.com

Get support information

If you need help, service, technical assistance, or more information about the Ubuntu operating system or other applications, contact the provider of the Ubuntu operating system or the provider of the application. If you need the service and support for hardware components shipped with your computer, contact Lenovo. For more information about how to contact Lenovo, refer to the *User Guide* and *Safety and Warranty Guide*.

To access the latest *User Guide* and *Safety and Warranty Guide*, go to:
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Appendix A. Notice for USB connector name update

The USB Implementers Forum published a revision of the guideline for USB connector names in September, 2022. Lenovo follows the revised guideline and updates USB connector names accordingly. You can refer to the table below for naming update details.

Current name	Previous name
USB-A connector (Hi-Speed USB)	USB-A 2.0 connector
USB-A connector (USB 5Gbps)	USB-A 3.2 Gen 1 connector
USB-A connector (USB 10Gbps)	USB-A 3.2 Gen 2 connector
USB-A connector (USB 5Gbps, Always On USB)	Always on USB-A 3.2 Gen 1 connector
USB-A connector (USB 10Gbps, Always On USB)	Always on USB-A 3.2 Gen 2 connector
USB-C connector (USB 5Gbps)	USB-C (3.2 Gen 1) connector
USB-C connector (USB 10Gbps)	USB-C (3.2 Gen 2) connector
USB-C connector (USB 20Gbps)	USB 3.2 Gen 2x2
USB-C connector (USB4 20Gbps)	USB 4 Gen 2x2
USB-C connector (USB4 40Gbps)	USB-C (USB 4) connector
USB-C connector (Thunderbolt 3)	USB-C (Thunderbolt 3) connector
USB-C connector (Thunderbolt 4)	USB-C (Thunderbolt 4) connector

Appendix B. Notices and trademarks

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