

User Guide



IdeaCentre Gaming 5i (17L,7)

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 (December 2021)

© Copyright Lenovo 2021.

LIMITED AND RESTRICTED RIGHTS NOTICE: If data or software is delivered pursuant to a General Services Administration "GSA" contract, use, reproduction, or disclosure is subject to restrictions set forth in Contract No. GS-35F-05925.

Contents

About this documentationiii	Remove or replace a CRU	14
Chapter 1. Meet your computer	1	Power cord	14
Front	1	Computer cover	14
Rear	2	Front bezel	15
Features and specifications	3	3.5-inch storage drive	16
USB specifications	3	Memory module	17
Operating environment	4	M.2 solid-state drive	18
Chapter 2. Get started with your		Microprocessor heatsink and fan assembly	19
computer	7	Coin-cell battery	20
Work with Windows	7	PCI-Express card, PCI-Express card holder,	
Windows help information	7	PCI-Express card bracket and side system	
Chapter 3. Explore your computer	9	fan	21
Lock the computer	9	Power supply assembly	26
Lenovo Vantage	9	Chapter 5. Help and support	29
Set the power plan	10	Frequently asked questions	29
Transfer data	10	Self-help resources	29
Connect to a Bluetooth-enabled device (for		Call Lenovo	31
selected models)	10	Before you contact Lenovo	31
Purchase accessories	11	Lenovo Customer Support Center	31
Chapter 4. CRU replacement	13	Purchase additional services	32
CRU list	13	Appendix A. Notices and	
		trademarks	33

About this documentation

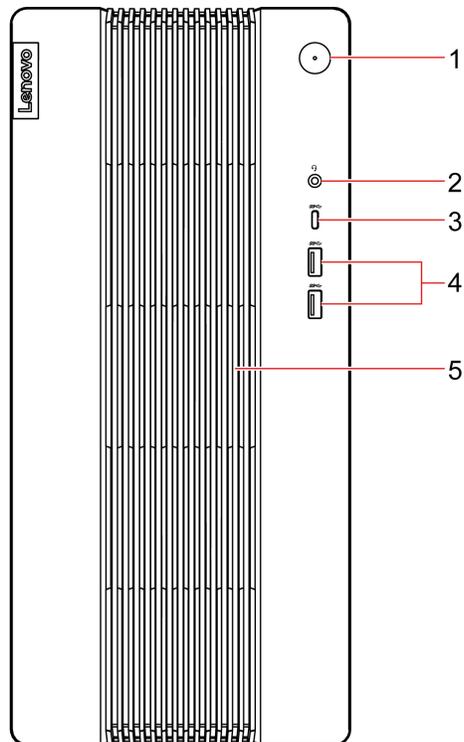
- This guide applies to the Lenovo product models listed below. Illustrations in this guide may look slightly different from your product model.

Model name	Machine types (MT)
IdeaCentre Gaming5 17IAB7	90T0, 90T1

- 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

Front



1. Power button

2. Headset connector

3. USB-C® connector (USB 3.2 Gen 1)

4. USB 3.2 connectors

5. Ventilation slots

Power indicator

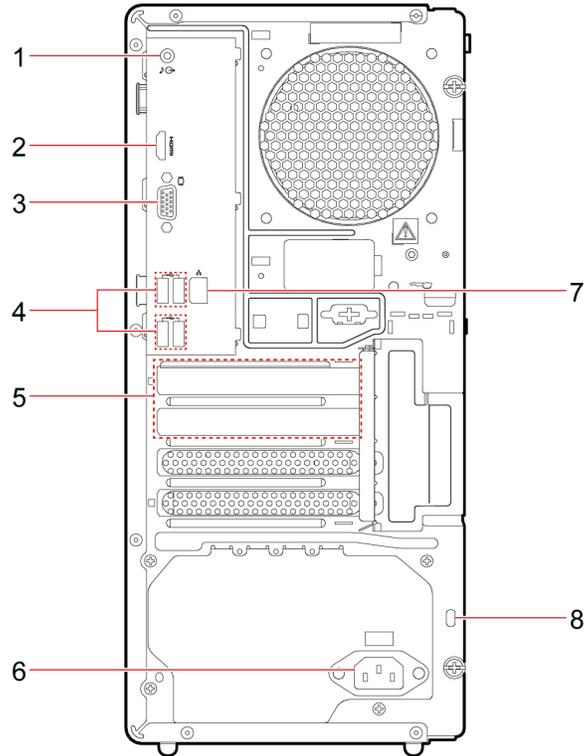
Show the system status of your computer.

- **Blinking for three times:** The computer is initially connected to power.
- **On:** The computer is on.
- **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 3.

Rear



1. Audio line-out connector	2. HDMI™ 1.4 out connector
3. VGA-out connector	4. USB 2.0 connectors (4)
5. PCI-Express card area	6. Power cord connector
7. Ethernet connector (2.5G)	8. Security-lock slot

Related topics

- “USB specifications” on page 3.
- “Work with Windows” on page 7.
- “Lock the computer” on page 9.

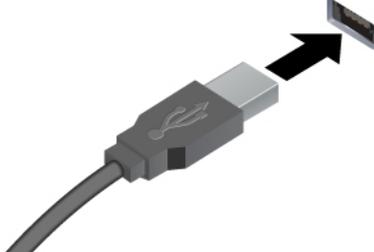
Features and specifications

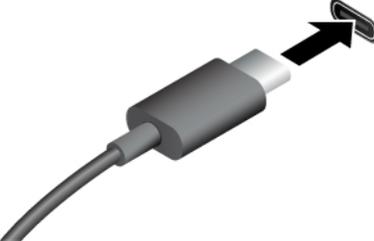
For detailed specifications of your computer, go to <https://psref.lenovo.com>.

Hardware	To view the hardware information of your computer, type device manager in the Windows search box and then press Enter.
Power supply	<ul style="list-style-type: none">• 300-watt automatic voltage-sensing power supply• 310-watt automatic voltage-sensing power supply• 380-watt automatic voltage-sensing power supply• 500-watt automatic voltage-sensing power supply
Microprocessor	To view the microprocessor information of your computer, type system information in the Windows search box and then press Enter.
Memory	Double data rate 4 (DDR4) dual in-line memory module (DIMM)
Storage device	To view the storage drive capacity of your computer, type disk management in the Windows search box and then press Enter. Note: The storage drive capacity indicated by the system is less than the nominal capacity.
Expansion	<ul style="list-style-type: none">• 3 SATA3.0 Port• 2 DDR4 DIMM slots• 2 M.2 solid-state drive slot (1 for WIFI and BT, 1 for PCIE SSD)• 2 Storage drive bay (3.5-inch Storage drive bay)• PCI Express slots: PCIe16 (1), PCIe1 (1)
Network features	<ul style="list-style-type: none">• Bluetooth• Ethernet LAN• Wireless LAN

USB specifications

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

Connector name	Description
 <ul style="list-style-type: none"> •  USB 2.0 connector •  USB 3.2 connector Gen 1 / USB 3.2 connector Gen 2 	<p>Connect USB-compatible devices, such as a USB keyboard, USB mouse, USB storage device, or USB printer.</p>

 <ul style="list-style-type: none"> •  USB-C (3.2 Gen 1) connector •  USB-C (3.2 Gen 2) connector •  Thunderbolt 3 connector (USB-C) •  Thunderbolt 4 connector (USB-C) 	<ul style="list-style-type: none"> • Charge USB-C compatible devices with the output voltage and current of 5 V and 3 A. • Connect to an external display: <ul style="list-style-type: none"> – USB-C to VGA: 1900 x 1200 pixels, 60 Hz – USB-C to DP: 3840 x 2160 pixels, 60 Hz • Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to https://www.lenovo.com/accessories.
---	---

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 / 3.1 Gen 1	5
3.2 Gen 2 / 3.1 Gen 2	10
3.2 Gen 2 × 2	20
Thunderbolt 3 (USB-C)	40
Thunderbolt 4 (USB-C)	40

Operating environment

Temperature

- Operating: From 5°C (41°F) to 35°C (95°F)

- Storage or transportation:
 - 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)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Chapter 2. Get started with your computer

Work with Windows

The following table contains Windows frequently used settings. You can learn the basics and start working with Windows right away.

To configure settings, type the corresponding keywords in the Windows search box and select the best match. Follow the on-screen instructions to customize settings.

Table 1. Basic settings

Functions	Descriptions	Search by keywords
Control Panel	View or change Windows settings, including hardware and software setup and configuration.	Control Panel
Connect to Wi-Fi networks	For models with a wireless LAN module, you can connect your computer to a Wi-Fi® network. Click the network icon in the Windows notification area, and then select a network for connection. 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.	Wi-Fi
Connect to wired networks	For models with an Ethernet (RJ-45) connector, you can use an Ethernet cable to connect your computer to a wired network.	—
Airplane mode	Airplane mode is a convenient setting to turn all wireless communications of your computer on and off. You may need to turn it on when boarding an airplane.	Airplane mode
Windows Updates	Microsoft periodically releases feature and security updates to the Windows operating system. Updates that are applicable to your Windows version are downloaded automatically when your computer is connected to the Internet. When updates are downloaded, you are prompted to restart the computer to install these updates. You can also manually check if there are available updates for the installed version of Windows. Attention: Only use Windows Update to download and install updates. Updates downloaded from other sources may include security risks.	Windows Updates

Windows help information

If the on-screen instructions cannot solve your problem, refer to the following to get the online Windows help information.

- Type Get Help or Tips in the Windows search box and then press Enter. When the app opens, type the problem description and select the matched result.
- Visit Microsoft support Web site: <https://support.microsoft.com>. Enter what you are looking for in the search box and get search results.

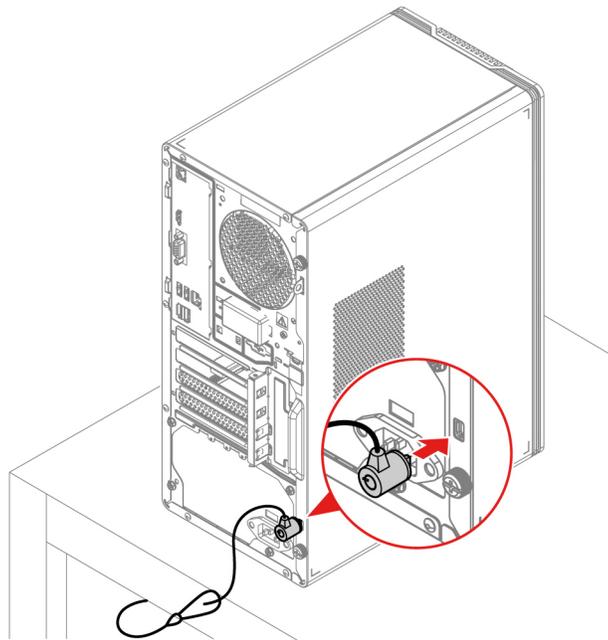
Chapter 3. Explore your computer

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.

Kensington-style cable lock

Lock your computer to a desk, table, or other fixtures through a Kensington-style cable lock.



Lenovo Vantage



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

Access Lenovo Vantage

Type Lenovo Vantage in the search box and then press Enter.

To download the latest version of Lenovo Vantage, go to Microsoft Store and search by the app name.

Key features

Lenovo Vantage enables you to:

- Know the device status easily and customize device settings.
- Download and install UEFI BIOS, firmware and driver updates 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.

Notes:

- The available features vary depending on the computer model.
- Lenovo Vantage 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.

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 change or customize a power plan:

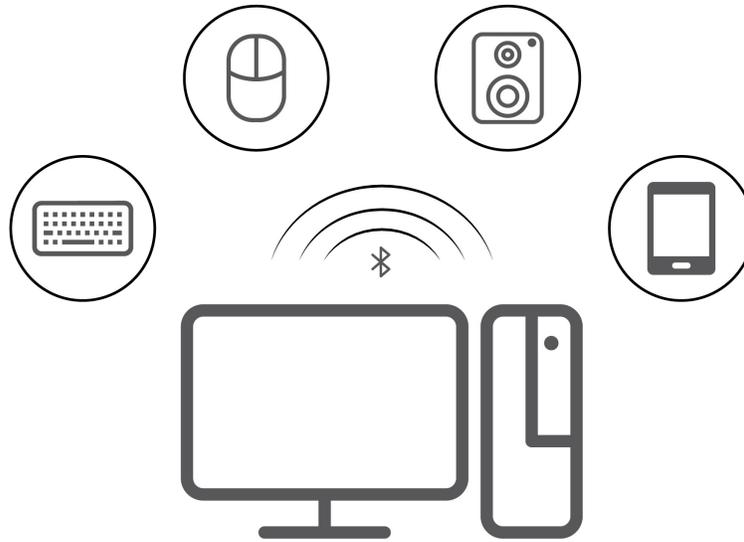
1. Type power plan in the Windows search box and then press Enter.
2. Customize a power plan of your preference.

Transfer data

Quickly share your files using the built-in Bluetooth technology among devices with the same features. You also can install a disc or media card to transfer data.

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. To ensure that the connection is successful, place the devices 10 meters (33 feet), at most, from the computer.



1. Click the action center icon in the Windows notification area. Enable the Bluetooth feature.
2. Click the bluetooth options to add a bluetooth device, and then follow the on-screen instructions.

Purchase accessories

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

To shop at Lenovo, go to <https://pcsupport.lenovo.com/warrantyupgrade>.

Chapter 4. CRU replacement

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

- **Self-service CRUs:** Refer to parts that can be installed or replaced easily by customer themselves or by trained service technicians at an additional cost.
- **Optional-service CRUs:** Refer to parts that can be installed or replaced by customers with a greater skill level. Trained service technicians can also provide service to install or 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

- Power cord
- Computer cover
- Keyboard *
- Mouse *
- Front bezel
- Memory modules
- M.2 solid-state drive
- 3.5-inch storage drive
- HDD bracket
- Thumbscrew kit

Optional-service CRUs

- Microprocessor heatsink and fan assembly
- Coin-cell battery
- Power supply assembly
- PCI-Express card
- PCI-Express card holder
- PCI-Express card bracket
- Side system fan

* for selected models

Remove or replace a CRU

This section provides instructions on how to remove or replace a CRU.

Power cord

Prerequisite

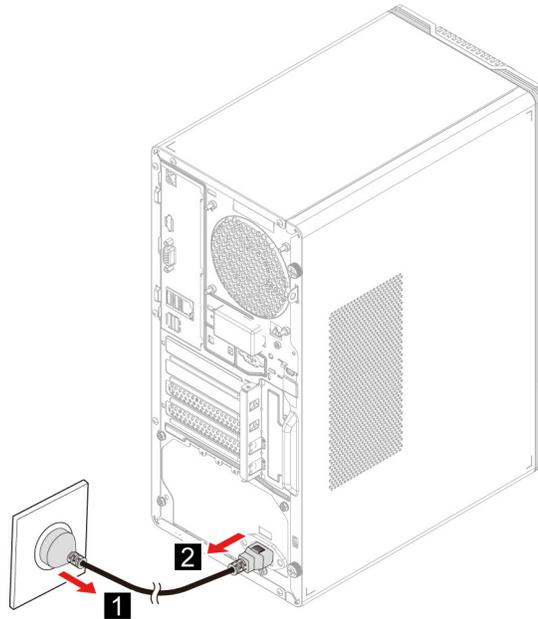
Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.



Before you remove the power cord, turn off the computer and wait several minutes until the computer is cool.

For access, do the following: Turn off the computer and remove all connected devices and cables.

Removal steps



Computer cover

Prerequisite

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



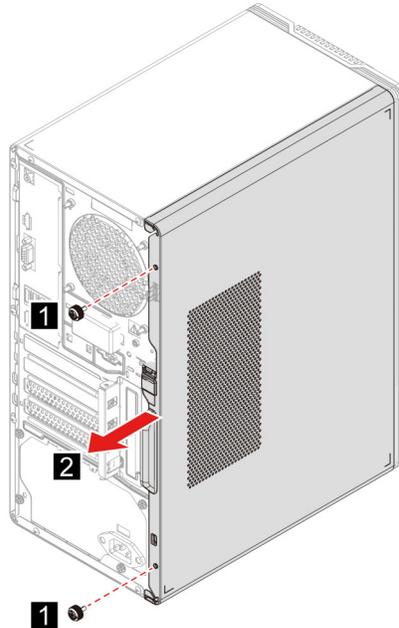
Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

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. See “Lock the computer” on page 9.
3. Remove the power cord. See “Power cord” on page 14.

Removal steps



Front bezel

Prerequisite

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

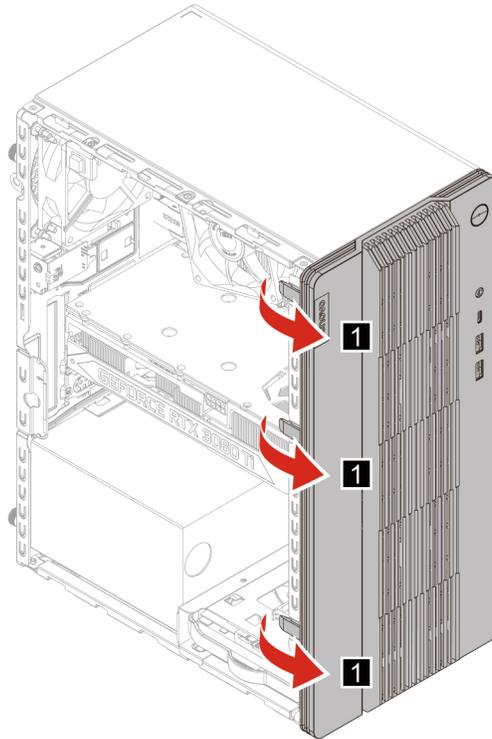


Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

For access, remove the following parts in order:

1. Remove the power cord. See “Power cord” on page 14.
2. Remove the computer cover. See “Computer cover” on page 14.

Removal steps



3.5-inch storage drive

Prerequisite

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

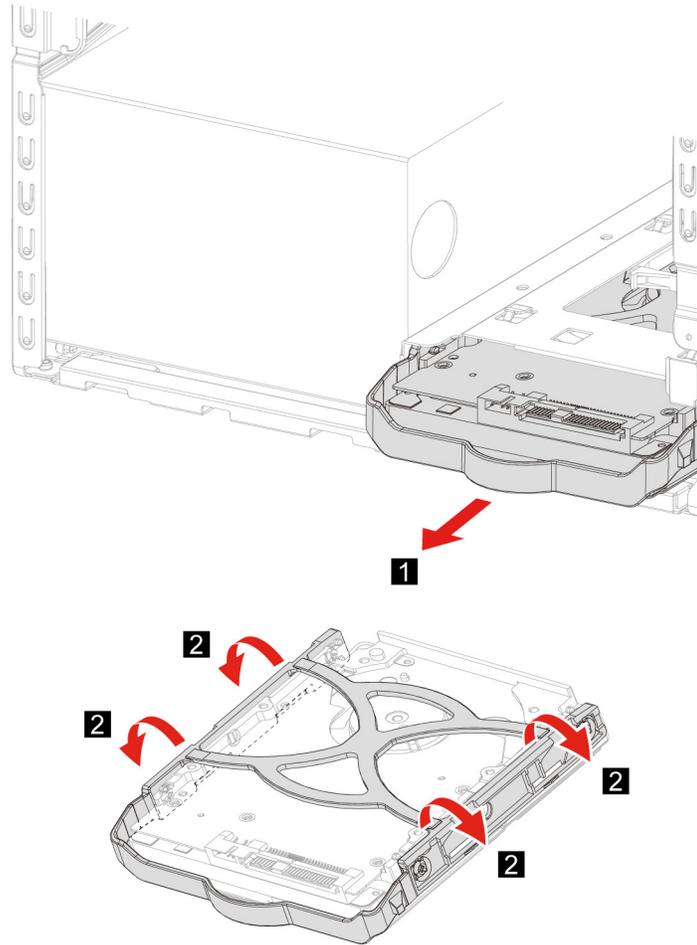
Attention: The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:

- 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, do the following:

1. Remove the power cord. See “Power cord” on page 14.
2. Remove the computer cover. See “Computer cover” on page 14.
3. Disconnect the signal cable and the power cable from the storage drive.

Removal steps



Memory module

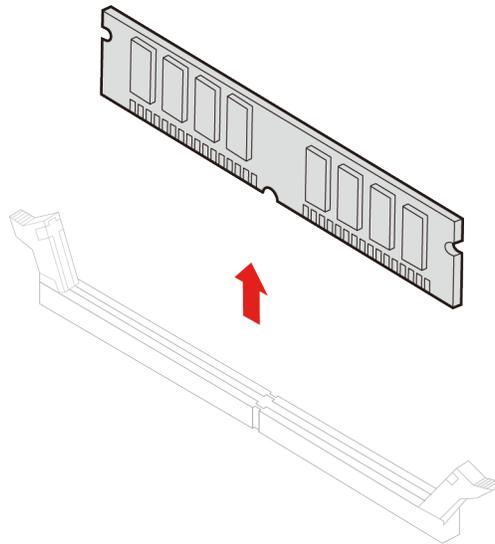
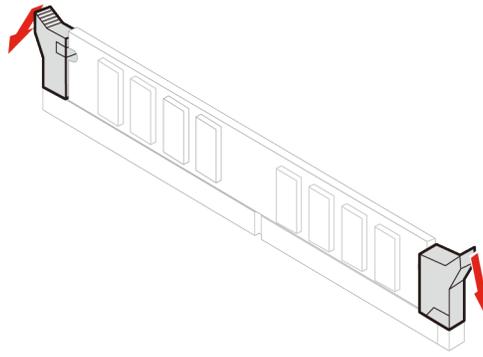
Prerequisite

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

For access, remove the following parts in order:

- Remove the power cord. See “Power cord” on page 14.
- Remove the computer cover. See “Computer cover” on page 14.

Replacement procedure



M.2 solid-state drive

Prerequisite

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

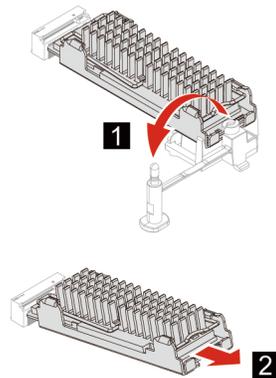
Attention: The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:

- 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.

For access, remove the following parts in order:

1. Remove the power cord. See “Power cord” on page 14.
2. Remove the computer cover. See “Computer cover” on page 14.

Removal steps



Microprocessor heatsink and fan assembly

Prerequisite

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



The heatsink might be very hot. Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

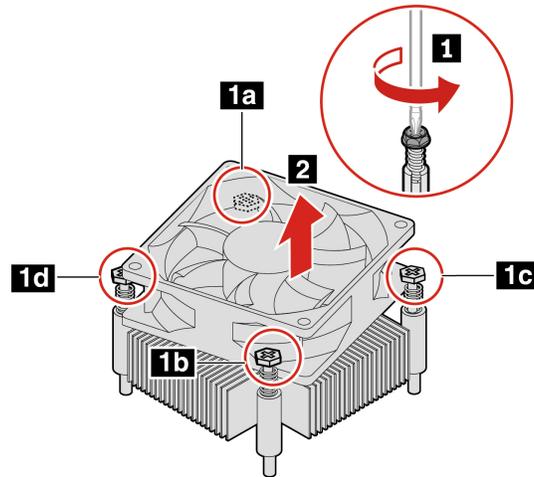
Notes:

- The microprocessor heatsink and fan assembly included with your computer will be one of the three models illustrated below. Follow the same procedures for each model.
- Any warranty replacements will only cover the specific model of heatsink and fan included with your computer. The images provided are for reference only.

For access, do the following:

1. Remove the power cord. See “Power cord” on page 14.
2. Remove the computer cover. See “Computer cover” on page 14.
3. Remove the fan power cable from the system board.

Removal steps



Notes:

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

Coin-cell battery

Prerequisite

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

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

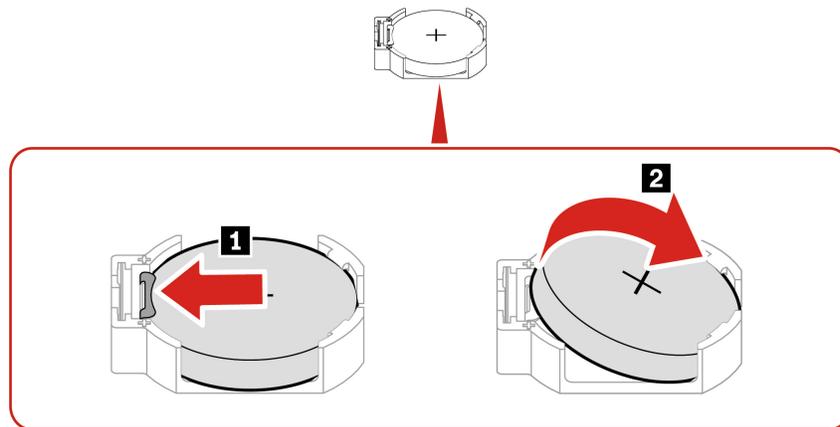
The coin-cell battery normally requires no charging or maintenance throughout its life; however, no coin-cell battery lasts forever. If the coin-cell battery fails, the date and time information is lost. An error message is displayed when you turn on the computer.

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

For access, remove the following parts in order:

- Remove the power cord. See “Power cord” on page 14.
- Remove the computer cover. See “Computer cover” on page 14.

Removal steps



Note: After installing a new coin-cell battery, reset the system date and time in the UEFI BIOS menu.

PCI-Express card, PCI-Express card holder, PCI-Express card bracket and side system fan

Prerequisite

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



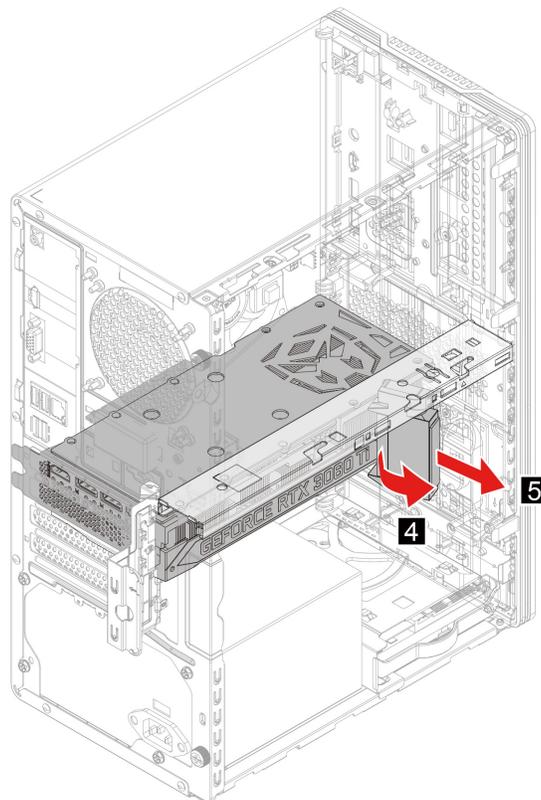
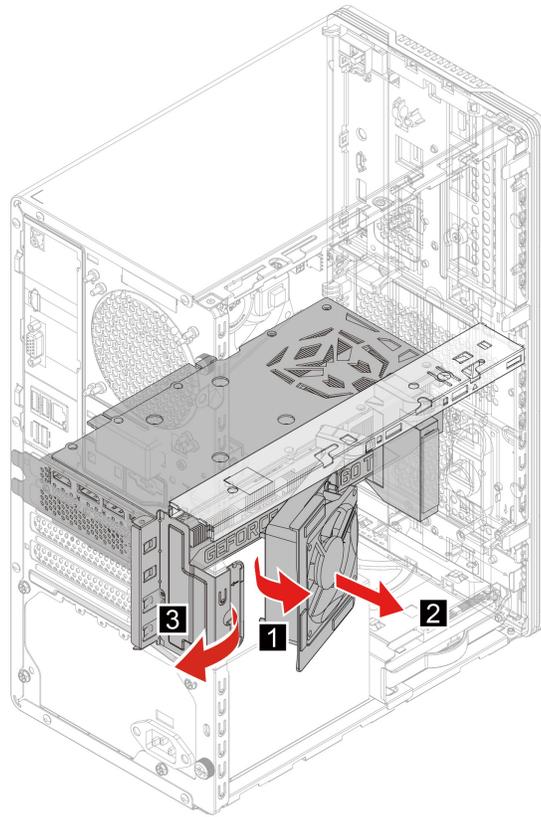
The PCI-Express card might be very hot. Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

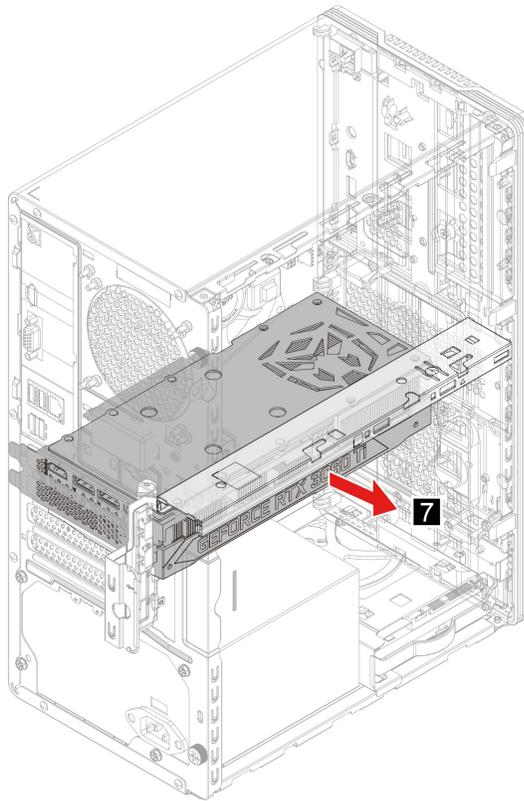
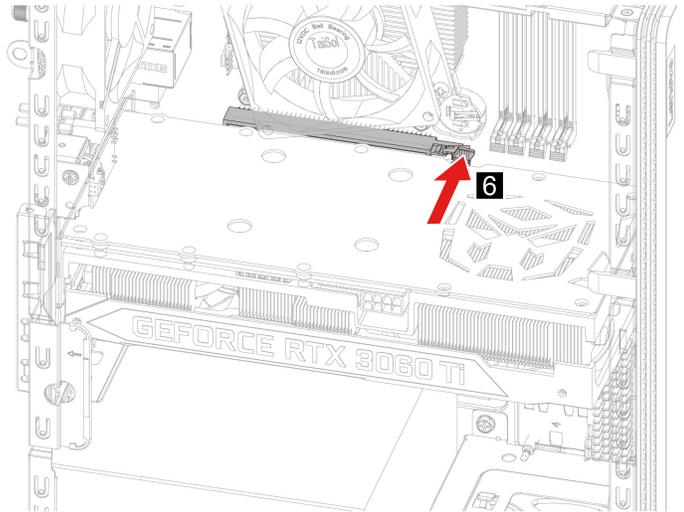
For access, do the following:

1. Remove the power cord. See “Power cord” on page 14.
2. Remove the computer cover. See “Computer cover” on page 14.
3. Remove the side system fan cable (if any) from the system board.

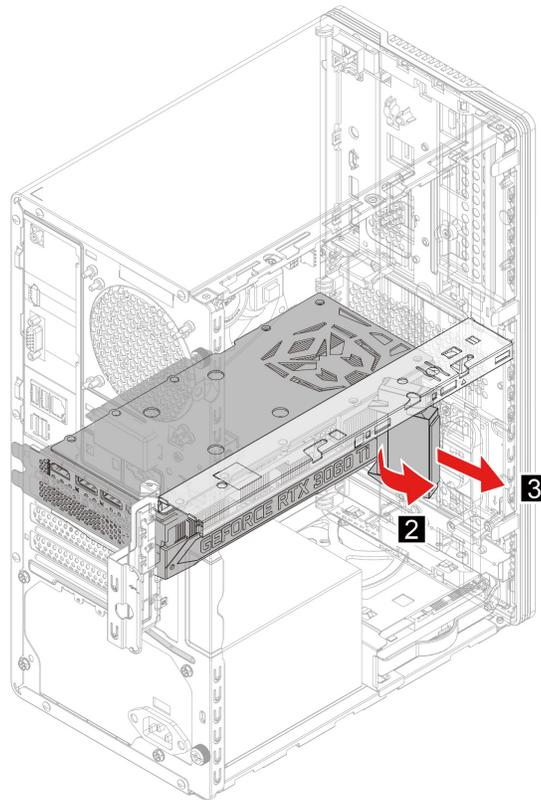
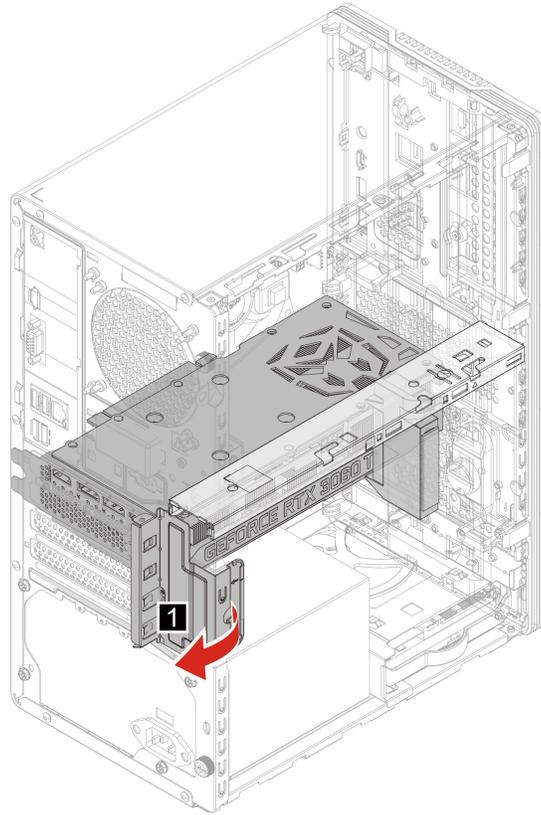
Removal steps

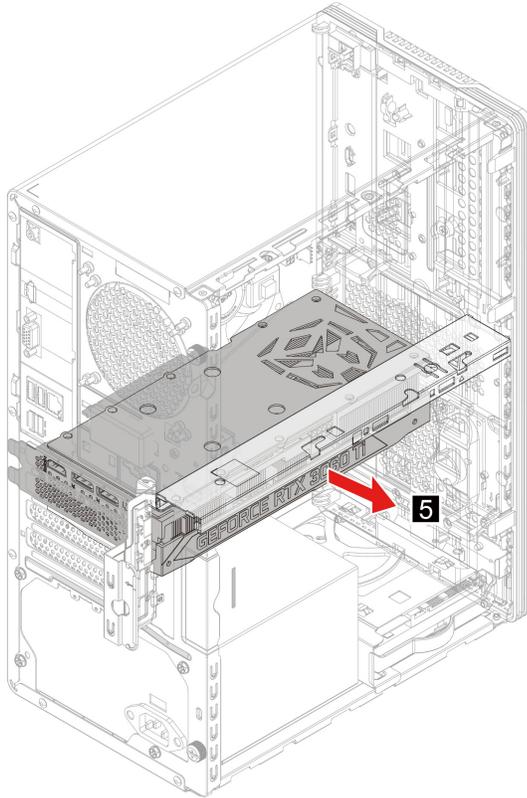
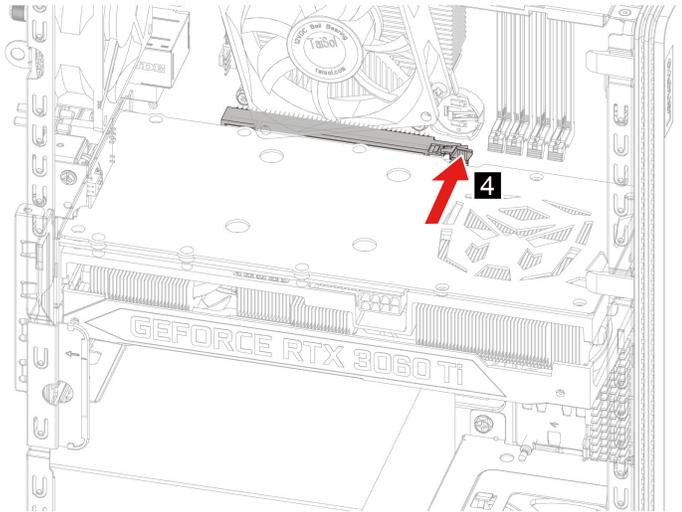
- **Type 1**



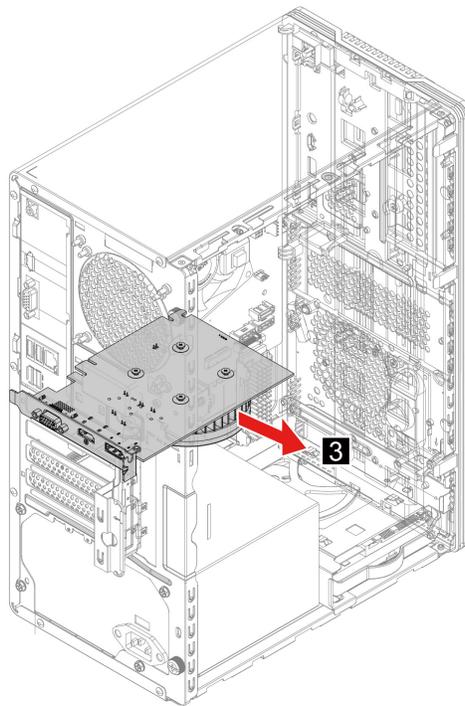
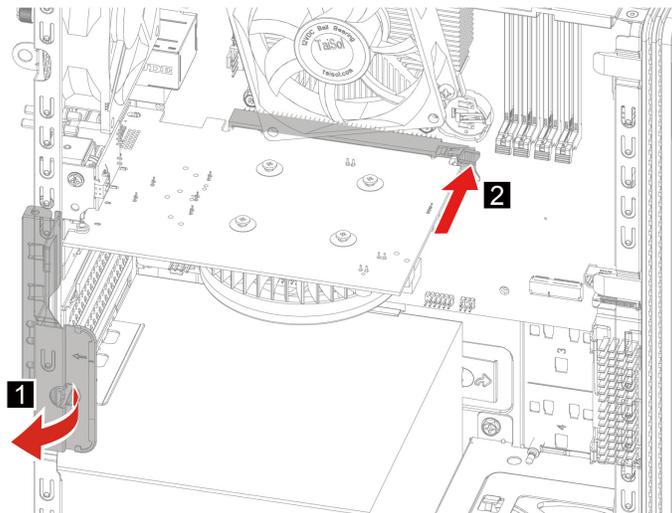


- Type 2





- Type 3



Power supply assembly

Prerequisite

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

Although there are no moving parts in the computer after the power cord has been disconnected, the following warnings are required for your safety.



Keep fingers and other parts of your body away from hazardous, moving parts. If you suffer an injury, seek medical care immediately. Never remove the cover on a power supply or any part that has the following label attached.



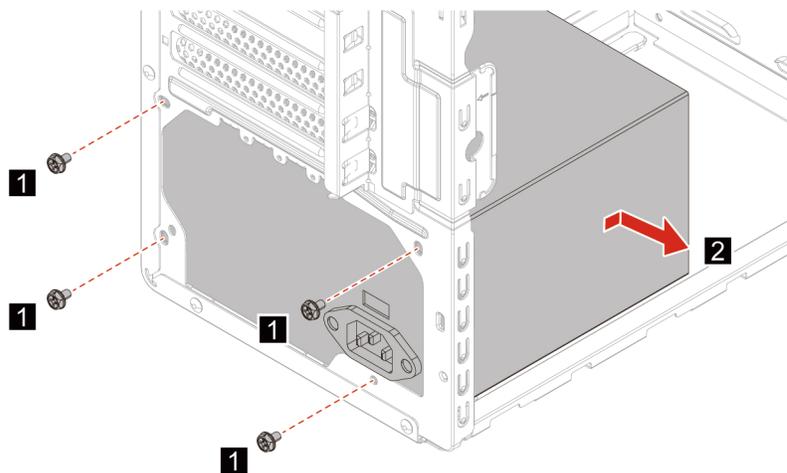
Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

For access, do the following:

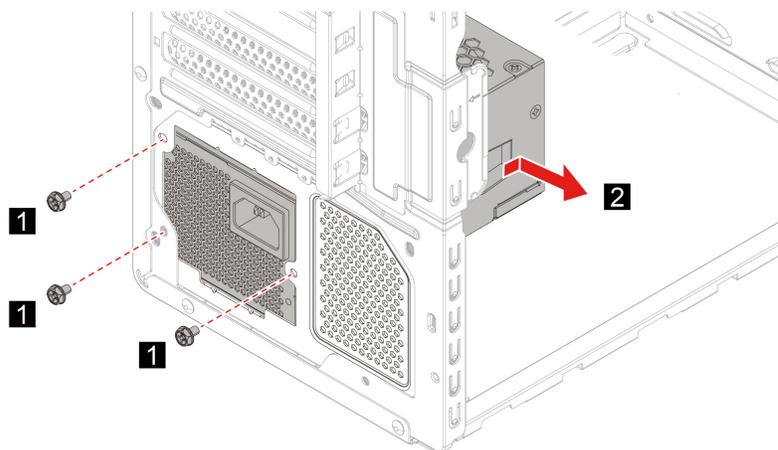
1. Remove the power cord. See “Power cord” on page 14.
2. Remove the computer cover. See “Computer cover” on page 14.
3. Remove the 3.5-inch storage drive. See “3.5-inch storage drive” on page 16.
4. Disconnect the power supply assembly cables from the system board.

Removal steps

- Type 1



- Type 2



Chapter 5. Help and support

Frequently asked questions

How do I partition my storage drive?	Refer to https://support.lenovo.com/solutions/ht503851
What should I do if my computer stops responding.	Press and hold the power button until the computer turns off. Then restart the computer. 1. Carefully unplug the ac power adapter and turn off the computer immediately. The more quickly you stop the current from passing through the computer the more likely you will reduce damage from short circuits. Attention: Although you might lose some data or work by turning off the computer immediately, leaving the computer on might make your computer unusable. 2. Wait until you are certain that all the liquid is dry before turning on your computer. CAUTION: Do not try to drain out the liquid by turning over the computer. If your computer has keyboard drainage holes on the bottom, the liquid will be drained out through the holes.
What should I do if I spill liquid on the computer?	
Where can I get the latest device drivers and UEFI/BIOS?	<ul style="list-style-type: none">• Lenovo Vantage or Lenovo PC Manager• Lenovo Support Web site at https://support.lenovo.com

Self-help resources

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

Resources	How to access?
Troubleshooting and frequently asked questions	<ul style="list-style-type: none">• https://www.lenovo.com/tips• https://forums.lenovo.com
Accessibility information	https://www.lenovo.com/accessibility
Reset or restore Windows	<ul style="list-style-type: none">• Use Lenovo recovery options.<ol style="list-style-type: none">1. Go to https://support.lenovo.com/HowToCreateLenovoRecovery.2. Follow the on-screen instructions.• Use Windows recovery options.<ol style="list-style-type: none">1. Go to https://pcsupport.lenovo.com.2. Detect your computer or manually select your computer model.3. Click Diagnostics → Operating System Diagnostics and then follow the on-screen instructions.

Resources	How to access?
<p>Use Lenovo Vantage to:</p> <ul style="list-style-type: none"> • Configure device settings. • Download and install UEFI BIOS, drivers and firmware updates. • Secure you computer from outside threats. • Diagnose hardware problems. • Check the computer warranty status. • Access <i>User Guide</i> and helpful articles. 	<p>Type Lenovo Vantage in the search box and then press Enter.</p>
<p>Product documentation:</p> <ul style="list-style-type: none"> • Generic Safety and Compliance Notices • <i>Safety and Warranty Guide</i> • <i>Setup Guide</i> • This <i>User Guide</i> • <i>Regulatory Notice</i> 	<p>Go to https://pcsupport.lenovo.com. Then, follow the on-screen instructions to filter out the documentation you want.</p>
<p>Lenovo Support Web site with the latest support information of the following:</p> <ul style="list-style-type: none"> • Drivers and software • Diagnostic solutions • Product and service warranty • Product and parts details • Knowledge base and frequently asked questions 	<p>Go to https://support.lenovo.com.</p>
<p>Windows help information</p>	<ul style="list-style-type: none"> • Use Get Help or Tips. • Use Windows Search or the Cortana® personal assistant. • Go to Microsoft support Web site: https://support.microsoft.com.

Call Lenovo

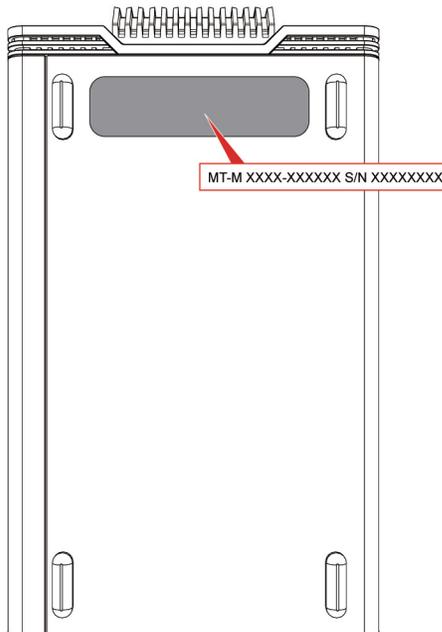
If you have tried to correct the problem yourself and still need help, you can call Lenovo Customer Support Center.

Before you contact Lenovo

Prepare the following 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

The following illustration shows where to find the machine type and serial number of your computer.



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/supportphonenumberlist>.

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 “Warranty information” in the *Safety and Warranty Guide* that comes with your computer.

Purchase 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 name might vary by country or region.

Appendix A. Notices and trademarks

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service.

Lenovo may have patents or pending patent programs covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

*Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing*

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

Changes are made periodically to the information herein; these changes will be incorporated in new editions of the publication. To provide better service, Lenovo reserves the right to improve and/or modify the products and software programs described in the manuals included with your computer, and the content of the manual, at any time without additional notice.

The software interface and function and hardware configuration described in the manuals included with your computer might not match exactly the actual configuration of the computer that you purchase. For the configuration of the product, refer to the related contract (if any) or product packing list, or consult the distributor for the product sales. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary.

Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk.

Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

This document is copyrighted by Lenovo and is not covered by any open source license, including any Linux agreement(s) which may accompany software included with this product. Lenovo may update this document at any time without notice.

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

<https://pcsupport.lenovo.com>

Trademarks

LENOVO, LENOVO logo, IDEACENTRE, and IDEACENTRE logo are trademarks of Lenovo. Intel, and Thunderbolt are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Microsoft, Windows, and Cortana are trademarks of the Microsoft group of companies. The terms HDMI and HDMI High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries. Wi-Fi, Wi-Fi Alliance, and Miracast are registered trademarks of Wi-Fi Alliance. USB-C is a trademark of USB Implementers Forum. All other trademarks are the property of their respective owners.

Lenovo