



ideacentre All-In-One Y910 Computer Hardware Maintenance Manual

Machine Types: F0CJ [AIO Y910-27ISH/Energy Star]



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Chapter 1. About this manual

This manual contains service and reference information for Lenovo All-In-One Y910 computer listed on the cover. It is intended only for trained servicers who are familiar with Lenovo computer products.

Before servicing a Lenovo product, be sure to read the Safety Information.

The description of the TV-tuner card in this manual applies only to computers with a TV-tuner card installed. It does not apply to computers without a TV-tuner card.

Important Safety Information

Be sure to read all CAUTION and DANGER sections in this manual before following any of the instructions.

Veillez lire toutes les consignes de type DANGER et ATTENTION du présent document avant d'exécuter les instructions.

Lesen Sie unbedingt alle Hinweise vom Typ "ACHTUNG" oder "VORSICHT" in dieser Dokumentation, bevor Sie irgendwelche Vorgänge durchführen

Leggere le istruzioni introdotte da ATTENZIONE e PERICOLO presenti nel manuale prima di eseguire una qualsiasi delle istruzioni

Certifique-se de ler todas as instruções de cuidado e perigo neste manual antes de executar qualquer uma das instruções

Es importante que lea todas las declaraciones de precaución y de peligro de este manual antes de seguir las instrucciones.

执行任何说明之前，请确保已阅读本书中的所有警告和危险声明。

執行任何指示前，請確實閱讀本書中的所有警告及危險聲明。

Chapter 2. Safety information

This chapter contains the safety information that you need to be familiar with before servicing a computer.

General safety

Follow these rules to ensure general safety:

- Keep the areas around the computer clear and clean during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally across both feet.
 3. Lift slowly. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back.
Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.
- Do not perform any action that would create a hazard for the customer, or would make the computer unsafe.
- Before you start the computer, ensure that other service representatives and customer personnel are not in a position that would create a hazard for them.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the computer.
- Keep your tool case away from areas that people may walk through to ensure no-one trips over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, tie or fasten it back.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a non-conductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.
Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reattach all covers correctly before returning the computer to the customer.

Electrical safety



CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect any attached power cords, telecommunication cables, network cables, and modem cables before you open the computer covers, unless instructed otherwise in the installation and configuration procedures.

Observe the following rules when working on electrical equipment.

Important: Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents. Many customers have rubber floor mats near their equipment that contain small conductive fibers to decrease electrostatic discharge.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing Field Replaceable Units (FRUs)
- Before you start to work on the computer, unplug the power cord. If you cannot unplug it, ask the customer to power-off the electrical outlet that supplies power to the machine and to lock the electrical outlet in the off position.
- If you need to work on a computer that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.
Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using a tester, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of the maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools to ensure they are safe to use.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are wet floors, non-grounded power extension cables, conditions that may cause or allow power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. This surface is conductive, and touching a live circuit can cause personal injury and damage to the computer.
- Do not service the following parts with the power on when they are removed from their normal operating positions in a computer:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generatorsand similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.

- Switch off power.
- Send another person to get medical aid.

Safety inspection guide

The intent of this inspection guide is to assist you in identifying potential hazards posed by these products. Each computer, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of features or options not covered by this inspection guide.

If any hazards are present, you must determine how serious the apparent hazard could be and whether you can continue without first resolving the problem.

Consider the following items and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented as a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.
3. Check the power cord for:
 - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - b. The power cord should be the appropriate type as specified in the parts listings.
 - c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious alterations. Use good judgment as to the safety of any alterations.
6. Check inside the unit for any obvious hazards, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling electrostatic discharge-sensitive devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the computer, the part, the work mat, and the person handling the part are all at the same charge.

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people while handling the part.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Note: The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
- Use the round ground-prong of the AC plug on AC-operated computers.

Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety notices

The CAUTION and DANGER safety notices in this section are provided in the language of English.



DANGER

Electrical current from power, telephone and communication cables is hazardous.

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect any equipment that will be attached to this product to a properly wired outlet.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications cables, network cables, and modem cables before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect	To Disconnect
<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, attach all cables to devices. 3. Attach signal cables to connectors. 4. Attach power cords to outlet. 5. Turn device ON. 	<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, remove power cords from outlets. 3. Remove signal cables from connectors. 4. Remove all cables from devices.



CAUTION:

When replacing the lithium battery, use only Part Number 45C1566 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

- Throw into or immerse in water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.



CAUTION:

When laser products (such as CD-ROMs, DVD-ROM drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



 **DANGER**

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

These diodes emit radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

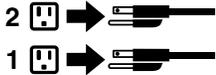


		
≥18 kg (37 lbs)	≥32 kg (70.5 lbs)	≥55 kg (121.2 lbs)

CAUTION:
Use safe practices when lifting.



CAUTION:
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



CAUTION:
Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.



Chapter 3. General information

This chapter provides general information that applies to all computer models covered by this manual.

Specifications

This section lists the physical specifications for your computer.

This section lists the physical specifications for your computer.

Type Lenovo All-In-One Y910

This section lists the physical specifications.

Environment

Air temperature:

Operating: 10° to 35°C

Transit: -20° to 55°C

Humidity:

Operating: 35% to 80%

Transit: 20% to 90% (40°C)

Altitude: 86KPa to 106KPa

Electrical input:

Input voltage: 90V-264V(AC)

Input frequency: 47Hz-63Hz

Chapter 4. General Checkout

Attention: The drives in the computer you are servicing might have been rearranged or the drive startup sequence may have been changed. Be extremely careful during write operations such as copying, saving, or formatting. Data or programs can be overwritten if you select an incorrect drive.

General error messages appear if a problem or conflict is found by an application, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.

Use the following procedure to help determine the cause of the problem:

1. Power-off the computer and all external devices.
2. Check all cables and power cords.
3. Set all display controls to the middle position.
4. Power-on all external devices.
5. Power-on the computer.
 - Look for displayed error codes.
 - Look for readable instructions or a main menu on the display.

If you did not receive the correct response, proceed to step 6.

If you did receive the correct response, proceed to step 7.

6. If one of the following happens, follow the instruction given:
 - If the computer displays a POST error, go to “POST error codes”.
 - If the computer hangs and no error is displayed, continue at step 7.
7. If the test stops and you cannot continue, replace the last device tested.

Chapter 5. Using the Setup Utility

The Setup Utility program is used to view and change the configuration settings of your computer, regardless of which operating system you are using. However, the operating system settings might override any similar settings in the Setup Utility program.

Starting the Lenovo BIOS Setup Utility program

To start the Lenovo BIOS Setup Utility program, do the following:

1. If your computer is already on when you start this procedure, shut down the operating system and turn off the computer.
2. Press and hold the **F1** key then turn on the computer. When the Lenovo BIOS Setup Utility program is displayed, release the **F1** key.

Note: If a Power-On Password or an Administrator Password has been set, the Setup Utility program menu will not be displayed until you type your password. For more information, see “Using passwords.”

Viewing and changing settings

System configuration options are listed in the Lenovo BIOS Setup Utility program menu. To view or change settings, see “Starting the Setup Utility program.”

You must use the keyboard when using the Lenovo BIOS Setup Utility menu. The keys used to perform various tasks are displayed on the bottom of each screen.

Using passwords

You can use the Lenovo BIOS Setup Utility program to set passwords to prevent unauthorized persons from gaining access to your computer and data. See “Starting the Setup Utility program.” The following types of passwords are available:

- Administrator Password
- Power-On Password

You do not have to set any passwords to use your computer. However, if you decide to set passwords, read the following sections.

Password considerations

A password can be any combination of letters and numbers up to 16 characters (a-z and 0-9). For security reasons, it is a good idea to use a strong password that cannot be easily compromised. We suggest that passwords should follow these rules:

- For a strong password, use 7-16 characters and a mix of letters and numbers.
- Do not use your name or your user name.
- Do not use a common word or a common name.
- Use something significantly different from your previous password.

Attention: Administrator and Power-On passwords are not case sensitive.

Administrator Password

Setting an Administrator Password deters unauthorized persons from changing configuration settings. You might want to set an Administrator Password if you are responsible for maintaining the settings of several computers.

After you set an Administrator Password, a password prompt is displayed every time you access the Lenovo BIOS Setup Utility program.

If both the Administrator and Power-On Password are set, you can type either password. However, you must use your Administrator Password to change any configuration settings.

Setting, changing, or deleting an Administrator password

To set an Administrator Password, do the following:

Note: A password can be any combination of letters and numbers up to 16 characters (a-z and 0-9). For more information, see “Password considerations” on page 13.

1. Start the Lenovo BIOS Setup Utility program (see “Starting the Lenovo BIOS Setup Utility program” on page 13).
2. From the **Security** menu, select **Set Administrator Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the password then press the **Enter** key.
4. Re-type the password to confirm, then press the **Enter** key. If you typed the password correctly, the password will be installed.

To change an Administrator Password, do the following:

1. Start the Lenovo BIOS Setup Utility program (see “Starting the Lenovo BIOS Setup Utility program” on page 13).
2. From the **Security** menu, select **Set Administrator Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the current password then press the **Enter** key.
4. Type the new password, then press the **Enter** key. Re-type the password to confirm the new password. If you typed the new password correctly, the new password will be installed. A Setup Noticed confirming that changes have been saved will be displayed.

To delete a previously set Administrator Password, do the following :

1. From the **Security** menu, select **Set Administrator Password** and press the **Enter** key.
2. The password dialog box will be displayed. Type the current password and press the **Enter** key.
3. To delete an **Administrator Password**, leave each new password line item blank, then press the **Enter** key. A Setup Notice confirming that changes have been saved will be displayed.
4. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
5. Select **Save changes and Exit** from the menu.

Power-On Password

When a Power-On Password is set, you cannot start the Lenovo BIOS Setup Utility program until a valid password is typed from the keyboard.

Setting, changing, or deleting a Power-On Password

Note: A password can be any combination of letters and numbers up to 16 characters (a-z and 0-9).

To set a Power-On Password, do the following:

1. Start the Lenovo BIOS Setup Utility program (See "Starting the Lenovo BIOS Setup Utility program" on page 13.)
2. From the **Security** menu, select **Set Power-On Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the password, then press the **Enter** key.
4. Re-type the password to confirm. If you typed the password correctly, the password will be installed.

To change a Power-On Password, do the following:

1. Start the Lenovo BIOS Setup Utility program (See "Starting the Lenovo BIOS Setup Utility program" on page 13.)
2. From the **Security** menu, select **Set Power-On Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the current password then press the **Enter** key.
4. Type the new password, then press the **Enter** key. Re-type the password to confirm the new password. If you typed the new password correctly, the new password will be installed. A Setup Noticed confirming that changes have been saved will be displayed.

To delete a previously set Power-On Password, do the following :

1. From the **Security** menu, select **Set Power-On Password** and press the **Enter** key.
2. The password dialog box will be displayed. Type the current password and press the **Enter** key.
3. To delete the **Power-On Password**, leave each new password line item blank, then press Enter. A Setup Notice confirming that changes have been saved will be displayed.
4. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
5. Select **Save changes and Exit** from the menu.

Enabling or disabling a device

The Devices options is used to enable or disable user access to the following devices:	
USB Functions	Select whether to enable or disable USB (Universal Serial Bus) functions. If the functions are disabled, no USB devices can be used.
SATA Mode	When this feature is set to Disabled , all devices connected to the SATA connectors (e.g. hard disk drives or the optical disk drive) are disabled and cannot be accessed.
Onboard Audio Controller	Select whether to enable or disable the Onboard Audio Controller . When this feature is set to Disabled all devices connected to the audio connectors (e.g. headphones or a microphone) are disabled and cannot be used.
Onboard Ethernet Controller or LAN Boot Agent	Select whether to enable or disable the Onboard Ethernet Controller , or select whether to enable or disable load onboard PXE (Preboot Execution Environment) .

To enable or disable a device, do the following:

1. Start the Setup Utility program (see "Starting the Setup Utility program" on page 13).
2. From the Setup Utility program menu, select **Devices**.
3. Select an option as follows:

Select **USB Setup**, press the **Enter** key, then select **USB Functions**.

Select **ATA Device Setup**, press the **Enter** key, then select **SATA Mode**.

Select **Audio Setup**, press the **Enter** key, then select **Onboard Audio Controller**.

Select **Network Setup**, press the **Enter** key, then select **Onboard Ethernet Support** or **LAN Boot Agent**.

4. Select **Disabled** or **Enabled** and press the **Enter** key.
5. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
6. Select **Save changes and Exit** from the menu.

Notes:

- a. If you do not want to save the settings, select **Discard changes and Exit** from the menu.
- b. Select IDE/AHCI Mode: Device driver support is required for AHCI. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.

Selecting a startup device

If your computer does not boot from a device such as the CD/DVD-ROM drive disk or hard disk as expected, follow one of the procedures below.

Selecting a temporary startup device

Use this procedure to start up from any boot device.

Note: Not all CDs, DVDs or hard disk drives are bootable.

1. Turn off your computer.
2. Press and hold the **F12** key then turn on the computer. When the **Startup Device Menu** appears, release the **F12** key.

Note: If the **Startup Device Menu** does not display using these steps, repeatedly press and release the **F12** key rather than keeping it pressed when turning on the computer.

3. Use **↑** and **↓** arrows to select the desired startup device from the **Startup Device Menu** and press the **Enter** key to begin.

Note: Selecting a startup device from the **Startup Device Menu** does not permanently change the startup sequence.

Selecting or changing the startup device sequence

To view or permanently change the configured startup device sequence, do the following:

1. Start the Lenovo BIOS Setup Utility program (see “Starting the Lenovo BIOS Setup Utility program” on page 13).
2. From the Lenovo BIOS Setup Utility program main menu, select the **Startup** option.
3. Press the **Enter** key, and select the devices for the **Primary Boot Sequence**. Read the information displayed on the right side of the screen.
4. Use **-** and **^** arrows to select a device. Use the **<+>** or **<->** keys to move a device up or down. Use the **<x>** key to exclude the device from or include the device in the boot sequence.
5. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
6. Select **Save changes and Exit** from the menu.

Notes:

- a. If you do not want to save the settings, select **Discard changes and Exit** from the menu.
- b. If you have changed these settings and want to return to the default settings, select **Load Optimal Defaults** from the menu.

Exiting the Lenovo BIOS Setup Utility program

After you finish viewing or changing settings, press the **Esc** key to return to the Lenovo BIOS Setup Utility program main menu. You might have to press the **Esc** key several times. Do one of the following:

- If you want to save the new settings, select **Save changes and Exit** from the menu. When the **Save & reset** window shows, select the **Yes** button, and then press the **Enter** key to exit the Lenovo BIOS Setup Utility program.
- If you do not want to save the settings, select **Discard changes and Exit** from the menu. When the **Reset Without Saving** window shows, select the **Yes** button, and then press the **Enter** key to exit the Lenovo BIOS Setup Utility program.

Chapter 6. Symptom-to-FRU Index

The Symptom-to-FRU index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with Chapter 4, “General Checkout,” on page 11. This index can also be used to help you decide which FRUs to have available when servicing a computer. If you are unable to correct the problem using this index, go to “Undetermined problems” on page 20.

Notes:

- If you have both an error message and an incorrect audio response, diagnose the error message first.
- If you cannot run the diagnostic tests or you get a diagnostic error code when running a test but did receive a POST error message, diagnose the POST error message first.
- If you did not receive any error message look for a description of your error symptoms in the first part of this index.

Hard disk drive boot error

A hard disk drive boot error can be caused by the following.

Error	FRU/Action
The startup drive is not included in the boot sequence configuration.	Check the configuration and ensure the startup drive is in the boot sequence.
No operating system is installed on the boot drive.	Install an operating system on the boot drive.
The boot sector on the startup drive is corrupted.	The drive must be formatted. Do the following: <ol style="list-style-type: none">1. Attempt to back up the data on the failing hard disk drive.2. Use the operating system to format the hard disk drive.
The drive is defective.	Replace the hard disk drive.

Power Supply Problems

Follow these procedures if you suspect there is a power supply problem.

Check/Verify	FRU/Action
Check that the following are properly installed: <ul style="list-style-type: none">• Power Cord• On/Off Switch connector• System Board Power Supply connectors• Microprocessor connections	Reseat connectors
Check the power cord.	Power Cord
Check the power-on switch.	Power-on Switch

POST error codes

Each time you turn the computer on, it performs a series of tests to check that the system is operating correctly and that certain options are set. This series of tests is called the *Power-On Self-Test*, or *POST*. POST does the following:

- Checks some basic motherboard operations
- Checks that the memory is working correctly
- Starts video operations
- Verifies that the boot drive is working

POST Error Message	Description/Action
Keyboard error	Cannot initialize the keyboard. Make sure the keyboard is properly connected to the computer and that no keys are held pressed during POST. To purposely configure the computer without a keyboard, select Keyboardless operation in Startup and set the option to Enabled . The BIOS then ignores the missing keyboard during POST.
Reboot and Select proper Boot device or Insert Boot Media in selected Boot device	The BIOS was unable to find a suitable boot device. Make sure the boot drive is properly connected to the computer. Make sure you have bootable media in the boot device.

Undetermined problems

1. Power-off the computer.
2. Remove or disconnect the following components (if connected or installed) one at a time.
 - a. External devices (modem, printer, or mouse)
 - b. Extended video memory
 - c. External Cache
 - d. External Cache RAM
 - e. Hard disk drive
 - f. Disk drive
3. Power-on the computer to re-test the system.
4. Repeat steps 1 through 3 until you find the failing device or component.

If all devices and components have been removed and the problem continues, replace the system board.

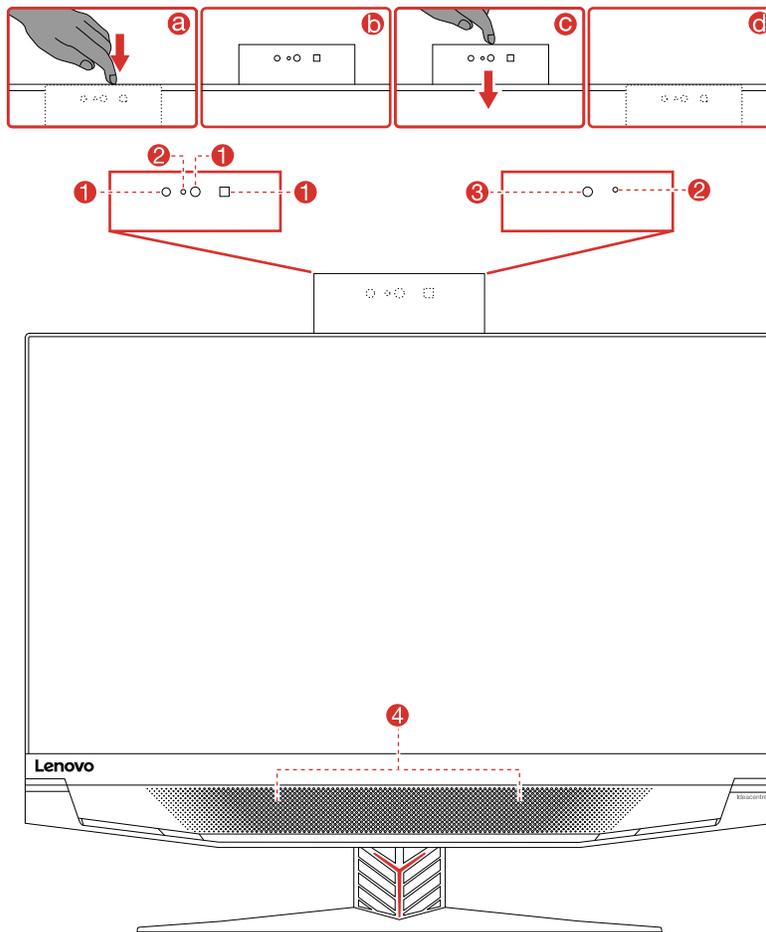
Chapter 7. Locating connectors, controls and components

This section provides illustrations to help locate the various connectors, controls and components of the computer.

Front view

The following illustration shows the location of controls and components on the front of the computer.

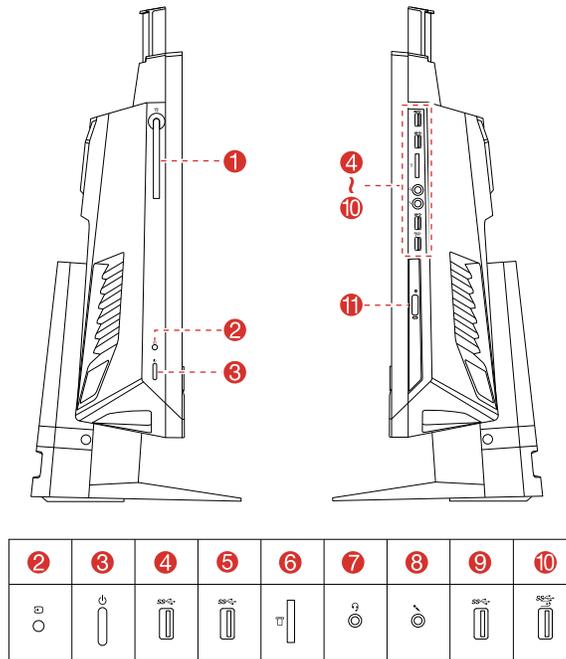
Attention: Be careful not to block any air vents on the computer. Blocked air vents can cause overheating.



1. 3D camera	3. 2D camera
2. Camera LED indicator	4. Built-in microphone

Left and right view

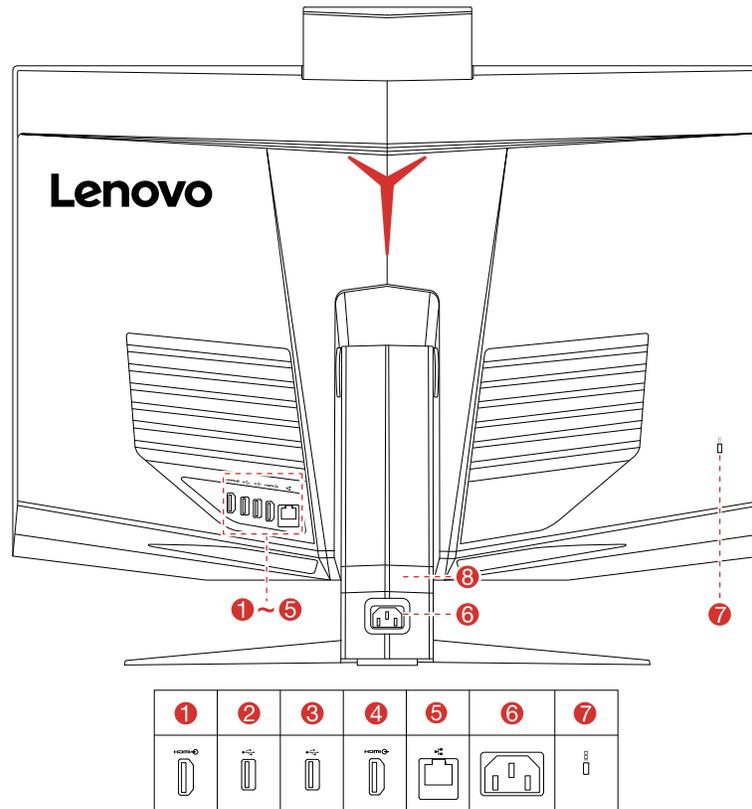
The following illustration shows the location of connectors, controls and components on the left and right side of the computer.



1. Headset hanger	7. Combo audio jack
2. HDMI-in switch button	8. Mic connector
3. Power button	9. USB 3.0 connector
4. USB 3.0 connector	10. USB 3.0 connector/USB power off charging connector
5. USB 3.0 connector	11. Optical drive eject button
6. Memory card reader	

Rear view

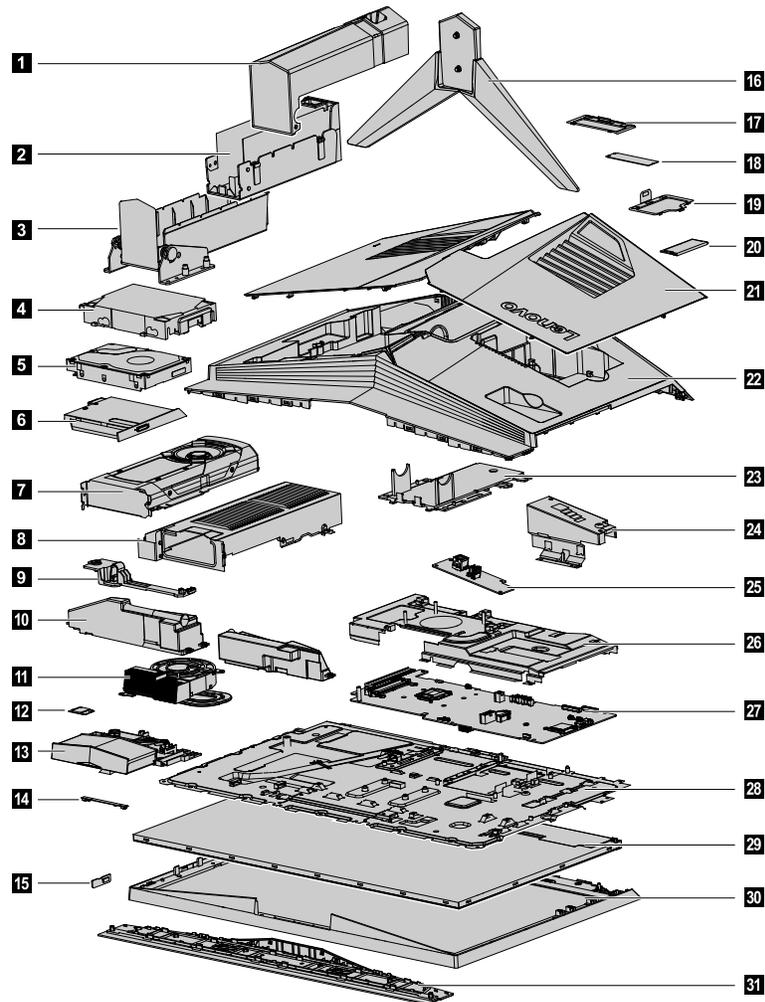
The following illustration shows the location of connectors and components on the rear of the computer.



1. HDMI-in connector	5. Ethernet connector
2. USB 2.0 connector	6. Power connector
3. USB 2.0 connector	7. Security cable slot
4. HDMI-out connector	8. Cable clip

Hardware components

The following illustration shows the components that make up your computer.

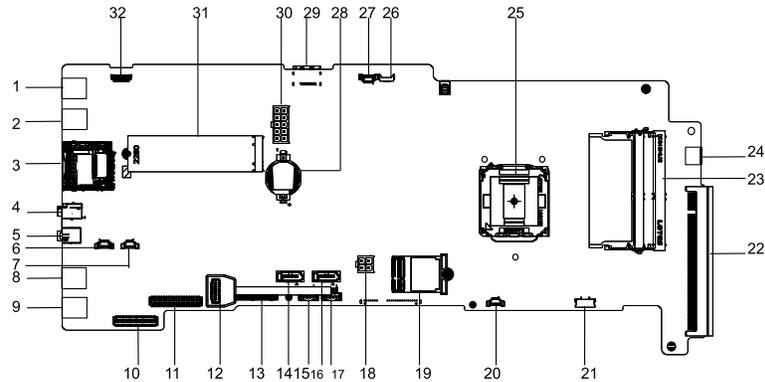


1. Stand holder back cover	17. Solid state drive cover
2. Power supply unit	18. Solid state drive
3. Stand holder front cover	19. Memory cover
4. Hard disk drive bracket	20. Memory card
5. Hard disk drive	21. Rear covers
6. Optical disk drive	22. Middle cover
7. Graphic card	23. Hinge cover
8. Graphic card cover	24. Rear I/O bracket
9. Graphic card holder	25. Rear I/O board
10. Speaker system	26. EMI cover
11. System fan	27. Motherboard
12. Wi-Fi card	28. Main frame
13. Camera module	29. LCD panel

14. Microphone	30. Front cover
15. Power switch board	31. Bottom cover
16. Stand base	

Identifying parts on the motherboard

The motherboard (sometimes called the planar or system board) is the main circuit board in your computer. It provides basic computing functions and supports a variety of devices that are factory-installed or that you can install later. The following illustration shows the location of connectors and components on the front of the motherboard.



1. USB 3.0 connector	17. HDD power connector
2. USB 3.0 connector	18. Power supply unit connector
3. Card reader connector	19. Wi-Fi card slot
4. Combo audio connector	20. System fan connector
5. Mic connector	21. Power switch board connector
6. Speaker connector	22. PCIE connector
7. Microphone connector	23. Memory socket
8. USB 3.0 connector	24. HDMI-out connector
9. USB 3.0 connector	25. CPU socket
10. LVDS connector	26. 3D camera connector
11. LVDS connector	27. 2D camera connector
12. HDMI-in connector	28. Battery
13. Rear I/O connector	29. DisplayPort connector
14. ODD SATA connector	30. Power supply unit connector
15. ODD power connector	31. Solid state drive slot
16. HDD SATA connector	32. Backlight connector

Chapter 8. Replacing hardware

Attention: Do not remove the computer cover or attempt any repair before reading the “Important safety information” in the Safety and Warranty Guide that was included with your computer. To obtain copies of the Safety and Warranty Guide, go to the Support Web site at: <http://consumersupport.lenovo.com>.

Note: Use only parts provided by Lenovo.

General information

Pre-disassembly instructions

Before starting the disassembly procedure, make sure that you do the following:

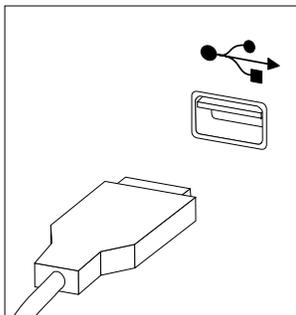
1. Turn off the power to the system and all peripherals.
2. Unplug all power and signal cables from the computer.
3. Place the system on a flat, stable surface.

Replacing the keyboard and mouse

Note: Your keyboard will be connected to a USB connector at either side or at the rear of the computer.

To replace the keyboard and mouse:

- Step 1. Remove any media from the drives, shut down the computer, and turn off all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. .
- Step 4. Locate the connector for the keyboard. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 5. Disconnect the defective keyboard cable from the computer and connect the new keyboard cable to the same connector.

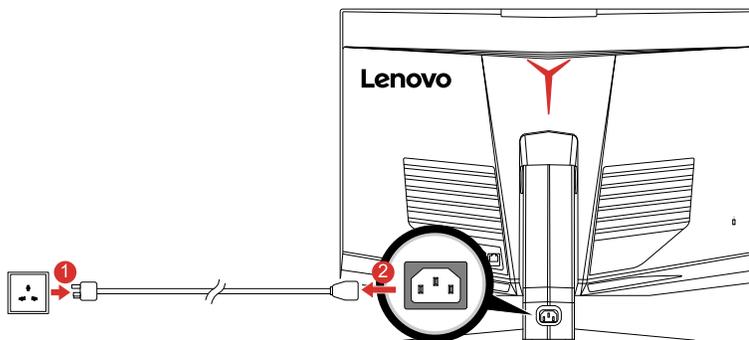


- Step 6. The mouse can be replaced using the same method.

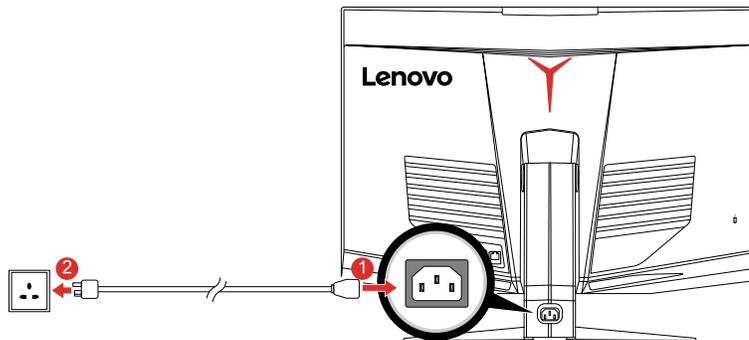
Replacing the power cord

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug the cord from electrical outlet, and then disconnect the power cord from the connector on the computer,



Step 3. Connect the new power cord as shown.

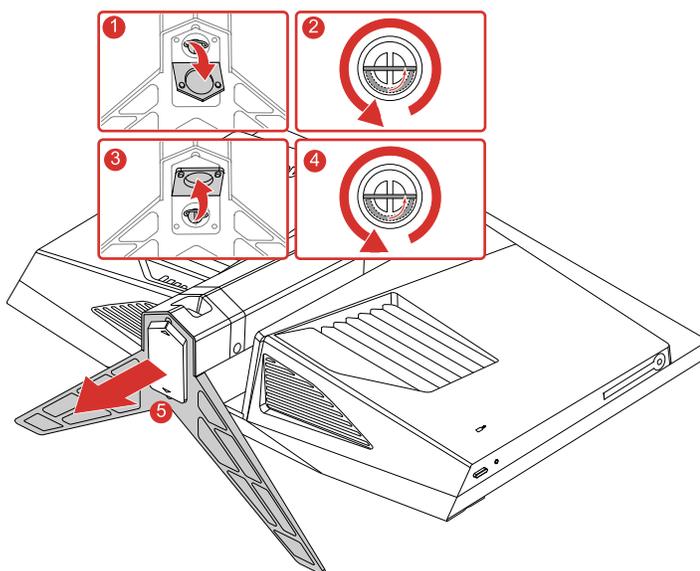


Removing the stand base

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Open the top part of the rubber, and then twist the hand screw ring counter-clockwise until the stand base is loosened. **1 2**
- Step 5. Open the bottom part of the rubber, and then twist the hand screw ring counter-clockwise until the stand base is loosened. **3 4**
- Step 6. Remove the stand base from the stand holder and put it aside. **5**

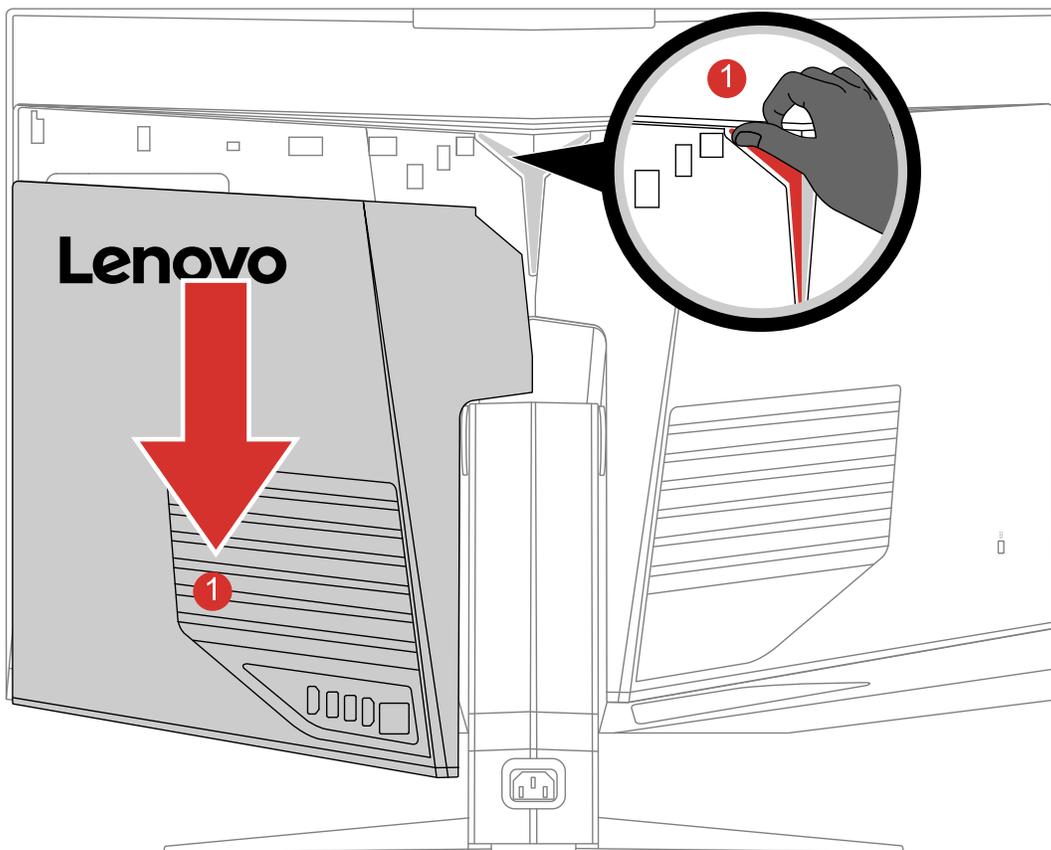


Removing the rear covers

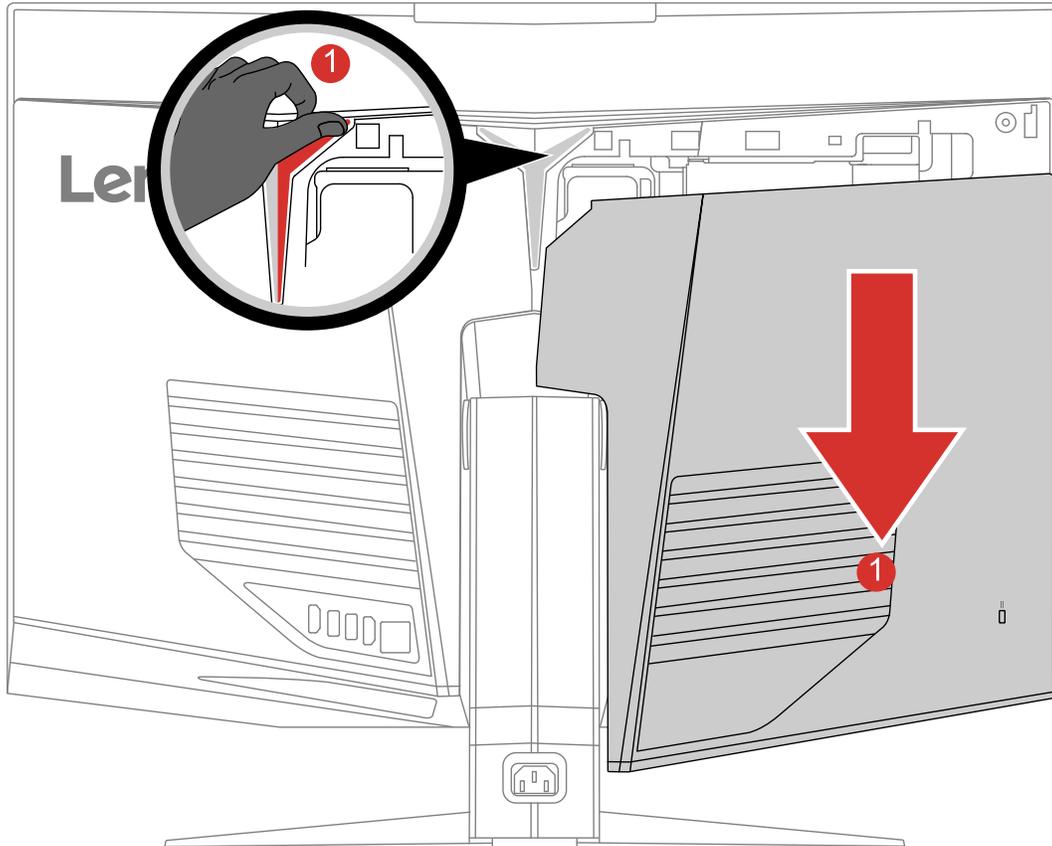
Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. To remove the left rear cover, press the top left part of the **Y** logo, and then push the left rear cover down.



Step 5. To remove the right rear cover, press the top right part of the **Y** logo, and then push the right rear cover



Replacing the graphic card

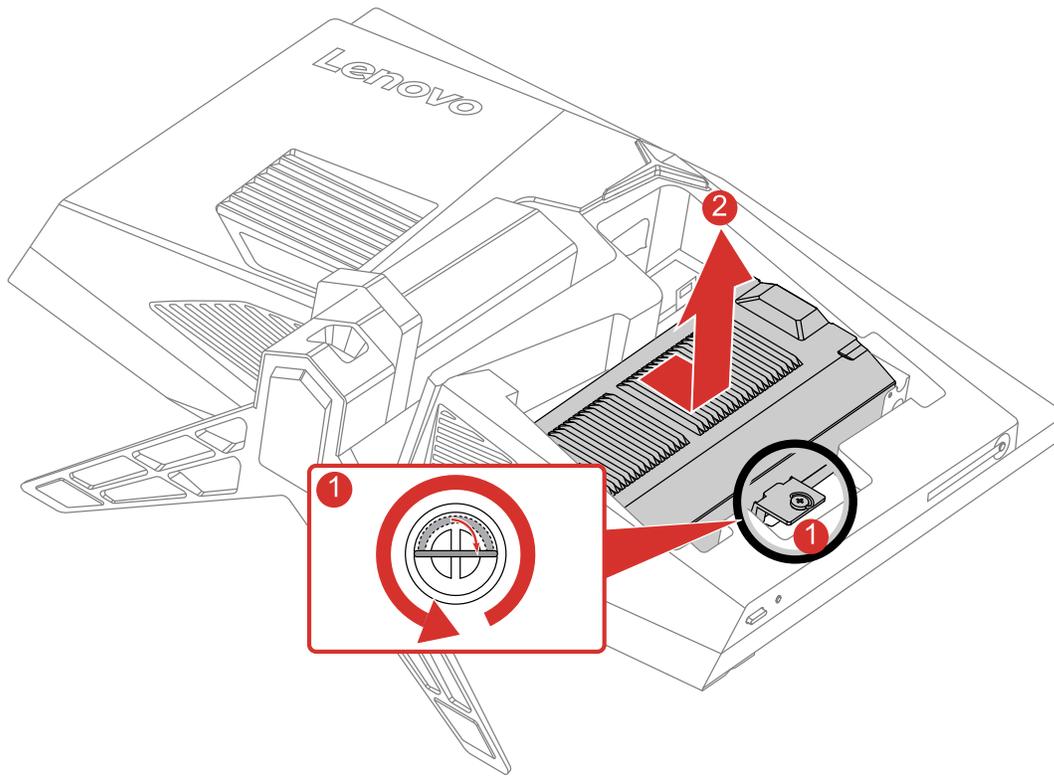
Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the right rear cover. Refer to Removing the rear covers.

Step 5. Loosen the screw that secures the graphic card module to the chassis. **1**

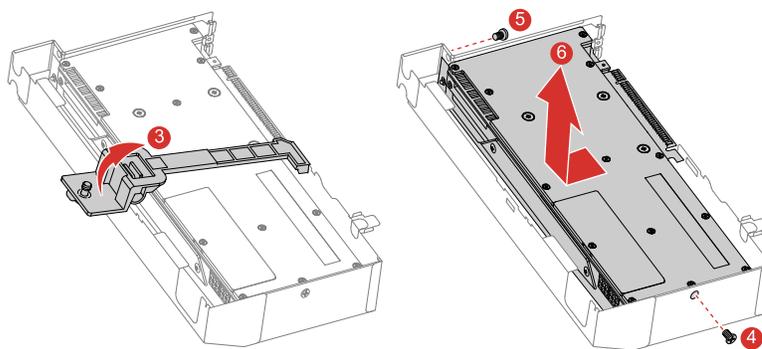
Step 6. Slide out the graphic card module. **2**



Step 7. Remove the graphic card holder. **3**

Step 8. Remove the screws that secure the graphic card to the graphic card cover. **4 5**

Step 9. Slide out the graphic card. **6**



Step 10. To install the new graphic card:

- Slide in and secure the graphic card to its cover with screws.
- Reinstall the graphic card holder.
- Slide in the graphic card module into position and secure it to the chassis by fastening the screw in the graphic card holder.

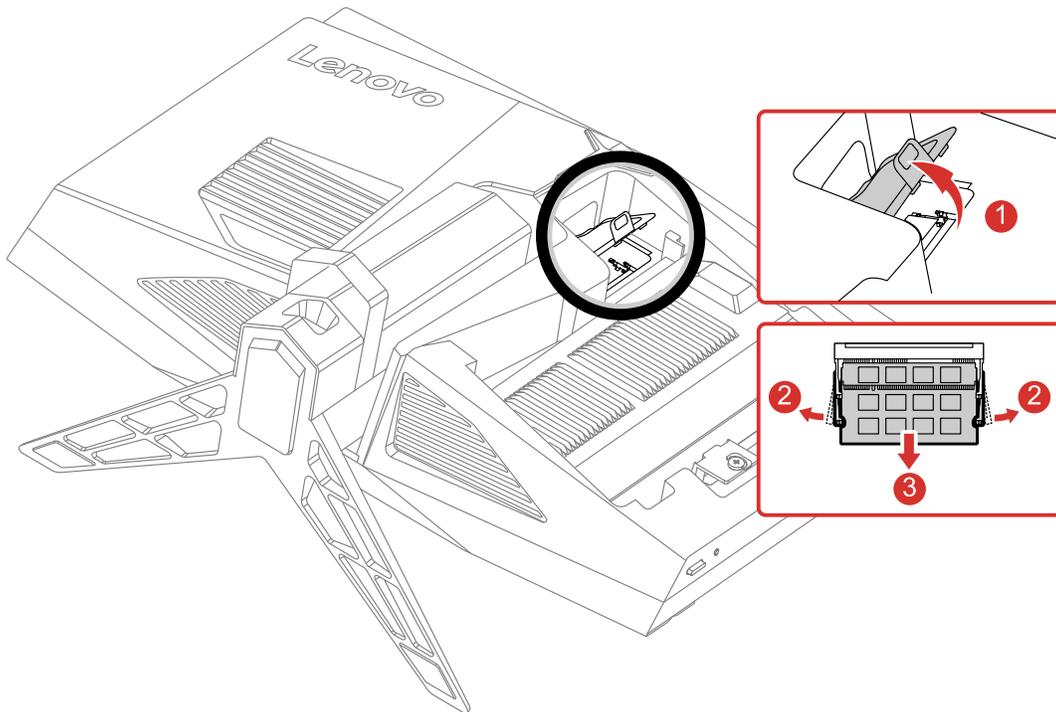
Step 11. Reattach the right rear cover.

Replacing the memory module

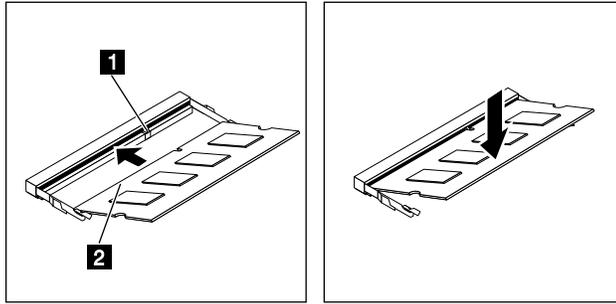
Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the right rear cover. Refer to Removing the rear covers.
- Step 5. Open the memory cover. **1**
- Step 6. Open the retaining clips **2** and gently pull the memory module out of the memory socket **3**.



- Step 7. To install the new memory module:
 - a. Position the new memory module over the memory slot. Ensure that the notch **2** on the memory module aligns correctly with the slot key **1** in the memory socket. Push the memory module straight down into the socket until the retaining clips close.



b. Reinstall the memory cover.

Step 8. Reattach the right rear cover.

Replacing the solid state drive

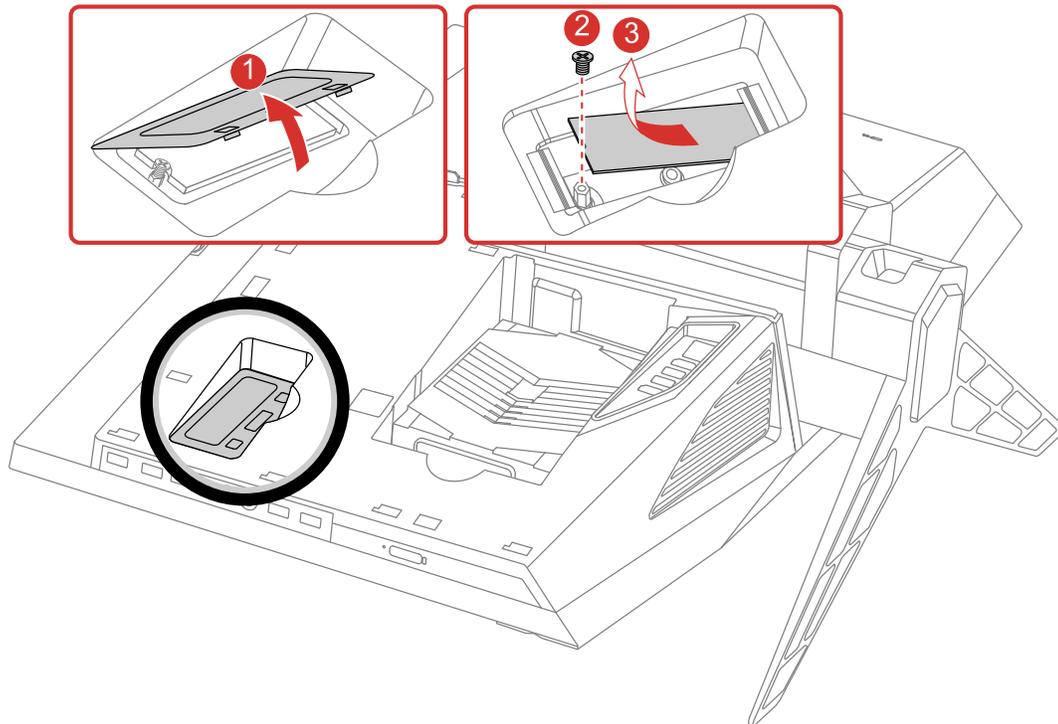
Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the left rear cover. Refer to Removing the rear covers.

Step 5. Remove the solid state drive cover. **1**

Step 6. Remove the screw that secure the solid state drive to the motherboard **2**, and then slide out the solid state drive. **3**



Step 7. To install the new solid state drive:

- a. Insert the new solid state drive into the slot, and then secure it to the motherboard with one screw.
- b. Reinstall the solid state drive cover.

Step 8. Reattach the left rear cover.

Replacing the hard disk drive

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

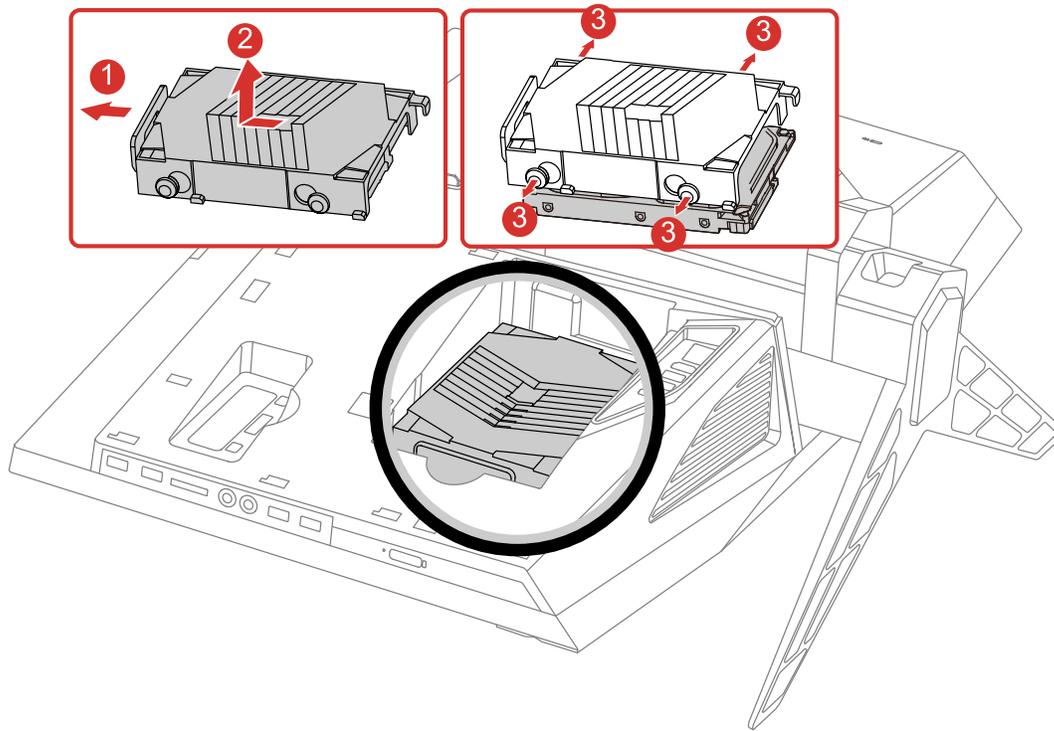
Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.

Step 2. Unplug all power cords from electrical outlets.

Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.

Step 4. Remove the left rear cover. Refer to Removing the rear covers.

- Step 5. Pull the hard disk drive and bracket to left **1**, and then lift them up. **2**
- Step 6. Disconnect the signal cable from the hard disk drive.
- Step 7. Remove the four screws that secure the hard disk drive to the bracket. **3**



- Step 8. To install the new hard disk drive:
- Line up the new hard disk drive with the bracket and secure it with four screws.
 - Connect the data and power cables to the new hard disk drive.
 - Slide the hard disk drive and bracket back into position.
- Step 9. Reattach the left rear cover.

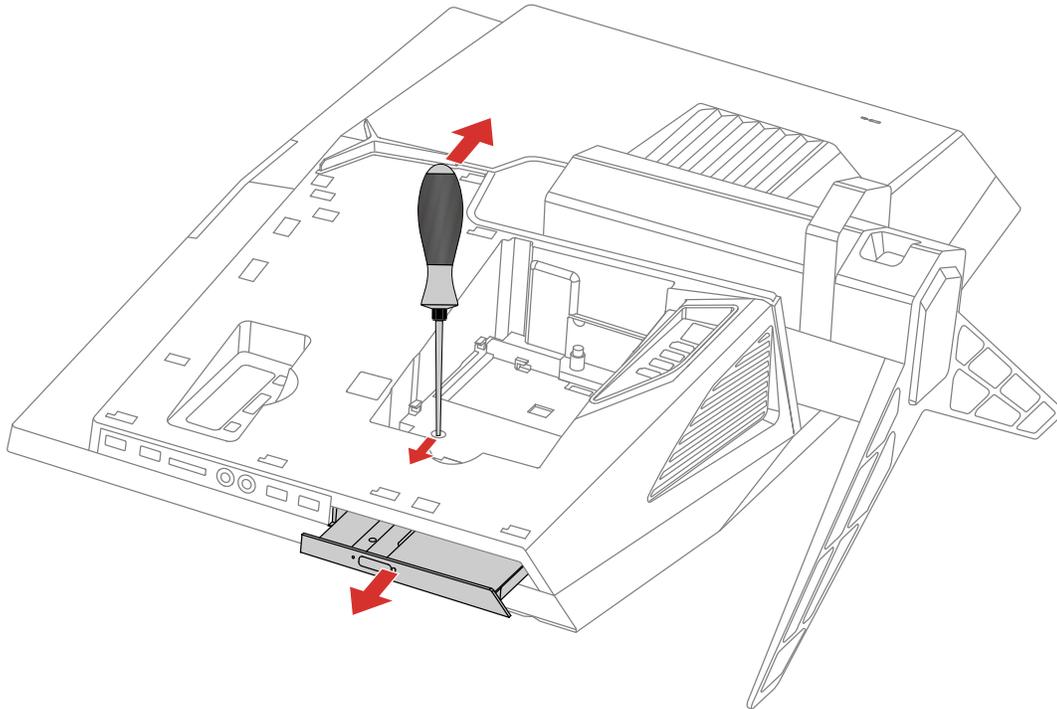
Replacing the optical drive

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

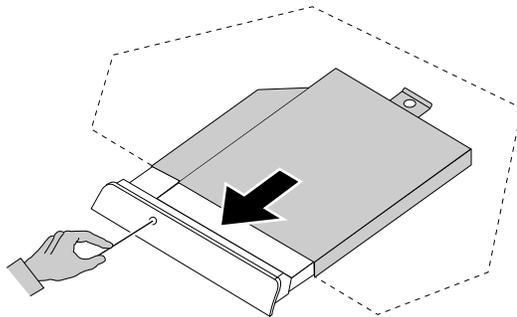
Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the left rear cover. Refer to Removing the rear covers.
- Step 5. Remove the hard disk drive. Refer to Replacing the hard disk drive.

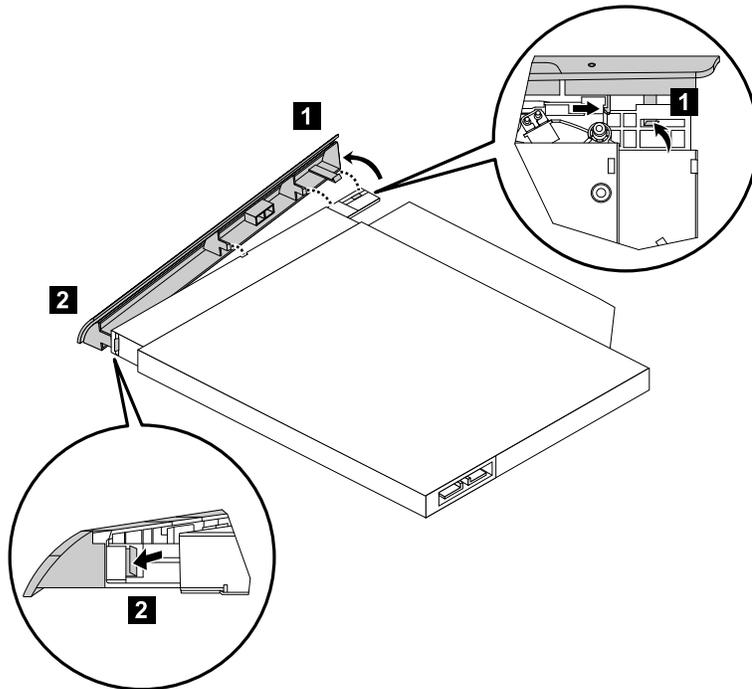
Step 6. Locate the optical removal notch, and then push the optical drive out using a screw driver .



Step 7. Push a small iron stick (paper clip) into the small hole on the optical drive bezel so that the disk springs out as shown.



Step 8. Remove the optical drive bezel from the optical drive as shown. **1 2**



Step 9. To install the new optical drive:

- a. Insert the tabs on the optical drive bezel into the corresponding holes in the new optical drive, and then push the bezel back into position.
- b. Gently push the disk forward until it snaps into position.
- c. Slide the new optical drive into the drive bay.

Step 10. Reattach the hard disk drive and the left rear cover.

Removing the middle cover

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To remove the middle cover:

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the left and right rear covers. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.

Step 8. Remove the optical drive. Refer to Replacing the optical drive.

Step 9. Remove the seven screws that secure the middle cover to the chassis.



Step 10. Lift up and remove the middle cover as shown.



Step 11. To reattach the middle cover:

- a. Line up the middle cover with the chassis, and then press the middle cover until it locks into position.
- b. Secure the middle cover to the chassis with seven screws.

Step 12. Reattach the optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the power switch board

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the power switch board

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Disconnect the power switch board cable from the power switch board.
- Step 11. Push the lock pin outwards **1**, and then lift up the power switch board. **2**



Step 12. To install the power switch board:

- a. Align the new power switch board with the corresponding slot, and then push the power switch board until it locks into position.
- b. Connect the cable to the new power switch board.

Step 13. Reattach the middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the rear I/O module

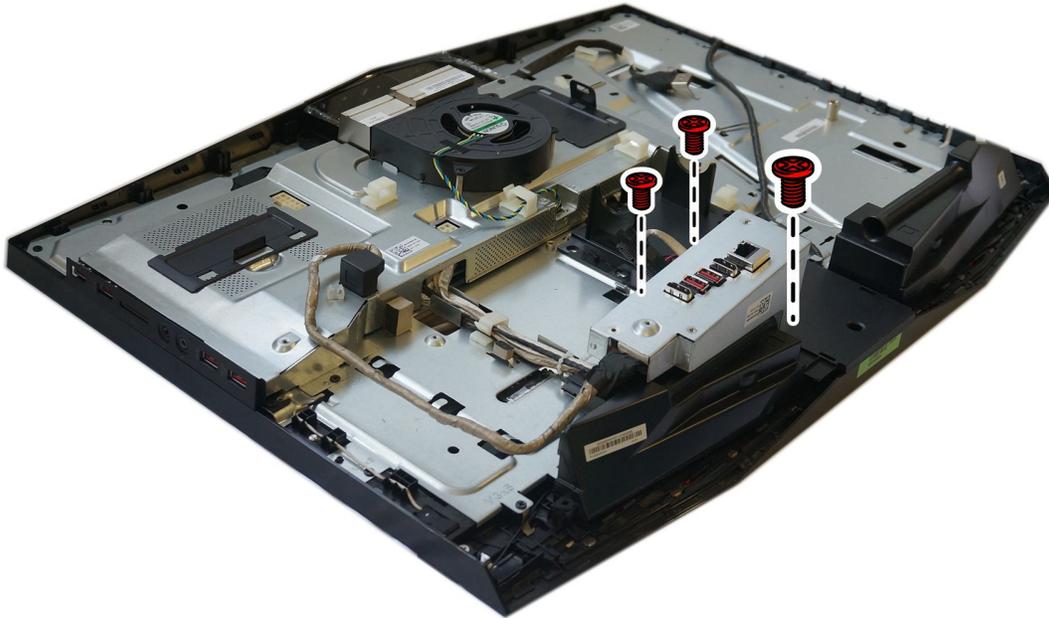
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the rear I/O module

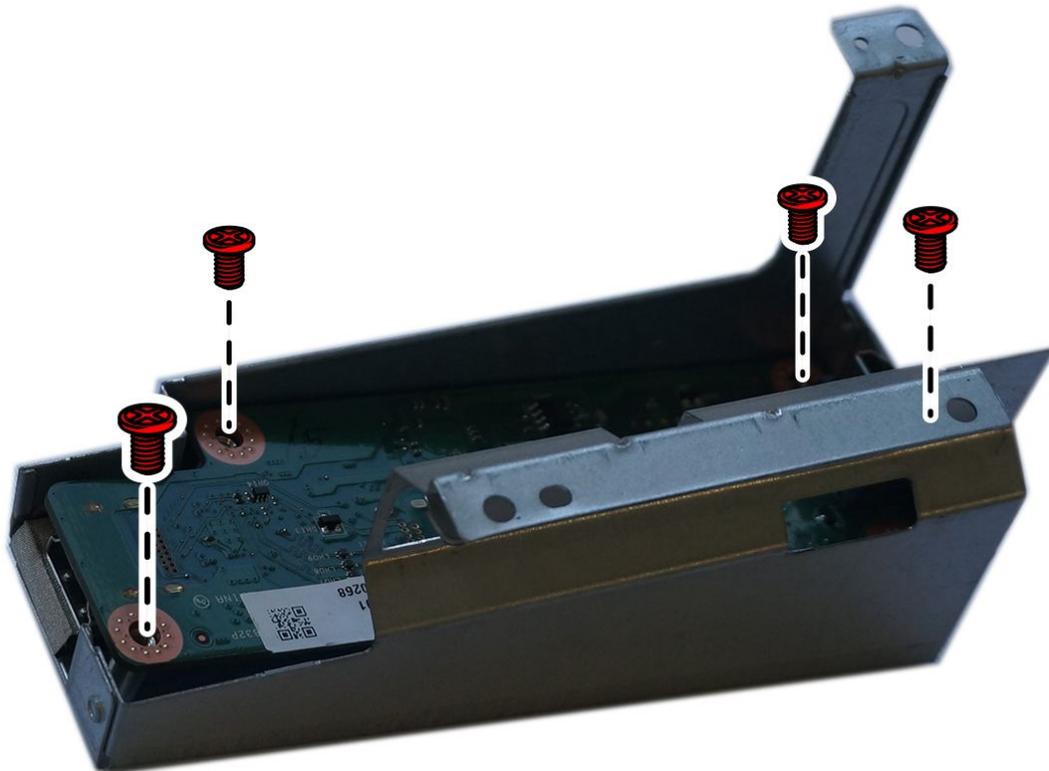
- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the left and right rear covers. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the stand holder. Refer to Removing the stand holder.

Step 11. Remove the three screws that secure the rear I/O module to the motherboard, and then lift it up gently.



Step 12. Disconnect the cables from the rear I/O module.

Step 13. Remove the four screws that secure rear I/O board to the bracket, and then slide the rear I/O board out.



Step 14. To install the new rear I/O module:

- a. Align the holes in the new I/O board with the ones in the bracket.

- b. Secure the new I/O board to the bracket with four screws.
- c. Connect the cables to the I/O board.
- d. Secure the rear I/O module to the chassis with three screws.

Step 15. Reattach the stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the system fan

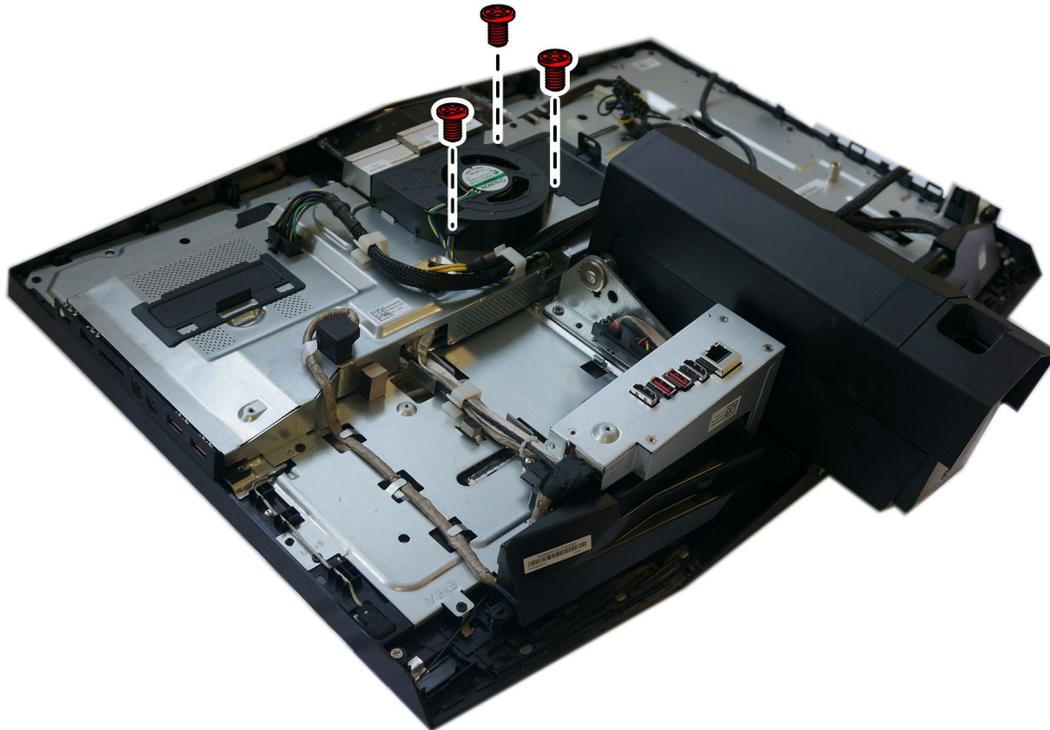
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the system fan

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the left and right rear covers. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the middle cover. Refer to Removing the middle cover.

Step 9. Remove the three screws that secure the system fan to the EMI cover.



Step 10. Disconnect the system fan power cable from the connector on the motherboard.

Step 11. Lift up the system fan to remove it from the EMI cover.

Step 12. To install the new system fan:

- a. Connect the system fan power cable to the connector on the motherboard.
- b. Place the new system fan into position, and then secure it to the EMI cover with three screws.

Step 13. Reattach the middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Removing the stand holder

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the left and right rear covers. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.

- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the five screws that secure the stand holder to the chassis, and then lift up the stand holder to remove it.



- Step 11. To reattach the stand holder:
- Align the holes in the stand holder with the corresponding holes in the chassis.
 - Secure the stand holder to the chassis with five screws.
- Step 12. Reattach the middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Removing the EMI cover

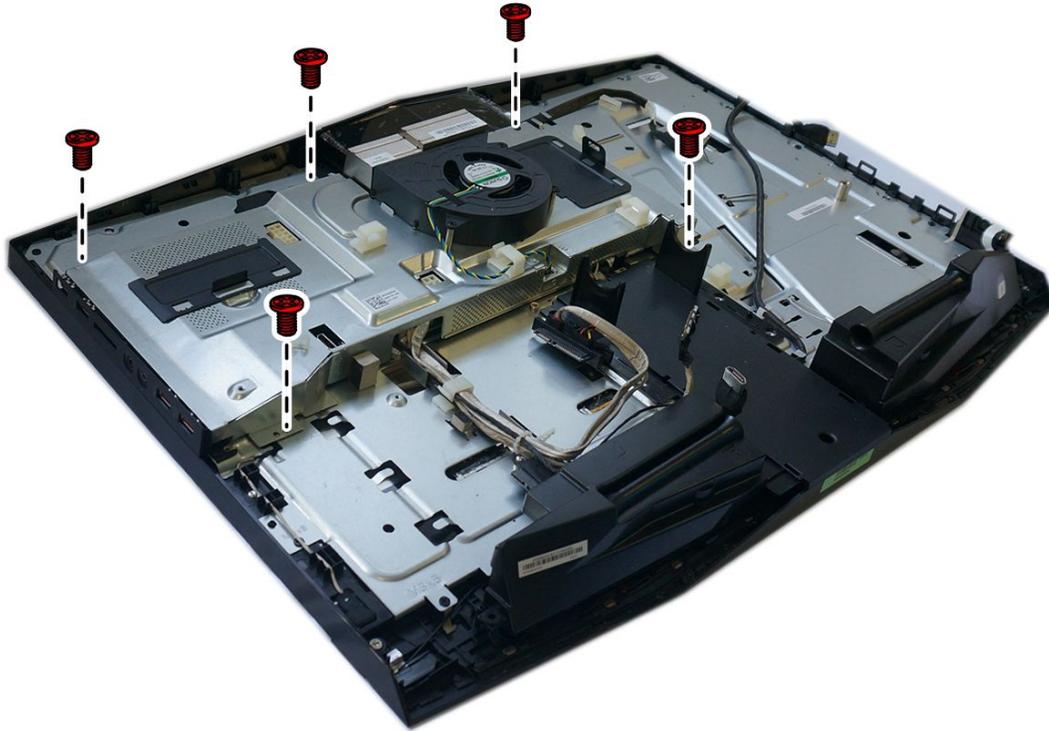
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the EMI cover

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.

- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the stand holder. Refer to Removing the stand holder.
- Step 11. Disconnect the power cable of the system fan from the connector on the motherboard.
- Step 12. Remove the five screws that secure the EMI cover to the chassis, and then lift it up.



- Step 13. To install the EMI cover:
 - a. Align the holes in the EMI cover with the mounting holes in the chassis.
 - b. Secure the EMI cover to the chassis with five screws.
 - c. Connect the power cable of the system fan the connector on the motherboard.
- Step 14. Reattach the stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the Wi-Fi card

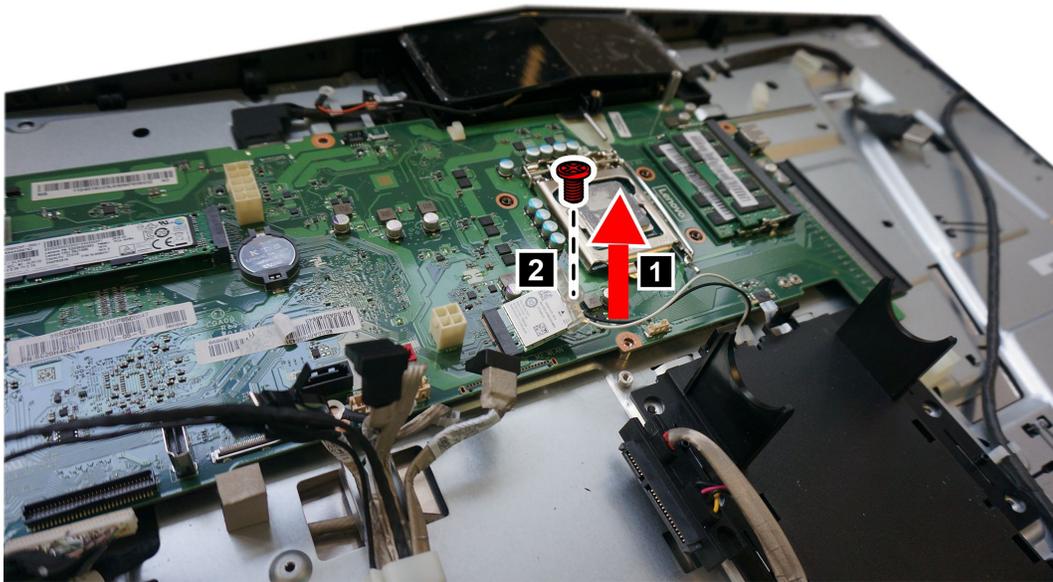
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the Wi-Fi card:

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.

- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the stand holder. Refer to Removing the stand holder.
- Step 11. Remove the EMI cover. Refer to Removing the EMI cover.
- Step 12. Disconnect the antenna cables from the Wi-Fi card. **1**
- Step 13. Remove the screw that secures the Wi-Fi card to the motherboard. **2**
- Step 14. Pull the Wi-Fi card out of the slot.



- Step 15. To install the new Wi-Fi card:
 - a. Insert the new Wi-Fi card into the Wi-Fi card slot.
 - b. Secure new the Wi-Fi card to the motherboard with one screw.
 - c. Connect the antenna cables to the new Wi-Fi card.
- Step 16. Reattach the EMI cover, stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

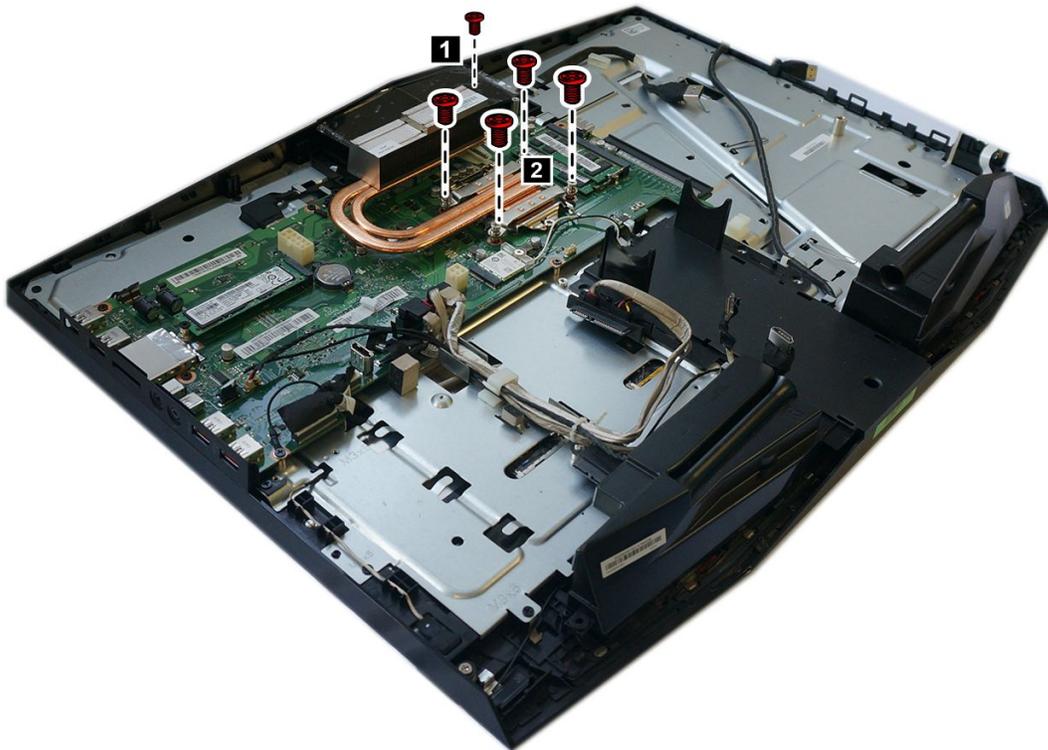
Replacing the heat-sink

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the heat-sink:

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the stand holder. Refer to Removing the stand holder.
- Step 11. Remove the rear I/O module. Refer to Replacing the rear I/O module.
- Step 12. Remove the EMI cover. Refer to Removing the EMI cover.
- Step 13. Remove the screw on the top right corner of the heat-sink. **1**
- Step 14. Loosen the five screws that secure the heat-sink to the motherboard, and then lift up the heat-sink to remove it. **2**



Attention: Place the heat-sink upside down on a flat surface to prevent thermal grease from contaminating other components.

Attention: Use an alcohol pad to wipe the thermal grease off the CPU.

- Step 15. To install the new heat-sink:

- a. Position the new heat-sink on the motherboard so that the four screws are aligned with the holes in the motherboard.
- b. Tighten the screws in numeric order to secure the new heat-sink to the motherboard.
- c. Reinstall the screw on the top right corner of the heat-sink.

Step 16. Reattach the EMI cover, rear I/O module, stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the motherboard

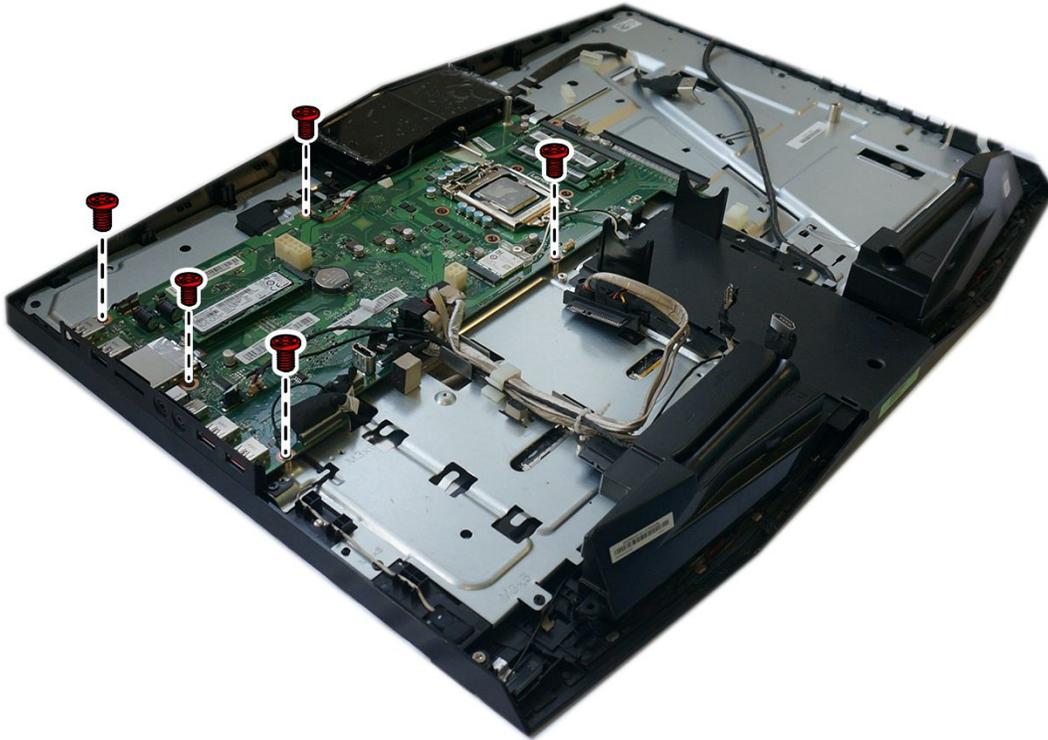
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the motherboard:

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the solid state drive if available. Refer to Replacing the solid state drive.
- Step 8. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 9. Remove the optical drive. Refer to Replacing the optical drive.
- Step 10. Remove the middle cover. Refer to Removing the middle cover.
- Step 11. Remove the stand holder. Refer to Removing the stand holder.
- Step 12. Remove the rear I/O module. Refer to Replacing the rear I/O module.
- Step 13. Remove the system fan. Refer to Replacing the system fan.
- Step 14. Remove the EMI cover. Refer to Removing the EMI cover.
- Step 15. Remove the memory modules. Refer to Replacing the memory module.
- Step 16. Remove the heat-sink. Refer to Replacing the heat-sink.
- Step 17. Remove the Wi-Fi card. Refer to Replacing the Wi-Fi card.
- Step 18. Remove all the cables from the motherboard.

Step 19. Remove the five screws that secure the motherboard to the chassis, and then lift the motherboard up to remove it.



Step 20. To install the new motherboard:

- a. Align the five screw holes in the new motherboard with the screw holes in the chassis.
- b. Secure the new motherboard to the chassis with five screws.
- c. Connect all the cables to the new motherboard.

Step 21. Install the following parts to the new motherboard:

- Wi-Fi card
- Heat-sink
- Memory module
- Solid state drive if available

Step 22. Reattach the EMI cover, system fan, rear I/O module, stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the speaker system

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the speaker system:

Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.

- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.
- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the stand holder. Refer to Removing the stand holder.
- Step 11. Remove the rear I/O module. Refer to Replacing the rear I/O module.
- Step 12. Remove the system fan. Refer to Replacing the system fan.
- Step 13. Remove the EMI cover. Refer to Removing the EMI cover.
- Step 14. Disconnect the speaker cable from the connector on the motherboard.
- Step 15. Remove the screw that secures the hinge cover to the chassis. Then, lift up the hinge cover to remove it.



Step 16. Lift up the speaker to remove it.



Step 17. To install the new speaker system:

- a. Align the new speaker into position.
- b. Align the hole in hinge cover with the one on the chassis and secure the hinge cover to the chassis with one screw.

Step 18. Reattach the EMI cover, system fan, rear I/O module, stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the camera module

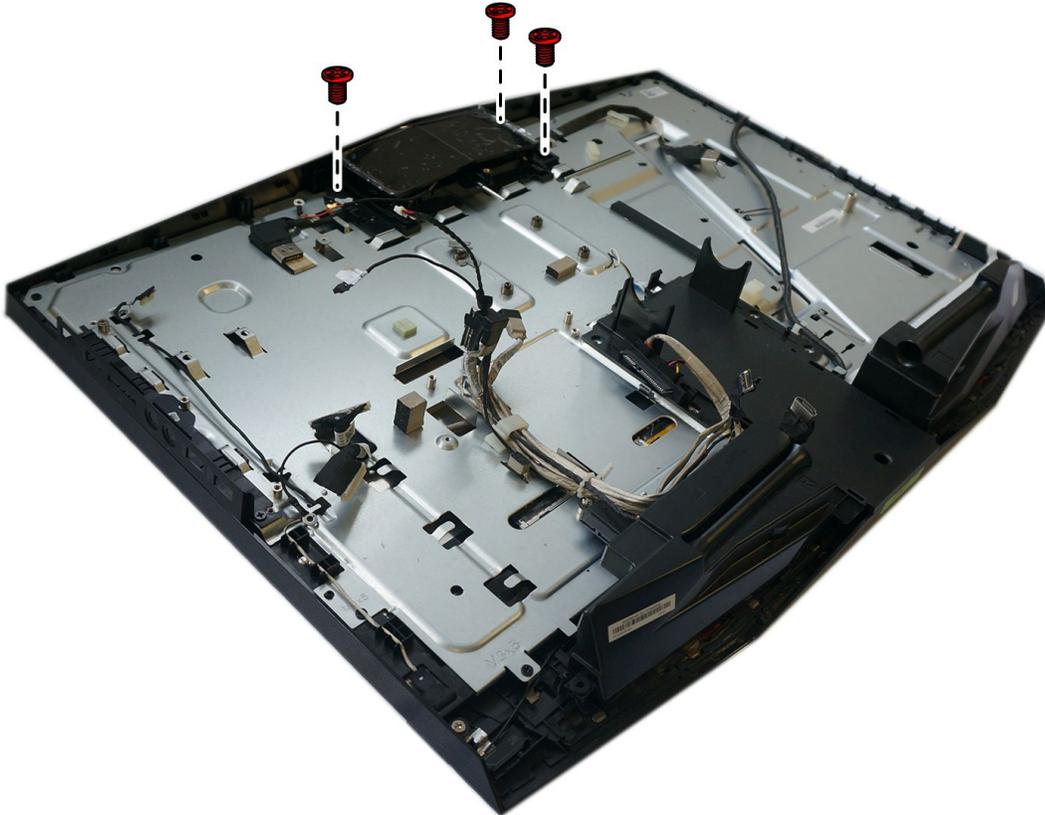
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the camera module:

- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the graphic card. Refer to Replacing the graphic card.

- Step 7. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 8. Remove the optical drive. Refer to Replacing the optical drive.
- Step 9. Remove the middle cover. Refer to Removing the middle cover.
- Step 10. Remove the stand holder. Refer to Removing the stand holder.
- Step 11. Remove the rear I/O module. Refer to Replacing the rear I/O module.
- Step 12. Remove the EMI cover. Refer to Removing the EMI cover.
- Step 13. Remove the mother board. Refer to Replacing the motherboard.
- Step 14. Remove the three screws that secure the camera module to the chassis.



- Step 15. To install the new camera module:
 - a. Align the mounting holes on the new camera module with the ones on the chassis.
 - b. Secure the camera module to the chassis with three screws.
- Step 16. Reattach the mother board, EMI cover, rear I/O module, stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Replacing the LCD panel module-None Touch

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

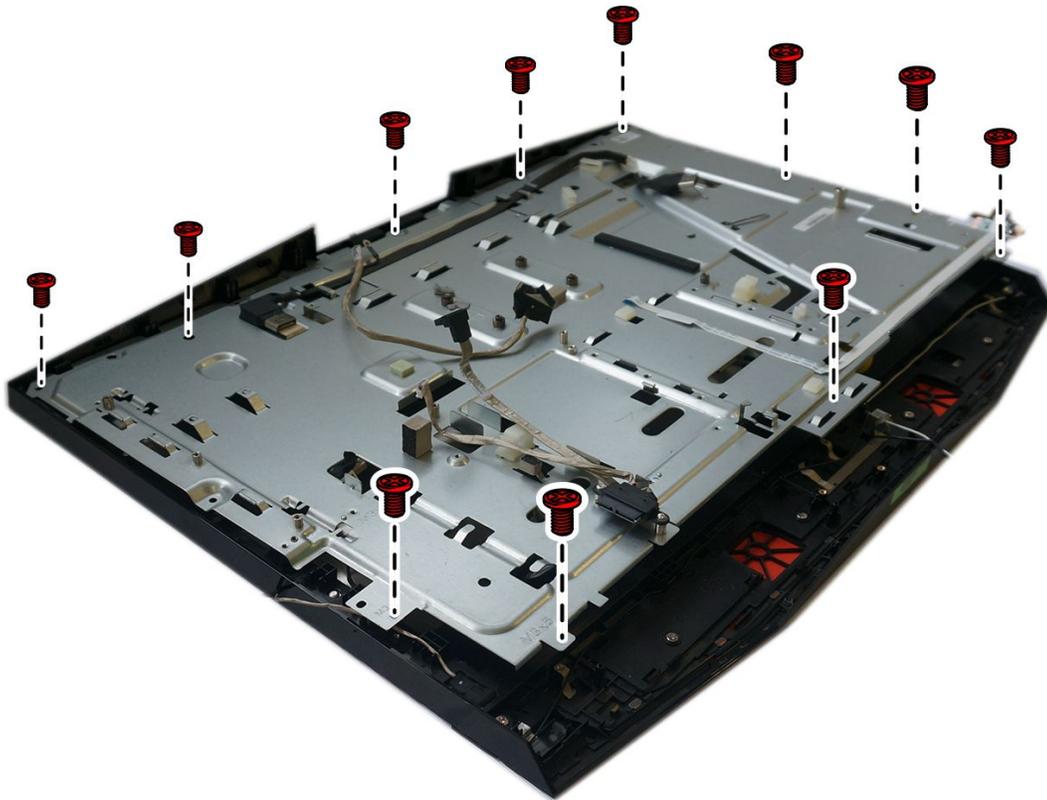
Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the LCD panel module:

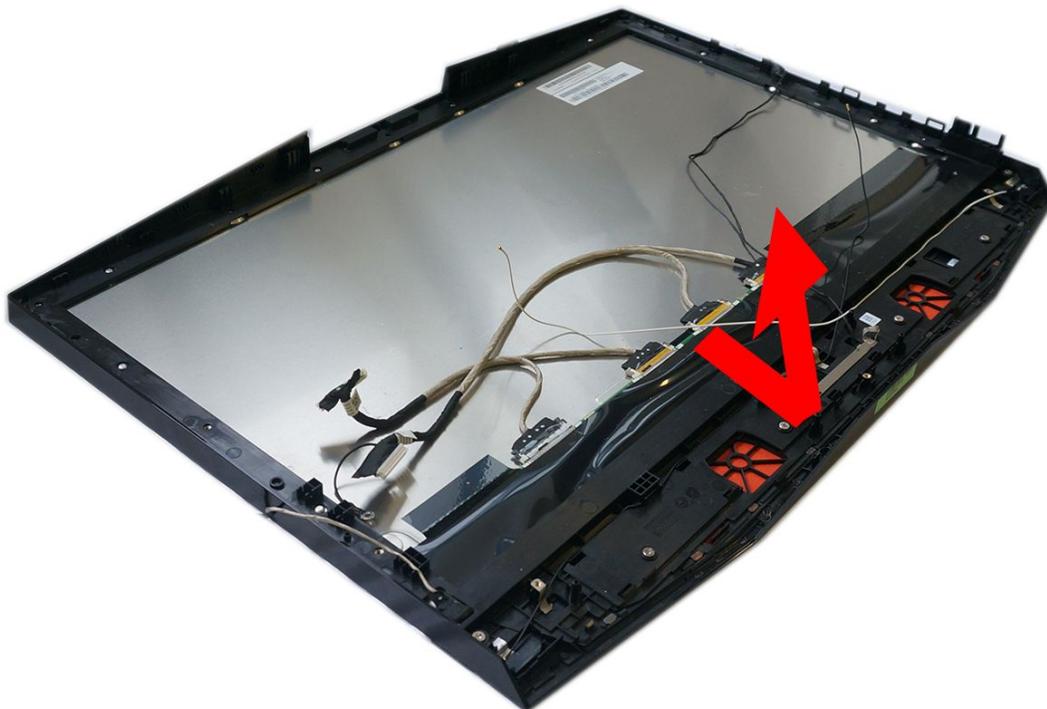
- Step 1. Remove any media from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to Locating connectors, controls and components to locate the various connectors.
- Step 4. Remove the stand base. Refer to Removing the stand base.
- Step 5. Remove the rear cover. Refer to Removing the rear covers.
- Step 6. Remove the stand holder. Refer to Removing the stand holder.
- Step 7. Remove the power switch board. Refer to Replacing the power switch board.
- Step 8. Remove the graphic card. Refer to Replacing the graphic card.
- Step 9. Remove the hard disk drive. Refer to Replacing the hard disk drive.
- Step 10. Remove the optical drive. Refer to Replacing the optical drive.
- Step 11. Remove the middle cover. Refer to Removing the middle cover.
- Step 12. Remove the stand holder. Refer to Removing the stand holder.
- Step 13. Remove the rear I/O module. Refer to Replacing the rear I/O module.
- Step 14. Remove the EMI cover. Refer to Removing the EMI cover.
- Step 15. Remove the mother board. Refer to Replacing the motherboard.
- Step 16. Remove the hinge cover and speaker system. Refer to Replacing the speaker system.
- Step 17. Remove the camera module. Refer to Replacing the camera module.
- Step 18. Remove the screw that secures the side I/O cover to the chassis, and then remove the side I/O cover.



Step 19. Remove the eleven one screws that secure the main frame to the LCD panel.



Step 20. Pull the front cover in the directions as shown until the LCD panel and front cover are separated.



Step 21. Disconnect the LVDS cables from the connectors on the LCD panel.

Step 22. To install the new the LCD panel module:

- a. Align the new LCD panel with the front cover.
- b. Connect the LVDS cables to the connectors on the new LCD panel.
- c. Align the holes in the main frame with the ones in the front cover, and then secure the main frame to front cover with screws.
- d. Reattach the side I/O cover.
- e. Reattach the camera module.
- f. Reattach the speaker system.
- g. Reattach the motherboard.
- h. Connect the LVDS and speaker system cables to the corresponding connectors on the motherboard.

Step 23. Reattach the EMI cover, system fan, power switch board, rear I/O module, stand holder, middle cover, optical drive, hard disk drive, graphic card, rear covers and stand base.

Chapter 9. FRU lists

This chapter lists the information on the field replaceable units (FRUs) for ideacentre All-In-One Y910 desktop computers.

Attention: Be sure to read and understand all the safety information before replacing any FRUs.

Notes: FRUs that have a 1 or 2 in the CRU column are Customer Replaceable Units (CRUs).

- **1**– identifies parts that are fairly simple to replace, requiring few or no tools.
- **2**– identifies parts that are slightly more difficult to replace.
- **N**– identifies parts that are not to be replaced by the customer.

FRU PN	Description	Basic Name
01AG710	8GB DDR4 2400 SoDIMM	MEMORY
01AG711	8GB DDR4 2400 SoDIMM	MEMORY
00XH635	USB Calliope KB BK CAN ENG/FRA	DT_KYB
00XH633	USB Calliope KB BK NORDIC	DT_KYB
01AG040	Intel Core i7-6700 3.4G 4C	SP
01AG042	Intel Core i5-6500 3.2G 4C	SP
01EF322	AVC 65W Y910 Intel UMA HS	HEATSINK
00XL041	Fru, LINECORD,AU,1.8M,3P,NON-LH	LINECORD
01AG491	NV@GF GTX1080@8G/DVI/H/3-DP	VIDEO_CARD
01AG492	NV@GF GTX1070@8G/DVI/H/3-DP	VIDEO_CARD
01EF559	For SSD	SCREW
00XL176	AIO Y910 GFX CARD cable DP	CABLE
00XL181	AIO Y910 PWR/B cable	CABLE
01AH403	AIO Y910-27ISH MIC Modul	MICROPHONE
00XL024	Fru, LINECORD,GB,1.8M,3P,NON-LH	LINECORD
00XL018	Fru, LINECORD,TW,1.8M,3P,NON-LH	LINECORD
00XL044	Fru, LINECORD,DK,1.8M,3P,NON-LH	LINECORD
00XH604	USB Calliope KB BK HBW	DT_KYB
00XL178	AIO Y910 LCD_AUO_60P cable	CABLE
00XH605	USB Calliope KB BK HUN	DT_KYB
00XH607	USB Calliope KB BK ITA	DT_KYB
01EF594	Assy Headphone Rack	MECH_ASM
00XL177	AIO Y910 LCD_AUO_50P cable	CABLE
01EF504	Middle Cover,Y910-27I	MECH_ASM
00XH598	USB Calliope KB BK FRA	DT_KYB
01EF469	Bracket,For WIFI Antenna Kit	MECHANICAL
00XL034	Fru, LINECORD,BR,1.8M,3P,NON-LH	LINECORD

00XH602	USB Calliope KB BK GRE	DT_KYB
01EF505	ODD Bezel,Y910-27I	MECH_ASM
01AH325	AVC AIOY910 1080P Cam	CAMERA
00XH601	USB Calliope KB BK GER	DT_KYB
00XL182	AIO Y910 IO/B_HDMI cable	CABLE
00PH135	Newmen M600 USB gaming mouse Black	MOUSE
00XL010	Fru, LINECORD,CN,1.8M,3P,NON-LH	LINECORD
00XL037	Fru, LINECORD,AR,1.8M,3P,NON-LH	LINECORD
45K0625	HDD,2TB,7200,DT3,SATA3,STD	HDD_ASM
01EF503	MB Shielding,Y910-27I	SHIELD
00XL017	Fru, LINECORD,TW,1.8M,3P,NON-LH	LINECORD
00XL033	Fru, LINECORD,BR,1.8M,3P,NON-LH	LINECORD
01AG712	8GB DDR4 2400 SoDIMM	MEMORY
00XH627	USB Calliope KB BK SLV	DT_KYB
00XH687	Newmen K600 USB gaming keyboard B	DT_KYB
45K0623	HDD,1TB,7200,DT3,SATA3,STD	HDD_ASM
00XL048	Fru, LINECORD,IT,1.8M,3P,NON-LH	LINECORD
00JT512	Wireless,CMB,FXN,QCA1535	WIRELESS
00XL032	Fru, LINECORD,BR,1.8M,3P,NON-LH	LINECORD
01AG713	16GB DDR4 2400 SoDIMM	MEMORY
00XL169	AIO Y910 Acon Ant	ANTENNA
00XH626	USB Calliope KB BK EURO ENG	DT_KYB
00KT209	FAN 100x22mm SysFan for A7300,S	FAN
01AH927	Harman Kardon speaker 2*5W	SPEAKERINT
01GJ037	H170 UMA H4 QHD NO DPK	BDPLANAR
01EF494	Stand Back Cover,Y910-27I	MECH_ASM
01GJ036	H170 UMA H4 QHD WIN DPK	BDPLANAR
01EF506	ODD Latch,Y910-27I	LATCH
00XL027	Fru, LINECORD,IL,1.8M,3P,NON-LH	LINECORD
00XL000	Fru, JP,Anti-TR,1.8M,3P,NON-LH	LINECORD
01EF507	Hinge Cover,Y910-27I	COVER
00XL039	Fru, LINECORD,ZA,1.8M,3P,NON-LH	LINECORD
01EF493	Slide Door Right,Y910-27I	DOOR
00XH610	USB Calliope KB BK KOR	DT_KYB
00XL174	AIO Y910 IO/B cable	CABLE
01AJ796	AIOY910 Power Switch Board	CARDPOP
01AJ795	AIOY910 REAR IO Board	CARDPOP
01EF492	Slide Door Left,Y910-27I	DOOR
00XH608	USB Calliope KB BK JPN	DT_KYB
01EF508	Rear IO Shielding,Y910-27I	SHIELD

01EF498	GFX Card Shielding,Y910-27I	SHIELD
00XL175	AIO Y910 LCD_CNVT cable	CABLE
01EF499	GFX Card Holder,Y910-27I	MECH_ASM
00XL031	Fru, LINECORD,CH,1.8M,3P,NON-LH	LINECORD
00XL046	Fru, LINECORD,DK,1.8M,3P,NON-LH	LINECORD
00XL042	Fru, LINECORD,AU,1.8M,3P,NON-LH	LINECORD
01AH321	Intel SR300 3D camera	CAMERA
00XL004	Fru,US/CA,1.8M,3P,NON-LH	LINECORD
00XL183	AIO Y910 IO/B-GFX CARD cable	CABLE
00XL006	Fru, US/CA,1.8M,3P,NON-LH	LINECORD
00XL038	Fru, LINECORD,ZA,1.8M,3P,NON-LH	LINECORD
01EF491	Base Stand,Y910-27I	STAND
00XL020	Fru, LINECORD,IN,1.8M,3P,NON-LH	LINECORD
00XL180	AIO Y910 SATA_ODD cable	CABLE
00JT095	128G,M.2,2280,PCIe3x4,SAMSG,STD	SSD_ASM
00XL022	Fru, LINECORD,IN,1.8M,3P,NON-LH	LINECORD
00XL023	Fru, LINECORD,GB,1.8M,3P,NON-LH	LINECORD
00XL050	Fru, LINECORD,TH,1.8M,3P,NON-LH	LINECORD
00XL179	AIO Y910 SATA_HDD cable	CABLE
00XL025	Fru, LINECORD,GB,1.8M,3P,NON-LH	LINECORD
00XL015	Fru, EU/KR,1.8M,3P,NON-LH	LINECORD
00PC552	HDD,2TB,7200,DT3,SATA3,STD	HDD_ASM
01AG043	Intel Core i5-6400 2.7G 4C	SP
00XL045	Fru, LINECORD,DK,1.8M,3P,NON-LH	LINECORD
00UW411	Newmen KB-760 USB KB BLK-US	DT_KYB
00XL172	AIO Y910 3D CAM cable	CABLE
00XH621	USB Calliope KB BK SWS	DT_KYB
01EF496	HDD Cage,Y910-27I	MECH_ASM
00XL035	Fru, LINECORD,AR,1.8M,3P,NON-LH	LINECORD
01EF495	Stand Front Cover,Y910-27I	MECH_ASM
00XL019	Fru, LINECORD,TW,1.8M,3P,NON-LH	LINECORD
01AG714	16GB DDR4 2400 SoDIMM	MEMORY
01EF595	Assy Co Tape Mic PW Sp mesh	MECH_ASM
00XL016	Fru, EU/KR,1.8M,3P,NON-LH	LINECORD
01EF497	HDD Cage Shielding,Y910-27I	SHIELD
00XH622	USB Calliope KB BK THAI	DT_KYB
01EF510	2D Camera Assembly,Y910-27I	MECH_ASM
00UW413	Newmen MS-312 USB MC Black	MOUSE
00PC551	HDD,1TB,7200,DT3,SATA3,STD	HDD_ASM
00XH630	USB Calliope KB BK IND ENG	DT_KYB

00XL029	Fru, LINECORD,CH,1.8M,3P,NON-LH	LINECORD
00XH618	USB Calliope KB BK SLK	DT_KYB
00XL173	AIO Y910 MIC cable	CABLE
00XH625	USB Calliope KB BK UKE	DT_KYB
00XH619	USB Calliope KB BK SPA	DT_KYB
01EF509	3D Camera Assembly,Y910-27I	MECH_ASM
00XH624	USB Calliope KB BK TUR	DT_KYB
54Y8984	PWR_SUPPLY,100-240Vac,380W	PWR_SUPPLY
00XH611	USB,Calliope,KB,BK,LA SPA	DT_KYB
00XL036	Fru, LINECORD,AR,1.8M,3P,NON-LH	LINECORD
00XL043	Fru, LINECORD,AU,1.8M,3P,NON-LH	LINECORD
01EF502	M2 Shielding,Y910-27I	SHIELD
00XL167	AIO Y910 High-tek Ant	ANTENNA
01EF501	DIMM Shielding,Y910-27I	SHIELD
00XL001	Fru, JP,Anti-TR,1.8M,3P,NON-LH	LINECORD
00PH131	USB Calliope Mouse Black(Orange wh	MOUSE
00FC442	SMD,DT,SATA,9.5mm,x8,w/o bezel	OPT_DRIVE
00XH594	USB Calliope KB BK TC/ENG	DT_KYB
00XH614	USB Calliope KB BK POR	DT_KYB
00JT096	256G,M.2,2280,PCIe3x4,SAMSG,STD	SSD_ASM
00XL030	Fru, LINECORD,CH,1.8M,3P,NON-LH	LINECORD
00XL040	Fru, LINECORD,ZA,1.8M,3P,NON-LH	LINECORD
00XL005	Fru, US/CA,1.8M,3P,NON-LH	LINECORD
00XH595	USB Calliope KB BK CZE	DT_KYB
00XL171	AIO Y910 2D CAM cable	CABLE
00XL014	Fru, EU/KR,1.8M,3P,NON-LH	LINECORD
01AG715	16GB DDR4 2400 SoDIMM	MEMORY
00XL049	Fru, LINECORD,IT,1.8M,3P,NON-LH	LINECORD
01EF514	Main Bracket,Y910-27I	BRACKET
00XH593	USB Calliope KB BK BUL	DT_KYB
00XH591	USB,Calliope,KB,BK,BEL ENG	DT_KYB
00XH616	USB Calliope KB BK RUS	DT_KYB
01EF511	Side IO Cover,Y910-27I	COVER
00XL028	Fru, LINECORD,IL,1.8M,3P,NON-LH	LINECORD
00XL009	Fru, LINECORD,CN,1.8M,3P,NON-LH	LINECORD
00XL026	Fru, LINECORD,IL,1.8M,3P,NON-LH	LINECORD
01EF513	Front Bottom Cover,Y910-27I	MECH_ASM
01EF512	Front Bezel Sub Assy,Y910-27I	MECH_ASM
00XH587	USB Calliope KB BK ENG	DT_KYB
01AG709	4GB DDR4 2400 SoDIMM	MEMORY

00XL047	Fru, LINECORD,IT,1.8M,3P,NON-LH	LINECORD
00XH588	USB Calliope KB BK ARA	DT_KYB
01AG708	4GB DDR4 2400 SoDIMM	MEMORY
01AG707	4GB DDR4 2400 SoDIMM	MEMORY
01AG701	4GB DDR4 2400 SoDIMM	MEMORY

Chapter 10. General information

This chapter provides general information that applies to all computer models covered by this manual.

Additional Service Information

This chapter provides additional information that the service representative might find helpful.

Power management

Power management reduces the power consumption of certain components of the computer such as the system power supply, processor, hard disk drives, and some monitors.

Advanced configuration and power interface (ACPI) BIOS

As this computer has an ACPI BIOS system, the operating system is allowed to control the power management features of the computer and the settings for Advanced Power Management (APM) BIOS mode is ignored. Not all operating systems support ACPI BIOS mode.

Automatic Power-On features

The Automatic Power-On features within the Power Management menu allow you to enable and disable features that turn on the computer automatically.

- **Wake Up on Alarm:** You can specify a date and time at which the computer will be turned on automatically. This can be either a single event, a daily event or a weekly event.
- **Wake Up on LAN:** This feature allows LAN adapter card to wake the System.