



IdeaCentre K430/K410
Hardware Maintenance Manual



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Machine Types: 10086/3109/4743 K430; 10089/1168/4744 K410



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Chapter 1. About this manual

This manual contains service and reference information for IdeaCentre K430 & K410 computers 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 card in this manual is only used for the machines which have the TV card. It is invalid for those machines which do not have TV card.

Important Safety Information

Be sure to read all caution and danger statements in this book before performing 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:

- Observe good housekeeping in the area of the machines 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 between your feet.
 3. Use a slow lifting force. 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 causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip 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, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive 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.
- Reinstall all covers correctly before returning the machine 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 the attached power cords, telecommunication systems, networks, and modems 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, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- 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 machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine 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 maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- 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 moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
 - 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 potentially unsafe conditions on these products. Each machine, 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 unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions 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 in 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 unsafe conditions, 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 machine, 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 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 to properly wired outlets any equipment that will be attached to this product.**
- **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 systems, networks, and modems 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 outlet. 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 or immerse into 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:

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

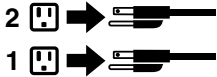


		
≥18 kg(37 lbs)	≥32 kg(70.5 lbs)	≥55 kg(121.2 lbs)

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 machine types supported by this publication.

Specifications

This section lists the physical specifications for your computer.

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Type IdeaCentre K430 & K410

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 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 program, 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 do receive the correct response, proceed to step 7.

6. Look at the following conditions and follow the instructions:
 - 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 is not 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 character (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:

- Strong passwords contain 7-16 characters, combine letters and numbers.
- Do not use your name or your user name.
- Do not use a common word or a common name.
- Be 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 character (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 type 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 **Enter** key.
4. Type the new password, then press **Enter** key. Re-type the password to confirm the new password, if you type the new password correctly, the new password will be installed. A Setup Notice will display that changes have been saved.

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**, **Enter** blank fields for each new password line item. A setup notice will display that changes have been saved.
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 character (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, and press the **Enter** key.
4. Re-type the password to confirm, if you type 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 type the new password correctly, the new password will be installed. A setup notice will display that changes have been saved.

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**, **Enter** blank fields for each new password line item. A setup notice will display that changes have been saved.
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.
ATA Drive Setup	Select IDE or ACHI mode. Device driver support is required for ACHI mode. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.
Onboard Audio Controller	Select whether to enable or disable the Onboard Audio Controller , when feature is set to Disabled all devices connected to the audio connectors (e.g. a headphone or a microphone) are disabled and can't be used.
Onboard Ethernet Controller or Boot Agent	Select whether to enable or disable Onboard Ethernet Controller , or select whether to enable or disable load onboard PXE (Preboot Execution Environment) , or SMC (Secure Managed Client) . This feature will allow the computer to boot from a server image.

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:

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

ATA Device Setup press the **Enter** key. Select **Configure SATA as**, press the **Enter** key and then select SATA mode.

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

Network Setup press the **Enter** key, then select **Onboard Ethernet Support** or **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.

Note: If you do not want to save the settings, select **Discard changes and Exit** from the menu.

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 startup 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 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 have the following causes.

Error	FRU/Action
The startup drive is not included in the boot sequence in configuration.	Check the configuration and ensure the startup drive is in the boot sequence.
No operating system 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(s) connection	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 system-board 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 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.

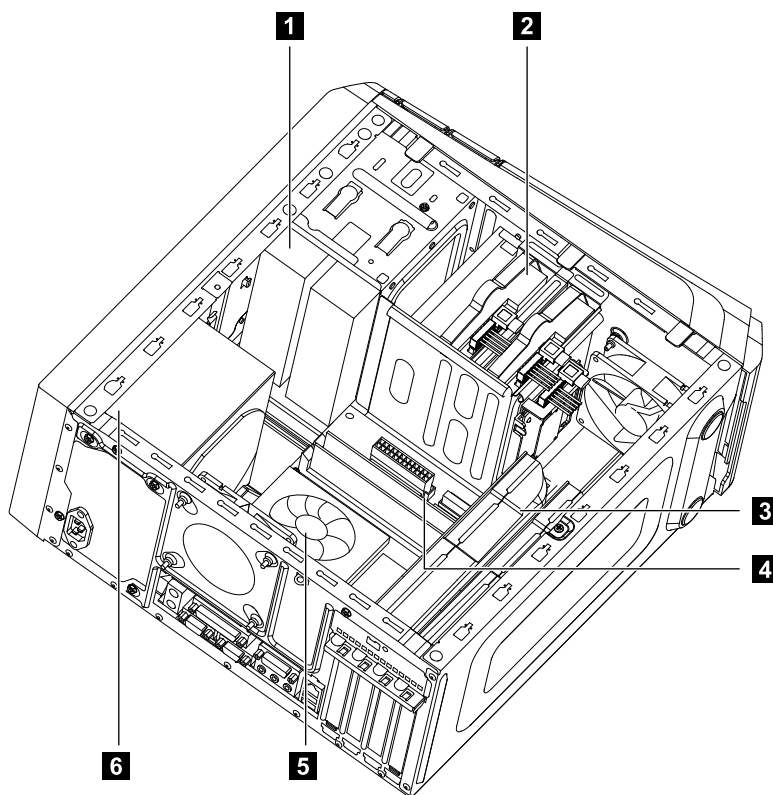
If all devices and components have been removed and the problem continues, replace the system board.

Chapter 7. Locations

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

Identifying internal components

The following illustration shows the components inside your computer.



1 Optical disk drive

2 Hard disk drive

3 Graphics card

4 Memory modules

5 System fan

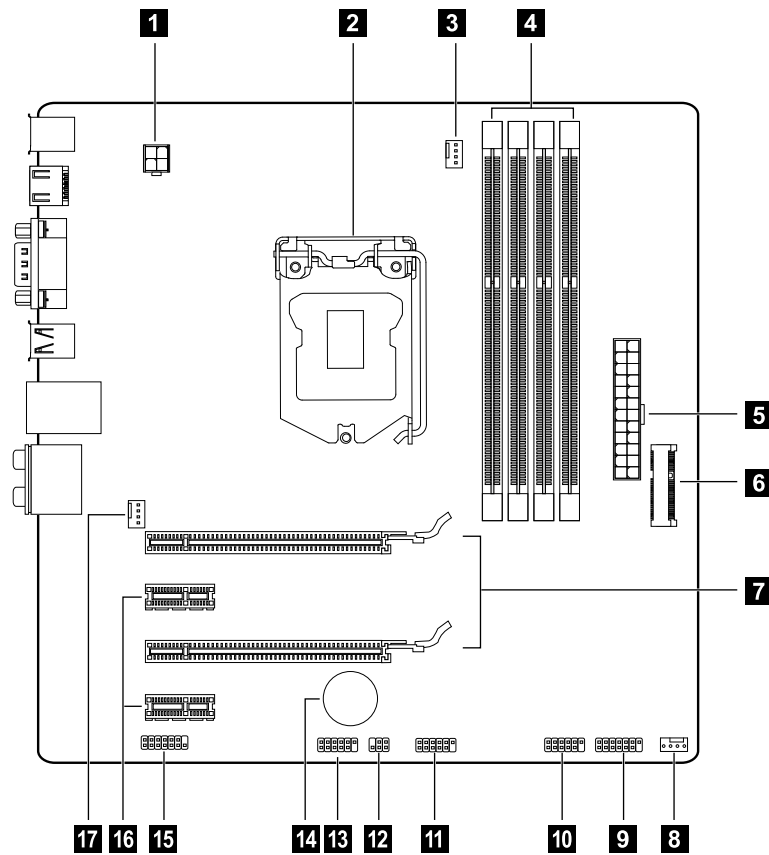
6 Power supply

Identifying parts on the system board

The system board (also known as the “mainboard” or “motherboard”) is the main circuit board in your computer. It provides basic computer functions and supports a variety of devices that are factory-installed or that you can install later.

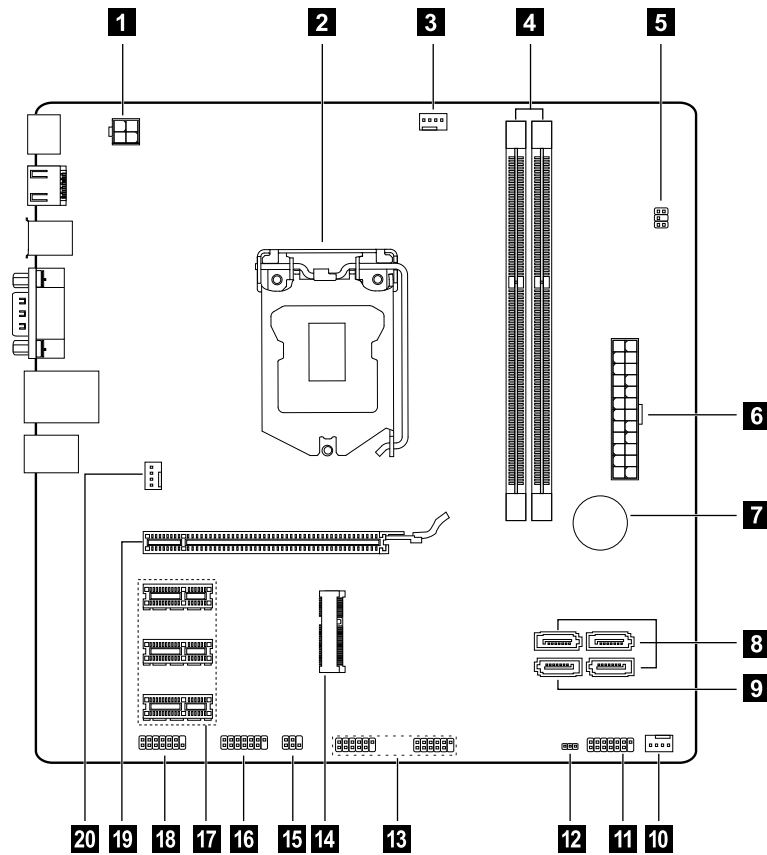
The following illustrations show the locations of the different parts on the system board.

IdeaCentre K430



- | | |
|---------------------------------------------|---------------------------------------------|
| 1 12V power connector | 10 Front USB connector |
| 2 Microprocessor and heat sink | 11 Front USB connector |
| 3 Microprocessor fan connector | 12 Mode SW connector |
| 4 Memory slots (4) | 13 Serial (COM2)connector |
| 5 Power connector | 14 Battery |
| 6 Mini PCI Express slot | 15 LPC debug connector |
| 7 PCI Express x 16 adapter slots (2) | 16 Front audio connector |
| 8 Power fan header | 17 PCI Express x 1 adapter slots (2) |
| 9 Front panel connector | 18 System fan connector |

IdeaCentre K410



- | | |
|------------------------------------------|---------------------------------------------|
| 1 12V power connector | 10 Power fan header |
| 2 Microprocessor and heat sink | 11 Front panel connector |
| 3 Microprocessor fan connector | 12 Clear CMOS jumper |
| 4 Memory slots (2) | 13 Front USB connectors (2) |
| 5 Thermal sensor header connector | 14 Mini PCI Express slot |
| 6 Power connector | 15 PCI Express × 1 adapter slots (3) |
| 7 Battery | 16 Front audio connector |
| 8 SATA connectors (3) | 17 PCI Express × 16 adapter slot |
| 9 eSATA connector | 18 System fan 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>

General information

Pre-disassembly instructions

Before proceeding with 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.

General information

Pre-disassembly instructions

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

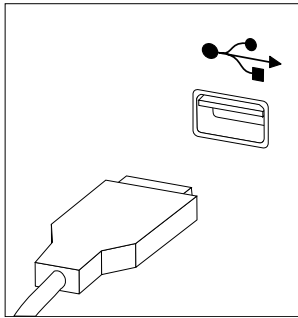
1. Turn off the power to the system and all peripherals.
2. Unplug all power and signal cables from the computer.
3. Place the system on a flat, stable surface.

Replacing the keyboard and mouse

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

To replace the keyboard:

- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the computer, and turn off all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Locate the connector for the keyboard. Refer to “Front view of the chassis” and “Rear view of the chassis”.



- Step 4. Disconnect the defective keyboard cable from the computer and connect the new keyboard cable to the same connector.
- Step 5. The mouse can be replaced using the same method.

Removing the computer cover

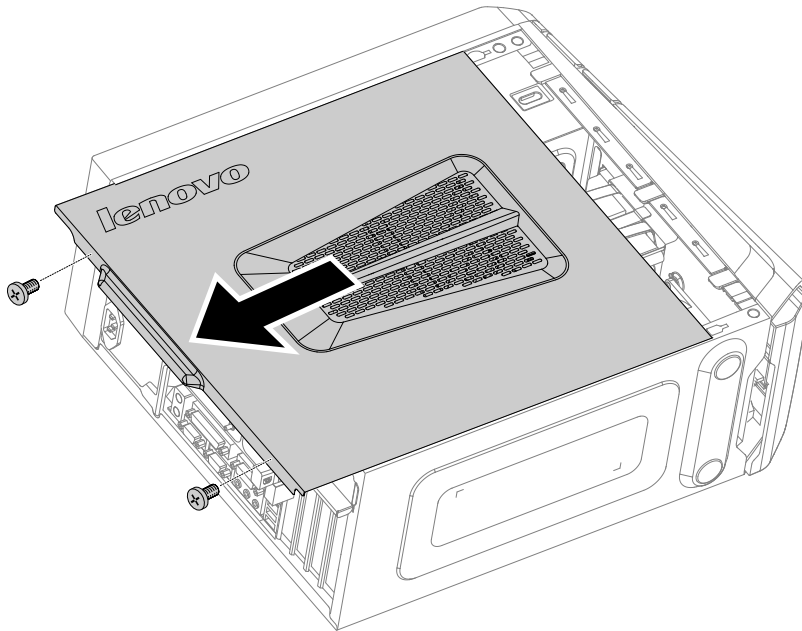
Attention:

- Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.
- For this procedure, it helps to lay the computer on a flat, stable surface.

To remove the computer cover:

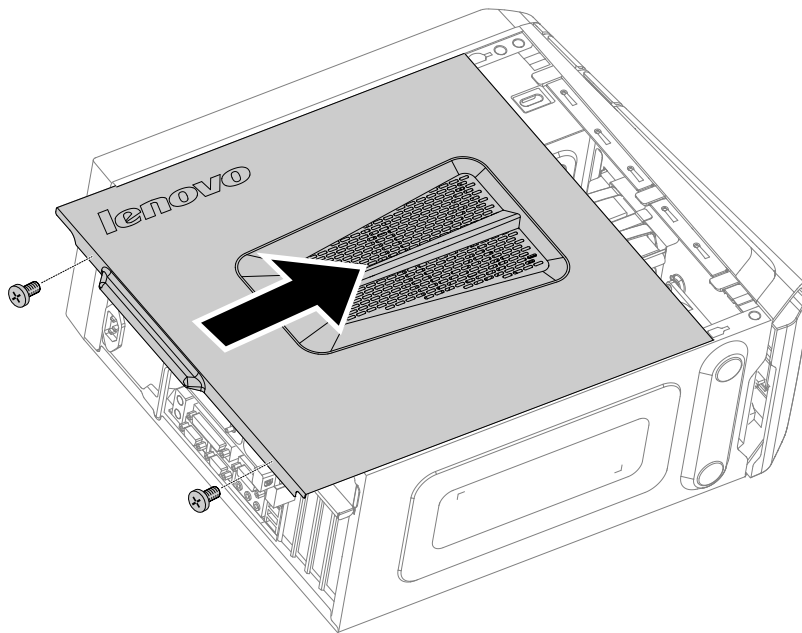
- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the computer, and turn off all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Locating connectors on the rear of the computer”.
- Step 4. Remove the two screws that secure the computer cover at the rear of the chassis.

Step 5. Slide the computer cover out to remove it.



Step 6. To reinstall the computer cover:

- a. Line up the computer cover with the chassis then slide it back.
- b. Secure the computer cover to the chassis with the screws.



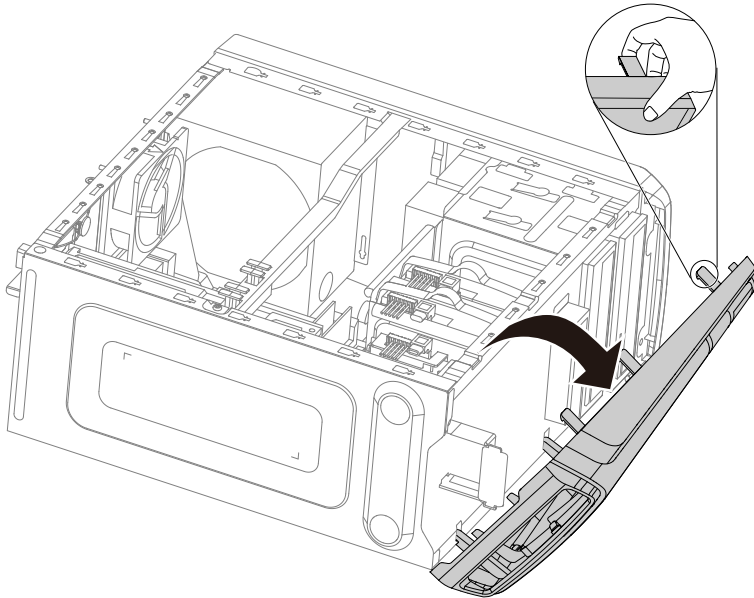
Removing the front bezel

Note: For this procedure, it helps to lay the computer flat.

To remove the front bezel:

Step 1. Remove the computer cover. Refer to “Removing the computer cover”.

Step 2. Remove the front bezel by releasing the three plastic tabs inside the chassis and sliding the bezel out as shown.



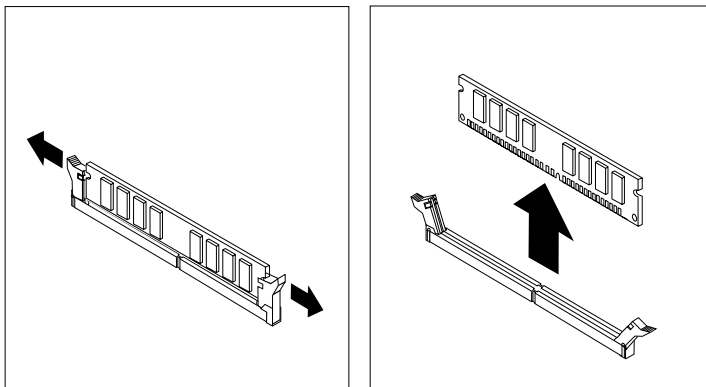
Step 3. To reattach the bezel, align the plastic tabs on the bottom of the bezel with the corresponding holes in the chassis, and then snap it into position.

Replacing a memory module

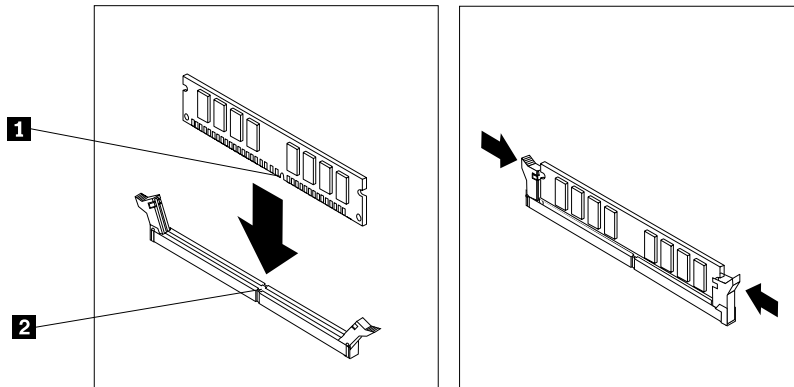
Note: For this procedure, it helps to lay the computer flat.

To replace a memory module:

- Step 1. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 2. Locate the memory module connectors. Refer to “Locating components”.
- Step 3. Remove the memory module to be replaced by opening the retaining clips as shown.



Step 4. Position the new memory module over the memory connector. Make sure that the notch **1** on the memory module aligns correctly with the connector key **2** on the system board. Push the memory module straight down into the connector until the retaining clips close.



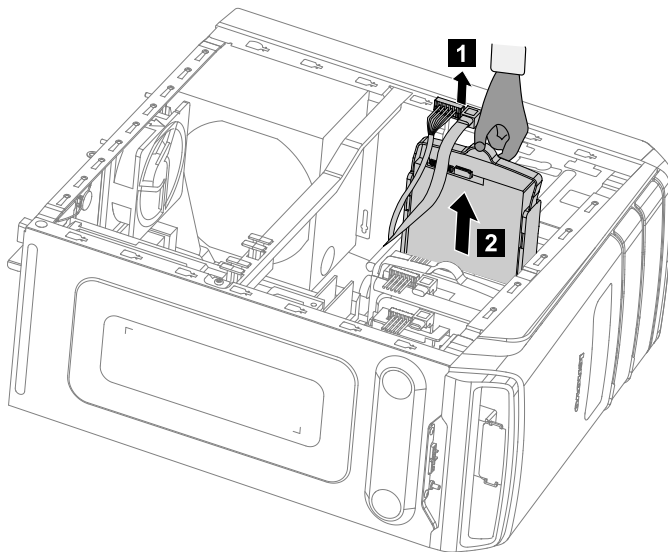
Step 5. Reattach the computer cover.

Replacing a hard disk drive

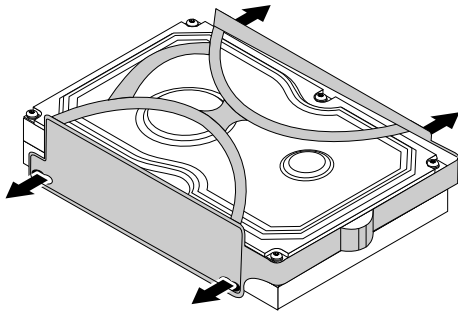
Note: For this procedure, it helps to lay the computer flat.

To replace a hard disk drive:

- Step 1. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 2. Disconnect the data and power cables from the hard disk drive.
- Step 3. Lift up the plastic handle and slide the hard disk drive out of the drive bay. **1 2**



Step 4. Remove the hard disk drive from the plastic bracket as shown.



Step 5. Line up the new hard disk drive with the plastic bracket and snap it into position.

Step 6. Slide the new hard disk drive into the drive bay and slide the drive bay into place.

Step 7. Connect the power and signal cables to the new hard disk drive.

Step 8. Reattach the computer cover.

Replacing an optical drive

Note: For this procedure, it helps to lay the computer flat.

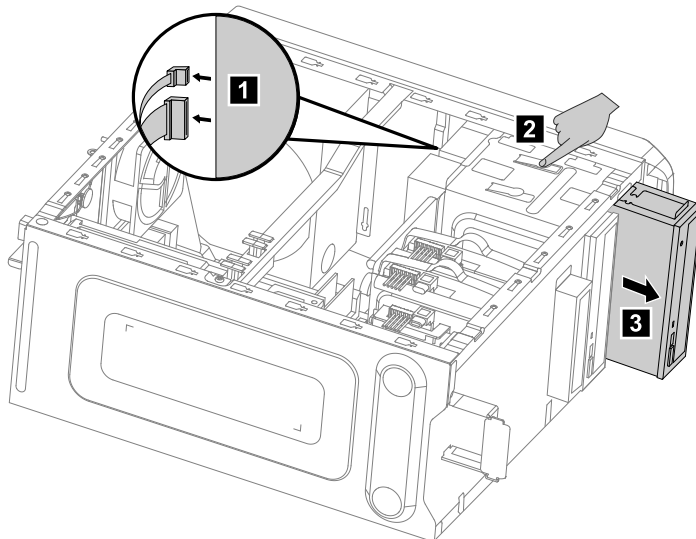
To replace an optical drive:

Step 1. Remove the computer cover. Refer to “Removing the computer cover”.

Step 2. Remove the front bezel. Refer to “Removing the front bezel”.

Step 3. Disconnect the data and power cables from the rear of the optical drive. **1**

Step 4. Press the release button and push the optical drive straight out of the front of the chassis. **2 3**



Step 5. Slide the new optical drive into the bay from the front until it snaps into position.

Step 6. Connect the data and power cables to the new disk drive.

Step 7. Reattach the front bezel and computer cover.

Replacing a graphics card

Note: For this procedure, it helps to lay the computer flat.

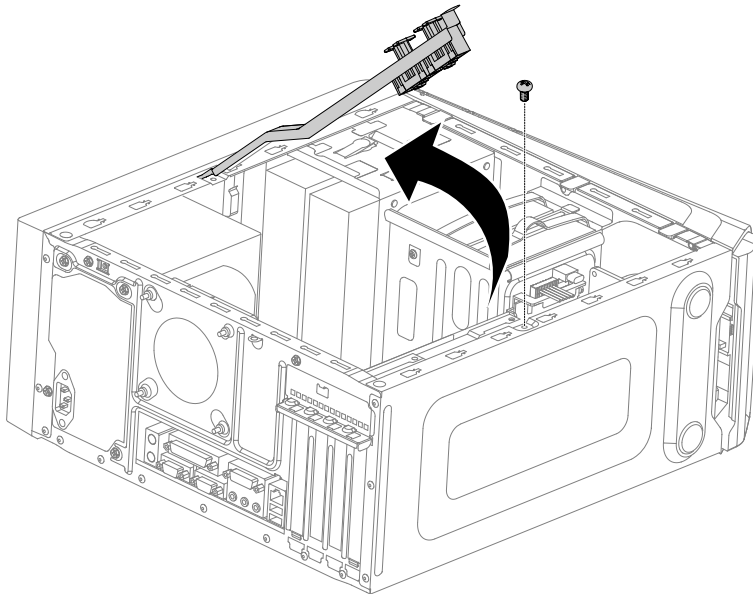
To replace a graphics card:

Step 1. Remove the computer cover. Refer to “Removing the computer cover”.

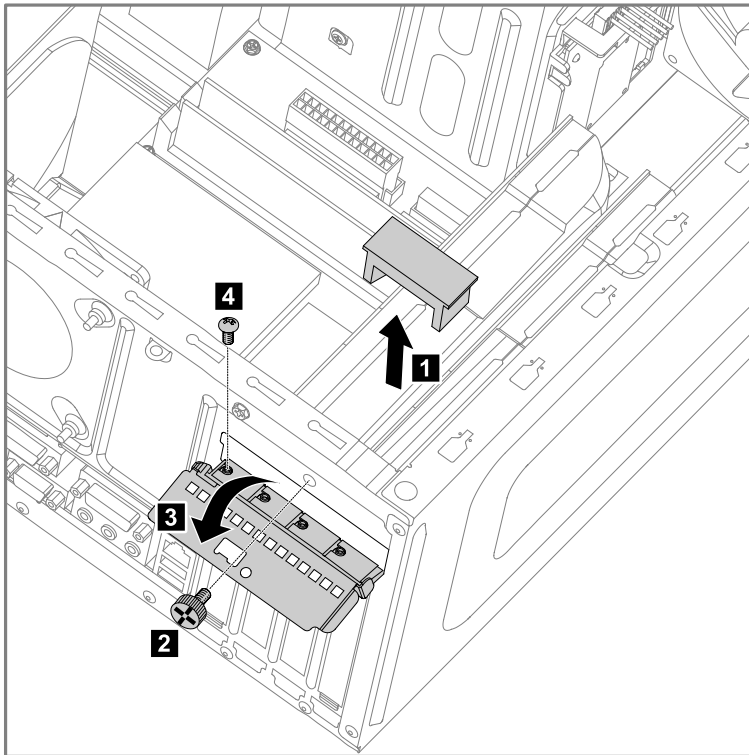
Step 2. Follow the below steps to remove a graphics card:

If your computer has a Duo-graphics cards installed, follow the steps below to replace it:

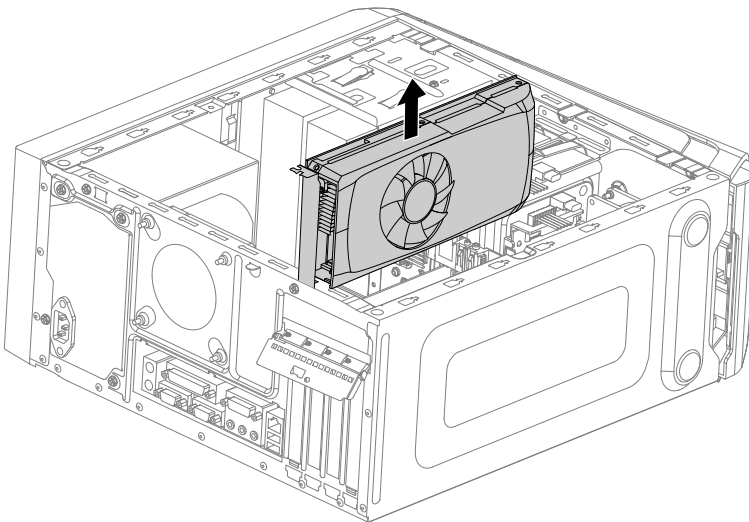
- a. Remove the screw that secures the Duo-graphics cards fixing bracket and lift the bracket up.



- b. Remove the screw that secures the graphics card latch to the chassis, open it, and remove the Duo-graphics cards connector.

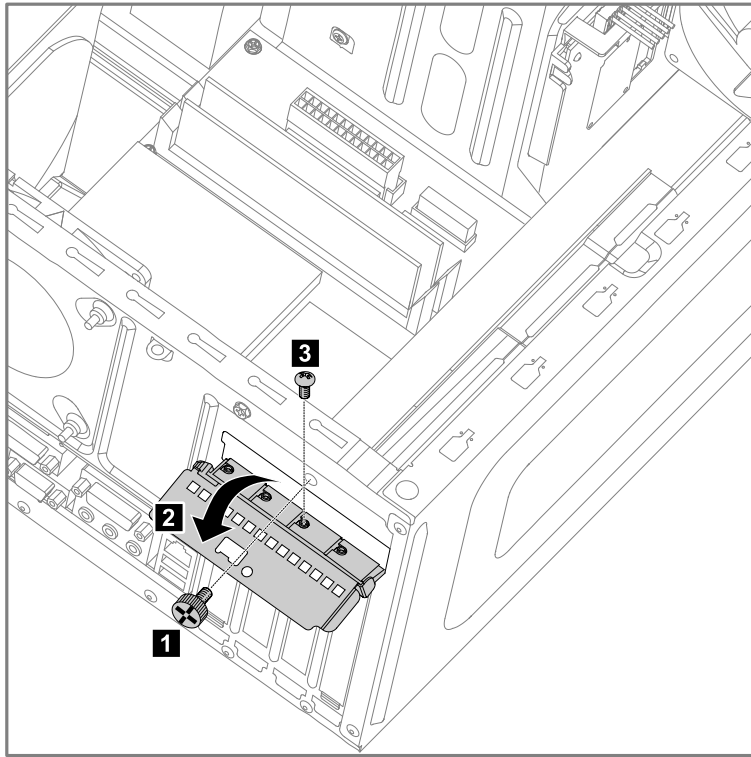


- c. Remove the graphics card by pulling it straight out of the connector.

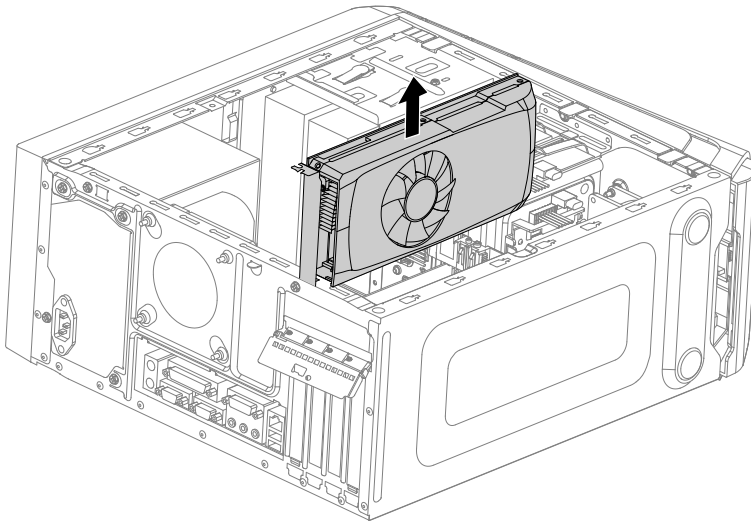


If your computer has a single graphics card installed, follow the steps below to replace it:

- a. Remove the screw that secures the graphics latch to the chassis and open it.



- b. Remove the graphics card by pulling it straight out of the connector.



- Step 3. Install the new adapter into the same adapter connector.
- Step 4. Turn the graphics card latch to the closed position and secure it with the screw.
- Step 5. Connect the two graphics cards with the Duo-graphics cards connector and reattach the Duo-graphics cards fixing bracket to the chassis. (For models with Duo-graphics cards only)
- Step 6. Reattach the computer cover.

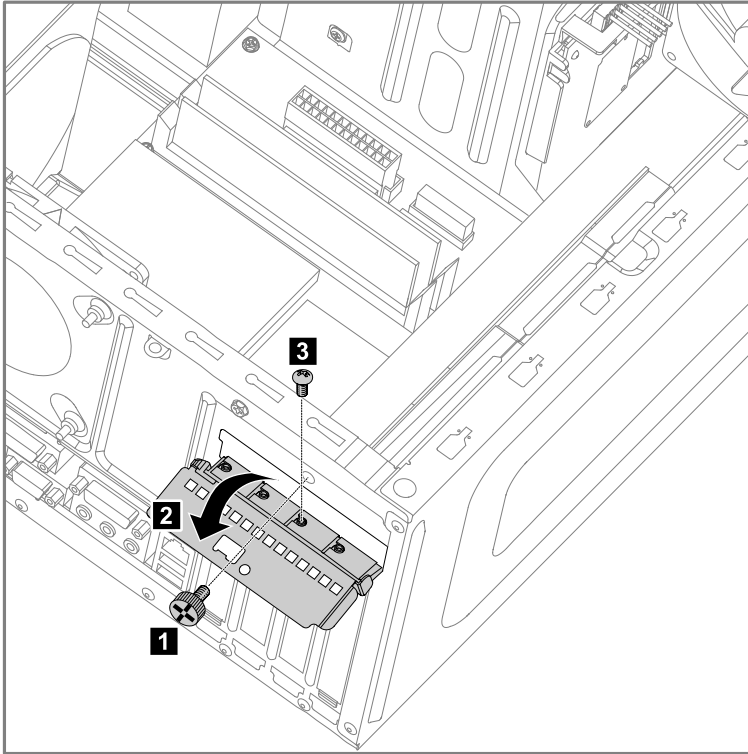
Replacing the TV-Tuner card

Note: For this procedure, it helps to lay the computer on a flat, stable surface.

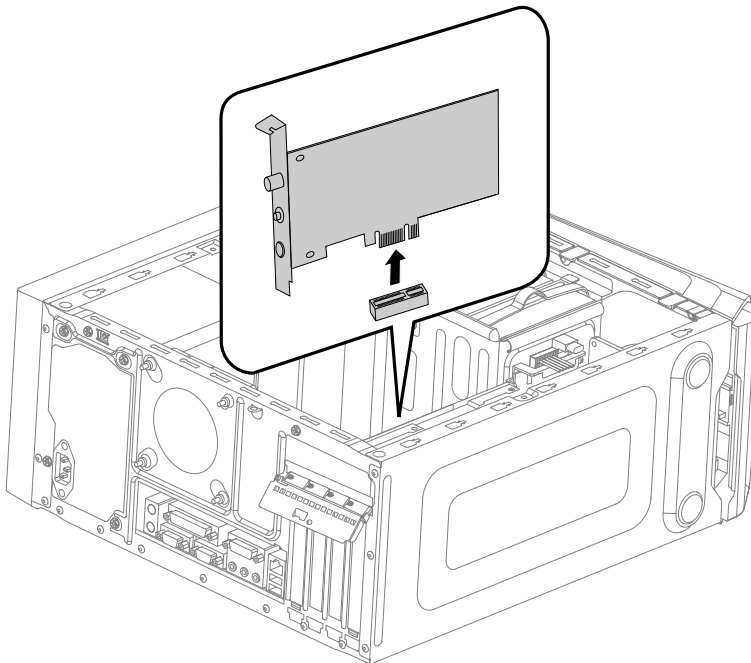
To replace the TV-Tuner card:

Step 1. Remove the computer cover. Refer to “Removing the computer cover”.

Step 2. Remove the screw that secures the graphics card latch to the chassis and open it. **1 2 3**



Step 3. Remove the TV-Tuner card by pulling it straight out of the connector.



Step 4. Install the new TV-tuner into the same connector.

Step 5. Turn the graphics card latch to the closed position and secure it with the screw.

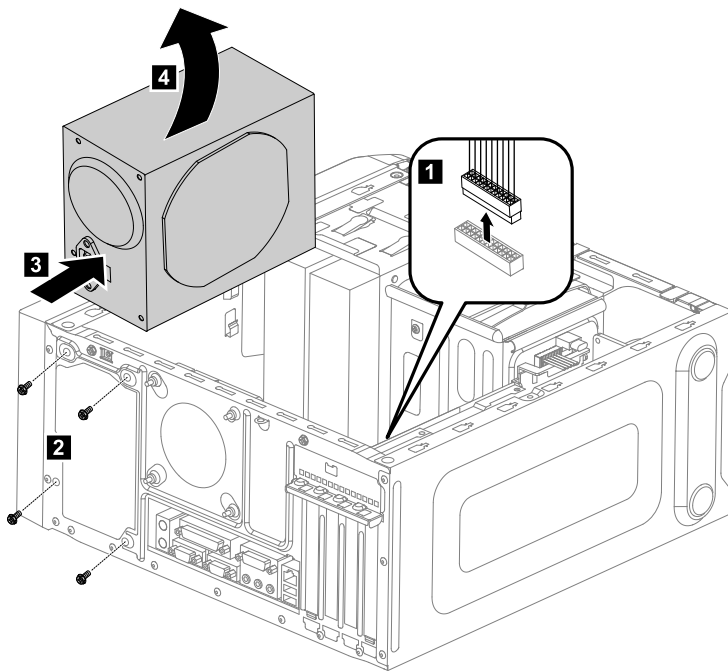
Step 6. Reattach the computer cover.

Replacing the Power supply

Note: For this procedure, it helps to lay the computer flat.

To replace the Power supply:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) 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 “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 5. Disconnect the power cables from the connectors on motherboard. **1**
- Step 6. Remove the 4 screws that secure the Power supply to the chassis. **2**
- Step 7. Slide then lift the Power supply out of chassis. **3 4**

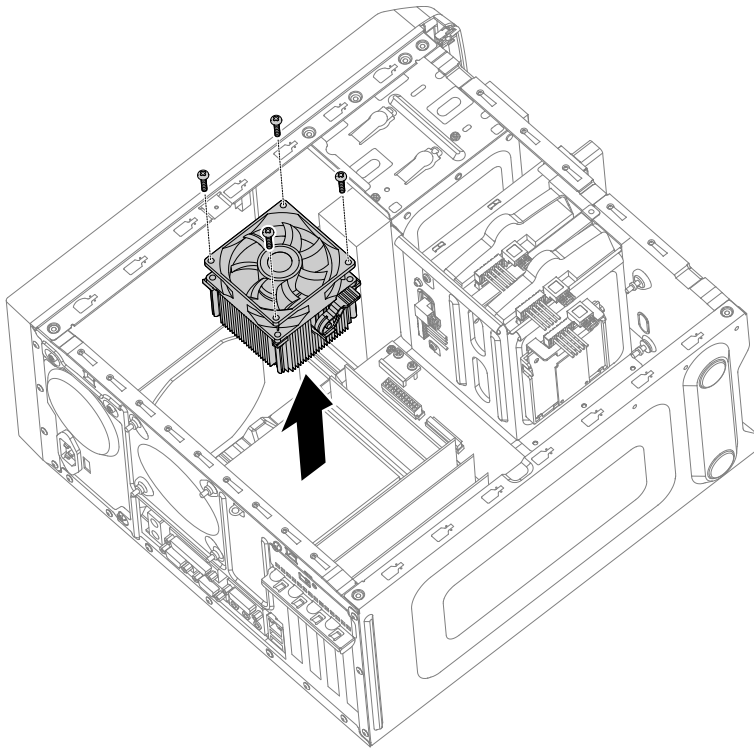


- Step 8. Install the new power supply :
 - a. Line up the holes on the new power supply with mounting holes on the rear of the chassis and secure it to the chassis with the 4 screws.
 - b. Connect the power cables to the connectors on the motherboard.
- Step 9. Reattach the computer cover.

Replacing the microprocessor fan

To replace the microprocessor fan:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) 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 “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 5. Disconnect the fan power cable from the connector on the motherboard.
- Step 6. Remove the 4 screws that secure the microprocessor fan to the heat-sink and lift up the microprocessor fan to remove it.



- Step 7. To install the new microprocessor fan:
 - a. Line up the new microprocessor fan with the heat-sink and secure it to the heat-sink with 4 screws.
 - b. Connect the microprocessor fan power cable to the connector on the board.
- Step 8. Reattach the computer cover.

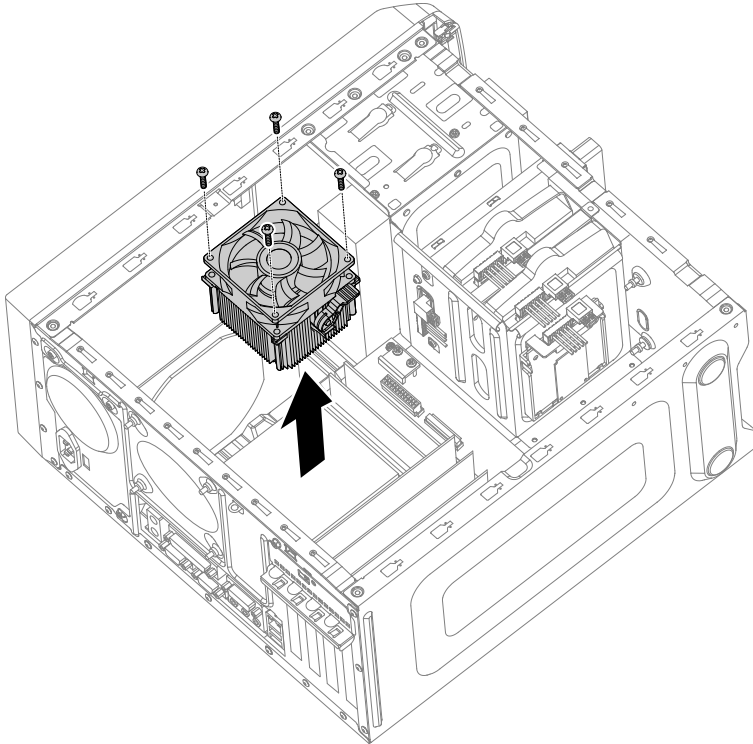
Replacing the heat-sink

Note: For this procedure, it helps to lay the computer flat.

To replace the heat-sink:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) 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 “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 5. Remove the microprocessor fan. Refer to “Replacing the microprocessor fan”.
- Step 6. Remove the 4 screws that secure the heat-sink to the motherboard.
- Step 7. Lift up the heat-sink to remove it.



- Step 8. Install the new heat-sink :
 - a. Line up the screws on the new heat-sink with mounting holes on the motherboard and secure it with the 4 screws.
 - b. Reattach the microprocessor fan to the heat-sink.
 - c. Reconnect the microprocessor fan power cable to the connector on the motherboard.
- Step 9. Reattach the computer cover.

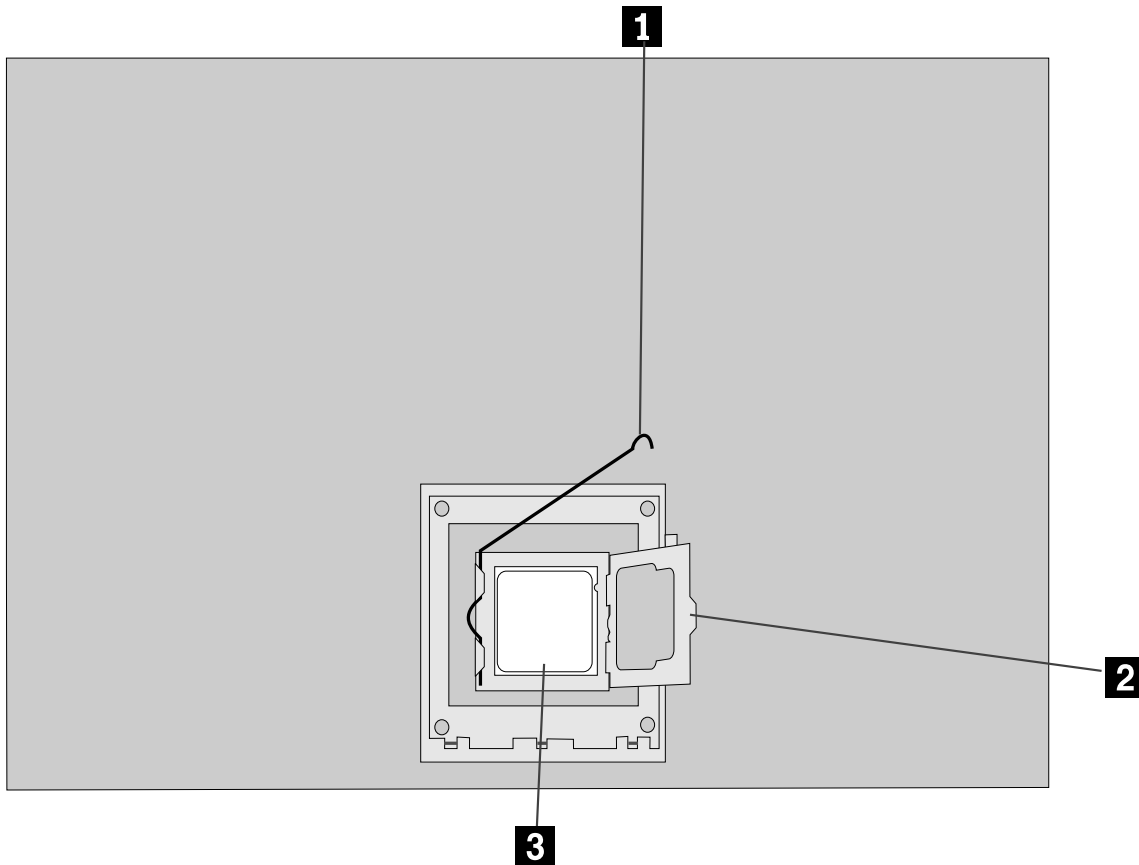
Replacing the CPU

Note: For this procedure, it helps to lay the computer flat.

To replace the CPU:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) 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 “Left and right view” and “Rear view” for help with locating the various connectors.

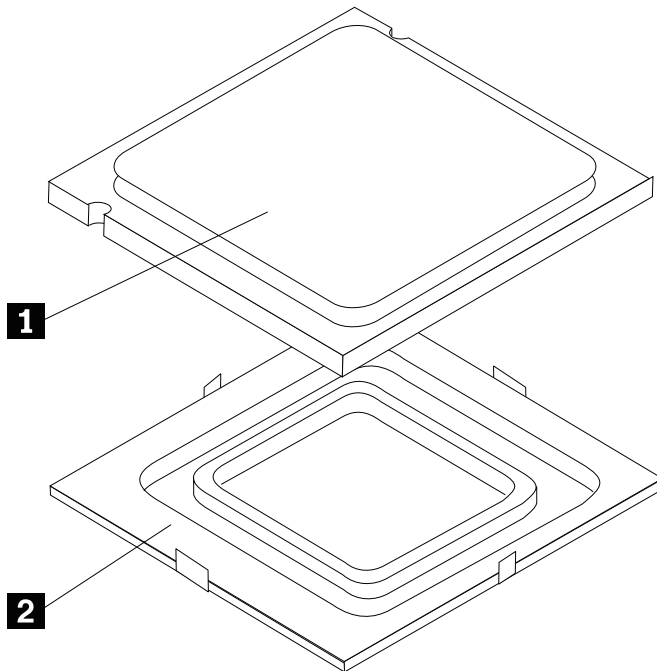
- Step 4. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 5. Remove the microprocessor fan. Refer to “Replacing the microprocessor fan”.
- Step 6. Remove the heat-sink. Refer to “Replacing the heat-sink”.
- Step 7. To remove the microprocessor **3** from the system board, press then slide the small handle out to spring it up. **1** and open the retainer. **2**



Attention: Do not touch the gold contacts on the bottom of the microprocessor. When handling the microprocessor, touch only the sides.

Note: Do not drop anything onto the microprocessor socket while it is exposed. The socket pins must be kept as clean as possible.

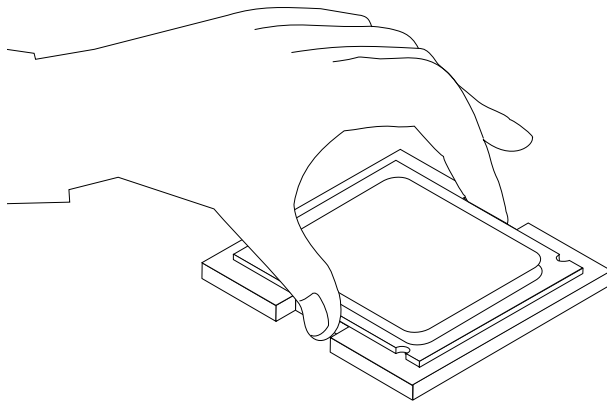
Step 8. Holding the sides of the microprocessor with your fingers, remove the protective cover **1** that protects the gold contacts on the new microprocessor. **2**



Step 9. Holding the sides of the microprocessor with your fingers, position the microprocessor so that the notches on the microprocessor are aligned with the tabs in the microprocessor socket.

Important: To avoid damaging the microprocessor contacts, keep the microprocessor completely level while installing it into the socket.

Step 10. Lower the microprocessor straight down into its socket on the motherboard.



Step 11. To secure the microprocessor in the socket, close the microprocessor retainer and lock it into position with the small handle.

Step 12. Use a thermal grease syringe to place 5 drops of grease on the top of the microprocessor. Each drop of grease should be 0.03ml (3 tick marks on the grease syringe).

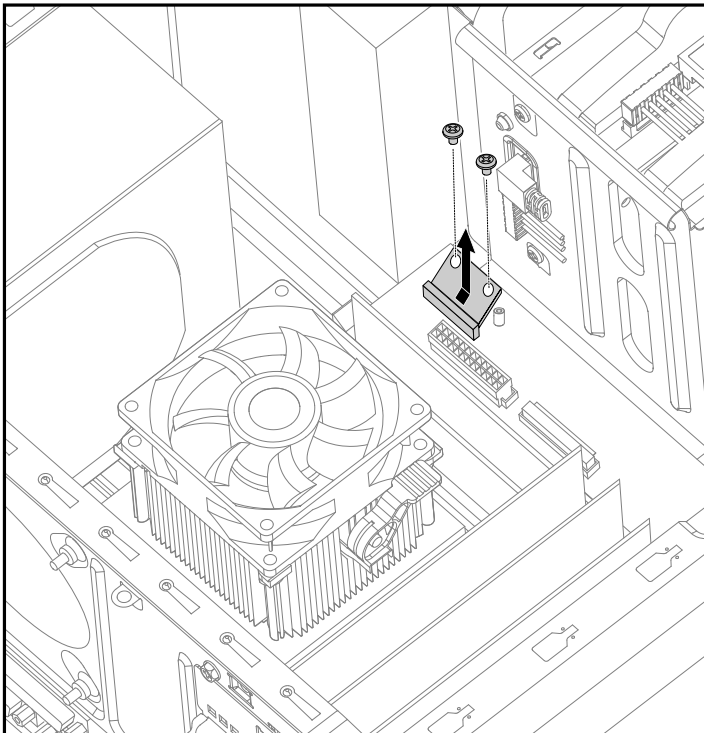
Step 13. Reattach the heat-sink, microprocessor fan, computer cover.

Replacing the Wi-Fi card

Note: For this procedure, it helps to lay the computer flat.

To replace the Wi-Fi card:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) 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 “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 5. Disconnect the 2 antenna cables from the Wi-Fi card.
- Step 6. Remove the 2 screws that secure the Wi-Fi card to the motherboard.
- Step 7. Pull the Wi-Fi card upward to remove it from the card port.



- Step 8. Install the new Wi-Fi card:
 - a. Line up the new Wi-Fi card, then insert it into the same card port.
 - b. Secure the Wi-Fi card to the motherboard with the 2 screws.
 - c. Connect the 2 antenna cables to the new Wi-Fi card.
- Step 9. Reattach the computer cover.

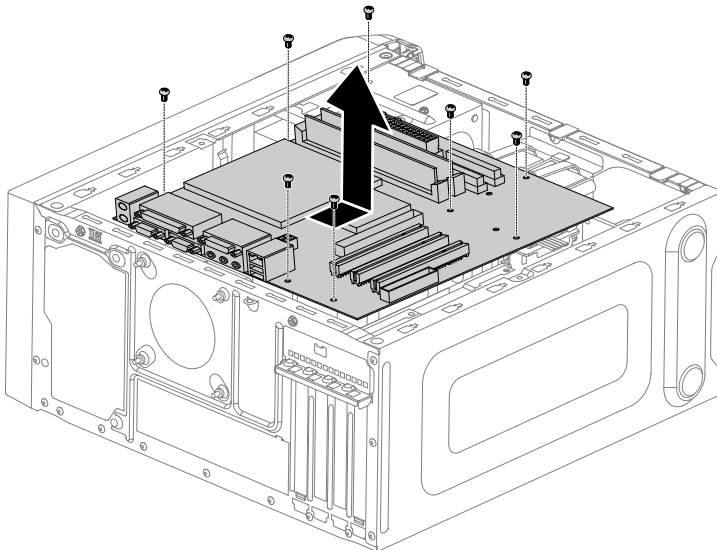
Replacing the motherboard

Note: For this procedure, it helps to lay the computer flat.

To replace the motherboard:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) 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 “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the computer cover. Refer to “Removing the computer cover”.
- Step 5. Remove the memory module. Refer to “Replacing a memory module”.
- Step 6. Remove the microprocessor fan. Refer to “Replacing the microprocessor fan”.
- Step 7. Remove the heat-sink. Refer to “Replacing the heat-sink”.
- Step 8. Remove the graphic card. Refer to “Replacing the graphic card”.
- Step 9. Remove the TV-Tuner card. Refer to “Replacing the TV-Tuner card”.
- Step 10. Remove the Wi-Fi card. Refer to “Replacing the Wi-Fi card”.
- Step 11. Remove the CPU. Refer to “Replacing the CPU”.
- Step 12. Disconnect the all cables from the connectors on motherboard.
- Step 13. Remove the 8 screws that secure the motherboard to the chassis.
- Step 14. Slide then lift the motherboard out of the chassis to remove it.



- Step 15. Install the new motherboard:
 - a. Line up the holes on the new motherboard with mounting holes on the chassis and secure it with screws.
 - b. Reattach the memory module, Wi-Fi card, CPU, and the heat-sink to the new motherboard.
 - c. Connect the all cables to the new motherboard.
 - d. Attach the graphic card and TV-Tuner card to the new motherboard.
- Step 16. Reattach the computer cover.

FRU lists

This chapter lists the information on the field replaceable units (FRUs).

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.

Description	Lenovo P/N	CRU ID
Processor		N
I I73770K 3.5/1600/8/1155 77 E1 CPU	1100334	
I I73770 3.4/1600/8/1155 77 E1 CPU	1100335	
I I53570K 3.4/1600/6/1155 77 E1 CPU	1100336	
I I53550 3.3/1600/6/1155 77 E1 CPU	1100337	
I I53450 3.1/1600/6/1155 77 E1 CPU	1100338	
I I3-3220 3.3/1600/3/1155 55 L1 CPU®	1100456	
I I3-3240 3.4/1600/3/1155 55 L1 CPU®	1100454	
I I53330 3.0/1600/6/1155 77 E1 CPU	1100393	
I I52320 3.0/1333/6/1155 95 D2 CPU®	1100103	
I SNB Ci3 2120 3.3/3M/1155/65/GT1 Q0®	1007388	
I I3 2130 3.4/1333/3/1155 65 Q0 CPU®	1100102	
I G640 2.8/3/1066/1155 65 Q0 CPU	1100474	
Motherboard		N
ECS H61 MATX 1.0 95W MB @RTL8111F_A662(R)	11200369	
MSI Z75 MATX MB MP MB@RTL8111E_ALC892®	11200302	
Heat Sink		N
TSL CEL3102836A6 Intel 65/95W Cooler	31045550	
AVC Z8UL06S012 Intel 65/95W Cooler	31045549	
Fan Module		N
FOX PV902512PSPF 0JG2 9225 Sysfan(R)	31039640	
AVC DS09225R12HP183 9225 Sysfan(R)	31039310	
AVC DS09225R12HP251 Frontfan	31500949	
Memory		N
HMT325U6CFR8C-H9 2GB D3-1333 RAM-HF	1100200	
MT8KTF25664AZ-1G4M1 2GB D3-1333 RAM-HF	1100201	
Mic_R D9PFW 2GB DDRIII1333 RAM(R)	1100186	
Mic_S D9PFW 2GB DDRIII1333 RAM(R)	1100187	
Elp_R J2108BCSE-DJ-F 2GB DDRIII1333 RAM®	1007495	
Psc_S A3P2GF3CKF-GDJ 2GB D3-1333 RAM	1100044	
M378B5773DH0-CH900 2GB DDRIII1333 RAM®	1007407	
Mic_S D9LGK 2GB DDRIII1333 RAM(R)	1006968	
HMT325U6BFR8C-H9 2GB DDRIII1333 RAM®	1006931	

MT8JTF25664AZ-1G4D1 2GB DDRIII1333 RAM(R)	1007003
HMT351U6CFR8C-H9 4GB D3-1333 RAM-HF	1100203
MT16KTF51264AZ-1G4M1 4GB D3-1333 RAM-HF	1100204
EBJ41UF8BDW0-GN-F 4GB D3-1600 RAM-HF	1100216
Mic_R D9PFW 4GB DDRIII1333 RAM(R)	1100188
Mic_S D9PFW 4GB DDRIII1333 RAM(R)	1100189
Psc_S A3P2GF3CKF-GDJ 4GB D3-1333 RAM(R)	1100154
Elp_R J2108BCSE-DJ-F 4GB DDRIII1333 RAM®	1100007
M378B5273DH0-CH900 4GB DDRIII1333 RAM®	1007408
MT16JTF51264AZ-1G4D1 4GB DDRIII1333 RAM(R)	1006919
HMT351U6BFR8C-H9N0 4GB DDRIII1333 RAM(R)	1006920
HMT325U6CFR8C-H9 2GB D3-1333 RAM-HF	1-100200
HMT351U6CFR8C-H9 4GB D3-1333 RAM-HF	1-100203
MT8KTF25664AZ-1G4M1 2GB D3-1333 RAM-HF	1-100201
MT16KTF51264AZ-1G4M1 4GB D3-1333 RAM-HF	1-100204
Mic_S D9PFW 2GB DDRIII1333 RAM(R)	1-100187
Mic_S D9PFW 4GB DDRIII1333 RAM(R)	1-100189
Elp_R J2108BCSE-DJ-F 2GB DDRIII1333 RAM®	1-007495
Elp_R J2108BCSE-DJ-F 4GB DDRIII1333 RAM®	1-100007
M378B5773DH0-CH900 2GB DDRIII1333 RAM®	1-007407
M378B5273DH0-CH900 4GB DDRIII1333 RAM®	1-007408
M378B5773DH0-CK0 2GB D3-1600 RAM-HF	1-100209
HMT325U6CFR8C-PB 2GB D3-1600 RAM-HF	1-100210
MT8KTF25664AZ-1G6M1 2GB D3-1600 RAM-HF	1-100211
Elp_R J2108BDBG-GN-F 2GB D3-1600 RAM	1-100436
M378B5273DH0-CK0 4GB D3-1600 RAM-HF	1-100213
HMT351U6CFR8C-PB 4GB D3-1600 RAM-HF	1-100214
MT16KTF51264AZ-1G6M1 4GB D3-1600 RAM-HF	1-100215
Elp_R J2108BDBG-GN-F 4GB D3-1600 RAM	1-100437
M378B5773DH0CK0 2GB D31600RAMHF	1100209
HMT325U6CFR8CPB 2GB D31600RAMHF	1100210
MT8KTF25664AZ1G6M1 2GB D31600RAMHF	1100211
M378B5273DH0CK0 4GB D31600RAMHF	1100213
HMT351U6CFR8CPB 4GB D31600RAMHF	1100214
MT16KTF51264AZ1G6M1 4GB D31600RAMHF	1100215
M378B1G73BH0CK0 8GB D31600RAMHF	1100217
HMT41GU6MFR8CPB 8GB D31600RAMHF	1100218
MT16JTF1G64AZ1G6D1 8GB D31600RAMHF	1100096

Hard Disk Drive		2
Seagate Pharaoh6Gb/s ST3500413AS 500G HDDLH	16200064	
WD XL500SM6G WD5000AAKX083CA1 500G HDDLH	16200031	
Seagate Pharaoh 4K ST500DM002 500G HDDLH	16200178	
Seagate Pharaoh6Gb/s ST31000524AS 1TB HDDLH	16200065	
WD XL500SM6G WD10EALX089BA1 1TB HDDLH	16200032	
Seagate Grenada ST1000DM003 1TB HDDLH	16200182	
Seagate Grenada ST1500DM003 1.5TB HDDLH	16200183	
Hitachi HDS723020BLA642 2T64M7200SATA6G HDDLH	16005286	
Seagate Grenada ST2000DM001 2TB HDDLH	16200184	
Samsung PM830 64G mSATA SSD	16200109	
Samsung PM830 128G mSATA SSD	16200110	
Portable Hard Disk Drive		1
Lenovo Portable HardDrive(SP) F410(500G)	16005961	
Optical Drive		2
PLDS 16XDH16ABSH SATA Black DVDRWLH	25011181	
TSST 16XSH216AB SATA Black DVDRWLH	25200416	
HLDS 16XGH70N SATA Black DVDRWLH	25200485	
Optiarc16XAD7290H SATA Black DVDRWLH	25201497	
PLDS 16XDH16ACSH SATA Black DVDRWLH	25201626	
Panasoinc 16XSW810 SATA Black DVDRWLH	25201490	
Optiarc16XAD7250H SATA Black DVDRWLH	25011199	
HLDS BH30N Black BD RecorderLH (BE)	25200322	
PLDS DH12B2SH HH Black BD RecorderLH	25202896	
Graphic Card		2
Bitland @HD7450@512M/A/DB/H Graphic Card	11-200448	
MSI @HD7450@512M/A/DB/H Graphic Card	11-200449	
Bitland @Geforce GT 630@2G/A/DB/H Graphic Card	11-200899	
Bitland @Geforce GT 620@1G/A/DB/H Graphic Card	11-200739	
MSI @Geforce 605@512M/A/DB/H Graphic Card	11-200733	
Bitland @Geforce 605@512M/A/DB/H Graphic Card	11-200737	
MSI @HD7570@2G/A/DB/H Graphic Card	11200576	
Bitland @HD7450@1G/A/DB/H Graphic Card®	11200452	
MSI @HD7450@1G/A/DB/H Graphic Card®	11200453	
MSI @HD7750@1G/A/D/DP/H Graphic Card	11200901	
MSI @Geforce GT 530@2G/A/DB/H Graphic Card	11200462	
MSI @Geforce 605@1G/A/DB/H Graphic Card	11200731	
Bitland @Geforce GT 620@1G/A/DB/H Graphic Card	11200739	
MSI @Geforce GTX 560@2.5G/A/2D/DP/H Graphic Card	11200047	
Bitland @Geforce GT 545@1.5G/A/DB/D/H Graphic Card	11200046	

Bitland @Geforce GT 630@2G/A/DB/H Graphic Card	11200899	
Power Supply		N
HuntKey HK380-12GP S2(S7) ATX280W Power Supply	36-200158	
LiteonPS-5281-7VR5-RoHS ATX280W Power Supply	36-200157	
AcBelPC6001-EL9G ATX280W Power Supply	36-200156	
FSP280-50EPA ATX280W 85% Power Supply	36-200161	
LiteonPS-5281-02VA-RoHS ATX280W 85% Power Supply	36-200160	
AcBelPC9008-EL1G ATX280W 85% Power Supply	36-200159	
AcBel PC7033-EL0G 450W NEW CABLE Power Supply(R)	36-001873	
AcBel PC6001EL6G ATX 280W Robust Power Supply(R)	36001720	
HuntKey HK38012GP S2 ATX 280W WW Power Supply(R)	36001795	
Liteon PS52817VR4ROHS ATX280W TW cap Power Supply	36002064	
HuntKeyHK38012GP S2(S6) ATX280W Power Supply®	36002008	
PS52817VR2RoHS 280W Robust Power®	36001721	
AcBel PC6001EL8G ATX280W Power Supply	36200020	
Liteon PS528102VA ATX 280W 85plus Power Supply(R)	36001697	
AcBelPC9008EL0G ATX 280W 85plus Power Supply(R)	36001698	
FSP28050EPA ATX 280W 85plusPower Supply(R)	36001699	
Liteon PS53117VR3 110V/220V 310W Power Supply(R)	36001874	
HuntKeyHK41011FP 110V/220V 310WPower Supply®	36002011	
AcBel PC7033EL0G 450W NEW CABLE Power Supply(R)	36001873	
AcBelFS8003EL1G 625W Power Supply®	36001663	
ACBEL FS8003EL1G ES5.0 625W PSU®	36200221	
Wi-Fi Card		N
LTN RTL8188CE 11n HMC WiFi card	11200352	
LS 400mm Antenna_Black_Roatan	31501133	
LS 400mm Antenna_Gray_Roatan	31501134	
TV-Tunner Card		2
YUAN PE988D DVBT&Analog TV Tunner	11012024	
YUAN PE988A ATSC&Analog TV Tunner	11012025	
JYT DMBTH 15Z TV Tunner	11012934	
JYT SBTVDT 15Z TV Tunner	11012932	
Remote Control		1
Phillips Win7 IR Black 43-key remote controller	888010934	
Phillips Win7 IR receiver	888010662	
SMK IR RC Win7 Japan	888011291	
SMK IR Receiver Win7 Japan	888011292	

Cables		N
Luxshare460mm Thermal Cable 6PIN(R)	31034561	
Grandsun 460mmThermal Cable 6PIN(R)	31045784	
Grandsun 2H300mmSATA Cable with Latch(R)	31024767	
Luxshare 2H300mmSATA Cable with Latch(R)	31024785	
Grandsun 2H300mmSATA Cable with Latch(R)	31024767	
Luxshare 2H300mmSATA Cable with Latch(R)	31024785	
Grandsun 2H420mmSATA Cable with Latch(R)	31030139	
Luxshare 2H420mmSATA Cable with Latch(R)	31024760	
Grandsun 2H420mmSATA Cable with Latch(R)	31030139	
Luxshare 2H420mmSATA Cable with Latch(R)	31024760	
Grandsun 2H420mmSATA Cable with Latch(R)	31030139	
Luxshare 2H420mmSATA Cable with Latch(R)	31024760	
Luxshare 370mmSATA Cable	31034778	
Grandsun 370mmSATA Cable	31034820	
LS DVIDVI cable 1.8m	31501245	
LX 200mmHDMI to DVIDS cable®	31041295	
Luxshare 130mm DVItovGA cord(R)	31024556	
JT VGA port cap	31049015	
JT HDMI port cap	31049017	
GS 2H100mm 4pinSATA cable Latch®	31024761	
Luxshare 2H100mm HDD Power Supply adaptor with Latch(R)	31024766	
MSI graphics card SLI cable	31048424	
ATI graphics card crossfire cable	31047520	
JT Z75 MB rearIO shielding	31500766	
Monitor		N
Lenovo Black LI2361dwA/TPV/A/R/WW	18200176	
Lenovo Black LI2361dwA/TPV/A/R/CN	18200177	
Lenovo L2262wA/TPV/A/R/WW 0560HB1	18004685	
Lenovo Black L2262wA/TPV/A/R/CN	18004767	
Lenovo L2262w/TPV/A/R/WW/W3Y/S/D	18200125	
Lenovo Black L2062wA/TPV/A/R/WW	18004891	
Lenovo Black L2062wA/TPV/A/R/CN	18004890	
Lenovo L2062w/TPV/A/R/ID/W3Y/S/D	18200071	
Lenovo L2364wA/TPV/A/R/WW 1187HB1	18200040	
Lenovo L2364w A/TPV/A/R/CN	18200041	
Lenovo L2364w TPV/A/R/WW/W3Y/S/D	18200127	
Speaker		1
Lenovo M0620 (black)	25013742	

Mechanical		N
JT LX319 K4 chassis card bracket	31500767	
JT mobile HDD case	31501000	
RoatonK4 Bitland mSATA Conversion Card	11200762	
JT SSD plastic bracket	31500999	
JT M2X3 Dedicated Screw	31501076	
Chassis		N
JT LX-319CTA Front Bezel	90200579	
JT LX-319CTA Upper Bezel with Mode Switch & Power Botton	90200580	
JT LX-319CTA ODD holder	90200581	
JT Tinian LX-320AT hard drive rail	31038607	
AVC DS09225R12HP183 9225 Sysfan(R)	31039310	
FOX PV902512PSPF 0J-G-2 9225 Sysfan(R)	31039640	
AVC DS09225R12HP251 system fan	31500949	
Foxconn 460 mm thermal sensor cable with 6 pins	31034567	
Luxshare 6P 460mm sensor cable with holder	31034561	
Luxshare K4 Ambient LED cable_400mm	31501040	
JiaHao K4 Ambient LED cable_400mm	31501071	
Bitland K4 Mode switch Card	11200417	
Bitland RTS5182 front USB3.0 with card reader	11200656	
Taisol GL839 Front USB3.0 with card reader	11200657	
Bitland RTS5182 front USB3.0 with card reader	11200658	
Taisol GL839 front USB3.0 with card reader	11200659	
Luxshare K4 LED/switch cable_650mm	31501041	
JiaHao K4 LED/switch cable_650mm	31501072	
Keyboard & Mouse		
Sunrex LXH-EKB-10YA(TH) B-Silk KB-LVT	25200495	
Sunrex LXH-EKB-10YA(CZ-SL) B-Silk KB-LVT	25200496	
Sunrex LXH-EKB-10YA(IN) B-Silk KB-LVT	25200497	
Sunrex LXH-EKB-10YA(US-EU) B-Silk KB-LVT	25200498	
Sunrex LXH-EKB-10YA(RU) B-Silk KB-LVT	25200499	
Sunrex LXH-EKB-10YA(UK) B-Silk KB-LVT	25200500	
Sunrex LXH-EKB-10YA(Nordic) B-S KB-LVT	25200501	
Sunrex LXH-EKB-10YA(LA) B-Silk KB-LVT	25200502	
Sunrex LXH-EKB-10YA(AR) B-Silk KB-LVT	25200503	
Sunrex LXH-EKB-10YA(SW) B-Silk KB-LVT	25200504	
Sunrex LXH-EKB-10YA(GE) B-Silk KB-LVT	25200505	
Sunrex LXH-EKB-10YA(TR) B-Silk KB-LVT	25200506	
Sunrex LXH-EKB-10YA(IS) B-Silk KB-LVT	25200507	
Sunrex LXH-EKB-10YA(PT) B-Silk KB-LVT	25200508	

Sunrex LXH-EKB-10YA(SP) B-Silk KB-LVT	25200509	
Sunrex LXH-EKB-10YA(SL) B-Silk KB-LVT	25200510	
Sunrex LXH-EKB-10YA(NL) B-Silk KB-LVT	25200511	
Sunrex LXH-EKB-10YA(IT) B-Silk KB-LVT	25200512	
Sunrex LXH-EKB-10YA(HB) B-Silk KB-LVT	25200513	
Sunrex LXH-EKB-10YA(FR) B-Silk KB-LVT	25200514	
Sunrex LXH-EKB-10YA(BE) B-Silk KB-LVT	25200515	
Sunrex LXH-EKB-10YA(GK) B-Silk KB-LVT	25200516	
Sunrex LXH-EKB-10YA(HG) B-Silk KB-LVT	25200517	
Sunrex LXH-EKB-10YA(BG) B-Silk KB-LVT	25200518	
Sunrex LXH-EKB-10YA(HR) B-Silk KB-LVT	25200519	
Sunrex LXH-EKB-10YA(BR) B-Silk KB-LVT	25200520	
Sunrex LXH-EKB-10YA(JP) B-Silk KB-LVT	25200521	
Sunrex LXH-EKB-10YA(EN-FR) B-S KB-LVT	25201039	
Liteon LXH-SM-8825 B-Silk Mouse	25200528	
Chicony LXH-MSU-1111 B-Silk Mouse	25200529	
Chicony LXH-MSU-1111 B-Silk Mouse	25203466	
Sunrex LXH-EMS-10ZA B-Silk Mouse	25200530	
Liteon SK-8861(US) S-Silk KB-Black(WW)	90200692	2
Liteon SK-8861(US-MY)S-Silk KB-Black(WW)	90200693	
Liteon SK-8861(TW) S-Silk KB-Black(WW)	90200694	
Liteon SK-8861(TH) S-Silk KB-Black(WW)	90200695	
Liteon SK-8861(CS-SK)S-SilkKB-Black(WW)	90200696	
Liteon SK-8861(US-IN)S-Silk KB-Black(WW)	90200697	
Liteon SK-8861(US-EU)S-SilkKB-Black(WW)	90200698	
Liteon SK-8861(RU) S-Silk KB-Black(WW)	90200699	
Liteon SK-8861(GB) S-Silk KB-Black(WW)	90200700	
Liteon SK-8861(Nordic)S-SilkKB-Black(WW)	90200701	
Liteon SK-8861(LA) S-Silk KB-Black(WW)	90200702	
Liteon SK-8861(LA-AR)S-Silk KB-Black(WW)	90200703	
Liteon SK-8861(SA) S-Silk KB-Black(WW)	90200704	
Liteon SK-8861(CH) S-Silk KB-Black(WW)	90200705	
Liteon SK-8861(DE) S-Silk KB-Black(WW)	90200706	
Liteon SK-8861(TR) S-Silk KB-Black(WW)	90200707	
Liteon SK-8861(IS) S-Silk KB-Black(WW)	90200708	
Liteon SK-8861(ES) S-Silk KB-Black(WW)	90200709	
Liteon SK-8861(PT) S-Silk KB-Black(WW)	90200710	
Liteon SK-8861(SL) S-Silk KB-Black(WW)	90200711	
Liteon SK-8861(NL) S-Silk KB-Black(WW)	90200712	
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Liteon SK-8861(IL) S-Silk KB-Black(WW)	90200714	
Liteon SK-8861(FR) S-Silk KB-Black(WW)	90200715	
Liteon SK-8861(BE) S-Silk KB-Black(WW)	90200716	
Liteon SK-8861(GR) S-Silk KB-Black(WW)	90200717	
Liteon SK-8861(HU) S-Silk KB-Black(WW)	90200718	
Liteon SK-8861(BG) S-Silk KB-Black(WW)	90200719	
Liteon SK-8861(KR) S-Silk KB-Black(WW)	90200720	
Liteon SK-8861(BR) S-Silk KB-Black(WW)	90200721	
Liteon SK-8861(JP) S-Silk KB-Black(WW)	90200722	
Liteon SK-8861(EN-FR)S-Silk KB-Black(WW)	90200723	
Liteon SM-8861(WW) Mouse Black	90200724	
Liteon SM-8861 Mouse(No Battery) Black	90200725	
Liteon SM-8861(JP) Mouse-Black(WW)	90200779	

Chapter 9. General information

This chapter provides general information that applies to all machine types supported by this publication.

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.

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