lenovo

User Guide

Lenovo K2450

Before using this information and the product it supports, be sure to read and understand the following:

- *Safety, Warranty, and Setup Guide*
- "Important safety information" on page iv
- Appendix D "Notices" on page 39

The *Safety, Warranty, and Setup Guide* has been uploaded to the Web site. To refer to it, go to http://www.lenovo.com/UserManuals.

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Contents

Read this first iii

Important safety information iv
- Conditions that require immediate action iv
- Safety guidelines v

Chapter 1. Product overview..... 1

Front view.....1
Left-side view.....3
Right-side view 4
Bottom view 5
Status indicators.....6
Features 7
Specifications.....8

Chapter 2. Using your computer..... 9

Frequently asked questions 9
Configuring the operating system 9
Registering your computer 10
Special keys and buttons 10
- Function key combinations 10

Numeric keypad 12
Using the touch pad 12
Power management 13
- Checking the battery status 13
- Using the ac power adapter 14
- Charging the battery.....14
- Maximizing the battery life 14
- Power-saving modes 14
- Handling the battery 16

Connecting to the network.....17
- Ethernet connection 17
- Wireless connection 17

Using a flash media card 18

Chapter 3. You and your computer 19

Accessibility and comfort 19
- Ergonomic information.....19

Chapter 4. Security..... 21

Attaching a mechanical lock 21
Using passwords 21
Using a fingerprint reader.....21
Using the Active Protection System program.....21

Chapter 5. Recovery overview.....22

Recovery solutions on the Windows 7 operating system 22
Recovery solutions on the Windows 8.1 operating system 23

Chapter 6. Preventing problems 25

General tips for preventing problems.....25
Taking care of your computer.....25

Chapter 7. Troubleshooting computer problems.....29

Troubleshooting 29
- Battery and power problems 29
- Computer screen problems.....30
- Problems with drives and other storage devices.....31
- OneKey Recovery Pro program problems 32
- A password problem 32
- A sound problem.....32
- Other problems.....33

Appendix A. Regulatory information 34

Wireless related information.....34
Korean Class B compliance statement 35
Lenovo product service information for Taiwan 35
ENERGY STAR model information 36

Appendix B. WEEE and recycling statements.....37

China WEEE statement 37
Taiwan Battery recycling information 37

Appendix C. Restriction of Hazardous Substances Directive (RoHS) 38

China RoHS 38

Appendix D. Notices.....39

Trademarks.....40

Index 41

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Read this first

Be sure to follow the important tips given here to continue to get the most use and enjoyment out of your computer. Failure to do so might lead to discomfort or injury, or cause your computer to fail.

Protect yourself from the heat that your computer generates.

When your computer is turned on or the battery is charging, the base, the palm rest, and some other parts may become hot. The temperature they reach depends on the amount of system activity and the level of charge in the battery.

Extended contact with your body, even through clothing, could cause discomfort or even a skin burn.

- Avoid keeping your hands, your lap, or any other part of your body in contact with a hot section of the computer for any extended time.
- Periodically take hands from using the keyboard by lifting your hands from the palm rest.

Protect yourself from the heat generated by the ac power adapter.

When the ac power adapter is connected to an electrical outlet and your computer, it generates heat.

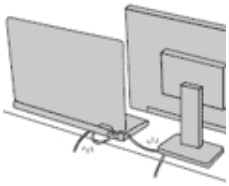
Extended contact with your body, even through clothing, may cause a skin burn.

- Do not place the ac power adapter in contact with any part of your body while it is in use.
- Never use it to warm your body.

Prevent your computer from getting wet.

To avoid spills and the danger of electrical shock, keep liquids away from your computer.

Protect the cables from being damaged.



Applying strong force to cables may damage or break them.

Route communication lines, or the cables of an ac power adapter, a mouse, a keyboard, a printer, or any other electronic device, so that they cannot be walked on, tripped over, pinched by your computer or other objects, or in any way subjected to treatment that could interfere with the operation of your computer.

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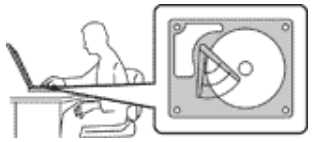
Protect your computer and data when moving it.



Before moving a computer equipped with a hard disk drive, do one of the following, and make sure that the power switch is off or is blinking:

- Turn it off.
- Put it in sleep mode.
- Put it in hibernation mode.

This will help to prevent damage to the computer, and possible loss of data.

Handle your computer gently.

Do not drop, bump, scratch, twist, hit, vibrate, push, or place heavy objects on your computer, display, or external devices.

Carry your computer carefully.

- Use a quality carrying case that provides adequate cushioning and protection.
- Do not pack your computer in a tightly packed suitcase or bag.
- Before putting your computer in a carrying case, make sure that it is off, in sleep mode, or in hibernation mode. Do not put a computer in a carrying case while it is turned on.

Important safety information

This information can help you safely use your notebook personal computer. Follow and retain all information included with your computer. The information in this document does not alter the terms of your purchase agreement or the Lenovo® Limited Warranty.

Customer safety is important. Our products are developed to be safe and effective. However, personal computers are electronic devices. Power cords, power adapters, and other features can create potential safety risks that can result in physical injury or property damage, especially if misused. To reduce these risks, follow the instructions in this document carefully. By carefully following the information contained in this document and provided with your product, you can help protect yourself from hazards and create a safer computer work environment.

Conditions that require immediate action

Products can become damaged due to misuse or neglect. Some product damage is serious enough that the product should not be used again until it has been inspected and, if necessary, repaired by an authorized servicer.

As with any electronic device, pay close attention to the product when it is turned on. On very rare occasions, you might notice an odor or see a puff of smoke or sparks vent from your product. Or you might hear sounds like popping, cracking or hissing. These conditions might merely mean that an

internal electronic component has failed in a safe and controlled manner. Or, they might indicate a potential safety issue. However, do not take risks or attempt to diagnose the situation yourself. Contact the Customer Support Center for further guidance. For a list of Service and Support phone numbers, go to the following Web site:
http://www.lenovo.com/support/phone

Frequently inspect your computer and its components for damage or wear or signs of danger. If you have any question about the condition of a component, do not use the product. Contact the Customer Support Center or the product manufacturer for instructions on how to inspect the product and have it repaired, if necessary.

In the unlikely event that you notice any of the following conditions, or if you have any safety concerns with your product, stop using the product and unplug it from the power source and telecommunication lines until you can speak to the Customer Support Center for further guidance.

- Power cords, plugs, power adapters, extension cords, surge protectors, or power supplies that are cracked, broken, or damaged.
- Signs of overheating, smoke, sparks, or fire.
- Damage to a battery (such as cracks, dents, or creases), discharge from a battery, or a buildup of foreign substances on the battery.
- A cracking, hissing or popping sound, or strong odor that comes from the product.
- Signs that liquid has been spilled or an object has fallen onto the computer product, the power cord or power adapter.
- The computer product, power cord, or power adapter has been exposed to water.
- The product has been dropped or damaged in any way.
- The product does not operate normally when you follow the operating instructions.

Note: If you notice these conditions with a product (such as an extension cord) that is not manufactured for or by Lenovo, stop using that product until you can contact the product manufacturer for further instructions, or until you get a suitable replacement.

Safety guidelines

Always observe the following precautions to reduce the risk of injury and property damage.

Service and upgrades

Do not attempt to service a product yourself unless instructed to do so by the Customer Support Center or your documentation. Only use a Service Provider who is approved to repair your particular product.

Note: Some computer parts can be upgraded or replaced by the customer. Upgrades typically are referred to as options. Replacement parts approved for customer installation are referred to as Customer Replaceable Units, or CRUs. Lenovo provides documentation with instructions when it is appropriate for customers to install options or replace CRUs. You must closely follow all instructions when installing or replacing parts. The Off state of a power indicator does not necessarily mean that voltage levels inside a product are zero. Before you remove the covers from a product equipped with a power cord, always make sure that the power is turned off and that the product is unplugged from any power source. If you have any questions or concerns, contact the Customer Support Center.

CAUTION:

Before replacing any CRUs, turn off the computer and wait three to five minutes to let the computer cool before opening the cover.

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Power cords and power adapters

DANGER

Use only the power cords and power adapters supplied by the product manufacturer.

The power cords shall be safety approved. For Germany, it shall be H05VV-F, 3G, 0.75 mm^2, or better. For other countries, the suitable types shall be used accordingly.

Never wrap a power cord around a power adapter or other object. Doing so can stress the cord in ways that can cause the cord to fray, crack, or crimp. This can present a safety hazard.

Always route power cords so that they will not be walked on, tripped over, or pinched by objects.

Protect power cords and power adapters from liquids. For instance, do not leave your power cord or power adapter near sinks, tubs, toilets, or on floors that are cleaned with liquid cleansers. Liquids can cause a short circuit, particularly if the power cord or power adapter has been stressed by misuse. Liquids also can cause gradual corrosion of power cord terminals and/or the connector terminals on a power adapter, which can eventually result in overheating.

Ensure that all power cord connectors are securely and completely plugged into receptacles.

Do not use any power adapter that shows corrosion at the ac input pins or shows signs of overheating (such as deformed plastic) at the ac input pins or anywhere on the power adapter.

Do not use any power cords where the electrical contacts on either end show signs of corrosion or overheating or where the power cord appears to have been damaged in any way.

To prevent possible overheating, do not cover the power adapter with clothing or other objects when the power adapter is plugged into an electrical outlet.

Extension cords and related devices

Ensure that extension cords, surge protectors, uninterruptible power supplies, and power strips that you use are rated to handle the electrical requirements of the product. Never overload these devices. If power strips are used, the load should not exceed the power strip input rating. Consult an electrician for more information if you have questions about power loads, power requirements, and input ratings.

Plugs and outlets

DANGER

If a receptacle (power outlet) that you intend to use with your computer equipment appears to be damaged or corroded, do not use the outlet until it is replaced by a qualified electrician.

Do not bend or modify the plug. If the plug is damaged, contact the manufacturer to obtain a replacement.

Do not share an electrical outlet with other home or commercial appliances that draw large amounts of electricity; otherwise, unstable voltage might damage your computer, data, or attached devices.

Some products are equipped with a three-pronged plug. This plug fits only into a grounded electrical outlet. This is a safety feature. Do not defeat this safety feature by trying to insert it into a non-grounded outlet. If you cannot insert the plug into the outlet, contact an electrician for an approved

outlet adapter or to replace the outlet with one that enables this safety feature. Never overload an electrical outlet. The overall system load should not exceed 80 percent of the branch circuit rating. Consult an electrician for more information if you have questions about power loads and branch circuit ratings.

Be sure that the power outlet you are using is properly wired, easily accessible, and located close to the equipment. Do not fully extend power cords in a way that will stress the cords.

Be sure that the power outlet provides the correct voltage and current for the product you are installing.

Carefully connect and disconnect the equipment from the electrical outlet.

Power supply statement

DANGER

Never remove the cover on a power supply or any part that has the following label attached.

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

External devices

CAUTION:
Do not connect or disconnect any external device cables other than Universal Serial Bus (USB) cable while the computer power is on; otherwise, you might damage your computer. To avoid possible damage to attached devices, wait at least five seconds after the computer is shut down to disconnect external devices.

General battery notice

DANGER

Personal computers manufactured by Lenovo contain a coin cell battery to provide power to the system clock. In addition, many mobile products, such as notebook computers, utilize a rechargeable battery pack to provide system power when in portable mode. Batteries supplied by Lenovo for use with your product have been tested for compatibility and should only be replaced with approved parts.

Never attempt to open or service any battery. Do not crush, puncture, or incinerate batteries or short circuit the metal contacts. Do not expose the battery to water or other liquids. Only recharge the battery pack strictly according to instructions included in the product documentation.

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Battery abuse or mishandling can cause the battery to overheat, which can cause gasses or flame to "vent" from the battery pack or coin cell. If your battery is damaged, or if you notice any discharge from your battery or the buildup of foreign materials on the battery leads, stop using the battery and obtain a replacement from the battery manufacturer.

Batteries can degrade when they are left unused for long periods of time. For some rechargeable batteries (particularly Lithium Ion batteries), leaving a battery unused in a discharged state could increase the risk of a battery short circuit, which could shorten the life of the battery and also can pose a safety hazard. Do not let rechargeable Lithium-Ion batteries completely discharge or store these batteries in a discharged state.

Rechargeable battery notice

DANGER

Do not attempt to disassemble or modify the battery pack. Attempting to do so can cause an explosion, or liquid leakage from the battery pack. A battery pack other than the one specified by Lenovo, or a disassembled or modified battery pack is not covered by the warranty.

If the rechargeable battery pack is incorrectly replaced, there is danger of an explosion. The battery pack contains a small amount of harmful substances. To avoid possible injury:

- **Replace only with a battery of the type recommended by Lenovo.**
- **Keep the battery pack away from fire.**
- **Do not expose it to water or rain.**
- **Do not attempt to disassemble it.**
- **Do not short-circuit it.**
- **Keep it away from children.**
- **Do not drop the battery pack.**

Do not put the battery pack in trash that is disposed of in landfills. When disposing of the battery, comply with local ordinances or regulations.

The battery pack should be stored at room temperature, charged to approximately 30 to 50% of capacity. We recommend that battery pack be charged about once per year to prevent overdischarge.

Lithium coin cell battery notice

DANGER

Danger of explosion if battery is incorrectly replaced.

When replacing the lithium coin cell battery, use only the same or an equivalent type that is recommended by the 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.

The following statement applies to users in the state of California, U.S.A.

California Perchlorate Information:

Products containing manganese dioxide lithium coin cell batteries may contain perchlorate.

Perchlorate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate

Heat and product ventilation

DANGER

Computers, ac power adapters, and many accessories can generate heat when turned on and when batteries are charging. Notebook computers can generate a significant amount of heat due to their compact size. Always follow these basic precautions:

- **When your computer is turned on or the battery is charging, the base, the palm rest, and some other parts may become hot. Avoid keeping your hands, your lap, or any other part of your body in contact with a hot section of the computer for any extended length of time. When you use the keyboard, avoid keeping your palms on the palm rest for a prolonged period of time. Your computer generates some heat during normal operation. The amount of heat depends on the amount of system activity and the battery charge level. Extended contact with your body, even through clothing, could cause discomfort or even a skin burn. Periodically take breaks from using the keyboard by lifting your hands from the palm rest; and be careful not to use the keyboard for any extended length of time.**
- **Do not operate your computer or charge the battery near flammable materials or in explosive environments.**
- **Ventilation slots, fans and/or heat sinks are provided with the product for safety, comfort, and reliable operation. These features might inadvertently become blocked by placing the product on a bed, sofa, carpet, or other flexible surface. Never block, cover, or disable these features.**
- **When the ac power adapter is connected to an electrical outlet and your computer, it generates heat. Do not place the adapter in contact with any part of your body while using it. Never use the ac power adapter to warm your body. Extended contact with your body, even through clothing, may cause a skin burn.**

For your safety, always follow these basic precautions with your computer:

- **Keep the cover closed whenever the computer is plugged in.**
- **Regularly inspect the outside of the computer for dust accumulation.**
- **Remove dust from vents and any perforations in the bezel. More frequent cleanings might be required for computers in dusty or high-traffic areas.**
- **Do not restrict or block any ventilation openings.**
- **Do not operate your computer inside furniture, as this might increase the risk of overheating.**
- **Airflow temperatures into the computer should not exceed 35°C (95°F).**

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Electrical current safety information

DANGER

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

To avoid a shock hazard:

- **Do not use your computer during a lightning storm.**
- **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.**
- **Whenever 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, battery pack, and all the cables before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Do not use your computer until all internal parts enclosures are fastened into place. Never use the computer when internal parts and circuits are exposed.**

DANGER

Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To connect:

1. **Turn everything OFF.**
2. **First, attach all cables to devices.**
3. **Attach signal cables to connectors.**
4. **Attach power cords to outlets.**
5. **Turn devices ON.**

To disconnect:

1. **Turn everything OFF.**
2. **First, remove power cords from outlets.**
3. **Remove signal cables from connectors.**
4. **Remove all cables from devices.**

The power cord must be disconnected from the wall outlet or receptacle before installing all other electrical cables connected to the computer.

The power cord may be reconnected to the wall outlet or receptacle only after all other electrical cables have been connected to the computer.

Liquid crystal display (LCD) notice

CAUTION:
For products with mercury-containing fluorescent lamps (for example, non-LED)

- **The fluorescent lamp in the liquid crystal display contains mercury; dispose of according to local, state, or federal laws.**
- **The LCD is made of glass, and rough handling or dropping the computer can cause the LCD to break. If the LCD breaks and the internal fluid gets into your eyes or on your hands, immediately wash the affected areas with water for at least 15 minutes; if any symptoms are present after washing, get medical care.**

Using headphones or earphones

CAUTION:
Excessive sound pressure from earphones and headphones can cause hearing loss. Adjustment of the equalizer to maximum increases the earphone and headphone output voltage and the sound pressure level. Therefore, to protect your hearing, adjust the equalizer to an appropriate level.

Excessive use of headphones or earphones for a long period of time at high volume can be dangerous if the output of the headphone or earphone connectors do not comply with specifications of EN 50332-2. The headphone output connector of your computer complies with EN 50332-2 Sub clause 7. This specification limits the computer's maximum wide band true RMS output voltage to 150 mV. To help protect against hearing loss, ensure that the headphones or earphones you use also comply with EN 50332-2 (Clause 7 limits) for a wide band characteristic voltage of 75 mV. Using headphones that do not comply with EN 50332-2 can be dangerous due to excessive sound pressure levels.

If your Lenovo computer came with headphones or earphones in the package, as a set, the combination of the headphones or earphones and the computer already complies with the specifications of EN 50332-1. If different headphones or earphones are used, ensure that they comply with EN 50332-1 (Clause 6.5 Limitation Values). Using headphones that do not comply with EN 50332-1 can be dangerous due to excessive sound pressure levels.

Additional safety information

DANGER

Plastic bags can be dangerous. Keep plastic bags away from babies and children to avoid danger of suffocation.

Save these instructions.

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Chapter 1. Product overview

This chapter introduces the computer hardware features.

- “Front view” on page 1
- “Left-side view” on page 3
- “Right-side view” on page 4
- “Bottom view” on page 5
- “Status indicators” on page 6
- “Features” on page 7
- “Specifications” on page 8

Front view

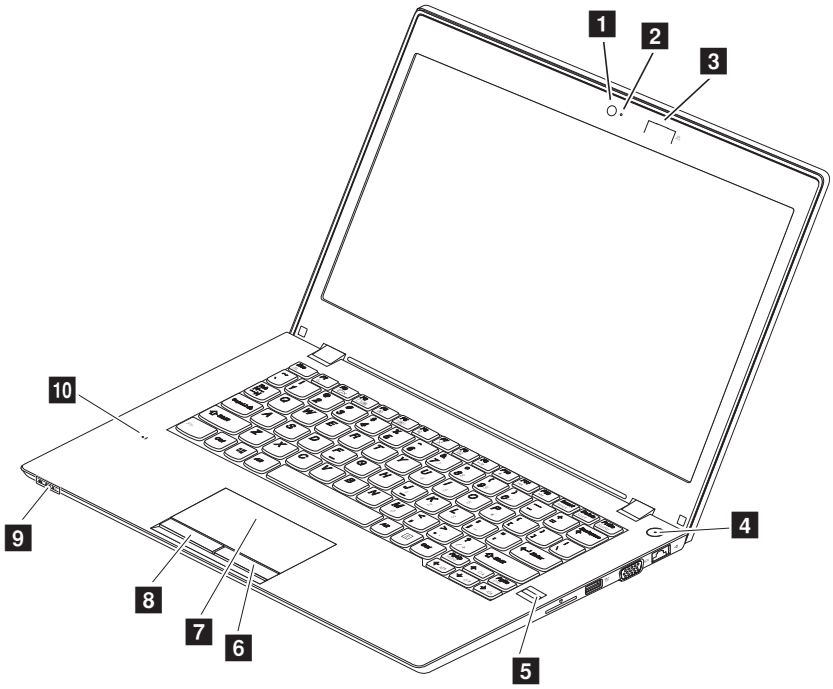

Figure 1. Front view

1 Camera	6 Right-click button
2 Camera indicator	7 Touch pad
3 Keyboard light	8 Left-click button
4 Power button	9 Status indicators
5 Fingerprint reader	10 Microphones

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1 Camera

Use the camera to take pictures or hold a video conference.

2 Camera indicator

The camera indicator is on when the camera is in use.

3 Keyboard light

The keyboard light enables you to use your computer when the lighting condition is not ideal. To turn on the keyboard light, press Fn + Esc. To turn it off, press the combination again.

Note: Avoid using your computer in dark conditions for prolonged periods. It is bad for your eyes.

4 Power button

Press this button to turn on the computer. To turn off the computer, refer to “Power-saving modes” on page 14.

5 Fingerprint reader

The fingerprint authentication technology enables you to use your fingerprint to enter the operating system.

6 Right-click button

7 Touch pad

8 Left-click button

Move your fingertip across the touch pad to move the pointer. The right-click button and left-click button provide functions similar to the right button and left button on a mouse.

9 Status indicators

For more information, refer to “Status indicators” on page 6.

10 Microphones

The built-in microphone captures sound and voice when it is used with a program capable of handling audio.

Left-side view

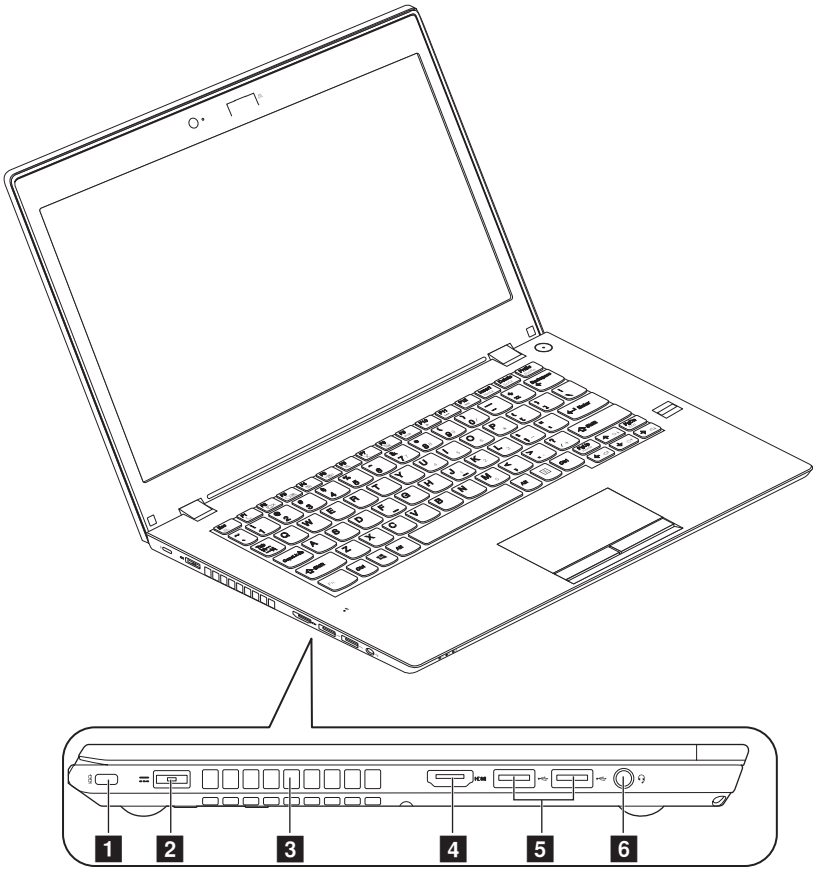

Figure 2. Left-side view

1 Security keyhole	4 HDMI connector
2 ac power connector	5 USB 2.0 connectors
3 Fan louvers	6 Combo audio jack

1 Security keyhole

To protect your computer from theft, you can purchase a security cable lock that fits this keyhole to lock your computer to a stationary object. For more information, refer to "Attaching a mechanical lock" on page 21.

2 ac power connector

Attach an ac power adapter cable to this connector to provide power to the computer and charge the battery.

3 Fan louvers

The fan louvers and internal fan enable air to circulate to ensure proper cooling, especially the cooling of the microprocessor.

Note: To ensure proper airflow, do not place any obstacles in front of the fan louvers.

4 HDMI connector

Use the high-definition multimedia interface (HDMI) connector to connect a compatible digital audio device or video monitor, such as a high-definition television (HDTV).

5 USB 2.0 connector

Use the USB 2.0 connector to connect devices compatible with a USB interface, such as a USB printer or a digital camera.

Attention: When you attach a USB cable to the connector, make sure that the USB mark is facing upward. Otherwise the connector might be damaged.

6 Combo audio jack

To listen to the sound from your computer, connect a headphone or a headset that has a 3.5-mm (0.14-inch) plug to the combo audio jack.

Note: The combo audio jack does not support conventional microphones. Use the built-in microphone or a headset instead.

Right-side view

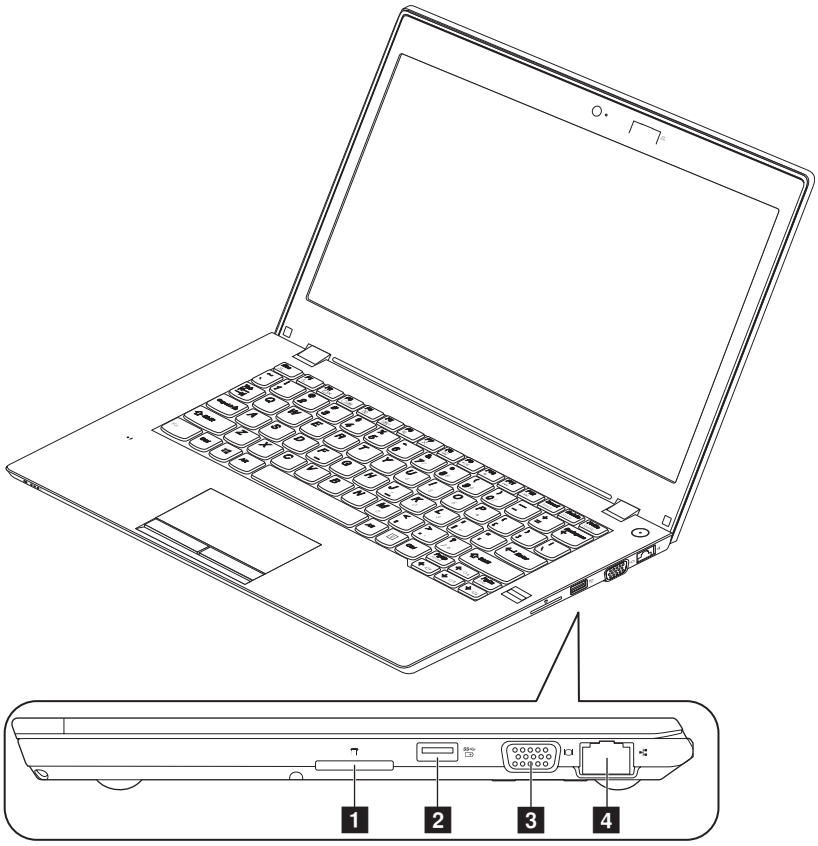

Figure 3. Right-side view

1 Media card reader slot	3 Monitor connector
2 USB 3.0 connector	4 Ethernet connector

1 Media card reader slot

For more information, refer to “Using a flash media card” on page 18.

2 USB 3.0 connector

Use the USB 3.0 connectors to connect a USB 1.1, 2.0, or 3.0 device, such as a USB printer or a digital camera.

Attention: When you attach a USB cable to the connector, make sure that the USB mark is facing upward. Otherwise the connector might be damaged.

3 Monitor connector

Use the monitor connector to connect an external monitor or projector to your computer.

4 Ethernet connector

Attach an Ethernet cable to this connector to connect your computer to a local area network (LAN).

DANGER

To avoid the risk of electrical shock, do not connect the telephone cable to the Ethernet connector. You can only connect an Ethernet cable to this computer.

Bottom view

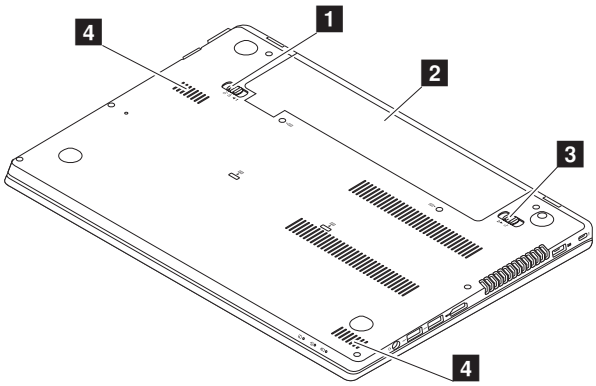

Figure 4. Bottom view

1 Battery lock	3 Battery latch
2 Battery	4 Speakers

1 Battery lock

Keeps the battery secured in place.

2 Battery

Use your computer with battery power whenever ac power is unavailable.

3 Battery latch

Keeps the battery secured in place.

4 Speakers

To adjust the sound level of the built-in speakers, see “Function key combinations” on page 10.

Status indicators

This topic describes the status indicators.

Note: Your computer might look different from the following illustration.

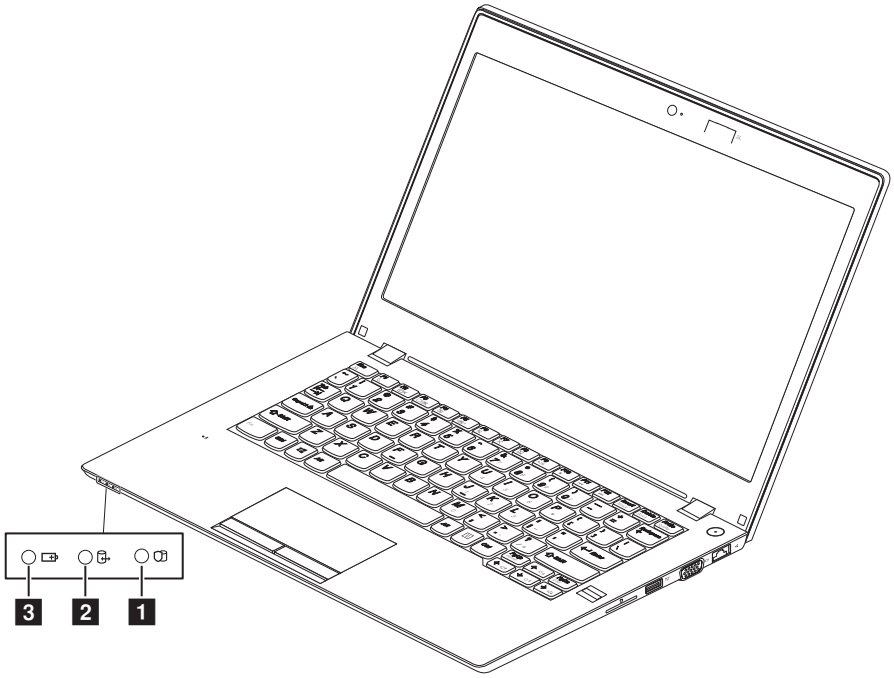

Figure 5. Status indicators

1 Active Protection System™ (APS) status indicator

- **Green:** Impact shock has been detected, so the hard disk drive is temporarily locked.
- **Off:** No impact shock has been detected, and the hard disk drive is operating normally.

2 Device access status indicator

When this indicator is on, the hard disk drive is reading or writing data.

Attention:

- When the indicator is on, do not put the computer into sleep mode or turn off the computer.
- When the indicator is on, do not move the computer. Sudden physical shock might cause drive errors.

3 Battery status indicator

- **Green:** The battery charge level is between 80% and 100%, or the battery discharge level is between 20% and 100%.
- **Slow-blinking green:** The battery charge level is between 20% and 80%, and charging is continuing. When the battery charge level reaches 80%, the battery status indicator stops blinking, but the charging might continue until the battery is 100% charged.
- **Slow-blinking amber:** The battery charge level is between 5% and 20%, and the charging is continuing. When the battery charge level reaches 20%, the blinking color changes to green.

- **Amber:** The battery discharge level is between 5% and 20%.
- **Fast-blinking amber:** The battery charge or discharge level is 5% or less.
- **Off:** The battery is detached or the computer is powered off.

Features

This topic provides information about the computer features.

Processor

- To view the processor information of your computer, do either of the following:
  - Windows® 7: Click **Start**, right-click **Computer**. Then click **Properties**.
  - Windows 8.1: From the desktop, move the cursor to the top-right or bottom-right corner of the screen to display the charms. Then click **Settings** → **PC info**.

Memory

- Double data rate 3 low-voltage (DDR3L) synchronous dynamic random access memory (SDRAM)

Storage device

- 2.5-inch hard disk drive with a height of 7 mm / 9.5 mm (0.28 inch / 0.37 inch)
- 2.5-inch solid-state drive with a height of 7 mm (0.28 inch)

  Note: If your computer is equipped with both a hard disk drive and an M.2 solid-state drive, you are not recommended to use the M.2 solid-state drive as a bootable device. The M.2 solid-state drive is designed and developed for "cache" function purpose only. If you use the M.2 solid-state drive as a bootable device, its reliability is not guaranteed.

Display

- Size: 317.5 mm (12.5 inches)
- Resolution:
  - LCD: 1366-by-768
  - External monitor: Maximum 2048-by-1536
- Camera
- Built-in microphones

Keyboard

- 6-row Lenovo keyboard

Interface

- Combo audio jack
- External monitor connector
- HDMI connector
- RJ45 Ethernet connector
- USB 2.0 connector
- USB 3.0 connector
- 4-in-1 digital media card reader slot

Wireless features

- Integrated wireless LAN
- 100/1000 Mbps Ethernet communication

Specifications

This topic lists the physical specifications for your computer.

Heat output

- 45 W (222 Btu/hr)

Power source (ac power adapter)

- Sine-wave input at 50 to 60 Hz
- Input rating of ac power adapter: 100 to 240 V ac, 50 to 60 Hz

Battery pack

- Lithium-ion (Li-ion) battery pack

Chapter 2. Using your computer

This chapter provides information on using some of the computer components.

- "Frequently asked questions" on page 9
- "Configuring the operating system" on page 9
- "Registering your computer" on page 10
- "Special keys and buttons" on page 10
- "Using the touch pad" on page 12
- "Power management" on page 13
- "Connecting to the network" on page 17
- "Using a flash media card" on page 18

Frequently asked questions

The following are a few tips that will help you optimize the use of your computer.

Can I get my user guide in another language?

To download the user guide in another language, go to http://www.lenovo.com/UserManuals. Then follow the instructions on the screen.

How to use the battery power more effectively?

- For instructions on how to install or replace a computer device, see "Power-saving modes" on page 14.
- If you are going to turn off the computer for an extended period, you can prevent battery power from draining by removing the battery. For more information, see "Power management" on page 13.

Where are the recovery discs?

Your computer might not come with a recovery disc. Instead, some alternative recovery solutions are available on your computer. For more information, see Chapter 5 "Recovery overview" on page 22.

Where can I get the latest drivers?

To download the latest drivers for your computer, go to http://www.lenovo.com/drivers. Then follow the instructions on the screen.

What can I do if the backup process fails?

If the backup process fails, do the following:

1. Close other applications, then restart the backup process.
2. Check if the destination medium is damaged. Select another file path and try again.

Configuring the operating system

Your computer comes with a preinstalled operating system. When you use the computer for the first time, you might be prompted to take the following steps to complete the configuration process:

- Accepting the end user license agreement
- Configuring the Internet connection
- Registering the operating system
- Creating a user account

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Registering your computer

When you register your computer, information is entered into a database, which enables Lenovo to contact you in case of a recall or other severe problem. After you register your computer with Lenovo, you will receive quicker services when you call Lenovo for help. In addition, some locations offer extended privileges and services to registered users.

To register your computer with Lenovo, do one of the following:

- Go to http://www.lenovo.com/register and follow the instructions on the screen to register your computer.
- Connect your computer to the Internet and register your computer through a preinstalled registration program:
  - Windows 7: The preinstalled Lenovo Product Registration program launches automatically after you have used your computer for a time. Follow the on-screen instructions to register your computer.
  - Windows 8.1: Launch the Lenovo Support program. Then click **Registration** and follow the instructions on the screen to register your computer.

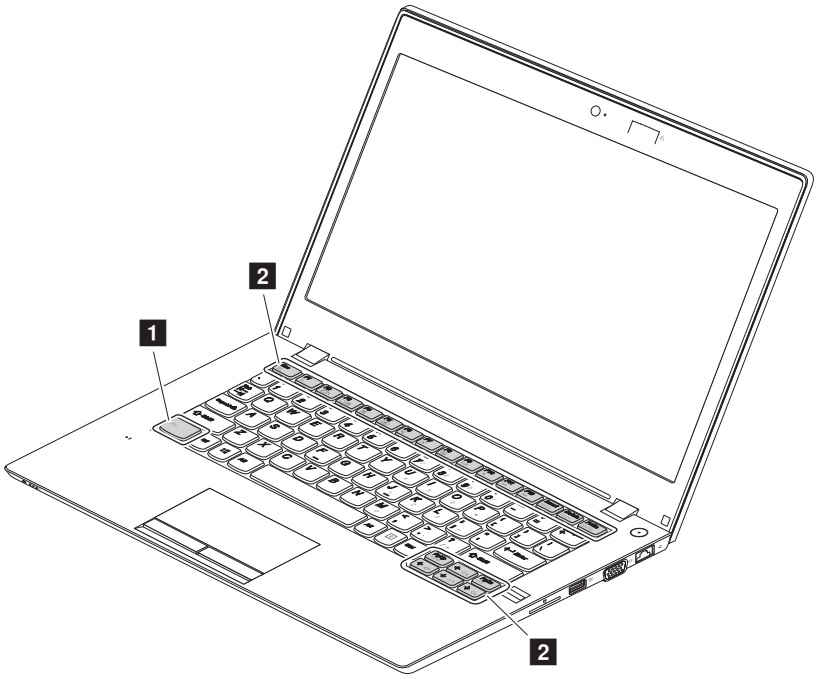
Special keys and buttons

Your computer has several special keys and buttons to help you work more easily and effectively.

Function key combinations

The following illustration shows the locations of the special keys on your computer. To use the function key combinations, press the Fn key 1, then press one of the function keys 2.

Note: Your computer might look different from the following illustration.



The following is a brief introduction to the function key combinations.

Configuring Keyboard light (Fn + Esc)

- Windows 7: Press Fn + Esc to open the camera and audio settings window. The camera preview is turned on. Then, you can change the camera and audio settings as desired.
- Windows 8.1: Press Fn + Esc to enable or disable the camera.

Power conservation (Fn + F1)

Puts your computer into sleep mode.

Display backlight feature (Fn + F2)

Enables or disables the display backlight feature.

Switching the display output location (Fn + F3)

Switches between the computer display and an external monitor. The following options will be displayed:

- **PC screen only**
- **Duplicate**
- **Extend**
- **Second screen only**

Note: You can also press the Windows key + P combination to switch between the computer display and an external monitor.

Configuring camera settings (Fn + F4)

- Windows 7: Press Fn + F4 to open the camera and audio settings window. The camera preview is turned on. Change the camera and audio settings as desired.
- Windows 8.1: Press Fn + F4 to enable or disable the camera.

Wireless radio control (Fn + F5)

Enables or disables the built-in wireless networking features.

Muting/Unmuting volume (Fn + F6)

Cuts off or turns on the volume.

Enabling/Disabling built-in microphone (Fn + F7)

Enables or disables the built-in microphone.

Touch pad control (Fn + F8)

Enables or disables the touch pad function.

Multimedia controls

- Fn + F9: Play or Pause
- Fn + F10: Stop
- Fn + F11: Previous track or scene
- Fn + F12: Next track or scene

Volume controls (Fn + left or right arrow)

To adjust the sound volume from your computer, do the following:

- **Fn + left arrow:** Decreases the sound volume.
- **Fn + right arrow:** Increases the sound volume.

Adjusting display brightness (Fn + up or down arrow)

To adjust the display brightness, do the following:

- **Fn + up arrow:** Increases the display brightness.
- **Fn + down arrow:** Decreases the display brightness.

Other functions

- **Fn + Insert:** Has the same function as the Numeric Lock key on a conventional keyboard.
- **Fn + PrtSc:** Has the same function as the SysRq key on a conventional keyboard.
- **Fn + PgUp:** Has the same function as the Home key on a conventional keyboard.
- **Fn + PgDn:** Has the same function as the End key on a conventional keyboard.

Numeric keypad

The keyboard has keys that can work as a 10-key numeric keypad when enabled 1. To enable or disable the keypad, press Fn + Insert.

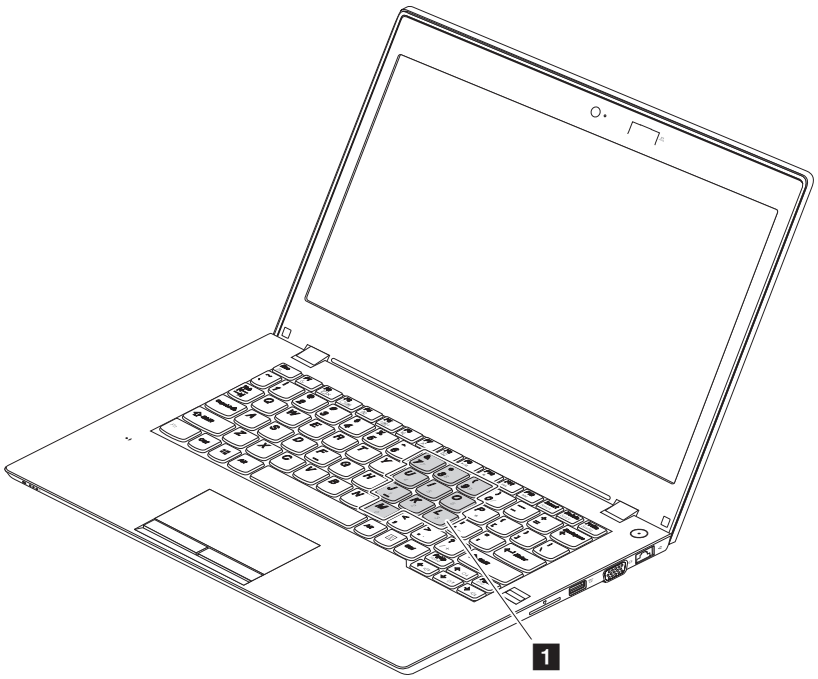


Figure 6. Numeric keypad

Using the touch pad

The following illustration shows the controls on the touch pad. To enable or disable the touch pad, press Fn + F8.

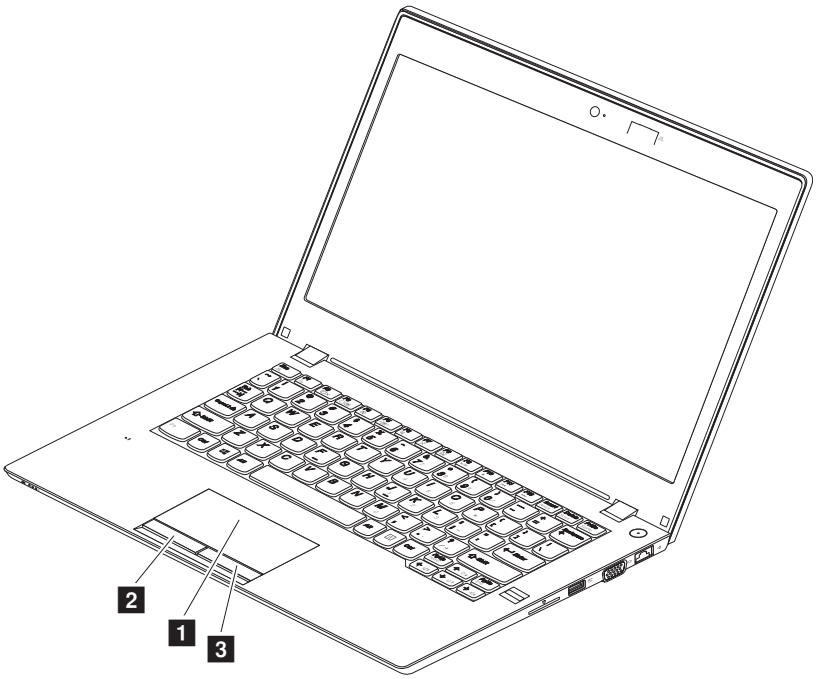


Figure 7. Touch pad

1 Touch pad: To move the cursor on the screen, slide your fingertip over the touch pad in the direction in which you want the cursor to move.

2 Left-click button: Functions the same as the left button on a conventional mouse.

3 Right-click button: Functions the same as the right button on a conventional mouse.

Using the multi-touch touch pad

On some models, the touch pad supports multi-touch with which you can zoom in, zoom out, or scroll on the screen while browsing the Internet or reading or editing a document.

Power management

Use your computer with ac power whenever ac power is available. Use your computer with battery power when ac power is not available.

Checking the battery status

The battery icon in the Windows notification area displays the percentage of battery power remaining. Different computer components consume power at different rates. The more you use the power-intensive components, the faster you consume battery power. Because each computer user has different habits and needs, it is difficult to predict how long a battery charge will last. There are two main factors:

- How much energy is stored in the battery when you begin to work.
- The way you use your computer:
  - How often you access the hard disk drive?
  - How bright you make the computer display?

Using the ac power adapter

When you use ac power, the battery charges automatically.

The ac power adapter that comes with your computer has two basic components:

- The transformer pack that converts ac power for use with the computer.
- The power cord that plugs into the ac outlet and into the transformer pack.

Attention: Using an improper power cord could cause severe damage to the computer.

Connecting the ac power adapter

To connect the ac power adapter, do the following:

1. Plug the power cord into an electrical outlet.
2. Connect the power cord to the transformer pack.
3. Connect the ac power adapter to the ac power connector of the computer.

Tips on using the ac power adapter

Observe the following guidelines when using the ac power adapter:

- When the ac power adapter is not in use, disconnect it from the electrical outlet.
- Do not bind the power cord tightly around the ac power adapter transformer pack when it is connected to the transformer.
- Before you charge the battery, make sure that its temperature is at least 10°C (50°F).
- You can charge the battery when the ac power adapter is connected to the computer and the battery is installed. Charge it in any of the following conditions:
  - When you purchase a new battery
  - If the battery meter at the bottom of your display indicates a low batter charge level
  - If the battery has not been used for a long time

Charging the battery

It is recommended that you charge the battery or replace it with a charged battery on any of the following conditions:

- The percentage of battery power remaining is low.
- The power alarm alerts you that the remaining power is low.

Maximizing the battery life

To maximize the battery life, do the following:

- Use the battery until the charge is depleted; that is, use the battery until the battery status indicator starts blinking orange.
- Fully recharge the battery before using it. The battery is fully charged if the battery indicator shows solid green when the ac power adapter is plugged in.
- Always use power management features such as power modes, sleep, and hibernation.

Power-saving modes

There are several modes that you can use at any time to conserve power. This topic introduces each mode and gives tips on the effective use of the battery power.

Sleep mode

If you are not going to use the computer for a short time, put the computer into sleep mode. When the computer is in sleep mode, you can wake it up to resume use and bypass the startup process.

To put the computer into sleep mode, do the following:

- **Windows 7:**
  1. Click **Start**.
  2. Click the triangle mark next to the **Shut down** icon, and then select **Sleep**.
- **Windows 8.1:**
  1. Move the cursor to the top-right or bottom-right corner of the screen to display the charms.
  2. Click **Settings**.
  3. Select **Sleep** from the **Power** menu options.
- Press Fn + F1.

  Attention: Wait until the power indicator starts blinking (indicating that the computer is in sleep state) before you move the computer. Moving the computer while the hard disk drive is spinning can damage the hard disk drive, causing loss of data.

To wake up the computer, do one of the following:

- Press the power button.
- Press the Fn key on the keyboard.

Hibernation mode

By using this mode, you can turn off the computer completely without saving files or exiting from any program that is running. When the computer enters hibernation mode, all open programs, folders, and files are saved to the hard disk drive, and then the computer turns off.

To put the computer into hibernation mode, do the following:

- **Windows 7:**
  1. Click **Start**.
  2. Click the triangle mark next to the **Shut down** icon, and then select **Hibernation**.
- **Windows 8.1:**
  1. Right-click the start button on the taskbar to enter **Control panel**, and then click **Hardware and sound** → **Change what the power buttons do**.
  2. Click **Change settings that are currently unavailable**, and then tick **Hibernate** under **Shutdown settings**.
  3. Move the cursor to the top-right or bottom-right corner of the screen to display the charms.
  4. Click **Settings**.
  5. Select **Hibernation** from the **Power** menu options.

Shutting down the computer

If you are not going to use the computer for a day or two, shut it down.

To shut down the computer, do the following:

- **Windows 7:**

  Click **Start** → **Shut down**.

- **Windows 8.1:**
  1. Move the cursor to the top-right or bottom-right corner of the screen to display the charms.
  2. Click **Settings**.
  3. Select **Shut down** from the **Power** menu options.

Handling the battery

This system does not support batteries that are not genuine Lenovo-made or authorized. The system will continue to boot, but might not charge unauthorized batteries.

Attention: Lenovo has no responsibility for the performance or safety of unauthorized batteries, and provides no warranties for failures or damage arising out of their use.

DANGER

Do not attempt to disassemble or modify the battery pack.

Attempting to do so can cause an explosion, or liquid leakage from the battery pack.

A battery pack other than the one specified by Lenovo, or a disassembled or modified battery pack is not covered by the warranty.

DANGER

If the rechargeable battery pack is incorrectly replaced, there is danger of an explosion. The battery pack contains a small amount of harmful substances. To avoid possible injury:

- **Replace only with a battery of the type recommended by Lenovo.**
- **Keep the battery pack away from fire.**
- **Do not expose it to excessive heat.**
- **Do not expose it to water or rain.**
- **Do not short-circuit it.**
- **Store it in a cool dry place.**
- **Keep it away from children.**

The battery pack is a consumable supply. If your battery begins to discharge too quickly, replace the battery pack with a new one of the type recommended by Lenovo. For more information about replacing the battery pack, contact your Customer Support Center.

DANGER

Do not drop, crush, puncture, or subject to strong forces. Battery abuse or mishandling can cause the battery to overheat, which can cause gasses or flame to “vent” from the battery pack or coin cell. If your battery is damaged, or if you notice any discharge from your battery or the buildup of foreign materials on the battery leads, stop using the battery and obtain a replacement from the battery manufacturer.

DANGER

Only recharge the battery pack strictly according to instructions included in the product documentation.

DANGER

Do not put the battery pack in trash that is disposed of in landfills. When disposing of the battery, comply with local ordinances or regulations and your company's safety standards.

DANGER

There is a danger of an explosion if the backup battery is incorrectly placed. The lithium battery contains lithium and can explode if it is not properly handled, or disposed of. Replace only with a battery of the same type. To avoid possible injury or death, do not: (1) throw or immerse into water, (2) allow it to heat to more than 100°C (212°F), or (3) attempt to repair or disassemble it. Dispose of it as required by local ordinances or regulations and your company's safety standards.

Connecting to the network

Your computer has one or more network cards for connecting to the Internet.

The Access Connections program or the Lenovo Settings program preinstalled on your computer is a connectivity assistant program for creating and managing location profiles. Each location profile stores all the network and Internet configuration settings needed for connecting to a network infrastructure from a specific location such as a home or an office.

For more information, refer to the help information system of the program.

Ethernet connection

Your computer has one Ethernet connector. Using the connector and a wired cable, you can connect to your network or a broadband connection, such as digital subscriber line (DSL) or cable television (CATV). This connection enables you to do 1 Gbps half-duplex or full-duplex data transmission.

Wireless connection

Wireless communication is the transfer of data without the use of cables but by means of radio waves only.

Wireless LAN

A wireless LAN covers a relatively small geographic area, such as an office building or a house. Devices based on the 802.11 standards can connect to this network.

Your computer comes with a build-in wireless network card and a configuration utility to help you make wireless connections and monitor the status of your connection, so that you can stay connected to your network while you are in the office, in a meeting room, or at home, with no need for a wired connection.

Establishing a wireless connection

To establish a wireless connection, do the following:

1. Press Fn + F5 to turn on the wireless feature.
2. Click the wireless network connection status icon in the Windows notification area. A list of available wireless networks is displayed.
3. Double-click a network to connect to it. Provide required information if needed.

To connect to different wireless networks in different locations, use the Access Connections program or the Lenovo Settings program to manage multiple network profiles so that the computer connects to an available network automatically when the location changes.

Using a flash media card

Your computer has one media card reader slot. The media card reader slot supports the following types of cards:

- Secure Digital (SD) card
- Secure Digital High Capacity (SDHC) card
- SD eXtended Capacity (SDXC) card
- MultiMediaCard (MMC)

Attention: While transferring data to or from a flash media card, such as an SD card, do not put your computer into sleep or hibernation mode before the data transfer is complete; otherwise, your data could become damaged.

Inserting a flash media card

Attention: Before you start installing any of the following cards, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

To insert a flash media card, do the following:

1. Ensure that the card is correctly oriented.
2. Insert the card firmly into the 4-in-1 media card reader slot. The card might stop before it is completely installed into the slot.

Removing a flash media card

To remove a flash media card, do the following:

1. Push the flash media card until you hear a click.
2. Gently pull the flash media card out of the memory card slot.

Note: If you do not remove the card from your computer after you eject the card from the Windows operating system, the card can no longer be accessed. To access the card, you must remove it once, then insert it again.

Chapter 3. You and your computer

This chapter provides information about accessibility and comfort.

Accessibility and comfort

Good ergonomic practice is important to get the most from your personal computer and to avoid discomfort. Arrange your workplace and the equipment you use to suit your individual needs and the kind of work that you perform. In addition, use healthy work habits to maximize your performance and comfort while using your computer.

The following topics provide information about arranging your work area, setting up your computer equipment, and establishing healthy work habits.

Lenovo is committed to providing the latest information and technology to our customers with disabilities. Refer to our accessibility information which outlines our efforts in this area.

Ergonomic information

Working in the virtual office might mean adapting to frequent changes in your environment. Following some simple rules will make things easier and bring you the maximum benefits of your computer. Keeping in mind such basics as good lighting and proper seating, for example, can help you improve your performance and achieve greater comfort.

This example shows someone in a conventional setting. Even when not in such a setting, you can follow many of these tips. Develop good habits, and they will serve you well.

General posture: Make minor modifications in your working posture to deter the onset of discomfort caused by long periods of working in the same position. Frequent, short breaks from your work also help to prevent minor discomfort associated with your working posture.

Display: Position the display to maintain a comfortable viewing distance of 510-760 mm (20-30 inch). Avoid glare or reflections on the display from overhead lighting or outside sources of light. Keep the display screen clean and set the brightness to levels that enable you to see the screen clearly. Press Fn + up/down arrow to adjust display brightness.

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Head position: Keep your head and neck in a comfortable and neutral (vertical, or upright) position.

Chair: Use a chair that gives you good back support and seat height adjustment. Use chair adjustments to best suit your desired posture.

Arm and hand position: If available, use chair arm rests or an area on your working surface to provide weight support for your arms. Keep your forearms, wrists, and hands in a relaxed and neutral (horizontal) position. Type with a soft touch without pounding the keys.

Leg position: Keep your thighs parallel to the floor and your feet flat on the floor or on a footrest.

What if you are traveling?

It might not be possible to observe the best ergonomic practices when you are using your computer while on the move or in a casual setting. Regardless of the setting, try to observe as many of the tips as possible. Sitting properly and using adequate lighting, for example, will help you maintain desirable levels of comfort and performance.

Questions about vision?

The visual display screens of Lenovo notebook computers are designed to meet the highest standards and to provide you with clear, crisp images and large, bright displays that are easy to see, yet easy on the eyes. Of course, any concentrated and sustained visual activity can be tiring. If you have questions on eye fatigue or visual discomfort, consult a vision care specialist for advice.

Chapter 4. Security

This chapter provides information about protecting your computer from theft and unauthorized use.

Attaching a mechanical lock

You can attach a mechanical lock to your computer to prevent it from being removed without your permission.

Attach a mechanical lock to the keyhole of the computer; then secure the chain on the lock to a stationary object. Refer to the instructions shipped with the mechanical lock.

Note: You are responsible for evaluating, selecting, and implementing the locking devices and security features. Lenovo makes no comments, judgments, or warranties about the function, quality, or performance of locking devices and security features.

Using passwords

Using passwords helps prevent your computer from being used by others. Once you set a password and enable it, a prompt appears on the screen each time you power on the computer. Enter your password at the prompt. The computer cannot be used unless you enter the correct password.

Note: This password can be a combination of one to seven alphanumeric characters.

For more information about how to set the password, refer to the online help information system on the right screen of the BIOS program.

Note: To enter the BIOS program, press F1 when the Lenovo logo is displayed on the screen while the computer is starting up.

Using a fingerprint reader

With the fingerprint reader, in addition to registering fingerprint information and using it as a password for Windows operating system or Web site logon, you also can launch applications quickly and encrypt private data with your fingerprint to secure your computer. For more information, refer to the online help information system of the fingerprint software.

Using the Active Protection System program

Some Lenovo models have the Active Protection System program preinstalled.

As a reliable safeguard, the Active Protection System program reduces the possibility of shock damage to the hard disk drive that may result in data loss. When your computer is subject to shock or excessive vibration, the shock sensor in the computer detects the condition and stops the hard disk drive until the environment is stable again.

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Chapter 5. Recovery overview

This chapter provides information about the recovery solutions for your computer.

- "Recovery solutions on the Windows 7 operating system" on page 22
- "Recovery solutions on the Windows 8.1 operating system" on page 23

Recovery solutions on the Windows 7 operating system

It is important to create a rescue medium and a set of recovery media as early as possible and store them in a safe place for future use.

Recovery programs installed on the Windows 7 operating system

Your computer comes with the following recovery programs installed on the Windows 7 operating system:

- Product Recovery

  To launch the program, do the following:

  Start the computer. When the Lenovo logo is displayed, press F11 and then follow the on-screen instructions.

- OneKey® Recovery Pro

  To launch the program, do the following:

  Click **Start** → **Lenovo Solution Center**. Then follow the on-screen instructions.

The recovery programs enable you to do the following:

- Creating and using recovery media

  You can use recovery media to restore the hard disk drive to the factory default settings. Recovery media are useful if you transfer the computer to another area, sell the computer, recycle the computer, or put the computer in an operational state after all other methods of recovery have failed. As a precautionary measure, it is important to create recovery media as early as possible.

- Performing backup and recovery operations

  The OneKey Recovery Pro program enables you to back up all your hard disk drive contents including the operating system, data files, software programs, and personal settings. You can designate where the OneKey Recovery Pro program stores the backup.

- Using the OneKey Recovery Pro workspace

  The OneKey Recovery Pro workspace resides in a protected, hidden area of your hard disk drive that operates independently from the Windows operating system. This enables you to perform recovery operations even if you cannot start the Windows operating system. You can perform the following recovery operations from the OneKey Recovery Pro workspace.

- Creating and using a rescue medium

  With a rescue medium, such as a disc or a USB hard disk drive, you can recover the computer from failures that prevent you from gaining access to the OneKey Recovery Pro workspace on your hard disk drive.

Attention: The recovery process is irreversible. Ensure that you have backed up your critical data before using the recovery feature.

For more information, refer to the help information system of the programs.

Reinstalling the Windows 7 operating system

Attention: The recovery process is irreversible. Ensure that you have backed up your critical data before using the recovery feature.

To reinstall the Windows 7 operating system, do the following:

1. Turn off the computer.
2. Start the computer. When the Lenovo logo is displayed, press F11 and then follow the on-screen instructions to open the Product Recovery program.
3. Follow the on-screen instructions to reinstall the operating system.

Note: You can choose to restore your system partition to the original factory state or to a previously generated backup.

Solving recovery problems

If you are unable to access the OneKey Recovery Pro workspace or the Windows environment, do either of the following:

- Use a rescue medium to start the OneKey Recovery Pro workspace.
- Use recovery media if all other methods of recovery have failed and you need to restore the hard disk drive to the factory default settings.

Note: If you are unable to access the OneKey Recovery Pro workspace or the Windows environment from a rescue or recovery medium, you might not have the rescue device (an internal hard disk drive, a disc, a USB hard disk drive, or other external devices) set as the first boot device in the startup device sequence. You must first make sure that your rescue device is set as the first boot device in the startup device sequence in the BIOS program. Go to the **Startup** → **Boot** menu to temporarily or permanently change the startup device sequence.

Recovery solutions on the Windows 8.1 operating system

Recovery programs installed on the Windows 8.1 operating system

Your computer comes with the Windows recovery program installed on the Windows 8.1 operating system.

To launch the program, do the following:

1. Turn off the computer.
2. Start the computer. When the Lenovo logo is displayed, press F11 and then follow the on-screen instructions to open the Product Recovery program.
3. Follow the on-screen instructions to reinstall the operating system.

Attention: The recovery process is irreversible. Ensure that you have backed up your critical data before using the recovery feature.

For more information, refer to the help information system of the programs.

The recovery program enables you to do the following:

- Refreshing your computer

  This program enables you to restore your computer to the factory default settings while preserving the data on the hard disk drive.

  To refresh your computer, do the following:

  1. Move the cursor to the top-right or bottom-right corner of the screen to display the charms. Then click **Settings** → **Change PC settings** → **Update and recovery** → **Recovery**.

2. In the **Refresh your PC without affecting your files** section, click **Get started**. Then follow the on-screen instructions to refresh your computer.

- Resetting your computer

  When you use the recovery program to reset your computer, all the data stored on the hard disk drive will be deleted and the computer will be restored to the factory default settings.

  Attention: To avoid data loss, back up your data in advance.

  To reset your computer, do the following:

  1. Move the cursor to the top-right or bottom-right corner of the screen to display the charms. Then click **Settings** → **Change PC settings** → **Update and recovery** → **Recovery**.
  2. In the **Remove everything and reinstall Windows** section, click **Get started**. Then follow the on-screen instructions to refresh your computer.

Note: After restoring your computer to the factory default settings, you might need to reinstall the drivers for some devices.

- Advanced startup options

  Advanced startup options enable you to start up from an external drive or disc, change your computer settings, change the startup settings of the Windows operating system, or restore the Windows operating system from a system image.

  To use the advanced startup option, do the following:

  1. Move the cursor to the top-right or bottom-right corner of the screen to display the charms. Then click **Settings** → **Change PC settings** → **Update and recovery** → **Recovery**.
  2. In the **Advanced startup** section, click **Restart now** → **Troubleshoot** → **Advanced options**. Then follow the on-screen instructions to change the settings as desired.

For more information about the recovery solutions provided on your computer, refer to the online help information system of the Windows 8.1 operating system.

Chapter 6. Preventing problems

An important part of owning a Lenovo notebook computer is maintenance. With proper care, you can avoid common problems. The chapter provides information that can help you keep your computer running smoothly.

- "General tips for preventing problems" on page 25
- "Taking care of your computer" on page 25

General tips for preventing problems

This topic provides general tips for you to prevent problems when using your computer.

1. Check the capacity of your hard disk drive from time to time. If the hard disk drive gets full, the operating system will slow down and might produce errors.
2. Empty your recycle bin on a regular basis.
3. To free up disk space, uninstall unused programs.
4. Clean out your Inbox, Sent, and Trash folders from your e-mail client program.
5. Back up your data at least once a week. If critical data is present, it is recommended that you perform a daily backup operation. Lenovo has many backup options available for your computer. CD-RW drives and CD-RW/DVD drives are available for most computers and can be installed easily.
6. Schedule system restore operations to take a system snapshot periodically.

   Note: Always take a system snapshot before installing new drivers, updating software, or installing new software.
7. Update device drivers and the BIOS when needed.
8. Profile your machine at http://www.lenovo.com/support to keep up to date with current drivers and revisions.
9. Keep up to date for device drivers on other non-Lenovo hardware. You might want to read the device driver information release notes before updating for compatibility or known issues.
10. Keep a log book. Entries might include major hardware or software changes, driver updates, minor issues you have experienced, and how you resolved the minor issues.
11. If required, you can find your country's Customer Support Center at http://www.lenovo.com/support.

    Note: When calling the Customer Support Center, ensure that you have your machine model type, serial number, and the computer in front of you. Also, if the computer is producing error codes, it is helpful to have the error screen on or the message written down.
12. If you want to get the latest software source for Microsoft® Windows product updates, go to http://www.microsoft.com. Lenovo provides technical assistance with installation of, or questions related to, Service Packs for your Lenovo-preinstalled Windows products.

Taking care of your computer

Although your computer is designed to function reliably in normal work environments, you need to use common sense in handling it. By following these important tips, you will get the most use and enjoyment out of your computer.

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Be careful about where and how you work

- Do not eat or smoke over your keyboard. Particles that fall into your keyboard can cause damage.
- Store packing materials safely out of the reach of children to prevent the risk of suffocation from plastic bags.
- Keep the computer more than 13 cm (5 inches) away from magnets, activated cellular phones, electrical appliances, or speakers.
- Avoid subjecting your computer to extreme temperatures (below 5°C/41°F or above 35°C/95°F).
- Some appliances, such as certain portable desktop fans or air purifiers, produce negative ions. If a computer is close to such an appliance, and is exposed for an extended time to air containing negative ions, it might become electrostatically charged. Such a charge might be discharged through your hands when you touch the keyboard or other parts of the computer, or through connectors on I/O devices connected to it. Even though this kind of electrostatic discharge (ESD) is the opposite of a discharge from your body or clothing to the computer, it poses the same risk of a computer malfunction.

Your computer is designed and manufactured to minimize any effects of electrostatic charge. An electrostatic charge above a certain limit, however, increases the risk of ESD. Therefore, when using the computer close to an appliance that produces negative ions, give special attention to the following:

- Avoid directly exposing your computer to the air from an appliance that produces negative ions.
- Keep your computer and peripherals as far as possible from such an appliance.
- Wherever possible, ground your computer to facilitate safe electrostatic discharge.

Note: Not all such appliances cause a significant electrostatic charge.

Be gentle with your computer

- Avoid placing any objects (including paper) between the display and the keyboard or the palm rest.
- Do not open the display beyond 130 degrees, as this might damage the computer hinge.
- Do not turn your computer over while the ac power adapter is plugged in. This could break the adapter plug.

Carry your computer properly

- Before moving your computer, be sure to remove any media, turn off attached devices, and disconnect cords and cables.
- Before moving your computer, ensure that it is in sleep or hibernation mode, or turned off. This prevents damage to the hard disk drive and avoids data loss.
- When picking up your open computer, hold it by the bottom. Do not pick up or hold your computer by the display.
- Use a quality carrying case that provides adequate cushion and protection. Do not pack your computer in a tightly packed suitcase or bag.

For outdoor use

- Back up your critical data before you take your computer outdoors.
- Ensure that the battery is fully charged.
- Be sure to turn off the power and close the LCD when not in use.
- When you leave the computer in your car, place it on the back seat to avoid being insolated.
- Carry the ac power adapter and power cord with the computer.

Handle storage media and drives properly

- If your computer comes with an optical drive, do not touch the surface of a disc or the lens on the tray.
- Wait until you hear the CD or DVD click into the center pivot of the drive before closing the tray.

- When installing the hard disk drives or optical drives, follow the instructions shipped with your hardware, and apply pressure only where needed on the device.
- Turn off your computer if you are replacing the hard disk drive.
- Store your external and removable hard disk drives or optical drives in the appropriate containers or packaging when not in use.
- Before you install any of the following devices, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the device.
  - Memory cards, such as SD cards, Memory Stick cards, MultiMediaCards, and Memory Stick Pro cards
  - Memory modules

  Note: Not all devices listed are included in your computer.
- When transferring data to or from a flash media card, such as an SD card, do not put your computer in sleep or hibernation mode before the data transfer is complete. Otherwise, data might be damaged.

Clean the computer cover

Occasionally clean your computer cover by doing the following:

1. Prepare a mixture of a gentle kitchen-use detergent (one that does not contain abrasive powder or strong chemicals such as acid or alkaline). Use 5 parts water to 1 part detergent.
2. Absorb the diluted detergent into a sponge.
3. Squeeze excess liquid from the sponge.
4. Wipe the cover with the sponge, using a circular motion and taking care not to let any excess liquid drip.
5. Wipe the cover to remove the detergent.
6. Rinse the sponge with clean running water.
7. Wipe the cover with the clean sponge.
8. Wipe the cover again with a dry, soft, lint-free cloth.
9. Wait for the cover to dry completely and remove any fibers from the cloth.

Note: Before cleaning the computer cover, ensure that you have turned off the computer and disconnected the power cord.

Clean the computer keyboard

To clean the computer keyboard, do the following:

1. Apply some isopropyl rubbing alcohol to a soft, dust-free cloth.
2. Wipe each keytop surface with the cloth. Wipe the keys one by one; if you wipe several keys at a time, the cloth might hook onto an adjacent key and possibly damage it. Ensure that no liquid drips onto or between the keys.
3. Allow the keyboard to dry.
4. To remove any crumbs and dust from beneath the keys, use a camera blower with a brush or cool air from a hair drier.

Note: Avoid spraying cleaner directly onto the display or the keyboard.

Clean the computer display

To clean the computer display, do the following:

1. Gently wipe the display with a dry, soft, lint-free cloth. If you see a scratchlike mark on the display, it might be a stain transferred from the keyboard when the cover was pressed from the outside.
2. Wipe or dust the stain gently with a soft, dry cloth.
3. If the stain remains, moisten a soft, lint-free cloth with water or a 50-50 mixture of isopropyl alcohol and water that does not contain impurities.
4. Wring out as much of the liquid as you can.

5. Wipe the display again; do not let any liquid drip into the computer.
6. Be sure to dry the display before closing it.

Keep the following in mind:

- Only an authorized Lenovo repair technician should disassemble and repair your computer.
- Do not modify or tape the latches to keep the display open or closed.

Chapter 7. Troubleshooting computer problems

This chapter provides information on what to do if you experience a problem with your computer.

Troubleshooting

This topic categorizes common computer problems and provides troubleshooting hints and tips.

Battery and power problems

This topic provides instructions on troubleshooting battery and power problems.

Print these instructions first.

The battery pack cannot be fully charged in the standard charge time when the computer is turned off.

The battery pack might be over-discharged. Do the following:

1. Ensure that the computer is turned off.
2. Ensure that the over-discharged battery pack is in the computer.
3. Connect the ac power adapter to the computer and let it charge.

Note: If a quick charger is available, use it to charge the over-discharged battery pack. If the battery pack still cannot be fully charged in 24 hours, use a new battery pack.

The computer turns off before the battery status indicator shows empty, or the computer operates after the battery status indicator shows empty.

Discharge and recharge the battery pack.

The operating time of a fully charged battery pack is short.

Discharge and recharge the battery pack. If the problem persists, use a new battery pack.

The computer does not operate with a fully charged battery pack.

The surge protector in the battery pack might be active. Turn off the computer for one minute to disable the surge protector; then turn on the computer again.

The battery pack cannot be charged.

You cannot charge the battery when it is too hot. If the battery is hot, remove it from the computer and let it cool to room temperature. After it cools, reinstall it and recharge the battery. If the problem persists, contact your local Service Provider.

The ac power adapter is connected to both the computer and the working electrical outlet, but the ac power adapter icon is not displayed in the Windows notification area, and the ac power indicator does not light up.

Do the following:

1. Turn off the computer, and then disconnect the ac power adapter and remove the main battery.
2. Reinstall the battery and reconnect the ac power adapter, then turn on the computer. Ensure that the ac power adapter is correctly and securely connected.
3. Turn on the computer.

If the problem persists, contact your local Service Provider.

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A startup problem

Print these instructions first.

The Windows operating system does not start.

Use the recovery program provided on your computer to identify and troubleshoot the problem. For details, refer to Chapter 5 “Recovery overview” on page 22.

Sleep and hibernation problems

Print these instructions first.

A critical low-battery error occurs, and the computer immediately turns off.

This indicates that the battery power is getting too low. Connect the ac power adapter to your computer and plug the other end of the ac power adapter into an electrical outlet. You also can solve the problem by replacing the battery with a charged one.

The computer enters sleep mode immediately after the power-on self-test.

Ensure that:

- The battery is charged.
- The operating temperature is within the acceptable range. Refer to Chapter 6 “Preventing problems” on page 25.

Computer screen problems

Print these instructions first.

The screen is blank.

This indicates that the battery power is getting too low. Connect the ac power adapter to your computer and plug the other end of the ac power adapter into an electrical outlet. You also can solve the problem by replacing the battery with a charged one.

If the problem persists, do the following:

- If you are using the ac power adapter or using the battery, and the battery status indicator is on, press Fn + up arrow to increase the screen brightness.
- If the power indicator is blinking, press the power button to resume the computer from sleep mode.
- Check if the LCD backlight feature is enabled.
- Check if the display device driver is installed correctly.
- Check if the screen resolution and color quality are correctly set.
- Check if the monitor type is correct.

The screen is unreadable or distorted.

Ensure that:

- The display device driver is installed correctly.
- The screen resolution and color quality are correctly set.
- The monitor type is correct.

Incorrect characters are displayed on the screen.

Ensure that the operating system and programs are correctly installed on your computer. If the problem persists, contact your local Service Provider.

When I turn on the computer, nothing is displayed on the screen and the computer does not beep while starting up.

Ensure that:

- The battery is installed correctly.
- The ac power adapter is connected to the computer and the power cord is plugged into a working electrical outlet.
- Press the power button again to ensure that the computer is turned on.

If the problem persists, contact your local Service Provider.

When I turn on the computer, only a white cursor is displayed on a blank screen.

Restore back-up files, or restore the entire contents of your hard disk drive to the original factory contents using the recovery programs provided on your computer.

If the problem persists, contact your local Service Provider.

My screen goes blank while the computer is on.

Your screen saver or power management might be enabled. Do one of the following to exit from the screen saver or to resume from sleep or hibernation mode:

- Touch the touch pad.
- Press the Fn key on the keyboard.
- Press the power button.
- Press Fn + F2 to check whether the LCD screen has been turned off.

Problems with drives and other storage devices

This topic provides instructions on troubleshooting problems with drives and other storage devices.

Hard disk drive problems

Print these instructions first.

The hard disk drive makes a rattling noise intermittently.

The rattling noise might be heard when:

- The hard disk drive begins or finishes getting access to data.
- You carry the hard disk drive.
- You carry your computer.

This is a normal characteristic of a hard disk drive and can be ignored.

The hard disk drive does not work.

Enter the BIOS program. Select **Startup** → **Boot**. Ensure that the hard disk drive is on the **Boot priority order** list. If it is on the **Excluded from boot order** list, this indicates that it has been disabled. Select the entry for the hard disk drive on the **Excluded from boot order** list and press Shift+1 to move it to the **Boot priority order** list.

Optical drive problems

Print these instructions first.

You hear a noise from the drive when the CD, DVD, or CD-RW disc is spinning.

If the disc is not correctly loaded on the center pivot of the drive, it might rub against the drive cover and make a noise. Ensure that the disc is loaded correctly in the drive.

The drive tray does not open even if you press the eject button.

When your computer is not turned on, pressing the eject button does not cause the drive tray to open.

Ensure that the computer is turned on and that the drive connector is firmly connected to the computer.

If the problem persists, you can manually open the drive tray by inserting the end of a straightened paper clip into the emergency eject hole when the computer is running.

OneKey Recovery Pro program problems

Print these instructions first.

Backup cannot be made.

Ensure that:

- You are using a Windows operating system.
- There is enough space on your hard disk drive to store the backup data.

Fail to restore the system partition to the factory default state.

The cause might be that the partition properties such as the size or the capacity of your system has been modified.

A password problem

Print these instructions first.

I forgot my password.

Do any of the following:

- If you forget your user password, take your computer to a Lenovo authorized service technician or a marketing representative to have the password changed.
- If you forget your hard disk drive password, you have to replace the hard disk drive by contacting a Lenovo authorized service technician or a marketing representative. Proof of purchase is required, and a fee will be charged for the parts and service.
- If you forget your supervisor password, a Lenovo authorized service technician cannot reset your password. You have to replace the system board by contacting a Lenovo authorized service technician or a marketing representative. Proof of purchase is required, and a fee will be charged for the parts and service.

A sound problem

Print these instructions first.

No sound can be heard from the speaker even when the volume is turned up.

Ensure that:

- The mute function is off.
- The headphone jack is not used.
- Speakers are selected as the playback device.

Other problems

Print these instructions first.

Your computer does not respond.

Do either of the following:

- Turn off your computer by pressing and holding the power button for four seconds or more. If the computer still does not respond, remove the ac power adapter and the battery.
- Your computer might lock when it enters sleep mode during a communication operation. Disable the sleep timer when you are working on the network.

The computer does not start from a device you want.

Do the following:

1. Enter the BIOS program.
2. Select **Startup** → **Boot**. Ensure that the device is included in the **Boot Priority Order** list.
3. Press F12.
4. When the Lenovo logo is displayed on the screen, select the device that you want the computer to start from.

The connected external device does not work.

Ensure that:

- The external device is connected by USB cables while the computer is turned on; otherwise, your computer might be damaged.
- When you are using a high-power-consumption external device such as an external USB optical drive, ensure that you use the power cable that comes with the external device. Otherwise, the device might not be recognized, or the computer might be turned off.

For more technical support information, go to:
http://www.lenovo.com/support

Appendix A. Regulatory information

Wireless related information

Wireless interoperability

The Wireless LAN PCI Express Mini Card is designed to be interoperable with any wireless LAN product that is based on DSSS, CCK, and/or OFDM radio technology, and is compliant to:

- The 802.11b/g Standard, 802.11a/b/g or 802.11n draft 2.0 on Wireless LANs, as defined and approved by the Institute of Electrical and Electronics Engineers.
- The WiFi certification as defined by the Wi-Fi Alliance.

Your Bluetooth card is compliant to Bluetooth Specification 4.0 as defined by the Bluetooth Special Interest Group SIG, it supports the following profiles:

- Advanced Audio Distribution Profile (A2DP)
- Audio/Video Control Transport Protocol (AVCTP)
- Audio/Video Distribution Transport Protocol (AVDTP)
- A/V Remote Control Profile (AVRCP)
- Basic Imaging Profile (BIP)
- Basic Printing Profile (BPP)
- Dial-Up Networking Profile (DUN)
- File Transfer Profile (FTP)
- Generic Access Profile (GAP)
- Generic A/V Distribution Profile (GAVDP)
- Hardcopy Cable Replacement Profile (HCRP)
- Headset Profile (HSP)
- Hands-Free Profile (HFP)
- Human Interface Device Profile (HID)
- Message Access Profile (MAP)
- Object Exchange Protocol (OBEX)
- Object Push Profile (OPP)
- Personal Area Networking Profile (PAN)
- Phone Book Access Profile (PBAP)
- Service Discovery Protocol (SDP)
- Synchronization Profile (SYNC)
- Video Distribution Profile (VDP)
- Generic Attribute Profile (GATT)
- Proximity Profile
- Find Me Profile
- Immediate Alert Profile
- Battery Status Profile

Usage environment and your health

Integrated wireless cards emit radio frequency electromagnetic energy like other radio devices. However, the level of energy emitted is far much less than the electromagnetic energy emitted by wireless devices like for example mobile phones.

Due to the fact that integrated wireless cards operate within the guidelines found in radio frequency safety standards and recommendations, Lenovo believes they are safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature.

In some situation or environment, the use of integrated wireless cards may be restricted by the proprietor of the building or responsible representatives of the organization. These situations and areas may for example include:

- Using the integrated wireless cards on board of airplanes, in hospitals or near petrol stations, blasting areas (with electro-explosive devices), medical implants or body-worn electronic medical devices, such as pace makers.
- In any other environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization (such as airport or hospital), you are encouraged to ask for authorization to use integrated wireless cards prior to turning on the computer.

Korean Class B compliance statement

B급 기기(가정용 방송통신기자재)
이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다

Lenovo product service information for Taiwan

台灣 Lenovo 產品服務資訊如下：
荷蘭商聯想股份有限公司台灣分公司
台北市內湖區堤頂大道二段89號5樓
服務電話：0800-000-702

ENERGY STAR model information

ENERGY STAR® is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy aimed at saving money and protecting the environment through energy efficient products and practices.

Lenovo is proud to offer our customers products with the ENERGY STAR qualified designation. Lenovo computers of the following machine type(s), if the ENERGY STAR mark is affixed, have been designed and tested to conform to the ENERGY STAR program requirements for computers.

80GY

20437

By using ENERGY STAR qualified products and taking advantage of the power-management features of your computer, you can help reduce the consumption of electricity. Reduced electrical consumption can contribute to potential financial savings, a cleaner environment, and the reduction of greenhouse gas emissions.

For more information about ENERGY STAR, go to:
http://www.energystar.gov

Lenovo encourages you to make efficient use of energy an integral part of your day-to-day operations. To help in this endeavor, Lenovo has preset the following power-management features to take effect when your computer has been inactive for a specified length of time:

Table 1. ENERGY STAR power-management features

Power plan: Energy Saver (settings when plugged into ac power)

• Turn off the display: After 10 minutes
• Put the computer to sleep: After 20 minutes
• Advanced power settings:
  – Turn off hard disk drives: After 15 minutes
  – Hibernate: Never

To awaken your computer from Sleep mode, press the Fn key on your keyboard. For more information about these settings, see your Windows Help and Support information system.

Appendix B. WEEE and recycling statements

Lenovo encourages owners of information technology equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. Information on product recycling offerings can be found on Lenovo's Internet site at http://www.lenovo.com/recycling.

China WEEE statement

《废弃电器电子产品回收处理管理条例》提示性说明

联想鼓励拥有联想品牌产品的用户当不再需要此类产品时，遵守国家废弃电器电子产品回收处理相关法律法规，将其交给当地具有国家认可的回收处理资质的厂商进行回收处理。更多回收服务信息，请点击进入http://support.lenovo.com.cn/activity/551.htm

Taiwan Battery recycling information

廢電池請回收

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Appendix C. Restriction of Hazardous Substances Directive (RoHS)

China RoHS

产品中有毒有害物质或元素的名称及含量

部件名称	有毒有害物质或元素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬 (Cr(VI))	多溴连苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组件*	X	O	O	O	O	O
硬盘	X	O	O	O	O	O
光驱	X	O	O	O	O	O
内存	X	O	O	O	O	O
电脑I/O 附件	X	O	O	O	O	O
电源	X	O	O	O	O	O
键盘	X	O	O	O	O	O
鼠标	X	O	O	O	O	O
机箱/ 附件	X	O	O	O	O	O

○:表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006
标准规定的限量要求以下
×:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006
标准规定的限量要求
表中标有"×"的所有部件都符合欧盟RoHS 法规.

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根据型号的不同，可能不会含有以上的所有部件，请以实际购买机型为准

在中华人民共和国境内销售的电子信息产品必须标识此标志，标志内的数字代表在正常使用状态下的产品的环保使用期限

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Index

A

Active Protection System 21

B

built-in microphone 2

C

Camera 1, 11
Charging the battery 14

F

fingerprint reader 21
Function key combinations 10

P

password 21

S

Security 21
Special keys 10

T

Touch pad 2

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