



ideacentre 300 Series Hardware Maintenance Manual

Machine Types: 90DN [300-20IBR/Energy Star] and 90DA
[300-20ISH/Energy Star]



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Hardware Maintenance Manual

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Chapter 1. About this manual

This manual contains service and reference information for Lenovo ideacentre 300 series desktop 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 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.

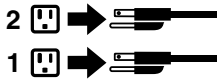


		
≥18 kg(37 lbs)	≥32 kg(70.5 lbs)	≥55 kg(121.2 lbs)

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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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, and 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, and then press the **Enter** key.
4. Re-type the password to confirm, and 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, and then press **Enter** key.
4. Type the new password, and 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, and then press the **Enter** key.
4. Type the new password, and 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:	
Serial Port Setup	Select this option to enable or disable Serial Port (com).
USB Functions	Select whether to enable or disable USB (Universal Serial Bus) functions. If it is disabled, the USB keyboard and/or USB mouse may be not able to be used without device driver support.
ATA Drive Setup	Select IDE, ACHI mode or disable SATA controller. 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.
Video Setup	To configure video related functions. This option allows you to configure system's initiate graphic adapter from either IGD (Integrated Graphics Device) or PEG (PCI Express Graphics). Keep on the IGD enabled based on the setup options.

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 LAN 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:
 - Serial Port Setup** press the **Enter** key, and then select **Serial Port Setup**.
 - 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.
 - Video Setup** press the **Enter** key, and then select **Video Setup**.
 - Audio Setup** press the **Enter** key, and then select **Onboard Audio Controller**.
 - Network Setup** press the **Enter** key, and then select **Onboard Ethernet Support** or **LAN Boot Agent**.
4. Select **Disabled** or **Enabled** and then 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, and 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 $\bar{\text{~}}$ 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.

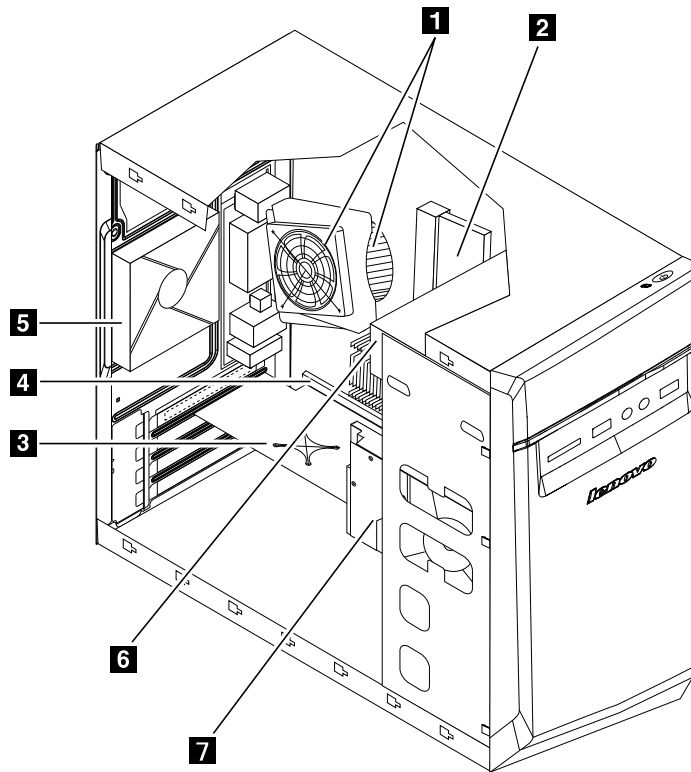
If all devices and components have been removed and the problem continues, replace the system board.

Chapter 7. Locating connectors, controls and components

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

Hardware components

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

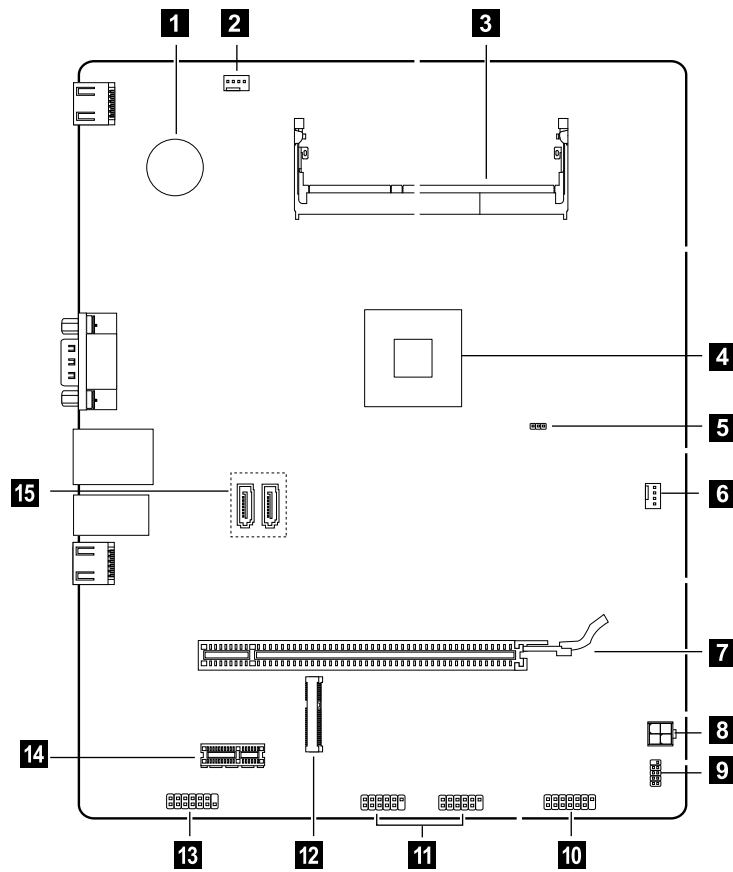


1. Microprocessor fan and heatsink	5. System fan
2. Memory modules	6. Optical drive
3. PCI express adapter card	7. Hard disk drive
4. PCI express adapter connectors	

Identifying parts on the motherboard

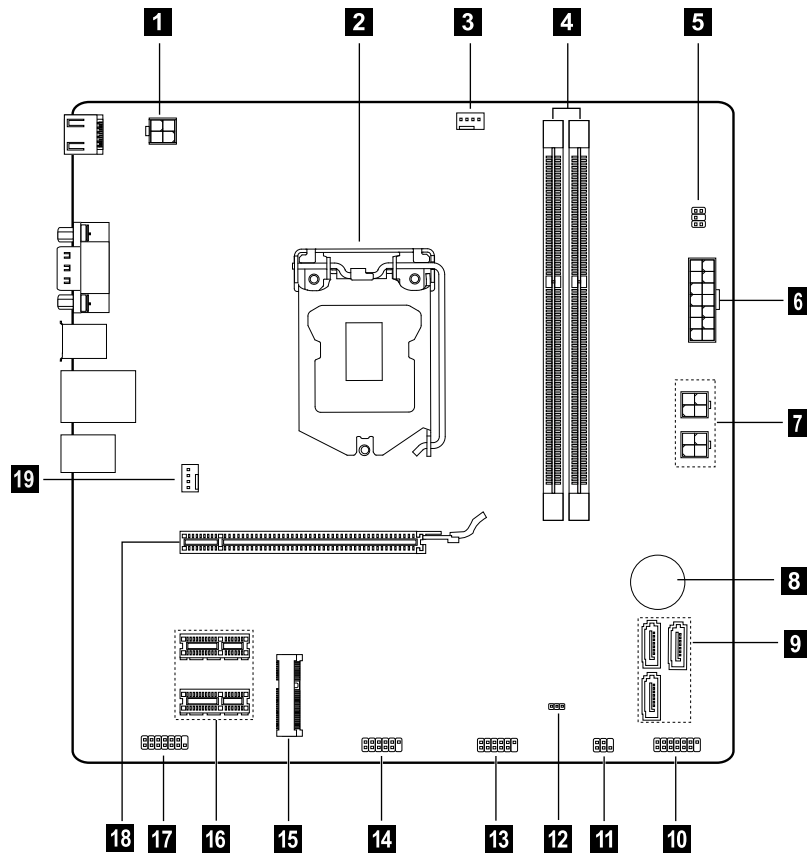
The motherboard (sometimes called the planar or system board) is the main circuit board in your computer. It provides basic computing functions and supports a variety of devices that are factory-installed or that you can install later. The following illustration shows the location of connectors and components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

ideacentre 300-20IBR



1. Battery	9. LPC debug header
2. Microprocessor fan header	10. Front panel connector
3. Memory connector	11. Front USB connectors (2)
4. Microprocessor and heat sink	12. M.2 Wi-Fi card slot
5. Clear CMOS jumper	13. Front audio connector
6. System fan header	14. PCI express X 1 adapter slot
7. PCI express X 16 adapter slot	15. SATA connectors (2)
8. Power connector	

ideacentre 300-20ISH



1. Power connector	11. LPC debug header
2. Microprocessor and heat sink	12. Clear CMOS jumper
3. Microprocessor fan header	13. Front USB connector
4. Memory slots (2)	14. Serial connector
5. Thermal sensor header	15. M.2 Wi-Fi card slot
6. Hard disk drive power connector	16. PCI express X 1 adapter slots (2)
7. Auxiliary power connector	17. Front audio connector
8. Battery	18. PCI express X 16 adapter slot
9. SATA connectors (3)	19. System fan header
10. Front panel connector	

Chapter 8. Replacing hardware

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

Note: Use only parts provided by Lenovo.

General information

Pre-disassembly instructions

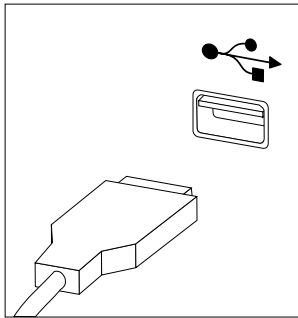
Before proceeding with the disassembly procedure, make sure that you do the following:

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

To replace the keyboard and mouse

- 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.



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

- Step 4. Disconnect the defective keyboard cable from the computer and connect the new keyboard cable to the same connector.

Note: The mouse can be replaced using the same method.

Removing the computer cover

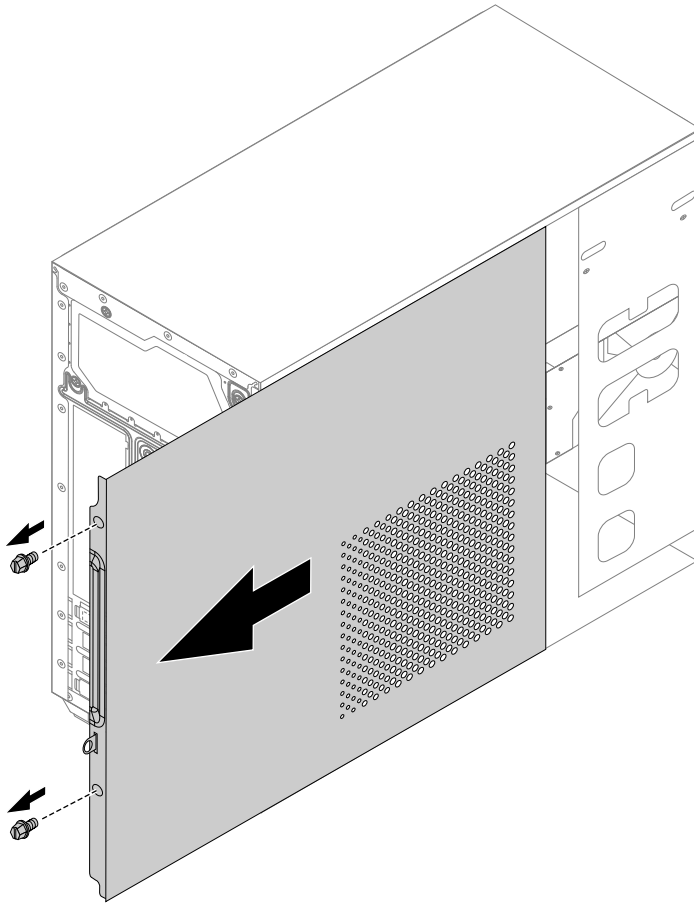
Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

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

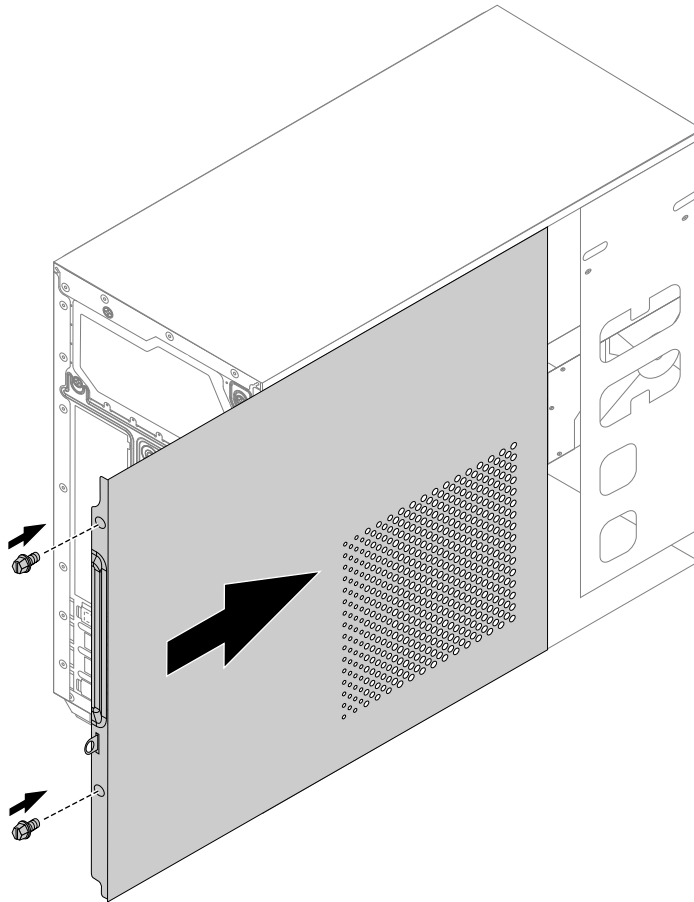
To remove the computer cover:

- 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 2 screws that secure the computer cover at the rear of the chassis.



- Step 5. To reinstall the computer cover:
- Line up the computer cover with the chassis, and then slide it back.
 - Secure the computer cover to the chassis with the screws.



Removing the front bezel

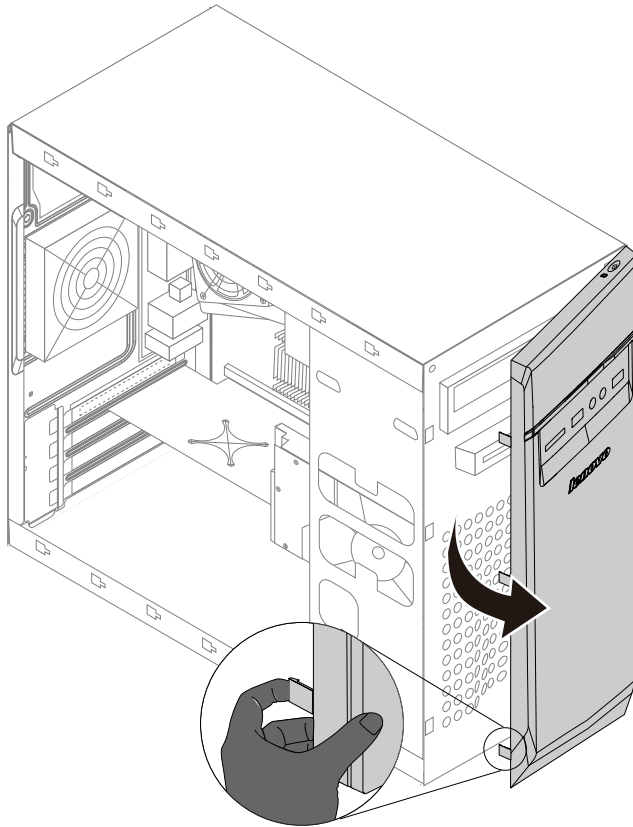
Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

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

To remove the front bezel:

- 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 front bezel by releasing the three plastic tabs inside the chassis and pushing the bezel outward as shown.



Step 6. To reattach the bezel:

- a. Align the plastic tabs on the bottom of the bezel with the corresponding holes in the chassis, and then snap it into position at the bottom and top of the chassis.

Step 7. Reattach the computer cover.

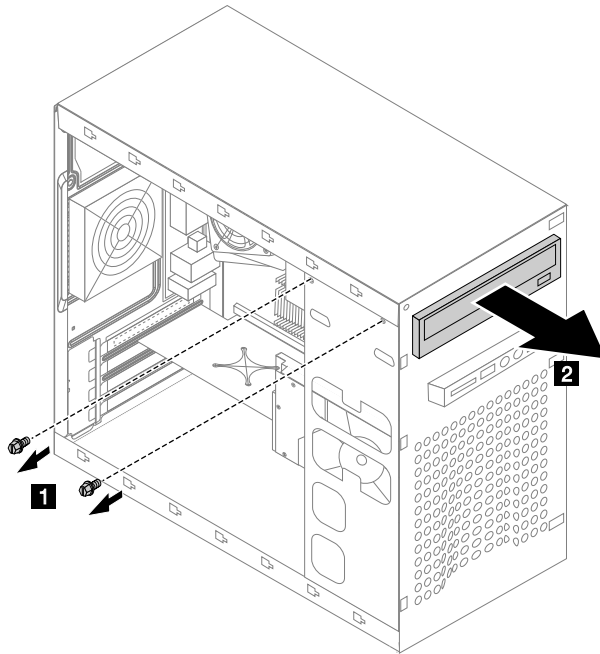
Replacing an optical drive

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

To replace an optical drive:

- Step 1. Remove 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 front bezel. Refer to “Removing the front bezel”.

- Step 6. Disconnect the data and power cables from the rear of the optical drive.
- Step 7. Remove the 2 screws that secure the optical disk drive bay to the chassis. **1**
- Step 8. Slide out the optical disk drive bay, and then lift it up. **2**



- Step 9. To install the new optical drive:
- Slide the new optical drive into the bay from the back until it snaps into position.
 - Secure the optical drive to the bay with the two screws.
 - Connect the data and power cables to the drive.

Step 10. Reattach the front bezel, computer cover.

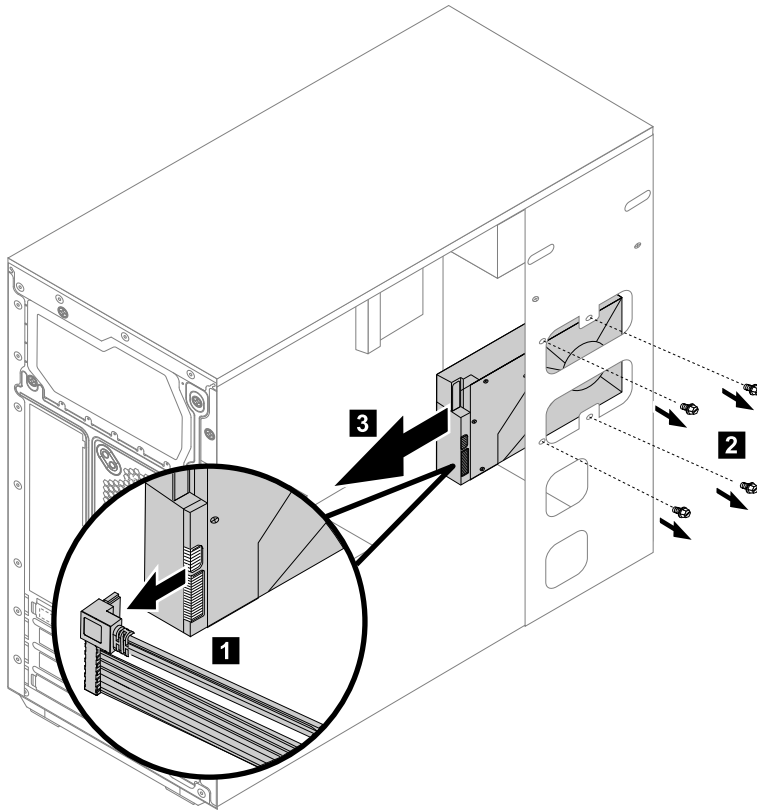
Replacing the hard disk drive

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

To replace the hard disk drive:

- 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 data and power cables from the hard disk drive. **1**
- Step 6. Remove the four screws that secure the hard disk drive to drive bay. **2**
- Step 7. Remove the hard disk drive by pulling it straight out of the drive bay. **3**



- Step 8. To install the new hard disk drive :
- Slide the new hard disk drive into the drive bay.
 - Secure the new hard disk drive to the drive bay with the four screws.
 - Connect the power and data cables to the hard disk drive.
- Step 9. Reattach the computer cover.

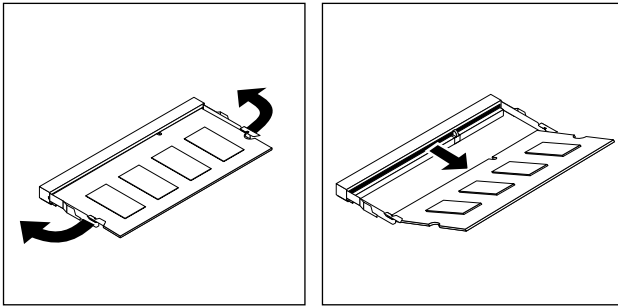
Replacing a memory module

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

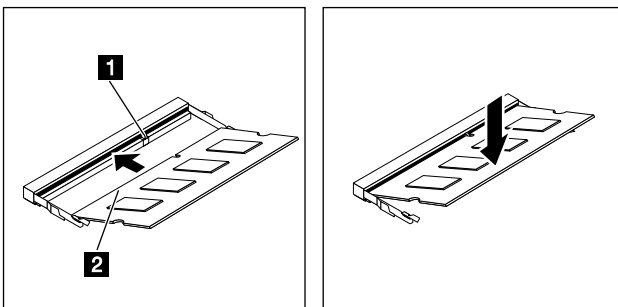
To replace an optical drive:

- 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. Locate the memory module connectors. Refer to “Locating components”.
- Step 6. **For ideacentre 300–20IBR, refer to the below instructions:**

Step 7. Remove the memory module being replaced by opening the retaining clips as shown.

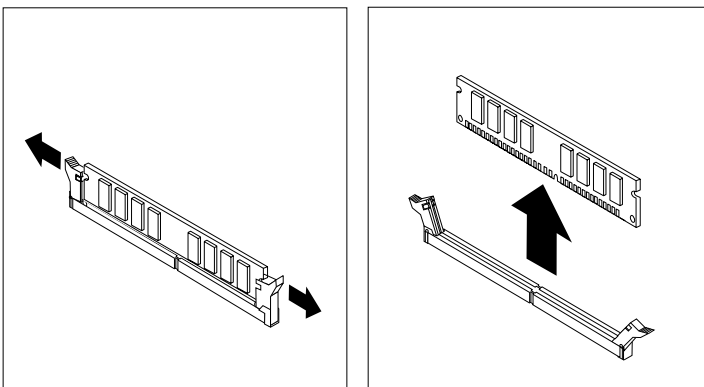


Step 8. Insert the notched end **1** of the new memory module into the slot. Press the memory module firmly and pivot the memory module until it snaps into place. Make sure that the memory module is secured in the slot and does not move easily.

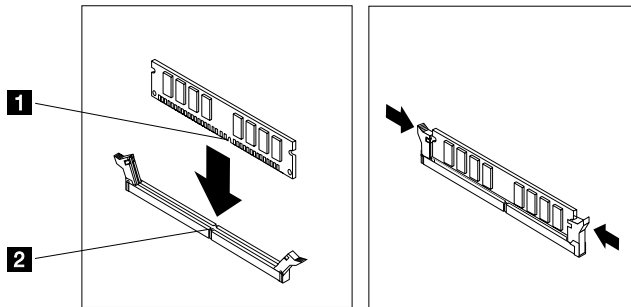


Step 9. **For ideacentre 300–20ISH, refer to the below instructions:**

Step 10. Remove the memory module being replaced by opening the retaining clips as shown.



Step 11. Position the new memory module over the memory connector. Make sure the notch **1** on the memory module is correctly aligned with the connector key **2** on the system board. Push the memory module straight down into the connector until the retaining clips close.



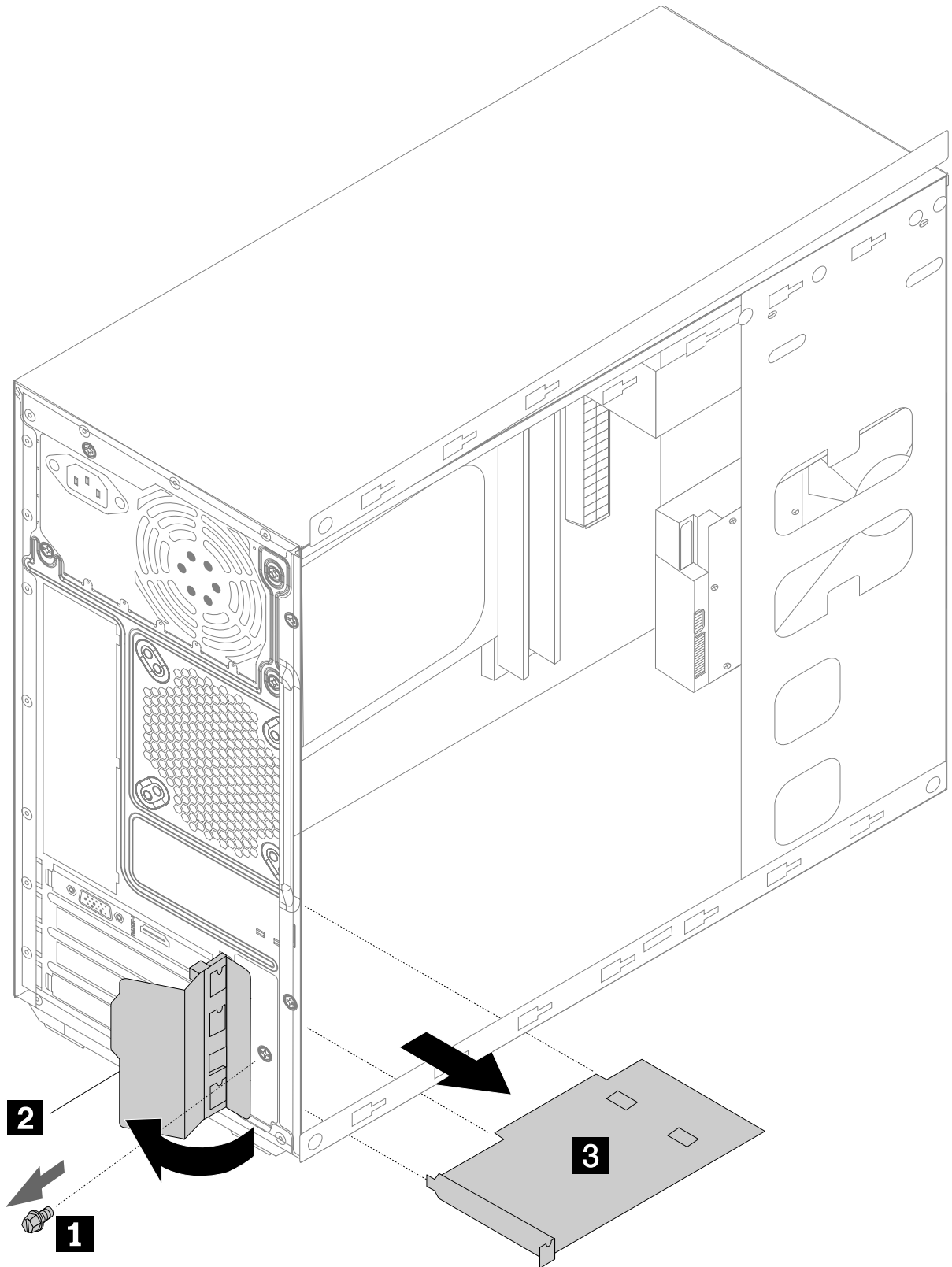
Step 12. Reattach the computer cover.

Replacing the graphic card

To replace the graphic card:

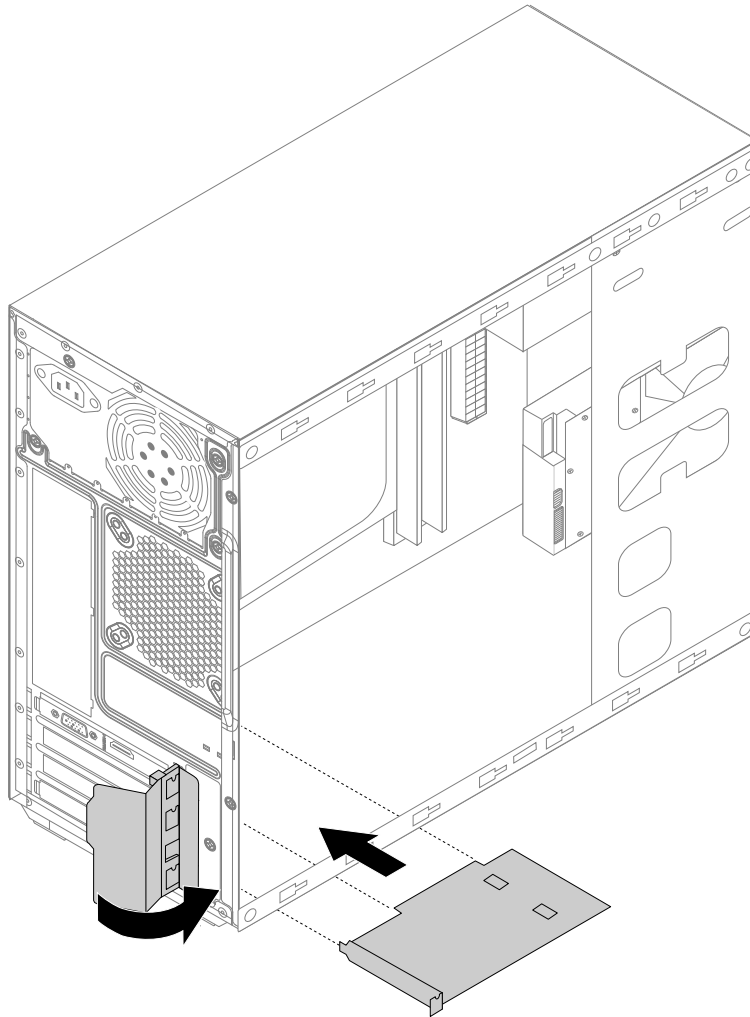
- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, 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. Remove the screw that secures the latch to the chassis, **1** open the adapter latch **2** and remove the adapter by pulling it straight out of the adapter connector. **3**



Step 6. To install the new graphic card:

- a. Install the new adapter into the same adapter connector.
- b. Reattach the metal bracket back into position and secure the graphic card to the chassis with the screw.



Step 7. Reattach the computer cover.

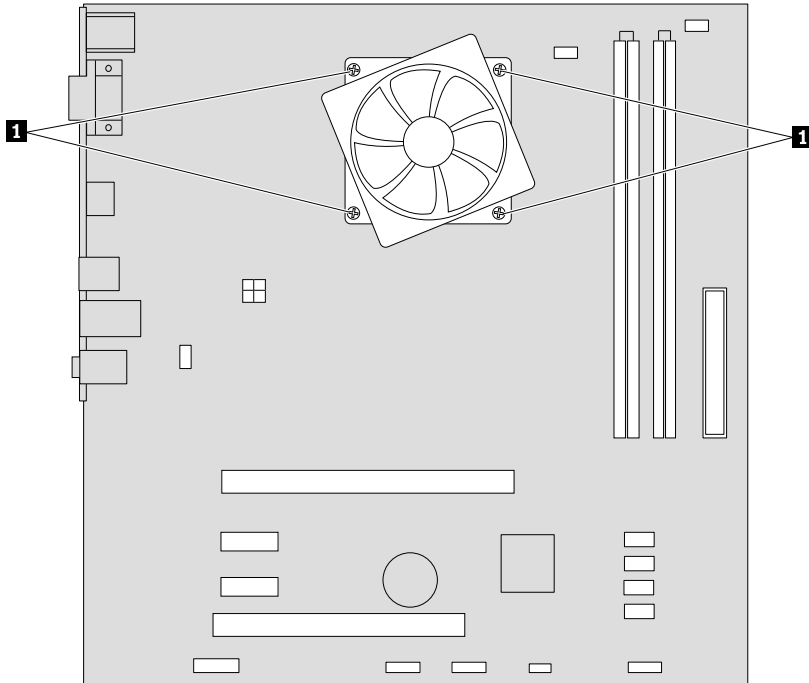
Replacing the heat-sink assembly

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

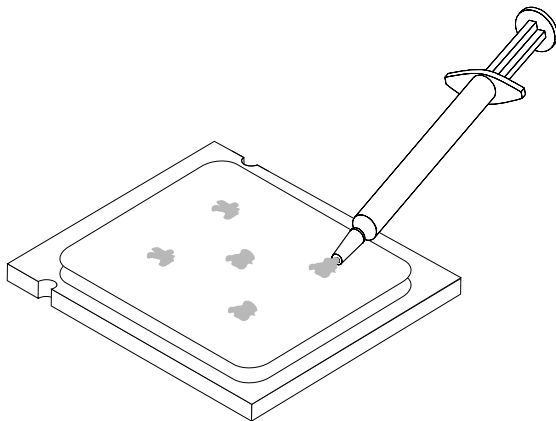
To replace the heat-sink:

- 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. Disconnect the microprocessor fan cable from the system board.
- Step 6. Remove the 4 screws that secure the heat-sink assembly to the motherboard.



- Step 7. Lift up the heat-sink to remove it.
- Step 8. To install the new heat-sink assembly:
- Use a thermal grease syringe to place five drops of grease on the top of the microprocessor. Each drop of grease should be 0.03ml (3 tick marks on the grease syringe).



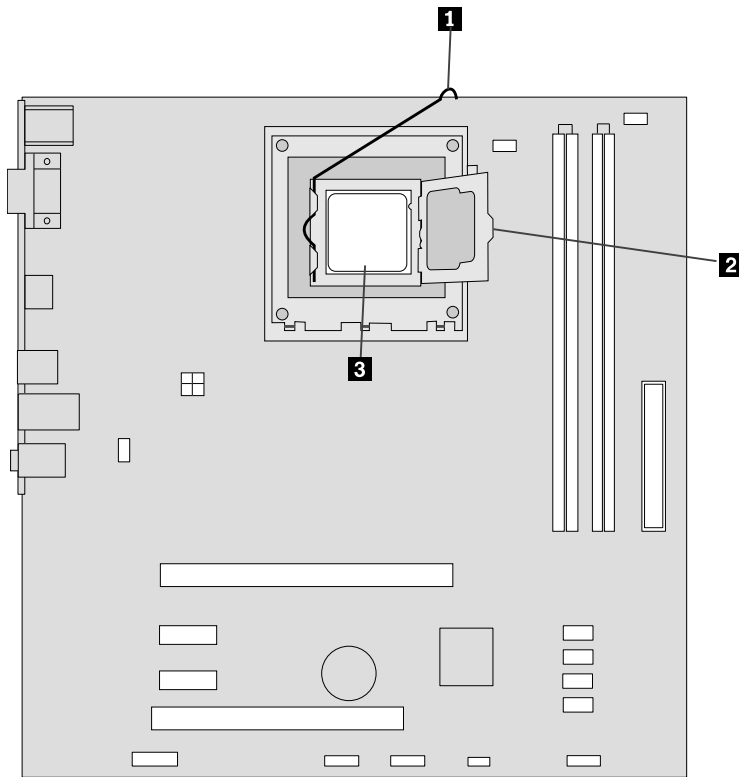
- Line up the screws on the new heat-sink with mounting holes on the motherboard and secure it with the 4 screws.
 - Reconnect the microprocessor fan power cable to the connector on the motherboard.
- Step 9. Reattach the computer cover.

Replacing the CPU

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

To replace the CPU

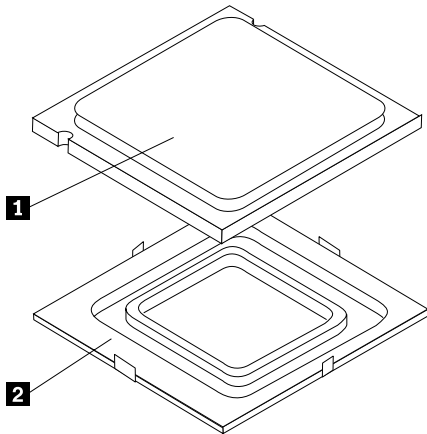
- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, 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. Replacing the heat-sink assembly. Refer to “Replacing the heat-sink assembly”.
- Step 6. 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.

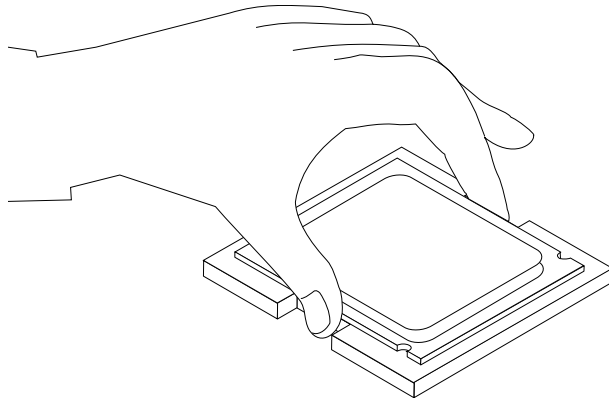
- Step 7. Holding the sides of the microprocessor with your fingers, remove the protective cover **1** that protects the gold contacts on the new microprocessor. **2**



- Step 8. 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 9. Lower the microprocessor straight down into its socket on the motherboard.



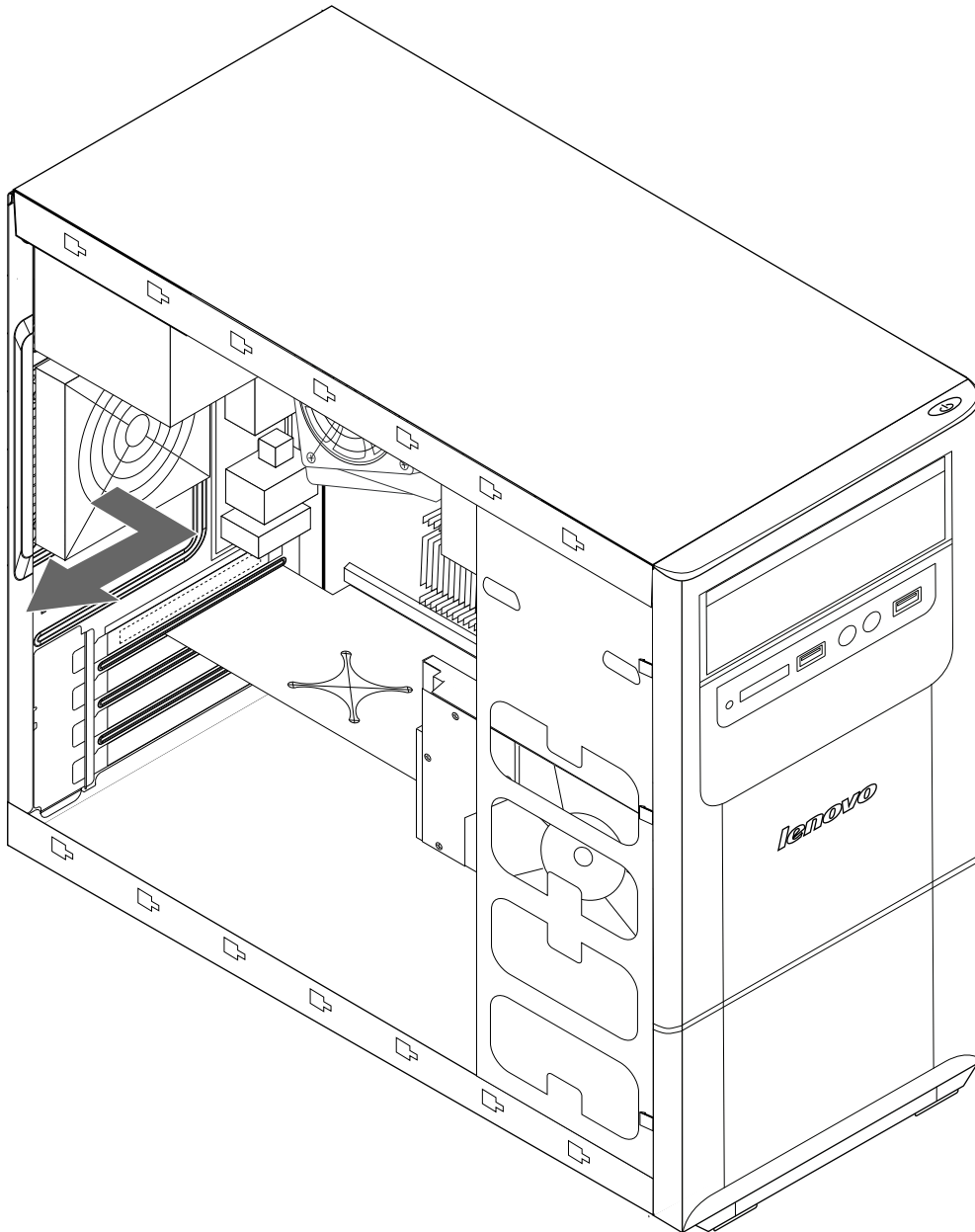
- Step 10. To secure the microprocessor in the socket, close the microprocessor retainer and lock it into position with the small handle.
- Step 11. Use a thermal grease syringe to place 5 drops of grease on the top of the microprocessor. Each drop of grease should be 0.03ml (3 tick marks on the grease syringe).
- Step 12. Reattach the heat-sink assembly and the computer cover.

Replacing the system fan

To replace the system fan: (Selected models only)

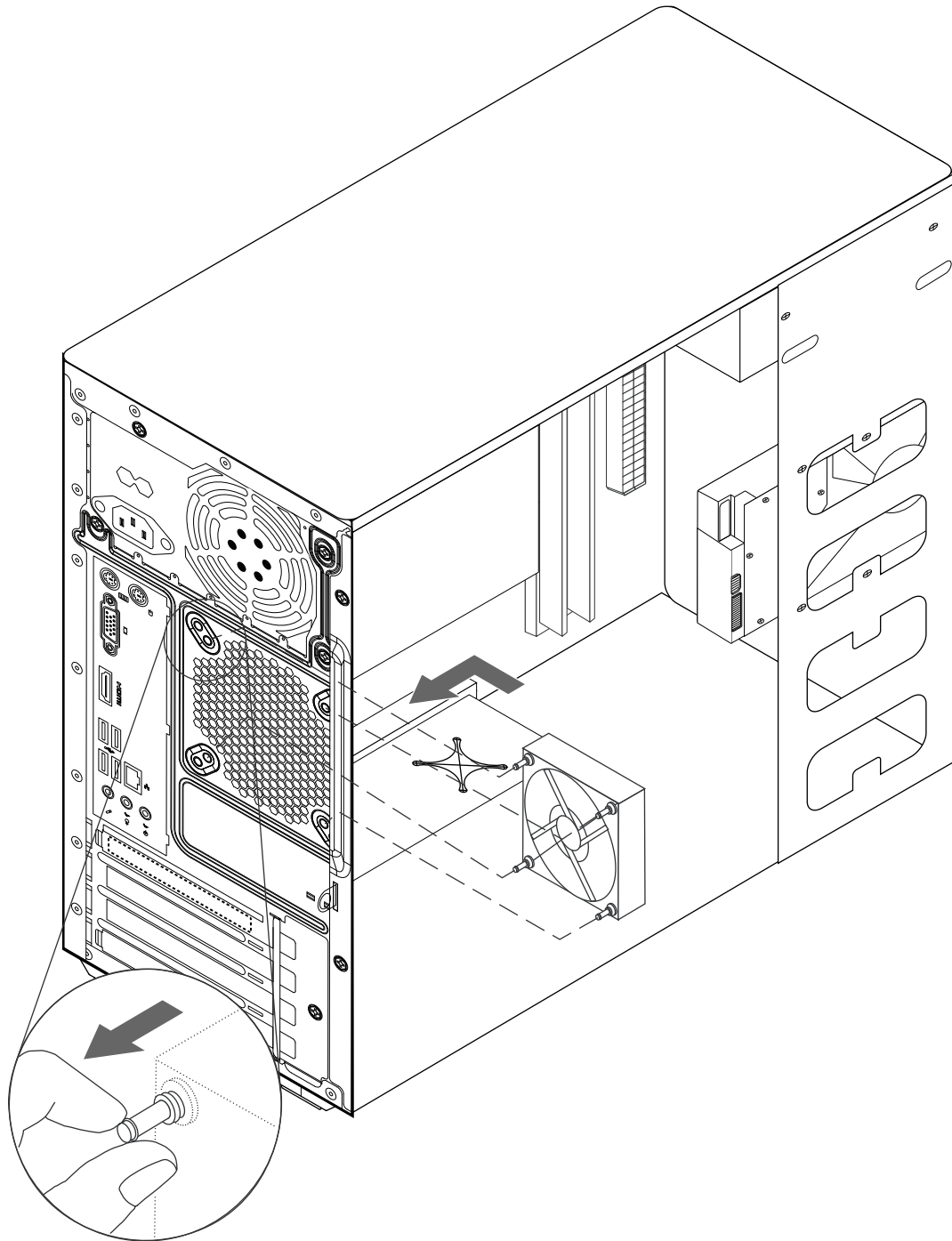
- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, 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. Pull the system fan assembly out of the chassis.



Step 7. To install the new system fan:

- a. Install the new system fan assembly by aligning the rubber mounts of the system fan assembly with the holes on the chassis, and then push the rubber mounts through the holes.
- b. Pull on the tips of the rubber mounts until the fan assembly is in place.
- c. Connect the system fan power cable to the connector on the board.



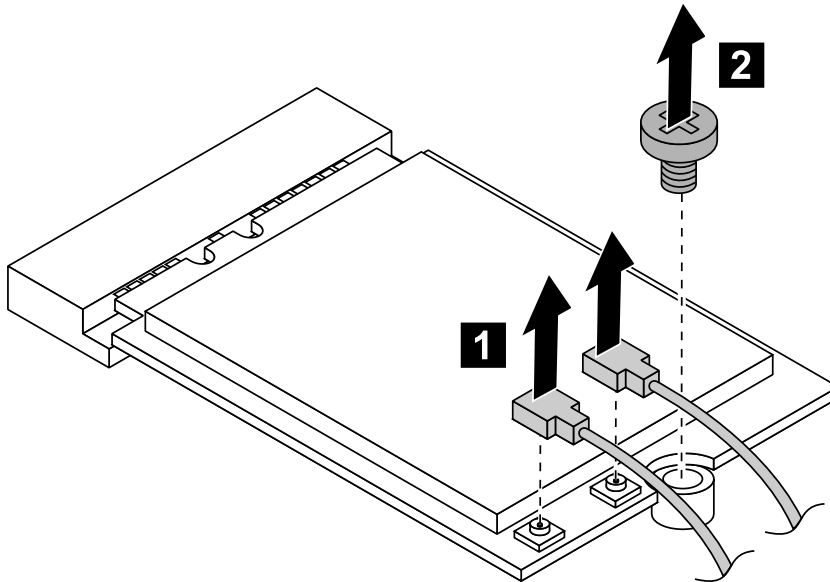
Step 8. Reattach the computer cover.

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. Remove the graphic card. Refer to “Replacing the graphic card.”
- Step 6. Disconnect the 2 antenna cables from the Wi-Fi card. **1**
- Step 7. Remove the screw that secure the Wi-Fi card to the motherboard. **2**



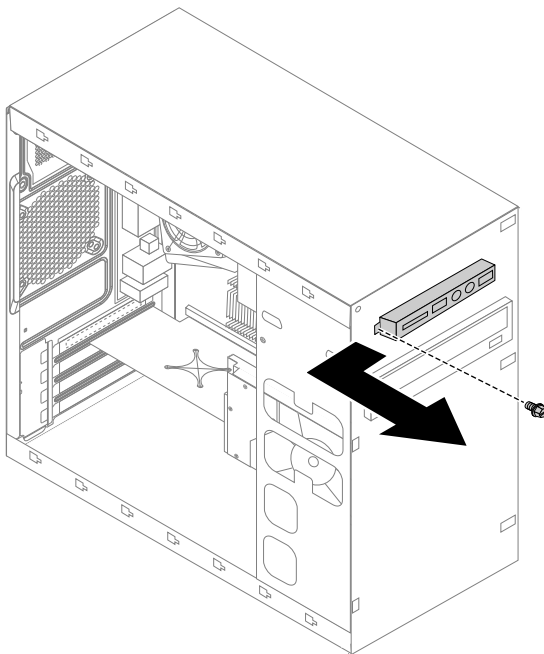
- Step 8. Pull the Wi-Fi card upward to remove it from the card port.
- Step 9. Install the new Wi-Fi card:
 - a. Line up the new Wi-Fi card, and then insert it into the same card port.
 - b. Secure the Wi-Fi card to the motherboard with the screw.
 - c. Connect the 2 antenna cables to the new Wi-Fi card.
- Step 10. Reattach the graphic card, computer cover.

Replacing the front card reader module

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

To replace the the front card reader module:

- 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 front bezel. Refer to “Removing the front bezel”.
- Step 6. Disconnect the data cables from the connectors on motherboard.
- Step 7. Remove the screw that secures the front card reader module to the chassis.
- Step 8. Slide out the card reader module out of chassis.



- Step 9. Install the new front card reader module:
 - a. Slide the front card reader module in and secure it with screw.
 - b. Connect the data cables to the motherboard.
- Step 10. Reattach the front bezel, computer cover.

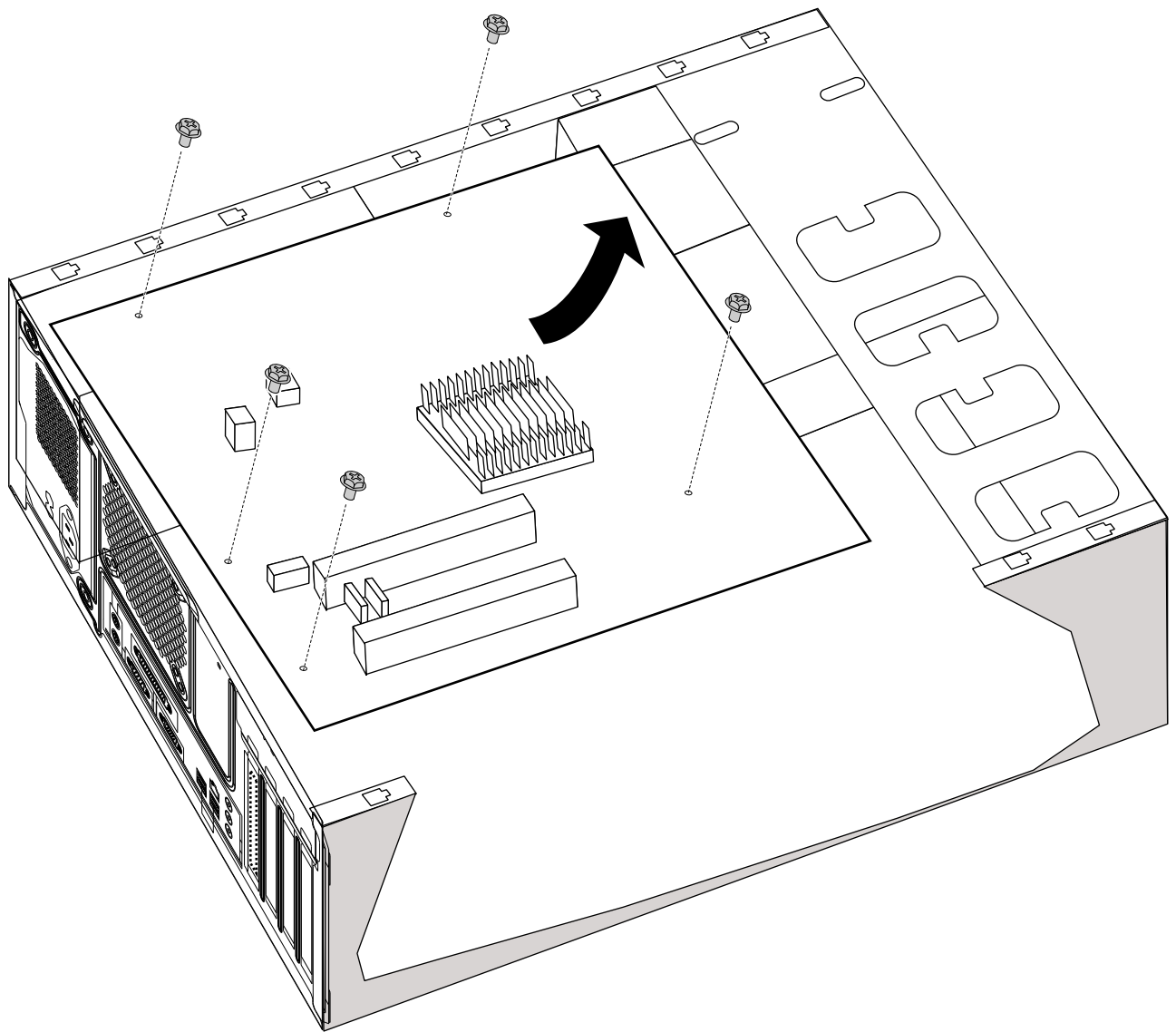
Replacing the motherboard

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 front bezel. Refer to “Removing the front bezel”.
- Step 6. Remove the memory module. Refer to “Replacing a memory module”.
- Step 7. Remove the heat-sink assembly. Refer to “Replacing the heat-sink assembly”.
- Step 8. Remove the CPU. Refer to “Replacing the CPU”.
- Step 9. Remove the graphic card. Refer to “Replacing the graphic card”.
- Step 10. Remove the Wi-Fi card. Refer to “Replacing the Wi-Fi card”.
- Step 11. Remove the system fan. Refer to “Replacing the system fan”.
- Step 12. Disconnect the all cables from the connectors on motherboard.
- Step 13. Remove the 6 screws that secure the motherboard to the chassis.
- Step 14. Lift up the motherboard 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, heat-sink assembly to the new motherboard.
- c. Connect the all cables to the new motherboard.
- d. Reattach the hard disk drive, optical drive, graphic card and the TV-Tuner card.

Step 16. Reattach the computer cover.

FRU lists

This chapter lists the information on the field replaceable units (FRUs) for Lenovo ideacentre 300 series.

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

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

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

Fru P/N	Description	Basic Name
54Y8917	CRU,CMN 90W Common adapter	AC_ADAPTER
54Y8964	AC_ADAPTER,65W,100-240V,3P	AC_ADAPTER
54Y8966	AC_ADAPTER,90W,100-240V,3P	AC_ADAPTER
01AJ179	Intel BSW N3150 NO DPK	BDPLANAR
01AJ066	Intel BSW N3050 WIN DPK	BDPLANAR
01AJ065	Intel BSW N3050 NO DPK	BDPLANAR
01AJ183	Intel BSW N3700 WIN DPK	BDPLANAR
01AJ182	Intel BSW N3700 NO DPK	BDPLANAR
01AJ180	Intel BSW N3150 WIN DPK	BDPLANAR
31026146	VL BLK1.8m BSMI Power Cord(R)	CABLE
31026357	LW BLK1.8m UL CSA Power Cord(R)	CABLE
31049509	Volex 1.8M C13 SA power cord	CABLE
31026082	VL BLK1.8m BS Power Cord(R)	CABLE
31049498	Volex 1.0M C5 KOR power cord	CABLE
31045147	LX(ASAP) 1.0M C5 CCC power cord	CABLE
31026140	VL BLK1.8m ANE Power Cord(R)	CABLE
31502006	GS SATA power cable(300mm_300mm)	CABLE
31049503	Volex 1.0M C5 DEN power cord	CABLE
31026143	VL BLK1.8m KTL Power Cord(R)	CABLE
31049520	LX(ASAP) 1.0M C5 ANZ power cord	CABLE
31049497	Volex 1.0M C5 EU power cord	CABLE
31049512	Volex 1.8M C13 ITY power cord	CABLE
31049516	Volex 1.8M C13 SWI power cord	CABLE
31039728	Longwell 1.8M Israel C13 power cord(R)	CABLE
31033857	LW BLK1.0m3wire ULCSA power cord(R)	CABLE
31039732	Longwell 1.8M SEV C13 power cord(R)	CABLE
31049521	LX(ASAP) 1.8M C13 UL power cord	CABLE
31039106	LW BLK 1.0m Korea C5 power cord(R)	CABLE
31049502	Volex 1.0M C5 ISI power cord	CABLE

31033858	VL BLK1.0m3wire ULCSA power cord(R)	CABLE
31049523	LX(ASAP) 1.8M C13 JPN power cord	CABLE
31026355	LW BLK1.8m VDE Power Cord(R)	CABLE
31039105	LW BLK 1.0m SA C5 power cord(R)	CABLE
31039101	LW BLK 1.0m Denmark C5 power cord(R)	CABLE
31026096	LW BLK1.8m BS Power Cord(R)	CABLE
31049507	Volex 1.0M C5 LA power cord	CABLE
31026351	LW BLK1.8m KTL Power Cord(R)	CABLE
31049508	Volex 1.0M C5 SWI power cord	CABLE
31049524	LX(ASAP) 1.8M C13 ANZ power cord	CABLE
31039104	LW BLK 1.0m Italy C5 power cord(R)	CABLE
31035396	LW BLK 1.0m UK power cord(R)	CABLE
31049522	LX(ASAP) 1.8M C13 EU power cord	CABLE
31039103	LW BLK 1.0m Switzerland C5 power cord(R)	CABLE
31031394	LW BLK1.8m SABS Power Cord(R)	CABLE
31035828	LW BLK 1.0m Brazil power cord(R)	CABLE
31024760	LX 2H420mmSATA calbe Latch(R)	CABLE
31032953	GS BLK1.0m3wire CCC power cord(R)	CABLE
31035395	LW BLK 1.0m India power cord(R)	CABLE
31506479	MGE 2H420mmSATA calbe Latch(R)	CABLE
31033216	LW BLK1.8m India power cord(R)	CABLE
31028776	GS BLK1T1 1.8m CCC Power cord(R)	CABLE
31049499	Volex 1.0M C5 TW power cord	CABLE
31035397	LW BLK 1.0m ANZ power cord(R)	CABLE
31049511	Volex 1.8M C13 DEN power cord	CABLE
31026145	VL BLK1.8m UL CSA Power Cord(R)	CABLE
31039730	Longwell 1.8M PSE C13 power cord(R)	CABLE
31039107	LW BLK 1.0m Israel C5 power cord(R)	CABLE
31049496	Volex 1.0M C5 UK power cord	CABLE
31036980	LW BLK 1.8m C13 IRAM power cord(R)	CABLE
31043145	LX 250mm SATA cable 2 latch	CABLE
31507416	LS USB2.0 F_IO cable_U500A600_321HT	CABLE
31035332	LW BLK 1.0m VDE power cord(R)	CABLE
31049501	Volex 1.0M C5 SA power cord	CABLE
31026350	LW BLK1.8m ANE Power Cord(R)	CABLE
31043146	GS 250mm SATA cable 2 latch	CABLE
31049515	Volex 1.8M C13 LA power cord	CABLE
31038784	LW BLK 1.8m Brazil power cord(R)	CABLE
31039100	LW BLK 1.0m Argentina C5 power cord(R)	CABLE
31507417	CL USB2.0 F_IO cable_U500A600_321HT	CABLE

31026349	LW BLK1.8m BSMI Power Cord(R)	CABLE
31049513	Volex 1.8M C13 BR power cord	CABLE
31049500	Volex 1.0M C5 ANZ power cord	CABLE
31049517	LX(ASAP) 1.0M C5 UL power cord	CABLE
31039726	Longwell 1.8M Italy C13 power cord(R)	CABLE
31039729	Longwell 1.8M Denmark C13 power cord(R)	CABLE
31049514	Volex 1.8M C13 JPN power cord	CABLE
31049505	Volex 1.0M C5 BR power cord	CABLE
31049510	Volex 1.8M C13 ISI power cord	CABLE
31026144	VL BLK1.8m VDE Power Cord(R)	CABLE
31049518	LX(ASAP) 1.0M C5 EU power cord	CABLE
31038885	LW BLK 1.0m Taiwan C5 power cord(R)	CABLE
31040179	LX(ASAP) 1.8M CCC C13 power cord(R)	CABLE
31506478	CL 2H420mmSATA calbe Latch(R)	CABLE
31049504	Volex 1.0M C5 ITY power cord	CABLE
31502005	LS SATA power cable(300mm_300mm)	CABLE
04X2750	Fru, H5060 500 M.2 Rear antenna	CABLE
04X2749	Fru, 780mm M.2 front antenna	CABLE
04X2792	Fru, 600mm 321HT&326CT LED cable	CABLE
5C10H09610	MGE U2 F_IO cable_U500A600	CABLE
03T7470	7 in 1 Card Reader	CARDREADER
00XD381	WI-FI Cover	COVER
00XD391	Power Supply Chassis Bracket	COVER
00PC201	DT_KYB,DOK5321(US)B-Silk USB,US	DT_KYB
31503528	AVC ZEUK00T004 Intel 18W CPU Cooler	FAN
31503529	Fox PKP737R00K12Z Intel 18W CPU Cooler	FAN
16200544	WDXL500A WD5000AAKX-08U6AA0 500G HDD-LH	HDD_ASM
16200613	WD XL1000B WD10EZEX-08M2NA0 1TB HDD	HDD_ASM
16200688	ST Grenada BP2 ST1000DM003 1TB HDD	HDD_ASM
16200512	TSB Mars 4K 500G DT01ACA050 -LH	HDD_ASM
16200513	TSB Mars 4K 1TB DT01ACA100 -LH	HDD_ASM
16200674	ST Pharaoh 4K Non-MC ST500DM002 500GHDD	HDD_ASM
45K0629	HDD,500G,7200,DT3,SATA3,STD	HDD_ASM
45K0623	HDD,1TB,7200,DT3,SATA3,STD	HDD_ASM
16200689	ST Grenada BP2 ST2000DM001 2TB HDD	HDD_ASM
16200514	TSB Mars 4K 2TB DT01ACA200 -LH	HDD_ASM
45K0625	HDD,2TB,7200,DT3,SATA3,STD	HDD_ASM
5H40H42768	AVC 18W Intel CPU Heatsink	HEATSINK
5H40H42769	FOX 18W Intel CPU Heatsink	HEATSINK
00XD252	CPU Heatsink 18W	HEATSINK

25209196	Liteon SK-8861(HU) 2.4G KB-Black8	KYB_MOUSE
25209130	Sunrex EKB-10YA(FR) B-Silk USB KB-LVT8	KYB_MOUSE
25209194	Liteon SK-8861(FR) 2.4G KB-Black8	KYB_MOUSE
25209176	Liteon SK-8861(US-MY) 2.4G KB-Black8	KYB_MOUSE
25209178	Liteon SK-8861(TH) 2.4G KB-Black8	KYB_MOUSE
25209139	Sunrex EKB-10YA(US-EU) B-S USB KB-LVT8	KYB_MOUSE
25209199	Liteon SK-8861(JP) 2.4G KB-Black8	KYB_MOUSE
25209177	Liteon SK-8861(TW) 2.4G KB-Black8	KYB_MOUSE
25209137	Sunrex EKB-10YA(PT) B-Silk USB KB-LVT8	KYB_MOUSE
25209203	Liteon SK-8861(US-EU) 2.4G KB-Black8	KYB_MOUSE
25209116	Sunrex EKB-10YA(CZ-SL) B-S USB KB-LVT8	KYB_MOUSE
25209138	Sunrex EKB-10YA(BE-EN) B-S USB KB-LVT8	KYB_MOUSE
25209131	Sunrex EKB-10YA(GK) B-Silk USB KB-LVT8	KYB_MOUSE
25209175	Liteon SK-8861(US) 2.4G KB-Black8	KYB_MOUSE
25209112	Primax KB4721(US) B-Silk USB KB-LVT8	KYB_MOUSE
25209122	Sunrex EKB-10YA(AR) B-Silk USB KB-LVT8	KYB_MOUSE
25209125	Sunrex EKB-10YA(TR) B-Silk USB KB-LVT8	KYB_MOUSE
25209184	Liteon SK-8861(LA) 2.4G KB-Black8	KYB_MOUSE
25209198	Liteon SK-8861(KR) 2.4G KB-Black8	KYB_MOUSE
25209193	Liteon SK-8861(IL) 2.4G KB-Black8	KYB_MOUSE
25209111	Sunrex EKB-10YA(US) B-Silk USB KB-LVT8	KYB_MOUSE
25209180	Liteon SK-8861(US-IN) 2.4G KB-Black8	KYB_MOUSE
25209115	Sunrex EKB-10YA(TH) B-Silk USB KB-LVT8	KYB_MOUSE
25209181	Liteon SK-8861(RU) 2.4G KB-Black8	KYB_MOUSE
25209128	Sunrex EKB-10YA(IT) B-Silk USB KB-LVT8	KYB_MOUSE
25209185	Liteon SK-8861(LA-AR) 2.4G KB-Black8	KYB_MOUSE
25209192	Liteon SK-8861(IT) 2.4G KB-Black8	KYB_MOUSE
25209119	Sunrex EKB-10YA(UK) B-Silk USB KB-LVT8	KYB_MOUSE
25209189	Liteon SK-8861(TR) 2.4G KB-Black8	KYB_MOUSE
25209202	Liteon SK-8861(BE-EN) 2.4G KB-Black8	KYB_MOUSE
25209183	Liteon SK-8861(Nordic) 2.4G KB-Black8	KYB_MOUSE
25209117	Sunrex EKB-10YA(IN) B-Silk USB KB-LVT8	KYB_MOUSE
25209118	Sunrex EKB-10YA(RU) B-Silk USB KB-LVT8	KYB_MOUSE
25209200	Liteon SK-8861(EN-FR) 2.4G KB-Black8	KYB_MOUSE
25209187	Liteon SK-8861(CH) 2.4G KB-Black8	KYB_MOUSE
25209129	Sunrex EKB-10YA(HB) B-Silk USB KB-LVT8	KYB_MOUSE
25209195	Liteon SK-8861(GR) 2.4G KB-Black8	KYB_MOUSE
25209197	Liteon SK-8861(BG) 2.4G KB-Black8	KYB_MOUSE
25209134	Sunrex EKB-10YA(KR) B-Silk USB KB-LVT8	KYB_MOUSE
25209136	Sunrex EKB-10YA(EN-FR) B-S USB KB-LVT8	KYB_MOUSE

25209126	Sunrex EKB-10YA(SP) B-Silk USB KB-LVT8	KYB_MOUSE
25209190	Liteon SK-8861(ES) 2.4G KB-Black8	KYB_MOUSE
25209114	Sunrex EKB-10YA(TW) B-Silk USB KB-LVT8	KYB_MOUSE
25209124	Sunrex EKB-10YA(GE) B-Silk USB KB-LVT8	KYB_MOUSE
25209179	Liteon SK-8861(CS-SK) 2.4G KB-Black8	KYB_MOUSE
25209188	Liteon SK-8861(DE) 2.4G KB-Black8	KYB_MOUSE
25209123	Sunrex EKB-10YA(SW) B-Silk USB KB-LVT8	KYB_MOUSE
25203464	Liteon SM-8861(WW) Mouse Black	KYB_MOUSE
25209135	Sunrex EKB-10YA(JP) B-Silk USB KB-LVT8	KYB_MOUSE
25209121	Sunrex EKB-10YA(LA) B-Silk USB KB-LVT8	KYB_MOUSE
25209132	Sunrex EKB-10YA(HG) B-Silk USB KB-LVT8	KYB_MOUSE
25209191	Liteon SK-8861(SL) 2.4G KB-Black8	KYB_MOUSE
25209186	Liteon SK-8861(SA) 2.4G KB-Black8	KYB_MOUSE
25209127	Sunrex EKB-10YA(SL) B-Silk USB KB-LVT8	KYB_MOUSE
25209120	Sunrex EKB-10YA(Nordic) B-S USB KB-LVT8	KYB_MOUSE
25209201	Liteon SK-8861(PT) 2.4G KB-Black8	KYB_MOUSE
25209133	Sunrex EKB-10YA(BG) B-Silk USB KB-LVT8	KYB_MOUSE
25209182	Liteon SK-8861(GB) 2.4G KB-Black8	KYB_MOUSE
31503360	LX(ASAP) 1.0M C5 Danmark power cord	LINECORD
31503358	LX(ASAP) 1.0M C5 Korea power cord	LINECORD
31503355	LX(ASAP) 1.0M C5 South Africa power cord	LINECORD
31502863	LX(ASAP) 1.8M C13 DANMARK power cord	LINECORD
31503356	LX(ASAP) 1.0M C5 Argentina power cord	LINECORD
31503357	LX(ASAP) 1.0M C5 Brazil power cord	LINECORD
31502869	LX(ASAP) 1.8M C13 ARGENTINA power cord	LINECORD
5L60J34355	Thailand ,1.8M,3P,LUX(ASAP)	LINECORD
31502866	LX(ASAP) 1.8M C13 ISRAEL power cord	LINECORD
31503354	LX(ASAP) 1.0M C5 Taiwan power cord	LINECORD
31502867	LX(ASAP) 1.8M C13 BSMI power cord	LINECORD
31503352	LX(ASAP) 1.0M C5 UK power cord	LINECORD
31503425	LS 1.0M C5 2pin Japan power cord	LINECORD
31502862	LX(ASAP) 1.8M C13 BRAZIL power cord	LINECORD
31502864	LX(ASAP) 1.8M C13 ITALY power cord	LINECORD
31503353	LX(ASAP) 1.0M C5 India power cord	LINECORD
31502871	LX(ASAP) 1.8M C13 INDIA power cord	LINECORD
31502861	LX(ASAP) 1.8M C13 UK power cord	LINECORD
31503424	Volex 1.0M C5 2pin Japan power cord	LINECORD
31502865	LX(ASAP) 1.8M C13 SABS power cord	LINECORD
31502870	LX(ASAP) 1.8M C13 KOREA power cord	LINECORD
31503361	LX(ASAP) 1.0M C5 Switzerland power cord	LINECORD

31502868	LX(ASAP) 1.8M C13 Switzerland power cord	LINECORD
31503359	LX(ASAP) 1.0M C5 Italy power cord	LINECORD
31503362	LX(ASAP) 1.0M C5 Israel power cord	LINECORD
31503423	Longwell 1.0M C5 2pin Japan power cord	LINECORD
5L60J33143	lux 0014+H03VV-F 0.75/3C+0011	LINECORD
00XD761	Front Bezel,321HT,AVC	MECH_ASM
00XD764	Chassis,321HT2,JT	MECH_ASM
00XD763	Front Bezel,321HT2,JT	MECH_ASM
00XD762	Chassis,321HT,AVC	MECH_ASM
00XD324	20L,Bezel,Lenovo H50-50	MECH_ASM
00XD323	20L,Chassis,Lenovo H50-50	MECH_ASM
00XD765	Front Bezel,321HTA2,JT	MECH_ASM
31049015	JT VGA plastic cover	MECHANICAL
31505052	AVC VGA entrance rubber cover	MECHANICAL
31049017	JT HDMI rubber cover	MECHANICAL
31506508	JT 314 chassis power supply cover	MECHANICAL
31506616	AVC ATX power supply cover	MECHANICAL
31506509	JT 321 chassis ODD shield	MECHANICAL
31501076	JT M2X3 Dedicated Screw	MECHANICAL
1100635	MT16KTF1G64HZ-1G6E1 8G D3L-1600S MEMORY	MEMORY
1101012	Mic_R D9QBJ ?8GB D3L-1600 Sodimm	MEMORY
1100983	M471B5674QH0-YK0 2GB DDR3L 1600 Sodimm	MEMORY
03T7118	SODIMM,8G,DDR3L,1600	MEMORY
03T7117	SODIMM,4G,DDR3L,1600	MEMORY
1100985	HMT451S6BFR8A-PB 4GB DDR3L 1600 Sodimm	MEMORY
03T7116	SODIMM,2G,DDR3L,1600	MEMORY
1100986	HMT41GS6BFR8A-PB 8GB DDR3L 1600 Sodimm	MEMORY
1100956	MT4KTF25664HZ-1G6E1 2GB 1600 Sodimm	MEMORY
1100957	MT8KTF51264HZ-1G6E1 4GB 1600 Sodimm	MEMORY
00PC592	Doking M680B B-Silk USB MC BLK	MOUSE
25200528	Liteon LXH-SM-8825 B-Silk Mouse	MOUSE
25200530	Sunrex LXH-EMS-10ZA B-Silk Mouse	MOUSE
71Y5545	SMD,DT,SATA,H/H,x16	OPT_DRIVE
71Y5543	DVD,DT,SATA,H/H,x16	OPT_DRIVE
36200352	Delta ADP-65FD BE Common 65W adapter	PWR_SUPPLY
36200353	Liteon PA-1650-72IA Common 65W adapter	PWR_SUPPLY
00XD080	Braswell MB Rear IO shield	SHIELD
00PC521	NV GF GT720 2G VGA/HDMI HP	VIDEO_CARD
00PC527	NV GF GT720 1G VGA/HDMI HP	VIDEO_CARD
00JT454	Wireless,CMB,LTN,8821AE	WIRELESS

00JT497	Wireless,CMB,IN,3165 ac	WIRELESS
00JT507	Wireless,CMB,IN,3165 ac Ind	WIRELESS

FRU list of ideacentre 300–20IBR

NO.	FRU	CRU No.
1	Side cover	1
2	Memory	1
3	Front cover	1
4	ODD	2
5	ODD cable	
7	HDD	2
8	HDD cable	
10	TF Reader FRU=TF board+ TF cable	
	TF board	
	TF cable	
11	Fan FRU=Fan+Heat sink	2
	Fan	
	Heat sink	
12	RF Antenna FRU=RF cable+Antenna+Adhesive	
	Rf cable	
	Antenna	
	Adhesive	
13	Antenna cover	1
14	Power switch (with cable)	
15	USB&Audio FRU=USB&Audio Bracket+USB&Audio module	
	USB&Audio Bracket	
	USB&Audio module (with cable)	
16	Mechanical chassis	
	cable organizer	
	rubber foot*3	
17	Mother board FRU=Mother board+Cmos battery+Thermal paste	
	Mother board	
	Cmos battery	
	Thermal paste	
18	I/O shielding	1
	power cord organizer	
	Conductive foam	
19	Power shielding	1

20	Graphic board	1
	Fan	
	Graphic bracket	

FRU list of ideacentre 300–20ISH

NO.	FRU	CRU No.
1	Side cover	1
2	Memory	1
3	Front cover	1
4	ODD	2
5	ODD cable	
7	HDD	2
8	HDD cable	
10	TF Reader FRU=TF board+ TF cable	
	TF board	
	TF cable	
11	Fan FRU=Fan+Heat sink	2
	Fan	
	Heat sink	
12	RF Antenna FRU=RF cable+Antenna+Adhesive	
	Rf cable	
	Antenna	
	Adhesive	
13	Antenna cover	1
14	Power switch (with cable)	
15	USB&Audio FRU=USB&Audio Bracket+USB&Audio module	
	USB&Audio Bracket	
	USB&Audio module (with cable)	
16	Mechanical chassis	
	cable organizer	
	rubber foot*3	
17	Mother board FRU=Mother board+Cmos battery+Thermal paste	
	Mother board	
	Cmos battery	
	Thermal paste	
18	I/O shieding	1
	power cord organizer	
	Conductive foam	

19	Power shielding	1
20	Graphic board	1
	Fan	
	Graphic bracket	
21	Power supply	

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.