

Dear users of Inspur Yingxin server,

Thank you for your choice of Inspur Yingxin server!

This manual describes the technical characteristics, system setting and installation method of Inspur Yingxin server, and can help you learn more about it and use it easily.

Please send the packaging materials of our product to the recycling center, to facilitate pollution prevention and benefit the mankind.

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Inspur

December 2014

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Statement

Before you use this server officially, please read the following statement. Only after reading the following statement and agreeing to the following terms can you begin to use this server. If you have any questions about the following terms, please contact your supplier or contact us directly. If you do not raise any objection but begin to use this server, it shall be deemed that you have agreed to the following terms and conditions.

1. Special notes: At any time, you shall not modify any parameter in BIOS of this server other than those allowable to be modified.
2. In case of any hardware failure of this server or if you hope to make any hardware upgrade, please send your detailed hardware configuration information to our customer service center. Please do not disassemble chassis of this server or any hardware device in the case.
3. As this server's memory, CPU, CPU radiator, fan, etc. are of special specifications, please do not mix with corresponding devices of any other model of machine.
4. In case of any software problem during use of this server, you shall first contact the corresponding software provider, and especially contact us to facilitate communication and jointly solve the problems. As for installation and operating of databases, network management software, or other networking products, you shall handle in this way in particular.
5. If this server is installed on cabinet, please read the attached Quick Use Guide carefully. If you have any problem, please contact our customer service center.
6. Attention: During use, back up your data if necessary.
7. Marks, names and copyrights of software and hardware products involved in this manual are owned by the corresponding companies.
8. Term “we” in the above statement refers to Inspur; Inspur reserves the right to finally interpret the above statement.

Notes for safe use

To ensure your personal safety and to avoid the risk of damaging the system and use environment, please read this section carefully before installing or using, and strictly follow the requirements.



Note: To make better use of the equipment, you should pay attention to the following precautions to avoid possible damage of components or data loss:

1. In case of any of the following circumstances, please unplug the power plug from the power socket, and contact the customer service department of Inspur:
 - The power cable, extension cable, or power plug is damaged.
 - The equipment is splashed wet.
 - The equipment falls off or is damaged.
 - Any object has fallen into the equipment.
 - The equipment does not work properly according to operating instructions.
2. If the system gets wet, please follow the following steps:
 - Turn off the system and power supply, disconnect power sockets, and open the cover after 10 to 20 seconds.
 - Move the equipment to a place with good ventilation conditions, and dry the system for at least 24 hours, to ensure that the system is completely dry.
 - Close the host cover, reconnect the system to the power socket, and then boot.
 - In case of operation failure or unexception, please contact Inspur to obtain technical assistance.
3. Pay attention to the positions of system cables and power cables, keep them away from being stepped on or touched off, and ensure there are no other items on the cable.
4. Cool down the equipment before removing the cover or touching internal components. To avoid damage to the motherboard, wait for five seconds after the system shuts down, and then remove the components from the motherboard or disconnect peripheral system equipment.

5. If the modem, telecommunications or LAN options are installed, please pay attention to the following matters:
 - In case of thunder and lightning, do not connect or use a modem, or it may be struck by lightning.
 - Do not connect or use a modem in a wet environment.
 - Do not insert the modem or telephone cable into the network interface controller (NIC) socket.
 - Before opening the equipment packaging, touching or installing internal components, or touching uninsulated modem cable or jack, disconnect the modem cable.
6. To prevent damage to electronic components within the device caused by electrostatic discharge, please note the following matters:
 - Remove the static electricity in body before disassembling and contacting any electronic component within the device. You can remove static electricity by touching the metal grounded object (such as an unpainted metal surface on the case) to prevent static influence on sensitive components.
 - Do not take the static-sensitive components not to be used out of antistatic packaging.
 - Please regularly touch the grounding conductor or unpainted metal surface on the case, to remove static electricity that can damage internal components.
7. When disassembling internal components upon consent of Inspur, please note the following matters:
 - Turn off the system power supply and disconnect cables and any connected component. When disconnecting the cable, please pull out the cable connector instead of pulling the cable.
 - Before removing the cover or touching internal components, cool down the equipment.
 - Before disassembling and touching any electronic component, touch the metal grounded object to remove the static electricity on body.
 - Do not disassemble excessively, to avoid damage of components or scratch arms.
 - Handle components and plug-in cards carefully, instead of touching the components or contacts on a card. When fetching a component or plug-in card, grasp its edges or metal mounting bracket.
8. When installing cabinet products, please note the following matters:
 - Make sure that legs of the installed cabinet are fixed to the cabinet and are grounded, and all the cabinet weight falls on the ground.
 - Install components from bottom to top, and first install the most important components.
 - Pull components out of the cabinet gently, to ensure the balance and stability of cabinet.
 - Press the component slide release latch and slide the component in or out carefully, as slide cabinet may pinch your fingers.

- Do not make AC branch circuit in the cabinet be overloaded. Total cabinet load shall not exceed 80% of branch circuit rating load.
- Keep cabinet components in good ventilation conditions.
- When maintaining a component in the cabinet, do not step on any other component.

WARNING: The following warnings indicate the potential risks of property loss, personal injury or death:

Warning 1: The system power supply may generate high voltage and hazardous electric energy, so as to cause personal injury. Do not arbitrarily remove the host cover to disassemble and replace any component inside. Unless otherwise notified by Inspur, only maintenance technicians trained by Inspur are authorized to open the cover to disassemble and replace internal components.

Warning 2: Please connect the device to a suitable external power supply as indicated on the rated input label. To prevent your equipment from damage by sudden rise or drop of voltage, please use the related voltage stabilization equipment or uninterruptible power supply equipment.

Warning 3: If extension cables must be used, please use the three-wire cable equipped with proper ground connection plugs, view the rated values of extension cable, and ensure that the total rated current of all products connected to extension cables do not exceed 80% of rated current limits of extension cables.

Warning 4: Be sure to use power supply components such as power lines and power sockets (if attached), and do not arbitrarily replace any power cable or plug to ensure the safety of equipment and user.

WARNING 5: To prevent risk of electric shock caused by system leakage, please insert the power cables of system and peripheral equipment into properly grounded power sockets. Please insert three-wire power plugs into properly grounded three-core AC power sockets at arm's length. Please use the grounding pins of power line, rather than adapter plugs or grounding pins with unplugged cables. If the grounding conductor is not installed and the situation of adequate grounding protection is unclear, do not use this equipment. You can consult electricians.

Warning 6: Do not place any object into the system opening, because it might cause short circuit of internal components and thus cause fire or electric shock.

Warning 7: Keep the system away from any radiator or heat source. Do not block the vent.

Warning 8: Do not leave any food or liquid inside the system or any other component. Do not use the equipment in the environment of high humidity and high dust.

Warning 9: Use of a wrong type of battery might cause explosion. Before replacement of battery, please consult the manufacturer and use the battery of same or similar type recommended by the manufacturer. Do not disassemble, squeeze and puncture the battery or make its external contacts short out. Do not expose it to the environment of fire or water, or the temperature exceeding 60 °C. Do not attempt to open or maintain the battery. Be sure to properly dispose spent batteries. Do not mix the spent batteries, the circuit boards that may contain batteries, and other components and wastes. For battery recycling, please contact the local recycling and disposal agency.

If you purchased a cabinet product, please read the installation instructions attached carefully, understand specific warning statements and installation process, and follow the following precaution measures to ensure the stability and security of the cabinet:

Warning 10: Before installing the device in the cabinet, please install front and side legs on a separate cabinet first; for the cabinet connected to other cabinet, please install front legs first. If legs are not installed accordingly before installation of devices in a cabinet, it may cause the cabinet turnover in some cases, so as to cause personal injury. Therefore, please install the legs before installation of the devices in the cabinet. After installation of equipment and other components in the cabinet, you can pull out only a component through its sliding components one time. If several components are pulled out simultaneously, it may cause the cabinet turnover and serious personal injury.

Warning11: Do not move the cabinet alone. Taking into account the height and weight of the cabinet, at least two people should move the cabinet at the same time.

Warning 12: Statement

This is a Class A product that may cause radio interference in a life environment. In this case, the user should take feasible measures.

About this Manual

- Product overview
- BIOS
- Install the operating system
- Integrated Raid System
- FAQ and troubleshooting

We recommend that you read this manual carefully before using the main chassis of this server, in order to avoid unnecessary operation mistakes.

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Overview of NX5440M4 computing blade

Technical specifications

Processor	
Processor type	1 -2 Intel®Xeon Haswell-EP series processors
Platform	
Platform type	Grantley-EP 2S Platform
Memory	
Memory type	DDR4-1600/1866/2133 ECC Registered
Memory slots	8
Total memory capacity	Supporting maximum 512GB
Display controller	
Controller type	Integrated display card
Hard disk controller	SATA controller supports 2 2.5-inch hot-swap SATA / SSD hard disks

Views

Views are as shown in Fig. 1-1:

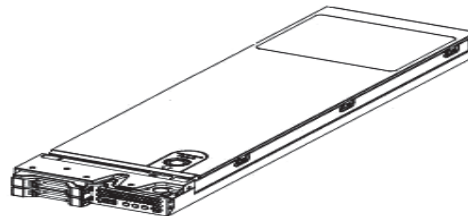


Fig. 1-1 Computing Blade

Overview of NX5440M4 computing blade

Unit interfaces and indicator lights

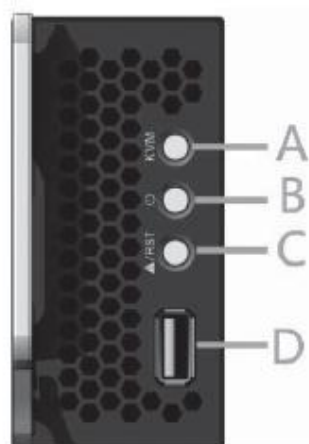


Fig. 1-2 Unit Interfaces and Indicator Lights

No.	Name	Status /function
A	KVM status indicator light/key	Blue when KVM blade is activated/manually activate the current blade
B	Power key/power supply indicator light	Switch blade module/light on when normally working, and green flickers when BMC is enabled
C	Reboot key/fault indicator light	Reboot blade module/red flickers in case of any blade fault
D	USB interface	Connecting USB equipment

Use

NX5440M4 computing blades must be installed in the Inspur I8000 server system for use. For the installation method, please refer to relevant parts of I8000 server user manual or the schematic diagrams pasted on the I8000 blade server chassis. Here, we will talk about it any more.

Jumper setting

Mainboard jumper setting aims to change interface functions through short-circuit connection of two jumper pins, so as to adjust mainboard functions, as shown below.

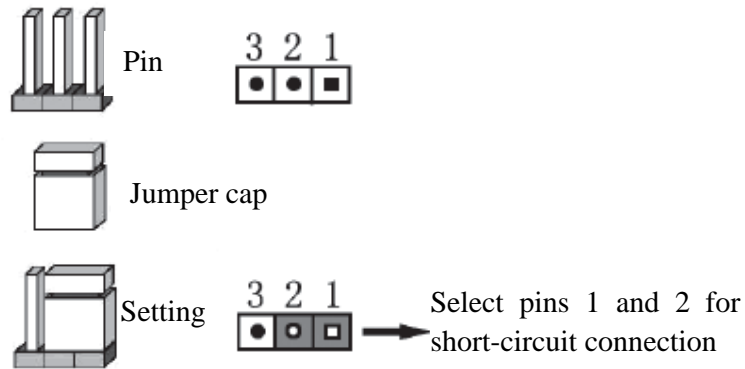


Fig. 1-3 Jumper Setting

Open the upper panel of chassis

Any change of mainboard jumper shall be authorized by Inspur. Open the upper panel of chassis according to the following steps:

1. Close system, pull out the blade module, press and hold deblocking shrapnel;
2. Push out towards the arrow direction, to remove the upper panel of chassis.

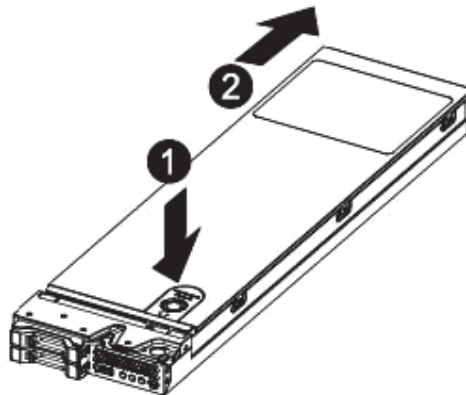


Fig. 1-4

Overview of NX5440M4 computing blade

Clear CMOS jumper

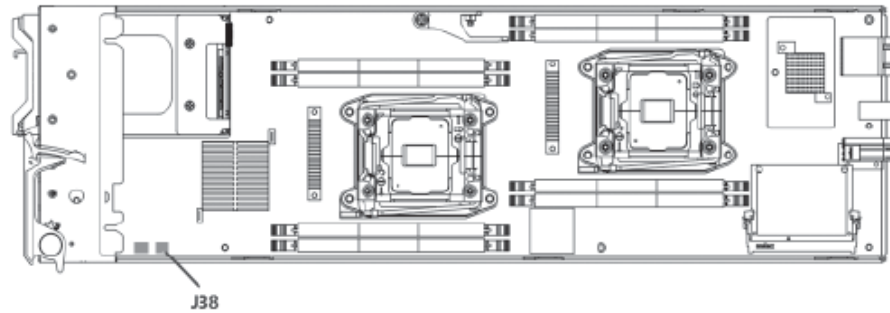


Fig. 1-5 Jumper Position

Jumper No.	Description	Functions
J38	CMOS Clear jumper	Pin 1-2 short-circuit connection, normal status; Pin 2-3 short-circuit connection, Clear CMOS.

Notes

Clear CMOS, and wait for 5 seconds after short-circuit connection of Pin2-3; then conduct short-circuit connection of Pin1 and Pin2 stitches of CLR_CMOS jumper with the jumper cap again (default setting status), and recover original status.

BIOS

How to enter BIOS setup interface

Switch on and boot this server, to start system boot. If the prompt of “Press to SETUP or <TAB> to POST” appears at the bottom of screen, press **DEL**, wait and enter the “BIOS setup” interface.

In case of failure to enter, please press **Ctrl-Alt-Del** simultaneously, and reboot. Repeat the above operations (If you press the **DEL** key when seeing the prompt, you should complete operation as soon as possible).



Some BIOS options can not be set, such as automatic system test and configuration.

Select the rightward pointer in front of some option, and press **Enter** key, cascading menus (namely sub-menus) will be displayed.

BIOS System menu

This chapter mainly introduces the following function menus of BIOS, and notes.

Function menus:

Menu	Function
Main	Setting basic system options such as system time and system date, and displaying the information of BIOS, memory, etc.
Advanced	Setting advanced features of serial port redirection, PCI bus, CSM module
IntelRCSetup	Setting memory mode, CPU properties, power dissipation management, QPI speed, IIO module, ME module, PCH module, etc.
Server Mgmt	Display BMC network configuration parameters
Boot	Setting boot sequence of system devices
Security	Setting system administrator and user password
Save &Exit	Save BIOS setup, and exit BIOS setup, etc.

BIOS

Operation key description:

Key	Description
↑ (Up key)	Select the previous menu or value
↓ (Down key)	Select the next menu or value
← (Left key)	Select the left menu or value
→ (Right key)	Select the right menu or value
Esc key	Back to the previous menu or exit BIOS setup interface
+ key	Change the option value. Change the value of current menu option to the previous option value. This key only display the values related to this option, rather than all option values
- key	Change the option value. Change the value of current menu option to the next option value. This key only display the values related to this option, rather than all option values
F1 function key	Help hotkey, can display relevant description of current menu
F9 function key	Recover the default setting for the best performance
F10 function key	Save CMOS setting and exit
Enter function key	Execute current command or enter sub-menus

Statement:

Here, we introduce only common BIOS options, which you need not or should not set. We will not talk about them any more.

Main menu

In the BIOS setup, Main menu is first displayed, through which a user can view BIOS version and memory capacity, and also set system time and date, etc.

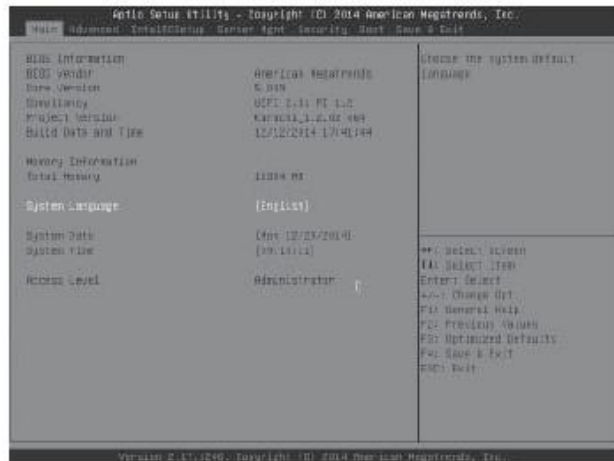


Fig. 2-1

- BIOS Information

Display BIOS version, BIOS change time.

- Memory Information

Display system memory capacity size.

- System Date

Setting system date in the format of week/ month /day /year.

- System Time

Set system time in the format of hour/minute/ second (24 hours).

Advanced menu

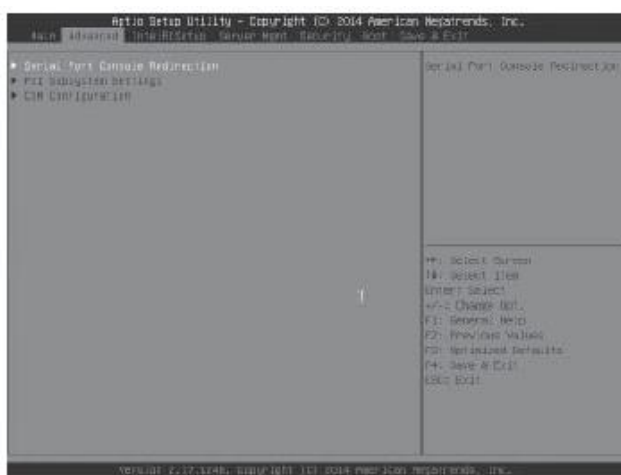


Fig. 2-2

BIOS

- Serial Port Console Redirection

Serial port redirection function, is disabled by default.

- PCI Subsystem Setting

Managing the resource distribution of PCI devices at the time of enumeration, and IO virtualization.

- CSM Configuration

Control enabling of BIOS CSM module. If some devices need Option Rom support, do not disable CSM Support.

Filter BIOS startup options; enabled for legacy or UEFI?

Control network card devices in enabling for UEFIPXE or Legacy PXE.

IntelRCSetup menu

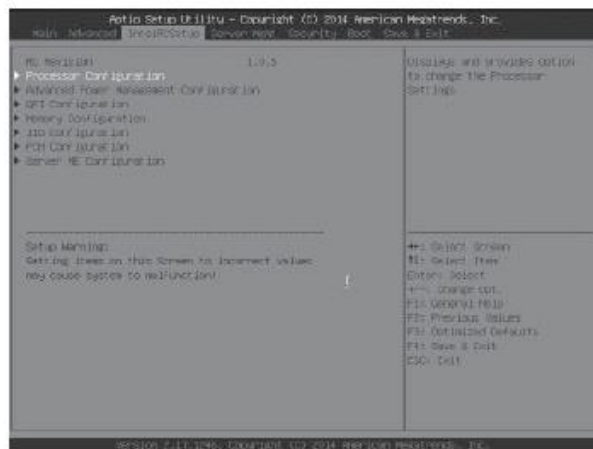


Fig. 2-3

IntelRCSetup menu mainly includes the following sub-menus:

- Processor Configuration
- Advanced Power Management Configuration
- QPI Configuration
- Memory Configuration
- IIO Configuration
- PCH Configuration

- Server ME Configuration

Main and common menu options are introduced as follows.

Processor Configuration

View basic information of processor, enable or disable some functions.

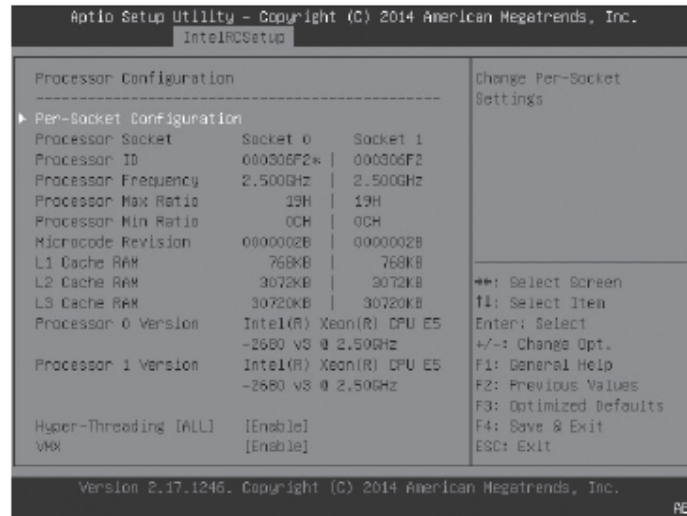


Fig. 2-4

★ Per-Socket Configuration

Set single processor, and control cores enabled.

◇ Cores Enabled

Control processor cores

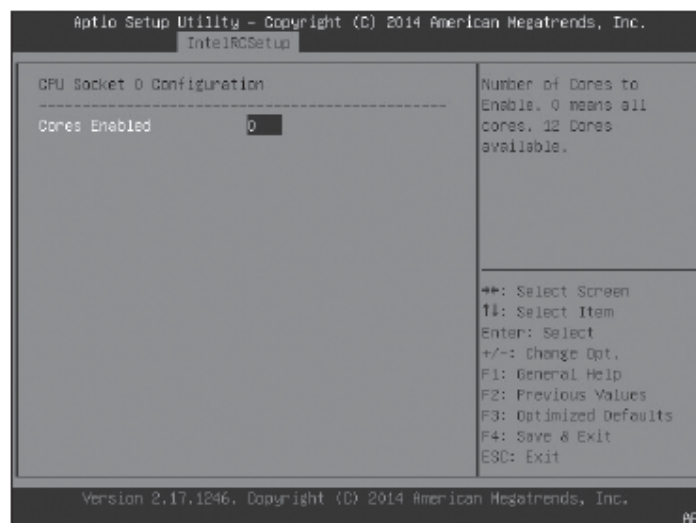


Fig. 2-5

BIOS

★ Hyper-Threading ALL

CPU hyper-threading function options include **Disabled** and **Enabled**. It is enabled by default.

★ VMX

CPU virtualization setting options include **Disabled** and **Enabled**. It is enabled by default.

Advanced Power Management Configuration

Used for CPU power dissipation management.

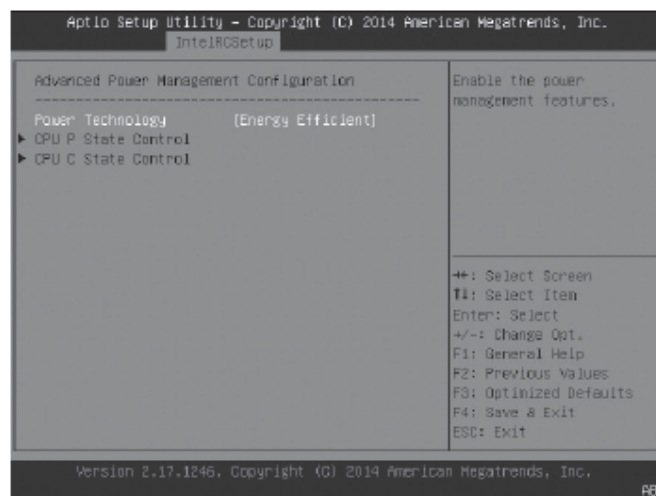


Fig. 2-6

★ Power Technology

Disable, Energy Efficient, Custom.

★ CPU P State Control

◇ EIST (P-States)

Enable or disable Intel EIST technology

◇ Turbo Mode

Enable or disable Intel overlocking technology

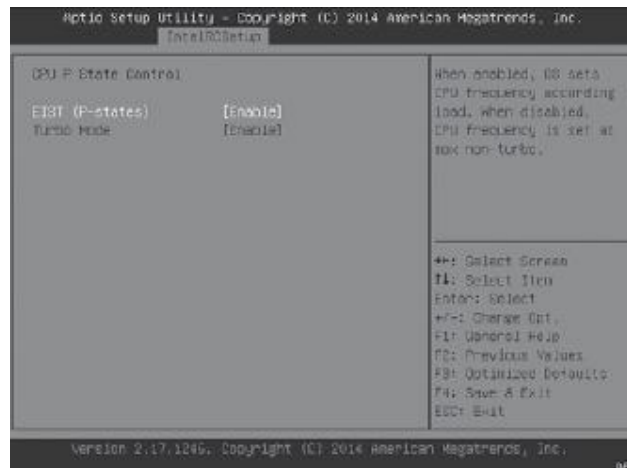


Fig. 2-7

★ CPU C State Control

◇ Package C State Limit

It is used to set Intel CPU Package C State, and to control C States of all threads in single CPU.

A user may select the following C states:

C0/ C1 state, C1 state, C2 state, C6(nonRetention) state,

C6 (Retention) state

◇ CPU C3 report

Control reporting of CPU C3 status to the system.

◇ CPU C6 report

Control reporting of CPU C6 status to the system.



Fig. 2-8

BIOS

QPI Configuration

It is used to view QPI status and set QPI.

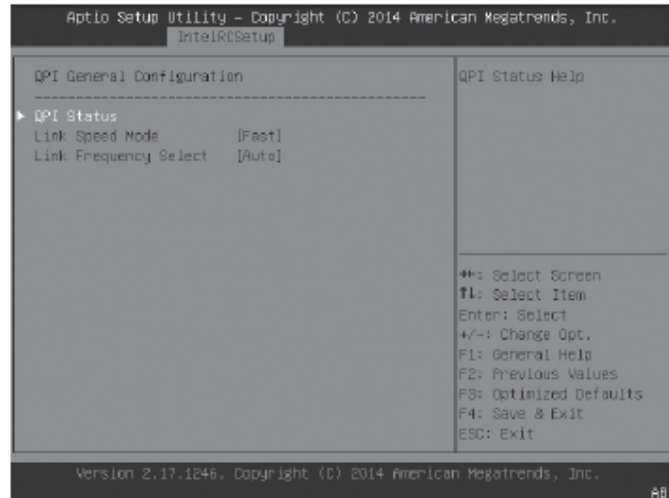


Fig. 2-9

★ QPI Status

Used view current status of QPI bus.

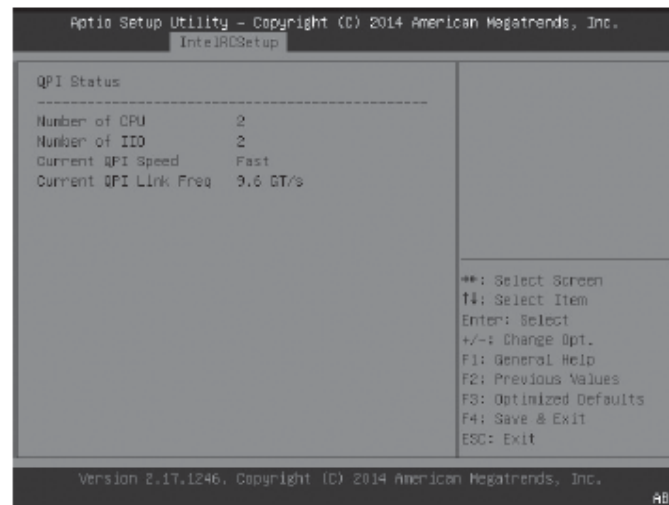


Fig. 2-10

★ Link Speed Mode

Control QPI bus mode

★ Link Frequency Select

Select QPI bus speed

Memory Configuration

It is used to view memory status and set memory controller.

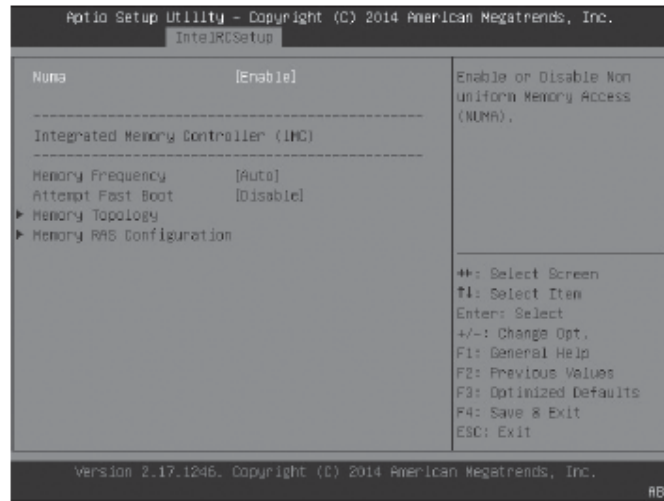


Fig. 2-11

★ Numa

Enable or disable Numa. Enable this function to significantly enhance server performance.

★ Memory Frequency

Select memory frequency

★ Attempt Fast Boot

It is used to skip some steps of memory initialization and realize rapid startup.

★ Memory Topology

It is used to view memory topology information.

★ Memory RAS Configuration

It is used to set RAS function of memory controller.

◇ RAS Mode

Memory mode options include Disable, Mirror, Lockstep Mode. It is Disabled by default.

Mirror: Enable Mirroring function. DIMM 0/1, 2/3 in each CPU shall be equipped with the same memory. After being Enabled, CPU0 and 2 will serve as mirror masters, while CPU 1 and 3 will become mirror slaves of CPU0 and 2.

BIOS

When writing memory, the system will directly write contents into master and slave simultaneously. At this moment, system memory seen will be half of actual memory.

Lockstep Mode: Enable Lock Step function. DIMM 0/1, 2/3 in each CPU should be equipped with the same memory. Enable this function to enhance memory error correcting capability.

◇ Lockstep x4 DIMMS

Select whether to use X4 DIMMs

◇ Memory Rank Sparing

The memory of at least 2 rank should be equipped to enable Sparing function. After this function is Enabled, the system will disable one rank. When other rank errors of this memory accumulatively reach certain threshold, error rank will be mapped out and replaced by a standby rank selected before. Afterwards, this DIMM loses the sparing function.

Under sparing mode, system memory seen is less than actual memory.

◇ Error Threshold

It is used to set accumulative error threshold.

◇ Patrol Scrub

After it is enabled, CPU will read and check all memory chips installed one time within certain period. Any ECC error discovered will be actively corrected.

◇ Patrol Scrub Interval

It is used to set Patrol Scrub period.

◇ Demand Scrub

After it is enabled, CPU will discover and correct any Ecc error when reading certain memory.

◇ Device Tagging

After it is enabled, if certain particle in single rank of DIMM has any error, the particle used for error correcting will replace. Then, this rank has no Device tagging function, and error correcting capability will decline.

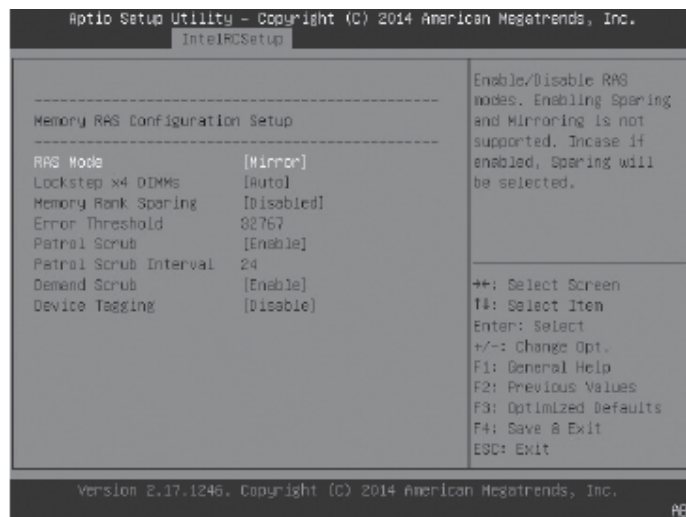


Fig. 2-12

IIO Configuration

It is used to set CPU IIO.

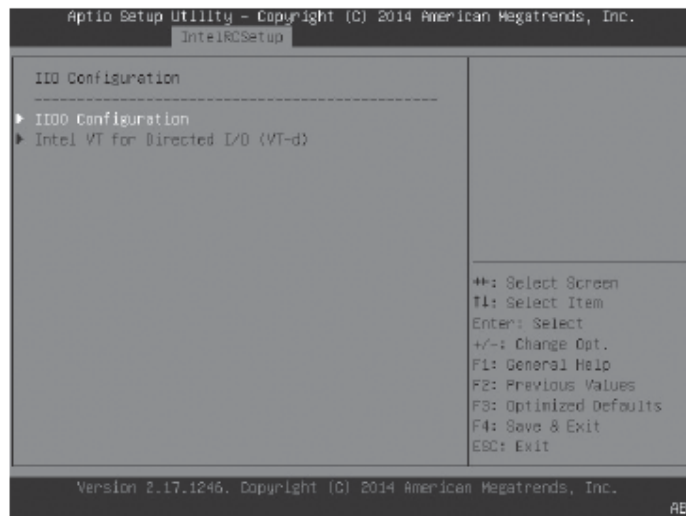


Fig. 2-13

★ IIO0 Configuration

It is used to set CPU IIO PCIe Port, including slots width, slot work speed, and current slot status.

◇ IOU2 (IIO PCIe Port 1)

Control PCIe port width.

BIOS

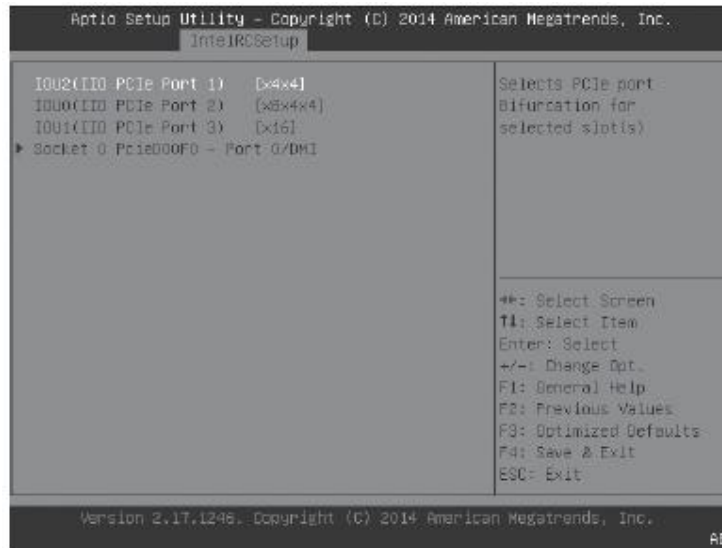


Fig. 2-14

◇ Socket 0 PCIe D00F0 – Port 0/DMI

It is used to view connecting status, and to set Link Speed and DeEmphasis.

- Link Speed

setting PCIE Speed.

- PCI-E Port DeEmphasis

It is used to set PCIE Port DeEmphasis.



Fig. 2-15

★ Intel VT for Directed I/O (VT-d)

Directed I/O supports Intel virtual technology or not. There are two options, namely Disabled and Enabled.

It is disabled by default.

2.2.3.6 PCH Configuration

Enter this interface to set PCH function.

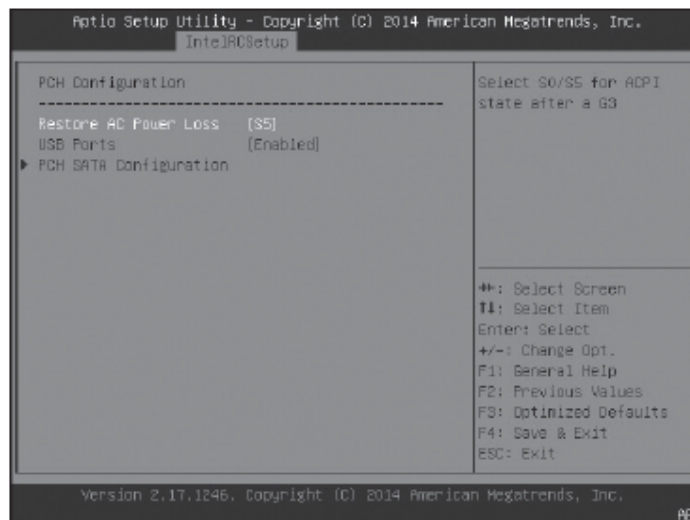


Fig. 2-16

★ Restore AC Power Loss

It is used to set power supply status after system power failure. S5 indicates shutdown status, and manual startup is needed; Last State denotes the status at the time of previous power failure; S0 denotes automatic startup status.

★ USB Ports

Enable or disable USB devices on the whole board.

★ PCH SATA Configuration

◇ SATA Controller

Enable or disable SATA controller.

◇ Configure SATA as

It is used to set the mode of integrating SATA controller on the mainboard. IDE, AHCI and RAID are available for selection.

◇ Port X

BIOS

Separately control disabling of SATA port.

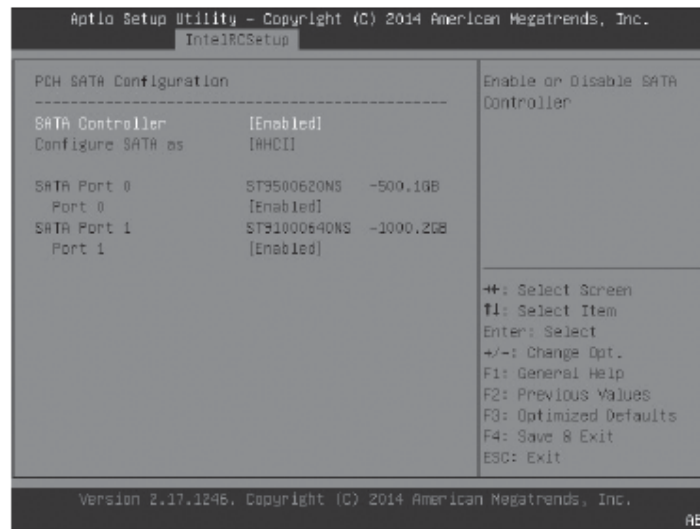


Fig. 2-17

Server ME Configuration

This menu is used to display relevant information of ME subsystem, including the information of BIOS interface version, FW status, FW error code, etc.

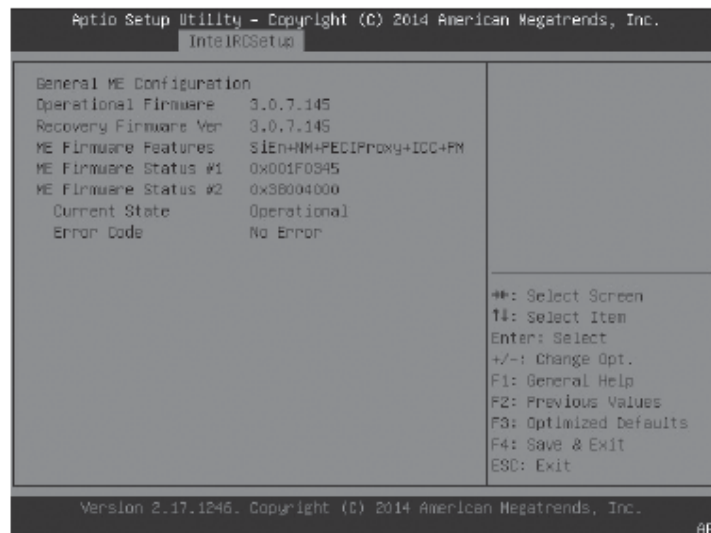


Fig. 2-18

Server Mgmt menu

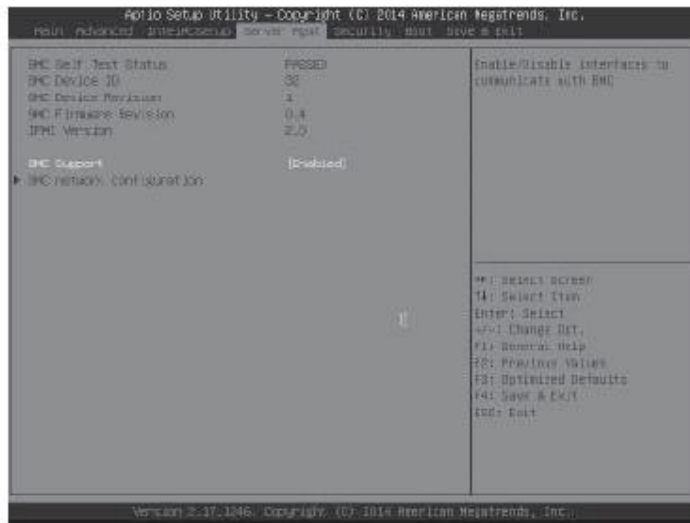


Fig. 2-19

- BMC Support

Enable and Disable are available for selection. It is used to control the interaction of BIOS with BMC.

- BMC network configuration

This menu is used to display configuration information of BMC network interface

Security menu

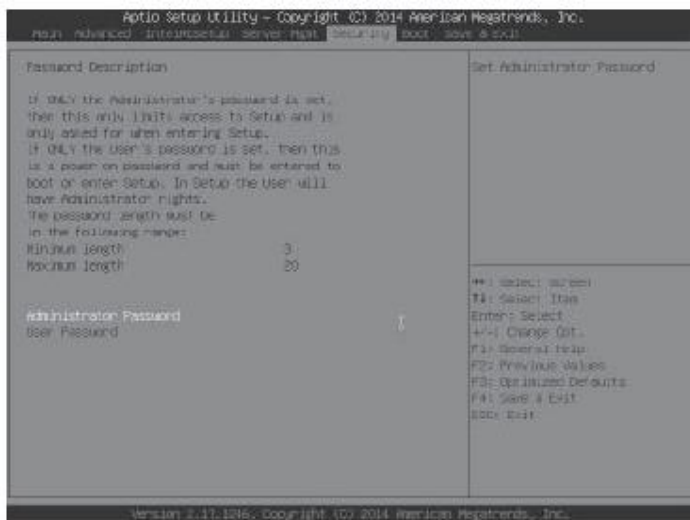


Fig. 2-20

BIOS

- Administrator Password

This menu is used to set system administrator password. After setting administrator password and entering the BIOS Setup interface, input the password of ordinary user level or above.

- User Password

This menu is used to set user password. After setting user password, booting the system and entering the BIOS Setup interface, input user password. If administrator password and user password are set simultaneously in the BIOS Setup interface, user will be inferior to administrator in authority.

Boot menu

It is mainly used to set the priorities of system boot devices.

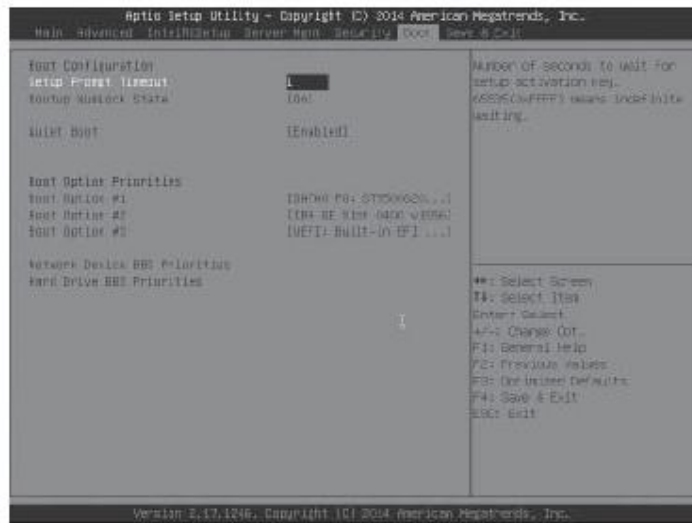


Fig. 2-21

- Quiet Boot

Disabled and Enabled are available for selection. If it is Disabled, when booting, the system will display normal self-test information. If it is enabled, when booting, the system will display OEM LOGO rather than self-test information.

- Boot Option #1/#2#3

Enter this menu, select a boot sequence device option, press the **Enter** key to pop out the list of boot devices, select certain device through the arrow key, and press the Enter key to set this boot sequence.

- Hard Drive BBS Priority

Press Enter key to enter submenus and set the device boot sequence.

Save&Exit menu

This menu is used to save or exit BIOS setup changes, or to exit the setting interface.

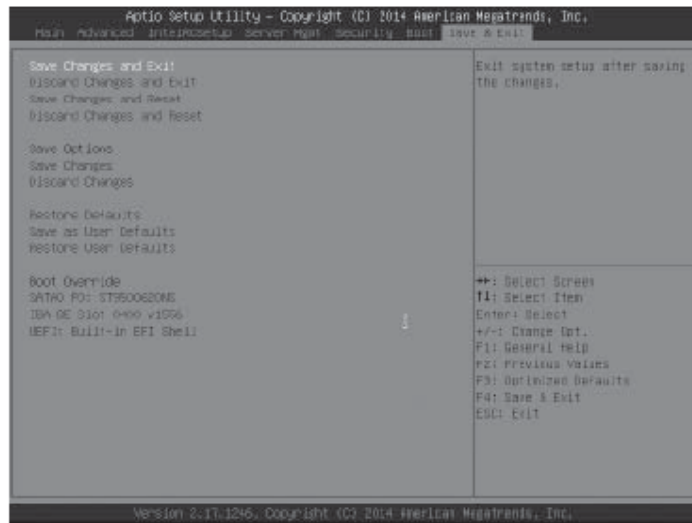


Fig. 2-22

- Save Changes and Exit

Select this option, press Enter key, and click **Yes** in the pop-out prompt, to save the BIOS setup changes and exit BIOS setup interface. This menu function may be enabled through F10 shortcut key.

- Discard Changes and Exit

Select this option, press **Enter** key, and click Yes in the pop-out prompt, to exit the BIOS setup changes and the BIOS setup interface.

- Save Changes and Reset

Select this option, press **Enter** key, and click Yes in the pop-out prompt, to save the BIOS setup changes, exit BIOS setup interface, and reboot.

- Discard Changes and Reset

Select this option, press **Enter** key, and click **Yes** in the pop-out prompt, to ignore the BIOS setup changes, exit BIOS setup, and then reboot.

BIOS

- Saving Changes

Select this option, press Enter key, and click Yes in the pop-out prompt, to save your the BIOS setup changes, without exit of BIOS setup interface.

- Discard Changes

Select this option, press Enter key, and click Yes in the pop-out prompt, to exit the BIOS setup changes, without exit of BIOS setup interface.

- Restore Defaults

Select this option, press Enter key, and click Yes to load the default optimal setting, without exit of BIOS setup interface. This menu function may be enabled through F9 shortcut key.

- Save as User Defaults

Select this option, press Enter key, and click Yes to save current setting values of BIOS options as default values.

- Restore User Defaults

Select this option, press Enter key, and click Yes to load default values.

- Boot Override

Select a device option, and then press Enter key to boot the system from the selected device.

Install the operating system

This chapter focuses on installation of the operating system for this server:

- Boot the operating system from CD and manually install the operating system

To manually install certain operating system, a user maybe needs to load the hard disk controller driver through the floppy drive or Inspur drive U disk. For making the driver floppy disk, please refer to the readme.pdf file in root directory of Inspur system driver disc. For the method of making Inspur drive U disk drive and the drive load notes, please refer to attached Instructions on Inspur Drive U Disk.

In the driver making interface, a user may view and make the controller driver for operating system installation under relevant configuration options. The operating systems suitable for manual installation are all 64-bit systems.

Suggest confirming whether selected operating system is supported by your equipment in advance.

Manually install Windows Server2012 R2

Installation preparation

- Windows Server2012 R2 installing disc (X86_64bit version)
- Inspur driver disc

Installing steps

1. Switch on and boot this server, put Windows Server 2012 R2 installing disc into the DVD-ROM, and select “boot from CD” .
2. If system prompt of “confirming to boot from CD” appears, press any key, or Windows installing program will be automatically enabled through CD.
3. In the **Language and Other Preference** setting interface, select and set according to actual conditions, and then click Next to continue.
4. In the installation confirming interface, click **Install Now**.
5. In the “select the operating system to be installed” interface, select from the list according to your CD version.

Install the operating system

In the “input product key” interface, input your product key (25 characters) according to actual conditions, and then click **Next** to continue.

If you select the "Automatic online windows activation" option at the bottom of key, system will try automatically activating your windows within three days after your first login. After windows installation, you enjoy a 30-day period for online (or by phone) windows activation. If the period expires before your activation, windows will stop running.

6. In the "License Terms" interface, you can learn about the Microsoft software license terms. After reading carefully, please select "I accept the license terms", and then click Next to continue.
7. Select the type of installation. For the first installation by default, select "Customize: only install Windows (Advanced)" mode.
8. In the "where to install Windows" interface
 - ⊙ If the prompt of "no drive is found" appears, it indicates that the disk controller drive program needs to be loaded through the Inspur drive U disk, with details as follows:

Load the drive program with the Inspur drive U disk:

- ① Load hard disk controller driver into the 3.5 floppy disk (A:) partition of Inspur drive U disk;
 - ② Connect Inspur drive U disk to the USB interface of the server;
 - ③ Click the "Load Driver" option on the interface, and click **OK** in the pop-up prompt interface;
 - ④ System will automatically search for the driver. Click **Next** in the "select the driver" interface;
 - ⑤ System will automatically install the driver found, and return to the main interface.
 - ⊙ If the system automatically installs the disk controller driver, information of existing partitions and unallocated space of the computer will be displayed in the main interface. Click **Drive Options to** start disk partitioning.
9. In the disk partitioning interface, you can:
 - ⊙ Delete existing partitions by selecting existing disk partitions and then clicking **Delete**.

Install the operating system

- ④ Format a partition by selecting an existing disk partition and then click **Format**.
- ④ Create a new partition by selecting an unallocated disk space and then clicking **Create**.

You can operate according to the actual needs. Here, we will introduce how to create partitions:

- ① Select the unallocated disk space, click **Create**, delete the figure in the partition size input box, enter the disk partition size (by MB), and then click **Apply**.

Notes: suggest a partition size of 30GB or above.

- ② If the prompt of “To ensure that all Windows functions are normal, additional partitions maybe need to be created for system files” pops out, click **OK** to continue; through this operation, a disk partition reserved by the system will be created additionally.
- ③ Select the disk partition (primary partition) you just created, click **Format**, and click **OK** in the prompt confirmation interface.
- ④ After formatting, click **Next** to continue.

10. The system will install Windows, copy the files, expand files, and load functions and updates until installation completion. In this process, the system may automatically restart several times.

11. After installation, the system will enter the “change password before first user login” interface, take out the installing disc and drive U disk, and click **OK** to continue.

12. Set administrator password according to prompt, and then click the arrow button on the right of password input box. If password meets requirements, the prompt of “your password has been changed” will pop out, when you can click **OK** to confirm.

Windows Server2012 R2 requires strong type passwords, so the password must contain letters, numbers and special characters, or setting fails.

13. After login, select the “do not display this window when logging” in the “initial configuration task” interface, then click **Close**, and select “Do not display this console when logging” in the pop-out “Server Manager” interface, to close the interface.

Install the operating system

Install driver

1. Install Chipset drive
 - 1) Insert the Inspur driver disc, click the Blue Dolphin icon under **Install** or **Run** option in the pop-out AutoPlay interface, input the navigation code marked on the driver disc cover in the navigation code verification interface, and click **OK** to automatically enter the installing interface;
 - 2) Select Windows 2012 R2 in the “Please select an operating system” field;
 - 3) Select chipset driver in the “Please choose parts” field;
 - 4) Click Next to start the installation;
 - 5) Enter the “Welcome to use the installation program” interface, and click Next;
 - 6) Enter the “license agreement” interface, and click **Yes** to continue the installation;
 - 7) Enter the “Readme file information” interface, and click Next;
 - 8) Start installing the program, and display installation progress, After installation, click Next continue to;
 - 9) In the “installation completion” interface, click **Finish**.
2. Install network card driver

After installing the chipset driver, continue to install the network card driver instead of removing the driver disc.

- 1) Select Windows 2012 R2 in the “Please select an operating system” field;
- 2) Select the network card driver _64bit in the “please select parts” field;
- 3) Click **Next** to start the installation;
- 4) In the installing menu interface, click **Install Driver and Software**;
- 5) In the “Welcome to use the setup wizard” interface, click **Next** to continue;
- 6) In the “License Agreement” interface, click “I accept all terms of the license agreement” , and then click Next to continue;
- 7) In the “Installing options” interface, click Next to continue;
- 8) In the “Ready to install programs” interface, click **Install** to continue;
- 9) Start program installation, and click **Finish** after completion;
- 10) In the installing menu interface, click **Exit**.

Install the operating system

3. Install IB daughter card (HCA card) drive (Optional)
4. Take out the Inspur driver disc, when system will automatically reboot to complete installation of Windows Server 2012 R2.

Manually install Red Hat Enterprise Linux 6.4

Installation preparation

- Red Hat Enterprise Linux 6.4 installing disc (X86_64bit version)
- Inspur driver disc

Installing steps

1. Switch on and boot the system, and put the installing disc into DVD-ROM (take the use of DVD installing disk as an example). Set in BIOS to boot the server from CD.
2. “Welcome to Red Hat Enterprise Linux 6.4 !” interface will be displayed. The options are as follows:

Install or upgrade an existing system

Install system with basic video driver

Rescue installed system

Boot from local driver

Up and down arrow key may be used to select options. We think you install for the first time by default. Select “Install or upgrade an existing system”, and press the **Enter** key to continue installation.

3. Installation program display: Disc Found
Click **Skip** to skip CD testing, and press the **Enter** key to continue installation.
4. Enter “RED HAT ENTERPRISE LINUX 6”interface, and click **Next**.
5. Enter “What language would you like to use during the installation process?” interface, select “English(English)”, and then click **Next**.

Install the operating system

6. Enter “Select the appropriate keyboard for the system” interface, select “US.English” according to actual conditions, and then click **Next**.

7. Enter “What type of devices will your installation involve?” interface, and select device types according to actual conditions.

Select **Basic Storage Devices**, and click **Next**.

If “Storage Device Warning” interface pops out, please select and confirm according to actual conditions, and continue installation.

8. Set Hostname according to actual conditions;

Select **Configure Network** on the bottom left corner of the interface for network configuration, to add or delete network card, or to configure network IP address. After network configuration, click **Next**.

9. Enter “Please select the nearest city in your time zone:” interface, select “Asia/Shanghai”, and then click **Next**.

10. Enter “Setting Root Password” interface, set a password consisting of at least 6 numbers, and then click **Next**.

If your password is not safe, system will pop out the “Weak Password” prompt interface, select according to actual conditions, and then continue.

11. Enter “Which type of installation would you like?” interface.

Take the customized manual partition as an example: select “New Custom layout”, and click **Next**.

12. Enter the “select the hard disk for installing” interface. In the “Data Storage Devices (to be mounted only) list, system will display tested storage devices.. Please double click the hard disk for which a system will be installed according to actual conditions, add this hard disk to the “Install Target Devices” list, select one hard disk as “Boot Loader”, and then click **Next**.

13. Enter “Please Select A Device” partitioning interface (If hard disk has been partitioned, existing partition situation will be displayed. If it is unnecessary, you can delete it).

First select a hard disk, and click **Create**, when the system will pop out “New Storage” interface.

Select “Create Partition--Standard Partition”, and click **Create** to enter “Add Partition” interface.

Install the operating system

① Create root partition (/) and boot partition:

Select root partition in the Mount point: /, select the hard disk for which a system will be installed in the Allowable Drives window, input partition size in the Size(MB), and click OK to complete creating a root partition.

Similarly, a boot partition can be created: /boot.

② Create swap partition (Swap): Select “Swap” in File system Type, select the hard disk for which a system will be installed in the Allowable Drives window, input swap partition size in the Size(MB), and click **OK** to complete creating the swap partition.

You can also create other partitions as needed. After partitioning, click **Next to** continue installation.

If “Format Warnings” interface pops out, confirm according to the prompt.

14. If the “Writing storage configuration to disk” prompt window pops out, select “Write changes to disk”, to format hard disk partition.

15. Enter “Boot Loader” setting interface, set according to needs, and then click **Next** to continue the installation.

16. Enter the “select installation type and software package” interface, and customize installation according to actual conditions. Select “Customize now” (customize software package), and click Next.

17. Enter “program package selection” interface, select the software package according to actual conditions, and click Next.

Select **D e s k t o p, X W i n d o w s S y s t e m** software package in **D e s k t o p** s, and **Development tools** software package in **Development**.

18. Start building the file system and copy files.

19. Display of “Congratulations, your Red Hat Enterprise Linux installation is complete.” interface indicates successful system installation. Click **Reboot**, and take out the installing disc, when system will automatically reboot.

20. After system reboot, enter “Welcome” interface, and click **Forward** to continue installation.

Install the operating system

21. Enter “License Information” interface, select “Yes, I agree to the License Agreement”, and click **Forward** to continue installation.
22. Enter “Set Up Software Updates” interface and click Forward to continue installation.
23. Enter “New User” interface, set user name and password according to the actual need to add a new user, and then click **Forward** to continue the installation.
24. Enter “Date and time” interface, set correct time and date, and then click Forward to continue installation.
25. Enter “Kdump” setting interface, set according to actual conditions, and then click **Finish** to complete installation.
26. Input Username and Password to login in the system.

Load HCA card drive

1. Put Inspur driver disc into DVD-ROM, and left click **Applications** → **Accessories** → **Terminal**

2. In the terminal window, input:

```
mount -o ro,loop MLNX_OFED_LINUX-<ver>-<OS label>.iso /mnt
```

3. Enter /mnt directory, and execute installation script, to automatically install the drive

```
/mnt/mlnxofedinstall
```

(1). After installing drive, input in the terminal window: “mst start” Starting MST (Mellanox Software Tools) driver set

```
Loading MST PCI module - Success
```

```
Loading MST PCI configuration module - Success
```

```
Create devices
```

```
MST modules:
```

```
-----
```

```
MST PCI module loaded
```

```
MST PCI configuration module loaded
```

Install the operating system

Display of the above information indicates normal drive load

(2). Input “mst status”

MST devices:

/dev/mst/mt4099_pciconf0 - PCI configuration cycles access.

bus:dev.fn=02:00.0 addr.reg=88 data.reg=92

Chip revision is: 01

/dev/mst/mt4099_pci_cr0 - PCI direct access.

bus:dev.fn=02:00.0 bar=0xdfb00000 size=0x100000

Chip revision is: 01

Display of the above information indicates that HCA devices are normally identified and may be used.

4. Driver unloading

Execute `/usr/sbin/ofed_uninstall.sh`, to automatically unload the driver

Integrated RAID System

This chapter mainly introduces the configuration and use of SATA controller RAID integrated on the mainboard.

To use SATA RAID integrated on the mainboard, enter BIOS setup interface, set “IntelRCSetup → PCH Configuration → PCH SATA Configuration → Configure SATA as” option as **RAID**, save and exit BIOS.

How to enter “SATA RAID configuration” interface

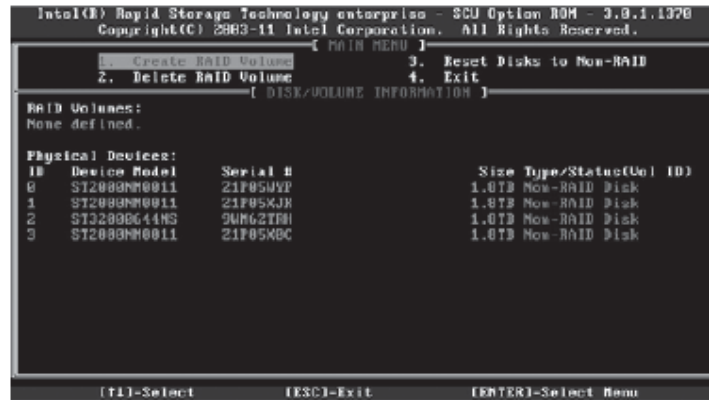
1. In the system startup process, the following prompt will pop out:
Press<CTRL-I> to enter Configuration Utility...
2. Press **Ctrl-I** to enter SATA RAID configuration interface.

Control key applications

Key	Description
↑↓	It is used to move cursors for different menus or change menu options
TAB	Select the next menu setting option
Enter	Select a menu
Esc	Exit menu or back to the previous menu from sub-menus

SATA RAID setting

In the “SATA RAID configuration” interface, menu list information will be displayed, including the information of hard disks connected to SATA controller (hard disk ID number, hard disk model, hard disk capacity, and volume member status of hard disk, etc.), and the information of existing RAID volumes (including volume ID number, name, RAID level, capacity, status, and boot information), as shown below:



Executable menus on the SATA RAID configuration interface include:

- Create RAID Volume
- Delete RAID Volume
- Reset Disks to Non-RAID
- Exit

Create RAID Volume

This option is used to create RAID volumes.

In the SATA RAID configuration interface, select this menu through $\uparrow\downarrow$ arrow key, then press the **Enter** key or directly input the number in front of the menu to enter **Create RAID Volume** menu.

System will display the following menu options:

Name: please input less than 16 volume names not containing special characters.

RAID Level: please select RAID volume level. If any volume is not created currently, please select RAID0(Stripe), RAID1 (Mirror), RAID10 (RAID0+1) or RAID5 (Parity) according to actual conditions.

RAID0: Allowing 2 or more hard disks.

RAID1: Allowing 2 hard disks.

RAID10: Allowing 4 or more hard disks.

RAID5 (Parity): Allowing 3 or hard disks.

Disks: select hard disks to create a RAID volume. Select this option, press the **Enter** key, enter the hard disk selection interface, select hard disks with **Space** key in proper order, and then press the **Enter** key to back to the volume creating menu

Integrated RAID System

interface.

Strip Size: Used to set volume strip size, only suitable for RAID0 and RAID5 volumes.

Capacity: Used to set volume capacity. Volume has the maximum capacity by default.

After the above setting, please select **Create Volume**, and press the **Enter** key, when system will prompt:

“WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST. Are you sure you want to create this volume?(Y/N):”.

If you really need to create a RAID volume, please input “Y” to start volume creating, while data in the selected hard disk will get lost.

If you do not want to create a RAID volume, please input “N”, to exit volume creating process.

We select to input “Y”. After creating a volume, back to SATA HostRAID configuration interface. Created RAID volume will be displayed in the list of RAID volumes.

Delete RAID Volume menu

It is used to delete existing RAID volumes.

In the SATA RAID configuration interface, select this menu with ↑↓ arrow key, and then press the **Enter** key or directly input the number in front of the menu to enter the **Delete RAID Volume** menu.

System prompt: “Deleting a volume will reset the disks to non-RAID. Warning: ALL DISKS DATA WILL BE DELETED.”.

If you really want to delete a RAID volume, please press **DEL** key, when system will pop out the following prompt: “ALL DATA IN THE VOLUME WILL BE LOST! Are you sure you want to delete “Volume*”? (Y/N):” If you really want to delete this RAID volume, please input “Y”; if you want to cancel deleting this RAID volume, please input “N”.

Reset Disks to Non-RAID menu

This option is used to reset hard disks in the RAID volume and recover to non-RAID status.

Integrated RAID System

In the SATA RAID configuration interface, select this menu with ↑↓ arrow key, and then press the **Enter** key or directly input to enter this menu.

System will display all hard disks in the RAID volume. Please select the hard disk to be reset with Space key according to actual conditions, and then press the **Enter** key, when system will prompt about whether to reset the hard disk again. You can input “Y” or “N” according to prompt. But be careful. When hard disk is reset, all data in it will be lost, and this hard disk will not belong to RAID volume any longer.

Exit menu

This option is used to exit SATA HostRAID configuration interface.

In the SATA RAID configuration interface, select this menu with ↑↓ arrow key, and then press the Enter key to enter this menu.

When system prompt “Are you sure you want to exit?(Y/N):” pops out, input “Y” to exit the SATA RAID configuration interface, and input “N” to cancel exit operation.

FAQ and troubleshooting

This chapter introduces FAQ and related to troubleshooting contents. If you cannot determine failure reasons and troubleshooting methods, please contact our client service center for help.



Before replacing or installing any server hardware device, please disconnect power lines from server completely. Suggest using the antistatic wrist strap when dismantling the server, and connecting the other end to the ground for electrostatic protection.

Reboot

In case of any failure or problem, please first try rebooting the machine according to the following methods.

Objective	Operation method
Reboot software, clear system memory and reboot the operating system.	<Ctrl+Alt+Del>
Clear system memory, conduct POST self-test again, and reboot the operating system.	Reset button
Conduct cold boot again, close system power switch and reboot to clear system memory, conduct POST self-test again, and reboot the operating system, to make all peripheral equipment power up again.	Power button

Boot problems

Some problems often happen at the time of boot generally due to wrong hardware installation and configuration. You can first refer to the following methods to discover and solve problems.

Failure of system power up

If power light is not on after you press the power switch, and system still is electroless, please solve problems according to the following steps:

FAQ and troubleshooting

1. Check whether your power sockets can normally supply power, and whether power lines are connected correctly.
2. Boot many times by pressing the power switch (do not exert much strength with fingers).
3. Disconnect system power lines, and open chassis to check.
4. Check whether cables and accessories in the chassis are connected firmly.
5. Remove plug-in parts unauthorized by Inspur.
6. Load the chassis well, connect power lines correctly and then boot.

No response of the displayer

If it is powered up (host normally boots and revolves), but the displayer makes no response:

1. Check whether signal lines and power lines of the displayer are plugged correctly and firmly.
2. Determine the displayer power switch has been turned on.
3. Adjust the displayer's contrast ratio and brightness, and check whether it is displayed.
4. Close system, disconnect power lines, and check whether contact pins of the displayer signal lines and host connectors are bending.
5. If possible, replace the displayer for testing.
6. Remove any installed parts unauthorized by Inspur first.
7. Upon permission of Inspur's technical support personnel, unplug the memory chip and clear CMOS for testing.

Installation system can not find the hard disk

1. If system is installed directly from CD, but CD is not found, please check whether disc status and POST hard disk status are normal.
2. If the hard disk can be detected at the time of POST, rather than during system installation, please check the following circumstances:
 - If Ruijie management software CD is used to install the system, and prompt “no matched storage controller” pops out after navigation sequence number and system installation information are loaded, please confirm whether navigation sequence number is correctly inputted.
 - As navigation sequence number varies in case of any storage configuration

FAQ and troubleshooting

change, please obtain a new navigation sequence number from technical support personnel of Inspur to change equipment storage configuration.

- If the operating system is installed directly from CD, hard disk driver is generally loaded through floppy drive. Before installing driver through USB floppy drive, first set BIOS and close onboard floppy drive controller.
- Please check whether the floppy disk drive is made correctly (plug-in raid card drive should be made directly through attached raid card drive disk), and whether floppy disk has any failure.

Keyboard and mouse do not work

1. Check whether connectors of mouse and keyboard cable are plugged correctly, and whether connector pins are bending.
2. Check whether mouse is normally set in the control panel.
3. Clean the rolling wheel and drive shaft of mouse.
4. Suggest using the keyboard and mouse passing compatibility test of Inspur Group, or replacing any other qualified keyboard or mouse

System blue screen, crash or reboot

In case of blue screen, reboot or crash during the system use, refer to the following treatment methods:

1. If non-Inspur parts are plugged in or some application software is installed before such failure, suggest unloading for test.
2. Use the latest antivirus software for anti-virus testing.
3. Suggest recording the code displayed in case of blue screen. For example, stop c000000218.....; stop:0x0000007b and other similar error symbols generally indicate system problems. In this case, suggest reinstalling the system according to this user manual or after consulting at 8008600011.
4. If problems cannot be solved through the above operations, suggest calling the customer service center after saving winnt/minidump file in C disk to seek for help of professional technology engineers, who may require you to provide the minidump file for further analyzing blue screen crash causes. If minidump folder is not found in C disk, please refer to the following steps: right-click My Computer, select < Properties> → < Advanced > → < Startup and Failure Recovery>→ <Settings>, change “Write debugging information” on the next page into “small memory dump”, and reboot. In case of next blue screen, system will automatically generate the minidump file.

Machine alarm

If your equipment gives out an alarm during startup or use, please refer to the following treatment steps:

1. If it happens after certain board cards are plugged in, suggest removing them and conducting startup test. If your server works normally now, it indicates that plug-in board cards are not compatible with this server. You'd better not use them any longer. If the problem is not solved, please continue to follow the following steps.
2. Simply judge the alarm position:
 - If the alarm is from the chassis front, exception change of failure indicator light generally will follow, and maybe fan exception or hard disk module exception exists;
 - If the alarm comes from the chassis rear, please check whether a redundancy power supply is configured, whether certain PSU status light has any exception or whether power lines are not available (in case of power alarm, you can press shield switch to stop warning);
 - If the alarm comes from chassis inside, maybe it is given out by the mainboard, RAID card or hard disk backboard. In case of non-display failure or power-up failure, the problem is most likely from the mainboard. In this case, try unplugging the memory chip or clearing CMOS; If POST results show it is normal, an alarm is given out when RAID card is tested, and array exception is displayed, the problem is most likely from the RAID card, and array exception maybe exists; if hard disk backboard gives out an alarm, and hard disk status light of front panel generally has exception, it shall be analyzed comprehensively.
3. After understanding the basic information, please report detailed alarm information to technical support personnel of Inspur as soon as possible, to facilitate our analysis and judgment, and to help you solve problems as soon as possible.

Other notes

1. This server does not support system hibernation function.
2. In order to ensure the system reliability, suggest using relevant model parts tested and certified by us.

FAQ and troubleshooting

3. Please guarantee good electrical environment, normal voltage input and ground connection, and temperature and humidity within the normal range.
4. If your server needs to be transferred for special needs, move after shutdown and poweroff, and avoid vibration during transportation.
5. For more product notes, please refer to the official website of Inspur about server FAQs: http://www.inspur.com/support/Channel_Home/support_sv.asp

Technical support

If you have any question or encounter any problem that can not be solved in the process of using the server, please take the following measures:

1. If you have any question on product configuration and detailed specifications, please contact your supplier.
2. In case of any problem during use, please directly contact the client service center of Inspur, and record the product sequence number on your mainframe box. Upon receipt of your service request, our technical support personnel will offer you solutions or on-site repair service.
3. Contact way of Inspur's client service center:

Free consulting Tel : 400-8600011

800-8600011

Email: sv_str_pcs@inspur.com

Address of downloading Inspur server drivers and product materials:

http://www.inspur.com/support/Channel_Home/support_sv.asp

Names and Contents of Toxic and Harmful Substances or Elements- server

Names and Contents of Toxic and Harmful Substances or Elements -Server

Components	Toxic and harmful substances or elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Chassis	×	○	○	○	○	○
Mainboard	×	○	○	○	○	○
Memory	○	○	○	○	○	○
Hard disk	○	○	○	○	○	○
Power supply	×	○	○	○	○	○
Power lines	○	○	○	○	○	○
Floppy drive	×	○	○	○	○	○
CD-ROM	×	○	○	○	○	○
Plug-in network card	×	○	○	○	○	○
Plug-in memory card	○	○	○	○	○	○
Connection board card	×	○	○	○	○	○
Data cable	×	○	○	○	○	○
Keyboard	×	○	○	○	○	○
Mouse	×	○	○	○	○	○
CPU	×	○	○	○	○	○
Processor heatsink	×	○	○	○	○	○
Guide rail	○	○	○	○	○	○
Presswork	○	○	○	○	○	○
CD	○	○	○	○	○	○
Packing container	○	○	○	○	○	○
Packing cushion	○	○	○	○	○	○
Packaging plastic bag	○	○	○	○	○	○

Description:

- : means the contents of toxic and harmful substances in all homogeneous materials of this component comply with Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.
- ×: means the contents of toxic and harmful substances in at least one homogeneous material of this component fail to comply with Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products, due to limit in PCB welding process.
- The above components are maybe available configuration components. For actual product configuration, please see configuration label.