Dear User of Inspur Yingxin Server,

Heartfelt thank you for your use of Inspur Yingxin Server!

This manual introduces the technical characteristics, the system installation and setup of the server to help you to fully understand and expediently use this server.

Please deliver the package of our product to the waste recycling station for recycling, in favor of pollution prevention and humankind's benefit.

Any alteration about the content of this manual will not be informed.

Please contact Inspur Group Co., Ltd. if you have any questions or advice about this manual.

Inspur Group Co., Ltd.
May, 2012

Statement

Please read the following statements before you use this server. Only when you have read this statement hereinafter and agreed the following terms, you can formally use this server. If you have any questions about the following terms, please contact our supplier or us directly. If you have no questions about these terms and start to use this server, it acquiesces that you have agreed the following terms.

1. We must call your attention that you must not alter any other parameters in the motherboard BIOS of this server at any time, except for the parameters which we promote that you can alter.

2. If there are any hardware problems when you use this server, or you wish to upgrade the hardware, please feed back the detailed hardware configuration of your server to our Customer Service. Don't disassemble the server case or any hardware components in the case by yourself.

3. In this server, the MEMORY, CPU, CPU Fan, Fan, and so on are all in given standard. Please don't use them together with the corresponding components of any other computers.

4. When you have any software problems during the application of this server, we hope that you firstly contact the corresponding software supplier and then he will contact us in favor of communication so as to solve your problem together, especially for the software problems about the installation and operation of the database, network management software or other networking products.

5. Please read carefully our user manual before you use Inspur Yingxin server. If you have any doubt, please do not hesitate to contact our custom center.

6. We must call your attention that in the application process you should pay attention to doing necessary backup of your file.

7. The copyright of the marks and names of all the software and hardware products involved in this manual is reserved by the relevant companies.

8. In the statements above, "us" indicates Inspur Group Co., Ltd; Inspur Group Co., Ltd. holds the right of final explanation about the above statements

Safety Information

For the sake of safety and to avoid potential dangers that may cause property loss and personal injury or death, please read this part carefully before you use this server.

Notes: in order to help you use the equipment, the following considerations can help avoid the occurrence of problems that may damage the components or cause data loss:

1. In case of the following cases, please unplug the power line plug of products from the power socket and contact the customer service department of Inspur:

- The power cables, extended cables or power plugs are damaged.
- The products get wet by water.
- The products have fallen off or been damaged.
- Objects fall into the products.
- When operating according to the operation instructions, the products cannot function normally.

2. If the system becomes damp, please treat it according to the following steps:

- Switch off the power supplies of the system and the equipment, disconnect them with the power socket, wait for 10 to 20 minutes, and then open the cover of the host.
- Move the equipment to the ventilation place to dry the system at least for 24 hours and make sure that the system is fully dried.
- Close the cover of the host, re-connect the system to the power socket, and then start the equipment.
- In case of operation failure or abnormal situation, please contact Inspur and get technical support.

3. Pay attention to the position of the system cables and power cables, wire them in places not to be stepped on or knocked down and ensure not to place other objectives on the cables.

4. Before dismounting the cover of host or contacting the internal components, you shall cool down the equipment first; to avoid damaging the main-board, please power off the system and wait for 5 seconds, and then dismount the components from the main-board or disconnect the connection of peripheral equipment of the system.

5. If there are modulator-demodulator, telecommunication or local area network options in the equipment, please pay attention to the following matters:

- In case of thunder and lightning weather, please do not connect or use the modulator-demodulator. Otherwise, it may be subject to lightning strike.

- Never connect or use modulator-demodulator in moist environment.

- Never insert the modulator-demodulator or telephone cables to the socket of network interface controller (NIC).

- Before unpacking the product package, contacting or installing internal components or contacting un-insulated cables or jacks of the modulator-demodulator, please disconnect the modulator-demodulator cables.

6. In order to prevent the electrostatic discharge from damaging the electronic components in the equipment, please pay attention to the following matters:

- You shall conduct off the static electricity on the body before dismounting or contacting any electronic component in the equipment. You can conduct off the static electricity on the body by contacting the metal earthing objects (such as the unpainted metal surface on the chassis) to prevent the static electricity on the body from conducting itself to the sensitive components.

- For electrostatic sensitive components not ready to be installed for application, please do not take them out from the antistatic package materials.

- During the work, please touch the earthing conductor or the unpainted metal surface on the cabinet regularly to conduct off the static electricity on the body that may damage the internal components.

7. When dismounting the internal components with the approval of Inspur, please pay attention to the following matters:

- Switch off the system power supply and disconnect the cables, including disconnecting any connection of the system. When disconnecting the cables, please grab the connector of cables and plug it out, and never pull the cables.

- Before dismounting the cover of cabinet or touching the internal components, the products need to be cooled down.

- Before dismounting and touching any electronic component in the equipment, you shall conduct off the static electricity on the body by touching the metal earthing objectives.

- During the dismounting process, the operation shall not be too big, so as to prevent damage to the components or scratching of the arms.

- Carefully deal with the components and plug-in cards, and please never touch the components or connection points on the plug-in cards. When taking the plug-in cards or components, you should grab the edges of the plug-in cards or components or their metal fixed supports.

8. During the process of cabinet installation and application, please pay attention to the following matters:

- After the installation of cabinet is finished, please ensure that the supporting feet have been fixed to the rack and supported to the ground, and all weight of the rack have been fell onto the ground.

- It shall install into the cabinet according to the sequences from the bottom to the top, and first install the heaviest component.

- When pulling out the components from the cabinet, it shall apply force slightly to ensure the cabinet to keep balance and stabilization.

- When pressing down the release latch of the sliding rail of components and sliding in or out, please be careful, as the sliding rail may hurt your figures.

- Never make the AC power branch circuit in the cabinet overload. The sum of cabinet load shall not exceed 80% of the ratings of branch circuits.

- Ensure that components in the cabinet have good ventilation.

- When repairing components in the cabinet, never step on any other components.

Warning: the following warnings show that there are potential dangers that may cause property loss, personal injury or death:

Warning 1: The power supply equipment in the system may generate high voltage and dangerous electrical energy and thus cause personal injury. Please do not dismount the cover of the host or to dismount and replace any component in the system by yourself, unless otherwise informed by Inspur; only maintenance technicians trained by Inspur have the right to disassemble the cover of the host, dismount and replace the internal components.

Warning 2: Please connect the equipment to appropriate power supply, and the power should be supplied by external power supply which is indicated on the

rated input label. To prevent your equipment from damages caused by momentary spike or plunge of the voltage, please use relevant voltage stabilizing equipment or uninterruptible power supply equipment.

Warning 3: If extended cables are needed, please use the three-core cables matched with correct earthed plug, and check the ratings of the extended cables to make sure that the sum of rated current of all products inserted into the extended cables do not exceed 80% of the limits of the rated currents of the extended cables.

Warning 4: Please be sure to use the supplied power supply component, such as power lines, power socket (if supplied with the equipment) etc.. For the safety of equipment and the user, do not replace randomly power cables or plugs.

Warning 5: To prevent electric shock dangers caused by leakage in the system, please make sure that the power cables of the system and peripheral equipment are correctly connected to the earthed power socket. Please connect the three-core power line plug to the three-core AC power socket that is well earthed and easy to access, be sure to use the earthing pin of power lines and do not use the patch plug or the earthing pin unplugged with cables. In case of the earthing conductors not installed and it is uncertain whether there are appropriate earthing protections, please do not operate or use the equipment. Contact and consult with the electrician, please.

Warning 6: To avoid short circuit of internal components and fire or electric shock hazards, please do not fill any object into the open pores of the system.

Warning 7: Please place the system far away from the cooling plate and at the place with heat sources, and be sure not to block the air vents.

Warning 8: Be sure not to scatter food or liquid in the system or on other components, and do not use the product in humid and dusty environment.

Warning 9: The replacement of batteries with those of another model may cause explosion. When replacement of batteries is required, please consult first the manufacturer and choose batteries of the same or a similar model recommended by the manufacturer. Do not dismount, extrude and pink the batteries or make the external connection point short circuit, and do not expose them in the environment over 60°C. Never throw them into fire or water. Please do not try to open or repair the batteries, and be sure to reasonably deal with the flat batteries and

do not put the flat batteries, the circuit boards that may include the batteries and other components with other wastes. For relevant battery recovery, please contact the local waste recovery and treatment mechanism.

If what you bought is the chassis, besides carefully read the installation description attached with the cabinet products and get known about the special warning notices and installation process, you must abide by the following preventive measures to guarantee the cabinet to be stable and safe:

Warning 10: Before installing equipment in the chassis, please install front and side supporting feet on the independent chassis; for cabinet connecting with other chassis, it shall install the front supporting foot first. If you fail to install correspondingly the supporting foot before installing equipment in the chassis, it may cause the cabinet to turn over in some cases, and thus may cause personal injury. Therefore, it is necessary to install supporting feet before installing equipment in the chassis. After installing the equipment and other components in the chassis, it can only pull out one component from the cabinet through its sliding component at one time. Pulling out several components at the same time may lead the cabinet to turn over and cause serious personal injury.

Warning 11: Please do not move the chassis. Considering the height and weight of the chassis, at least two people are needed to complete its movement.

Warning 12: Declaration

The product is Grade A product, and in the living environment, it may cause radio interference. In such case, it may need the user to take feasible measures for the interference.

Regarding the Manual

- Product Introduction
- System BIOS
- Integrated Raid System
- Common Problems and Trouble-shooting

We suggest you read this manual seriously before you use this server for sake of the unnecessary faults in your operation.

Technical Service Hot-line: 86-531-88546554
Address: NO.1036 Inspur Road, Jinan, China (Inspur Group)
Zip code: 250101

Content

Chapter 1 NX 5440 Computing Blade Introduction

1.1 NX5440 Computing Blade Technical Specification

Processor	
Type	1-2 processor(s) of Intel® Xeon Sandy Bridge-EP series
Platform	
Type	Romley-EP 2S(Socket-R)
Memory	
Type	DDR3-1600/1333/1066/800 ECC Registered
Memory Slots	8
Total Capacity	Up to 256GB
Monitor Controller	
Type	Integrated graphics
HDD Controller	
SATA Controller	Support 2 pieces of 2.5” hot-swapping SATA SSD hard disks.

1.2 NX5440 Computing Blade View

The following 1-1 picture shows the view of NX5440 Computing Blade:

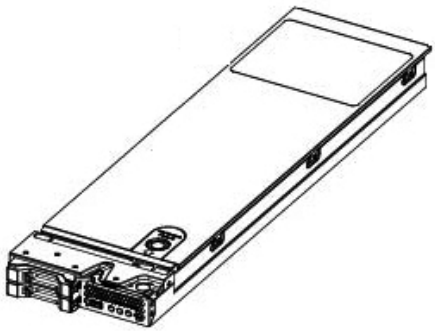


Figure 1-1 Computing Blade

1.3 Introduction of Unit Interfaces and Indicators in NX5440 Computing Blade

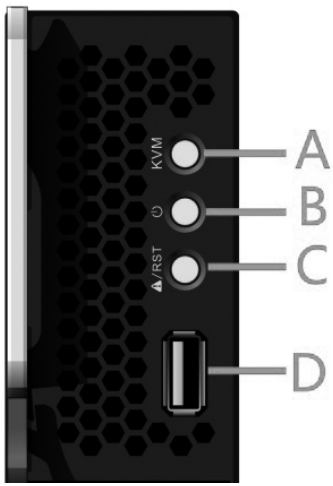


Figure 1-2 Blade Unit Interface and Indicator

NO.	NAME	STATUS/FUNCTION
A	Blade KVM Status Indicator/KVM Button	Blue: it lights blue when KVM is activated; Blue: Manually activate the KVM unit of current blade
B	Switch Button/ Power Indicator	Open or close the blade unit/ it lights when blade is under normal status and it blinks when BMC is started, green.
C	Reboot Button/Fault Indicator	It lights when the blade fails or is rebooted, red.
D	USB Interface	For connecting USB devices.

1.4 NX5440 Computing Blade Application

NX 5440 Computing Blade should accompany Inspur I8000 server, namely, the user should install the computing blade into the I8000 server system for proper application. Please refer to the relevant parts in the I8000 server user manual or the illustration pasted to the main chassis of the I8000 blade server for details about the installation.

1.5 Jumper Settings

Motherboard jumper setting is an operation that changes interface function by short-cutting two pins, please refer to the following figure and adjust the motherboard

function.

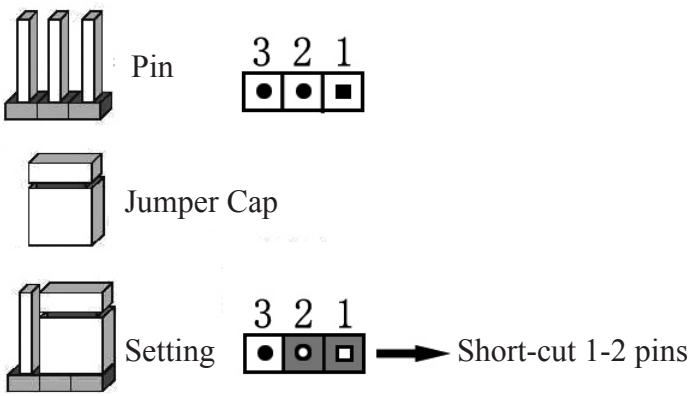


Figure 1-3 Jumper Setting View

Open Upper Panel of the Chassis

If you need to adjust the motherboard jumpers, please open the upper panel of the chassis with the authorization of Inspur Group.

1. Close the system, extract the blade unit, and press the unlocking springs;

2. Pull outward to the direction as the arrow in the picture shows, remove the upper panel.

1. Press the notches of unlocking springs
2. Pull the upper panel backwards to open it

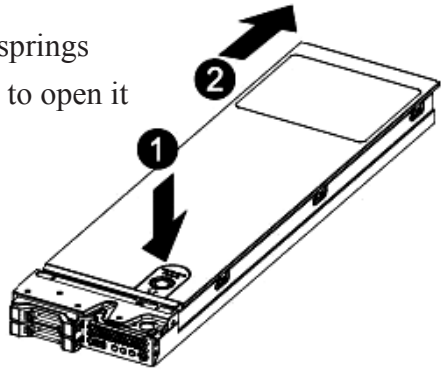


Figure 1-4

Introduction of Clear CMOS Jumper

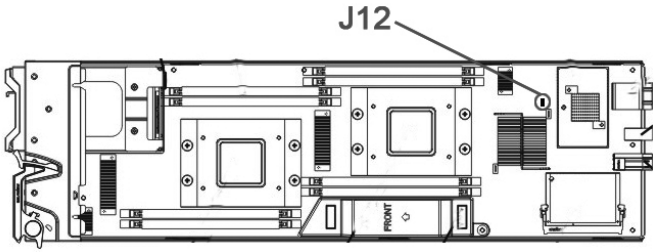


Figure 1-5 Jumper Location View

Jumper NO.	Description	Function
J12	CMOS clear jumpers	Short-cut pin 1-2, normal status: short-cut pin 2-3, clear CMOS.

Notes:

When you short-cut Pin 2-3 to clear CMOS, please remain the shortcut for 5 seconds; then re-short-cut Pin 1 and Pin 2 (default status) of CLR-CMOS jumper with jumper caps to recover the previous status.

Chapter 2 System BIOS

2.1 How to Enter the BIOS Setup

Power up and start the server. When the picture of "Press <DEL> to SETUP or <TAB> to POST" is displayed, press [DEL] and then the system enters BIOS setup.

If the system does not enter BIOS setup after previous steps, please press [Ctrl]-[Alt]-[Del] at the same time to reset the system, and repeat operations above. (If the prompt displays to press [DEL] again, please press it quickly.)

Notes: some items in BIOS cannot be configured, for examples, some system auto detecting and configuring information. Some has a right pointed arrow, which means if this item is selected and [Enter] is pressed, the screen will display its submenu.

2.2 BIOS System Menu Introduction

Next the following main function menus of BIOS are introduced.

Function Menu:

Menu name	Menu Function
Main	Configuring the basic system settings, such as system time, system date, super user and user password setup; displaying version of BIOS, CPU, and memory information etc
Advanced	Configuring advanced characteristics, such as CPU configuration, integrated SATA controller and SAS controller configuration
Chipset	Configure memory models, CPU characteristics and etc.
Server Mgmt	Display the BMC network configuration index
Boot	Configure the boot order of system devices
Security	Configure system administrator and password
Save &Exit	Save BIOS configuration, exit BIOS configuration and etc.

Introduction of operational keys:

Key	Description
↑ (up)	For selecting the upper menu or value
↓ (down)	For selecting the next menu or value
← (left)	For selecting the left menu or value
→ (right)	For selecting the right menu or value
Esc	For returning to the superior menu or the main menu
+	For changing the item value For changing the current menu item into the previous item value The key only displays the item values relevant to the item itself rather than all the item values.
-	For changing the item value For changing the current menu item into the next item value The key only displays the item values relevant to the item itself rather than all the item values.
F1	The help key for displaying the relevant introduction of current menu
F2	For restoring the value saved last time
F9	For back to the system default configuration with the best performance
F10	For saving CMOS settings and exiting
Enter	For executing current command or entering the submenu

Declaration:

We just introduce some common items in BIOS. It is unnecessary and we also do not recommend you to change or configure the items. This declaration will not reappear.

2.2.1 Main menu

Entering BIOS setup utility, you can see Main menu displayed firstly. In this menu, you can do some operations, such as check BIOS version and set system time and date.

Figure 2-1

● **BIOS Information**

Display BIOS's version and modification time

● **Memory Information**

Display the memory total capacity installed in system

● **System Date**

Set the system date, in format of [week month/date/year].

● **System Time**

Set the system time, adopting 24 hour system, in format of [hour/minute/second]

2.2.2 Advanced menu

Figure 2-2

Advanced menu includes the following submenus or setting items.

Launch PXE OpROM
WHEA Configuration
CPU Configuration
SATA Configuration
SAS Configuration
Serial Port Console Redirection

Following are the introductions about main and common items.

◇ **Launch PXE OpROM**

There two options, [Disabled] (defaulted) and [Enabled].

● **WHEA Configuration**

◇ **WHEA Support**

WHEA provides a common infrastructure function to tackle hardware faults on the Window platform. There two options, [Disabled] and [Enabled] (defaulted).

● **CPU Configuration**

◇ Socket 0/1 CPU Information

It displays detailed information about CPU0/1, including CPU main frequency, maximum frequency, minimum frequency, CPU cores, whether support hyper-threading and VT-X, first lever cache, second cache, and third cache.

◇ **Hyper-threading**

CPU hyper-treading function setup includes [Enabled] (defaulted) and [Disabled] two items.

◇ **Active Processor Cores**

Activated all the cores in the CPU. It includes [All], [1], [2], [4], [6] (the items may vary according to different CPU cores configured, for example, when the CPU is configured with 4 core, the items are [All], [1], [2]), and [All] is the default option to open all.

◇ **Intel(R) Virtualization Technology**

CPU virtualization tech supports function setup, including [Enabled] (defaulted) and [Disabled] two items.

◇ **CPU Power Management Configuration**

This item is for CPU power consumption management.

◇ **Configuration Power Technology**

There are three items, namely, [Disable], [Energy Efficient] and [Custom].

● SATA Configuration

Enter this item and it will display the status of SATA devices connected to every SATA port.

◇ **SATA Mode**

The item is used to set onboard SATA controller modes. There are [Disabled], [IDE Mode], [AHCI Mode], and [RAID Mode].

◇ **Serial-ATA Controller 0**

This item only appears when SATA Mode is set to be [IDE Mode]. There are three options, [Disabled], [Enhanced] and [Compatible].

● **SAS Configuration**

Enter this item to view the status of SAS devices connected to every SAS ports.

When "[Chipset]->[South Bridge]->[Scu devices]" is set to be [Disable], this item will disappear.

● **Serial Port Console Redirection**

The item can be used to configure the serial port redirection.

2.2.3 Chipset Menu

Figure 2-3

The Chipset menu mainly includes the following submenus:

North Bridge
South Bridge
ME Subsystem

Following are the introductions about the main and common items.

2.2.3.1 North Bridge

Figure 2-4

● **IOH Configuration**

The menu is used to open or close VT-d or set the rate of PCIE port.

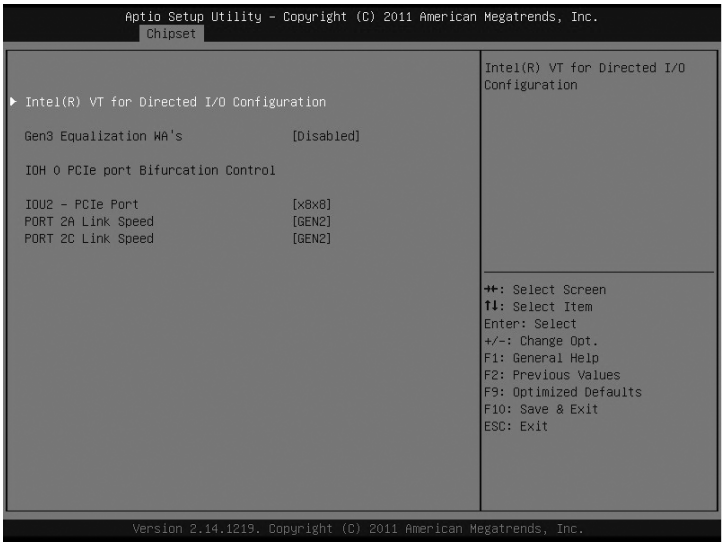


Figure 2-5

◇ **Intel(R) VT for Direct I/O Configuration**

Whether the Directed I/0 supports Intel virtualization technology, including [Enabled] and [Disabled] (defaulted) two items.

◇ **Link Speed**

Used to set PCIE port rate, including [Gen1], [Gen2], [Gen3].

Note: if port rate is set to be Gen3, it requires to start [Gen3 Equalization WA's] simultaneously.

● **QPI Configuration**

This menu can be user to set items, such as QPI rate mode and frequency.

● **Memory Mode**

Set Memory mode, including [Independent] (default configuration), [Mirroring], [Lock Step] and [Sparing] four items.

To realize <Mirroring> function, the user has to set the same memory of DIMM 0/1 and 2/3 under every CPU. After mirroring starts, the system will set CPU0,2 as mirror master, and 1,3 as the mirror slave to the 0,2. When the system write the memory, it will write into the master and slave. In this mode, system available memory capacity reduces to half.

To realize [Lock Step] function, the user has to set the same memory of DIMM 0/1 and 2/3 under every CPU. Enabling this function can enhance the correction ability of the memory.

To realize <Sparing> function, two pieces of 2 Rank memory or above should be installed. After the enabling the function, the system will select a rank for spare, when the faults in the other ranks on this memory reach a certain threshold number and the fault rank is mapped out, the spare rank will replace it. After this, the DIMM has no sparing function. If the model has been set as the [sparing] mode, the number viewed under the system will be less than the practical memory number.

Notes: when the system is set to be [Sparing] or [Mirroring] mode, it requires to set corresponding memory. At this time, the Sparing or Mirroring information on this item will display "support". This means the settings are effective, otherwise, it means that the settings fail.

● Patrol Scrub

This function enables CPU to read and verify all the memories installed in the system in a certain period (24 hours). If ECC fault is detected, the CPU will correct it automatically.

● **Demand Scrub**

This function enables the CPU to correct ECC errors while reading a certain section of the memory.

● **Device Tagging**

When this function is enabled, if a certain particle in the rank of DIMM fails, then the correcting particle will replace it. After this, this rank has no Device tagging function and the correction ability drops.

● **Data Scrambling**

This function can help to avoid the signal errors when single bit consecutively displays “0”or”1” in memory visit.

● **Thermal Throttling**

There three options, [Disable], [CLTT], [OLTT].

Thermal Throttling is a protective function for memory overheat.

Two available options:

CLTT-> the memory temperature is read by the in-built sensor (TSOD), when the temperature reaches a certain threshold value, the bandwidth will be automatically reduced.

OLTT-> for memory without in-built sensor (TSOD), the bandwidth will be limited in the value of [OLTT Peak BW %].

● **Altitude**

Thermal Throttling function calculating index, the altitude of the machine.

● **Rank Margin**

Used in the memory test while the system runs slowly and the performance is adversely affected. Default to close.

● **Serial Message Debug Level**

Rank Margin tests relative settings.

● **DIMM Information**

This menu item displays the memory information, including memory capacity and current memory modes.

2.2.3.2 South Bridge

This menu mainly display PCH relative information and settings.

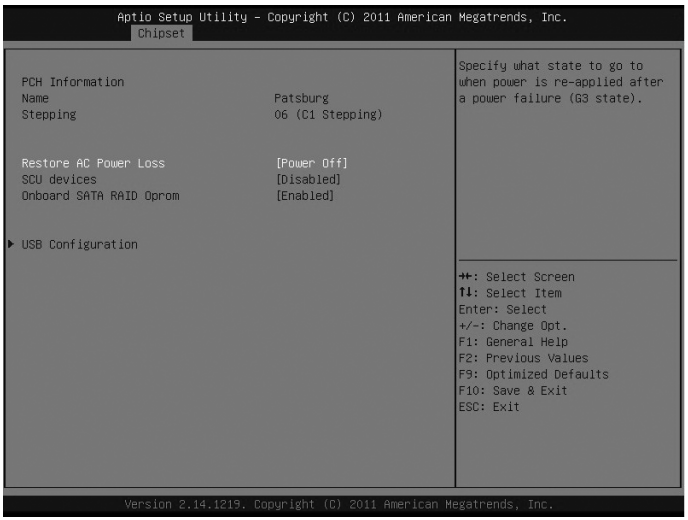


Figure 2-6

● Restore AC Power Loss

Power status settings after power off. [Power Off] is the closed status, it requires manually start; [Last State] is the status when power was off last time; [Power On] is the automatically power on.

● SCU device

This item is used to open or close SAS controller, there are [Enabled] and [Disabled] two options.

If SAS HDD connection is required, set this item as [Enabled].

● Onboard SATA RAID Oprom

This item is used to open or close onboard SATA RAID controller rom, here are [Enabled] and [Disabled] two options.

If SATA mode is selected as ‘raid mode’, this item must be set as [Enabled].

● USB Configuration

Open or close USB.

2.2.3.3 ME Subsystem

This menu displays the relative information about ME subsystem, including BIOS port version, FW status, FW fault report code .

2.2.4 Server Mgmt Menu

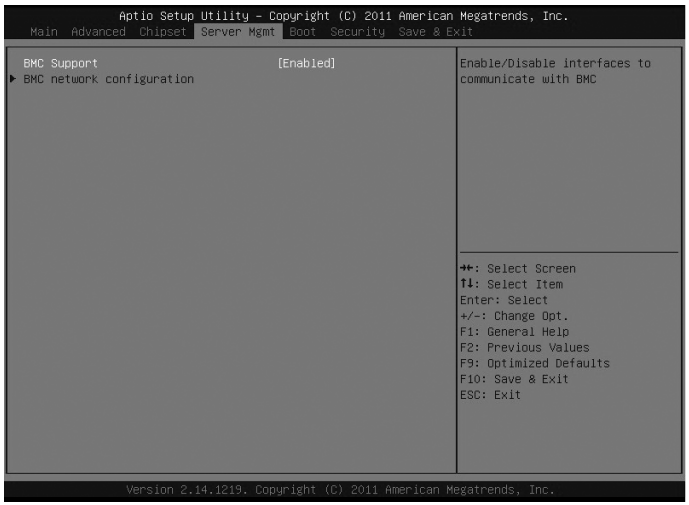


Figure 2-7

● BMC Support

There are two options, [Enable] and [Disable]. It is used to control whether BIOS has mutual information with BMC.

● BMC network Configuration

This menu displays information configuration of BMC network port.

2.2.5 Boot Menu

Boot menu is mainly used to the configuration of system boot devices priority.

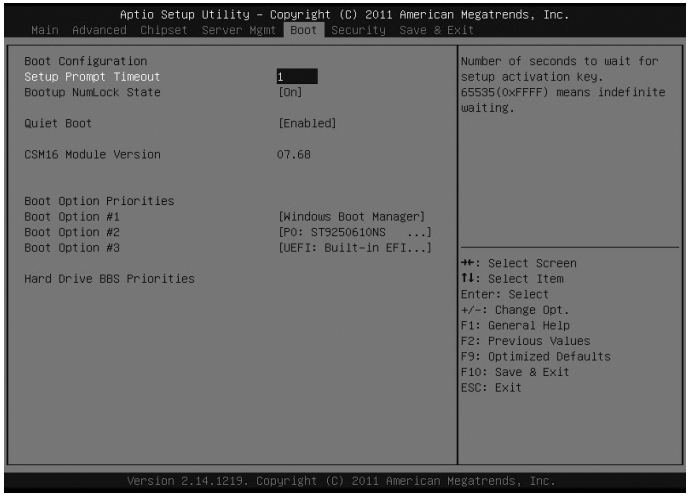


Figure 2-8

● **Quiet Boot**

There are two options, [Disabled] and [Enabled]. When [Disabled] is selected, the system will display self-detecting information as usual during the boot. When [Enabled] is selected, the system will display OEM LOGO instead during the boot.

● **Boot Option #1/#2#3**

Enter the menu, select a boot item, and press [Enter]. The system will pop up the boot list. Use the arrow to select a device, then press [Enter] to finish the boot settings.

● **Hard Drive BBS Priority**

Press [Enter] to enter the submenu. Then set the boot order for the device.

2.2.6 Security Menu

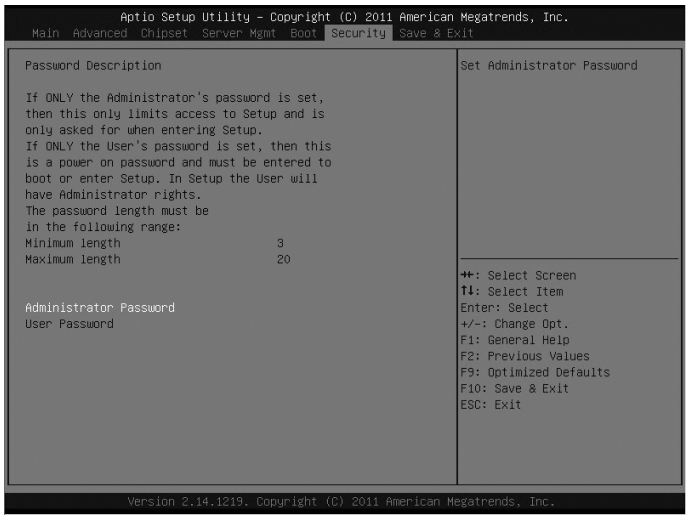


Figure 2-9

● **Administrator Password**

The menu is used to set system administrator password. After the settings, the user has to input the password of common user or level above to enter the BIOS Setup.

● **User Password**

The menu is used to set user password. After the setting, the user has to input user password for system boot and BIOS Setup. If administrator password and user password are all configured, user password only allows lower right than administrator's in BIOS Setup interface

2.2.7 Save&Exit Menu

This menu is used to save or cancel the BIOS settings. It also allows the user to exit the setup.

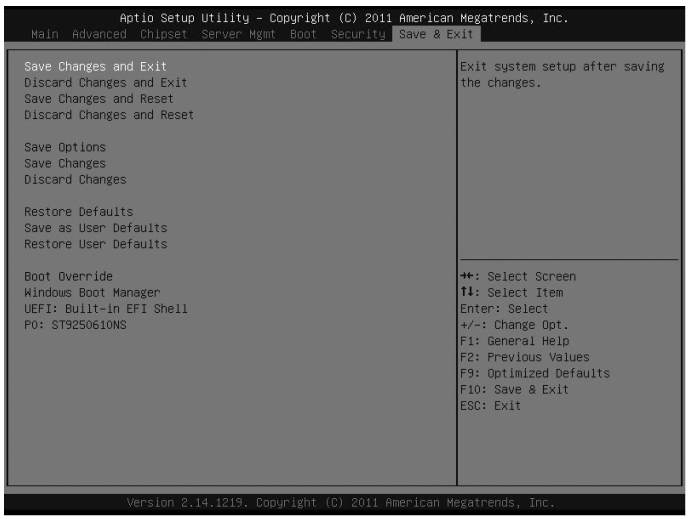


Figure 2-10

● **Save Changes and Exit**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and save the amendments you made in the BIOS Setup. Then exit BIOS Setup. You can also [F10] to realize this function.

● **Discard Changes and Exit**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and discard the amendments you made in the BIOS Setup. Then exit BIOS Setup.

● **Save Changes and Reset**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and save the amendments you made in the BIOS Setup. Then exit BIOS Setup and the computer will be rebooted.

● **Discard Changes and Reset**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and ignore the amendments you made in the BIOS Setup. Then exit BIOS Setup and the computer will be rebooted.

● **Saving Changes**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and save the

amendments you made in the BIOS Setup. And you will not exit the BIOS Setup.

● **Discard Changes**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and discard the amendments you made in the BIOS Setup. And you will not exit the BIOS Setup.

● **Restore Defaults**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and the system will load the default optimized settings. You will not exit the BIOS Setup. Also, you can realize this function by [F9].

● **Save as User Defaults**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and all BIOS settings will be saved as the default configurations.

● **Restore User Defaults**

Select this item and press [Enter]. Then select [Yes] in the pop-up, and the system will load the default settings.

● **Boot Override**

Select the device item in this menu and press [Enter] to confirm. Then the system will boot from the selected device.

Chapter 3 Operating System Installation

This Chapter mainly introduces how to install operation system into the server.

● Use OS Disk Guide to install manually

During manual setup of the operating system, some operating systems may need the floppy driver or Inspur driver CD to load the driver of hard disk controller. Refer to the readme.pdf file under the root directory in Inspur driver CD for the making method of the driver floppy disk. Refer to the Inspur Driver U disk Manual for how to make Inspur Driver U disk and considerations during driver loading.

Log into the driver making interface of Inspur driver CD to check and make controller drivers required during Operating System Installation under relative configurations. All the descriptions about manually OS installation in this Chapter is based on 64 bit system.

The installation introduction illustrates how to install OS under external Intel® RSTe 3.0 RAID configurations. If your server is configured with other external RAID cards, please refer to the User Manual in the disk attached for how to add hard disk controller drivers. For network card driver, graphics driver and system patches, please still refer to this Chapter.

Please first confirm that the configurations of your server supports the operation system to be installed.

3.1 Manually Install Windows Server 2008 R2 Enterprise Edition

3.1.1 Preparation Prior to Installation

●Windows Server2008 R2 Enterprise Installation Disk (X86_64bit version)

● Inspur Driver CD

3.1.2 Installation Steps

1. Power up and start the server, put the installation CD of Windows Server 2008 R2 into the optical drive and boot the server from the CD.

2. When the system prompts “Press any key to boot from CD or DVD”, press any key. If there is no prompt, the system will start Windows installation program from CD.

3. Select or set the language and other items in the language setting interface, and

press <Next> to continue.

4. Click <Install now> in the confirmation page of the installation and continue.

5. Select the operating system to install in the interface of "Select the operating system to be installed" , if the product key interface prompts, please enter your product keys (25 characters) and click <Next> to continue.

If you select the "auto-activate Windows while online", it means the auto-activate function will try to activate your windows system three days after your first login; after the windows installation completes, you will have 30 days to activate windows online or via phone, if you do not activate the system within the 30 days, the Windows will stop automatically.

6. The Microsoft software license clauses will be shown in the interface of "Please read the license terms". Select "I accept the license terms" after reading, and click <Next> to continue.

7. In the interface of "Which type of installation do you want?", select the installation type, and here the default set by us is the first installation. Select "Custom" model to continue.

8. The system enters the interface of "Where do you want to install Windows?",

⊙ If it prompts "no driver is detected", it means your configurations require Inspur Driver U Disk to load the driver of disk controller. Please follow the steps below:

If Inspur driver U disk is used:

① Please make the disk controller driver in the Inspur driver U disk [3.5 floppy disk (A :)] partition.

② Please connect Inspur driver U disk to the USB interface of the server;

③ In the interface of "Where do you want to install Windows?", select <Load Driver>;

④ The system will search the driver automatically. In the interface of "Choose to install the driver", select the driver, and click <Next> to continue;

⑤ The system will automatically install the driver searched and back to the homepage.

⊙ If the system installs the driver of CD controller automatically, the disk partition and available space will display in the homepage. Click <Driver Selection> to start the disk partition.

9. In the disk partition operation interface, we can perform the following operation:

⊙ It can delete the existing partitions by selecting the existing partitions and then clicking <Delete>.

⊙ It can format the partitions by selecting the existing partitions and clicking <Format>.

⊙ It can create new partitions by selecting unallocated disk spaces and then clicking <New> to create new partitions.

You can operate according to the actual demands. Here we'd expound on the issue when there are no existing partitions in the disk.

① Select the unallocated space, click <New>, delete the number in the Size input box, then input the one you want to create (unit: MB) and click <Apply> to continue. If the confirmation window pops up, click <OK> to continue.

Note: we suggest the partition should be larger than 30GB.

② If the system prompts " window requires additional partition for the system files to perform all functions normally ", click <Yes> to continue.

This will make another partition in the disk to be saved by the system.

③ Select the newly formed partition (main partition), and click <Format>. Then in the confirmation page, click <Yes> to continue.

④ After formatting the partition, click <Next> to continue.

10. The system starts to install Windows, and it will complete operations of "Copying files", "Expanding files", "Installing functions", "Installing updates" and "Completing installation" etc.. In this course the system may automatically reboot for several times.

11. After the installation, the system would boot to the interface of "The user's password must be changed before logging on the first time." Take out the installation CD and driver U disk and then click <OK> to continue.

12. Follow the prompt to set the Administrator password and then click the arrow button at the right of the password input box to continue. If the password meets the requirements, it will prompt "Your password has been changed." and then click <OK> to confirm that the password has been changed.

Windows Server 2008 R2 has strict requirement for the password, so it must contain letters, numbers and special characters, or the setting cannot be successful.

13. After logging in the system, select "Do not show this window at logon" at the bottom of the "Initial Configuration Tasks" interface, and then click <Close>. In the new interface of "Server Manager", select "Do not show this console at logon" and

close the interface.

3.1.3 Install the Driver

1. Install Chipset patch

① Insert Inspur driver CD into the optical drive, click the blue dolphin icon under the installation or operation procedure item in the automatically playing interface popped out after the disk's running. Input the navigation code on the driver CD case in the navigation code confirmation page , and click <OK> to enter the installation interface automatically;

② In "Select OS" column, select Windows 2008 R2;

③ In the "Select Component" column, select Chipset Patch _64bit;

④ Click <Next> to start the installation;

⑤ Enter the interface of "Welcome to the Setup Program" and click <Next> to continue the installation;

⑥ Enter the interface of "License Agreement", and select <Yes> to continue the installation;

⑦ Enter the interface of "Readme File Information", and click <Next> to continue the installation;

⑧ The installation program begins to install; and click <Next> according to the prompts;

⑨ Complete the installation, click <Finish>.

2. Install Network card driver

Please do not withdraw the driver CD after the installation of chipset patches, the system will enter the network card driver installation,

① In the "Select OS" column, select Windows 2008 R2;

In the "Select Hardware" column, select Network card driver 64

② In the "Select Component" column, select Network card driver _64bit;

③ Click <Next> to start the installation;

④ In the setup menu, click <Install driver and software> to continue;

⑤ In the welcome page, click <Next> to continue;

⑥ Enter the interface of "License Agreement", select "I accept the terms in the license agreement" and then click <Next> to continue;

⑦ Enter the interface of "Setup Options" and click <Next> to continue;

⑧ Enter the interface of "Ready to Install the Program", and click <Install> to

continue;

⑨ The installation program starts to install; when the installation is completed, click <Finish> according to the prompt;

□ In the setup menu, click <Back>.

3.Install IB sub-card (HCA card) driver (Optional)

4.Take out Inspur Driver CD, the system will be rebooted.

Complete the installation of Windows Server 2008 R2 Enterprise.

3.2 Manually Install Red Hat Enterprise Linux 6.1

3.2.1Preparation Prior to the Installation

- Red Hat Enterprise Linux 6.1 Installation CD (X86_64bit version)
- Inspur Driver CD

3.2.2 Installation Steps

1. Power up and start the system, put the installation CD into the optical drive (here taking using DVD installation disk as example), enter BIOS to set, and make the server boot from the CD.

2. The system enters the interface of "Welcome to Red Hat Enterprise Linux 6.1!" which includes the following items:

Install or upgrade an existing system

Install system with basic video driver

Rescue installed system

Boot from local driver

Memory test

You can use up and down arrow key to select items. Here we default that this is the first installation. Select "Install or upgrade an existing system", and press [Enter] to continue installation.

3. The system prompts Disc Found,Here select <Skip> to skip the disk testing, click [Enter] to continue the installation.

4. The installation program goes to "Red Hat Enterprise Linux 6" interface; click <Next> to continue the installation.

5. Select the language you would like to use during the installation process. Here we select "English (English)" for installation and click <Next> to continue

6. The installation program enters "Select the appropriate keyboard for the system" interface. Please select keyboard type according to actual situation. Here we select

"U.S. English" and click <Next> to continue the installation.

7. The installation program goes to "What type of devices will your installation involve" interface, please select the type according to your actual needs

Here we select Basic Storage Devices, click <Next> to continue.

If "Storage Device Warning" interface prompts, please select according to your actual needs and continue the installation.

8. Please select the Hostname according to your actual needs; select <Configure Network> on the lower left corner to configure the network, here you can make network configurations such as add or delete network card, set network IP address. After the network configuration, click <Next> to continue.

9. The installation program goes to the time zone selection interface "Please select the nearest city in your time zone:". Select "Asia/shanghai" and then click <Next> to continue the installation.

10. The installation program enters Root Password setting interface, set at least six figures as needed and click <Next> to continue the installation.

If the safety of the password you set is too weak, the system will prompt "Weak Password", please select according to your actual needs and then continue.

11. The installation program enters "Which type of installation would you like?". Here we illustrate the installation by the example of customer manually partition, select "Create Custom Layout", and click <Next> to continue.

12. The installation program enters the interface of "Select the hard disk to install". In the Data Storage Devices (to be mounted only) list, the system shows the detected storage device. Please select the hard dick to install the system according to the actual demand and add this hard disk to "Install Target Devices". Then select a hard disk as "Boot Loader", and click <Next> to continue the installation.

13. When the installation program enters "Please Select A Device" partition creating interface, (if partition has been created on the hard disk, it will be displayed, and you can delete it if you do not need it).

Select hard disk first, then click <Create>, the system will pop out "Create Storage" interface, click "Create Partition——Standard Partition, then click <Create> to enter "Add Partition" partition.

① Create root partition (/) and boot partition: Select root partition in Mount point: /, select the hard disk to install the system in Allowable Drives window, and input the Size (MB) of partition and click <OK> to finish the creating of root partition. Create

the boot partition in the same way: /boot.

② Create a swap partition (Swap). Select “Swap” in File system Type, select the hard disk to install the system in Allowable Drives window and input the size (MB) of the swap partition and click <OK> to finish the creating of swap partition.

You can also create other partitions as needed, and click <Next> to continue the installation after the creation.

If “Format Warning” interface pops out, please confirm according to the prompts.

14. The system prompts: “Writing storage configuration to disk”, select “Write changes to disk” to continue installation, the system will start formating the hard disk.

15. The installation program enters [Boot Loader] setting interface, set as needed and click <Next> to continue the installation.

16. Please select the type to install and the software package that needs customization according to actual demand, so select “Customize now” and click <Next> to continue the installation.

17. The installation program enters program package selection interface. Please select according to the actual demand. After confirming the selected software package to install, and click <Next> to continue the installation.

Here we select the [Desktop] and [X Windows System] in Desktops and [Development tools] software package in [Development].

18. The installation program begins to build file system and copy files.

19. Entering “Congratulations, your Red Hat Enterprise Linux installation is complete.” interface indicates the success of installation. Then click <Reboot>, and take out the installation CD. The system would reboot automatically.

20. The system reboots to enter “Welcome” interface; click <Forward> to continue the installation.

21. The installation program enters “License Agreement” interface. Select “Yes, I agree to the License Agreement” and click <Forward> to continue the installation.

22. The installation program enters “Set Up Software Updates” interface and click <Forward> to continue the installation.

23. The installation program enters “Create User” interface. Set user name and password to add user; click <Forward> to continue the installation.

24. The installation program enters “Date and time” interface, please set the right time and date, and click <Forward> to continue the installation.

25. The installation program enters Kdump setting interface, please set as needed

and click < Finish > to finish the installation.

26. Input Username and Password to login the system.

3.2.3 Load HCA Card Driver

1. Insert Inspur Driver CD into the driver, click【Applications】→【Accessories】→【Terminal】on the desk.

2. In the terminal window that appears, input:

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

3. Enter the directory of /mnt to run installation script, automatically complete the driver installation

/mnt/mlnxofedinstall

（1) after the driver installation, in the terminal window, input:“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

If the information above is displayed, it means the load runs normally.

(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

If the information above is displayed, it means that the HCA device normal detection can be used.

4. Unload the driver

Execute /usr/sbin/ofed_uninstall.sh，the system will automatically complete the driver unload.

Chapter 4 Integrated RAID System

This chapter mainly introduces the configuration of onboard SATA controller Raid and its application method.

To use onboard SATA RAID, you have to enter the BIOS, set the “Chipset→PCH →SCU devices” as [Enabled], and set “Onboard SATA Oprom” as [Enabled].

4.1 How to Enter the Configuration Interface of SATA RAID

1. During boot, the screen will display:

Press [CTRL-I] to enter Configuration Utility…

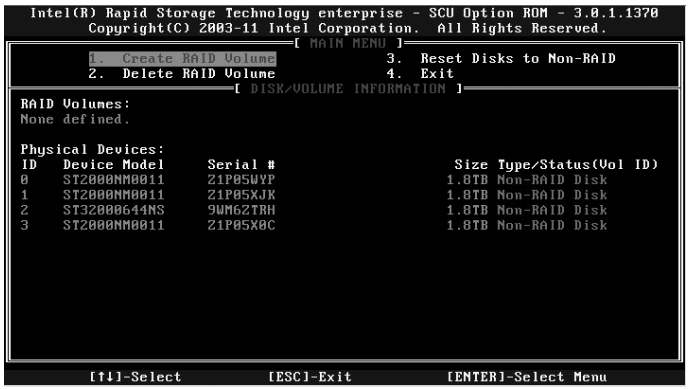
2. Press [Ctrl][I] to enter SATA RAID configuration interface.

4.2 Control Key Application

Key	Description
↑↓	For moving cursor and modifying menu option value in different menus
TAB	For selecting the next menu configuration item
Enter	For selecting menu
Esc	For exiting menu or back to the previous menu from submenu

4.3 SATA RAID Configuration

After entering the SATA RAID configuration interface, these information will pops out, including the menu list information, the information of the HDDs connected to the SATA controller (HDD port number, HDD model, HDD capacity and whether the HDD is part of the volume, etc), the existing RAID volume information (including volume ID number, name, RAID level, capacity, state and whether can boot information), as show in the below picture.



The executable menus of the configuration interface of SATA RAID are the following four:

● Create RAID Volume

Create RAID Volume.

● Delete RAID Volume

Delete the existing RAID Volume.

● Reset Disks to Non-RAID

Reset the HDD in the RAID volume, and restore the HDD to non-RAID status.

● Exit

Exit the configuration interface of SATA RAID.

Ⅰ. Create RAID Volume Menu

After entering the configuration interface of SATA RAID, you can select the menu with up and down arrow keys, and then press [Enter] to create RAID volume menu. Or simply input the digital key before the menu to Create RAID menu.

The system will display the following menu options:

Name: Please input the volume name, which contains less than 16 characters without special characters.

RAID Level: Please select RAID volume level; if it has not created volume at present, there are four volume levels for selection, namely, RAID0 (Stripe), RAID1 (Mirror), RAID10 (RAID0+1) and RAID5 (Parity), and please select the levels based on the actual demand.

RAID0: it allows 2 or more than two hard disks to create this RAID volume.

RAID1: it allows two hard disks to create this RAID volume.

RAID10: it allows four hard disks to create this RAID volume. This option is only available when there are 4 or more than 4 hard disks.

RAID5 (Parity): it allows three and more than three hard disks to create this RAID volume.

Disks: select hard disks to be used to create RAID volume; select this option and press [Enter], and it will enter the hard disk option interface; please press [Space] to select the hard disk in turn to create RAID volume, and then press [Enter] to return the menu creation interface.

Strip Size: please select the size of strip of volume, and only volumes RAID0 and RAID5 can select this option.

Capacity: Set the volume capacity, which is defaulted as the maximum capacity.

After having done all the settings above, please select<Create Volume>, press [Enter], and the screen will display:

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

If the creation of RAID volume is confirmed please enter "Y", the volume will then be created, and at the same time, all the data on the selected hard disk will be lost.

If not to create RAID volume, please enter "N" and exit the creation of volume.

Here, we enter "Y" and create RAID volume, after the creation, return to the main configuration interface of SATA RAID, and the created RAID volume will be displayed in the RAID volume.

Ⅱ. Delete RAID Volume Menu

After entering the configuration interface of SATA RAID, you can select the menu with up and down arrow keys, and then press [Enter] to create RAID volume menu. Or simply input the digital key before the menu to Delete RAID Volume menu.

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

If the user confirms to delete RAID volume, please press [DEL] key; and the system will pop up the warning again: "ALL DATA IN THE VOLUME WILL BE LOST! Are you sure you want to delete "Volume*"? (Y/N):" if yes, please enter "Y", otherwise, please enter "N".

Ⅲ. Reset Disks to Non-RAID Menu

After entering the configuration interface of SATA RAID, you can select the menu by up and down arrows, and then press [Enter] to the menu. Or simply input it.

The system will display all hard disks in RAID volume; please select hard disks to be reset by [Space] key based on actual demand, and then reset hard disk by pressing [Enter]. The system will again warn whether there is a need to reset the hard disk, and enter “Y” or “N” according to the prompt. It should be noted that when resetting hard disks, all data on hard disks will be lost. And at the same time, the hard disk will never again belong to the RAID volume.

Ⅳ. Exit Menu

After entering the configuration interface of SATA RAID, you can select the menu by the up and down arrows, and then press [Enter] to enter the menu.

System prompts: “Are you sure you want to exit? (Y/N):” ; input “Y”, and then it will exit the configuration interface of SATA RAID; input “N”, and it will cancel the operation and exit.

Chapter 5 Common Problems and Trouble-shooting

This chapter focuses on the common problems and Trouble-shooting of the server. If you are not sure about the cause of a failure and its removal method, please contact our customer service center for solution.

Notes: When replacing or installing hardware device for the server, you should disconnect the power cable from the server completely. It is recommended to use the anti-static wrist strap and to earth-connect the other end to provide electrostatic protection in dismounting the server.

5.1 Restarting Server

When a failure occurs, please try to restart the machine according to the following methods first.

Purpose	How to operate
Restart the software, clear up system memory and restart the operating system.	<Ctrl+Alt+Del>
Clear system memory, re-self-test the POST, and reboot the operation system	Reset button
Cold boot again, switch off and restart the system power so that to clear up the system memory, to self-check the POST again, to restart the operating system and to power up all peripherals again.	Power button

5.2 Problems When Starting the Machine

Some problems often occur when the machine is started, generally due to incorrect hardware installation and configuration. You may find and solve the problems by the following methods.

5.2.1 System Can Not Be Powered on

After pressing the power button, the power light is not on and the system stays in non-electric state. Please try the following steps:

1. Check whether your power socket can supply power normally and the power cable is correctly connected.

2. Repeatedly press the power button to start the machine (pay attention not to exerting too much force).

3. Disconnect the power cable from the system and open the chassis to check.

4. Check the fastness of the cable connection and accessory plugging in the chassis.

5. Remove other external components other than Inspur's.

6. Pack the chassis, connect the power cable correctly and start the machine.

5.2.2 Monitor Has No Display

The server can be powered on (the host can start and run normally), but the monitor doesn't work:

1. Check the correctness and fastness of the signal cable and power cable connected to the monitor.

2. Make sure to power on the display.

3. Adjust the contrast and brightness of the monitor to confirm whether it can display or not.

4. Shut down the system and disconnect the power cable to check whether there is curve in the pin at the connecting end of the monitor signal cable and the host.

5. Find another monitor for test if possible.

6. If the machine is installed with components other than Inspur ones, please remove them first.

7. With the permission of Inspur technical support personnel, you may pull and plug RAM and clear CMOS for test.

5.2.3 Installation System Can't Find Hard Disk

1. When installing the system directly booted with the system CD, if it prompts that no hard disk can be found, please check the normality of the disk state and power-on self-check hard disk state.

2. If the power-on self check can detect the hard disk but the hard disk can't be detected when installing the system, it may be caused by the following conditions:

● When you use Ruijie Management Software Kit, if the system prompts "no storage controller matches"after you input navigation code and system installation information, please check whether you input the navigation code correctly.

● As the navigation code will change while storage configurations vary, please ask for new navigation code from Inspur Technical Support while you change the storage configurations.

● If you are using the system CD to boot and install the operating system directly,

the hard disk drive is generally added through the floppy driver or Inspur driver U disk. When using USB floppy driver to add the drive, please set the BIOS first and close the onboard floppy driver controller.

● Please check whether the driver having been made is correct or not (the drive for external RAID card should be made directly from the attached RAID card driver CD) and whether there is fault in the floppy disk.

5.2.4 Keyboard and Mouse Do Not Work

1. Check whether the cable joint of the mouse and keyboard is plugged and connected correctly. Make sure the joint pin has no curve.

2. Check whether the mouse setting in the control panel of the operating system is correct or not.

3. Clean the scrolling and drive shaft of the mouse.

4. It is suggested that you use the keyboard and mouse tested for compatibility by Inspur group or replace with other keyboard and mouse for testing.

5.2.5 System Blue Screen, Halt or Restart

For blue screen, restart or halt of the machine in the utilization of the system, you may refer to the following measures:

1. If other external non-Inspur components or some application program software are installed before the fault, it is suggested removing it and going on to test your server.

2. Use the latest antivirus software for antivirus test.

3. It is suggested that you record the displayed information code for blue screen, such as: stop c000000218.....; stop: 0x0000007b. This kind of information reveals problems in the system. It is suggested that you reinstall it. For the installation process, you can refer to the user manual or call 8008600011 for help.

4. If all above operations failed to solve the problem, it is suggested that you backup the file winnt/minidump in disk C, and call the service center for support from professional technical engineers who may ask you to provide minidump file for further analysis on the cause for blue screen and halt. If there is no minidump folder in disk C, please refer to the following steps: right-click on My Computer, select <Property>→<advanced>→<startup and recovery>, then select <settings>, change <write debugging information> in the next page to “small RAM dump” and restart the machine. The system will produce minidump file automatically in the next blue screen.

5.2.6 Machine Alarm

If there's machine alarm in startup or utilization process, please refer to the following measures:

1. If this happens after you plugged in some external board, you may need to pull off this device and to do another test. If the alarm goes off, it shows that your external board is incompatible with the machine. It is suggested not to use it any more; if the alarm is still on, please go on referring to the following steps.

2. Locate the alarm sound:

● When the alarm sound is from the front of the chassis, usually we notice abnormal changes of the fault indicating light. There is the possibility of abnormal fans or hard disk module;

● If the alarm sound is from the rear of the chassis, please check whether a redundant power supply is configured or not and whether there is an abnormal status light of the power supply module or a module without power cable (when power alarm goes on, the shield switch can be pressed to stop it);

● If the alarm sound is in the chassis, the alarm may be from motherboard, RAID card or hard disk back plane. If it is also accompanied by no display on the monitor or power on faults, there is high possibility of something wrong with motherboard. You can try to pull or plug RAM or clear CMOS; If the starting self-check is normal and the alarm starts when the RAID card is under test, and there is abnormal array information, then it is likely that the RAID card has set off the alarm. There may be array abnormality; when the hard disk back plane alarms, there is always abnormal status light of the hard disk on the front panel, which can be used to help analysis.

3. After having collected the basic information, please feedback the detailed alarm information to Inspur technical support personnel in a timely manner. We will make further analysis and judgment and help you solve the problem as soon as possible.

5.3 Additional Notes

1. The server does not support system hibernation function.

2. In order to guarantee the reliability of the system, it is suggested that you use the component of the relevant Model tested and authenticated by us when expanding and equipping components.

3. Please guarantee the fine electricity utilization environment of the server, normal voltage input and earth-connecting condition and temperature and humidity and so

on within the normal range.

4. For special needs, when transferring the server, pay attention to avoiding the vibration and carry out in power off condition.

5. For more notices of our products, please refer to the FAQ for server in the official website of Inspur:

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

5.4 Technical Support Information

If you have any doubt or unsolved problems in using Inspur server, please take the following measures:

1. If you have doubt in product configuration and specification details, please contact your supplier.

2.If there is system problem in using the machine, please contact the customer service center of Inspur server directly, please record the product serial number on your host chassis. After receiving your service request, our technical support personnel will provide you with solution or field maintenance.

3. Inspur Server Customer Service Center Contact:

Technical Support Hot-line: 86-531-88546554

Free Consultancy Hot-line: 800-8600011

400-8600011

Email:sv_str_pcs@inspur.com

Download address of drive and product information for Inspur server:

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