Inspur Server User Manual

SA5112M4（NF5170M4）

Abstract

This manual contains technical information such as specifications, hardware operations, software configuration, fault diagnosis, etc. that are relevant to the maintenance and operation of this server.

It is recommended that server installation, configuration, and maintenance is performed by experienced technicians only.

Target Audience

This manual is intended for:

- Technical support engineers
- Product maintenance engineers
- Technicians

Warnings:

This manual introduces the server's technical features, system installation and setup, which will help the user to understand how best to utilize the server and all its functionalities.

1.For your safety, please do not disassemble the server's components arbitrarily. Please do not extend configuration or connect other peripheral devices arbitrarily. If needed, please conduct Inspur for our support and guidance.

2.Before disassembling the server's components, please be sure to disconnect all the power cords connected to the server.

3.BIOS and BMC setup is a significant factor in correctly configuring your server. If there are no special requirements, it is suggested to use the default values and not alter the parameter settings arbitrarily.

4.Please install the product-compatible operating system and use the driver shipped with the server or provided in Inspur official website. If you use an incompatible operating system or non-Inspur driver, it may cause compatibility issues and affect the normal use of the product, Inspur will not assume any responsibility or liability.

Content

1 Safety Instructions

⚠ Warning: Please be advised to follow the instructions below for safety. Failure to do so could result to potential dangers that may cause property loss, personal injury or death.

1. The power supplies in the system may produce high voltages and energy hazards that may cause personal injury. For your safety, please do not attempt to remove the cover of the system to remove or replace any component without assistance provided by Inspur. Only service technicians trained by Inspur are authorized to remove the cover of the host, and to remove and replace internal components.
2. Please connect the equipment to the appropriate power supply. Use only power supplies with the correct voltage and electrical specifications according to the label. To protect your equipment from damages caused by a momentary spike or plunge of the voltage, please use relevant voltage stabilizing equipment, or uninterruptible power supplies.
3. If you must use an extension cable, please use a three-core cable with properly grounded plugs. Observe extension cable ratings. Ensure that the total rating of all equipment plugged into the extension cable does not exceed 80 percent of the ratings limit for the extension cable.
4. Please be sure to use the power supply components that come with the server, such as power lines, power socket (if provided with the server) etc. For your safety, please do not replace power cables or plugs randomly.
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/grounded 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 earthing /grounding pin of power lines and do not use the patch plug or the earthing/grounding pin unplugged with cables. In the case that the earthing/grounding conductors are not installed and it is uncertain whether there are appropriate earthing/ grounding protections, please do not use or attempt to operate the equipment. Contact and consult an electrician.
6. Please do not push any objects into the openings of the system. Doing so may cause

fire or electric shock.

7. Please place the system far away from the cooling plate and heat sources, and be sure not to block the air vents.
8. Please be sure not to scatter food or liquid in the system or on other components, and do not use the product in humid or dusty environments.
9. Using an incompatible battery may cause explosion. When battery replacement is required, please consult the manufacturer first, and choose batteries of the same or equivalent type. Do not disassemble, crush, puncture the batteries or make the external connection point short circuit, and do not expose them in the environment over 60°C. Never throw batteries into fire or water. Please do not attempt to open or repair the batteries. Dispose of used batteries according to instructions. For battery recycling, please contact the local waste recycling center.
10. Before installing equipment into the rack, please install all front and side stabilizers on the independent rack first. Please install the front stabilizers first, if connecting with other racks. Please install stabilizers before installing equipment into the rack. Failure to install the corresponding stabilizers before installing equipment into the rack may cause the cabinet to tip over, possibly resulting to severe injury. After installing the equipment and other components into the rack, only one component can be pulled out from the rack through its sliding part at one time. Pulling out several components at the same time may cause the rack to turn over, resulting to serious personal injury.
11. A minimum of two people are required to safely move a rack. The racks are extremely awkward and heavy, moving them without adequate, trained personnel could result in severe injury or death.
12. It is prohibited to directly short-circuit the copper busbar. Please do not touch the copper busbar when the rack is powered on.
13. This is Class A product, and may cause radio interference. In such case, users may need to take necessary measures to mitigate the interference.
14. The equipment is intended for installation in a Restricted Access Location.

⚠ Note: The following considerations may help avoid the occurrence of problems that could damage the components or cause data loss, etc.

1. In the event of the following, please unplug the power line plug from the power socket

and contact Inspur's customer service department:

1) The power cables, extension cables or power plugs are damaged.
2) The products get wet.
3) The products have fallen or have been damaged.
4) Other objects have fallen into the products.
5) The products do not or are unable to function normally even when attempting to operate according to the instructions.

2. If the system becomes wet or damp, please follow these steps:

1) Power off the equipment, disconnect them with the power socket, wait for 10 to 20 seconds, and then open the host cover.
2) Move the equipment to a well-ventilated place to dry the system at least for 24 hours and make sure that the system is fully dried.
3) Close the host cover, reconnect the system to the power socket, and then power on.
4) In case of operation failure or other abnormal situations, please contact Inspur and get technical support.

3. Pay attention to the position of system cables and power cables-avoid placing wires in high foot traffic locations. Please do not place objects on the cables.
4. Before removing the host cover, and/or touching the internal components, please allow for the equipment to cool first. To avoid damaging the mainboard, please power off the system and wait for five seconds, and then remove the components from the mainboard and/or disconnect the peripheral device from the system. Please remember that only service technicians trained by Inspur are authorized to remove the cover of the host, and to remove and replace internal components.
5. If there is modem, telecom or LAN options installed in the equipment, please pay attention to the followings:

1) In the case of thunder and lightning, please do not connect or use the modem.
2) Never connect or use the modem in a damp environment.
3) Never insert the modem or telephone cables into the socket of network interface controller (NIC).
4) Before unpacking the product package, installing internal components, touching uninsulated cables or jacks of the modem, please disconnect the modem cables.

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

1) Please remove any static electricity on your body before dismounting or touching any electronic component in the equipment, to prevent the static electricity from conducting itself to the sensitive components. You may remove the static electricity on the body by touching the metal earthing objects (such as the unpainted metal surface on the rack).
2) Please do not take electrostatic sensitive components that are not ready to be installed for application out of the antistatic package materials.
3) While working, please touch the earthing conductor or the unpainted metal surface on the cabinet regularly to remove any static electricity from the body that may damage the internal components.

7. Upon receiving the proper authorization from Inspur and dismounting the internal components, please pay attention to the following:

1) Switch the system power supply off and disconnect the cables, including all connections of the system. When disconnecting the cables, please hold the connector of the cables and slowly pull the plugs out. Never pull on the cables.
2) The products need to completely cool down before dismounting the host cover or touching the internal components.
3) During the dismounting process, avoid making large movement ranges to prevent damage to the components or scratching arms.
4) Handle components and plug-in cards with care. Please do not touch the components or connection points on the plug-in cards. When handling the plug-in cards or components, firmly grab the edges of the plug-in cards and components, and/or their metal fixed supports.

8. During the process of rack installation and application, please pay attention to the followings:

1) After the rack installation is finished, please ensure that the stabilizers have been fixed to the rack and supported to ground, and the weight of the rack is firm on ground.
2) Always load from the bottom up, and load the heaviest items first.
3) When pulling out the components from the rack, apply slight force to keep the rack balanced.

4) When pressing down the release latch and the rail of components is sliding, please be careful; as the sliding may hurt your fingers.
5) Do not overload the AC power supply branch circuits in the rack. The total load of the rack should not exceed 80% of the ratings of the branch circuits.
6) Ensure that components in the rack have good ventilation conditions.
7) When repairing components in the rack, never step on any other components.

2 Product Specification Introduction

2.1 Introduction

This product adopts the Intel Grantley-EP platform and uses the Wellsburg chip set. It supports the following:

- Two mainstream Intel Xeon E5-26** V4 (or E5-26** V3) series processors.
- 16 DIMM DDR4 memory, up to 2400MHz.
- ECC Registered and multiple senior memory redundancy functions.
- Up to 2.5” x10 SAS/SATA/SSD hot-plugging hard disks or 3.5” x4 SAS/SATA/SSD hot-plugging hard disks + 2.5” x2 SSD hot-plugging hard disks.
- Mainboard integrates a Gigabit net card of high performance, and supports network advanced features.
- Mainboard integrates BMC/KVM chips. 2 PCI-Express expansion slots are available.
- SAS 3.0 (12Gb/s) or SAS Raid cards, and implements flexible SAS/SAS RAID solutions.
- Modular design on components such as structure, storage, PCI expansion, power supply and fan etc.
- Energy-saving and noise reduction design, equipped with PMbus power supply of high efficiency, supports DPNM function, and implements energy saving and consumption reducing.

- 2.5”×8 Configuration (i.e. Full Configuration)

Supports 8 front 2.5” SAS/SATA/SSD hard disks, shown in the figure below.

- 3.5”×4 Configuration (i.e. Full Configuration)

Supports 4 front 3.5”/2.5” SAS/SATA/SSD hard disks and 2 2.5” SSD hard disks, shown in the

following figure below.

Note: 3.5” hard disk bays could hold 3.5”/2.5” hard disks.

⚠ • 2.5”×10 Configuration (i.e. Full Configuration)

Supports 10 front 2.5” SAS/SATA/SSD hard disks, shown in the figure below.

2.2 Features and Specification

Processor	
Processor Type	Intel Xeon E5-26** V4 (or E5-26** V3) Series (supports up to two 145W)
Interface	Two Socket-R3 slots
Chipset	
Chipset Type	PCH C610 (Wellsburg)
Memory	
Memory Type	DDR4 ECC RDIMM/LRDIMM Memory
Single Inline Memory Module Qty.	16
Memory Volume	Supports up to 1024GB (64GB for single)
I/O Interface	
USB Interface	Max 2 front USB 3.0 interfaces, 2 built-in USB 3.0 interfaces, and 2 rear USB 3.0 interfaces.
Display Interface	Max 1 front VGA interface 1 rear VGA interface
Serial Interface	1 built-in serial port

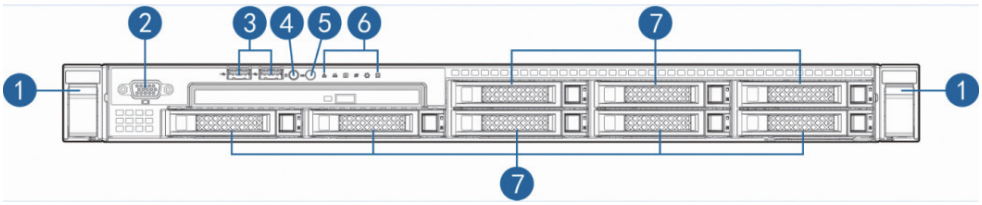
ID Indicator Interface	1 ID indicator (blue) and its press button
Display Controller	
Controller Type	Aspeed 2400
SAS Backplane	
SAS3.0 Backplane	3.5x4 Backplane: Supports 3.5”x4 HDDs, SAS backplane provides 1 HD Mini SAS port and 1 8PIN power port; 1 backplane is installed. 2.5x2 Backplane: Supports 2.5”x2 HDDs, provide 2 SATA ports and 1 4PIN power port; 1 backplane is installed. 2.5x8 Backplane: Supports 2.5”x8 HDDs, SAS backplane provides 2 HD Mini SAS ports and 1 8PIN power port; 1 backplane is installed.
Network Card	
Network Card Controller	The mainboard is optionally integrated with 1 Intel I350 dual or four Gigabit net card, providing two or four 1000M adaptive RJ45 network ports; The mainboard is optionally integrated with 1 Intel 82599 single-port or dual-port net card, providing one or two 10 Gigabit SFP+ network ports.
Management Chip	
Management Chip	It integrates 1 independent 1000Mbps network interface, which is used in IPMI remote management.
PCI Extension Slot	Mainboard: 1 onboard PCI Express 3.0 x24 slot (used to support PCI-E Riser, which could not adapt to external cards); 3 vertically inserted PCIE slots; In the system: Single CPU: It could support 1 PCIE x8+x1 slot (able to support network sub card of management function), which transfers via a half-height and half-length PCI-E Riser card. Dual CPUs: Could support 1 PCIE x8+x1 slot (able to support network sub card of management function), which transfers via PCI-E Riser card, and supports half-height and half-length cards. Could support 1 PCIE x16 slot (x16 signal), which transfers via installing one Riser card, and supports full-height and half-length cards.
Hard Disk	
Hard Drive Type	Front 2.5/3.5 inch SAS, SATA and SSD hard disks; Up to 10 front hard disks could be supported. (Subject to type purchased)
External Storage Driver	
CD Driver	Supports Slim SATA interface DVD drive (9.5 mm) (Subject to type purchased) External USB CD drive.
Drive U Disk	Optional drive U disk.
Power Supply	
Specification	Output power of sing/double power 550W/800W and above; 1+1 redundancy; 2 power modules; Supports PMBus power supply, and implements Node Manager 3.0 function.
Power Input	Please refer to power input on nameplate tag of the host.
Physical Specification	

External Dimension of Package	635 width × 215 height × 955 depth (unit: mm)
Host Size	430 width × 44 height × 730 depth (unit: mm)
Product Weight	Gross weight: 26kg (Gross weight includes: Host + Packing Box + Rail + Parts Kit)
Environment Parameters	
Working Environment Temperature	10℃ -35℃
Storage & Transportation Temperature	-40℃ -60℃
Working Humidity	20% -80% relative humidity
Storage & Transportation Humidity	20% -93% (40℃) relative humidity

3 Component Identification

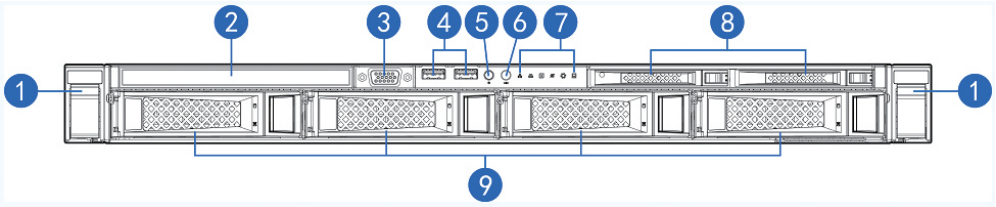
3.1 Front Panel Component

- 2.5” X 8 Hard Drive Bays



Item	Description
1	Quick release levers (2)
2	Front video connector
3	Front USB 3.0 connectors (2)
4	Power button
5	ID LED and button
6	See “Front Control Panel Buttons and LEDs” item 4--9
7	Hard drive bays

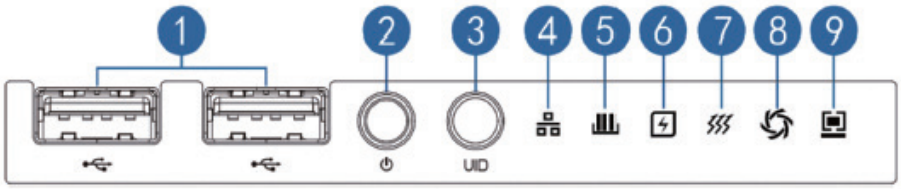
- 3.5” X 4 Hard Drive Bays



Item	Description
1	Quick release levers (2)
2	CD Driver
3	Front video connector
4	Front USB 3.0 connectors (2)
5	Power button
6	ID LED and button
7	See “Front Control Panel Buttons and LEDs” item 4--9
8	2.5-inch SSD hard drive bays (2)

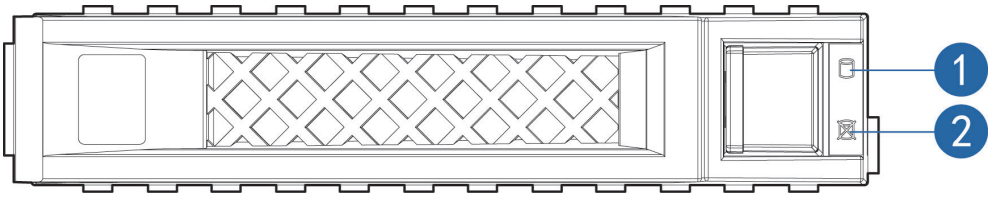
Item	Description
9	3.5-inch hard drive bays

3.2 Front Control Panel Buttons and LEDs

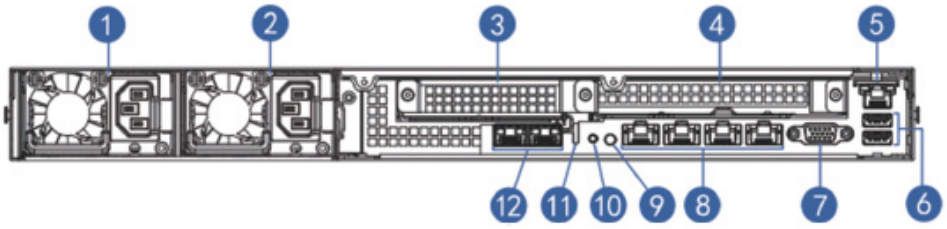


Item	Description
1	USB connectors (2)
2	Power button
3	UID LED and button
4	Network status LED
5	Memory fault LED
6	Power fault LED
7	System overheating LED
8	Fan fault LED
9	System fault LED

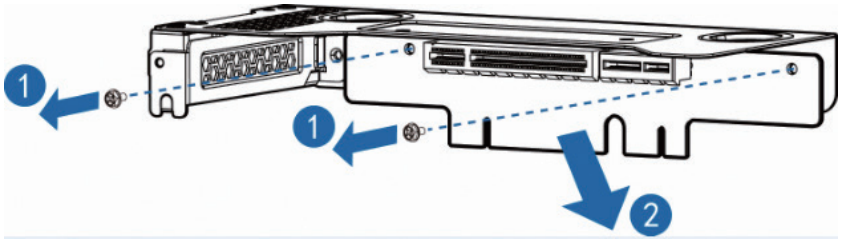
3.3 Hard Drive Bay LEDs



Item	Description	Status & Interpretation
1	Fault alarming LED	Steadily red: A hard drive failure Steadily blue: Hard drive positioning Steadily blue: RAID rebuilding
2	Activity status LED	Steadily green: Normal Flashing green: Read and write activity

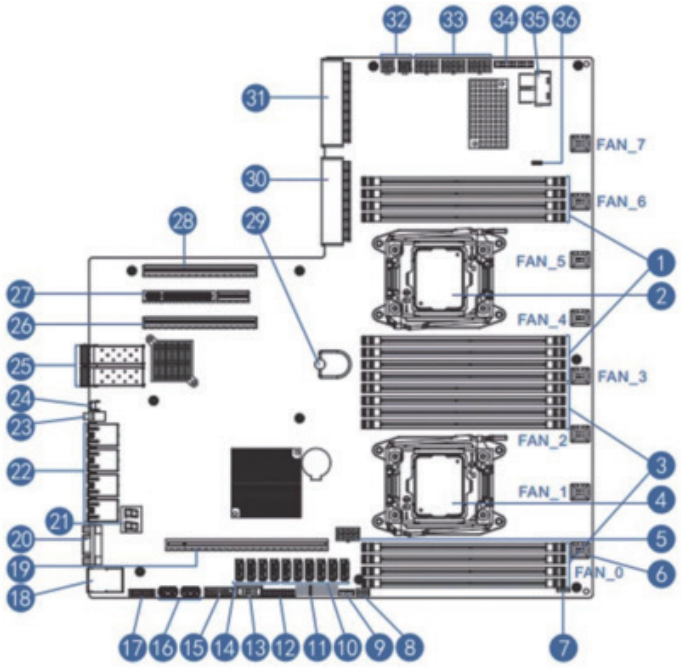


3.4 Rear Panel



Item	Description
1	PSU0
2	PSU1
3	PCIe x8
4	PCIe x16
5	IPMI management port
6	USB 3.0 connectors (2)
7	Video connector
8	NIC connectors (4)
9	ID LED and button
10	BMC reset button
11	10 Gigabit NIC LED
12	10 Gigabit NIC connector

3.5 PCI Slot Definition



3.6 System Board Components

Item	Description
1	Processor 0 DIMM slots
2	Processor socket 0
3	Processor 1 DIMM slots
4	Processor socket 1
5	GPU power connector
6	System fan connectors (8)
7	I2C connector
8	GPIO connector
9	IPMB connector
10	SATA connectors (6)
11	CLEAR CMOS jumper
12	TCM connector
13	COM connector
14	sSATA connectors (4)
15	Front USB 3.0 connector

Item	Description
16	Internal USB 3.0 connector
17	Front VGA connector
18	IPMI management port / rear USB 3.0 connector (2)
19	Processor 1 PCIe x24 slot
20	Rear VGA connector
21	Debug LED
22	GbE port
23	ID LED and button
24	BMC reset button
25	10 GbE port
26	Processor 1 PCIe x16 slot
27	Processor 0 PCIe x8 slot
28	Processor 0 PCIe x8 (in x16 slot)
29	System board handle
30	PSU1 connector
31	PSU0 connector
32	Power connectors (4-pin)
33	Power connectors (8-pin)
34	Front control panel connector
35	LSI 3008 HD mini SAS connector
36	LSI 3008 SAS Key

3.7 System Board Jumper Introduction

See [System Board Components] for the jumper position.

Item	Description	Function
CLR_CMOS	CMOS clear jumper	J46 Short-circuit pin1-2, restore to normal status; short-circuit pin2-3, clear CMOS.

Please note the following:

Please shut down the system, as well as disconnect power supply during CMOS cleaning, and hold for five seconds after short-circuiting Pin2-3; then short-circuit Pin1 and Pin2 (the default status) of CLR_CMOS jumper with a jumper cap to restore original status.

4 Operations

4.1 Power up the Server

Insert the power cord plug, then press the Power On button.

4.2 Power down the Server

⚠ WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

IMPORTANT: If installing a hot-plug device, it is not necessary to power down the server.

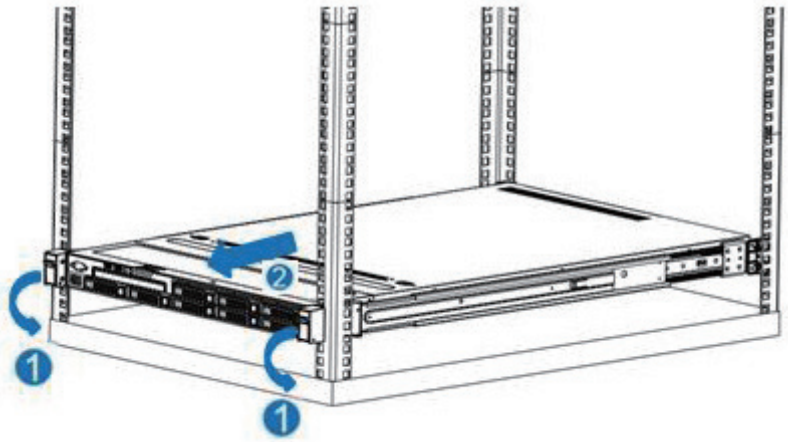
1. Back up the server data.
2. Shut down the operating system.
3. Disconnect the power cords.

The system is now without power.

4.3 Extend the Server from the Rack

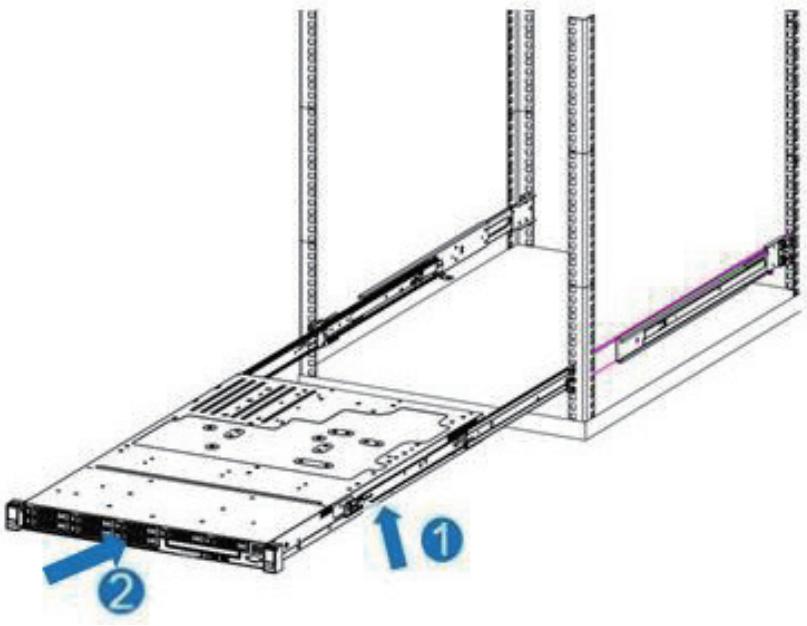
1. Pull down the quick release levers on each side of the server.
2. Extend the server from the rack.

⚠ WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.



3. After performing the installation or maintenance procedure, slide the server back into the rack, and then press the server firmly into the rack to secure it in place.

WARNING: To reduce the risk of personal injury, be careful when sliding the server into the rack. The sliding rails could pinch your fingers.



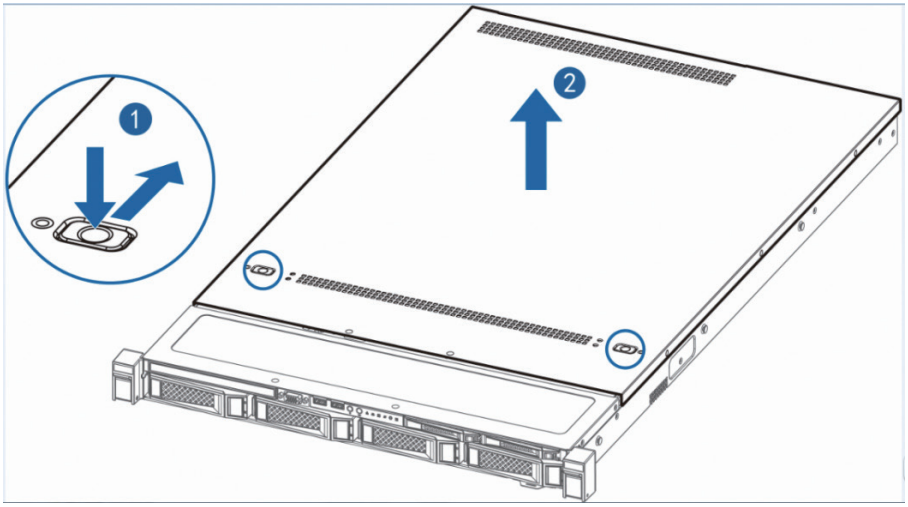
4.4 Remove the Access Panel

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: For proper cooling do not operate the server without the access panel, air baffle, or fan installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

To remove the component:

1. Power down the server if performing a non-hot-plug installation or maintenance procedure.
2. Extend the server from the rack.
3. Use the screwdriver to loosen the security screw on the hood latch.
4. Lift up on the hood latch handle, and then remove the access panel.



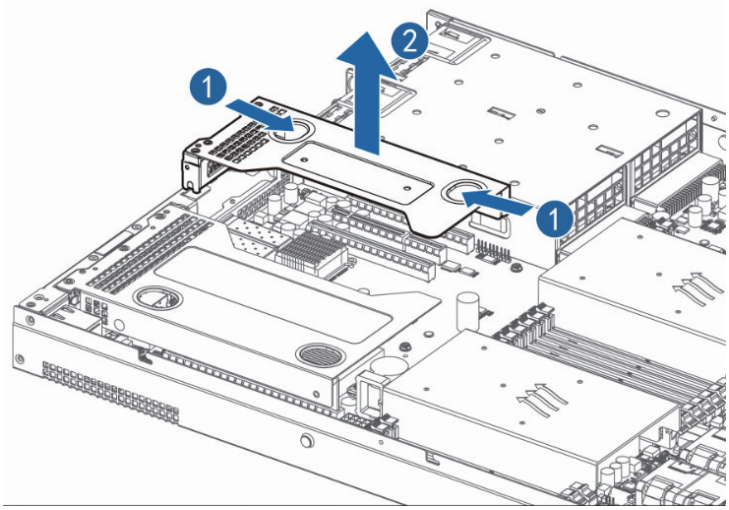
4.5 Install the Access Panel

1. Place the access panel on top of the server with the hood latch open. Allow the panel to extend past the rear of the server.
2. Push down on the hood latch. The access panel slides to a closed position.
3. Use the screwdriver to tighten the security screw on the hood latch.

4.6 Remove the PCI Riser Cage

CAUTION: To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Remove the PCI riser cage.



4.7 Install the PCI Riser Cage

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Install the PCI riser cage.
5. Install the access panel.
6. Install the server into the rack.
7. Power up the server.

4.8 Remove the Air Baffle

CAUTION: For proper cooling do not operate the server without the access panel, air baffle, or fan installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

1. Power down the server.
2. Extend or remove the server from the rack.
3. Remove the access panel.
4. Remove the air baffle.

5 Setup

5.1 Optimum Environment

When installing the server in a rack, select a location that meets the environmental standards described in this section.

5.1.1 Space and Airflow Requirements

To allow for servicing and adequate airflow, observe the following space and airflow requirements when deciding where to install a rack:

- Leave a minimum clearance of 63.5 cm (25 in) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 in) behind the rack.
- Leave a minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks.

Inspur Servers draw in cool air through the front door and expel warm air through the rear door. Therefore, the front and rear rack doors must be adequately ventilated to allow ambient room air to enter the cabinet, and the rear door must be adequately ventilated to allow the warm air to escape from the cabinet.

⚠ CAUTION: To prevent improper cooling and damage to the equipment, do not block the ventilation openings.

When vertical space in the rack is not filled by a server or rack component, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow.

⚠ CAUTION: Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

⚠ CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).

• Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in).

5.1.2 Temperature Requirements

To ensure continued safe and reliable equipment operation, install or position the system in a well-ventilated, climate-controlled environment.

The maximum recommended ambient operating temperature (TMRA) for most server products is 35°C (95°F). The temperature in the room where the rack is located must not exceed 35°C (95°F).

⚠ CAUTION: To reduce the risk of damage to the equipment when installing third-party options:

• Do not permit optional equipment to impede airflow around the server or to increase the internal rack temperature beyond the maximum allowable limits.

• Do not exceed the manufacturer's TMRA.

5.1.3 Power Requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA-75, 1992 (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.

⚠ WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.

⚠ CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

When installing more than one server, you may need to use additional power distribution devices to safely provide power to all devices. Observe the following guidelines:

- Balance the server power load between available AC supply branch circuits.
- Do not allow the overall system AC current load to exceed 80 percent of the branch circuit AC current rating.
- Do not use common power outlet strips for this equipment.
- Provide a separate electrical circuit for the server.

5.1.4 Electrical Grounding Requirements

The server must be grounded properly for optimal operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code), Article 250, as well as any local and regional building codes.

In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, and Canadian Electrical Code. In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7. Furthermore, you must be sure that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices.

Because of the high ground-leakage currents associated with multiple servers connected to the same power source, Inspur recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the server is not recommended.

5.2 Rack Warnings

⚠ WARNING: To reduce the risk of personal injury or damage to the equipment, please be sure of the following:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

⚠ WARNING: To reduce the risk of personal injury or equipment damage when unloading a rack:

- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.
- Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.

5.3 Identifying the Contents of the Server Shipping Carton

Unpack the server shipping carton and locate the materials and documentation necessary for installing the server. All the rack mounting hardware necessary for installing the server into the rack is included with the rack or the server.

The contents of the server shipping carton include:

- Server
- Power cord
- Power cord clasp
- Hardware documentation, Documentation CD, and software products
- Rack-mounting hardware

In addition to the supplied items, you may need:

- Operating system or application software
- Hardware options

5.4 Installing Hardware Options

Install any hardware options before initializing the server. For options installation information, refer to the option documentation. For server-specific information, refer to “Hardware options installation.”

5.5 Installing the Server into the Rack

CAUTION: Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

1. Install the server into the rack. For more information, see the installation instructions included with the Slide Rail System.
2. Connect peripheral devices to the server. For connector identification information, see Rear panel components in this guide.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into RJ-45 connectors.

3. Connect the power cord to the rear of the server.

IMPORTANT: When using cable management arm components, be sure to leave enough slack in each of the cables to prevent damage to the cables when the server is extended from the rack.

4.Connect the power cord to the AC power source.

WARNING: To reduce the risk of electric shock or damage to the equipment:

• Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

• Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

• Unplug the power cord from the power supply to disconnect power to the equipment.

• Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

5.6 Installing the Operating System

To operate properly, the server must have a supported operating system installed. For the latest information on supported operating systems, refer to the Inspur website (http://www.inspur.com/eportal/ui?pageId=444443).

Methods to install an operating system on the server include:

- Ruijie assisted installation—Insert the Ruijie server kit CD into the CD-ROM drive and reboot the server.
- Manual installation—Insert the operating system CD into the CD-ROM drive and reboot the server. This process may require you to obtain additional drivers from the Inspur website (http://www.inspur.com/eportal/ui?pageId=444443).

6 Hardware Options Installation

6.1 Introduction

If more than one option is being installed, read the installation instructions for all the hardware options and identify similar steps to streamline the installation process.

⚠ WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

⚠ CAUTION: To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

6.2 Processor Option

The server supports single- and dual-processor operation.

⚠ CAUTION: To avoid damage to the processor and system board, only authorized personnel should attempt to replace or install the processor in this server.

⚠ CAUTION: To help avoid damage to the processor and system board, do not install the processor without using the processor installation tool.

⚠ CAUTION: To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

To install the component:

1 Power down the server

2 Extend the server from the rack

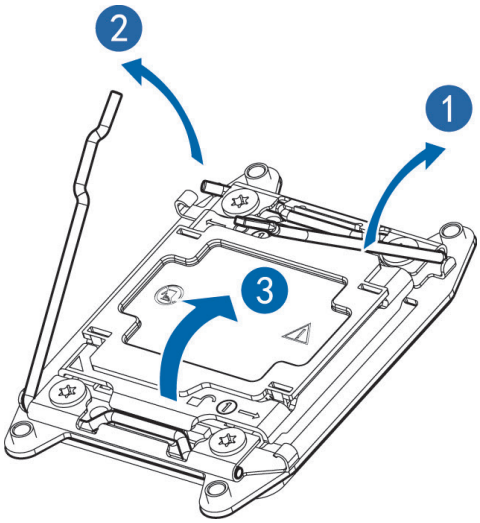
3 Remove the access panel

4 Remove the air baffle

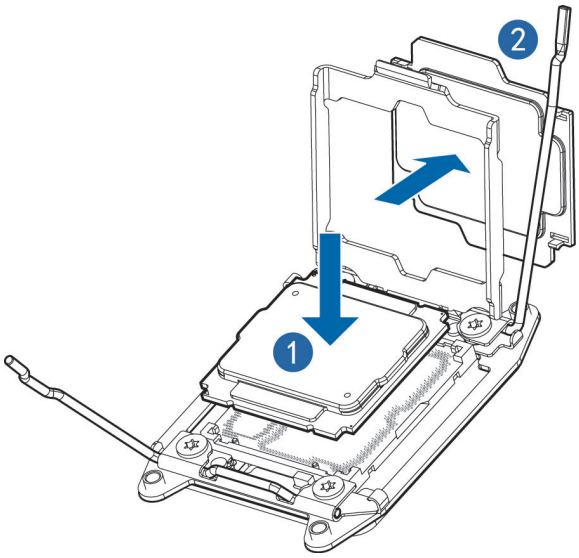
5 Remove the heatsink

6 Remove the processor:

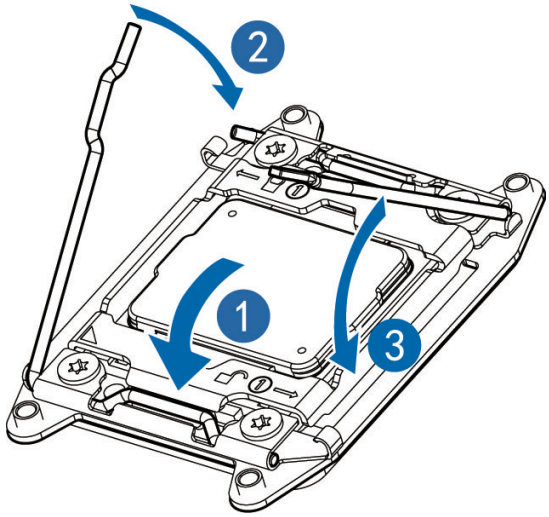
Step 1: Open the two locking levers and the CPU fixing plate.



Step 2: Install CPU into the CPU socket, and then remove the protective cover.



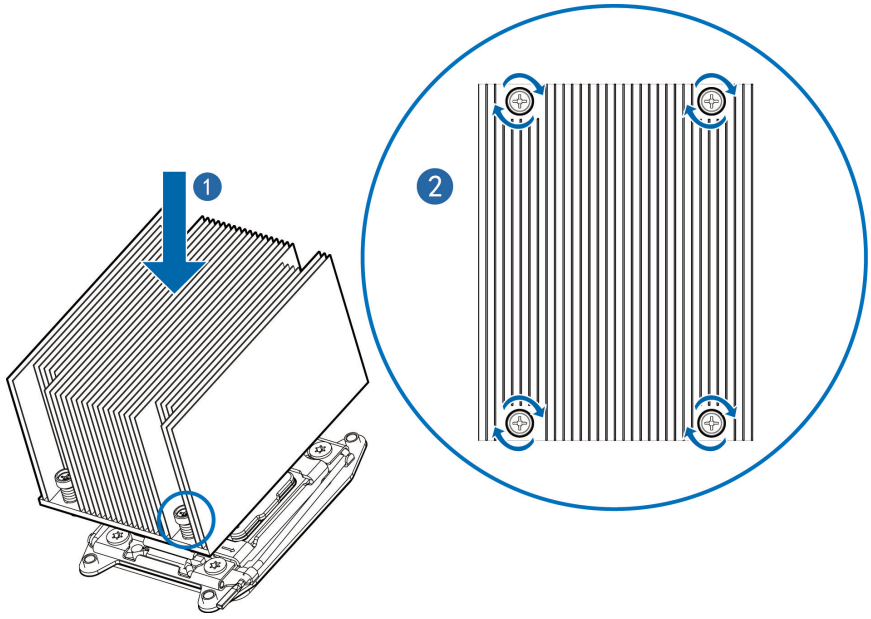
Step 3: Clamp CPU with CPU fixing plate, and then close the two locking levers firmly.



Step 4: Fix the CPU heatsink above CPU, and then fasten the bolts on the heatsink.

Note:

- It is required to coat thermal grease evenly onto the contact position between CPU heatsink and CPU.
- The direction of CPU heatsink fins should be identical with the system inlet/outlet direction.
- During fixing CPU heatsink, it is required to fasten bolts according to diagonal sequence accordingly.



CAUTION: The pins on the processor socket are very fragile. Any damage to them may require replacing the system board.

CAUTION: Failure to completely open the processor locking lever prevents the processor from seating during installation, leading to hardware damage.

6.3 Memory Options

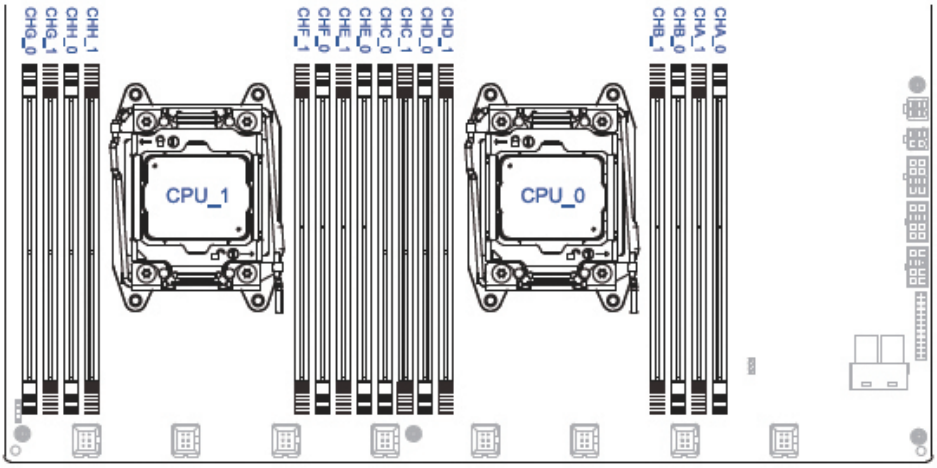
IMPORTANT:

This server does not support mixing DIMMs. Attempting to mix two types causes the server

to halt during BIOS initialization.

All memory installed in the server must be the same type.

- DIMM slot layout is as shown in the following figure:



- DIMM population guidelines:

Only DIMMs of the same type could be used in the same machine. Detailed DIMM population and combination principles are as follows:

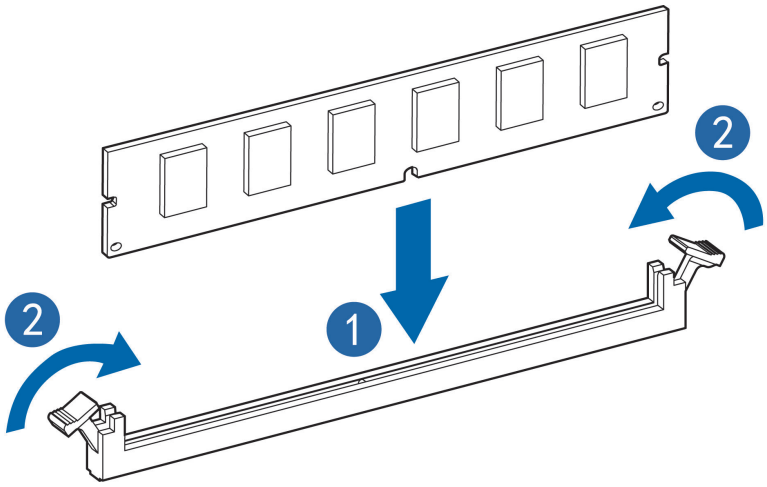
a、The white slot shall take the priority, while CPU1 memory shall be symmetrically installed with CPU0.

b、For single CPU, memory shall follow the screen printing sequence: CHA-0, CHB-0, CHC-0, CHD-0, CHA-1…

c、For dual CPUs, CPU0 position memory shall follow the screen printing sequence: CHA-0, CHB-0, CHC-0, CHD-0, CHA-1… CHG-0, CHH-0, CHE-0, CHF-0 …

Step 1: Open the lock tabs on both ends of the DIMM slot.

Step 2: Align the bottom key with the receptive point on the slot, press both ends of the DIMM with your thumbs. Insert the DIMM into the slot completely, and the lock tabs will automatically secure the DIMM, locking it into place.



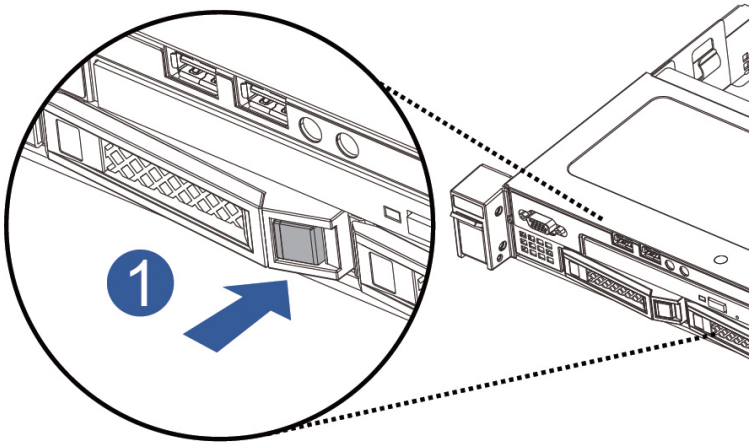
6.4 Hot-plug Hard Drive Option

When adding hard drives to the server, observe the following general guidelines:

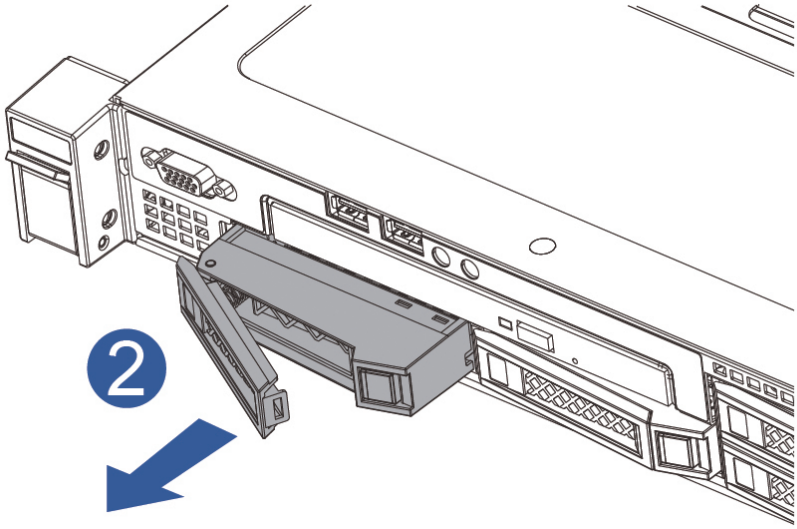
- The system automatically sets all device numbers.
- If only one hard drive is used, install it in the bay with the lowest device number; please check the hard drive device number on the pull-tag.

Installing a hot-plug SAS hard drive

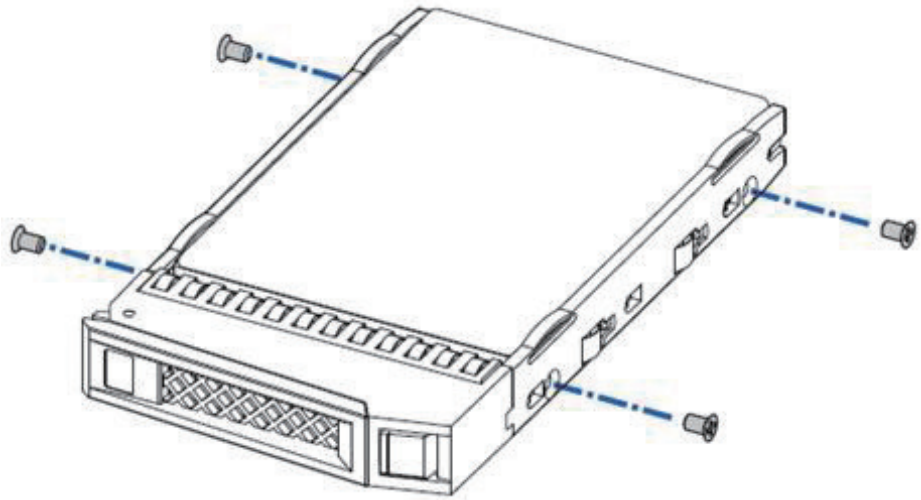
1. Remove the SAS hard drive blank.



2: Pop up buckles on hard disk bracket automatically, flatten and dismantle hard disk bracket.



3. Use four hard disk bolts to fix the hard disk onto the bracket.



6.5 Removing a Hot-plug Hard Drive

CAUTION: For proper cooling do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

1 Determine the status of the hard drive from the hot-plug SAS hard drive LED combinations.

2 Back up all server data on the hard drive.

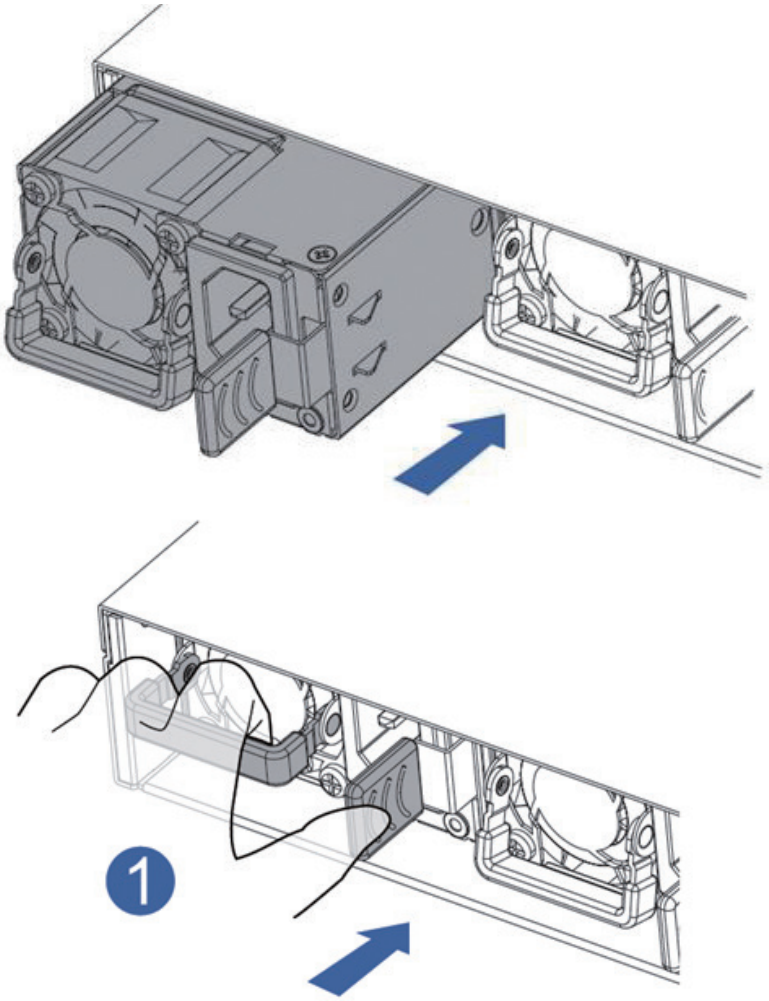
3 Remove the hard drive.

6.6 Redundant Hot-plug Power Supply Option

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

1. Access the product rear panel.
2. Remove the power supply blank.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.



3. Install the power supply in the power supply bay.
4. Connect the power cord to the power supply.
5. Route the power cord through the power cord anchor or cable management arm.
6. Reposition the cable management arm into the operating position.
7. Connect the power cord to the power source.
8. Be sure that the power supply LED is green.
9. Verify that the corresponding power supply LED on the SID is green.

6.7 Expansion Board Options

The server supports PCI, PCI-X, and PCI Express expansion boards.

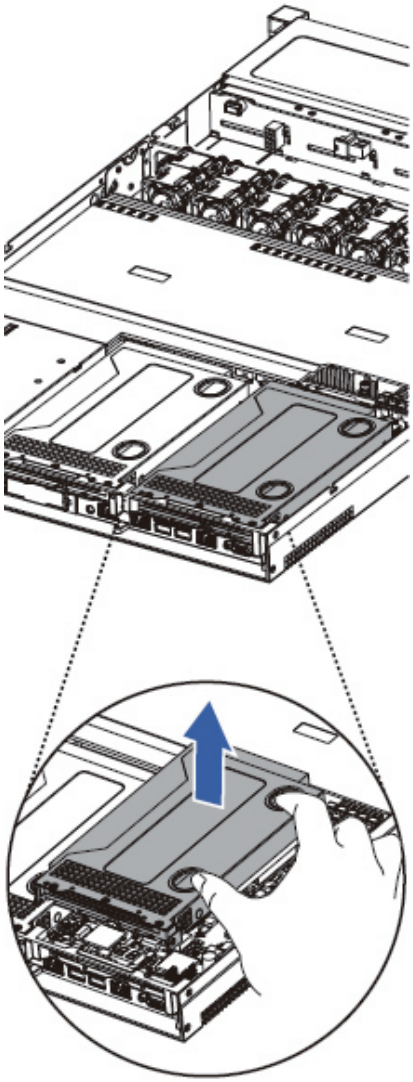
Removing Expansion Slot Covers

CAUTION: To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

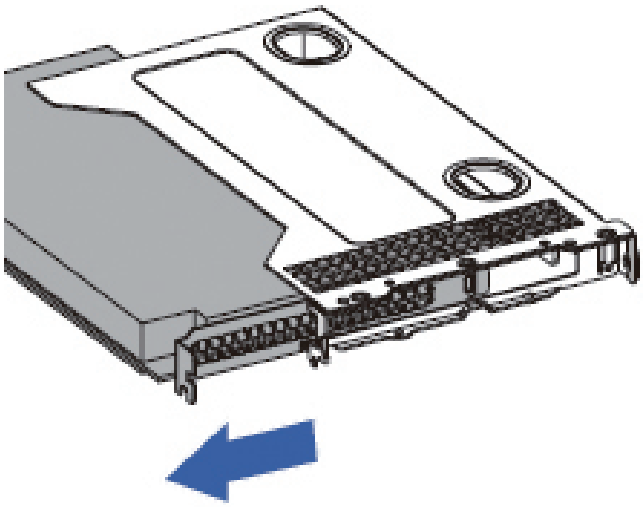
CAUTION: For proper cooling do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Remove the full-length expansion board retainer if any full-length expansion boards are installed.
5. Remove the PCI riser cage.
6. Remove the expansion slot cover:

Step 1: Align two fingers to holes on Riser bracket to take out the Riser card.



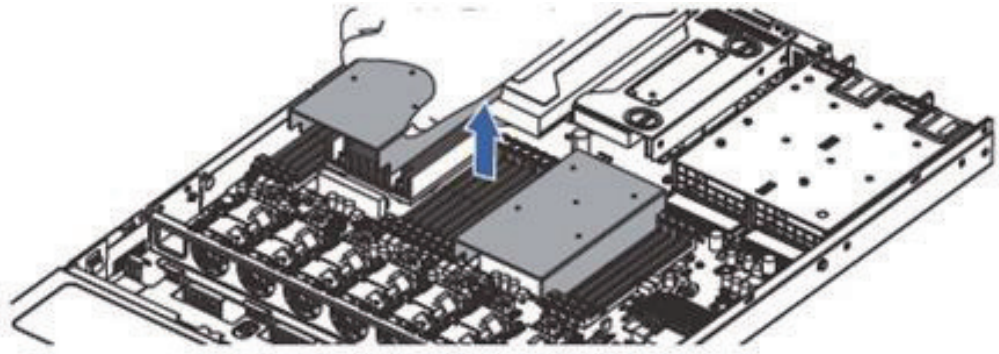
Step 2: Pull out the expansion card in the arrow direction, and replace it with a new expansion card.



6.8 Air Baffle Replacement

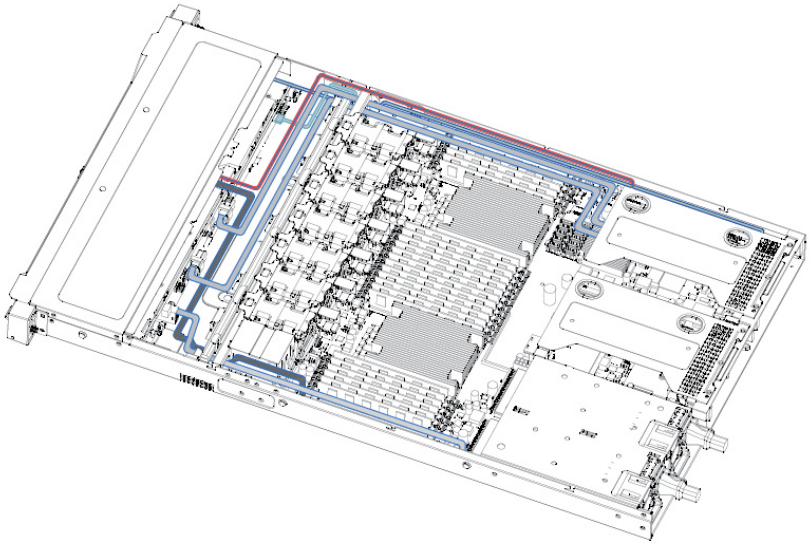
Step 1: Open the top cover of the chassis.

Step 2: Use fingers to lift up both ends of the air baffle, and remove the air baffle vertically.

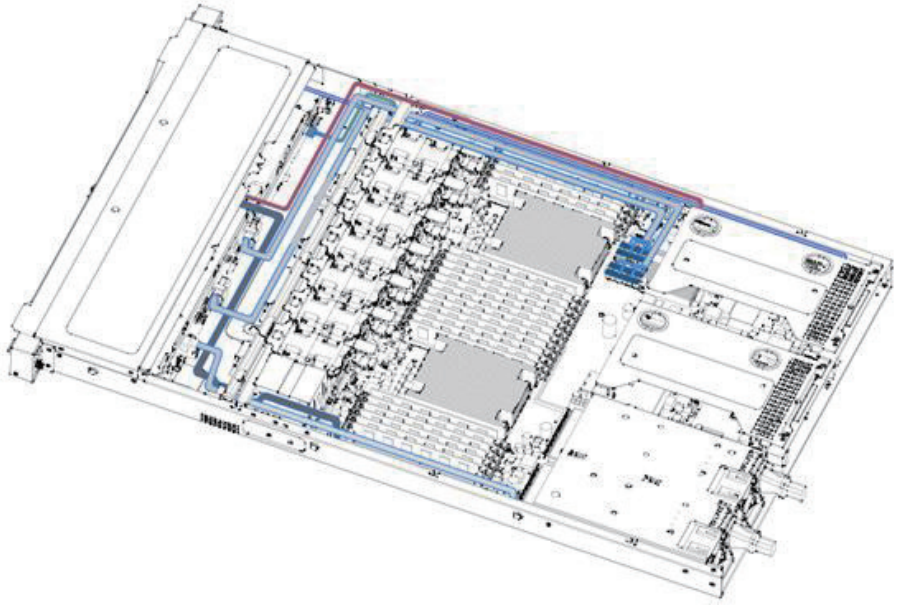


7 Cabling

7.1 External RAID/SAS card configuration cabling



7.2 Onboard SATA configuration cabling



8 BIOS Setup

This chapter introduces how to configure BIOS. All operations described in this section are limited to experienced operators or administrators with proper system maintenance qualifications.

BIOS is a basic input and output system. The system parameters and hardware parameters can be adjusted through special setup procedure. BIOS has a great impact on the system booting and running, setting parameters improperly may cause conflicts among hardware resources, or degrade the system running performance. Hence, understanding the BIOS setup is significant to the configuration of your server. It is suggested to use the default value, and not to alter the parameters arbitrarily.

Notes:

WARNING: Incorrectly changing the BIOS settings may leave the computer in a state in which the Operating System will no longer start. We recommend that you record the original BIOS settings before you modify them so it can safely revert to its previous state if required.

1. The factory default settings are the optimal settings. It is advised not to alter the parameters before understanding their denotations.
2. The common settings are introduced in detail in this chapter, but less common ones are not.
3. The BIOS content varies according to different configurations of the products; hence the detailed introduction is elided.

8.1 System BIOS Setup Methods

Power on the server. The system will then start to boot. When the following content appears below Inspur logo on the screen:

- Press <DEL> to SETUP or <TAB> to POST or <F12> to PXE Boot.
- Press [DEL] button.
- When “Entering Setup...” appears in the lower right corner, it will enter system BIOS configuration later, and you could select options in BIOS main menu using arrow buttons to enter sub-menu.

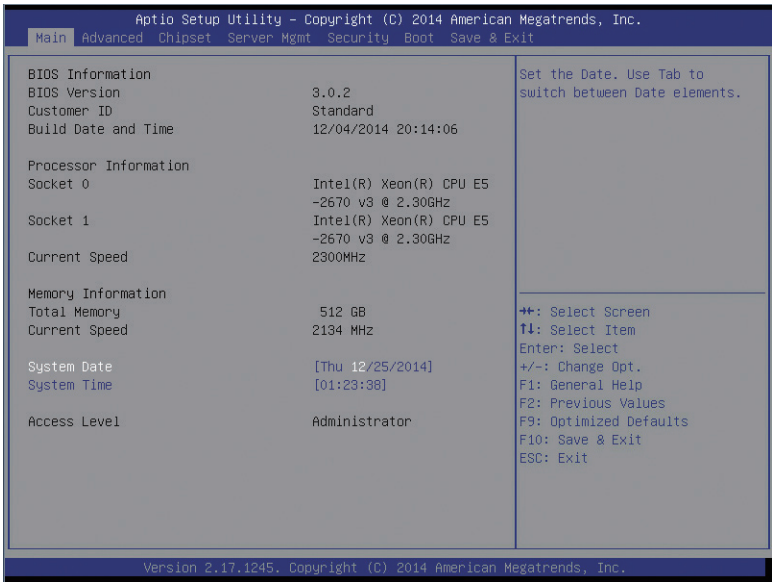
Note: Options in grey are not available. Options with symbol " ▶ " have a sub-menu.

Control key instruction table

Press Key	Function
<Esc>	Exit or return from sub-menu to main menu
<←> or <→>	Select a menu
<↑> or <↓>	Move the cursor up or down
<Home> or <End>	Move the cursor to the top or bottom of the screen
<+> or <->	Select the previous or next numerical value or setting of the current one
<F1>	Help
<F2>	Restore to the last configuration
<F9>	Restore to default configuration
<F10>	Save and exit
<Enter>	Execute commands or select a sub-menu

8.2 BIOS Settings

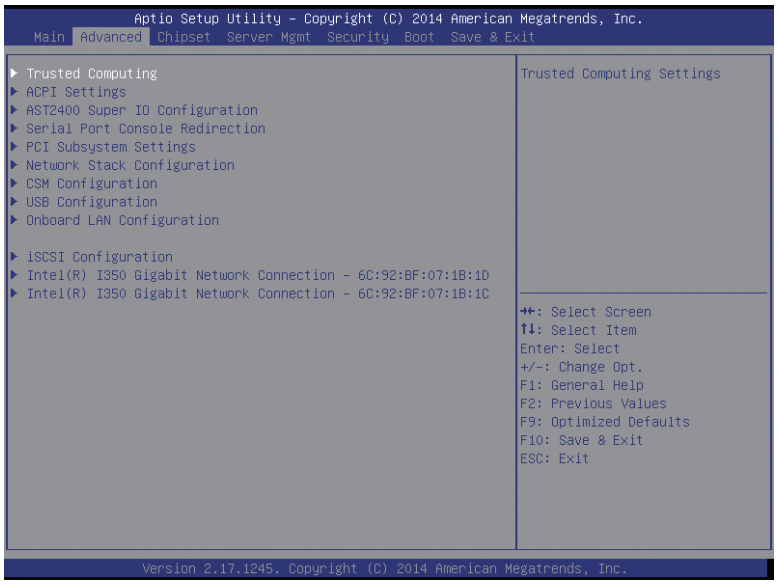
8.2.1 Main Menu



Main Menu Interface Instruction Table

Interface Parameters	**Function Description**
BIOS Information	Displays current BIOS information.
Processor Information	Displays CPU information.
Memory Information	Displays memory volume and current speed.
System Date(Day mm/dd/yyyy) System Time (hh/mm/ss)	Displays system time.
Access Level	Current access level

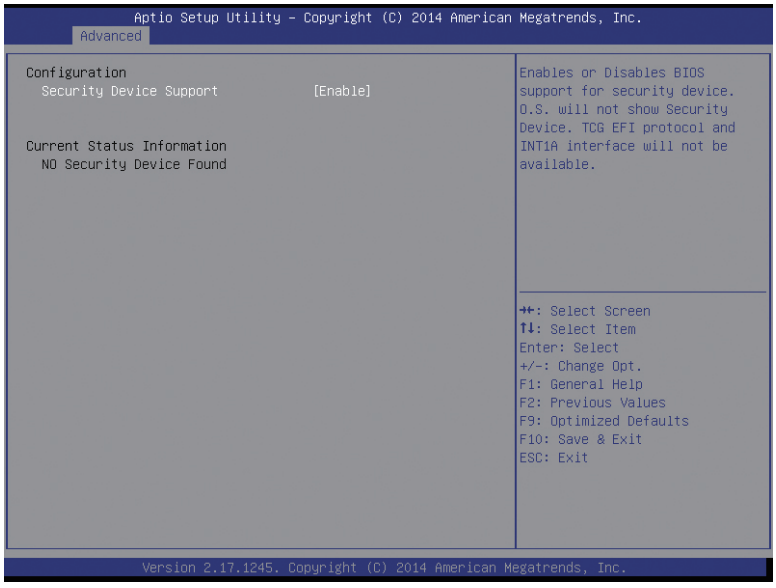
8.2.2 Advanced Menu



Advanced Menu Interface Instruction Table

Interface Parameters	Function Description
Trusted Computing	Trustable computing configuration
ACPI Settings	Advanced configuration and power interface settings
AST2400 Super IO Configuration	AST2400 I/O chip parameter configuration
Serial Port Console Redirection	Serial port console redirection settings
PCI Subsystem Settings	PCI subsystem settings
Network Stack Configuration	Network stack configuration
CSM Configuration	CMS configuration
USB Configuration	USB configuration
Onboard LAN Configuration	Onboard network card configuration

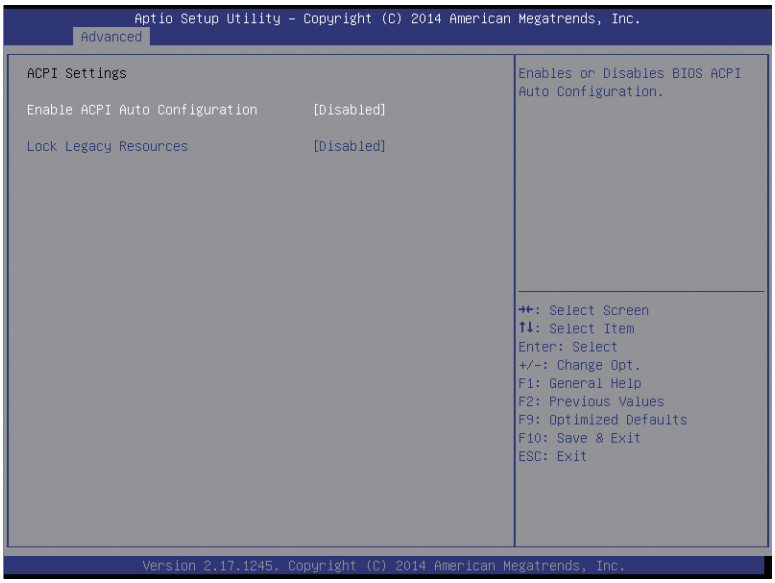
8.2.2.1 Trusted Computing



Trusted Computing Menu Interface Instruction Table

Interface Parameters	Function Description
Security Device Support	BIOS security device support settings
Current Status Information	Status information of the current security device

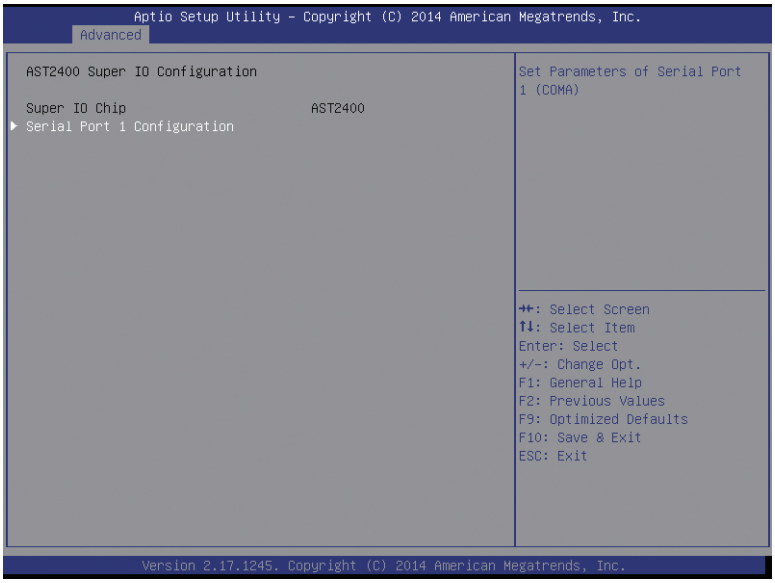
8.2.2.2 ACPI Settings



Advanced Menu Interface Instruction Table

Interface Parameters	Function Description
Enable ACPI Auto Configuration	To enable ACPI automatic configuration
Lock Legacy Resources	Lock legacy resources setting

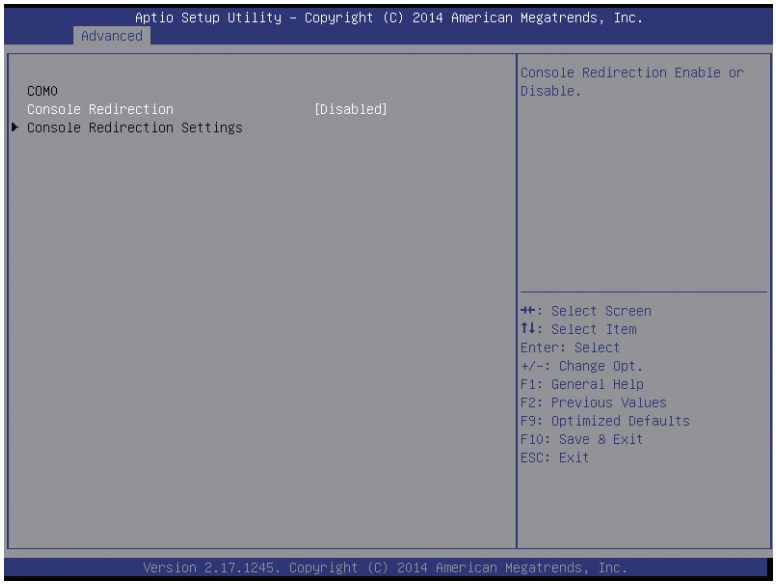
8.2.2.3 AST2400 Super IO Configuration



AST2400 Super IO Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Super IO Chip	The current I/0 chip
Serial Port 1 Configuration	Serial port 1 configuration

8.2.2.4 Serial Port Console Redirection

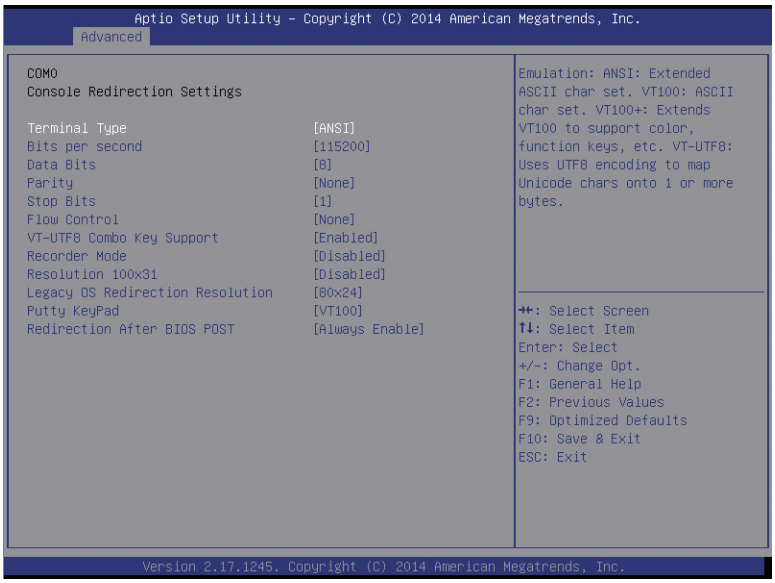


Serial Port Console Redirection Menu Interface Instruction Table

Interface Parameters	Function Description
Console Redirection	The console redirection switching settings
Console Redirection Settings	The console redirection parameter settings

8.2.2.4.1 Console Redirection Settings

When the Console Redirection option is set to [Enabled], the Console Redirection Settings menu is opened.



Console Redirection Settings Menu Interface Introduction

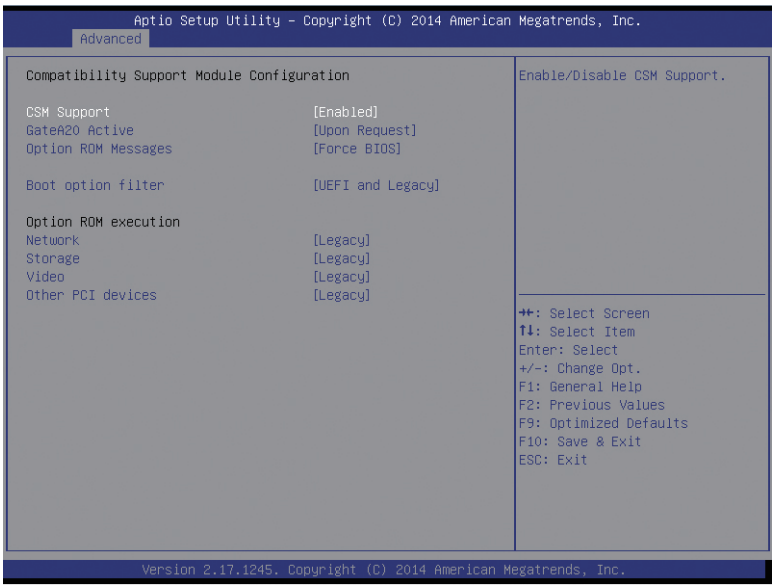
Interface Parameters	Function Description
Terminal Type	Terminal type settings
Bits per second	Baud rate settings
Data Bits	Data bits settings
Parity	Parity check settings
Stop Bits	Stop bits settings
Flow Control	Flow control settings
VT-UTF8 Combo Key Support	VT-UTF8 Combo key support settings
Recorder Mode	Recorder mode settings
Redirection 100×31	Expanded terminal resolution settings
Legacy OS Redirection Resolution	Terminal resolution settings of legacy OS
Putty Keypad	Putty's functional keys and keyboard settings
Redirection After BIOS POST	Redirection after BIOS POST settings

8.2.2.5 PCI Subsystem Settings

PCI Subsystem Settings Menu Interface Instruction Table

Interface Parameters	Function Description
PCI Latency Timer	PCI latency timer settings
PCI-X Latency Timer	PCI-X latency timer settings
VGA Palette Snoop	VGA palette snoop settings
Above 4G Decoding	64bit equipment's decoding settings on address space larger than 4G

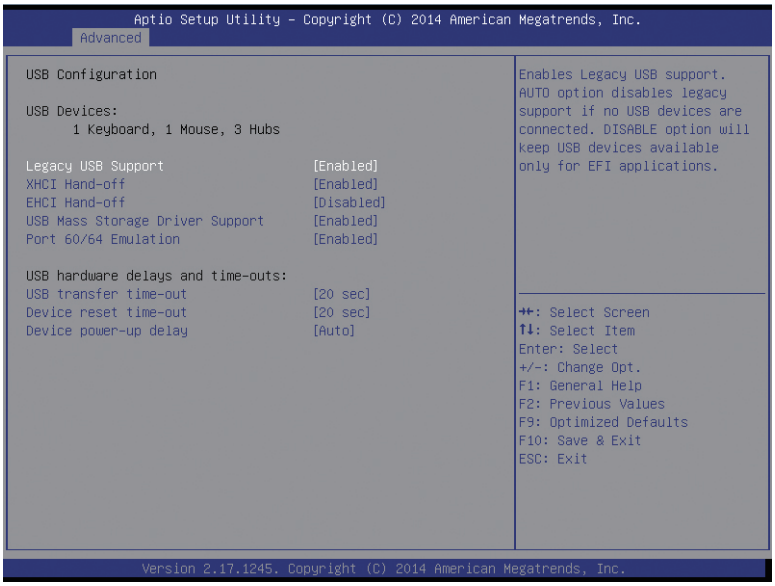
8.2.2.6 CSM Configuration



CSM Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
CSM Support	CSM support settings
GateA20 Active	A20 address line's control mode settings
Option Rom Message	Option Rom display mode settings
Boot option filter	Boot option filter settings
Option ROM execution	Option Rom execution method
Network	Network card Option Rom execution method settings
Storage	Storage device Option Rom execution method settings
Video	Video device Option Rom execution method settings
Other PCI devices	Other PCI devices Option Rom execution method settings

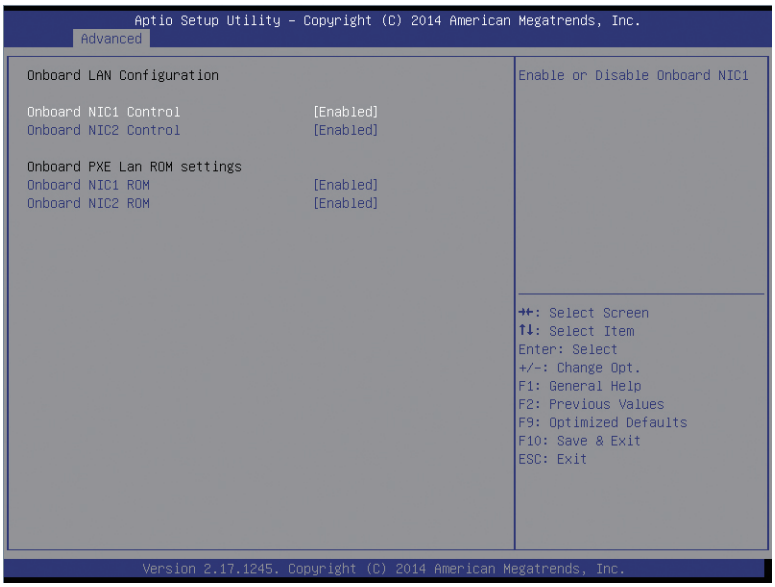
8.2.2.7 USB Configuration



USB Menu Interface Instruction Table

Interface Parameters	Function Description
Legacy USB Support	Legacy USB device settings
XHCI Hand-off	Extensible host controller interface settings, orienting to USB 3.0.
EHCI Hand-off	Enhanced host controller interface settings, orienting to USB2.0.
USB Mass Storage Driver Support	USB mass storage driver support settings
Port 60/64 Emulation	USB port 60/64h emulation settings

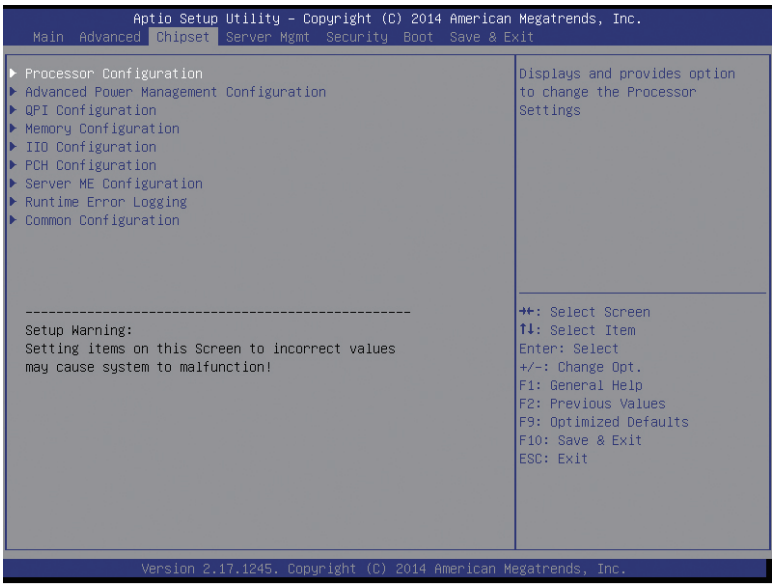
8.2.2.8 Onboard LAN Configuration



Onboard LAN Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Onboard NIC1 Control	Onboard network card NIC1 switching settings
Onboard NIC2 Control	Onboard network card NIC2 switching settings
Onboard NIC1 ROM	Onboard network card NIC1 PXE Oprom switching settings
Onboard NIC2 ROM	Onboard network card NIC2 PXE Oprom switching settings

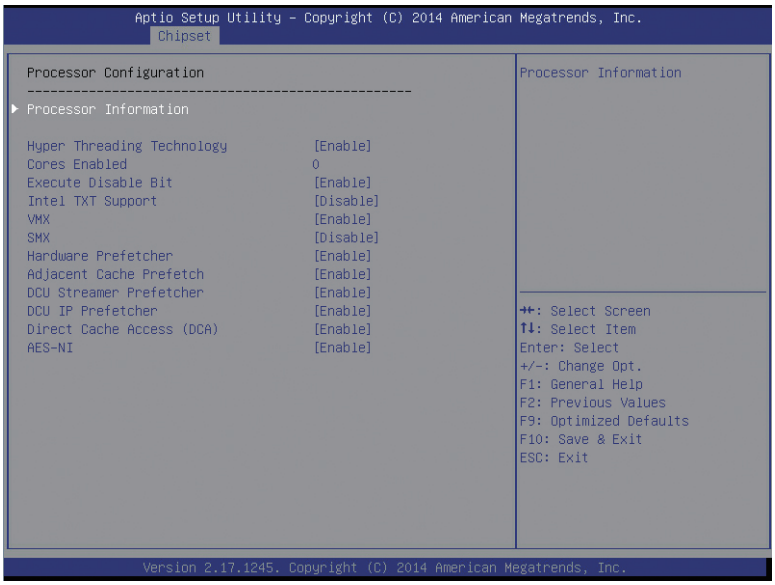
8.2.3 Chipset Menu



Chipset Menu Interface Instruction Table

Interface Parameters	Function Description
Processor Configuration	Processor configuration
Advanced Power Management Configuration	Advanced power management configuration
QPI Configuration	QPI configuration
Memory Configuration	Memory configuration
IIO Configuration	IIO configuration
PCH Configuration	PCH configuration
Server ME Configuration	Server ME configuration
Runtime Error Logging	Runtime error logging configuration
Common Configuration	Common options configuration

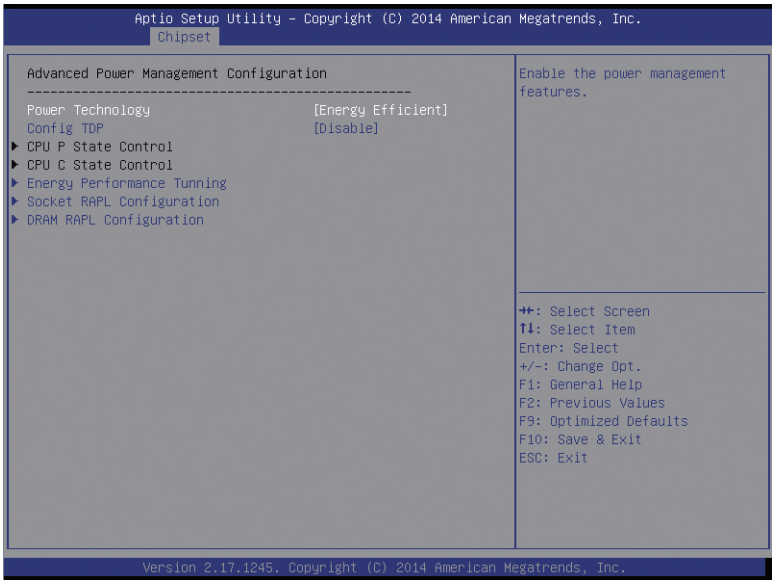
8.2.3.1 Processor Configuration



Processor Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Processor Information	Processor information submenu, and processor detailed information.
Hyper Threading Technology	Hyper threading technology settings
Core Enabled	CPU core number settings
Execute Disable Bit	Execute disable bit settings
Intel TXT Support	Intel trusted execution technology support settings
VMX	Intel virtual machine extensions technology settings
SMX	Safe mode extension settings
Hardware Prefetcher	Hardware prefetcher settings
Adjacent Cache Prefetch	Adjacent high speed cache prefetch settings
DCU Streamer Prefetcher	DCU Streamer prefetcher settings
DCU IP Prefectcher	DCU IP prefetcher settings
Direct Cache Access (DCA)	Direct cache access settings
AES-NI	Intel AES-NI advanced encryption standard settings

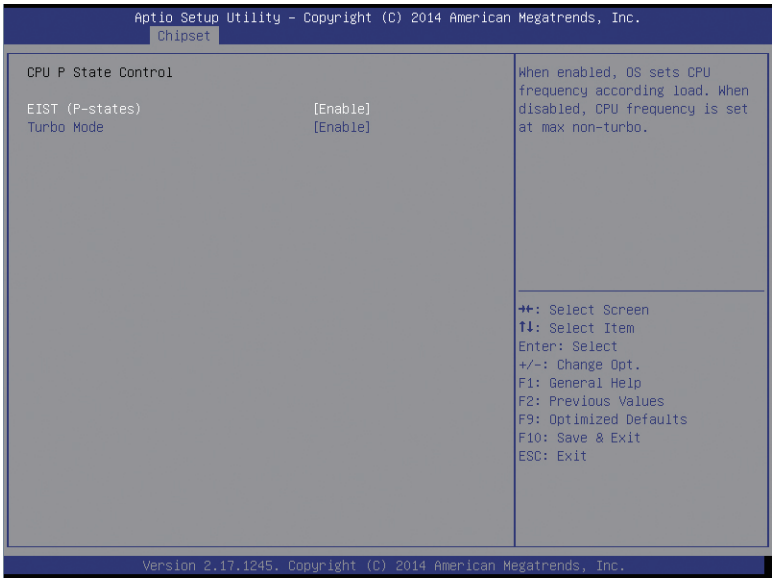
8.2.3.2 Advanced Power Management Configuration



Advanced Power Management Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Power Technology	To set power management
Config TDP	TDP settings
CPU P State Control	CPU P State control sub-menu, enabled when Power Technology is set to [Custom].
CPU C State Control	CPU C State control sub-menu, enabled when Power Technology is set to [Custom].
Energy Performance Tuning	CPU performance and energy tuning sub-menu
Socket RAPL Configuration	Turbo power limit settings sub-menu, and EIST option requires to be set to [Enabled].
DRAM RAPL Configuration	DRAM RAPL configuration sub-menu

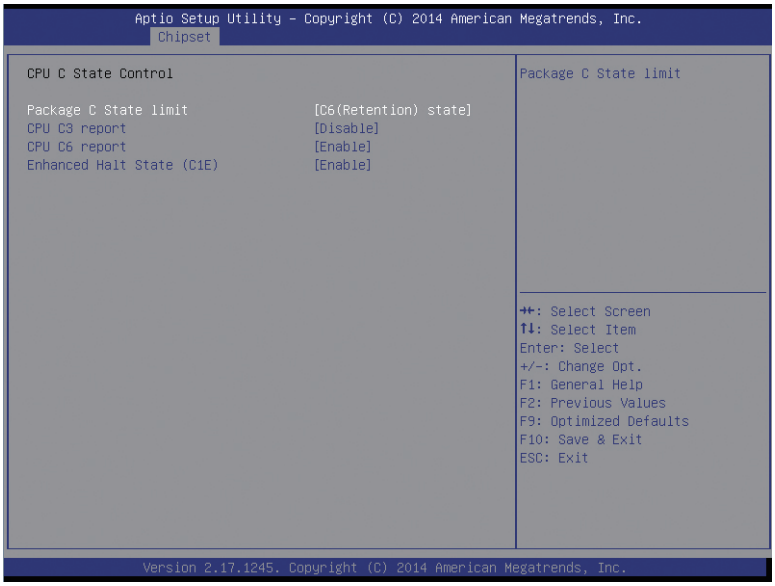
1. CPU P State Control



CPU P State Control Menu Interface Instruction Table

Interface Parameters	Function Description
EIST(P-states)	EIST enable/disable settings
Turbo Mode	Turbo mode enable/disable settings

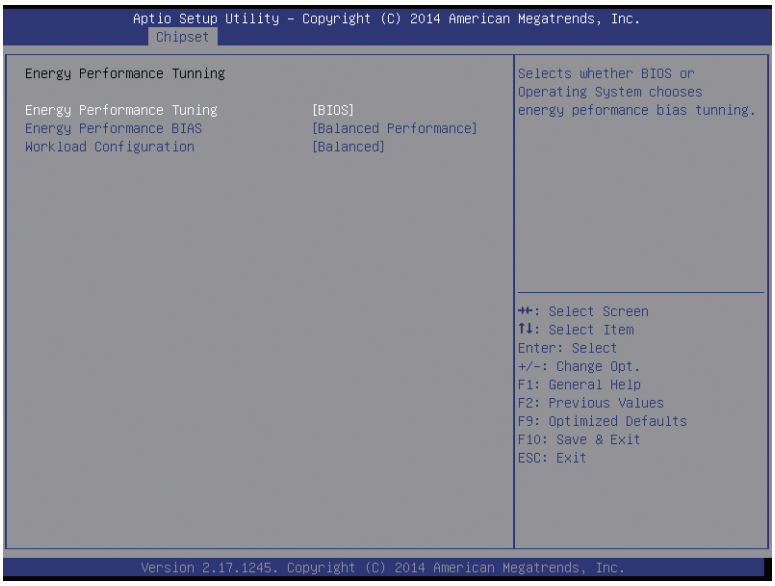
2. CPU C State Control



CPU C State Control Menu Interface Instruction Table

Interface Parameters	Function Description
Package C State limit	C state limit settings
CPU C3 report	C3 enable/disable settings
CPU C6 report	C6 enable/disable settings
Enhanced Halt State (C1E)	C1E enable/disable settings

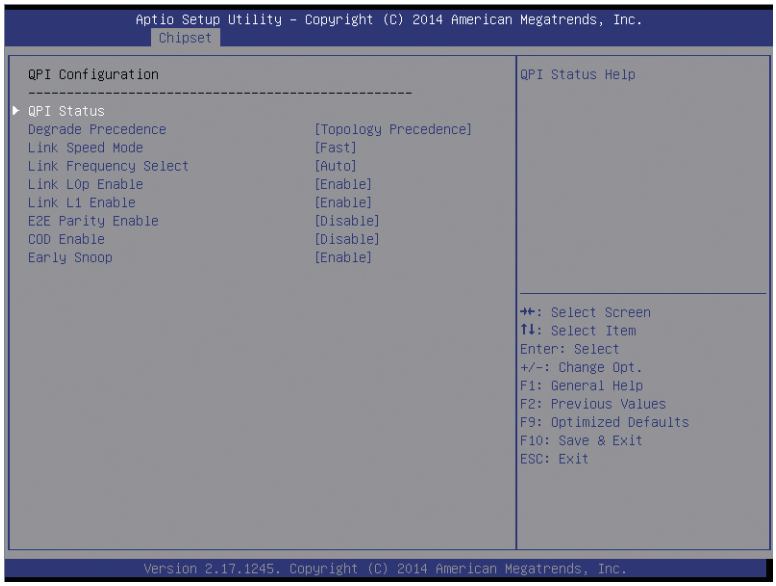
3. Energy Performance Tuning



Energy Performance Tuning Menu Interface Instruction Table

Interface Parameters	Function Description
Energy Performance Tuning	To select BIOS or OS to carry out energy performance tuning
Energy Performance BIAS	Energy performance management settings
Workload Configuration	Workload configuration

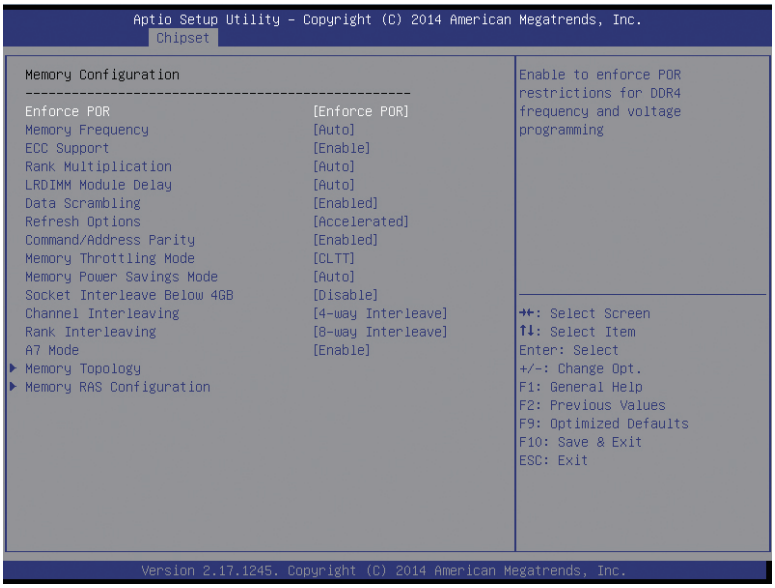
8.2.3.3 QPI Configuration



QPI Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
QPI Status	QPI status display sub-menu
Degrade Precedence	Degrade precedence settings
Link Speed Mode	Link speed mode settings
Link Frequency Select	Link frequency selection settings
Link L0p Enable	Link power saving mode settings, which is made when bandwidth is half of the peak bandwidth.
Link L1 Enable	In the case that system is extremely idle, turn off QPI Link.
E2E Parity Enable	E2E parity enable settings
COD Enable	COD enable settings
Early Snoop	Early Snoop settings

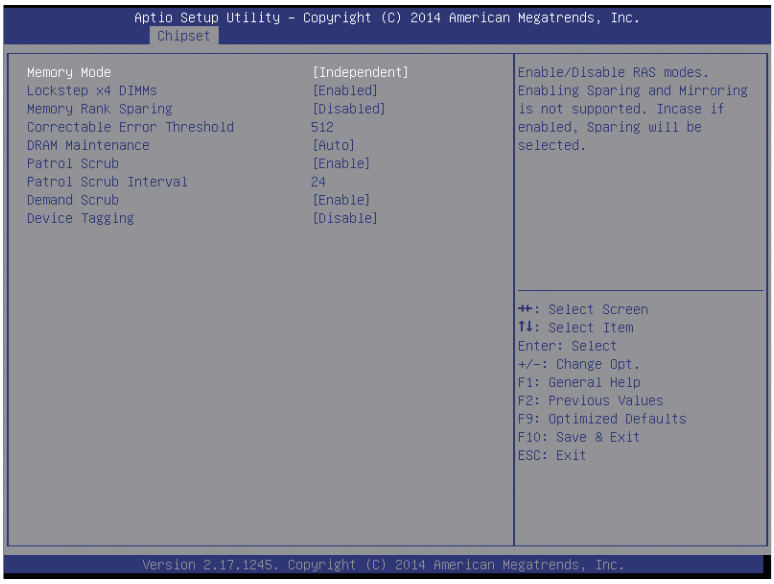
8.2.3.4 Memory Configuration



Memory Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Enforce POR	To execute POR settings
Memory Frequency	Memory frequency settings
ECC Support	ECC support settings
Rank Multiplication	Rank multiplication settings
LRDIMM Module Delay	LRDIMM module delay settings
Data Scrambling	Data scrambling settings
Refresh Options	Refresh mode settings
Command/Address Parity	DDR4 command/address parity settings
Memory Throttling Mode	Memory throttling mode settings
Memory Power Savings Mode	Memory power saving mode settings
Socket Interleave Below 4GB	Processor Interleaving settings on address space below 4G.
Channel Interleaving	Channel interleaving settings
Rank Interleaving	Rank interleaving settings
A7 Mode	A7 mode settings
Memory Topology	Memory Topology
Memory RAS Configuration	Memory RAS configuration sub-menu

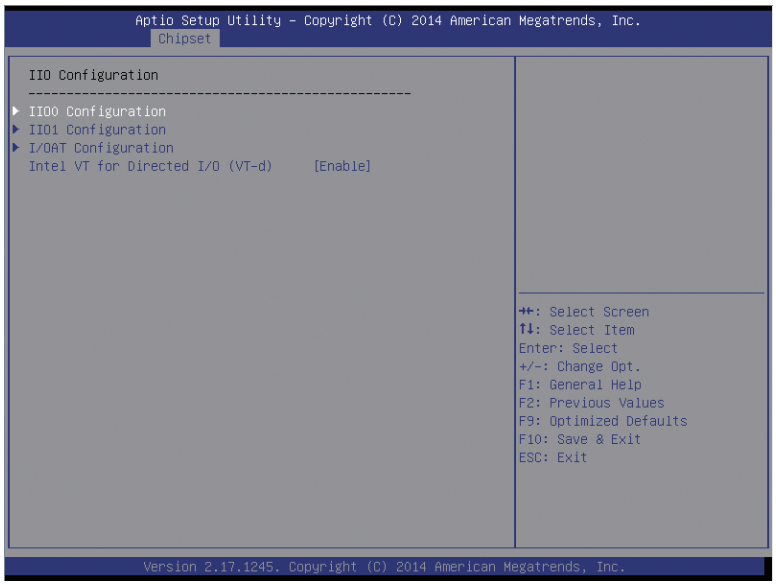
Memory RAS Configuration



Memory RAS Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Memory Mode	As for memory mode configuration, there're 3 options of [Independent], [Mirroring] and [Lock Step].
Lockstep X4 DIMMs	X4 DIMMs' Lockstep enable/disable settings
Memory Rank Sparing	Memory Rank sparing settings
Correctable Error Threshold	Correctable error threshold settings
DRAM Maintenance	DRAM maintenance settings
Patrol Scrub	Patrol Scrub settings
Patrol Scrub Interval	Patrol Scrub interval settings
Demand Scrub	Demand Scrub settings
Device Tagging	Device tagging settings

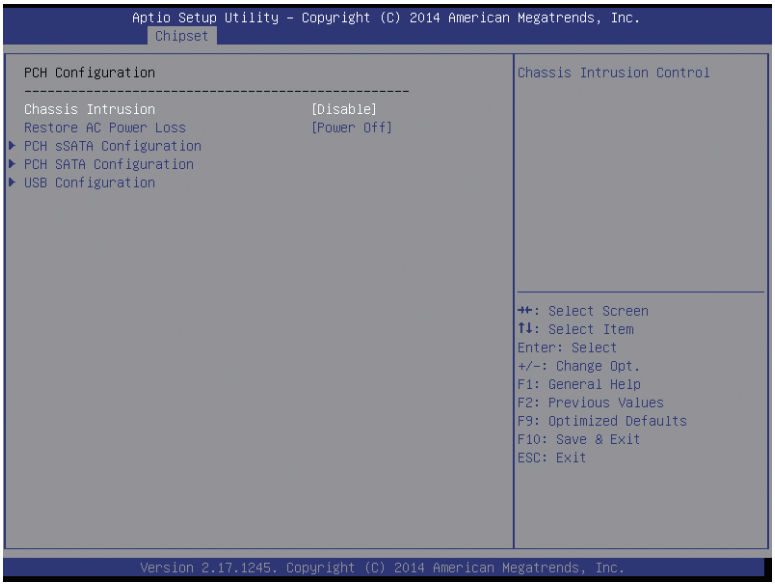
8.2.3.5 IIO Configuration



IIO Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
IIO0 Configuration	IIO0 configuration sub-menu, used to set link speed of PCIE device of CPU0.
IIO1 Configuration	IIO1 configuration sub-menu, used to set link speed of PCIE device of CPU1.
I/OAT Configuration	Intel I/O acceleration technology configuration sub-menu
Intel VT for Directed I/O (VT-d)	Intel VT-d enable/disable settings

8.2.3.6 PCH Configuration

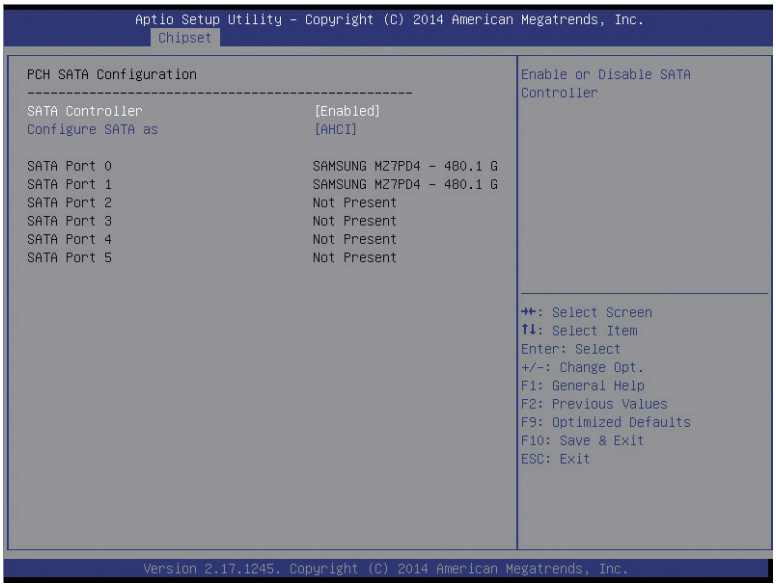


PCH Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Chassis Intrusion	Chassis intrusion enable/disable settings
Restore AC Power Loss	AC power-on power status settings
PCH sSATA Configuration	PCH sSATA configuration sub-menu
PCH SATA Configuration	PCH SATA configuration sub-menu
USB Configuration	USB configuration sub-menu

1. PCH SATA Configuration

Taking PCH SATA Configuration menu as an example, introduce onboard SATA port, and SATA hard disk configuration, while PCH sSATA Configuration is similar to this, which will not be repeated here.



PCH SATA Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
SATA Controller	SATA controller switching settings
Configure SATA as	As for SATA mode configuration, there're two modes of [AHCI] and [RAID] for setting.
SATA Port 0/1/2/3/4/5	Information of hard disks connected to onboard SATA port 0/1/2/3/4/5.

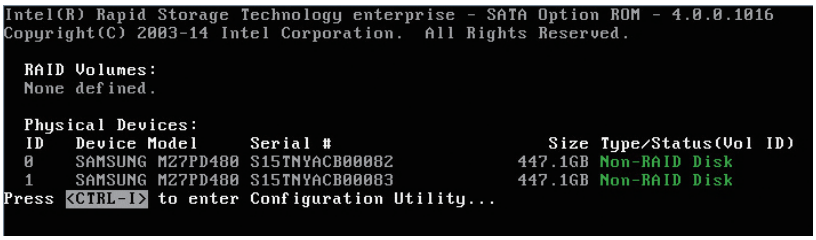
SATA RAID mode configuration

a. Set the option of Configure SATA to [RAID]. Press F10 to save settings, and the system should restart.

b. During system startup, the following content will display on the screen:

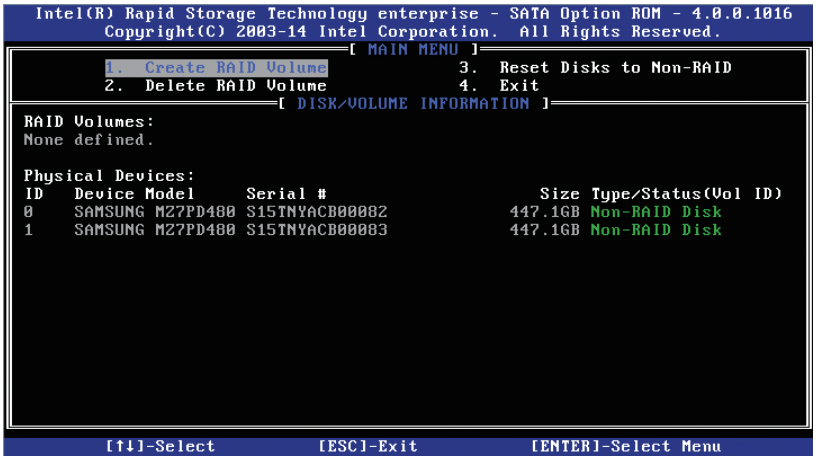
Press<CTRL-I> to enter Configuration Utility…

Meanwhile, press [Ctrl] and [I] synchronously to enter SATA RAID configuration interface, and one example is as shown in the following figure.



c. After entering SATA RAID configuration interface, menu list information, information of hard disk connected to SATA controller (hard disk ID number, hard disk type, hard disk capacity as well as whether the hard disk is a volume member etc.), existed RAID volume information (including volume ID number, name, RAID level, capacity, status, bootable

information or not) should be displayed.



Press Key	Description
↑↓	Used to move cursor in different menus or to change values of menu options.
TAB	To select the next menu setting option.
Enter	To select a menu.
Esc	To exit menu or return to previous menu from sub-menu.

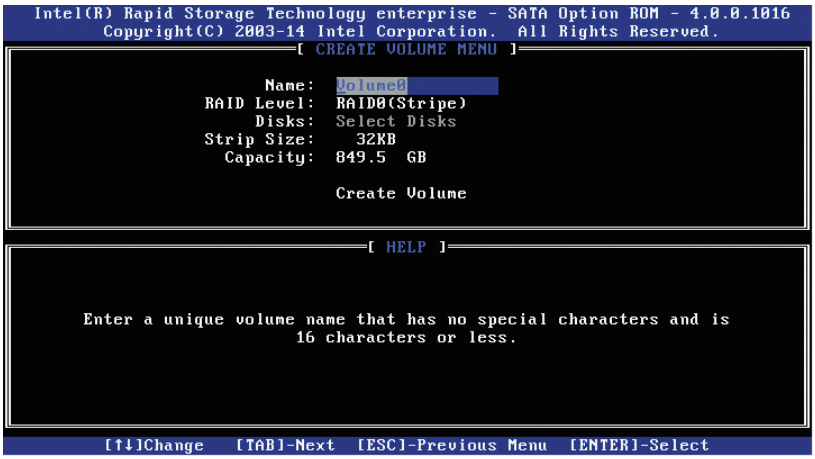
d. SATA RAID configuration interface has the following 4 executable menus:

Create RAID Volume	To create an RAID volume.
Delete RAID Volume	To delete an existed RAID volume.
Reset Disks to Non-RAID	To reset hard disks in RAID volume, and to restore them to non-RAID status.
Exit	To exit SATA Host RAID configuration interface.

a) Create RAID Volume Menu

After entering SATA RAID configuration interface, you could use up and down arrows to select this menu, then press [Enter] to create an RAID volume menu, or directly enter the number before the menu to create a RAID volume menu. For other menu operations that are similar, it will not be repeated here.

A Create RAID Volume instance is shown in the following figure:



System displays the following menu options:

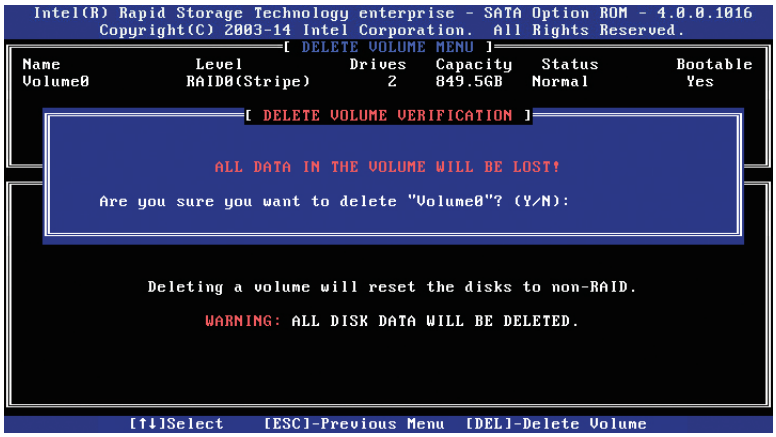
Name	Please enter a volume label name less than 16 characters without containing any special character.
RAID Level	Please select RAID volume level. If no volume has been created at present, there are four volume levels of RAID0 (Stripe), RAID1 (Mirror), RAID10 (RAID0+1) and RAID5 (Parity) for selection. Please select volume level according to actual requirements. RAID0: This RAID volume is allowed to be made on 2 or above hard disks. RAID1: This RAID volume is allowed to be made on 2 hard disks. RAID10: This RAID volume is allowed to be made on 4 hard disks, which is only available when hard disk quantity is 4 or above. RAID5 (Parity): This RAID volume is allowed to be made on 3 or above hard disks.
Disks	Select hard disks to make RAID volume, press enter after this option is selected. The system will enter hard disk selection interface. Please select hard disks to make RAID volume using space key accordingly, and then press enter to return to volume create menu.
Strip Size	Please select strip size, only RAID0 and RAID5 volumes could select this option.
Capacity	Set volume capacity, and the default value is the max volume capacity.

After completing the above configuration, please select [Create Volume], and press enter. The system should then prompt: “WARNING： ALL DATA ON THE SELECTED DISKS WILL BE LOST. Are you sure you want to create this volume ?(Y/N):”.

To create a RAID volume, please enter “Y”. A volume will be created, and all data on the selected disk will be lost. Otherwise, please enter “N”, to exit volume creation.

Following, we enter “Y” to create an RAID volume. After the creation is completed, return to SATA Host RAID configuration main interface. The created RAID volume will be displayed in RAID volume.

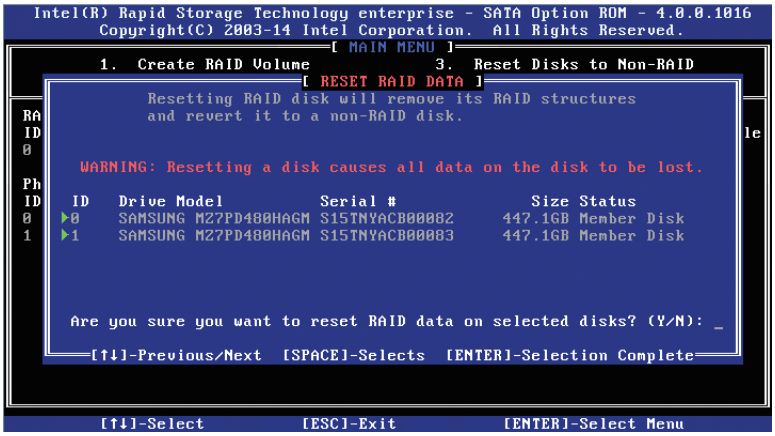
b) Delete RAID Volume Menu



After entering Delete RAID Volume menu, the system should prompt: “Deleting a volume will reset the disks to non-RAID. Warning： ALL DISKS DATA WILL BE DELETED.”.

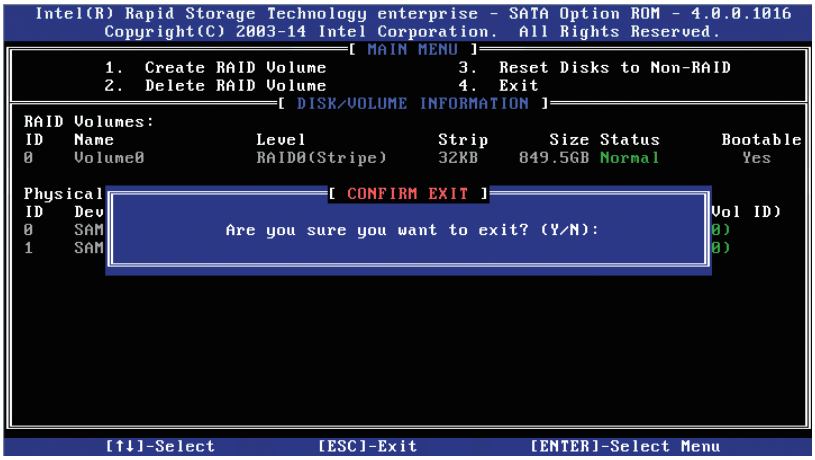
To delete an RAID volume, please press [DEL], system prompts: “ALL DATA IN THE VOLUME WILL BE LOST!” again. Are you sure you want to delete “Volume*”? (Y/N):”, to delete this RAID volume, please enter “Y”, to cancel deletion of this RAID volume, please enter “N”.

c) Reset Disks to Non-RAID Menu



After entering Reset Disks to Non-RAID menu, system will display all hard disks in RAID volume. Please select the hard disk to reset using the space key according to actual demand, and then press enter to reset the hard disk. The system should prompt, “Are you sure you want to reset RAID data on selected disks? (Y/N)” again, enter “Y” or “N” according to prompt. It is to be noted that during resetting hard disk, all data on this disk will be lost. Meanwhile, this disk will not belong to RAID volume any more.

d) Exit Menu



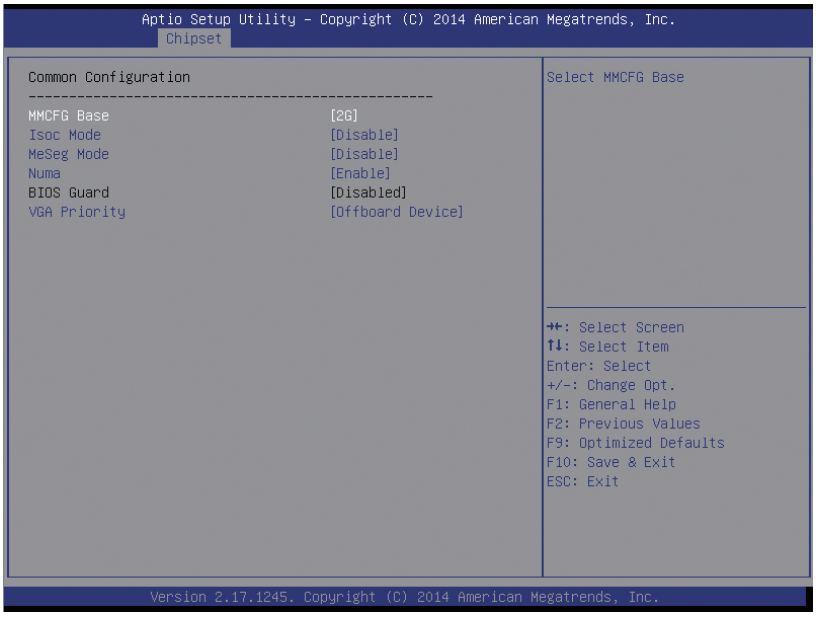
System prompts: “Are you sure you want to exit?(Y/N):”, enter “Y”, to exit SAS RAID configuration interface, enter “N”, to cancel exit operation.

8.2.3.7 Server ME Configuration

Server ME Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Operational Firmware Version	Operational ME firmware version
Recovery Firmware Version	Recovery ME firmware version
ME Firmware Features	ME firmware features
ME Firmware Status #1	ME FW status value #1
ME Firmware Status #2	ME FW status value #2
Current State	Current state
Error code	ME FW error code

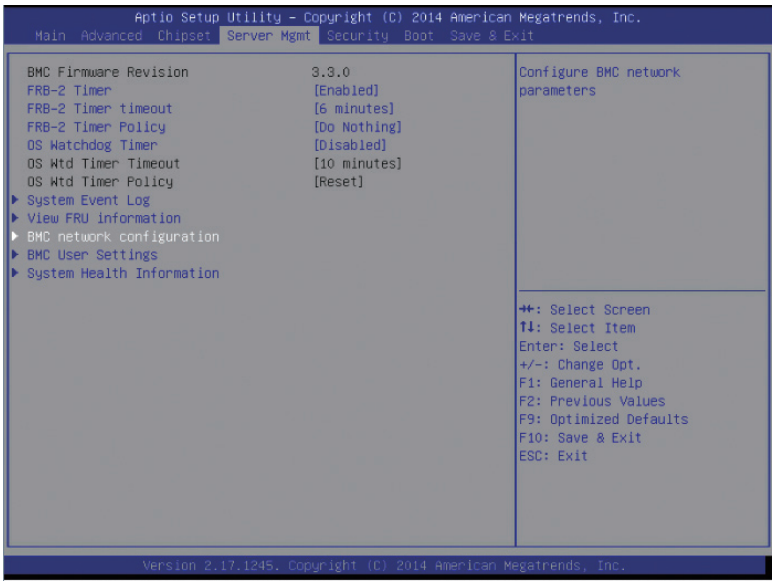
8.2.3.8 Common Configuration



Common Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
MMCFG Base	MMCFG base address settings
Isoc Mode	Isoc mode settings
MeSeg Mode	MeSeg mode settings
Numa	Numa switching settings
BIOS Guard	BIOS guarding settings
VGA Priority	Integrated video card and external video card priority settings

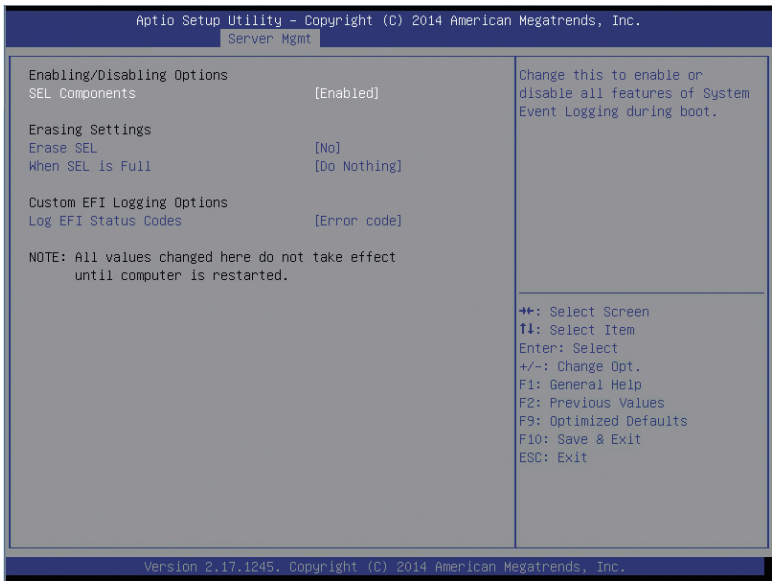
8.2.4 Server Management



Server Mgmt. Menu Interface Instruction Table

Interface Parameters	Function Description
BMC Firmware Version	BMC firmware version
FRB-2 Timer	FRB-2 timer settings
FRB-2 Timer timeout	FRB-2 timer timeout settings
FRB-2 Timer policy	Policy settings after FRB-2 timer timeout
OS Watchdog Timer	OS watchdog timer settings
OS Wtd Timer timeout	OS watchdog timer timeout settings
OS Wtd Timer policy	Policy settings after OS watchdog timer timeout
BMC network configuration	BMC network settings
System Event Log	System event log sub-menu
View FRU information	To view FRU information sub-menu
BMC network configuration	BMC network configuration sub-menu
BMC User Settings	BMC user settings sub-menu
System Health Information	System health information sub-menu

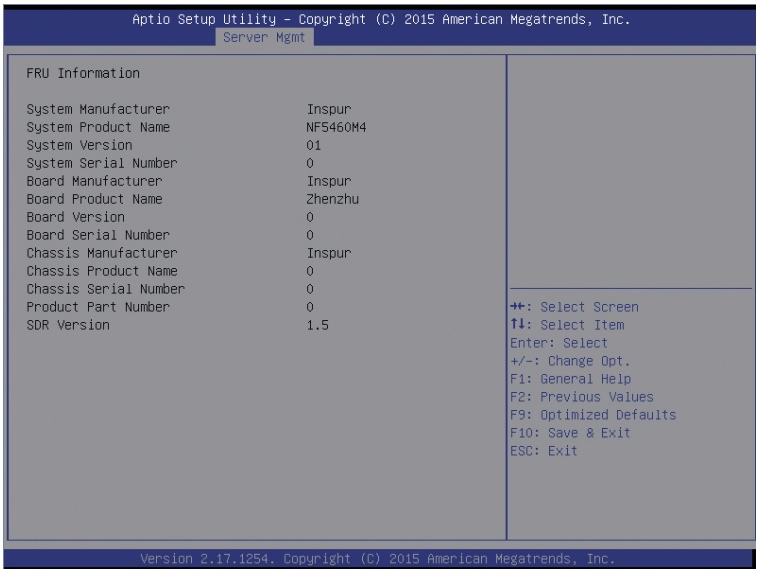
8.2.4.1 System Event Log



System Event Log Menu Interface Instruction Table

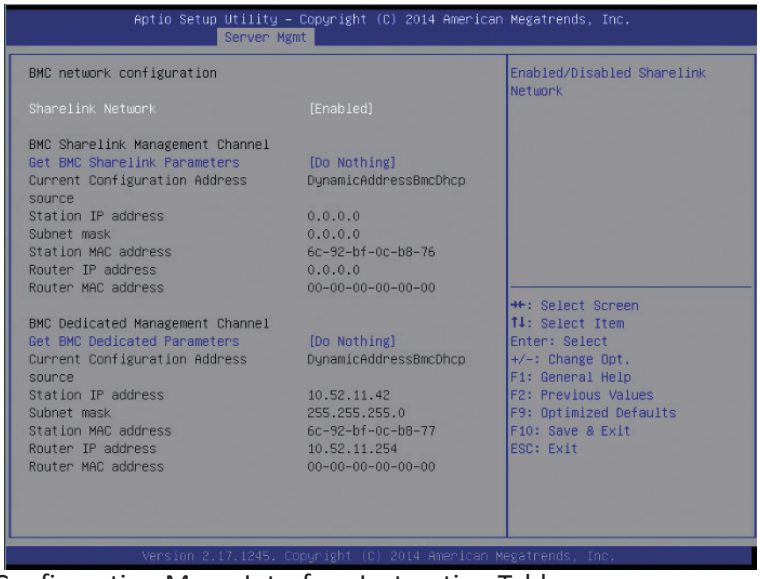
Interface Parameters	Function Description
SEL Components	System event log enable/disable settings during startup
Erase SEL	System event log erase settings
When SEL is Full	Operation settings when SEL is full
Log EFI Status Codes	Log EFI status codes settings

8.2.4.2 View FRU Information



The View FRU Information menu lists BMC FRU information read by BIOS, and BIOS will interact with BMC at each system restart, keeping synchronous update of FRU information.

8.2.4.3 BMC Network Configuration



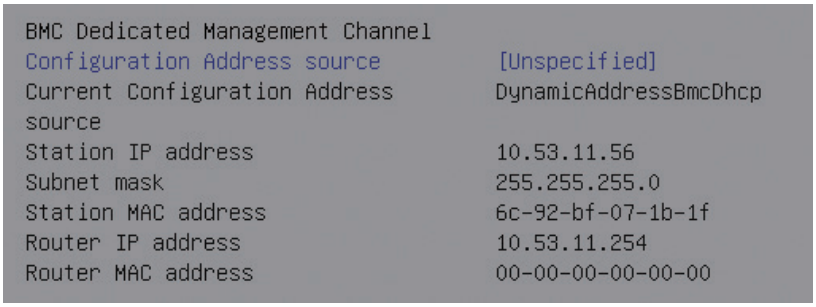
BMC Network Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Configuration Address Source	Configuration BMC Network Status Parameter: It could set static IPs, and obtain IPs dynamically, while [Unspecified] will not modify BMC network parameters.
Current Configuration Address	Current configuration address status
Station IP address	Port IP address
Subnet mask	Subnet mask
Station MAC address	Port MAC address
Router IP address	Router IP address
Router MAC address	Router MAC address

BMC network configuration in BIOS setup interface is used to configure BMC management

network via BIOS.

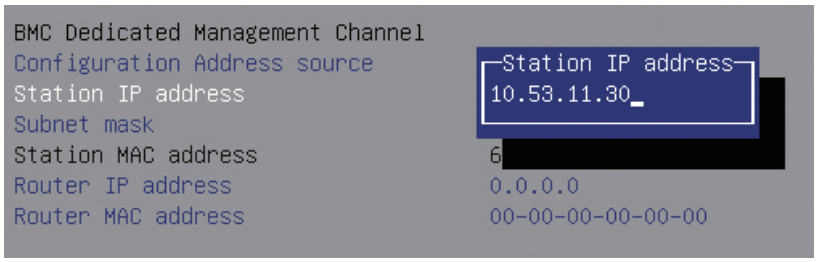
1) If no operation is carried out in BIOS, by default, it will read BMC. It will configure its dedicated management port and sharelink management port. Taking its dedicated management port as an example, the BIOS reading configuration is as shown in the following figure:



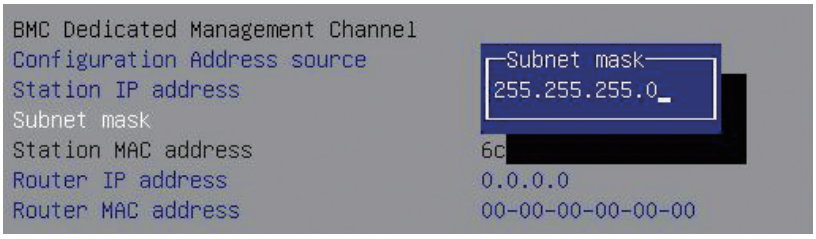
2) BIOS could carry out Dynamic and Static network settings on BMC Dedicated management port and sharelink management port. Taking the dedicated management port as an example, to set a BMC Static IP as follows:

a. Set the Configuration Address Source option to [Static]

b. Select the Station IP Address option. Press Enter to pop up the Station IP Address window. Enter the Static IP to set manually. After configuration is completed, press Enter to confirm, and an example is as shown in the following figure:

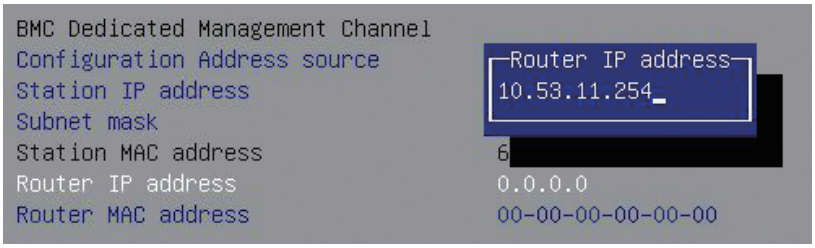


c. Select the Subnet Mask option. Press Enter to pop up the Subnet Mask box. Enter the Subnet Mask to set manually. After configuration is completed, press Enter to confirm, and an example is as shown in the following figure:

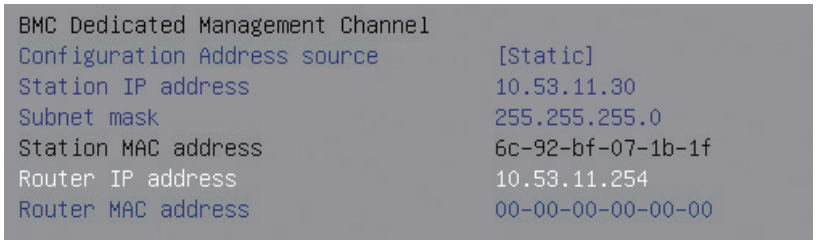


d. Select the Router IP Address option, and press Enter, to pop up the Router IP Address box,

enter the Router IP Address to set manually, after configuration is completed, press Enter to confirm, and an example is as shown in the following figure:



e. When the Static IP configuration is done, press F10 to save and restart. BIOS will carry out Static IP configuration for BMC.

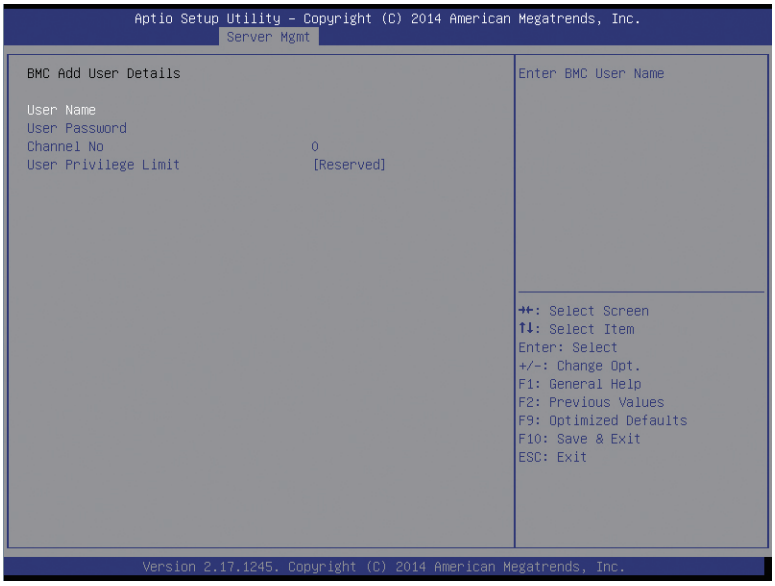


8.2.4.4 BMC User Settings

BMC User Settings Menu Interface Instruction Table

Interface Parameters	Function Description
Add User	The sub-menu for adding users
Delete User	The sub-menu for deleting users
Change User Settings	The sub-menu for changing user settings

1) Add User Operation

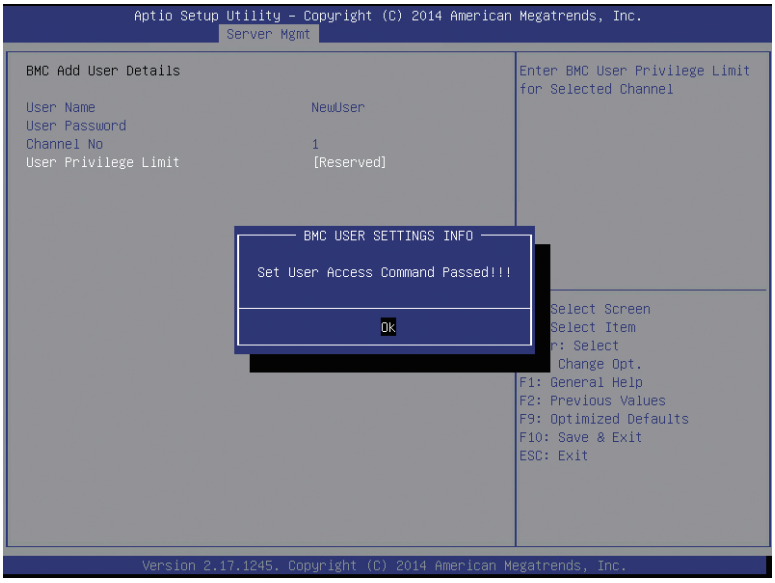


a. Select the User Name option and press Enter to pop up the User Name box. Enter the user name to set manually. After configuration is completed, press Enter to confirm.

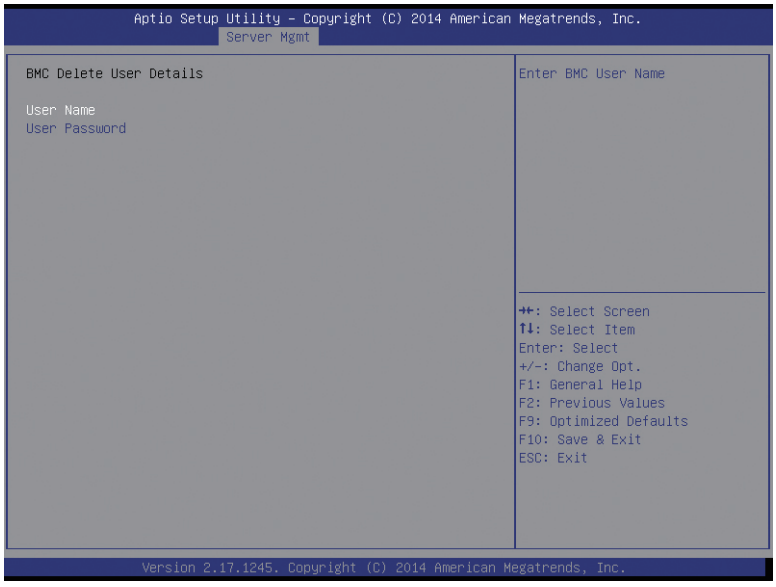
b. Select the User Password option and press Enter to pop up the User Password box. Enter the user password to set manually. After configuration is completed, press Enter to confirm.

c. Channel NO is set to 1 or 8.

d. For the User Privilege Limit option, set privilege for new user. After configuration is completed, press Enter to pop up the BMC USER SETTINGS INFO box. When the system prompts “Set User Access Command Passed”, press Enter and then OK to confirm. The new user is then added successfully. An example is shown in the following figure:



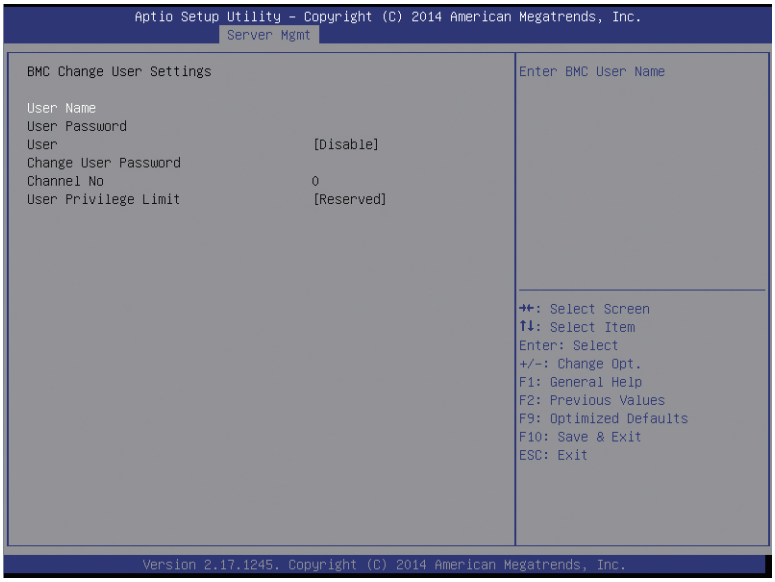
2) Delete User Operation



a. Select the User Name option, and click Enter to pop up the User Name box. Manually enter the user name to delete. After configuration is completed, press Enter to confirm.

b. Select the User Password option. Press Enter to pop up the User Password box. Manually enter the user password to delete. Following, press Enter to confirm, and the BMC USER SETTINGS INFO prompt will pop up, indicating if the user password deletion is done, or not.

3) Change User Settings



a. Select the User Name option. Click Enter to pop up the User Name box. Manually enter the user name to modify. After configuration is completed, click Enter to confirm.

b. Select the User Password option. Click Enter to pop up the User Password box. Manually enter the user password, and click Enter to confirm.

c. Select the User option and set to [Enable] or [Disable].

d. Select the Change User Password option to change user password.

e. Channel NO is set to 1 or 8.

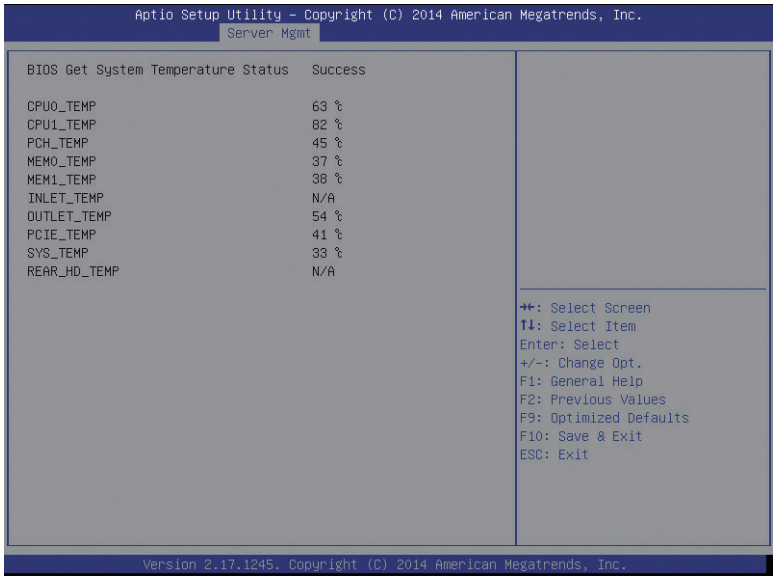
f. The User Privilege Limit option could change user's privilege. After configuration is completed, press Enter to pop up the BMC USER SETTINGS INFO prompt. When the system prompts "Set User Access Command Passed", press Enter and then OK to confirm. The user settings information is changed successfully.

8.2.4.5 System Health Information

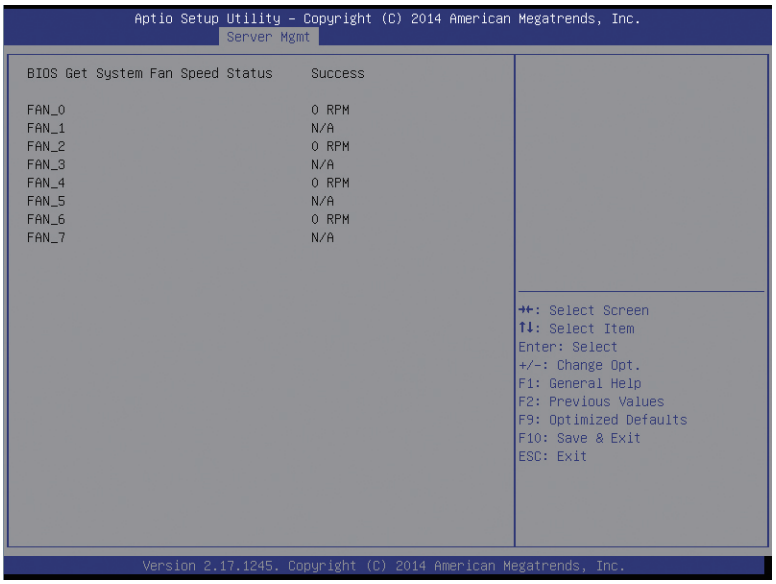
System Health Information Menu Interface Instruction Table

Interface Parameters	Function Description
System Temperature Information	System temperature information sub-menu
System Fan Speed	System fan speed sub-menu
System Voltage Information	System voltage information sub-menu

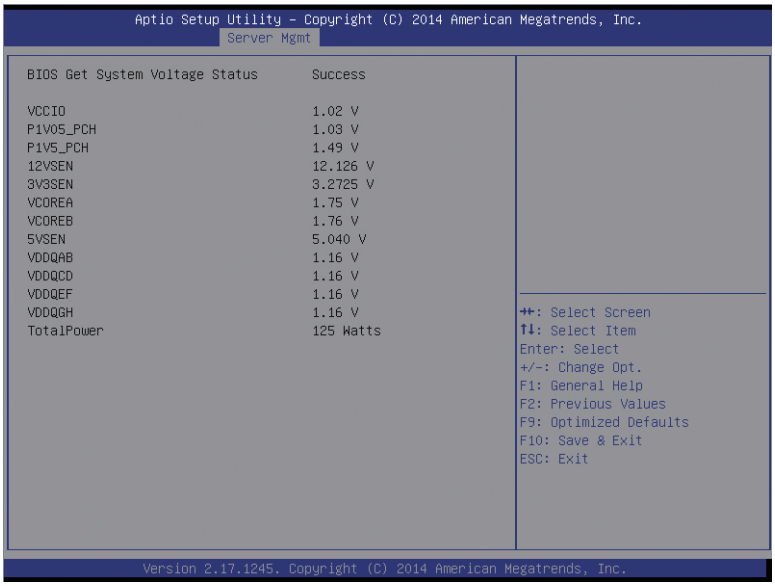
1) System Temperature Information



2) System Fan Speed



3) System Voltage Information

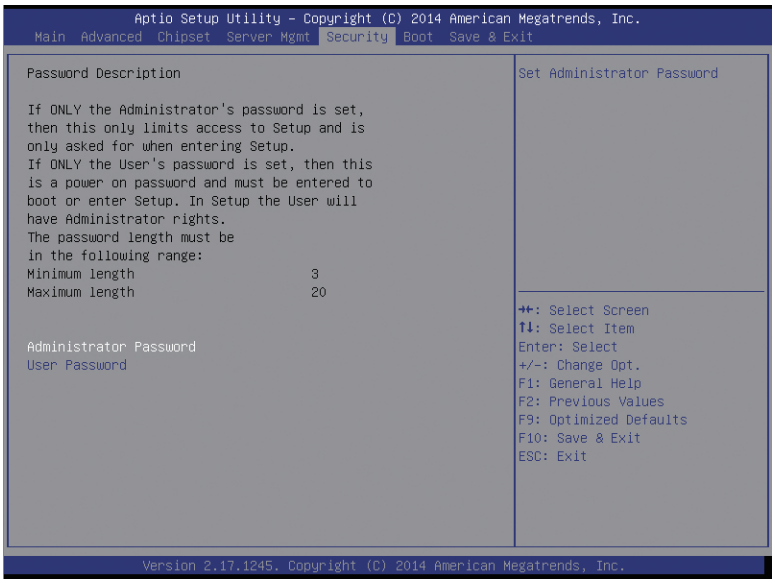


8.2.5 Security Menu

Security Menu Interface Instruction Table

Interface Parameters	Function Description
Administrator Password	Create a password for administrator
User Password	Create a password for normal user

8.2.6 Boot Menu

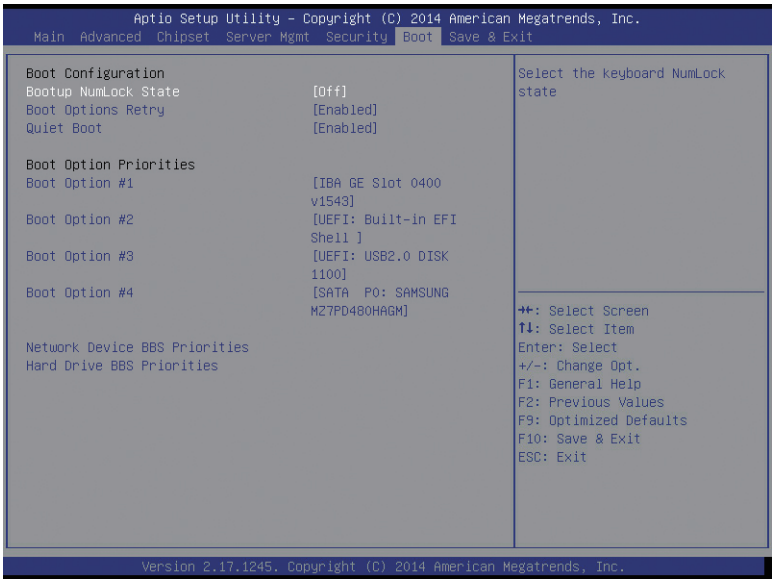


Boot Configuration Menu Interface Instruction Table

Interface Parameters	Function Description
Bootup NumLock State	Numlock state settings after bootup
Boot Options Retry	The booting device polling settings
Quiet Boot	To boot quietly, set this option to Enabled, and boot logo displays as that set by manufacturer, disabled, boot logo displays as AMI's default logo.
Boot Option Priorities Boot Option #X	Boot option priority settings
Hard Driver BBS Priorities	Hard disk device BBS priority settings
Network Device BBS Priorities	Network device BBS priority settings

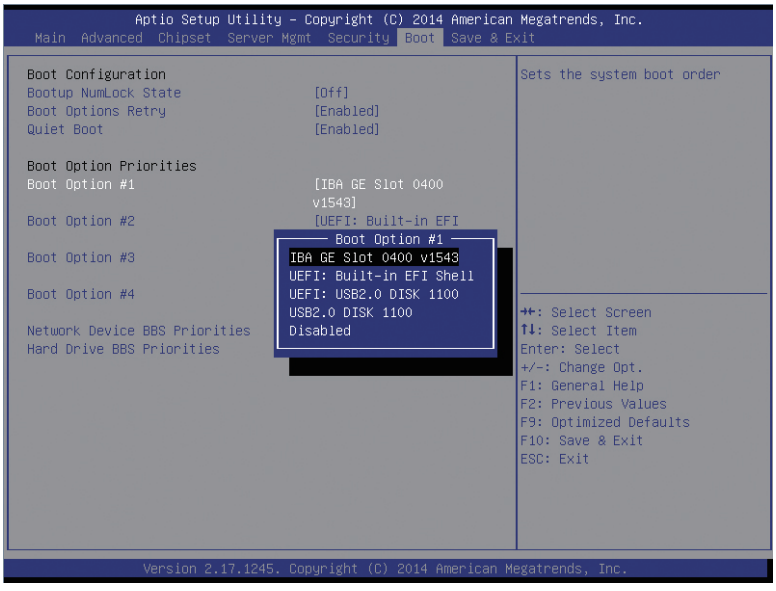
To Set BIOS Boot Operation:

Enter Boot menu. Move the cursor to Boot option #X via up and down keys to select. Set system boot priorities, X is 1, 2, 3 etc. An example is shown in the following figure:



Taking Boot Option #1 as an example, you could set the first boot device for the system. Move the cursor to Boot option #1. Press Enter to pop up the boot option for selection: i.e. IBA GE slot 0400 v1543, UEFI: Built-in EFI Shell, UEFI: USB2.O DISK 1100, USB2.O DISK 1100, etc. Select one via up and down keys, i.e. USB2.O DISK 1100. Press Enter to select USB DOS disk as the first boot device for the system.

8.2.7 Save & Exit Menu



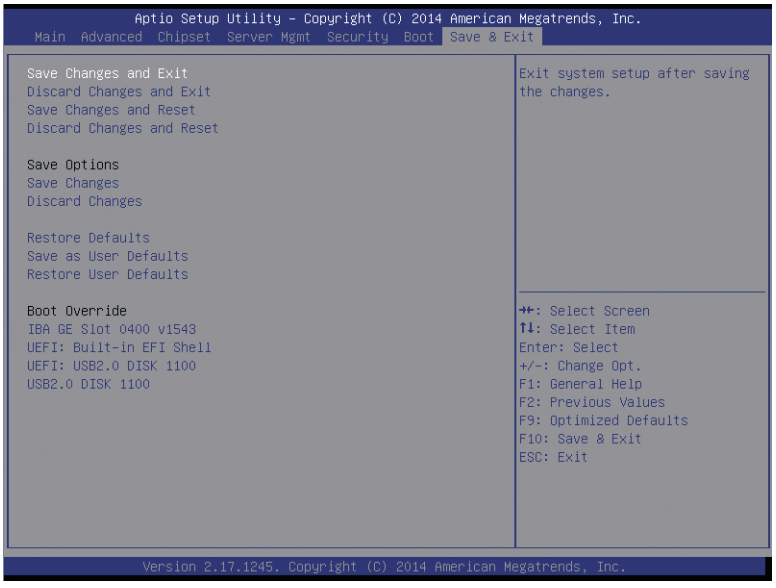
Save & Exit Menu Interface Instruction Table

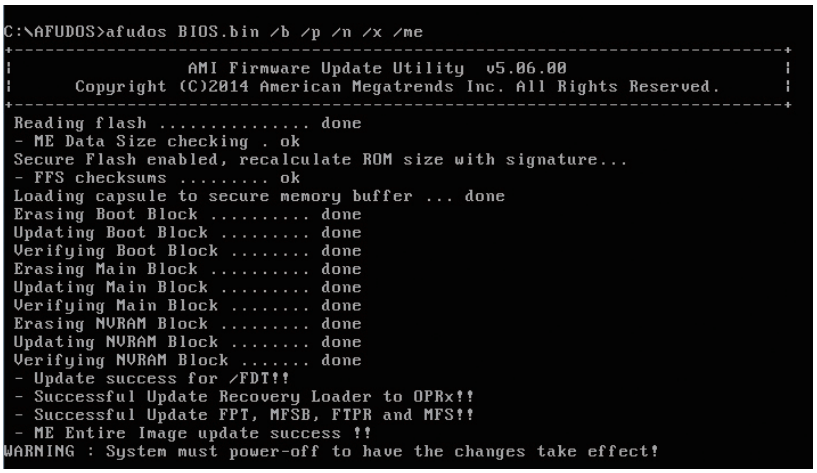
Interface Parameters	Function Description
Save Changes and Exit	To save changes and exit
Discard Changes and Exit	To discard changes and exit
Save Changes and Reset	To save changes and reset
Discard Changes and Reset	To discard changes and reset
Save Changes	To save changes
Discard Changes	To discard changes
Restore Defaults	To restore defaults
Save as user Defaults	To save as user defaults
Restore user Defaults	To restore user defaults
Boot Override	To reload boot device, you could select all boot devices in the following.

8.3 Firmware Update

For BIOS update, you could select to update in DOS or OS.

1) Use Afudos tool to update BIOS in DOS. System boots from USB DOS startup disk and enters the directory containing Afudos tool. While bin files of the corresponding new BIOS version are put into this folder, execute command: Afudos BIOS.bin /b /p /n /x /me to update BIOS and ME, for BIOS.bin – bin files of the new BIOS version. An example is shown in the following figure:





When there is no change in ME part, to update BIOS, it is only required to execute command: Afudos BIOS.bin /b /p /n /x.

Parameter instructions: /b -- Program Boot Block

/p -- Program Main BIOS

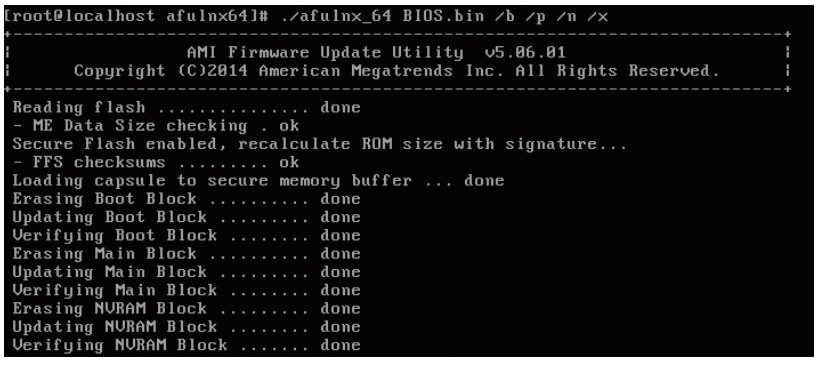
/n -- Program NVRAM

/x -- Don't Check ROM ID

/me -- Program ME Entire Firmware Block

2) Use Afudos tool to update BIOS in Linux OS

There are 32bit and 64bit Linux OS afulnx tools. Taking Linux 64bit OS as an example, use the afulnx_64 tool to enter the directory containing afulnx_64 tool. Meanwhile, put bin files of corresponding BIOS into this folder, and enter command: /afulnx_64 BIOS.BIN /P /B /N /X /R. An example is shown in the following figure:



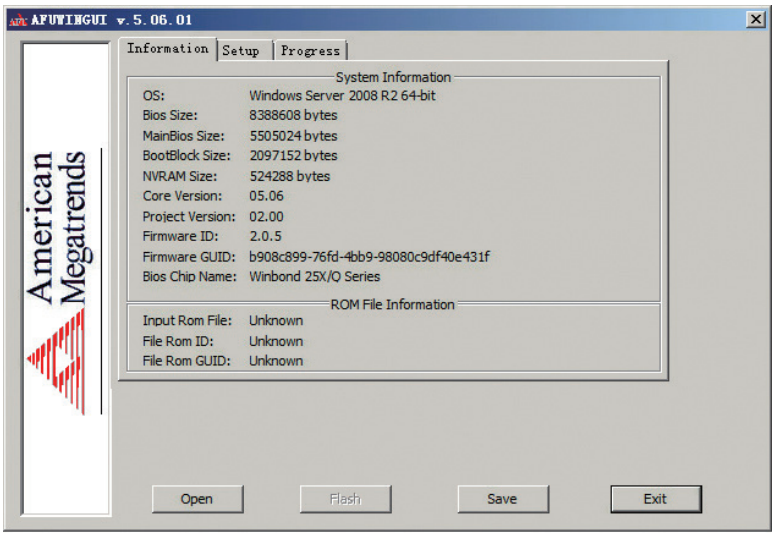
If there are any changes in ME part, to update BIOS, please execute the following command: afudos BIOS.bin /b /p /n /x /me, with parameter instructions identical to DOS.

3) Use afuWin tool to update BIOS in Windows OS

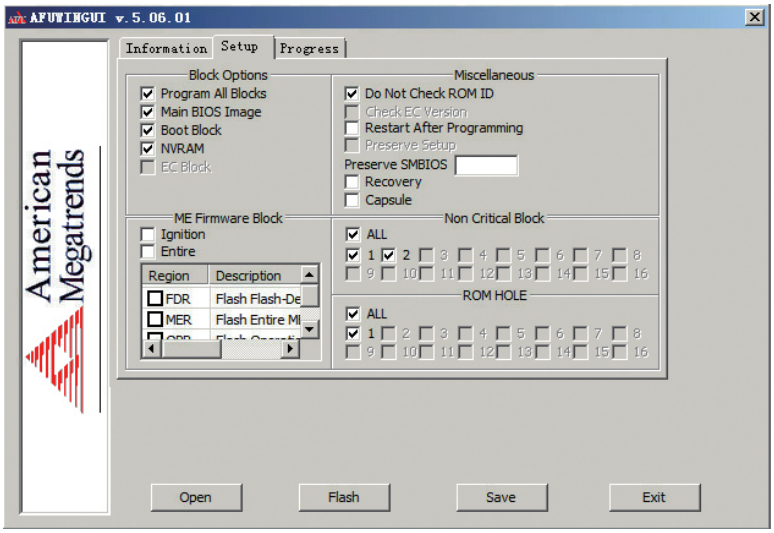
There are 32bit and 64bit Windows OS afuwin tools and afuwinx64.exe is used in 64bit OS. Run a command prompt to enter the directory containing the afuwinx64.exe tool.

Meanwhile, put bin files of corresponding BIOS into this folder and enter command: afuwinx64.exe BIOS.BIN /P /B /N /X /R, to update BIOS files. The GUI method is provided in Windows to refresh BIOS. Taking Windows 2008R2 OS as an example, use AFUWINGUI tool to update BIOS.

a. Run AUWINGUI.EXE tool, shown in the following figure:



b. Click the Open button. After selecting the BIOS.bin file to update, system enters Setup interface automatically.



c. Select Program all Blocks and Do Not Check ROM ID options on Setup interface. Click flash button. The system should enter the progress interface automatically and execute BIOS updates according to colors shown on the right. The BIOS update should then be done.

9 BMC Settings

9.1 Introduction

A baseboard management controller (BMC) is a specialized service processor that monitors the physical state of a computer, network server or other hardware device using sensors and communicating with the system administrator through an independent connection.

The Inspur Server management software is a control unit for server management, which is compatible with the management standard IPMI2.0 specification.

Below are the main functions of the Inspur Management Software:

- Remote control
  - Achieves server control via functions such as KVM (Keyboard Video and Mouse), SOL (Serial Over LAN), virtual media, etc. Note: SOL function must be reached via third-party tools, such as IPMITool.
- Warning management
  - Reports warning message in real time, and carries out corresponding solutions according to the information.
- State monitoring
  - Monitors the running states of all monitoring units in real time.
- Device information management
  - Provides device version, model and asset information.
- Heat dissipation control
  - It could adjust fan speed dynamically according to ambient temperature and workload.
- Supports IPMITool management
  - Supports the command operation sent by IPMITool. The IPMITool is downloadable : http://ipmitool.sourceforge.net/manpage.html
- Supports WEB interface management
  - Provides a friendly and visual interface management. Configuration can quickly be completed as well as query tasks, by simply clicking on the interface.
- Supports account centralized management

- Supports store accounts in Active Directory server and direct authentication process to server to reach the management system login with domain accounts

9.2 Functional Modules

This chapter introduces the Inspur Server Management System Module Composition, as well as the functions of these modules.

9.2.1 Module Composition

The Inspur Server Management System is mainly composed of the IPMI module, command line module, WEB module, KVM Over IP and virtual media.

- The Command module attains the calling of IPMI module. The User reaches the operation on IPMI module via command lines.
- The WEB module attains daily management on server in the form of visual interface via calling IPMI commands, and the WEB module integrates functions of KVM and virtual media.

9.2.2 IPMI Module Introduction

IPMI module attains management of the server system according to the IPMI2.0 standard. The Functions of the IPMI module include:

- System real-time monitoring

Provides the alarming report, alarming indication and start system self-protection in the event of fault detection.

- System remote control

Provides management requirements such as remote power-on/off, and business system reset via command lines and Web.

9.2.3 Command Line Function Introduction

The command line module includes query and setting commands for network, sensor, fan, user management, system and server.

9.2.4 Remote Control Module Introduction

The Remote control module includes:

- KVM Over IP: A management method that carries out monitoring and control on remote devices via local video, keyboard and mouse to the client, enabling the operation of remote devices in real-time.

- Virtual Media: A method of providing remote access on local media (CD-ROM, floppy drive or CD/floppy disk iso file) in the form of virtual CD driver and floppy drive on server via the internet.

Note: If the Java runtime environment does not meet the requirement, please download here:
http://www.oracle.com/technetwork/java/javase/downloads/index.html

9.3 Web Interface Introduction

An introduction of the Web interface management system, as well as operation steps to login Web interface

- Login Web interface: Introduces methods to the Web login interface.
- Web Interface introduction: Introduces the Web interface layout.

9.3.1 Login Web Interface

This guide introduces operation steps to log into the Web management interface, using the Windows 7 Operating System and the Firefox browser as examples.

Note: When carrying out interface operation via Web, a maximum of 20 users can be logged in at the same time.

Step 1: Ensure the management network ports on client and server are connected to internet.

Step 2: Open the browser, and enter “http://ipaddress” in the address bar.

Step 3: The login interface should appear as shown below:

1. Enter user name and password.

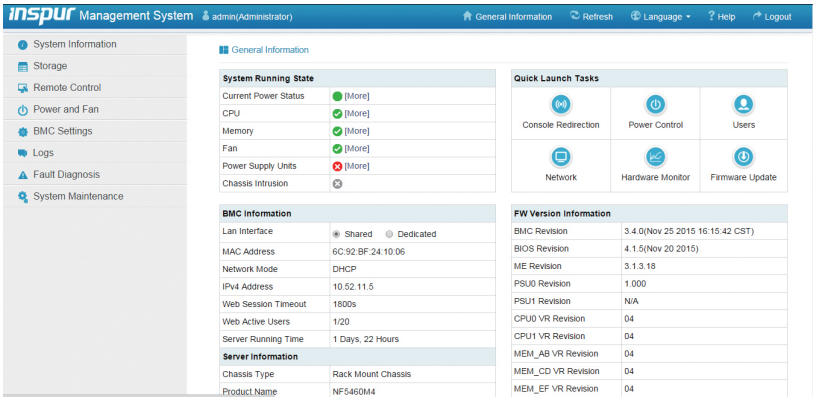
Note: The system provides a default user “admin” in administer user group, and the default password is “admin”.

2. Click “Login”, to enter the management interface.

9.3.2 Web Interface Introduction

The Web Interface helps users accomplish server management. The Web Interface also has a help function so users can click the help button Help in the case that they may need it.

The Web interface is divided into four parts, as shown in the following figure.



- The name of the Web interface is displayed on top left of the interface.
- The meanings of all buttons can be found on top right of the interface:
  - ◇ General Information Click the General Information button, to return to the General Information page.
  - ◇ Refresh Click the Refresh button, to refresh the page.
  - ◇ Language Click the Language button, to change the language (which supports Chinese and English).
  - ◇ Help Click the Help button to query help information on the corresponding page.
  - ◇ Logout Click the Logout button, to return to the login page.
- The navigation tree is on the left. Via the nodes on the tree, you can select different functional interfaces. The following functions are included:
  - Viewing the overall situation

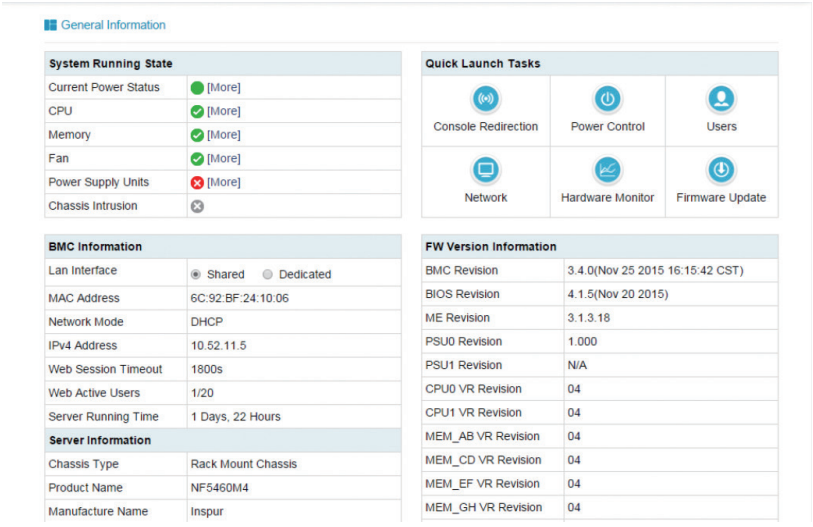
- Viewing system information
- Storage
- Remote control
- Power management
- Event and log query
- Real-time monitoring
- Diagnosis and orientation
- System maintenance
- System configuration etc.

For detailed introduction on all functions, please refer to the following chapters.

- Specific operation interface is on the right of the interface.

9.3.3 Overview

Click General Information to open the “General Information” interface, shown below.



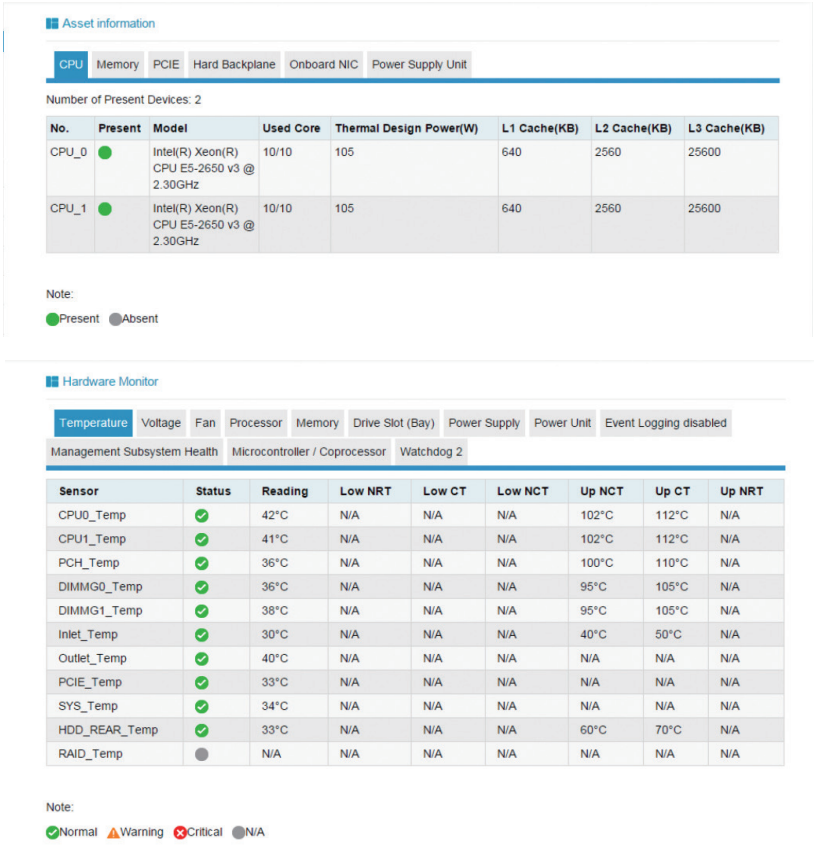
9.3.4 System Information

Select “System Information” on the navigation tree which includes six interfaces of asset information, hardware monitor, system device status, BIOS setup options, FRU information and history, shown in the following figure below.

- Asset information: Display system configuration information, which includes CPU, memory, PCIE device, onboard NIC and power supply unit information.
- Hardware monitor: Display real-time monitoring information, which includes temperature

sensor, voltage sensor, fan speed, power supply, processor status, memory status and power unit status information.

- Device status: Display status information of the front hard disks and onboard NIC.
- FRU information: Display FRU information.
- History: Display the history information of inlet air temperature and total power.



Asset information

CPU | Memory | PCIE | Hard Backplane | Onboard NIC | Power Supply Unit

Number of Present Devices: 2

No.	Present	Model	Used Core	Thermal Design Power(W)	L1 Cache(KB)	L2 Cache(KB)	L3 Cache(KB)
CPU_0	●	Intel(R) Xeon(R) CPU E5-2650 v3 @ 2.30GHz	10/10	105	640	2560	25600
CPU_1	●	Intel(R) Xeon(R) CPU E5-2650 v3 @ 2.30GHz	10/10	105	640	2560	25600

Note:

●Present ●Absent

Hardware Monitor

Temperature | Voltage | Fan | Processor | Memory | Drive Slot (Bay) | Power Supply | Power Unit | Event Logging disabled | Management Subsystem Health | Microcontroller / Coprocessor | Watchdog 2

Sensor	Status	Reading	Low NRT	Low CT	Low NCT	Up NCT	Up CT	Up NRT
CPU0_Temp	✓	42°C	N/A	N/A	N/A	102°C	112°C	N/A
CPU1_Temp	✓	41°C	N/A	N/A	N/A	102°C	112°C	N/A
PCH_Temp	✓	36°C	N/A	N/A	N/A	100°C	110°C	N/A
DIMMG0_Temp	✓	36°C	N/A	N/A	N/A	95°C	105°C	N/A
DIMMG1_Temp	✓	38°C	N/A	N/A	N/A	95°C	105°C	N/A
Inlet_Temp	✓	30°C	N/A	N/A	N/A	40°C	50°C	N/A
Outlet_Temp	✓	40°C	N/A	N/A	N/A	N/A	N/A	N/A
PCIE_Temp	✓	33°C	N/A	N/A	N/A	N/A	N/A	N/A
SYS_Temp	✓	34°C	N/A	N/A	N/A	N/A	N/A	N/A
HDD_REAR_Temp	✓	33°C	N/A	N/A	N/A	60°C	70°C	N/A
RAID_Temp	●	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note:

✓Normal ⚠Warning ✗Critical ●N/A

System Device Status

Backplane Hard Disk | NIC

HDD ID	Present	Status	Location	Rebuild
HDD_Front 0	●	✓	●	●
HDD_Front 1	●	✓	●	●
HDD_Front 2	●	✓	●	●
HDD_Front 3	●	●	●	●
HDD_Front 4	●	✓	●	●
HDD_Front 5	●	✓	●	●
HDD_Front 6	●	✓	●	●
HDD_Front 7	●	●	●	●
HDD_Front 8	●	✓	●	●
HDD_Front 9	●	✓	●	●
HDD_Front 10	●	✓	●	●
HDD_Front 11	●	✓	●	●
HDD_Front 12	●	✓	●	●
HDD_Front 13	●	✓	●	●
HDD_Front 14	●	✓	●	●
HDD_Front 15	●	●	●	●
HDD_Front 16	●	✓	●	●
HDD_Front 17	●	✓	●	●

BIOS Setup Options

Advanced | Chipset | Boot

Advanced	
Setup Option	**Setup Option Value**
COM0 Console Redirection	Disable
Above 4G Decoding	Disable

FRU Information

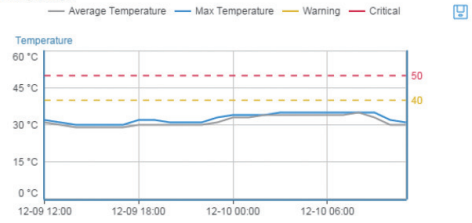
Basic Information | Chassis Information | Board Information | Product Information

Attribute	Value
FRU Device ID	0
FRU Device Name	BMC_FRU

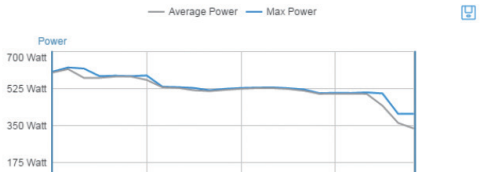
History Record

Last Day | Last Month | Last Year

Inlet Temperature:



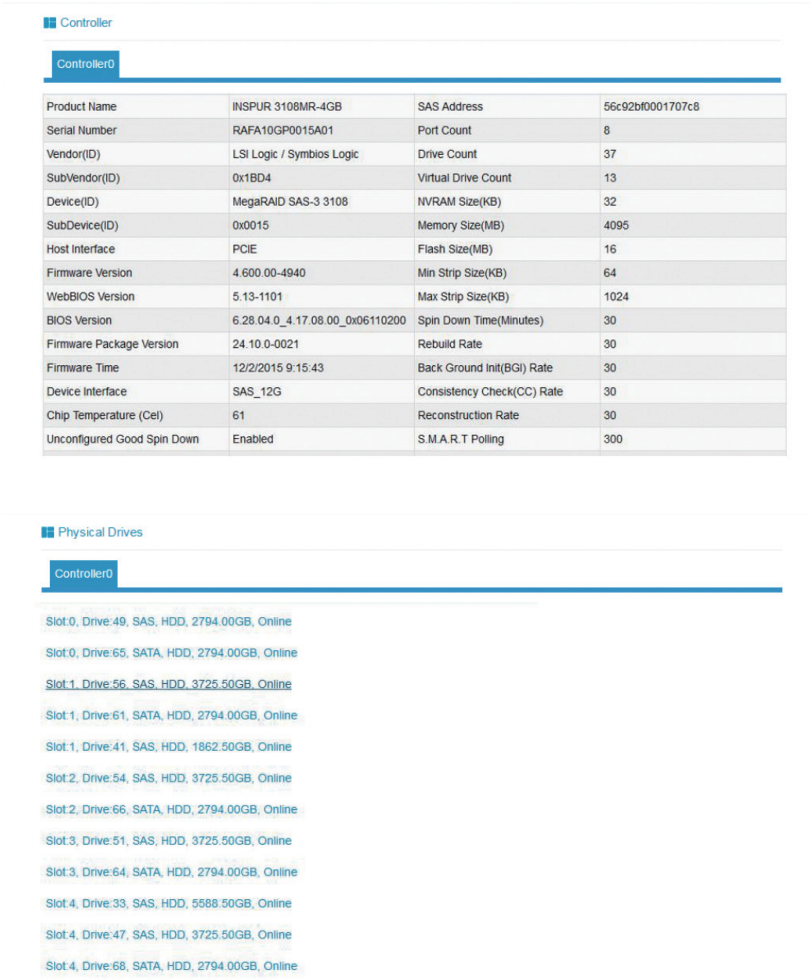
Total Power:

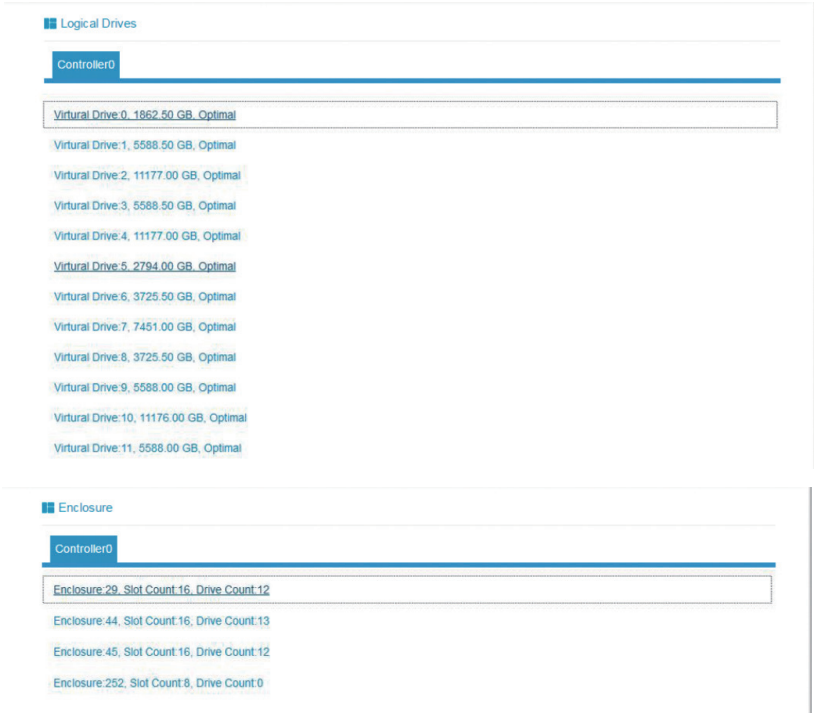


9.4 Storage

Select “Storage” on navigation tree to open the storage interface, which contains four interfaces of controller, physical drives, logical drives and enclosure, shown in the following figure.

- Controller: Displays the controller information of the storage system.
- Physical drives: Displays the information of physical disks configured in the system.
- Logical drives: Displays the information of logical disks configured in the system.
- Enclosure: Displays the related information for the Enclosure of the storage system.

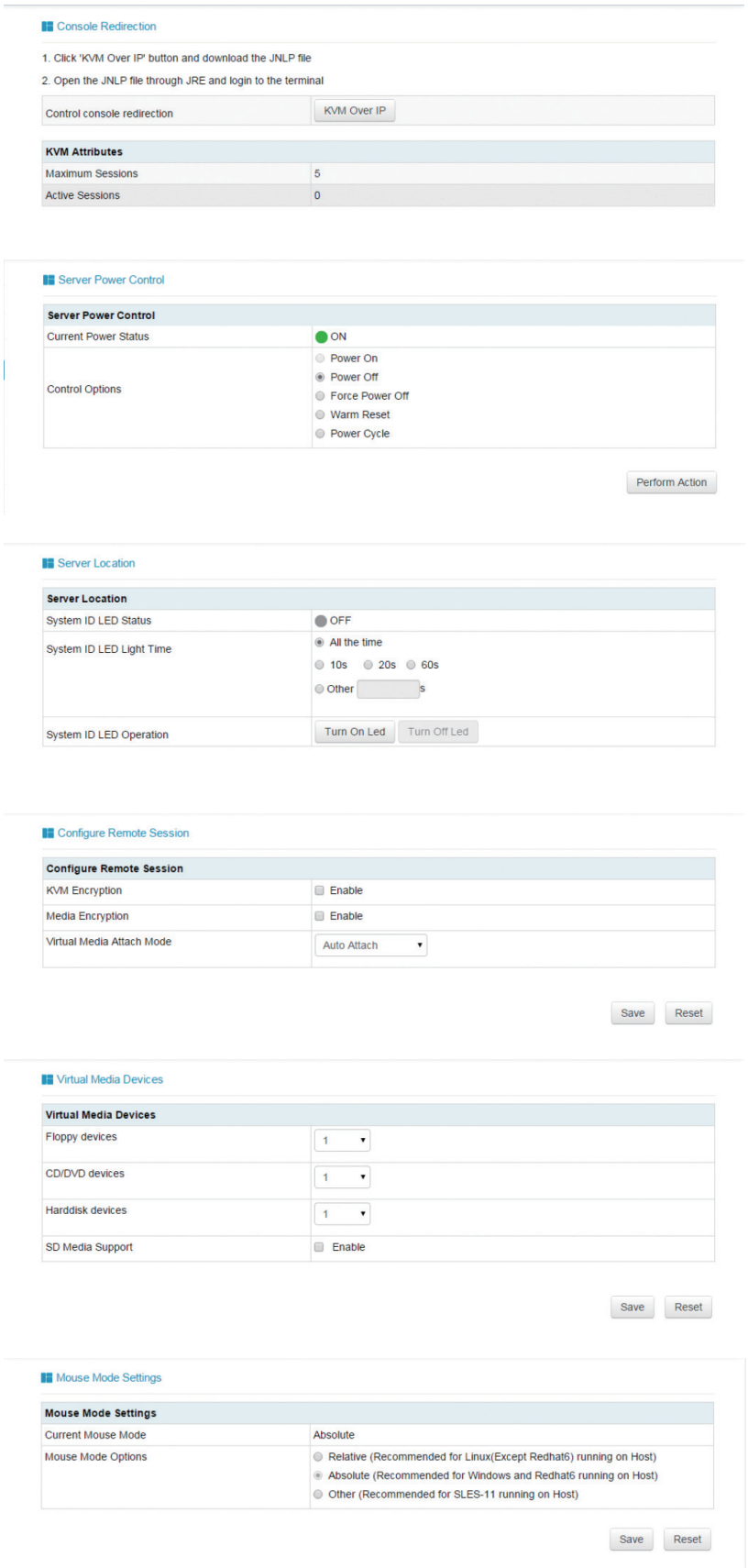




9.5 Remote Control

Select “Remote Control” on the navigation tree to open the remote control interface, which contains six interfaces of console redirection (KVM)”, server power control, server location, configure remote session, virtual media devices and mouse modes settings, shown in the following figure.

- Console redirection (KVM): To pop up the KVM console window.
- Server power control: To control startup, shutdown and restart of the server.
- Server location: To turn on/off the location light.
- Configure remote session: To set KVM session encryption, media encryption and virtual media connection methods.
- Virtual media devices: To set the quantity of virtual media (floppy disks, CD drives and hard disks etc.)
- Mouse modes settings: To set the mouse working mode for KVM remote console.



Console Redirection

1. Click 'KVM Over IP' button and download the JNLP file
2. Open the JNLP file through JRE and login to the terminal

Control console redirection	KVM Over IP

KVM Attributes	
Maximum Sessions	5
Active Sessions	0

Server Power Control

Server Power Control	
Current Power Status	ON
Control Options	Power On Power Off Force Power Off Warm Reset Power Cycle

Perform Action

Server Location

Server Location	
System ID LED Status	OFF
System ID LED Light Time	All the time 10s 20s 60s Other s
System ID LED Operation	Turn On Led Turn Off Led

Configure Remote Session

Configure Remote Session	
KVM Encryption	Enable
Media Encryption	Enable
Virtual Media Attach Mode	Auto Attach

Save Reset

Virtual Media Devices

Virtual Media Devices	
Floppy devices	1
CD/DVD devices	1
Harddisk devices	1
SD Media Support	Enable

Save Reset

Mouse Mode Settings

Mouse Mode Settings	
Current Mouse Mode	Absolute
Mouse Mode Options	Relative (Recommended for Linux(Except Redhat6) running on Host) Absolute (Recommended for Windows and Redhat6 running on Host) Other (Recommended for SLES-11 running on Host)

Save Reset

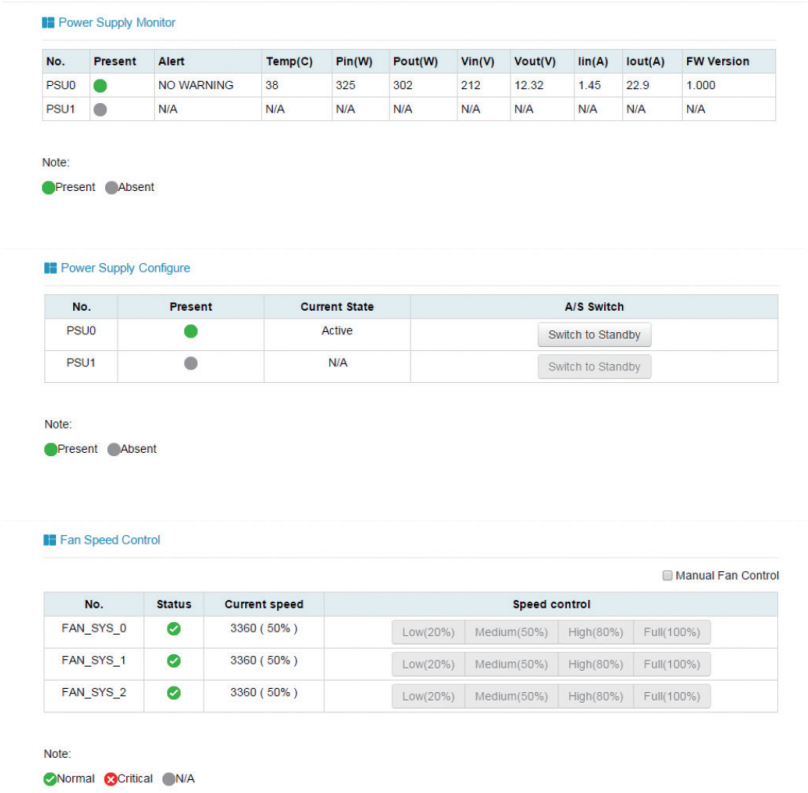
9.6 Power Supply and Fan

Select “Power Supply and Fan” on the navigation tree to open the power supply and fan page. It contains three pages of power supply monitoring, power supply management, fan speed control, as shown in the following figure.

- Power supply monitoring: Contains PSU present status, alert status, temperature, input power, output power, input voltage, output voltage, input current, output current and firmware version information.
- Power supply management: Contains PSU present status, current status and primary/ secondary mode switching function.
- Fan speed control: Contains fan status, current speed information and speed control function.

Note: Fan speed control contains the following speed levels:

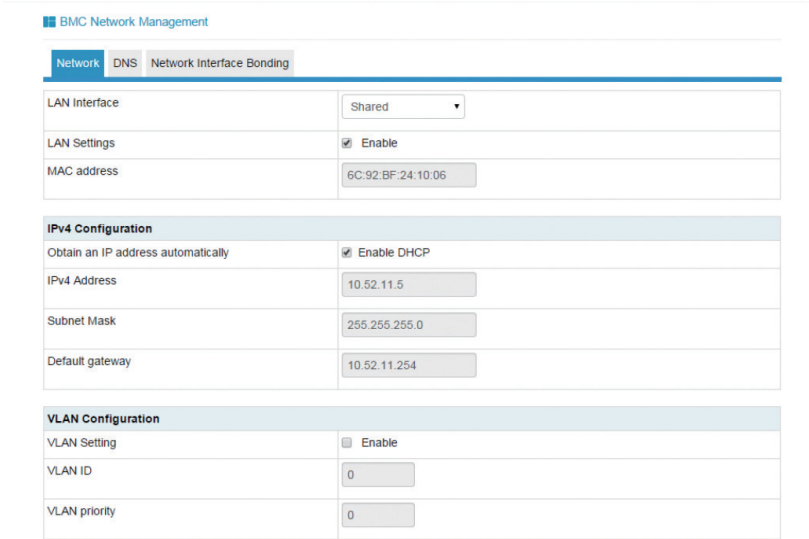
- Low: About 20% duty ratio
- Medium: About 50% duty ratio
- High: About 80% duty ratio
- Full: 100% duty ratio



9.7 BMC Configuration

Select “BMC Configuration” on the navigation tree to open the BMC Configuration page. This page contains information related to the BMC network management, services, NTP settings, SMTP settings, alert settings, active directory settings, LDAP/E-Directory settings, user management, IP access control and BMC share NIC switch, shown in the following figure.

- BMC Network Management: Contains BMC network (static IP and DHCP), DNS settings and network interface bonding function.
- Services: Configures the BMC’S Web service, KVM service, ssh service, telnet service, etc.
- NTP settings: Sets the BMC time, which has two methods:
  - Synchronize from NTP server.
  - Sets time manually.
- SMTP settings: Sets the SMTP server information related to alert.
- Alert settings: Sets information to alert event filtering and alert targets of BMC management module.
- Active directory settings: Sets BMC active directory.
- LDAP/E-Directory settings: Sets BMC LDAP.
- User management: Carries out management of the BMC users, including add user, delete user and change password.
- IP access control: Sets IP address fields accessible to BMC.
- BMC share NIC switch: Selects BMC shared network, switch onboard NIC or external NIC, and sets network interface switch mode.



Services

#	Service Name	Current State	Interfaces	Nonsecure Port	Secure Port	Timeout(s)	Maximum Sessions	Active Sessions
1	web	Active	both	80	443	1800	20	1
2	kvm	Active	both	7578	7582	N/A	5	0
3	cd-media	Active	both	5120	5124	N/A	1	0
4	fd-media	Active	both	5122	5126	N/A	1	0
5	hd-media	Active	both	5123	5127	N/A	1	0
6	ssh	Inactive	N/A	N/A	22	600	N/A	N/A
7	telnet	Inactive	N/A	23	N/A	600	N/A	N/A

NTP Settings

NTP Settings

Date:	December 10 2015
Time:	11 35 04 hh:mm:ss
UTC TimeZone:	(GMT+08:00)
NTP Server:	pool.ntp.org

Automatically synchronize Date & Time with NTP Server

Refresh Save Reset

SMTP Settings

LAN Channel	Shared
Sender Email	

Primary SMTP Server

SMTP Support	Enable
SMTP Server IP Address	
Username	
Password	

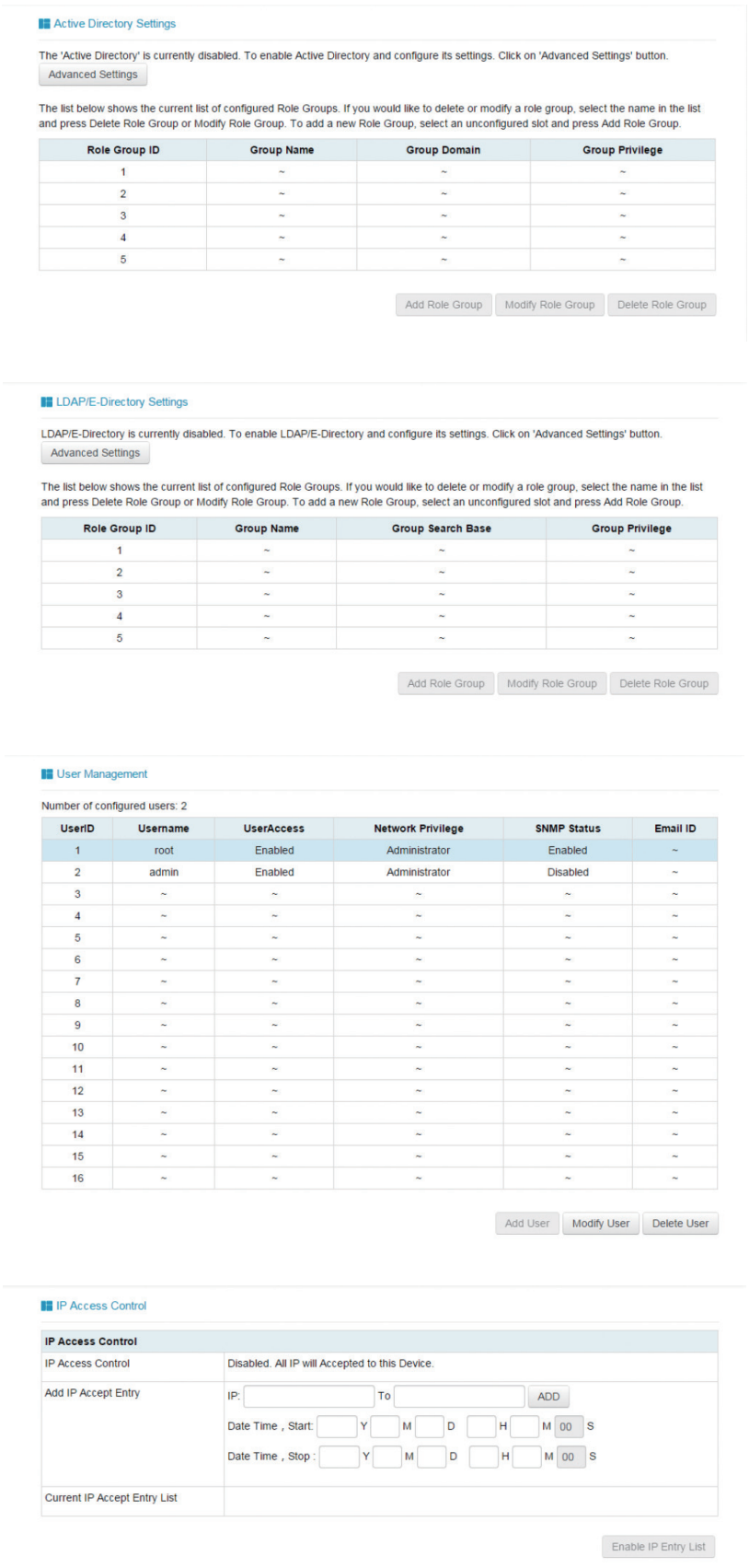
Secondary SMTP Server

SMTP Support	Enable
SMTP Server IP Address	
Username	
Password	

Alert Settings

SNMP Trap Configure

Trap Version	v1
Event Severity	All
Community	public
Username	
Engine ID(Hex)	
Authentication and password	NONE
Privacy and password	NONE
System Name	
System ID	
Host Location	
Contact	
Host OS	



Active Directory Settings

The 'Active Directory' is currently disabled. To enable Active Directory and configure its settings. Click on 'Advanced Settings' button.

Advanced Settings

The list below shows the current list of configured Role Groups. If you would like to delete or modify a role group, select the name in the list and press Delete Role Group or Modify Role Group. To add a new Role Group, select an unconfigured slot and press Add Role Group.

Role Group ID	Group Name	Group Domain	Group Privilege
1	~	~	~
2	~	~	~
3	~	~	~
4	~	~	~
5	~	~	~

Add Role Group | Modify Role Group | Delete Role Group

LDAP/E-Directory Settings

LDAP/E-Directory is currently disabled. To enable LDAP/E-Directory and configure its settings. Click on 'Advanced Settings' button.

Advanced Settings

The list below shows the current list of configured Role Groups. If you would like to delete or modify a role group, select the name in the list and press Delete Role Group or Modify Role Group. To add a new Role Group, select an unconfigured slot and press Add Role Group.

Role Group ID	Group Name	Group Search Base	Group Privilege
1	~	~	~
2	~	~	~
3	~	~	~
4	~	~	~
5	~	~	~

Add Role Group | Modify Role Group | Delete Role Group

User Management

Number of configured users: 2

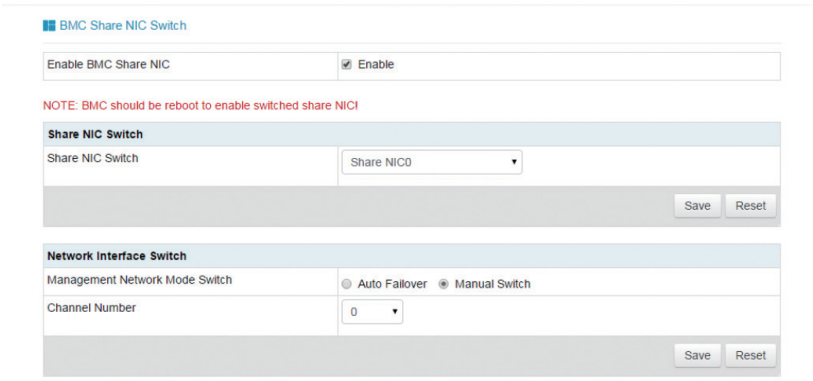
UserID	Username	UserAccess	Network Privilege	SNMP Status	Email ID
1	root	Enabled	Administrator	Enabled	~
2	admin	Enabled	Administrator	Disabled	~
3	~	~	~	~	~
4	~	~	~	~	~
5	~	~	~	~	~
6	~	~	~	~	~
7	~	~	~	~	~
8	~	~	~	~	~
9	~	~	~	~	~
10	~	~	~	~	~
11	~	~	~	~	~
12	~	~	~	~	~
13	~	~	~	~	~
14	~	~	~	~	~
15	~	~	~	~	~
16	~	~	~	~	~

Add User | Modify User | Delete User

IP Access Control

IP Access Control	
IP Access Control	Disabled. All IP will Accepted to this Device.
Add IP Accept Entry	IP: To ADD Date Time , Start: Y M D H M 00 S Date Time , Stop : Y M D H M 00 S
Current IP Accept Entry List	

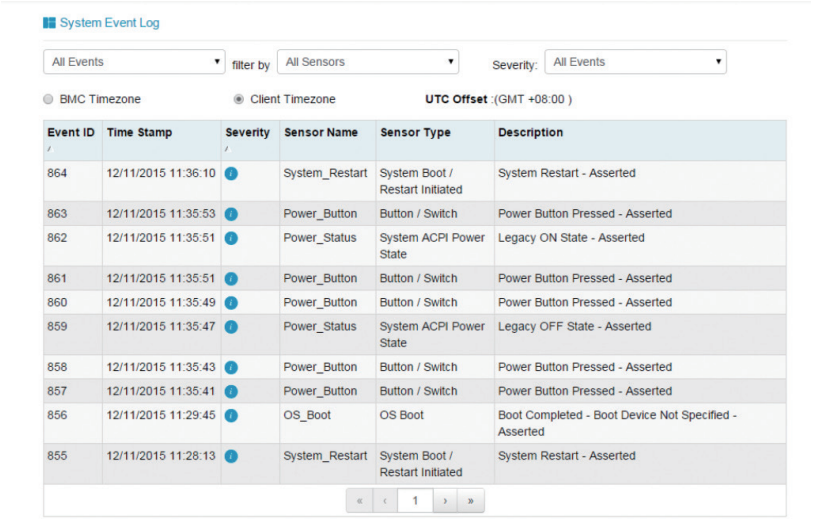
Enable IP Entry List

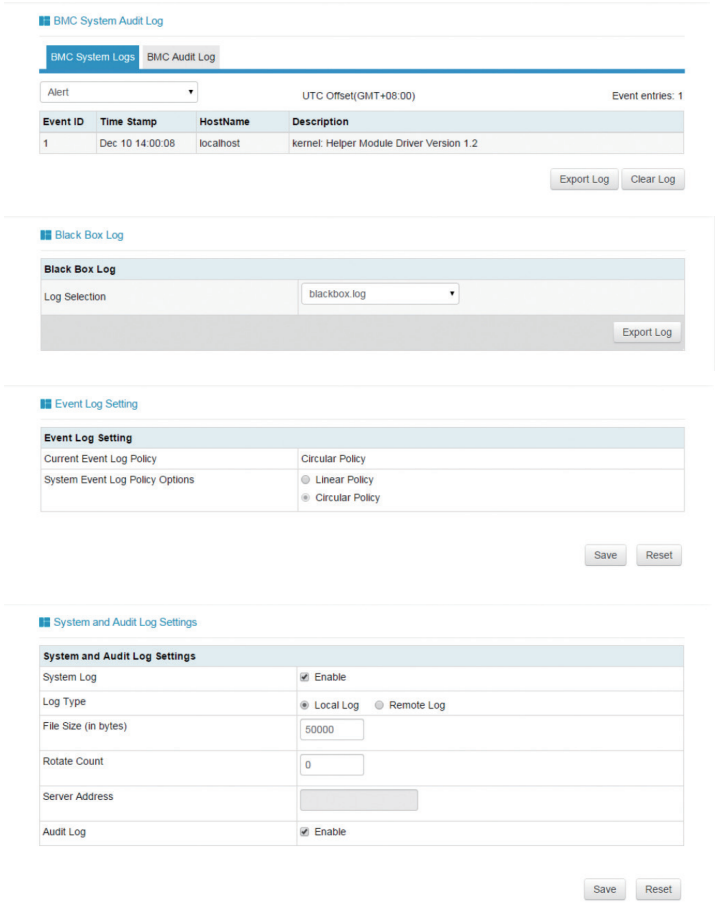


9.8 Logs

Select “Logs” on navigation tree to open related log page. This contains system event log, BMC system audit log, black box log, event log setting and system and audit log settings, shown in the following figure.

- System event log: Displays various event logs generated by server.
- BMC system audit log: Displays system logs and audit logs of BMC.
- Black box logs: Used to import fault logs.
- Event log setting: Sets BMC log storage strategies:
  - ◇ Linear strategy: To clear all logs after log storage is full and record again.
  - ◇ Circular strategy: To record circularly after log record is full.
- System and audit log settings: Sets storage mode, lengths and other information of BMC system audit logs.





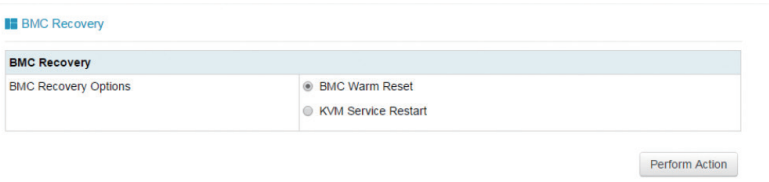
9.9 Fault Diagnosis

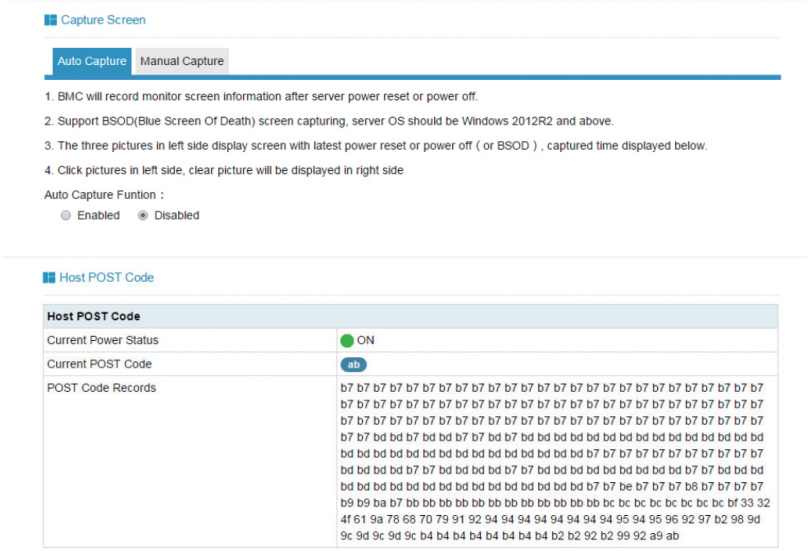
Select “Fault Diagnosis” on navigation tree to open fault diagnosis page, which contains three pages of BMC recovery, capture screen and host POST code, shown in the following figure.

- BMC recovery: Contains two functions of BMC warm reset and KVM service restart.
- Capture screen: Used to record the information on the last screen at system crash.

> ⚠ Note: Blue screen only adapts to Windows 2008R2 and Windows 2012 OS;

- Host POST code: Displays POST code during system startup.

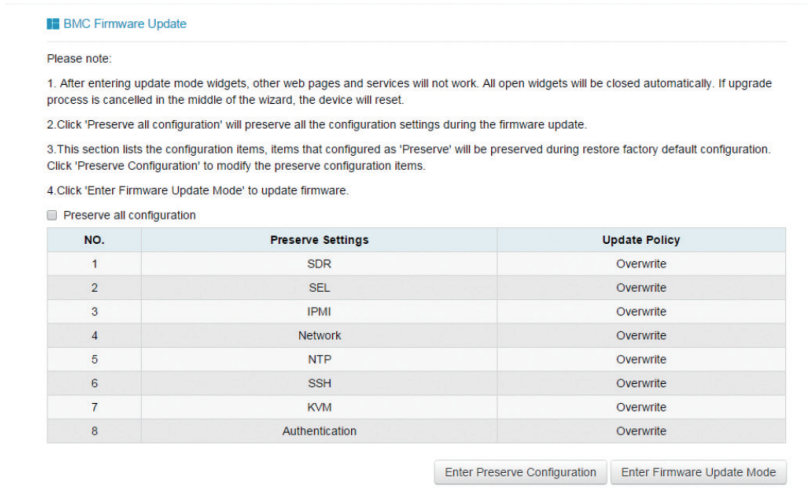


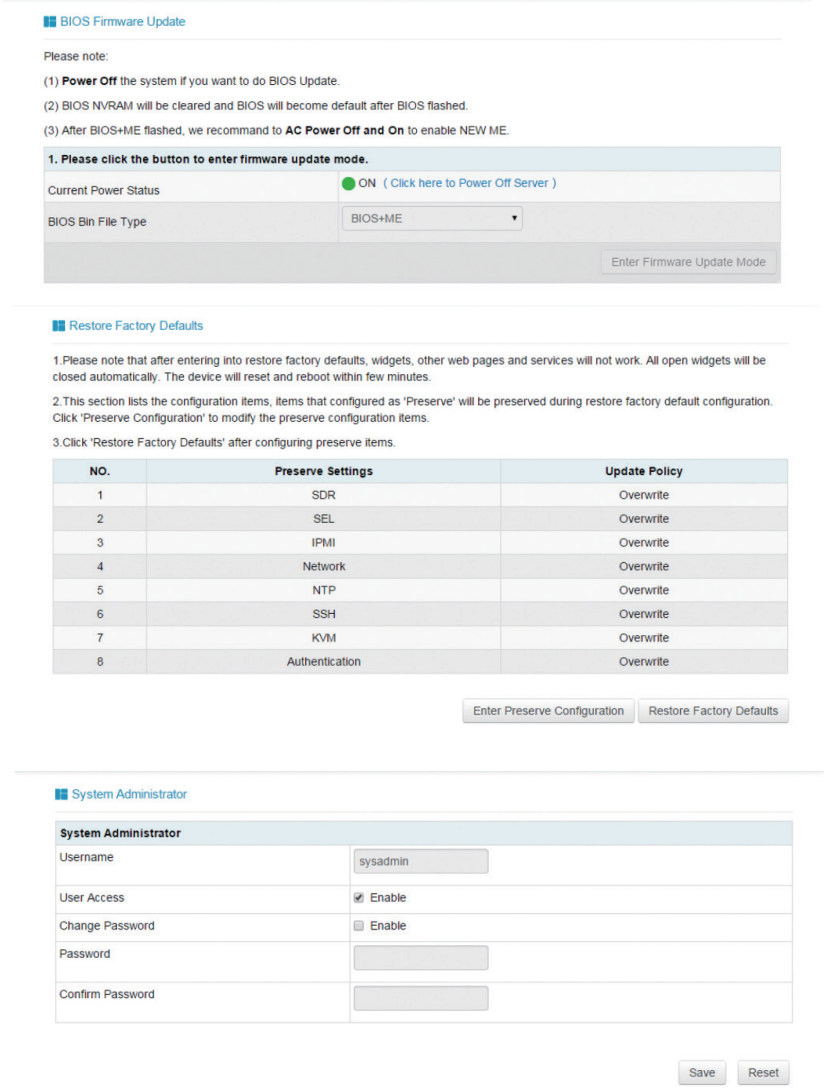


9.10 System Maintenance

Select “System Maintenance” on the navigation tree to open system maintenance page. It contains BMC firmware update, BIOS firmware update, restore factory defaults and system administrator, shown in the following figure.

- BMC firmware update: Updates BMC FW via BMC Web interface;
- BIOS firmware update: Updates BIOS FW via BMC Web interface;
- Restore factory defaults: Restores BMC’s configuration to factory state.
- System administrator: Sets administrator’s information.





9.11 Command Line Function Introduction

This chapter introduces Web interface of the management system, as well as operation steps to the Web interface login.

- Login command line

  Introduces methods of login command line.

- Command line function introduction

  Introduces command line functions.

9.11.1 Command Line Login

Login to BMC Command line through ssh, default user name: root, and default

password: rootuser.

```
login as: root
root@10.53.11.240's password:
Executing [-/usr/local/bin/smashclp]
```

After logging in, enter the command line interface:

```
                >> smashclp <<
////////////////////////////////////////////////
smashclp cli tool version 0.9
Enter 'help' for a list of built-in commands
////////////////////////////////////////////////

/smashclp>
```

Enter help to view online help:

```
/smashclp> help
Built-in command:
-------------------
ipconfig:       get or set network parameters, please enter <ipconfig --help> for more information
sensor  :       get or set sensor parameters, please enter <sensor --help> for more information
fru     :       get or set fru parameters, please enter <fru --help> for more information
chassis :       get or set chassis parameters, please enter <chassis --help> for more information
user    :       get or set user parameters, please enter <user --help> for more information
mc      :       get or set mc parameters, please enter <mc --help> for more information
fan     :       get or set fan parameters, please enter <fan --help> for more information
psu     :       get or set psu parameters, please enter <psu --help> for more information
password:       change root password
exit    :       exit the command line
/smashclp>
```

9.11.2 Command Line Function Introduction

9.11.2.1 Network Information Acquisition and Configuration:

Acquire and configure BMC's network information via ipconfig instructions:

```
/smashclp> ipconfig --get
     eth0
          IP Address Source  :  dhcp
          IP Address         :  10.53.11.240
          Subnet Mask        :  255.255.255.0
          Default Gateway IP :  10.53.11.254
          MAC Address        :  6C:92:BF:07:1A:B6
     eth1
          IP Address Source  :  dhcp
          IP Address         :  0.0.0.0
          Subnet Mask        :  0.0.0.0
          Default Gateway IP :  0.0.0.0
          MAC Address        :  6C:92:BF:07:1A:B7
```

9.11.2.2 Sensor Information Acquisition:

Via sensor instruction, acquire the information list of all sensors:

```
/smashclp> sensor --list
sensor name      | num | value     | unit      | status | lnr       | lc        | lnc       | unc       | uc        | unr
CPU0_Temp        | 19h | 60.000    | degrees C | ok     | na        | na        | na        | 102.000   | 112.000   | na
CPU1_Temp        | 1Ah | na        | degrees C | na     | na        | na        | na        | 102.000   | 112.000   | na
PCH_Temp         | 1Dh | 37.000    | degrees C | ok     | na        | na        | na        | 100.000   | 110.000   | na
DIMMG0_Temp      | 1Eh | 30.000    | degrees C | ok     | na        | na        | na        | 95.000    | 105.000   | na
DIMMG1_Temp      | 1Fh | na        | degrees C | na     | na        | na        | na        | 95.000    | 105.000   | na
Inlet_Temp       | 02h | na        | degrees C | na     | na        | na        | na        | 40.000    | 50.000    | na
Outlet_Temp      | 00h | na        | degrees C | na     | na        | na        | na        | na        | na        | na
SYS0_Temp        | 01h | na        | degrees C | na     | na        | na        | na        | na        | na        | na
SYS1_Temp        | 03h | na        | degrees C | na     | na        | na        | na        | na        | na        | na
HDD0_REAR_Temp   | 04h | na        | degrees C | na     | na        | na        | na        | 60.000    | 70.000    | na
HDD1_REAR_Temp   | 0Bh | na        | degrees C | na     | na        | na        | na        | 60.000    | 70.000    | na
RISER0_Temp      | 05h | na        | degrees C | na     | na        | na        | na        | na        | na        | na
RISER1_Temp      | 06h | na        | degrees C | na     | na        | na        | na        | na        | na        | na
GPU0_Temp        | 07h | na        | degrees C | na     | na        | na        | na        | 82.000    | 92.000    | na
GPU1_Temp        | 08h | na        | degrees C | na     | na        | na        | na        | 82.000    | 92.000    | na
MIC0_Temp        | 09h | na        | degrees C | na     | na        | na        | na        | 104.000   | 114.000   | na
MIC1_Temp        | 0Ah | na        | degrees C | na     | na        | na        | na        | 104.000   | 114.000   | na
SYS_VCCIO        | 40h | 1.070     | Volts     | ok     | 0.690     | 0.770     | 0.850     | 1.170     | 1.250     | 1.330
SYS_12V          | 43h | 12.502    | Volts     | ok     | 9.024     | 9.776     | 10.528    | 13.536    | 14.288    | 15.040
SYS_3.3V         | 44h | 3.377     | Volts     | ok     | 2.660     | 2.800     | 2.940     | 3.657     | 3.797     | 3.938
SYS_5V           | 47h | 5.220     | Volts     | ok     | 3.888     | 4.176     | 4.464     | 5.544     | 5.832     | 6.120
PCH_P1V05        | 41h | 1.070     | Volts     | ok     | 0.770     | 0.850     | 0.930     | 1.170     | 1.250     | 1.330
PCH_P1V5         | 42h | 1.550     | Volts     | ok     | 1.180     | 1.260     | 1.340     | 1.670     | 1.750     | 1.830
CPU0_VCORE       | 45h | 1.810     | Volts     | ok     | 1.040     | 1.120     | 1.200     | 2.300     | 2.380     | 2.460
CPU1_VCORE       | 46h | na        | Volts     | na     | 1.040     | 1.120     | 1.200     | 2.300     | 2.380     | 2.460
CPU0_DDR_VDDQAB  | 48h | 1.220     | Volts     | ok     | 0.910     | 0.990     | 1.070     | 1.330     | 1.410     | 1.490
CPU0_DDR_VDDQCD  | 49h | 1.200     | Volts     | ok     | 0.910     | 0.990     | 1.070     | 1.330     | 1.410     | 1.490
CPU1_DDR_VDDQEF  | 4Ah | na        | Volts     | na     | 0.910     | 0.990     | 1.070     | 1.330     | 1.410     | 1.490
CPU1_DDR_VDDQGH  | 4Bh | na        | Volts     | na     | 0.910     | 0.990     | 1.070     | 1.330     | 1.410     | 1.490
FAN_0            | 30h | 0.000     | RPM       | cr     | na        | 0.000     | na        | na        | na        | na
FAN_1            | 31h | na        | RPM       | na     | na        | 0.000     | na        | na        | na        | na
FAN_2            | 32h | 0.000     | RPM       | cr     | na        | 0.000     | na        | na        | na        | na
FAN_3            | 33h | na        | RPM       | na     | na        | 0.000     | na        | na        | na        | na
FAN_4            | 34h | 0.000     | RPM       | cr     | na        | 0.000     | na        | na        | na        | na
FAN_5            | 35h | na        | RPM       | na     | na        | 0.000     | na        | na        | na        | na
FAN_6            | 36h | 0.000     | RPM       | cr     | na        | 0.000     | na        | na        | na        | na
FAN_7            | 37h | na        | RPM       | na     | na        | 0.000     | na        | na        | na        | na
CPU0_Status      | 6Ah | 0x0       | discrete  | 0x8080 | na        | na        | na        | na        | na        | na
CPU1_Status      | 6Bh | 0x0       | discrete  | 0x8000 | na        | na        | na        | na        | na        | na
MEM_CHA0_Status  | 70h | 0x0       | discrete  | 0x8040 | na        | na        | na        | na        | na        | na
```

9.11.2.3 FRU Information Acquisition and Configuration:

Via FRU instruction, acquire FRU configuration information:

```
/smashclp> fru --get all
 Chassis Type           : Rack Mount Chassis
 Chassis Part Number    : 0
 Chassis Serial         : 0
 Chassis Extra          : NULL
 Board Mfg Date         : Mon Sep  8 13:17:00 2014
 Board Mfg              : Inspur
 Board Product          : Baotu
 Board Serial           : 0
 Board Part Number      : 0
 Product Manufacturer   : Inspur
 Product Name           : NF5280M4
 Product Part Number    : 0
 Product Version        : 01
 Product Serial         : 0
 Product Asset Tag      : NULL
/smashclp>
```

9.11.2.4 Chassis Status Acquisition and Control:

Via chassis instruction, acquire and control system power status.

```
/smashclp> chassis --get --help
chassis commands:
    chassis <option1> [<option2> <parameter>]
    option1:
      --help     show help information
      ?          show help information
      --get      get chassis information
      for example : chassis --get <option2> <parameter>
      --set      set chassis information
      for example : chassis --set <option2> <parameter>
    option2:
      power      set or get host status
      identify   set or get UID status
    parameter:
      status     get host or UID status
      on         set host status power on
      off        set host or UID status power off
      force      set UID status all the light
    Set UID light on server seconds, Please put seconds in the followed identify
    for example : chassis --set identify 15. Light on 15 Seconds
    The Seconds must be greater than 0 and less than or equal to 240
```

Acquire system power status:

```
/smashclp> chassis --get power status
The host status is on
```

9.11.2.5 User Acquisition, Adding and Deleting:

Via user instruction, acquire the user list, add or delete users.

```
/smashclp> user  --help
user commands:
    user <option> [<user id> [<user name>/<user priv>]]
    option:
      --help     show help information
      ?          show help information
      --list     show all the user of the information
      --add      Add new user information
      for example : user --add <user id> <user name>
      --password     Modify user password
      for example : user --password <user id>
      --privilege     Modify user permissions
      for example : user --privilege <user id> <user priv>
      --delete     Delete user
      for example : user --delete <user id>
      <user name>, The user name cannot be longer than 16 bytes.
      <user id>, The user id more than 0, less than 16.
      <user priv>, The user priv is 2(USER), 3(OPERATOR), 4(ADMINISTRATOR) or 15(NO ACCESS).
      The password does not exceed 16 bytes.
```

Acquire user list:

```
/smashclp> user  --list
ID  Name             Channel Priv Limit
1   admin            ADMINISTRATOR
2                    NO ACCESS
3                    NO ACCESS
4                    NO ACCESS
5                    NO ACCESS
6                    NO ACCESS
7                    NO ACCESS
8                    NO ACCESS
9                    NO ACCESS
10                   NO ACCESS
11                   NO ACCESS
12                   NO ACCESS
13                   NO ACCESS
14                   NO ACCESS
15                   NO ACCESS
16                   NO ACCESS
```

9.11.2.6 BMC Version Acquisition and BMC Restart

Via mc instruction you may acquire BMC version information and restart BMC.

```
/smashclp> mc --help
mc commands:
    mc <option1> [<option2>] <parameter>
    option1:
      --help     show help information
      ?          show help information
      --get      get mc information
      for example : mc --get <parameter>
      --set      set mc information
      for example : mc --set <option2> <parameter>
    option2:
      bmc        set bmc action, this only support --set
      kvm        set kvm action, this only support --set
    parameter:
      version    get bmc version, this only support --get command
      reset      set bmc or kvm reset action, this only support --set command
```

Acquire BMC version information:

```
/smashclp> mc --get version
Device ID                 : 32
Device Revision           : 1
Firmware Revision         : 4.5.0
IPMI Version              : 2.0
```

9.11.2.7 Fan Work Mode Configuration and Fan Speed Acquisition:

Via fan instruction, you may set fan work mode, and acquire fan speed.

```
/smashclp> fan --help
fan commands:
    fan <option1> [<option2> <parameter1> [<parameter2>]]
    option1:
      --help     show help information
      ?          show help information
      --get      get fan information
      for example : fan --get <option2>
      --set      set fan information
      for example : fan --set <option2> <parameter1> [<parameter2>]
    option2:
      fanmode     set or get fanmode
      for example : fan --set fanmode 0|1
      0 : auto mode
      1 : manual mode
      fanlevel     set or get fan level
      for example : fan --set fanlevel <parameter1> <parameter2>
      parameter1: the fan id
      parameter2: the fan of the precent
```

Fan speed acquisition:

```
/smashclp> fan --get fanlevel
ID  Status  SpeedPercent  SpeedRPM
0     NA          0          0 PRM
1     NA          0          0 PRM
2     NA          0          0 PRM
3     NA          0          0 PRM
4     NA          0          0 PRM
5     NA          0          0 PRM
6     NA          0          0 PRM
7     NA          0          0 PRM
```

9.11.2.8 Power Module Information Acquisition and Configuration:

Via Psu instruction, you may acquire power module information, and set power module as main output.

```
/smashclp> psu --help
psu commands:
    psu <option1> <option2> [<parameter1> <parameter2>]
    option1:
      --help     show help information
      ?          show help information
      --get      get psu information
      for example : psu --get <option2>
      --set      set psu information
      for example : psu --set <option2> [<parameter1> <parameter2>]
    option2:
      psuinfo     show all psu information, this only support --get
      psumode     set psu information, this only support --set
      parameter1: the ID of the PSU module, not more than 1
      parameter2: the Action of the PSU module. 0 representation activate, 1 representation standby.
```

Power module information acquisition:

```
/smashclp> psu --get psuinfo
PSU Asset Info:
ID | Mfr ID          | Mfr Model       | Serail Number   | FW Ver
0  | N/A             | N/A             | N/A             | N/A
1  | N/A             | N/A             | N/A             | 1.000
PSU Monitor Info:
ID | Status | Alert | Temp(C) | Pin(W) | Pout(W) | Vin(V) | Vout(V) | Iin(A) | Iout(A)
0  | N/A    | N/A   | N/A     | N/A    | N/A     | N/A    | N/A     | N/A    | N/A
1  |Activate| OK    | 24      | 56     | 40      | 231    | 12.33   | 0.26   | 3.28
```

9.11.2.9 Change Root Password:

Via password instruction, you may change the root user's password:

```
/smashclp> password
New password:
```

9.12 Time Zone Table

Name of Time Zone	Time
Dateline Standard Time	(GMT-12:00) International Date Line West
Samoa Standard Time	(GMT-11:00) Midway Island, Samoa
Hawaiian Standard Time	(GMT-10:00) Hawaii
Alaskan Standard Time	(GMT-09:00) Alaska
Pacific Standard Time	(GMT-08:00) Pacific Time (US and Canada); Tijuana
Mountain Standard Time	(GMT-07:00) Mountain Time (US and Canada)
Mexico Standard Time 2	(GMT-07:00) Chihuahua, La Paz, Mazatlan
U.S. Mountain Standard Time	(GMT-07:00) Arizona
Central Standard Time	(GMT-06:00) Central Time (US and Canada
Canada Central Standard Time	(GMT-06:00) Saskatchewan
Mexico Standard Time	(GMT-06:00) Guadalajara, Mexico City, Monterrey
Central America Standard Time	(GMT-06:00) Central America
Eastern Standard Time	(GMT-05:00) Eastern Time (US and Canada)
U.S. Eastern Standard Time	(GMT-05:00) Indiana (East)
S.A. Pacific Standard Time	(GMT-05:00) Bogota, Lima, Quito
Atlantic Standard Time	(GMT-04:00) Atlantic Time (Canada)
S.A. Western Standard Time	(GMT-04:00) Caracas, La Paz
Pacific S.A. Standard Time	(GMT-04:00) Santiago
Newfoundland and Labrador Standard Time	(GMT-03:30) Newfoundland and Labrador
E. South America Standard Time	(GMT-03:00) Brasilia
S.A. Eastern Standard Time	(GMT-03:00) Buenos Aires, Georgetown

Greenland Standard Time	(GMT-03:00) Greenland
Mid-Atlantic Standard Time	(GMT-02:00) Mid-Atlantic
Azores Standard Time	(GMT-01:00) Azores
Cape Verde Standard Time	(GMT-01:00) Cape Verde Islands
GMT Standard Time	(GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
Greenwich Standard Time	(GMT) Casablanca, Monrovia
Central Europe Standard Time	(GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
Central European Standard Time	(GMT+01:00) Sarajevo, Skopje, Warsaw, Zagreb
Romance Standard Time	(GMT+01:00) Brussels, Copenhagen, Madrid, Paris
W. Europe Standard Time	(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
W. Central Africa Standard Time	(GMT+01:00) West Central Africa
E. Europe Standard Time	(GMT+02:00) Bucharest
Egypt Standard Time	(GMT+02:00) Cairo
FLE Standard Time	(GMT+02:00) Helsinki, Kiev, Riga, Sofia, Tallinn, Vilnius
GTB Standard Time	(GMT+02:00) Athens, Istanbul, Minsk
Israel Standard Time	(GMT+02:00) Jerusalem
South Africa Standard Time	(GMT+02:00) Harare, Pretoria
Russian Standard Time	(GMT+03:00) Moscow, St. Petersburg, Volgograd
Arab Standard Time	(GMT+03:00) Kuwait, Riyadh
E. Africa Standard Time	(GMT+03:00) Nairobi
Arabic Standard Time	(GMT+03:00) Baghdad
Iran Standard Time	(GMT+03:30) Tehran
Arabian Standard Time	(GMT+04:00) Abu Dhabi, Muscat
Caucasus Standard Time	(GMT+04:00) Baku, Tbilisi, Yerevan
Transitional Islamic State of Afghanistan Standard Time	(GMT+04:30) Kabul
Ekaterinburg Standard Time	(GMT+05:00) Ekaterinburg
West Asia Standard Time	(GMT+05:00) Islamabad, Karachi, Tashkent
India Standard Time	(GMT+05:30) Chennai, Kolkata, Mumbai, New Delhi
Nepal Standard Time	(GMT+05:45) Kathmandu
Central Asia Standard Time	(GMT+06:00) Astana, Dhaka
Sri Lanka Standard Time	(GMT+06:00) Sri Jayawardenepura
N. Central Asia Standard Time	(GMT+06:00) Almaty, Novosibirsk

Myanmar Standard Time	(GMT+06:30) Yangon Rangoon
S.E. Asia Standard Time	(GMT+07:00) Bangkok, Hanoi, Jakarta
North Asia Standard Time	(GMT+07:00) Krasnoyarsk
China Standard Time	(GMT+08:00) Beijing, Chongqing, Hong Kong SAR, Urumqi
Singapore Standard Time	(GMT+08:00) Kuala Lumpur, Singapore
Taipei Standard Time	(GMT+08:00) Taipei
W. Australia Standard Time	(GMT+08:00) Perth
North Asia East Standard Time	(GMT+08:00) Irkutsk, Ulaanbaatar
Korea Standard Time	(GMT+09:00) Seoul
Tokyo Standard Time	(GMT+09:00) Osaka, Sapporo, Tokyo
Yakutsk Standard Time	(GMT+09:00) Yakutsk
A.U.S. Central Standard Time	(GMT+09:30) Darwin
Cen. Australia Standard Time	(GMT+09:30) Adelaide
A.U.S. Eastern Standard Time	(GMT+10:00) Canberra, Melbourne, Sydney
E. Australia Standard Time	(GMT+10:00) Brisbane
Tasmania Standard Time	(GMT+10:00) Hobart
Vladivostok Standard Time	(GMT+10:00) Vladivostok
West Pacific Standard Time	(GMT+10:00) Guam, Port Moresby
Central Pacific Standard Time	(GMT+11:00) Magadan, Solomon Islands, New Caledonia
Fiji Islands Standard Time	(GMT+12:00) Fiji Islands, Kamchatka, Marshall Islands
New Zealand Standard Time	(GMT+12:00) Auckland, Wellington
Tonga Standard Time	(GMT+13:00) Nuku'alofa

10 Common Faults, Diagnosis and Troubleshooting

This chapter introduces the common server faults, as well as corresponding diagnosis and troubleshooting suggestions.

10.1 Common Faults

1) No power after startup

- After the machine is connected with power cable, no power is provided for the machine while pressing the On/Off button. The indicator does not light up after power on.

2) Power module indicator off or red indicator on

- The machine is under normal operation, but a certain power module indicator is off or red indicator is on.

3) No display after power on

- No information appeared on the display after power on via pressing On/Off button.

4) Front panel indicator is off

- All front panel indicators are off after power on.

5) Front panel status indicator alarms

- The machine is under normal operation, but status indicator gives an alarm.

6) Blank screen of the display

- Blank screen occurs during using the display.

7) Abnormal display

- Image dithering, rolling or warping occurs during using the display.

8) Abnormal display of memory capacity

- The operating system shows that memory capacity is inconsistent with physical memory capacity.

9) Keyboard and mouse are not available

- Neither keyboard nor mouse can be operated normally.

10) USB interface problem

- Introduce solutions when failing to use USB interface.

10.2 Diagnosis and Troubleshooting Instructions

1) Diagnosis and troubleshooting on power-on failure at startup

Description: After pressing the power button, server front control panel indicator (power-on status indicator, hard drive status indicator) is off. Meanwhile, no KVM (display) output is displayed, and server chassis fan does not rotate.

Operation steps:

a. Verify whether power supply is normal or not: if the power module indicator is on, it indicates normal power supply. If power module indicator is off, please check if power supply is normal.

b. If power supply is normal, plug in and off the power module again to test, and then power on for verification.

c. If there is a machine and a power module of the same type, you could change the power module to test whether there is a power module fault.

d. If the instructions above do not resolve the problem, please contact Inspur customer service.

2) Power module indicator off or red indicator on

Description: The machine is under normal operation, but a certain power module indicator is off or the red light is on.

Operation steps:

a. Firstly check whether all power cables are normal, and plug in power cables again.

b. If the fault still exists, plug in and off the power module again.

c. If shutdown is allowed, you could exchange the two power modules to judge whether it is a power module fault.

d. If above operations could not solve the problem, please contact Inspur customer service.

3) No display after power on

Description: After pressing the power button, server front control panel indicator is on, but there’s no output on the display.

Operation steps:

a. Firstly check whether the display is connected normally with the server’s VGA port;

b. Test on another display;

c. If above operations could not solve the problem, please contact Inspur customer service.

4) Front panel status indicator alarms

Description: The server is under normal operation, but system status indicator on front control panel flashes or the red indicator is on.

Operation steps:

Please check whether all power module indicators are steadily green, if so, you can login BMC web interface to collect logs, and contact Inspur customer service.

5) Memory capacity incomplete

Description: Memory capacity viewed via the operating system does not correspond with physical memory capacity.

Operation steps:

a. Ensure all memories of correct type have been correctly installed in place.

b. Enter BIOS setup to view memory capacity, if it could be completely identified in BIOS setup, this may lie in the limitation on memory capacity set by the operating system. Otherwise, please contact Inspur customer service.

6) Keyboard and mouse are not available

Description: Neither keyboard nor mouse could be operated normally.

Operation steps:

a. Make sure the keyboard or mouse has been connected correctly and firmly.

b. Test other parts to verify whether it is a mouse or keyboard fault.

c. Retest the machine via power on/off.

d. Reboot and enter cmos or raid configuration interface to test keyboard or mouse performance. When tested in a non-system situation, if keyboard or mouse performance turns out to be normal, a system fault could be considered. If keyboard or mouse fault still exists, a mainboard interface fault could be considered, and Inspur technical hotline can be called for support.

7) USB interface problem

Description: Unable to use devices with a USB interface.

Operation steps:

a. Make sure the operating system on server supports USB devices.

b. Make sure system has been installed with correct USB device driver.

c. Power off the server, and then power on again to test.

d. Check whether the USB device is normal when connecting to other hosts.

e. If the USB device is normal when connecting to other hosts, the server may be abnormal: please call Inspur technical hotline for support. If the USB device turns out to be abnormal when connecting to other hosts, please replace the USB device.

11 Battery Replacement

If the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock.

WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

To remove the component:

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Remove the full-length expansion board retainer if any full-length expansion boards are installed.
5. Remove the PCI riser cage.
6. Remove the air baffle.
7. Remove the battery.

To replace the component, reverse the removal procedure.

For more information about battery replacement or proper disposal, contact Inspur Customer Service.

12 Regulatory Compliance Notices

12.1 Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

12.2 Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

12.2.1 FCC Rating Label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference

to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

12.3 Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

12.4 European Union Regulatory Notice

Products bearing the CE marking comply with the following EU Directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- Eco-design Directive 2009/125/EC, where applicable

CE compliance of this product is valid if powered with the correct CE-marked AC adapter provided by INSPUR.

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) that are listed in the EU Declaration of Conformity issued by INSPUR for this product or product family and available (in English only) within the product documentation.

The compliance is indicated by one of the following conformity markings placed on the product:

Please refer to the regulatory label provided on the product.

12.5 Disposal of Waste Equipment by Users in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more

information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

12.6 Korean Notice

Class A Equipment

A급 기기 (업무용 방송통신기기)	이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Class B Equipment

B급 기기 (가정용 방송통신기기)	이 기기는 가정용(B급)으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

12.7 Chinese Notice

Class A Equipment

声明
此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取可行的措施。

12.8 Battery Replacement Notice

⚠ WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or

water.

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to Inspur, an authorized Inspur Partner, or their agents.

13 Electrostatic Discharge

13.1 Preventing Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

13.2 Grounding Methods to Prevent Electrostatic Discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact Inspur Customer Service.

14 Inspur Support Guide

- Inspur Global Service Support

  Global Technical Service Hotline:

  1-844-860-0011 (Toll Free)

  1-646-517-4966 (Direct Phone)

Global Technical Service Email: serversupport@inspur.com

- Information customer needs to provide when requesting for support:

  Contact name

  Phone number

  E-mail address

  Product model

  Product serial number

  Part Number

  Detailed description of problem