

Inspur Server User Manual NF5486M5

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Descrioption: The Product Specification chapter (chapter 2) is uptated

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 NF5486M5 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 contact 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 provided by Inspur. 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.

Inspur is not responsible for any damages, including loss of profits, loss of information, interruption of business, personal injury, and/or any damage or consequential damage without limitation, incurred before, during, or after the use of our products.

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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.

- 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.
- 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.
- Do not use the "standard power cable + power extension cable" combination.
- 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.
- 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.
- Please place the system far away from the cooling plate and heat sources, and be sure 7. not to block the air vents.
- Please be sure not to scatter food or liquid in the system or on other components, and 8.

- do not use the product in humid or dusty environments.
- 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.

- 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 becomeswet 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.
 - 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:
 - 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).
- 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:
 - 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 rangesto 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

2.1 Introduction

Inspur NF5486M5 is anew generation of 4U2S rack-mountedstorage server, supporting 106 3.5-inch hard drives, up to 1.25PB storage capacity, which is the IT device with the largest storage density in the industry. Based on the new generation of Intel® Xeon® scalable processors, and with the high-efficiency design, it can provide excellent computing performance and flexible and large local storage capacity, which can be used as an ideal solution for warm& cold storage in radio and television, transportation, education and Internet industries. It is suitable for communication, Internet, large data centers and large enterprises, as the infrastructure of distributed storage systems, and is also suitable for applications such as video storage and cloud storage resource pools.

- Key points
- Excellentcomputing, storage and expansion capability

 Supports the new generation of Intel® Xeon® scalable processors, up to TDP 140W CPU; 16

 DIMM sockets support RDIMM and LRDIMM, which significantly improves the performance.

 Achievesthe multi-dimensional extension of space, supports up to 106 3.5" hard drives in

 4U space, and provides ultra-high storage performance.
- Intelligent monitoring of energy consumption, dynamic control of hard drives

 NF5486M5 can control the power-on and power-off of a single hard drivethrough hardware structure design. Users can flexibly shut down the power supply of any hard drive through the management interface (BMC console) according to business needs to save energy and save the operating costs of the server room.
- Hard drive partition management balance

 The 106 hard drives are controlled by four SAS expanders and are divided into four zones.

 The BMC console can be used to control the operation of hard drives in each zone to achieve

optimal flexible configuration of services and performance.

■ Hot-swap maintenance

The computing node, fan, hard drive, and power supply all support hot swap. About the system maintenance, it provides the most convenient maintenance procedures for information personnel, which shortens maintenance time and optimizes service efficiency.

• 3.5×106 configuration (e.g. full configuration)

The server supports 106 3.5-inch SATA hard drives, and the appearance is shown below.



2.2 Features and Specifications

Technical specifications	
Model	NF5486M5
Hardware features	
Controller	One controller and dual CPUs, do not support hot swap
Host	Standard 4U rack server, which can be placed in a 1.2m rack
Processor	Supports one or two Intel® Xeon®3100/4100/5100/6100/8100 series processor(s): Supports up to 22 cores (2.1GHz) Maximum frequency:3.6GHz (4cores) Two UPI interconnecting links, up to 10.4GT/s per link Maximum L3 cache of single core: 1.375MB Maximum thermal design power: 140W
Chipset	Intel C622
Memory	Supports up to 16 memories. Each processor supports 6 memory channels, each channel supports up to 2 memory slots. The maximum memory speed is up to 2666MT/s. RDIMM and LRDIMM are supported. Memory protection supports ECC, memory mirroring, and memory level protection.
System maximum cache	768GB
USB port supported by each controller	TwoUSB3.0 ports
Storage	1063.5-inchSATA 7.2KRPM He HDDs, supporting the mix of hard drives of different manufacturers
M.2 storage	Supports one SATA M.2, used to install the operating system
I/O expansion slot	Supports up to one standard PCIe slot, one OCP card slot (connector A), and one PHY card slot (connector C) PCIe expansion supports both free-tool design and screw fixation mode
PSU	2000W, PSU 1+1 redundancy, 200V-240V, 47Hz-63Hz, supporting hot swap
Fan	Eight 6076birotor fans and three 4056 birotor fans, supporting hot swap and N+1 redundancy
System management	Integrates 1 independent 1000Mbps network interface for remote management

	Front (chassis ear):						
	POWER button, RESET button, UID LED, HDD LED, fan LED and system						
Port	status LED						
	Rear:						
	OneRJ45 + oneVGA+ two USB.3.0						
	Microsoft Windows Server 2008/2012/2016						
Operating system	Red Hat Enterprise Linux 6/7						
	SUSE Linux Enterprise Server 11/12						
Physical features							
Chassis dimensions W*D*H							
mm	447*995*174mm						
(D is the length loaded into the	147 333 174mm						
rack)							
	Without hard drives and package: 55.7KG						
Chassis weight (Kg)	With package and without hard drives:64.9KG						
	With hard drives and package:130KG						
Environmental parameters							
Operating Temperature	10°C -35°C						
Storage & Transportation Temperature	-40°C -60°C						
Operating Humidity	20% -80% relative humidity						
Storage & Transportation Humidity	20% -93% (40℃) relative humidity						

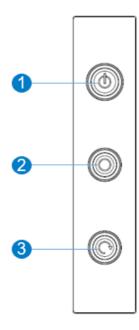
3 Component Identification

3.1FrontPanel Components



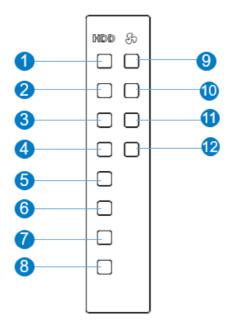
Item	Description
1	Front panel buttons& LEDs
2	HDD & Fan LEDs

Front Panel Buttons and LEDs



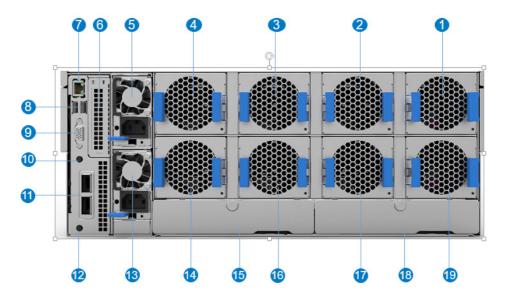
Item	Description
1	Power button
2	ID LED& button
3	Reset button

HDD & Fan LEDs



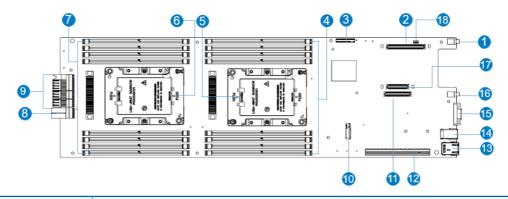
Item	Description
1	HDD failure LED (1st row)
2	HDD failure LED (2nd row)
3	HDD failure LED (3rd row)
4	HDD failure LED (4th row)
5	HDD failure LED (5th row)
6	HDD failure LED (6th row)
7	HDD failure LED (7th row)
8	HDD failure LED (8th row)
9	40FAN0 failure LED
10	40FAN1 failure LED
11	40FAN2 failure LED
12	60FAN failure LED

3.2 Rear Panel



Item	Description
1	6076 system fan 0
2	6076 system fan 1
3	6076 system fan 2
4	6076 system fan 3
5	PSU0
6	PCIe slot
7	BMC management port
8	USB3. 0 port
9	VGA port
10	UID
11	OCP slot
12	Main power switch
13	PUS1
14	6076 system fan 7
15	Left rear cover of the HDD tray
16	6076 system fan 6
17	6076 system fan 5
18	Right rear cover of the HDD tray
19	6076 system fan 4

3.3 MotherboardComponents



Item	Description
1	Power button
2	OCP slot A
3	TPM connector
4	DIMM slots (CPU0)
5	CPU0 socket
6	CPU1 socket
7	DIMM slots (CPU1)
8	Signal backplane connector
9	Power backplane connector
10	M. 2 connector
11	OCP slot C
12	PCIe x16 slot
13	BMC network port
14	USB port
15	VGA port
16	UID LED
17	OCP slot B
18	Clear CMOS

MotherboardJumper Introduction

See [3.3 Motherboard Components] for the jumper position.

Item Description		Function							
CLR_CMOS	I NI N CIAST IIIMNAT	Short-circuit pin1-2,normal status; Short-circuit pin2-3, clear CMOS.							

Note:

It is required to shut down the system, as well as disconnect the power supply during CMOS clearing. Hold for 5 seconds after short-circuiting pin2-3.

4 Operations

4.1 Power up the Server

Insert the power cord plug, then press the Power 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 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. Extend the server from the rack.
- 2. Rails are divided into two sections to slide out, that is:
- 1) When 0~55 hard drivesneed maintenance, only pull out the first part of the rails, about 500mm (19.7 inches), and open the front access panel.
- 2) When the whole machine needsmaintenance, pull out the rails completely, about 930mm centimeters (36.6 inches), you need to unlock the buckles on both sides of the rails so that you can extend the chassis from the rack completely (Note: When the chassis should be extended completely, make sure that the rear cables have all been removed).
- 3) If it needs to remove the server from the rack, remove all the hard drives in advance.

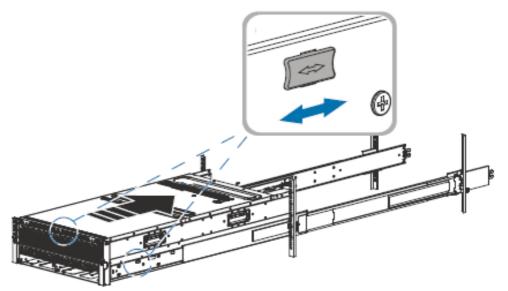


WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

3. After performing the installation or maintenance procedure, align the server with the rails, and slide the server back into the rack.



/!\ 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.

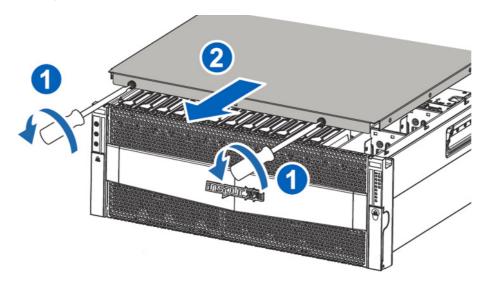


/IN CAUTION: For proper cooling, do not operate the supercomputer without the access panel, air baffle, or fan installed. If the supercomputer supports hot-plug components, minimize the amount of time the access panel is open.

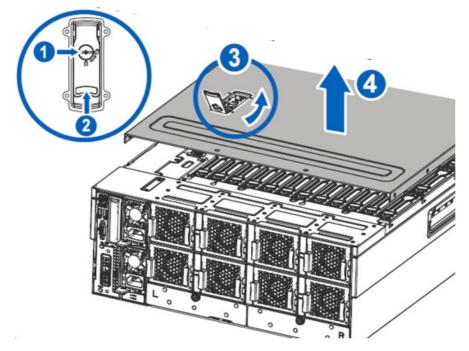
To remove the component:

1. Power down the server if performing a non-hot-plug installation or maintenance procedure.

- 2. Extend the server from the rack.
- 3. Loosen the two security screws on the front of the access panel by hand, and remove the front access panel.



4. Lift up on the hood latch handle, and then remove the rear access panel.



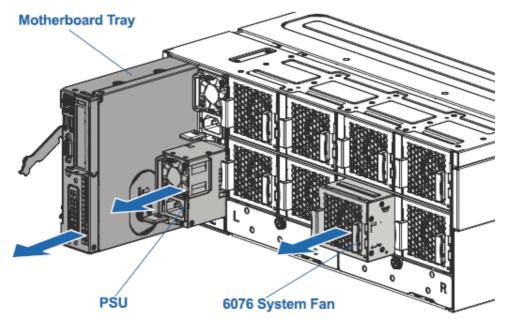
4.5 Install the Access Panel

- 1. Place the front access panel on the server. Align the guide pins on both sides with the corresponding guide slots on the chassis base.
- 2. Push the front access panel to the closed position and tighten the two screws clockwise.

- 3. Open the hood latch, place the rear access panel on the server, and align the guide pins on both sides with the corresponding guide slots on the chassis base.
- 4. Align the hole on the hood latch with the alignment pin in the chassis and push the hood latch to the closed position.

4.6 Remove the Motherboard Tray, PSU and 6076 System Fan

- 1. Power down the server.
- 2. Extend the server from the rack.
- 3. Press the release lever of the motherboard tray, hold the lever and remove the motherboard tray.
- 4. Press the PSU release latch, hold the handle and remove the PSU.
- 5. Press the release latcheson both sides of the 6076 system fan and remove the fan.



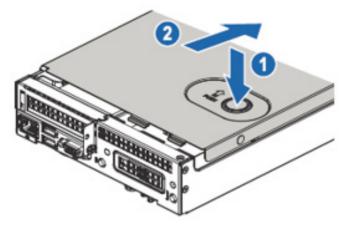
4.7 Remove the Top Cover and Air Baffle of the Motherboard Tray



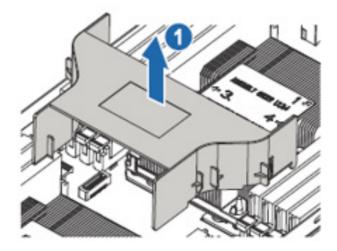
/ CAUTION:To avoid damage to the server, power down the server and remove all AC power cords before removing or installing the motherboard tray.

- 1. Power down the server.
- 2. Extend the motherboard tray from the server.

3. Press the lock button ①, push the top cover in the direction of ②, and remove the top cover of the motherboard tray.



4. Remove the air baffle above the motherboard as shown below.

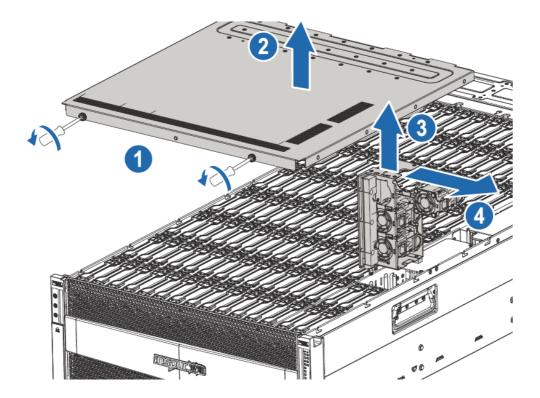


4.8 Remove the 4056 System Fan

CAUTION: For proper cooling, do not operate the supercomputer 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 the server from the rack
- 3. Remove the access panel as shown by 1 and 2.

4. Remove the fan bracket from the chassis as shown by ③, and remove the fan as shown by ④.



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 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.

5.1.2 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.

5.1.3 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 Identifying the Contents of the Server Shipping Carton

Unpack the server shipping carton and locate the materials 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
- Rack-mounting hardware

In addition to the supplied items, you may need:

- Operating system or application software
- Hardware options

5.3 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".

5.4 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, install the hard drives successively, and install the front and rear covers of the chassis.
- 2. Install the cable management arm into the rack.
- 3. 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.

- 4. Connect the power cord to the rear of the server.
- 5. 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.

5.5 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=2317460). To install an operating system on the server, you can download it directly from the official website.

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 theinternal system components to cool before touching them.



/I\ CAUTION:To prevent damage to electrical components, properly ground the server beforebeginning 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 personnelshould attempt to replace or install the processor in this server.

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.



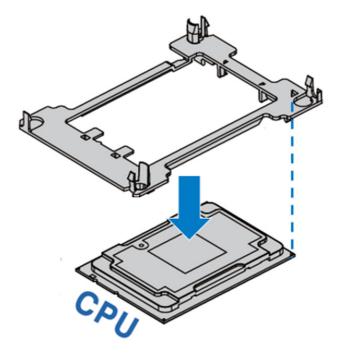
CAUTION:To install a faster processor, update the system ROM before installing the processor.

To install the component:

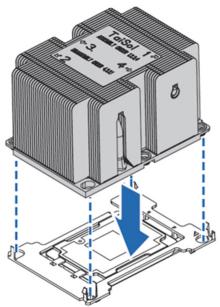
- 1. Power down the server.
- 2.Extend the server motherboard tray from the rack.
- 3. Remove the top cover of the motherboard tray.
- 4. Remove the air baffle.
- 5. Remove the heatsink.

6.Install the processor:

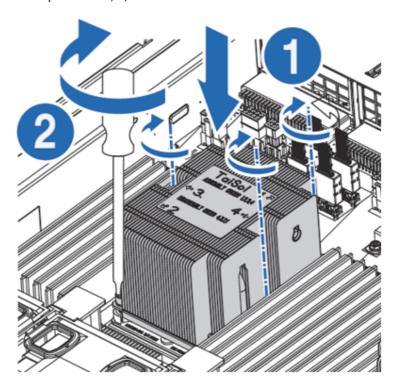
Step 1:Align the Clip's triangle mark with the CPU's corner mark, and then assemble the Clip and CPU together.



Step 2:Align the heatsink position marked by "1" with the Clip's triangle mark, vertically align the mounting holes on the heatsink with those on the Clip, and assemble the heatsink and Clip together.



Step 3: Install the assembled heatsink module onto the CPU socket, and the position marked by "1" should be aligned with the triangle mark on the CPU socket. Tighten the screws according to the sequence of 1, 2, 3 and 4.





- It is required to coat thermal grease evenly onto the contact position between CPU heatsink and CPU.
- The pins of the processor socket are easily damaged. If any pins are damaged, you may need to replace the motherboard.

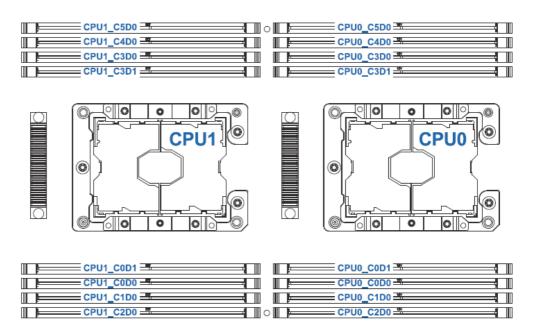
6.3 Memory Option

IMPORTANT:

This serverdoes not support mixing DIMMs. Attempting to mix the DIMMs of two different types may cause the server stops running during initialization.

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

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



• DIMM population guidelines:

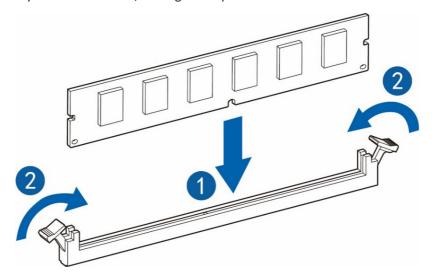
Two CPUs:

DIMM				СР	U1							СР	U0			
Qty	CH5	CH4	Ċ	1 3	Ċ	H0	CH1	CH2	CH5	CH4	Ċ	1 3	Ċ	H0	CH1	CH2
Qty	D0	D0	D0	D1	D1	D0	D0	D0	D0	D0	D0	D1	D1	D0	D0	D0
2																
3																
4																
5															•	
6							•	•							•	
7						•	•	•							•	
8			•			•	•	•			•			•	•	
9			•			•	•	•		•	•			•	•	
10			•			•	•	•		•	•			•	•	
11			•			•	•	•	•	•	•			•	•	
12																
13																
14																
15																
16																

DIMM installation method:

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.

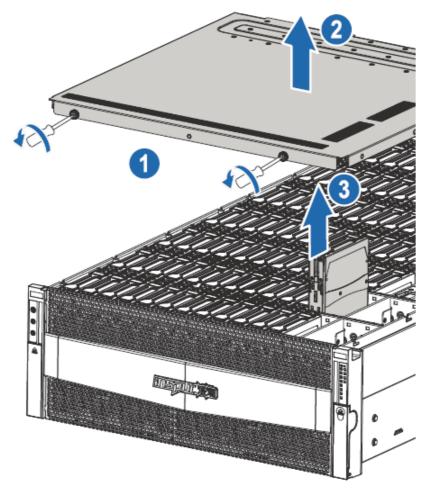


6.4 Hot-plug HDDOption

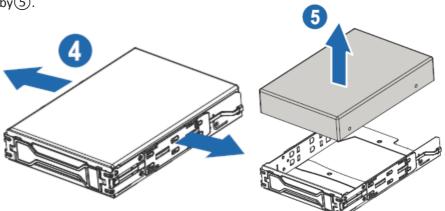
CAUTION:For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

- 1. Check the status of the hard disk drive from the hot-plug HDD LED.
- 2. Back up all data on the hard disk drive.
- 3. Remove the hard disk drive.

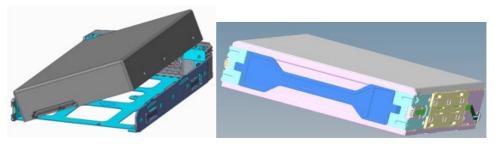
Step 1: Remove the access panel as shown by (1) and (2), hold the HDD tray handle and remove the HDD tray as shown by (3).



Step 2:Pull the two sides of the tray outward as shown by 4, and remove the HDD as shown by 5.



Step 3:Place the HDD at a 45-degree angle into the tray, the screw holes on the HDD aligned with the locating pins on the tray. Press the HDD downward to secure it into the tray.



Step 4: Install the tray into the server.

6.5 Air Baffle Option

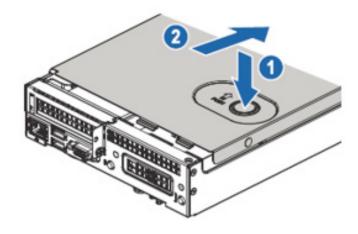
CAUTION:For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

- 1. Power down the server.
- 2. Extend the server from the rack.

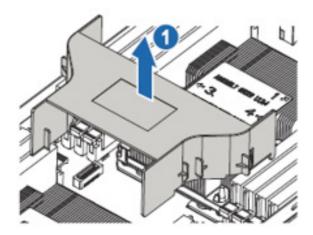


/ WARNING: To reduce the risk of personal injury from hot surfaces, allow the machine to cool before touching it.

- 3. Remove the motherboard tray.
- 4. Press the lock button (1), push the top cover in the direction of (2), and remove the top cover of the motherboard tray.



4. Remove the air baffle vertically, and replace it with a new one.



7 BIOS Setup

BIOS is the basic input/output system, which is the basic program code loaded in the motherboard chipset. It stores the computer's most important input/output program, POST program and system auto-boot program. It provides the most basic and most direct hardware settings and control, detects the boot device, boots the system or other preboot execution environment.

Inspur Purley platform server is developed on the basis of AMI Codebase, supporting Legacy and UEFI operating environments, with abundant in-band and out-of-band configuration functions and scalability. It can meet the customization needs of different customers.



/I\ Notes:

- 1. We recommend that you record the original BIOS settings before you modify them so it can safely revert to its previous state if required. If there is an exception, such as failure to boot, caused by changing the BIOS settings, users can try to recover it through the Clear CMOS operation.
- 2. The factory default settings are the optimal settings. It is advised not to alter the parameters before understanding their denotations.
- 3. The common settings are introduced in detail in this chapter, but less common ones are not.
- 4. The BIOS content varies according to different configurations of the products; hence the detailed introduction is elided.

7.1 Common Operations

7.1.1 Login to BIOS Interface

Power on the server. The system will then start to boot. When the following content appears below Inspur logo on the screen: "Press to SETUP or <TAB> to POST or <F11> to Boot Menu or <F12> to PXE Boot." Press DEL key. When "Entering Setup ..." appears in the lower right corner of the screen, it will enter the BIOS setup soon. In the BIOS main menu, you could select the subitem through direction keys to enter the submenu.

Other hotkeys function:

- Press F2 to enter BIOS Setup interface.
- Press TAB to display the system information during POST.

- Press F11 to enter the boot management interface, select the boot device.
- Press F12 to boot the PXE.

BIOS Setup Interface Control Key Instruction Table

Key	Function
<esc></esc>	Exit or return from submenu to main menu
< < > or < > >	Select a menu
<↑> or <↓>	Move the cursor up or down
<home> or <end></end></home>	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></f1>	Help
<f2></f2>	Restore to the last configuration
<f9></f9>	Restore to the default configuration
<f10></f10>	Save and exit
<enter></enter>	Execute commands or select a submenu

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



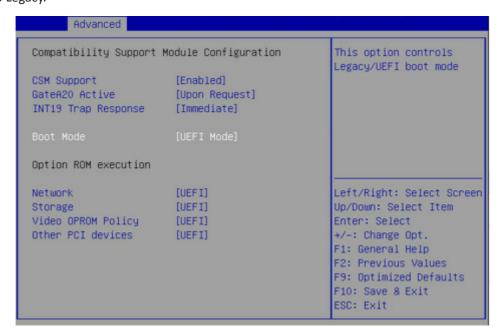
7.1.2 UEFI/Legacy Mode Switch

Login to the BIOS Setup interface, select "Advanced -> CSM Configuration". Press Enter, to set the Boot Mode (UEFI Mode/Legacy Mode). Set the Option ROM execution mode of Network, Storage, Video OPROM Policy and Other PCI devices, as shown in the following figure.

At present, Inspur Purley platform servers are set to UEFI Mode by default. Compared with Legacy mode, UEFI mode has many advantages: It supports boot from the GPT disk which is larger than 2.2T, supports IPv6/IPv4 PXE boot, and provides UEFI Shell environment. This option can be set according to customer's demand.

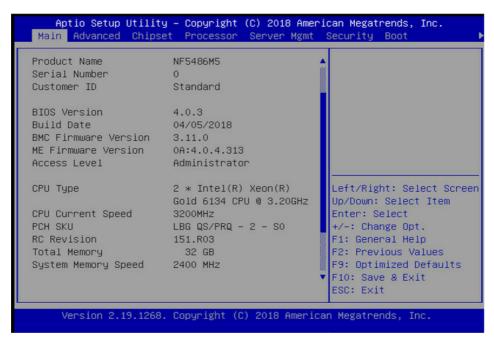
If the Boot Mode is set to Legacy Mode, the Option ROM execution mode of Network, Storage, Video OPROM Policy and Other PCI devices must be set to Legacy.

If the Boot Mode is set to UEFI Mode, the Option ROM execution mode of Network must be set to UEFI, and the Option ROM execution mode of Storage, Video OPROM Policy and Other PCI devices is suggested to set to UEFI. If there are special requirements, it can be set to Legacy.



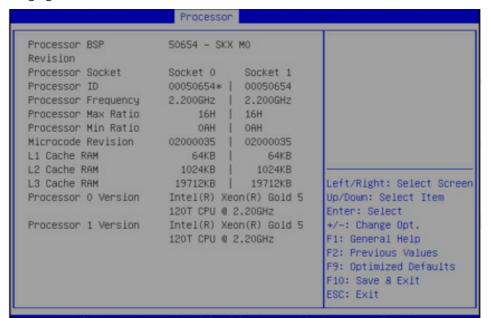
7.1.3 View System Information

Login to the BIOS Setup interface, and the Main menu displays the current system information, including BIOS/BMC/ME version, CPU/PCH SKU/RC version, memory and other information, as shown in the following figure.



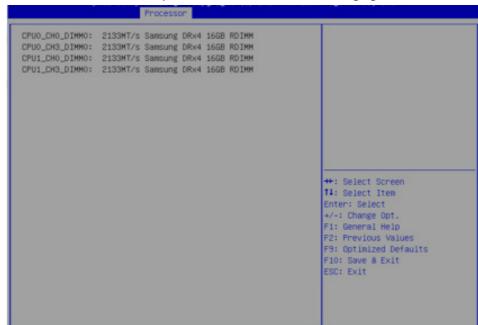
7.1.4 View CPU Information

Login to the BIOS interface, select "Processor -> Processor Configuration -> Processor Information", and press Enter to display the CPU detailed information, as shown in the following figure.



7.1.5 View Memory Information

Login to the BIOS interface, select "Processor -> Memory Configuration -> Memory Topology", and press Enter to display the manufacturer, speed, capacity and other

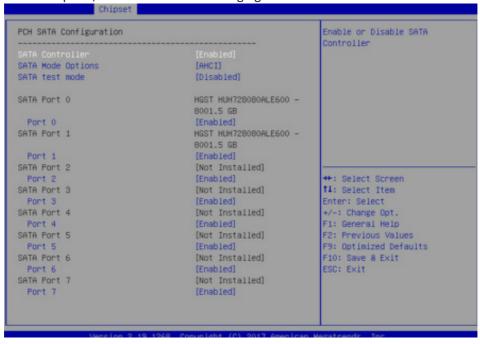


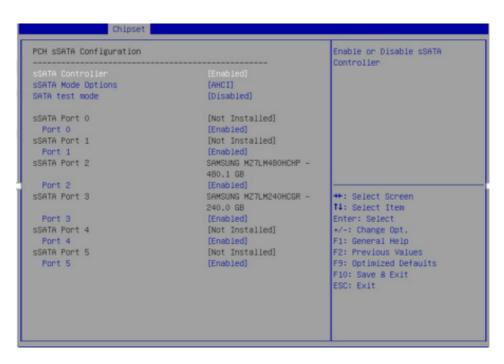
information of the memories in position, as shown in the following figure.

7.1.6 View HDD Information and RAID Configuration

7.1.6.1 View HDD Information

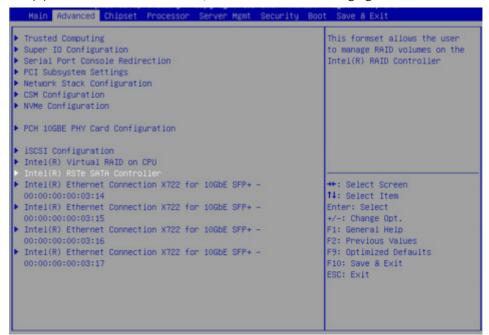
Login to the BIOS interface, select "Chipset -> PCH SATA Configuration/PCH sSATA Configuration", and press Enter to display the HDD information of the current onboard SATA ports or sSATA ports, as shown in the following figures.





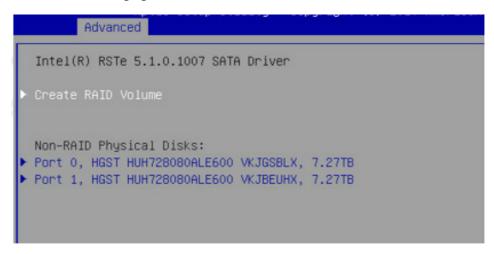
7.1.6.2 RAID Mode Settings

- 1. Set the SATA Mode Option to [RAID], press F10 to save the setting, and the system reboots.
- 2. When Boot Mode is set to UEFI mode, in the BIOS Setup Advanced interface, there will be the Intel(R) RSTe SATA Controller menu, as shown in the following figure.

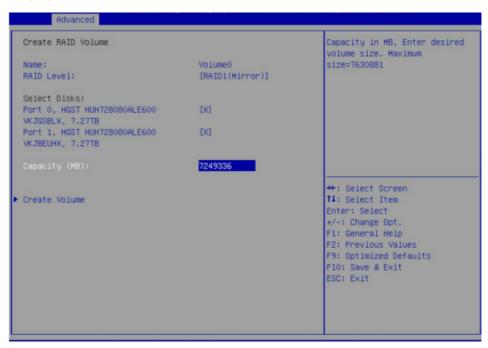


2.1 Press Enter, the executable operation and the current disk information will be displayed,

as shown in the following figure.



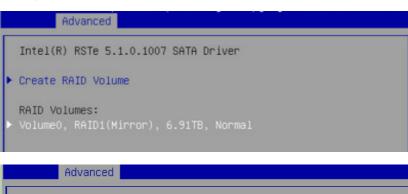
2.2 Create RAID volume. Select Create RAID Volume option, and press Enter, as shown in the following figure.

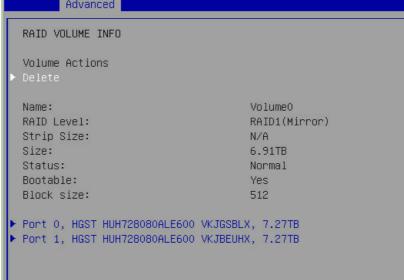


Create RAID Menu Instruction Table

Interface Parameters	Function Description	
Name	Please enter a volume name less than 16 characters without containing any special characters.	
RAID Level	Please select the RAID volume level. If no volume has been created at present, there are four volume levels of RAIDO (Stripe), RAID1 (Mirror), RAID10 (RAID0+1) and RAID5 (Parity) for selection. Please select the volume level according to actual requirements. RAID0: This RAID volume is allowed to be made on 2 or above disks. RAID1: This RAID volume is allowed to be made on 2 disks. RAID10: This RAID volume is allowed to be made on 4 disks, which is only available when disk quantity is 4 or above. RAID5 (Parity): This RAID volume is allowed to be made on 3 or above disks.	
Select Disks	Select disks to make RAID volume, press Enter, select X, and then press Enter to return to Create RAID Volume interface.	
Strip Size	Please select the strip size, only RAID0 and RAID5 volumes could enable this option.	
Capacity	Set the volume capacity, and the maximum capacity is shown in the Help information on the right side.	
Create Volume	After finishing the above settings, select this option to create RAID volume.	

2.3 Delete RAID volume. Select a created RAID Volume, press Enter. Select "Delete", there will be a prompt. To delete the volume, select "Yes" and press Enter; to cancel the deletion, select "No" and press Enter.





```
Delete

Delete the RAID volume?
ALL DATA ON VOLUME WILL BE LOST!

➤ Yes
➤ No
```

3. When Boot Mode is set to Legacy, a prompt "Press <CTRL-I> to enter Configuration Utility..." will appear on the screen during system booting. Press [Ctrl] and [I] keys at the same time to enter SATA RAID configuration, as shown in the following figure.

```
Intel(R) Rapid Storage Technology enterprise - SATA Option ROM - 5.1.0.1007
Copyright(C) 2003-16 Intel Corporation. All Rights Reserved.

RAID Volumes:
None defined.

Physical Devices:
ID Device Model Serial # Size Type/Status(Vol ID)
0 HGST HUH728080AL VKJGSBLX 7.27T Non-RAID Disk
1 HGST HUH728080AL VKJBEUHX 7.27T Non-RAID Disk
Press (CORL-IX) to enter Configuration Utility...
```

3.1 After entering SATA RAID configuration interface, it will display the main menu list, the information (disk ID, disk type, disk capacity, volume member or not) of disks connected to SATA controller, and the existed RAID volumes information (including volume ID, name, RAID level, capacity, status, bootable or not). There are 5 executable menus in the SATA RAID configuration interface, as shown in the following figure.

```
Intel(R) Rapid Storage Technology enterprise -
Copyright(C) 2003-16 Intel Corporation.
                                                       SATA Option ROM - 5.1.0.1007
All Rights Reserved.
                                   —[ MAIN MENU ]—
                                                 3.
                                                      Reset Disks to Non-RAID
                                                  4.
                                                      Mark Disks as Spare
             Delete RAID Volume
                                                 5.
                                                      Exit
                          --- DISK/VOLUME INFORMATION 1=
RAID Volumes:
None defined.
Physical Devices:
ID
     Device Model
                         Serial #
                                                           Size Type/Status(Vol ID)
     HGST HUH728080AL VKJGSBLX
                                                          7.27T Non-RAID Disl
     HGST HUH728080AL VKJBEUHX
                                                          7.271 Non-RAID Disk
                 [ft]-Select [ESC]-Exit [ENTER]-Select Menu
```

Key Instruction Table

Key	Description	
$\uparrow \downarrow$	Used to move cursor in different menus or to change values of menu options	
TAB	To select the next menu option	
Enter	To select a menu	
Esc	To exit menu or return to previous menu from sub-menu	
Menu Instruction Table		
Create RAID Volume	To create an RAID volume	
Delete RAID Volume	To delete an existed RAID volume	
Reset Disks to Non-RAID	To reset disks in RAID volume, and to restore them to non-RAID status	
Mask Disk as Spare	To mask the disks as spare disks. The data will be cleared, and these disks can not be selected during RAID setting. It can be restored through the Reset Disks to Non-RAID menu.	
Exit	To exit SATA Host RAID configuration interface	

3.2 Create RAID Volume menu. After entering SATA RAID configuration interface, you could use up and down arrow keys to select this menu, and then press Enter to enter the Create RAID Volume menu, or directly input the number before the menu to enter the Create 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:



Create RAID Menu Instruction Table

Interfere Development	Function Description
Interface Parameters	Function Description
Name	Please enter a volume label name less than 16 characters without containing any
Name	special characters.
	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
RAID Level	requirements.
	RAID0: This RAID volume is allowed to be made on 2 or above disks.
	RAID1: This RAID volume is allowed to be made on 2 disks.
	RAID10: This RAID volume is allowed to be made on 4 disks, which is only available
	when disk quantity is 4 or above.
	RAID5 (Parity): This RAID volume is allowed to be made on 3 or above disks.
	Select disks to make RAID volume, press Enter, select X, and then press Enter to
Select Disks	return to Create RAID Volume interface.
	Total to distance in the rotal total
Strip Size	Please select the strip size, only RAIDO and RAID5 volumes could enable this option.
Capacity	Set the volume capacity.

After completing the above settings, please select [Create Volume], and press Enter. The system will prompt "WARNING: ALL DATA ON THE SELECTED DISKS WILL BE LOST. Are you sure you want to create this volume? (Y/N)". To create an RAID volume, please enter "Y". A volume will be created, and all data on the selected disks will be lost. Otherwise, please enter "N", to exit volume creation. Here we enter "Y" to create an RAID volume. After the creation is completed, return to MAIN MENU interface, the created RAID volume will be displayed.

3.3 Delete RAID Volume menu. After entering Delete RAID Volume menu, press [DEL] to delete the selected RAID volume, and the system will prompt "ALL DATA IN THE VOLUME WILL BE LOST! Are you sure you want to delete "Volume0*"? (Y/N)". To delete this RAID volume, please enter "Y", to cancel the deletion, please enter "N".



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

```
Intel(R) Rapid Storage Technology enterprise - SATA Option ROM - 5.1.8.1007
Copyright(C) 2003-16 Intel Corporation. All Rights Reserved.

[ RESET RAID DATA ]
Resetting RAID disk will remove its RAID structures
                  and revert it to a non-RAID disk.
RA
I D
        WARNING: Resetting a disk causes all data on the disk to be lost.
0
       ID
              Drive Model
                                                                       Size Status
              HGST HUH728080ALE600 VKJGSBLX
                                                                     7.27T Member Disk
7.27T Member Disk
Ph
ID
0
             HGST HUH728080ALE600 VKJBEUHX
       Are you sure you want to reset RAID data on selected disks? (Y/N):
         =[14]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete=
                    [fl]-Select
                                      [ESC]-Exit [ENTER]-Select Menu
```

3.5 Mask Disk as Spare menu. After entering Mask Disk as Spare menu, system will display the disks not in RAID volume. Please use the space key to select the disks according to the actual demand, and then press Enter. The system will prompt "Are you sure you want to mask selected disks as Spare? (Y/N)", enter "Y" or "N" according to the prompt. It is to be noted that all data on this disk will be lost as the spare disk.

```
Intel(R) Rapid Storage Technology enterprise - SATA Option ROM - 5.1.0.1907
Copyright(C) 2003-16 Intel Corporation. All Rights Reserved.
MARK AS SPARE J
              Marking disk as Spare will remove all data on the disk.
RA
      WARNING: Marking disk Spare causes all data on the disk to be lost.
No
      ΙD
            Drive Model
                                        Serial #
                                                                   Size Status
Ph
ID
            HGST HUH728080ALE600 VKJGSBLX
HGST HUH728080ALE600 VKJBEUHX
                                                                7.27T Non-RAID Disk
7.27T Non-RAID Disk
     ₽Ñ
0
         Are you sure you want to mark selected disks as Spare? (Y/N):
        =[ft]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete=
                                   [ESC1-Exit [ENTER1-Select Menu
                   [11]-Select
```

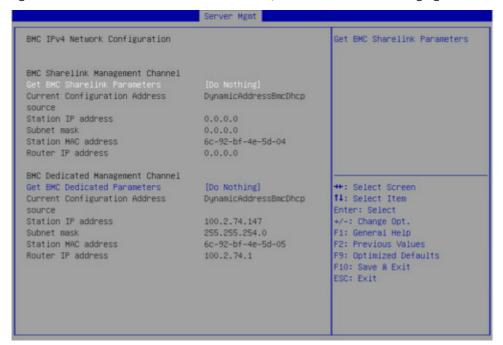
3.6 Exit menu. Select Exit menu through up and down keys, or press ESC to exit SATA RAID configuration interface, as shown in the following figure. The system will prompt "Are you sure you want to exit? (Y/N)", enter "Y" to exit, or enter "N" to cancel the exit operation.

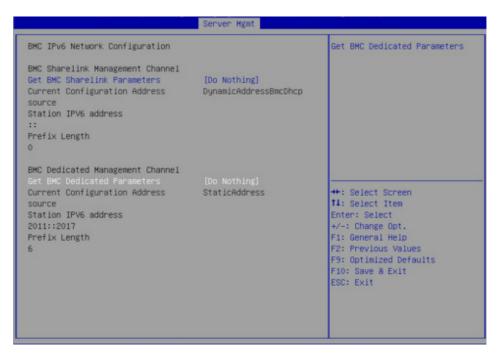


7.1.7 View and Set BMC Network Parameters

7.1.7.1 View BMC Network Parameters

Login to the BIOS interface, select "Server Mgmt -> BMC Network Configuration -> BMC IPv4 Network Configuration/BMC IPv6 Network Configuration". Press Enter to view the current configuration of BMC IPv4 and BMC IPv6 network, as shown in the following figures.





7.1.7.2 BMC Network Settings

Take BMC Sharelink port as an example to introduce the settings of BMC IPv4 network parameters, as shown in the following table.

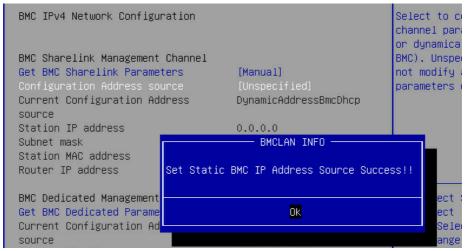
BMC Network Configuration Instruction Table

Interface Parameters	Function Description	Default Value
Get BMC Sharelink /Dedicated Parameters	Set the way to get BMC network parameters, options include: Do Nothing Auto Manual	Do Nothing
Configuration Address Source	Configure BMC network status parameters. When Get BMC Dedicated Parameters is set to [Manual], this option will be displayed. Options include: Unspecified Static DynamicBmcDhcp The static and dynamic settings take effect immediately.	Unspecified
Current Configuration Address	Display the current BMC network parameters configuration	
Station IP address	BMC station IP address	
Subnet mask	Subnet mask	
Station MAC address	BMC station MAC address	
Router IP address	BMC router IP address	

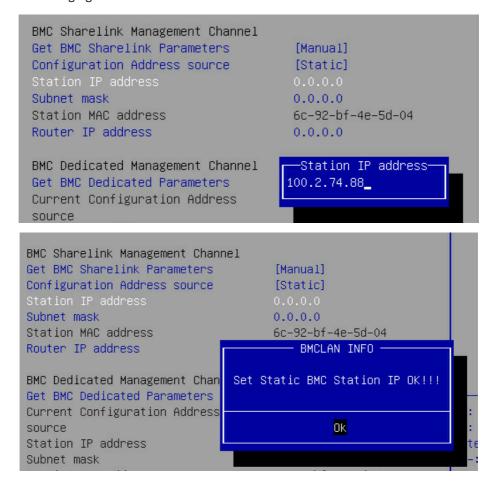
7.1.7.3 Set Static BMC Network Parameters

Set the Configuration Address Source option to [Static]. If the setting succeeds, the system





Select the Station IP Address option. Press Enter, the Station IP Address window pops up. Input the Static IP manually. After the setting is completed, press Enter to confirm, as shown in the following figures:



inspur

If the setting succeeds, the system prompts "Set Static BMC Station IP OK!!!" Press Enter to confirm, and the IP will take effect immediately.

If the setting fails, the system prompts "Set Static BMC Station IP Fail!!!"

If the IP does not change, the system prompts "Static BMC Station IP Not Change!!!"

If the input IP is invalid, the system prompts "Invalid Station IP Entered!!!", and assign 0.0.0.0 to the IP address. The assignment only changes the IP address in BIOS Setup interface, and does not notify BMC to change the IP settings.

The prompts of Subnet mask and Router IP address settings are similar to those of Station IP address setting, there is no more detailed description here. As shown in the following figure, the BMC network parameters have taken effect, you can login to BMC Web interface to operate.

BMC Sharelink Management Channel

Get BMC Sharelink Parameters [Manual]

Configuration Address source [Static]

Station IP address 100.2.74.88

Subnet mask 255.255.254.0

Station MAC address 6c-92-bf-4e-5d-04

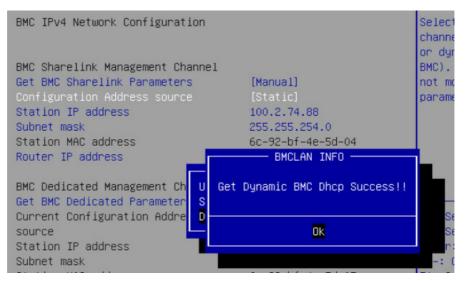
Router IP address 100.2.74.1

7.1.7.4 Set Dynamic BMC Network Parameters

Set the Configuration Address Source option to [DynamiBmcDhcp]. If the setting succeeds, the system will prompt "Set Dynamic BMC IP Address Source Success! Dynamic BMC Network Parameters are Getting Now, Please Wait a Moment!", as shown in the following figure.



After pressing Enter to confirm, the following interface will stay for 30s, please wait patiently.



After the dynamic network takes effect, the system will prompt "Get Dynamic BMC Dhcp Success!!", and the interface will be shown as the following figure.

BMC Sharelink Management Channel Get BMC Sharelink Parameters Configuration Address source	[Manual] [DynamicBmcDhcp]
Current Configuration Address	DynamicAddressBmcDhcp
Station IP address	100.2.74.24
Subnet mask Station MAC address	255.255.254.0 6c-92-bf-4e-5d-04
Router IP address	100.2.74.1



/! Note:

Please make sure that the BMC management port is connected to the network when you use the Manual setting options.

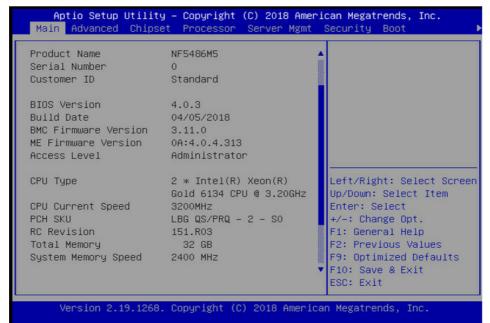
The options that take effect immediately in the BIOS Setup interface are implemented by calling the Callback function. Callback functions are only called when the options in the BIOS Setup interface are changed. Otherwise, the function will not take effect. For example, if you want to automatically get BMC parameters again, you need to set Get BMC Sharelink Parameters to [Do nothing] or [Manual], then set to [Auto], the function will take effect.

The settings of BMC IPv6 network parameters are similar to this, which will be omitted here.

7.2 BIOS Parameter Description

7.2.1 Main

Main interface displays the basic information of BIOS system, including BIOS/BMC/ME version, CPU type, total memory capacity and system time.

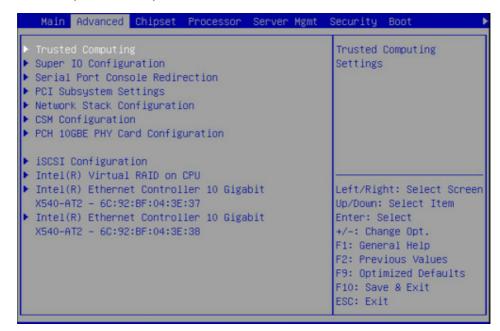


Main Interface Instruction Table

Interface Parameters	Function Description
Product Name	Product name
Serial Number	Serial number
Customer ID	Customer ID
BIOS Version	BIOS version
Build Date	Build date
BMC Firmware Version	BMC FW version
ME Firmware Version	ME FW version
Access Level	Current access level
CPU Information	Display the current CPU's type, PCH SKU, RC version information.
Memory Information	Display the current total memory capacity and frequency information.
System Date (Day mm/dd/yyyy)	Display and set system date. Use [Tab] or [Enter] key to switch between system date and time, directly input the value or use +/- keys to change the value (Press + key, the value increases by 1, and press – key, the value decreases by 1).
System Time (hh/mm/ss)	Display and set system time. Use [Tab] or [Enter] key to switch between system date and time, directly input the value or use +/- keys to change the value (Press + key, the value increases by 1, and press – key, the value decreases by 1).

7.2.2 Advanced

Advanced interface includes the BIOS system parameters and related function settings, such as ACPI, serial port, PCI subsystem, CSM, USB, onboard NIC and so on.

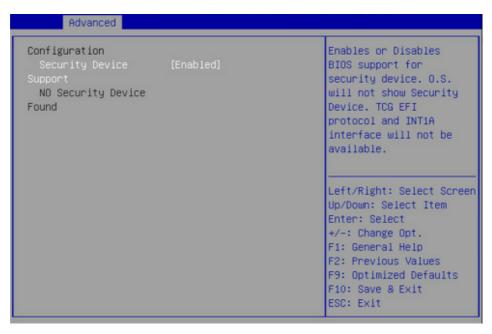


Advanced Interface Instruction Table

Interface Parameters	Function Description
Trusted Computing	Trusted computing configuration
Super IO Configuration	AST2500 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	CSM configuration
NVMe Configuration	NVMeconfiguration
PCH 10GBE PHY Card Configuration	PCH 10GBE PHY card configuration
iSCSI Configuration	iSCSI configuration
Intel(R) Virtual RAID on CPU	Intel NVMe virtual RAID configuration
Intel® Ethernet Connection X722 for 10GbE SFP+XX:XX:XX:XX:XXX	Intel 10G NIC UEFI OPROM configuration

7.2.2.1 Trusted Computing

Trusted Computing interface is used to enable or disable BIOS support for security device.

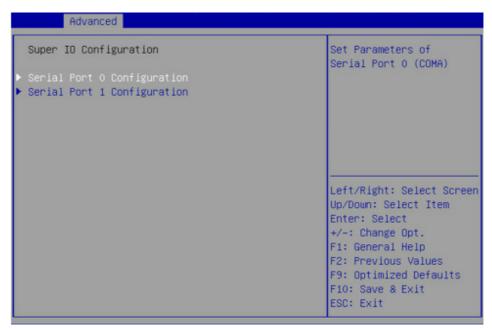


Trusted Computing Interface Instruction Table

Interface Parameters	Function Description	Default Value
Security Device Support	Security device support settings. Options include: Enabled Disabled BIOS supports TPM TCG version 1.2/2.0. BIOS supports TPM module through TPM software binding, when the verification of software binding fails, BIOS will record the error to SEL.	Enabled
No Security Device Found	Display the status of security device. There is no information displayed at present, to enable this function, it needs to install TPM chip.	

7.2.2.2 Super IO Configuration

Super IO Configuration interface is used to set the options related with I/O chip.

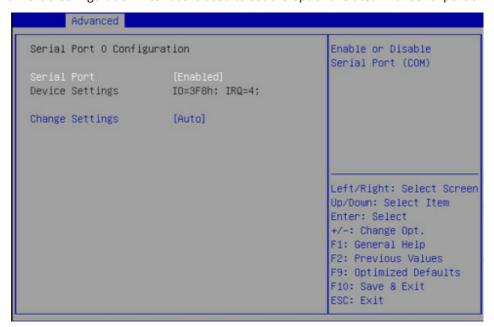


Super IO Configuration Interface Instruction Table

Interface Parameters	Function Description
Serial Port 0 Configuration	Serial port 0 configuration, the configuration interface provides this serial port's on-off control and resource allocation control. Users can manually adjust the IO PORT and IRQ number that COM PORT uses.
Serial Port 1 Configuration	Serial port 1 configuration (virtual serial port)

7.2.2.1 Serial Port 0 Configuration

Serial Port 0 Configuration interface is used to set the options related with serial port 0.



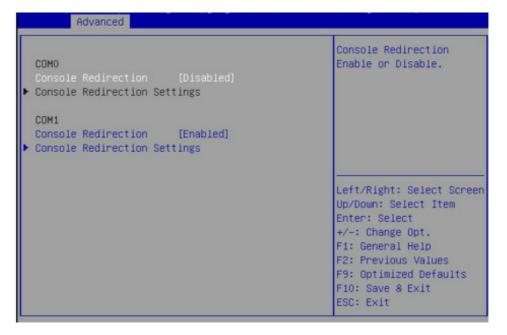
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Serial Port 0 ConfigurationInterface Instruction Table

Interface Parameters	Function Description	Default Value
Serial Port	Serial port 0 on-off settings. Options include: Enabled	Enabled
Serial Port	Disabled	Enabled
Change Settings	Select the optimal setting according to the demand. Options include:	
	Auto	Auto
	I0=3F8h; IRQ=4;	
	I0=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;	
	IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;	
	I0=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;	

7.2.2.3 Serial Port Console Redirection

Serial Port Console Redirection interface is used to set the options related with the serial port redirection.

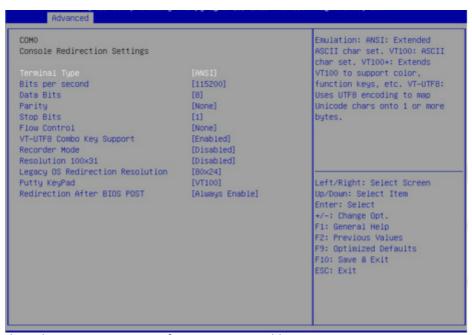


Serial Port Console Redirection Interface Instruction Table

Interface Parameters	Function Description	Default Value
Console Redirection	Serial port console redirection on-off settings. Options include: Enabled Disabled	Disabled
Console Redirection Settings	Serial port console redirection parameter settings	

7.2.2.4Console Redirection Settings

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



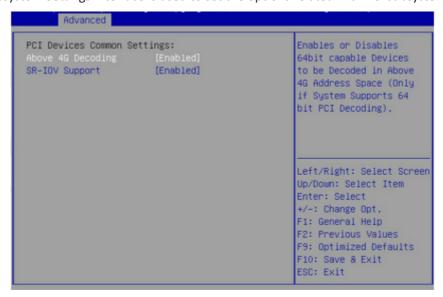
Console Redirection Settings Interface Instruction Table

Interface Parameters	Function Description	Default Value
Terminal Type	Terminal type settings. Options include: VT100 VT100+ VT-UTF8 ANSI	ANSI
Bits per second	Baud rate settings. Options include: 9600 19200 38400 57600 115200	115200
Data Bits	Serial port data width settings. Options include: 7	8
Parity	Parity settings. Options include: None Even Odd Mark (odd-even check) Space (storage parity check)	None
Stop Bits	Stop bit settings. Options include: 1 2	1

Flow Control	Flow control settings. Options include: None Hardware RTS/CTS	None
VT-UTF8 Combo Key Support	VT-UTF8 combination key support on-off settings. Options include: Enabled Disabled	Enabled
Recorder Mode	Recorder mode on-off settings. Options include: Enabled Disabled	Disabled
Redirection 100×31	Expanded redirection resolution 100×31 on-off settings. Options include: Enabled Disabled	Disabled
Legacy OS Redirection Resolution	Legacy OS redirection resolution settings. Options include: 80×24 80×25	80×24
Putty KeyPad	Putty function keys and keyboard settings. Options include: VT100 LINUX XTERMR6 SCO ESCN VT400	VT100
Redirection After BIOS POST	Redirection after BIOS POST settings. Options include: Always Enable BootLoader	Always Enable

7.2.2.5 PCI Subsystem Settings

PCI Subsystem Settings interface is used to set the options related with PCI subsystem.

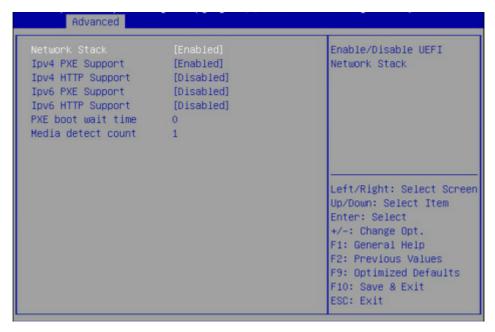


PCI Subsystem Settings Interface Instruction Table

Interface Parameters	Function Description	Default Value
Above 4G Decoding	Above 4G memory access control on-off settings. Options include: Enabled Disabled	Enabled
SR-IOV Support	SR-IOV support on-off settings. Options include: Enabled Disabled	Enabled

7.2.2.6Network Stack Configuration

Network Stack Configuration interface is used to set the options related with Network UEFI PXE.



Network Stack Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
	Network stack on-off settings. Options include:	
	Enabled	
Network Stack	Disabled	Enabled
	Only this option is enabled, the following options can be	
	displayed and the functions can be set.	
	UEFI Ipv4 PXE support on-off settings. Options include:	
Ipv4 PXE Support	Enabled	Enabled
	Disabled	
	Ipv4 HTTP support on-off settings. Options include:	
Ipv4 HTTP Support	Enabled	Disabled
	Disabled	
	UEFI Ipv6 PXE support on-off settings. Options include:	
Ipv6 PXE Support	Enabled	Disabled
	Disabled	

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Ipv6 HTTP Support	Ipv6 HTTP support on-off settings. Options include: Enabled Disabled	Disabled
PXF DOOT WAIT TIME	Set the wait time to cancel PXE boot after pressing ESC key, the setting range is 0~5.	0
Media detect count	Device detect count settings, the setting range is 1~50.	1

7.2.2.7 CSM Configuration

CSM Configuration interface is used to set the options related with the compatibility support module.



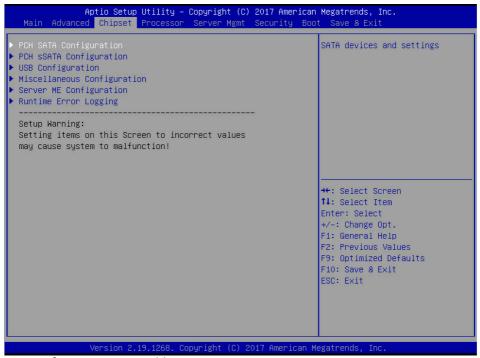
CSM Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
CSM Support	CSM support on-off settings. Options include: Enabled Disabled	Disabled
GateA20 Active	A20 line control mode settings. Options include: Upon Request Always A20 is an address line, which controls the system how to access the memory space larger than 1MB.	Upon Request
INT19 Trap Response	Interrupt/Capture signal response settings. Options include: Immediate Postponed	Immediate
Boot Mode	Boot mode settings. Options include: UEFI Mode Legacy Mode	UEFI Mode
Network	NIC Option ROM execution mode settings. Options include: Do not launch Legacy UEFI	UEFI

	Storage device Option ROM execution mode settings. Options include:	
Storage	Do not launch	UEFI
Storage		OLFI
	Legacy	
	UEFI	
	Video device Option ROM execution mode settings.	
	Options include:	
Video OPROM Policy	Do not launch	UEFI
	Legacy	
	UEFI	
	Other PCI devices Option ROM execution mode settings.	
Other PCI devices	Options include:	
	Do not launch	UEFI
	Legacy	
	UEFI	

7.2.3 Chipset

Chipset interface includes the information settings and runtime error logging settings of PCH SATA/sSATA, USB and ME devices.



Chipset Interface Instruction Table

Interface Parameters	Function Description
PCH SATA Configuration	PCH SATA configuration
PCH sSATA Configuration	PCH sSATA configuration
USB Configuration	USB configuration
Miscellaneous Configuration	Miscellaneous configuration
Server ME Configuration	Server ME configuration
Runtime Error Logging	Runtime error logging

7.2.3.1 PCH SATA Configuration/PCH sSATA Configuration

PCH sSATA Configuration and PCH SATA Configuration interfaces are used to set the options related with the onboard sSATA/SATA ports. Take PCH SATA Configuration menu as an example, as shown in the following figure.





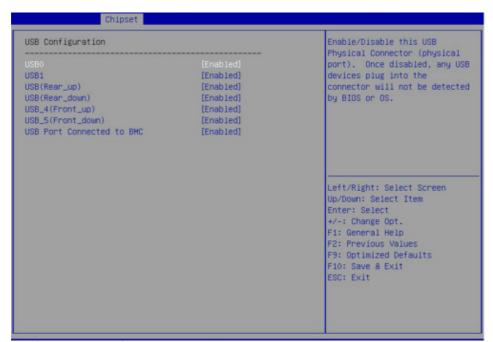
PCH SATA Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
SATA Controller	SATA controller on-off settings. Options include: Enabled Disabled	Enabled
SATA Mode Options	SATA mode settings. Options include: AHCI RAID	AHCI
SATA Port 0~7	SATA port 0~7 HDD information	
Port 0~7	SATA port on-off settings. Options include: Enabled Disabled	Enabled

PCH sSATA Configuration Interface Instruction Table is omitted here.

7.2.3.2 USB Configuration

USB Configuration is used to set the options related with the onboard USB ports.



USB Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
USB N	Onboard USB port on-off settings. Options include: Enabled Disabled	Enabled

7.2.3.3 Miscellaneous Configuration

Miscellaneous Configuration interface is used to set some other common options.

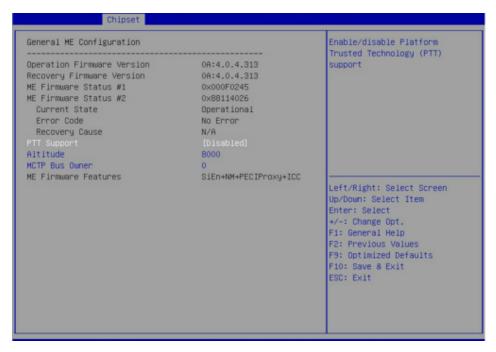


Miscellaneous Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Restore AC Power Loss	Power state settings when restoring on AC power loss. Options include: Power OFF Last State	Power OFF
Max Page Table Size	Power ON The maximum page table size settings. Options include: 1GB 2MB For older OS, please select 2MB, otherwise, it may cause a problem.	1GB
VGA Priority	Onboard/OffboardVGA device priority settings. Options include: Onboard Device Offboard Device	Offboard Device

7.2.3.4 Server ME Configuration

Server ME Configuration interface is used to display and set the options related with server ME configuration.

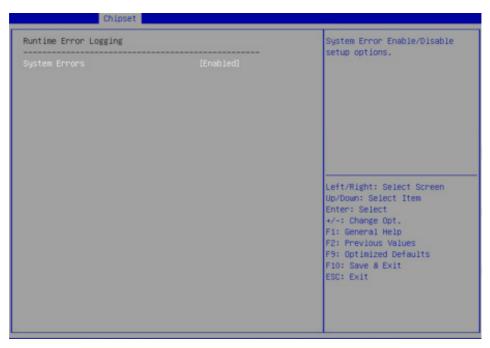


Server ME Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Operational Firmware Version	Operational ME firmware version	
Recovery Firmware Version	Recovery ME firmware version	
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	
Recovery Cause	Recovery cause	N/A
PTT Support	PTT support on-off settings. Options include: Enabled Disabled	Disabled
Altitude	Altitude settings	8000
MCTP Bus Owner	MCTP bus owner is located in PCIe: [15:8] bus, [7:3] device, [2:0] function. If set to 0, it means disabled.	0
ME Firmware Features	ME FW features	

7.2.3.5 Runtime Error Logging

Runtime Error Logging interface is used to set the runtime error logs.



Runtime Error Logging Interface Instruction Table

Interface Parameters	Function Description	Default Value
	System error log record settings. Options include:	
System Errors	Enabled	Enabled
	Disabled	

7.2.4 Processor

Processor interface is used to set the options related with the processor and memory.

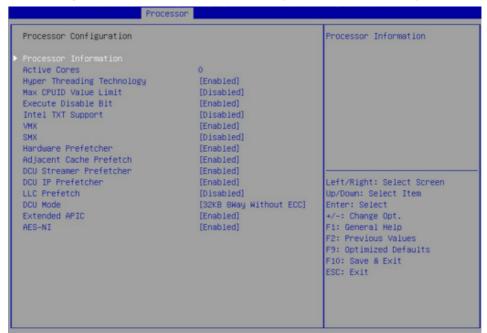


Processor Interface Instruction Table

Interface Parameters	Function Description
Processor Configuration	Processor configuration
Common Configuration	Common configuration
UPI Configuration	UPI configuration
Memory Configuration	Memory configuration
IIO Configuration	IIO configuration
Advanced Power Management Configuration	Advanced power management configuration

7.2.4.1 Processor Configuration

Processor Configuration interface is used to set the options related with the processor.



Processor Configuration Interface Instruction Table

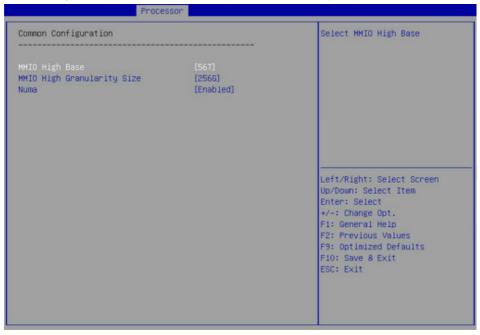
Interface Parameters	Function Description	Default Value
Processor Information	Processor information submenu, the processor's detailed information	
Active Cores	CPU core settings. Input the number of CPU cores you want to enable. In the Help information, it will display the effective values you can set and the maximum number of physical cores according to the current CPU usage. The default value is 0, all cores enabled.	0
Hyper Threading Technology	Hyper threading technology on-off settings. Options include: Enabled Disabled	Enabled

		ı
Max CPUID Value Limit	The max CPUID value limit on-off settings. Enabled	
	Disabled	Disabled
	When the legacy OS boot does not support CPUID	Disablea
	function, please enable this option.	
	Execute disable bit on-off setting. Options include:	
Execute Disable Bit	Enabled	Enabled
	Disabled	
Intel TXT Support	Intel trusted execution technology on-off settings.	
	Options include: Enabled	Disabled
	Disabled	
	Intel virtual machine extensions technology on-off	
	settings. Options include:	
VMX	Enabled	Enabled
	Disabled	
	Safe mode extension on-off settings. Options include:	
SMX	Enabled	Disabled
	Disabled	
	Hardware prefetcher on-off settings. Options include: Enabled	
	Disabled	
	Before CPU processing instructions or data, it will	
Hardware Prefetcher	prefetch these instructions or data from memory to	Enabled
	L2 cache, to shorten the amount of time that reading	
	memory takes, to help eliminate potential bottlenecks	
	and to improve system performance.	
	Adjacent cache prefetch on-off settings. Options	
	include:	
	Enabled Disabled	
Adjacent Cache Prefetch	If this function is enabled, during computer data	Enabled
	reading, it will intelligently consider the adjacent data	
	is needed as well, and it will prefetch these data during	
	processing, to speed up the reading process.	
	DCU streamer prefetcher on-off settings. Options	
	include:	
DCU Streamer Prefetcher	Enabled	Enabled
	Disabled This function can profetch CRU date to about a photographic date.	
	This function can prefetch CPU data to shorten the data reading time.	
	DCU IP prefectcher on-off settings. Options include:	
	Enabled	
DCU IP Prefectcher	Disabled	Enabled
	This function can judge whether there is data to	
	prefetch, to shorten the data reading time.	
	All threads LLC prefetcher on-off settings. Options	
LC Prefetcher	include:	Disabled
	Enabled	
	Disabled DCLL made settings. Ontions include:	
DCU Mode	DCU mode settings. Options include: 32KB 8Way Without ECC	32KB 8Way Without
	16KB 4Way With ECC	ECC
	Extended APIC on-off settings. Options include:	
Extended APIC	Enabled	Enabled
	Disabled	I

	AESinstruction on-off settings. Options include: Enabled	
	Disabled	
AES-NI	This menu mainly controls whether the CPU supports	Enabled
	AES instruction. These instructions are mainly used for	
	system virtualization. Enable this instruction, system	
	performance will be improved.	

7.2.4.2 Common Configuration

Common Configuration interface is used to set the common options.

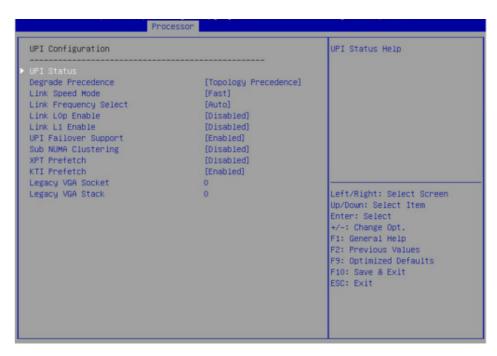


Common Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
	MMIO high base settings. Options include:	
	56T	
	40T	
MMIO High Base	24T	56T
	16T	
	4T	
	1T	
	MMIO high granularity size settings. Options include:	
	1G	
	4G	
MMIO High Granularity Size	16G	256G
,	64G	
	256G	
	1024G	
	Numa on-off settings. Options include:	
Numa	Enabled	Enabled
	Disabled	

7.2.4.3 UPI Configuration

UPI Configuration interface is used to set the options related with UPI.



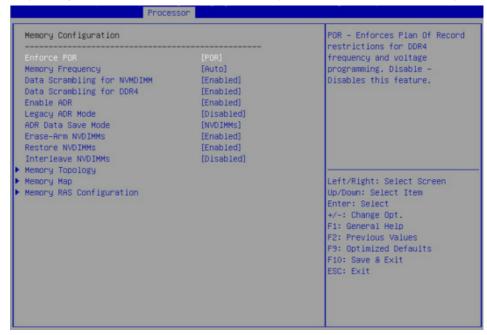
UPI Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
UPI Status	UPI status submenu, displaying the current UPI link status	
Degrade Precedence	Degrade precedence settings. Options include: Topology Precedence Feature Precedence When the system settings conflict, set it to Topology Precedence to reduce Feature; or set it to Feature Precedence to reduce Topology.	Topology Precedence
Link Speed Mode	Link speed mode settings. Options include: Fast Slow	Fast
Link Frequency Select	Link frequency select settings. Options include: Auto 9.6 GT/s 10.4GT/s Use Per Link Setting	Auto
Link LOp Enable	Link L0p on-off settings. Options include: Enabled Disabled Link power-saving mode setting, which is set when the bandwidth is half of the peak bandwidth	Disabled
Link L1 Enable	Link L1 on-off settings. Options include: Enabled Disabled In the case that system is extremely idle, turn off QPI Link.	Disabled
UPI Failover Support	UPI failover support on-off settings. Options include: Enabled Disabled	Enabled

Sub NUMA Clustering	Sub NUMA cluster settings. Options include: Auto: Support 1-cluster or 2-clusters according to IMC interleave. Enabled: Support all SNC clusters (2-clusters) and 1-way IMC interleave. Disabled: SNC function not supported.	Disabled
Legacy VGA Socket	Legacy VGA number settings, the range of effective values is 0~1.	0
Legacy VGA Stack	Legacy VGA stack number settings, the range of effective values is 0~6.	0

7.2.4.4 Memory Configuration

Memory Configuration interface is used to set the options related with the memory.



Memory Configuration Interface Instruction Table

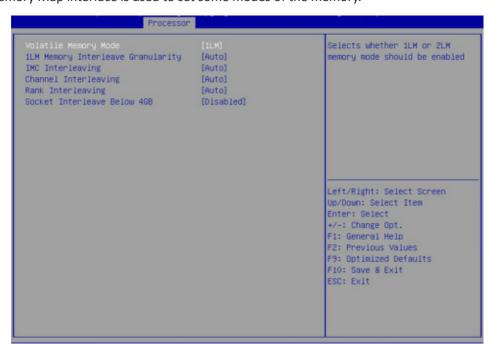
Interface Parameters	Function Description	Default Value
Enforce POR	Enforce POR settings. Options include: POR Disabled	POR
Memory Frequency	Memory frequency settings. Options include: Auto 1600 1866 2133 2400 2666	Auto
Data Scrambling for NVMDIMM	NVMDIMM data scrambling on-off settings. Options include: Enabled Disabled	Enabled

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Data Scrambling for DDR4	DDR4 data scrambling on-off settings. Options include: Auto Enabled Disabled	Enabled
Enable ADR	ADR on-off settings. Options include: Enabled Disabled	Enabled
Legacy ADR Mode	Legacy ADR mode on-off settings. Options include: Enabled Disabled	Enabled
ADR Data Save Mode	ADR data save mode settings. Options include: Disabled Batterybacked DIMMs NVDIMMs	NVDIMMS
Erase-Arm NVDIMMs	Erase-Arm NVDIMMs on-off settings. Options include: Enabled Disabled	Enabled
Restore NVDIMMs	Restore NVDIMMs on-off settings. Options include: Enabled Disabled	Enabled
Interleave NVDIMMs	Interleave NVDIMMs on-off settings. Options include: Enabled Disabled	Disabled
Memory Topology	Memory topology submenu, displaying the detailed information of the current installed memories.	
Memory Map	Memory Map submenu	
Memory RAS Configuration	Memory RAS configuration submenu	

7.2.4.4.1 Memory Map

Memory Map interface is used to set some modes of the memory.



Memory Map Interface Instruction Table

Interface Parameters	Function Description	Default Value
Volatile Memory Mode	Volatile memory mode settings. Options include: 1LM 2LM Auto	1LM
1LM Memory Interleave Granularity	1LM memory interleave granularity settings. Options include: Auto 256B Target, 256B Channel 64B Target, 64B Channel	Auto
IMC Interleaving	IMC interleaving settings. Options include: Auto 1-way Interleave 2-way Interleave	Auto
Channel Interleaving	Channel interleaving settings. Options include: Auto 1-way Interleave 2-way Interleave 3-way Interleave	Auto
Rank Interleaving	Rank interleaving settings. Options include: Auto 1-way Interleave 2-way Interleave 4-way Interleave 8-way Interleave	Auto
Socket Interleave Below 4GB	On-off settings of 4GB or less address space processor interleave. Options include: Enabled Disabled	Disabled

7.2.4.4.2 Memory RAS Configuration

Memory RAS Configuration interface is used to set the options related with the memory RAS feature.



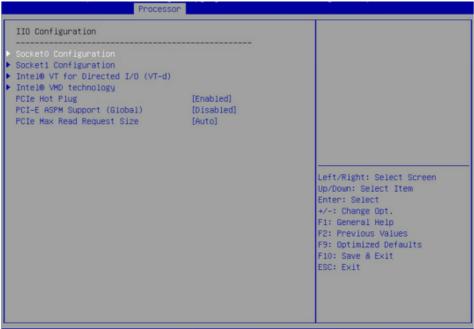
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Memory RAS Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Static Virtual Lockstep Mode	Static virtual lockstep mode on-off settings. Options include: Enabled Disabled	Disabled
Mirror Mode	Mirror mode settings. Options include: Disabled Mirror Mode 1LM Mirror Mode 2LM	Disabled
Mirror TAD0	Mirror TADO mode on-off settings. Options include: Enabled Disabled	Disabled
Enable Partial Mirror	Enable partial mirror mode. Options include: Disabled Partial Mirror mode 1LM Partial Mirror mode 2LM	Disabled
UEFI ARM Mirror	UEFI ARM mirror mode on-off settings. Options include: Enabled Disabled	Disabled
Memory Rank Sparing	Memory Rank sparing on-off settings. Options include: Enabled Disabled When it is set to Enabled, users can select the memory sparing mode. It is a kind of memory channel sparing in Rank, the total memory capacity varies with sparing modes, and it supports at most half of the memory capacity to be used for sparing.	Disabled
Correctable Error Threshold	Correctable error threshold settings	2
SDDC Plus One	SDDC+1 on-off settings. Options include: Enabled Disabled	Disabled
ADDDC Sparing	ADDDC sparing on-off settings. Options include: Enabled Disabled	Disabled
Set NGN Die Sparing	NGN Die sparing on-off settings. Options include: Enabled Disabled	Enabled
NGN Die Sparing Aggressiveness	NGN Die sparing aggressiveness settings, the value range is 0~255, and 0 means no sparing Die.	128
Patrol Scrub	Patrol Scrub on-off settings. Options include: Enabled Disabled	Enabled
Patrol Scrub Interval	Patrol Scrub interval settings, the unit is hour and the range is 0~24.	24
Patrol Scrub Address Mode	Patrol Scrub address mode settings. Options include: System Physical Address Reverse Address	System Physical Address

7.2.4.5IIO Configuration

IIO Configuration interface is used to set the options related with the PCIe sockets.



IIO Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
SocketN Configuration	Socket N configuration submenu, used to set the Link speed, Max Payload Size and ASPM of the CPU0's PCIE device, and to display the link status, maximum link and current link speed of the PCIE port.	
Intel VT for Directed I/O (VT-d)	Intel VT-d settings submenu, Intel VT-d on-off settings	
Intel VMD Technology	Intel VMD settings submenu, VMD on-off settings of each PStack of each CPU.	
Intel AIC Rtimer/AIC SSD Technology (Non-VMD)	Intel AIC Retimer/AIC SSDsettings submenu, AIC Retimer/AIC SSD on-off settings of each PStack of each CPU.	
PCIe Hot Plug	PCIe hot plug on-off settings. Options include: Enabled Disabled	Enabled
PCI-E ASPM Support (Global)	PCIE ASPM support on-off settings. Options include: Disabled Per-Port L1 Only	Disabled
PCIe Max Read Request Size	PCIe max read request size settings. Options include: Auto 128B 256B 512B 1024B 2048B 4096B	Auto

7.2.4.6 Advanced Power Management Configuration

Advanced Power Management Configuration interface is used to set the options related with the CPU power management.



Advanced Power Management Configuration Interface Instruction Table

Interface Parameters	Function Description
CPU P State Control	CPU P state control submenu
Hardware PM State Control	Hardware PM state control submenu
CPU C State Control	CPU C state control submenu
Package C State Control	Package C state control submenu
CPU-Advanced PM Tuning	CPU power-saving performance tuning submenu
Socket RAPL Configuration	Socket RAPL configuration submenu

7.2.4.6.1 CPU P State Control

CPU P State Control interface is used to set the options related with the CPU P state.

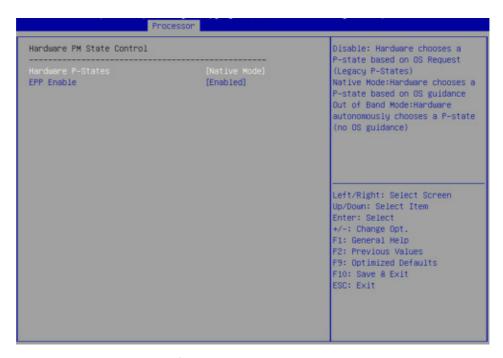


CPU P State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
UncoreFreq Scaling (UFS)	Uncore frequency scaling settings. Options include: Enabled Disabled (Min Frequency) Disabled (MAX Frequency) Custom	Enabled
Uncore Frequency	Uncore frequency settings. The range is 1300-2300, displayed whenUncoreFreq Scaling (UFS) is set to Custom.	1300
SpeedStep (Pstates)	SpeedStep on-off settings. Options include: Enabled Disabled	Enabled
Turbo Mode	Turbo mode on-off settings. Options include: Enabled Disabled	Enabled

7.2.4.6.2Hardware PM State Control

Hardware PM State Control interface is used to set the options related with the hardware PM state.



Hardware PM State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
Hardware P-States	Hardware P-States is set by OS automatically or not, the default value is decided based on the actual test. Options include: Disabled: based on legacy OS request Native Mode: based on legacy OS boot Out of Band Mode: hardware auto select, no OS boot Native Mode with No Legacy Support	Native Mode
EPP Enable	EPP on-off settings. Options include: Enabled Disabled	Enabled

7.2.4.6.3 CPU C State Control

CPU C State Control interface is used to set the options related with the CPU C state, for controlling the power consumption of CPU in idle state.



CPU C State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
	Monitor/Mwait support on-off settings. Options	Disabled
Manitar/Musit Cunnert	include:	
Monitor/Mwait Support	Enabled	
	Disabled	
	Autonomous core C-state on-off settings. Options	Disabled
Automorpho Como C State	include:	
Autonomous Core C-State	Enabled	
	Disabled	
	On-off settings of reporting C6 state to OS. Options	Disabled
CDLL C6 report	include:	
CPU C6 report	Enabled	
	Disabled	
Enhanced Halt State (C1E)	C1E on-off settings. Options include:	Disabled
	Enabled	
	Disabled	

7.2.4.6.4 Package C State Control

Package C State Control interface is used to set the options related to the Package C state.



Package C State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
Package C State	Package C state settings. Options include: CO/C1 state C2 state C6 (Non Retention) state C6 (Retention) state No Limit	CO/C1 state

7.2.4.6.5 CPU-Advanced PM Tuning

CPU-Advanced PM Tuning interface is used to set the options related with the CPU power-saving performance, with an Energy Perf BIAS submenu.

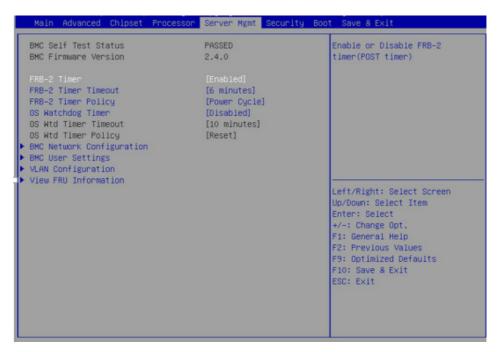


Energy Perf BIAS Interface Instruction Table

Interface Parameters	Function Description	Default Value
Power Performance Tuning	Power performance tuning settings. Options include: OS Controls EPB BIOS Controls EPB	OS Controls EPB
ENERGY_PERF_BIAS_CFG Mode	Power performance management settings. Options include: Performance Balanced Performance Balanced Power Power When the Power Performance Tuning is set to BIOS Controls EPB, this option can be set.	Performance
Workload Configuration	Workload optimization settings. Options include: UMA NUMA	

7.2.5 Sever Mgmt

Server Mgmt interface is used to set the options related with server management, including watchdog, BMC network configuration, BMC user settings, system health information, etc.



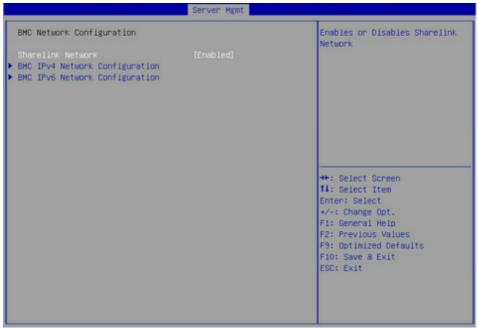
Server Mgmt Interface Instruction Table

Interface Parameters	Function Description	Default Value
BMC Self Test Status	BMC self-test status	
BMC Firmware Version	Current motherboard's BMC firmware version	
FRB-2 Timer	FRB-2 timer on-off settings. Options include: Enabled Disabled	Enabled
FRB-2 Timer Timeout	FRB-2 timer timeout settings. Options include: 3 minutes 4 minutes 5 minutes 6 minutes	6 minutes
FRB-2 Timer Policy	FRB-2 timer policy settings. Options include: Do Nothing Reset Power Down Power Cycle	Power Cycle
OS Watchdog Timer	OS watchdog timer settings. Options include: Enabled Disabled	Disabled
OS Wtd Timer Timeout	OS watchdog timer timeout settings. Options include: 5 minutes 10 minutes 15 minutes 20 minutes	10 minutes

OS Wtd Timer Policy	OS watchdog timer policy settings. Options include: Do Nothing Reset Power Down Power Cycle	Reset
BMC Network Configuration	BMC network configuration submenu	
BMC User Settings	BMC user settings submenu	
VLAN Configuration	VLAN configuration submenu	
View FRU Information	View FRU information submenu	

7.2.5.1 BMC Network Configuration

BMC Network Configuration interface is used to configure the BMC network through BIOS.

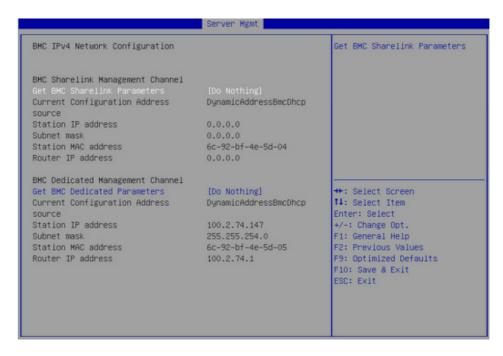


BMC Network Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Sharelink Network	BMC Sharelink network on-off settings, take effect immediately.	Enabled
BMC IPv4 Network Configuration	BMC IPv4 network configuration	
BMC IPv6 Network Configuration	BMC IPv6 network configuration	

7.2.5.1.1BMC IPv4 Network Configuration

BMC IPv4 Network Configuration interface is used to configure the BMC IPv4 management network through BIOS.

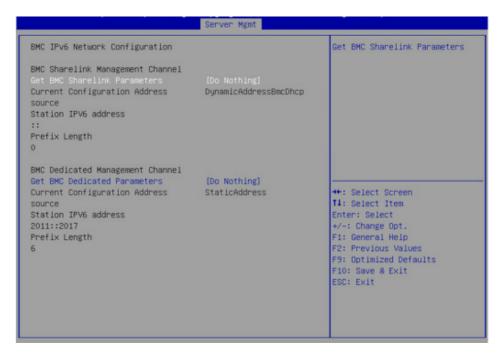


BMC IPv4 Network Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Get BMC Sharelink/Dedicated Parameters	Set the method to get the BMC sharelink/dedicated parameters. Options include: Do Nothing Auto Manual	Do Nothing
Configuration Address Source	Set BMC network status. Options include: Unspecified Static DynamicBmcDhcp The setting takes effect immediately.	Unspecified
Current Configuration Address	Current BMC configuration address status	
Station IP address	Station IP address	
Subnet mask	Subnet mask	
Station MAC address	Station MAC address	
Router IP address	Router IP address	

7.2.5.1.2BMC IPv6 Network Configuration

BMC IPv6 Network Configuration interface is used to configure the BMC IPv6 management network through BIOS.



BMC IPv6 Network Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Get BMC Sharelink/Dedicated Parameters	Set the method to get the BMC sharelink/dedicated parameters. Options include: Do Nothing Auto Manual	Do Nothing
Configuration Address Source	Set BMC network status. Options include: Unspecified Static DynamicBmcDhcp The setting takes effect immediately.	Unspecified
Current Configuration Address	Current BMC configuration address status	
Station IPv6 address	Station IPv6 address	
Prefix Length	IPv6 prefix length	

7.2.5.2 BMC User Settings

BMC User Settings interface is used to configure BMC users through BIOS.



BMC User Settings Interface Instruction Table

Interface Parameters	Function Description
Add User	Add user submenu
Delete User	Delete user submenu
Change User Settings	Change user settings submenu

7.2.5.2.1 Add User

Add User interface is used to add a BMC user through BIOS. The addition takes effect immediately, and the user will be added to the BMC user list.



Add User Interface Instruction Table

Interface Parameters	Function Description	Default Value
User Name	Set user name, supporting up to 16 characters.	
User Password	Set user password. It must contain uppercase and lowercase letters, special characters and numbers, within 8-20 characters.	
Channel NO	Set BMC channel, input 1 or 8.	
User Privilege Limit	User privilege settings. Options include: Reserved Callback User Operator Administrator If the setting succeeds, it will prompt "Set User Access Command Passed", and the BMC User takes effect immediately.	Reserved



/I Note: To enable the new user, it needs to set the User option in the Change User Settings interface to [Enabled], and then this user can login to the BMC Web interface.

7.2.5.2.2 Delete User

Delete User interface is used to delete a BMC user through BIOS. The deletion takes effect immediately, and this user can not login to the BMC Web interface any more.

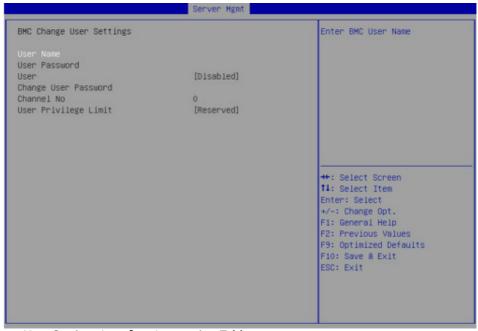


Delete User Interface Instruction Table

Interface Parameters	Function Description
User Name	Input the name of user to delete
User Password	Input the password of user to delete. If the password is correct, it pops up "User Deleted!!!" The deletion takes effect immediately in BMC, and this user can not login to the BMC Web interface any more.

7.2.5.2.3 Change User Settings

Change User Settings interface is used to modify the BMC user settings through BIOS.



Change User Settings Interface Instruction Table

Interface Parameters	Function Description	Default Value
User Name	Input the name of user to modify	
User Password	Input the password of user to modify. Only both the name and password are correct, the following options can be modified.	
User	User privilege on-off settings. Options include: Enabled Disabled	Disabled
Change User Password	Change the user password. It must contain uppercase and lowercase letters, special characters and numbers, within 8-20 characters.	
Channel NO	Set BMC channel, input 1 or 8.	0
User Privilege Limit	Modify the user privilege. Options include: Reserved Callback User Operator Administrator	Reserved

7.2.5.3 VLAN Configuration

VLAN Configuration interface is used to set the BMC VLAN parameters through BIOS.

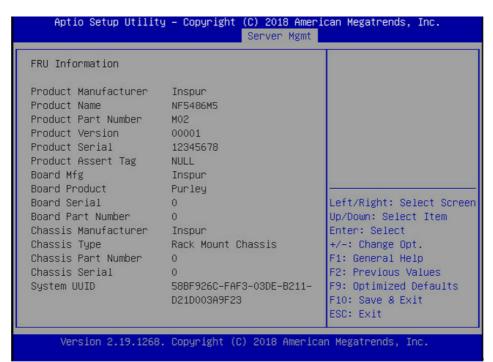


VLAN Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Sharelink/Dedicated VLAN Control	BMCsharelink/dedicated VLAN control on-off settings. Options include: Enabled	Disabled
	Disabled To enable VLAN, it needs to set the VLAN ID first.	
Sharelink/Dedicated VLAN ID	BMCsharelink/dedicated VLAN ID settings, the range is 2~4094. The setting takes effect immediately.	0
Sharelink/Dedicated VLAN Priority	BMCsharelink/dedicated VLAN priority settings, the range is 1~7. The setting takes effect immediately.	0

7.2.5.4 View FRU Information

View FRU Information interface displays the BMC FRU information read by BIOS. On each system reboot, BIOS interacts with BMC to keep the FRU information synchronized.

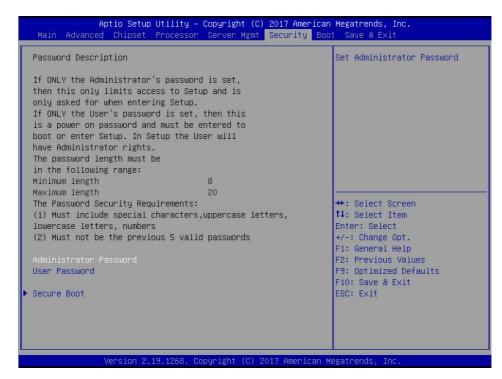


View FRU Information Interface Instruction Table

Interface Parameters	Function Description
System Manufacturer	System manufacturer
System Product Name	System product name
System Product Part Number	System product part number
System Version	System version
System Serial Number	System serial number
Board Manufacturer	Board manufacturer
Board Product Name	Board product name
Board Serial Number	Board serial number
Board Part Number	Board part number
Chassis Manufacturer	Chassis manufacturer
Chassis Product Name	Chassis product name
Chassis Serial Number	Chassis serial number

7.2.6 Security

Security interface is used to set the password of the administrator and user.

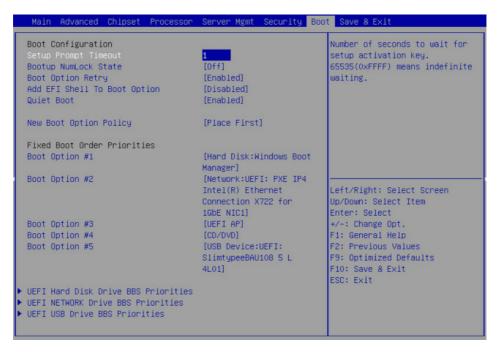


Security Interface Instruction Table

Interface Parameters	Function Description
Administrator Password	Create an administrator password. It must contain uppercase and lowercase letters, special characters and numbers, within 8-20 characters.
User Password	Create a user password. It must contain uppercase and lowercase letters, special characters and numbers, within 8-20 characters.
Secure Boot	Secure boot menu

7.2.7 Boot

Boot interface is used to set the options related with system boot, including boot mode, boot priority, boot procedure, etc.

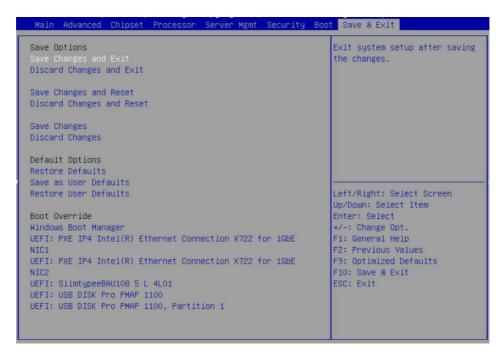


Boot Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Setup Prompt Timeout	Setup prompt timeout settings. Set the time to wait for the Setup activate key, and the maximum value is 65535 seconds.	1
BootupNumLock State	BootupNumlock state on-off settings. Options include: On Off	Off
Boot Options Retry	Boot options retry on-off settings. Options include: Enabled Disabled	Enabled
Quiet Boot	Quite boot on-off settings. Options include: Enabled Disabled If it is set to Enabled, the boot logo displays as that set by manufacturer, if set to Disabled, the boot screen displays as the text-mode POST interface.	Enabled
New Boot Option Policy	New UEFI boot option policy settings. Options include: Default Place First Place Last	Place First
Fixed Boot Order Priorities Boot Option #X	Boot options priority settings	
XXXX Driver BBS Priorities	XXXX driver BBS priority settings	

7.2.8 Save & Exit

Save & Exit interface is used to set the options related with BIOS parameters saving and exit.



Save & Exit 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 override the boot option, you could select the boot device from the following options

7.3 Firmware Update

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

7.3.1 Update BIOS in UEFI Shell

1) When Inspur Logo appears on the screen during system booting, there is a prompt "Press to SETUP or <TAB> to POST or <F11> to Boot Menu or <F12> to PXE Boot" below.

Press F11 key to open the Boot Menu, as shown in the following figure. Enter the item: UEFI: Built-in EFI Shell.

```
Please select boot device:

Windows Boot Manager (P2: SAMSUNG MZ7LM480HCHP-00003)

UEFI: USB DISK Pro PMAP 1100

UEFI: USB DISK Pro PMAP 1100, Partition 1

UEFI: Built-in EFI Shell

Enter Setup

† and ↓ to move selection

ENTER to select boot device

ESC to boot using defaults
```

2) Enter the disk where the AfuEfi64 package resides, and enter the AfuEfi64 folder. The BIOS.bin file is the 32M BIOS+ME file to update, as shown in the following figure.

```
fs0:\> cd afuefi64

fs0:\afuefi64> dir

Directory of: fs0:\afuefi64

10/24/14 09:34a <DIR> 4,096 .

10/24/14 09:34a <DIR> 0 ..

04/14/15 09:56a 16,777,216 BIOS.bin

02/02/15 02:58p 405,104 AfuEfix64.efi

2 File(s) 17,182,320 bytes

2 Dir(s)
```

3) When there is no change in ME part, execute the command to update 16M BIOS: AfuEfix64.efi BIOS.bin $\frac{b}{p}$ $\frac{x}{k}$, and the process is as shown in the following figure. After the update is completed, it is recommended to power cycle the system.

```
S1:\AfuEfi64\> AfuEfix64.efi BIOS.bin /B /P /N /X /K /L
                AMI Firmware Update Utility v5.09.01.1317
     Copyright (C)2017 American Megatrends Inc. All Rights Reserved.
Reading flash ..... done
- ME Data Size checking . ok
Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ..... ok
– Check RomLayout ..... Ok.
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NVRAM Block ..... done
Updating NVRAM Block ..... done
Verifying NVRAM Block ..... done
Erasing NCB Block ..... done
Updating NCB Block ..... done
Verifying NCB Block ..... done
Erasing RomHole Block ..... done
Updating RomHole Block ..... done
Verifying RomHole Block ..... done
```

4) If there are any changes in ME part, execute the command to update 32M ME+BIOS: AfuEfix64.efi BIOS.bin $\frac{b}{p} \frac{x}{k}$ and the process is as shown in the following figure.

Parameter instructions:

- /B Program Boot Block
- /P Program main bios image
- /N Program NVRAM
- /X Do not check ROM ID
- /K Program all non-critical blocks
- /L Program all ROM Holes
- /ME Program ME Entire Firmware Block

```
S1:\AfuEfi64\> AfuEfix64.efi BIOS.bin /B /P /N /X /K /L /ME
                AMI Firmware Update Utility v5.09.01.1317
      Copyright (C)2017 American Megatrends Inc. All Rights Reserved.
Reading flash ..... done
- ME Data Size checking . ok
Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ..... ok
- Check RomLayout ..... Ok.
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NVRAM Block ..... done
Updating NVRAM Block ..... done
Verifying NVRAM Block ..... done
Erasing NCB Block ..... done
Updating NCB Block ..... done
Verifying NCB Block ..... done
Erasing RomHole Block ..... done
Updating RomHole Block ..... done
Verifying RomHole Block ..... done
– Update success for FDR
– Update success for GBER |
– Update success for DER. |
- Update success for GBEA...
– PTT is locked, skip updating.
- Successful Update Recovery Loader to OPRx!!
- Successful Update MFSB!!
- Successful Update FTPR!!|
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FLOG and UTOK!!
  ME Entire Image update success !!
WARNING : System must power–off to have the changes take effect!
```



Note: After the update is completed, please power off the machine, and then power it on.

7.3.2 Update BIOS in Linux

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 the corresponding BIOS bin file into this folder.

When there is no change in ME part, execute the command to update BIOS: ./afulnx 64 BIOS.bin $\frac{b}{p}$ $\frac{x}{k}$ I, as shown in the following figure.

```
root@localhost afulnx]# ./afulnx_64 BIOS.bin /B /P /X /N /X /K /L
                AMI Firmware Update Utility v5.09.01.1319
      Copyright (C)2017 American Megatrends Inc. All Rights Reserved.
Reading flash ..... done
- ME Data Size checking . ok
Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ...... ok
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NURAM Block ...... done
Updating NURAM Block ..... done
Verifying NVRAM Block ..... done
Erasing NCB Block ..... done
Updating NCB Block ..... done
Verifying NCB Block ..... done
Erasing RomHole Block ..... done
Updating RomHole Block ..... done
Verifying RomHole Block .....
```

If there are any changes in ME part, execute the command to update BIOS and ME simultaneously: ./afulnx 64 BIOS.bin /b /p /n /x /k /l /me, as shown in the following figure.

```
[root@localhost afulnx]# ./afulnx_64 BIOS.bin /B /P /X /N /X /K /L /ME
                    AMI Firmware Update Utility v5.09.01.1319
       Copyright (C)2017 American Megatrends Inc. All Rights Reserved.
Reading flash ..... done
 - ME Data Size checking . ok
Secure Flash enabled, recalculate ROM size with signature... Enable.
 - FFS checksums ..... ok
Loading capsule to secure memory buffer \dots done Erasing Boot Block \dots done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ...... done
Erasing NVRAM Block ..... done
Updating NURAM Block ..... done
Verifying NVRAM Block ..... done Erasing NCB Block ..... done
Updating NCB Block ..... done
Verifying NCB Block ..... done
Erasing RomHole Block ..... done
Updating RomHole Block ..... done
Verifying RomHole Block ..... done
- Update success for FDR
  Update success for GBER |
Update success for DER. |
- Update success for GBEA... |
  PTT is locked, skip updating. Update success for MER. - /
JARNING: System must power-off to have the changes take effect!
```

/!\ Notes:

- 1. For Linux system, it needs to run the afulnx 64 tool as root.
- 2. After the update is completed, please power off the machine, and confirm that there is no residual electricity on the motherboard, and then power it on.

8BMC Settings

8.1 Introduction

This section introduces the specifications that the management software follows and its main functions.

The Inspur Server Management System 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 Server Management System:

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 implemented 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.

Thermal control

It could adjust fan speed dynamically according to the ambient temperature and workload.

Supports IPMITool management

Supports the command operation sent by IPMITool.

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

Store accounts in the Active Directory server, direct the authentication process to server, and achieve management system login with domain accounts.

8.2 Functional Modules

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

8.2.1 Module Composition

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

- The command line module attains the calling of IPMI module. The user performs 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.

8.2.2 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 alarm report and alarm indication in the event of fault detection.

System remote control

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

8.2.3 Command Line Function Introduction

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

8.2.4 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.

To use the remote control function, the client should be equipped with appropriate browser and lava runtime environment.



\ Note:

If the Java runtime environment does not meet the requirements, you can download it at http://www.oracle.com/technetwork/java/javase/downloads/index.html.

8.3 Web Interface Introduction

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

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

8.3.1 Login Web Interface

This guide introduces the operation steps to login to the Web management interface, taking the Windows Operating System and the Firefox browser as an example.



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 the client and server are connected to the internet.

Step 2: Open the browser, and enter "http://ipaddress" in the address bar (The default login mode is https, and the safe operation configuration is needed).

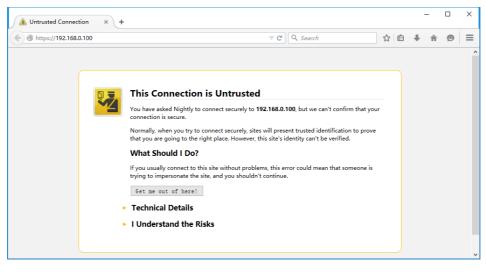
Step 3: The login interface should appear as shown below:

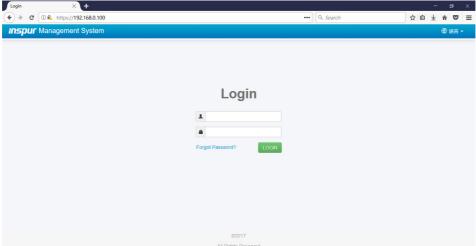
1. Enter the user name and password.



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.

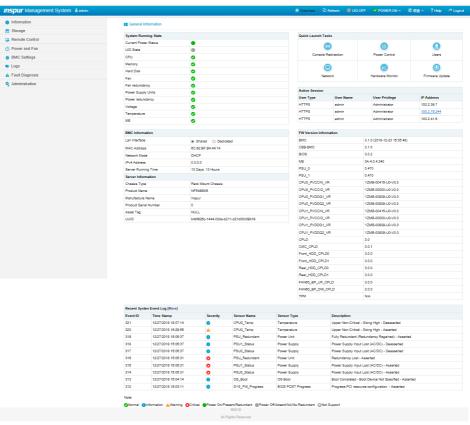




8.3.2 Web Interface Introduction

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

The Web interface is divided into several 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 on top right of the interface:
- ♦ note of the Overview of the Overview of the Overview page.
- ♦ Click on the Refresh button, to refresh the page.
- → UID:OFF Click on the UID button, to turn on/off the UID LED.
- → POWER:ON Click on the Power button, to turn on/off the server.
- ♦ Language ▼ Click on the Language button, to change the language (which supports Chinese and English).
- \diamond ? Help Click on the Help button to query help information on the corresponding page.
- → Logout Click on 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:
- Information
- Storage
- Remote control
- Power and fan

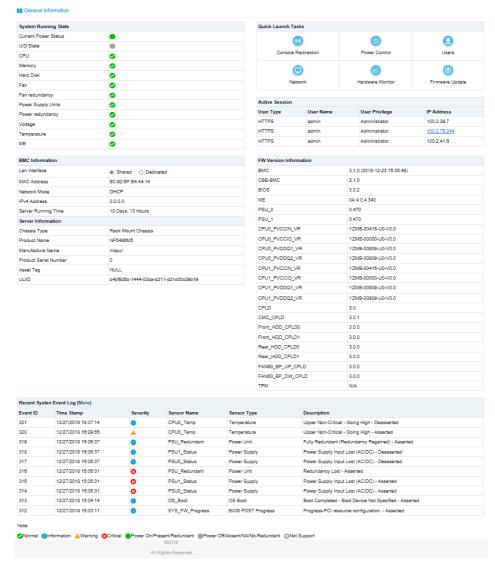
- BMC settings
- Logs
- · Fault diagnosis
- Administration

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

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

8.3.3 Overview

Click on Overview to open the "General Information" interface, as shown below.



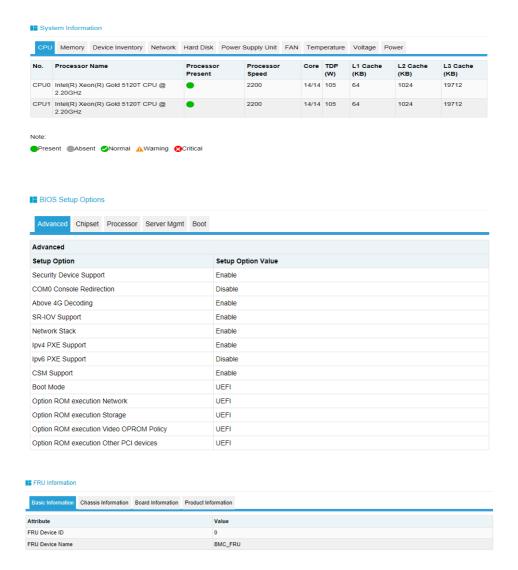
8.3.4 Information

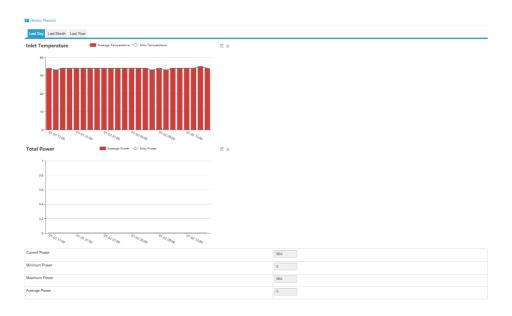
Select "Information" on the navigation tree. It contains the interfaces of system information,

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BIOS setup options, FRU information and history record, as shown in the following figures below.

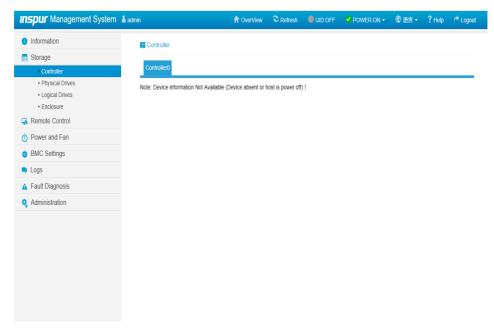
- System information: Displays system configuration information, including CPU, memory, PCIE device, network, hard disk, power supply unit, fan, temperature and voltage information.
- BIOS setup options: Displays the key BIOS setup options information.
- FRU information: Displays the FRU information, including basic information, chassis information, board information and product information.
- History record: Displays the history information of inlet air temperature and total power.





8.4 Storage

Select "Storage" on the navigation tree to open the storage interface. This interface contains controller, physical drives, logical drives and enclosure information, as shown in the following figures.



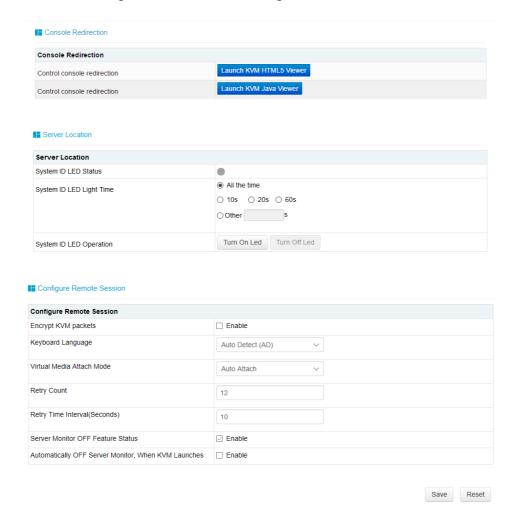
8.5 Remote Control

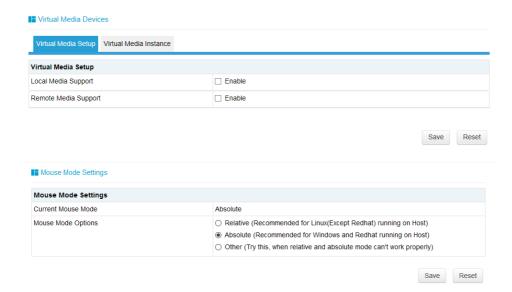
Select "Remote Control" on the navigation tree to open the remote control interface, which

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contains the interfaces of console redirection, locate server, remote session, virtual media and mouse mode settings, as shown in the following figures.

- Console redirection (KVM): The KVM console window will pop up.Java KVM and HTML5
 KVM are supported.
- Server location: To turn on/off the system ID LED.
- Configure remote session: To set the KVM session encryption, media encryption and virtual media connection methods.
- Virtual media devices: To set the quantity of virtual media (floppy devices, CD/DVD devices and hard disk drives, etc.).
- Mouse mode settings: To set the mouse working mode for KVM remote console.





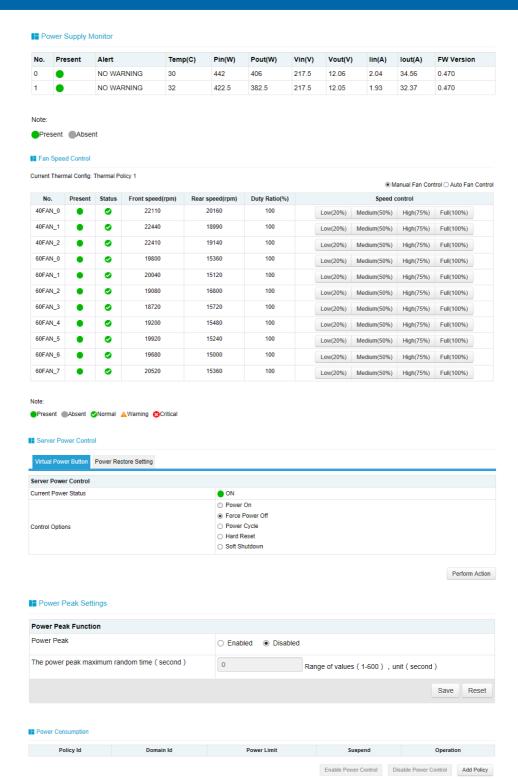
8.6 Power and Fan

Select "Power and Fan" on the navigation tree to open the power supply and fan interface. It contains the interfaces of power supply monitor, fan speed control, server power control, power peak and power consumption, as shown in the following figures.

- Power supply monitor: Contains PSU present state, alert, temperature, input power, output power, input voltage, output voltage, input current, output current and firmware version information.
- Fan speed control: Contains fan status, current speed and speed control function.

/I\ Note: Fan speed control contains the following speed levels:

- > Low: About 20% duty ratio
- > Medium: About 50% duty ratio
- > High: About 75% duty ratio
- > Full: 100% duty ratio
- Server power control: Contains the server's power on/off and reset, as well as the power policy on AC power loss.
- Power peak settings: To enable or disable the power peak, and set the maximum random time.
- Power consumption: To enable or disable the power control, and add policy.

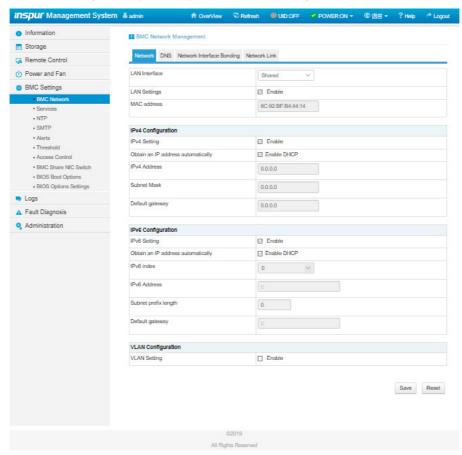


8.7 BMC Settings

Select "BMC Settings" on the navigation tree to open the BMC Settings interface. It contains

the interfaces of BMC network, services, NTP, SMTP, alerts, threshold, access control, BMC share NIC switch, BIOS boot options and BIOS options settings, as shown in the following figures.

- BMC network management: Contains BMC network (static IP and DHCP), DNS settings and network interface bonding and network link information.
- Services: To configure the BMC's Web service, KVM service, ssh service, telnet service, etc.
- NTP settings: To set the BMC time, which has two methods:
- > Synchronize from NTP server.
- > Set time manually.
- SMTP settings: To set the SMTP server information related to alert.
- Alert settings: To set the alert event filtering and alert targets of BMC management module.
- Threshold settings: To set the threshold values of the sensors.
- Access control: To set IP address fields accessible to BMC.
- BMC share NIC switch: Contains NCSI type switch, NCSI mode switch and channel switch.
- BIOS boot options: To set the boot option after BIOS reset.
- BIOS options settings: To export or upload the BIOS configuration file.

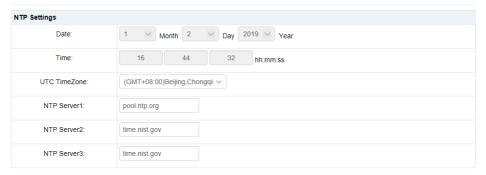


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Services

#	Service Name	Current State	Interfaces	Nonsecure Port	Secure Port	Timeout(s)	Maximum Sessions	Active Sessions
1	web	Active	both	80	443	1800	20	11
2	kvm	Active	both	7578	7582	1800	4	0
3	cd-media	Active	both	5120	5124	N/A	4	0
4	fd-media	Active	both	5122	5126	N/A	4	0
5	hd-media	Active	both	5123	5127	N/A	4	0
6	ssh	Active	N/A	N/A	22	600	N/A	0
7	telnet	Inactive	N/A	23	N/A	600	N/A	0
8	solssh	Inactive	N/A	52123	N/A	60	N/A	0

NTP Settings



 $\ensuremath{\,\,\boxtimes\,\,}$ Automatically synchronize Date & Time with NTP Server

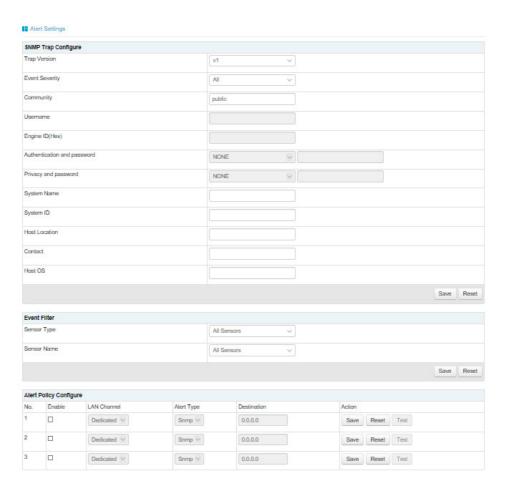


SMTP Settings

LAN Channel	Shared		
Sender Email			
Primary SMTP Server			
SMTP Support	Enable		
SMTP Server Names			
SMTP Server IP Address			
Port	25		
SMTP Server Authentication			
Username			
Password			
Secondary SMTP Server			
SMTP Support	☐ Enable		
SMTP Server Names			
SMTP Server IP Address			
Port	25		
SMTP Server Authentication			
Username			
Password			
		Save	Reset

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Threshold Settings

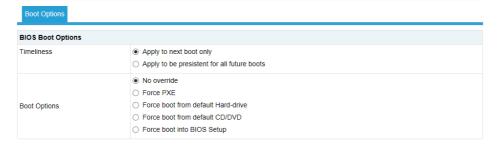
Sensor	Low NRT	Low CT	Low NCT	Up NCT	Up CT	Up NRT
Inlet_Temp	N/A	N/A	N/A	43	45	N/A
TempOutlet	N/A	N/A	N/A	63	65	N/A
CPU0_VR_Temp	N/A	N/A	N/A	124	125	N/A
CPU1_VR_Temp	N/A	N/A	N/A	124	125	N/A
CPU0_Temp	N/A	N/A	N/A	101	102	N/A
CPU1_Temp	N/A	N/A	N/A	101	102	N/A
CPU0_DIMM_Temp	N/A	N/A	N/A	84	85	N/A
CPU1_DIMM_Temp	N/A	N/A	N/A	84	85	N/A
PCH_Temp	N/A	N/A	N/A	109	110	N/A
FRONT_PANEL_Temp	N/A	N/A	N/A	77	N/A	N/A
CPU_ResourceRate	N/A	N/A	N/A	80	95	100
MEM_ResourceRate	N/A	N/A	N/A	80	95	100
HDD_ResourceRate	N/A	N/A	N/A	80	95	100
Total Power	N/A	N/A	N/A	2000	2040	N/A

Access Control Note: 1. Operate host's IP or MAC must be added first, when add IP access policies. 2. Operate host's IP or MAC must be deleted last, when delete IP access policies. Access Control Add Accept Entry IP: То MAC: Rule: Allow ∨ Enable Timeout: Start Date: Stop Date: ADD Current Accept Entry List BMC Share NIC Switch NCSI Type NCSI Type PHY V Network Interface Switch

O Auto Failover Manual Switch Share NIC eth0 ∨ Package ID Channel Number ~ Save Reset

BIOS Boot Options

NCSI Mode



Perform Action

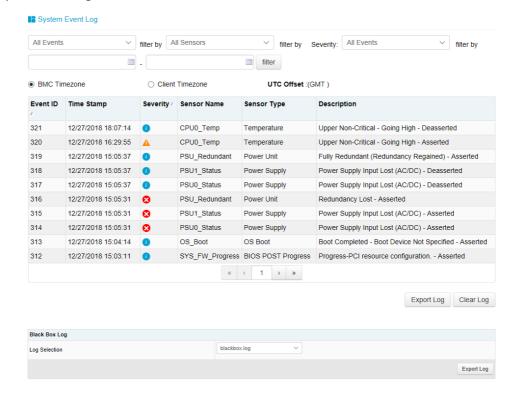
BIOS Settins

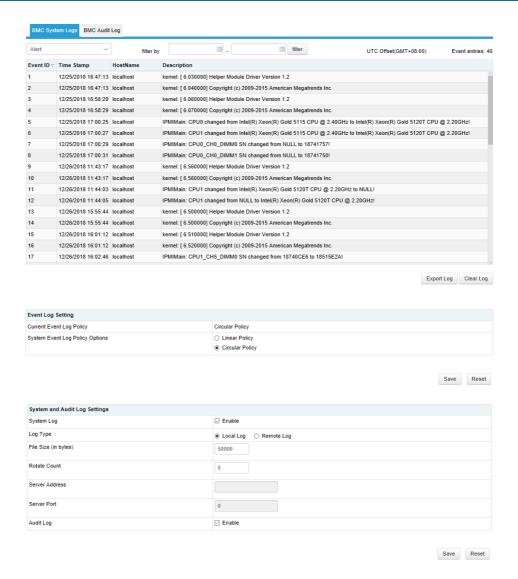


8.8 Logs

Select "Logs" on the navigation tree to open the related log interface. It contains the interfaces of system event log, BMC system audit log, black box log, event log setting and BMC system audit log setting, as shown in the following figures.

- System event log: Displays various event logs generated by the server.
- BMC system audit log: Displays system logs and audit logs of BMC.
- Black box log: Used to import fault logs.
- Event log setting: To set the BMC log storage policy:
- 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: To set the log type, file size and other information of BMC system audit logs.





8.9 Fault Diagnosis

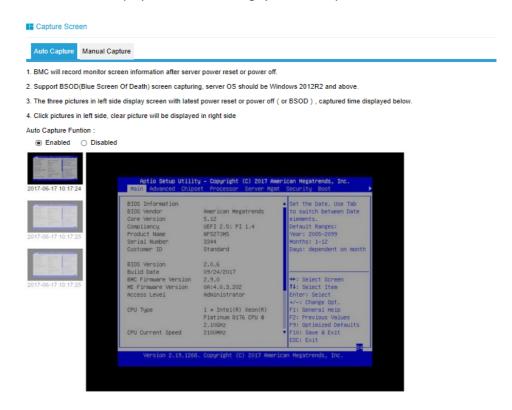
Select "Fault Diagnosis" on the navigation tree to open the fault diagnosis interface. It contains the interfaces of BMC self-inspection result, BMC recovery, capture screen and host POST code, as shown in the following figures.

- BMC self-inspection result: To view the BMC self-inspection result.
- 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: Support BSOD (Blue Screen Of Death) screen capturing, server OS should be Windows 2012R2 and above.

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



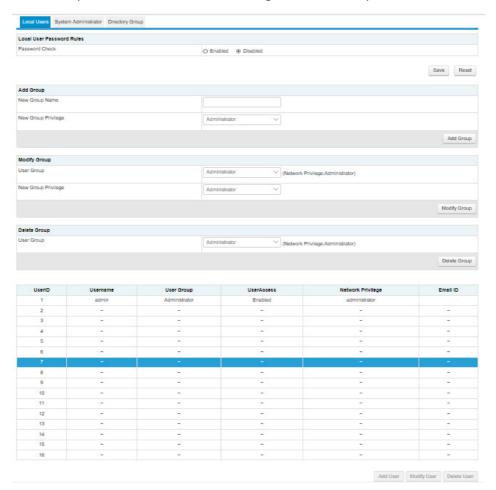


8.10 Administration

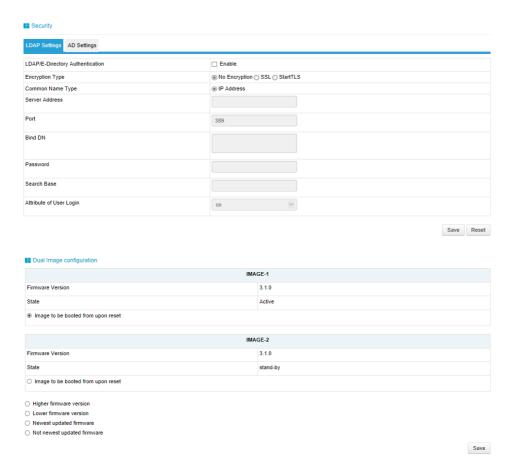
Select "Administration" on the navigation tree to open the administration interface. It contains the interfaces of user administration, security, dual image configuration, dual firmware update, BIOS firmware update, restore factory defaults, etc., as shown in the following figures.

- User administration: To add, delete or modify users via BMC Web interface.
- Security: To configure LDAP and AD servers via BMC Web interface.
- Dual image configuration: To configure the boot options in dual image mode via BMC Web interface.
- BMC firmware update: To update BMC FW via BMC Web interface.
- •BIOS firmware update: To update BIOS FW via BMC Web interface.

- CPLD update:To update motherboard CPLD via BMC Web interface.
- CBB BMC FW update:To update CBB BMC via BMC Web interface.
- CMC CPLD FW update:To update CMC CPLD via BMC Web interface.
- CPLD FW update for front harddisk backplane: To update the CPLD FW of the front harddisk backplane via BMC Web interface.
- CPLD FW update for rear harddisk backplane: To update the CPLD FW of the rear harddisk backplane via BMC Web interface.
- CPLD FW update for Fan60 backplane (upper):To update the CPLD FW of the Fan60 backplane (upper) via BMC Web interface.
- CPLD FW update for Fan60 backplane (below):To update the CPLD FW of the Fan60 backplane (below) via BMC Web interface.
- Restore factory defaults: To restore BMC's configuration to factory state.



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BMC Firmware Update

Please note:

- After entering update mode widgets, other web pages and services will not work. All open widgets will be closed automatically. If upgrade process is cancelled after clicking the button of 'Start firmware update', the device will reset.
- 2.Click 'Preserve all configuration' will preserve all the configuration settings during the firmware update.
- 3.This section lists the configuration items, items that configured as 'Preserve' will be preserved during restore factory default configuration. Click 'Preserve Configuration' to modify the preserve configuration items.
- 4.Click 'Enter Firmware Update Mode' to update firmware.

Firmware Version		
IMAGE-1	3.1.0	
IMAGE-2	3.1.0	

Current Active Image	IMAGE-1	
Image to be Updated	Both Images	~

☐ Preserve all configuration

NO.	Preserve Settings	Update Policy
1	SDR	Overwrite
2	SEL	Overwrite
3	IPMI	Overwrite
4	PEF	Overwrite
5	SOL	Overwrite
6	SMTP	Overwrite
7	User	Overwrite
8	DCMI	Overwrite
9	Network	Overwrite
10	NTP	Overwrite
11	SNMP	Overwrite
12	SSH	Overwrite
13	KVM	Overwrite
14	Authentication	Overwrite
15	Syslog	Overwrite
16	Hostname	Overwrite

■ BIOS Firmware Update

Please note:

- (1) You'd better Power Off the system if you want to do BIOS Update.
- (2) BIOS NVRAM will be cleared and BIOS will become default after BIOS flashed, when updating BIOS without preserve configuration.
- (3) After BIOS+ME flashed, we recommand to AC Power Off and On to enable NEW ME.
- (4) After BIOS or BIOS+ME flashed, we recommand to **AC Power Off and On**. Or the condition may occur that PHY NIC may be not detected. Once the condition occurs, system global reset is needed, you need to force power off the server when server is power on.

1. Please click the button to enter firmware update mode.				
BIOS Bin File Type	BIOS+ME	~		
Options to be preserved	☐ BIOS Setup Options ☑ PHY MAC			
			Enter Firmware Update Mode	

CPLD update

Please note:

(1) Power Off the system if you want to do CPLD Update.

(2) After CPLD update, we recommand to AC Power Off and On to enable new CPLD FW.

1.Enter CPLD update mode

Enter the update mode

■ CBB BMC FW Update

Please note:

After flash BMC failed, you need to reset the BMC and wait for at least 3 minutes, before executing the second flash operation

☐ Preserve all configuration

Enter Firmware Update Mode

■ CMC CPLD FW Update

Enter Firmware Update Mode

■ CPLD FW Update for Front Harddisk Backplane(01094)

Enter Firmware Update Mode

CPLD FW Update for Rear Harddisk Backplane(01090)

Enter Firmware Update Mode

■ CPLD FW Update for Fan60 Backplane(Upper)

Enter Firmware Update Mode

■ Diagnostics

Restore Factory Defaul

1. Please note that after entering into restore factory defaults, widgets, other web pages and services will not work. All open widgets will be closed automatically. The device will reset and reboot within few minutes.

2. This section lists the configuration items, items that configured as 'Preserve' will be preserved during restore factory default configuration. Click 'Preserve Configuration' to modify the preserve configuration items.

3. Click 'Restore Factory Defaults' after configuring preserve items.

NO.	Preserve Settings	Update Policy
1	SDR	Overwrite
2	SEL	Overwrite
3	IPMI	Overwrite
4	PEF	Overwrite
5	SOL	Overwrite
6	SMTP	Overwrite
7	User	Overwrite
8	DCMI	Overwrite
9	Network	Overwrite
10	NTP	Overwrite
11	SNMP	Overwrite
12	SSH	Overwrite
13	KVM	Overwrite
14	Authentication	Overwrite
15	Syslog	Overwrite
16	Hostname	Overwrite

Enter Preserve Configuration Restore Factory Defaults

8.11 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.

8.11.1 Command Line Login

Login to BMC Command line through ssh. After login, enter the command line interface:

Enter help to view online help:

```
smashclp> help
Built-in command:
 ipconfig:
                                             get or set network parameters, please enter <ipconfig --help> for more information get or set sensor parameters, please enter <sensor --help> for more information get or set fru parameters, please enter <fru --help> for more information
 sensor
 fru
                                             get or set chassis parameters, please enter <chassis --help> for more information get or set user parameters, please enter <user --help> for more information get or set mc parameters, please enter <user --help> for more information
 chassis :
 user
 mс
                                              get or set fan parameters, please enter <fan --help> for more information get or set psu parameters, please enter <psu --help> for more information
 fan
 psu
                                             get or set psu parameters, please enter <psu --help> for more information change root password firmware update operator, please enter <update --help> for more information BMC diagnose function, please enter <diagnose --help> for more information sol (text redirection) function, please enter <sol --help> for more information id get identify function, please enter <id --help> for more information BMC diaglog function, please enter <diaglog --help> for more information BMC registerinfo function, please enter <register --help> for more information exit the command line
password:
 update :
 diagnose:
 sol
 diaglog :
 register:
 exit
  /smashclp>
```

8.11.2 Command Line Function Introduction

8.11.2.1 Get and Set Network Information

Via ipconfig command, get and set BMC's network information:

```
smashclp> ipconfig --help
ipconfig commands:
        ipconfig <option1> [<option2> [<parameter2>]] [<option3> [<parameter3>]...] [interface]
        option1:
            --help
                               show help information
                               show help information
                              get network information
            --get
           for example : ipconfig --get [<option2>] [<option3>..] [interface] --set set network information
           for example : ipconfig --set <option2> <parameter2> [<option3> <parameter3>...] <interface>
        option2..n:
            --ipsrc <source>
           static = address manually configured to be static

dhcp = address obtained by BMC running dhcp

if <source> option <dhcp>,can not option other options and parameters

--ipaddr [<x.x.x.x>] set or get IP address

--netmask [<x.x.x.x>] set or get IP netmask
           --ipaddr [<x.x.x.x>] set or get IP address
--netmask [<x.x.x.x>] set or get IP netmask
--gateway [<x.x.x.x>] set or get IP gateway
--macaddr get MAC address, this only support --get
        interface:
           interface not specify is getting all network information, only support --get eth0 get or set eth0 network information eth1 get or set eth1 network information bond0 get or set bond0 network information
/smashclp>
```

8.11.2.2 Get Sensor Information

Via sensorcommand, get the information list of all sensors:

```
sensor commands:
                                  sensor sensor coption1> [<option2> [<parameter2>]] [<option3> [<parameter3>]...] [parameter]
option1:
                                                 -help show help information

? show help information

--list get all sensor information
for example : sensor --list [parameter]
     /smashclp>
 /smashclp> sensor --list
sensor name | num |
                                                                                                                  r - - List
| num | value |
| 19h | na |
| 14h | na |
| 16h | na |
| 15h | na |
| 15h | na |
| 00h | na |
| 40h | na |
| 43h | na |
| 44h | na |
| 47h | na |
                                                                                                                                                                                                                                                                                                                                                  | status | lnr
                                                                                                                                                                                                                                                      | unit
| degrees C
| Volts
| Volts
sensor name
CPU0_Temp
CPU1_Temp
PCH_Temp
DIMMG0_Temp
DIMMG1_Temp
System_Temp
Inlet_Temp
Outlet_Temp
Outlet_Temp
System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_System_Sy
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| na
| 0.690
| 9.024
| 2.660
| 3.888
| 0.770
| 1.180
| 1.040
| 1.040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            na
0.770
9.776
2.800
4.176
0.850
1.260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            na
1.250
14.288
3.797
5.832
1.250
1.750
2.380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | na
| 0.850
| 10.528
| 2.940
| 4.464
| 0.930
| 1.340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        na
1.170
13.536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                na
1.330
15.040
 SYS_VCCIO
SYS_12V
                                                                                                                                                                                                                                                              Volts
Volts
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Volts
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5.544
1.170
1.670
2.300
2.300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3.938
6.120
1.330
1.830
2.460
2.460
   SYS_3.3V
                                                                                                                                                                                                                                                                                                                                                       na
na
                                                                                                                          | 44h
| 47h
| 41h
| 42h
| 45h
| 46h
                                                                                                                                                                  na
na
na
na
   PCH P1V05
                                                                                                                                                                                                                                                                                                                                                       na
na
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1.120
1.120
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1.200
1.200
   CPUO VCORE
                                                                                                                                                                  na
 CPU1 VCORE
                                                                                                                                                                                                                                                                   Volts
```

8.11.2.3 Get and Set FRU Information

Via FRUcommand, get the FRU configuration information:

```
fru commands:
          fru <option1> [<option2> [<parameter>]]
option1:
              -help show help information
? show help information
-get get fru information
for example : fru --get <option2>
--set set fru information
                for example : fru --set <option2> <parameter>
           option2:
                                          set or get fru Chassis Type
               CT
                                          set or get fru Chassis Part Number
set or get fru Chassis Serial
set or get fru Chassis Extra
               CPN
              CS
CE
                                        set or get fru Chassis Extra
get fru Board Mfg Date
set or get fru Board Mfg
set or get fru Board Product
set or get fru Board Serial
set or get fru Board Part Number
set or get fru Product Manufacturer
set or get fru Product Part Number
set or get fru Product Part Number
set or get fru Product Part Number
set or get fru Product Serial
set or get fru Product Asset Tag
get all of fru information
               BD
               ВМ
                ΒP
                BS
                ΒN
                PN
               PPN
               PV
PS
                all
                                          get all of fru information
          parameter:
the value of the fru modify, the string of value not more than 50 and the overall of fru not more than 255
If modify Chassis Type, the values are numeric, and less than 30
```

8.11.2.4 Get and Control Chassis Status

Via chassis command, get and control the system power status:

8.11.2.5 Get User List and Add/Delete User

Via user command, get the user list, add or delete users.

```
smashclp> user
user commands:
       user <option> <value> [<option> <value> ...]
       option:
           -ton:
--help show help information

? show help information
--list show all the user of the information
--id The user identify
--name Add or modify user name
for example : user --id <user id> --name <user name>
           --help
           --list
           --name
          To example: user -id <user tub --hamme <user name>
-passwd Modify user password
for example: user -id <user id> --passwd <user password>
-priv Modify user privilege
for example: user -id <user id> --priv <user priv>
--del Delete user
          /smashclp>
 /smashclp> user --list
TD
     Name
                                Channel Priv Limit
      root
                                ADMINISTRATOR
                                ADMINISTRATOR
     admin
```

8.11.2.6 Get BMC Version and ResetBMC

Via mc command, get BMC version information and reset BMC:

```
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:
                      set bmc action, this only support --set set kvm action, this only support --set set webgo action, this only support --set
        bmc
        kvm
        webgo
      parameter:
                      get bmc version, this only support --get command set bmc , kvm or webgo reset action, this only support --set command
        version
         reset
/smashclp>
/smashclp> mc --get version
                                : 32
Device ID
Device Revision
                                 : 1
                                : 4.2.0
Firmware Revision
IPMI Version
                                 : 2.0
/smashclp>
```

8.11.2.7 Set Fan Mode and Get Fan Speed

Via fancommand, set the fan mode, and getthe 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>
       parameterl: the fan id
       parameter2: the fan of the precent
/smashclp>
/smashclp> fan --get fanlevel
ID Status SpeedPercent SpeedRPM
                           0 PRM
                Θ
Θ
     NΔ
                 Θ
                           0 PRM
2
3
4
                           0 PRM
     NΔ
                           0 PRM
     NΑ
                 Θ
                           0 PRM
                 Θ
     NΑ
5
     NA
                 Θ
                           0 PRM
6
     NΑ
                 0
                           0 PRM
     NΑ
                 Θ
                           9 PRM
/smashclp>
```

8.11.2.8 Get and Set Power Module Information

Via psucommand, get the power module information, and set power module as the main output:

Get the power module information:

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

8.11.2.9 Change Root Password

Via password command, change the root user's password:

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

8.11.2.10 Fault Diagnosis

Via diagnose command, execute the tools and commands integrated in BMC to view the BMC status.

```
/smashclp> diagnose
diagnose commands:
      diagnose <option> [<parameterl>] [<parameter2>...]
      option:
         --help
                        show help information
                        show help information
         bmc diagnose support command:
                                 show log file profile, only support parameter1 select log file
show log file content, only support parameter1 select log file
show listing of last logged in users
show and configure network info
            last
            ifconfig
                                 show and configure phy configuration
report a snapshot of the current processes
            ethtool
            top
                                  display Linux tasks
            dmesg
                                  print or control the kernel ring buffer
                                 Print network connections and routing tables etc. bmc gpio test tool
            netstat
            gpiotool
            i2c-test
                                  bmc i2c test tool
            pwmtachtool
                                 bmc fan test tool
            ipmitool
                                 bmc ipmitool tool
      parameter1:
         only support for option ls and cat command ncml bmc service configuratio
                                  bmc service configuration
            log
                                  bmc system log
            cpuinfo
                                  bmc cpu info
                                 bmc memory info
            meminfo
            slabinfo
            versioninfo
                                  bmc version info
      for example : diagnose ls ncml
for example : diagnose cat log debug.log
 'smashclp>
```

8.11.2.11 Collect Fault Logs

Via dialog command, trigger the fault logs collection function. When the server fails, it can quickly collect the fault logs information stored in BMC. The collected fault logs can be downloaded through the browser or wget.

```
/smashclp> diaglog --help
diaglog commands:
    diaglog <optionl>
    optionl:
        --help show help information
        ? show help information
        --get trigger one key log
        for example : diaglog --get
/smashclp>
```

8.11.2.12 Serial Over LAN

Via sol command, perform the serial port redirection operation, to view the POST information of the serial ports during system startup.

8.12 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
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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

9 Common Faults, Diagnosis and Troubleshooting

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

9.1 Hardware Problems

1) Power-on failure at startup

Description: After pressing the power button, the LED (power status LED, HDD status LED) on server's front control panel is off. Meanwhile, no KVM (display) output is displayed, and server chassis fans do not rotate.

Suggestions:

- a. Check the power supply situation: If the power module LED is on, it indicates normal power supply. If the power module LED is off or red, please check whether the power supply is normal, and whether the power cord is connected well.
- b. If the power supply is normal, insert the power module again, 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) No display after power on

Description: After pressing the power button, the power LEDon server's front control panel is on, the chassis fans rotate normally, but there's no output on the display.

Suggestions:

- a. Firstly check whether the monitor is powered up normally.
- b. If the monitor is powered up normally, check whether it is connected normally with the server's VGA port.
- c. Test on another monitor.
- d. If there is no output on the new monitor, login to the BMC Web interface. Open BMC remote KVM to check whether there isoutput on the monitor. If there is normal output, it indicates the VGA port may be abnormal, please contact Inspur customer service.
- e. If above operations could not resolve the problem, please contact Inspur customer

service.

3) Status LED on front panel is abnormal

Description: The server is under normal operation, but the status LED on front panel turns red.

Suggestions:

- a. Firstly confirm which LED is abnormal according to the previous chapter about the LEDs on the front panel.
- b. If the system failure LED is abnormal, check whether the system runs normally; if the system runs normally, you can login to the BMC Web interface to view the BMC logs, to check whether there are errors reported.
- c. If the power failure LED is abnormal, check whether the power module LED is normal; if the power module LED is normal, you can login to the BMC Web interface to view the BMC logs, to check whether there are errors reported.
- d. If other LEDs are abnormal, you can login to the BMC Web interface to view the BMC logs, to check whether there are errors reported.
- e. If above operations could not resolve the problem, please contact Inspur customer service.
- 4) Power module LEDis off or red

Description: The server is under normal operation, but a certain power module LED is off or red.

Suggestions:

- a. Firstly check whether all power cables are normal, and plug in the power cables again.
- b. If the fault still exists, insert 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 resolve the problem, please contact Inspur customer service.
- 5) HDD status LED is abnormal

Description: The server is under normal operation, but the HDD status LED is off or red.

Suggestions:

- a. If it is caused by manual operations, restore the array through RAID configuration.
- b. If there is no manual operations, check whether the HDDs are identified normally. If the server is configured with anRAID card, login to the RAID management interface to check

whether there is an HDD failure.

c. If there is an HDD failure, or the above operations could not resolve the problem, please contact Inspur customer service.

Note: Hot-plugging HDD allows users to take out or replace the HDD without system shutdown and power off, which improves the system disaster recovery capability, scalability and flexibility. It only means the hot-plug HDD can be plugged in and out online without damage, and the following two items need to be noticed: ① Depending on the RAID level, hot plugging the HDD in the RAID will cause RAID degradation or failure. When installing a new HDD, different RAID cards have different policies, you may need to login to the RAID card management interface for recovery. ② Remove the HDD until the HDD motor stops completely, to prevent damage to the motor. For the operations on the RAID card management interface, please refer to Inspur technical website: www.4008600011.com.

6) Chassis fans make excessive noise

Suggestions:

- a. Firstly check whether the chassis fans operate at a high speed caused by the overtemperature chassis.
- b. If the chassis has a high temperature, check the temperature of server room, if it is excessively high, open the air conditioner to cool the room.
- c. If the server room's temperature is normal, check whether the front panel or chassis interior is jammed with dust, or the air inlet is blocked. It needs to improve the server room's environment, to avoid server over-temperature running because of too much dust.
- d. Check whether the server runs under high load.
- e. If above operations could not resolve the problem, please contact Inspur customer service.
- 7) There is alarm sound during startup

Suggestions:

Firstly identify the source of alarm sound:

- a. If the alarm sound comes from the power supply, check the power LED's status. If the power LED is abnormal, refer to item 3) to handle it.
- b. If the alarm sound comes from the chassis interior, open the chassis to identify the specific source.

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- c. If the alarm sound comes from the RAID card, check the HDD LED status or login to the RAID management interface to check the HDD status. For the operations about the RAID management interface, please refer to Inspur technical website: www.4008600011.com.
- d. If above operations could not resolve the problem, please contact Inspur customer service.
- 8) Keyboard and mouse are not available

Description: Neither keyboard nor mouse could be operated normally.

Suggestions:

- a. Make sure the keyboard or mouse has been connected correctly and firmly.
- b. Replace other parts to test whether it is a mouse or keyboard fault.
- c. Power cycle the server and retest.
- d. Reboot and enter BIOS or RAID configuration interface to test keyboard or mouse performance. When tested in a non-system situation, if the keyboard or mouse performance turns out to be normal, a system fault could be considered. If the keyboard or mouse fault still exists, a mainboard interface fault could be considered, and Inspur technical hotline can be called for support.
- 9) USB interface problem

Description: Unable to use devices with a USB interface.

Suggestions:

- a. Make sure the operating system on server supports USB devices.
- b. Make sure the 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 connected to other hosts.
- e. If the USB device is normal when connected to other hosts, the server may be abnormal: please contact Inspur customer service.
- f. If the USB device turns out to be abnormal when connecting to other hosts, please replace the USB device.

9.2 Software Problems

1)System installation problems

Description: It fails to load the RAID driver or to create partitions larger than 2T during system installation, C disk utilization is too large, and other problems.

Suggestions:

- a. If it fails to load the driver during system installation, check the RAID driver's version, please visit Inspur website (http://www.inspur.com) to download the correct RAID driver. For some RAID drivers, it needs to load several times.
- b. If it fails to create 2T partitions, check BIOS Advance ->CSM Configuration->Boot option filter, enable the UEFI option, and select UEFI mode to boot the system. It needs to enter the CMD command line to change the HDD format to GPT, and then partitions larger than 2T can be created.
- c. If the C disk utilization is too large after system installation, open Computer Property->Advanced System Property->Advanced->Performance->Settings->Change Virtual Memory, turn down the virtual memory or allocate the virtual memory to other partitions.
- d. If above operations could not resolve the problem, please contact Inspur customer service.
- 2) Abnormal memory capacity

Description: The memory capacity displayed in the OS and the physical memory capacity are inconsistent.

Suggestions:

- a. Check the OS version, the supported memory capacity varies with the version of Windows OS. Enter BIOS Setup to view the memory capacity, if the memory is identified completely, the operating system may have limits to the memory capacity, e.g. Windows server 2008 x86 supports 4G memory at most.
- b. If the memory is not identified completely in BIOS Setup, confirm that the corresponding slots have been installed with memories of correct type.
- c. If above operations could not resolve the problem, please contact Inspur customer service.
- 3) Abnormal network

Description: The network is disconnected, or the rate of lower than the actual rate of the network port.

Suggestions:

- a. Check whether the network cable is connected well and whether the network LED flashes normally, re-insert the network cable to test again.
- b. If the problem still exists, use a computer to connect with the server directly. If the direct connection is normal, check whether the network cable or the switch port is normal.
- c. If the direct connection is abnormal, please visit Inspur website (http://www.inspur.com) to download the latest NIC driver.
- d. If above operations could not resolve the problem, please contact Inspur customer service.

10 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.

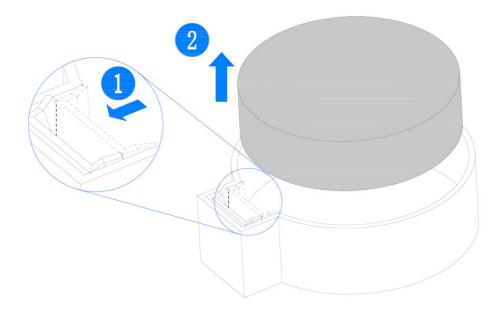
/IN WARNING: The computer contains an internal lithium manganese dioxide, a

vanadiumpentoxide, 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. Remove the motherboard tray.
- 3. Remove the top cover of the tray.
- 4. Remove the air baffle.
- 5. Remove the battery.



11 Regulatory Compliance Notices

11.1 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.

11.2 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.

11.2.1 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

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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.

11.3 European Union Regulatory Notice

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

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

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.

11.4 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.



11.5 Chinese Notice

Class A Equipment

本产品为 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,需要用户对其干扰采取切实可行的防护措施。

11.6 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.

12 Electrostatic Discharge

12.1 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.

12.2 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.

13Warranty

13.1 Introduction

Inspur warrants that all Inspur-branded hardware products shall provide a period of three (3) year warranty. This document describes Warranty Service, including a detailed description of service-level.

The warranty terms and conditions may vary by country, and some services and/or parts may not be available in all countries. For more information about warranty services in your country, contact Inspur technical support or Inspur local office.

13.2 Warranty Service

13.2.1 Service Overview

Туре	Duration
Remote Services	3 years
RMA Services	3 years

13.2.2 Warranty Service Terms & Conditions

i. Remote Services

Inspur provides 24x7 remote service through Hotline, E-mail and Website. Through Hotline and E-mail Services, Inspur engineer helps customers determine the cause of the malfunction and provide solution. Website service provides a number of resources to help customers resolve problems, and learn about our products, such as product manuals, drivers and Firmware.

Below is how to obtain our remote service:

Туре	Description	Response time
Hotline	1-844-860-0011(English) 1-646-517-4966(English) 86-800-860-0011(Chinese)	Within 2hrs
E-mail	serversupport@inspur.com	Within 2hrs
Website	http://en.inspur.com/	

ii. RMA Services

Customerscould return defective parts to the designated Inspur site after submitting aservice request. Inspur may, at its discretion, repair or replace the defective parts. Repair or replacement parts may be new, used, or equivalent to new in performance and reliability. Replaced or repaired parts are warranted to be free of defects in material or workmanship

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for ninety (90) calendar days or, for the remainder of the warranty period of the product, whichever is longer.

13.3 Warranty Exclusions

Inspur does not guarantee that there will be no interruptions or mistakes during the use of the products. Inspur will not undertake any responsibility for the losses arising from any operation not conducted according to Inspur Hardware Products.

The Warranty Service Terms & Conditions do not apply to consumable parts, as well as any products the serial number of which falls off, is damaged or obscure for the following reasons:

- Accident, misuse, abuse, defiling, improper maintenance or calibration or other external causes
- Operating beyond the parameters as stipulated in the user documentation
- Use of the software, interface, parts or supplies not provided by Inspur
- Improper preparation place or maintenance
- Virus infection
- Loss or damage in transit
- Alterations or repairs have been made by unauthorized persons, or service organizations Inspur does not undertake any responsibility for the damages or losses of any application, data or removable storage medium. Except for the software installed by Inspur in its production of this product, Inspur is not responsible for the restoration or reinstallation of any programs or data.