Inspur Yitian Supercomputer
User Manual
NF5288M5

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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 NF5288M5 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. After the first login, please change the BMC user password in time.
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.

Contents

1 Safety Instructions

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

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

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

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

1. In the event of the following, please unplug the power line plug from the power socket and contact Inspur’s customer service department:

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

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

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

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

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

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

1) Please remove any static electricity on your body before dismounting or touching

any electronic component in the equipment, to prevent the static electricity from conducting itself to the sensitive components. You may remove the static electricity on the body by touching the metal earthing objects (such as the unpainted metal surface on the rack).

2) Please do not take electrostatic sensitive components that are not ready to be installed for application out of the antistatic package materials.

3) While working, please touch the earthing conductor or the unpainted metal surface on the cabinet regularly to remove any static electricity from the body that may damage the internal components.

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

1) Switch the system power supply off and disconnect the cables, including all connections of the system. When disconnecting the cables, please hold the connector of the cables and slowly pull the plugs out. Never pull on the cables.

2) The products need to completely cool down before dismounting the host cover or touching the internal components.

3) During the dismounting process, avoid making large movement ranges to prevent damage to the components or scratching arms.

4) Handle components and plug-in cards with care. Please do not touch the components or connection points on the plug-in cards. When handling the plug-in cards or components, firmly grab the edges of the plug-in cards and components, and/or their metal fixed supports.

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

1) After the rack installation is finished, please ensure that the stabilizers have been fixed to the rack and supported to ground, and the weight of the rack is firm on ground.

2) Always load from the bottom up, and load the heaviest items first.

3) When pulling out the components from the rack, apply slight force to keep the rack balanced.

4) When pressing down the release latch and the rail of components is sliding, please be careful; as the sliding may hurt your fingers.

5) Do not overload the AC power supply branch circuits in the rack. The total load of the rack should not exceed 80% of the ratings of the branch circuits.

6) Ensure that components in the rack have good ventilation conditions.

7) When repairing components in the rack, never step on any other components.

2 Product Specification

2.1 Introduction

Inspur Yitian NF5288M5 (AGX-2) is a high-end, dual-socket and rack-mounted server, which is designed based on the new generation of Intel® Xeon® scalable processor, to satisfy the requirements of cloud computing, big data, data mining, deep learning and other high-end IT applications. This server has high quality and high reliability on the performance, storage and extension, and makes innovations and breakthroughs on computing performance, flexible configuration and intelligent management, particularly suitable for telecom operators, financial industry, internet companies and other large-scale enterprises.

● Main features:

◆ Excellent computing, storage and scalability

Supports a new generation of Intel® Xeon® scalable processors, supports TDP165 CPU; 16 DIMMs support RDIMM, LRDIMM, NVDIMM memory, 4 x Apache Pass, significantly improved application performance and computing performance.

Achieves multi-dimensional space extension, supports 8 2.5” hard drives in 2U space.

◆ Optimize for different applications

Storage modules, I/O modules, network modules, GPU modules can achieve a variety of different combinations of scenarios, users can configure the flexibility according to business needs.

Provides ample I/O and offers up to 6 PCI-E 3.0 in a small 2U chassis; with GPU cage and corresponding cable assemblies, 8 FHFL GPU cards are supported in standard 2U space to meet the needs of high-end customers on system function and performance.

◆ Intelligent monitoring, three-dimensional management

In order to simplify the device management in data center, Inspur Dashboard visual management module is provided. With the help of Inspur Light Path Diagnostics, administrators can quickly locate the device to be maintained which greatly reduces the workload of the administrators.

Supports embedded high-capacity flash memory, built-in Inspur InCloud Manager, greatly simplifies the user’s equipment deployment, management and maintenance.

Supports 8 2.5” SAS/SATA/SSD/NVME HDDs (i.e. Full Configuration) in the front, as shown in

the figure below.

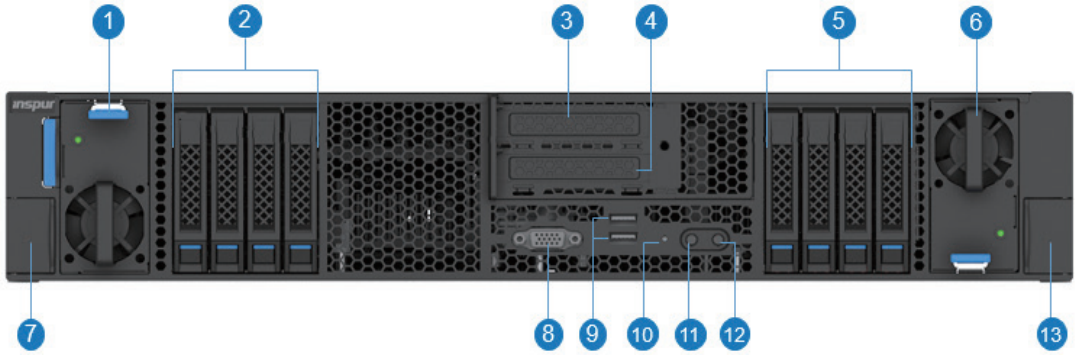
2.2 Features and Specifications

Processor	
Processor Type	Intel® Skylake (supports up to two 165W processors)
Socket	2
Chipset	
Chipset Type	LBG-4
Memory	
Memory Type	DDR4 Registered, LR DIMM, NVDIMM, Apache Pass
Memory Slot Qty.	16
Total Memory Capacity	Supports up to 1024GB (64GB per memory)
I/O	
USB	2 rear USB 3.0 ports, 2 front USB 3.0 ports
VGA	1 front VGA port 1 rear VGA port
Serial port	1 rear serial port
UID	2 UID LEDs and buttons (1 front and 1 rear)
Display	
Controller Type	Integrated in the Aspeed2500 chip, supports up to 1280*1024 resolution
SAS	
SAS3.0 Backplane	Supports hot-plug SAS/SATA/SSD/NVME HDDs
NIC	
NIC Controller	Standard configuration: 4*10GbE NIC chip (Intel X722)

Management	
Management Chip	It integrates 1 independent 1000Mbps network interface, special for IPMI remote management.
PCI Extension Slot	• PCIE configuration 1 onboard PCIe3.0 X8 RAID Mezz expander The front IO supports 2 PCIe3.0 X16 HHHL PCIe cards • SXM2 full configuration 1 onboard PCIe3.0 X8 RAID Mezz expander The front IO supports 2 PCIe3.0 X16 HHHL PCIe cards The rear IO supports 4 PCIe3.0 X16 HHHL PCIe cards
HDD	
HDD Type	Supports up to 8 2.5” SAS, SATA, SSD and NVME HDDs in the front
External Storage Drive	
Optical Drive	Supports external USB drive
TF Card	Built-in TF card
Power	
Specification	3000W output power; 1+1 redundancy
Power Input	Please refer to the power input on the nameplate label of the host.
Physical	
External Dimensions of Packing box	721 width × 279 height × 1168 depth (unit: mm)
Size of Host Machine	448 width × 88.7 height × 899.3 depth (unit: mm)
Product Weight	Full configuration Host weight: 38kg; Gross weight: 48kg (Gross weight includes: Host + Packing Box + Rails + Accessory Box)
Environmental	
Operating Temperature	10℃ -35℃
Storage & Transportation Temperature	-40℃ -60℃
Operating Humidity	20％ -80％ relative humidity
Storage & Transportation Humidity	20％ -93％ (40℃) relative humidity

3 Component Identification

3.1 Front Panel Components



Item	Description
1	PSU0
2	2.5” HDD module
3	PCIE slot (CPU0/SW11)
4	PCIE slot (CPU1)
5	2.5” HDD module
6	PUS1
7	Quick release lever
8	Front VGA port
9	Front USB3.0 ports (2)
10	RST button & fault LED
11	Power button & LED
12	UID button & LED
13	Quick release lever

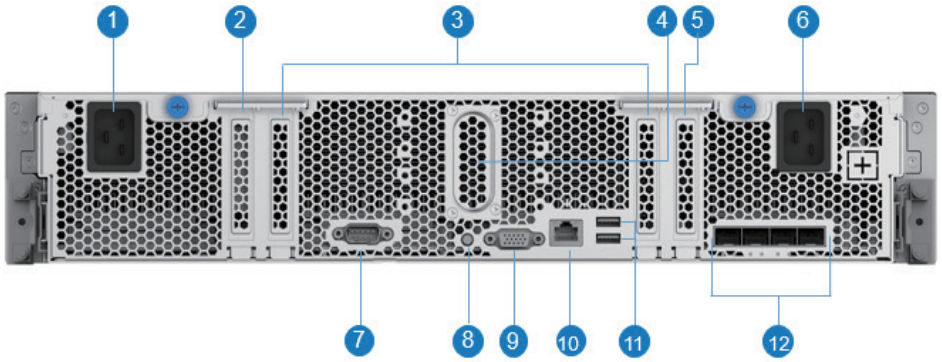
- SAS/SATA HDD sequence diagram

- NVME HDD sequence diagram

- HDD Bay LEDs

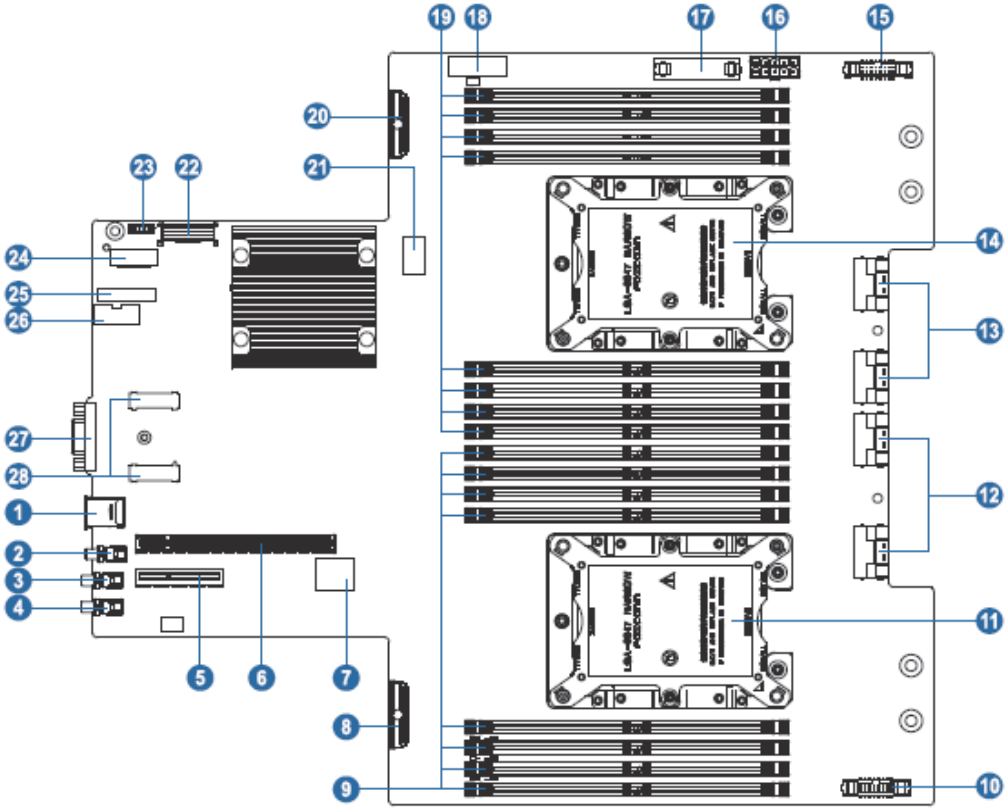
Item	Description	Status & Interpretation
1	Fault alarm LED	Steady red: An HDD failure occurs Steady blue: HDD positioning Steady blue: RAID rebuilding
2	Activity status LED	Steady green: Normal Flashing green: Read and write activity

3.2 Rear Panel Components



Item	Description
1	Power input interface (1)
2	PCIE slot (SW1)
3	PCIE slots (SW0)
4	Water-cooled input/output interface
5	PCIE slots (SW2)
6	Power input interface (2)
7	System interface
8	UID button & LED
9	VGA port
10	MLAN port
11	USB3.0 ports (2)
12	10G network ports (4)

3.3 Motherboard Components



Item	Description
1	USB3.0 ports (2)
2	RST button
3	Power button
4	UID button
5	M.2 Riser slot
6	PCIE Riser slot
7	BMC_TF slot
8	SAS/SATA connector 0
9	DIMM slots (CPU1)
10	PSU1 control connector
11	CPU1
12	PCIEx16_CPU0 SlimSAS connector 1
13	PCIEx16_CPU0 SlimSAS connector 2
14	CPU0

Item	Description
15	PSU0 control connector
16	Fan board power connector
17	Fan board control connector
18	Rear IO Board connector 1
19	DIMM slots (CPU0)
20	SAS/SATA connector 1
21	CLR_CMOS
22	Rear IO Board connector 0
23	RAID KEY
24	XDP connector
25	TPM/TCM
26	CPLD programming interface
27	VGA port
28	RAID Card connectors

- Motherboard Jumper Introduction

See [3.3 Motherboard Components] for the jumper position.

Item	Description	Function
CLR_CMOS	CMOS clear jumper	No jumper, normal status; short-circuit pins, clear CMOS.

Note:

1. CLR_CMOS only has two pins, without jumper equipped.

2. 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 pins, and then remove the jumper (default setting) to restore to its original status.

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: I**f 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.

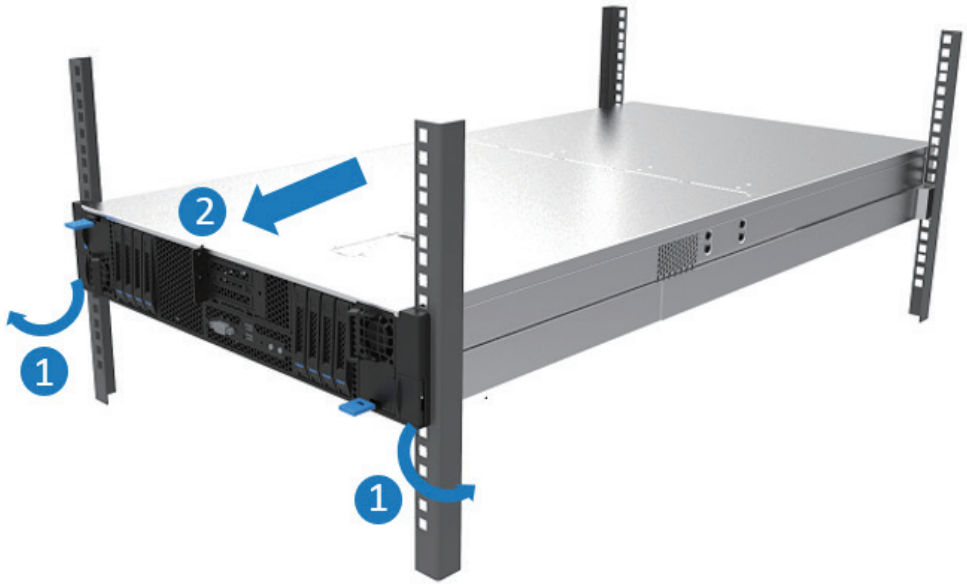
4.3 Extend the Server from the Rack

1. Open the handles outward and use a screwdriver to unlock the screws inside the left and right ears.
2. Extend the server from the rack.
3. Rails are divided into two sections to slide out, that is:

3.1 When the fan needs online-maintenance, only pull out the first part of the rails, about 580mm (22.8 inches), and open the front access panel, to maintain the fan module or motherboard on the rack.

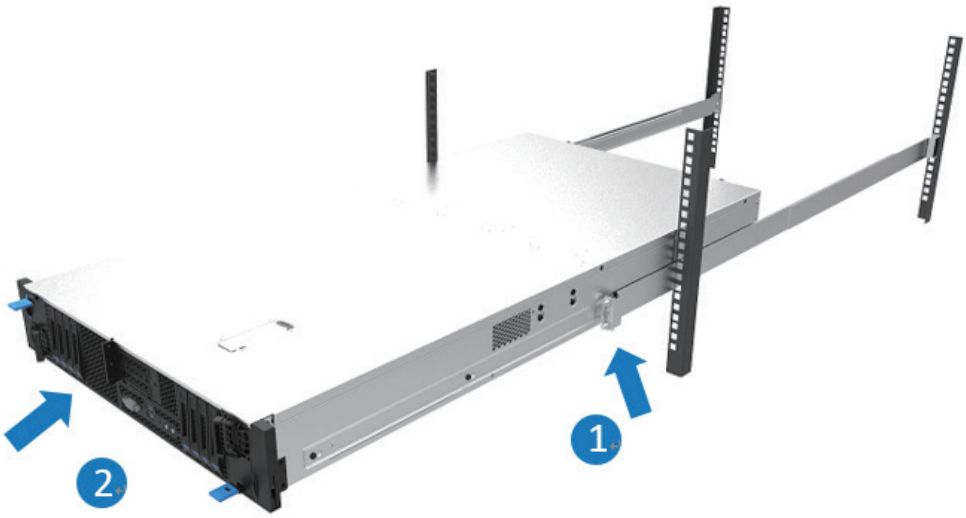
3.2 When the whole machine needs maintenance, pull out the rails completely, about 100 centimeters (39.4 inches), you need to unlock the buckles on both sides of the rails so that you can extend the chassis from the rack completely (Note: When the chassis should be extended completely, make sure that the rear cables have all been removed).

⚠ **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.



4. After performing the installation or maintenance procedure, slide the server back into the rack until it clicks into place. Tighten the screws inside the two ears to secure the chassis in place.

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



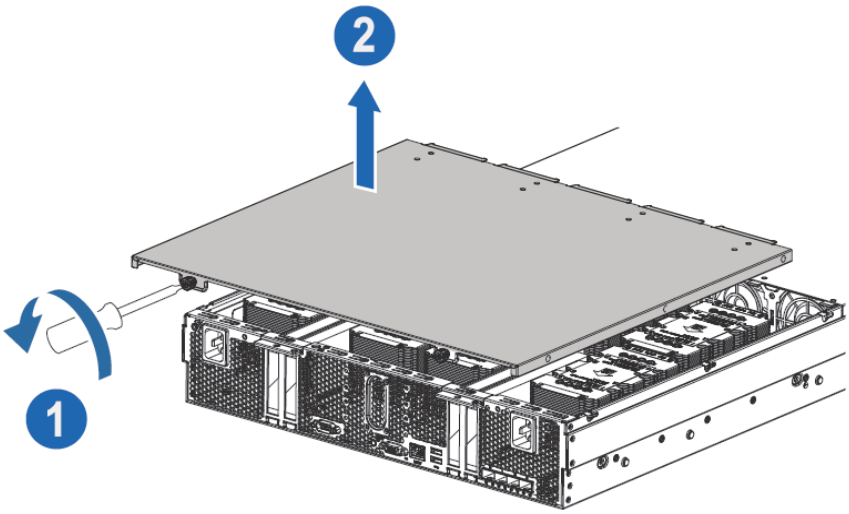
4.4 Remove the Access Panel

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

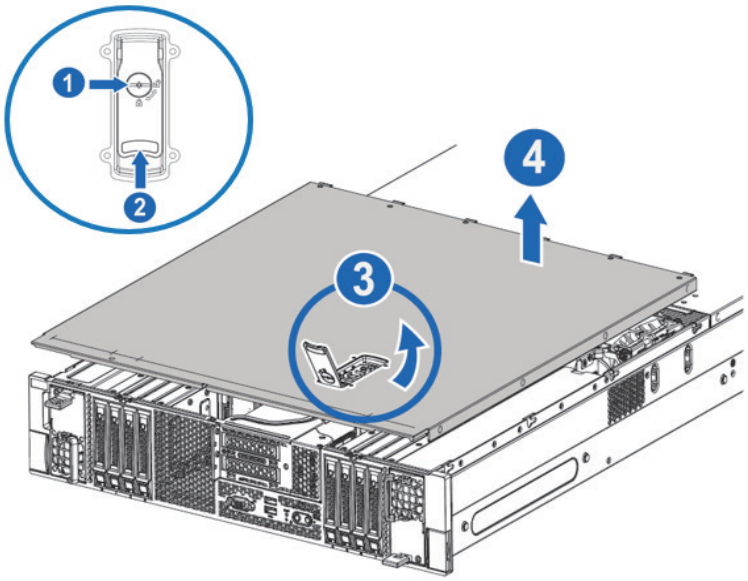
CAUTION: For proper cooling, do not operate the server without the access panel, air baffle, or fan installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

To remove the component:

1. Power down the server if performing a non-hot-plug installation or maintenance procedure.
2. Extend the server from the rack.
3. Loosen the security screws on the back of access panel, and remove the rear access panel.



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



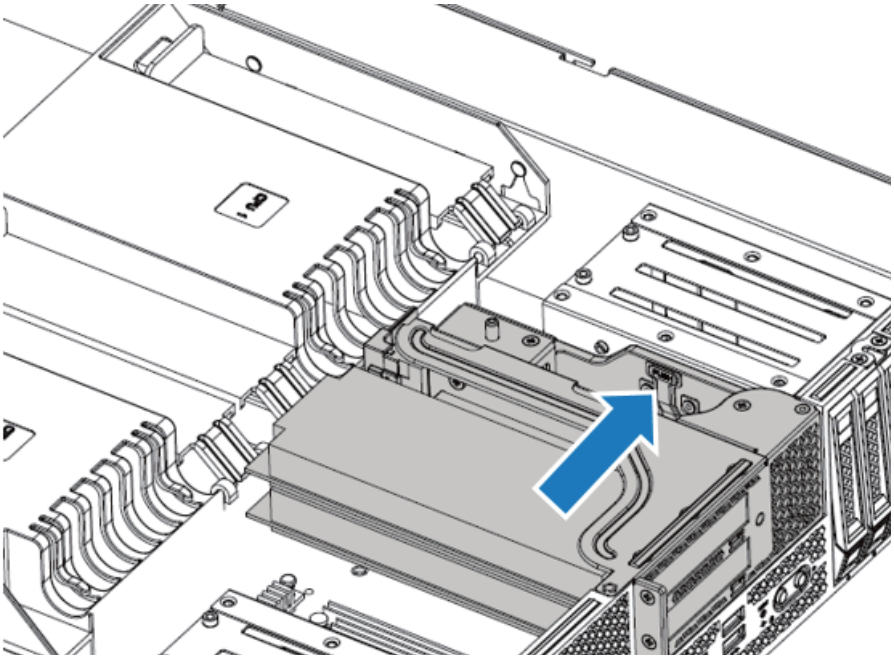
4.5 Install the Access Panel

1. Place the rear access panel on the server. Align the guide pins on both sides with the corresponding guide slots on the chassis base.
2. Push the rear access panel to the closed position and tighten the two screws clockwise.
3. Open the hood latch, place the front 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 on the top of the PCIE bracket and push the hood latch to the closed position.

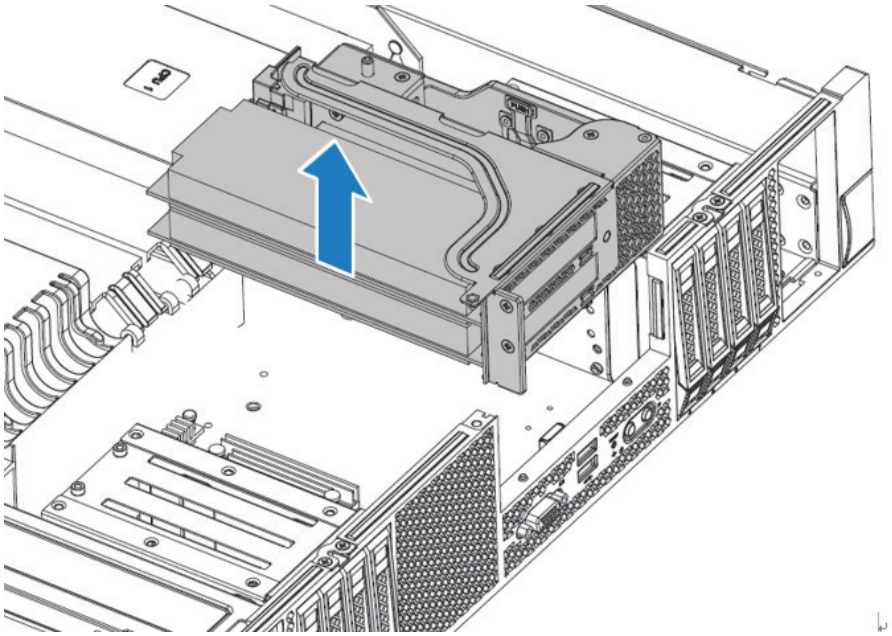
4.6 Remove the PCIE Riser Cage

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

1. Power down the server.
2. Extend the server from the rack.
3. Remove the front access panel.
4. Disconnect the cables (if any) from the PCIE Riser cage.
5. Press the latch in the direction shown in the figure.



6. Hold the PCIE Riser cage and remove it vertically.



4.7 Install the PCIE Riser Cage

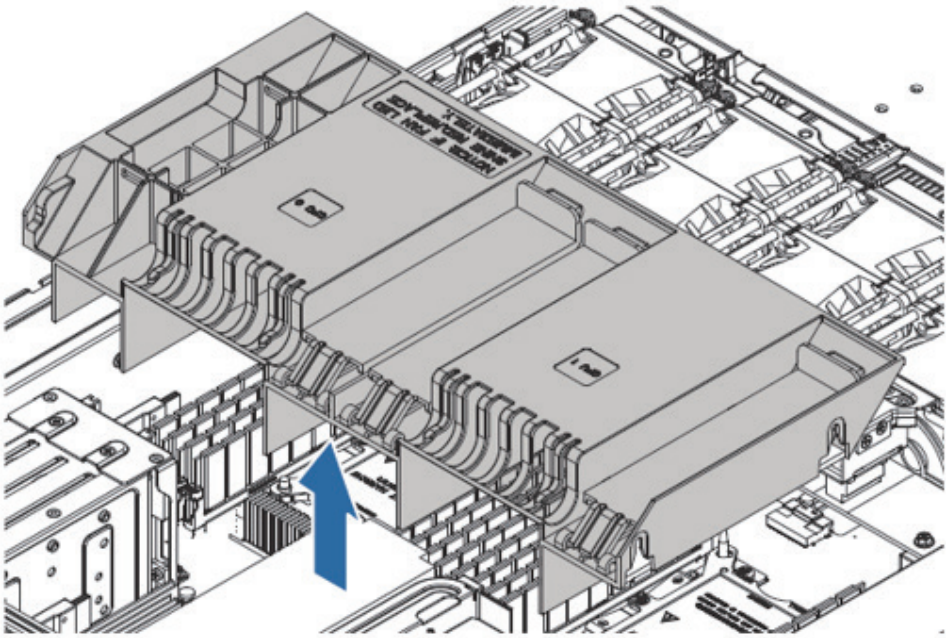
1. Power down the server.
2. Extend the server from the rack.
3. Remove the front access panel.
4. Install the PCIE Riser cage.
5. If the PCIE Riser card is equipped with cables, connect the cables.
6. Install the front access panel.
7. Install the server into the rack.
8. Power up the server.

4.8 Remove the Air Baffle

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

1. Power down the server.
2. Extend or remove the server from the rack.

3. Remove the access panel.
4. If there are cables under the air baffle, pull them out.
5. Remove the air baffle.



5 Setup

5.1 Optimum Environment

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

5.1.1 Space and Airflow Requirements

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

- Leave a minimum clearance of 99 cm (39 in) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 in) behind the rack.
- Leave a minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks.

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

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

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

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

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

- Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in).

5.1.2 Temperature Requirements

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

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

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

- Do not permit optional equipment to impede airflow around the server or to increase the internal rack temperature beyond the maximum allowable limits.
- Do not exceed the manufacturer's TMRA.

5.1.3 Power Requirements

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

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

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

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

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

5.1.4 Electrical Grounding Requirements

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

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

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

5.2 Rack Warnings

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

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

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

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

5.3 Identifying the Contents of the Server Shipping Carton

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

The contents of the server shipping carton include:

- Server
- Power cord
- Rack-mounting hardware

In addition to the supplied items, you may need:

- Operating system or application software
- Hardware options

5.4 Installing Hardware Options

Install any hardware options before initializing the server. For options installation

information, refer to the option documentation. For server-specific information, refer to "Hardware options installation".

5.5 Installing the Server into the Rack

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

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

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

3. Connect the power cord to the rear of the server.
4. Connect the power cord to the AC power source.

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

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

5.6 Installing the Operating System

To operate properly, the server must have a supported operating system installed. For the latest information on supported operating systems, refer to the Inspur website (http://www.inspur.com/eportal/ui?pageId=2317460).

To install the operating system on the server, you can download from the official website directly.

6 Hardware Options Installation

6.1 Introduction

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

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

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

6.2 Processor Option

The server supports single- and dual-processor operation.

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

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

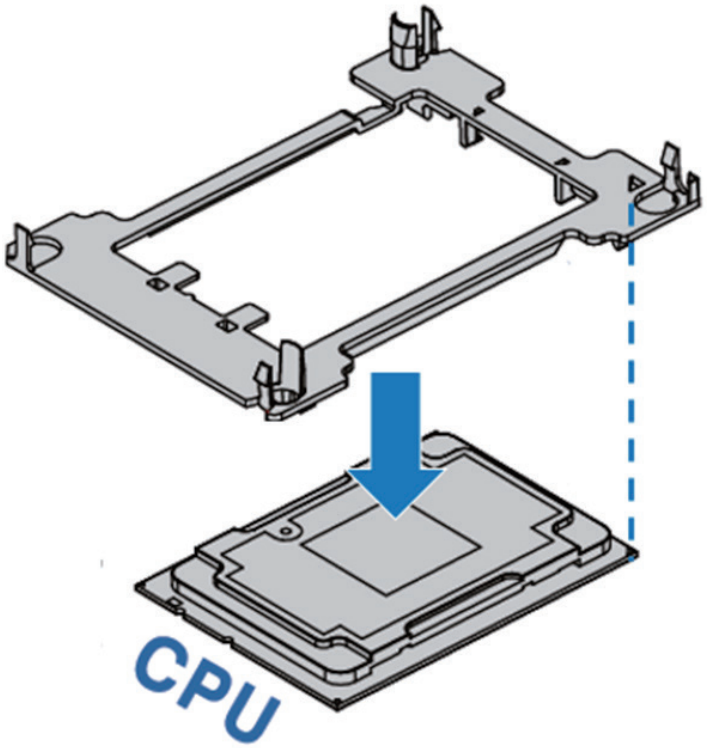
CAUTION: To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

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

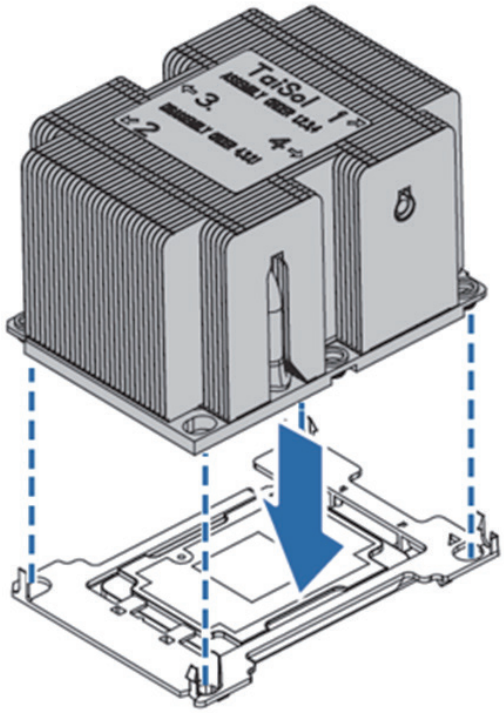
To install the component:

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Remove the air baffle.
5. Remove the heatsink.
6. Install the processor:

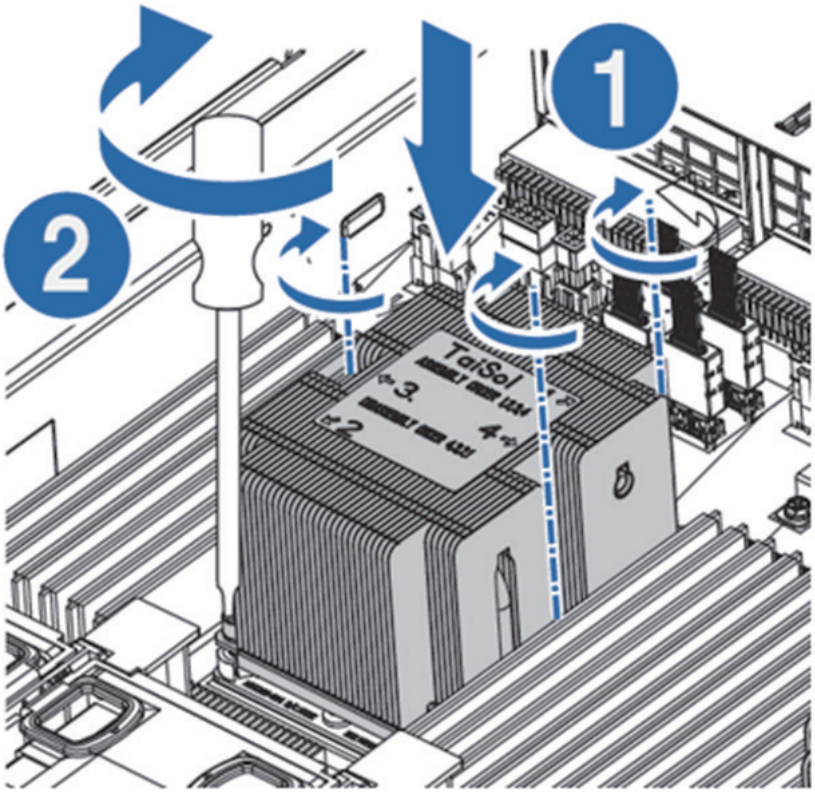
Step 1: Align the Clip's triangle mark with the CPU's corner mark, and then assemble the Clip and CPU together.



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, 4.



Notes:

- It is required to coat thermal grease evenly onto the contact position between CPU heatsink and CPU.
- During fixing CPU heatsink, it is required to fasten bolts according to the sequence accordingly.

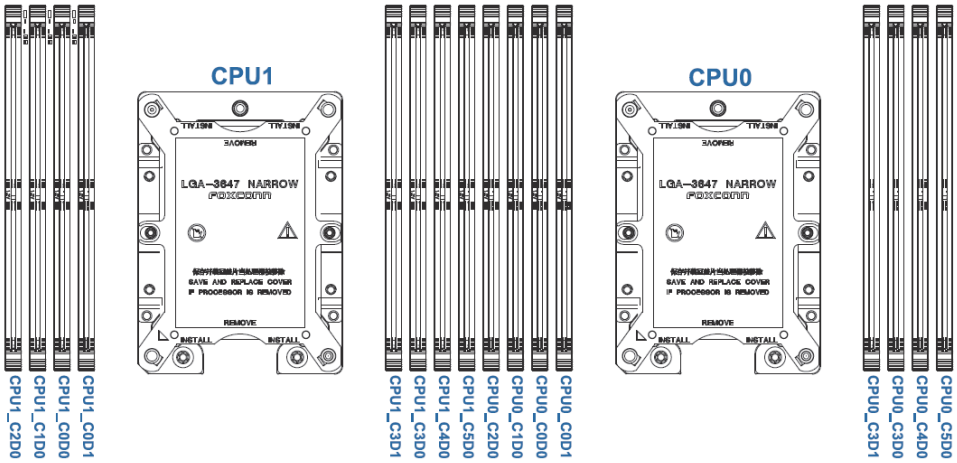
6.3 Memory Option

IMPORTANT:

This server does not support mixing DIMMs. Attempting to mix the DIMMs of 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:

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

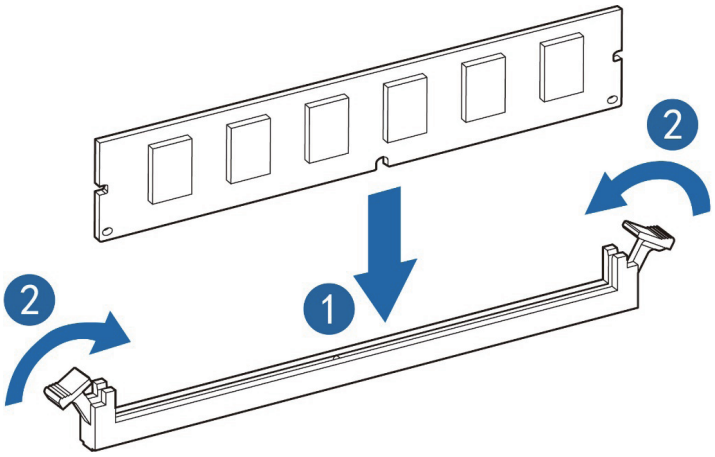
a. The white slots take the priority, while CPU1 DIMM shall be symmetrically installed with CPU0 DIMM.

b. For the single CPU, the DIMM population follows the screen printed sequence: CPU0_C0D0, CPU0_C1D0, CPU0_C2D0, CPU0_C3D0, CPU0_C4D0, CPU0_C5D0; CPU0_C0D1, CPU0_C1D1…

c. For dual CPUs, CPU0 DIMM population follows the screen printed sequence: CPU0_C0D0, CPU0_C1D0, CPU0_C2D0… ; CPU1 DIMM population follows the screen printed sequence: CPU1_C0D0, CPU1_C1D0, CPU1_C2D0 …

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.



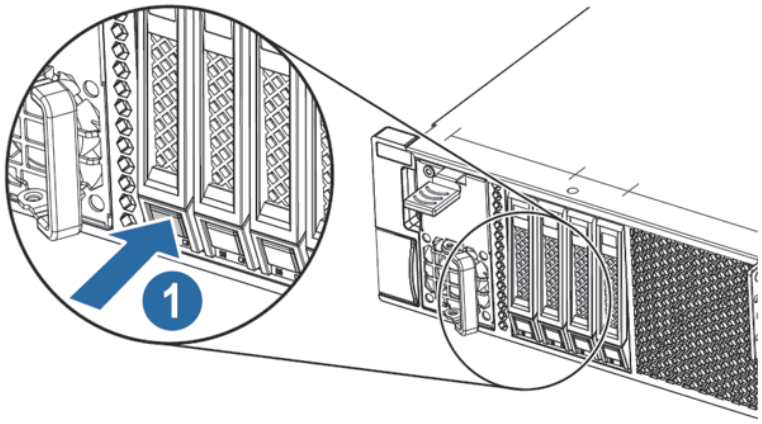
6.4 Hot-plug HDD Option

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.

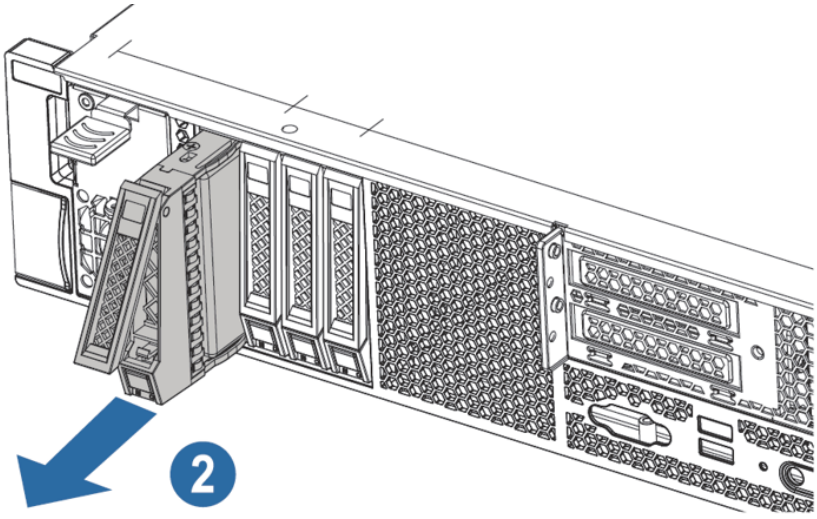
1. Check the status of the hard disk drive from the hot-plug HDD LED.
2. Back up all data on the hard disk drive.
3. Remove the hard disk drive.

Installing a hot-plug HDD

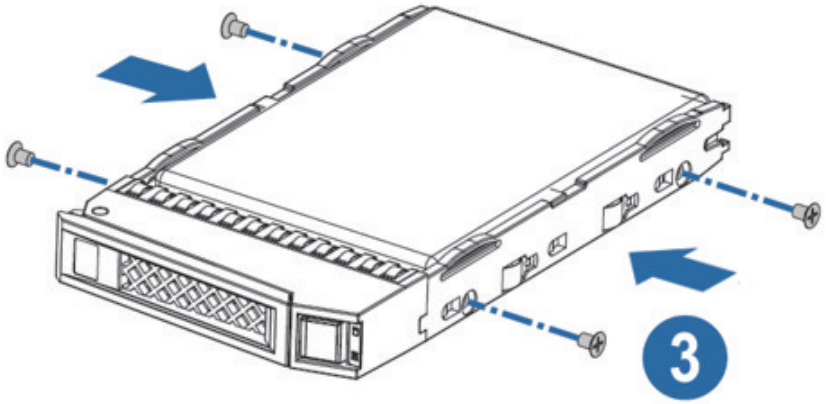
Step 1: Press the HDD panel button.



Step 2: The lever on HDD tray pops up automatically, pull it outwards and remove the HDD tray.



Step 3: Use four screws to fix the HDD into the tray.



Step 4: Install the HDD into the chassis, and lock the lever firmly.

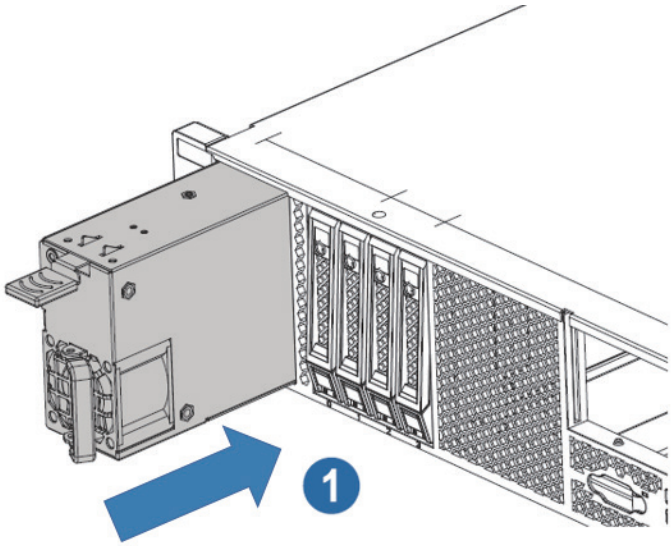
6.5 Redundant Hot-plug Power Supply Option

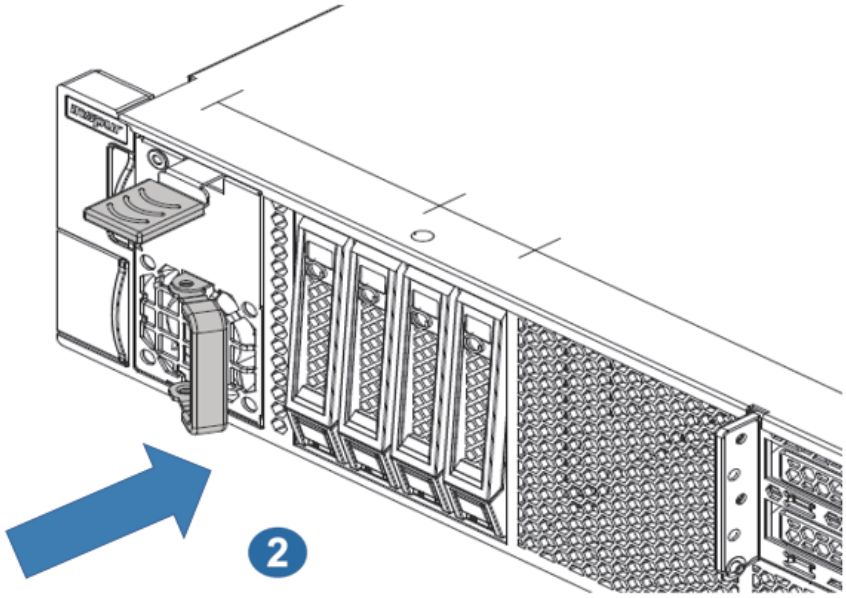
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

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

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

3. Install the power supply into the power supply bay.





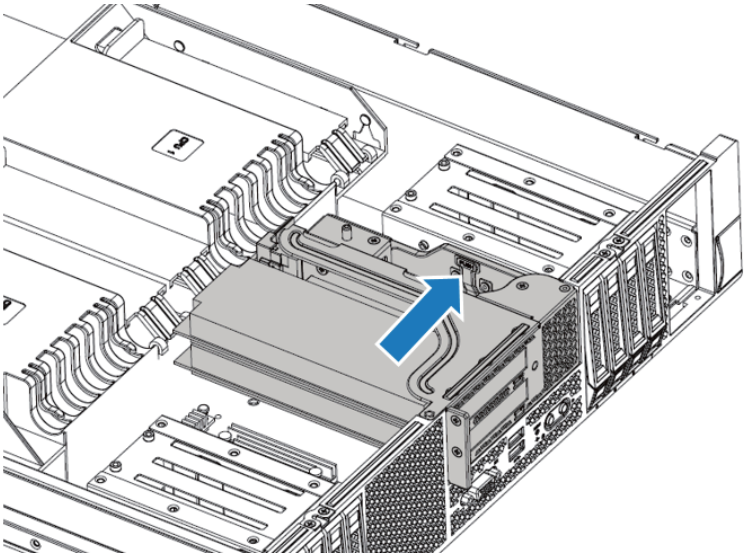
4. Connect the power cord to the power supply.
5. Route the power cord through the power cord anchor or cable management arm.
6. Reposition the cable management arm into the operating position.
7. Connect the power cord to the power source.
8. Verify that the corresponding power supply LED is green.

6.6 Expansion Board Option

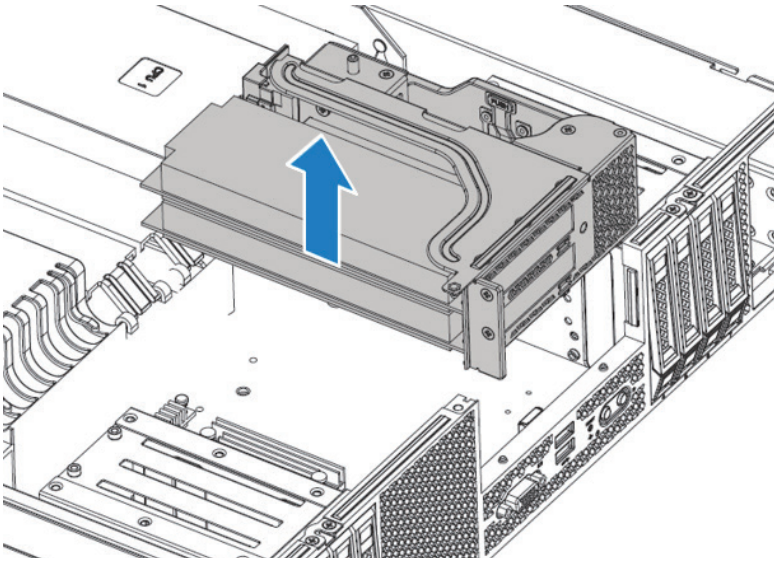
CAUTION: To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCIE Riser cage.

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

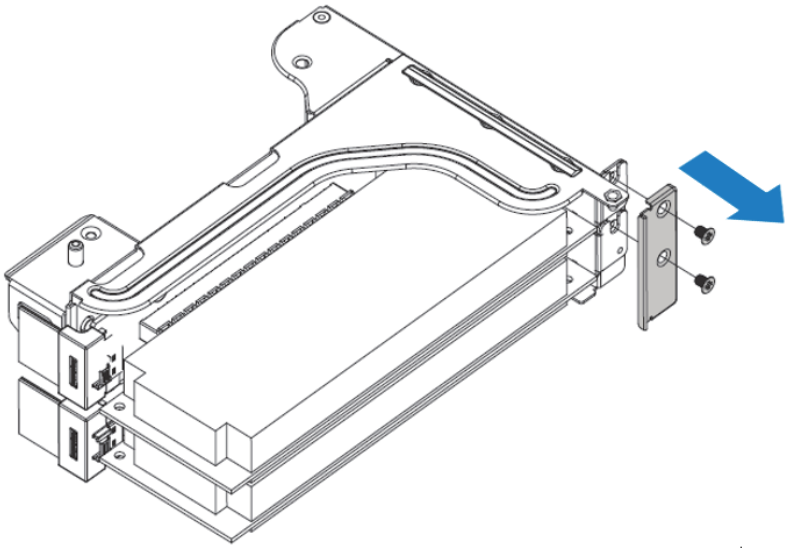
1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Disconnect the cables (if any) from the PCIE Riser cage.
5. Press the latch in the direction shown in the figure.



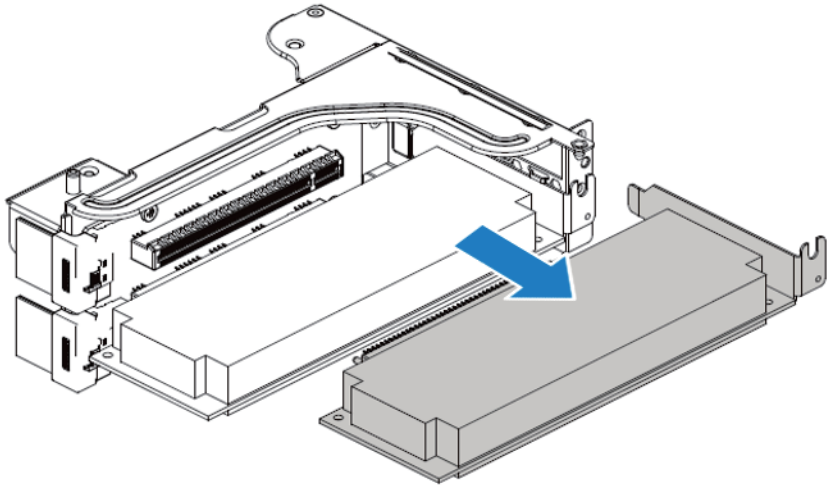
6. Hold the PCIE Riser cage and remove it vertically.



7. Remove the two retaining screws and remove the IO fixing plate.



8. Pull out the expansion board in the direction of arrow to replace it with a new expansion board.

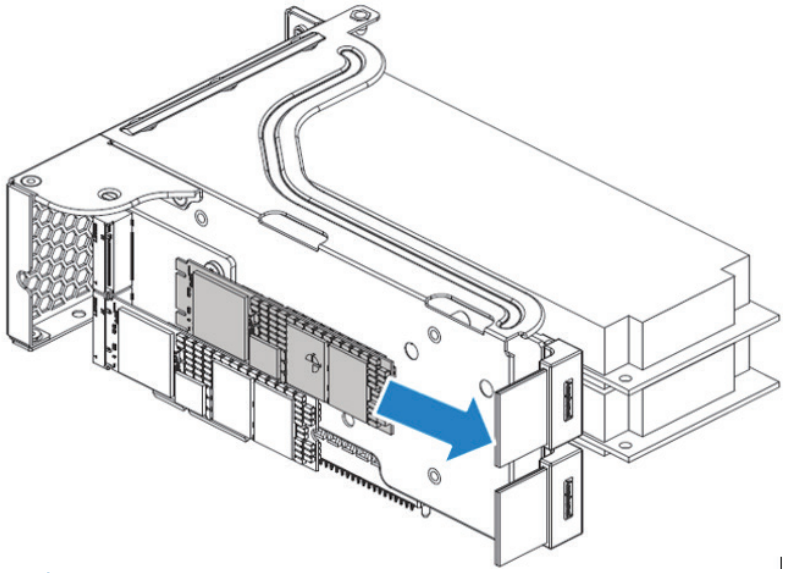


6.7 M.2 Memory Card Option

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

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

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Disconnect the cables (if any) from the PCIE Riser cage.
5. Remove the PCIE Riser cage.
6. Remove the M.2 HDD retaining screws, and pull out the expansion card in the direction of arrow to replace it with a new M.2 memory card.



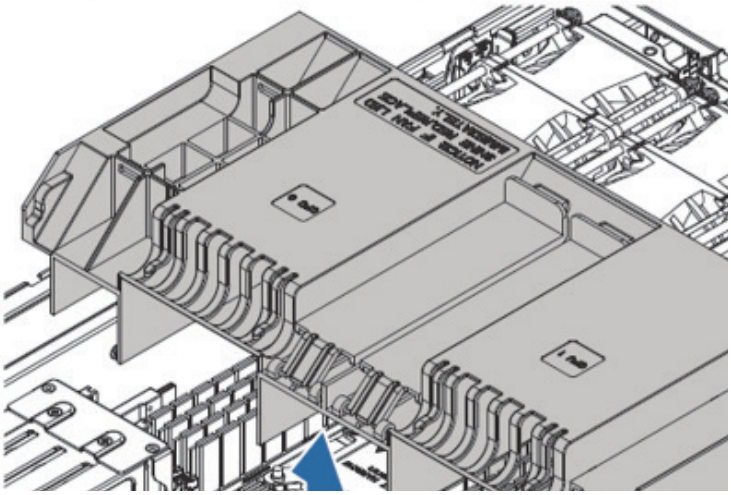
6.8 Air Baffle Option

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 access panel.
4. Hold the air baffle with two hands, and remove it vertically to replace it with a new one.



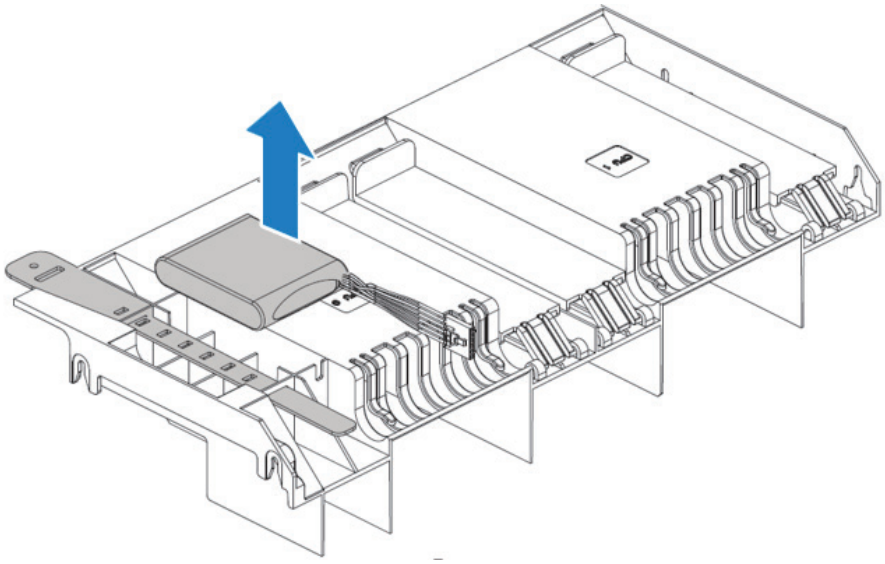
6.9 Cache Supercapacitor Option

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 access panel.
4. Remove the cables from the supercapacitor, open the fixing strap, and remove the supercapactor in the direction shown in the figure.



7 BIOS Setup

BIOS is the basic input/output system, which is the basic program code loaded in the motherboard chipset. It stores the server 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.

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.
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<ESC> to Front Page Press<DEL> to Setup 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.

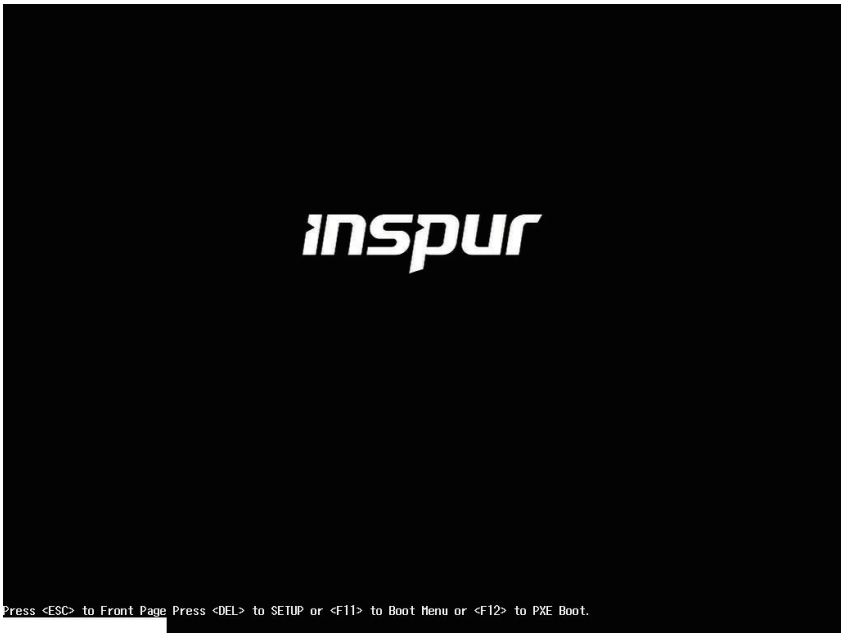
Other hotkeys function:

- Press ESC to enter BIOS Front Page interface.
- Press DEL to enter BIOS Setup interface.
- 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>	Exit or return from submenu to main menu
<←> or <→>	Select a menu
<↑> or <↓>	Move the cursor up or down
<F1>	Help
<F5>/<F6>	Change the value
<F9>	Restore to the default configuration
<F10>	Save and exit
<Enter>	Execute commands or select a submenu

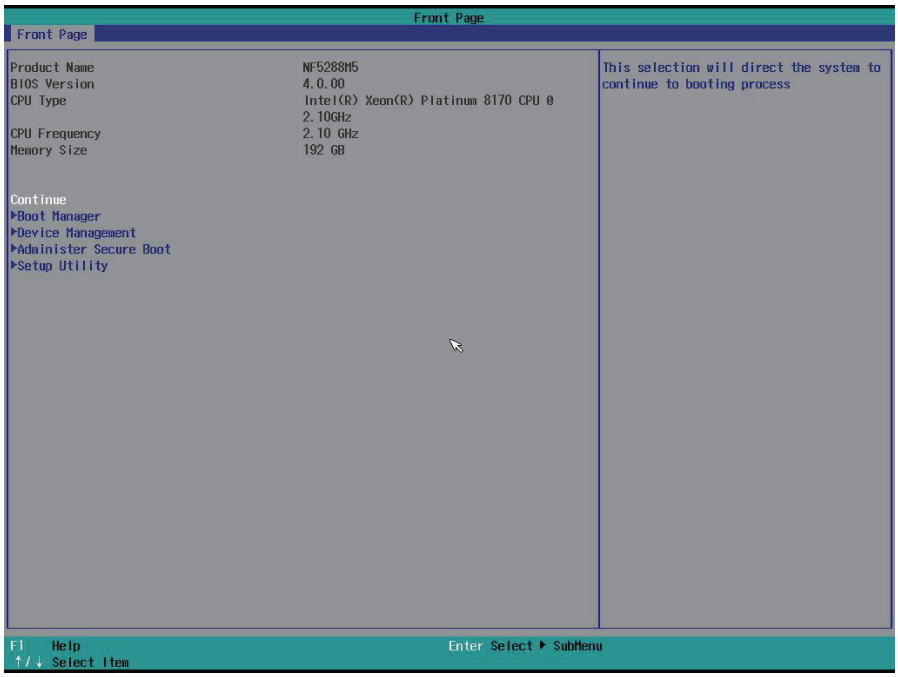
Note: Options in grey are not available. Options with symbol "▶" have a sub-menu.



7.2 BIOS Parameter Description

7.2.1 Front Page

When Inspur Logo appears during system boot, press ESC to enter the Setup Front Page interface, as shown in the following figure:

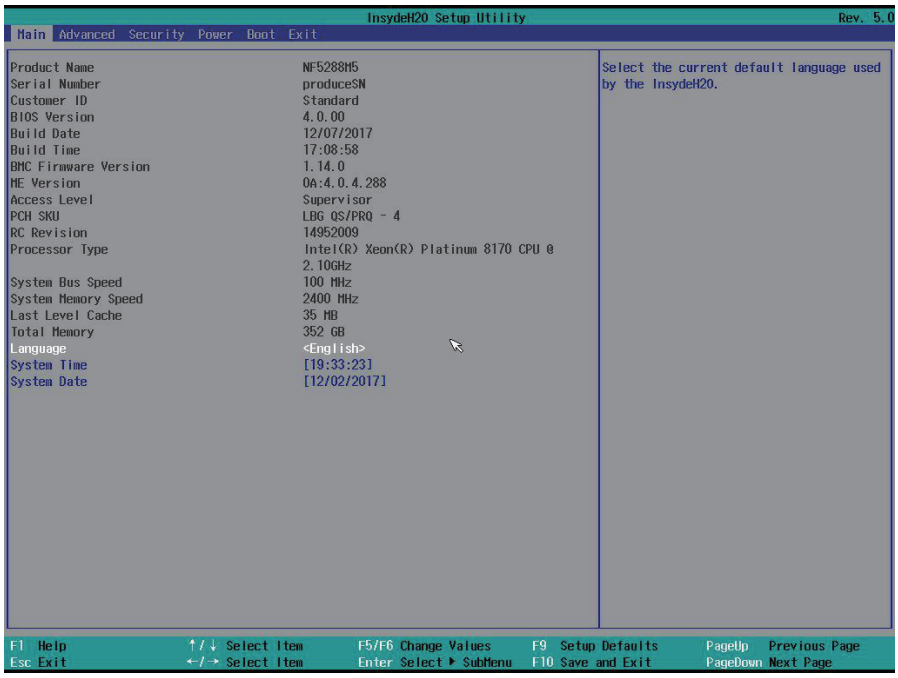


Front Page Interface Instruction Table

Interface Parameters	Function Description	Default Value
Product Name	Display the current product name	---
BIOS Version	Display BIOS version	---
CPU Type	Display CPU type	---
CPU Frequency	Display CPU nominal frequency	---
Memory Size	Display the current system memory size	---
Continue	Continue to boot option	---
Boot Manger	Boot device management option menu	---
Device Management	Device management option menu, including configuration option menus of PCH SATA/sSATA RAID, Intel NVME VMD RAID, SAS RAID and other devices in UEFI mode	---
Administer Secure Boot	Secure boot option settings	---
Setup Utility	BIOS setup interface	---

7.2.2 Main

When the logo appears, press DEL to enter the BIOS Setup Main interface, or select the Setup Utility option on the Front Page interface to enter the BIOS Setup Main interface. BIOS Main interface contains the basic information of BIOS system, the version information of BIOS, BMC and ME, CPU model information, total memory capacity information and system time. The specific parameters are shown in the following table, and the Main interface is shown in the following figure.

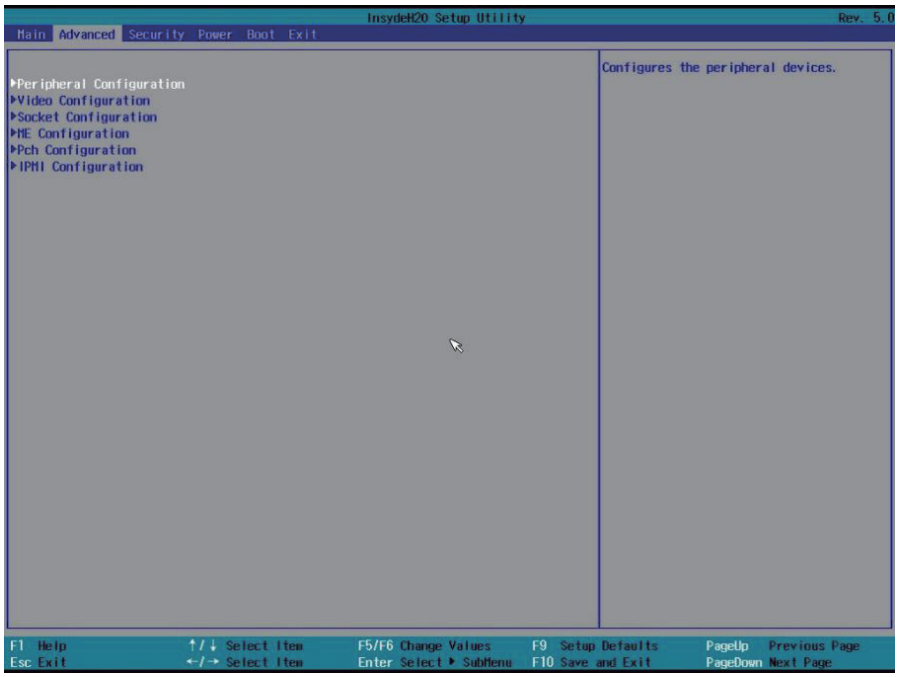


Main Interface Instruction Table

Interface Parameters	**Function Description**
Product Name	Display current product name
Serial Number	Display product serial number
Customer ID	Display the customer ID
BIOS Version	Display the BIOS version
Build Date	Display the build date for current BIOS Version
Build Time	Display the build time for current BIOS Version
BMC Firmware Version	Display the BMC firmware version
ME Version	Display the ME version
Access Level	Display the current access level
PCH SKU	Display the PCH revision
RC Revision	Display the reference code version
Processor Type	Display CPU type information
System Bus Speed	Display the speed of system bus
System Memory Speed	Display the memory speed
Last Level Cache	Display the last cache size
Total Memory	Display total memory size
Language	Display current Setup interface language
System Date	Display and set system date, allow changes, take effect immediately
System Time	Display and set system time, allow changes, take effect immediately

7.2.3 Advanced Menu

Advanced interface includes the BIOS system parameters and related function settings, as shown in the follow figure and table.

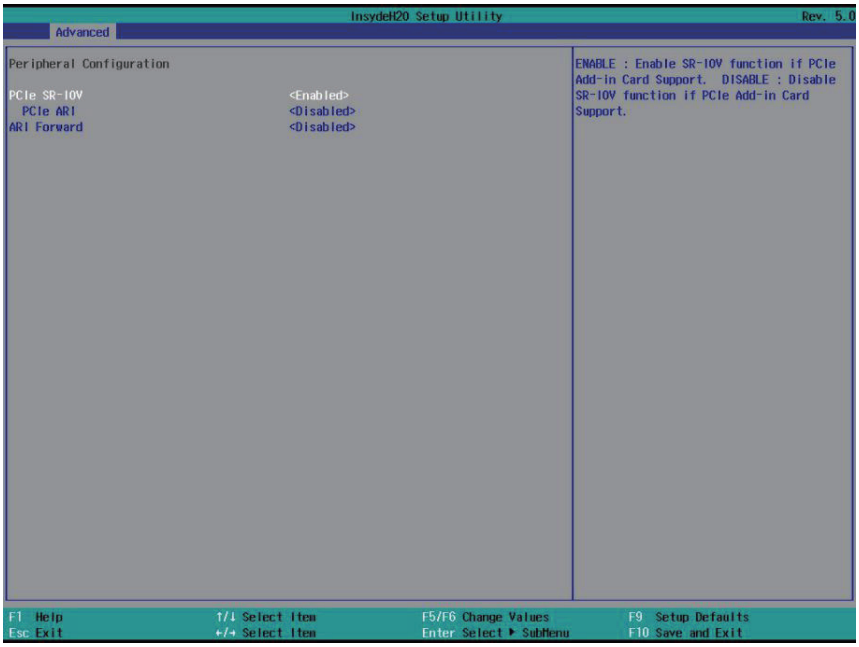


Advanced Interface Instruction Table

Interface Parameters	**Function Description**
Peripheral Configuration	Peripheral devices configuration sub-menu
Video Configuration	Video configuration sub-menu
Socket Configuration	Socket configuration sub-menu
ME Configuration	Management engine technology parameters configuration sub-menu
PCH Configuration	PCH configuration sub-menu
IPMI Configuration	IPMI configuration sub-menu

7.2.3.1 Peripheral Configuration

Peripheral Configuration interface is used for system peripheral device settings, as shown in the follow figure and table.

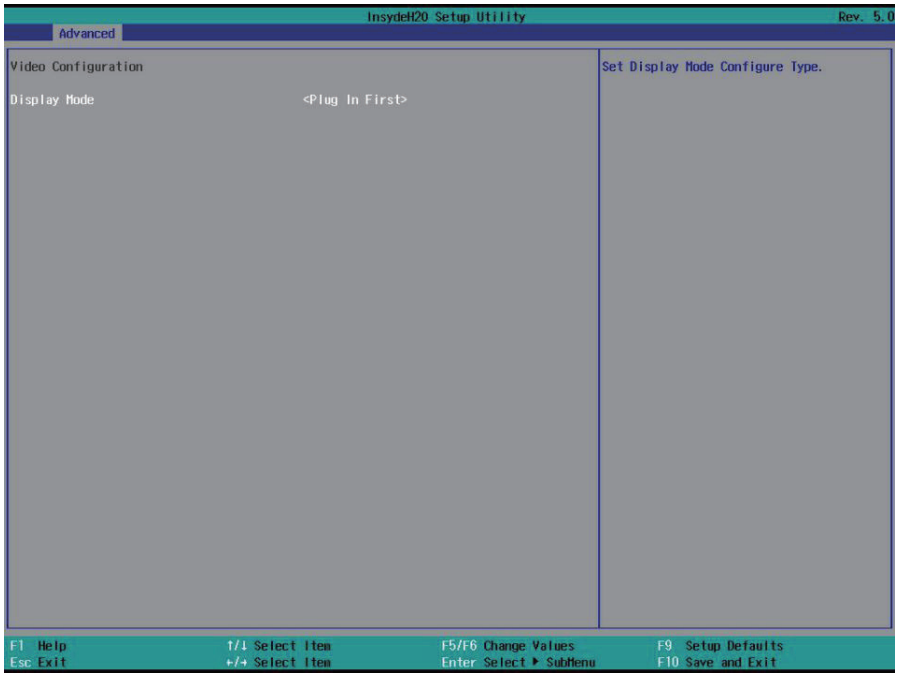


Peripheral Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
PCIe SR-IOV	PCIe device SR-IOV setting	Enabled
PCIe ARI	ARI capability setting	Disabled
ARI Forward	ARI forward setting	Disabled

7.2.3.2 Video Configuration

Video Configuration interface is used to set the system display mode, as shown in the following figure and table.

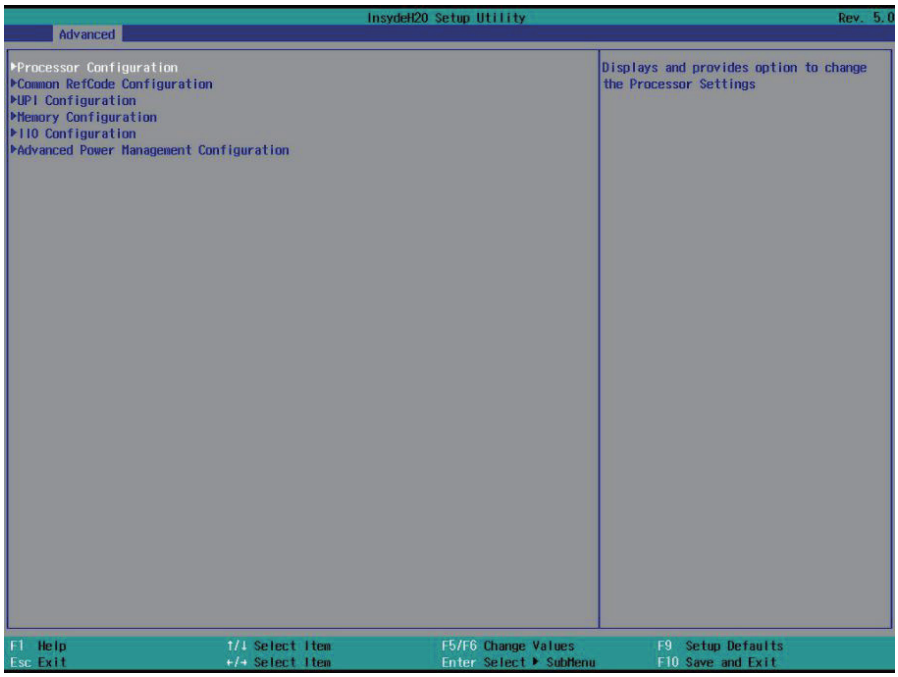


Video Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Display Mode	Set display mode configure type	Plug In First

7.2.3.3 Socket Configuration

Socket Configuration interface is used for system processor and memory related settings, as shown in the following figure and table.

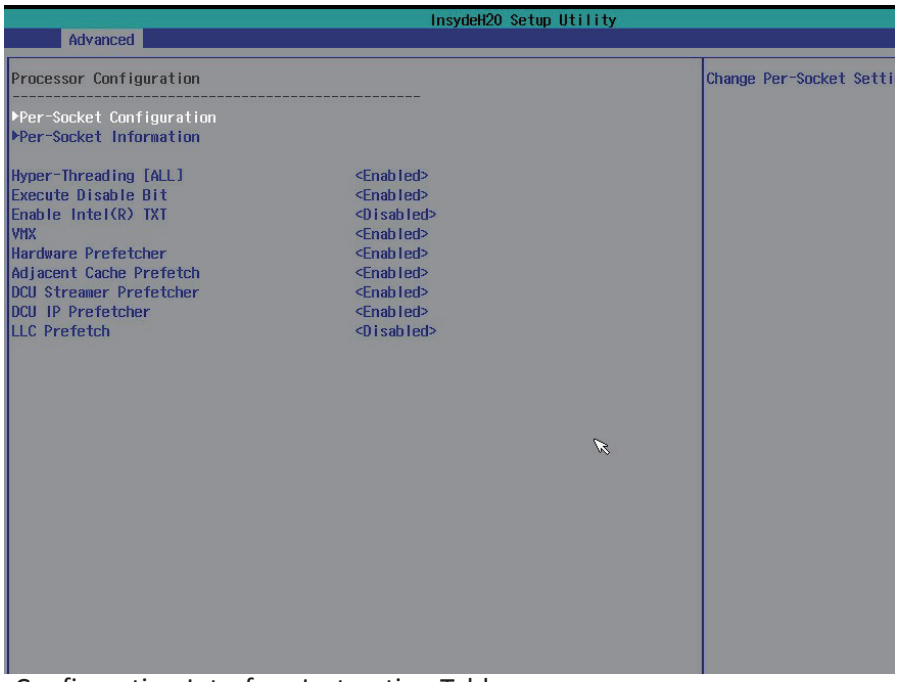


Socket Configuration Interface Instruction Table

Interface Parameters	Function Description
Processor Configuration	Processor configuration sub-menu
Common RefCode Configuration	Common reference code configuration sub-menu
UPI Configuration	UPI configuration sub-menu
Memory Configuration	Memory configuration sub-menu
IIO Configuration	IIO configuration sub-menu
Advanced Power Management Configuration	Advanced power management configuration sub-menu

7.2.3.3.1 Processor Configuration

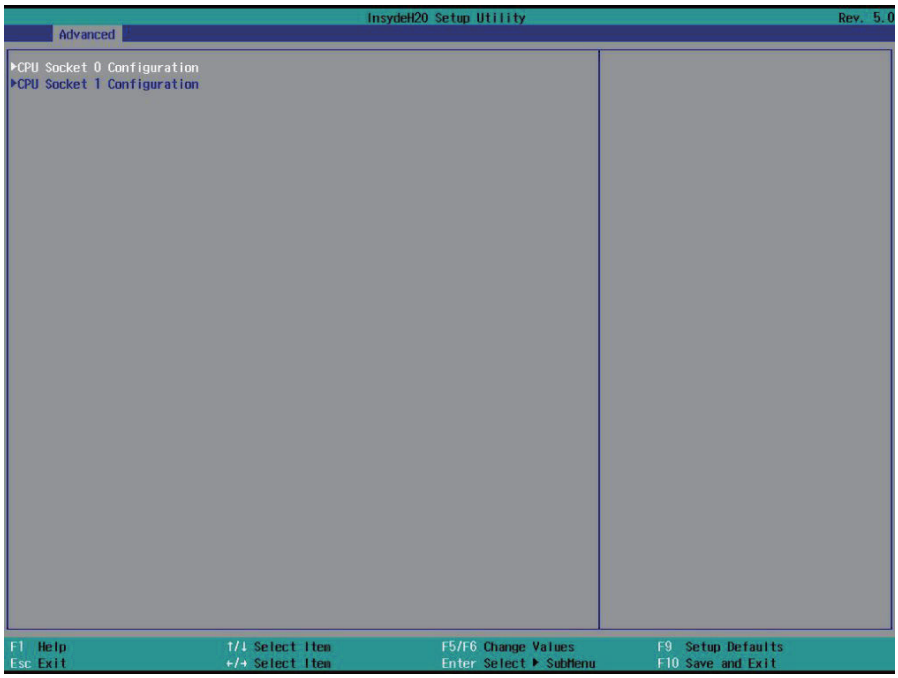
Processor Configuration interface is used for system processor related settings, as shown in the following figure and table.

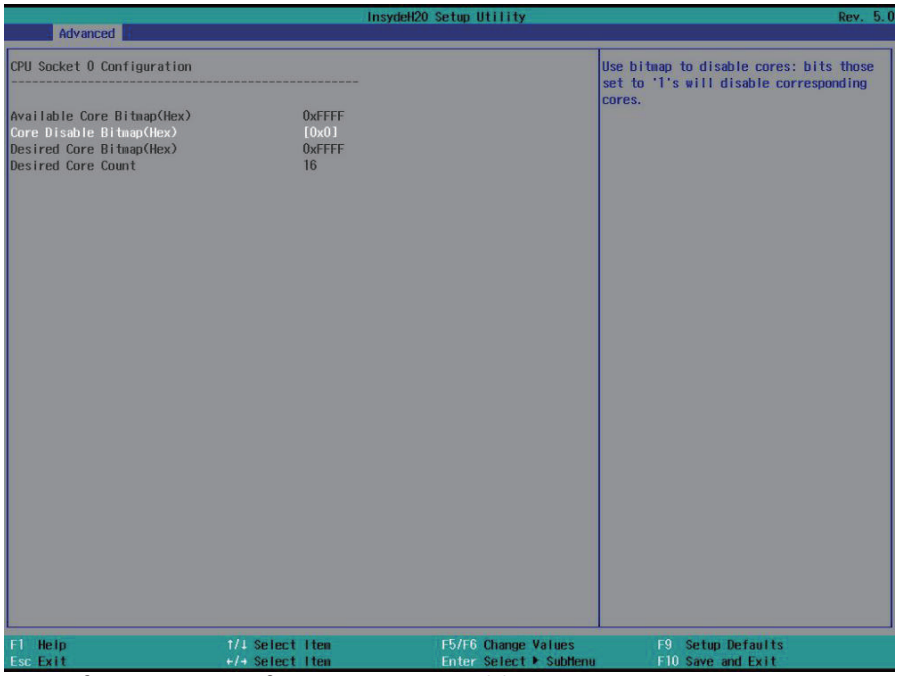


Processor Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Per-Socket Configuration	Per-Socket setting sub-menu	--
Per-Socket Information	Per-Socket information display sub-menu	--
Hype-Threading [ALL]	Logical processor thread setting	Enabled
Execute Disable Bit	Virus protecting technology setting	Enabled
Enable Intel(R) TXT	Intel trustable execution technology setting	Disabled
VMX	Intel hardware-assisted virtualization technology settings	Enabled
Hardware Prefetcher	Hardware prefetch setting	Enabled
Adjacent Cache Prefetch	Adjacent high speed cache prefetch setting	Enabled
DCU Streamer Perfetcher	DCU streamer prefetch setting	Enabled
DCU IP Prefetcher	DCU IP prefetch setting	Enabled
LLC Prefetch	LLC prefetch setting	Disabled

(a) Entering the Per-Socket Configuration sub menu, core disable bitmap can be set, as shown in the following figures.

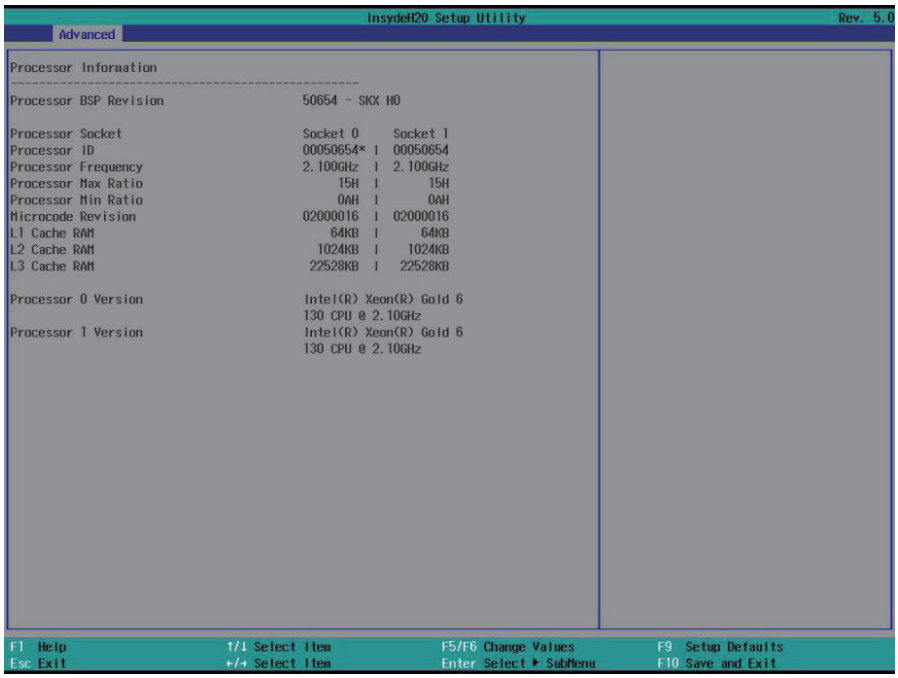




CPU Socket Configuration Interface Instruction Table

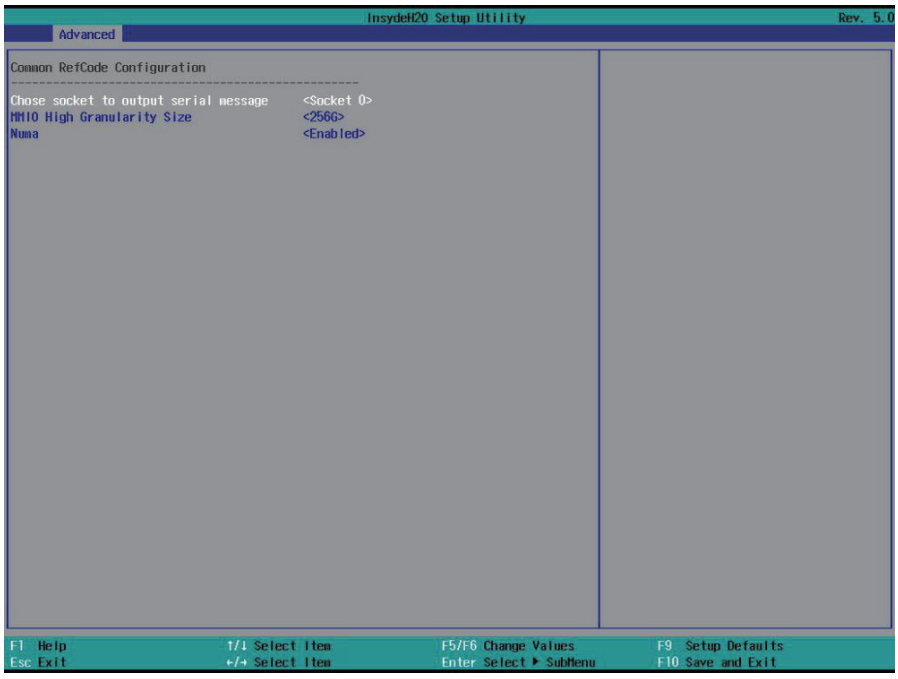
Interface Parameters	Function Description	Default Value
Available Core Bitmap(Hex)	Display the available core bitmap	--
Core Disable Bitmap(Hex)	Disabled core bitmap setting	0x0
Enable Core Bitmap(Hex)	Display the enable core bitmap	--
Desired Core Count	Display the number of enabled cores	--

(b) Information of all processors will be displayed by entering Per-Socket Information sub menu.



7.2.3.3.2 Common RefCode Configuration

Common RefCode Configuration interface is used for common settings, as shown in the following figure and table.

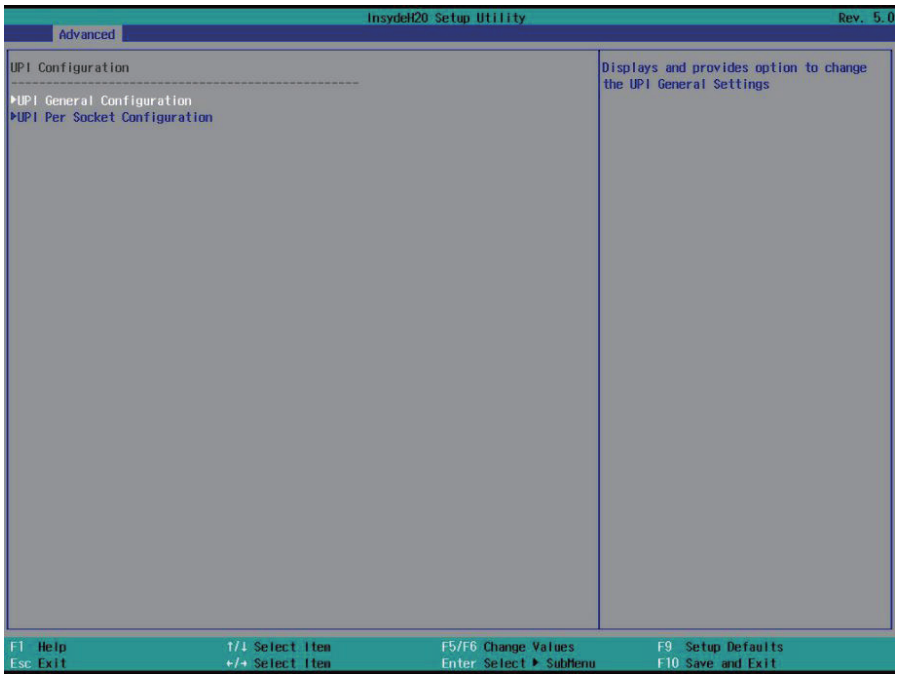


Common RefCode Configuration Interface Introduction

Interface Parameters	Function Description	Default Value
Chose socket to output serial message	MRC serial message display setting	Socket0
MMIO High Granularity Size	MMIO high resources granularity size setting	256G
Numa	Numa switching setting	Enabled

7.2.3.3.3 UPI Configuration

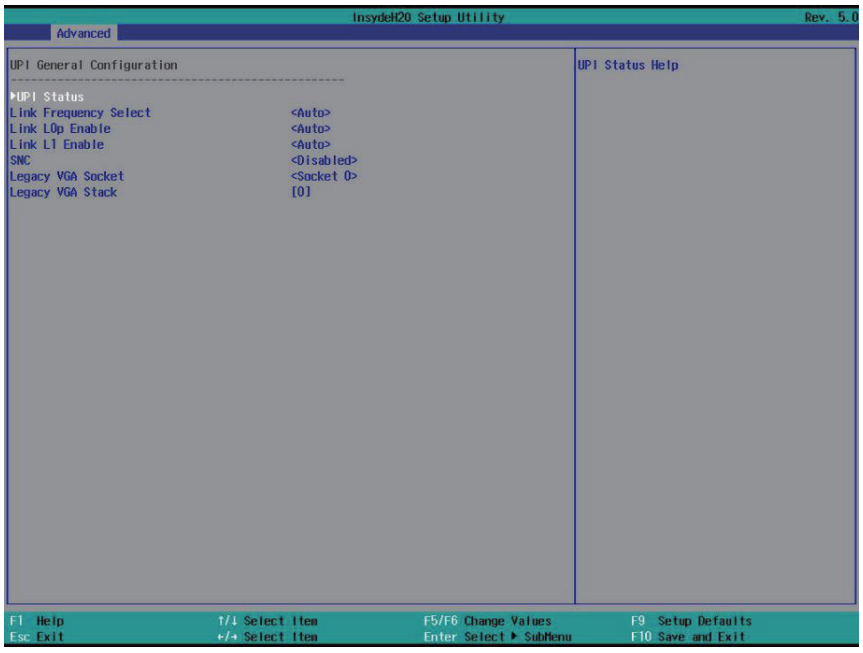
UPI Configuration interface is used for UPI related settings, as shown in the following figure and table.



UPI Configuration Interface Instruction Table

Interface Parameters	Function Description
UPI General Configuration	UPI general configuration sub-menu
UPI Per Socket Configuration	UPI per-socket configuration sub-menu

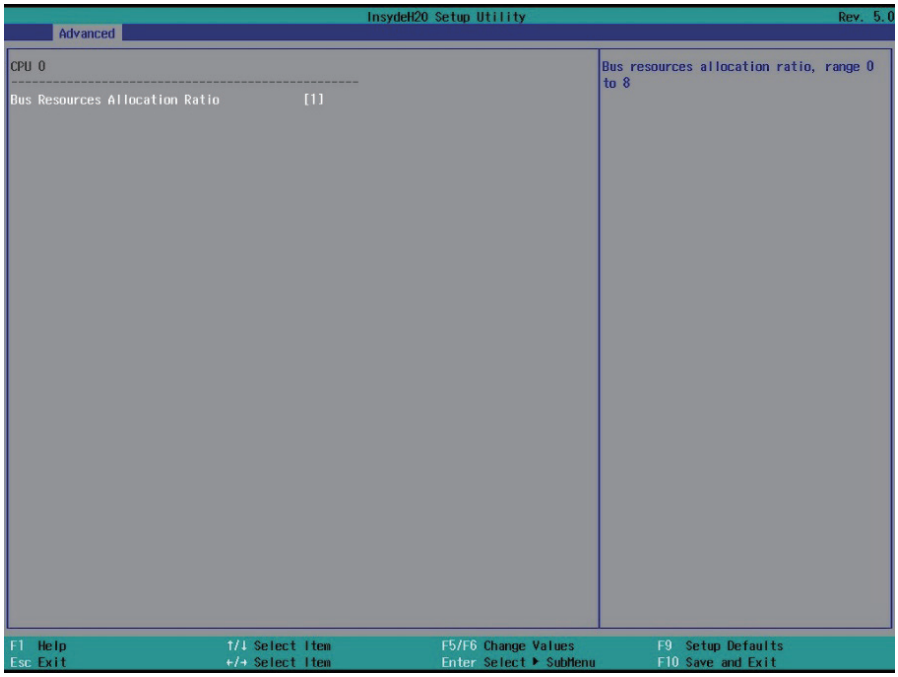
(a) It will display UPI general configuration menu by entering UPI General Configuration sub menu.



UPI General Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
UPI Status	UPI status display sub-menu	--
Link Frequency Select	UPI link frequency setting	Auto
Link L0p Enable	UPI link power saving mode settings, which is made when bandwidth is half of the peak bandwidth.	Auto
Link L1 Enable	In the case that system is extremely idle, turn off QPI Link.	Auto
SNC	SNC setting	Disabled
Legacy VGA Socket	Legacy VGA socket range setting	Socket0
Legacy VGA Stack	Legacy VGA stack range setting	0

(b) Bus resources allocation ration can be configurated by entering UPI Per Socket Configuration sub menu.

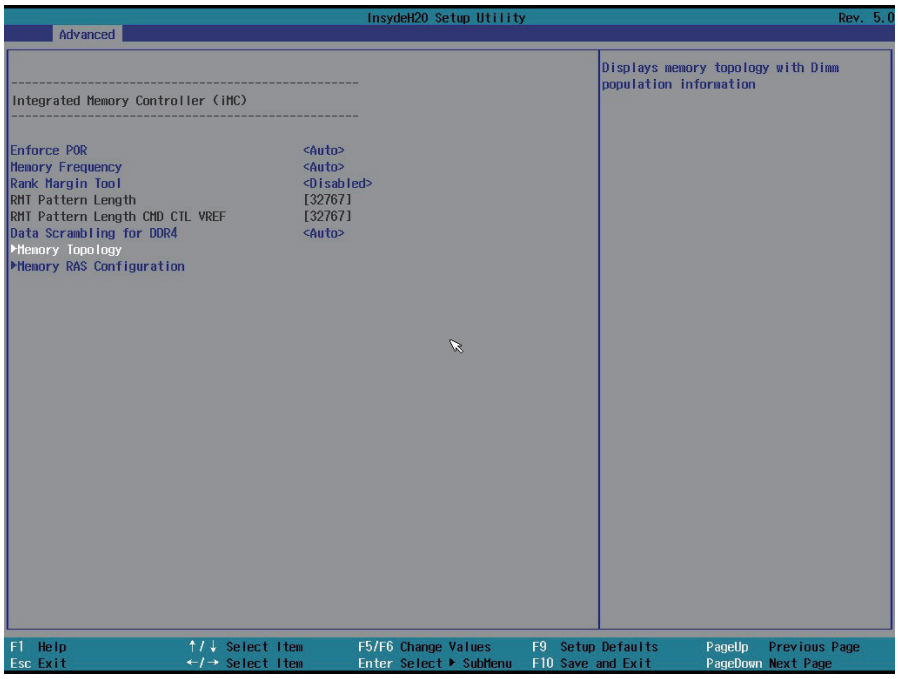


UPI Per Socket Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Bus Resources Allocation Ratio	Bus resources allocation ratio of each CPU	1

7.2.3.3.4 Memory Configuration

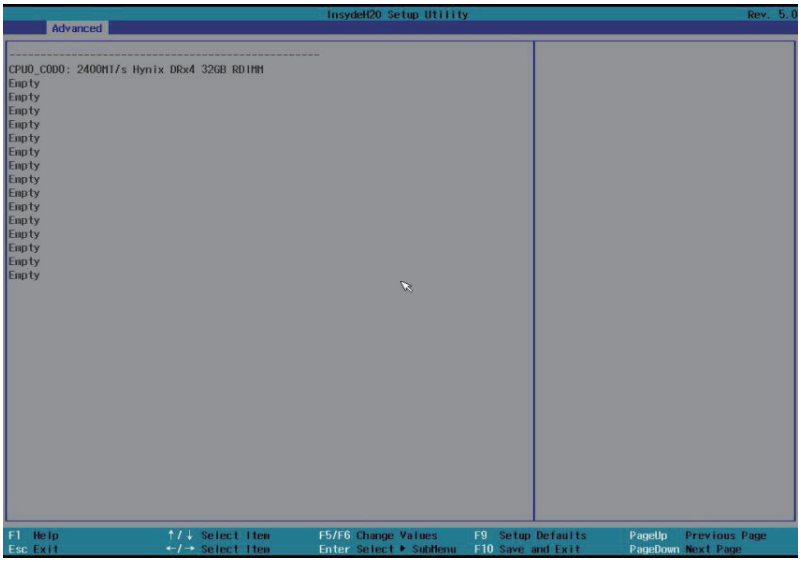
Memory Configuration interface is used for memory related settings, as shown in the following figure and table.



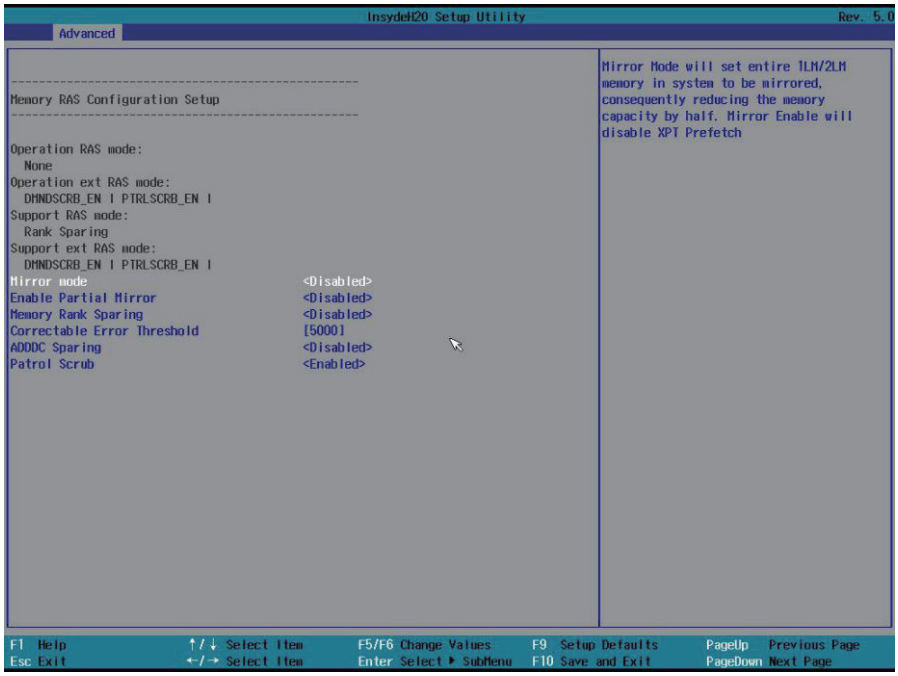
Memory Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Enforce POR	Enforce POR settings	Auto
Memory Configuration	Memory frequency select setting	Auto
Rank Margin Tool	Rank margin tool setting	Disabled
RMT Pattern Length	Set the pattern length for the rank margin tool when it's enabled	32767
RMT Pattern Length CMD CTL VREF	Set the pattern length for the rank margin tool (CMD CTL VREF step) when it's enabled	32767
Data Scrambling for DDR4	Data scrambling setting	Auto
Memory Topology	Memory topology sub-menu	--
Memory RAS Configuration	Memory RAS setting sub-menu	--

(a) It will display the memory topology information by entering the Memory Topology sub menu.



(b) It will display the memory RAS configuration by entering the Memory RAS Configuration sub menu.

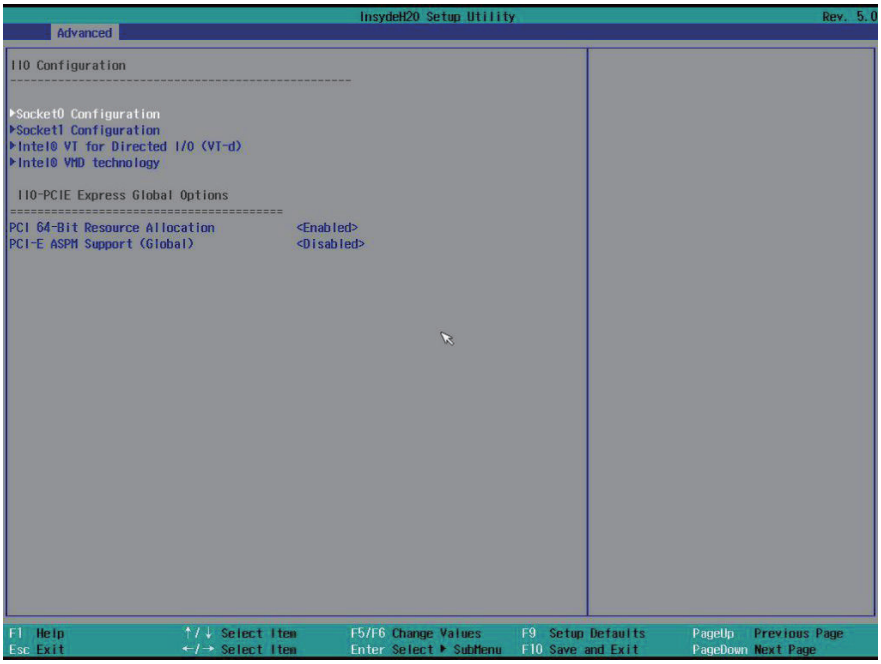


Memory RAS Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Operation RAS mode	Display current operation RAS mode	--
Operation ext RAS mode	Display current operation extra RAS mode	--
Support RAS mode	Display supported RAS mode	--
Support ext RAS mode	Display supported extra RAS mode	--
Mirror Mode	Mirror mode setting	Disabled
Enable Partial Mirror	Partial mirror mode setting	Disabled
Memory Rank Sparing	Memory Rank hot sparing setting	Disabled
Correctable Error Threshold	Correctable error threshold setting	5000
ADDDC Sparing	ADDDC sparing setting	Disabled
Patrol Scrub	Patrol scrub setting	Enabled

7.2.3.3.5 IIO Configuration

IIO Configuration interface is used for PCIe slot settings, as shown in the following figure and table.

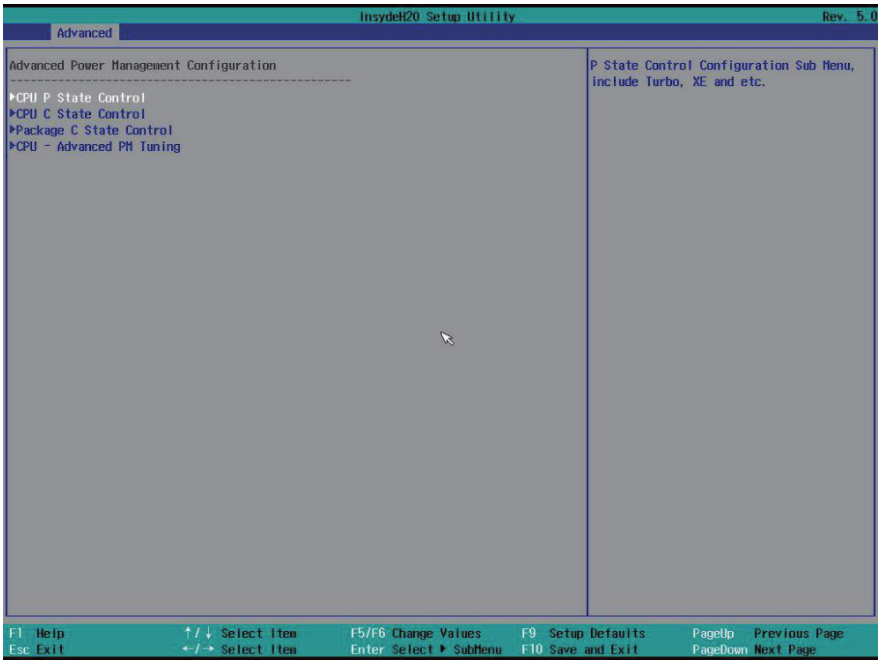


IIO Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Socket# Configuration	Socket# IIO Configuration setting sub-menu	--
Intel VT for Directed I/O (VT-d)	Intel VT-d switching setting sub-menu	--
PCI 64-Bit Resource Allocation	PCI 64-bit resource allocation setting	Enabled
PCI-E ASPM Support (Global)	Global PCIe device ASPM support setting	Disabled

7.2.3.3.6 Advanced Power Management Configuration

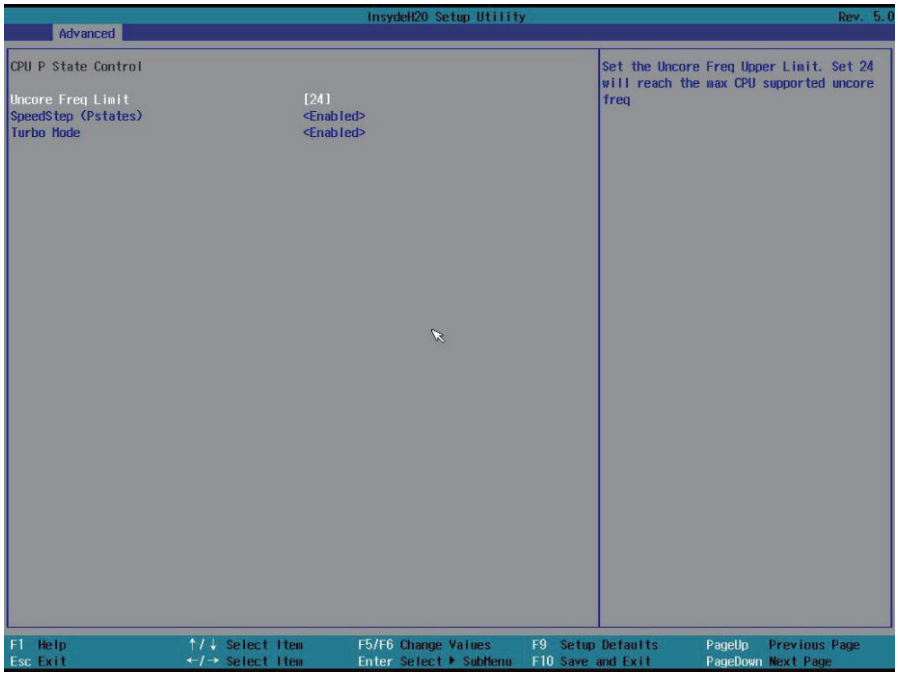
Advanced Power Management Configuration interface is used for CPU power management settings, as shown in the following figure and table.



Advanced Power Management Configuration Interface Instruction Table

Interface Parameters	Function Description
CPU P State Control	CPU P state control configuration sub-menu
CPU C State Control	CPU C state control configuration sub-menu
Package C State Control	Package C state setting sub-menu
CPU-Advanced PM Tuning	CPU advanced PM turning setting sub-menu

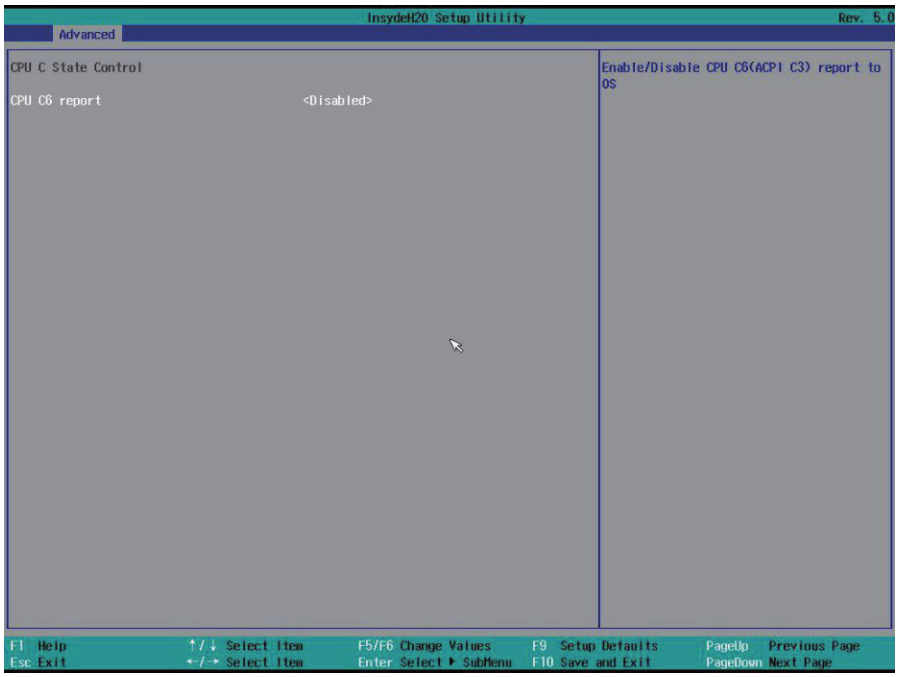
(a) It will display the CPU P state configuration menu by entering CPU P State Control sub menu.



CPU P State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
Uncore Fre Limit	Uncore frequency limit setting	24
SpeedStep (Pstates)	CPU P state setting	Enabled
Turbo Mode	Turbo mode setting	Enabled

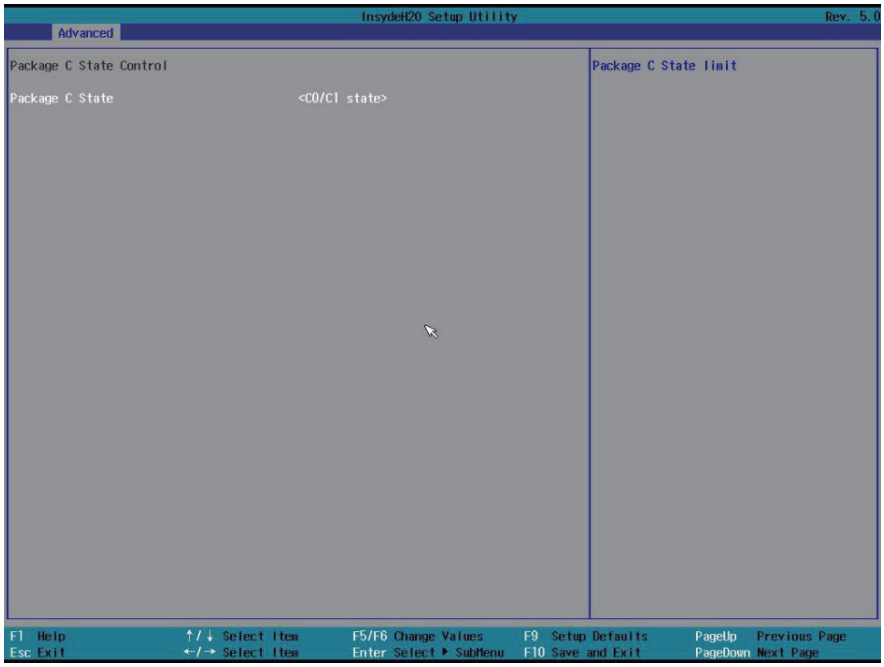
(b) It will display the CPU C state configuration menu by entering CPU C State Control sub menu.



CPU C State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
CPU C6 report	Report C6 state to OS setting	Disabled

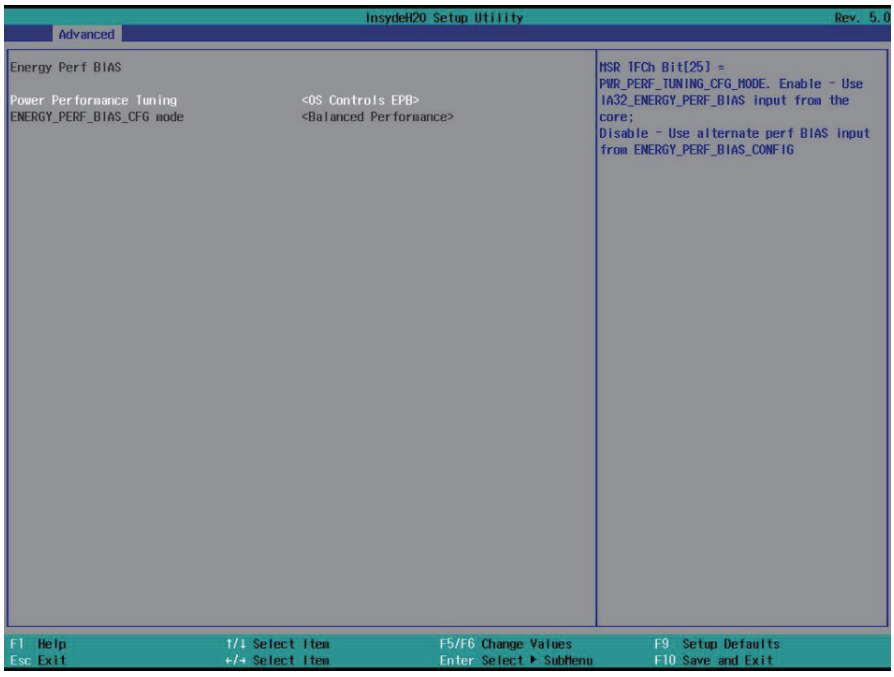
(c) It will display the package C state configuration menu by entering Package C State Control sub menu.



Package C State Control Interface Instruction Table

Interface Parameters	Function Description	Default Value
Package C State	Package C state setting	C0/C1 State

(d) Select CPU Advanced PM Tuning menu, select Energy Perf BIAS, and enter power performance setting interface, as shown below:

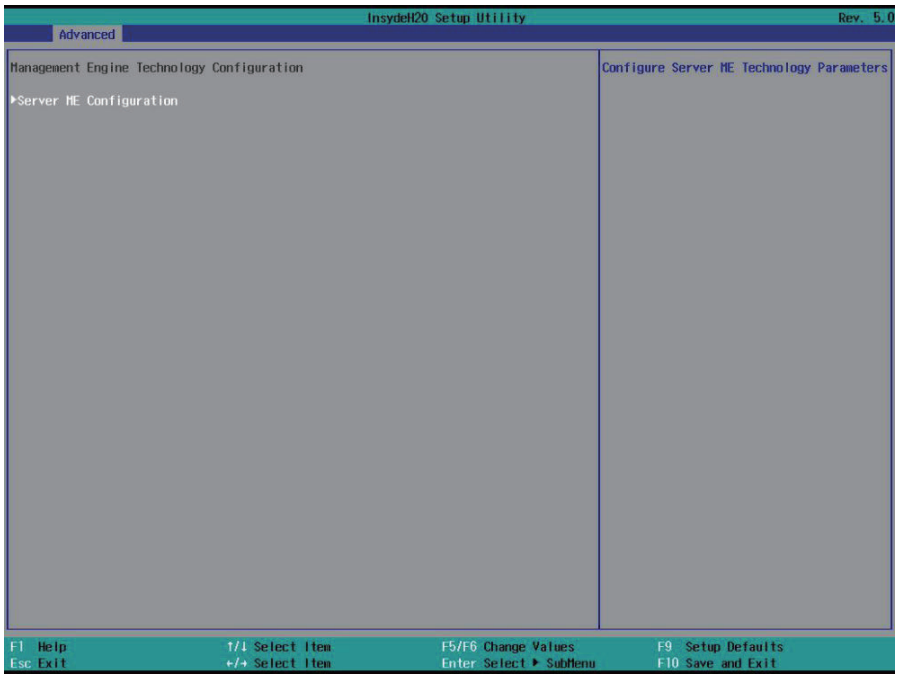


Energy Perf BIAS Interface Instruction Table

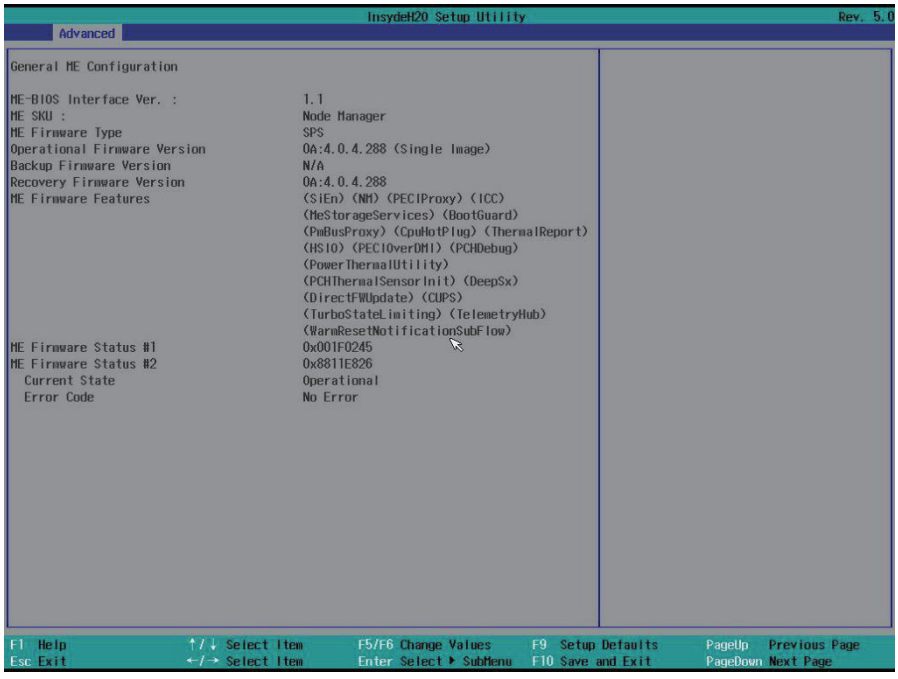
Interface Parameters	Function Description	Default Value
Power Performance Tuning	Power performance tuning setting	OS Controls EPB
ENERGY_PERF_BIAS_CFG mode	Performance setting	Balanced Performance

7.2.3.4 ME Configuration

ME Configuration interface displays the information related with ME configuration.



The general information of ME configuration will be displayed by entering Server ME Configuration sub menu.



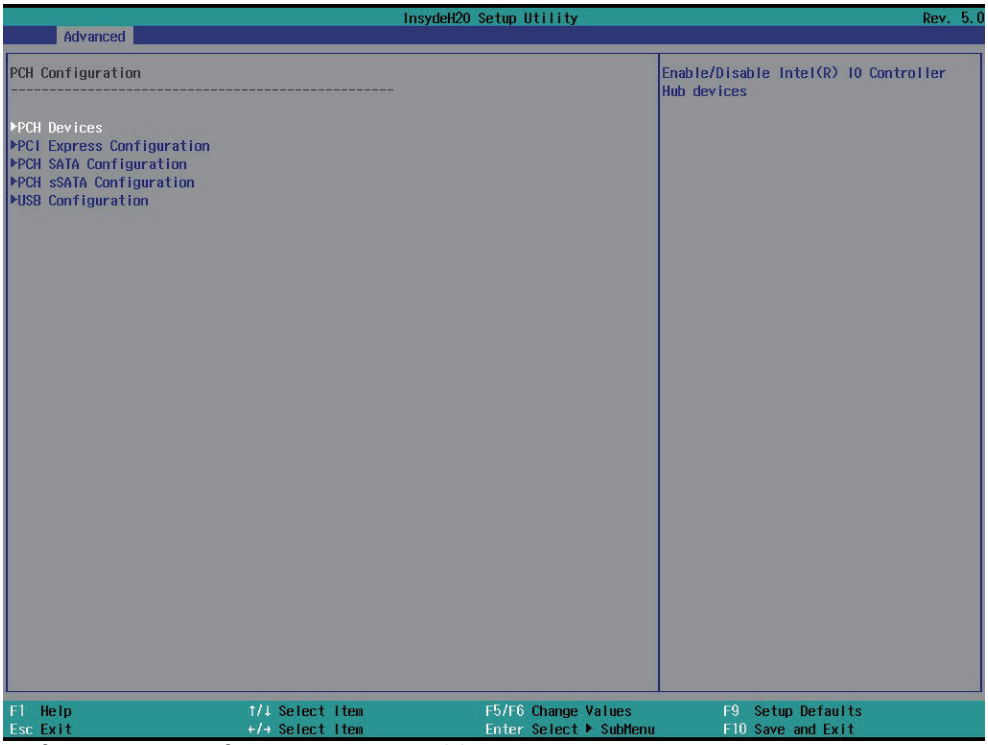
Sever ME Configuration Interface Instruction Table

nterface Parameters	Function Description
ME–BIOS Interface Ver.	ME BIOS interface version
ME SKU	ME SKU
ME Firmware Type	ME FW type

Operational Firmware Version	Current operational ME FW version
Backup Firmware Version	Backup ME FW version
Recovery Firmware Version	Recovery ME FW version
ME Firmware Features	ME FW features
ME Firmware Status#1	ME FW status1
ME Firmware Status#2	ME FW status 2
Current State	ME current state
Error Code	ME error code

7.2.3.5 PCH Configuration

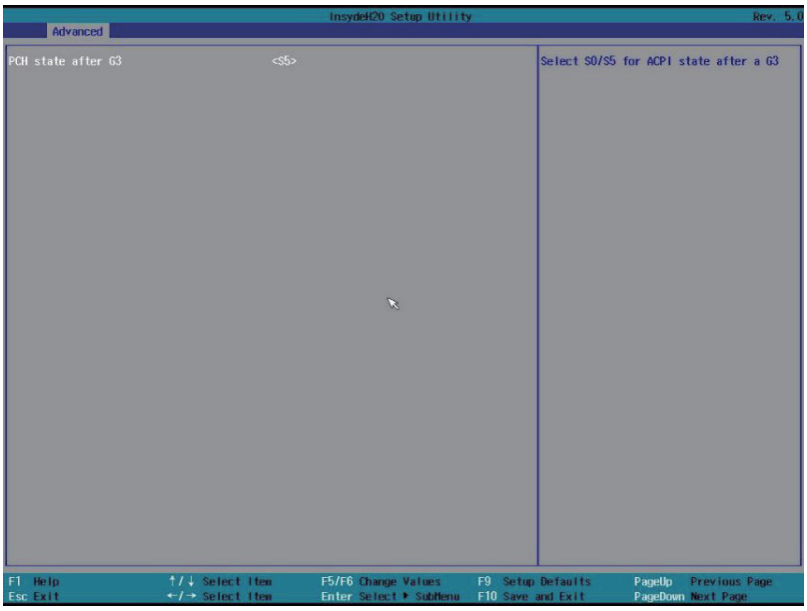
PCH Configuration interface is used to set the PCH related devices, including SATA/sSATA, USB options, etc., as shown in the following figure and table.



PCH Configuration Interface Instruction Table

Interface Parameters	**Function Description**
PCH Devices	Intel IO control hub device setting sub-menu
PCH Express Configuration	PCH Express devices display and setting sub-menu
PCH SATA Configuration	PCH SATA configuration sub-menu
PCH sSATA Configutation	PCH sSATA configuration sub-menu
USB Configuration	PCH USB configuration sub-menu

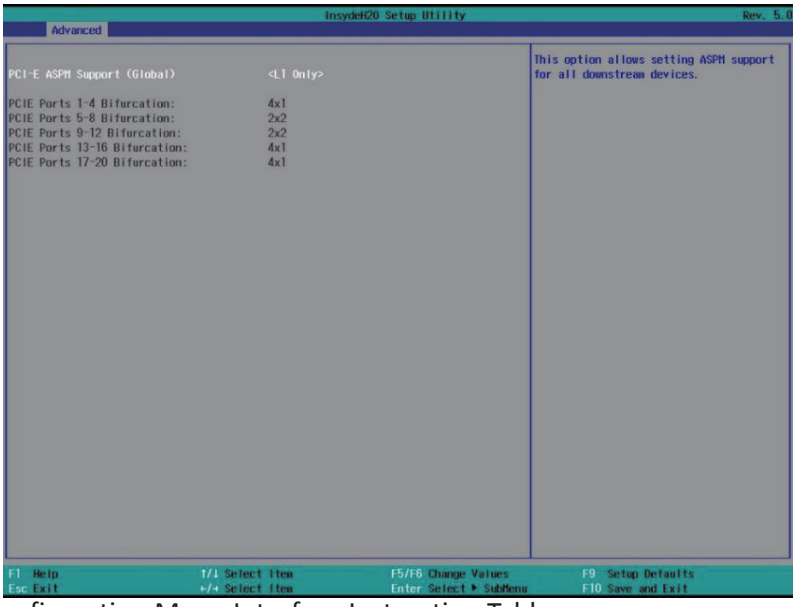
7.2.3.5.1 PCH Devices



PCH Devices Interface Instruction Table

Interface Parameters	Function Description	Default Value
PCH state after G3	Select S0/S5 for ACPI state after a G3	S5

7.2.3.5.2 PCI Express Configuration

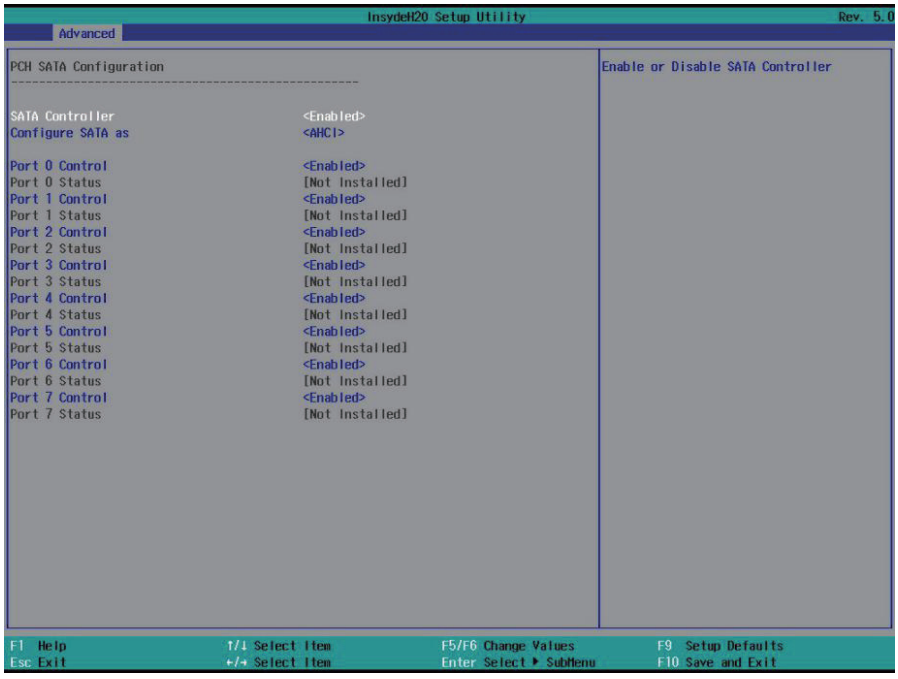


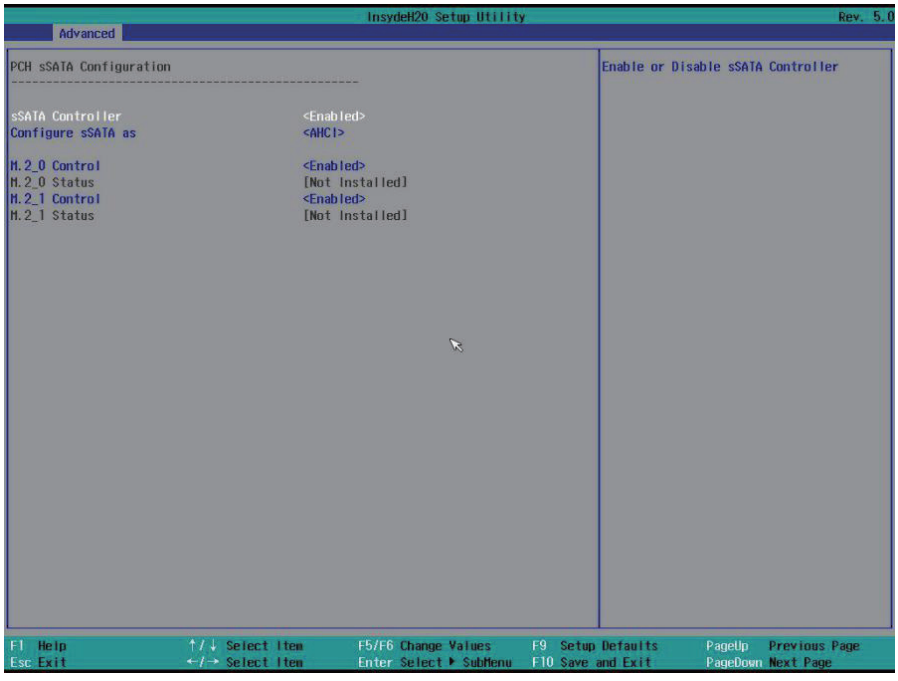
PCI Express Configuration Menu Interface Instruction Table

Interface Parameters	Function Description	Default value
PCI-E ASPM Support (Global)	Setting ASPM support for all downstream devices	L1 Only
PCIE Ports X Bifurcation	Bifurcation of PCIe port X	--

7.2.3.5.3 PCH SATA Configuration/PCH sSATA Configuration

PCH SATA Configuration/PCH sSATA Configuration interface is used to set the onboard PCH SATA/sSATA options, as shown in the following figures.





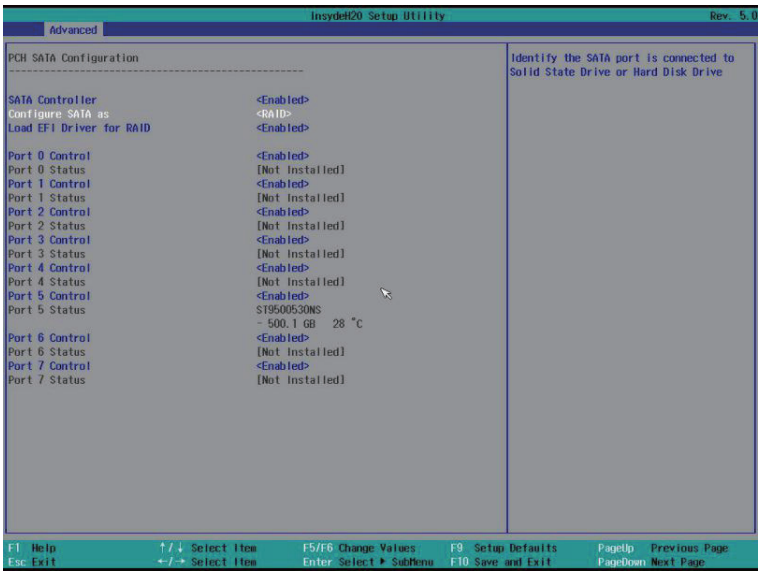
PCH SATA Configuration Menu Interface Instruction Table

Interface Parameters	Function Description	Default value
SATA Controller	Enable or disable SATA controller	Enabled
Configure SATA as	Set the SATA Controller as AHCI or RAID	AHCI
Port X Control	Enable or disable SATA port X	Enabled
Port X Status	SATA port X status	--

PCH SATA/sSATA RAID mode setting

Take SATA as an example to introduce how to set the SATA/sSATA controller to RAID mode, the sSATA setting method is similar with SATA's, and there is no explanation here.

1. Set the SATA Mode Option to [RAID], press F10 to save the setting, and the system reboots.



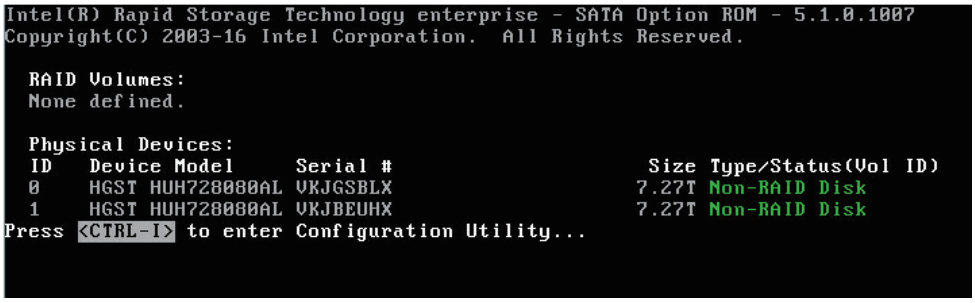
Notes:

When the SATA Mode Option is set to RAID, you can choose whether to enable the Load EFI Driver for RAID option. When the Boot Type is UEFI mode, the setting is Enabled. However, when the Boot Type is Legacy mode, you need to set Load EFI Driver for RAID to Disabled. When the Boot Type is UEFI mode and the Load EFI Driver for RAID is set to Enabled, the system will load Intel RSTe SATA Controller to manage the SATA RAID after pressing F10 and system reboot. When the logo appears during system startup, press ESC to enter the Front Page interface, enter the Device Management configuration interface, and select Intel RSTe SATA Controller to configure RAID.

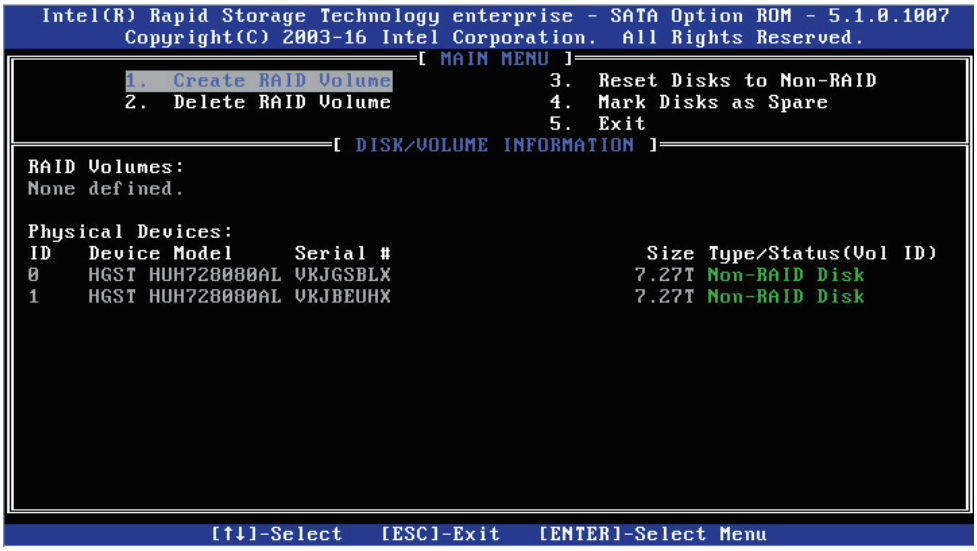
When the Boot Type is Legacy mode and the Load EFI Driver for RAID is set to Disabled, the system will load Legacy Option ROM to manage the SATA RAID after pressing F10 and system reboot. During system startup, the screen will prompt: Press <CTRL-I> to enter Configuration Utility…then press <Ctrl> and <I> simultaneously to enter the SATA RAID configuration interface for RAID configuration.

2. Take SATA RAID configuration in Legacy Mode as an example to introduce the SATA RAID configuration. During system startup, the screen will prompt: Press <CTRL-I> to

enter Configuration Utility... Press <Ctrl> and <I> simultaneously to enter the SATA RAID configuration, as shown in the following figure.



2.1 After entering SATA RAID configuration interface, it will display the main menu list, the information (HDD ID, HDD type, HDD capacity, volume member or not) of HDDs 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.



Key Instruction Table

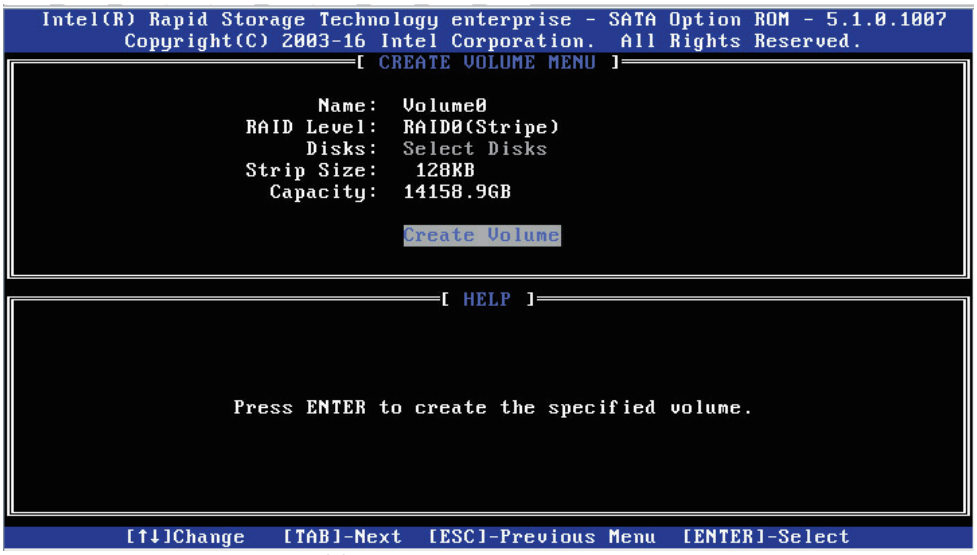
Key	Description
↑↓	Used to move cursor in different menus or to change values of menu options.
TAB	To select the next menu option.
Enter	To select a menu.
Esc	To exit menu or return to previous menu from sub-menu.

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 HDDs in RAID volume, and to restore them to non-RAID status.
Mask Disk as Spare	To mask the HDDs as spare disks. The data will be cleared, and these HDDs 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.

2.2 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:

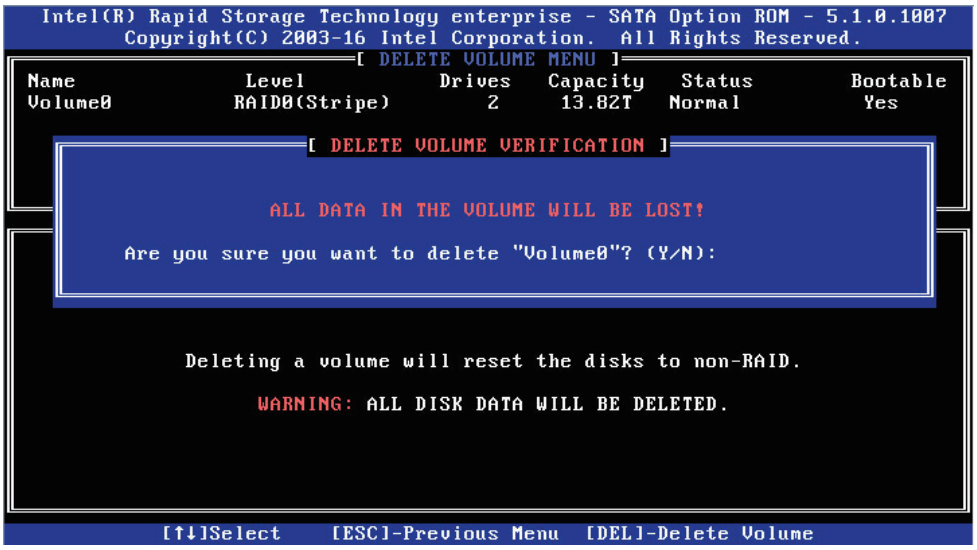


Create RAID Menu Instruction Table

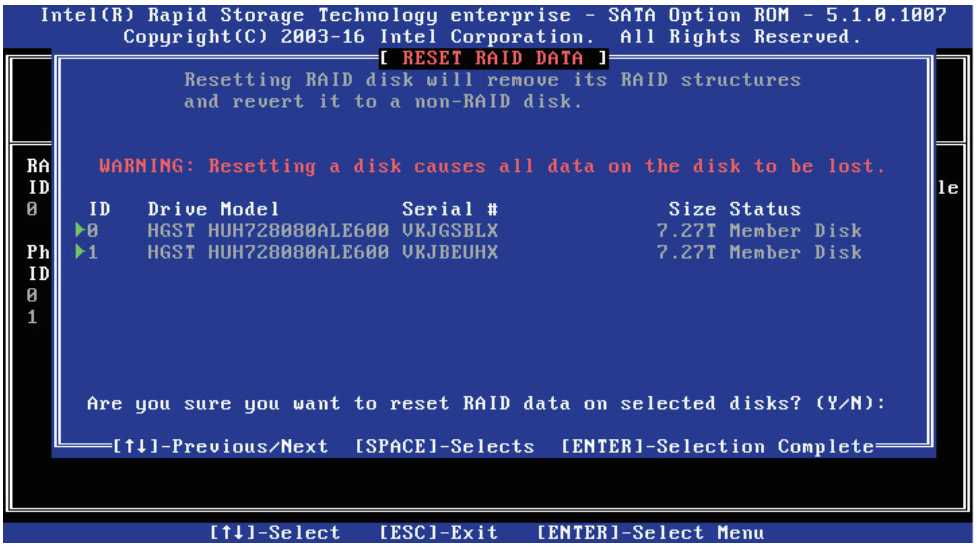
Interface Parameters	Function Description
Name	Please enter a volume label name less than 16 characters without containing any special characters.
RAID Level	Please select RAID volume level. If no volume has been created at present, there are four volume levels of RAID0 (Stripe), RAID1 (Mirror), RAID10 (RAID0+1) and RAID5 (Parity) for selection. Please select volume level according to actual requirements. RAID0: This RAID volume is allowed to be made on 2 or above HDDs. RAID1: This RAID volume is allowed to be made on 2 HDDs. RAID10: This RAID volume is allowed to be made on 4 HDDs, which is only available when HDD quantity is 4 or above. RAID5 (Parity): This RAID volume is allowed to be made on 3 or above HDDs.
Select Disks	Select HDDs 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.

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.

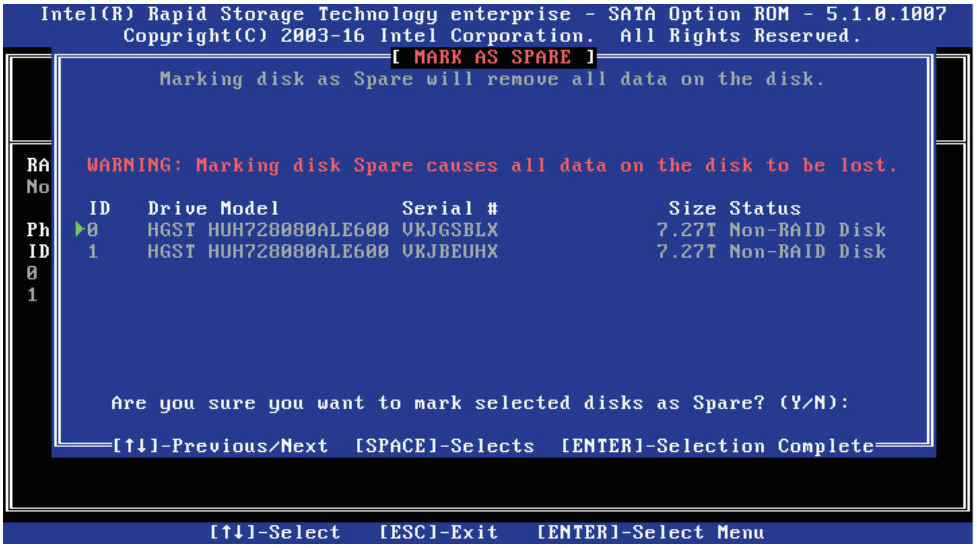
2.3 Delete RAID Volume menu. After entering Delete RAID Volume menu, press [DEL] to delete the selected RAID volume, and the system will prompt “ALL DATA IN THE VOLUME WILL BE LOST! Are you sure you want to delete “Volume0*”? (Y/N)”. To delete this RAID volume, please enter “Y”, to cancel the deletion,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



2.4 Reset Disks to Non-RAID menu. After entering Reset Disks to Non-RAID menu, system will display all HDDs in RAID volume. Please use the space key to select the HDD to reset according to the actual demand, and then press Enter to reset the HDD. 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.



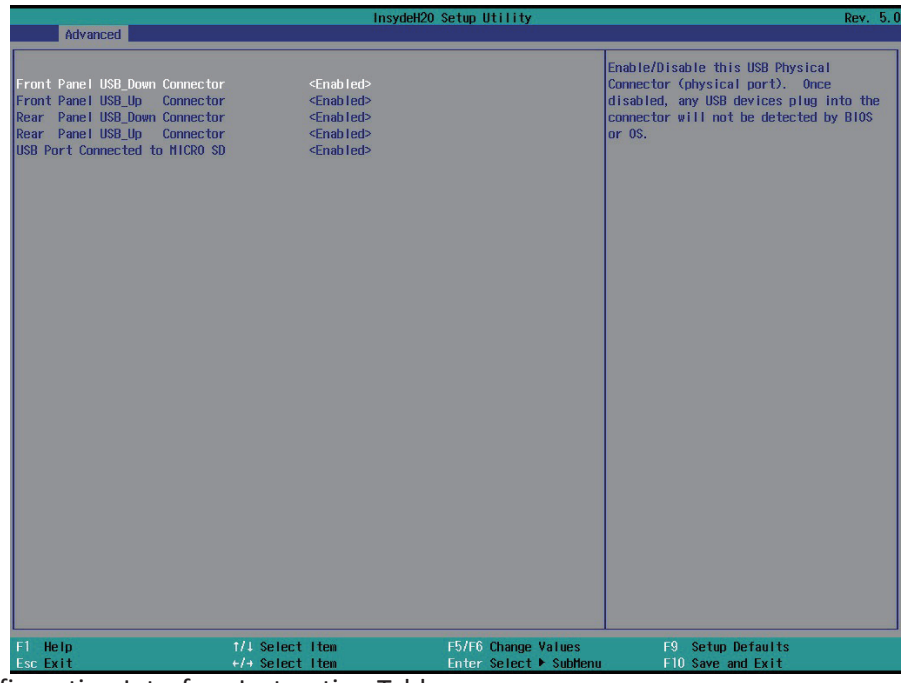
2.5 Mask Disk as Spare menu. After entering Mask Disk as Spare menu, system will display the HDDs not in RAID volume. Please use the space key to select the HDDs according to the actual demand, and then press Enter. The system will prompt “Are you sure you want to mask selected disks as Spare? (Y/N)”, 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.



2.6 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.

7.2.3.5.4 USB Configuration

USB Configuration interface is used to set USB related options, as shown in the following figure and table.

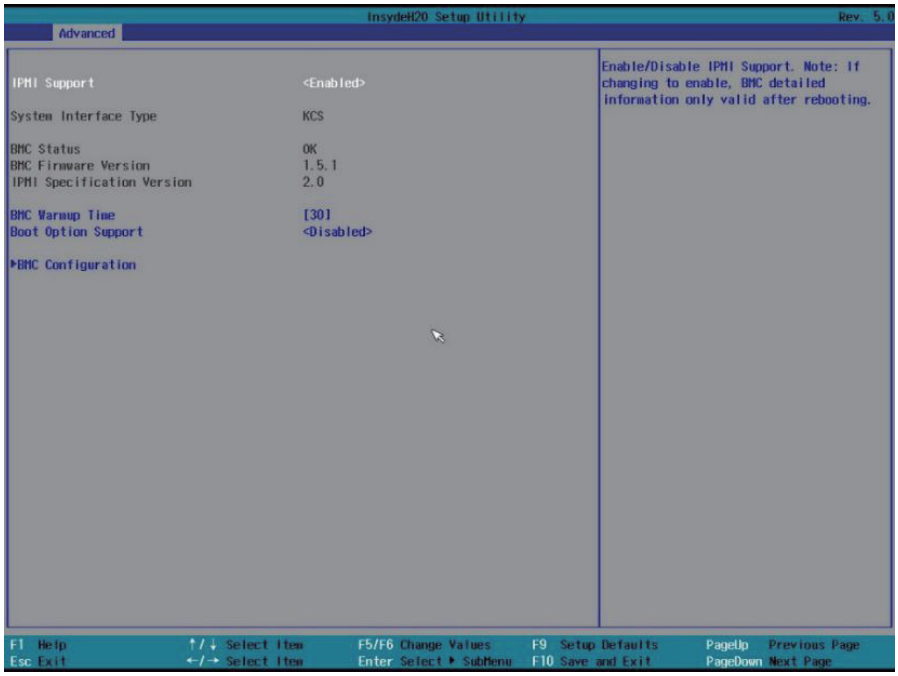


USB Configuration Interface Instruction Table

Interface Parameters	Function Description	Default value
Front Panel USB_Down Connector	Front panel down USB connector setting	Enabled
Front Panel USB_Up Connector	Front panel up USB connector setting	Enabled
Rear Panel USB_Up Connector	Rear panel up USB connector setting	Enabled
USB Port Connected to MICRO SD	Setting of USB port connected to Micro SD	Enabled

7.2.3.6 IPMI Configuration

IPMI Configuration interface is used to set IPMI related options, as shown in the following figure and table.



IPMI Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
IPMI Support	IPMI support switch setting	Enabled
System Interface Type	System interface type of connecting BMC display	--
BMC Status	Current BMC status display	--
BMC Firmware Version	BMC firmware version	--
IPMI Specification Version	IPMI specification version	--
BMC Warmup Time	A maximum waiting time period from POST to BMC ready	30
Boot Option Support	IPMI boot optional function setting	Disabled
BMC Configuration	BMC Configuration setting sub-menu	--

Select BMC Configuraiton to enter the BMC configuration interface, as shown in the following figure.

BMC Configuration Menu Interface Instruction Table

Interface Parameters	Function Description	Default Value
Watchdog Timer Support	Enable or disable BMC watchdog timer at start of POST	Disabled
Not disable in OS	Enable or disable BMC watchdog timer when boot to OS	Disabled
Watchdog Timer Timeout	Watchdog expiration time setting	5
Watchdog Timer Action	Watchdog timeout action setting	Hard Reset
Dedicated MAC Address	MAC address of dedicated port	--
Dedicated Ipv4 Source	Ipv4 address source of dedicated port setting	--
Dedicated Ipv4 IP Address	Ipv4 IP address of dedicated port setting	--
Dedicated Ipv4 Subnet Mask	Ipv4 subnet mask of dedicated port setting	--
Dedicated Ipv4 Gateway Address	Ipv4 gateway address of dedicated port setting	--

Sharelink Network	Enable or disable sharelink network	Enabled
Shared MAC Address	MAC address of share link port display	--
Shared Ipv4 Source	Ipv4 address source of share link port setting	--
Shared Ipv4 IP Address	Ipv4 IP address of share link port setting	--
Shared Ipv4 Subnet Mask	Ipv4 subnet mask of share link port setting	--
Shared Ipv4 Gateway Address	Ipv4 gateway address of share link port setting	--

(a) BMC dynamic IP setting method:

(1) Select Dedicated or Shard BMC port;

(2) Modify the IP address acquisition mode of this port to DHCP through IPV4 source.

(3) Select Exit -> Save Change Without Exit option to save, it takes effect immediately;

(b) BMC static IP setting method:

(1) Select Dedicated or Shard BMC port;

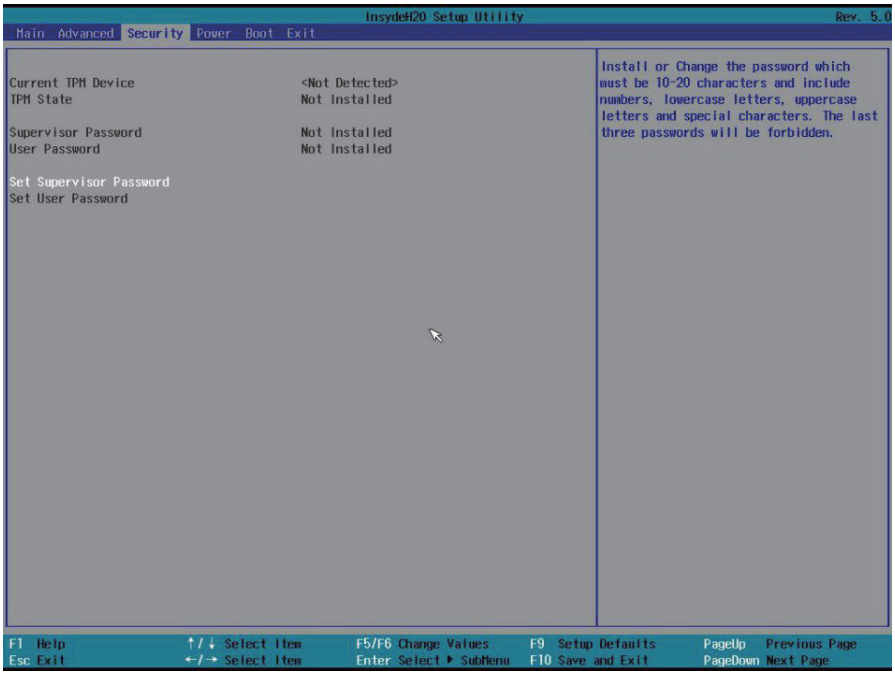
(2) Modify the IP address acquisition mode of this port to Static through IPV4 source.

(3) Select IPV4 IP Address, press Enter, input IP, and press Enter to confirm; then set IPV4 Subnet Mask and IPV4 Gateway Address in the same way;

(4) Select Exit -> Save Change Without Exit option to save, it takes effect immediately.

7.2.4 Security

Security interface is used to set the options related with administrative security, including TPM, administrator and user password settings, as shown in the following figure and table.

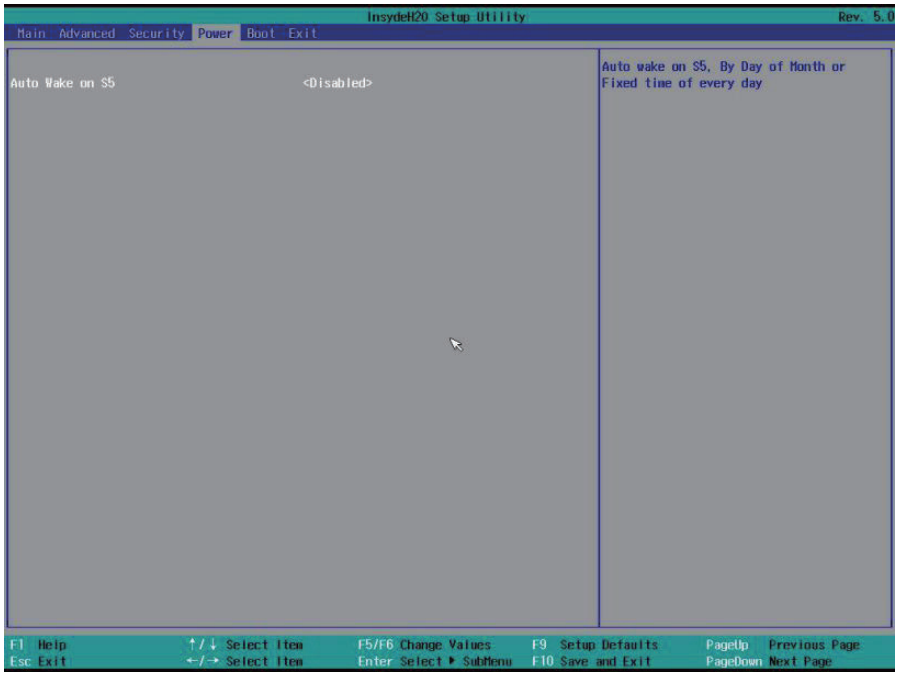


Security Interface Instruction Table

Interface Parameters	Function Description
Current TPM Device	Display current TPM device
TPM State	Display current TPM device status
Supervisor Password	Display supervisor password status
User Passward	Display user password status
Set Supervisor Password	Set a supervisor password. The password length should be 10-20 characters, and it must include uppercase letters, lowercase letters, numbers and special characters at the same time.
Set User Password	Set a user password. The password length should be 8 characters, and it must include uppercase letters, lowercase letters, numbers and special characters at the same time.

7.2.5 Power

Power interface is used to set the options related with system power status, as shown in the following figure and table.

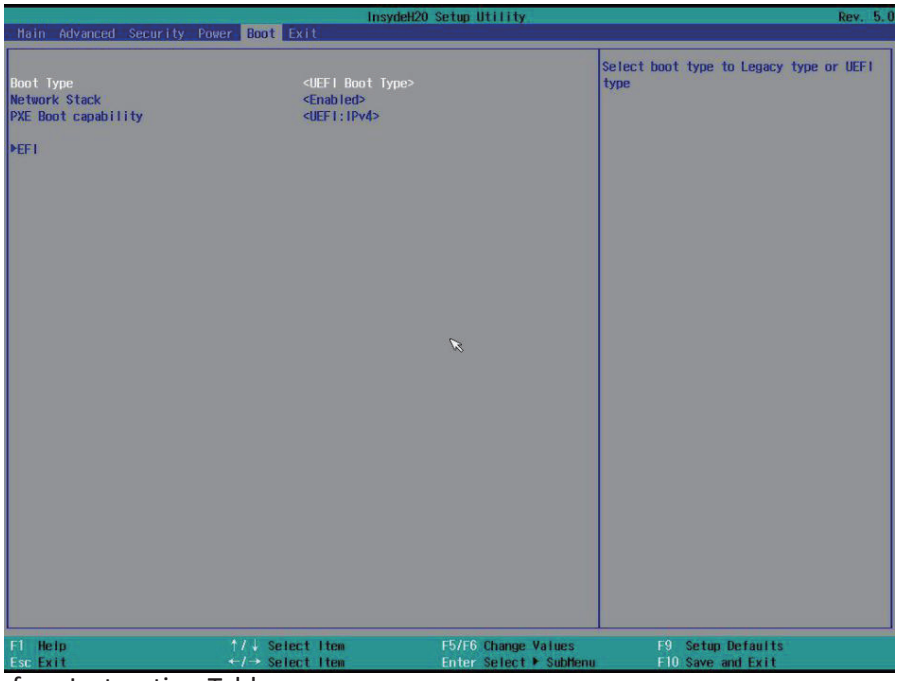


Power Interface Instruction Table

Interface Parameters	Function Description	Default Value
Auto Wake on S5	Auto wake on S5 setting. When set to Enabled, you can set to wake up the machine from S5 state automatically at a certain time.	Disabled

7.2.6 Boot

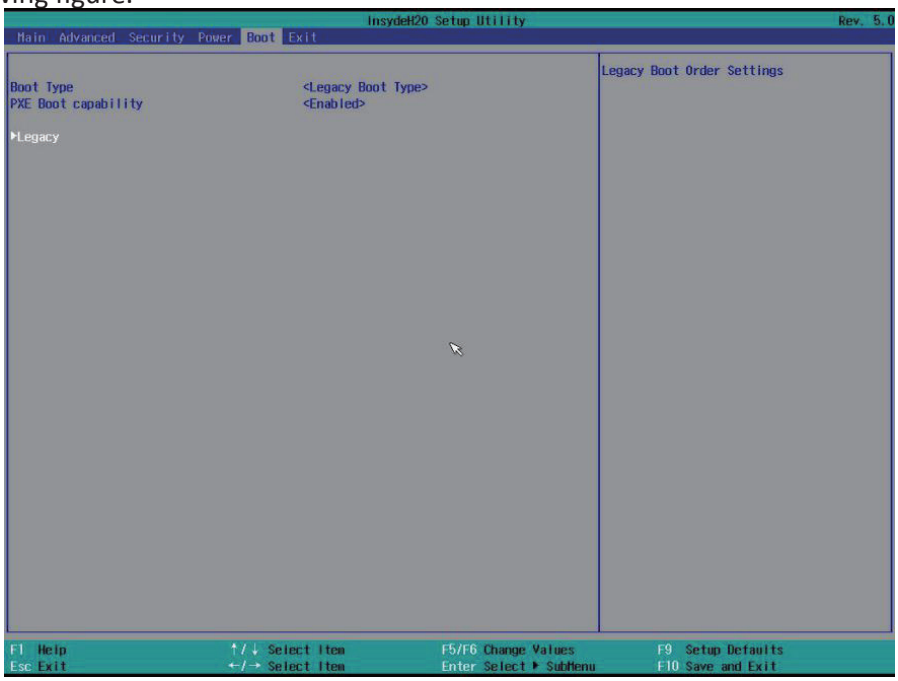
Boot interface is used to set system boot options, including boot type, boot priority, etc. The BIOS boot type defaults to UEFI mode, as shown in the following figure and table.



Boot Interface Instruction Table

Interface Parameters	Function Description	Default Value
Boot Type	Select boot type	UEFI Boot Type
Network Stack	Network stack support setting	Enabled
PXE Boot capability	PXE boot setting	UEFI:IPv4
EFI	EFI boot option setting sub-menu, the boot priority can be adjusted and set	--

When Boot Type is set to Legacy Boot Type, save the setting and reboot the system. Enter the Boot interface again, you can enter the Legacy Boot Configuration interface, as shown in the following figure.

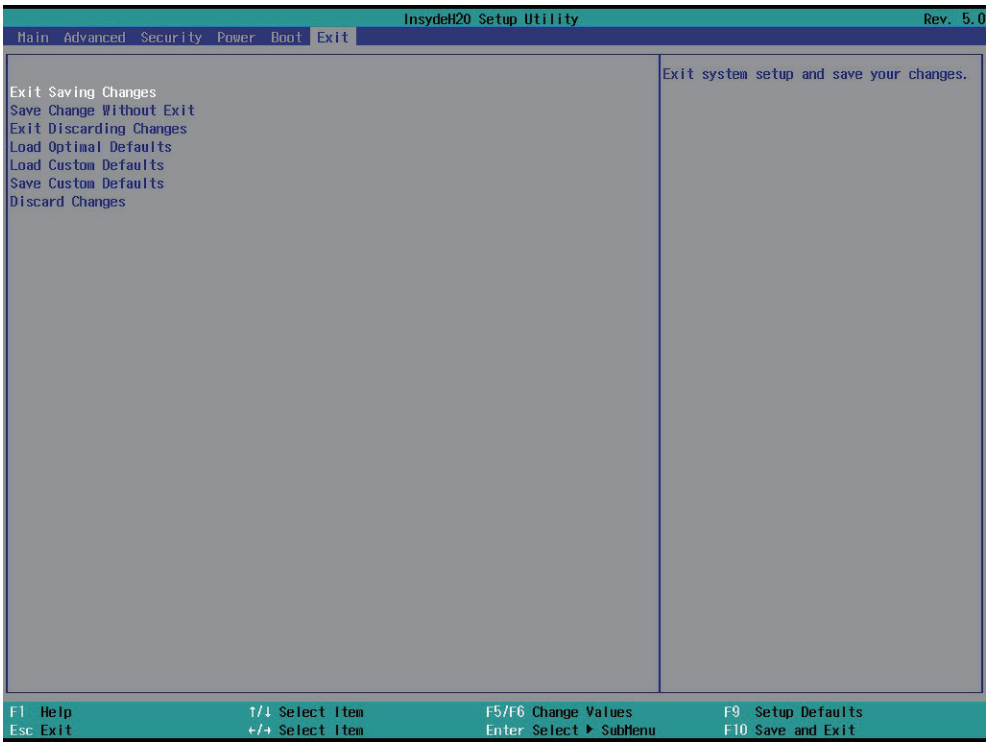


Legacy Boot Configuration Interface Instruction Table

Interface Parameters	Function Description	Default Value
Boot Type	Select boot type	Legacy Boot Type
PXE Boot capability	PXE boot setting	Enabled
Legacy	Legacy boot option setting sub-menu, the boot priority can be adjusted and set	---

7.2.7 Exit

Exit interface is used to set the options related with save and exit after changing BIOS parameters, as shown in the following figure and table.



Exit Menu Interface Instruction Table

Interface Parameters	Function Description
Exit Saving Changes	To save changes and exit system setup
Save Change Without Exit	To save changes and do not exit system setup
Exit Discarding Changes	To abandon changes and exit system setup
Load Optional Defaults	To load the optional default setting of the system setup
Load Custom Defaults	To load the custom default setting of the system setup
Save Custom Defaults	To save as custom default setting of the system setup
Discard Changes	To abandon changes.

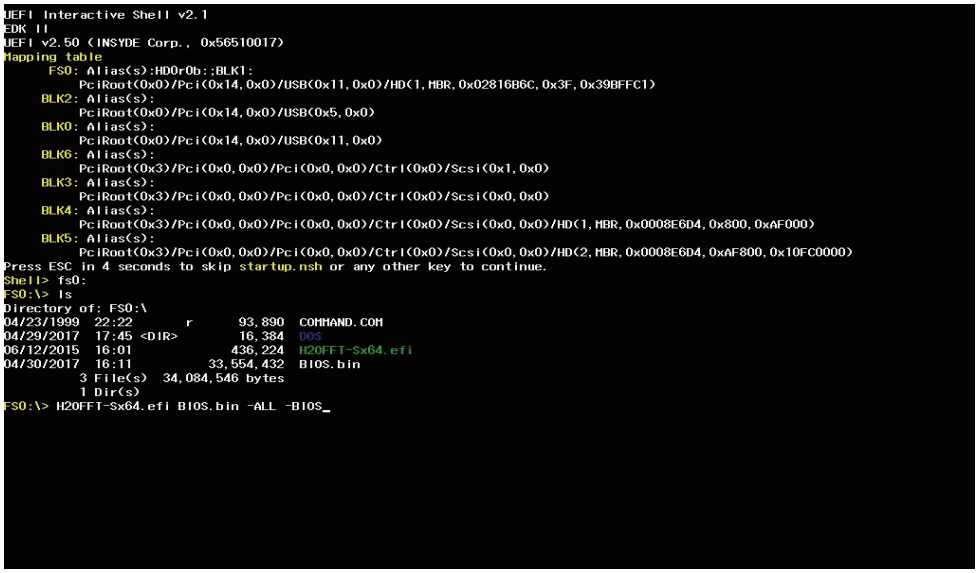
7.3 Firmware Update

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 during sytem startup, there is a prompt “Press <DEL> to SETUP or <F11> to Boot Menu or <F12> to PXE Boot” on the bottom of the screen. Press F11 to start the Boot Menu, and enter EFI shell.

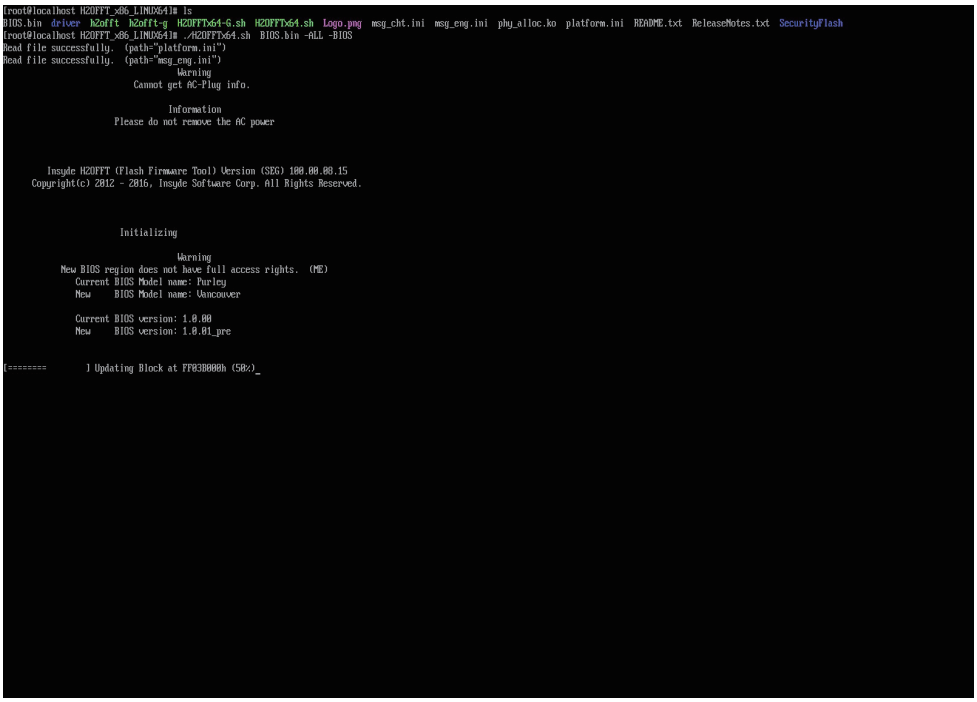
2) Enter the disk in which the BIOS flash toolkit H2OFFT-Sx64.efi resides, enter the flash toolkit folder, and BIOS.bin is the 32M BIOS+ME file to be updated. Execute the command H20FFT-Sx64.efi XXXX.bin -ALL –SSB to flash BIOS+ME, and execute H20FFT-Sx64.efi XXXX. bin -ALL -BIOS –SSB to flash BIOS only, as shown in the following figure.



Note: After updating ME+BIOS, please power off the machine, confirm that there is no residual electricity on the motherboard, and then power it on.

7.3.2 Update BIOS in Linux OS

There’re 32bit and 64bit Linux OS H2OFFT tools. Here take Linux 64bit OS as an example, using H2OFFTx64.sh tool. Enter the directory containing H2OFFTx64.sh tool, meanwhile, put the bin file of corresponding BIOS into this folder. Execute the command ./H2OFFTx64. sh -ALL -SSB to flash BIOS+ME, and execute ./H2OFFTx64.sh -ALL -BIOS –SSB to flash BIOS only, as shown in the following figure.



Notes:

1. For Linux system, it needs to run the afulnx_64 tool as root.
2. After updating ME+BIOS, please power off the machine, confirm that there is no residual electricity on the motherboard, and then power it on.

8 BMC 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.

- Heat dissipation control

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

- Supports IPMITool management

Supports the command operation sent by IPMITool. The IPMITool is downloadable: http://ipmitool.sourceforge.net/manpage.html

- Supports WEB interface management

Provides a friendly and visual interface management. Configuration can quickly be completed as well as query tasks, by simply clicking on the interface.

- Supports account centralized management

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 Java runtime environment.

Note:
If the Java runtime environment does not meet the requirement, please download here: 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.

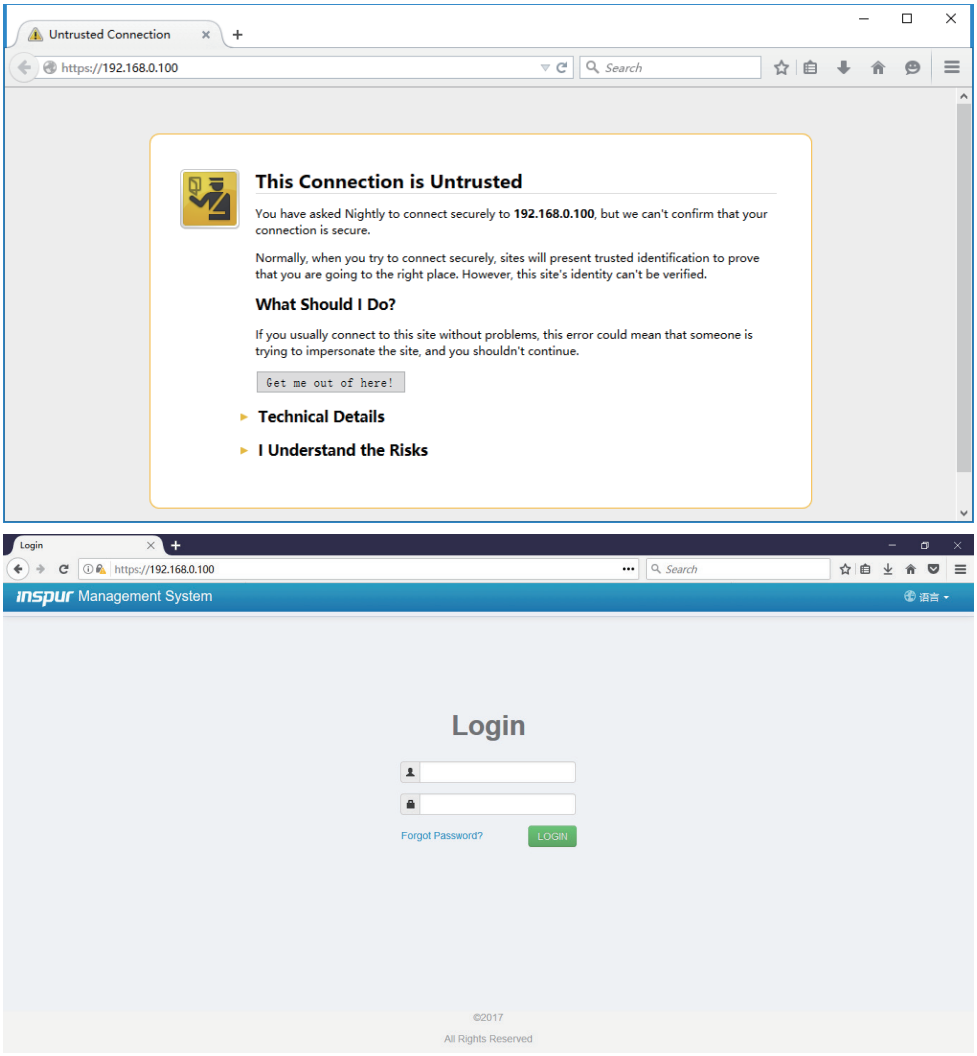
Step 2: Open the browser, and enter “http://ipaddress” in the address bar (ipaddress is the actual IP address of the management port. The default login mode is https, and the safe operation configuration is needed).

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

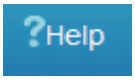
1. Enter the user name and password.

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.

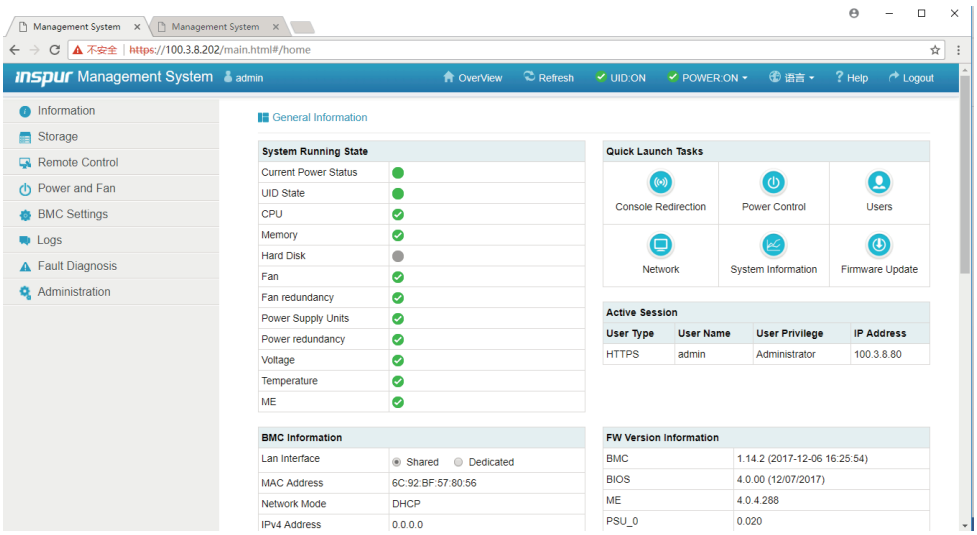


8.3.2 Web Interface Introduction

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:

◇ OverView Click on the Overview button, to return to the overview page.

◇ Refresh Click on the Refresh button, to refresh the page.

◇ UID:ON 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).

◇ 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:

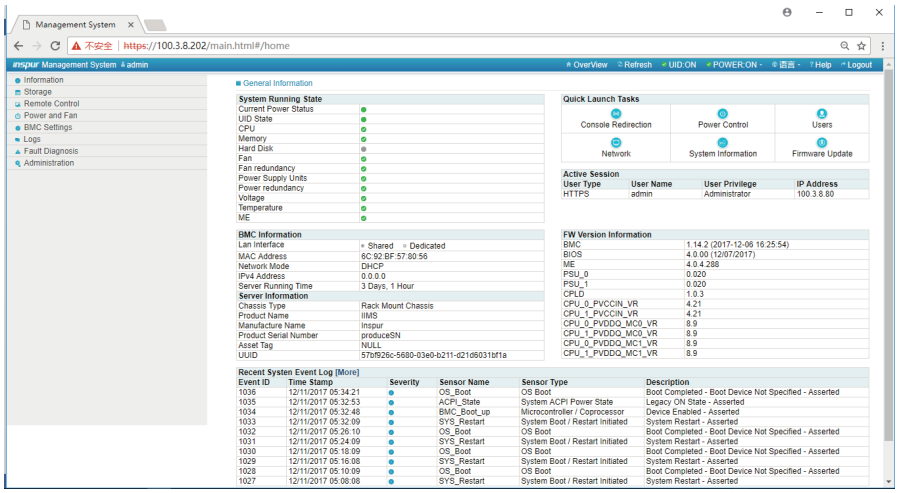
- View the overall situation
- View system information
- Remote control
- Power management
- Event and log query
- Real-time monitoring
- Diagnosis and orientation
- System maintenance
- System configuration

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

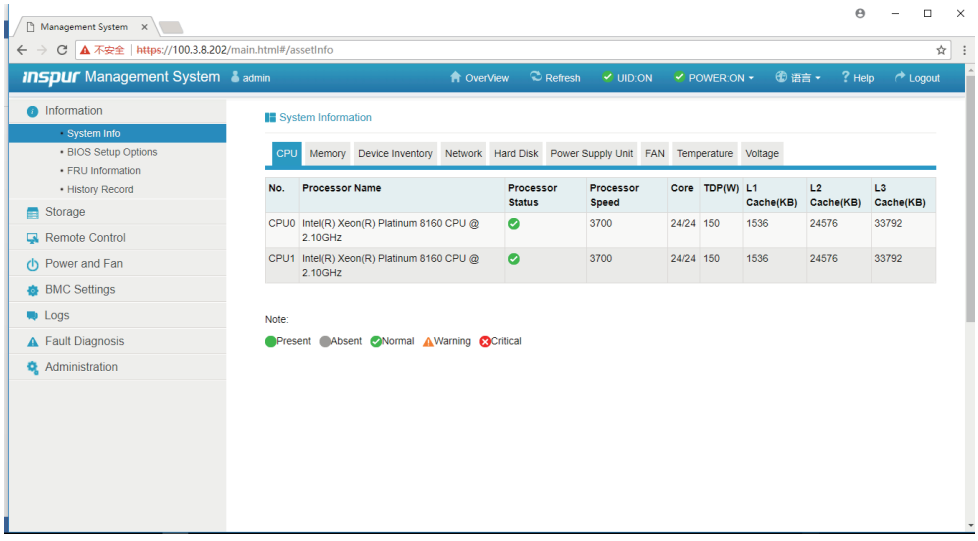
Click on Overview to open the “General Information” interface, as shown below.

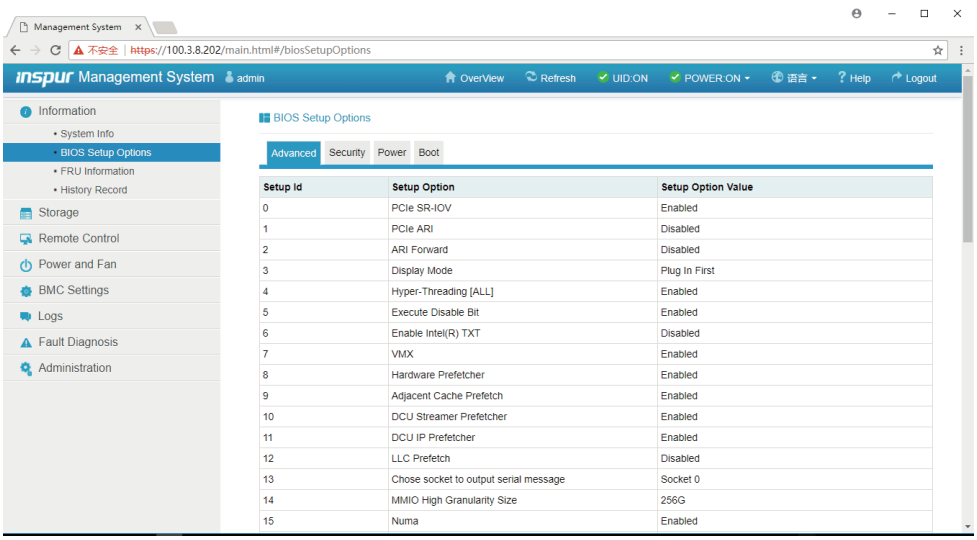


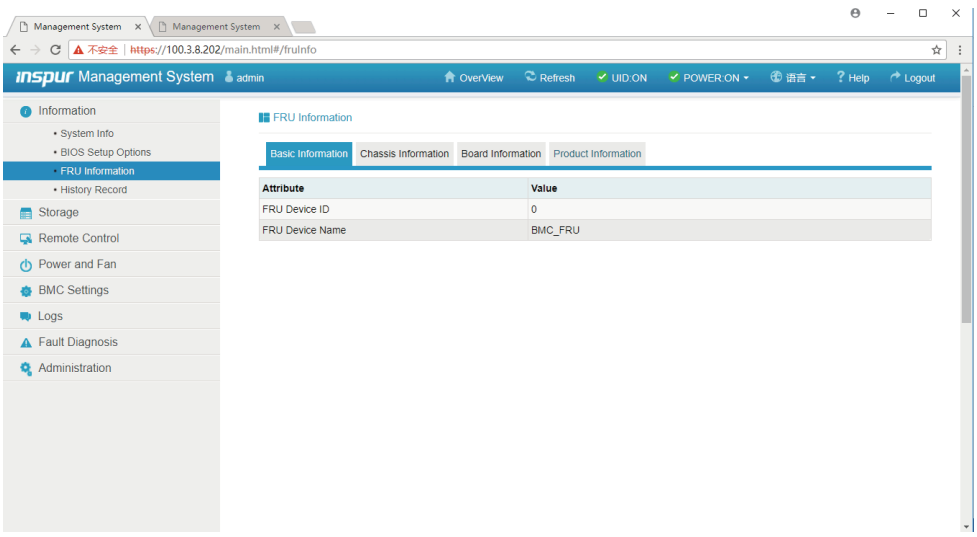
8.3.4 Information

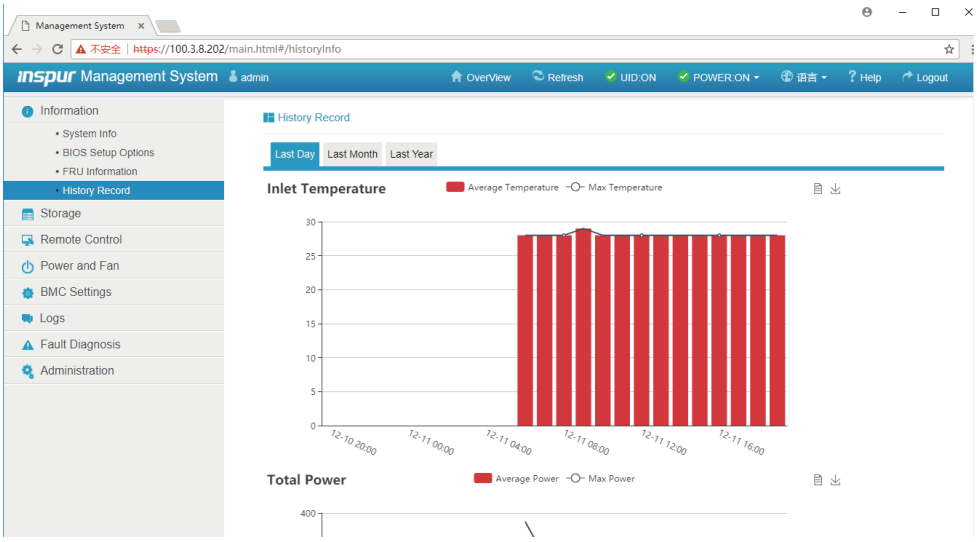
Select “Information” on the navigation tree. It contains the interfaces of system information, BIOS setup options, FRU information and history record, as shown in the following figures below.

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





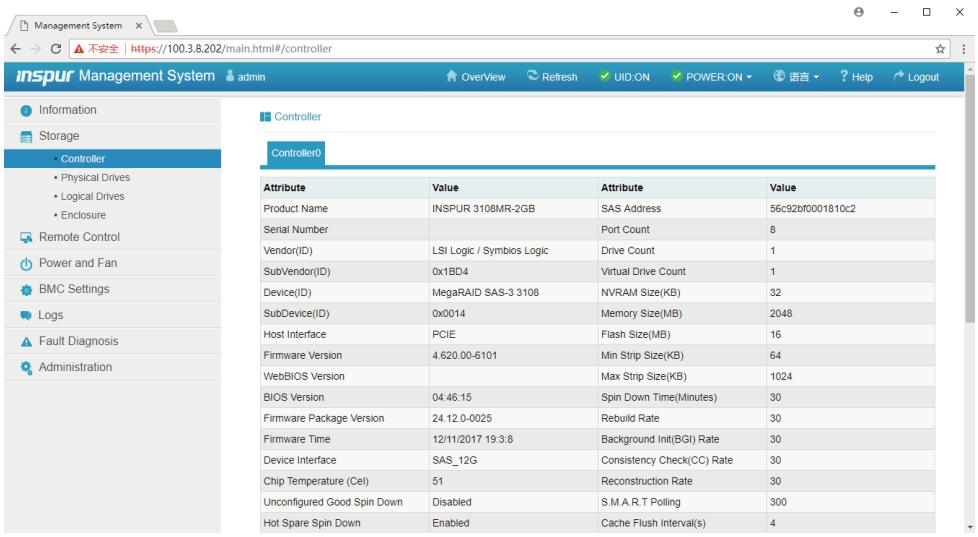




8.4 Storage

Select “Storage” on the navigation tree to open the storage interface. At present, the storage

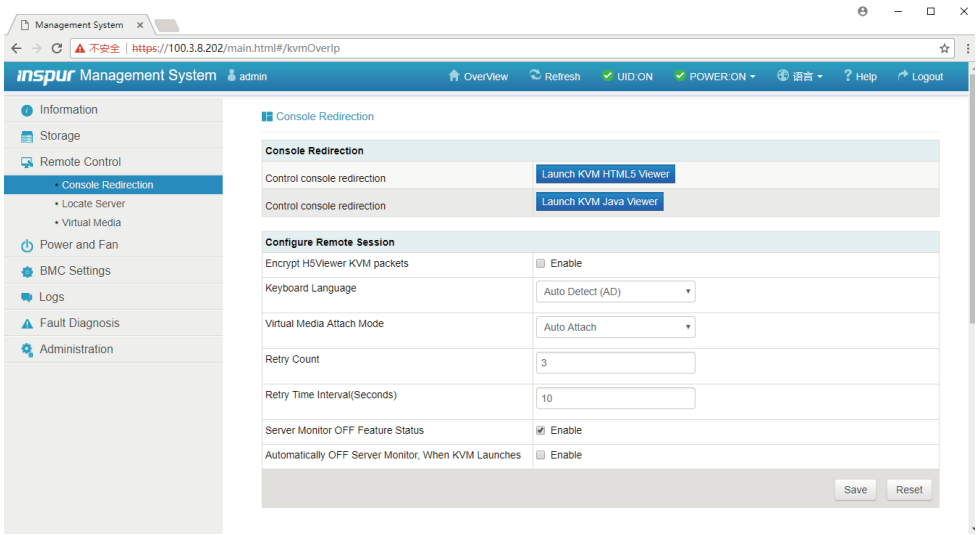
information control only supports LSI RAID card. This interface contains controller, physical drives, and logical drives information, as shown in the following figures.

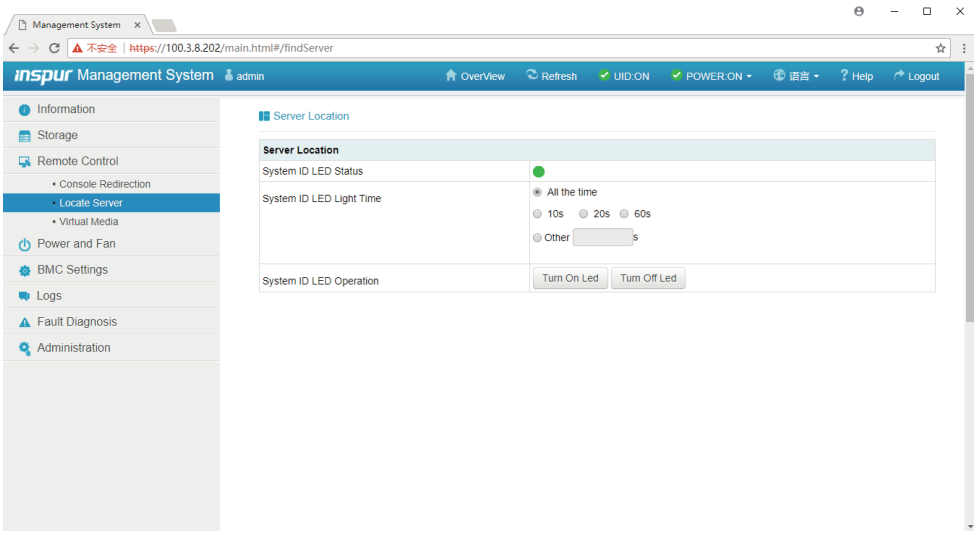


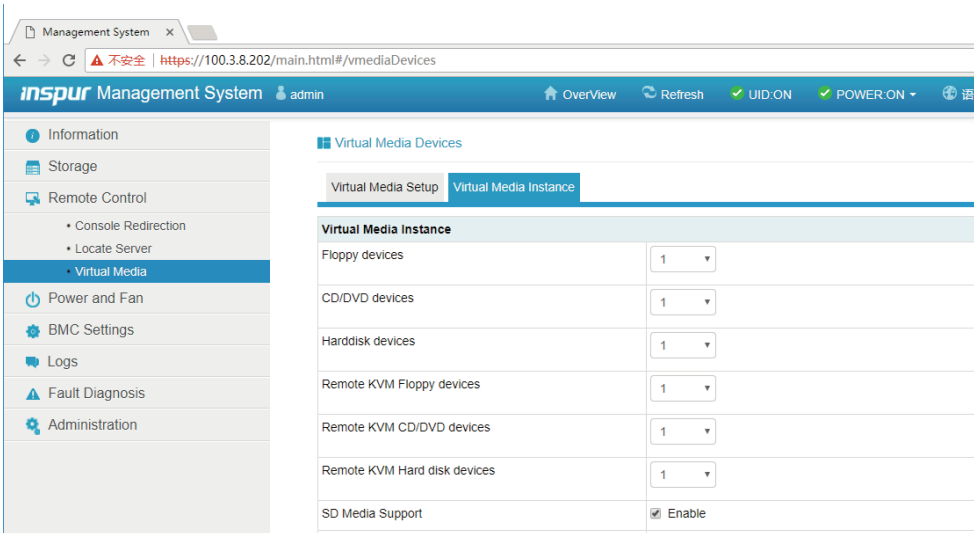
8.5Remote Control

Select “Remote Control” on the navigation tree to open the remote control interface, which contains the interfaces of console redirection, locate server and virtual media, 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.
- Virtual media devices: To set the quantity of virtual media (floppy devices, CD/DVD devices and hard disk drives, etc.).







8.6 Power and Fan

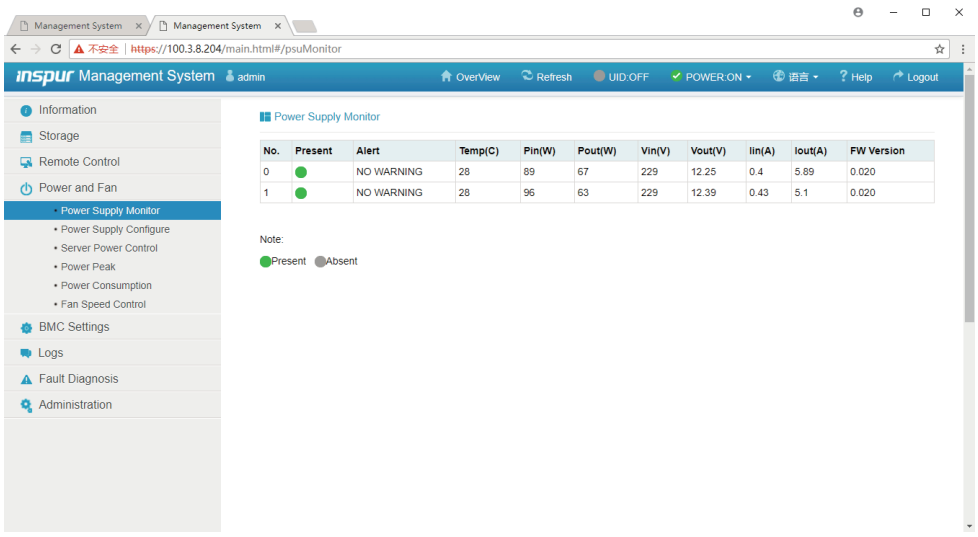
Select “Power and Fan” on the navigation tree to open the power and fan interface. It contains the interfaces of power supply monitor, power supply configure, server power control, power peak, power consumption and fan speed control, and settings, as shown in the following figures.

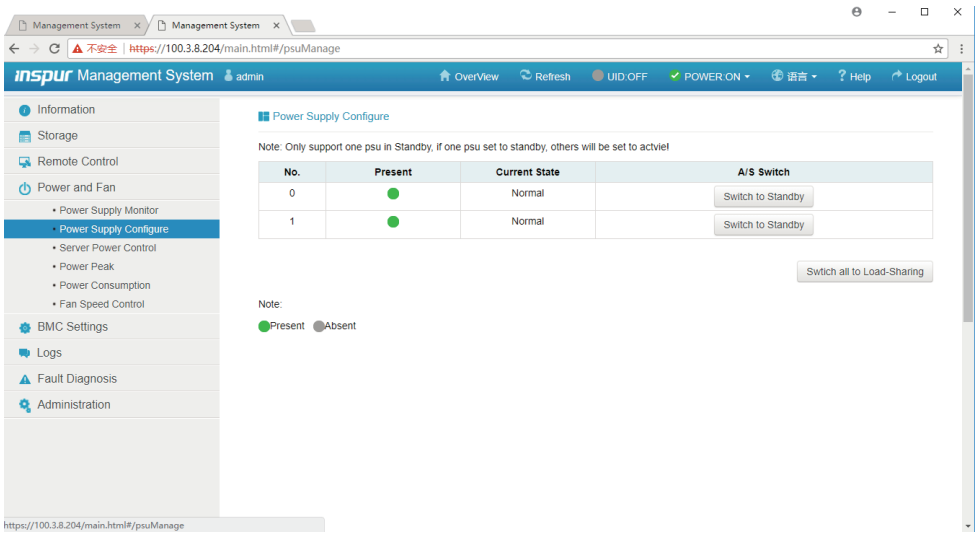
- Power supply monitor: Contains PSU present state, alert, temperature, input power, output power, input voltage, output voltage, input current, output current and firmware version information.
- Power supply configure: Contains PSU present state, current state and A/S mode switch function.
- Server power control: Contains the server’s power on/off and reset, as well as the power policy on AC power loss.

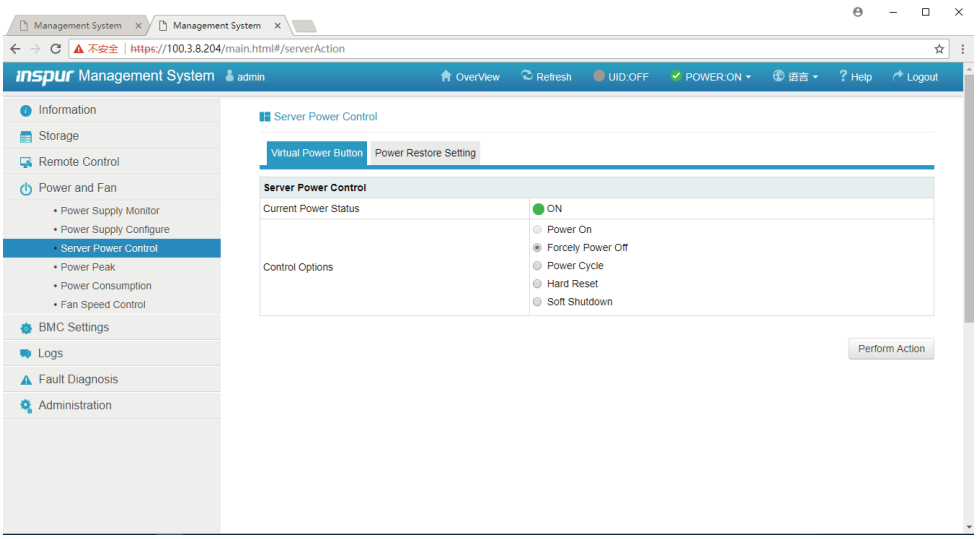
- Power peak settings: To enable or disable the power peak, and set the maximum random time.
- Power consumption: To manage power consumption dynamically.
- Fan speed control: Contains fan status, current speed and speed control function.

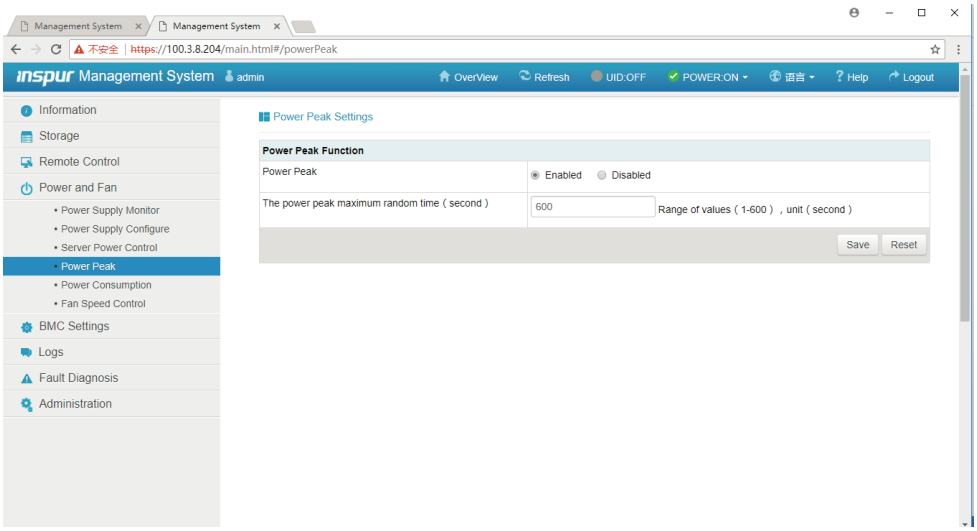
Note: Fan speed control contains the following speed levels:

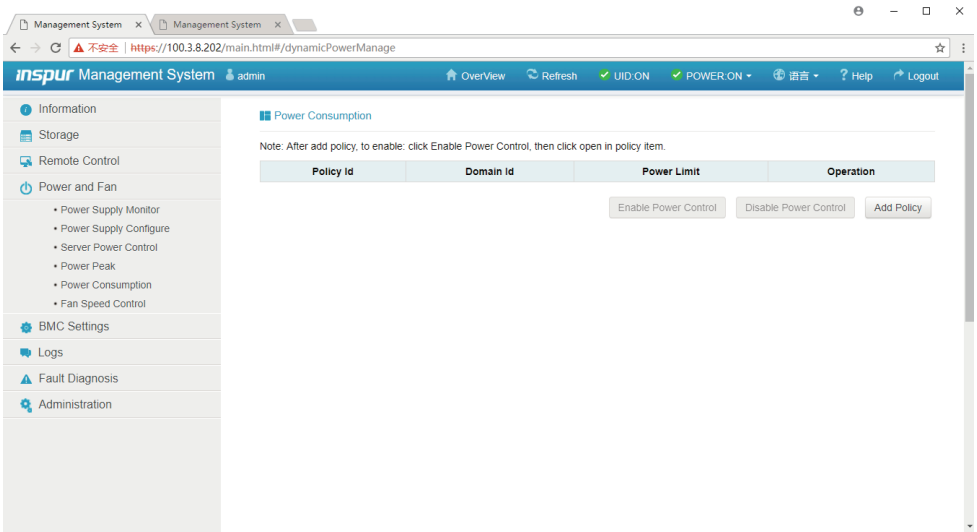
- Low: About 20% duty ratio
- Medium: About 50% duty ratio
- High: About 75% duty ratio
- Full: 100% duty ratio

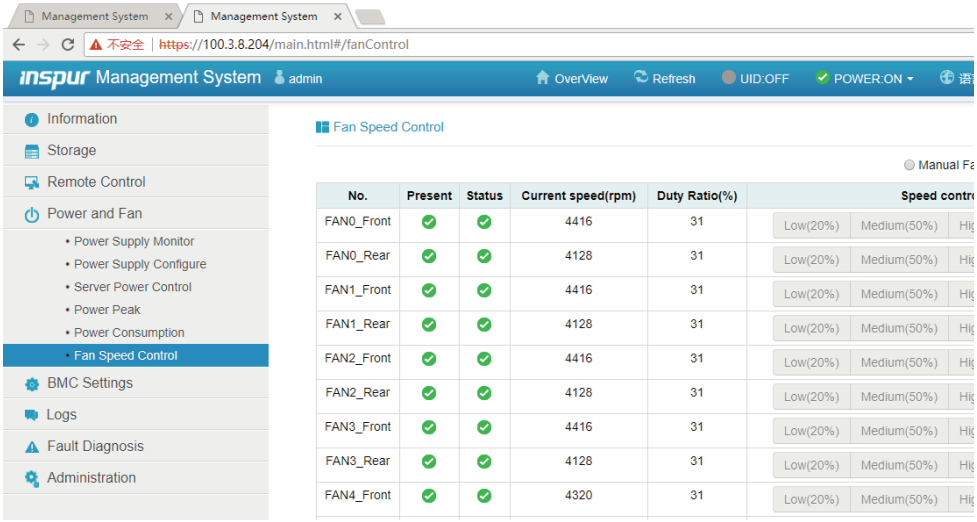








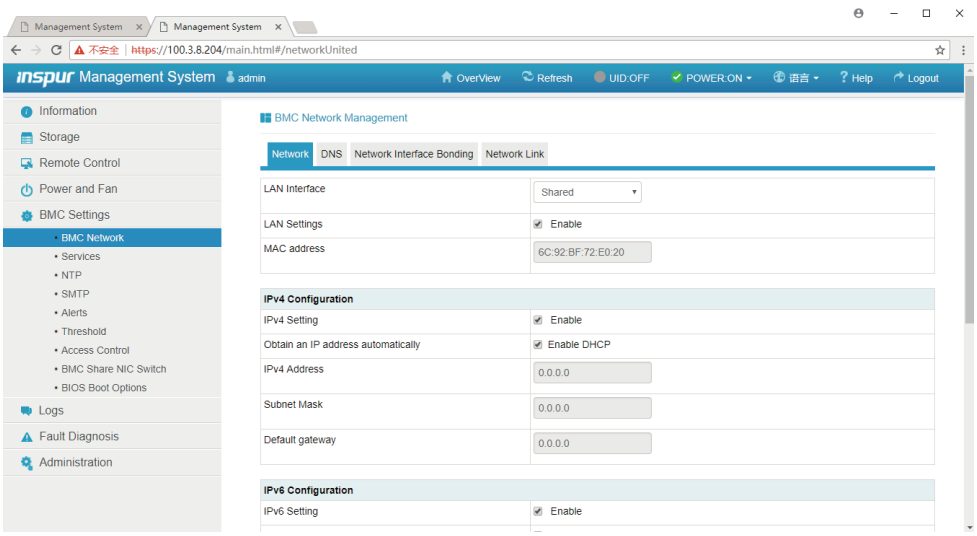


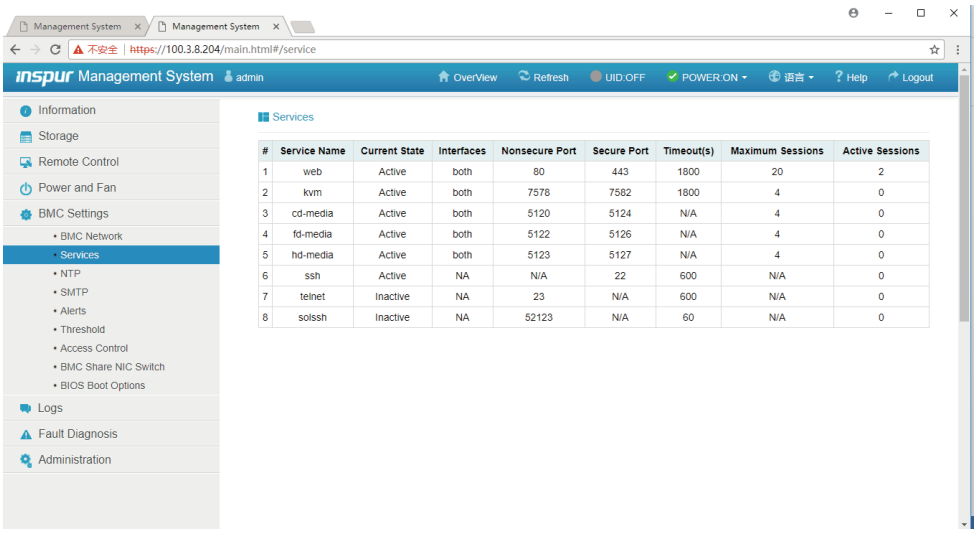


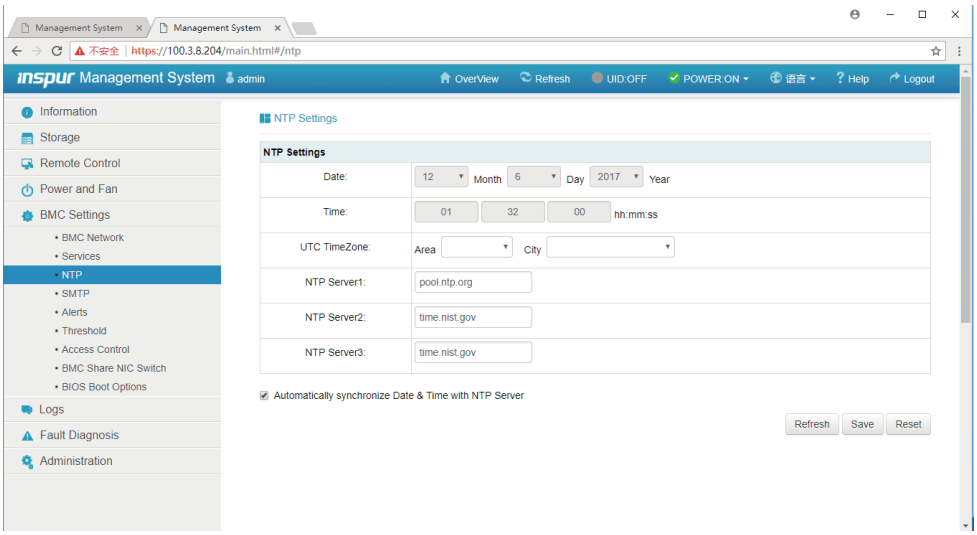
8.7 BMC Settings

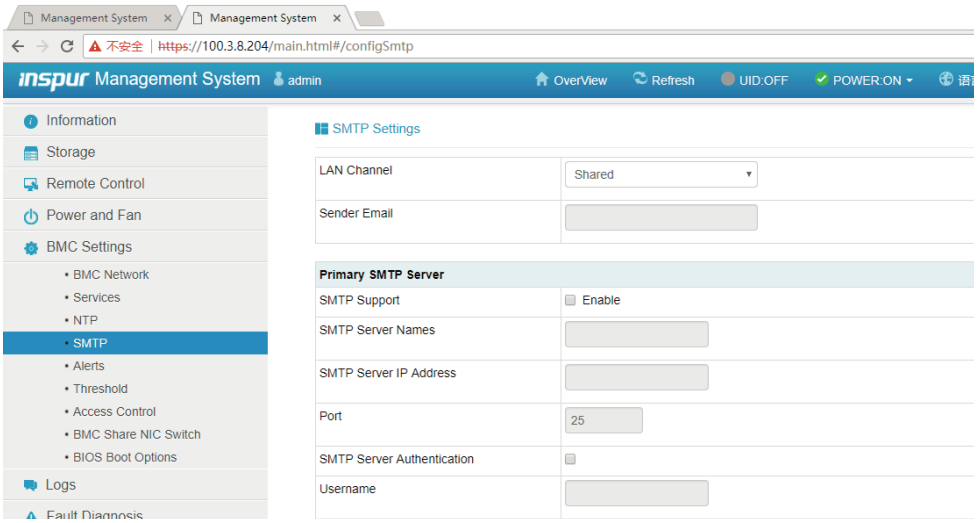
Select “BMC Settings” on the navigation tree to open the BMC Settings interface. It contains the interfaces of BMC network management, services, NTP settings, SMTP settings, alert settings, access control, BMC share NIC switch and BIOS boot options, as shown in the following figures.

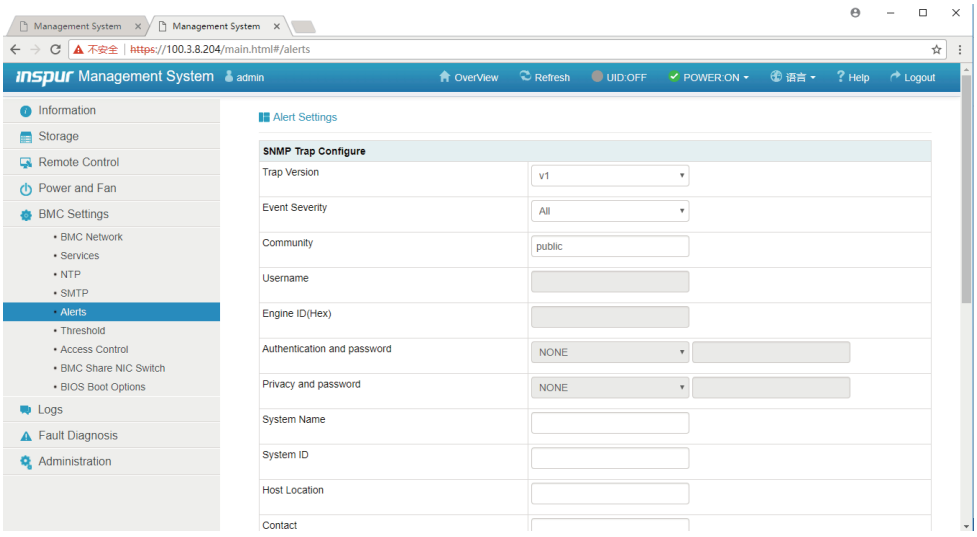
- BMC network management: Contains BMC network (static IP and DHCP), DNS settings and network interface bonding and network link information.
- Services: To configure the BMC’s Web service, KVM service, ssh service, telnet service, etc.
- NTP settings: To set the BMC time, which has two methods:
  - Synchronize from NTP server.
  - Sets 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.
- 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.

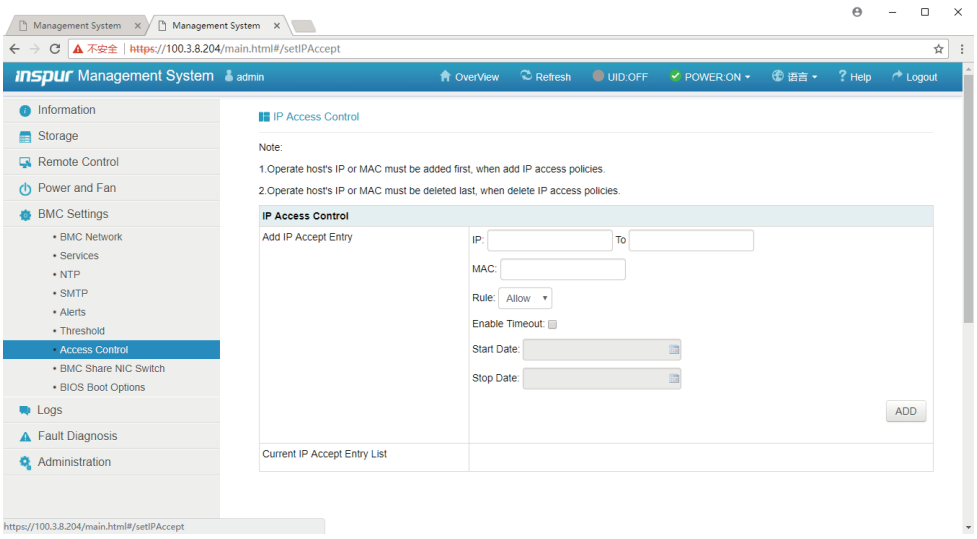


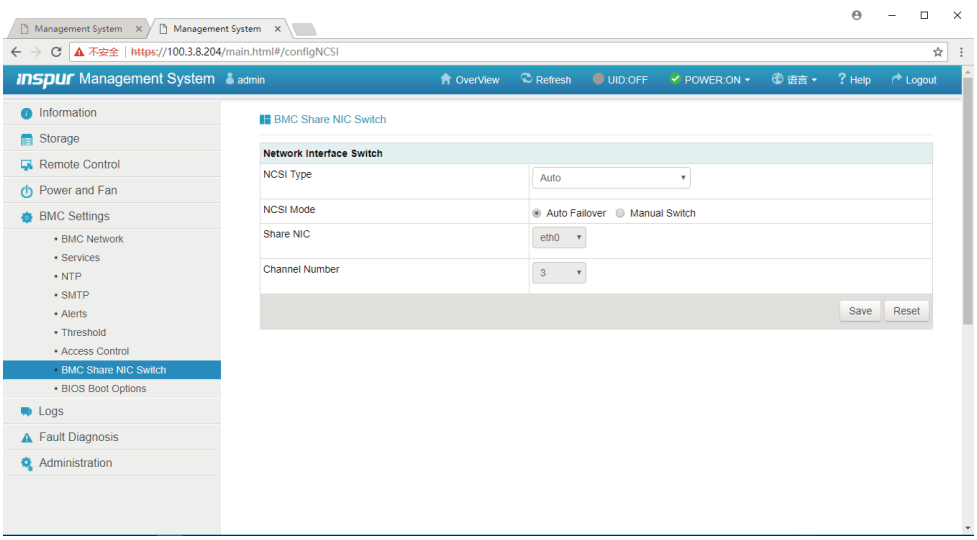


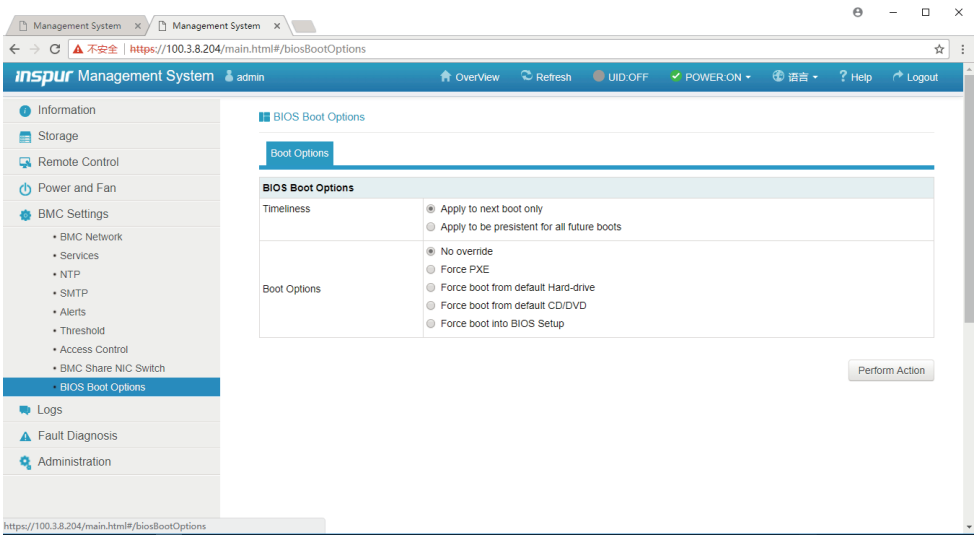










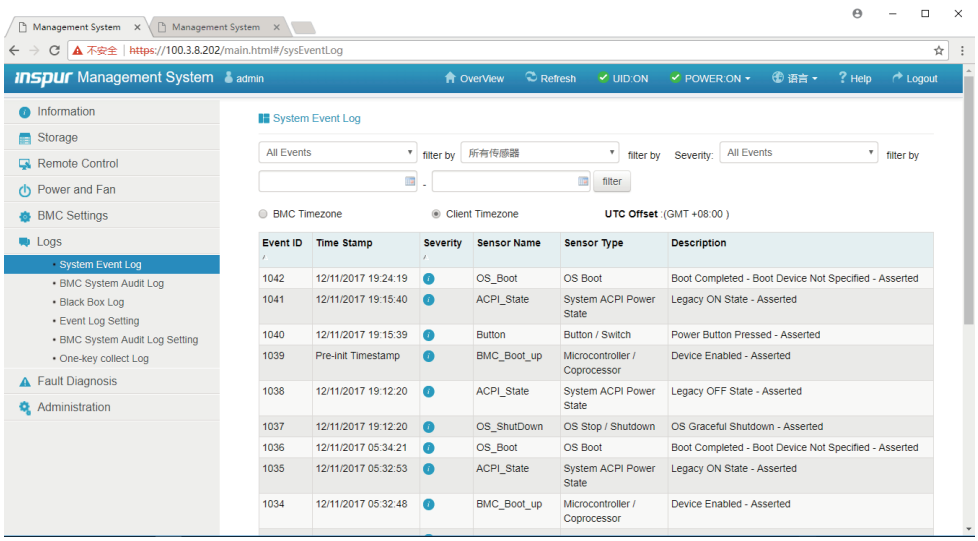


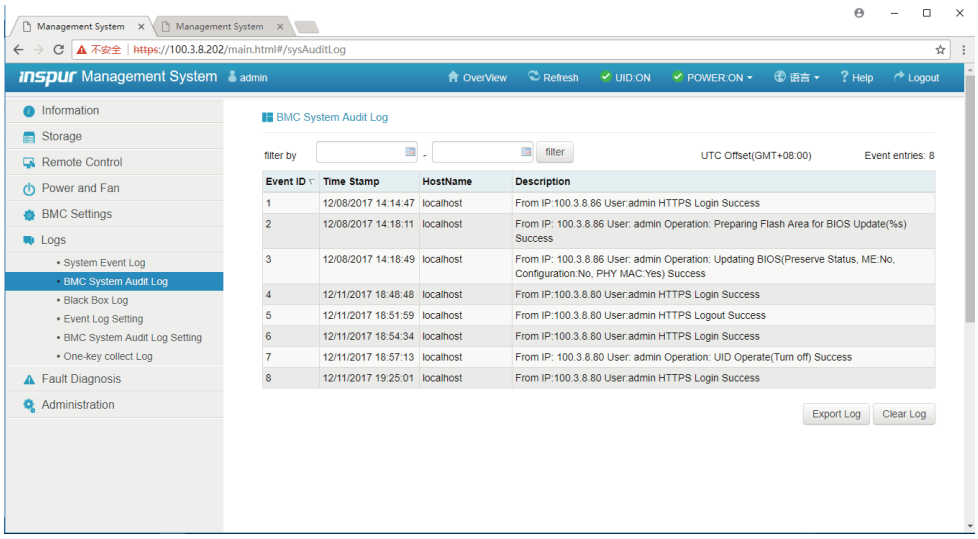
8.8 Logs

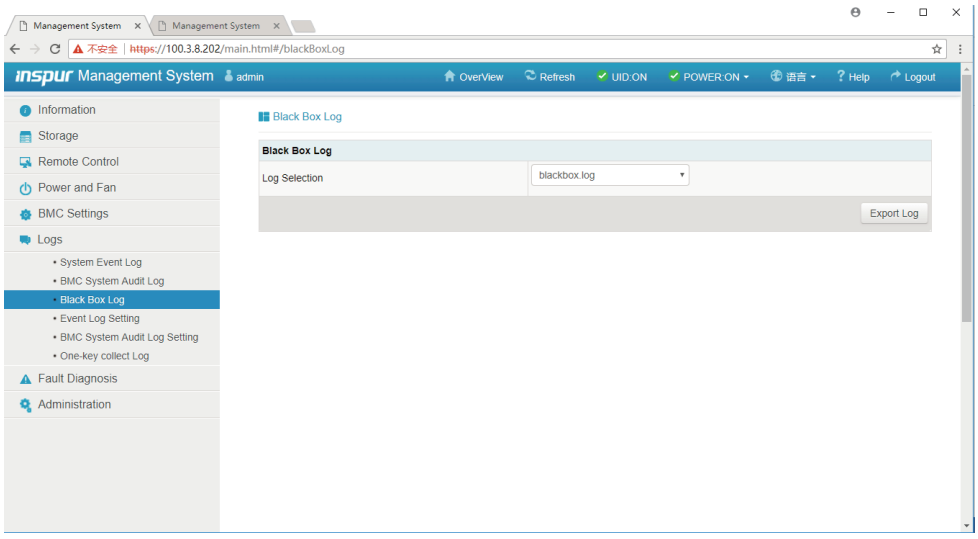
Select “Logs” on the navigation tree to open the related log interface. It contains the interfaces of system event log, BMC system audit log, black box log, event log setting and BMC system audit log settings, as shown in the following figures.

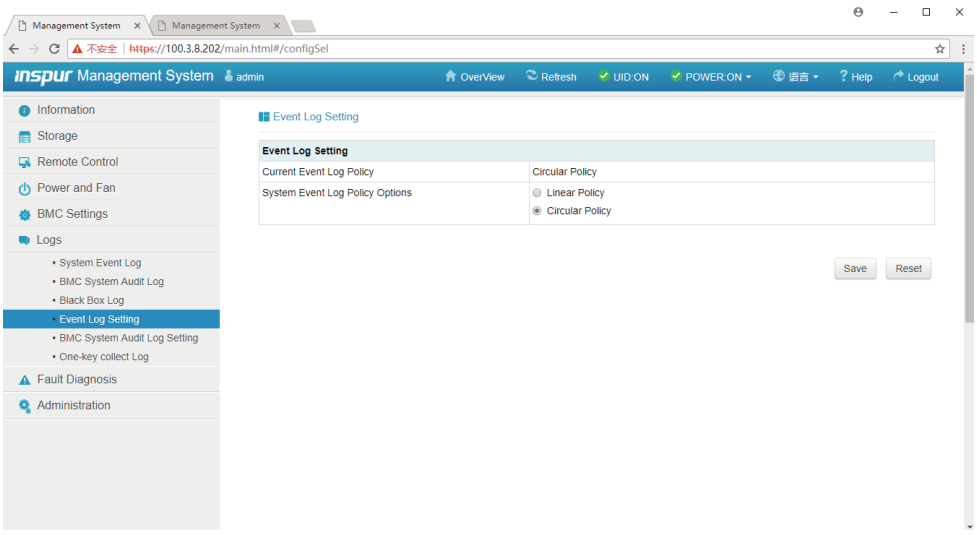
- System event log: Displays various event logs generated by the server.
- BMC system audit log: Displays system logs and audit logs of BMC.
- Black box log: Used to import fault logs.
- Event log setting: To set the BMC log storage policy:
  - ◆ Linear strategy: To clear all logs after log storage is full and record again.
  - ◆ Circular strategy: To record circularly after log record is full.
- BMC system audit log settings: To set the log type, file size and other information of BMC system audit logs.

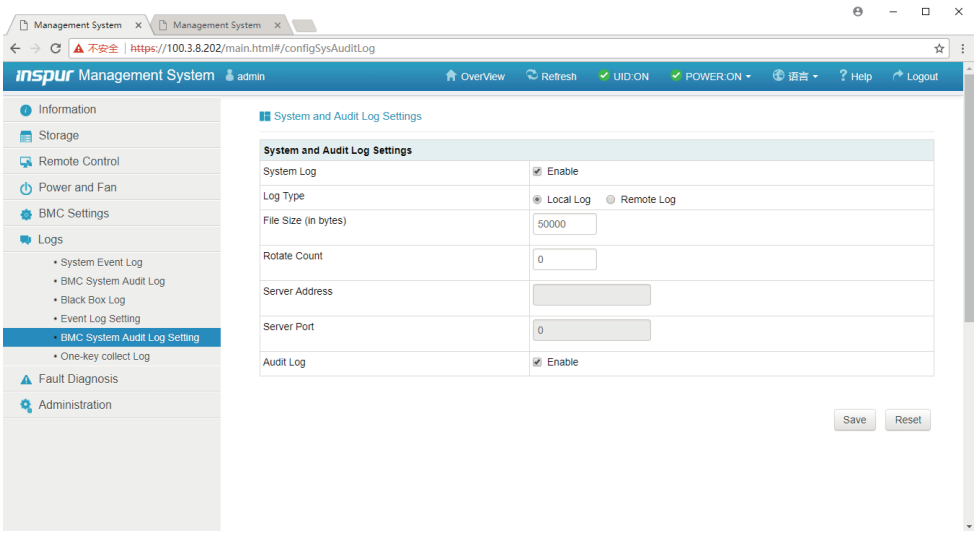
- One-key collect log: One-key collect log.

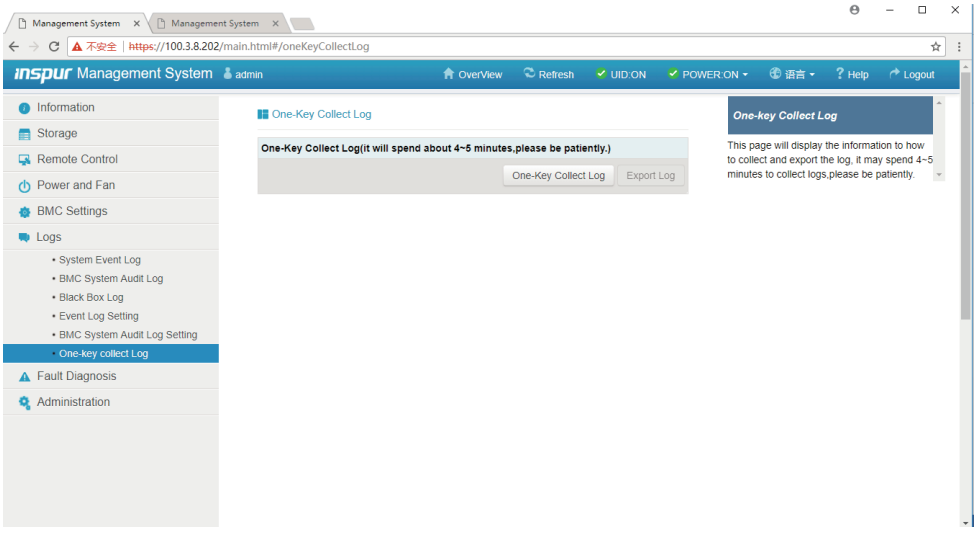












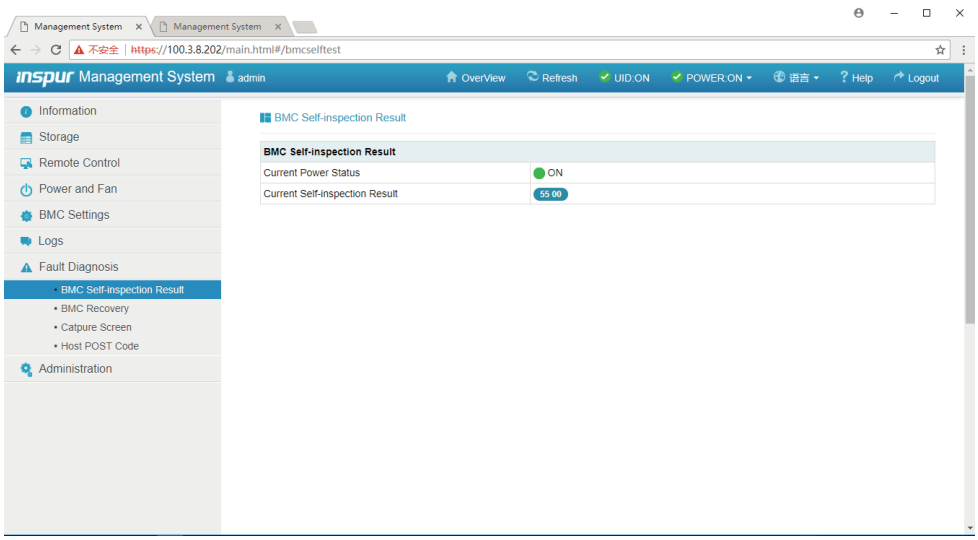
8.9 Fault Diagnosis

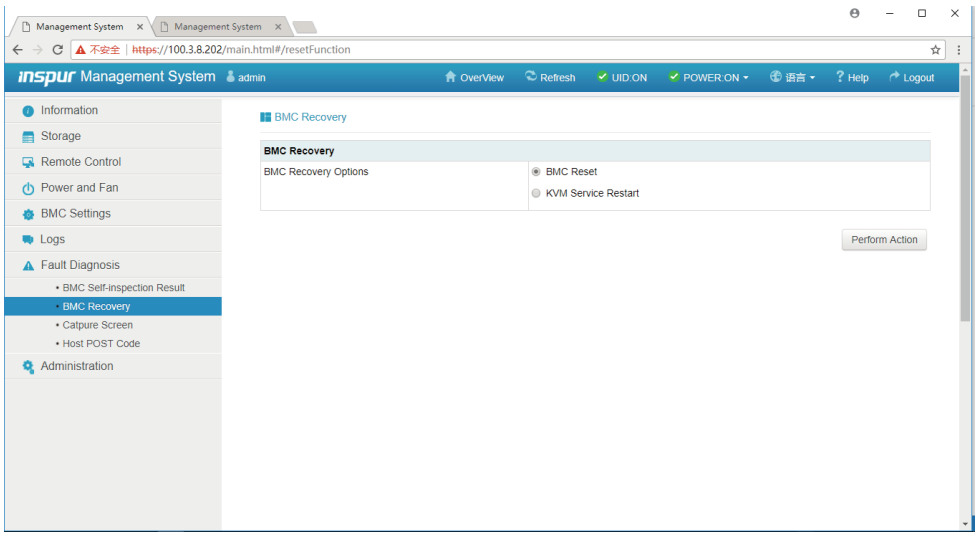
Select “Fault Diagnosis” on the navigation tree to open the fault diagnosis interface. It contains the interfaces of BMC self-inspection result, BMC recovery, capture screen and host POST code, as shown in the following figures.

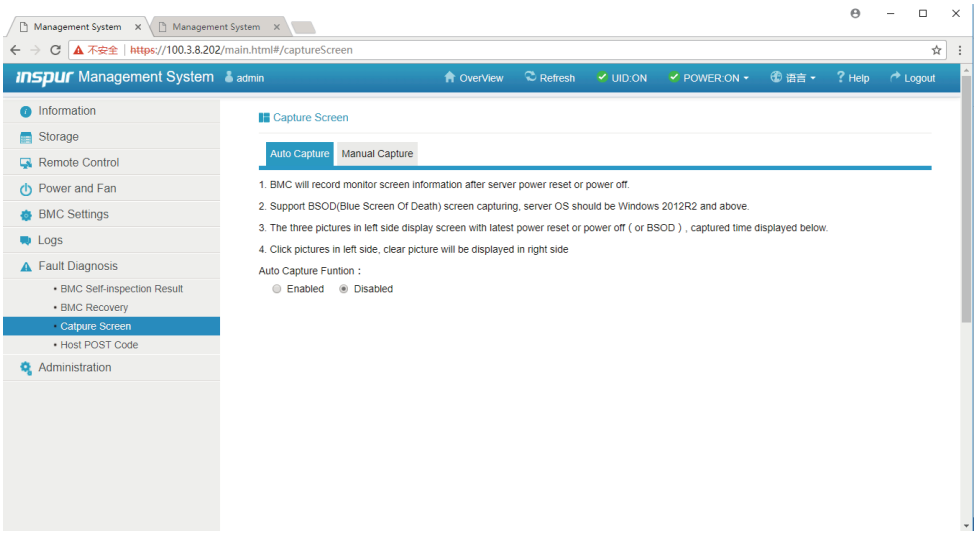
- BMC self-inspection result: To view the BMC self-inspection result.
- BMC recovery: Contains two functions of BMC warm reset and KVM service restart.
- Capture screen: Used to record the information on the last screen at system crash.

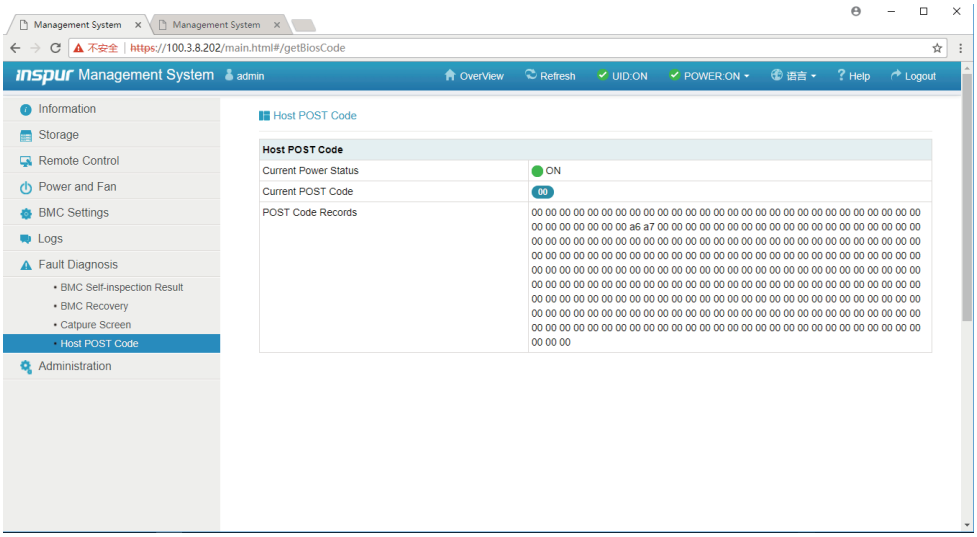
Note: Support BSOD (Blue Screen Of Death) screen capturing, server OS should be Windows 2012R2 and above.

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







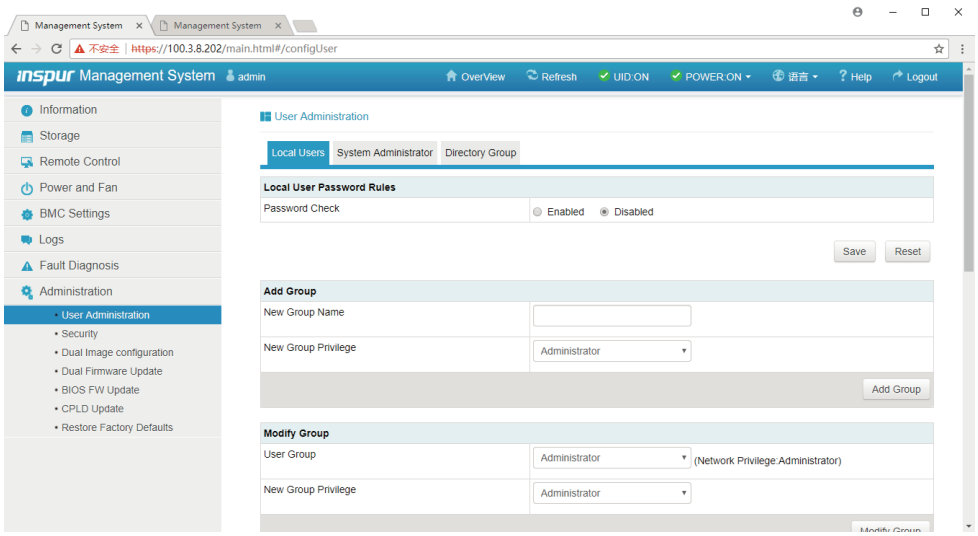


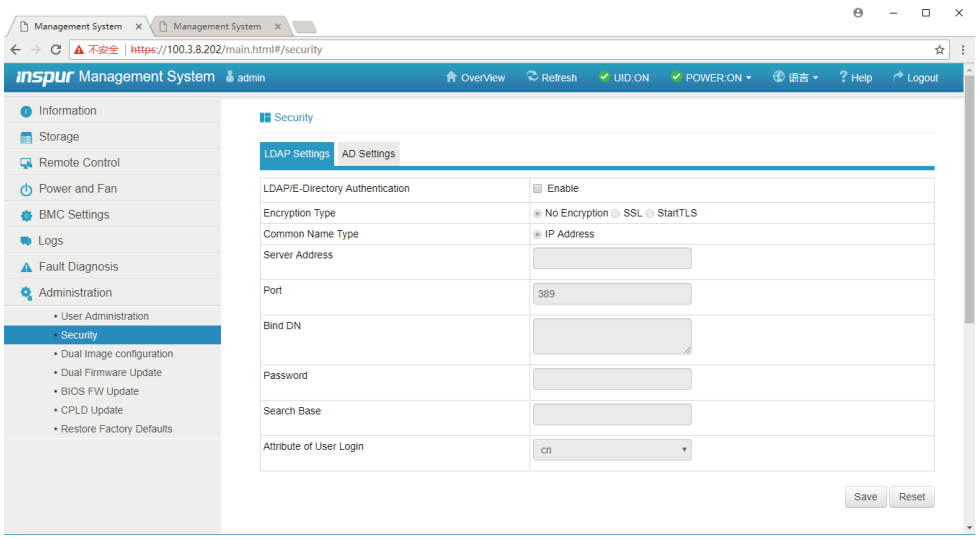
8.10 System Maintenance

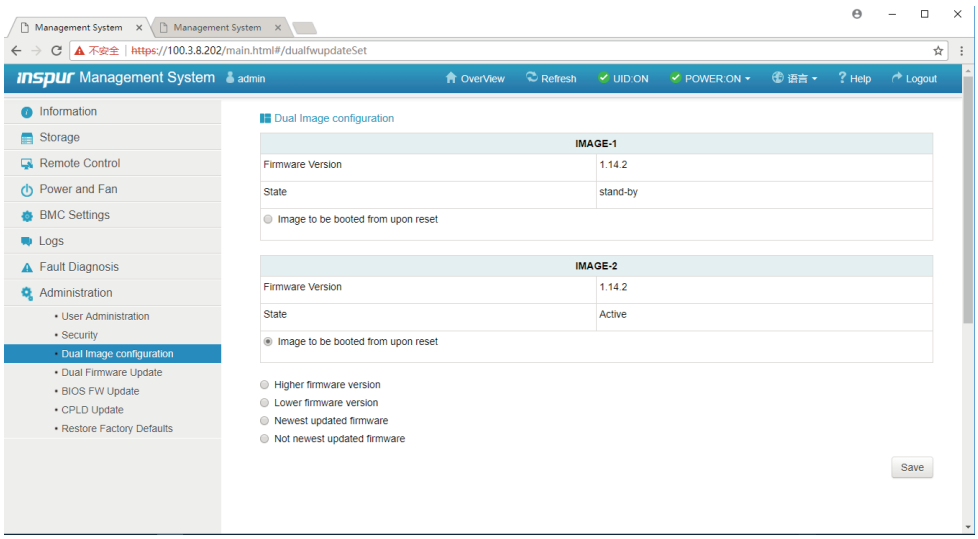
Select “System Maintenance” on the navigation tree to open the system maintenance interface. It contains the interfaces of user administration, security, dual image configuration, BMC firmware update, BIOS firmware update, CPLD firmware update and restore factory defaults, as shown in the following figures.

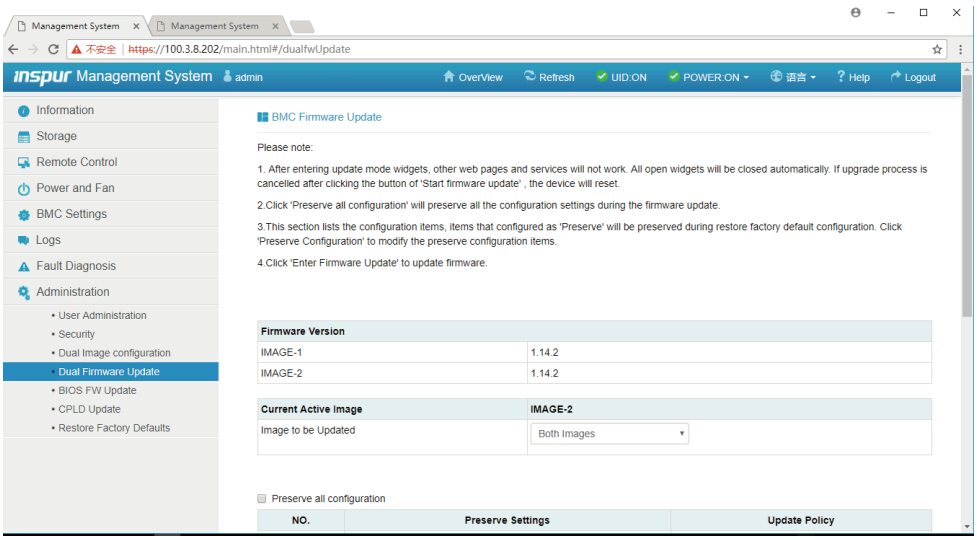
- User administration: To add, delete or modify users via BMC Web interface.
- Security: To configure LDAP and AD servers via BMC Web interface.
- Dual image configuration: To configure the boot options in dual image mode via BMC Web interface.
- BMC firmware update: To update BMC FW via BMC Web interface.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

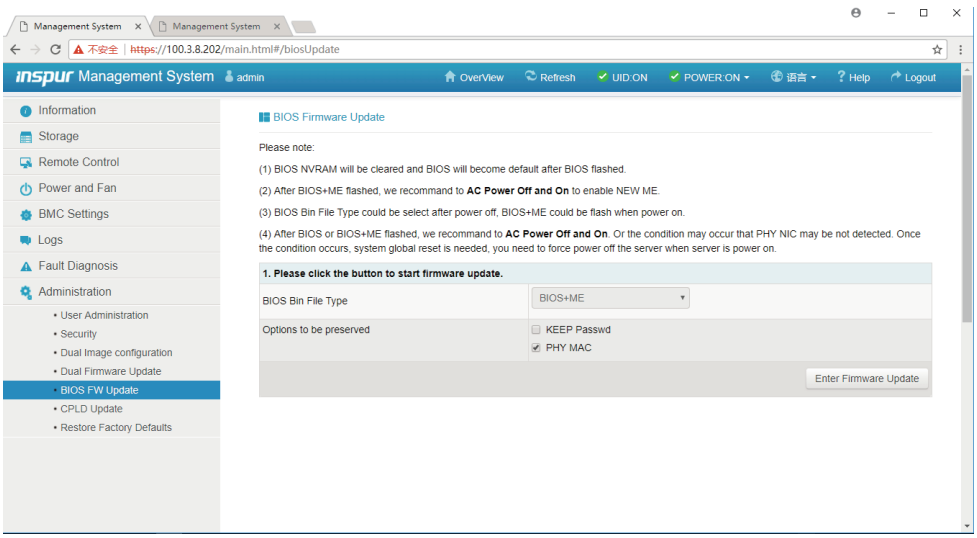
- Restore factory defaults: To restore BMC's configuration to factory state.

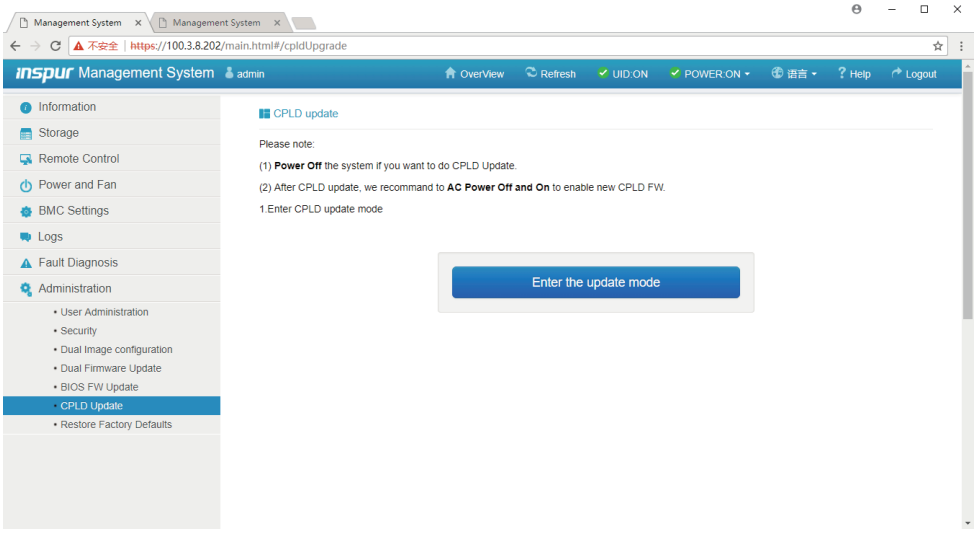


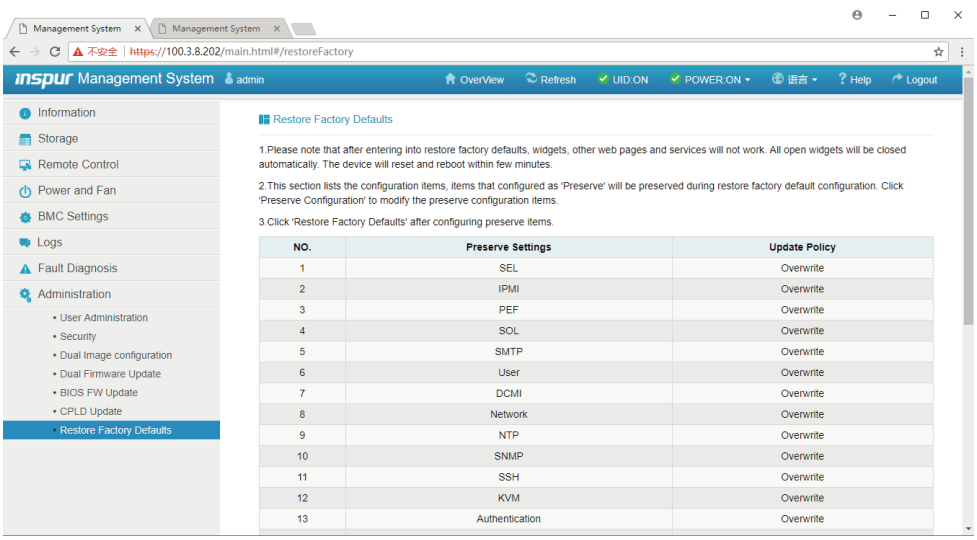












8.11 Command Line Introduction

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

- Login command line

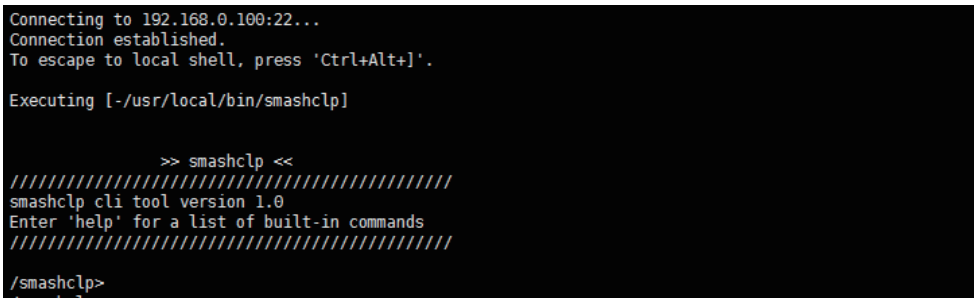
Introduces methods of login command line.

- Command line function introduction

Introduces command line functions.

8.11.1 Command Line Login

Login to BMC Command line through ssh. After logging in, 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
sensor  :       get or set sensor parameters, please enter <sensor --help> for more information
fru     :       get or set fru parameters, please enter <fru --help> for more information
chassis :       get or set chassis parameters, please enter <chassis --help> for more information
user    :       get or set user parameters, please enter <user --help> for more information
mc      :       get or set mc parameters, please enter <mc --help> for more information
fan     :       get or set fan parameters, please enter <fan --help> for more information
psu     :       get or set psu parameters, please enter <psu --help> for more information
password:       change root password
update  :       firmware update operator, please enter <update --help> for more information
diagnose:       BMC diagnose function, please enter <diagnose --help> for more information
sol     :       sol (text redirection) function, please enter <sol --help> for more information
id      :       id get identify function, please enter <id --help> for more information
diaglog :       BMC diaglog function, please enter <diaglog --help> for more information
register:       BMC registerinfo function, please enter <register --help> for more information
exit    :       exit the command line
/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      get network information
       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
       --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 sensor command, get the information list of all sensors:

```
/smashclp> sensor --help
sensor commands:
     sensor <option1> [<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 | value     | unit       | status | lnr       | lc        | lnc       | unc       | uc        | unr
CPU0_Temp        | 19h | na        | degrees C  | na     | na        | na        | na        | 102.000   | 112.000   | na
CPU1_Temp        | 1Ah | na        | degrees C  | na     | na        | na        | na        | 102.000   | 112.000   | na
PCH_Temp         | 1Dh | na        | degrees C  | na     | na        | na        | na        | 100.000   | 110.000   | na
DIMMG0_Temp      | 1Eh | na        | degrees C  | na     | na        | na        | na        | 95.000    | 105.000   | na
DIMMG1_Temp      | 1Fh | na        | degrees C  | na     | na        | na        | na        | 95.000    | 105.000   | na
System_Temp      | 01h | na        | degrees C  | na     | na        | na        | na        | na        | na        | na
Inlet_Temp       | 02h | na        | degrees C  | na     | na        | na        | na        | 40.000    | 50.000    | na
Outlet_Temp      | 00h | na        | degrees C  | na     | na        | na        | na        | na        | na        | na
SYS_VCCIO        | 40h | na        | Volts      | na     | 0.690     | 0.770     | 0.850     | 1.170     | 1.250     | 1.330
SYS_12V          | 43h | na        | Volts      | na     | 9.024     | 9.776     | 10.528    | 13.536    | 14.288    | 15.040
SYS_3.3V         | 44h | na        | Volts      | na     | 2.660     | 2.800     | 2.940     | 3.657     | 3.797     | 3.938
SYS_5V           | 47h | na        | Volts      | na     | 3.888     | 4.176     | 4.464     | 5.544     | 5.832     | 6.120
PCH_P1V05        | 41h | na        | Volts      | na     | 0.770     | 0.850     | 0.930     | 1.170     | 1.250     | 1.330
PCH_P1V5         | 42h | na        | Volts      | na     | 1.180     | 1.260     | 1.340     | 1.670     | 1.750     | 1.830
CPU0_VCORE       | 45h | na        | Volts      | na     | 1.040     | 1.120     | 1.200     | 2.300     | 2.380     | 2.460
CPU1_VCORE       | 46h | na        | Volts      | na     | 1.040     | 1.120     | 1.200     | 2.300     | 2.380     | 2.460
```

8.11.2.3 Get and Set FRU Information

Via FRU command, get the FRU configuration information:

```
/smashclp> fru --help
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:
       CT         set or get fru Chassis Type
       CPN        set or get fru Chassis Part Number
       CS         set or get fru Chassis Serial
       CE         set or get fru Chassis Extra
       BD         get fru Board Mfg Date
       BM         set or get fru Board Mfg
       BP         set or get fru Board Product
       BS         set or get fru Board Serial
       BN         set or get fru Board Part Number
       PM         set or get fru Product Manufacturer
       PN         set or get fru Product Name
       PPN        set or get fru Product Part Number
       PV         set or get fru Product Version
       PS         set or get fru Product Serial
       PAT        set or get fru Product Asset Tag
       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
/smashclp>
```

8.11.2.4 Get and Control Chassis Status

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

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

8.11.2.5 Get User List and Add/Delete User

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

```
/smashclp> user --help
user commands:
     user <option> <value> [<option> <value> ...]
     option:
       --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>
       --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
         for example : user --del <user id>
       --complexity     Enable/Disable password complexity check or Get complexity
         for example : user --complexity <enable/disable/get>
       <user id>:              The user id more than 1, less than 16.
       <user name>:            The user name cannot be longer than 16 bytes.
       <user password>:        The user password cannot be longer than 16 bytes.
       <user priv>:            The user priv is 2(USER), 3(OPERATOR), 4(ADMINISTRATOR) or 15(NO ACCESS).
/smashclp>
/smashclp> user --list
ID  Name             Channel Priv Limit
1   root             ADMINISTRATOR
2   admin            ADMINISTRATOR
3                    NO ACCESS
```

8.11.2.6 Get BMC Version and Reset BMC

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

```
/smashclp> mc --help
mc commands:
     mc <option1> [<option2>] <parameter>
     option1:
       --help     show help information
       ?          show help information
       --get      get mc information
       for example : mc --get <parameter>
       --set      set mc information
       for example : mc --set <option2> <parameter>
     option2:
       bmc        set bmc action, this only support --set
       kvm        set kvm action, this only support --set
       webgo      set webgo action, this only support --set
     parameter:
       version    get bmc version, this only support --get command
       reset      set bmc , kvm or webgo reset action, this only support --set command
/smashclp>
/smashclp> mc --get version
Device ID                 : 32
Device Revision           : 1
Firmware Revision         : 4.2.0
IPMI Version              : 2.0
/smashclp>
```

8.11.2.7 Set Fan Mode and Get Fan Speed

Via fan command, set the fan mode, and get the fan speed:

```
/smashclp> fan --help
fan commands:
     fan <option1> [<option2> <parameter1> [<parameter2>]]
     option1:
       --help     show help information
       ?          show help information
       --get      get fan information
       for example : fan --get <option2>
       --set      set fan information
       for example : fan --set <option2> <parameter1> [<parameter2>]
     option2:
       fanmode     set or get fanmode
       for example : fan --set fanmode 0|1
       0 : auto mode
       1 : manual mode
       fanlevel     set or get fan level
       for example : fan --set fanlevel <parameter1> <parameter2>
       parameter1: the fan id
       parameter2: the fan of the precent
/smashclp>
/smashclp> fan --get fanlevel
ID  Status  SpeedPercent  SpeedRPM
0    NA         0         0 PRM
1    NA         0         0 PRM
2    NA         0         0 PRM
3    NA         0         0 PRM
4    NA         0         0 PRM
5    NA         0         0 PRM
6    NA         0         0 PRM
7    NA         0         0 PRM
/smashclp>
```

8.11.2.8 Get and Set Power Module Information

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

```
/smashclp> psu --help
psu commands:
     psu <option1> <option2> [<parameter1> <parameter2>]
     option1:
       --help     show help information
       ?          show help information
       --get      get psu information
       for example : psu --get <option2>
       --set      set psu information
       for example : psu --set <option2> [<parameter1> <parameter2>]
     option2:
       psuinfo     show all psu information, this only support --get
       psumode     set psu information, this only support --set
       parameter1: the ID of the PSU module, not more than 4
       parameter2: the Action of the PSU module.
  0 represents active1, 1 represents active2, 2 represents standby1, 3 represents standby2, 4 represents normal.
/smashclp>
```

Get the power module information:

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

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 --help
diagnose commands:
     diagnose <option> [<parameter1>] [<parameter2>...]
     option:
       --help     show help information
       ?          show help information
       bmc diagnose support command:
         ls              show log file profile, only support parameter1 select log file
         cat             show log file content, only support parameter1 select log file
         last            show listing of last logged in users
         ifconfig        show and configure network info
         ethtool         show and configure phy configuration
         ps              report a snapshot of the current processes
         top             display Linux tasks
         dmesg           print or control the kernel ring buffer
         netstat         Print network connections and routing tables etc.
         gpiotool        bmc gpio test tool
         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 configuration
         log             bmc system log
         cpuinfo         bmc cpu info
         meminfo         bmc memory info
         slabinfo        bmc slab info
         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 <option1>
     option1:
       --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.

```
/smashclp> sol --help
sol commands:
     sol <option1>
     option1:
       --help     show help information
       ?          show help information
       --start     start sol (text redirection)
       for example : sol --start
/smashclp>
/smashclp>
/smashclp> sol --start

SOL (text redirection) is going to be executed.
Please remember the exit sequence: ~.

Press any key to continue.
 Notice: SOL (Text Redirection) Starts Successully.
 Please Remember, Exit Sequence: ~.
```

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
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 common server 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 LED on 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 is output 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 LED is 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 an RAID 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 over-temperature 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.

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 server 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 is 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 server 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

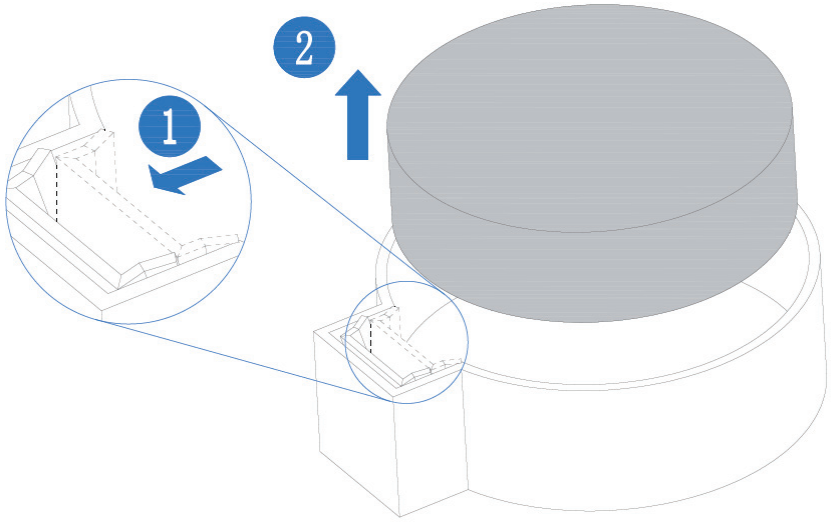
If the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock.

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

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

To remove the component:

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



11 Regulatory Compliance Notices

11.1 Chinese Notice

Class A Equipment

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

11.2 Battery Replacement Notice

WARNING: The server 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 server 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.

13 Warranty

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

Type	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:

Type	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

Customers could return defective parts to the designated Inspur site after submitting a service 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 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.