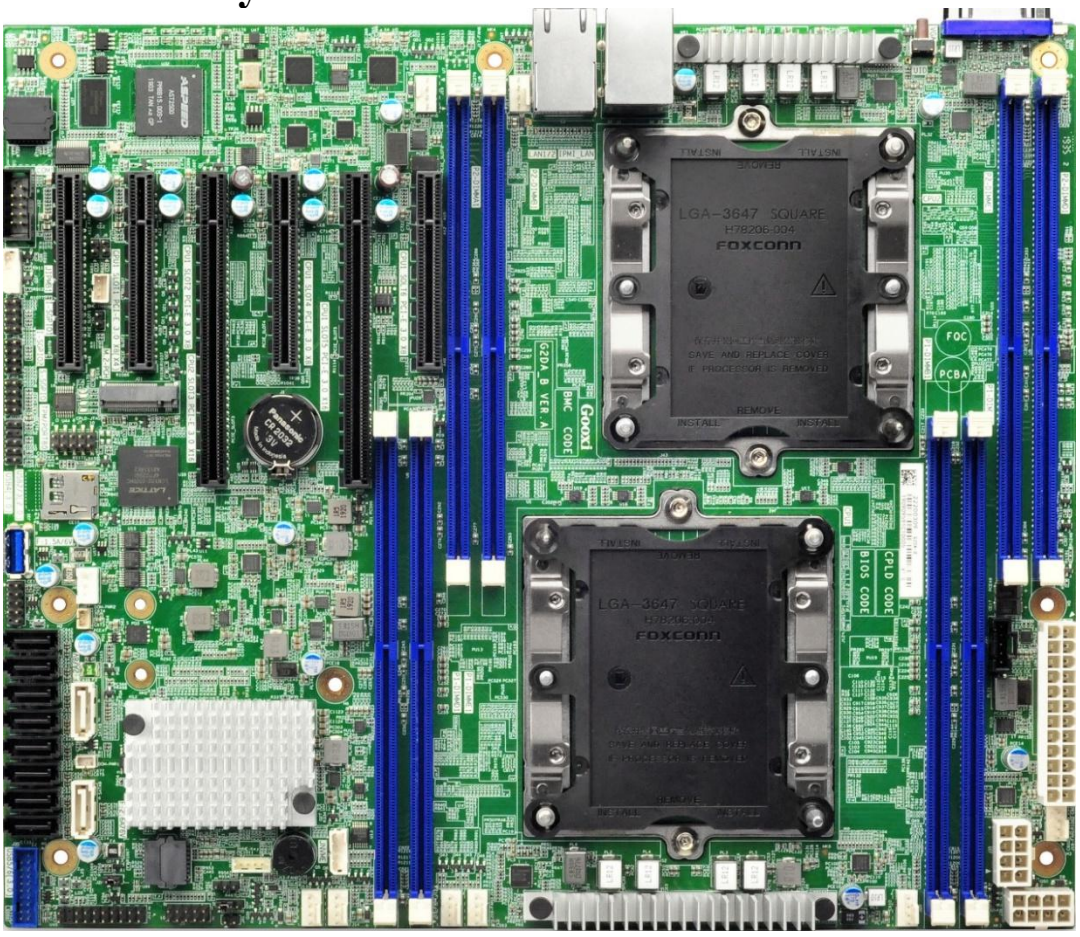
Gooxi®

G2DA-B

Purley 8DIMM Dual-CPU Motherboard



User Manual

Rev 1.0

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Product Name: G2DA-B

Version: V0.1

Issue Date: Dec-2020

Preface

This manual is the product technical manual of Gooxi® G2DA-B server Motherboard. It mainly introduces and illustrates the parameters, characteristics, composition, installation mode and basic operation of this motherboard.

This manual is for reference and research of professional system integrator and technician. This product should only be installed and maintained by experienced technicians.

About this manual

Chapter 1: Motherboard Introduction

This chapter describes the classification, main parameters and characteristics of Gooxi G2DA-B motherboard.

Chapter 2: Motherboard Port Details

This chapter provides the detailed description of Gooxi G2DA-B motherboard port.

Chapter 3: Motherboard Installation

This chapter introduces the installation steps of Gooxi G2DA-B motherboard and components on the motherboard, including the installation description of CPU, heatsink, memory, hard disk, etc.

Chapter 4: Description of BIOS Parameter Setting

This chapter details each setting in the program of Gooxi G2DA-B motherboard BIOS.

Chapter 5: IPMI Deployment

This chapter introduces how to deploy the IPMI of Gooxi G2DA-B motherboard.

Chapter 6: RAID Setting

This chapter describes how to set RAID on Gooxi G2DA-B motherboard.

Chapter 7: Specifications

This chapter introduces the product technical specifications of Gooxi G2DA-B motherboard.

Abbreviation

The full English name and Chinese explanation of each abbreviation are provided as follows:

Abbreviation	English Name	Chinese Name
PCH	Platform Controller Hub	即之前统称的“南桥”
GbE	Gigabit Ethernet	千兆以太网
BMC	Baseboard Management Controller	基板管理控制器
IPMI	Intelligent Platform Management Interface	智能平台管理接口
CPU	Central Processing Unit	中央处理器
SATA	Serial Advanced Technology Attachment	串行 ATA 接口规范
SAS	Serial Attached SCSI	串行 SCSI
sSATA	secondary SATA	扩展 SATA 接口
LAN	Local Area Network	局域网
VGA	Video Graphics Array	视频传输标准
MB	Mother Board	主板
MIB	Motherboard Interface Board	主板转接板/侧板
BP	Backplane	背板
FIB	Fan Interface Board	风扇转接板
PCIE	Peripheral Component Interconnect Express	高速串行计算机扩展总线标准
USB	Universal Serial Bus	通用串行总线
FW	Firmware	固件
TPM	Trusted Platform Module	可信赖平台模块
IO	Input/Output	输入输出
BIOS	Basic Input-Output System	基本输入输出系统
CMOS	Complementary Metal Oxide Semiconductor	互补金属氧化物半导体
ME	Management Engine	管理引擎
DDR4	Double Data Rate 4 SDRAM	第四代双倍数据速率同步动态随机存储器
DIMM	Dual-Inline-Memory-Modules	双列直插式存储模块
RDIMM	Registered DIMM	带寄存器的双线内存模块
LRDIMM	Load-Reduced DIMM	低负载 DIMM
AEP	Apache Pass	Intel® 傲腾 DDR4 内存代号
MEZZ CONN	Mezzanine Connector	夹层/扣卡
KVM	Keyboard Video Mouse	通过直接连接键盘、视频、鼠标端口, 能够访问和控制计算机
CPLD	Complex Programmable Logic Device	复杂可编程逻辑器件
ECC	Error Correcting Code	错误检查和纠正
CFM	Cubic Feet Per Minute	立方英尺每分钟
RPM	Revolution Per Minute	转每分

Conventions:

 Caution: It is used to deliver equipment or environmental safety warning messages. If it is not avoided, it may lead to equipment replacement, data loss, equipment performance degradation or other unpredictable results.

 Danger: It is used to warn potential dangerous situations, which may lead to death or serious personal injury if unavoidable

 Red arrow: point to a position

 Blue arrow: action of pulling out or inserting downward or tilting in.

 White arrow: represents the next action or result.

 Dark blue rotation arrow 1: represents the action of turning the screw clockwise or pulling outward.

 Dark blue rotation arrow 2: represents the action of turning the screw clockwise or turning it inward.

Contents

Chapter 1: Motherboard Introduction

1.1 Motherboard parameters

Gooxi® G2DA-B type is a standard ATX (12.07"* 10.15") dual-processor server motherboard, which is designed based on Intel x86 architecture and adopts Intel® Purley platform, based on Intel® PCH C621 chipset with Intel's latest generation Xeon® Scalable CPU, which supports 2* Xeon® Scalable CPU, 8* DDR4 2133 / 2400 / 2666 ECC RDIMMs, and single board supports up to 512GB.

The following are the main parameters of G2DA-B:

Model		G2DA-B
CPU		1Gen and 2Gen Intel® Xeon® Scalable processors
Chipset		C621
Motherboard Size		ATX
Peculiar Functions	BMC chip	ASPEED AST2500
	Fan temperature control	Supports
	Status alarm	Supports
Memory	Slots amount	8
	Total volume	Up to 512GB
	Type	DDR4 3DS LRDIMM/LRDIMM/RDIMM/NV-DIMM ECC 2666/2400/2133 MHz Supports 4* DDR4 Channels, and each Channel supports 1* DIMM, 8* DDR4 slots in total.
	Capacity	Per DIMM supports 8GB, 16GB, 32GB, 64GB
	PCI-E slots	6
Expansion Slot	Slot1	PCI-Express 3.0 x8 Slot from CPU0
	Slot2	PCI-Express 3.0 x8 Slot from CPU0
	Slot3	PCI-Express 3.0 x16 Slot from CPU1
	Slot4	PCI-Express 3.0 x8 Slot from CPU0
	Slot5	PCI-Express 3.0 x16 Slot from CPU0
	Slot6	PCI-Express 3.0 x8 Slot from CPU0
Network	LAN	2* GbE RJ45 LAN ports, 1* dedicated BMC management LAN port
Storage	SATA controller	3* 8643 port, 2* SATA 7PIN port, supports RAID 0, 1, 5, 10
	BMC	IPMI 2.0
Screen	VGA	Supports
TPM	TPM	Supports
Rear I/O Port	External USB	2* USB3.0, 2* USB2.0
	VGA port	1
	Serial port	1* DB-9 serial port
	RJ-45	2* GbE RJ45 LAN ports, 1* dedicated BMC management LAN port

Monitor	CPU Temp.	Supports
	System status	Supports
	Fan speed	Supports
OS		Windows® Server 2012 R2 (64bit) Windows® Server 2016 (64bit) Redhat® Enterprise Linux Server 7.3(64bit) Suse® Enterprise Linux Server 12.2(64bit) Centos® Enterprise Linux Server 7.3(64bit) Ubuntu® Server 16.04(64bit) VMWare® ESXi Microsoft® Hyper-V® Citrix® Xen® Server Linux® Kernel Virtual Machine
Environment Parameters		Operating temperature: 10℃~40℃ Non-operating temperature: -40℃ ~70℃ Operating humidity: 8%~90% (non condensing) Non-operating humidity: 5%~90% (non condensing)

Table 1.1

If the specifications are changed, please visit our official website: www.gooxi.us

1.2.1 Motherboard Features

Gooxi G2DA-B motherboard has the characteristics of high performance, high reliability & stability, low power consumption and high customization:

High performance: Supports 2Gen Intel Xeon Scalable CPU family & Intel Lewisburg C621 chipset.

High reliability: Through professional constant temperature and humidity test equipment, Gooxi® simulates the test of various complex environments (high temperature, low temperature, high and low temperature cycle), etc.

High stability: Via long-time full load pressure test under normal and high temperature conditions.

Low power consumption: The power MOS transistor with ultra-low Rds (on) resistance and optimized DC-DC switching power supply design make the overall power conversion efficiency of the motherboard greater than 90%. Tailored BIOS, turn off unnecessary functions to reduce power consumption. BMC can save energy by accurately adjusting the fan speed via temperature monitoring.

Diagram of motherboard hardware chip:

G2DA-B Block Diagram

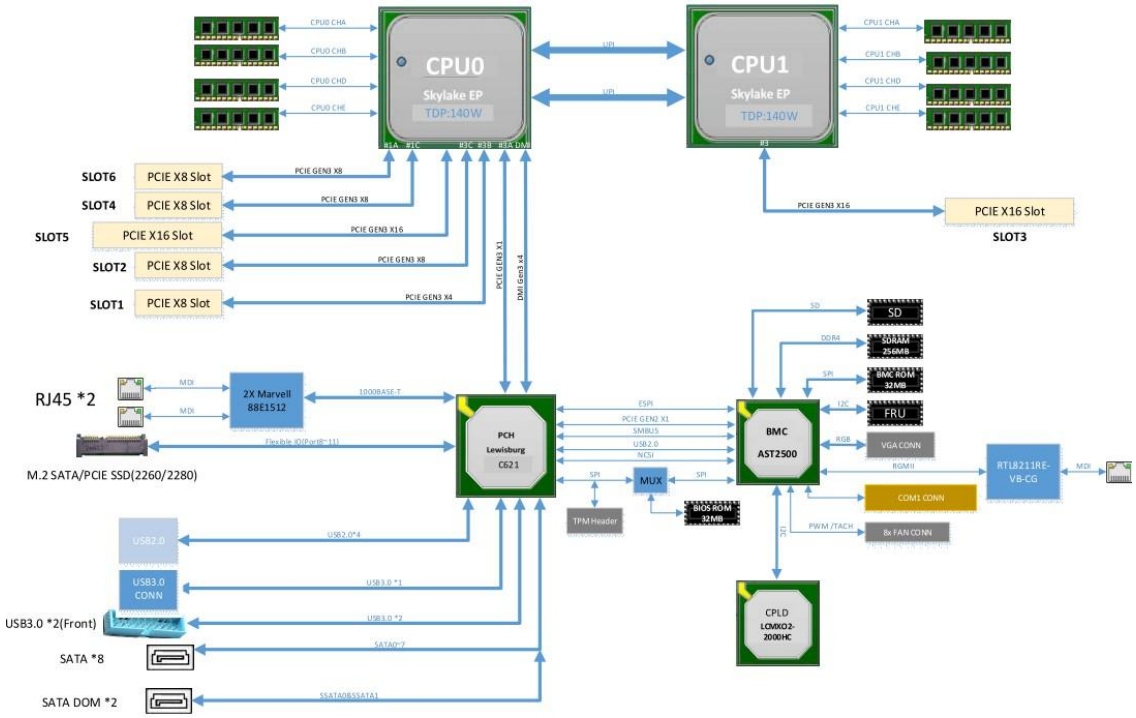

Fig. 1.1

Chapter 2: Motherboard Port Details

2.1 Motherboard overview

Motherboard also called Mainboard and Systemboard. It is installed in the chassis and is one of the most basic and important components of the server.

This section focuses on the interface, LED and jumpers of G2DA-B motherboard.

2.1.1 G2DA-B motherboard family picture

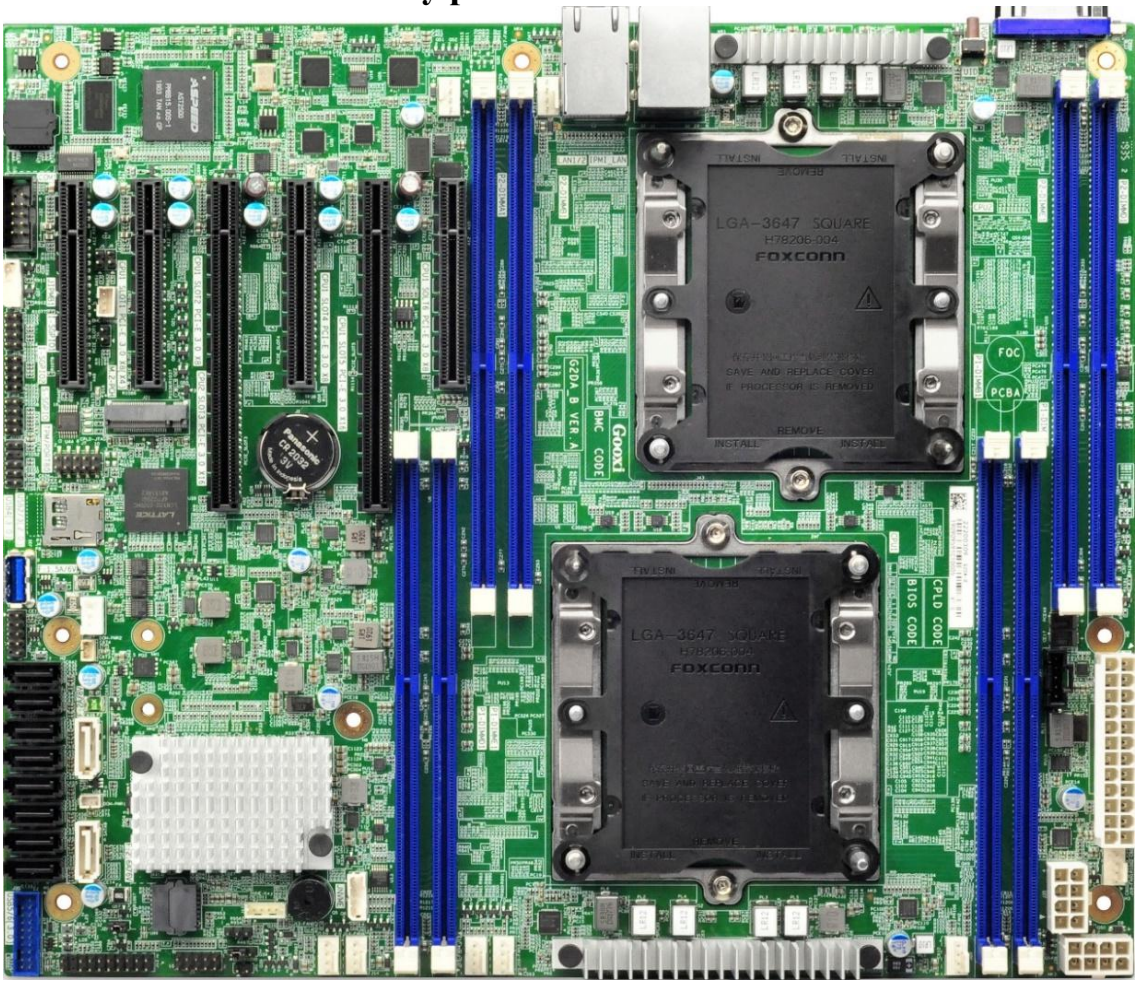

Fig. 2. 1

⚠Note: all pictures shown in this manual are based on the latest PCB version available at the time of publication of this manual. The motherboard you receive may or may not look exactly the same as the pictures shown in this manual.

2.1.2 G2DA-B motherboard ports&definition

1. MB port position

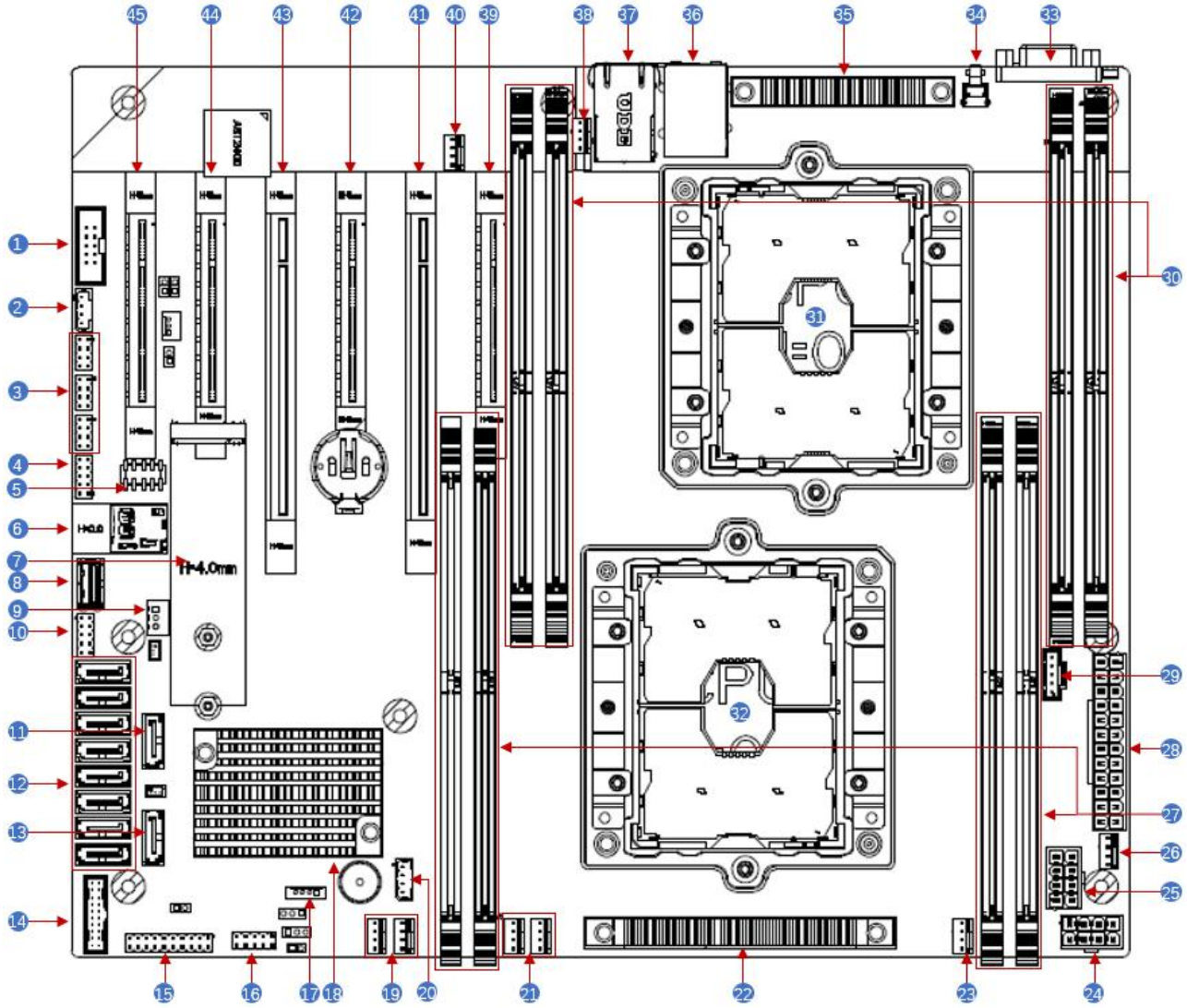

Fig. 2. 2

2. MB port definition

Connector S/N	Function
1	COM1
2	IPMB,4-pin external BMC I²C header.
3	SGPIO for SAS card hard disk indicator connection.
4	TPM(Trusted Platform Module) card interface
5	CPLD JTAG, for burning CPLD program
6	Micro SD card slot
7	M.2 SATA/PCIE x 4, supports 2260/2280 specification
8	Vertical USB 3.0 type A connector
9	JSTBY, Wake-on-LAN connector
10	USB2.0, two USB2.0 can be transferred out with an adapter line and connected to the front panel
11/13	S-SATA 3.0 port
12	I- SATA 3.0 port

14	USB3.0, two USB3.0 can be transferred out with an adapter line and connected to the front panel
15	Front panel port
16	Pin 1/2 CLEAR CMOS, Pin3/4 PASSWORD CLEAR, Pin5/6 ME FW UPDATE, Pin7/8 BMC Disable, Pin9/10 BIOS RECOVERY
17	NVME-Key
18	C621 Chipset
19/21/23/26/38/40	4PIN fan port
20	JNVME
22/35	PSU chip heatsink
24/25	PSU connector
27	CPU0 DIMMA1/B1/E1/D1
28	PSU connector
29	I²C PSU connector
30	CPU1 DIMMA1/B1/E1/D1
31	CPU1
32	CPU0
33	VGA port
34	UID LED
36	Dual-layer USB 2.0 CONN+IPMI LAN
37	Dual-layer GbE data LAN port
39	CPU0 PCI-E 3.0 X8 slot
41	CPU0 PCI-E 3.0 X16 slot
42	CPU0 PCI-E 3.0 X8 slot
43	CPU1 PCI-E 3.0 X16 slot
44	CPU0 PCI-E 3.0 X8 slot
45	CPU0 PCI-E 3.0 X8 slot(only has X4 signal)

Table 2. 1

2.2 Motherboard IO Connector

2.2.1 Introduction to MB button and front panel

The front panel contains head pins for buttons and indicators, which are usually located on the control panel on the front of the chassis. These connectors are designed for use with the Gooxi chassis. See the figure below for the description of front control panel buttons and LED indicators.

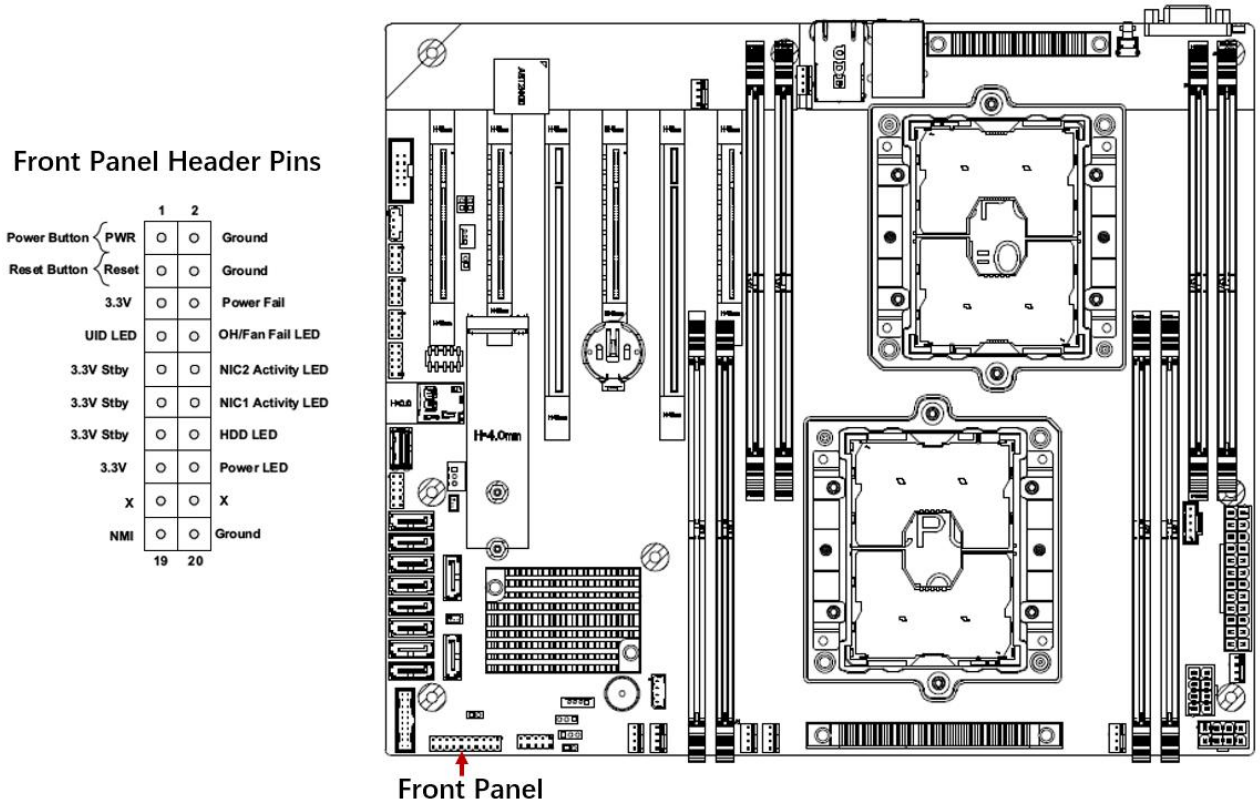

Fig. 2. 3

Front Panel PIN definitions are as below:

Front Panel Definition				
PIN	**Description**	**PIN**	**Description**	**Description**
1	Power Button	2	Ground	Motherboard power on button
3	Reset Button	4	Ground	Motherboard reset button
5	3.3V	6	Power Fail LED	Power status indicator in the motherboard lights up when PWROK is started
7	UID_LED	8	OH/PWR Fail/ Fan Fail LED	
9	3.3V Stby	10	NIC2 Active LED	The activity indicator of service LAN port2 is synchronized with the active indicator LAN port 2, and flashes when there is data access
11	3.3V Stby	12	NIC1 Active LED	The activity indicator of service LAN port1 is synchronized with the active indicator LAN port 1, and flashes when there is data access
13	3.3V Stby	14	HDD LED	The hard disk working status indicator flashes when data is read, and other statuses are always off

15	3.3V	16	PWR LED	The power status indicator in the motherboard lights up when PWROK is started
17	X	18	X	
19	NMI	20	Ground	Connect the non blocked interrupt button, which is not supported by the software

Table 2. 2

2.2.2 Admin LAN port

The LAN port is dedicated to and is used for remote admin of IPMI, using CAT5 and above cables to access the switchboard and customer's hosting. It supports 1GB, 100MB & 10MB, and adaptive adjustment, but not as service data LAN port. The LAN port LEDs shown in below: dedicated IPMI_LAN port provides IPMI2.0 dedicated LAN connection.

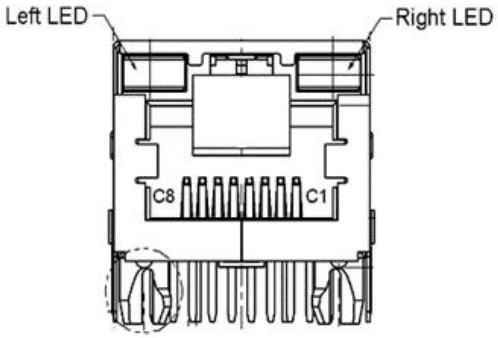

Fig. 2. 4

IPMI LAN Port LED	
LED	Description
Right LED	Yellow indicator flashes: data activity Indicator off: no data activity
Left LED	Green indicator on: 1GB. Yellow indicator on:100 MB Yellow indicator off, green indicator off, 10MB

Table 2. 3

Location:

Fig. 2. 5

2.2.3 LAN service port

The 2* 1GbE LAN port chips adopt Marvell88E1512 adaptive 1000M/100M/10M to receive/send service data. CAT5 and above cables are to access the switchboard and customer's hosting.

Diagram of network port location

Fig. 2. 6

Service Data LAN PortLED	
LED	Description
Right LED	Green indicator on: 1GB. Yellow indicator on:100 MB Yellow indicator off, green indicator off, 10MB
Left LED	Yellow indicator flashes: data activity Indicator off: no data activity

Table 2. 4

Note: the indicators of each LAN port are the same.

2.2.4 USB Connector

1. 2* external USB ports to access USB2.0 devices.

Fig. 2. 7

2. 1* inner USB2.0

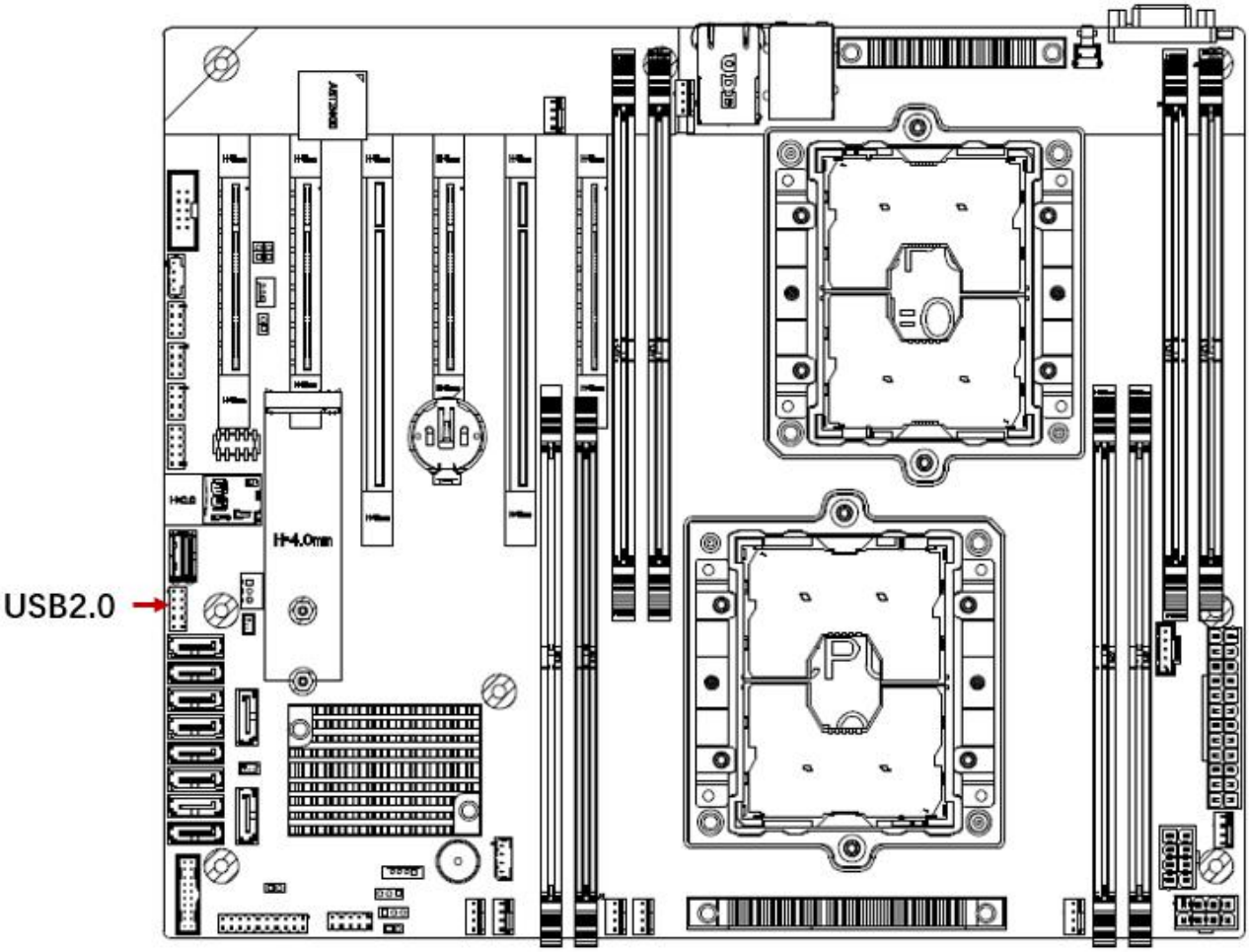

Fig. 2. 8

3. 1* TYPEA vertical USB3.0 interface in the board

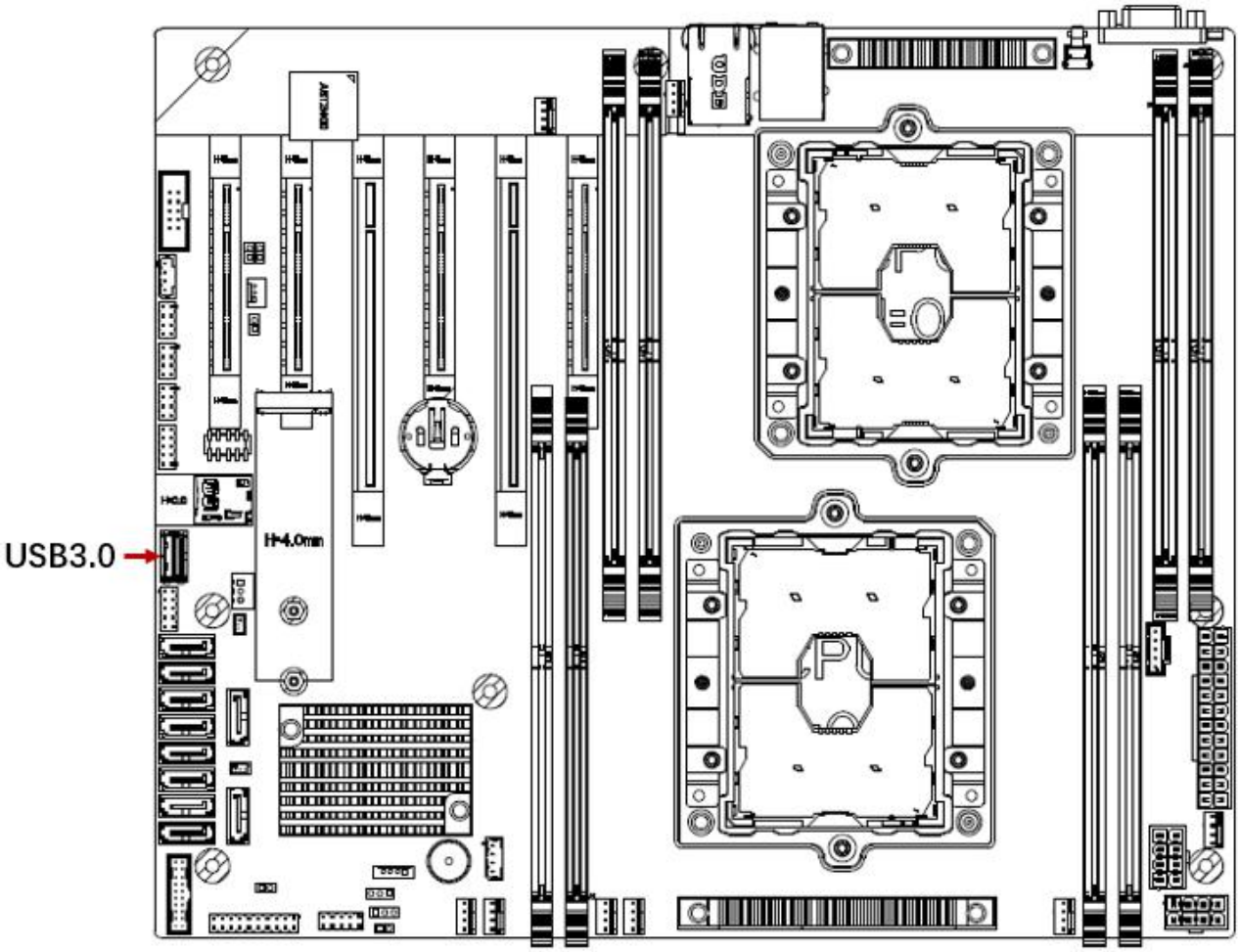

Fig. 2. 9

2.2.5 VGA Connector

AST2500 onboard PCIE VGA Controller, 1 * 15PIN VGA Connector to connect VGA screen and output MB information.

Location as below:

Fig. 2. 10

VGA Connector definitions as below:

VGA Pin header definition			
PIN	**Description**	**PIN**	**Description**
1	VCC(5V)	2	Ground
3	Ground	4	RED
5	HSYNC	6	Ground
7	Ground	8	Green
9	VSYNC	10	Ground
11	Ground	12	BLUE
13	DDCCLK	14	Ground
15	DDCDATA		

Table 2. 5

2.2.6 COM Connector introduction

MB onboard 1* 9PIN COM Header, figure as below:

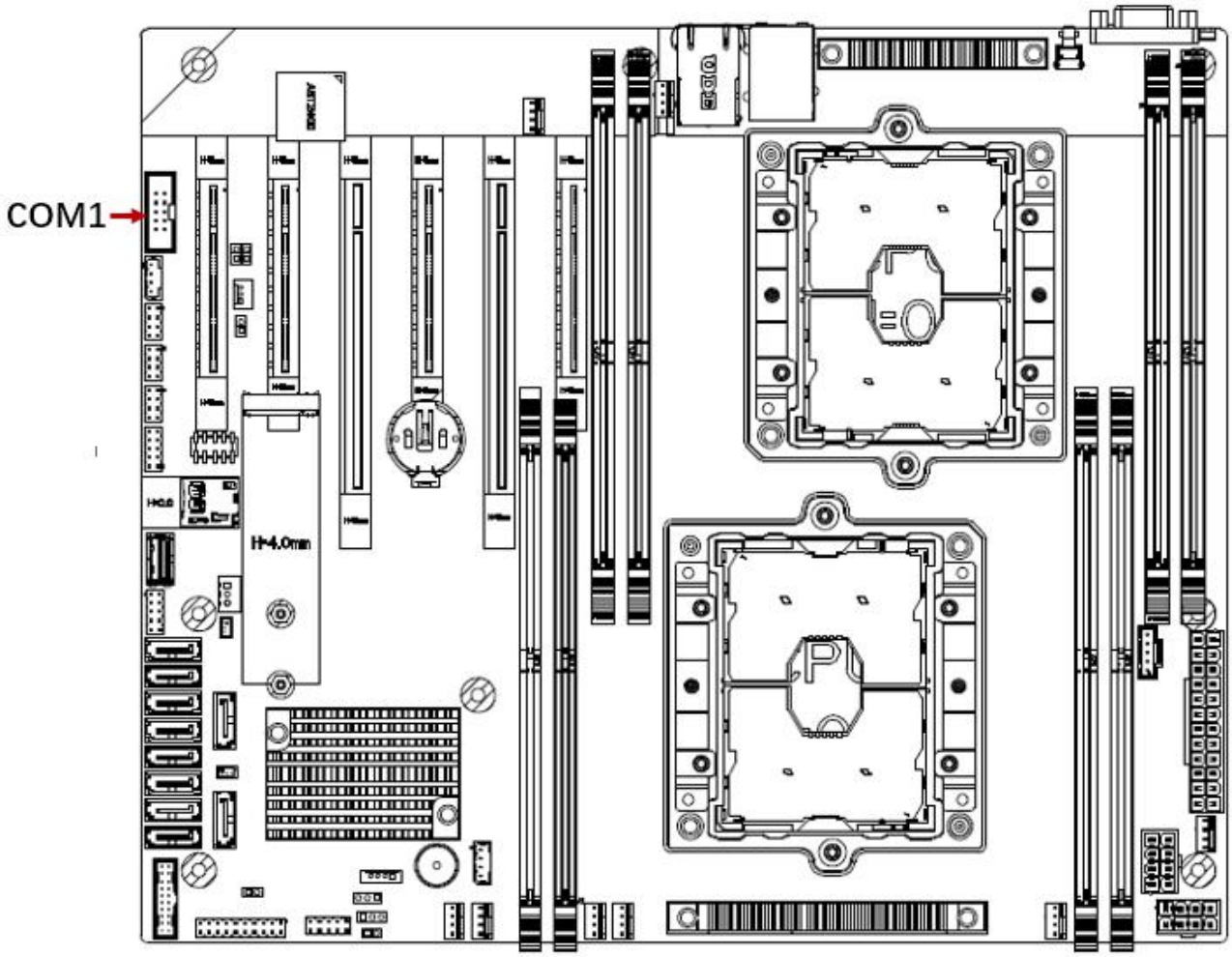

Fig. 2. 11

COM Header definitions as below:

COM Header 定义			
PIN	**Description**	**PIN**	**Description**
		9	Ground
8	RI	7	DTR
6	CTS	5	TXD
4	RTS	3	RXD
2	DSR	1	DCD

Table 2. 6

2.2.7 Chassis Intrusion & ME Update Jumper

Chassis Intrusion

MB inner chassis intrusion pin: optional function, which means when someone opens the chassis, it will detect and warn. If necessary, you can contact Gooxi to customize it for you.

ME Update Jumper:

ME(Management Engine), as Intel developed the chipset management software for it, when updating the BIOS with ME FW, it needs to jump to the 2nd and 3rd pin, and return to the 1st and 2nd pin after the updates. In other cases, jumping cap is not required.

Locations of Chassis Intrusion & ME Update shown as below:

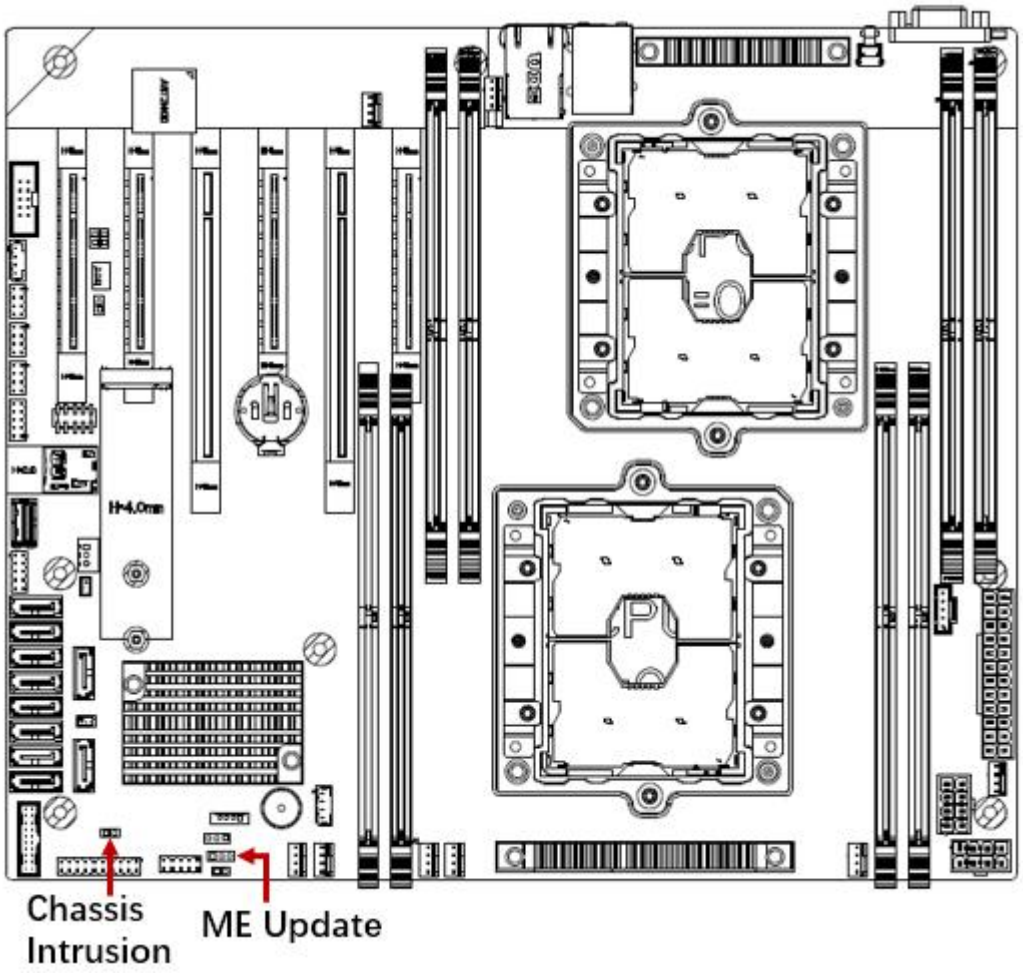

Fig. 2. 12

2.2.8 SATA DOM Connector introduction

This MB designed 2 * SATA for SATA DOM Connector (SATA1, SATA2), all of which are from Intel PCH.

Location of SATA Connector shown as below:

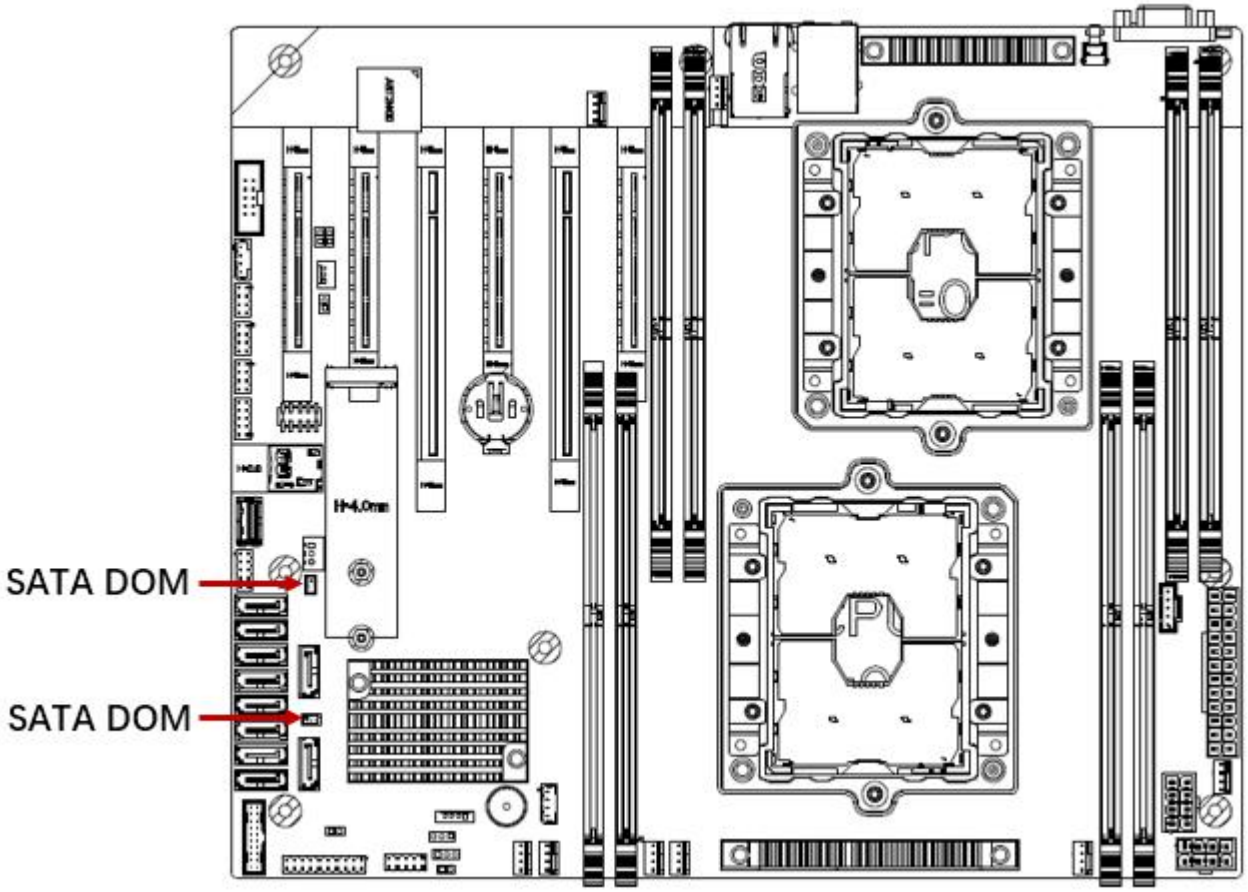

Fig. 2. 13

SATA DOM Connector definitions as below:

SATA DOM Connector Pin Definition	
PIN Sequence	**Description**
PIN1	Ground
PIN2	SATA HOST TX+
PIN3	SATA HOST TX-
PIN4	Ground
PIN5	SATA HOST RX-
PIN6	SATA HOST RX+
PIN7	Ground

Table 2. 7

2.2.9 PCIE Slot introduction

The MB onboard 2* PCIE3.0 X16 Slots and 4* PCIE3.0 X8 Slots, of which SLOT1(only X4 signal), SLOT2, SLOT4, SLOT5, SLOT6 are from CPU0; SLOT3 from CPU1.

Locations shown as below:

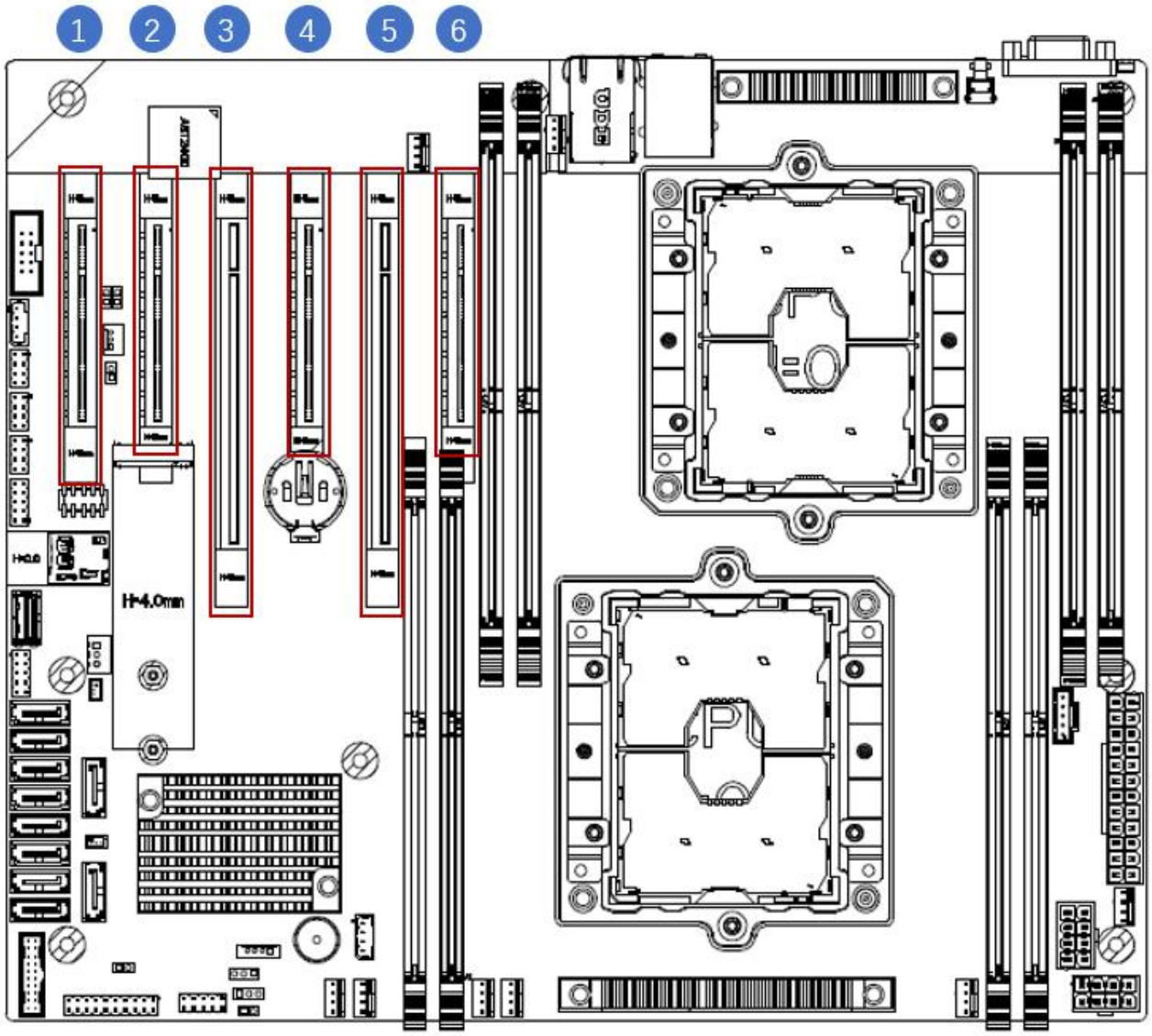

Fig. 2. 14

2.2.10 ATX 24 PIN POWER Connector introduction

ATX 24PIN POWER Connector, through 24PIN power cables connected to motherboard.
Locations shown as below:

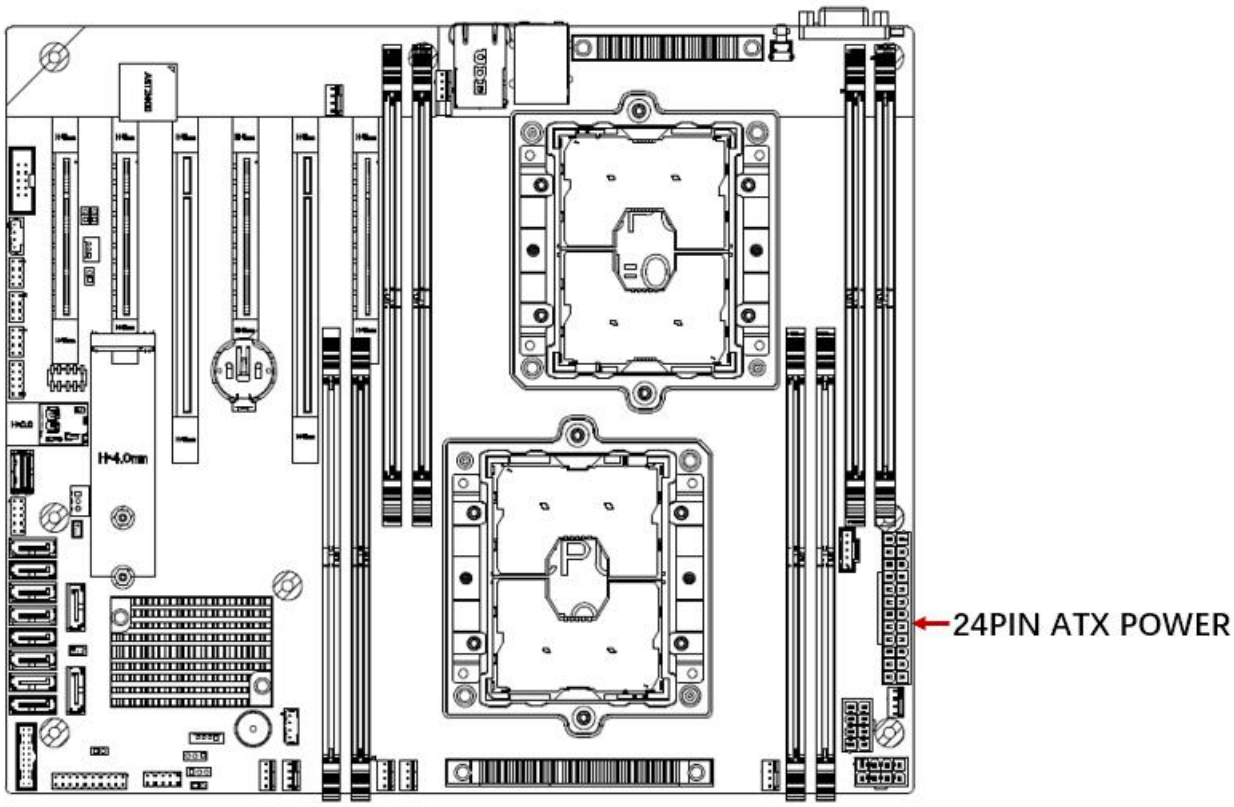

Fig. 2. 15

2.2.11 ATX 8 PIN POWER Connector introduction

ATX 8PIN POWER Connector, through 8PIN power cables connected to motherboard.
Locations shown as below:

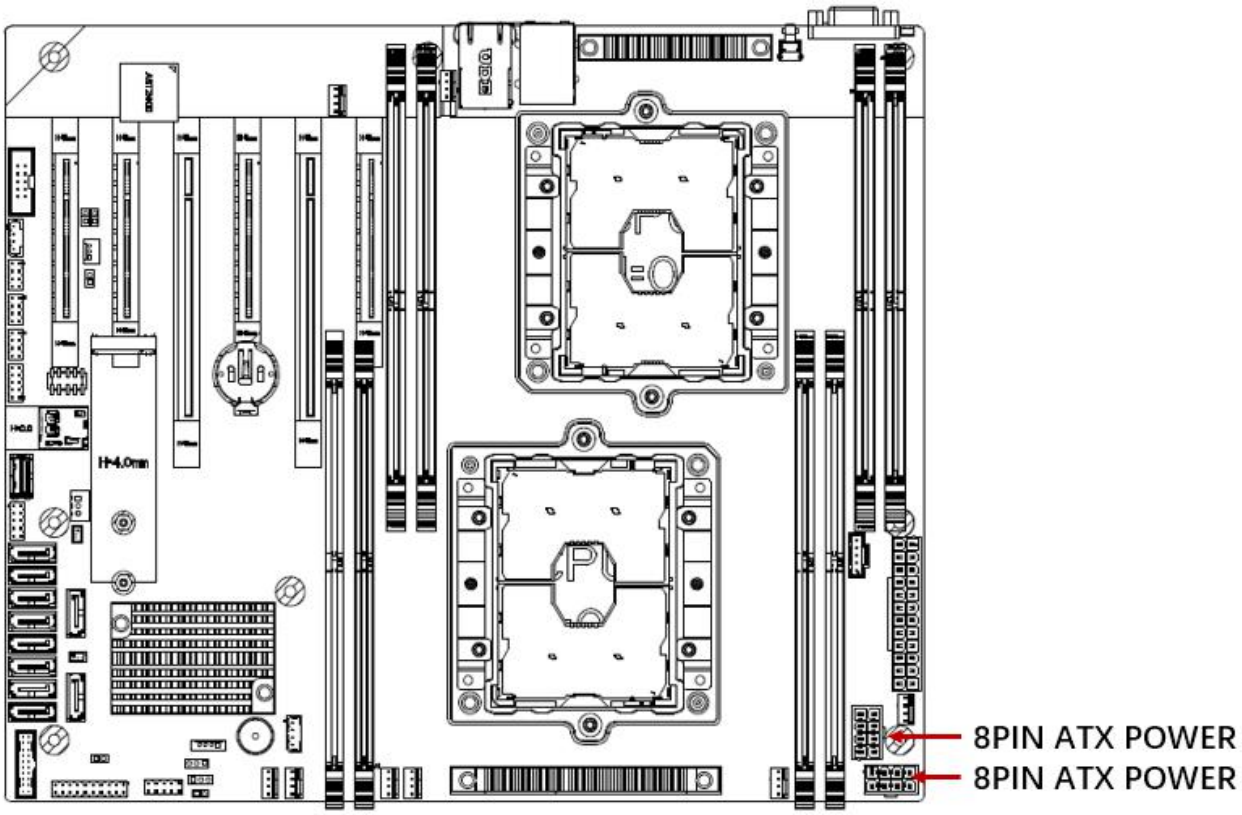

Fig. 2. 16

2.2.12 DIMM SLOT introduction

G2DA-B single board supports double CPU, each CPU supports 4* channels and 4* DIMMs. When only insert 1* DIMM, it is recommended to preferentially insert it into the slot close to the CPU.

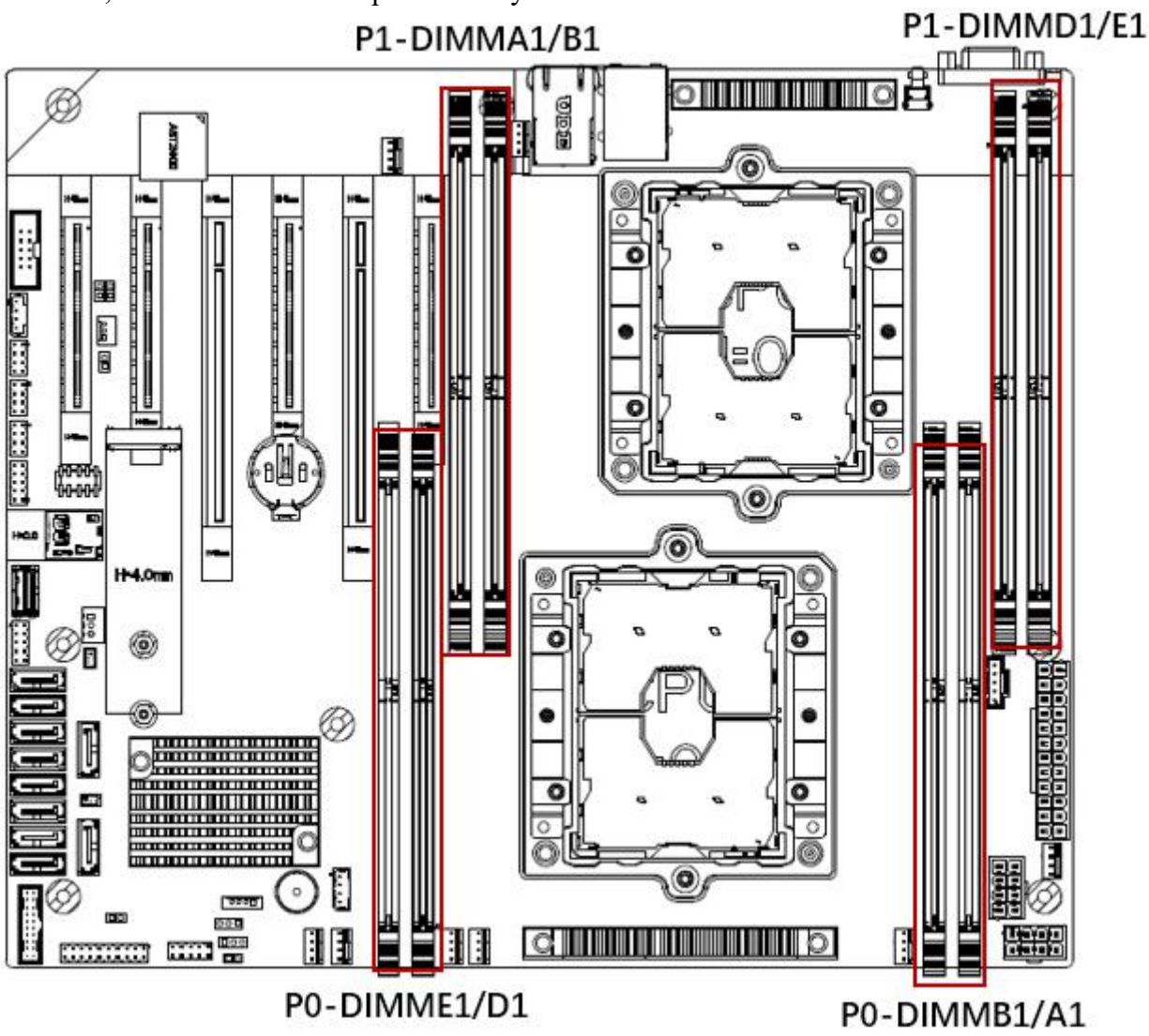

Fig. 2. 17

2.2.13 CPU SOCKET introduction

The motherboard has 2* LGA3467 CPU sockets, which are used to load the CPU of LGA3647. During CPU installation, note the installation of the 1st Pin. The 1st Pin is as follows: the red circle in the figure below shows the 1st Pin, which is indicated by a triangular arrow corresponding to the triangular arrow of the CPU.

The location of CPU socket is as follows:

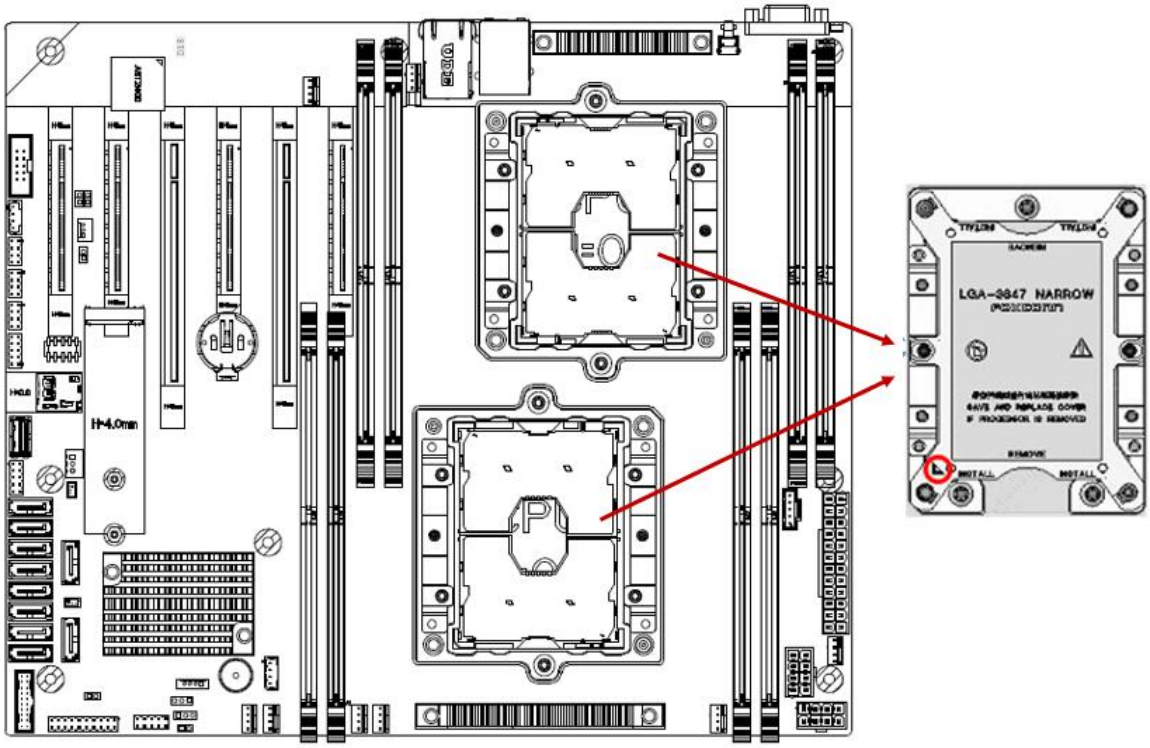

Fig. 2. 18

2.2.14 SATA SGPIO Header introduction

SATA SGPIO Header's location shown as below:

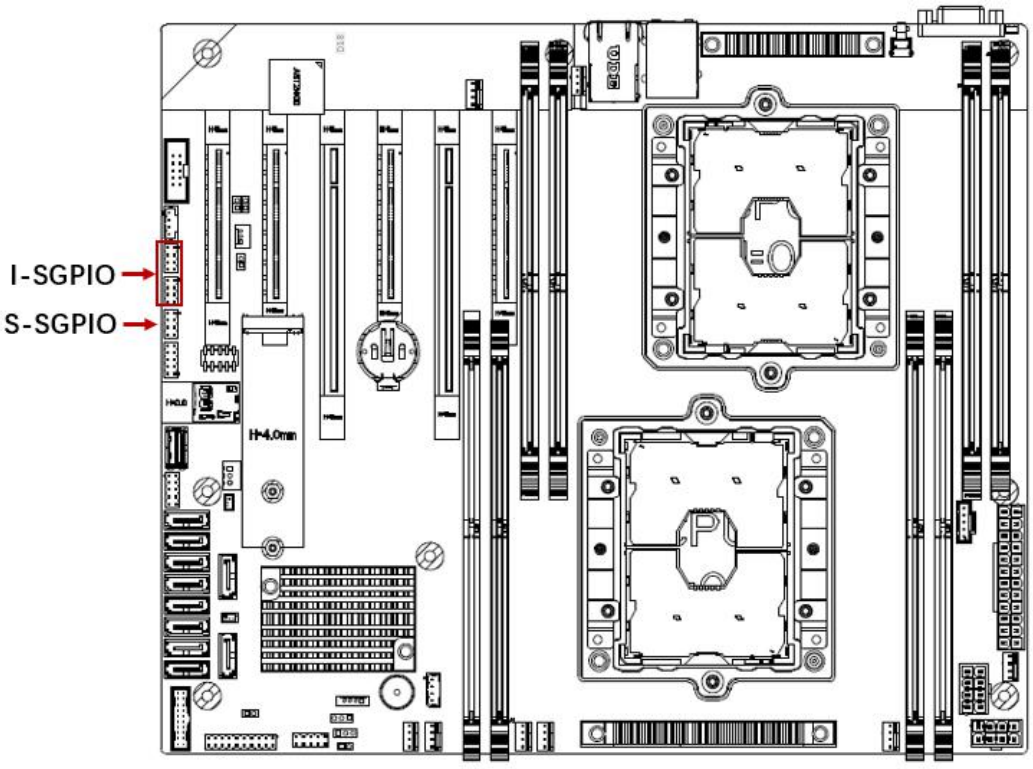

Fig. 2. 19

2.2.15 4PIN FAN HEADER introduction

The motherboard has 8* 4PIN onboard fan connector, from which System FAN's locations are FAN1- FAN6, 2* Thermal fan's locations are FANA/B, providing cooling fan connection for other I / O cards, and PWM speed regulation can be realized.

Pin is defined as follows:

FAN Header Pin Definition	
PIN Sequence	Description
1	Ground
2	12V
3	TACH
4	PWM

Table 2. 8

The location diagram of fan connector is as follows:

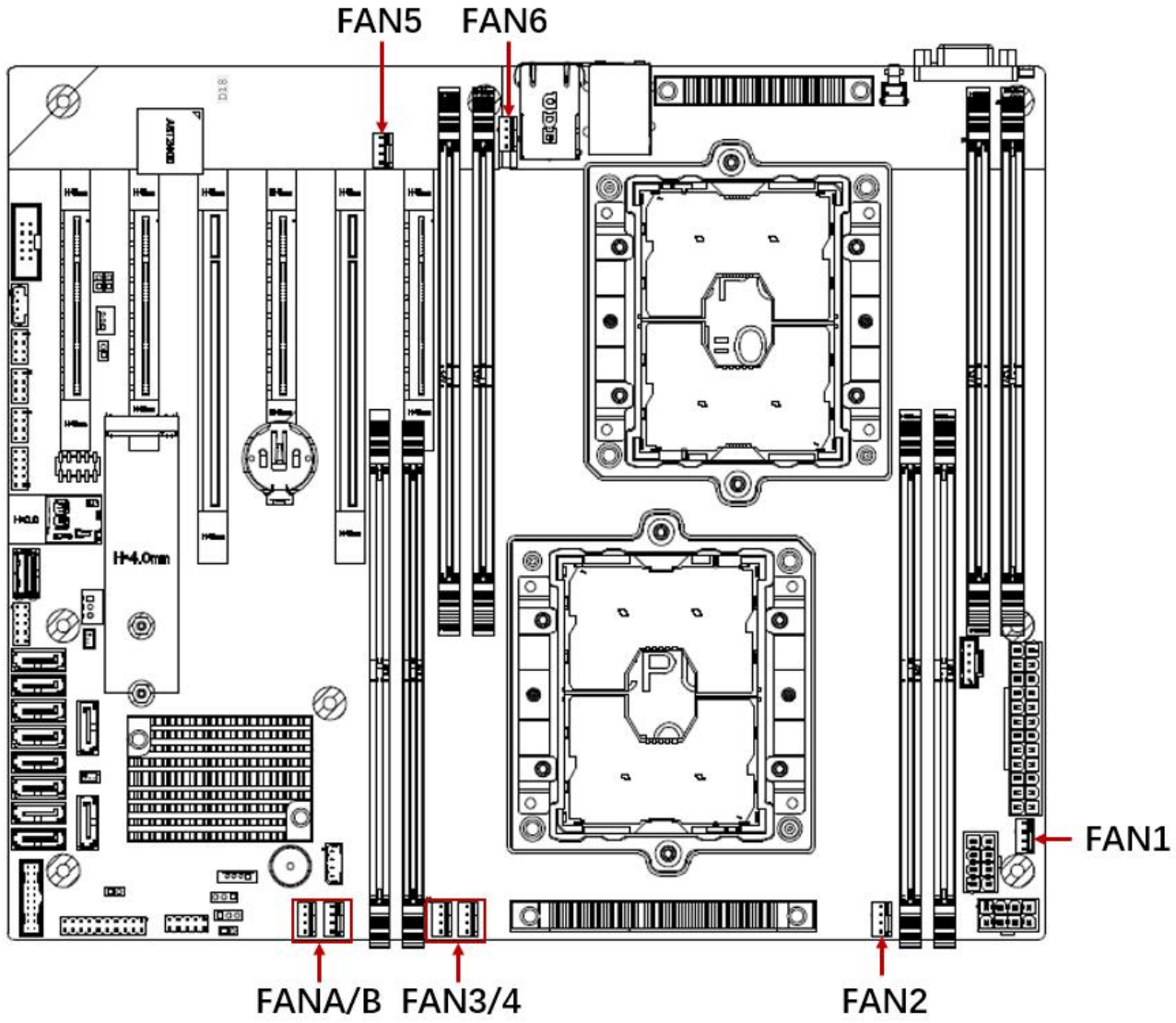

Fig. 2. 20

2.2.16 CR2032 BATTERY SOCKET

The location of lithium battery on the MB is as follows:

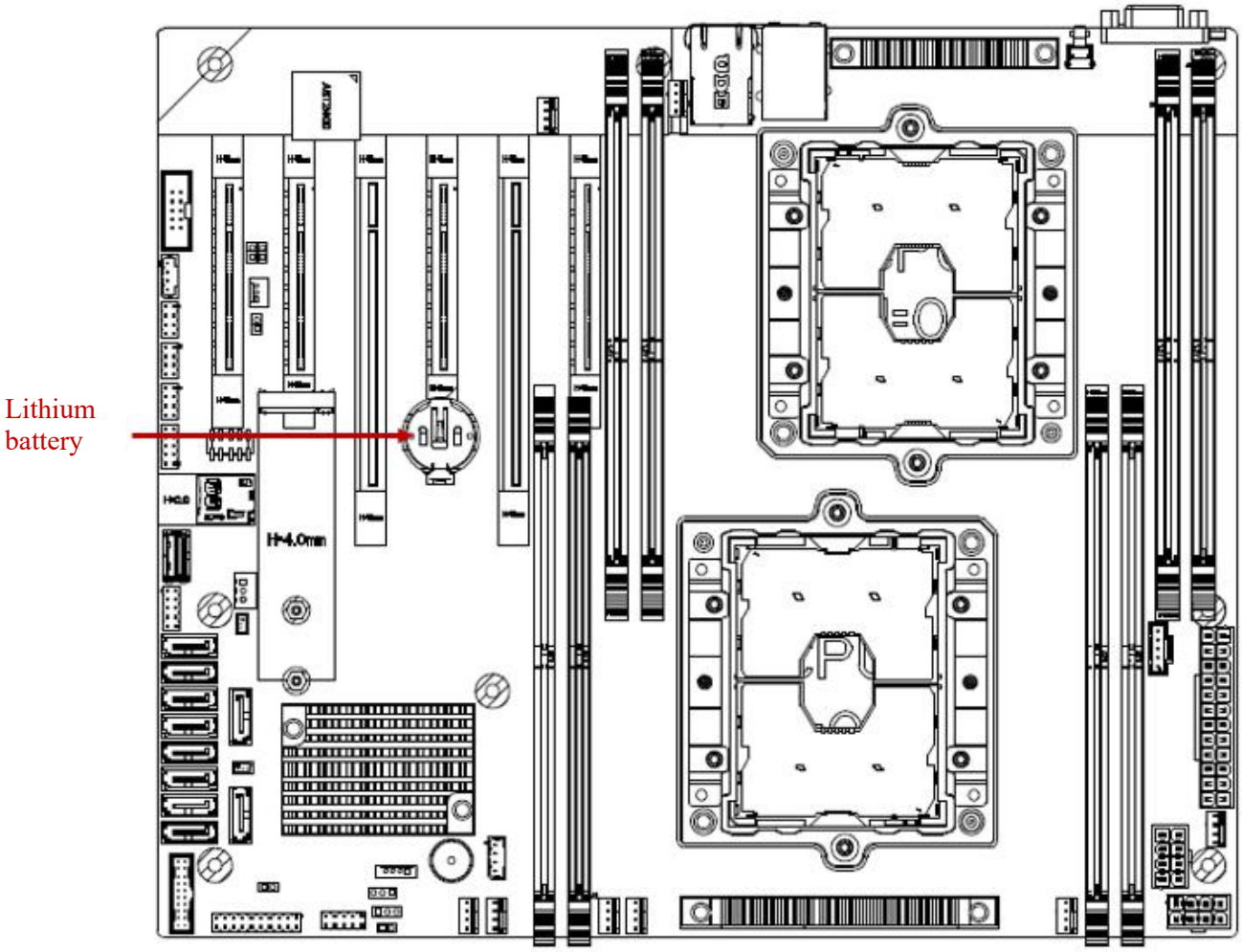

Fig. 2. 21

Clear CMOS Jumper (JBAT1): By default, no need to jump on the boot, and the CMOS content is cleared when the boot is inserted. The socket is used to load the CR2032 button battery and supply power to CMOS.

2.2.17 Definition of LED on motherboard

There are 5 LEDs inside the motherboard, which are used to display functional states of the motherboard, as shown in the following table:

S/N	Tag No.	Description	Color
1	D18	BMC heartbeat LED	GREEN
2	D22	CPLD heartbeat LED	GREEN
3	D16	PCH SATA device active LED	GREEN
4	D15	ATX Power OK LED	GREEN
5	D17	UID LED	BLUE

Table 2. 9

Diagram of LED position of MB is as follows:

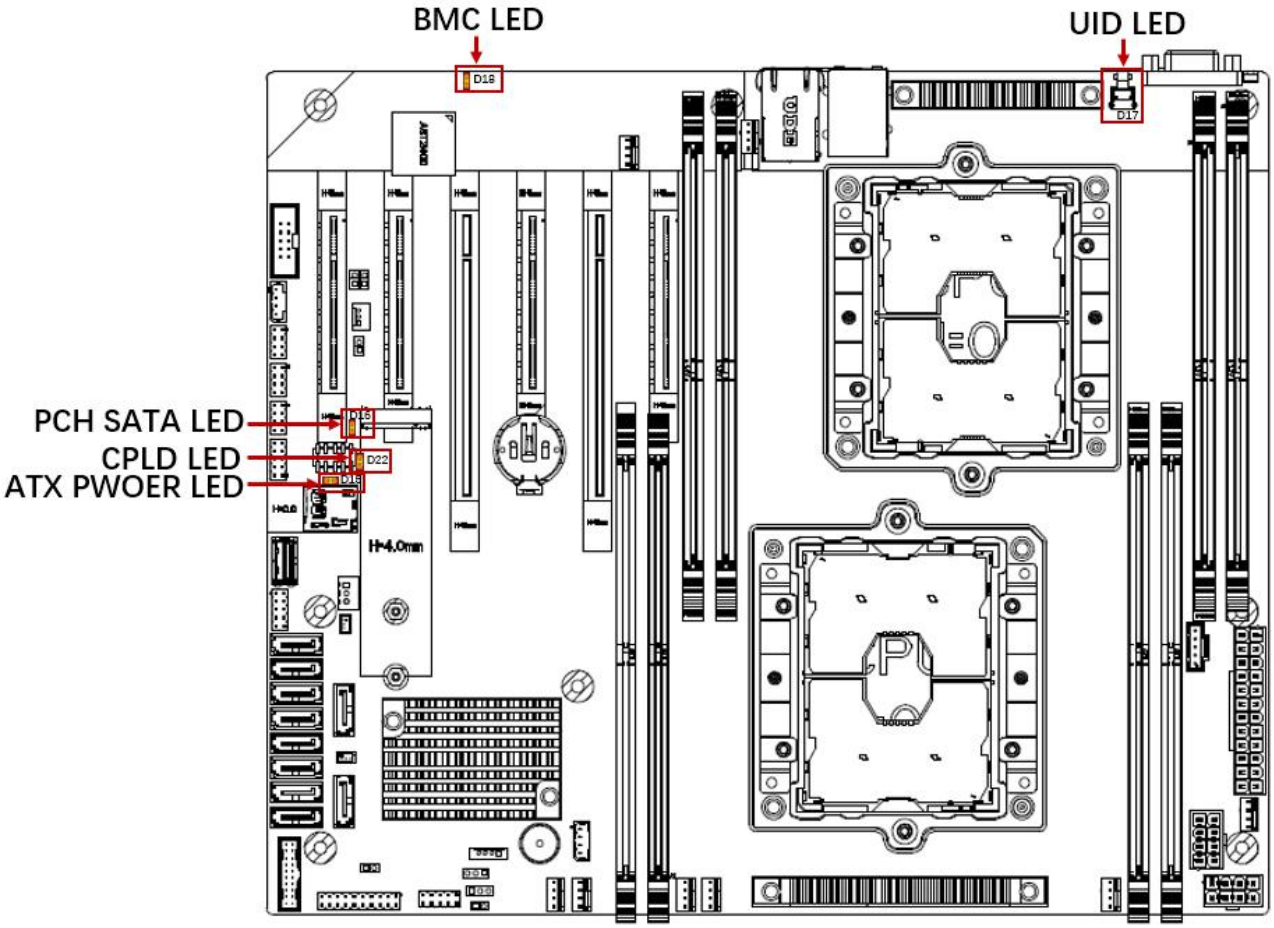

Fig. 2. 22

2.2.17.1 BMC heartbeat LED

BMC Heartbeat LED		
Status	Description	Location
BMC Firmware Initialization Completed	Green indicator 1HZ blinking	D18
BMC Firmware Initialization not Completed	Green indicator off	

Table 2. 10

2.2.17.2 UID LED

UID LED		
Status	Description	Location
Blue UID LED on	The user-defined indicator is used to identify a specific motherboard. This LED can be turned on/off via the IPMI remote control Web interface	D17

Table 2. 11

2.2.17.3 PCH SATA device active LED

PCH SATA device active LED		
Status	Description	Location
SATA HDD is present but no data activity	Green indicator on	D16
SATA HDD has data activity	Green indicator blinking	
SATA HDD is not present	Green indicator off	

Table 2. 12

2.2.17.4 ATX Power OK LED

ATX Power OK LED		
Status	Description	Location
ATX power OK	Green indicator on	D15
ATX power not OK	Green indicator off	

Table 2. 13

2.2.17.5 CPLD Heartbeat LED

CPLD Heartbeat LED		
Status	Description	Location
CPLD operates normally	Green indicator 1HZ blinking	D22
CPLD unburned or abnormal	Green indicator off	

Table 2. 14

2.2.17.6 LAN Port 100/1000M Link LED

LAN Port 100/1000M Link LED		
Status	Description	Location
LAN Port connected 1000M Link	Green indicator on	On Connector RJ45
LAN Port connected 100M Link	Yellow indicator on	
LAN Port connected 10M Link	Yellow indicator off, Green indicator off	

Table 2. 15

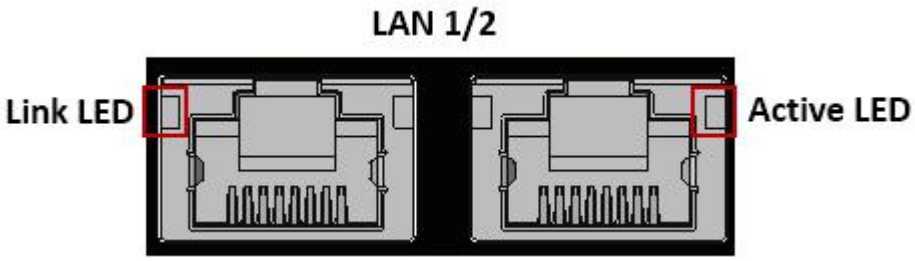

Fig. 2. 23

2.2.17.7 LAN Port Active LED

LAN Port Active LED		
Status	Description	Location
LAN Port has data activity	Yellow indicator blinking: data activity	On Connector RJ45
LAN Port no data	Indicator off: no data activity	

Table 2. 16

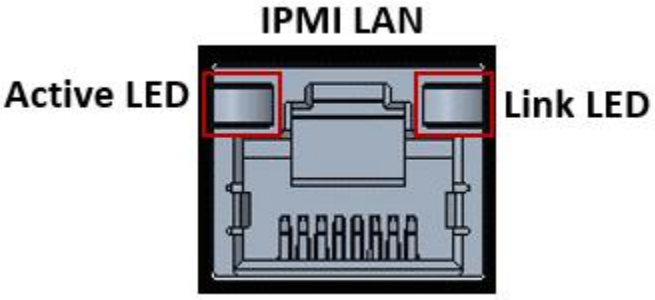

Fig. 2. 24

2.2.18 M.2 Connector introduction

G2DA-B MB provides 1* M.2 slot, supports 2260/2280 two Sizes, the slot supports PCIe & Sata signals.

M.2 slot location shown as below:

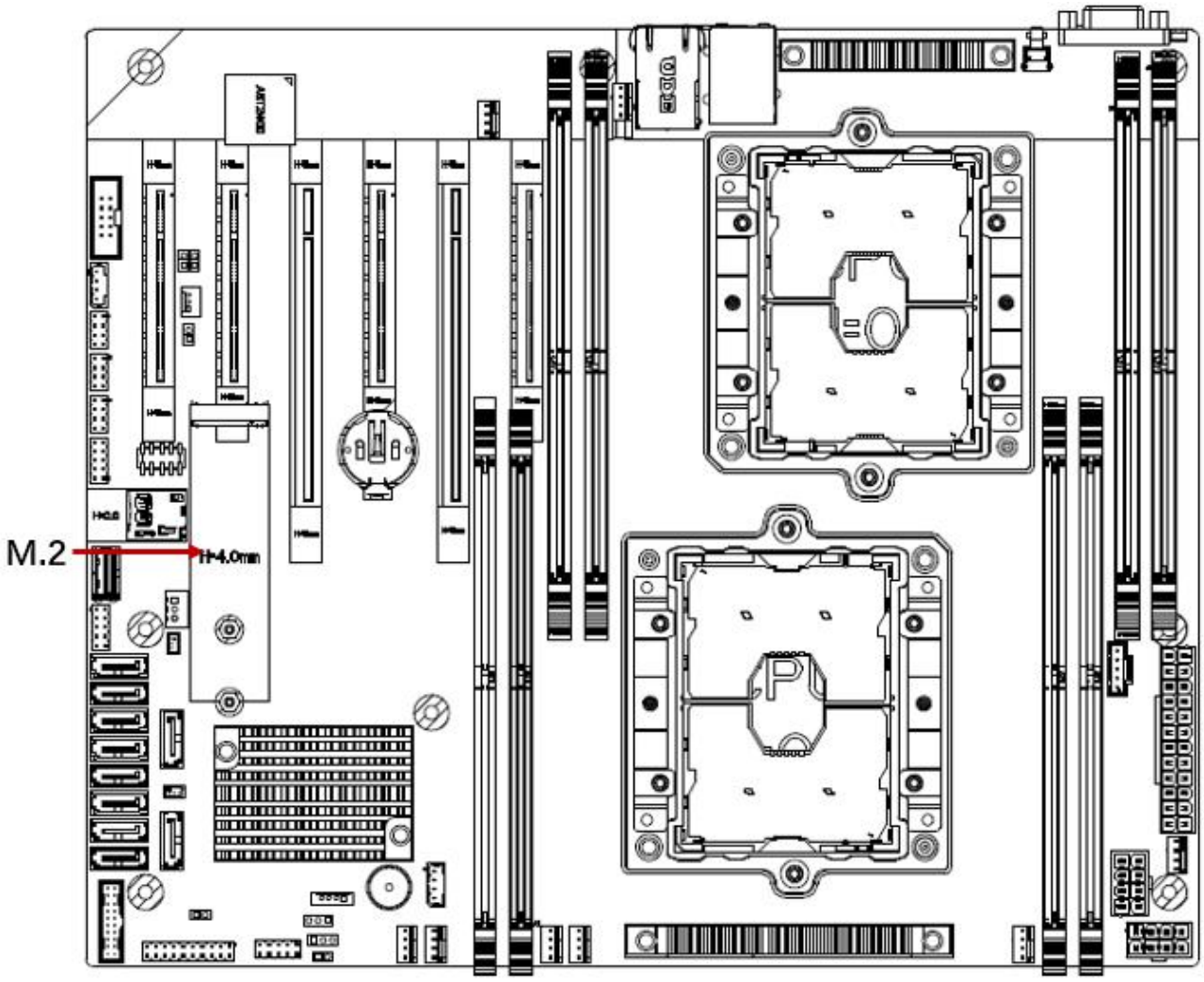

Fig. 2. 25

2.2.19 RAID key introduction

G2DA-B onboard RAID key for CPU NVME SSD wire jumper connector, on the wire jumper installed RAID key to support NVME RAID.

Wire jumper's location shown as below:

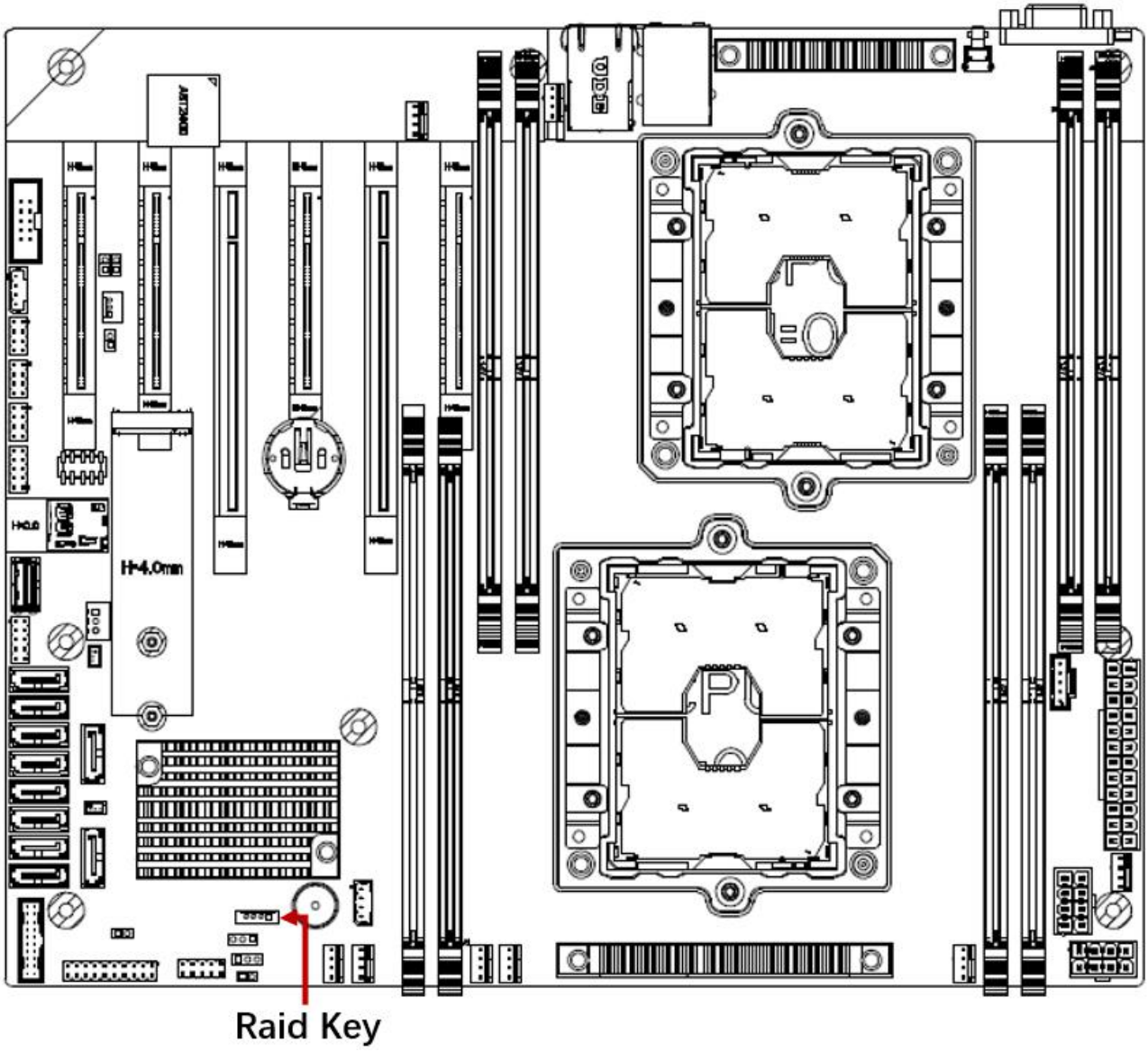

Fig. 2. 26

RAID key for CPU NVME SSD wire jumper Pin's definition:

AID key for CPU NVME SSD Pin Definition	
PIN Sequence	Description
PIN1	Ground
PIN2	3.3V Standby
PIN1	Ground
PIN2	PCH RAID Key

Table 2. 17

2.2.21 NVMe SMBus Headers introduction

NVMe SMBus (I2C) head (JNVI2C1/2) for PCIe SMBus connecting Timer & data. Via dedicated SMBus port providing hot-swap. This feature applies only to systems with SMCI proprietary NVMe add-on cards & cables installed. The interface position is shown in the figure below:

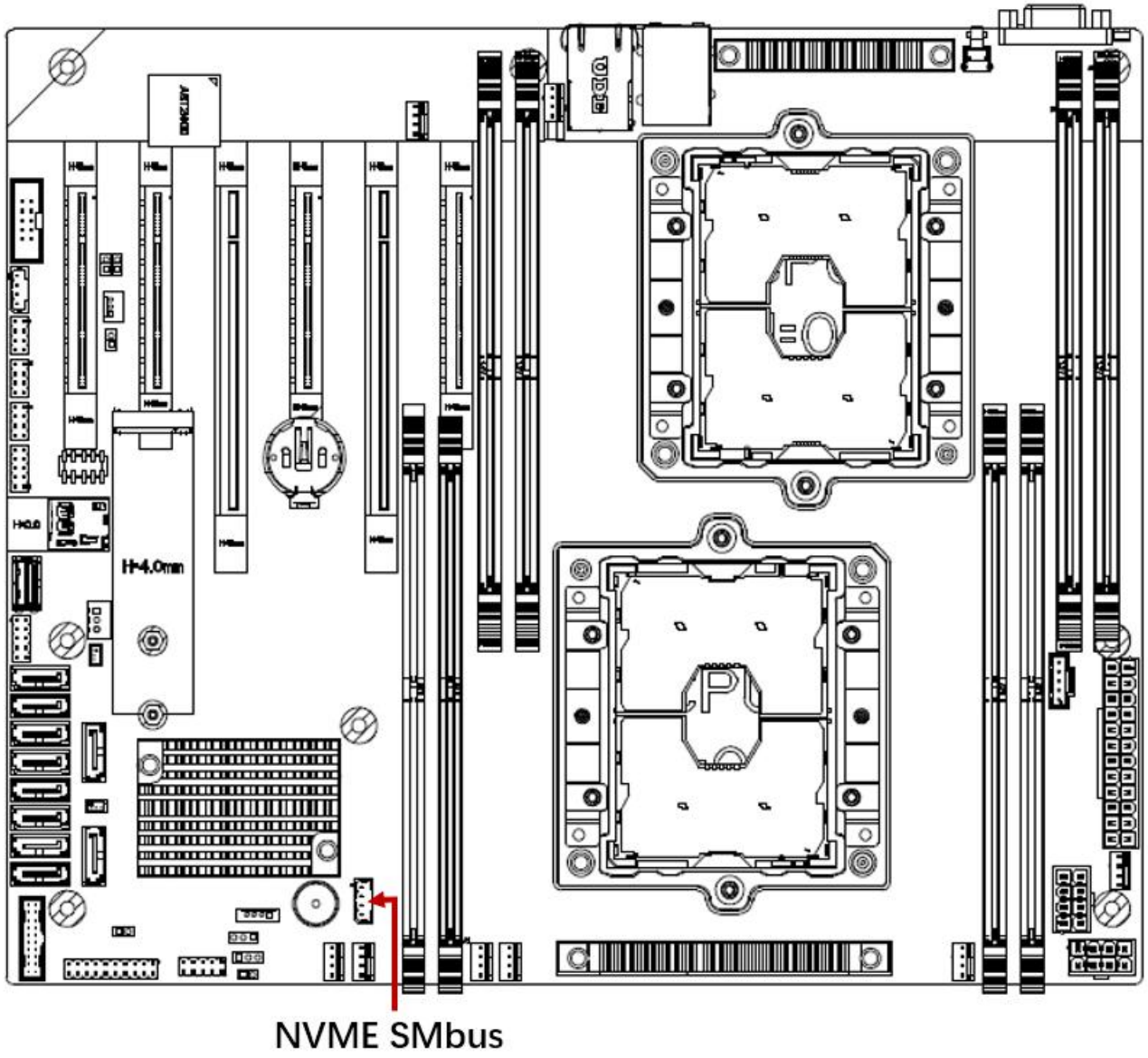

Fig. 2. 27

2.2.22 TPM Header introduction

The TPM header is used to connect from the trusted platform module (TPM) / port 80. The TPM / port 80 connector is a security device that supports encryption & authentication in the hard disk drive. If the TPM associated with the hard drive is not installed in the system, it allows the motherboard to deny access.

The location of TPM header is shown in the following figure:

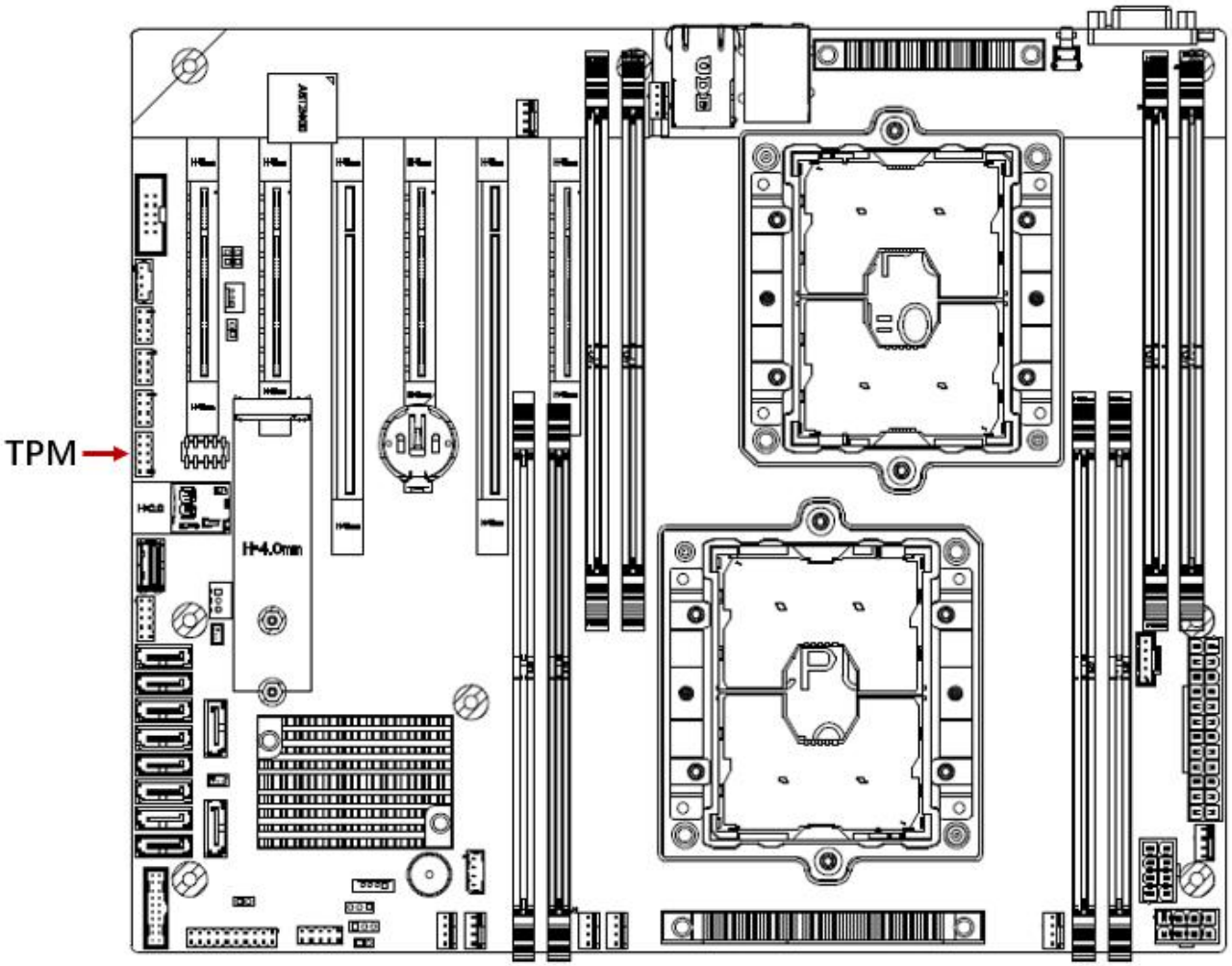

Fig. 2. 28

TPM Header Pin definitions as below：

TPM Header Pin Definition	
PIN Sequence	Description
PIN1	Ground
PIN2	3.3V Standby
PI	Ground
PIN2	PCH RAID Key

Table 2. 18

2.2.23 SATA 3.0 Connector

G2DA-B contains 8 I-SATA3.0 ports (SATA0-7) and 2 S-SATA (SATA8 / 9). These SATA ports are provided by the C621 chipset.

SATA 3.0 Connector location is shown in the figure below:

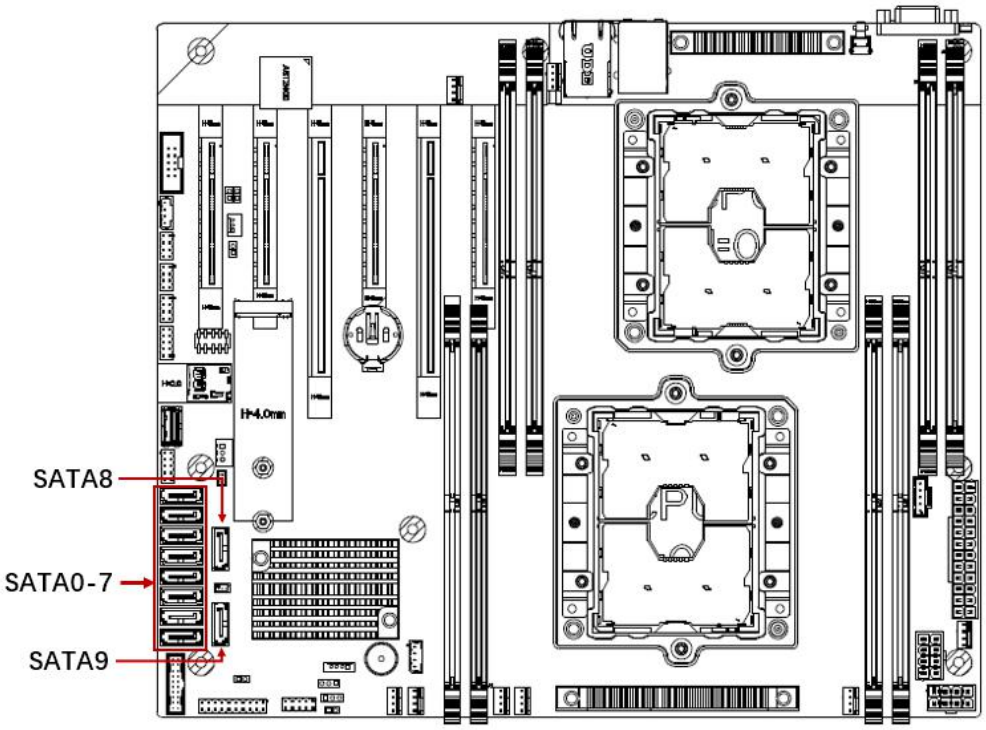

Fig. 2. 29

2.2.24 4-pin BMC External I2C Header

The system admin bus header of IPMI 2.0 of G2DA-B MB is located at J8. Connect cable here to connect the IPMB I2C on the system to other boards to expand the functions of the IPMI admin platform.

Jumper position is shown in the figure below:

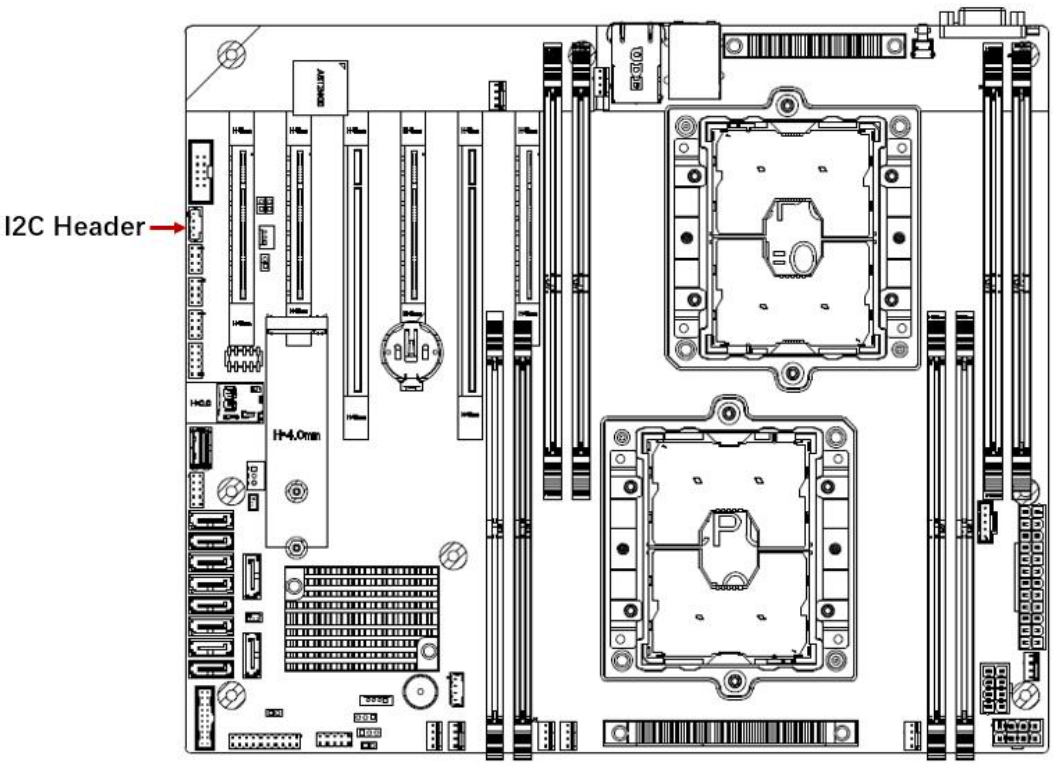

Fig. 2. 30

2.2.25 Micro SD Card slot

1* Micro SD slot on the G2DA-B motherboard is in order to install a Micro SD memory card for BMC log storage. The card slot position is shown in the figure below:

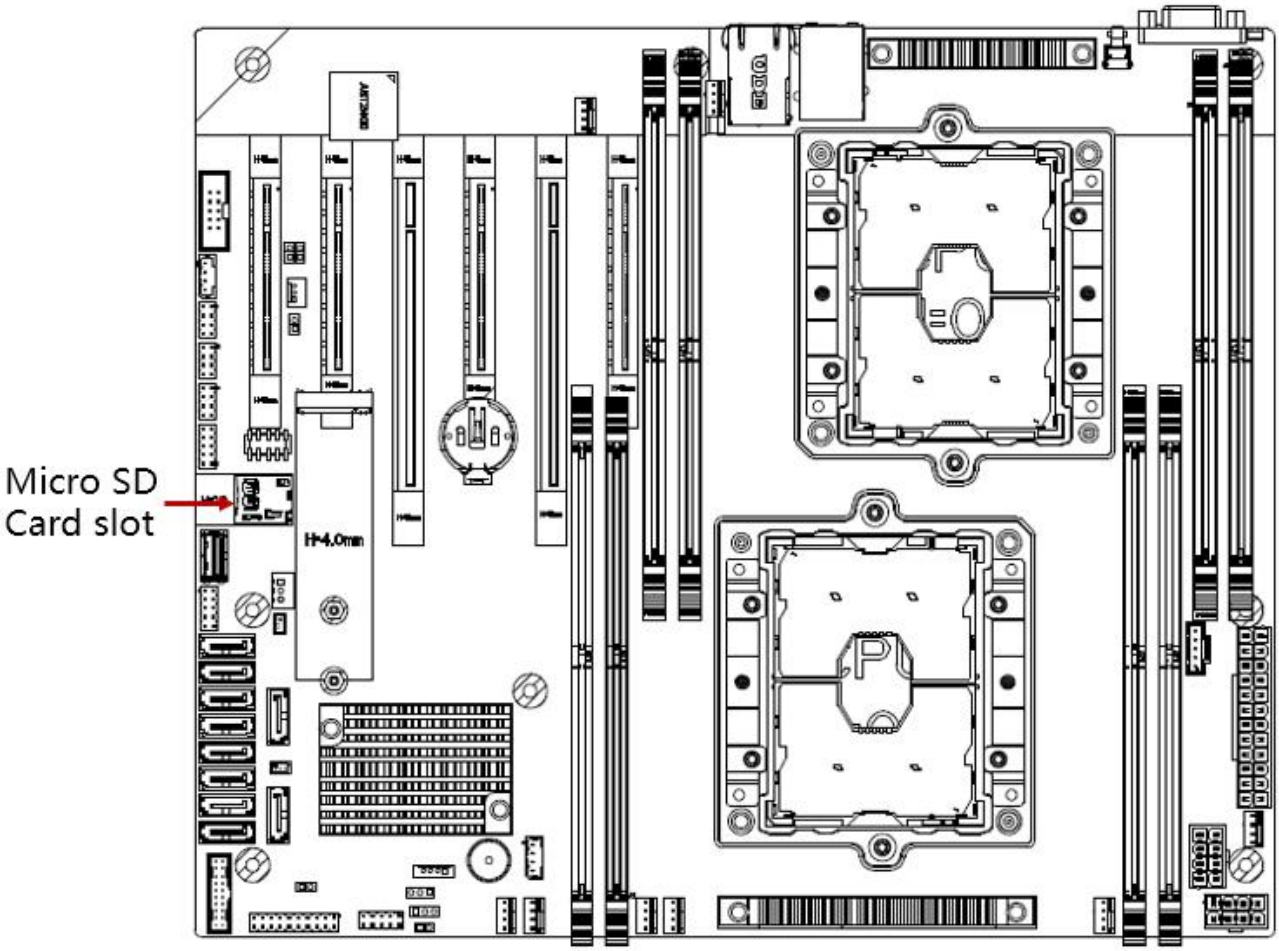

Fig. 2. 31

Chapter 3: Motherboard Installation

This chapter introduces the installation steps, including the installation description of CPU, heatsink, memory, hard disk, etc.

3.1 MB installation

1. Confirm the screw hole position, as shown in the round circle in the following diagram.

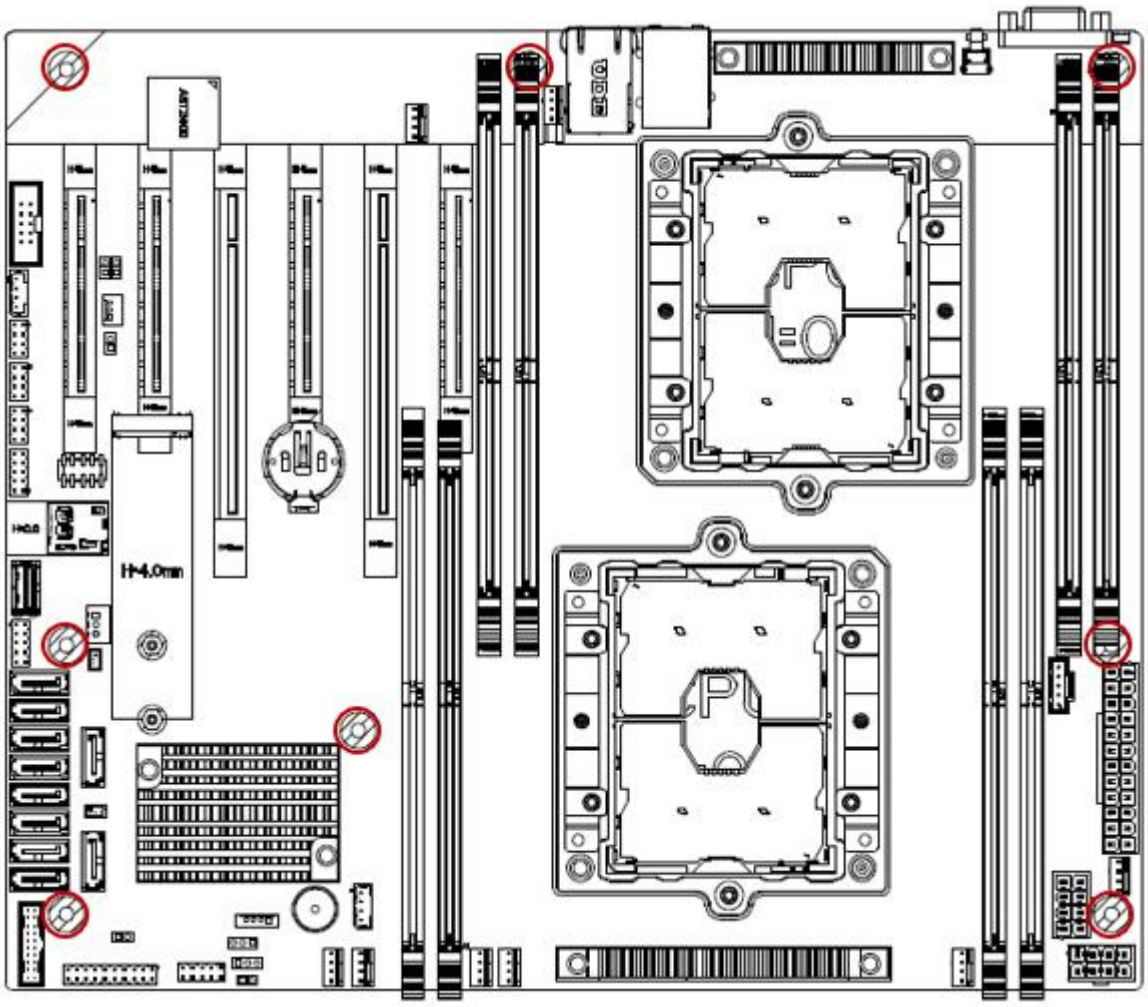

Fig. 3. 1

2. Align the holes of MB & stud holes, and install the screws fixing the MB on the base of the standard chassis with a cross screwdriver.

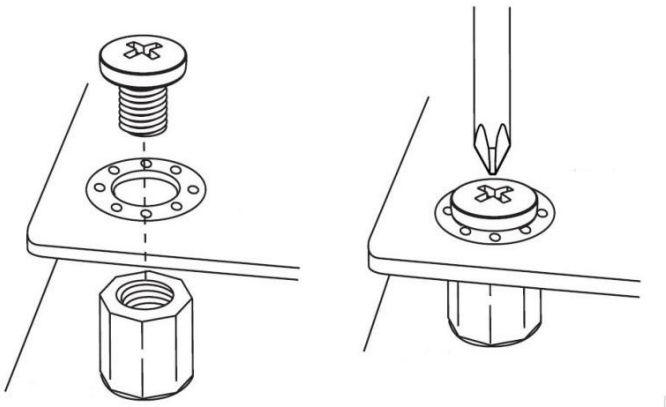

Fig. 3.2

3.2 Disassembly and assembly of CPU

Attention:

1. Please purchase Intel CPU through regular channels.
2. Please ensure that the purchased processor specification supports type of this motherboard.
3. If you purchase bulk CPUs, please make sure that your CPUs uses Gooxi certified heatsink.
4. When install only one CPU on the motherboard, it needs to be installed at CPU0, otherwise it cannot be started.
5. The protective cover on the CPU socket is used to protect the pins on the socket, so it can be removed only when the CPU is installed.

Steps for installing LGA3647 processor:

Step1:

1-1. Tilt the CPU angle as shown in Fig. 3.3, align the A1 angle (triangle mark), and clamp it on one end of the clamping sheet.

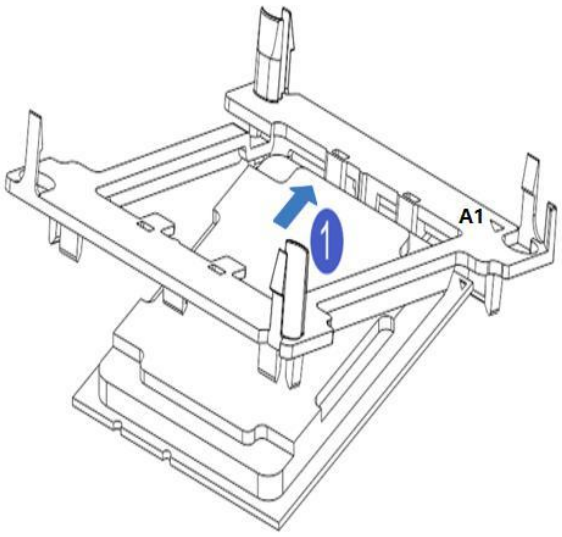

Fig. 3.3

1-2. Press the other end of the clamping piece, in the direction of the arrow in Fig. 3.4, to fix the CPU to the clamping piece.

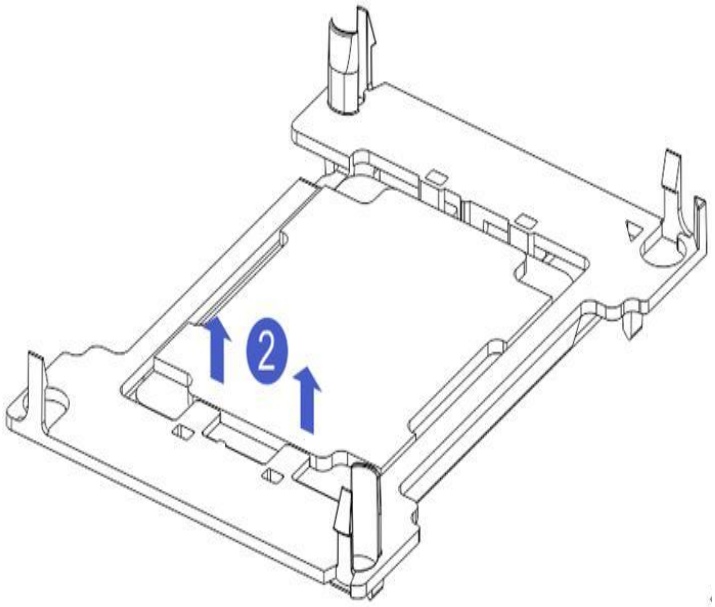

Fig. 3.4

Step 2: install the CPU on the heatsink to ensure the surfaces of CPU and heatsink are clean, free of oil.

2-1. Apply about 0.4ml volume of thermal conductive silicone grease on the CPU and smooth it evenly (this step is for the heatsink that is not coated with thermal conductive silicone grease).

2-2. Align the A1 angle (triangle mark) and buckle the CPU on the heatsink, as shown in Fig. 3.5.

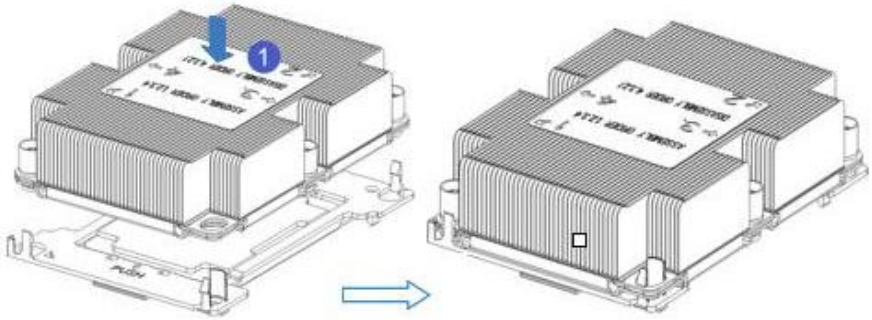

Fig. 3.5

Step 3: installation of CPU heatsink

Installation steps:

3-1. Remove the processor idle bezel (as shown in Fig. 3.6 below)

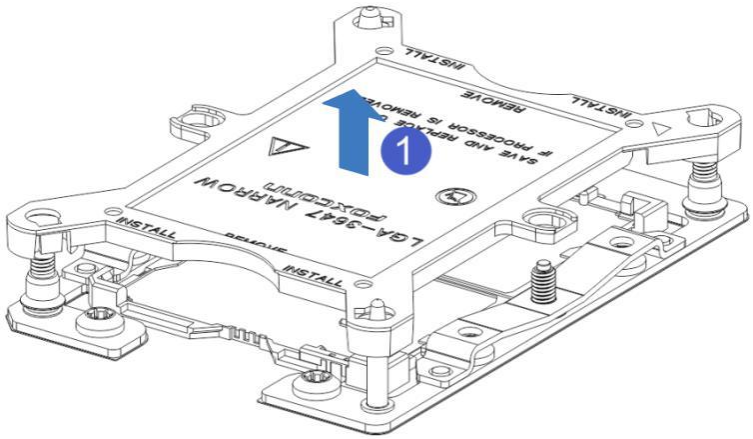

Fig. 3.6

3-2. Align the heatsink with the fixing studs on the CPU base, and tighten the fixing screws of the heatsink in sequence according to the instructions. (as shown in Fig. 3.7 below)

Note: the pins on the MB are fragile and easy to be damaged. To avoid damaging the MB, do not touch the processor or processor socket contacts.

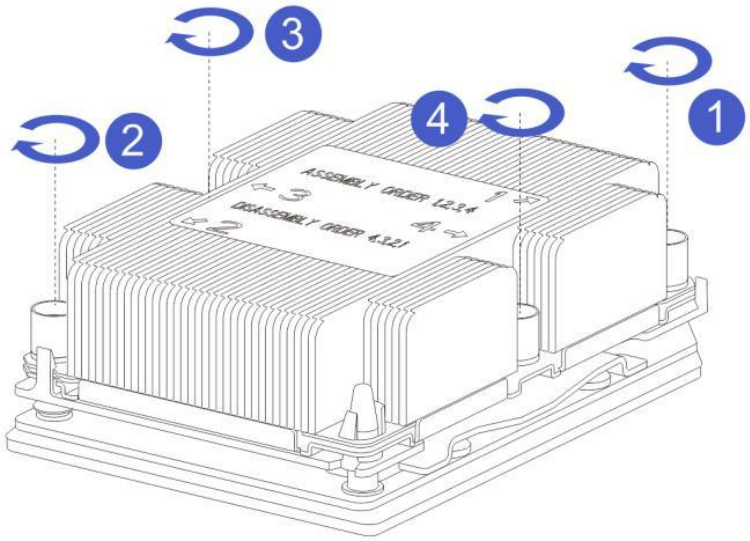

Fig. 3. 7

3.3 Memory support & disassembly

Note: check the Gooxi website for recommended memory modules. Care when installing or removing DIMM modules.

3.3.1 Memory support

G2DA-B supports up to 1TB 3DS LRDIMM/LRDIMM/RDIMM/NV-DIMM DDR4 ECC 2666/2400/2133 MHz in 8* memory slots.

3.3.2 Memory installation sequence

The blue memory slot of each channel seen as the "first DIMM module" of the channel, and the black slot as the 2nd module of the channel. When installing the memory module, fill the blue memory slot first, and then the black. To maximize memory capacity, populate all memory slots on the MB, including all blue & black slots.

3.3.3 General memory-filling requirements

1. Use the same type & speed memory module on MB. Memory modules of different types and speeds are not allowed.

2. Use unbalanced memory expansion (such as filling 2 memories in 1 channel on the same MB and filling 1 memory in the other channel) will degrade memory performance .

3. Fill 1 memory slot with a pair of memory modules of the same type and size will produce interleaved memory, which will improve memory performance.

DDR4 Support (1 slot per channel)

Type	Sort by DIMM & data width	DIMM capacity (GB)		Speed (MT/s); Voltage (V); Number of slots per channel (SPC) & DIMM per channel (DPC)
				1 slot/ per channel
				1DPC(1DIMM/ per channel)
		4Gb	8Gb	1.2V
RDIMM	SRx4	8GB	16GB	2666
RDIMM	SRx8	4GB	8GB	2666
RDIMM	DRx8	8GB	16GB	2666
RDIMM	DRx4	16GB	32GB	2666
RDIMM 3Ds	QRx4	N/A	2H-64GB	2666
RDIMM 3Ds	8Rx4	N/A	4H-128GB	2666
LRDIMM	QRx4	32GB	64GB	2666
LRDIMM 3Ds	QRx4	N/A	2H-64GB	2666
	8Rx4	N/A	4H-128GB	2666

Table 3. 1

For best memory performance, follow the table below when populating memory modules:

DIMM Key parameters of configuration	
Parameters	Permission Value
Amount of Channel	1, 2, 3, 4, 5, 6
Amount of DIMM Per Channel	1DPC (1 DIMM per channel)
DIMM Type	RDIMM (w/ECC), LRDIMM, 3DS-LRDIMM
DIMM Structure	● RDIMM Original card: A/B (2RX4), C (1RX4), D (1RX8), E (2RX8) ● RDIMM Original card: A/B (4RX4) ● LRDIMM Original card: D/E (4RX4) ● LRDIMM Original card: A/B (8RX4)

Table 3. 2

General Filling Requirements
DIMM Mixing Rule
● please use DDR4 DIMM fo fill all memory modules only. ● channel X8 and DIMM can be mixed to use. ● LRDIMM&RDIMM are not allowed to be mixed in the same channel, different channels and different sockets. ● it is not allowed to mix non 3DS and 3DS LRDIMM between the same channel, different channels and different sockets

Table 3. 3

Mixed DIMM Types in Channel			
DIMM Type	RDIMM	LRDIMM	3DS LRDIMM
RDIMM	√	×	×
LRDIMM	×	√	×
3DS LRDIMM	×	×	√

Table 3. 4

Memory-fill table:

Onboard Memory-Fill Table for G2DA-B MB with 8 DIMM Slots	
When use 1 CPU	**Memory-fill sequence**
1 CPU & 1 DIMM	CPU0:P0-DIMMA1;
1 CPU & 2 DIMMs	CPU0: P0-DIMMA1/P0-DIMMD1;
1 CPU & 3 DIMMs (unbalanced: not recommended)	CPU0: P0-DIMMB1/P0-DIMMA1/P0-DIMMD1;
1 CPU & 4 DIMMs	CPU0: P0-DIMMB1/P0-DIMMA1/P0-DIMMD1/P0-DIMME1;
When use 2 CPUs	**Memory-fill sequence**
2 CPUs & 2 DIMMs	CPU0: P0-DIMMA1; CPU1: P1-DIMMA1;
2 CPUs & 4 DIMMs	CPU0: P0-DIMMA1/P0-DIMMD1; CPU2: P1-DIMMA1/P1-DIMMD1;
2 CPUs & 6 DIMMs	CPU0: P0-DIMMB1/P0-DIMMA1/P0-DIMMD1/P0-DIMME1; CPU1: P1-DIMMA1/P1-DIMMD1
2 CPUs & 8 DIMMs	CPU0: P0-DIMMB1/P0-DIMMA1/P0-DIMMD1/P0-DIMME1; CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1;

Table 3. 5

3.3.4 How to install memory

The four memory sockets controlled by the MB CPU 0 are: P0-DIMMA1, P0-DIMMB1, P0-DIMM C1 和 P0-DIMM D1; The four memory sockets controlled by the MB CPU 1 are: P1-DIMMA1, P1-DIMMB1, P1-DIMM C1, & P1-DIMM D1. Note that the gap of memory is consistent with that of DIMM slot (see Fig. 3.8 below). Clip each DIMM module vertically into place to prevent incorrect installation.

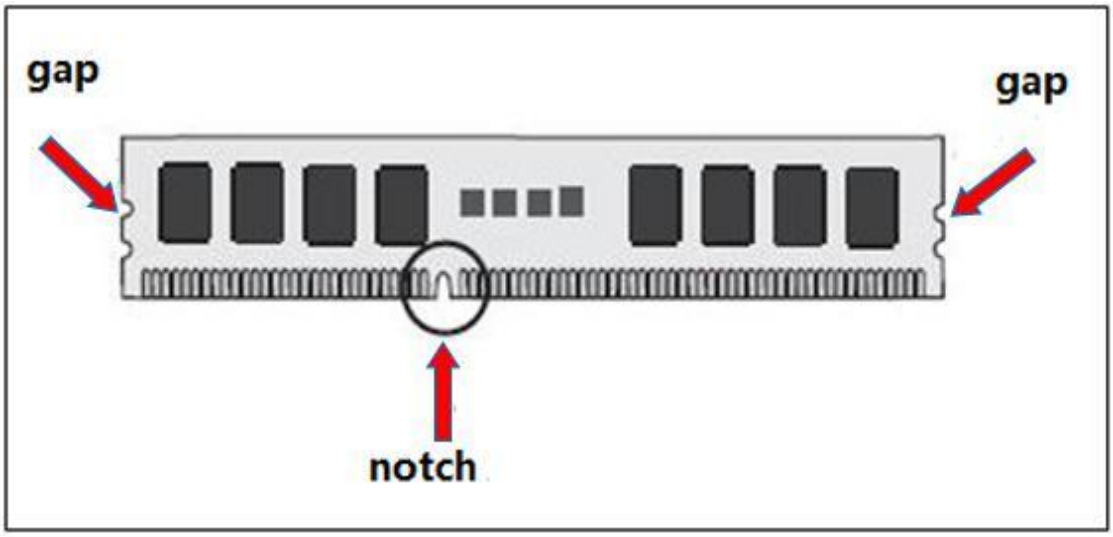

Fig. 3.8

Note: when install or remove the memory module, be careful to prevent any possible damage to the memory or its respective slots. Install: insert the memory module vertically and press the memory slot snap position, noting that it is aligned with the bottom of the notch. The demonstration is shown in Fig. 3.9:

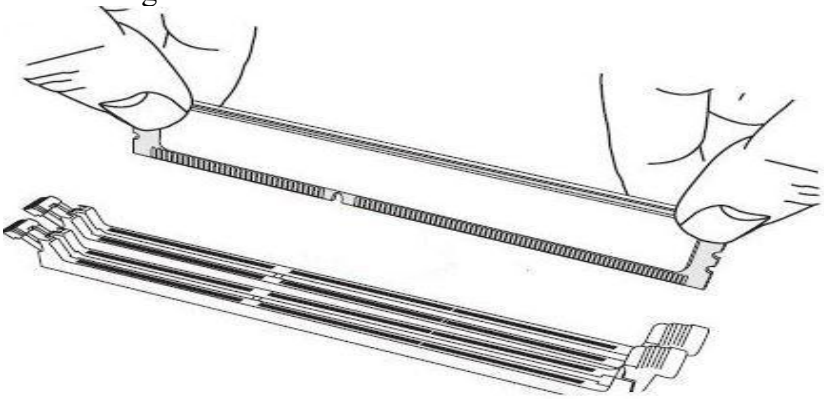

Fig. 3.9

Push the latch near both ends of the memory module slot inward with your thumb to secure the memory in the slot. See Fig. 3.10 below

Fig. 3.10

Remove: gently push the latch near both ends of the memory module slot with your thumb. This should free up memory from the slot. The demonstration is shown in Fig. 3.11:

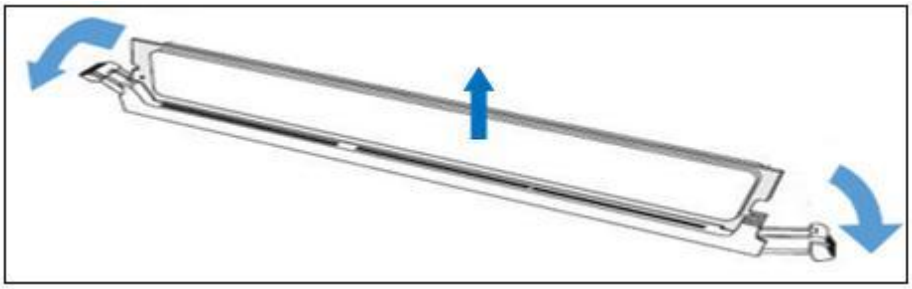

Fig. 3.11

Chapter 4: BIOS Parameter Setting

4.1 Enter the BIOS setup interface

Operation steps:

1. Power on the server motherboard and connect the keyboard;
2. In the process of POST, pay attention to the prompt of entering BIOS Setup interface at the bottom left of LOGO picture, “Press <DEL> or <ESC> to enter setup, <F7> to enter Boot Menu.”;
3. Press the <DEL> or <ESC> keyboard to enter the BIOS Setup interface.

4.2 Setup menu parameters

4.2.1 Navigation key

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

4.2.2 Main menu description

Main interface contains the basic information of BIOS system, such as BIOS version number, CPU model, memory capacity, and the system time that can be set.

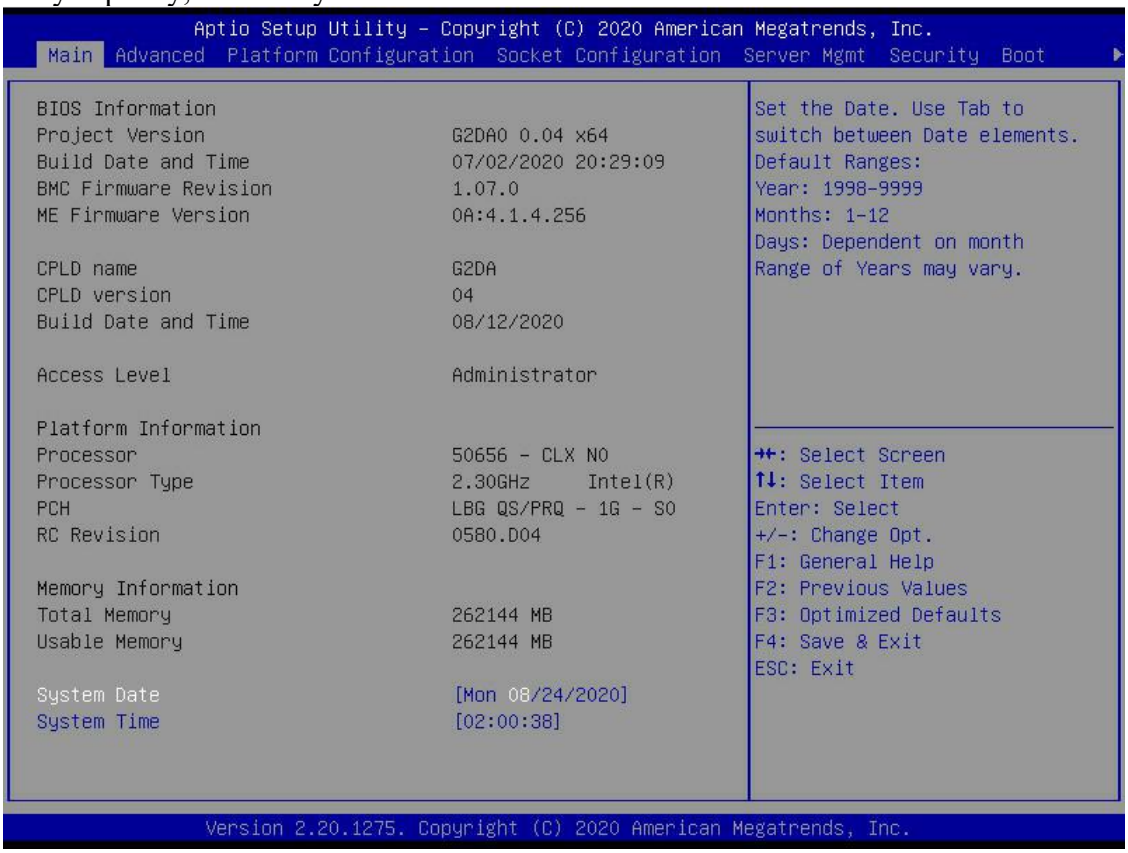

Fig. 4. 1

BIOS Information

Project Version:

Displays the version information of the single board BIOS.

Build Date and Time:

Displays the compilation date and time of the single board BIOS.

BMC Firmware Revision:

Displays the version information of single board BMC.

ME Firmware Version:

Displays the version information of single board ME.

CPLD Name:

Displays the name information of single board CPLD.

CPLD Version:

Displays the CPLD information of single board CPLD.

Build Date and Time:

Access Level:

Displays the permissions of the current user of the single board.

Platform Information

Processor:

CPUID and step information.

Processor Type:

CPU type information.

PCH:

PCH SKU and step information.

RC Revision:

Displays the version information of single board RC.

Memory information

Total Memory：

Displays the total memory capacity of the system.

Usable Memory：

Displays the available memory capacity of the system.

System Language:

Select the current system language.

System Date:

Display and set the current system date. The format of the system date is "week, month, day, year". Press “Enter” to switch between month, day and year. You can change the value in the following ways：

- Press “+”： The value is increased by 1.
- Press“-”： The value decreased by 1.
- Press the number key to change the value directly.

System Time:

Display and set the current system time. The system time is 24-hour, and the format is "hour: minute: second". Press “Enter” to switch between hours, minutes and seconds. You can change the value in the following ways：

- Press “+”： The value is increased by 1
- Press“-”： The value decreased by 1
- Press the number key to change the value directly.

4.2.3 Advanced Menu description

Advanced menu contains advanced configuration items of BIOS system.

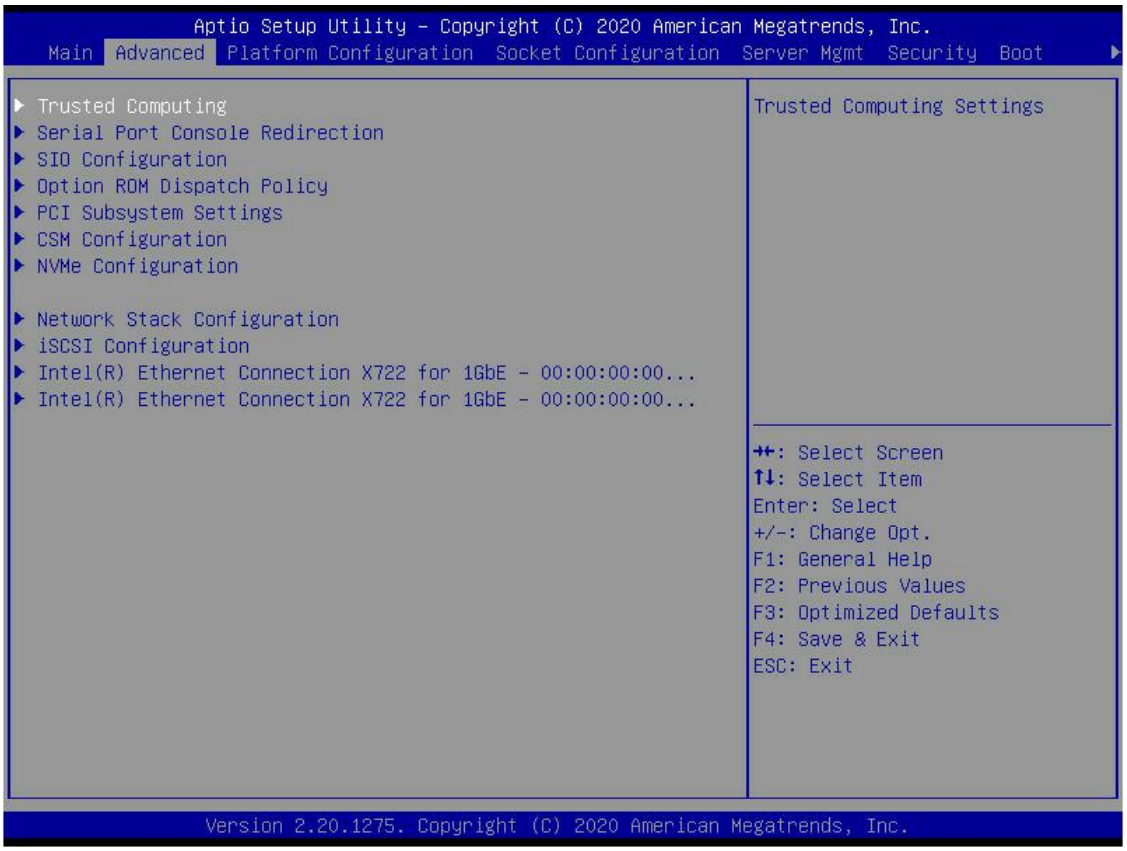

Fig. 4. 2

●Trusted Computing

Trusted execution module configuration.

●Serial Port Console Redirection

●SIO Configuration

●Option ROM Dispatch Policy

●PCI Subsystem Settings

●CSM Configuration

●NVMe Configuration

●Network Stack Configuration

●iSCSI Configuration

●Intel Enthernet Connection X722 for xGbE - XX:XX:XX:XX:XX:XX

4.2.4 Trusted Computing

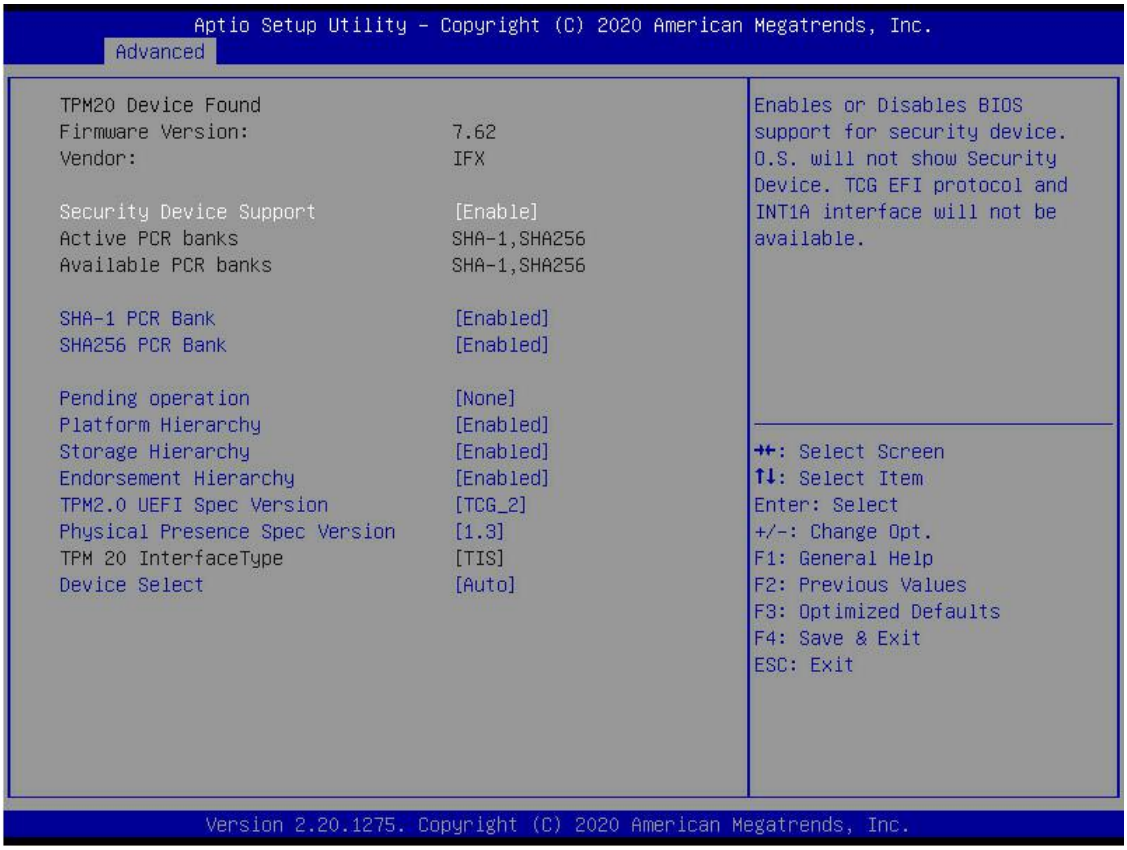

Fig. 4. 3

Display and set TCM / TPM module information. Different module options are set differently. Users can set according to Setup help.

4.2.5 Serial Port Console Redirection

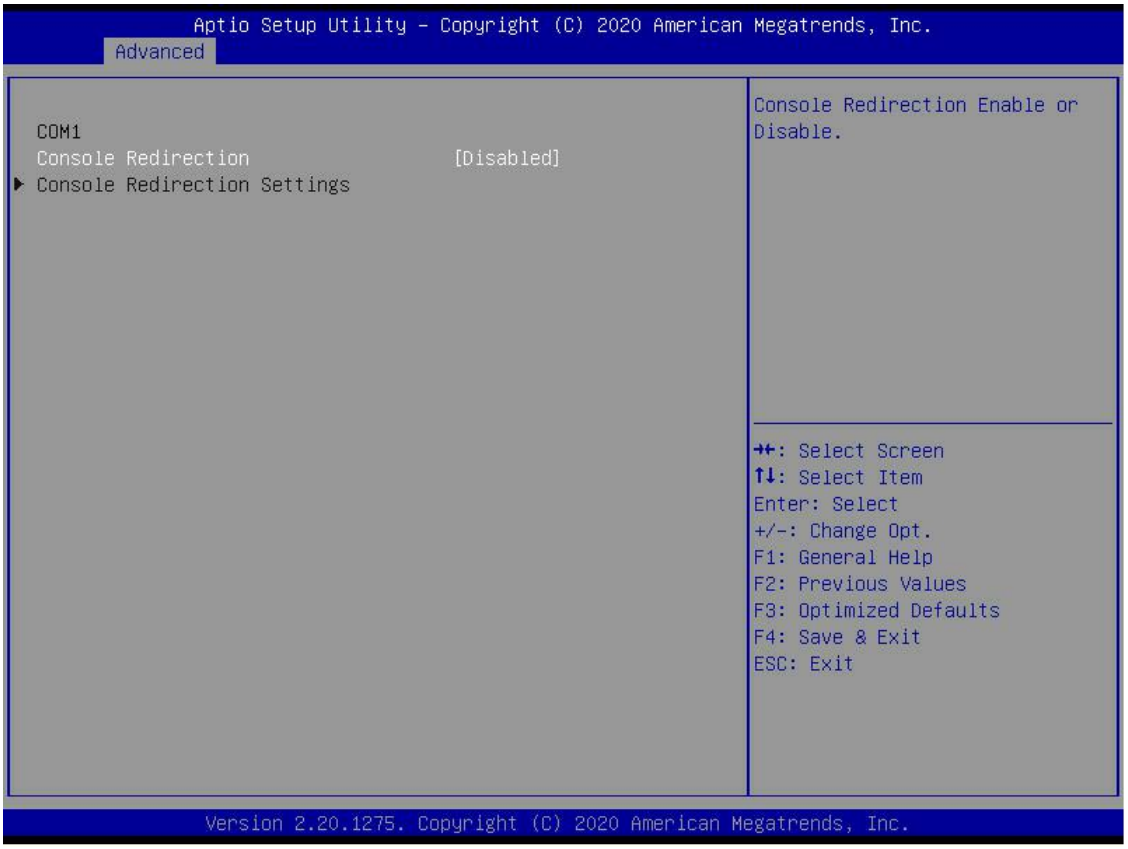

Fig. 4. 4

Console Redirection:

The console redirection switch redirects the information output from the console (such as graphics card) to the display to the serial port.

●Disabled: turn off the redirection function.

●Enabled: turn on the redirection function.

Default: Disabled

4.2.6 Console Redirection Settings

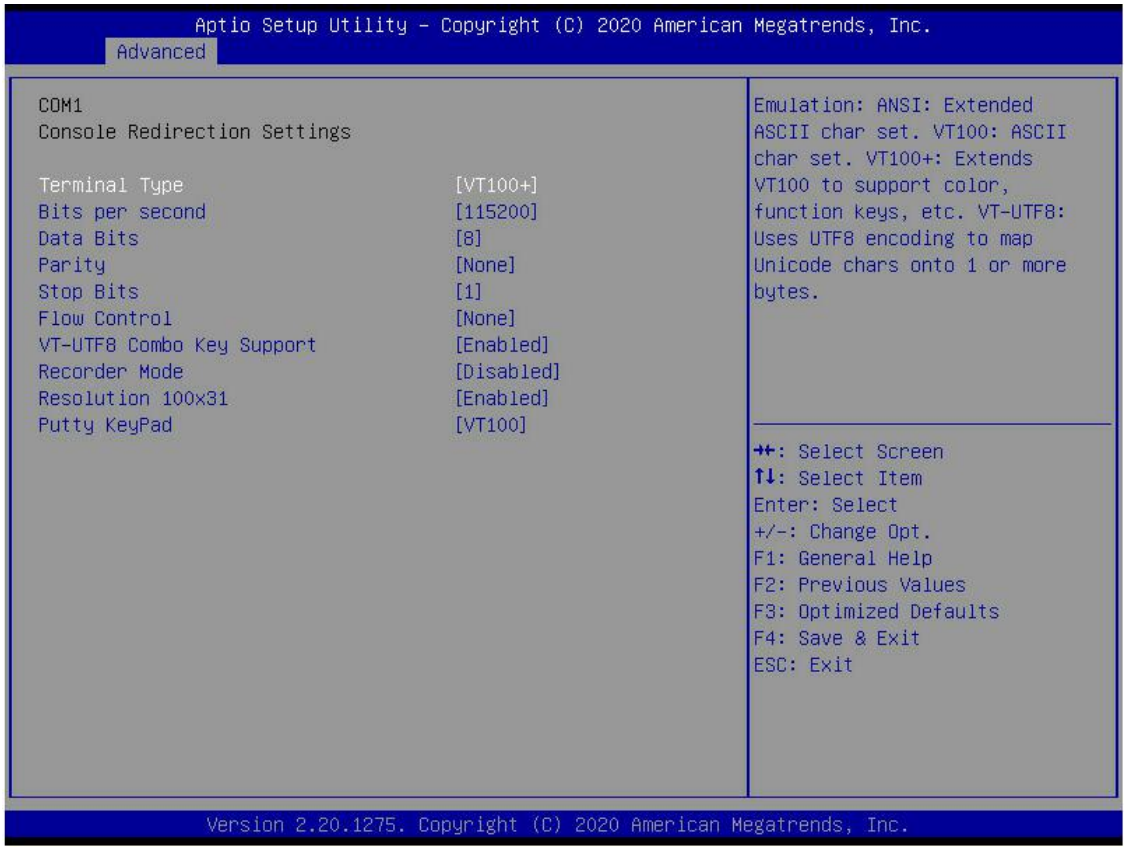

Fig. 4. 5

Terminal Type

This option allows you to select the emulation type. The BIOS emulation type must match the mode selected in the terminal program. The menu options are:

●VT100

●VT100+

●VT-UTF8

●ANSI

Default: VT100+

Bits per second

Serial port redirection rate, the value range is 9600 ~ 115200

Default: 115200

Data Bits

Serial port redirection data bit length, menu options are:

●8

●7

Default: 8

Parity

Serial port redirection checking switch, menu options are:

●None: no check

●Even: even check

●Odd: odd check

●Mark: the check bit is always 1

●Space: the check bit is always 0

Default: None

⚠ Checks of Mark and space are not allowed for error detection.

Stop Bits

The end of a serial data packet, menu options are:

●1

●2

Default: 1

Flow Control

Serial port redirection control flow selecting switch, menu options are:

●None: turn off the serial port redirection control flow

●Hardware RTS/CTS: request to send / request to clear

Default: None

VT-UTF8 Combo key support

ANSI/VT100 End VT-UTF8 combination key supporting switch, and the menu options are:

●Disabled: turn off ANSI/VT100 End VT-UTF8 combination key support

●Enabled: turn on ANSI/VT100 End VT-UTF8 combination key support

Default: Enabled

Recorder Mode

Record mode switch, turn on this function, only text information will be sent, and the menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

4.2.7 SIO Configuration

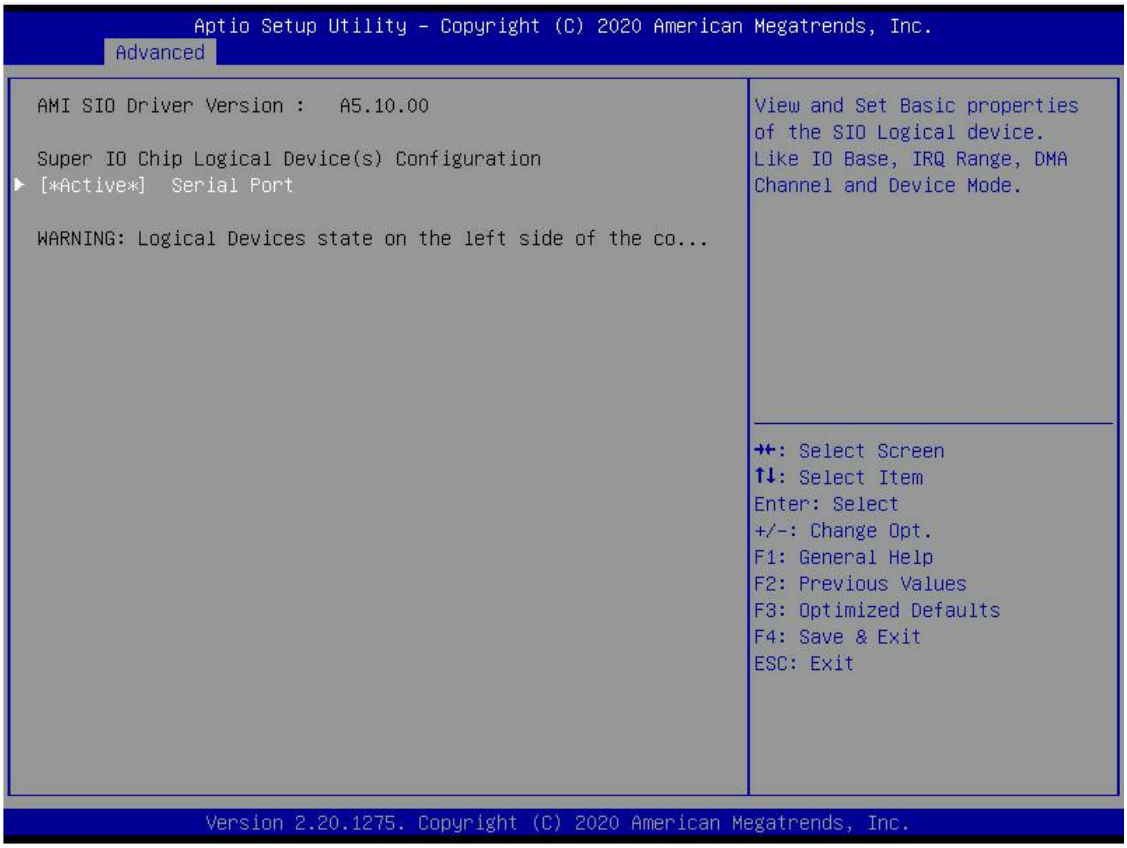

Fig. 4. 6

4.2.8 [*Active*] Serial Port

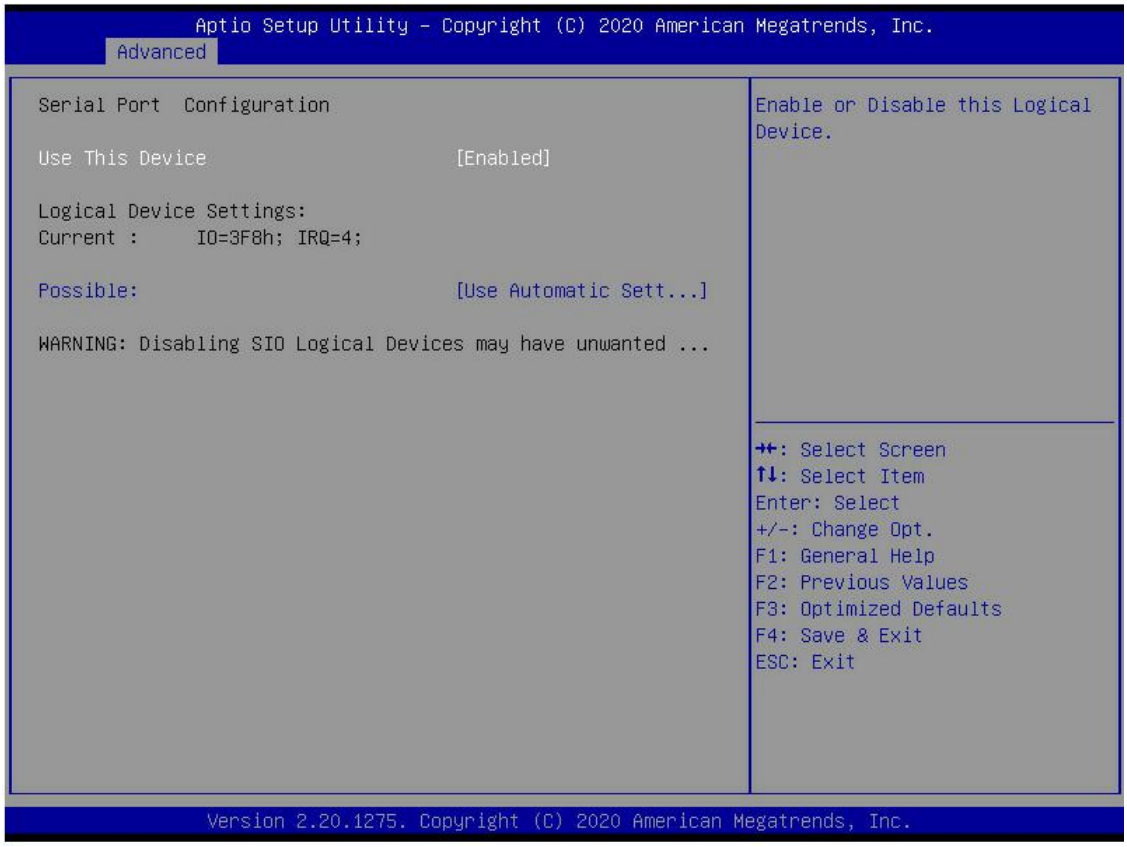

Fig. 4. 7

Use This Device

Use this device, and the menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

Possible

Select the optimal settings for the serial port based on the requirements. The menu options are:

●Use Automatic Settings

●IO=3F8h; IRQ=4; DMA;

●IO=3F8h; IRQ=3,4,5,7,9,10,11,12; DMA;

●IO=2F8h; IRQ=3,4,5,7,9,10,11,12; DMA;

●IO=3E8h; IRQ=3,4,5,7,9,10,11,12; DMA;

●IO=2E8h; IRQ=3,4,5,7,9,10,11,12; DMA;

Default: Use Automatic Settings

4.2.9 Option ROM Dispatch Policy

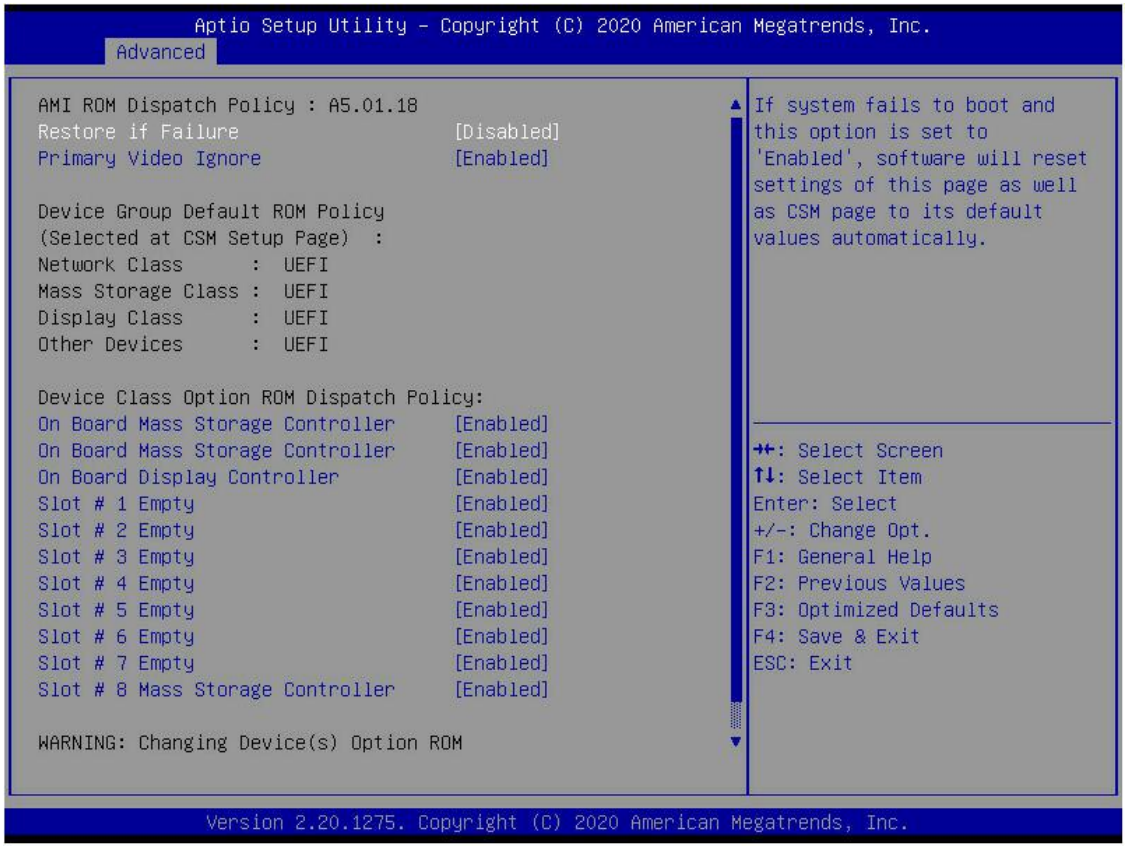

Fig. 4. 8

Administrator Option ROM Dispatch Policy

Restore if Failure

The menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

Primary Video Ignore

Ignore the basic graphics card, and the menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

On Board Mass Storage Controller

Onboard or external equipment controller, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

On Board Mass Storage Controller

Onboard or external equipment controller, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

On Board Display Controller

Onboard or external equipment controller, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

Slot # 1 Empty

Onboard or external equipment controller, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

…

Slot # 8 Empty

Onboard or external equipment controller, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

4.2.10 PCI Subsystem Settings

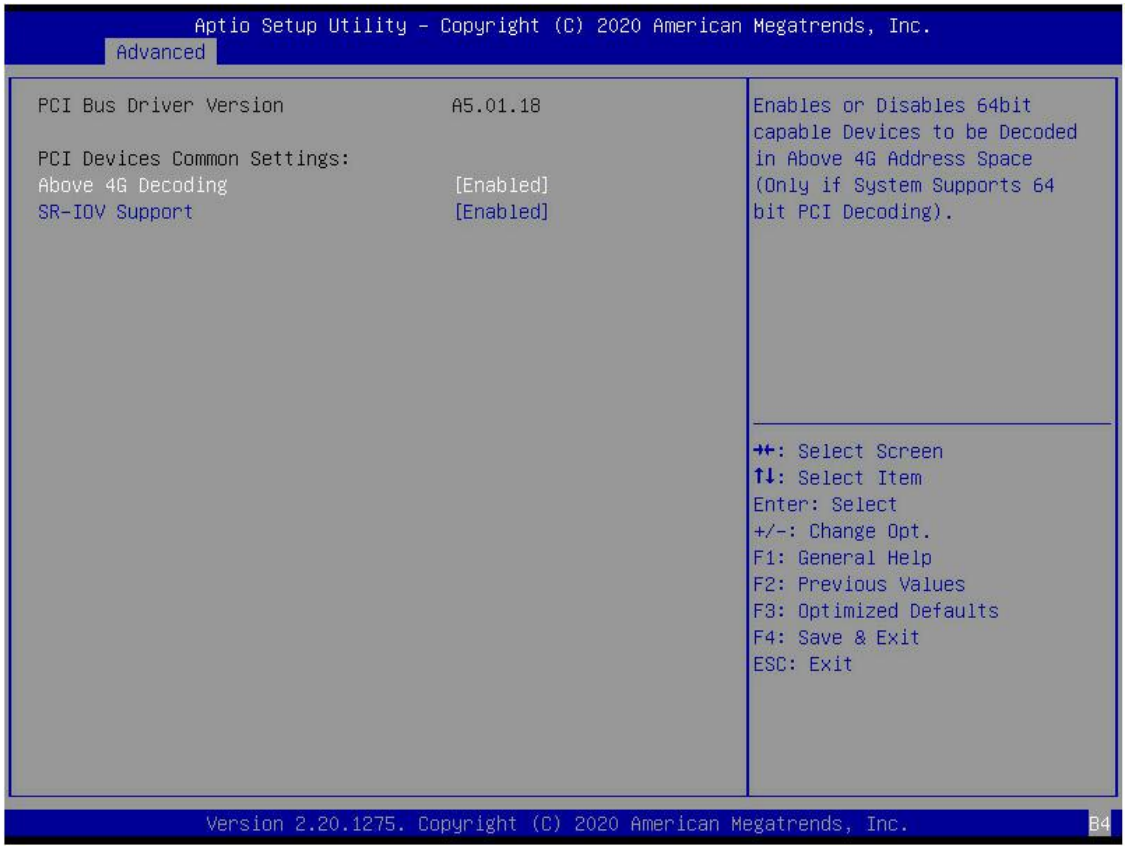

Fig. 4. 9

Above 4G Decoding

The decoding control switch of memory space resources above 4G, and the menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

SR-IOV Support

SR-IOV Support switch setting, and the menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

4.2.11 CSM Configuration

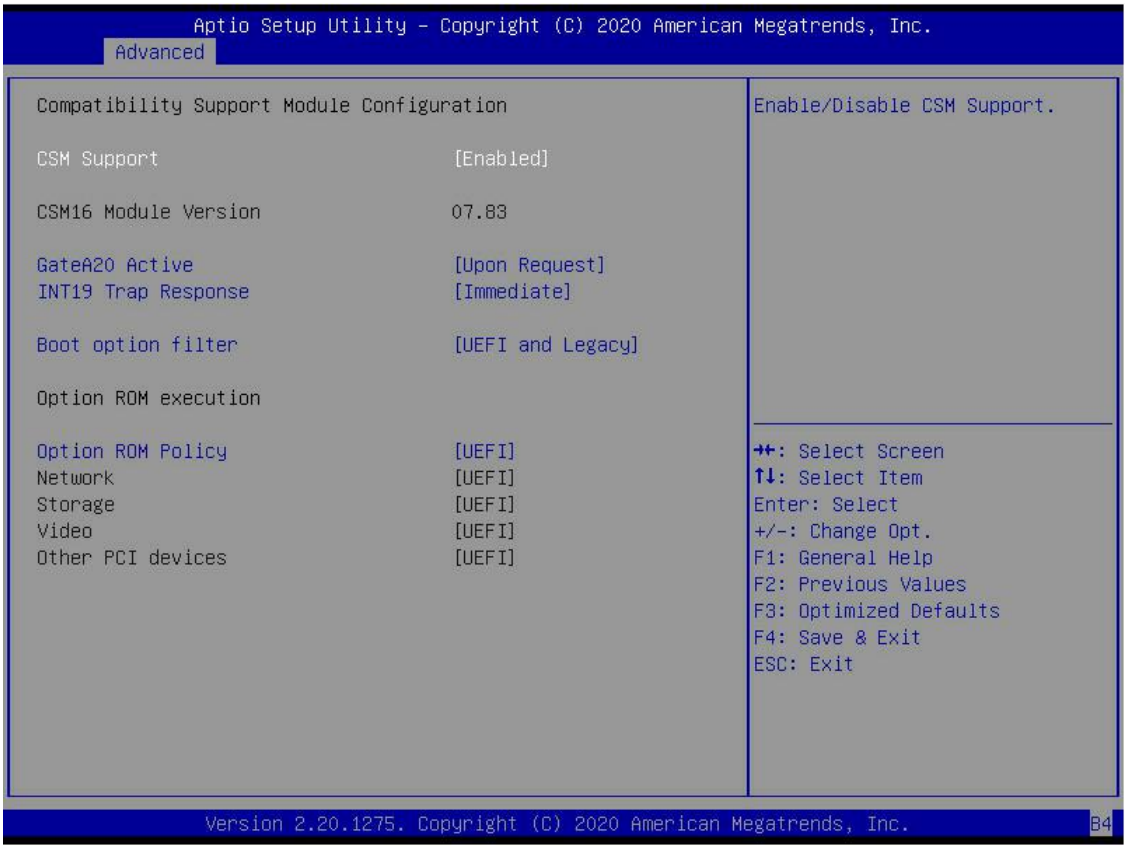

Fig. 4. 10

CSM Support

Turn on or off the compatible support module. The menu options are:

●Disabled: turn off

●Disabled: turn on

Default: Enabled

GateA20 Active

Control mode setting of A20 address line, menu options are:

●Upon Request

●Always

Default: Upon Request

INT19 Trap Response

Interrupt and capture signal response settings, menu options are:

●Immediate: immediate response

●Postponed: postponed response

Default: Immediate

Boot option filter

Start the option control switch, and the menu options are:

●UEFI and Legacy: UEFI and Legacy startup items

●UEFI only: UEFI startup item

●Legacy only: Legacy startup item

Default: UEFI and Legacy

Option ROM Policy

Select Option ROM execution mode, and the menu options are:

●UEFI: UEFI mode

●Legacy: Legacy mode

Default: UEFI

4.2.12 NVMe Configuration

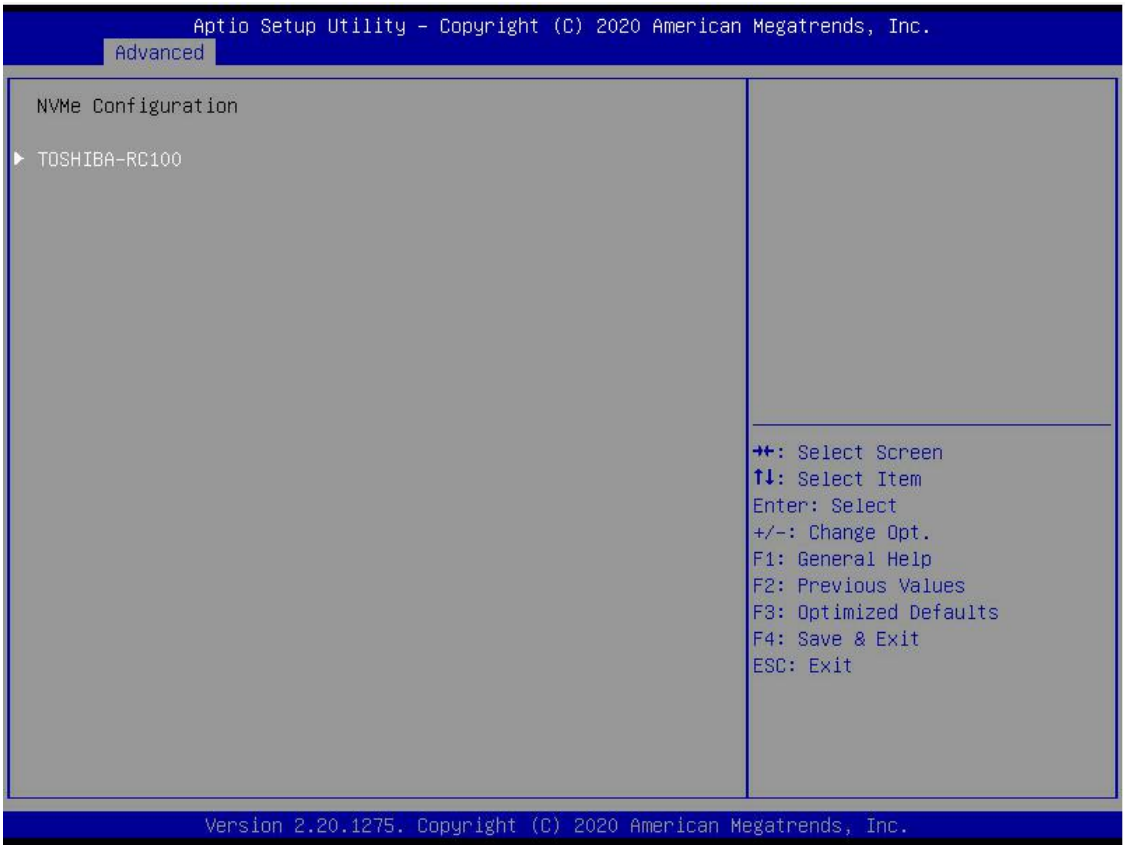

Fig. 4. 11

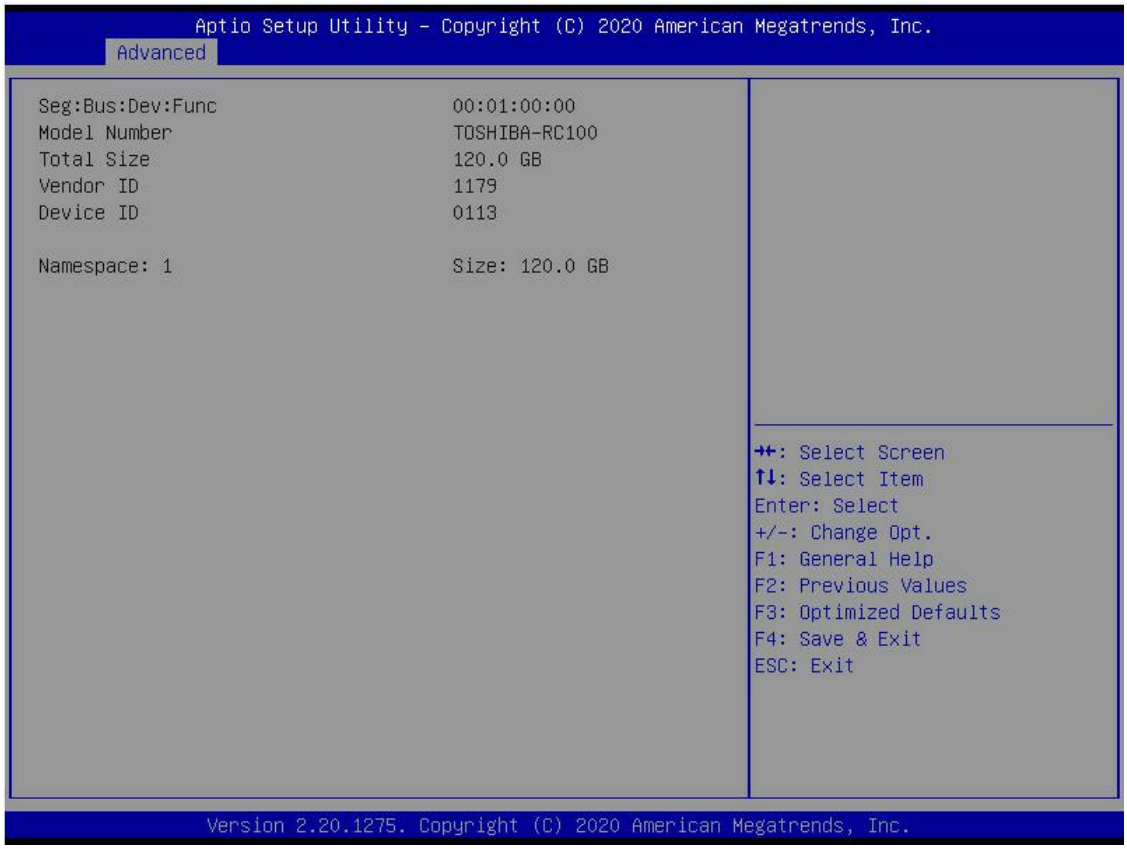

Fig. 4. 12

Displays the details of the NVMe hard drive.

4.2.13 Network Stack Configuration

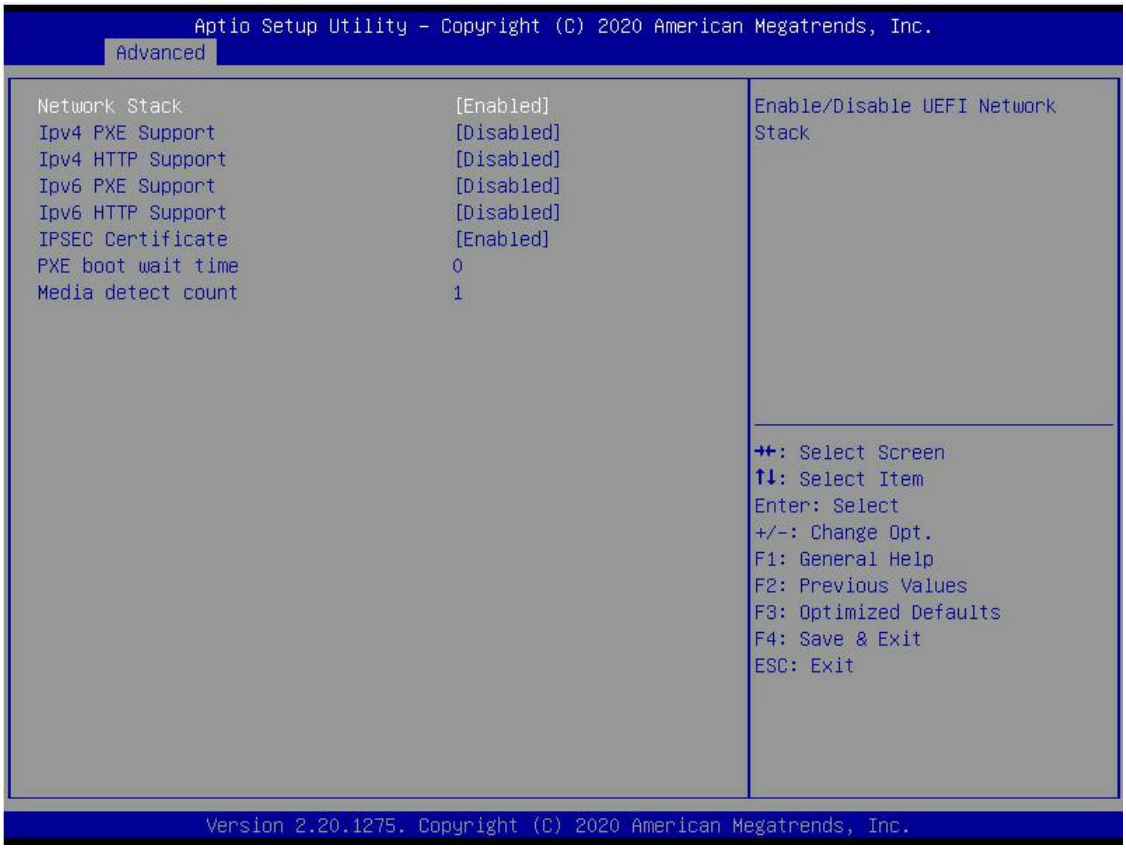

Fig. 4. 13

Network Stack

Network stack control switch, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

Ipv4 PXE Support

Ipv4 UEFI PXE Function control switch, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

Ipv4 HTTP Support

Ipv4 HTTP Function control switch, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

Ipv6 PXE Support

Ipv6 UEFI PXE Function control switch, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

Ipv6 HTTP Support

Ipv6 HTTP Function control switch, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

PXE boot wait time

Boot waiting time: the user can enter this, during the waiting process, you can press "ESC" to give up PXE boot, which is 0 by default.

Media detect count

Device-in-place detection times. You can enter the device detection times of the device LAN card. The default is 1

4.2.14 iSCSI Configuration

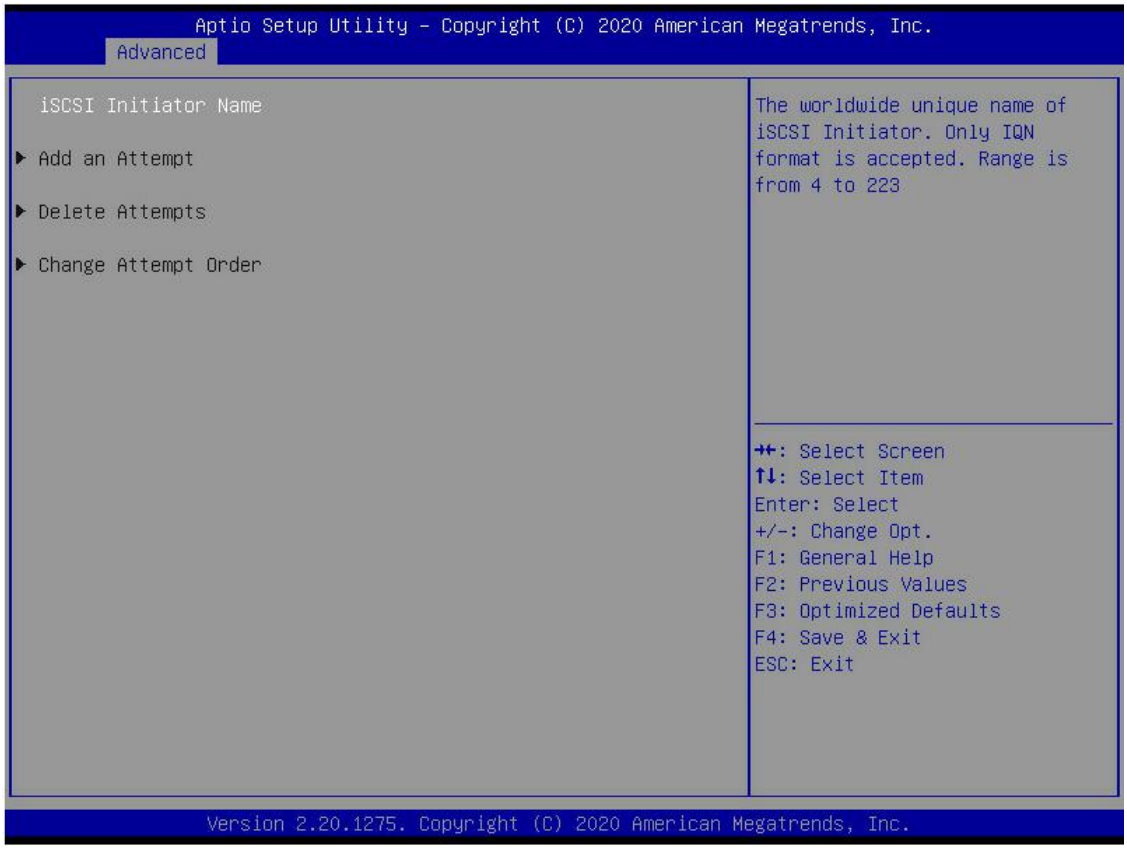

Fig. 4. 14

4.2.15 Platform Configuration menu

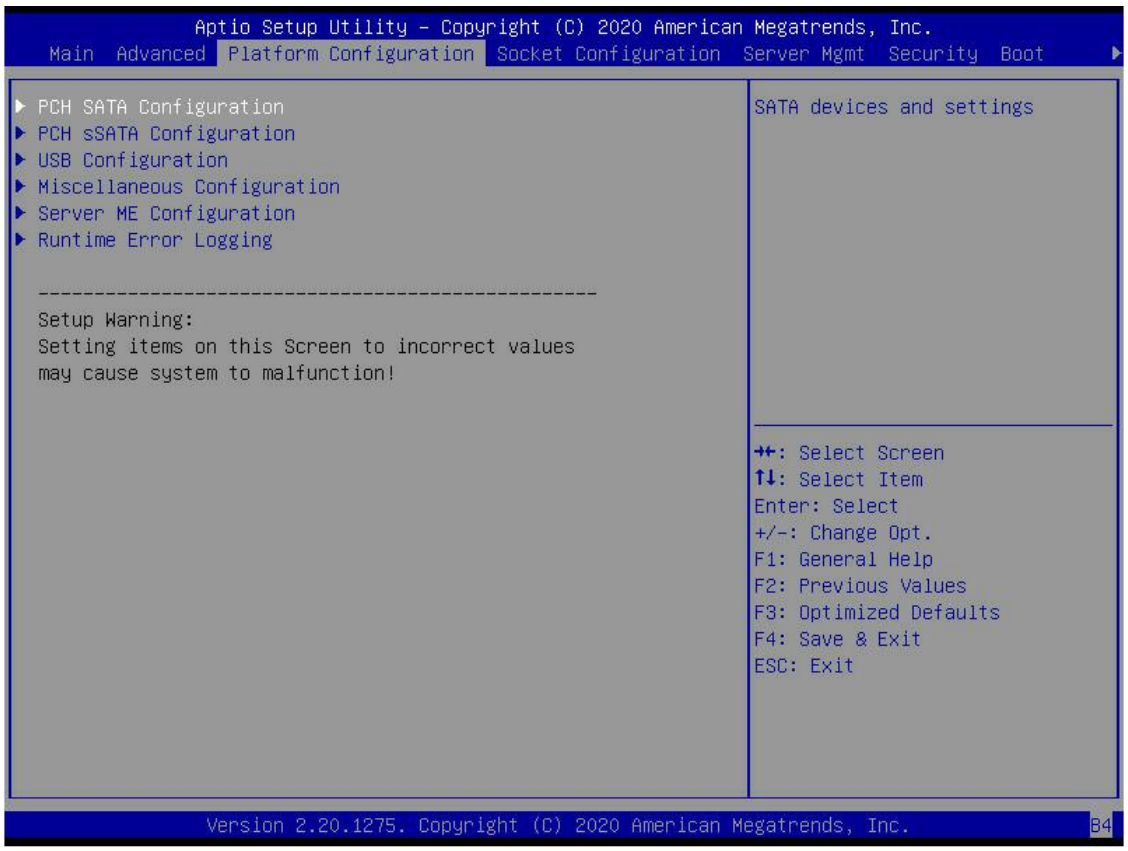

Fig. 4. 15

●PCH SATA Configuration

●PCH sSATA Configuration

●USB Configuration

●Miscellaneous Configuration

●Server ME Configuration

●Runtime Error Logging

4.2.16 PCH SATA Configuration

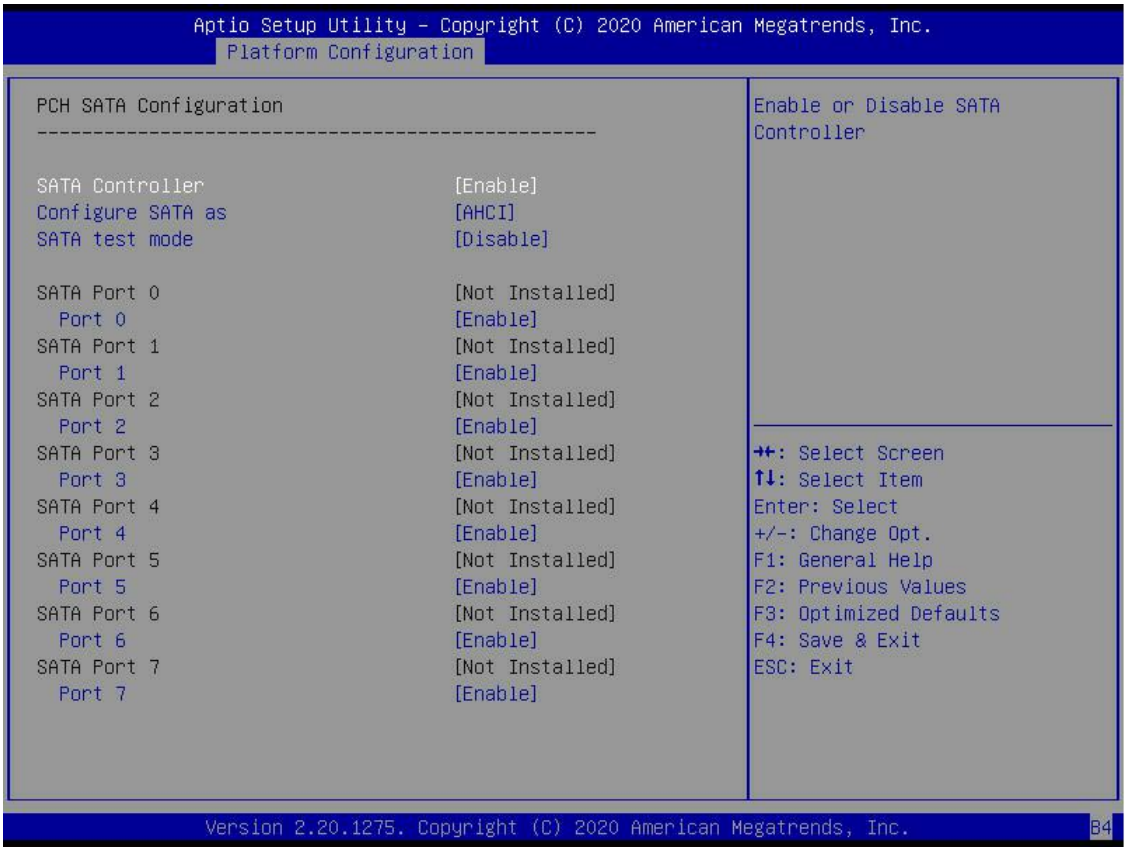

Fig. 4. 16

SATA Controller

SATA Controller Switch controls the opening and closing of SATA controller. The menu options are:

●Disabled: turn off SATA Controller

●Enabled: turn on SATA Controller

Default: Enabled

Configure SATA as

SATA Mode selection, menu options are:

●AHCI: select SATA mode as AHCI mode

●RAID: select SATA mode as RAID mode.

Default: AHCI

SATA test mode

SATA Test mode switch, menu options are:

●Disable: turn off

●Disable: turn on

Default: Disable

SATA Port X

Display SATA Port 0~7 device information. When the device is not connected, it is displayed as Not Installed.

Port X

Control turning off/on SATA Port X, menu options are:

●Disabled: turn off SATA Port X.

●Enabled: turn on SATA Port X.

Default: Enabled

Hot Plug

Control turning off/on the hot plug function of SATA port x device. The menu options are:

●Disabled: turn offSATA Port X hot plug function

●Enabled: turn onSATA Port X hot plug function

Default: Enabled

4.2.17 PCH sSATA Configuration

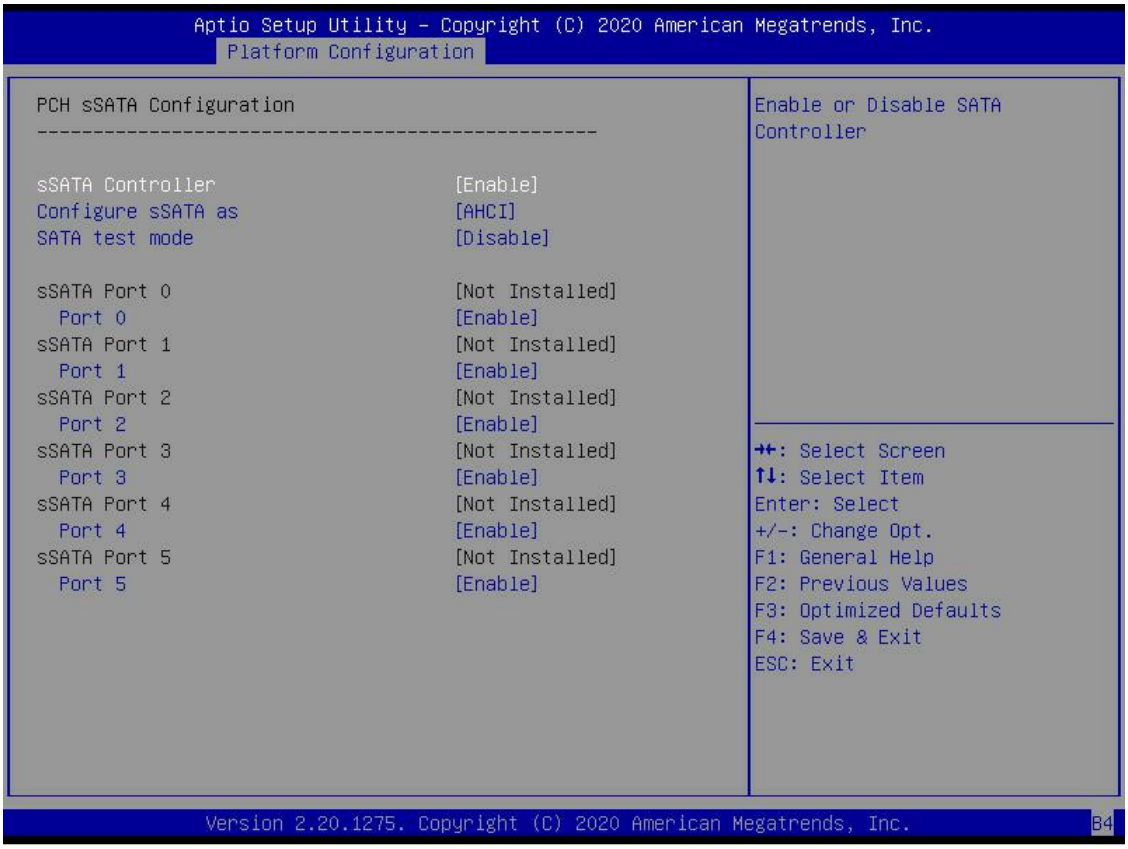

Fig. 4. 17

sSATA Controller

sSATA Controller switch to control turning on/off sSATA controller, menu options are:

●Disabled: turn off sSATA Controller

●Enabled: turn on sSATA Controller

Default: Enabled

Configure sSATA as

sSATA Mode selection, menu options are:

●AHCI: select sSATA mode as AHCI mode

●RAID: select sSATA mode as RAID mode

Default: AHCI

SATA test mode

SATA Test mode switch, menu options are:

●Disable: turn off

●Disable: turn on

Default: Disable

sSATA Port X

Display sSATA Port 0~7 device information. When the device is not connected, it is displayed as Not Installed.

Port X

Control sSATA Port X turning on/off, menu options are:

●Disabled: turn off sSATA Port X

●Enabled: turn on sSATA Port X

Default: Enabled

4.2.18 USB Configuration

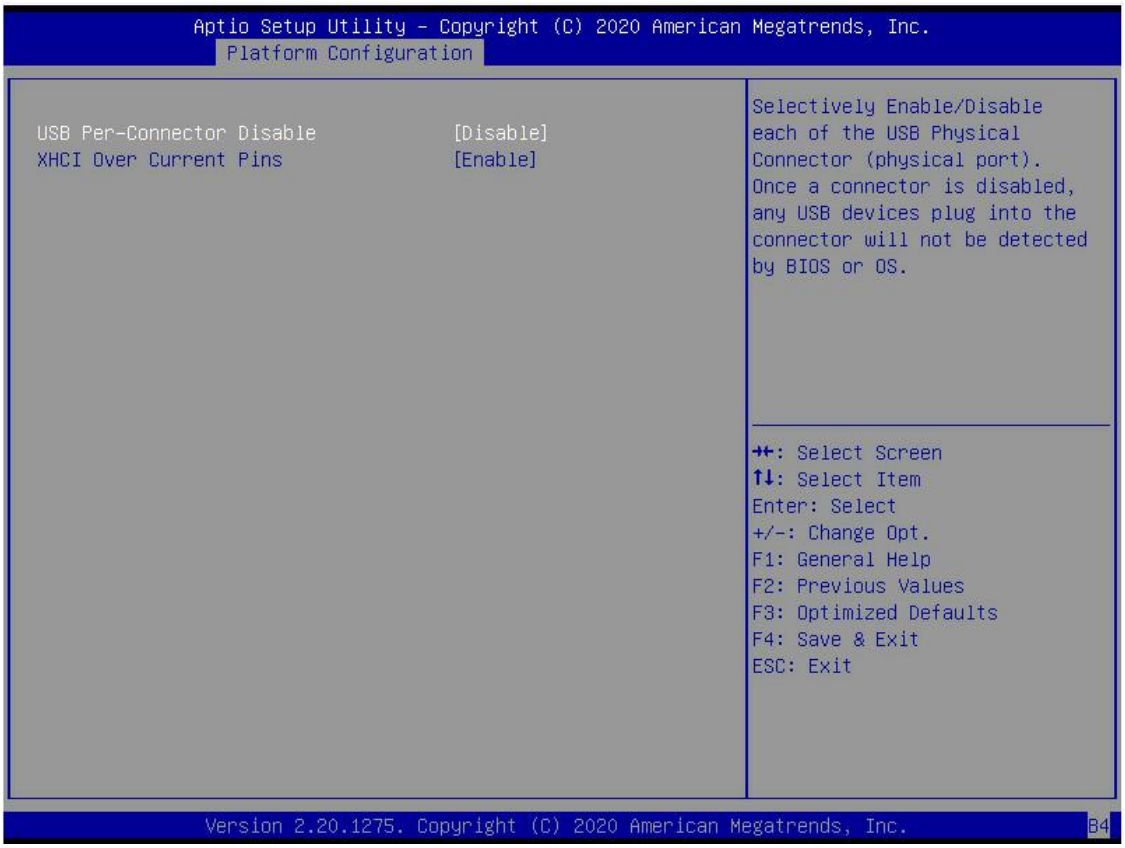

Fig. 4. 18

USB Per-Connector Disable

For each USB connector switch, the menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

XHCI Over Current Pins

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

4.2.19 Miscellaneous Configuration

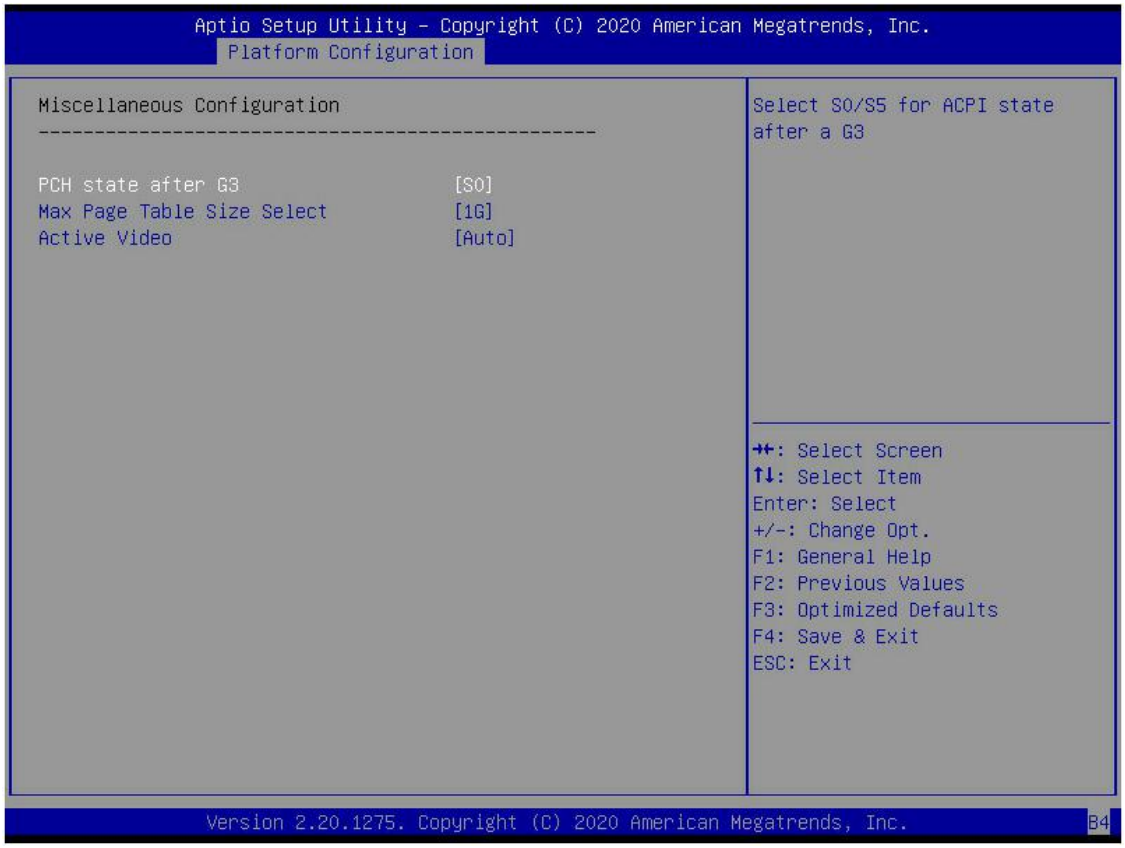

Fig. 4. 19

PCH state after G3

PCH state after G3 Status setting, menu options are:

●S0: power on directly

●S5: press the power button to power on

●leave power state unchanged: keep the power state unchanged

Default: S0

Max Page Table Size Select

The menu options are:

●2M

●1G

Default: 1G

Active Video

Select the active display device type, and the menu options are:

●Auto

●Onboard Device

●PCIE Device

Default: Auto

4.2.20 Server ME Configuration

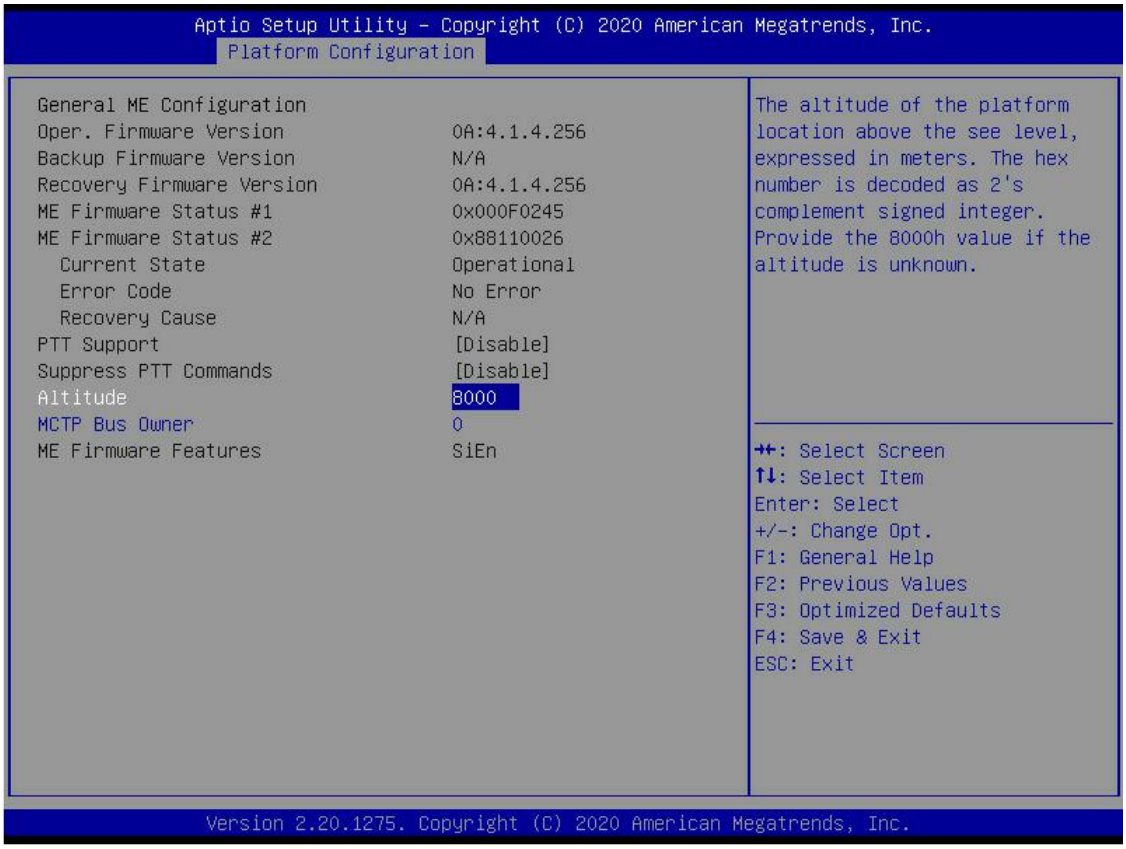

Fig. 4. 20

Display Server ME version, features, status and other information

4.2.21 Runtime Error Logging

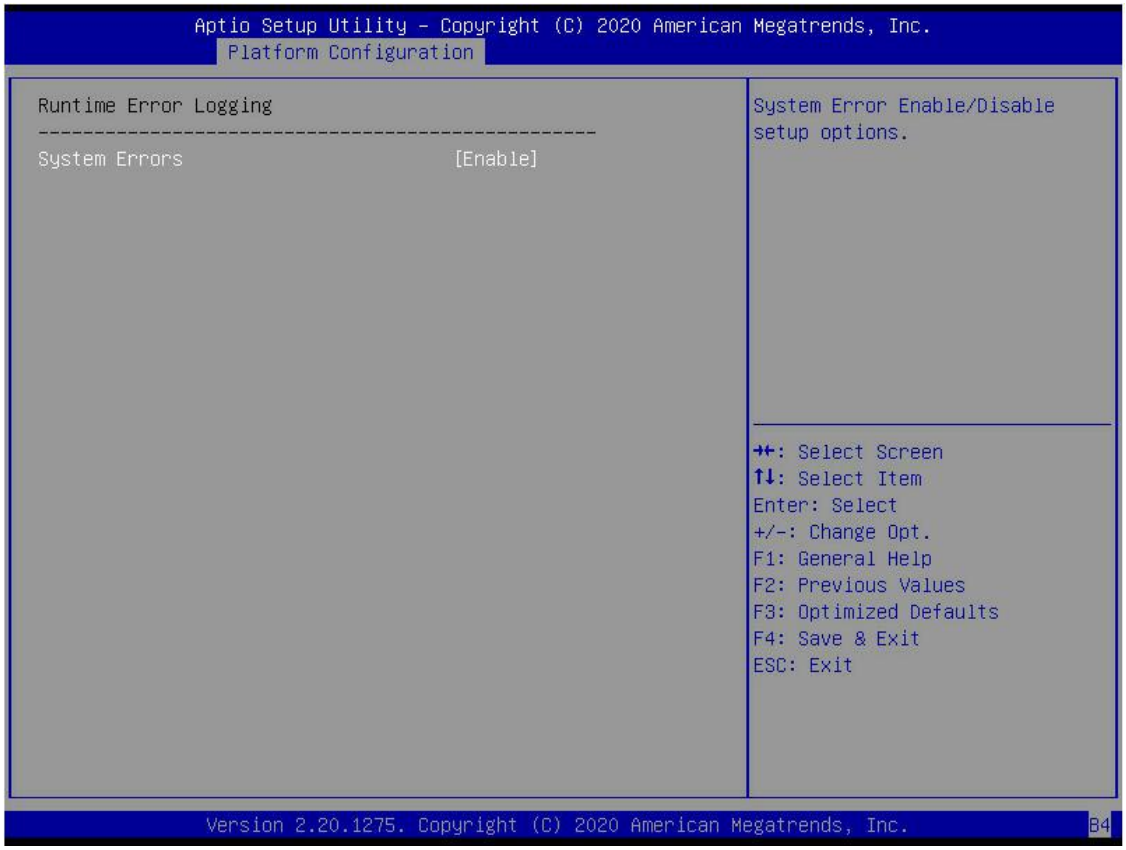

Fig. 4. 21

System Errors

Turn on/off the system error function. The menu options are:

●Disabled: turn off

●Disabled: turn on

Default: Enabled

4.2.22 Socket Configuration menu

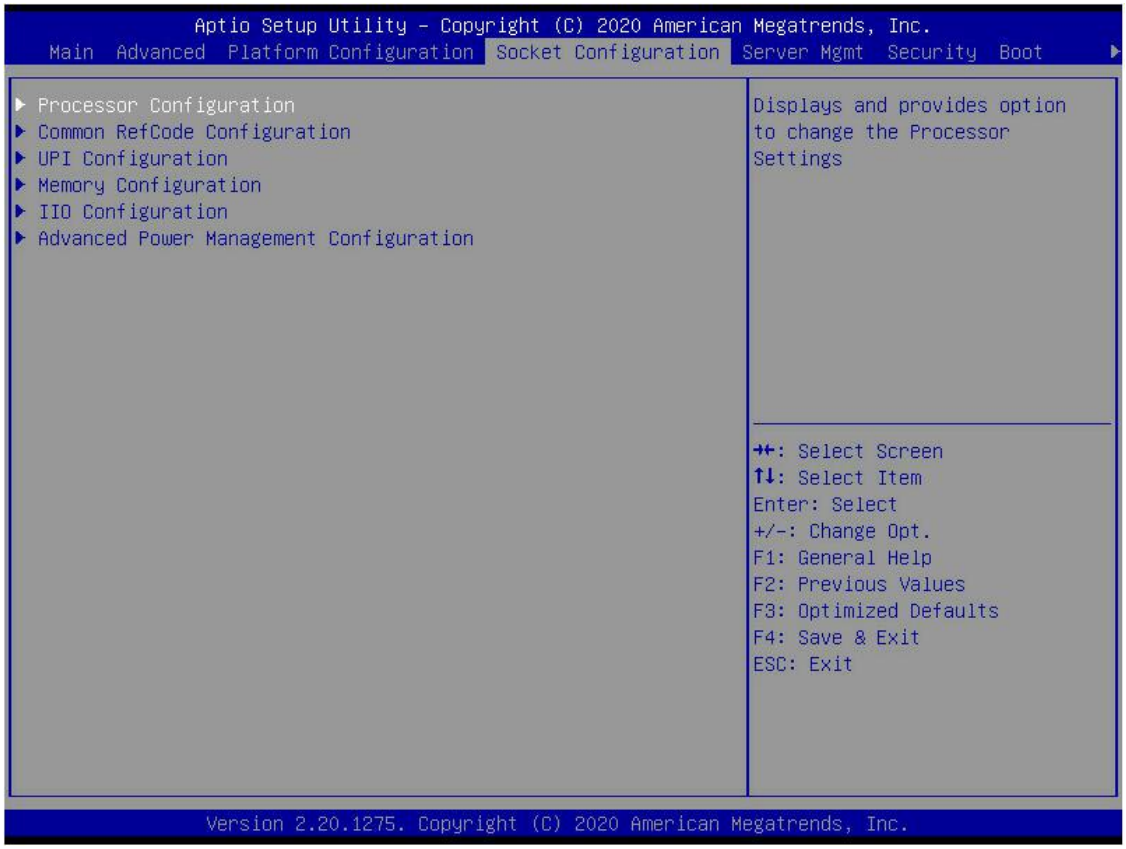

Fig. 4. 22

●Processor Configuration

●Common RefCode Configuration

●UPI Configuration

●Memory Configuration

●IIO Configuration

●Advanced Power Management Configuration

4.2.23 Processor Configuration

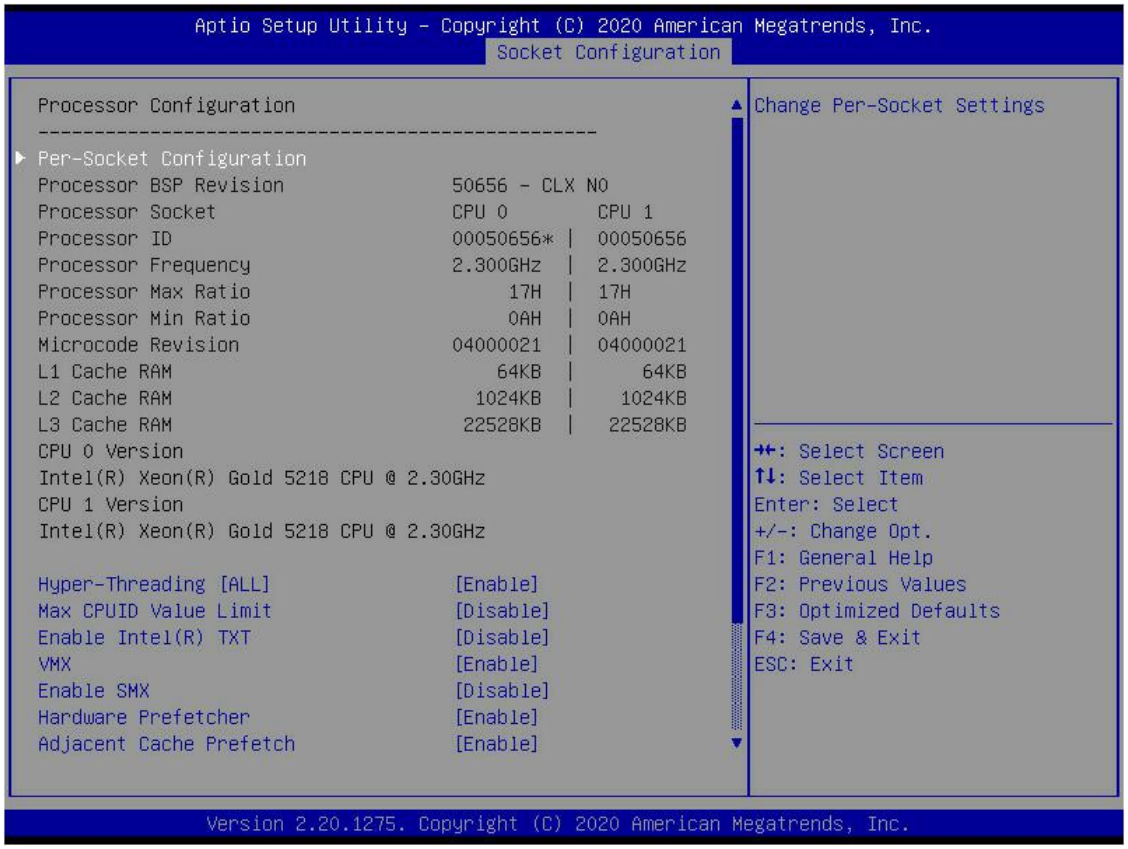

Fig. 4. 23

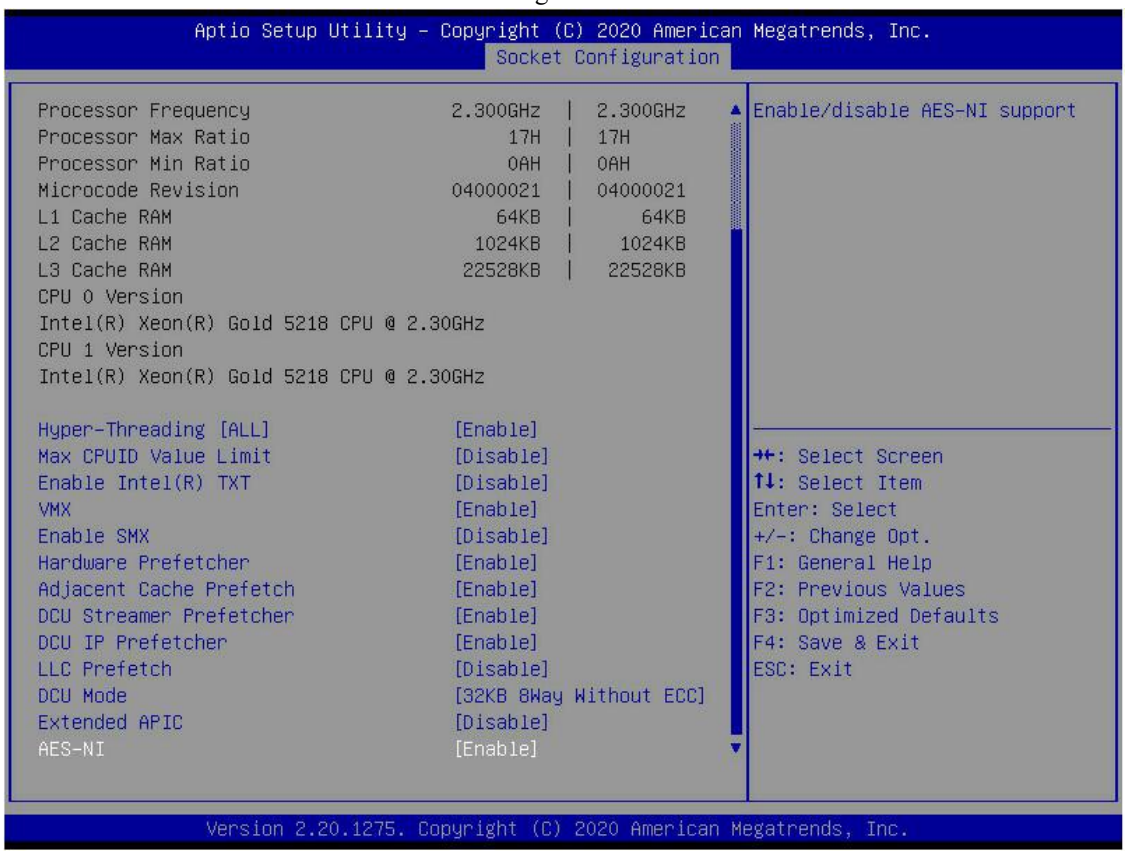

Fig. 4. 24

Display information of CPU Type\ID\Speed\Cache, etc, configuring CPU functions.

●Pre-Socket Configuration

Hyper-Threading

Hyper-Threading control switch, which enables or disables the hyper-threading function of Intel CPU. When enabling this function, each physical processor core is equivalent to 2 logical processor cores; When this function is disabled, each physical processor core is equivalent to only 1 logical processor core. Enabling this function will bring higher processor core count and improve the overall performance of the application. The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

Max CPUID Value Limit

When starting a traditional operating system that cannot support extended CPUID, the menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

Enable Intel(R) TXT

Intel TXT function switch, menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

VMX

CPU Virtualization technology switch. If this option is enabled, the virtualization layer or OS supporting this option can use the hardware capabilities of Intel virtualization technology. Some virtualization layers require Intel virtualization technology to be enabled. If you do not use a virtualization layer or OS that supports this option, you can keep it enabled. The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

Enable SMX

Extended safety mode function switch, menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

Hardware Prefetcher

It means before the CPU processes instructions or data, it prefetches these instructions or data from memory to L2 cache, so as to reduce the time of memory reading and help eliminate potential bottlenecks, and improve system performance. The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

Adjacent Cache Prefetch

After the Adjacent Cache Prefetch function is enabled, when reading data, the computer will intelligently think that the data next to or adjacent to the data to be read is also needed, so these adjacent data will be read out in advance during processing, which can accelerate the reading speed. When the application scenario is sequential memory access, enabling this function will improve performance. When the application scenario is random access memory, it is recommended to disable this option. The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

DCU Streamer Prefetcher

Menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

DCU IP Prefetcher

Menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

LLC Prefetcher

Menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

DCU Mode

Menu options are:

●32KB 8Way Without ECC: 32KB 8 way without ECC

●16KB 4Way With ECC: 16KB 4way with ECC
Default: 32KB 8Way Without ECC

Extended APIC
Turn on / off extended APIC support. The menu options are:
●Enable: turn on
●Disable: turn off
Default: Disable

AES-NI
Turn on and off AES (Advanced Encryption Standard). The menu options are:
●Enable: turn on
●Disable: turn off
Default: Enable

4.2.24 Common RefCode Configuration

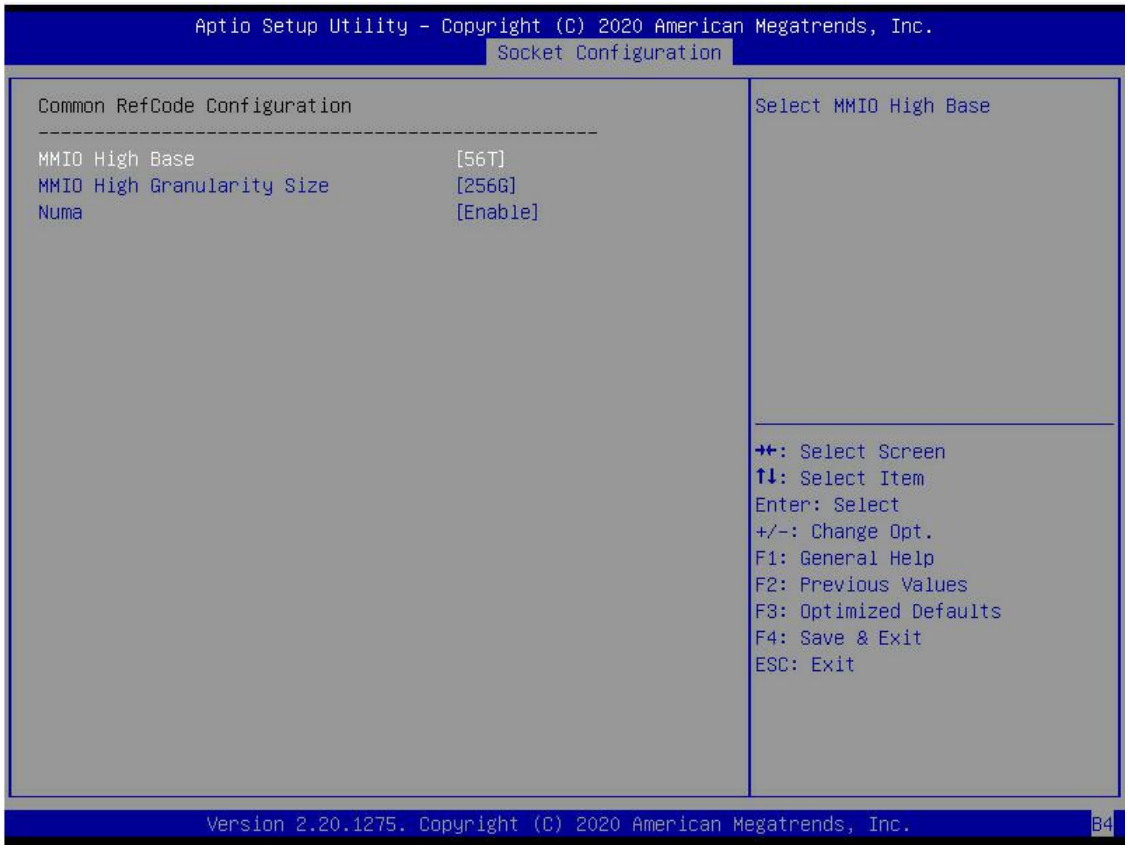

Fig. 4. 25

MMIO High Base
Select MMIO High Base. The menu options are:
●56T
●40T

●24T
●16T
●4T
●1T
Default: 56T

MMIO High Granularity Size
Select MMIO High Granularity Size. The menu options are:
●1G
●4G
●16G
●64G
●256G
●1024G
Default: 256G

Numa
To turn on/off inconsistent memory access, the menu options are:
●Enable: turn on
●Disable: turn off
Default: Enable

4.2.25 UPI Configuration

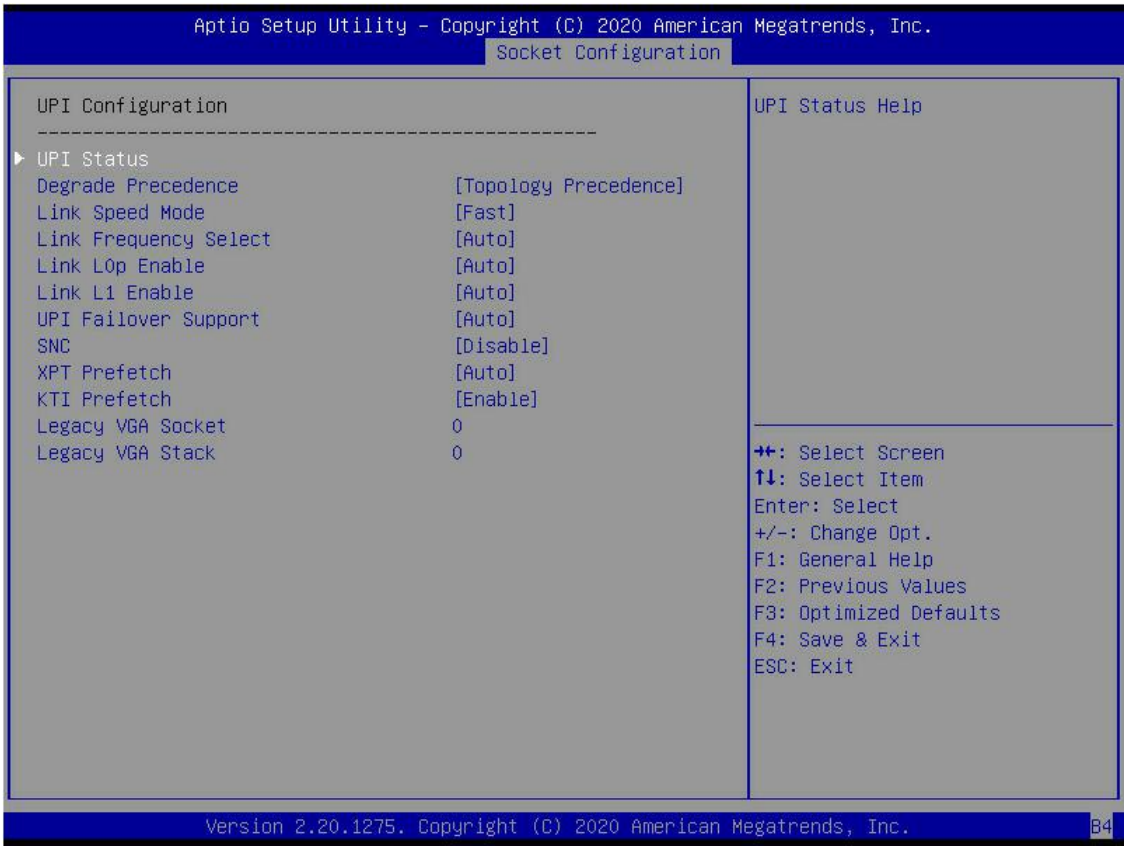

Fig. 4. 26

●UPI Status: UPI link status submenu, which displays the current UPI link status

Degrade Precedence

When the system settings conflict, set Topology Precedence to down feature, or by setting Feature Precedence to down Topology, the menu options are:

●Topology Precedence

●Feature Precedence

Default: Topology Precedence

Link Speed Mode

The menu options are:

●Slow: slow speed

●Fast: fast speed

Default: Fast

Link L0p Enable

The menu options are:

●Disable: turn off

●Disable: turn on

●Auto
Default: Auto

Link L1 Enable
The menu options are:
●Disable: turn off
●Disable: turn on
●Auto
Default: Auto

UPI Failover Support
The menu options are:
●Disable: turn off
●Disable: turn on
●Auto
Default: Auto

SNC
Sub NUMA cluster settings, menu options are:
●Disable: turn off
●Disable: turn on
●Auto
Default: Disable

XPT Prefectch
XPT Prefectch, menu options are:
●Disable: turn off
●Disable: turn on
●Auto
Default: Auto

KTI Prefectch
KTI Prefectch, menu options are:
●Disable: turn off
●Disable: turn on
●Auto
Default: Enable

●Legacy VGA Socket: legacy VGA amount setting, valid values range from 0 to 1.
●Legacy VGA Stack: legacy VGA stack amount setting, valid values range from 0~6.

4.2.26 Memory Configuration

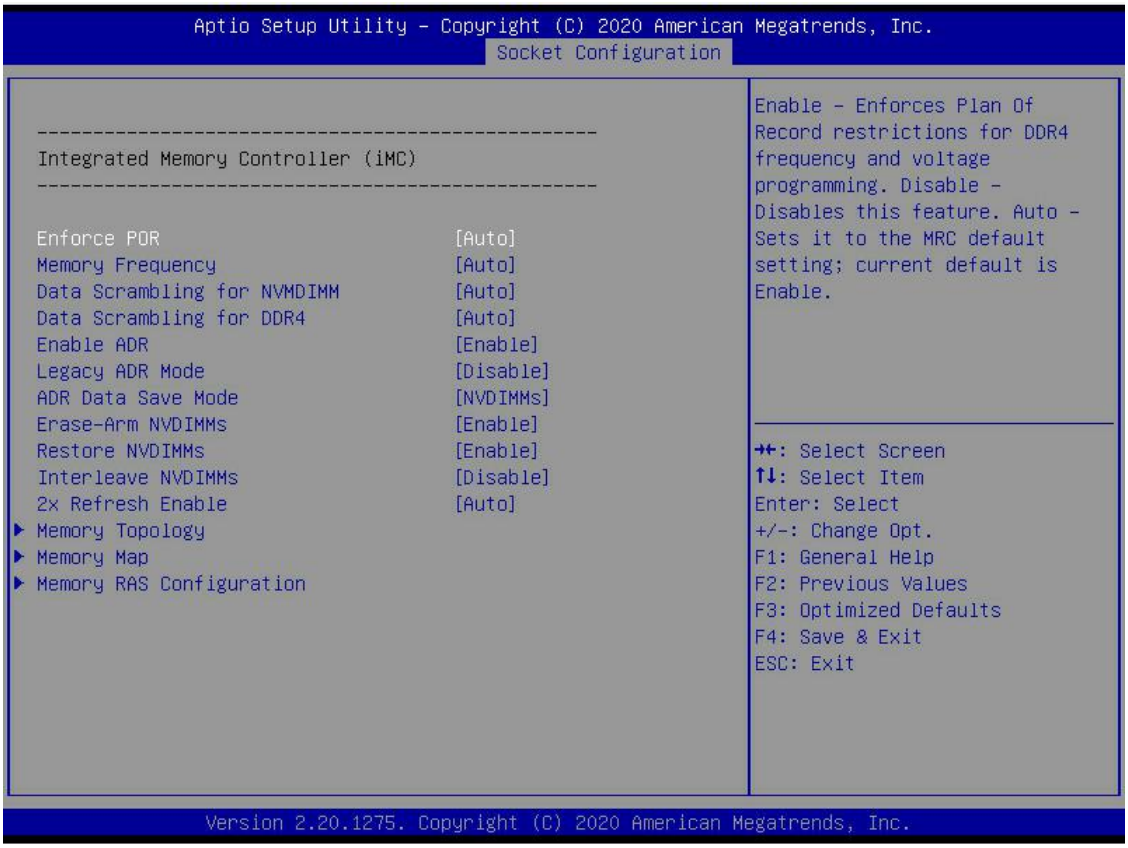

Fig. 4. 27

Enforce POR

To enforce POR settings, the menu options are:

●Auto

●POR: enforce POR

●Disable: turn off

Default: Auto

Memory Frequency

The menu options are:

●Auto

●800

●1000

●1066

●1200

●1333

●1400

●1600

……

Default: Auto

Data Scrambling for NVDIMM
The menu options are:
●Auto
●Disable: turn off
●Enable: turn on
Default: Auto

Data Scrambling for DDR4
The menu options are:
●Auto
●Disable: turn off
●Enable: turn on
Default: Auto

Enable ADR
The menu options are:
●Disable: turn off
●Enable: turn on
Default: Enable

Legacy ADR Mode
The menu options are:
●Disable: turn off
●Enable: turn on
Default: Enable

ADR Data Save Mode
The menu options are:
●Disable: turn off
●Batterybacked DIMMs
●NVDIMMs
Default: NVDIMMs

Erase-ARM NVDIMMs
The menu options are:
●Disable: turn off
●Enable: turn on
Default: Enable

Restore NVDIMMs
The menu options are:
●Disable: turn off
●Enable: turn on
●Auto
Default: Auto

Interleave NVDIMMs
The menu options are:
●Disable: turn off
●Enable: turn on
Default: Disable

2x Refresh Enable
The menu options are:
●Disable: turn off
●Enable: turn on
Default: Disable

Memory Topology
Memory topology submenu, displaying in-place memory details;

Memory Map
Memory Map submenu;

Memory RAS Configuration
Memory RAS Configuration submenu.

4.2.27 Memory Topology

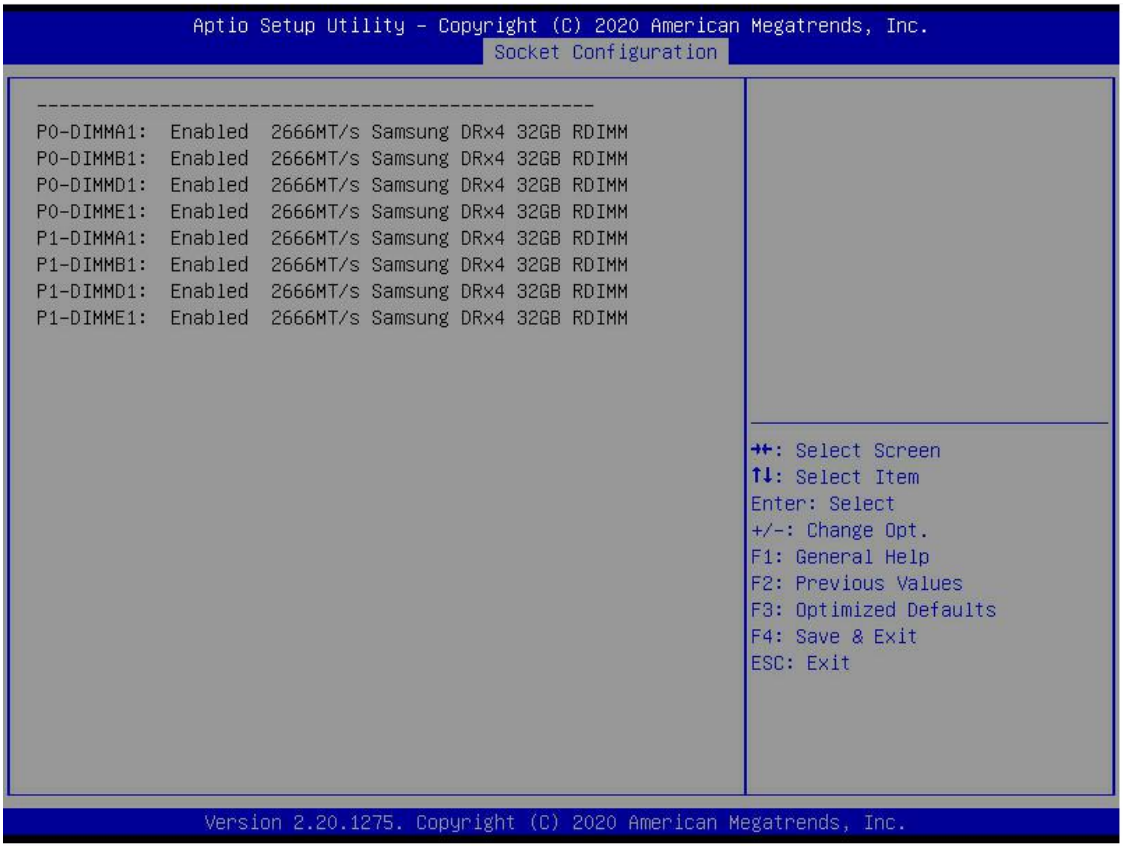

Fig. 4. 28

Displays the current in-place memory details

4.2.28 Memory Map

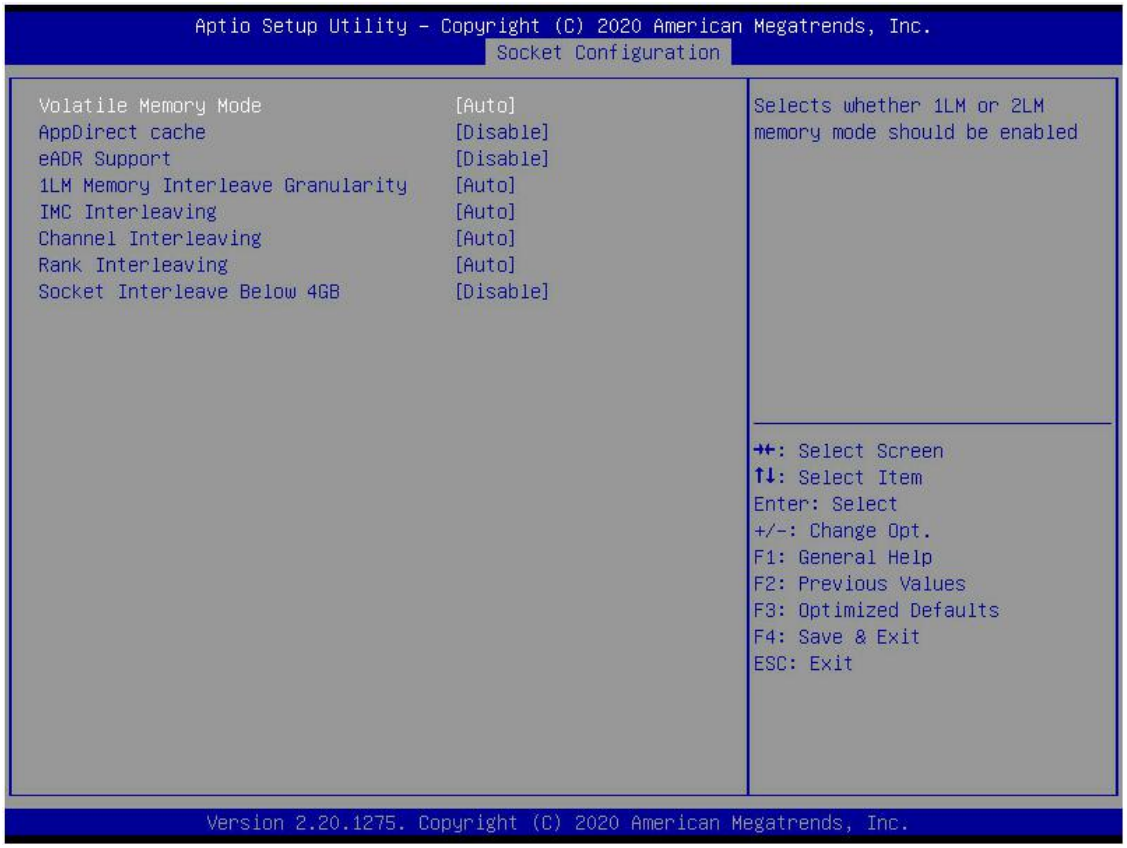

Fig. 4. 29

Volatile Memory Mode

Volatile memory mode setting, menu options are:

●1LM

●2LM

●Auto

Default: Auto

1LM Memory Interleave Granularity

The menu options are:

●Auto

●256B Target, 256B Channel

●64B Target, 64B Channel

Default: Auto

IMC Interleaving

The menu options are:

●Auto

●1-way Interleavel

●2-way Interleavel

Default: Auto

Channel Interleaving
The menu options are:
●Auto
●1-way Interleavel
●2-way Interleavel
●3-way Interleavel
Default: Auto

Rank Interleaving
The menu options are:
●Auto
●1-way Interleavel
●2-way Interleavel
●4-way Interleavel
●8-way Interleavel
Default: Auto

Socket Interleave Below 4GB
The menu options are:
●Enable: turn on
●Disable: turn off
Default: Disable

4.2.29 Memory RAS Configuration

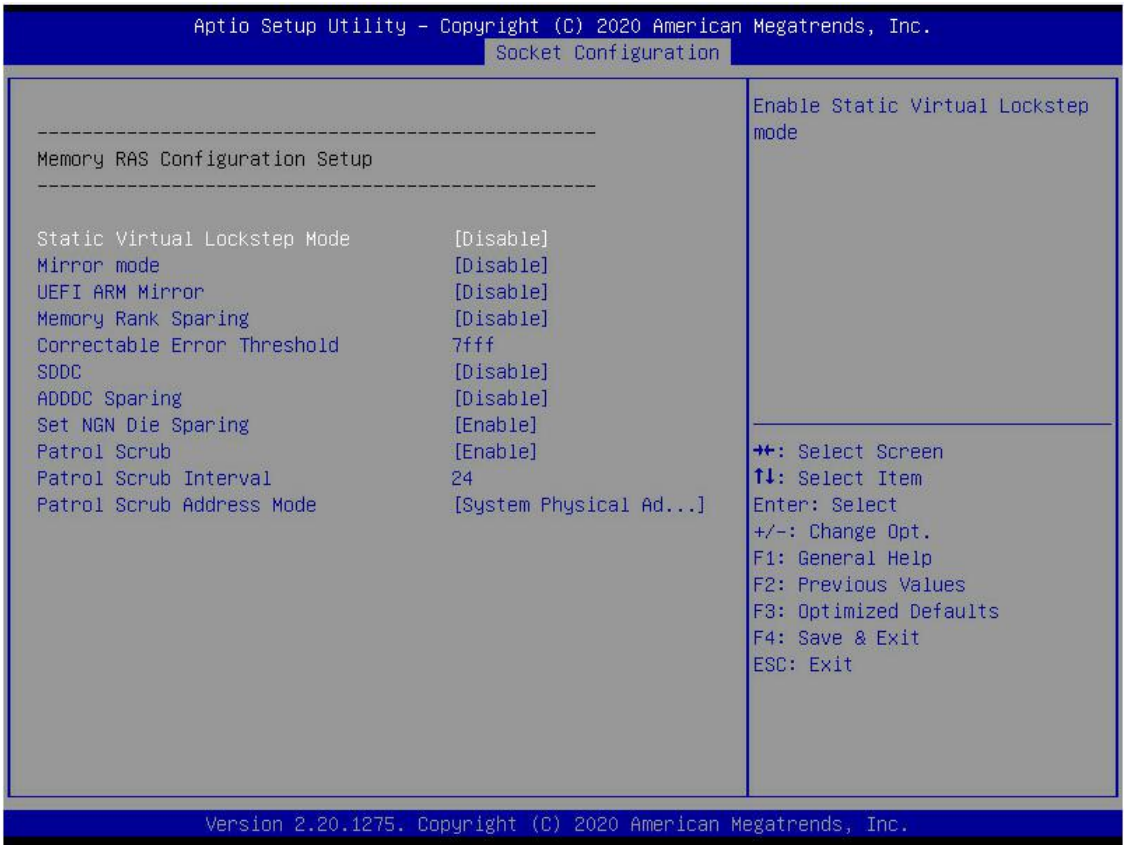

Fig. 4. 30

Static Virtual Lockstep Mode

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

Mirror Mode

The menu options are:

●Disable: turn off

●Enable Mirror Mode (1LM)

Default: Disable

UEFI ARM Mirror

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

Memory Rank Sparing

The menu options are:
●Enable: turn on
●Disable: turn off
Default: Disable

Correctable Error Threshold: The valid values are 0x01-0x7fff, and the default value is 0x7FFF.

SDDC
SDDC switch setting. **Note: not supported when AEP DIMM exists** The menu options are:
●Enable: turn on
●Disable: turn off
Default: Disable

ADDDC Sparing
The menu options are:
●Enable: turn on
●Disable: turn off
Default: Disable

Set NGN Die Sparing
The menu options are:
●Enable: turn on
●Disable: turn off
Default: Enable

Patrol Scrub
The menu options are:
●Enable: turn on
●Disable: turn off
Default: Enable

Patrol Scrub Interval : Patrol Scrub Interval setting, unit: hour, range: 1-24, default value: 24.

Patrol Scrub Address Mode
The menu options are:
●Reverse address
●System Physical Address
Default: System Physical Address

4.2.30 IIO Configuration

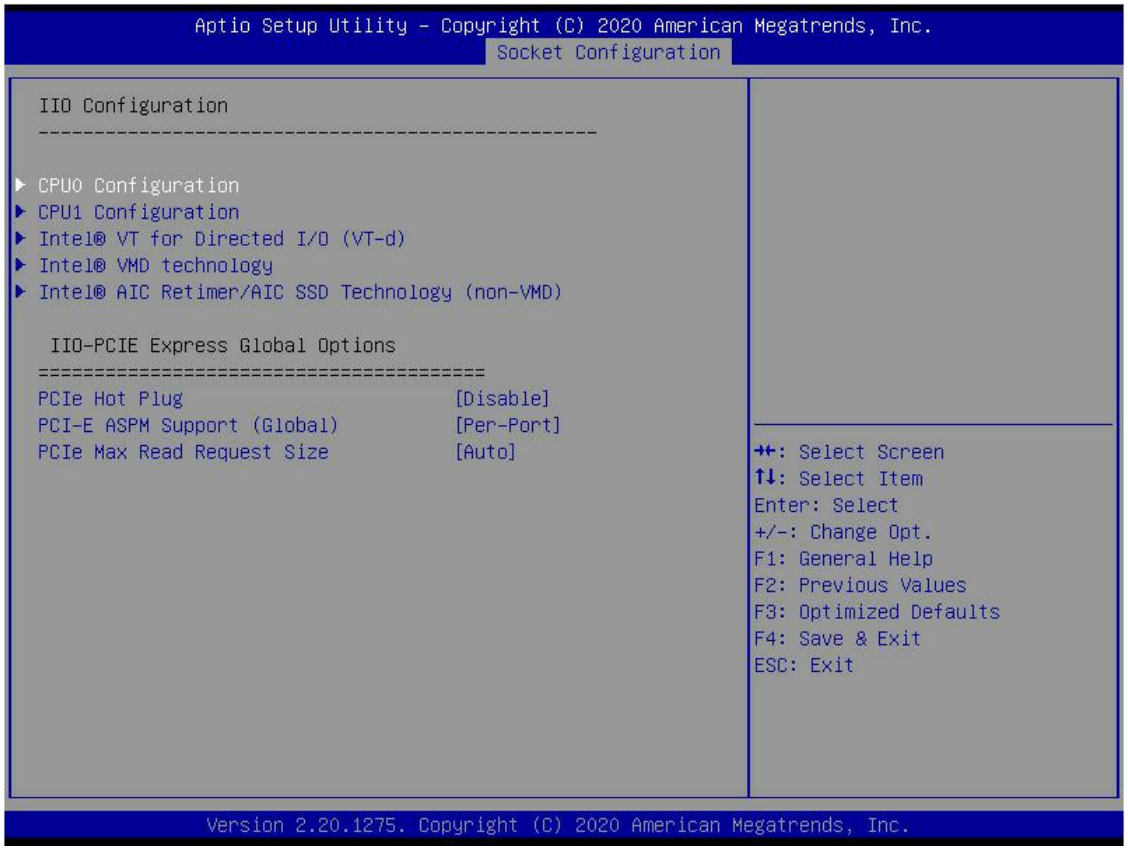

Fig. 4. 31

SocketN Configuration

Use to set the Link speed, Max Payload Size, ASPM and other settings on the PCIe of CPU0, and display the link status, maximum link, current link rate, etc. of the current PCIe port.

Intel(R) VT for Directed I/O(VT-d)

Intel VT-d Technology related setting submenu, Intel vt-d technology switch setting;

Intel(R) VMD Technology

Intel VMD Technology related setting submenu, switch setting of VMD on each PStack of each CPU;

Intel(R) AIC Retimer/AIC SSD Technology(non-VMD)

Intel AIC Retimer/AIC SSD Technology related setting submenu, the switch setting of AIC Retimer / AIC SSD technology on each PStack of each CPU.

PCIe Hot Plug

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

PCI-E ASPM Support(Global)

PCIE ASPM Global switch setting, the menu options are:

●Disable: turn off

●Per-Port

●L1 Only

Default: Per-Port

PCI-E Max Read Request Size

The menu options are:

●Auto

●128B

●256B

●512B

●1024B

●2048B

●4096B

Default: Auto

4.2.31 Advanced Power Management Configuration

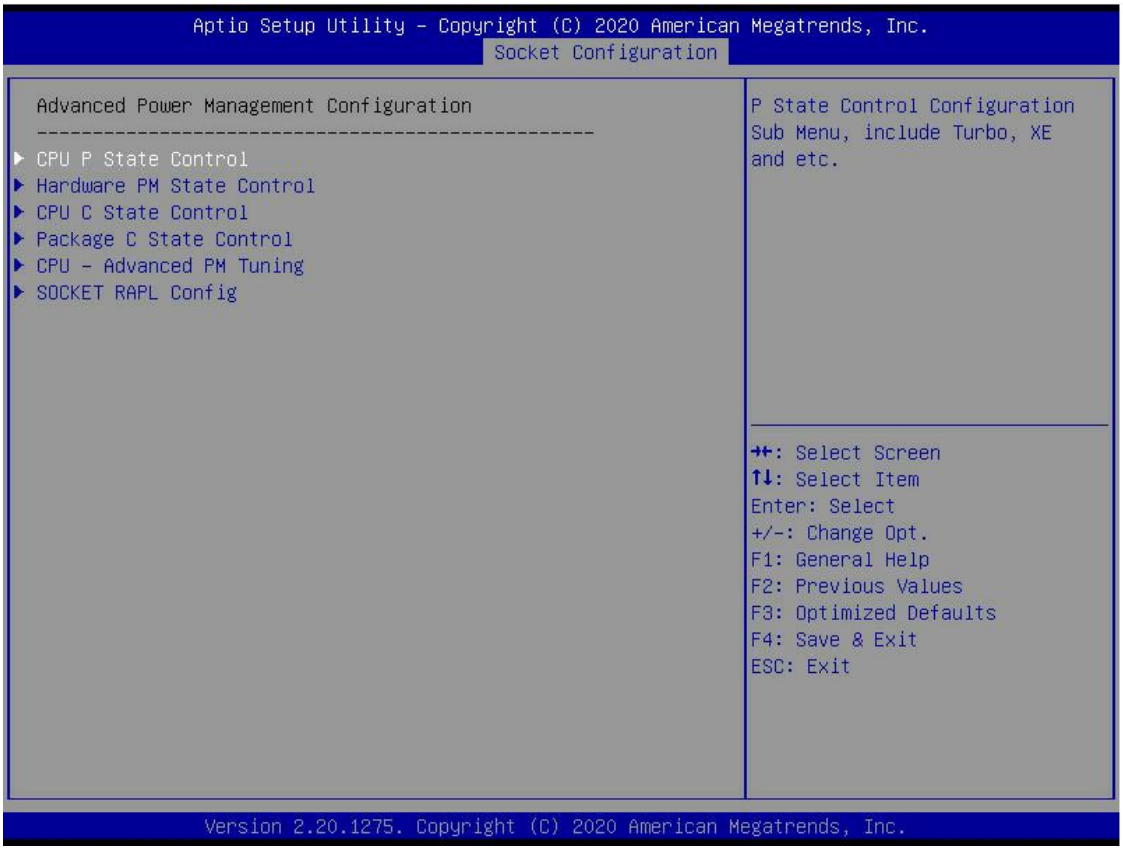

Fig. 4. 32

CPU P State Control

Hardware PM State Control

CPU C State Control

Package C State Control

CPU-Advanced PM Tuning

Socket RAPL Configuration

4.2.32 CPU P State Control

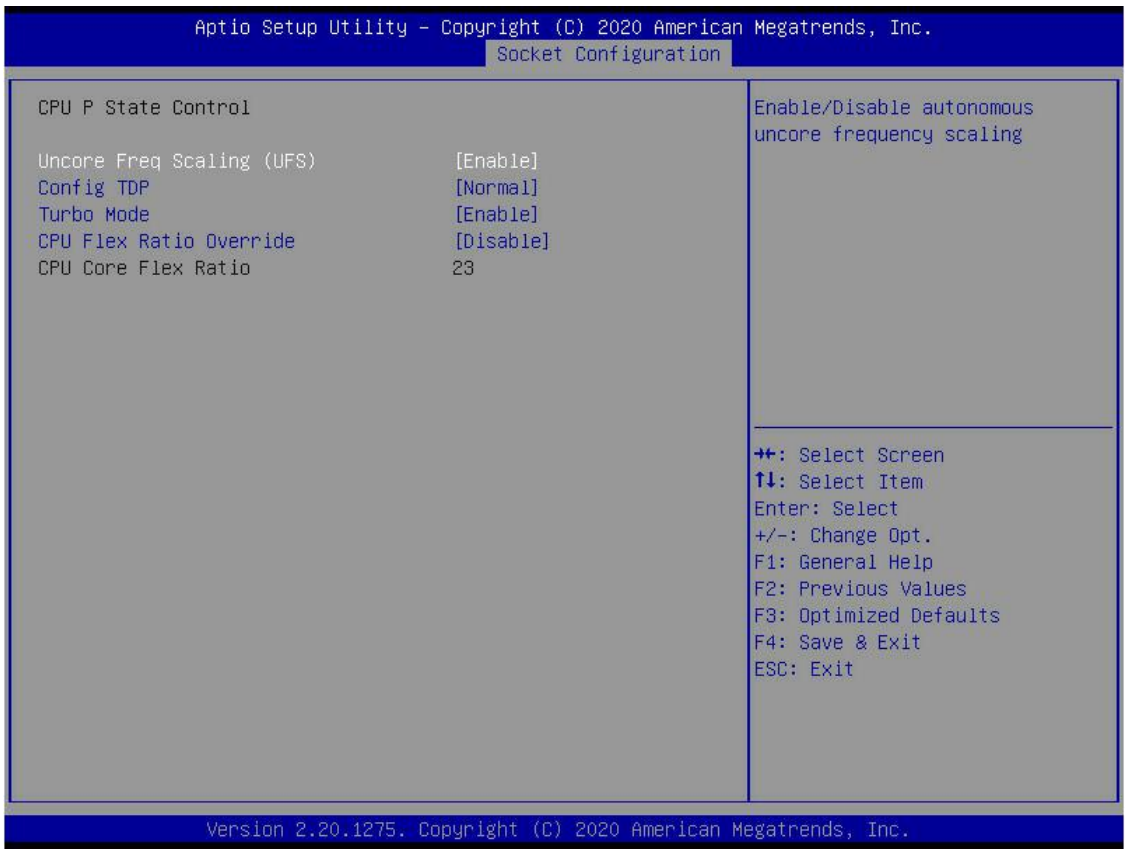

Fig. 4. 33

Uncore Freq Scaling(UFS)

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

Config TDP

The menu options are:

●Normal

●Level 1

●Level 2

Default: Normal

Turbo Mode

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

4.2.33 Hardware PM State Control

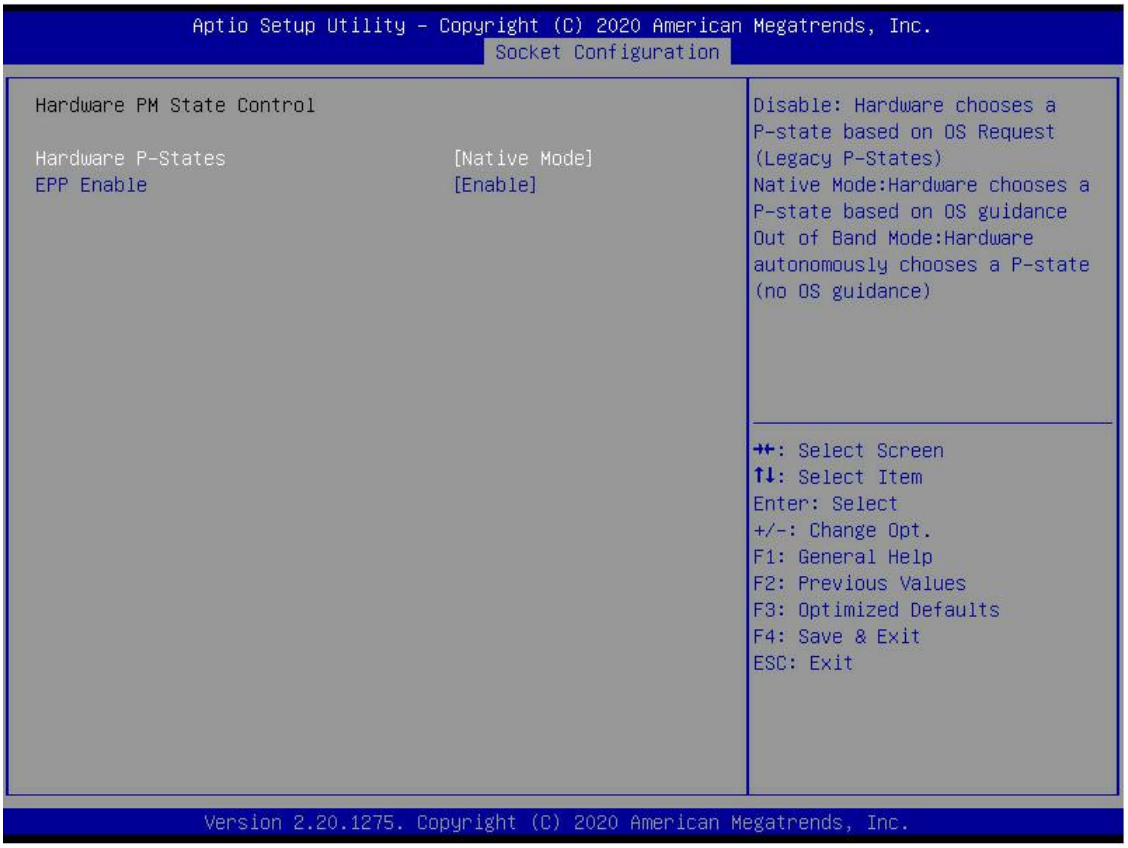

Fig. 4. 34

Hardware P-State

Hardware selects whether the P-State is set actively by OS. The default value is determined on the actual test. The menu options are:

●Disable: Hardware selection P-States based on traditional OS requests

●Native Mode: Hardware selection P-State based on traditional OS guide

●Out of Band Mode: automatic hardware selection, no OS boot required

●Native Mode with No Legacy Support

Default: Native Mode

EPP Enable

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Enable

4.2.34 CPU C State Control

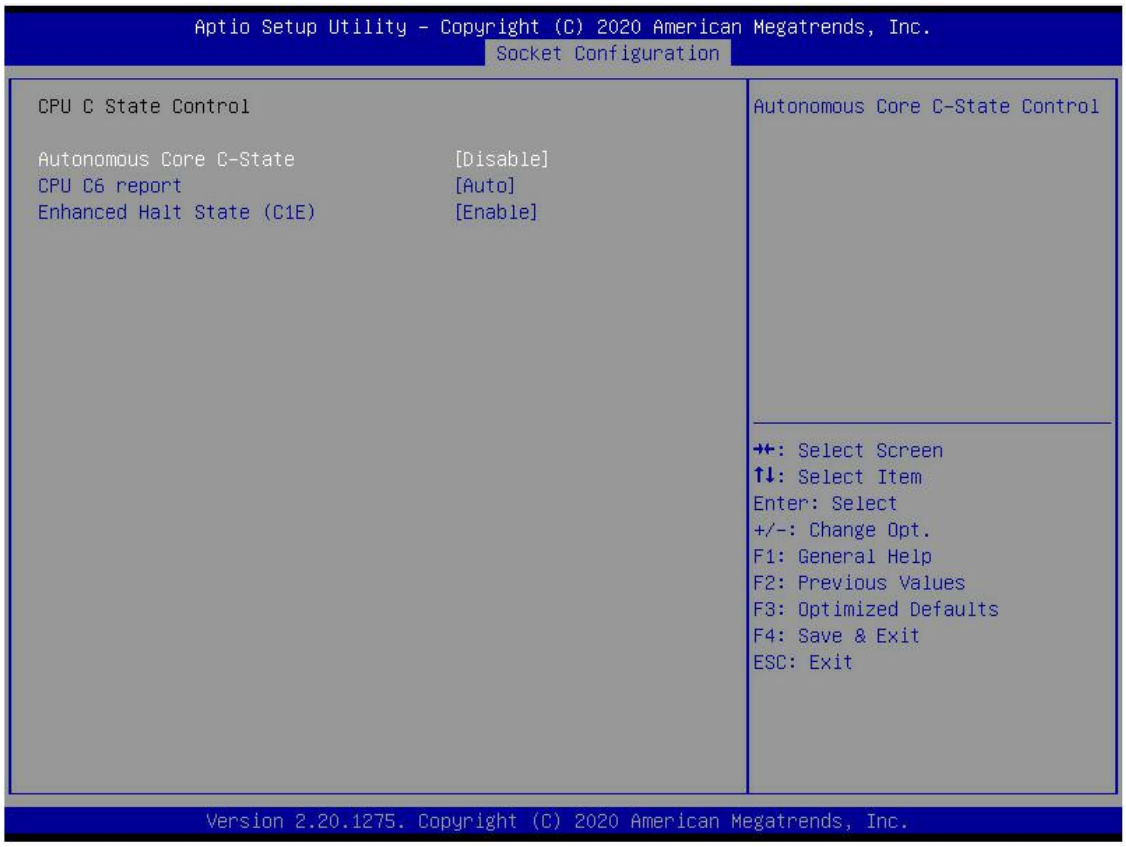

Fig. 4. 35

Autonomous Core C-State

The menu options are:

●Enable: turn on

●Disable: turn off

Default: Disable

CPU C6 report

Report the C6 status switch settings to the OS, and the menu options are:

●Disable: turn off

●Enable: turn on

●Auto

Default: Auto

Enhanced Halt State(C1E)

The menu options are:

●Disable: turn off

●Enable: turn on

Default: Enable

4.2.35 Package C State Control

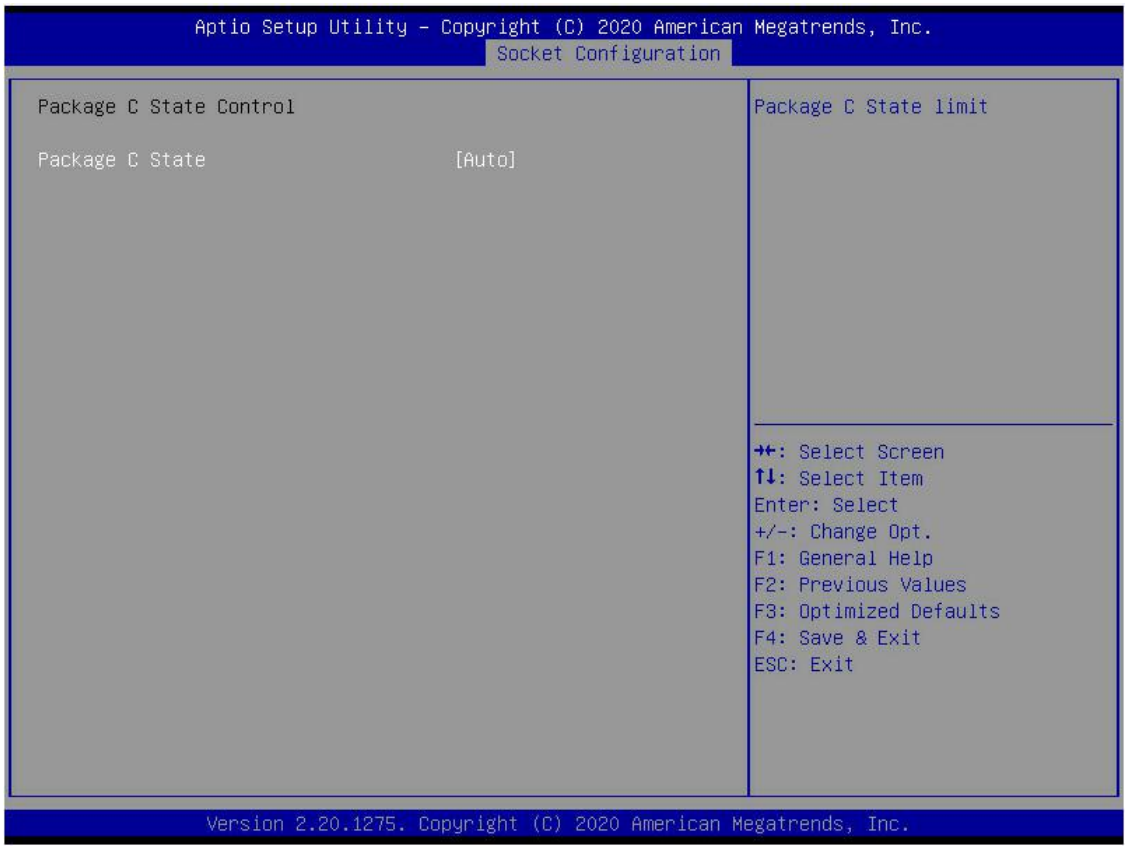

Fig. 4. 36

Package C State

The menu options are:

●C0/C1 state

●C2 state

●C6(non Retention) state

●C6(Retention) state

●No Limit

Default: Auto

4.2.36 CPU-Advanced PM Tuning

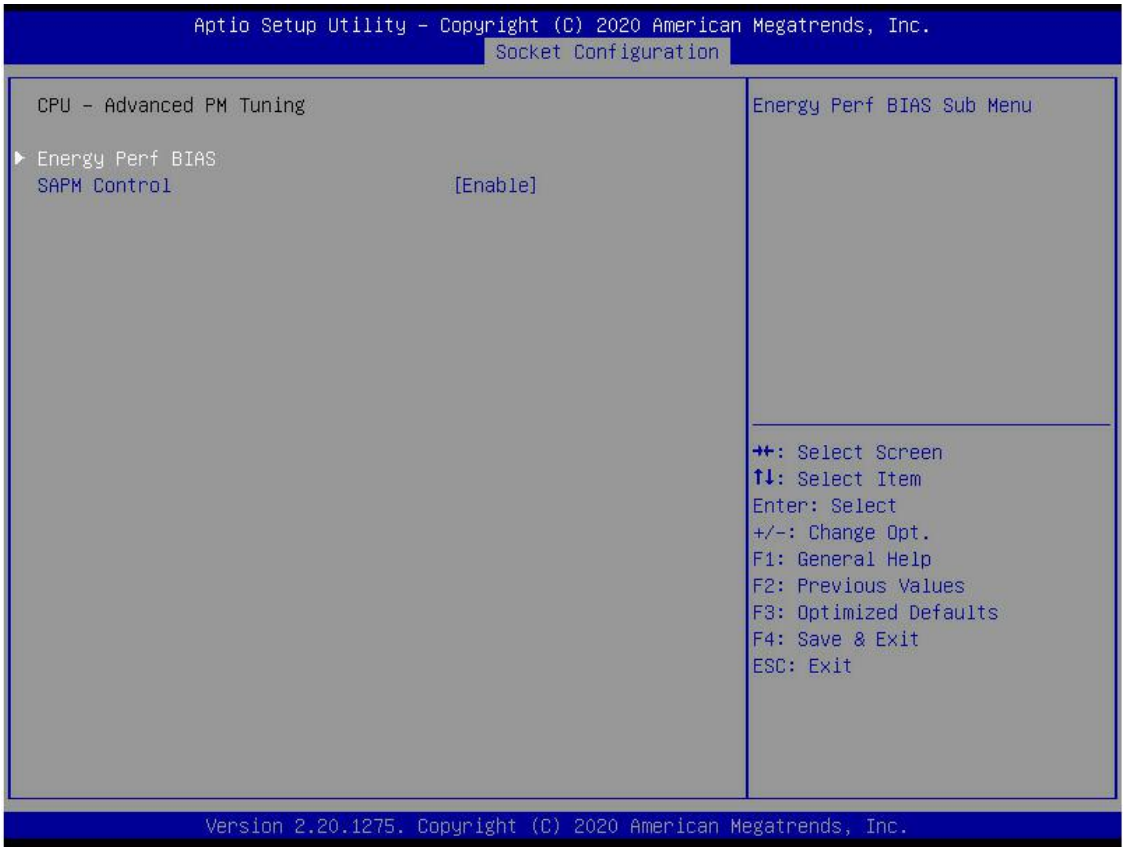

Fig. 4. 37

Energy Perf BIAS:

CPU power-saving performance related option settings

4.2.37 Energy Perf BIAS

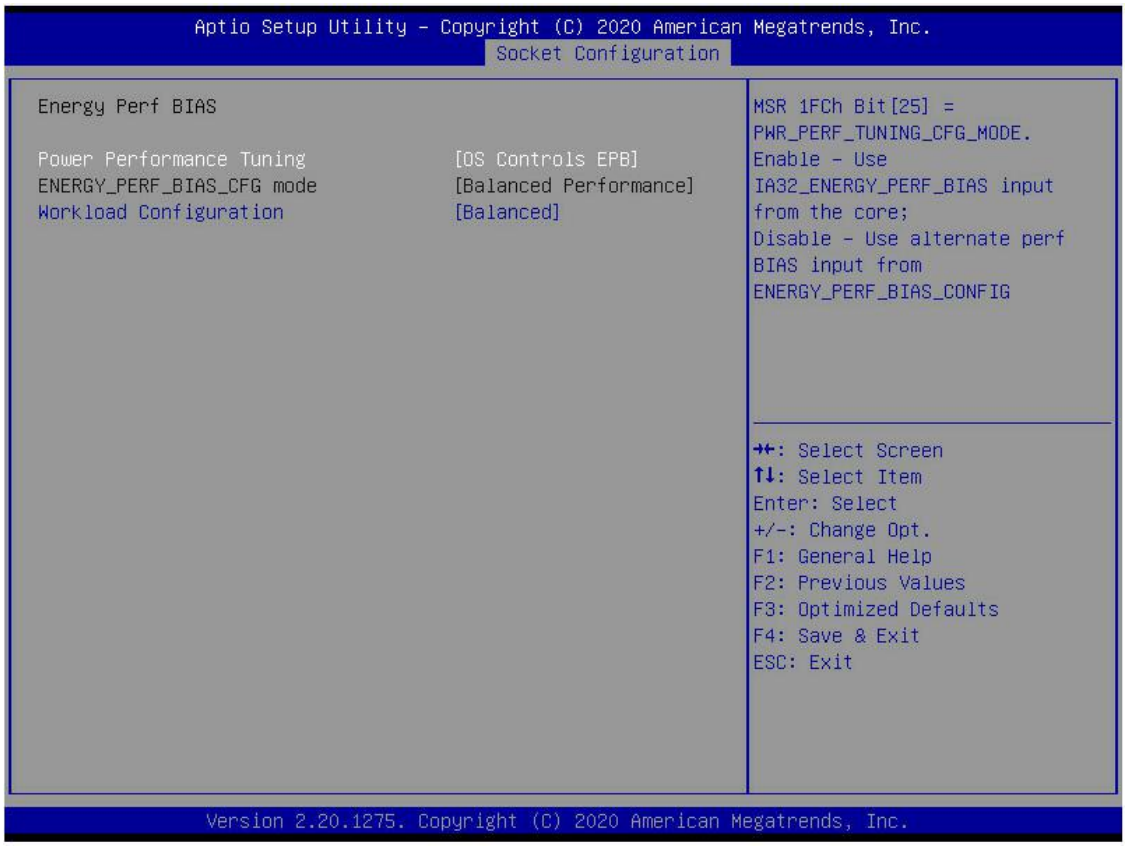

Fig. 4. 38

Power Performance Tuning

Power-saving performance adjustment settings, menu options are:

●OS Controls EPB: OS controls power-saving performance adjustment

●BIOS Controls EPB: BIOS controls power-saving performance adjustment

Default: OS Controls EPB

ENERGY_PERF_BIAS_CFG Mode

Power-saving performance management settings. When power performance tuning is set to BIOS Control EPB, this item can be set. The menu options are:

●Performance

●Balanced Performance

●Balanced Power

●Power

Default: Balanced Performance

Workload Configuration

For the optimization settings of workload characteristics, the menu options are:

●Balanced

●I/O Sensitive

Default: Balanced

4.2.38 Server Mgmt menu

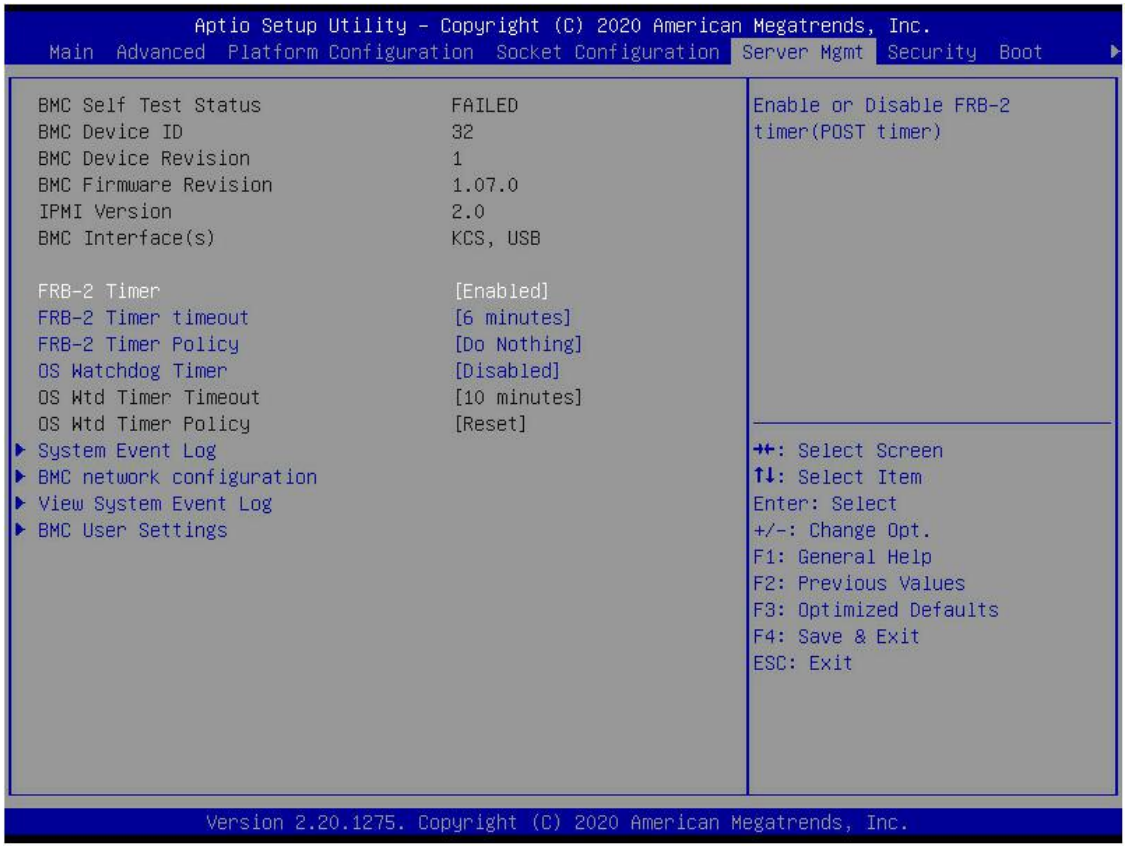

Fig. 4. 39

Display BMC self-test status, device ID, device version, BMC software version & IPMI specification version.

FRB-2 Timer

FRB-2 timer switch setting, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

FRB-2 Timer timeout

FRB-2 Timer timeout setting, menu options are:

●3 minutes

●4 minutes

●5 minutes

●6 minutes

Default: 6 minutes

FRB-2 Timer Policy

For the policy setting after FRB-2 timer timeout, the menu options are:

●Do Nothing
●Reset
●Power Down
●Power Cycle
Default: Do Nothing

OS Watchdog Timer
The menu options are:
●Enabled: turn on
●Disabled: turn off
Default: Disabled

OS Wtd Timer timeout
The menu options are:
●5 minutes
●10 minutes
●15 minutes
●20 minutes
Default: 10 minutes

OS Wtd Timer Policy
The menu options are:
●Do Nothing
●Reset
●Power Down
●Power Cycle
Default: Reset

●System Event Log menu

●BMC network configuration menu

●View System Event Log menu

●BMC User Settings menu

4.2.39 System Event Log menu

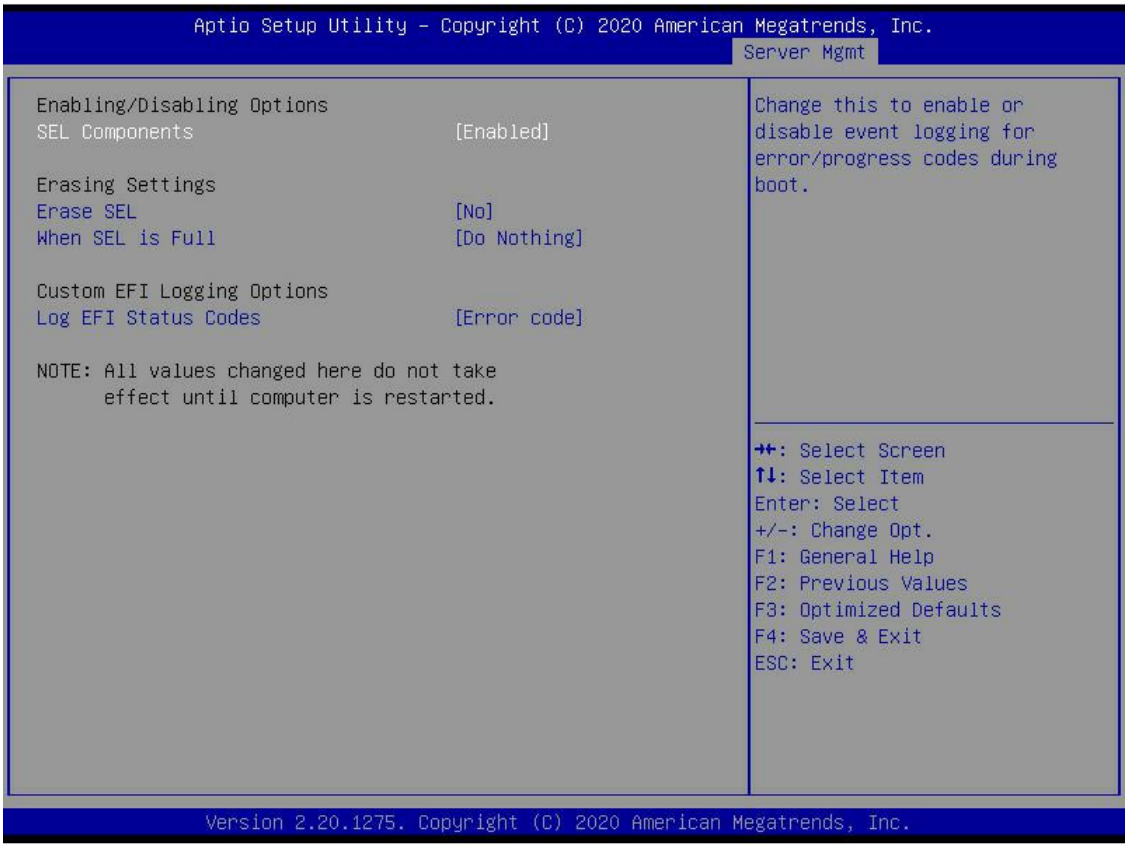

Fig. 4. 40

SEL Components

Start the process system event recording function control switch, menu options:

●Enabled: turn on

●Disabled: turn off

Default: Enabled

Erase SEL

Clear the system event recording control switch, menu options:

●No

●Yes, On next reset

●Yes, On every reset

Default: No

When SEL is Full

When the storage space of system event record is full, operate the control switch, menu options:

●Do Nothing

●Erase Immediately

Default: Do Nothing

Log EFI Status Codes

Record EFI Status Codes, menu options:

●Disabled: do nothing

●Both: record Error code & Progress code

●Error code: record only Error code

●Progress code: record only Progress code

Default: Error code

4.2.40 BMC network configuration menu

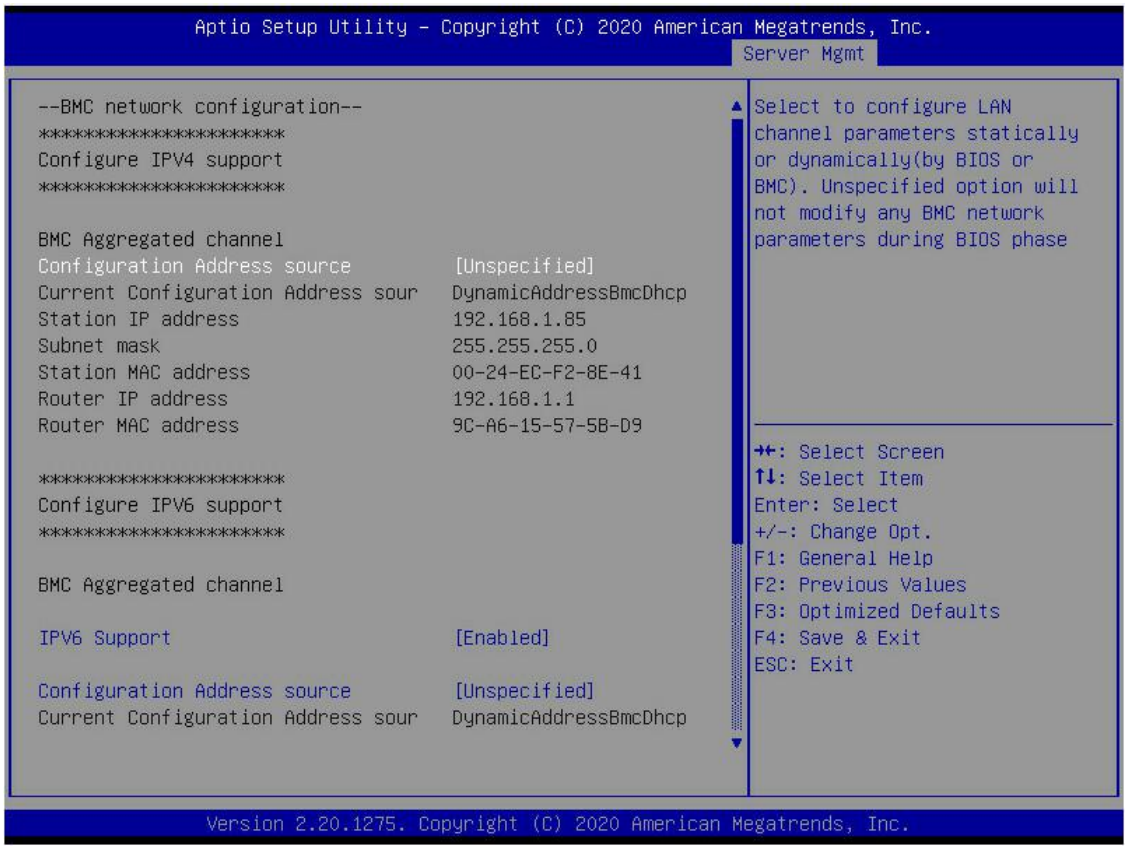

Fig. 4. 41

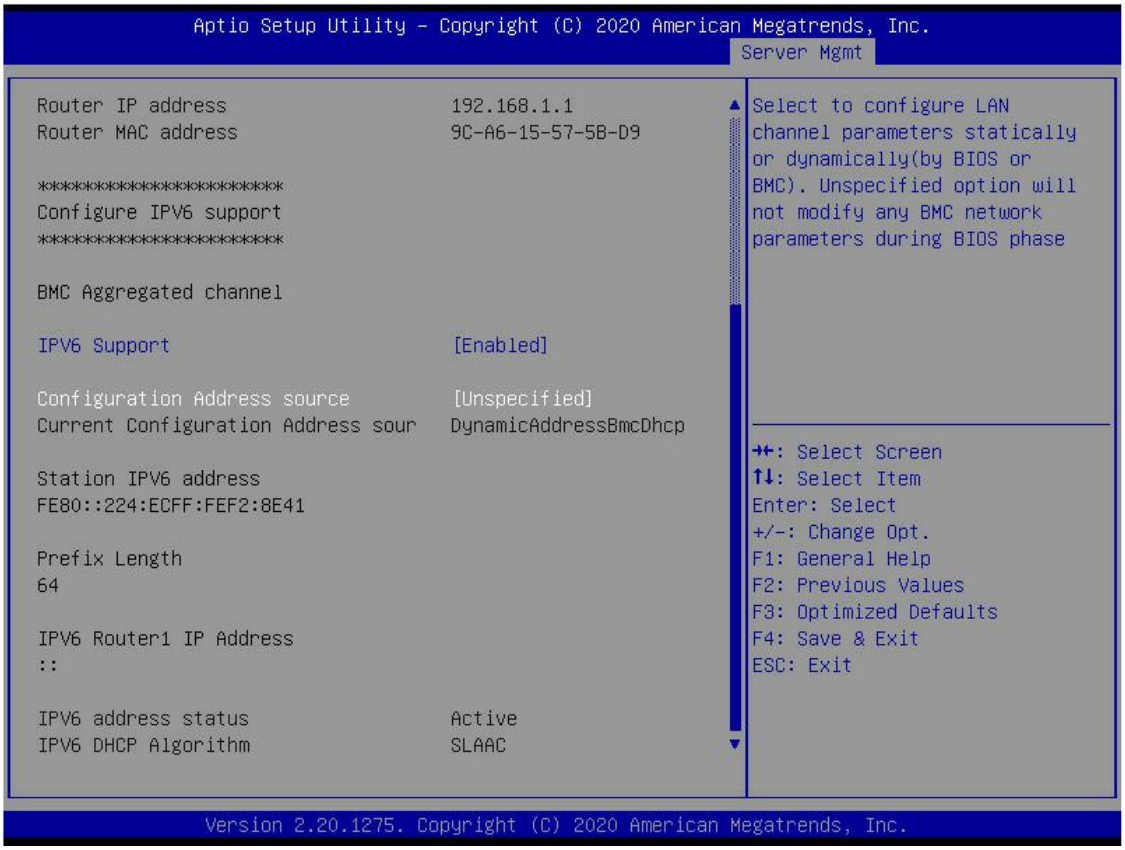

Fig. 4. 42

Configure IPV4 support

BMC Aggregated Channel

Configuration Address source

Configure BMC IP Address assignment mode, menu options are:

●Unspecified: do not change BMC Parameters

●Static: BIOS static IP configuration

●DynamicBmcDhcp: BMC runs DHCP to dynamically allocate IP

●DynamicBmcNonDhcp: BMC runs Non-DHCP Protocol dynamic allocation IP

Default: Unspecified

⚠ Change from Unspecified to other parameters. After saving and restarting, the option will restore the Unspecified value without configuring BMC IP every startup process.

When the Configuration Address source option is Unspecified, the LAN parameter information (IPV4) of the system's dedicated LAN port, current IP configuration mode, BMC IP, subnet mask, MAC address, routing IP and routing MAC will be displayed.

Configure IPV6 support

BMC Aggregated Channel

IPV6 Support

Select whether to support IPV6. The menu options are:

●Enabeld: support IPV6

●Disabled: not support IPV6

Default: Enabeld

⚠ Change from Unspecified to other parameters. After saving and restarting, the option will restore the Unspecified value without configuring BMC IP every startup process.

When Configuration Address source option is Unspecified, the LAN parameter information of the system shared LAN port will be displayed (IPV6).

4.2.41 View System Event Log menu

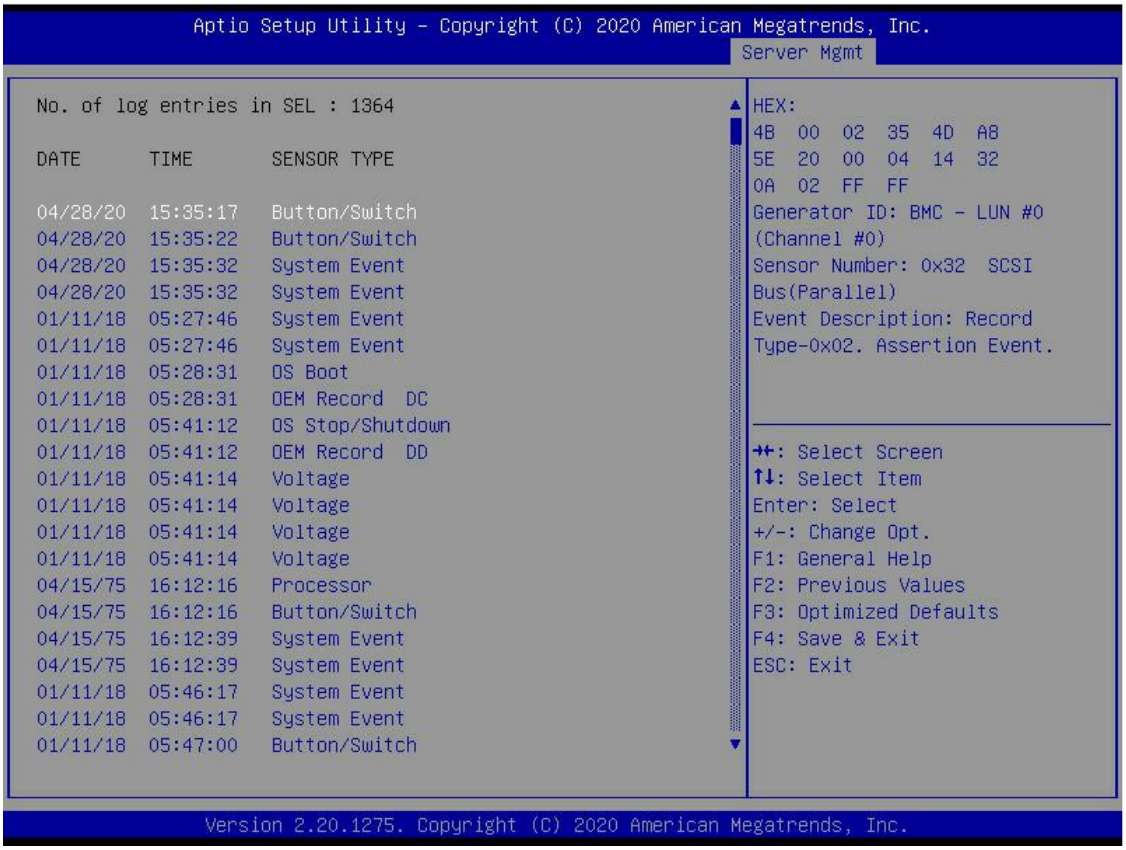

Fig. 4. 43

View system event log information.

⚠ Note that when entering this menu, BIOS needs to read SEL data and wait for a period of time.

4.2.42 BMC User Setting

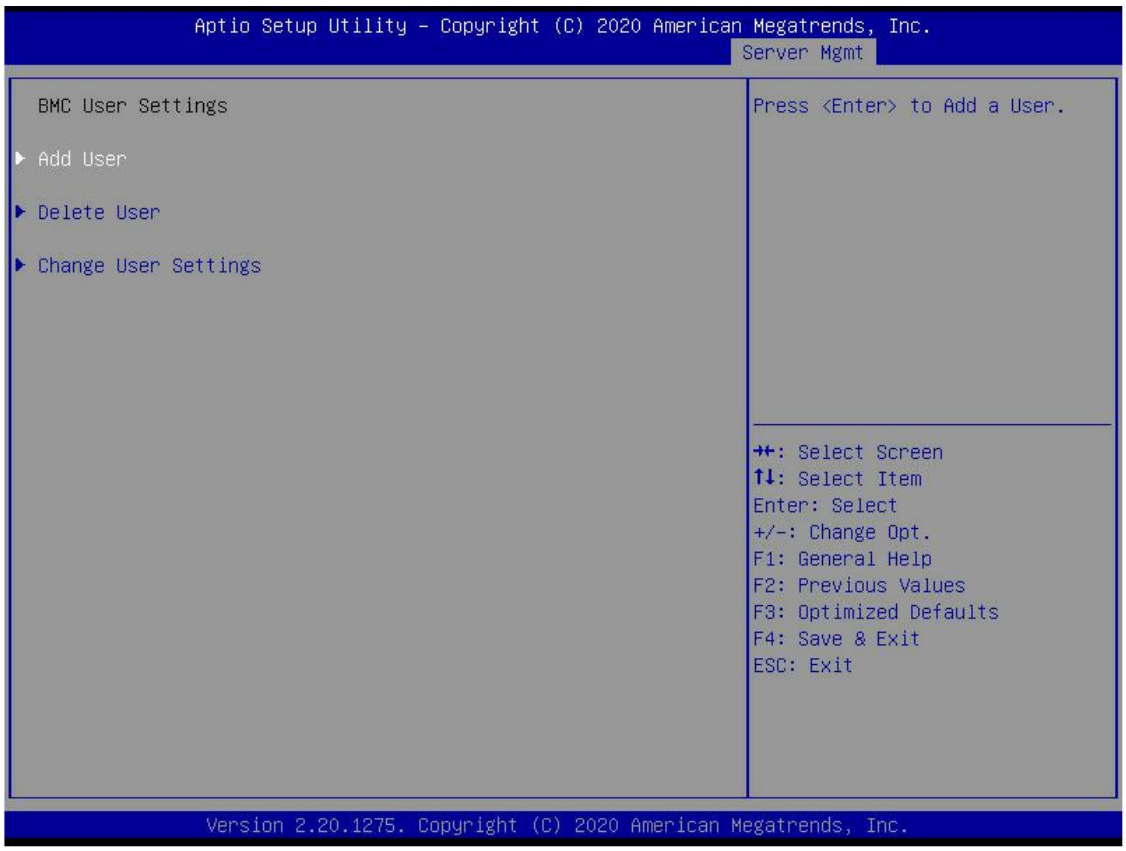

Fig. 4. 44

●Add User:

Add user submenu

●Delete User:

Delete user submenu

●Change User Setting:

Change user setting submenu

4.2.43 Add User

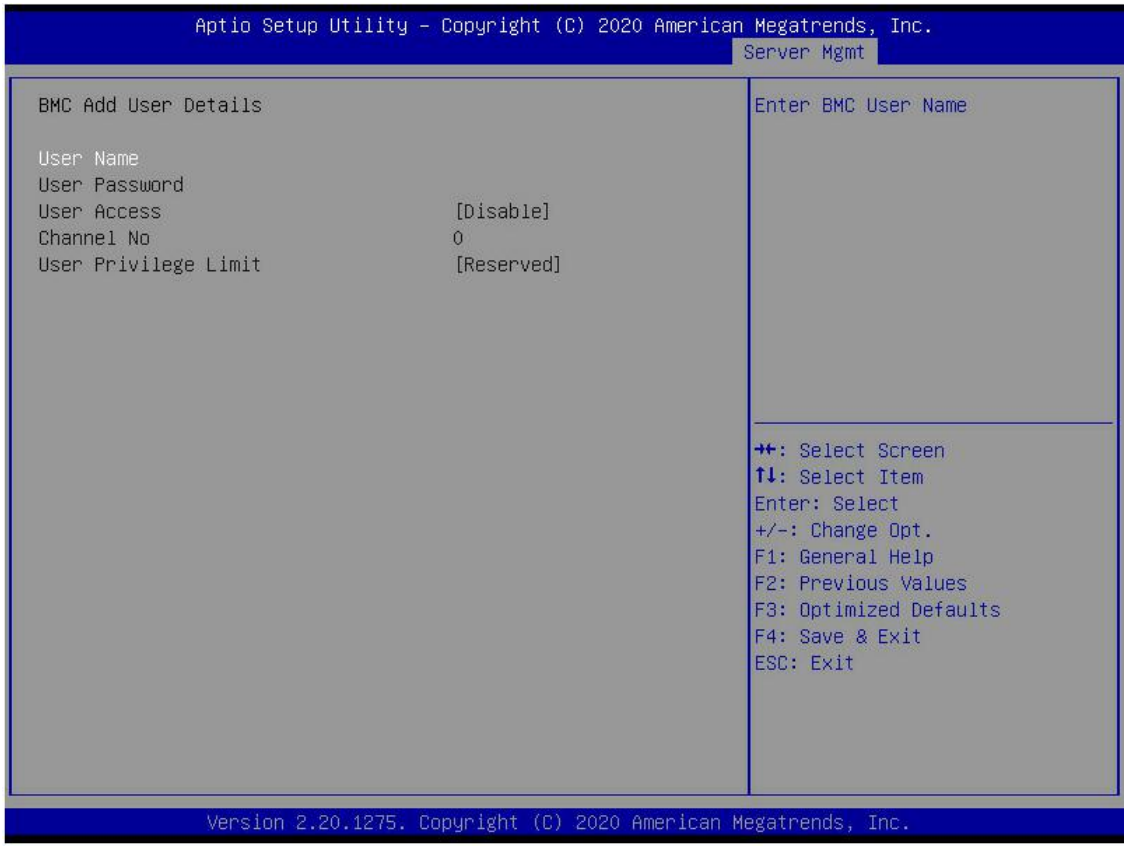

Fig. 4. 45

User Name: user name setting. The maximum number of characters supported is 16.

User Password: user password setting. Password characters must include uppercase and lowercase letters, special characters and numbers, with a minimum of 8 characters and a maximum of 20 characters.

Channel No: BMC channel setting, enter 1 or 8

User Privilege Limit
User Privilege Limit settings, menu options are:
●Reserved
●Callback
●User
●Operator
●Administrator
After the setting is successful, it will be prompted with“Set User Access Command Passed”, BMC User will take effect immediately.

4.2.44 Delete User

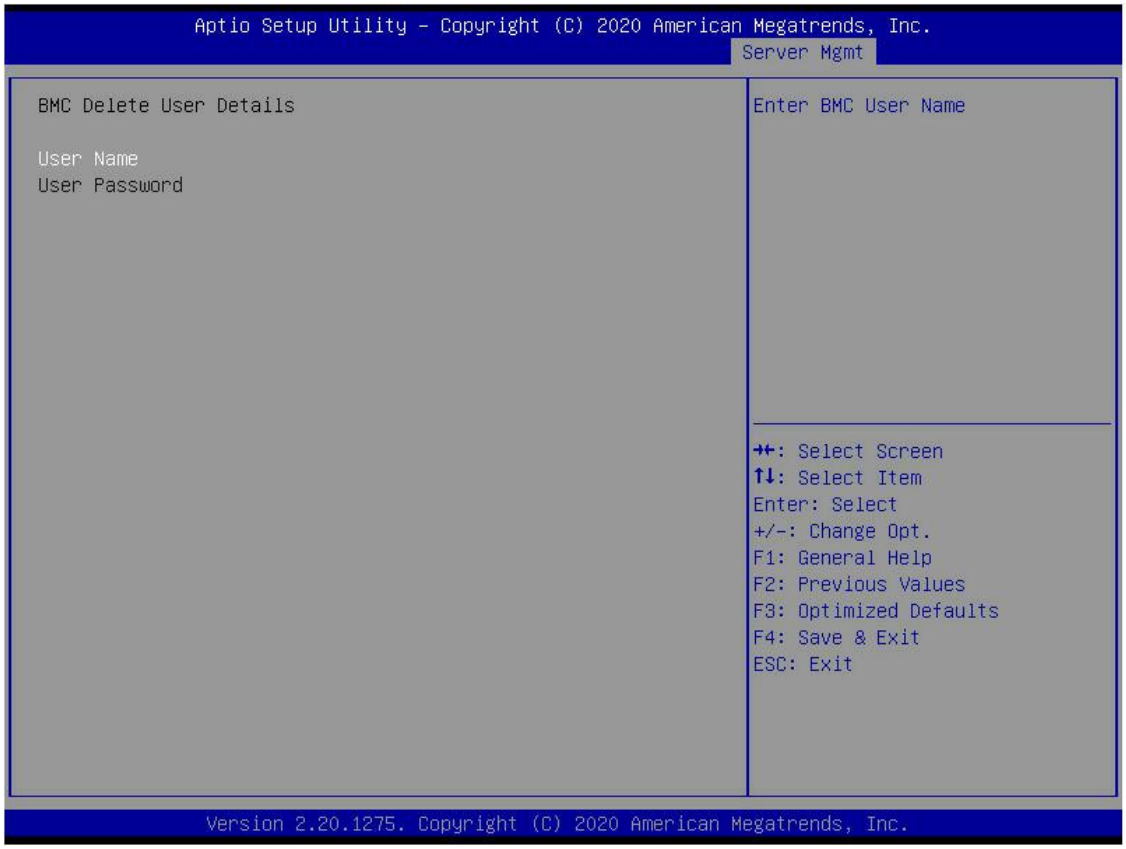

Fig. 4. 46

User Name: enter the user name to be deleted.

User Password: enter the password of the user to be deleted. After the password is entered correctly, a prompt "User Delete!!!" will show. The user who is successfully deleted will take effect in BMC immediately, and the user will not be able to log in to BMC web interface.

4.2.45 Change User Setting

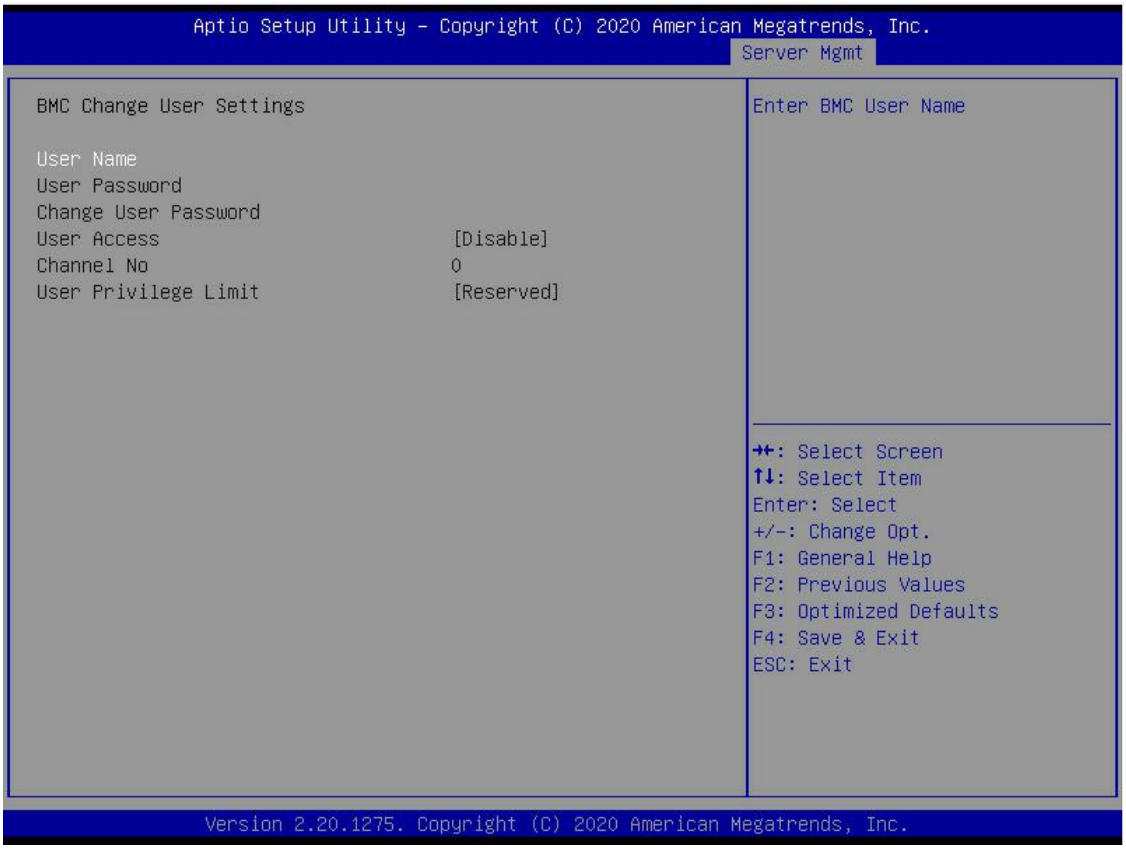

Fig. 4. 47

User Name: enter the user name to be modified.

User Password : enter the user password to be modified. The following options can be modified only if the name and password are entered correctly.

User

User permission switch settings, menu options are:

●Enabled: turn on

●Disabled: turn off

Default: Disabled

Change User Password: modify the user password. The password characters must include upper and lower case letters, special characters and numbers, with a minimum of 8 characters and a maximum of 20 characters.

Channel NO: BMC channel setting, enter 1 or 8.

User Privilege Limit

Modify user permission settings. The menu options are:

●Reserved

●Callback

●User
●Operator
●Administrator

4.2.46 Security menu

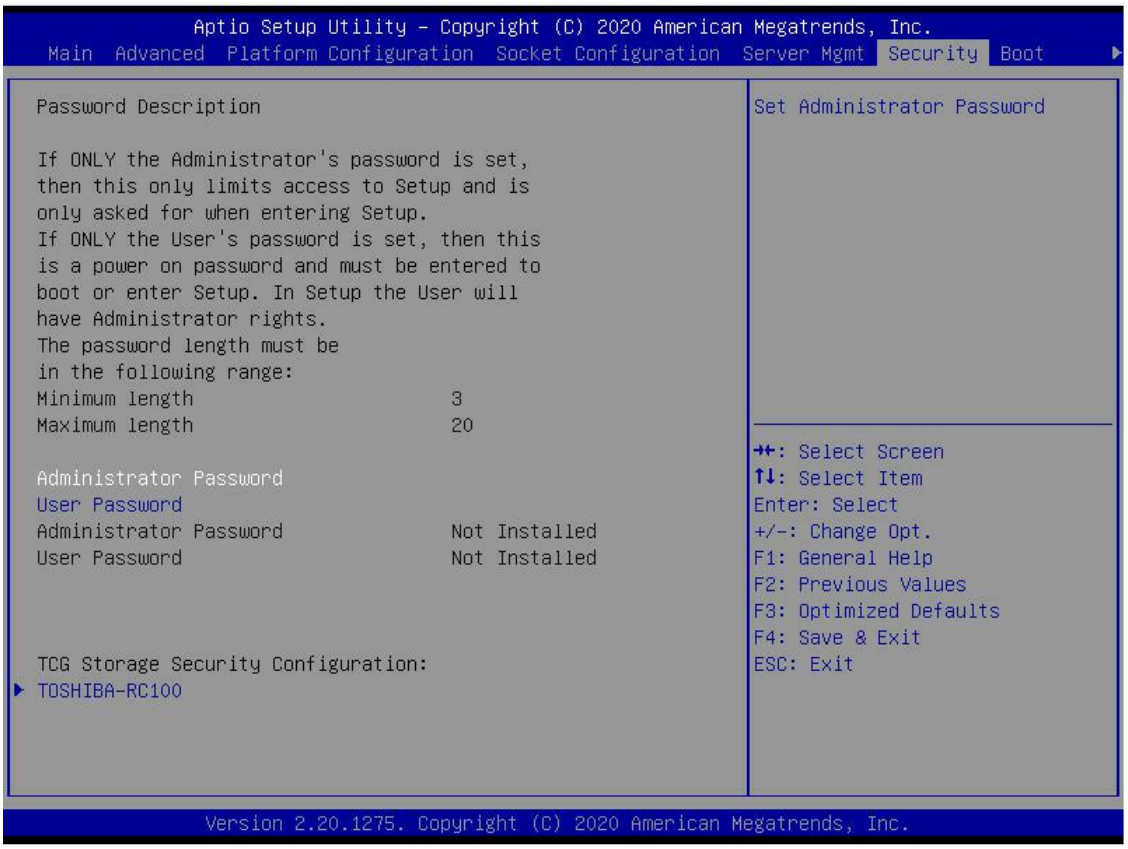

Fig. 4. 48

Administrator Password:
Select this option to set the administrator password;

User Password:
Select this option to set the user password;

Administrator Password:
Display status of administrator password. If there is an administrator password in the system, it displays Installed. If there is no administrator password, it displays Not Installed;

User Password:
Display user password status. If the system has a user password, it displays Installed. If there is no user password, it displays Not Installed;

HDD Security Configuration:

The hard disk list is displayed dynamically. The hard disks connected to SATA and sSATA controllers will be displayed here. Enter the hard disk interface to set the hard disk password. If there is no hard disk connection, it will not be displayed.

4.2.47 Boot menu

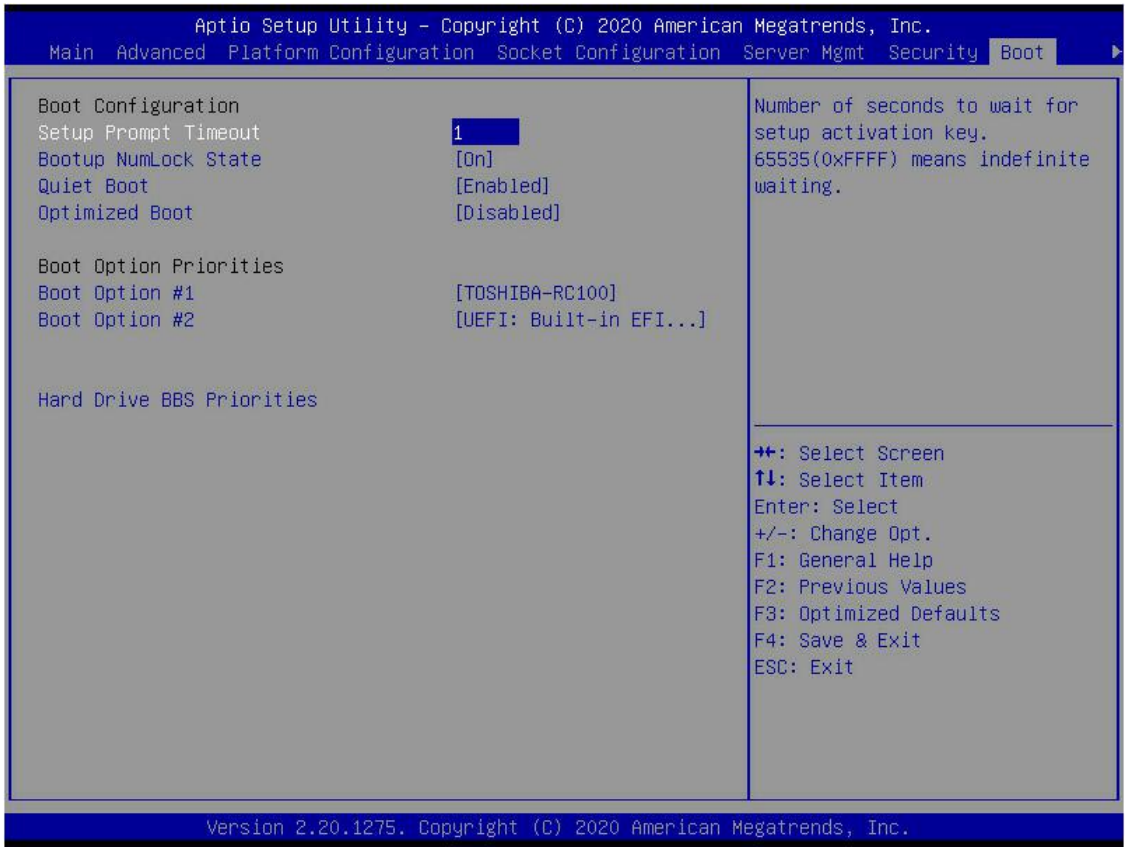

Fig. 4. 49

Setup Prompt Timeout: Setup prompts timeout setting. Set the time to wait for the Setup activation key. The maximum value is 65535 seconds. The default value is 1.

Bootup Numlock State

During startup, the keyboard NumLock indicator status switch is set, and the menu options are

●On

●OFF

Default: On

Quiet Boot

Turn on and turn off the function of Quiet Boot, and the menu options are:

●Disabled: turn off Quiet Boot, now shows the information of POST

●Disabled: turn on Quiet Boot, now shows OEM Logo

Default: Enabled

Optimized Boot

Turn on and turn off the function of Optimized Boot, and the menu options are:

●Disabled: turn off Quiet Boot

●Disabled: turn on Quiet Boot, CSM support will be disabled and connecting network devices will reduce startup time

Default: Disabled

Boot Option Priorities

Boot option list, which is dynamically displayed and is determined by the number of boot options in the system. When there is no boot item, it will not be displayed.

XXXX Driver BBS Priorities

4.2.48 Save & Exit menu

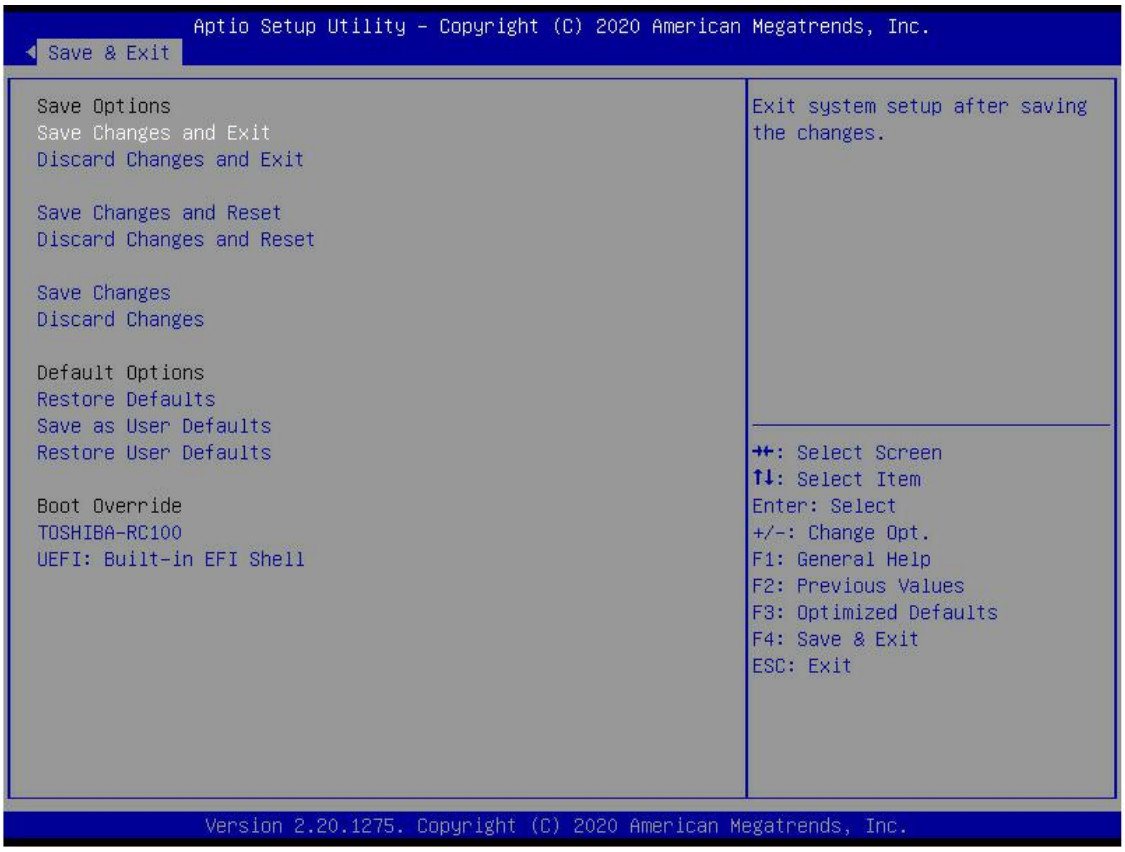

Fig. 4. 50

Save Changes and Exit:

Save the settings and exit the BIOS Setup menu;

Discard Changes and Exit:

Discard the save settings and exit the BIOS Setup menu;

Save Changes and Reset:
Save the settings and restart the system;

Discard Changes and Reset:
Discard the saved settings and restart the system;

Save Changes

Discard Changes

Restore Defaults:
Load BIOS factory settings;

Save as user Defaults

Restore user Defaults

Boot Override:
List of startup options, where you can select startup options.

4.3 User action reminder

1. With ⚠ option, when user operation is required, understand the operation specification in detail.
2. When operating the option, please understand the meaning of the option in combination with the operation manual and the option description of BIOS Setup interface.

Chapter 5 IPMI Deployment

5.1 Fast development of IPMI

How to fast deploy the IPMI function of the server is shown in Figure 5-1.

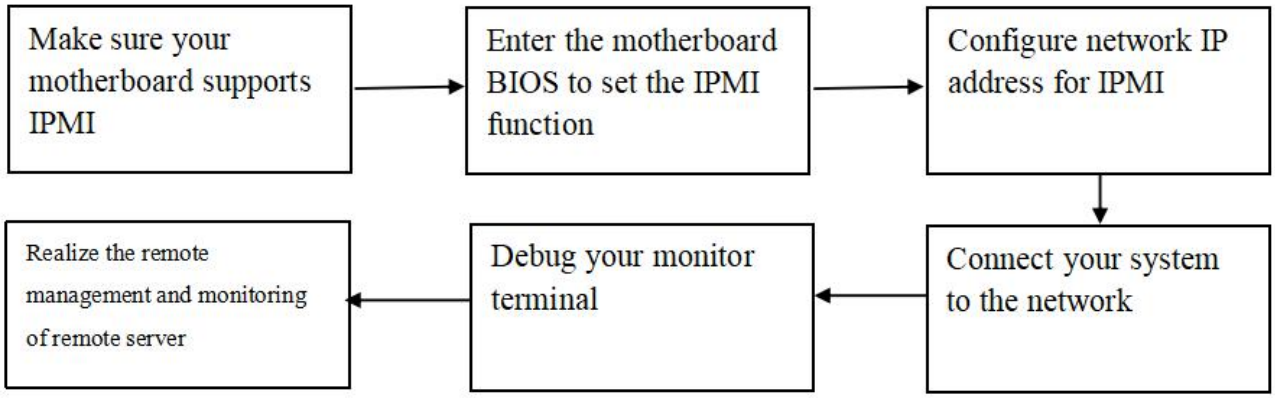

Fig. 5.1

5.1.1 Confirm the motherboard supports IPMI function

Check your motherboard manual and confirm that your motherboard supports IPMI, and then find the dedicated IPMI network port of the motherboard, or select the shared network port, as shown in Figure 5.2

Fig. 5.2

5.1.2 Enter BIOS to set IPMI function

Restart your system. Press ESC or DEL to enter the BIOS system of the motherboard while the device is started. The BIOS setting interface is shown in Fig. 5.3

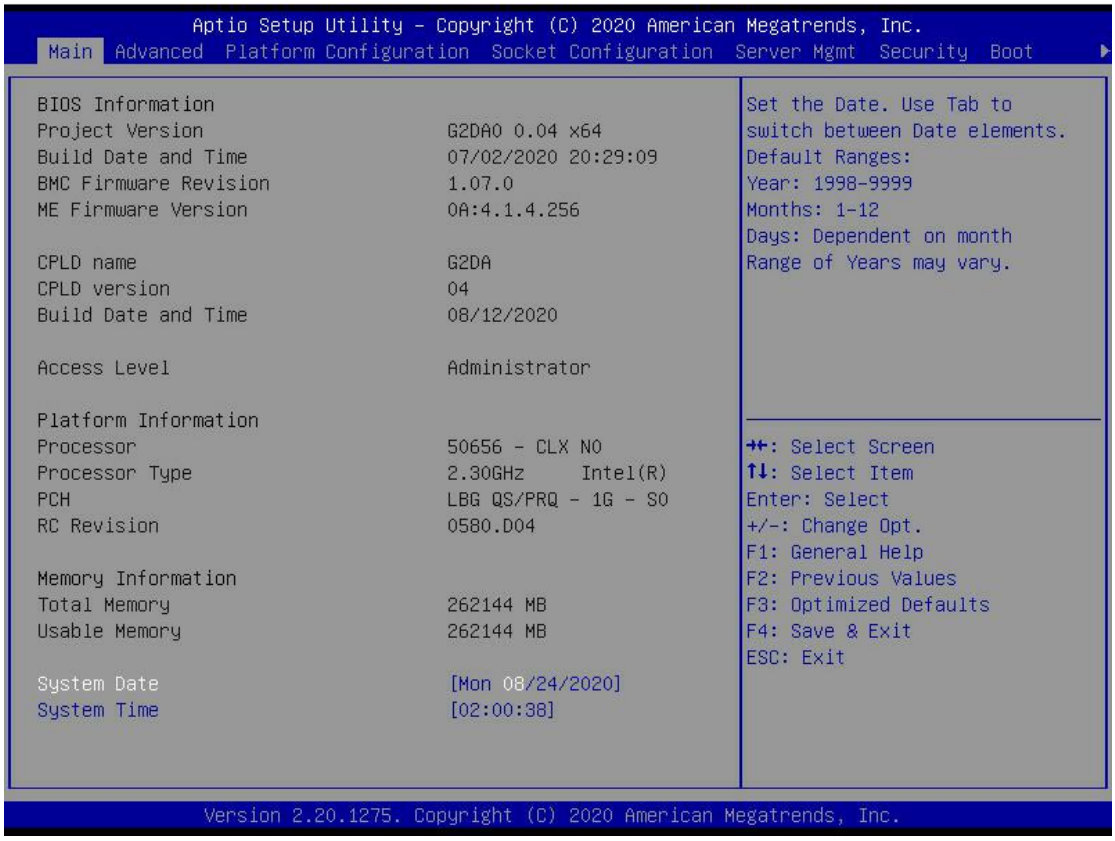

Fig. 5.3

After entering the interface, switch the menu item to the Server Mgmt through the left and right keys.

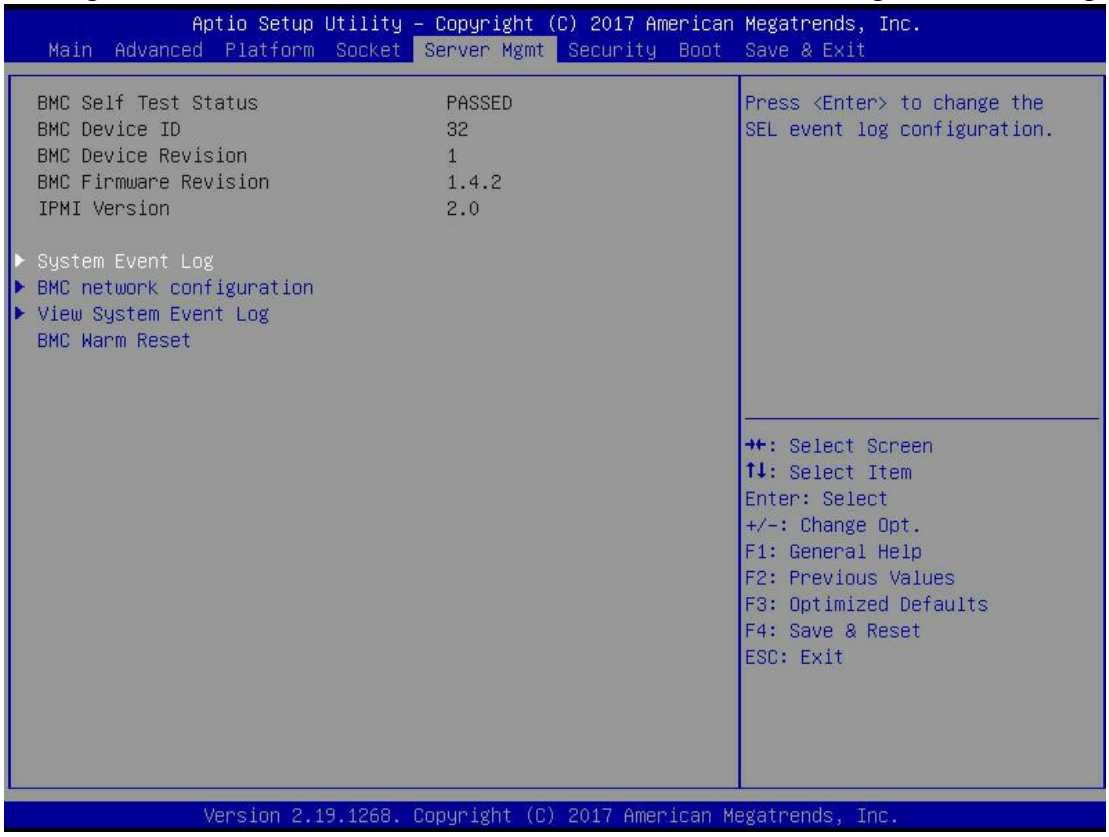

Fig. 5.4

Enter the BMC network configuration option through the keyboard, and the following interface will be entered, as shown in Fig. 5.5

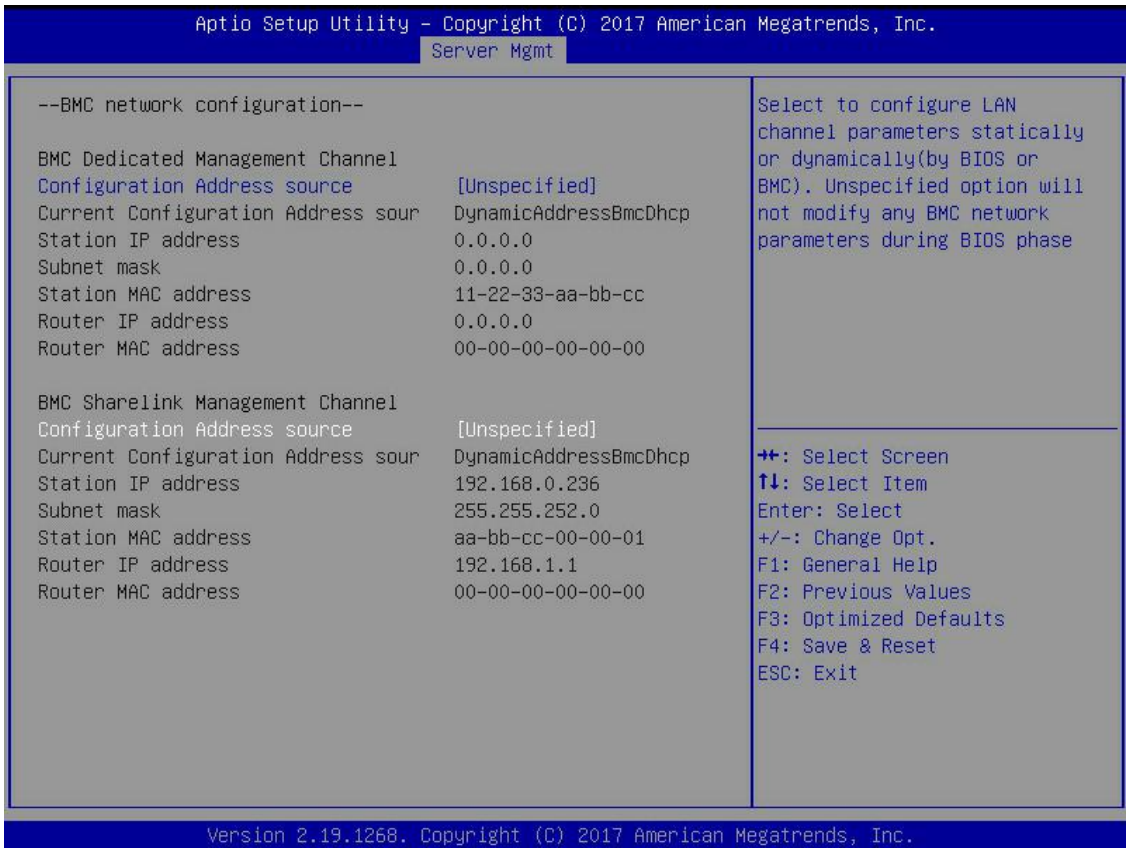

Fig. 5. 5

On this page, you can see two configurable LAN ports, one dedicated LAN port and the other as Sharelink shared LAN port. Take the shared LAN port as an example. If you connect a dedicated LAN port, the setting method is the same as that of the shared LAN port. Switch to the configuration address source option and press Enter to set the network mode of the LAN port, as shown in Fig. 5.6.

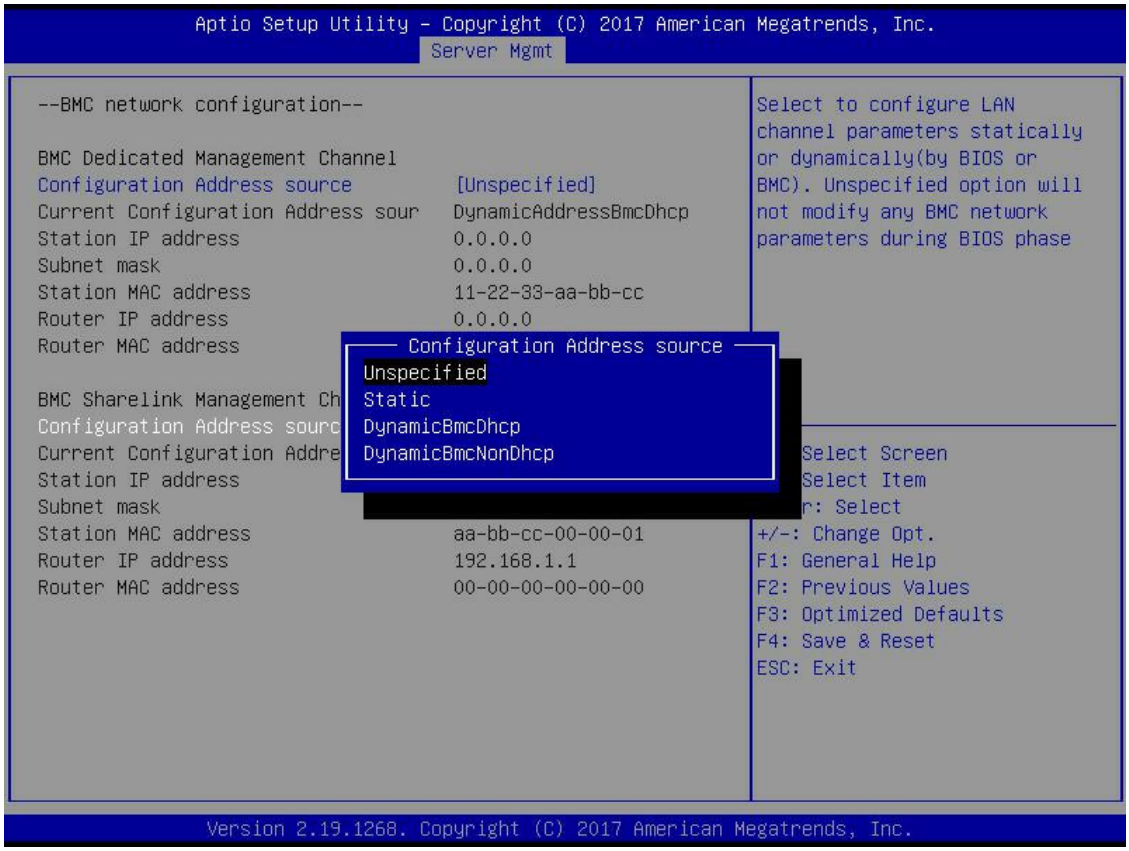

Fig. 5. 6

There are four network modes that can be configured on this interface, namely, Unspecified, Static, DynamicBMCDHCP, DynamicBMCNonDHCP. Static is the static mode. You can manually set the IP address. DHCP is the dynamic mode. Setting this item allows BMC to automatically obtain the IP address from the DHCP server.

5.1.3 IPMI interface configuration Static mode

If you choose to configure Static mode for IPMI interface, you should pay attention to the following problems:

(1) If there are multiple IPMI devices in your LAN, you should pay attention to the IP address between devices can not be repeated, otherwise communication can not be established.

(2) If the IP address of your IPMI device is an intranet address, the terminal device communicating with it must be in the same network segment as the IP address of the IPMI device.

(3) IP address of IPMI device can be mapped to WAN by routing device to realize remote management.

(4) IPMI port has the function of obtaining IP address through DHCP.

(5) IPMI supports TCP / IP V4 and TCP / IP V6.

Configure the IP address and subnet mask according to your actual situation. For example, here we set the IP address to 192.168.0.236 and the subnet mask to 255.255.252.0, as shown in Figure 5-7. After setting, press F4 to save and exit the BIOS interface.

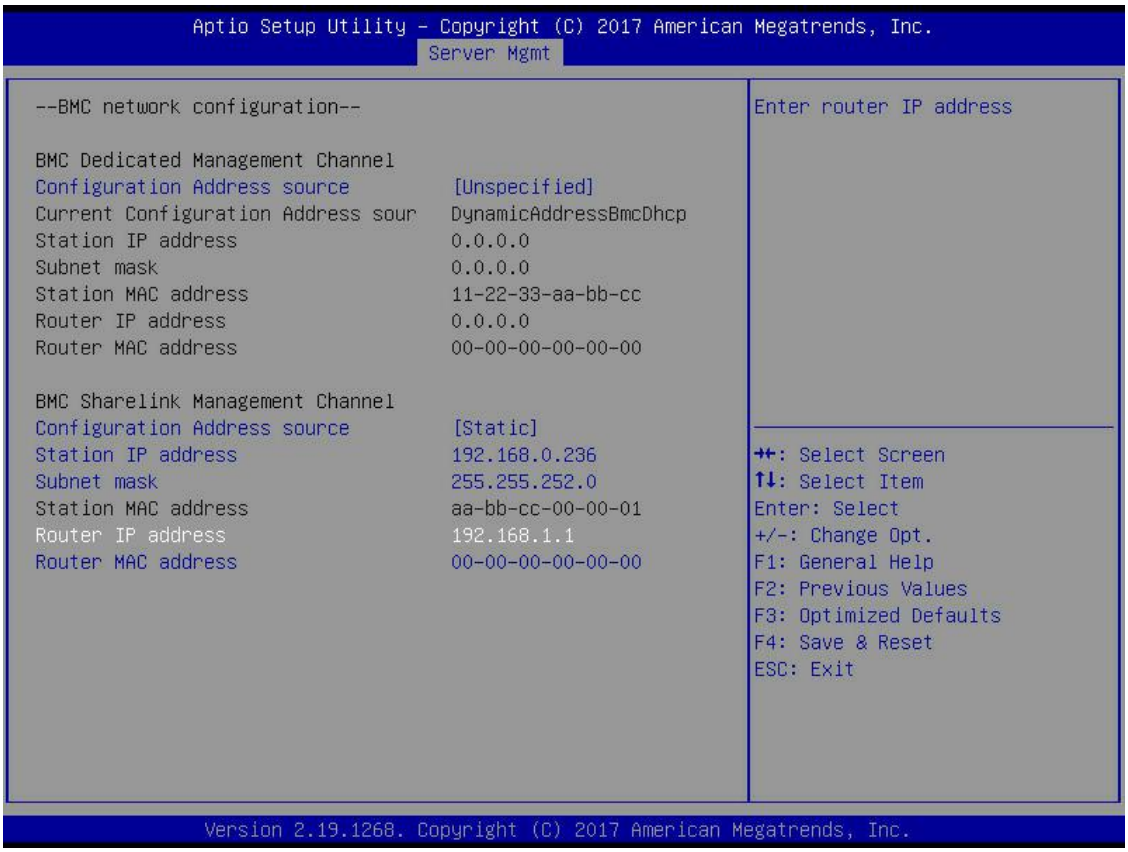

Fig. 5.7

We have finished the operation of configuring IPMI function.

5.1.4 IPMI configuring Java SOL

1. When the system starts up, press the<Del> key to enter the BIOS Setup interface.
2. Switch to the Advanced menu, select Serial Port Console Redirection, and press the < ENTER > key.
3. Make sure that the Console Redirection of COM0 is in [Enabled] state. If not, select Console Redirection and press < ENTER > to set the state to [Enabled]. In order to ensure the normal operation of IBMC, this option has been set to [Enabled] by default.

5.2 IPMI quick introduction of functions

After completing the previous configuration steps, we can start to log in to the IPMI management interface. The IPMI management interface can be accessed by using a standard web browser. Here, we recommend using Google Chrome, Firefox and IE browser (IE11 or above) to obtain the best browsing experience. Since the new version of the operation interface is based on HTML5 and costs a lot of computer resources, we recommend that users configure more than 8G of memory on the client when using KVM.

5.2.1 Enter the operation interface

Take Google Chrome browser as an example. Enter the IPMI access address in the address bar of the browser and press enter to access the IPMI management interface. Since all HTTP links have been converted to HTTPS encrypted links, the privacy setting error page shown in Fig. 5.8 will be entered, and the contents of other browsers may be different.

Click "advanced" > > "continue" on this page to normally access the IPMI management page and enter the login page, as shown in Fig. 5.9.

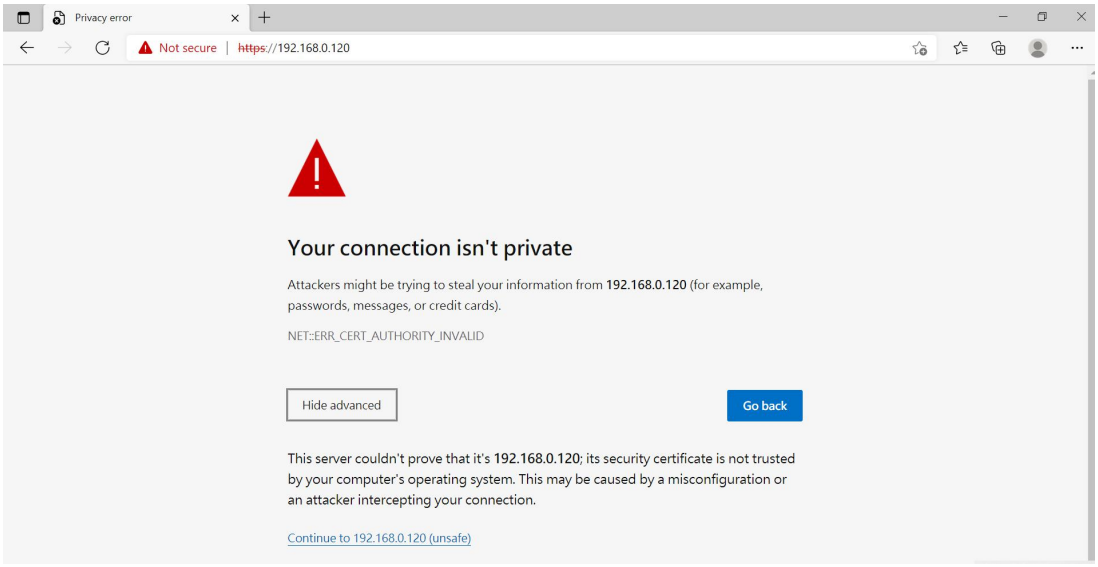

Fig. 5. 8

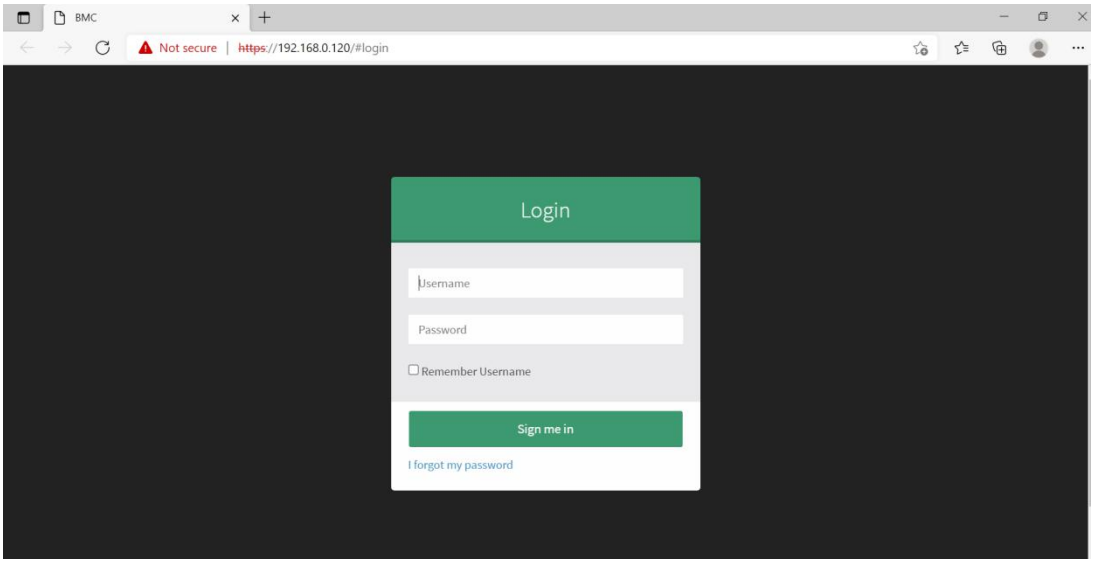

Fig. 5.9

Default user name and password

Factory default user name: admin

Factory default password: admin

When you log in with this user name, you will get all the privileges of the administrator. It is recommended that you modify your password after logging in.

5.2.2 IPMI Management system content

When you log in to the IPMI management system correctly, you can see the page as shown in Figure.

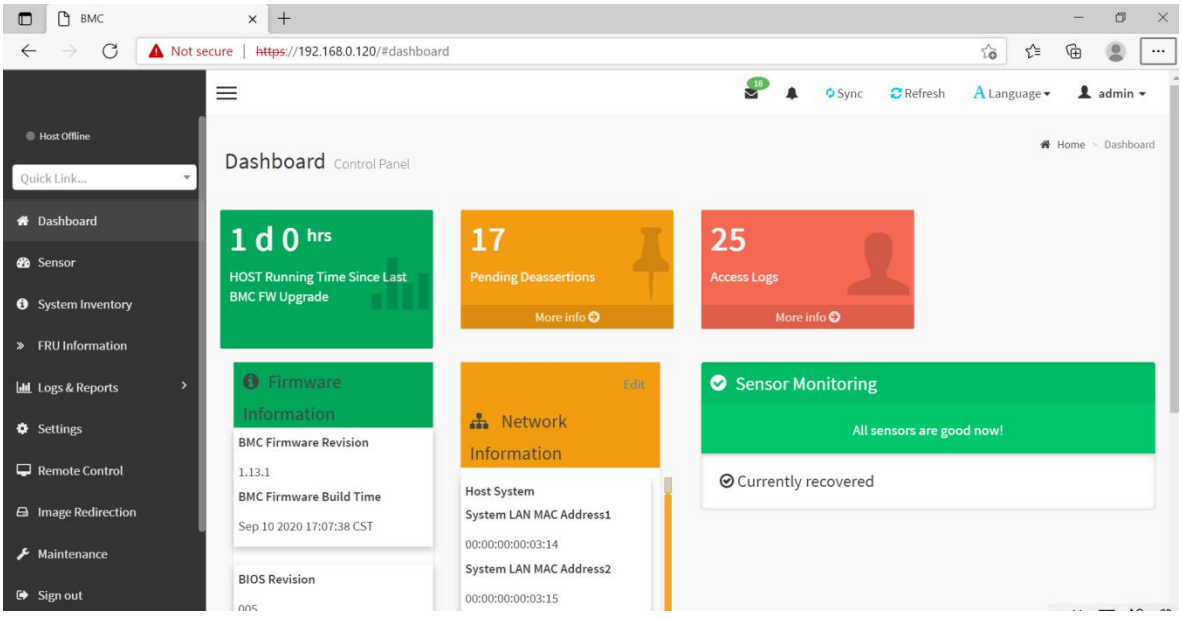

Fig. 5.10

IPMI Management interface menu description

（1） Instrument panel

On this page, users can view the basic information of IPMI management system. Including firmware

information, network information and sensor monitoring information.

Firmware information includes BMC firmware version information, BIOS version information, motherboard CPLD version information, backplane CPLD version information and BMC firmware compilation time information.

Network information includes MAC address of system network and BMC network information. You can choose to view the shared network port or private network port of BMC. BMC network information includes BMC network MAC address information, IPV4 network mode information, IPV4 address information, IPV6 network mode information and IPV6 address information.

Sensor monitoring information will display the current alarm sensor information in real time, including sensor name, sensor read value, real-time curve change of sensor read value and alarm status.

（2）Sensors

This page displays the status of all sensors. When there is a sensor alarm, the sensor will be displayed in the key sensor field. When the alarm is released, the sensor will be automatically removed from the key sensor field.

（3）System list

This page can view the server CPU and memory information. In the block diagram, click the CPU block to view the CPU information. If the memory block is green, it means that the memory exists. Click the memory block to view the memory information.

（4）Hard disk information

For the backplane with Expander, the green box indicates that the hard disk is in place, otherwise it is not. The status of the hard disk can be viewed on the right or under the hard disk box. Left click the green box to view the details of the hard disk, right click to locate the hard disk.

（5）Power consumption

In this menu, the power consumption can be capped and the latest power consumption can be viewed.

（6）FRU information

Select this menu to view the basic information of FRU.

（7）Log & Report

In this menu, you can view IPMI time log, audit log and video log.

（8）Settings

BMC can be configured in this menu. Including BSOD, date & time, network, etc.

（9）Remote control

On this page, you can start KVM and sol, as well as power control and UID control.

（10）Image redirection

On this page, you can get the latest image file on the remote storage device.

（11）Maintenance

Basic maintenance operations can be performed on the server, such as BMC firmware update and BIOS firmware update.

（12）Log off

Click to log off the current user's login.

5.2.3 KVM remote management

Boot KVM remote management

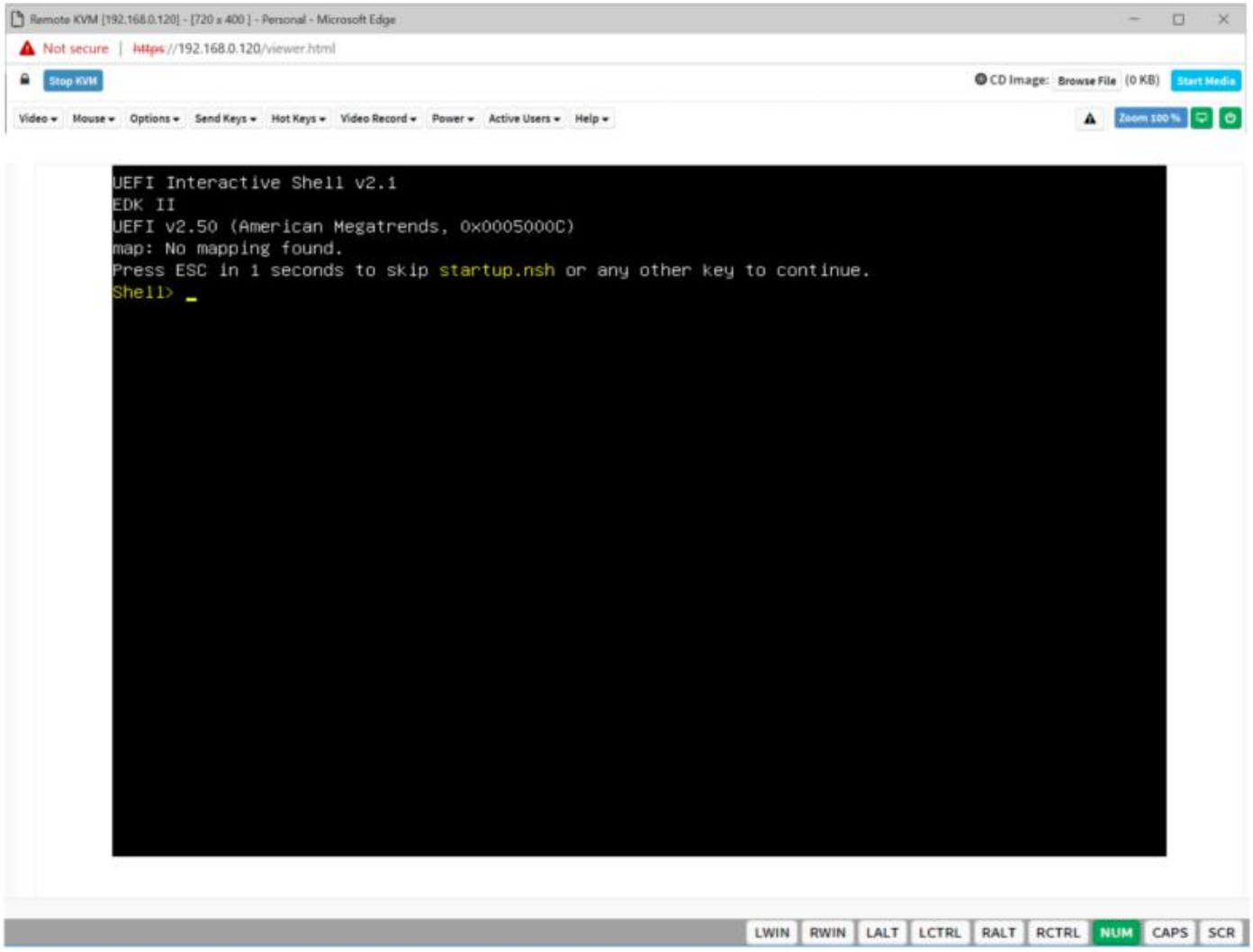

Fig. 5.11

As shown in Fig. 5.12, KVM can be started under the remote control menu KVM & Java SOL.

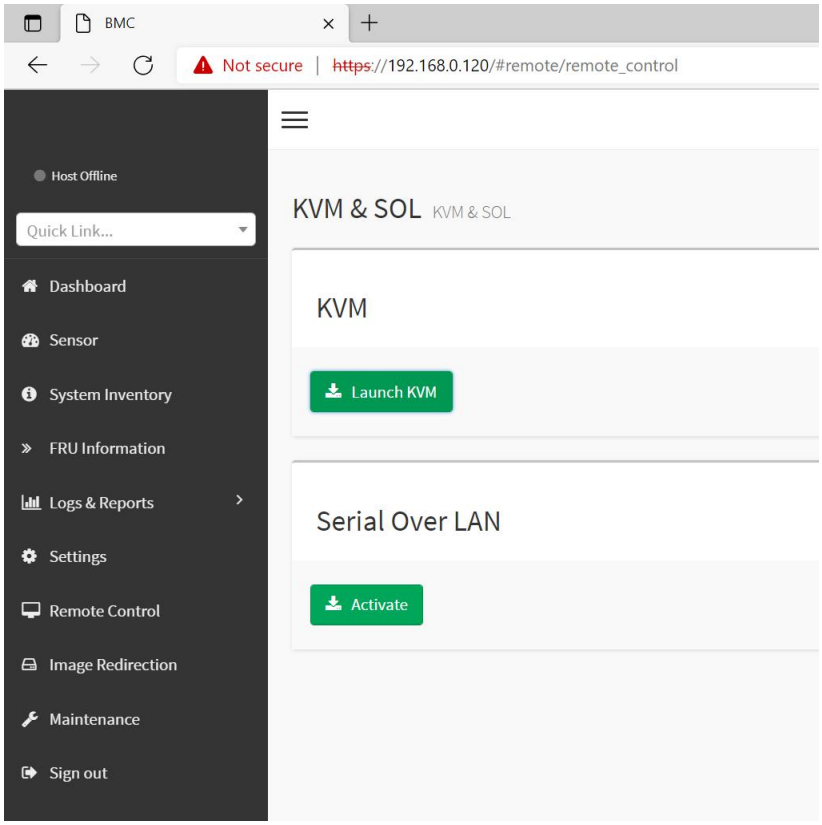

Fig. 5.12

KVM interface introduction

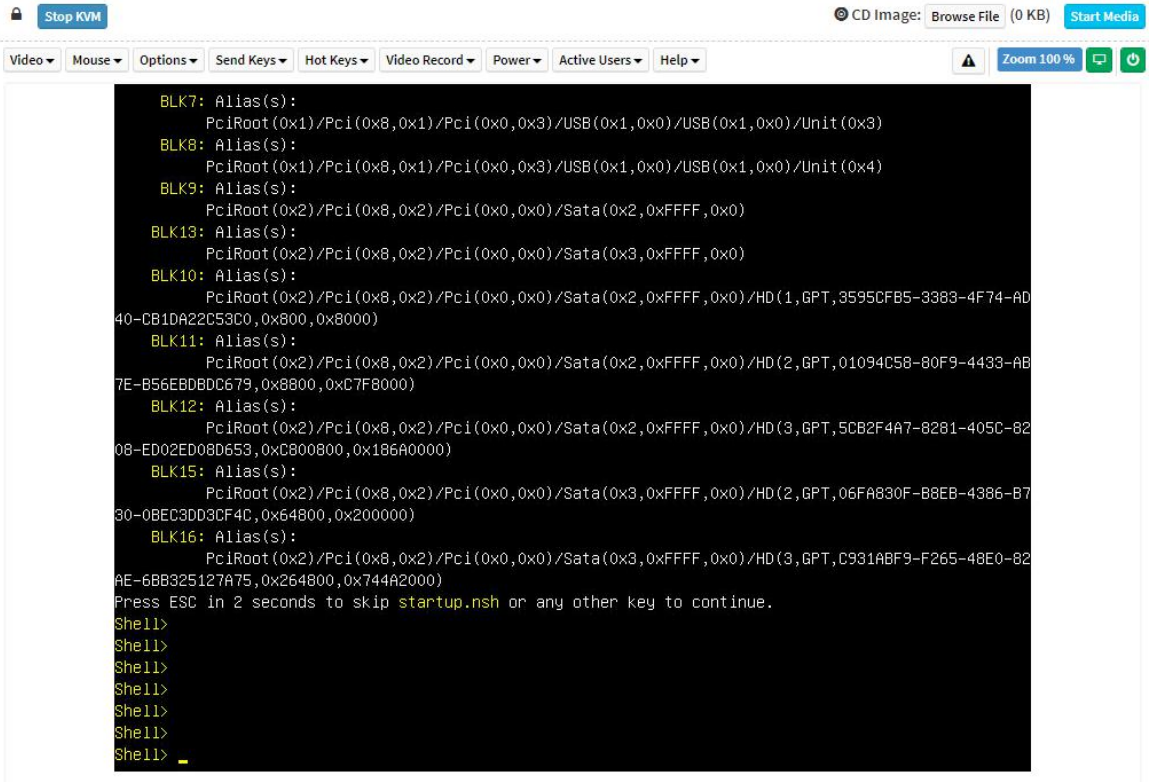

Fig. 5.13

As shown in Fig. 5.13, it is the KVM interface after starting KVM.

As shown in Fig. 5.14, the KVM interface includes two parts: one is the menu and quick operation column, and the other is the remote desktop window, that is, the server desktop information returned remotely.

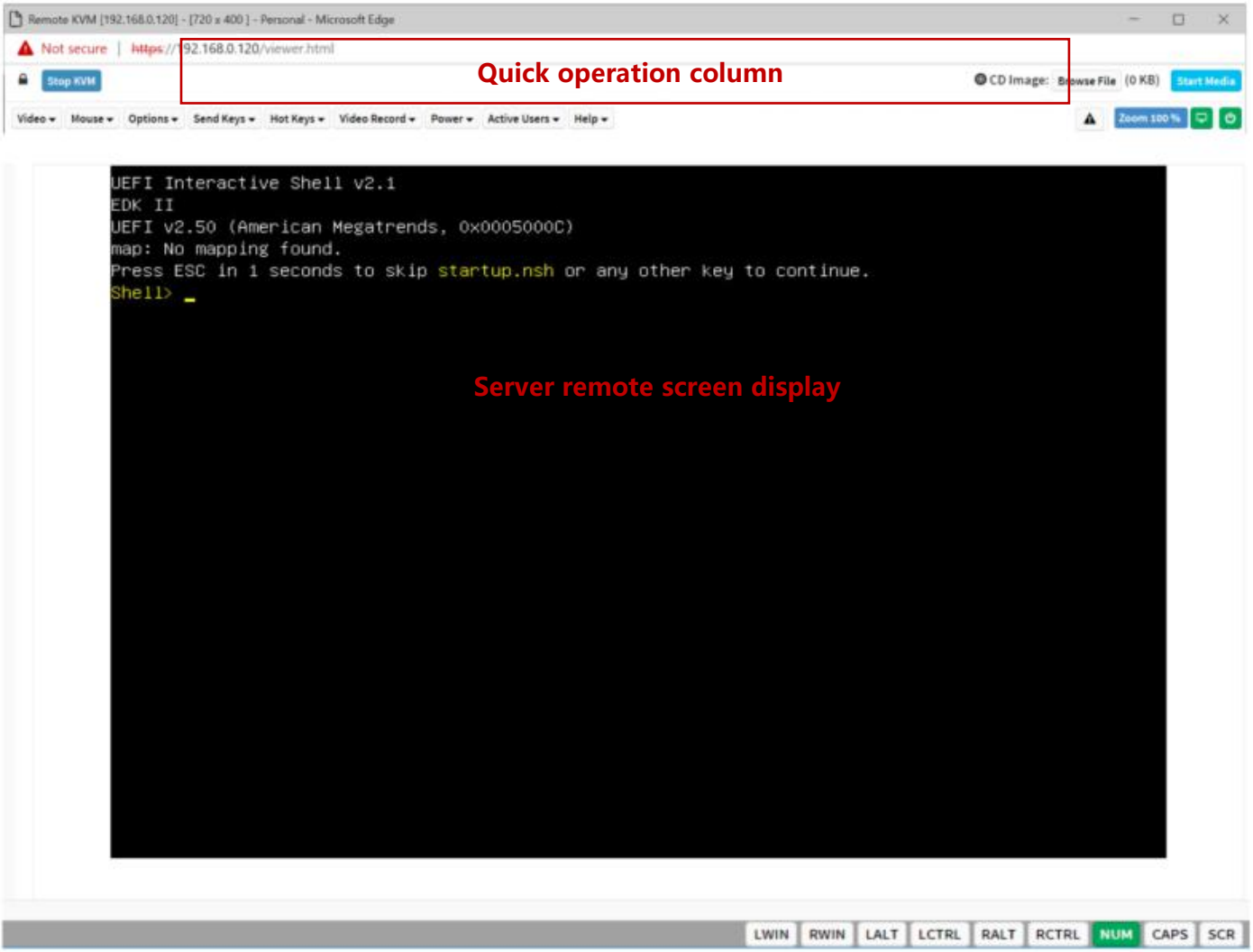

Fig. 5.14

Remote control shortcut operation

Stop KVM	Stop KVM
CD Image: Browse File (0 KB) Start Media	On CD image, usually used for remote installation of operating system
Zoom 100 %	Host displays unlocking and server on / off

Table 5.1

5.2.4 SOL introduction

Click Java SOL on the page shown in Fig. 5.12 to open the interface shown in Fig. 5.15.

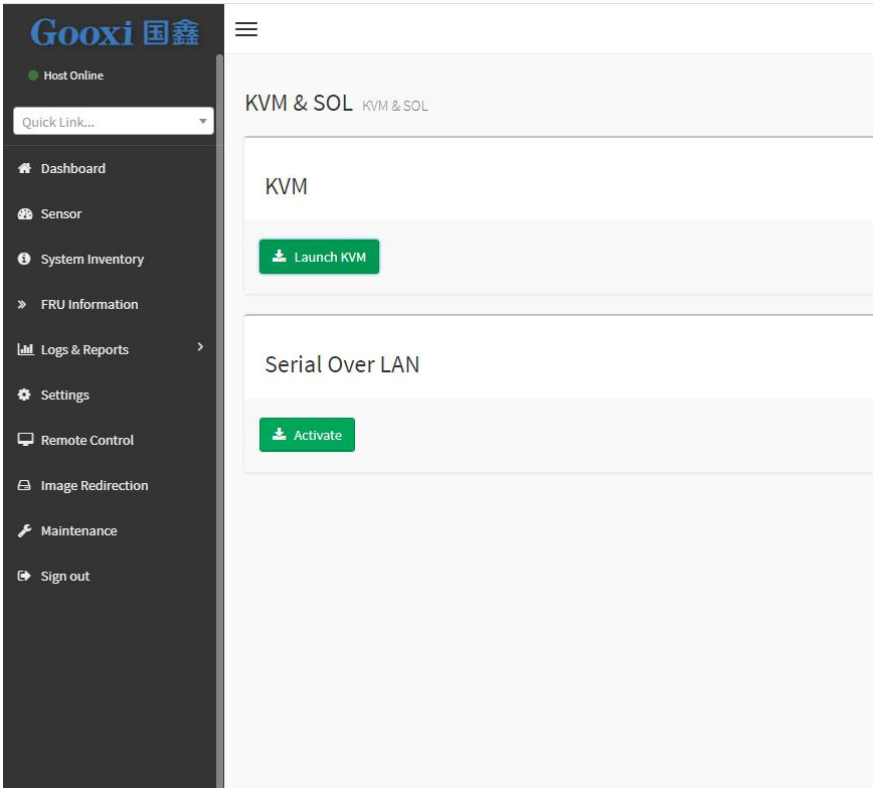
Gooxi 国鑫
Host Online
Quick Link...
Dashboard
Sensor
System Inventory
FRU Information
Logs & Reports
Settings
Remote Control
Image Redirection
Maintenance
Sign out
KVM & SOL
KVM & SOL
KVM
Launch KVM
Serial Over LAN
Activate

Fig. 5.15

Save the file and open it. You will see the SOL login interface shown in Fig. 5.16 below.

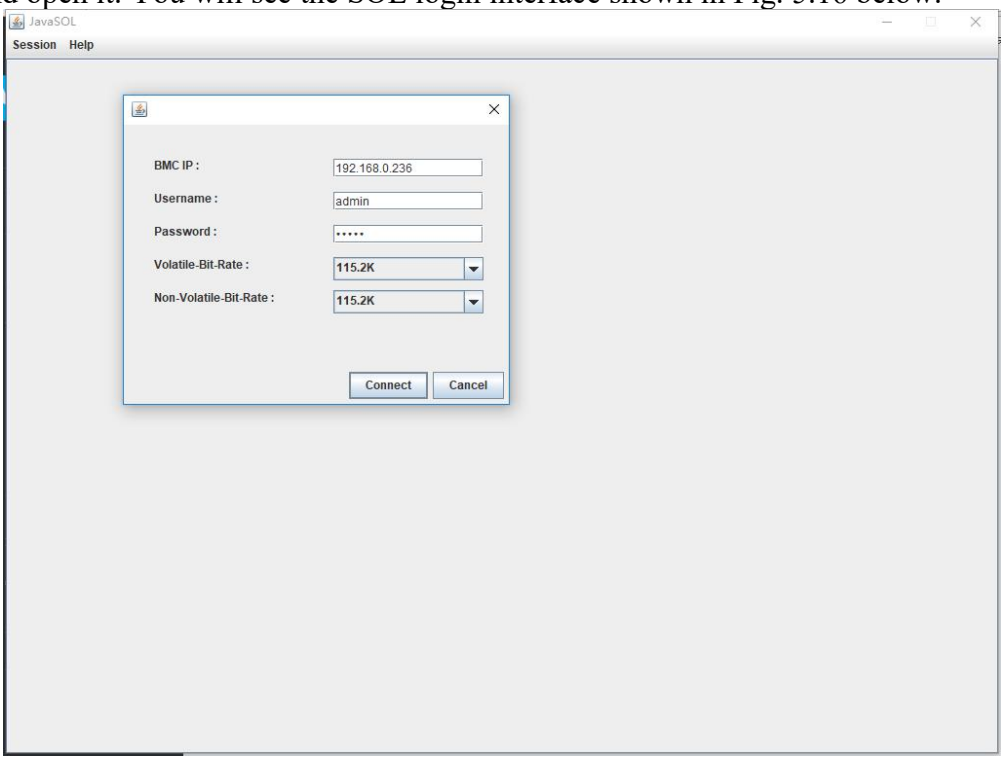

Fig. 5.16

On this interface you need to enter parameters related to BMC IP, Username, Password and baud rate.

BMC IP is the IPMI IP configured above for you. Username and Password are both by default. Baud rate is 115.2k. Click Connect to enter the SOL operation interface. Fig. 5.17 below shows.

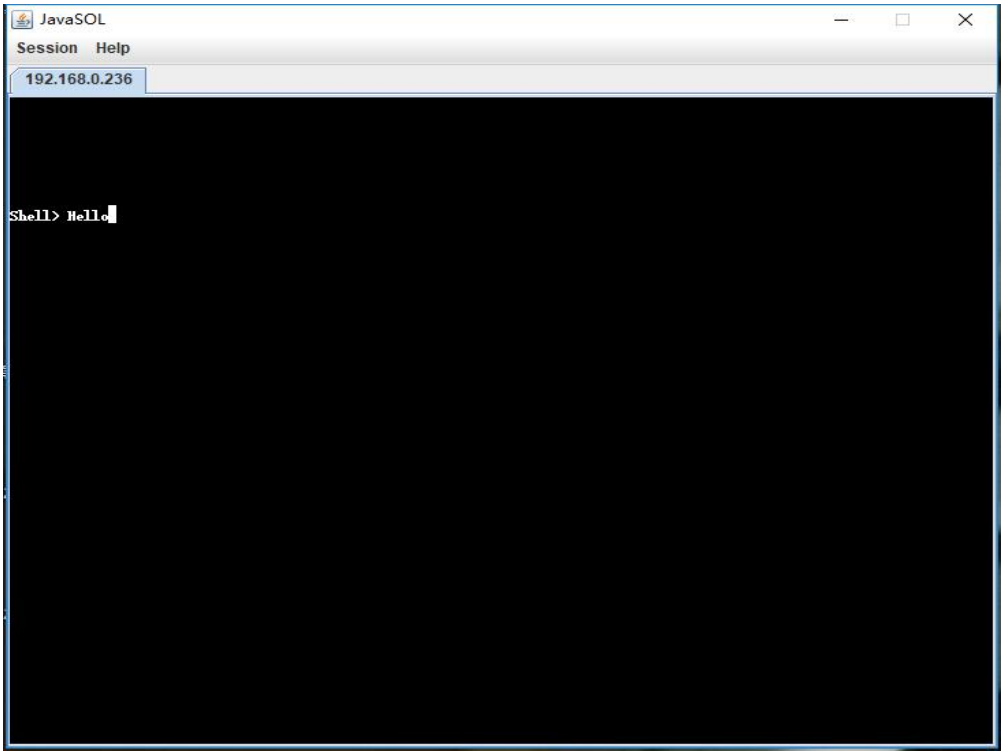

Fig. 5.17

5.3 Other ways to connect to IPMI

AST2500 firmware complies with the IPMI 2.0 specification, so users can use standard IPMI drivers assigned by the operating system.

5.3.1 IPMI driver

AST2500 supports Intel referenced drivers, which can be obtained from the following website: https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-technical-resources.html through Windows Server 2003 R2, Microsoft also provides the IPMI driver package. You can also use the open IPMI driver in the system. AST2500 supports the open IPMI driver of Linux kernel. Use the following command to load the IPMI driver: ”modprobe ipmi_devintf” “modprobe ipmi_si” If you are using an older version of the Linux kernel, you need to use "ipmi_kcs" replace "ipmi_si" component.

5.3.2 IPMI tools and other open source software

AST2500 supports open source IPMI tools. You can also use other software, such as Open IPMI, IPMI Utility, etc. The above documents are intended to help you quickly understand and deploy the IPMI functions of the system. We will provide other documents for the detailed IPMI function operation manual.

Chapter 6: RAID Setting

6.1 Configuring RAID in UEFI boot mode

- **Operation before configuring RAID**

a) During server startup, press Delete / ESC to enter the BIOS Setup interface

b) Move to PlatForm interface-->PCH Configuration-->PCH Sata Configuration-->Configure SATA as. Configure SATA to RAID mode, as shown in figure 6.1

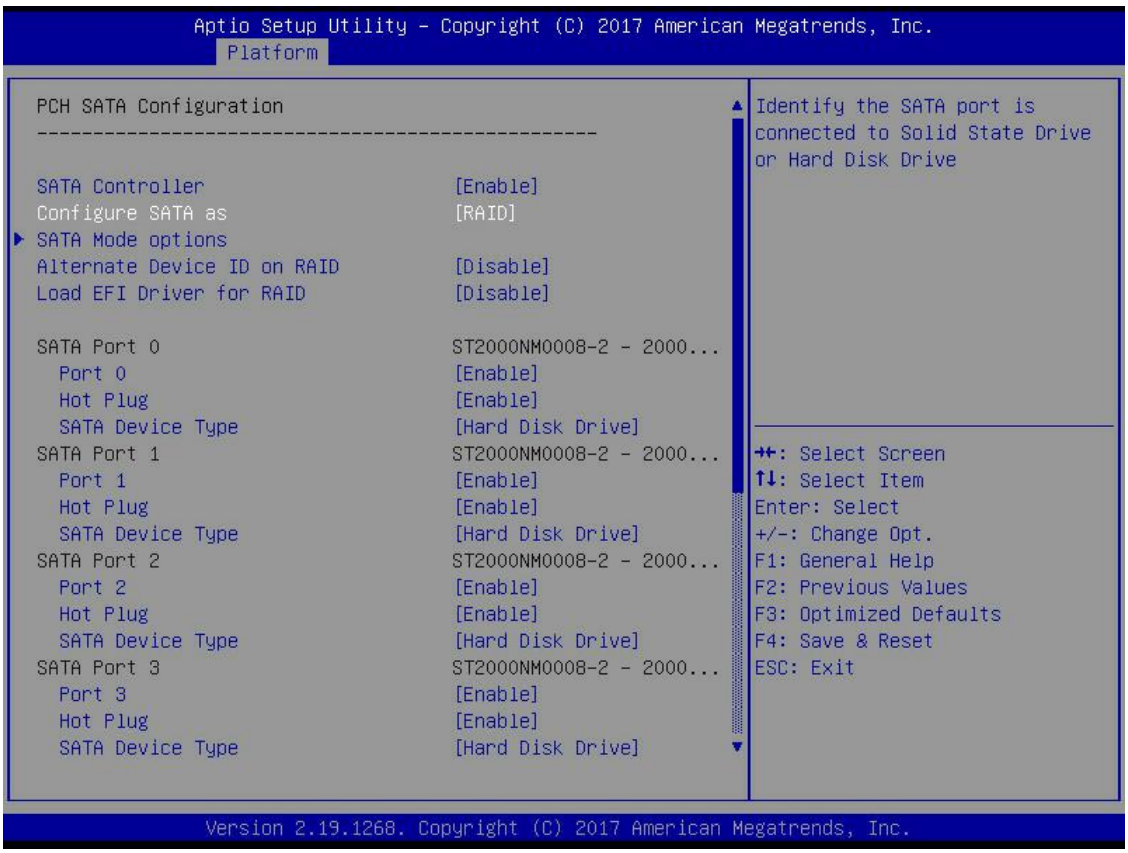

Fig. 6.1

c) Ensure that storage and video in CSM configuration are in UEFI mode, as shown in Fig. 6.2

d) Fig. 6.2 Set storage and video to UEFI mode

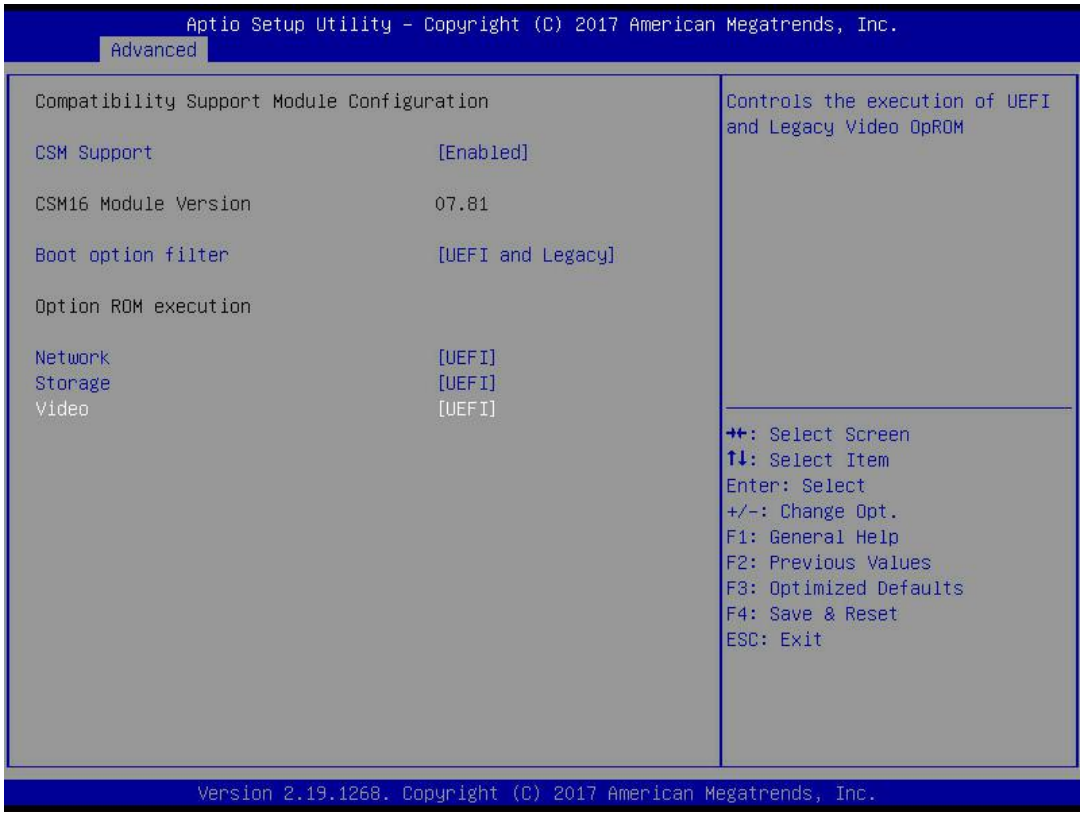

Fig. 6.2

- ✧ Restart the server, enter the BIOS Setup interface, move to the advance page, and you will see Intel (R) RSTe SATA Controller, press enter to configure RAID, such as Fig. 6.3
- ✧ Fig. 6.3 Intel RSTe SATA Controller

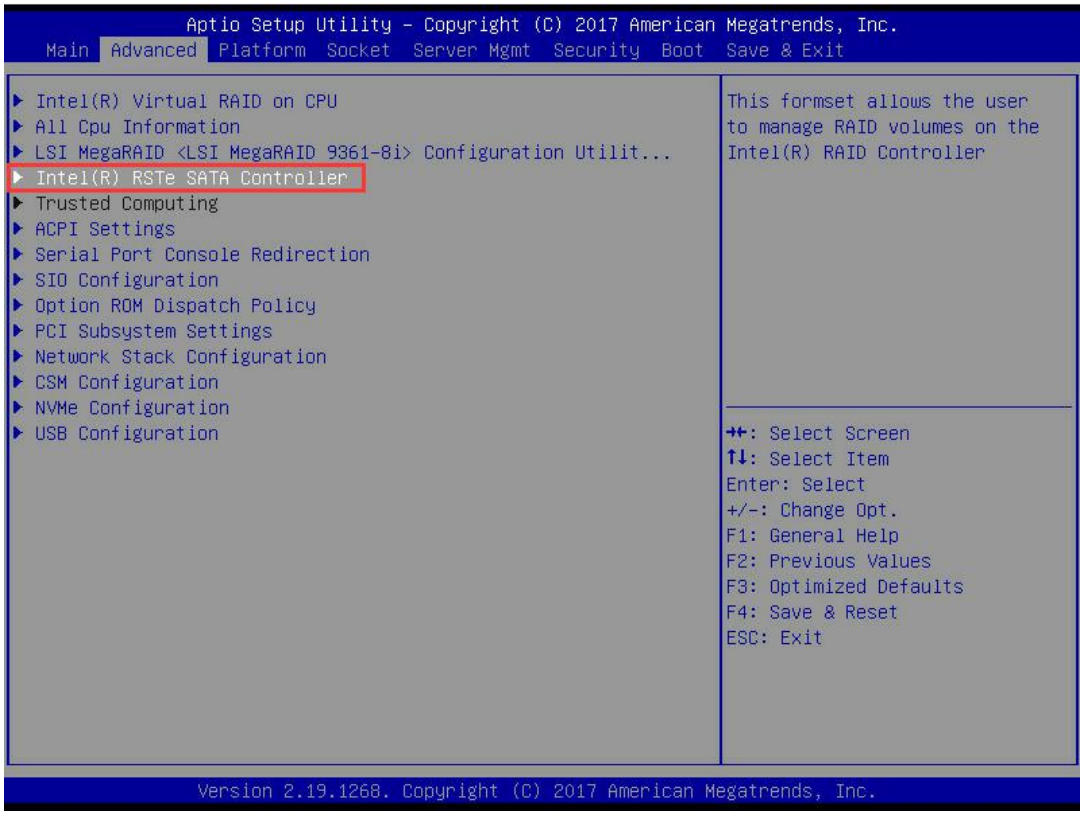

Fig. 6.3

➢ **Crate RAID**

a) Select Create RAID Volume, and press enter.

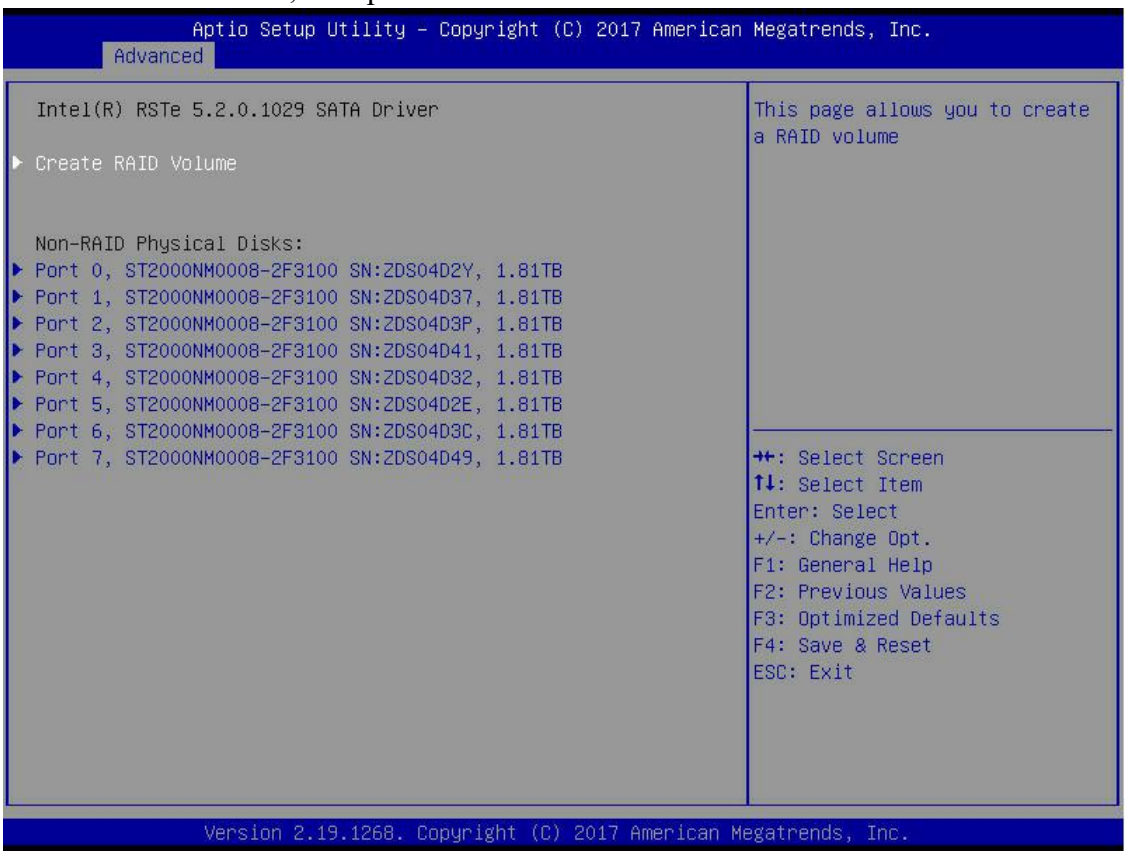

Fig. 6.4

b) Change the name of RAID to be created. Note it cannot contain special characters. As shown in Fig. 6.5

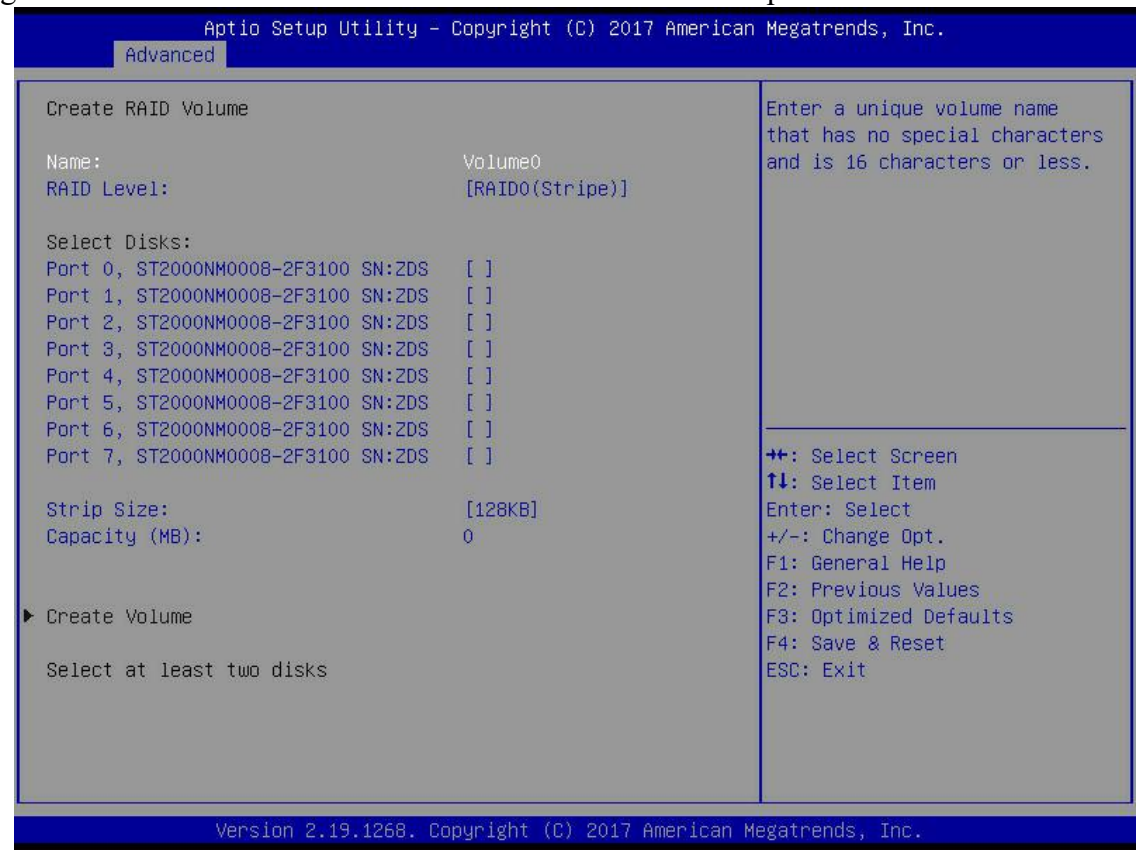

Fig. 6.5

c) RAID Level: select the RAID level, as shown in Fig. 6.6

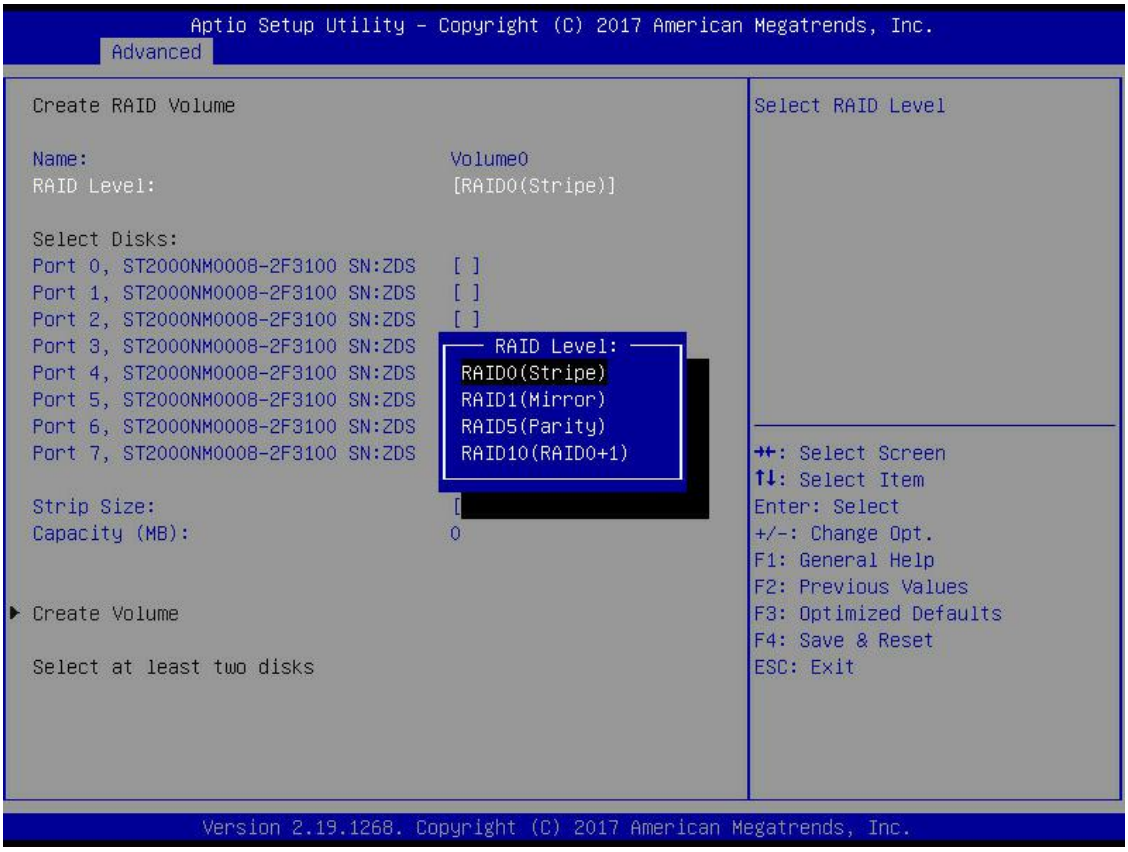

Fig. 6.6

d) Select Disks: press the spacebar to select the disks that need to participate in configuring RAID. As shown in Fig. 6.7

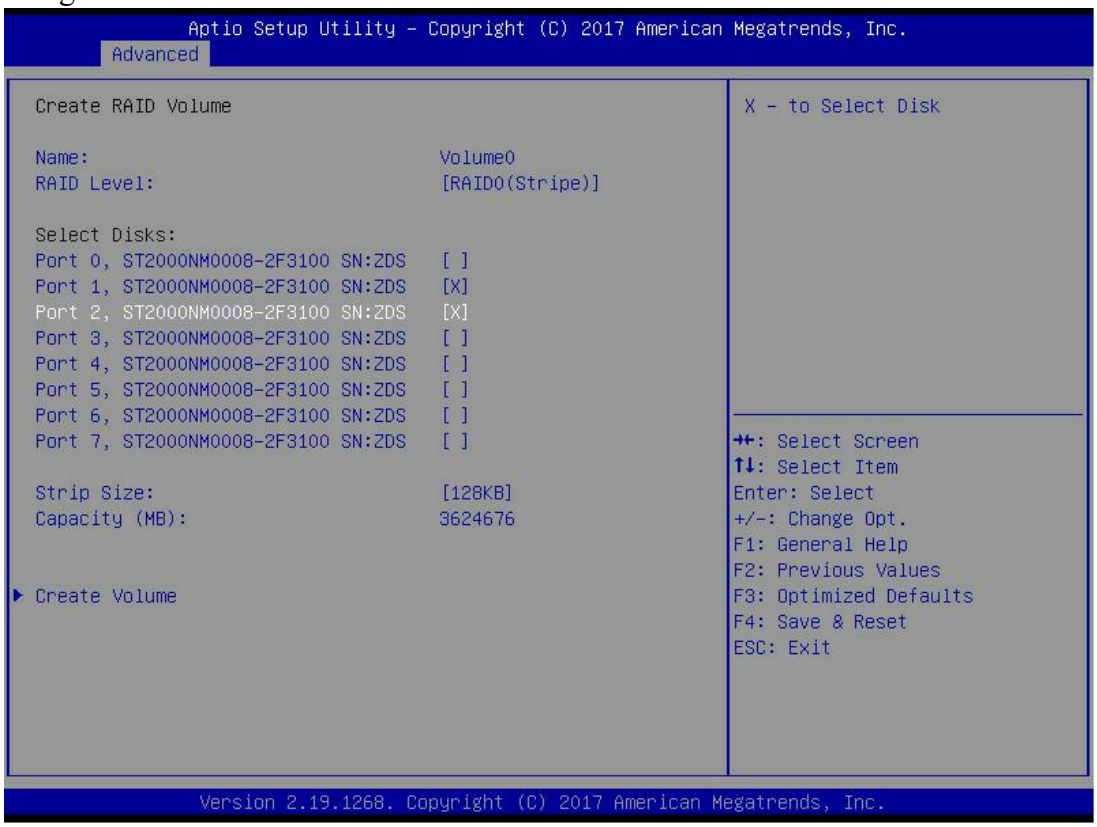

Fig. 6.7

e) Select Create Volume and press enter to configure the RAID.

✧ Description of parameters is shown in Table 6.1:

Parameters	Description
Name	Name of RAID.
RAID Level	It determines the performance, fault tolerance and capacity of logical disk.
Select Disks	Select the member disks that make up the RAID. Available disks are displayed under the select disks column. Press enter to select a disk, [x] indicates that the disk has been selected.
Strip Size	Size of stripe data blocks written on each disk.
Capacity	The capacity of the logical disk.

Table 6.1

When RAID is created, it will be displayed in the RAID volumes directory. Select a RAID and press enter to view the details of the RAID (including RAID name, level, disk information, etc.).

➢ **Configuring a hot spare**

a) As shown in Fig. 6.8, select the disk to be configured as a hot spare and press Enter.

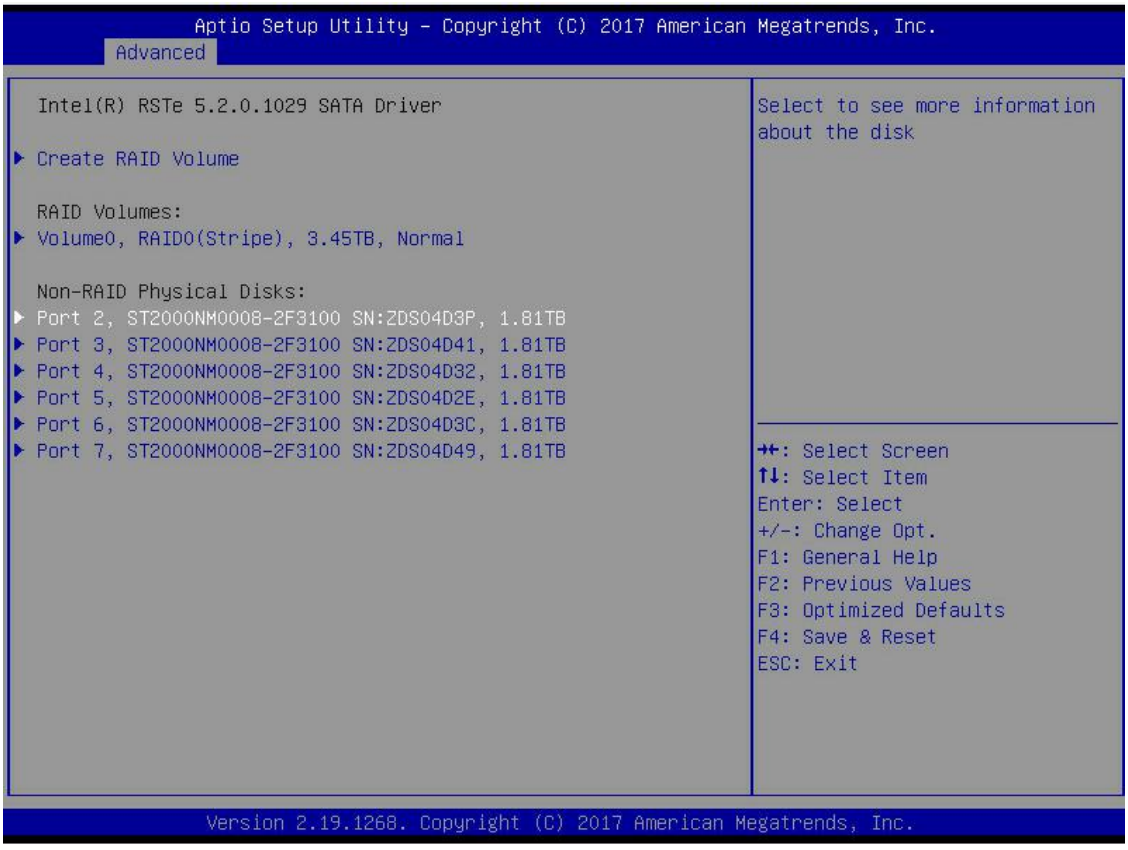

Fig. 6.8

b) Enter the interface shown in Fig. 6.9, select "Mark as Spare" and press enter.

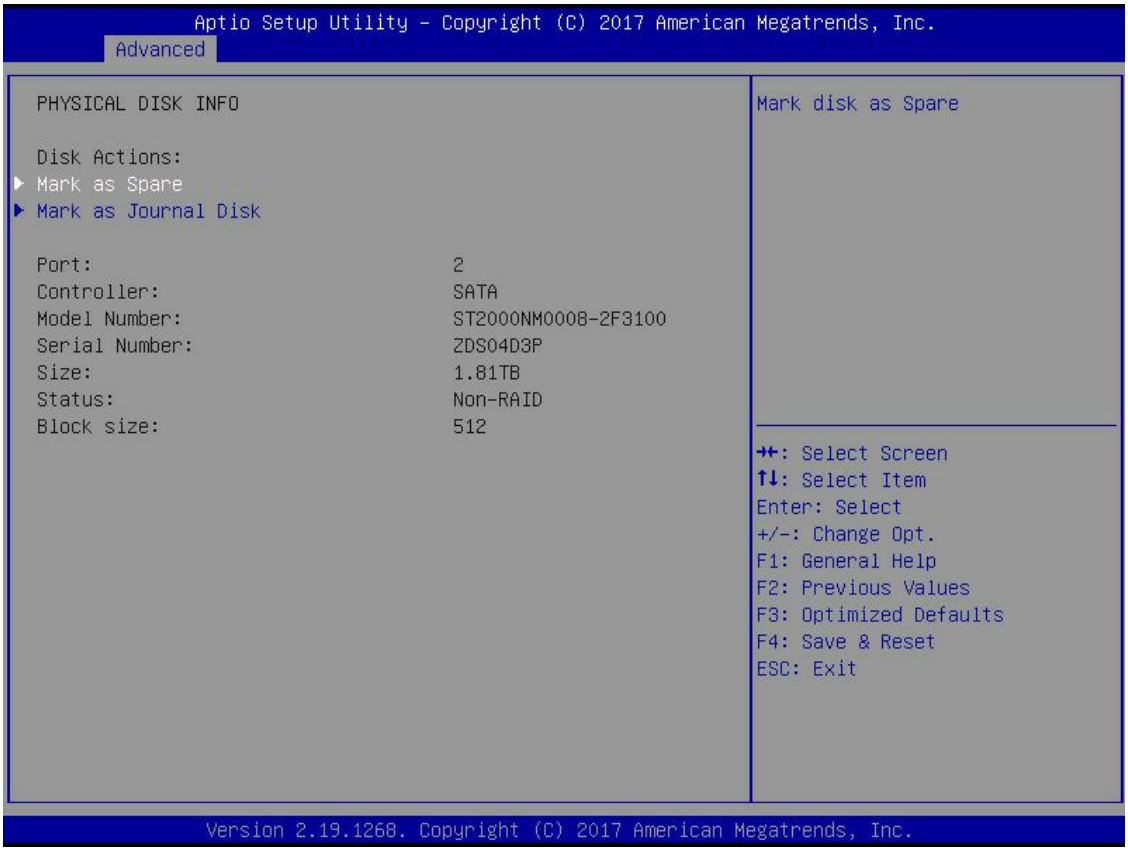

Fig. 6.9

c) Enter the interface shown in Fig. 6.0, select "Yes", and press Enter to complete the hot spare configuration.

d)

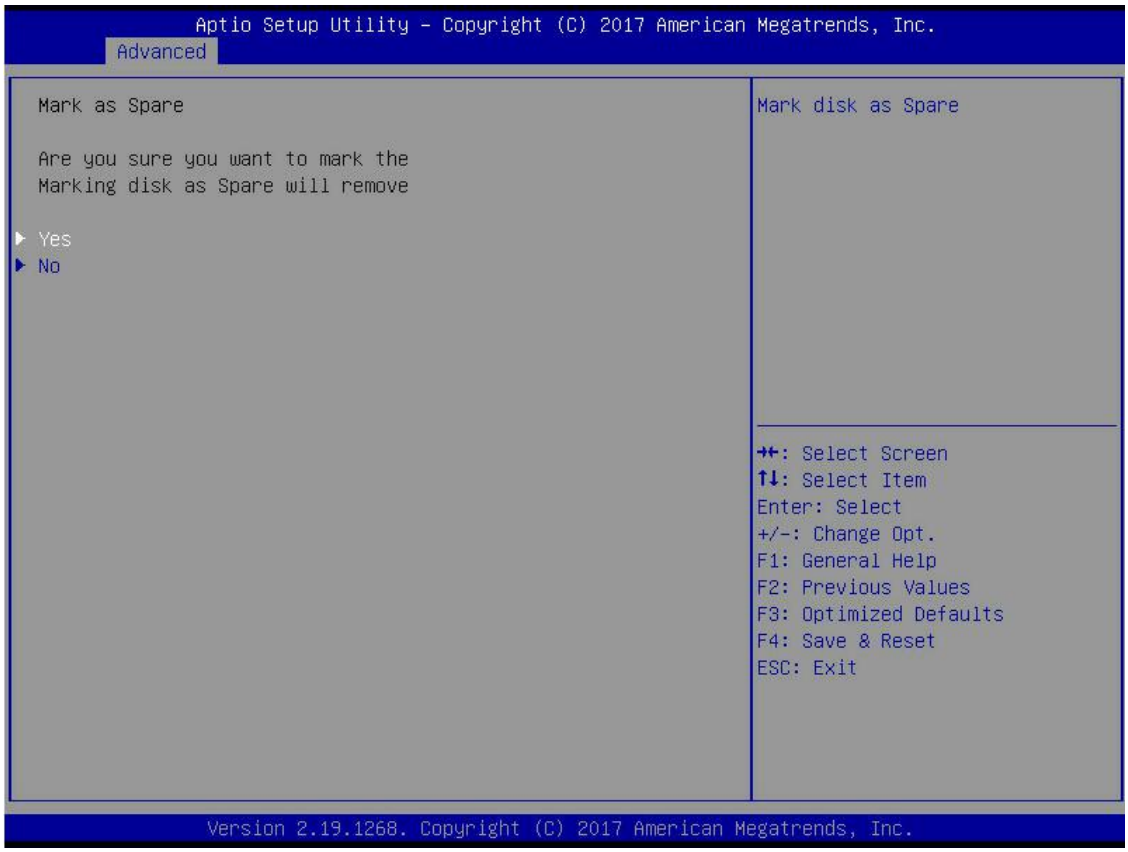

Fig. 6.10

➢ **Delete RAID**

a) Enter RSTe configuration interface.

b) As shown in Fig. 6.11, select the RAID to be deleted under the RAID volumes directory and press enter.

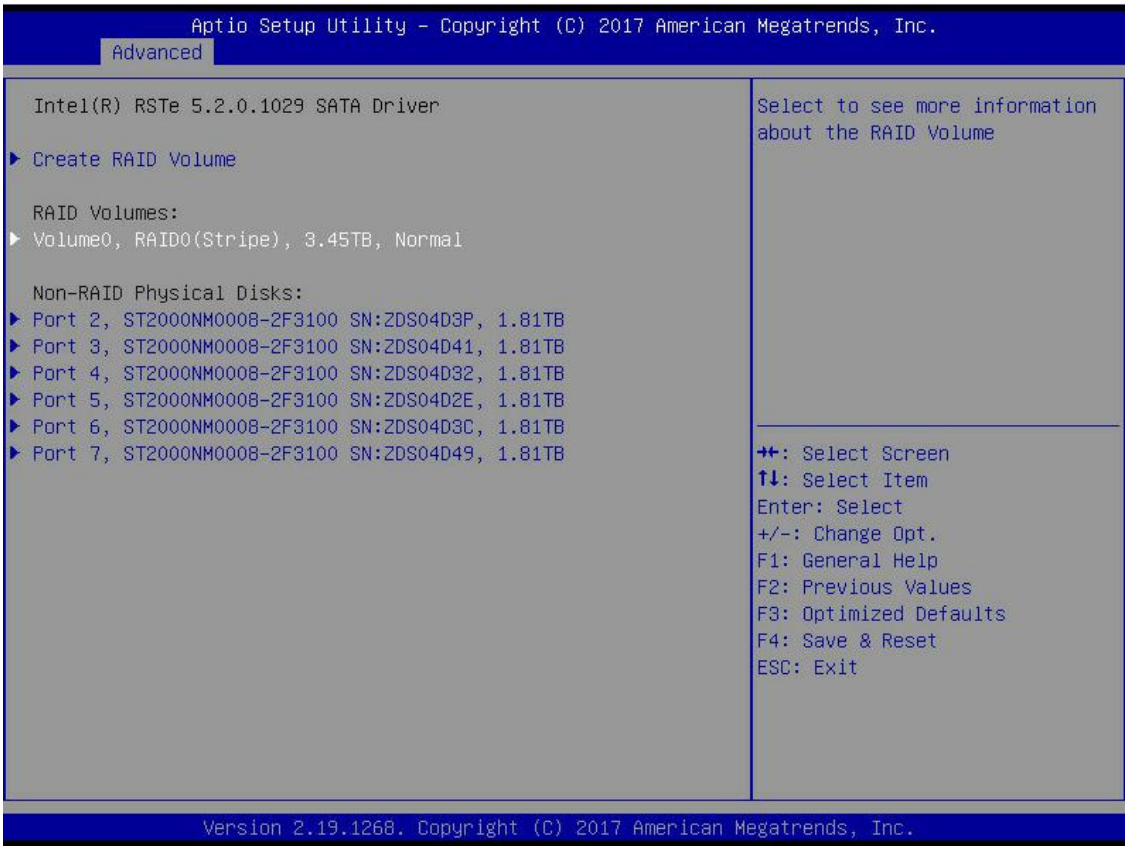

Fig. 6.11

c) Enter the RAID information interface shown in Fig. 6.12, select Delete and press Enter to delete RAID.

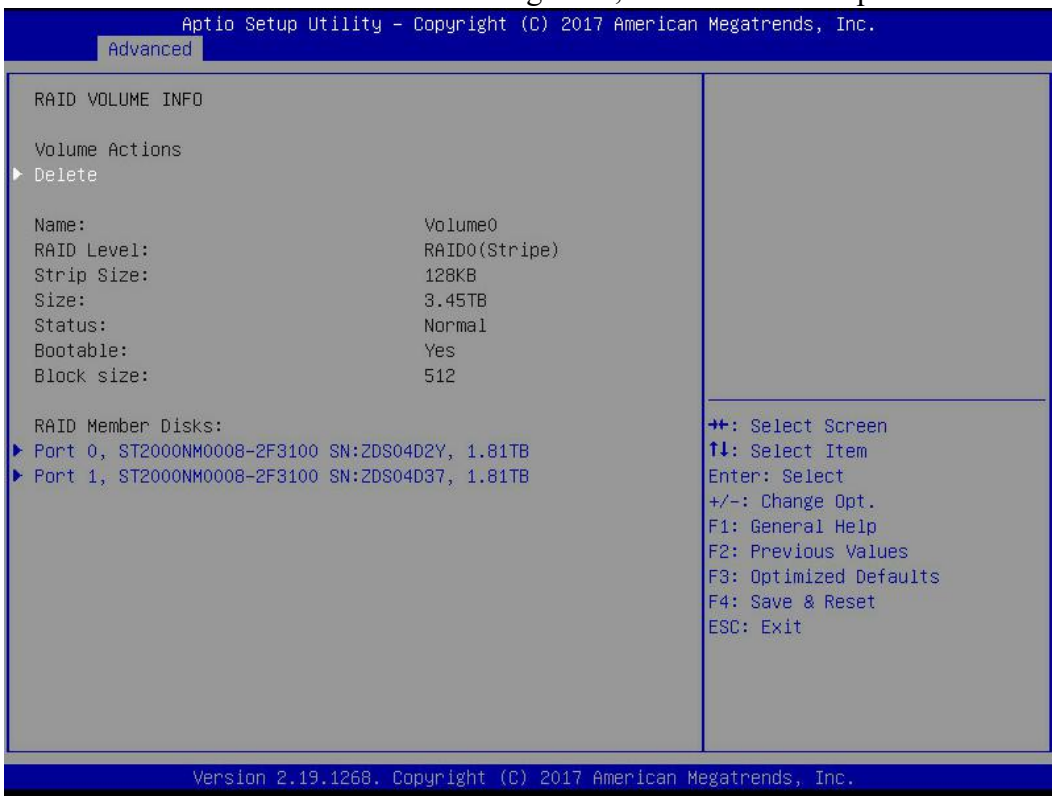

Fig. 6.12

6.2 Configuring RAID in Legacy startup mode

- **Set up RSTe work mode**

a) Enter BIOS Setup interface.

b) Move to PlatForm interface-->PCH Configuration-->PCH Sata Configuration

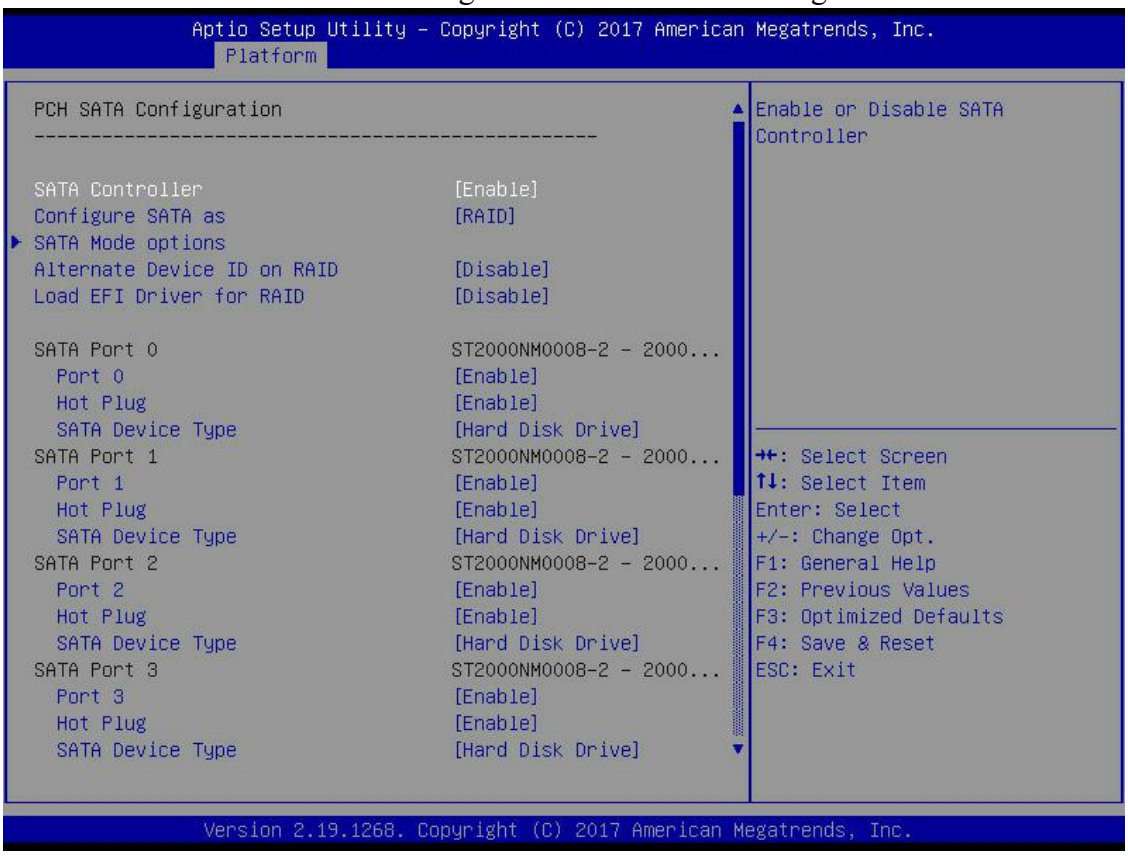

Fig. 6.13

RSTe onboard soft RAID has SATA and sSATA controllers, which respectively manage the disks connected to the two interfaces of the RAID card. The SATA controller supports up to 8 disks, and the SATA controller supports up to 6 disks.

c) Enter the interface shown in Fig. 6.14, select Configure SATA As, press Enter, and select the working mode of RSTe onboard soft RAID.

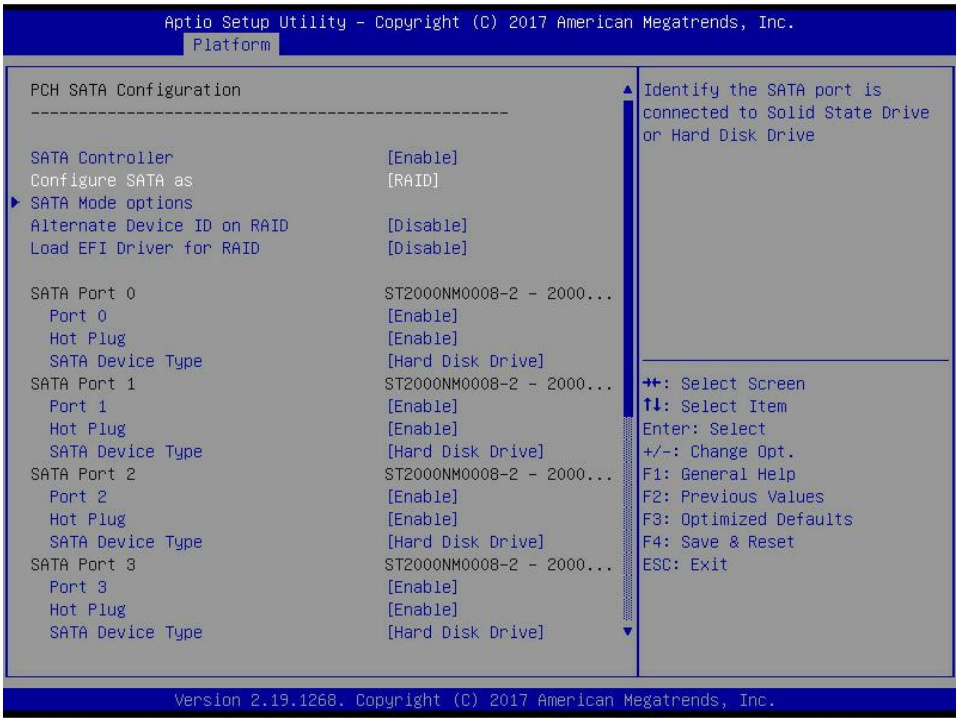

Fig. 6.14

- **Enter RSTe configuration interface**

a) Power up or restart the server. After the interface shown in Fig. 6.15 appears during BIOS startup, press Ctrl+I.

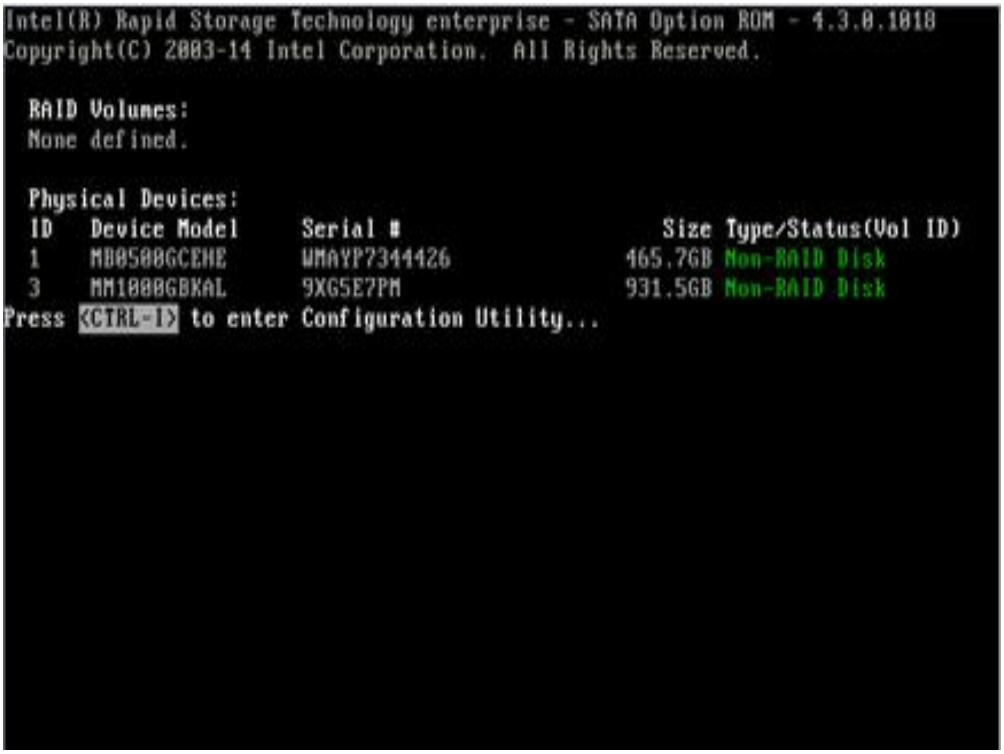

Fig. 6.15

If the working mode of both sSATA and SATA controllers is set to RAID, the prompt "Press <CTRL-I> to enter Configuration Utility" will appear twice during BIOS startup, corresponding to sSATA and SATA controllers in turn. Please select the controller according to the disks required to configure RAID.

b) Enter the RSTe configuration interface shown in Fig. 6.16 (see table 6.2 for interface description). Please refer to the key operation tips of the interface to navigate and modify settings in the interface.

Fig. 6.16

✧ Table 6.2 RSTe configuration interface description

Option	Description
MAIN MENU	Located on the upper side of the interface, you can perform the following tasks: Create RAID Volume Delete RAID Volume Reset Disks to Non-RAID Mark Disks as Spare Exit
DISK/VOLUME INFORMATION	Located on the lower side of the configuration interface, you can view the summary information of the created RAID and physical disks.

Table 6.2

➢ **Common task**

Configure RAID:

a) Enter RSTe configuration interface.

b) As shown in Fig. 6.17, select Create RAID Volume from RSTe, and press Enter.

Fig. 6.17

c) Enter Fig. 6.18, configure in Name, RAID Level, Disks, Strip Size and Capacity column (parameters description seen table6.3), then select Create Volume, press Enter.

✧ Fig. 6.18 Create RAID Volume interface

Fig. 6.18

✧ Table 6.3 Parameter Description

Parameter	Description
Name	Name of RAID.
RAID Level	It determines the performance, fault tolerance and capacity of logical disk.
Disks	Select the member disks that make up the RAID. After selecting the disks column, press Enter and press Space to select the disk.
Strip Size	Size of stripe data blocks written on each disk.
Capacity	The capacity of the logical disk.

Table 6.3

d) Enter the interface shown in Fig. 6.19 to view the details of RAID (including RAID name, level, disk information, etc.).

Fig. 6.19

Configure a hot spare:

a) Enter RSTe configuration interface.

b) As shown in Fig. 6.20, select Mark Disks as Spare from RSTe configuration interface, press Enter.

Fig. 6.20

c) Enter interface shown in Fig. 6.21, select disks to be configured as hot spare and press SPACE, then press Enter. In the prompt bar that appears, enter y and press Enter to complete the hot spare configuration.

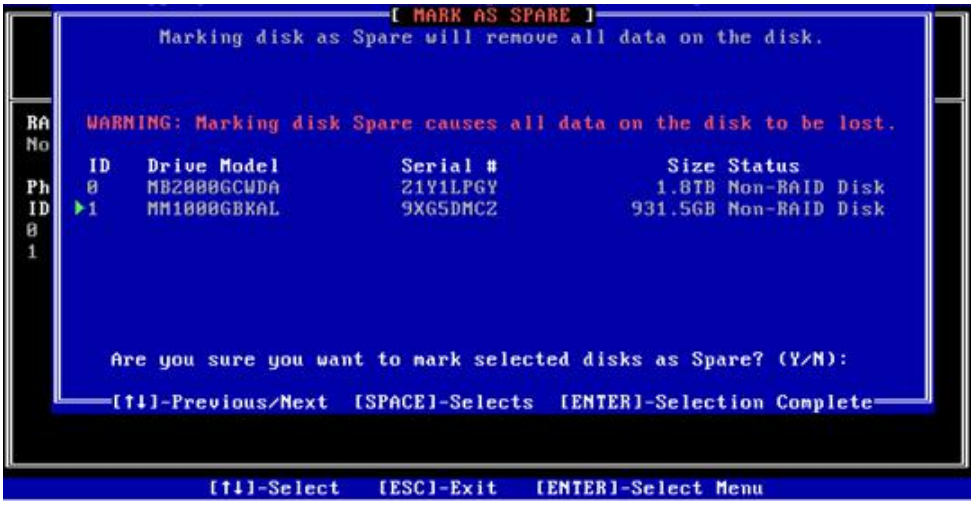

Fig. 6.21

d) In the RSTe configuration interface, you can see the hot spare information, as shown in Fig. 6.22.

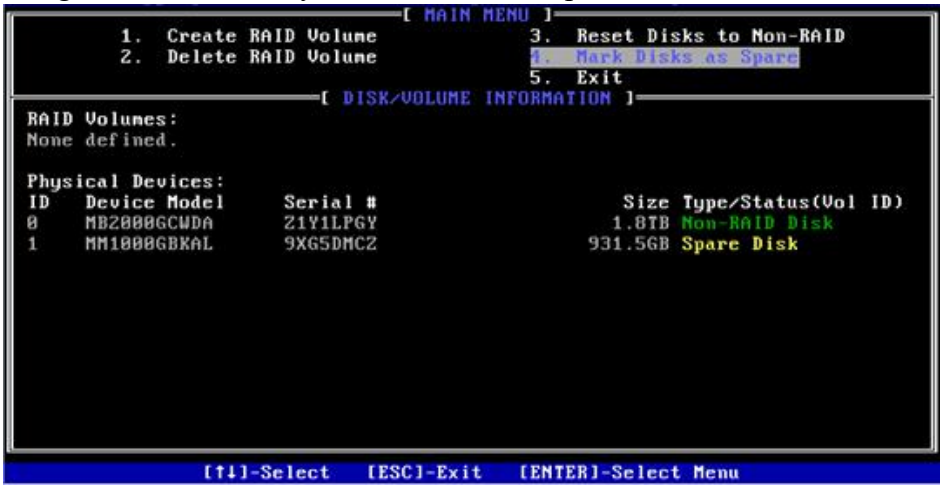

Fig. 6.22

Delete RAID:

a) Enter RSTe configuration interface.

b) As Fig. 6.23 shown, select Delete RAID Volume from RSTe, and press Enter.

Fig. 6.23

c) Enter the interface shown in Fig. 6.24, select the RAID to be deleted, and press Delete to complete the deletion.

Fig. 6.24

Chapter 7: Specifications

Model		G2DA-B
CPU		1Gen & 2Gen Intel® Xeon® Scalable processors
Chipset		C621
Motherboard Size		E-ATX
Features	BMC chip	ASPEED AST2500
	Fan Temperature Control	Supports
	Status Alarm	Supports
Memory	Slot Amount	8
	Total Capacity	Up to 512GB memory
	Memory Type	Supports DDR4 3DS RDIMM/LRDIMM/RDIMM ECC Memory supports 2133/2400/2666 MHz Intel Optane®
	Memory	Per DIMM supports 8GB, 16GB, 32GB, 64GB
	PCI-E Slot	6
Expansion Slot	Slot1	PCI-Express 3.0 x8 Slot from CPU1
	Slot2	PCI-Express 3.0 x16 Slot from CPU1
	Slot3	PCI-Express 3.0 x8 Slot from CPU1
	Slot4	PCI-Express 3.0 x4 Slot from CPU1
	Slot5	PCI-Express 3.0 x16 Slot from CPU0
	Slot6	PCI-Express 3.0 x16 Slot from CPU0
Network	LAN	2* 1GbE RJ45 LAN port, 1* dedicated BMC admin LAN port
Storage	SATA controller	3* 8643 interface, 2* SATA 7PIN interface Supports RAID 0, 1, 5 and 10
	BMC	IPMI 2.0
Screen	VGA	Supports
TPM	TPM	Supports
Rear I/O Port	External USB port	2* USB3.0, 2* USB2.0 ports
	VGA port	1
	Serial port	1* DB-9
	RJ-45	2* 1GbE RJ45 LAN port (2* 10GbE RJ45 LAN port, only C622 chip support), 1* dedicated BMC admin LAN port)
Monitoring	CPU temperature	Supports
	System status	Supports
	Fan speed	Supports

OS	Windows® Server 2012 R2 (64bit) Windows® Server 2016 (64bit) Redhat® Enterprise Linux Server 7.3(64bit) Suse® Enterprise Linux Server 12.2(64bit) Centos® Enterprise Linux Server 7.3(64bit) Ubuntu® Server 16.04(64bit) VMWare® ESXi Microsoft® Hyper-V® Citrix® Xen® Server Linux® Kernel Virtual Machine
Environment Parameter	Operating temperature: 10℃~40℃ Non-operating temperature:-40℃ ~70℃ Operating humidity: 8%~90% (non condensation) Non-operating humidity: 5%~90% (non condensation)

Table 7.1