





# Whitley Platform L-shaped Server Barebones





# User's Manual V1.0



## Glossary:

Words	Paraphrase					
Platinum Efficiency Power Supplies	The platinum certified power supply is the "80 PLUS Platinum" standard, that is, the conversion rate of 20% load is above 90%, the conversion rate of 50% load is above 94%, and the conversion rate of 100% load is above 91%					
M.2	The M.2 port is a new-generation port standa port specification introduced by Intel <sup>®</sup> to repla					
C620A	Intel <sup>®</sup> Chipset					
RJ45	Common name for standard 8-bay modular in	terface				
AST2500	Aspeed <sup>®</sup> BMC Chip					
Socket P -F CPU	Intel <sup>®</sup> processor interface types Refers to the CPU that supports the Intel <sup>®</sup> Om Path high-speed optical cable interconnection 100Gbps end-to-end interconnection					
8038 Fan	Fan with dimensions 80x80x38mm					
LGA 4189	Full name is Land Grid Array, LGA 4189 repres	ents 4189 contacts				
CR2032	3V CR2032 lithium manganese battery, shape battery or a lithium manganese button batter					
RS-232	One of the communication interfaces on the c transmission standard interface, called COM p	· ·				
Jtag	Joint Test Action Group, a joint test working group, mainly used for internal chip testing					
NC Pin	Empty pin					
XDP	Extend Debug Port, Intel <sup>®</sup> CPU debugging inte	rface				
Abbreviation	Original	Chinese meaning				
PCH	Platform Controller Hub	The former collectively referred to as the "South Bridge"				
PCH GbE	Platform Controller Hub Gigabit Ethernet					
		the "South Bridge"				
GbE	Gigabit Ethernet	the "South Bridge" Gigabit Ethernet				
GbE BMC	Gigabit Ethernet Baseboard Management Controller	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform Management				
GbE BMC IPMI	Gigabit Ethernet Baseboard Management Controller Intelligent Platform Management Interface	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform ManagementInterface				
GbE BMC IPMI CPU	Gigabit Ethernet Baseboard Management Controller Intelligent Platform Management Interface Central Processing Unit	the "South Bridge" Gigabit Ethernet Baseboard Management Controller Intelligent Platform Management Interface CPU				
GbE BMC IPMI CPU SATA	Gigabit EthernetBaseboard Management ControllerIntelligent Platform Management InterfaceCentral Processing UnitSerial Advanced Technology Attachment	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform ManagementInterfaceCPUSerial ATA Interface Specification				
GbE BMC IPMI CPU SATA SAS	Gigabit Ethernet Baseboard Management Controller Intelligent Platform Management Interface Central Processing Unit Serial Advanced Technology Attachment Serial Attached SCSI	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform ManagementInterfaceCPUSerial ATA Interface Specificationserial-SCSI				
GbE BMC IPMI CPU SATA SAS SAS	Gigabit Ethernet Baseboard Management Controller Intelligent Platform Management Interface Central Processing Unit Serial Advanced Technology Attachment Serial Attached SCSI secondary SATA	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform ManagementInterfaceCPUSerial ATA Interface Specificationserial-SCSIExtended SATA interface				
GbE BMC IPMI CPU SATA SAS SATA LAN	Gigabit EthernetBaseboard Management ControllerIntelligent Platform Management InterfaceCentral Processing UnitSerial Advanced Technology AttachmentSerial Attached SCSIsecondary SATALocal Area Network	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform ManagementInterfaceCPUSerial ATA Interface Specificationserial-SCSIExtended SATA interfacelocal area network				
GbE BMC IPMI CPU SATA SAS SATA LAN VGA	Gigabit EthernetBaseboard Management ControllerIntelligent Platform Management InterfaceCentral Processing UnitSerial Advanced Technology AttachmentSerial Attached SCSIsecondary SATALocal Area NetworkVideo Graphics Array	the "South Bridge"Gigabit EthernetBaseboard Management ControllerIntelligent Platform ManagementInterfaceCPUSerial ATA Interface Specificationserial-SCSIExtended SATA interfacelocal area networkvideo transmission standard				



BP	Backplane	Backplane		
PCIE	Peripheral Component Interconnect Express	High Speed Serial Computer Expansion Bus Standard		
USB	Universal Serial Bus	Universal Serial Bus		
FW	Firmware	firmware		
TPM	Trusted Platform Module	Trusted Platform Module		
Ю	Input/Output	input Output		
BIOS	Basic Input-Output System	basic input output system		
CMOS	Complementary Metal Oxide Semiconductor	CMOS		
ME	Management Engine	management engine		
DDR4	Double Data Rate 4 SDRAM	Fourth Generation Double Data Rate Synchronous Dynamic Random Access Memory		
DIMMs	Dual-Inline-Memory-Modules	Dual In-Line Memory Module		
RDIMMs	Registered DIMMs	Dual-wire memory modules with registers		
LRDIMM	Load-Reduced DIMMs	low load DIMM		
AEP	Apache Pass	Intel <sup>®</sup> Optane DDR4 memory code		
MEZZ CONN	Mezzanine Connector	Mezzanine / buckle		
KVM	Keyboard Video Mouse	Ability to access and control computers via direct connection to keyboard, video, mouse ports		
CPLD	Complex Programmable Logic Device	complex programmable logic device		
ECC	Error Correcting Code	Error Checking and Correction		
CFM	Cubic Feet Per Minute	cubic feet per minute		
RPM	Revolution Per Minute	rpm		

### **Conventions:**

WARNING: Indicates a potentially hazardous situation which, if unavoidable, could result in death or serious personal injury.
Red arrow: Represents pointing to a location
Blue arrow: represents the action of pulling out or inserting downward or inserting at an
angle
Hollow arrows: represent the next action or result





V	Dark blue rotation arrow 1: Represents the action of turning the screw clockwise or pulling
	outward
V	Dark blue rotation arrow 2: Represents the action of turning the screw counterclockwise or
	snapping it inward
В	Note: Used to convey equipment or environmental safety warning messages, which, if not
	avoided, may result in equipment replacement, data loss, reduced equipment performance,
	or other unpredictable results.

Manual version	Release date	Description
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#### **1.1 General safety matters**

#### To prevent the risk of personal and property damages, be sure to follow the recommendations below.

Please do not open the system cover by yourself, it should be operated by professionally trained maintenance technicians. Do not touch the triangle-marked portion with the lightning bolt that may be subject to high voltage or electric shock.

IMPORTANT: Disconnect all cables before servicing. (There may be more than one cable)

It is strictly forbidden to carry out live operations such as starting the machine before the cover is closed.

When it is necessary to open the cover, please wait for the internal equipment to cool before performing it, otherwise it may cause burns to you.

Do not use this device in wet environments.

If an extension cable needs to be used, use a three-wire cable and make sure it is properly grounded.

Make sure the computer is well grounded. Different grounding methods are possible, but they must be physically connected to ground. If you are not sure whether the grounding protection is safe, please contact the appropriate agency or electrician to confirm. If cable routing is required, please contact manufacturer for advice.

Please use a three-core power cord and socket with grounding protection. Improper grounding may cause leakage, burnout, or even personal injury.

Please ensure that the power socket and the power interface can be in close contact, loose contact may cause a fire hazard.

Please use your computer under 220V AC voltage. Working with inappropriate voltage will cause the danger of electric shock, fire and damage to the computer.

It is required that the computer is well ventilated and kept away from heat, fire, and cooling fans, otherwise the computer may be at risk of smoke, fire or other damage due to overheating.

If you smell or see smoke from your computer, shut down the computer immediately and unplug the power cord.

The power cord is required to be easily accessible from the power source and the power outlet. Please keep the power cord and plug clean and undamaged, otherwise there may be a risk of electric shock or fire.

**Note:** There is a danger of explosion if the battery is improperly replaced. Only use the replacement parts of the same or equivalent type recommended by the manufacturer. The used battery will pollute the environment. Please set the replaced old battery according to the relevant instructions.

Keep your computer away from electromagnetic fields.

Stay away from electronic noise caused by high-frequency safety equipment such as air conditioners, large fans, and large motors for radio and television stations.

8





Please do not plug or unplug the backplane cable or move the computer while the computer is running, otherwise the computer may crash or parts may be damaged.

Please try to avoid frequent restart or power on and off to prolong the life of your computer.

Please keep the environment clean and avoid dust. The temperature of the equipment working environment is  $10^{\circ}C^{4}0^{\circ}C$ , and the humidity is  $35\%^{8}0\%$ .

Please back up important data in time, manufacturer is not responsible for data loss caused by any circumstances. The optical drive used in this product is a **Class 1 laser device**.

**Class 1 Laser Equipment** 

Figure 1-1

### 1.2 Toxic and hazardous substances or elements in products

During the 10-year environmental protection use period, the toxic and harmful substances or elements contained in the product will not leak or mutate under normal use conditions, and the use of electronic information products by users of electronic information products will not cause serious pollution to the environment or serious damage to persons and property.

Component	Hazardous Substances					
	Pb	Hg	Cd	Cr VI	PBB	PBDE
Chassis / Baffle	Х	0	0	0	0	0
Mechanical components (fan, heat sink, motor, etc.)	Х	Ο	0	0	0	Ο
Printed circuit components - PCA*	Х	О	0	0	0	0
Cable / Wire / Connector	Х	0	0	0	0	0
HDD	Х	0	0	0	0	0

Table 1-1

Comment	Harmful Substances					
Component	Pb	Hg	Cd	Cr VI	PBB	PBDE
Media read / Store device	х	0	0	0	0	0
(CD, etc.)	Χ	Ū	Ū	Ŭ	Ũ	Ŭ





Power supply / adapter	х	0	0	0	0	0
Power cord	Х	0	0	0	0	0
Pointing device (mouse, etc.)	х	0	0	0	0	Ο
Keyboard	Х	0	0	0	0	0
UPS	Х	0	0	0	0	0
Complete rack / Rail products	х	Х	0	0	0	0

#### Table 1- 2

• means that the content of the toxic and harmful substance in all homogeneous materials of the component is below the limit specified in GB/T26572-2011 *Limit Requirements for Restricted Substances in Electronic and Electrical Products*.

× indicates that the content of the toxic and harmful substance in at least one homogeneous material of the component exceeds the limit requirements specified in GB/T26572-2011 *Limit Requirements for Restricted Substances in Electronic and Electrical Products*. However, it complies with the EU RoHS Directive (including its exemption provisions).

Note: the table shows the information of toxic and hazardous substances in all possible components of SNR server, storage and workstation products. Customers can refer to the status of toxic and hazardous substances in all components of the purchased products according to this table.

### 1.3 Warning notices

This product complies with EMC Class A standards.

### **1.4 Climate and Environmental Requirements**

◆ The best working temperature of the equipment is 10°C-40°C; the maximum indoor ambient temperature of the equipment is 40°C.

System battery 3 V CR2032 lithium battery

**NOTE:** Some configurations have been verified for performance at 45°C temperature and 90% (29°C maximum dew point) humidity.

Temperature	
Working temperature	10°C~40°C (50°F~104°F), the maximum temperature gradient is 10°C per hour
Continuous operating temperature range (below 950m or 3117ft above sea level)	In the situation of no direct illumination, 10°C to 40°C (50°F to 104°F)
Storage temperature range Humidity	-40°C~65°C (-40°F~149°F)
Storage	The max. dew point is 33°C (91°F). The relative humidity is 5%



	to 95%. The air must not condense at all times.
Continuous operating humidity	The max. dew point is 26°C (78.8°F) The relative humidity is
percentage range	10% to 80%

Table 1- 3

- If the lightning protection facilities of the computer are poor or not available, please shut down the computer in thunderstorm weather and unplug the power line, network cable, telephone line, etc. connected with the computer.
- Please use the authorized operating system and software and configure them correctly. Manufacturer. is not responsible for server failure caused by operating system and software.
- Please do not disassemble the chassis, increase or decrease the hardware configuration of the server.
   Manufacturer is not responsible for the hardware and data damage caused by this.
- When the server fails, please first check the "troubleshooting" section of this manual to determine and remove common faults. If you are not sure the cause of the failure, please contact the technical support department of Manufacturer
- Choosing a suitable environment for the computer is helpful for the stable operation and can prolong the life of the computer.
- Manufacturer. reserves the right of final interpretation of the above terms.

### 1.5 Other important descriptions

- If the equipment is marked with a label, it means that the equipment with the label is only designed and evaluated as the altitude of 2000m. Therefore, it is only suitable for safe use below 2000m, and there may be potential safety hazards when it is used above 2000m.
- If the equipment is marked with this mark, it means that the equipment with this mark is only designed and evaluated based on non tropical climate conditions. Therefore, it is only suitable for safe use in non tropical climate conditions, and there may be potential safety hazards when it is used in tropical climate conditions.





### **Chapter 2 Product Introduction**

### 2.1 System introduction

SNR Whitley dual-socket L-shaped servers are the 1U, 2U and 4U rack L-shaped storage server that SNR has launched based on Intel Whitley platform and aimed at the needs of the Internet, IDC (Internet Data Center), cloud computing, enterprise market and telecom applications. It is applicable to the high-density deployment of cloud computing, virtualization, high-performance computing (HPC), big data processing and other loads to improve the space utilization of the data center. The server has the advantages of large storage capacity, strong expansion ability, high reliability, easy

management and easy deployment.

#### 2.2 Product Features

- The CPU adopts 1 or 2 third-generation Intel<sup>®</sup> Xeon<sup>®</sup> Scalable processors (ICE Lake) 8300/ 6300/ 5300/ 4300 series processors, LGA4189 socket, 270W TDP
- 32 DDR4 memory slots support DDR4 LRDIMM/RDIMM/ECC, the memory frequency supports 2400/ 2666/ 2933/ 3200MHz
- The motherboard has 1 built-in PCIE 4.0x 4 M.2 ports
- Modular design, various combinations of PCIE and hard drives
- Onboard 2 Gigabit data network ports and 1 Gigabit management network port
- Optional 1 OCP3.0 network card module.

#### 2.2.1 System parameters

Processor and me	mory			
Processor	Support 1 or 2 Gen3 Intel Whitley platform full-series processors, LGA4189 socket			
TDP	Maximum 270W			
Processor core No.	Up to 40 cores			
Processor No.	2			
Memory type	DDR4 ECC RDIMM/LRDIMM, memory frequency supports 2400/ 2667/ 2933/ 3200MHz, single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs; 2 CPUs support a total of 32 DDR4 slots, with a single capacity of 16GB, 32GB, 64GB, 128GB, 256GB, a maximum of 4TB (16* 256GB LRDIMM); Barlow Pass DIMMs (CR 1.5) supported, and a maximum of 6TB (8* 256GB LRDIMM + 8* 512GB Barlow Pass mapped as memory)			
Storage and I/O				
Storage controller	Internal storage: 2 SATA ports (7Pin), 3 Minisas 8643 ports, 2 PCIe 4.0 X4 M.2 ports, 2 slimline x8 ports			
	1U 4 bays	1U 10 bays		
Hard drive	Front: 4* 2.5-inch SAS/SATA (HDD/SSD)	Front: 10* 2.5-inch SAS/SATA (HDD/SSD)		
	Front port: 2 USB3.0, 1 VGA port			
External port	Rear: 1 VGA, 1 DB-9COM port, 2 USB3.0, 1 RJ45 Gigabit management LAN port, 2* Gigabit/10Gigabit RJ45 network ports			
ВМС	ASPEED AST2500			
PCIe expansion	Support 2 PCIe 4.0 x32 slots (can be converted into various types of PCIE slots through			



	PCEI adapter board), 1 PCIe 4.0 x16, 1 OCP 3.0 (PCIe3.0 x8 signal), 2 Slimline (PCIe4.0 x8 Signal)		
TPM	Support		
Power supply	·		
Power supply	Platinum 550W, 800W, 1200W, 1600W, 2200W hot-swap redundant power supply (adapt according to the actual power)		
System fan			
Fan	Support 4* 8038 fans (optional 4* 8056 fans)		
Remote managem	ent		
BMC chip	ASPEED AST2500		
IPMI compliant	IPMI2.0		
Management port	1 dedicated RJ45 management network port		
System depth	748mm.		
Operating Support	: List		
System	CentOS 7.5/7.6/8.0/8.1 RHEL 7.4/7.5/7.6/8.0/8.1 SLES12 SP3/SP4 Ubuntu 18.04/Ubuntu-20.04- Fedora 28 Windows 10 Win server 2012 R2/2016/2019 Xenserver 7.1/7.2/ ESXi 6.7/ 7.0U1c Windows Server 2012 2016 Hyper-v		
BIOS	· · · · · · · · · · · · · · · · · · ·		
Name	АМІ		
Support start mode	HDD (internal)/optical drive/U disk/PXE		
TPM	Support		
Safety certificate			
Nation	Asia, Europe, Americas, Australia, Africa		
Energy saving certification	CECP, CELP		
Safety certificate	CCC, CE, FCC		
RoHS	Meet the requirements		
Environmental para	ameters		
Operating temperature	5°C~40°C		
Operating humidity	35%~80%		
Storage temperature			
Short-term storage (≤ 72h): temperature -40°C~70°C / humidity 20%~90% RH non Storage humidity condensing (including packaging) Long-term storage (> 72h): temperature 20°C ~28°C / humidity 30%~70% RH non			





condensing (including packaging)

#### Table 1- 4

#### 2.2.2 System Architecture

SL series servers include 1U, 2U and 4U models (SNR-SR1304RS, SNR-SR1310RS, SNR-SR2308RS, SNR-SR2312RS, SNR-SR2325RS, SNR-SR4324RS, SNR-SR4336RS). This manual mainly introduces the **1U** model. The name of the motherboard is G4DCL-B, and the models are the same except for the hard disk connection method and the maximum number of compatible hard disks.

The motherboard features are as follows:

- The CPU adopts the third-generation Intel<sup>®</sup> ICE-Lake<sup>®</sup> Scalable processor, LGA 4189 socket, TDP 270 W; single processor can reach up to 40 cores, providing excellent system performance, the highest main frequency is 3.2GHz, using Intel<sup>®</sup> largest single core that can be achieved by the Turbo acceleration technology, the maximum overclocking (Max Turbo Frequency) is 3.4GHz
- Support Intel<sup>®</sup> Hyper-Threading Technology, allowing multiple threads to run concurrently on each processor core (up to 2 threads per core) to improve multi-threaded application performance
- Per CPU support 8 DDR4 channels, each channel supports 2 memory sticks, RDIMM /LRDIMM
- Support up to 32\* 2400/2666/2933/3200 MHz DDR4 LRDIMM/RDIMM/ECC memory, and supports a single capacity of 8GB, 16GB, 32GB, 64GB, 128GB, 256GB. Support Intel second-generation Optane memory BPS (maximum 512GB per DIMM)
- Motherboard integrated AST2500 BMC chip, standard KVM function
- G4DCL-B motherboard provides 2\* M.2 Key M SSD slots, supports 2280 size, only supports PCIe 4.0 X 4 signals
- 2 Gigabit Ethernet ports are integrated on the motherboard, using 88E1512 chip from PCH;
- PCH adopts INTEL LEWISBURG C620A series chipset
- Modular design of hard disk module, PCIE expansion module, power supply, fan and other components, tool-free maintenance
- PCH leads out 14 SATA Ports, maximum speed: 6Gb/s, compatible with SATA 1.5Gb/s, 3.0Gb/s; SATA Controller outputs 8 SATA PORTs, while SSATA outputs 6 SATA PORTs, of which SATA PORT has 8 PORTs, based on sequentially introduced into 2 SFF-8643 connectors, while the first 4 PORTs of SSATA are introduced into a SFF-8643 connector, and the latter 2 PORTs are introduced into 7PIN SATA connectors for connecting SATA DOM and DVD
- The BMC chip in this single board adopts the AST2500 control chip of ASPEED Company, which is used for IPMI remote management. VGA output port, dedicated Gigabit RJ45 management network port, and connected to PCH via RMII/NCSI.



The system architecture motherboard block diagram is as follows:

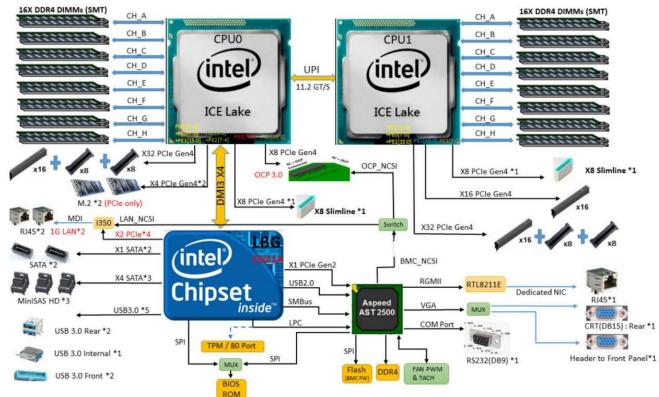
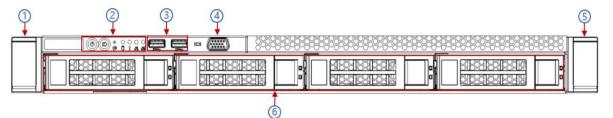


Figure 2-1

## 2.3 Introduction of system components

## 2.3.1 Front panel components

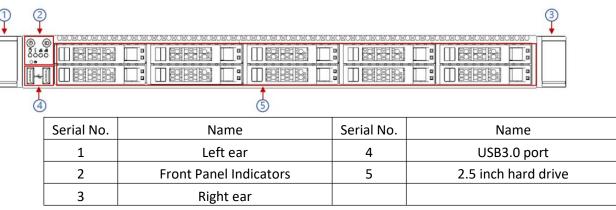
1U4-bay model



Serial No.	Name	Serial No.	Name
1	Left ear	4	VGA port
2	Front Panel Indicators	5	Right ear
3	USB3.0 port	6	3.5 inch hard drive



#### 1U10-bay model

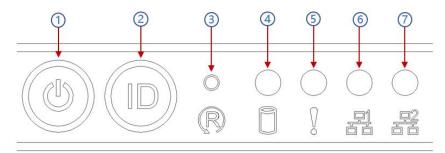


### Front panel port description

Name	Types of	Description
VGA port	DB15	For connecting to a display terminal such as a monitor or KVM.
USB port	USB 3.0	Provides an external USB port via which USB devices can be connected. Note: When using an external USB device, please make sure that the USB device is in good condition, otherwise the server may work abnormally.

#### Table 1- 11

### Front panel indicators and button description:



### Figure 2-8

Serial No.	Indicator/Button	Serial No.	Indicator/Button
1	Power switch button/indicator	5	System alarm indicator
2	UID button/indicator	6	Network port 1 connection status indicator
3	Reset restart server button	7	Network port 2 connection status indicator
4	Hard disk indicator		

### Table 1- 12



	LED Status Description			
Logo	Indicator/ Button	Status Description		
V SNR		SNR logo		
	Power Indicator	Power indicator description: Green (on): Indicates that the device is powered on normally. Green (flashing): Indicates that the device is in standby. Green off: The device is not powered on. Power button description: Short press this button in the power-on state, and the OS shuts down normally. Press and hold the button for 6 seconds in the power-on state to forcibly power off the server. Short press this button in the power-on state to start the machine.		
	UID button/ indicator	The UID button/indicator is used to conveniently locate the server to be operated. The UID button can be manually pressed or the BMC command can be remotely controlled to turn the light off or on. Description of UID indicator: Blue (on/flashing): Indicates that the server is located. Off: Indicates that the server is not located. UID button description: Short press this button to turn on/off the positioning light.		
R	Reset restart server button	Press to restart the server		
	Hard disk indicator	Blinking green light: The hard drive is operating normally		
	System alarm indicator	System alarm indicator. Including system alarms, fan alarms, power supply alarms, etc., which can be viewed through the IPMI management software		
	Network port connection status indicator	Corresponds to the Ethernet port indicator of the NIC card. Green (on): Indicates that the network port is connected normally. Off: Indicates that the network port is not in use or is faulty. Note: Corresponding to the two 1GE network ports on the motherboard.		
	Network port connection status	Corresponds to the Ethernet port indicator of the NIC card. Green (on): Indicates that the network port is connected normally. Off: Indicates that the network port is not in use or is faulty.		

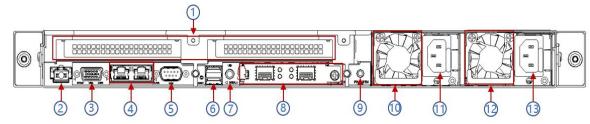




	indicator	Note: Corresponding to the two 1GE network ports on the
		motherboard.

### Table 1- 13

### 2.4.2 Rear panel components



## Figure 2-9

Serial No.	Name	Serial No.	Name
1	Riser modules	8	OCP3.0 interface
2	Management network port	9	Power switch button
3	VGA interface	10	Power module 1
4	PJ45 Gigabit network port	11	Power module AC port 1
5	COM port	12	Power module 2
6	USB3.0 interface	13	Power module AC port 2
7	UID indicator		

Table 1- 14

## Rear panel port description:

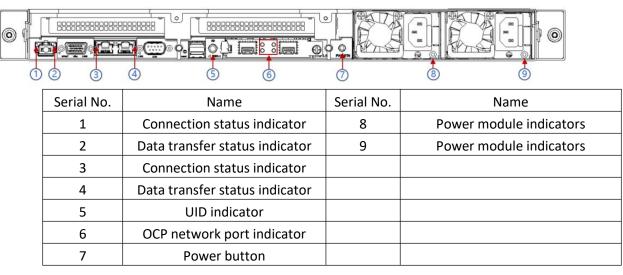
Name	Types of	No.	Description
VGA port	DB15	1	For connecting to a display terminal such as a monitor or KVM.
Managemen t network port	GE BASE-T	1	Provide outgoing 1000Mbit/s Ethernet port. The server can be managed through this interface.
USB port	USB 3.0	2	Provides an outgoing USB port via which USB devices can be connected. Notice: When using an external USB device, please make sure that the USB device is in good condition, otherwise the server may work abnormally.
RJ45 Gigabit Ethernet port	GE BASE-T	2	Server service network port.



Power		1 or	You can choose the number of power supplies according to your
Module AC	/	101	actual needs, but make sure that the rated power of the power
port		2	supply is greater than the rated power of the whole machine.
COM port		1	Serial communication port
OCP3.0 port		1	Install the network card of OCP3.0

Table 1- 15

## Rear panel indicators and button description:



#### Table 1- 16

Indicator/						
	Status Description					
Button						
	Green (on): Indicates that the input and output are normal.					
	Red (on): Indicates that the input is normal, and there is no output due to					
	power supply over-temperature protection, power output over-current/short-					
Power module	circuit, output over-voltage, short-circuit protection, device failure (excluding					
indicators	all device failures) and other reasons.					
mulcators	Green (1Hz/flashing): Indicates that the input is normal, the power supply is					
	turned off due to power-on or in-position; the input is over- or under-voltage.					
	Green (4Hz/flashing): indicates that the firmware is being upgraded online.					
	Off: Indicates that there is no AC power input.					
Connection	Steady green: Indicates Gigabit Link.					
Connection status indicator	Steady orange: Indicates 100M link.					
	Off: Ten Mega Links.					
Data transfer	Yellow (flashing): Indicates that data is being transmitted.					

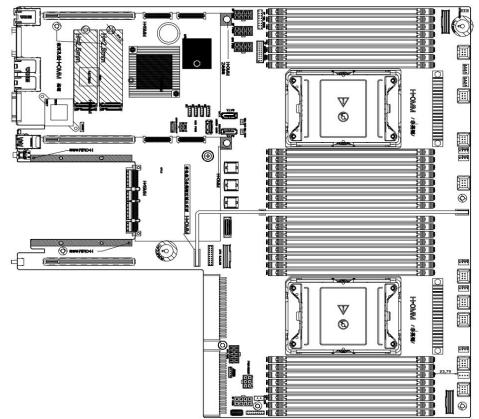


status indicator	Off: Indicates no data transmission.	
	Blue (on/flashing): Indicates that the server is located.	
	Off: Indicates that the server is not located.	
UID indicator	UID button description: Short press this button to turn on/off the positioning	
	light.	
OCP network	The upper two are connection status indicators, and the lower two are data	
port indicator	transmission status indicators	
	Short press this button in the power-on state, and the OS shuts down normally.	
Dowor Putton	Press and hold the button for 6 seconds in the power-on state to forcibly power	
Power Button	off the server.	
	Short press this button in the power-on state to start the machine.	

Table 1- 17

### 2.43 Motherboard components

All models share motherboard components, the port description is as follows:



Name	Remarks	Default
J16	BMC_UART5, BMC debug serial port	
PJ1	For CPU0 VR upgrading and programming, the jumper cap is not connected by default	



PJ2	For CPU1 VR upgrading and programming, the jumper cap is not			
	connected by default			
J12	Front VGA mounting ear connector			
J36	Front USB 3.0 connectors (x2)			
J35	Built-in USB3.0 connector			
J34	Rear USB3.0 connector q(x2)			
J1	Trusted Platform Module (TPM)	SPI		
SSD1 / SSD2	M.2 PCIE X2 CONN, only supports PCIe Only 2280 size			
J15	CPLD JTAG Header, used to program CPLD program			
J32	Front panel buttons, LED connectors			
J48	2X10 BP HDD LED Connector (for Rear HDD BP backplane)			
	sSATA, SATA 3.0 Connection from PCH (8643 miniSAS HD with PCH			
J27	sSATA SGPIO Pins) * Whitley3 Ver.A motherboard must use J27 and			
JZ /	J48 to connect RM2112-SHDB-D1 /D2 to turn on the hard drive			
	LED*			
J29	SATA, SATA 3.0 Connection from PCH (8643 miniSAS HD with PCH			
JZ3	SATA SGPIO Pins)			
124	SATA, SATA 3.0 Connection from PCH (8643 miniSAS HD with PCH			
J31	SATA SGPIO Pins)			
FAN1~FAN9	6 Pin fan connector (total 9 pcs)			
J40~J47	4 Pin fan connector (total 8 pcs)			
SATA1/SATA2	SATA DOM CONN (SATA 7 Pin) (with PWR design)			
J37/J38	SATA DOM PWR CONN			
J64	Chassis Intrusion Header, chassis intrusion detection			
J24/J25	Slimline PCIe X8 CONN (defined by SFF-9402 standard)			
B1	Buzzer			
DIMMA0-DIMMH0 DIMMA1-DIMMH1	CPU0 DIMM, 16 slots			
DIMMA1-DIMMH1 DIMMA3-DIMMH3 DIMMA4-DIMMH4	CPU1 DIMM, 16 slots			
SW3	Rear BMC Reset Button			
COM1	Rear COM Port			
J4	Rear BMC IPMI LAN Port			
J2	1X2 Gigabit data network port			
CN1	Rear VGA Connector			
SW2	Rear UID Button (Blue LED)	+		
SW1	Rear Power Button	+		
J51/J53/J56/J58	2X4 Front BP HDD Power Connectors (White)			
J59/J61	2X4 Risers and GPU Card Power Connectors (Black)			
J52/J54/J55	2X2 Rear BP HDD Power Connectors (Black)			
J60	2X3 Riser 4 Power Connector (Black)			
J69	PEHP CPU0 (1.8V CPU I2C Reserved for U.2 HDD backplane)	-		
J70	PEHP CPU1 (1.8V CPU I2C Reserved for U.2 HDD backplane)			
J49/J50	CRPS Slots			
SW4	SKU IDs (Reserved)			
J7/J8/J9/J10	BP1~BP4 BMC I2C Connector (Reserved for HDD BP backplane)			
J57	1X2 CD/DVD Power Connector			
J63	NVME Key (VROC)			
J57	1X2 CD/DVD Power Connector			

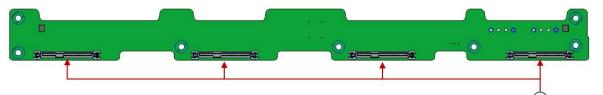


J13	VR Debug Mode Jump (Reserved for RD test Only)	No Jumper	
J14	CPLD No CPU Power ON Jump (Reserved for RD test Only) No Jumper		
J30	2X4 SATA sGPIO Header (for 8643 miniSAS HD Conn J29/J31)		
J28	2X4 sSATA sGPIO Header (for 8643 miniSAS HD Conn J28)		
J33	BMC Watch Dog Timer Enable (Reserved for RD test Only)		
J5	IPMB Connector		
J67	SCY Strap, (2/3)High = Disable Flash Descriptor Security	Default (1/2)Low	
J11	PCH_HOST I2C Header (Reserved for RD test Only)		
	PCH I2C Header		
	Pin.1/2 Clear CMOS		
J68	Pin.3/4 Password Clear	No Jumpers	
100	Pin.5/6 ME FW Recovery Status	No Julipers	
	Pin.7/8 BMC Disable		
	Pin.9/10 BIOS Recovery Mode Enable		
J3	SD Card Slot (BMC Log Storage)		
OCP1	OCP3.0 Slot (CPU0 PCIE X8)		
J17+J18+J19	Riser1 Slot (CPU0 PCIE X32)		
J20+J21+J22	Riser2 Slot (CPU0 PCIE X32)		
J23	Riser3 Slot (CPU1 PCIE X16)		

## 2.4.4 HDD Backplane Components

1U4 active backplane as shown in the figure

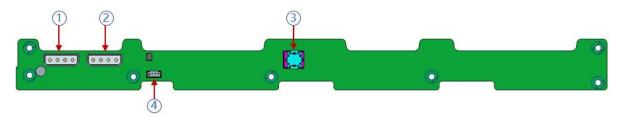
## Top surface:



Serial No.	Description	Function
	SAS/SATA hard drive connector	1. Maximum support 12G/b SAS hard disk;
1		2. Maximum support 6G/b SATA hard disk;
		3. Support SAS/SATA hard disk hot-swap.

### **Bottom surface:**

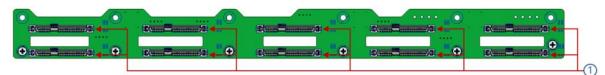




Serial No.	Description	Function
1, 2	Power connector	Backplane power transfer connector for 5V/12V power
		transfer
	SFF-8643 12Gb SAS	
3	interface	Backplane bay signal interface
4	I2C port	For I2C signal interface

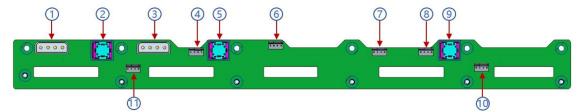
## 1U10 active backplane as shown

## TOP surface:



Serial No.	Description	Function
1	SAS/SATA hard drive connector	<ol> <li>Maximum support 12G/b SAS hard disk;</li> <li>Maximum support 6G/b SATA hard disk;</li> <li>Support SAS/SATA hard disk hot-swap.</li> </ol>

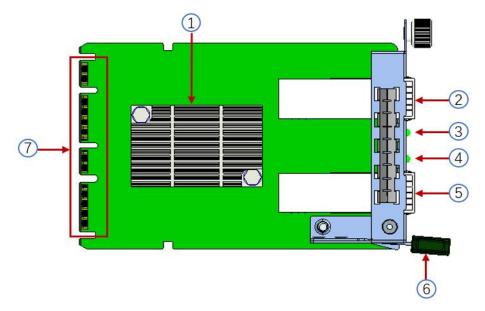
## Bottom view:



Serial No.	Description	Function
1.2	Dower connector	Backplane power transfer connector for
1, 3	Power connector	5V/12V power transfer
2, 5, 9	SFF-8643 12Gb SAS interface	Backplane bay signal interface
4, 6, 7, 8, 10,		For Ania for interface
11	Temperature controlled fan socket	For 4pin fan interface

## The OCP3.0 network card is shown in the figure:





Serial No.	Description	Function
1	Intel 82599ES chip	It is mainly connected to the network interface controller of the motherboard CPU through PCIe Gen.2 X8, which is converted into a two-port SFP+ at the network card end, and the 82599ES chip also provides an interface for communication with the motherboard BMC NCSI for information transfer between the BMC and the network card.
2	SFP+ LAN1	Provides SFP+ 10G optical port signal
3	LED1	LED status indicator
4	LED2	LED status indicator
5	SFP+ LAN2	Provides SFP+ 10G optical port signal
6	Network card buckle	It is used to lock the network card. When removing the network card, you need to press buckle down to pull out the network card.
7	OCP3.0 interface	Used to connect to the motherboard OCP3.0 PCIe X8 signal/12V power supply/Sideband signal

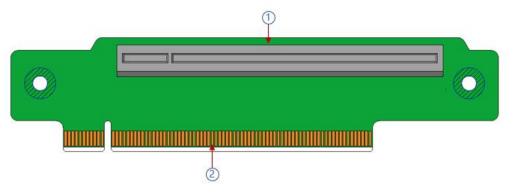
## **LED description**

Serial No.	Description	Function
	SFP+ LAN1 Link LED	Green/ yellow LED for indicating LAN1 speed
		Green: 10 Gigabit Internet speed; Yellow: Gigabit
LED1		Internet speed
		No light: no optical port network cable
	SFP+ LAN1 ACT LED	Green LED for LAN1 data activity



		Flashing: data activity; off: no data activity
	SFP+ LAN2 Link LED	Green/ yellow LED for LAN2 speed
		Green: 10 Gigabit Internet speed; Yellow: Gigabit
LED2		Internet speed
		No light: no optical port network cable
	SFP+ LAN2 ACT LED	Green LED for LAN2 data activity
		Flashing: data activity; off: no data activity

### **RISER 1 backplane as shown:**

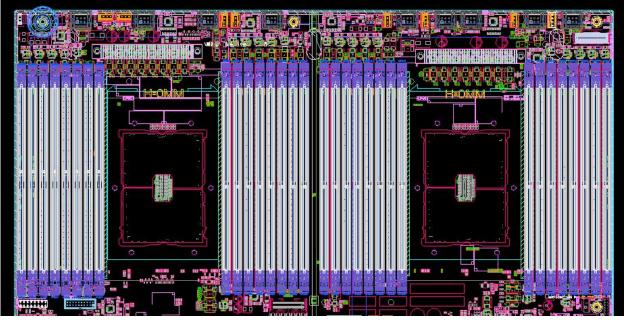


Serial No.	Description	Function
2	PCIE 3.0 X16 Slot	For PCIe 3.0 X16 devices.
4	PCIE X16 specification Gold finger	For motherboard PCIe X16 X8 port

### 2.4.5 DIMM slot locations

The motherboard adopts Intel Whitley platform and is equipped with Intel Xeon ICE Lake CPU. Each CPU supports 8 channels, and each channel has 2 DIMMs. The entire motherboard can support 32 DIMMs. When only one memory is inserted, the blue box in the figure below is preferred, (inner slot board slot plastic color is blue), supports DDR4 ECC RDIMMs/ LRDIMMs server memory, the memory frequency supports 2400/2666/2933 / MHz; the location is as shown below:





## 2.4.6 Hard disk label

1U4-bay model

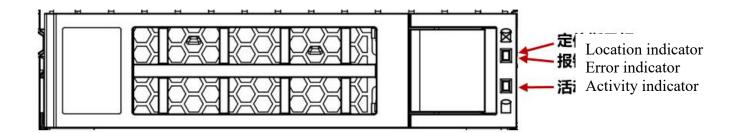
		× 8	383893838	\$2828 <del>2</del> 8282828282828282	322222223	;885858585858588888	388888 <u>]</u> [-
		BIBBB BE				BIB (3) DEG BI	e
	8	BI BPO REALIS			B [	<u>5155615617631</u>	

### 1U10-bay model

$\square$	■ (@ (@) (USOSOSOSOSOSOSOSOSOSOSOSOSOSOSOSOSOSOSO	



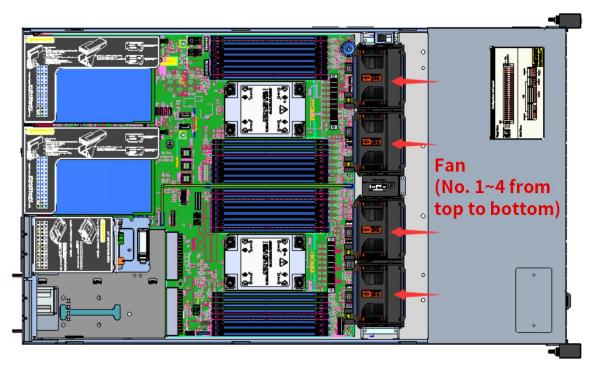
## 2.4.7 Hard disk indicator



Function	Activity indicator (green)	Location indicator (blue)	Error indicator (yellow)
Hard drive in place	On	Off	Off
Hard drive activity	Flashing 4Hz/sec	Off	Off
Hard disk positioning	On	Flashing 4Hz/sec	Off
Hard disk error	On	Off	On
RAID rebuilding	On	Off	Flashing 1Hz/sec

### 2.4.8 System fan

The server supports variable fan speeds. Normally the fan runs at the lowest speed, if the server temperature rises, the fan will increase the speed to cool down.





### **Chapter 3 Installing System Components**

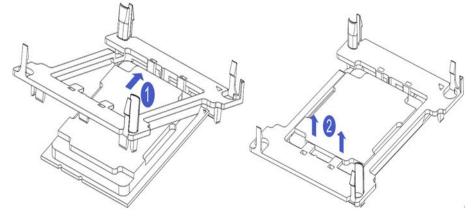
#### 3.1 Installation of CPU

Install the processor:

Step 1: CPU Installation

1. Tilt the CPU angle as shown in the figure, align the A1 corner (triangle mark), and clamp it on one end of the clamping piece.

2. Direction, press the other end of the clamping piece to fix the CPU to the clamping piece.



### Figure 3-1

Step 2: Install the CPU on the heat sink, and ensure that the surface of the CPU and heat sink is clean and free of oil and foreign body. (As shown below)

1. Smear about 0.4ml of thermal grease on the CPU and smooth it evenly.

2. Align the A1 corner (triangle mark), and buckle the CPU on the heat sink.

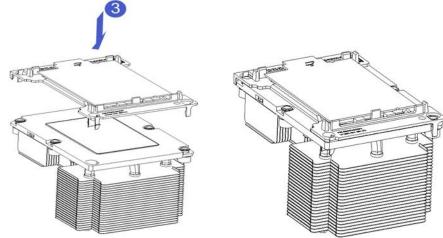


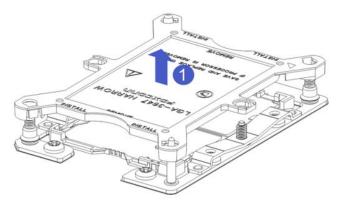
Figure 3-2



### 3.2 Installation of heat sink

Installing steps:

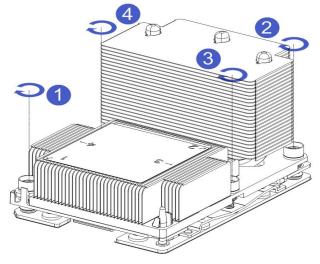
1. Remove the processor blank (as shown in the figure below)



### Figure 3-1

2. Align the heat sink with the heat sink fixing studs on the CPU base, and tighten the heat sink fixing screws in sequence according to the instructions. (As shown below)

**NOTE:** The pins on the motherboard are extremely fragile. To avoid damaging the motherboard, do not touch the processor or processor socket contacts.





### 3.3 Memory installation

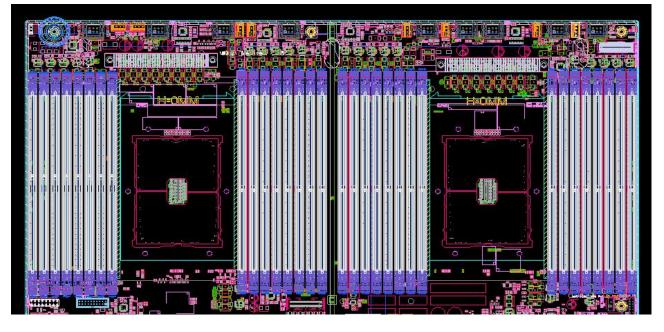
### 3.3.1 Memory support specifications

The motherboard supports 64GB R-DIMM, 128GB LR-DIMM, 256GB 3DS LRDIMM DDR4 memory, up to 2933 MHz

(2933MT/s is only achieved with a single memory per channel, depending on the CPU SKU).

**Note:** Please use memory modules with the same CAS delay value on this motherboard. It is recommended that you use the same capacity and the same frequency memory produced by the same manufacturer.





### 3.3.2 How to install memory

The 8 memory slots controlled by CPU 1 on the motherboard are: DIMMA1, A2, DIMMB1, B2, DIMM C1, C2 and DIMM D1, D2; the 8 memory slots controlled by CPU 2 are: DIMME1, E2, DIMMF1, F2, DIMMG1, G2 and DIMMH1, H2, pay attention to the notch of the memory and the notch of the DIMM slot, and snap each DIMM module into place vertically to prevent incorrect installation.

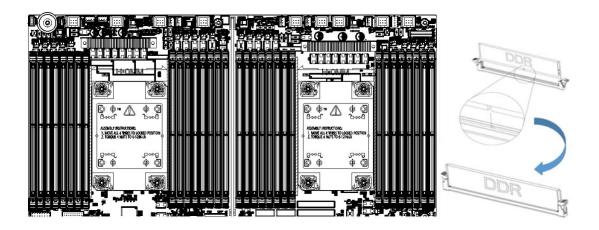


Figure 3-3



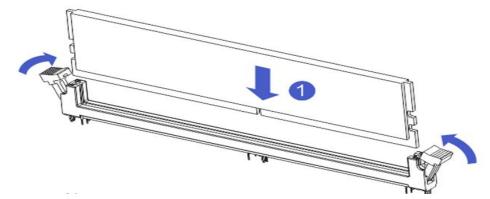


Figure 3-4

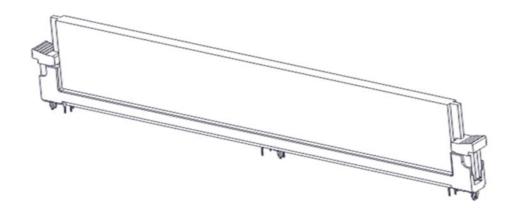


Figure 3-5

### 3.4 Hard disk installation

Install 3.5" hard drive:

1. Put the hard disk in the tray

2. There are 4 countersunk head screws on the left and right sides to lock the hard disk (the screw heads must not protrude from the surface of the slide rail on both sides of the tray)



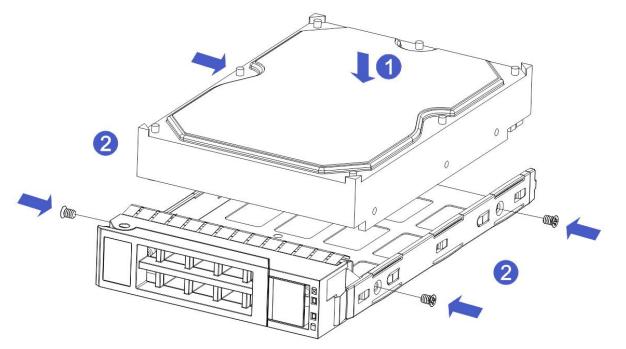


Figure 3-6

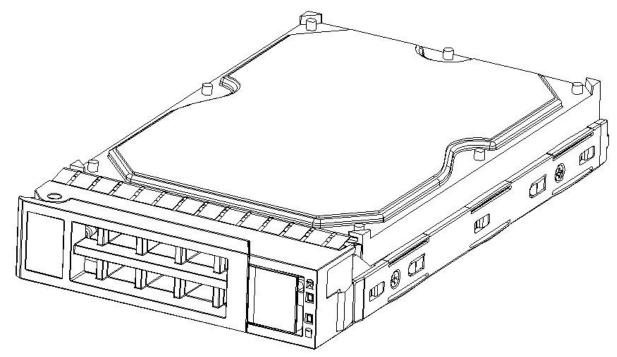


Figure 3- 7

Install 2.5" hard drive

1. Put the hard disk in the tray

2. Four countersunk head screws at the bottom lock the hard disk (the screw heads protrude from the bottom of the tray)



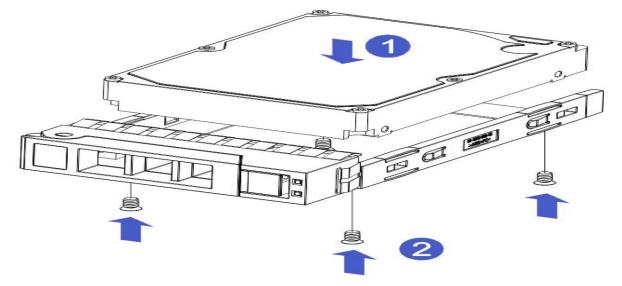
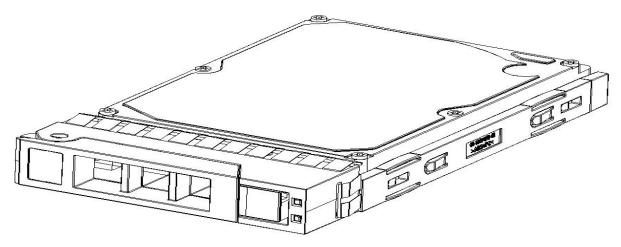


Figure 3-8

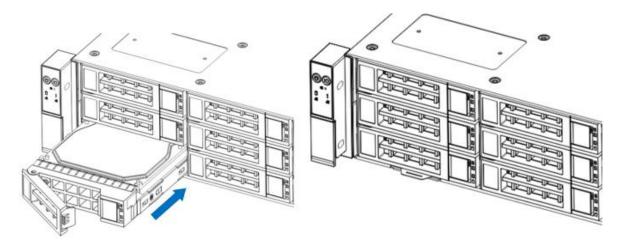


## Figure 3-9

HDD Tray Assembly Installed into Chassis

- 1. With the hard drive wrench open, push it into the chassis
- 2. When the hard disk gold finger touches the backplane device, turn the wrench in the direction of the arrow
- 3. Schematic diagram of hard disk installation in place







### 3.5 Front hard disk backplane installation

Front hard disk backplane installation:

- 1. The gourd holes and hanging holes on the left and right sides of the disk backplane are aligned with the pegs of the hard disk frame, and advance in the direction of the arrow.
- 2. After the hard disk backplane is pushed into place, press the backplane down until all the hoist nails and hanging holes on both sides are in place.
- 3. Flip the fixing parts on the left and right sides of the hard disk backplane, and lay the fixing parts flat.

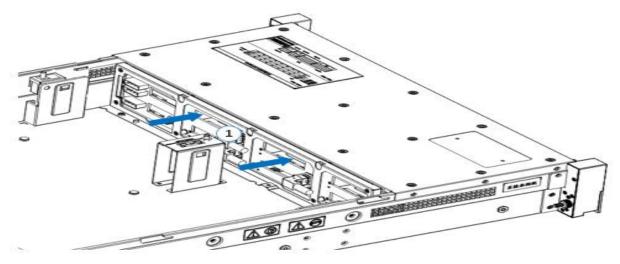


Figure 3- 11



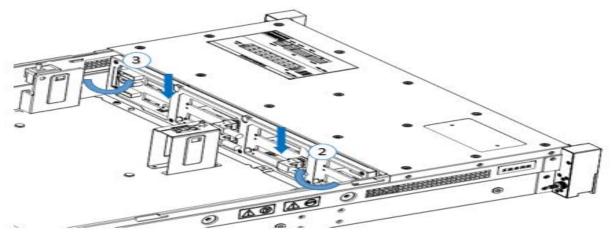
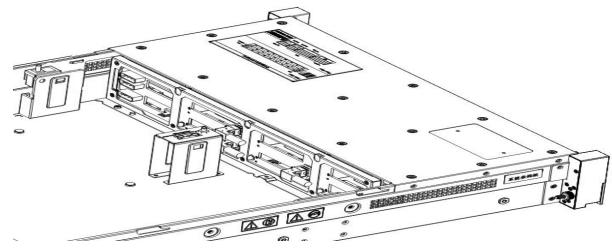


Figure 3- 12





### 3.6 M.2 SSD installation

Step 1: Install the positioning studs according to the length of the M.2 card to be installed.

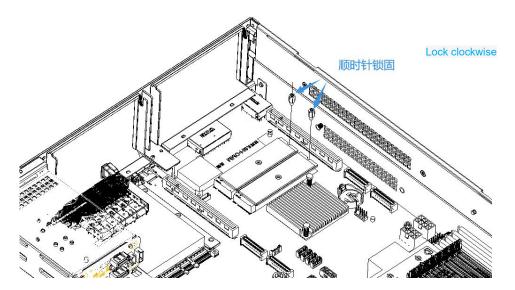


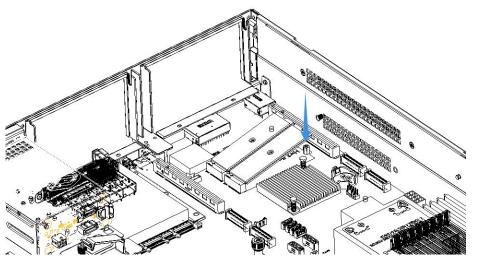




Figure 3-14

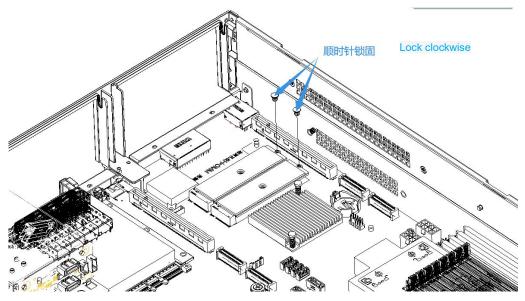
Step 2: Install the M.2 Card

- 1. Insert the M.2 card connector end into the motherboard connector as shown in the illustration.
- 2. Press the other end of the M.2 card to the plane of the positioning stud in step 1.





Step 3: Install the fixing screws of the M.2 card.





### 3.7 Installation of PCI-E expansion card

Step: Install the PCIE Card

- 1. Insert the PCIE card according to the direction shown in the figure
- 2. Rotate PCIE card lock
- 3. According to the arrow plan, lock the PCIE card lock



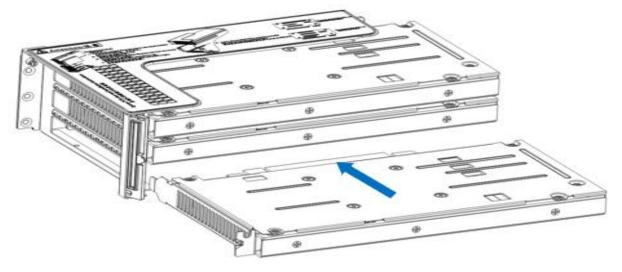


Figure 3-19

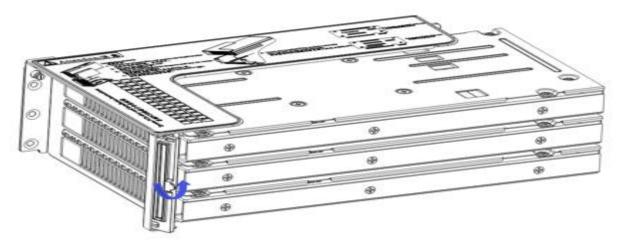
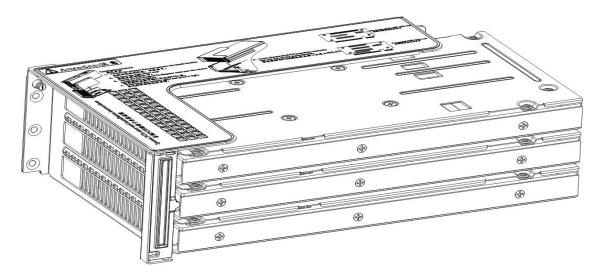


Figure 3- 20



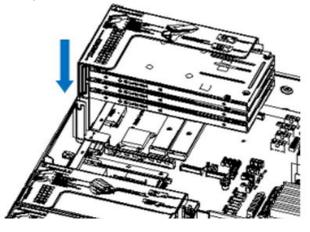






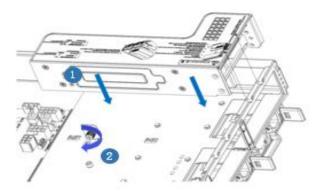
#### 3.8 PCI-E module installation

Riser1-3 module installation steps: PCIE components on the rear window, place them vertically downward - align with the PCIE slot, align with the positioning holes, and place them flush with the rear window.



#### Figure 3.22

Riser4 module installation steps: PCIE components in the rear window, place vertically downwards - align the PCIE slot, align the positioning holes, place it flush with the rear window, and then tighten the side screws.





#### 3.9 Rear hard disk module backplane installation

Step 1: Rear hard disk Module Backplane Installation

1. Move the back plate limit shrapnel outwards with your hands, and hold the shrapnel with your hands - keep the shrapnel open

2. Align the peg holes on the backplane of the hard disk with the pegs of the hard disk module bracket, push it in, and place it down in place, release the hard disk limit shrapnel, and the shrapnel will automatically bounce back to the original position;

3. Flip over the fixing parts on the back panel of the hard disk, as shown in the figure - the fixing parts can be placed flat.



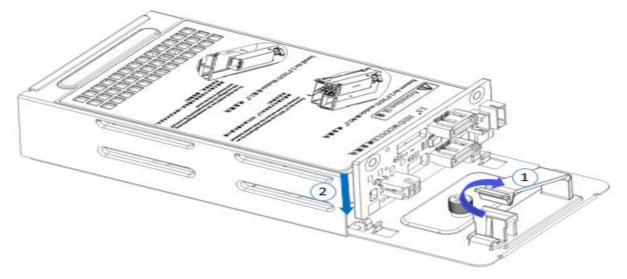
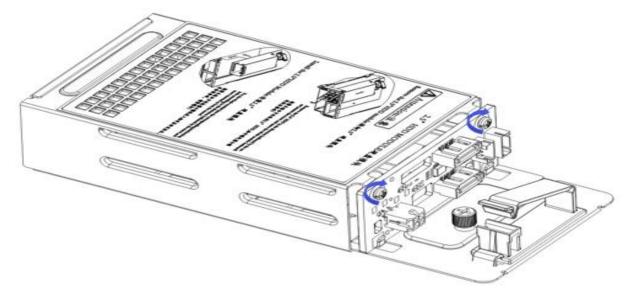


Figure 3-24



*Figure 3-25* 

## 3.10 Rear hard disk module installation

- Rear 3.5-inch hard disk enclosure installation
- Step 1. The hard disk box is placed vertically down and flush with the rear window
- Step 2. Rear hard disk Cage Assembly Fixing
- Step 3. Lock a captive screw



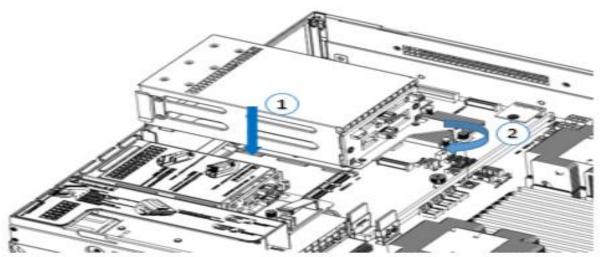
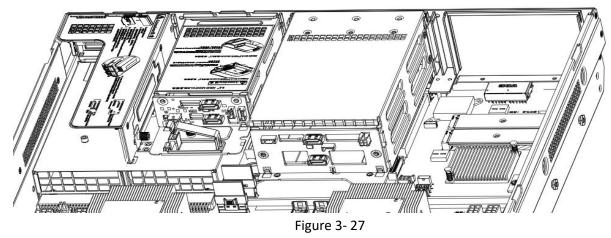
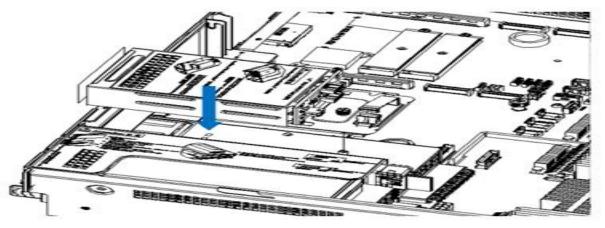


Figure 3-26

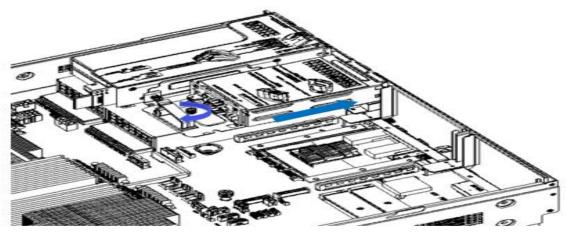


- Rear 2.5-inch hard disk enclosure installation
- 1. Place vertically downward and align with the guide pin at the lower end
- 2. After placing it flat, push it in the direction of the arrow to the end.
- 3. Lock the captive screw









### Figure 3-29

### 3.11 Installation of power module

Steps: Push the power supply to the end in the direction of the arrow, and after the shrapnel wrench on the right makes a clicking sound, it means the installation is in place;

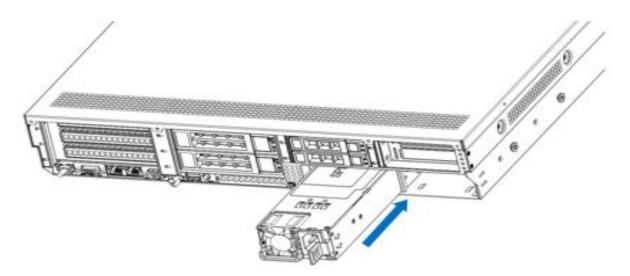


Figure 3- 30



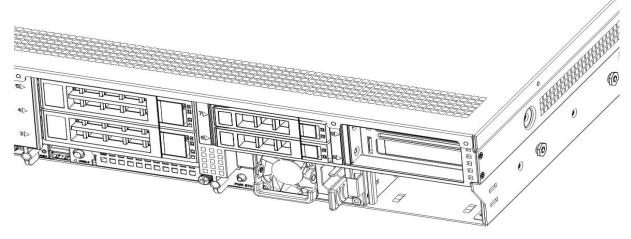
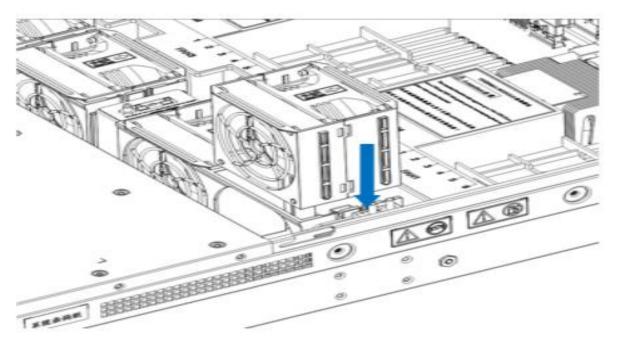


Figure 3-31

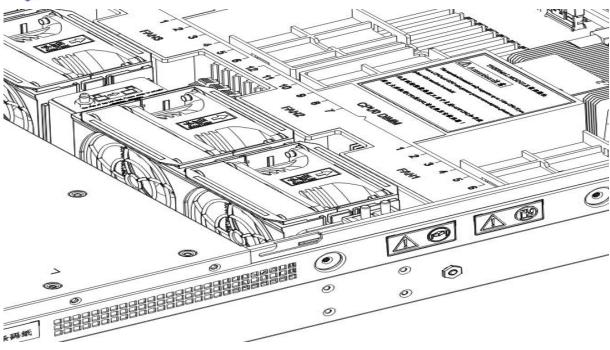
## 3.12 Installation of the fan module

Steps: Place the fan module vertically downward in the direction of the arrow (pay attention to the direction of the fan module)











### 3.13 Installation of the wind shield

Steps: Align the air deflector module with the hanging points on the left and right sides, and place it vertically downward - the height is lower than the height of the cabinet

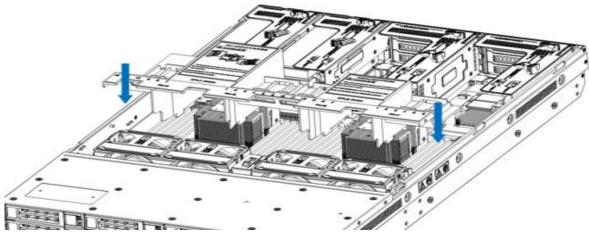


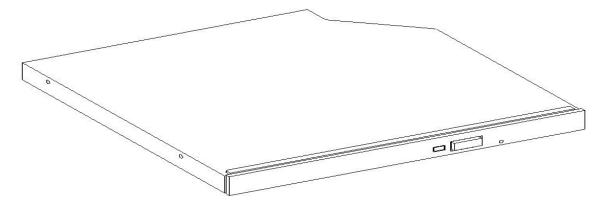
Figure 3-34

### 3.14 Installation of CD/DVD-ROM

Steps: Install the CD/DVD-ROM

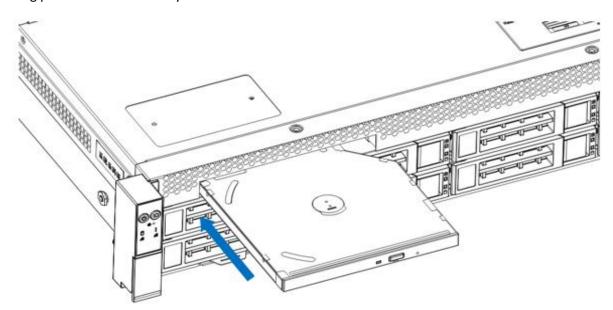
1. The optical drive is as shown in Figure 3-35:





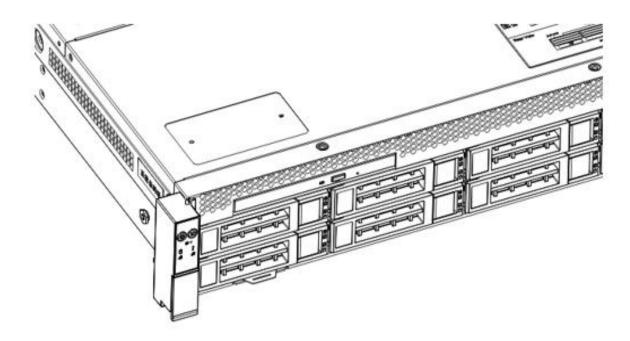
## Figure 3-35

2. Align the opening of the optical drive on the chassis, and push the optical drive in the direction of the arrow until the fixing part locks automatically.











### 3.15 Installation of the upper cover of the chassis

Step 1: Install the case back cover

- 1. Align the top cover with the opening of the box and place it downwards
- 2. Rotate the upper cover lock in the direction of the arrow to lock it in place

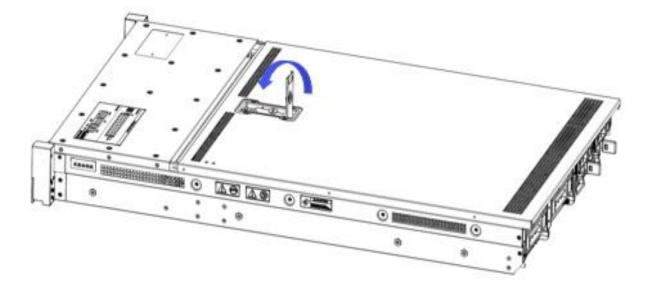


Figure 3-38



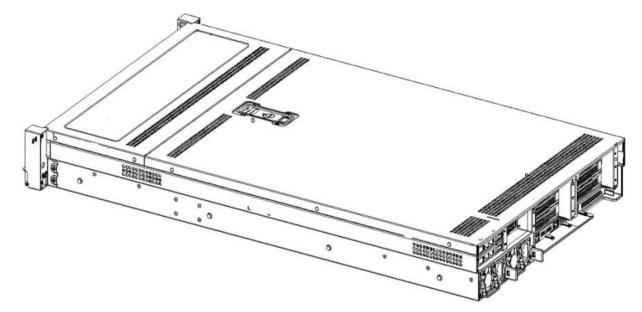


Figure 3- 39





### **Chapter 4 System Rack Installation**

### 4.1 Mounting on the inner rail of the guide rail

Step 1. Prepare two slide rails and pull out the inner rail.

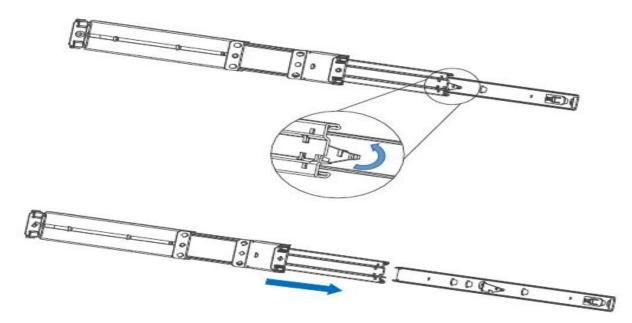


Figure 4-1

Step 2. Fasten the inner rails on both sides of the chassis.

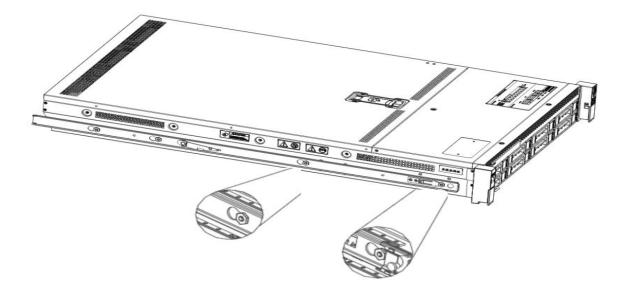


Figure 4-2

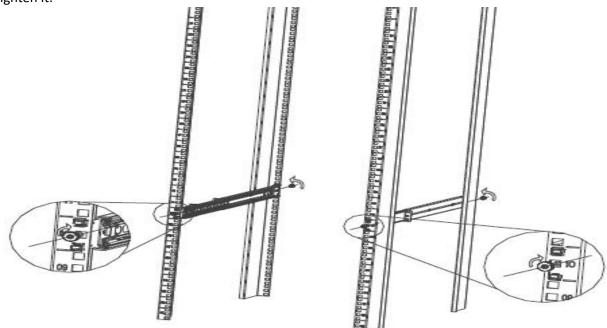
### 4.2 Installing the outer rails to the rack

Step 3. Install the outer rail on the cabinet bracket and tighten the screws.





Note: When installing the rail, you need to align the U mark, and install it in place when you hear a snap, and use M5 screws to tighten it.

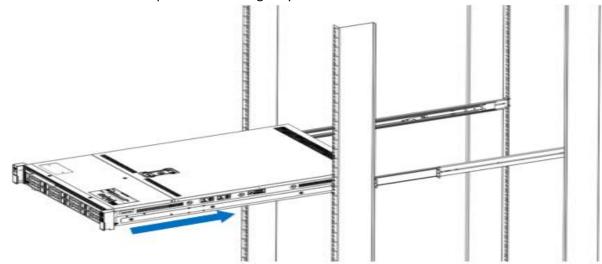




### 4.3 Install the server to the rack

Step 4. Align the chassis with the inner rails installed on the outer rails for installation.

Note: When you can push the chassis forward, you will hear a popping sound. If you can't push it, you need to pull the inner rail buckle down to continue to push the chassis gently.





Step 5. When the chassis is pushed forward and cannot slide, the screw installation is completed.





Note: During equipment maintenance, you need to loosen the panel screws, pull the chassis lightly, and do not push or pull the chassis at random to avoid damage to the equipment.

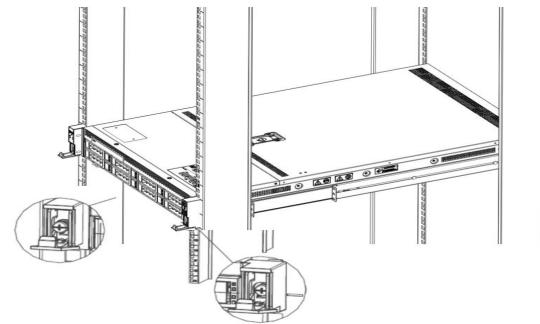


Figure 4-5

**Chapter 5 BIOS parameter settings** 



### 5.1 Enter the BIOS Setup interface

Steps:

1. Power on the server motherboard and connect the keyboard;

2. During the POST process, pay attention to the prompt to enter the BIOS Setup interface at the bottom left of the Logo screen, "Press <DEL> or <ESC> to enter setup, <F7> to enter Boot Menu.";

3. Press the <DEL> or <ESC> key on the keyboard to prepare to enter the BIOS Setup interface;

## 5.2 Setup menu parameter description

### 5.2.1 Navigation Key Description

$\rightarrow \leftarrow$ :	Select Screen	
$\uparrow \downarrow$ :	Select Item	
Enter:	Select	
+/-:	Change Opt.	
F1:	General Help	
F2:	Previous Values	
F3:	Optimized Defaults	
F4:	Save & Reset	
ESC:	Exit	

### 5.2.2 Main menu description

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



**BIOS** Information

## Datasheet

#### Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc. Main Advanced Platform Configuration Socket Configuration Server Mgmt Security Boot

G3DCL 0.05 ×64

0A:4.1.4.256

06/11/2020

1.00.0

01

06/19/2020 11:28:13

Set the Date. Use Tab to switch between Date elements.

Days: Dependent on month

Range of Years may vary.

Default Ranges:

Year: 1998-9999

++: Select Screen

↑↓: Select Item

F1: General Help

F4: Save & Exit ESC: Exit

F2: Previous Values

F3: Optimized Defaults

Enter: Select +/-: Change Opt.

Months: 1-12

Project Version Build Date and Time BMC Firmware Revision ME Firmware Version CPLD name CPLD version Build Date and Time Access Level

Platform Information Processor Processor Type PCH RC Revision

Memory Information Total Memory Usable Memory

System Date System Time Administrator 50654 – SKX UO Intel(R) Xeon(R) Bro LBG QS/PRQ – 1G – SO 0580.D04 8192 MB 8192 MB

[Fri 06/19/2020] [16:50:43]

Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

#### Figure 5-1

#### **BIOS Information**

**Project Version:** 

Displays the version information of the board BIOS.

Build Date and Time:

Displays the compilation date and time of the board BIOS.

**BMC Firmware Revision:** 

Displays the version information of the board BMC.

ME Firmware Version:

Displays the version information of the board ME.

**CPLD Name:** 

Displays the name information of the board CPLD.

CPLD Version:

Displays the version information of the board CPLD.

Build Date and Time:

Displays the compilation date and time of the board CPLD.

Access Level:

Displays the access rights of the current user of the board.



### **Platform Information**

Processor:

CPUID and stepping information.

Processor Type:

CPU model information.

PCH:

PCH SKU and stepping information.

RC Revision:

Displays the version information of the board RC.

### **Memory information**

Total Memory:

Displays the total system memory capacity.

Usable Memory:

Displays the amount of available memory in the system.

System Language:

Select the current system language.

System Date:

Displays and sets 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 increases by 1.

Press "-": the value decreases by 1.

Press the number key: directly change the value.

System Time:

Display and set the current system time. The system time is in 24-hour format, 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 increases by 1.

Press "-": the value decreases by 1.

Press the number key: directly change the value.

## 5.2.3 Advanced menu description

The Advanced interface contains advanced configuration items of the BIOS system.



Aptio Setup Utility – Copyright (C) 2020 American Main Advanced Platform Configuration Socket Configuration	
> Trusted Computing > Serial Port Console Redirection > SID Configuration > Option ROM Dispatch Policy > PCI Subsystem Settings > CSM Configuration > NVMe Configuration > Network Stack Configuration > iSCSI Configuration > Intel(R) Ethernet Connection X722 for 1GbE - 00:00:00:00 > Intel(R) Ethernet Connection X722 for 1GbE - 00:00:00:00	Trusted Computing Settings ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American M	legatrends, Inc.

#### Figure 5-2

Trusted Computing

Trusted Execution Module configuration.

### Serial Port Console Redirection

Serial port redirection configuration.

**SIO Configuration** 

**Option ROM Dispatch Policy** 

**PCI Subsystem Settings** 

**CSM** Configuration

NVMe Configuration

Network Stack Configuration

iSCSI Configuration

Intel Ethernet Connection X722 for xGbE - XX:XX:XX:XX:XX:XX

Intel xG network card UEFI OPROM configuration



## 5.2.4 Trusted Computing

TPM20 Device Found		Enables or Disables BIOS
Firmware Version:	7.62	support for security device.
Vendor:	IFX	O.S. will not show Security Device. TCG EFI protocol and
Security Device Support	[Enable]	INT1A interface will not be
Active PCR banks	SHA-1,SHA256	available.
Available PCR banks	SHA-1,SHA256	
SHA-1 PCR Bank	[Enabled]	
SHA256 PCR Bank	[Enabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	++: Select Screen
Endorsement Hierarchy	[Enabled]	↑↓: Select Item
TPM2.0 UEFI Spec Version	[TCG_2]	Enter: Select
Physical Presence Spec Version	[1.3]	+/-: Change Opt.
TPM 20 InterfaceType	[TIS]	F1: General Help
Device Select	[Auto]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

## Figure 5- 3

Display and set TCM/TPM module information. Different module options have different settings. Users can set according to the Setup help instructions.



## 5.2.5 Serial Port Console Redirection

Aptio Setup Utilit Advanced	ty – Copyright (C) 2020 Amer.	ican Megatrends, Inc.
COMO Console Redirection ▶ Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275	5. Copyright (C) 2020 America	an Megatrends, Inc.

#### Figure 5-4

**Console Redirection** 

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

Disabled: Disable the redirection function.

Enabled redirection.

Default: Disabled



### 5.2.6 Console Redirection Settings

Aptio Setup Utility - Advanced	– Copyright (C) 2020 America	an Megatrends, Inc.
COMO Console Redirection Settings Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Putty KeyPad	[VT100+] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [VT100]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Version 2.20.1275. 0	Copyright (C) 2020 American	Megatrends, Inc.

### Figure 5-5

### **Terminal Type**

This option selects 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 $\sim$ 115200

Default: 115200

Data Bits

Serial port redirection data bit length, menu options are: 8, 7

Default: 8

#### Parity

Serial port redirection verification switch, the menu options are: None: no verification



Even: Even parity Odd: odd parity Mark: The check digit is always 1 Space: The check digit is always 0 Default: None Mark and Space checks are not allowed to detect errors.

Stop Bits

Serial port data packet end flag, the menu options are:

1

2

Default: 1

Flow Control

Serial port redirection control flow selection switch, the menu options are:

None: close the serial port redirection control flow

Hardware RTS/CTS: Request to Send/Clear to Send

Default: None

VT-UTF8 Combo key support

ANSI/VT100 terminal VT-UTF8 key combination support switch, the menu options are:

Disabled: Disable ANSI/VT100 terminal VT-UTF8 key combination support

Enabled ANSI/VT100 terminal VT-UTF8 key combination support

Default: Enabled

Recorder Mode

Record mode switch, enable this function, only text information will be sent, the menu options are: Enabled Disabled

Default: Disabled

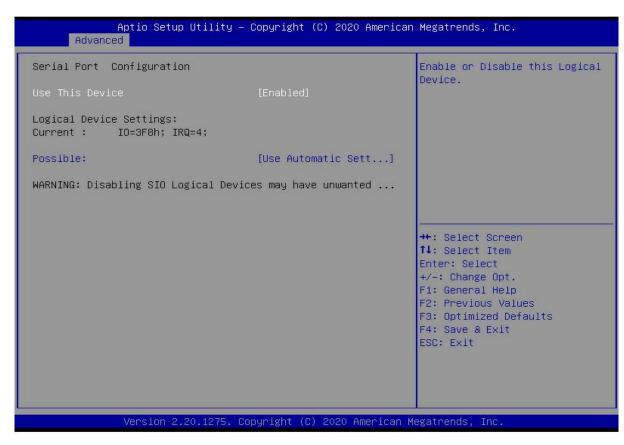


## 5.2.7 SIO Configuration

Aptio Setup Utility – Copyright (C) 2020 American Advanced	Megatrends, Inc.
AMI SIO Driver Version : A5.10.00	View and Set Basic properties of the SIO Logical device.
Super IO Chip Logical Device(s) Configuration ▶ [*Active*] Serial Port	Like IO Base, IRQ Range, DMA Channel and Device Mode.
WARNING: Logical Devices state on the left side of the co	
	<pre>→+: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2020 American M	egatrends, Inc.

Figure 5- 6





### Figure 5-7

Use This Device

With this device, the menu options are:

Enabled

Disabled

**Default: Enabled** 

#### Possible

Select the optimal setting for the serial port according to your needs. 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



## 5.2.9 Option ROM Dispatch Policy

AMI ROM Dispatch Policy : A5.01.18 Restore if Failure [Disabled] Primary Video Ignore [Enabled] Device Group Default ROM Policy (Selected at CSM Setup Page) : Network Class : UEFI Mass Storage Class : UEFI Display Class : UEFI Other Devices : UEFI	▲ If system fails to boot and this option is set to 'Enabled', software will reset settings of this page as well as CSM page to its default values automatically.
Other Devices : UEFI	
Device Class Option ROM Dispatch Policy: On Board Mass Storage Controller [Enabled] On Board Mass Storage Controller [Enabled] On Board Display Controller [Enabled] Slot # 1 Empty [Enabled] Slot # 2 Empty [Enabled] Slot # 3 Empty [Enabled] Slot # 4 Empty [Enabled] Slot # 5 Empty [Enabled] Slot # 6 Empty [Enabled] Slot # 7 Empty [Enabled] Slot # 8 Mass Storage Controller [Enabled] MARNING: Changing Device(s) Option ROM	<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 5-8

Manage Option ROM call policy

**Restore if Failure** 

To recover from a failure, the menu options are:

Enabled

Disabled

Default: Disabled

Primary Video Ignore

Ignoring the base graphics card, the menu options are:

Enabled

Disabled

Default: Enabled

On Board Mass Storage Controller

Onboard or external device controller, the menu options are:

Enabled

Disabled

Default: Enabled

On Board Mass Storage Controller

Onboard or external device controller, the menu options are:



Enab	led
------	-----

Disabled

Default: Enabled

On Board Display Controller

Onboard or external device controller, the menu options are:

Enabled

Disabled

Default: Enabled

Slot # 1 Empty

Onboard or external device controller, the menu options are:

Enabled

Disabled

Default: Enabled

## Slot # 8 Empty

Onboard or external device controller, the menu options are:

Enabled

Disabled

Default: Enabled

## 5.2.10 PCI Subsystem Settings

Aptio Setup Utili Advanced	ity – Copyright (C) 2020 i	American Megatrends, Inc.
PCI Bus Driver Version PCI Devices Common Settings: Above 4G Decoding SR-IOV Support	A5.01.18 [Enabled] [Enabled]	Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).
		<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.12	75. Copyright (C) 2020 Am	erican Megatrends, Inc. 84





## Figure 5-9

Above 4G Decoding

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

Enabled

Disabled

Default value: Enabled

SR-IOV Support

SR-IOV supports switch settings, the menu options are:

Enabled

Disabled

Default: Enabled

### 5.2.11 CSM Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Compatibility Support Module Configu	ration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.83	
GateA20 Active INT19 Trap Response	[Upon Request] [Immediate]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Option ROM Policy Network Storage Video Other PCI devices	[UEF1] [UEF1] [UEF1] [UEF1] [UEF1]	<pre> ++: Select Screen  14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Co	pyright (C) 2020 American M	egatrends, Inc. B4

### Figure 5-10

**CSM Support** 

To enable or disable compatible support modules, the menu options are:

Disabled

Enabled

Default: Enabled

GateA20 Active





The control mode setting of the A20 address line, the menu options are:

Upon Request: if needed

Always

Default: After Request

**INT19** Trap Response

Interrupt, capture signal response settings, the menu options are:

Immediate: respond immediately

Postponed: Delayed response

Default: Immediate

Boot option filter

Startup option class control switch, the menu options are:

UEFI and Legacy: UEFI and Legacy Boot Items

UEFI only: UEFI Boot items

Legacy only: Legacy Boot items

Default: UEFI and Legacy

**Option ROM Policy** 

Select the Option ROM execution method, the menu options are:

UEFI: UEFI mode

Legacy: Legacy Mode

Default: UEFI



## 5.2.12 NVMe Configuration

Aptio Setup Utility – Copyright (C) 2020 American N Advanced	Megatrends, Inc.
NVMe Configuration	
	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Me	gatrends, Inc.

Figure 5- 11



Aptio : Advanced	Setup Utility – Copyright (C) 2020 Americ	an Megatrends, Inc.
Seg:Bus:Dev:Func Model Number Total Size Vendor ID Device ID Namespace: 1	00:01:00:00 TOSHIBA-RC100 120.0 GB 1179 0113 Size: 120.0 GB	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versi	on 2.20.1275. Copyright (C) 2020 American	Megatrends, Inc.

## Figure 5- 12

Displays detailed information about NVMe hard drives.



### 5.2.13 Network Stack Configuration

Aptio Setup U Advanced	tility — Copyright (C) 2020 A	merican Megatrends, Inc.
Network Stack Ipv4 PXE Support Ipv4 HTTP Support Ipv6 PXE Support IPSEC Certificate PXE boot wait time Media detect count	[Enabled] [Disabled] [Disabled] [Disabled] [Enabled] 0 1	Enable/Disable UEFI Network Stack ++: Select Screen +: Select Screen +: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20	.1275. Copyright (C) 2020 Ame	rican Megatrends, Inc.

## Figure 5-13

#### Network Stack

Network stack control switch, the menu options are:

Enabled

Disabled

Default: Disabled

#### IPv4 PXE Support

Ipv4 UEFI PXE function control switch, the menu options are:

Enabled

Disabled

Default: Disabled

### Ipv4 HTTP Support

Ipv4 HTTP function control switch, the menu options are:

Enabled

Disabled

Default: Disabled

### IPv6 PXE Support





Ipv6 UEFI PXE function control switch, the menu options are: Enabled Disabled Default: Disabled

Ipv6 HTTP Support

Ipv6 HTTP function control switch, the menu options are: Enabled Disabled Default: Disabled

PXE boot wait time

PXE startup waiting time, the user can input the PXE startup waiting time, and can press "ESC" to give up PXE startup during the waiting process, the default is 0.

Media detect count

The number of device presence detections, the user can input the number of device network card device detections, the default is 1.

### 5.2.14 iSCSI Configuration

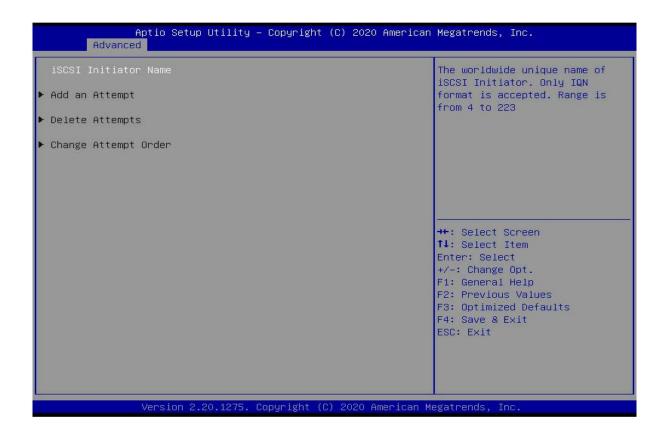




Figure 5- 14

iSCSI configuration

## 5.2.15 Platform Configuration menu

Aptio Setup Utility – Copyright (C) 2020 Americ Main Advanced Platform Configuration Socket Configuration	
<ul> <li>PCH SATA Configuration</li> <li>PCH sSATA Configuration</li> <li>USB Configuration</li> <li>Miscellaneous Configuration</li> <li>Server ME Configuration</li> <li>Runtime Error Logging</li> </ul>	SATA devices and settings
Setup Warning: Setting items on this Screen to incorrect values may cause system to malfunction!	
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2020 American	Megatrends, Inc. 84

### Figure 5-15

PCH SATA Configuration

PCH sSATA Configuration

**USB** Configuration

Miscellaneous Configuration

Server ME Configuration

Runtime Error Logging



### 5.2.16 PCH SATA Configuration

PCH SATA Configuration		Enable or Disable SATA Controller
SATA Controller Configure SATA as SATA test mode SATA Port 0 Port 0 SATA Port 1 Port 1 SATA Port 2	[Enable] [AHCI] [Disable] [Not Installed] [Enable] [Not Installed] [Enable] [Not Installed]	
Port 2 SATA Port 3 Port 3 SATA Port 4 Port 4 SATA Port 5 Port 5 SATA Port 6 Port 6 SATA Port 7 Port 7	[Enable] [Not Installed] [Enable] [Not Installed] [Enable] [Not Installed] [Enable] [Not Installed] [Enable] [Not Installed] [Enable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 5-16

#### SATA Controller

SATA controller switch, control to turn on and off the SATA controller, the menu options are:

Disabled: Disable the SATA controller.

Enabled: Enable the SATA controller.

Default: Enabled

### Configure SATA as

SATA mode selection, the 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, the menu options are:

Disabled

Enable

Default: Disable

#### SATA Port X

Displays device information on SATA Port 0~7, and displays Not Installed when no device is connected.

Port X





To control the opening and closing of SATA Port X, the menu options are:

Disabled: Disable SATA Port X.

Enabled: Enable SATA Port X.

Default: Enabled

### Hot Plug

Control the hot plug function of SATA Port X device on and off, the menu options are:

Disabled: Disable the SATA Port X hot-plug function.

Enabled: Enable SATA Port X hot plug function.

Default: Enabled

## 5.2.17 PCH sSATA Configuration

PCH sSATA Configuration		Enable or Disable SATA Controller
sSATA Controller Configure sSATA as SATA test mode sSATA Port 0 Port 0 sSATA Port 1 Port 1 sSATA Port 2	[Enable] [AHCI] [Disable] [Not Installed] [Enable] [Not Installed] [Enable] [Not Installed]	
Port 2 SSATA Port 3 Port 3 SSATA Port 4 Port 4 SSATA Port 5 Port 5	[Enable] [Not Installed] [Enable] [Not Installed] [Enable] [Not Installed] [Enable]	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

## Figure 5-17

sSATA Controller

sSATA controller switch, control to turn on and off the sSATA controller, the menu options are:

Disabled: Disable the sSATA controller.

Enabled: Enable the sSATA controller.

Default: Enabled

Configure sSATA as

sSATA mode selection, the 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, the menu options are:

Disabled

Enable

Default: Disable

## sSATA Port X

Displays device information on sSATA Port 0~7, and displays Not Installed when no device is connected.

## Port X

To control the opening and closing of sSATA Port X, the menu options are:

Disabled: Disable sSATA Port X.

Enabled: Enable sSATA Port X.

Default: Enabled

## 5.2.18 USB Configuration

	ility – Copyright ( nfiguration	(C) 2020 American	Megatrends, Inc.
USB Per-Connector Disable XHCI Over Current Pins	[Disable] [Enable]		Selectively Enable/Disable each of the USB Physical Connector (physical port). Once a connector is disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
Version 2.20.	1275. Copyright (C)	2020 American Me	egatrends, Inc. B4

Figure 5-18

USB Per-Connector Disable

For each USB connector switch, the menu options are:

Enable





Disable

Default: Disable

XHCI Over Current Pins

XHCl overcurrent pin switch, the menu options are:

Enable

Disable

Default: Enable

#### 5.2.19 Miscellaneous Configuration

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc. Platform Configuration		
Miscellaneous Configuration		Select SO/S5 for ACPI state after a G3
PCH state after G3 Max Page Table Size Select Active Video	[S0] [1G] [Auto]	
		<pre> ++: Select Screen  11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. C	opyright (C) 2020American	Megatrends, Inc. B4

Figure 5-19

PCH state after G3

PCH state setting after G3, the menu options are:

S0: Power on directly

S5: You need to press the Power button to turn on the power

leave power state unchanged: keep the power state unchanged

Default: SO

Max Page Table Size Select

To select the maximum page table size setting, the menu options are:

- 2M
- 1G



Default: 1G

Active Video

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

Auto

**Onboard Device** 

PCIE Device

Default: Auto

#### 5.2.20 Server ME Configuration

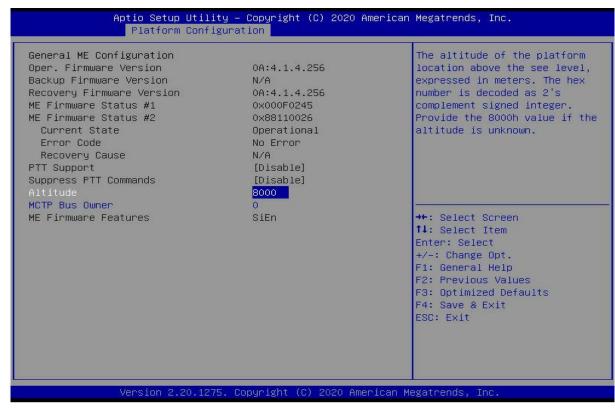


Figure 5-20

Display Server ME version, features, status and other information;



## 5.2.21 Runtime Error Logging

	Aptio Setup Utility – Platform Configurat		2020 American	Megatrends, Inc.
Runtime Error	Logging		_	System Error Enable/Disable setup options.
System Errors		[Enable]		<pre>**: Select Screen **: Select Screen **: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Version 2.20.1275. Co	pyright (C) 2	020 American Me	egatrends, Inc. 84

Figure 5- 21

System Errors

Turn on or off the system error function, the menu options are:

Disabled

Enabled



## 5.2.22 Socket Configuration menu

Aptio Setup Utility – Copyright (C) 2020 American Main Advanced Platform Configuration Socket Configuration	
<ul> <li>Processor Configuration</li> <li>Common RefCode Configuration</li> <li>UPI Configuration</li> <li>Memory Configuration</li> <li>IIO Configuration</li> <li>Advanced Power Management Configuration</li> </ul>	Displays and provides option to change the Processor Settings
Version 2.20.1275. Copyright (C) 2020 American M	egatrends, Inc.

Figure 5- 22

**Processor Configuration** 

Common RefCode Configuration

**UPI** Configuration

Memory Configuration

**IIO** Configuration

Advanced Power Management Configuration



## 5.2.23 Processor Configuration

Processor Configuration		Change Per-Socket Settings
Per–Socket Configuration		
	50654 - SKX UO	
Processor Socket	Socket 0 Socke	
Processor ID	00050654*   00050	
Processor Frequency	1.700GHz   1.700	GHZ
Processor Max Ratio	11H   11H	
Processor Min Ratio	08H   08H	050
Microcode Revision	0200005A   02000	
L1 Cache RAM		4KB
L2 Cache RAM	1024KB   102	
L3 Cache RAM	8448KB   844	
Processor 0 Version Intel(R) Xeon(R) Bronze 3104 CF		<pre>→+: Select Screen  ↓: Select Item</pre>
Processor 1 Version	0 @ 1.70GHZ	Enter: Select
Intel(R) Xeon(R) Bronze 3104 CF	0 @ 1.70GHZ	+/-: Change Opt.
Hyper-Threading [ALL]	[Enable]	F1: General Help F2: Previous Values
Max CPUID Value Limit	[Disable]	F3: Optimized Defaults
Enable Intel(R) TXT	[Disable]	F4: Save & Exit
VMX	[Enable]	ESC: Exit
Enable SMX	[Disable]	
Hardware Prefetcher	[Enable]	
Adjacent Cache Prefetch	[Enable]	

Figure 5- 23



Aptio Setup Utilit	y – Copyright (C) 2020 A Socket Configur	
Processor Frequency Processor Max Ratio Processor Min Ratio Microcode Revision L1 Cache RAM L2 Cache RAM L3 Cache RAM Processor 0 Version	1.700GHz   1.700G 11H   11H 08H   08H 0200005A   020000 64KB   64 1024KB   1024 8448KB   8448	5A KB KB
Intel(R) Xeon(R) Bronze 3104 CPL Processor 1 Version Intel(R) Xeon(R) Bronze 3104 CPL Hyper-Threading [ALL] Max CPUID Value Limit Enable Intel(R) TXT VMX Enable SMX Hardware Prefetcher Adjacent Cache Prefetch DCU Streamer Prefetcher DCU IP Prefetcher LLC Prefetch DCU Mode Extended APIC AES-NI		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit ECC]</pre>
Version 2.20.1275	. Copyright (C) 2020 Ame	rican Megatrends, Inc. 84

#### Figure 5-24

Display CPU Type\ID\Speed\Cache and other information, configure CPU-related functions;

Pre-Socket Configuration: each slot configuration;

Hyper-Threading

Hyper-Threading Control Switch, this option enables or disables the Hyper-Threading feature of Intel processors. When this feature is enabled, each physical processor core is equivalent to two logical processor cores; when this feature is disabled, each physical processor core is equivalent to only one logical processor core. Enabling this feature results in a higher processor core count, improving the overall performance of the application. The menu options are:

Enable

Disable

Default: Enable

Max CPUID Value Limit

Enabled when booting a legacy operating system that cannot support extended CPUIDs, the menu options are: Enable

Disable

Default: Disable

Enable Intel(R) TXT

Intel TXT function switch, the menu options are:

Enable

Disable

Default: Disable





VMX

CPU Virtualization Technology switch, if this option is enabled, the virtualization layer or operating system that supports this option can use the hardware capabilities of Intel Virtualization Technology. Some virtualization layers require Intel Virtualization Technology to be enabled. This option can also be left enabled without using a hypervisor or operating system that supports this option. The menu options are:

Enable

Disable

Default: Enable

Enable SMX

Extended safe mode function switch, the menu options are:

Enable

Disable

Default: Disable

Hardware Prefetcher

Hardware prefetching means that before the CPU processes instructions or data, it prefetches these instructions or data from memory to the L2 cache, thereby reducing memory read time, helping to eliminate potential bottlenecks, and improving system performance. The menu options are:

Enable

Disable

Default: Enable

Adjacent Cache Prefetch

After the adjacent cache prefetch function is enabled, when the computer reads data, it 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 pre-read during processing. , which can speed up reading. When the application scenario is to access memory sequentially, enabling this function will improve performance. When the application scenario is random access to memory, it is recommended to disable this option. The menu options are:

Enable

Disable

Default: Enable

**DCU Streamer Prefetcher** 

DCU stream prefetch switch, the menu options are:

Enable

Disable

Default: Enable

**DCU IP Prefetcher** 

DCU IP prefetch switch, the menu options are:

Enable

Disable

Default: Enable

LLC Prefetcher

LLC prefetch switch, the menu options are:



Enable

Disable

Default: Disable

DCU Mode

DCU mode setting, the menu options are:

32KB 8Way Without ECC: 32KB 8Way Without ECC

16KB 4Way With ECC: 16KB 4Way With ECC

Default: 32KB 8Way Without ECC

Extended APIC

To enable/disable extended APIC support, the menu options are:

Enable

Disable

Default: Disable

## AES-NI

To enable and disable AES (Advanced Encryption Standard), the menu options are:

Enable

Disable

Default: Enable

## 5.2.24 Common RefCode Configuration

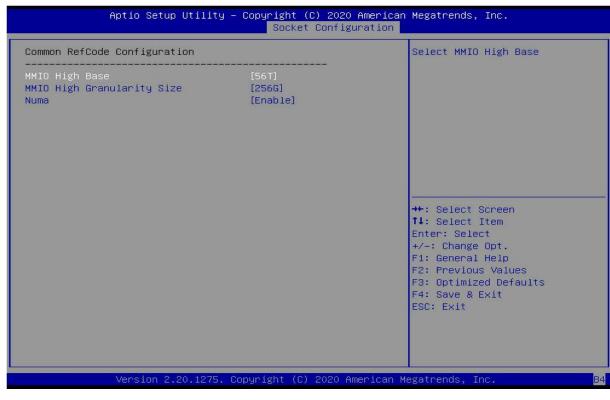


Figure 5-25

MMIO High Base





Select the MMIO high base address, the menu options are:

56T

40T

24T

16T

4T

1T

Default: 56T

MMIO High Granularity Size

To select the MMIO high interval size, the menu options are:

1G

4G

16G

64G

256G

1024G

Default: 256G

### Numa

To turn non-uniform memory access on or off, the menu options are:

Enable

Disable



## 5.2.25 UPI Configuration

#### Figure 5-26

UPI Status: UPI link status submenu, showing the current UPI link status

### Degrade Precedence

When the system settings conflict, you can lower the feature by setting Topology Precedence, or lowering the Topology by setting Feature Precedence. The menu options are:

**Topology Precedence** 

Feature Precedence

**Default: Topology Precedence** 

Link Speed Mode

Link speed mode setting, the menu options are:

Slow

Fast

Default: Fast

Link LOp Enable

Link LOp switch, the menu options are:

Disable

Enable

Auto

Default: Auto



Link L1 Enable

Link L1 switch, menu options are:

Disable

Enable

Auto

Default: Auto

**UPI** Failover Support

UPI failover supports switch settings, the menu options are:

Disable

Enable

Auto

Default: Auto

## SNC

Sub NUMA cluster settings, the menu options are:

Disable

Enable

Auto

Default: Disable

XPT Prefectch

XPT prefetch settings, the menu options are:

Disable

Enable

Auto

Default: Auto

**KTI Prefectch** 

KTI prefetch settings, the menu options are:

Disable

Enable

Auto

Default: Enable

Legacy VGA Socket: Set the number of traditional VGA, the valid value range is 0~1.

Legacy VGA Stack : Set the number of traditional VGA stacks, the valid value range is 0~6.



### 5.2.26 Memory Configuration

Aptio Setup Utility -	- Copyright (C) 2020 America Socket Configuration	n Megatrends, Inc.
Integrated Memory Controller (iMC) Enforce POR Memory Frequency Data Scrambling for NVMDIMM Data Scrambling for DDR4 Enable ADR Legacy ADR Mode ADR Data Save Mode Erase-Arm NVDIMMS Restore NVDIMMS Interleave NVDIMMS 2x Refresh Enable Memory Topology Memory Map Memory RAS Configuration	[Auto] [Auto] [Auto] [Auto] [Auto] [Enable] [Disable] [NVDIMMS] [Enable] [Disable] [Disable] [Auto]	Enable - Enforces Plan Of Record restrictions for DDR4 frequency and voltage programming. Disable - Disables this feature. Auto - Sets it to the MRC default setting; current default is Enable. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. (	Copyright (C) 2020 American	Megatrends. Inc.

Datasheet

## Figure 5-27

### Enforce POR

To enforce POR settings, the menu options are:

Auto

POR : execute POR

Disable

Default: Auto

Memory Frequency

Memory frequency setting, the menu options are:

Auto

800

1000

1066

1200

1333

1000

1400

1600

•••

Default: Auto



#### Data Scrambling for NVDIMMs

NVDIMM data scramble switch settings, the menu options are:

Auto

Disable

Enable

Default: Auto

#### Data Scrambling for DDR4

DDR4 data scramble switch settings, the menu options are:

Auto

Disable

Enable

Default: Auto

#### Enable ADR

ADR enable switch setting, the menu options are:

Disable

Enable

Default: Enable

### Legacy ADR Mode

Traditional ADR mode switch settings, the menu options are:

Disable

Enable

Default: Enable

### ADR Data Save Mode

ADR data saving mode setting, the menu options are:

Disable

Batterybacked DIMMs

**NVDIMMs** 

Default: NVDIMMs

#### **Erase-ARM NVDIMMs**

Erase-ARM NVDIMMs switch settings, menu options are:

Disable

Enable

Default: Enable

### Restore NVDIMMs

Fix NVDIMMs switch settings, menu options are:

Disable

Enable

Auto

Default: Auto

### Interleave NVDIMMs

To interleave the NVDIMMs switch settings, the menu options are:



Disable

Enable

Default: Disable

2x Refresh Enable

2x refresh switch settings, the menu options are:

Disable

Enable

Default: Disable

Memory Topology

Memory topology submenu, showing in-place memory details;

Memory Map

Memory Map submenu;

Memory RAS Configuration

Memory RAS configuration submenu;

## 5.2.27 Memory Topology

PUO AO: Enabled 2133MT/s UNKNOWN SRx4 8GB RDIMM	
CPUO A1:Not Installed	
CPUO BO:Not Installed	
CPUO B1:Not Installed	
CPUO CO:Not Installed	
CPUO C1:Not Installed	
CPUO DO:Not Installed	
CPUO D1:Not Installed	
CPUO EO:Not Installed	
CPUO E1:Not Installed	
CPUO FO:Not Installed	
CPUO F1:Not Installed	
CPU1 GO:Not Installed	++: Select Screen
CPU1 G1:Not Installed	↑↓: Select Item
CPU1 HO:Not Installed	Enter: Select
CPU1 H1:Not Installed	+/-: Change Opt.
CPU1 JO:Not Installed	F1: General Help
CPU1 J1:Not Installed	F2: Previous Values
CPU1 KO:Not Installed	F3: Optimized Defaults
CPU1 K1:Not Installed	F4: Save & Exit
CPU1 LO:Not Installed	ESC: Exit
CPU1 L1:Not Installed	
CPU1 MO:Not Installed	
CPU1 M1:Not Installed	

Figure 5-28

Display current in-place memory details



Aptio Setup Utility -	Copyright (C) 2020 A Socket Configur	merican Megatrends, Inc. ation
Volatile Memory Mode AppDirect cache eADR Support 1LM Memory Interleave Granularity IMC Interleaving Channel Interleaving Rank Interleaving Socket Interleave Below 4GB	[Auto] [Disable] [Disable] [Auto] [Auto] [Auto] [Auto] [Disable]	Selects whether 1LM or 2LM memory mode should be enabled
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

## Figure 5- 29

Volatile Memory Mode

Volatile memory mode setting, the menu options are:

1LM

2LM

Auto

Default: Auto

1LM Memory Interleave Granularity

1LM memory interleaving interval setting, the menu options are:

Auto

256B Target, 256B Channel

64B Target, 64B Channel

Default: Auto

IMC Interleaving

IMC cross setting, the menu options are:

Auto

1-way Interleavel

2-way Interleavel

Default: Auto



**Channel Interleaving** 

Channel cross setting, the menu options are:

Auto

1-way Interleavel

2-way Interleavel

3-way Interleavel

Default: Auto

Rank Interleaving

Rank cross setting, the menu options are:

Auto

1-way Interleavel

2-way Interleavel

4-way Interleavel

8-way Interleavel

Default: Auto

Socket Interleave Below 4GB

4GB address space processor interleave switch settings, the menu options are:

Enable

Disable

Default: Disable



### 5.2.29 Memory RAS Configuration

Aptio Setup Utility –	Copyright (C) 2020 Americar Socket Configuration	n Megatrends, Inc.
Memory RAS Configuration Setup Static Virtual Lockstep Mode Mirror mode UEFI ARM Mirror Memory Rank Sparing Correctable Error Threshold SDDC ADDDC Sparing Set NGN Die Sparing Patrol Scrub Patrol Scrub Interval Patrol Scrub Address Mode	[Disable] [Disable] [Disable] [Disable] 7fff [Disable] [Disable] [Enable] [Enable] 24 [System Physical Ad]	Enable Static Virtual Lockstep mode ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Co	pyright (C) 2020American ⊧	legatrends, Inc.

### Figure 5-30

### Static Virtual Lockstep Mode

Static virtual Lockstep mode switch settings, the menu options are:

Enable

Disable

Default: Disable

Mirror Mode

Mirror mode settings, the menu options are:

Disable : disable

Enable Mirror Mode (1LM)

Default: Disable

UEFI ARM Mirror

UEFI ARM mirror mode switch settings, the menu options are:

Enable

Disable

Default: Disable

Memory Rank Sparing

Memory Rank hot spare switch settings, the menu options are:

Enable





#### Disable

Default: Disable

Correctable Error Threshold : Correctable error threshold, the valid value is 0x01-0x7fff, the default value is 0x7fff. SDDC

SDDC switch setting, note: not supported when AEP DIMM exists, the menu options are:

Enable

Disable

Default: Disable

### ADDDC Sparing

ADDDC hot standby switch settings, the menu options are:

Enable

Disable

Default: Disable

Set NGN Die Sparing

Set NGN Die hot standby switch settings, the menu options are:

Enable

Disable

Default: Enable

### Patrol Scrub

Patrol Scrub switch settings, menu options are:

Enable

Disable

Default: Enable

Patrol Scrub Interval : Patrol Scrub interval time setting, the unit is hour, the range is 1-24, the default value is 24.

Patrol Scrub Address Mode

Patrol Scrub address mode setting, the menu options are:

**Reverse address** 

System Physical Address

Default: System Physical Address



#### 5.2.30 Socket Configuration

IIO Configuration         Socket0 Configuration         Socket1 Configuration         Intel® VT for Directed I/0 (VT-d)         Intel® VMD technology         Intel® AIC Retimer/AIC SSD Technology (non-VMD)         IIO-PCIE Express Global Options         ====================================	Aptio Setup Utility - Co	Copyright (C) 2020 America Socket Configuration	
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	<ul> <li>Socket0 Configuration</li> <li>Socket1 Configuration</li> <li>Intel® VT for Directed I/D (VT-d)</li> <li>Intel® VMD technology</li> <li>Intel® AIC Retimer/AIC SSD Technology</li> <li>IIO-PCIE Express Global Options</li> <li>EXERCISE FOR Support (Global)</li> </ul>	(non-VMD) ==== [Disable] [Per-Port]	++: Select Screen +: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit

#### Figure 5-31

SocketN Configuration

The SocketN configuration submenu is used to set the Link speed, Max Payload Size, ASPM and other settings of the device on the PCIE of CPUO, and display the link status of the current PCIE port, the maximum link, the current link rate, etc.;

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

Intel VT-d technology related settings submenu, Intel VT-d technology switch settings;

Intel(R) VMD Technology

Intel VMD technology related settings submenu, switch settings of VMD on each PStack of each CPU;

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

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

PCIe Hot Plug

PCIe hot-plug switch settings, the menu options are:

Enable

Disable

Default: Disable

PCI-E ASPM Support(Global)





PCIE ASPM master switch settings, the menu options are:

Disable

Per-Port: each port

L1 Only

Default: Per-Port

PCI-E Max Read Request Size

PCIE maximum read request size setting, the menu options are:

Auto

128B

256B

512B

1024B

2048B

4096B

Default: Auto

	Socket Configuratio	
PCI-E Completion Timeout Value Sck1 RP Correctable Err Sck1 RP NonFatal Uncorrectable Err	[Auto] [Auto] [Auto] [Auto] [Enable] [260ms to 900ms] [Disable] [Disable] [Disable]	Selects PCIe port Bifurcation for selected slot(s) 
▶ Socket 1 PcieBr3D02F0 – Port 3C ▶ Socket 1 PcieBr4D00F0 – MCP 0 / Port ▶ Socket 1 PcieBr5D00F0 – MCP 1	4A	<pre>\$\$\$ \$</pre>

## Socket0 Configuration

IOU0 (IIO PCIe Br1) Control CPU 0 riser 1 x16 PCIE branch option; IOU1 (IIO PCIe Br2)





Control CPU 0 riser 1 x8 and riser 2 x8 PCIE branch options; IOU2 (IIO PCIe Br3) Controls OCP NIC slots and PCIE breakout options linked to PCH upstream channels; Socket 0 PcieBr0D00F0 - Port 0/DMI CPU 0 is linked to the PCH's DMI channel configuration menu; Socket 0 PcieBr1D00F0 - Port 1A CPU 0 riser 1 x16 slot configuration menu; Socket 0 PcieBr2D00F0 - Port 2A CPU 0 riser 2 x8 slot configuration menu; Socket 0 PcieBr2D02F0 - Port 2C CPU 0 riser 1 x8 slot configuration menu; Socket 0 PcieBr3D00F0 - Port 3A CPU 0 OCP card slot configuration menu; Socket 0 PcieBr3D02F0 – Port 3C CPU 0 is linked to the configuration menu of the PCH upstream channel; Socket1 Configuration IOU0 (IIO PCIe Br1) Control CPU 1 riser 3 x16 PCIE branch options; IOU1 (IIO PCIe Br2) Control CPU 1 riser 2 x16 PCIE branch options; IOU2 (IIO PCIe Br3) Control the PCIE branch options of CPU1 Slimline 1 and Slimline 2; Socket 1 PcieBr0D00F0 – Port 0 Unused: Socket 1 PcieBr1D00F0 - Port 1A CPU 1 riser 3 x16 slot configuration menu; Socket 1 PcieBr2D00F0 - Port 2A CPU 1 riser 2 x16 slot configuration menu; Socket 1 PcieBr3D00F0 - Port 3A CPU1 Slimline 1 slot configuration menu; Socket 1 PcieBr3D02F0 - Port 3C CPU1 Slimline 2 slot configuration menu;



### 5.2.31 Advanced Power Management Configuration

Aptio Setup	Utility – Copyright (C) 2020 American Socket Configuration	Megatrends, Inc.
Advanced Power Management	Configuration	P State Control Configuration
<ul> <li>CPU P State Control</li> <li>Hardware PM State Control</li> <li>CPU C State Control</li> <li>Package C State Control</li> <li>CPU - Advanced PM Tuning</li> <li>SOCKET RAPL Config</li> </ul>		Sub Menu, include Turbo, XE and etc. 
Version 2.2	20.1275. Copyright (C) 2020 American M	egatrends, Inc.

Figure 5- 32

CPU P State Control

CPU P state control setting submenu;

Hardware PM State Control

Hardware power management state control submenu;

CPU C State Control

CPU C state control setting submenu;

Package C State Control

Package C status control submenu;

**CPU-Advanced PM Tuning** 

CPU performance and power saving tuning submenu;

Socket RAPL Configuration

Socket RAPL configuration submenu;



Aptio Setup Utili	ty – Copyright (C) 2020 Socket Configu	American Megatrends, Inc. <mark>Pration</mark>
CPU P State Control Uncore Freq Scaling (UFS) Config TDP Turbo Mode CPU Flex Ratio Override CPU Core Flex Ratio	[Enable] [Normal] [Enable] [Disable] 23	Enable/Disable autonomous uncore frequency scaling
		<pre> ++: Select Screen  11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.127	5. Copyright (C) 2020 Am	merican Megatrends, Inc.

## Figure 5-33

#### Uncore Freq Scaling (UFS)

Uncore frequency extension settings, the menu options are:

Enable

Disable

Default: Enable

## Config TDP

TDP level settings, the menu options are:

Normal

Level 1

Level 2

Default: Normal

Turbo Mode

Dynamic acceleration switch settings, the menu options are:

Enable

Disable



### 5.2.33 Hardware PM State Control

P-state based on OS guidance Out of Band Mode:Hardware	Aptio Setup Utility -	Copyright (C) 2020 Americar Socket Configuration	n Megatrends, Inc.
14: Select ItemEnter: Select+/-: Change Opt.F1: General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & Exit	Hardware P–States	[Native Mode]	P-state based on OS Request (Legacy P-States) Native Mode:Hardware chooses a P-state based on OS guidance Out of Band Mode:Hardware autonomously chooses a P-state (no OS guidance)
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.			<pre>fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

## Figure 5-34

#### Hardware P-State

The hardware selects whether the P-State state is actively set by the OS. The default value is determined according to the actual test. The menu options are:

Disable : Hardware selects P-States based on legacy OS requests

Native Mode: Hardware selection P-State based on legacy OS boot

Out of Band Mode: Hardware is automatically selected, no OS boot required

Native Mode with No Legacy Support

Default: Native Mode

**EPP Enable** 

EPP enable setting, the menu options are:

Enable

Disable



Aptio Setup Utility -	Copyright (C) 2020 American Socket Configuration	Megatrends, Inc.
CPU C State Control		Autonomous Core C-State Control
Autonomous Core C-State CPU C6 report Enhanced Halt State (C1E)	[Disable] [Auto] [Enable]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Co	opyright (C) 2020 American M	legatrends, Inc.

## Figure 5-35

Autonomous Core C-State

Autonomous core C state switch settings, the menu options are:

Enable

Disable

Default: Disable

CPU C6 report

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

Disable

Enable

Auto

Default: Auto

Enhanced Halt State (C1E)

C1E switch settings, the menu options are:

Disable

Enable



Aptio Setup L	Hility – Copyright (C) 2020 Socket Config	
Package C State Control		Package C State limit
Package C State	[Auto]	
		<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20	0.1275. Copyright (C) 2020 A	merican Megatrends, Inc.

## Figure 5-36

## Package C State

Package C status settings, the menu options are:

CO/C1 state

C2 state

C6(non Retention) state

C6(Retention) state

No Limit

Default: Auto



## 5.2.36 CPU-Advanced PM Tuning

Aptio Setup Utilit	y — Copyright (C) 2020 Socket Config	American Megatrends, Inc. uration
CPU – Advanced PM Tuning		Energy Perf BIAS Sub Menu
<ul> <li>Energy Perf BIAS SAPM Control</li> </ul>	[Enable]	
		<pre>++: Select Screen  \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 A	merican Megatrends, Inc.

Figure 5- 37

## Energy Perf BIAS

CPU energy saving performance related options settings



Aptio Setup Utilit	y – Copyright (C) 2020 Americ: Socket Configuration	
Energy Perf BIAS Power Performance Tuning ENERGY_PERF_BIAS_CFG mode Workload Configuration	[OS Controls EPB] [Balanced Performance] [Balanced]	MSR 1FCh Bit[25] = PWR_PERF_TUNING_CFG_MODE. Enable - Use IA32_ENERGY_PERF_BIAS input from the core; Disable - Use alternate perf BIAS input from ENERGY_PERF_BIAS_CONFIG **: Select Screen 11: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 American	Megatrends, Inc.

### Figure 5-38

Power Performance Tuning

- Energy saving performance adjustment settings, the menu options are:
- OS Controls EPB: OS Controls Power Saving Performance Tuning
- BIOS Controls EPB: BIOS Controls Power Saving Performance Tuning
- Default: OS Controls EPB

#### ENERGY\_PERF\_BIAS\_CFG Mode

Energy-saving performance management settings, this can be set when Power Performance Tuning is set to BIOS Control EPB, the menu options are:

Performance: performance

Balanced Performance: Balanced Performance

Balanced Power: Balanced Energy Savings

Power: Energy saving

Default: Balanced Performance

#### Workload Configuration

To optimize settings for workload characteristics, the menu options are:

Balanced

I/O Sensitive

Default: Balanced



### 5.2.38 Server Mgmt Menu

		n Server Mgmt Security Boot
BMC Self Test Status BMC Device ID BMC Device Revision BMC Firmware Revision IPMI Version BMC Interface(s) FRB-2 Timer FRB-2 Timer timeout FRB-2 Timer Policy OS Watchdog Timer OS Wtd Timer Timeout OS Wtd Timer Policy	FAILED 32 1 1.00.0 2.0 KCS [Enabled] [6 minutes] [Do Nothing] [Disabled] [10 minutes] [Reset]	Enable or Disable FRB-2 timer(POST timer)
<ul> <li>System Event Log</li> <li>BMC network configuration</li> <li>View System Event Log</li> <li>BMC User Settings</li> </ul>	[Reset]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 5-39

Display BMC self-check status, device ID, device version, BMC software version, and version that supports IPMI specification.

FRB-2 Timer

FRB-2 clock switch settings, the menu options are:

Enabled

Disabled

Default: Enabled

FRB-2 Timer timeout

FRB-2 clock timeout setting, the menu options are:

3 minutes

4 minutes

5 minutes

6 minutes

Default: 6 minutes

**FRB-2** Timer Policy

Policy settings after FRB-2 clock timeout, the menu options are:

Do Nothing

Reset



Power Down

Power Cycle

Default: Do Nothing

OS Watchdog Timer

OS watchdog clock switch settings, the menu options are:

Enabled

Disabled

Default: Disabled

### OS Wtd Timer timeout

OS watchdog clock timeout setting, the menu options are:

5 minutes

10 minutes

15 minutes

20 minutes

Default: 10 minutes

## OS Wtd Timer Policy

The policy setting after the OS watchdog clock times out, the menu options are:

Do Nothing

Reset

Power Down

Power Cycle

Default: Reset

System Event Log menu

System Event Log Control Menu

BMC network configuration menu

BMC Network Configuration Menu

View System Event Log menu

View the System Event Log Control Menu

BMC User Settings menu

**BMC User Settings Menu** 



#### 5.2.39 System Event Log menu

Aptio Setup Utility -	- Copyright (C) 2020 Ameri	ican Megatrends, Inc. Server Mgmt
Enabling/Disabling Options SEL Components	[Enabled]	Change this to enable or disable event logging for
Erasing Settings		error/progress codes during boot.
Erase SEL When SEL is Full	[No] [Do Nothing]	
Custom EFI Logging Options Log EFI Status Codes	[Error code]	
NOTE: All values changed here do no effect until computer is res		
		Enter: Select +/−: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. (	Copyright (C) 2020 America	an Megatrends, Inc.

Datasheet

## Figure 5-40

#### **SEL** Components

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

Enabled

Disabled

Default: Enabled

#### Erase SEL

Clear system event log control switch, menu options:

No: do not clear

Yes, On next reset

Yes, On every reset

Default: No

When SEL is Full

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

Do Nothing

**Erase Immediately** 

Default: Do Nothing

Log EFI Status Codes

Configuration records EFI Status Codes, menu options:



Disabled: Do not record Both: Record Error code & Progress code Error code: Only record Error code Progress code: Record only Progress code Default value: Error code

#### 5.2.40 BMC network configuration menu

BMC network configuration		Select to configure LAN
****		channel parameters statically
Configure IPV4 support		or dynamically(by BIOS or
жжжжжжжжжжжжжжж		BMC). Unspecified option will
		not modify any BMC network
BMC Sharelink Management channel Configuration Address source	[Unspecified]	parameters during BIOS phase
Current Configuration Address source	DynamicAddressBmcDhcp	
Station IP address	0.0.0.0	
Subnet mask	0.0.0.0	
Station MAC address	00-24-EC-E2-7D-DD	
Router IP address	0.0.0.0	
Router MAC address	00-00-00-00-00-00	-
		→+: Select Screen
BMC Dedicated Management channel		↑↓: Select Item
Configuration Address source	[Unspecified]	Enter: Select
Current Configuration Address sour	DynamicAddressBmcDhcp	+/-: Change Opt.
Station IP address	192.168.1.210	F1: General Help
Subnet mask	255.255.255.0	F2: Previous Values
Station MAC address	00-24-EC-F2-7D-DE	F3: Optimized Defaults
Router IP address	192.168.1.1	F4: Save & Exit
Router MAC address	9C-A6-15-57-5B-D9	ESC: Exit
***		
Configure IPV6 support		

Figure 5-41



BMC Dedicated Management channel		Select to configure LAN
Configuration Address source Current Configuration Address sour	[Unspecified] DynamicAddressBmcDhcp	channel parameters statical or dynamically(by BIOS or
Station IP address	192.168.1.210	BMC). Unspecified option wil
Subnet mask	255.255.255.0	not modify any BMC network
Station MAC address	00-24-EC-F2-7D-DE	parameters during BIOS phase
Router IP address	192,168,1,1	
Router MAC address	9C-A6-15-57-5B-D9	
****		
Configure IPV6 support		
жжжжжжжжжжжж		
BMC Sharelink Management channel		→+: Select Screen
bio onarciini nanagonene enannei		11: Select Item
IPV6 Support	[Enabled]	Enter: Select
		+/-: Change Opt.
Configuration Address source	[Unspecified]	F1: General Help
Current Configuration Address sour	DynamicAddressBmcDhcp	F2: Previous Values F3: Optimized Defaults
Station TPV6 address		F4: Save & Exit
FE80::224:ECFF:FEF2:7DDD		ESC: Exit
Prefix Length		
64		

## Figure 5- 42

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc. Server Mgmt			
IPV6 Router1 IP Address :: IPV6 address status	Active	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network	
IPV6 DHCP Algorithm	SLAAC	parameters during BIOS phase	
BMC Dedicated Management channel			
IPV6 Support	[Enabled]		
Configuration Address source Current Configuration Address sour			
Station IPV6 address FE80::224:ECFF:FEF2:7DDE		↔: Select Screen ↑↓: Select Item Enter: Select	
Prefix Length 64		+/-: Change Opt. F1: General Help F2: Previous Values	
IPV6 Router1 IP Address ::		F3: Optimized Defaults F4: Save & Exit ESC: Exit	
IPV6 address status IPV6 DHCP Algorithm	Active SLAAC		

Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.



Figure 5-43

Configure IPV4 support

BMC sharelink Management Channel

Configuration Address source

To configure the BMC IP address allocation mode, the menu options are:

Unspecified: Do not change BMC parameters

Static: BIOS static IP settings

DynamicBmcDhcp: BMC runs DHCP to dynamically assign IP

DynamicBmcNonDhcp: BMC runs Non-DHCP protocol to dynamically assign IP

Default: Unspecified

Modify the parameters from Unspecified to other parameters. After saving and restarting, the options will be restored to the Unspecified value, and there is no need to configure the BMC IP each time the startup process is performed.

When the Configuration Address source option is Unspecified, it will display the network parameter information (IPV4) of the system shared network port, the current IP configuration method, BMC IP, subnet mask, MAC address, routing IP, routing MAC;

**BMC Dedicated Management Channel** 

Configuration Address source

To configure the BMC IP address allocation mode, the menu options are:

Unspecified: Do not change BMC parameters

Static: BIOS static IP settings

DynamicBmcDhcp: BMC runs DHCP to dynamically assign IP

DynamicBmcNonDhcp: BMC runs Non-DHCP protocol to dynamically assign IP

Default: Unspecified

Modify the parameters from Unspecified to other parameters. After saving and restarting, the options will be restored to the Unspecified value, and there is no need to configure the BMC IP each time the startup process is performed.

When the Configuration Address source option is Unspecified, it will display the network parameter information (IPV4) of the dedicated network port of the system, the current IP configuration method, BMC IP, subnet mask, MAC address, routing IP, routing MAC;

Configure IPV6 support

BMC Sharelink Management Channel

IPV6 Support

Choose whether to support IPV6, the menu options are:

Enabled: Supports IPV6

Disabled: Does not support IPV6

Default: Enabled

Modify the parameters from Unspecified to other parameters. After saving and restarting, the options will be restored to the Unspecified value, and there is no need to configure the BMC IP each time the startup process is performed.





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

**BMC Dedicated Management Channel** 

IPV6 Support

Choose whether to support IPV6, the menu options are:

Enabled: Supports IPV6

Disabled: Does not support IPV6

Default: Enabled

Modify from Unspecified to other parameters, save and restart the execution, the option will restore the Unspecified value, without the need to configure the BMC IP every time the startup process.

When the Configuration Address source option is Unspecified, the network parameter information (IPV6) of the dedicated network port of the system will be displayed;

### 5.2.41 View System Event Log menu

No. of lo	g entries .	in SEL : 1364	HEX:
DATE	TIME	SENSOR TYPE	48 00 02 35 4D A8 5E 20 00 04 14 32
			0A 02 FF FF
04/28/20	15:35:17	Button/Switch	Generator ID: BMC – LUN #0
04/28/20	15:35:22	Button/Switch	(Channel #0)
04/28/20	15:35:32	System Event	Sensor Number: 0x32 SCSI
04/28/20	15:35:32	System Event	Bus(Parallel)
01/11/18	05:27:46	System Event	Event Description: Record
01/11/18	05:27:46	System Event	Type-0x02. Assertion Event.
01/11/18	05:28:31	OS Boot	
01/11/18	05:28:31	OEM Record DC	
01/11/18	05:41:12	OS Stop/Shutdown	
01/11/18	05:41:12	OEM Record DD	++: Select Screen
01/11/18	05:41:14	Voltage	↑↓: Select Item
01/11/18	05:41:14	Voltage	Enter: Select
01/11/18	05:41:14	Voltage	+/-: Change Opt.
01/11/18	05:41:14	Voltage	F1: General Help
04/15/75	16:12:16	Processon	F2: Previous Values
04/15/75	16:12:16	Button/Switch	F3: Optimized Defaults
04/15/75	16:12:39	System Event	F4: Save & Exit
04/15/75	16:12:39	System Event	ESC: Exit
01/11/18	05:46:17	System Event	
01/11/18	05:46:17	System Event	
01/11/18	05:47:00	Button/Switch	▼

### Figure 5-44

View system event log information.

Note that entering this menu, the BIOS needs to read the SEL data, and it needs to wait for a while.



## 5.2.42 BMC User Setting

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc. Server Mgmt		
BMC User Settings	Press <enter> to Add a User.</enter>	
Add User		
Delete User		
Change User Settings	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>	
Version 2.20.1275. Copyright (C) 2020 Amer	ican Megatrends, Inc.	

Figure 5-45

Add User

Delete User

Change User Setting



Aptio Setup Utility -	Copyright (C) 2020American	Megatrends, Inc. Server Mgmt
BMC Add User Details User Name User Password User Access Channel No User Privilege Limit	[Disable] O [Reserved]	Enter BMC User Name
		++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.		

### Figure 5-46

User Name : User name setting, up to 16 characters are supported.

User Password : User password settings, password characters must contain 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, input 1 or 8

User Privilege Limit

User permission settings, menu options are:

Reserved

Callback

User

Operator

Administrator

After the setting is successful, "Set User Access Command Passed" will be prompted, and the BMC User will take effect immediately.



Aptio Setup Utility – Copyright (C) 2020 Americar	Megatrends, Inc. Server Mgmt
BMC Delete User Details	Enter BMC User Name
User Name User Password	
	<pre> ++: Select Screen  1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2020 American №	legatrends, Inc.

#### Figure 5-47

User Name : Enter the user name to delete.

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



Aptio Setup Utility — (	Copyright (C) 2020 American	Megatrends, Inc. Server Mgmt
BMC Change User Settings User Name User Password Change User Password User Access Channel No User Privilege Limit	[Disable] O [Reserved]	Enter BMC User Name **: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Co;	oyright (C) 2020 American M	egatrends, Inc.

#### Figure 5-48

User Name : Enter the user name to be modified.

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

User

User permission switch settings, menu options are:

Enabled

Disabled

Default: Disabled

Change User Password : Change the user password. The input password must contain 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, input 1 or 8.

User Privilege Limit

To modify user permission settings, the menu options are:

Reserved

Callback

User

Operator

Administrator



#### 5.2.46 Security menu

	ty – Copyright (C) 2020 Am guration Socket Configura	erican Megatrends, Inc. tion Server Mgmt Security Boot →
Password Description		Set Administrator Password
If ONLY the Administrator's pass then this only limits access to only asked for when entering Ser If ONLY the User's password is s is a power on password and must boot or enter Setup. In Setup th have Administrator rights. The password length must be in the following range: Minimum length	Setup and is tup. set, then this be entered to	
Maximum length	20	
Administrator Password User Password Administrator Password User Password	Not Installed Not Installed	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre>
TCG Storage Security Configurat. ▶ TOSHIBA-RC100	ion:	ESC: Exit
Version 2.20.127	5. Copyright (C) 2020 Amer	ican Megatrends, Inc.

#### Figure 5-49

Administrator Password

Selects this option to set an administrator password;

**User Password** 

Selects this option to set user password;

Administrator Password

Displays the administrator password status, if the system has an administrator password, it displays Installed; if there is no administrator password, it displays Not Installed;

User Password

Displays the 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 the 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.



	Utility – Copyright (C) 2020 America Configuration Socket Configuration	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot Optimized Boot	1 [On] [Enabled] [Disabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option Priorities Boot Option #1 Boot Option #2	[TOSHIBA-RC100] [UEFI: Built-in EFI]	
Hard Drive BBS Priorities		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.2	0.1275. Copyright (C) 2020 American	Megatrends, Inc.

#### Figure 5- 50

Setup Prompt Timeout: Setup prompt timeout setting, set the time to wait for the Setup activation key, the maximum value is 65535 seconds, and the default value is 1.

Bootup Numlock State

During the boot process, the keyboard Numlock indicator light state switch setting, the menu options are:

On : open

 $\mathsf{OFF}:\mathsf{off}$ 

Default: On

Quiet Boot

To turn Quiet Boot on and off, the menu options are:

Disabled: Disable Quiet Boot, and POST information will be displayed at this time

Enabled: Enable Quiet Boot, and the OEM Logo will be displayed at this time

Default: Enabled

**Optimized Boot** 

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

Disabled: Disable Quiet Boot

Enabled: Enable Quiet Boot, which will disable Csm support and connect network devices to reduce startup time Default: Disabled

**Boot Option Priorities** 



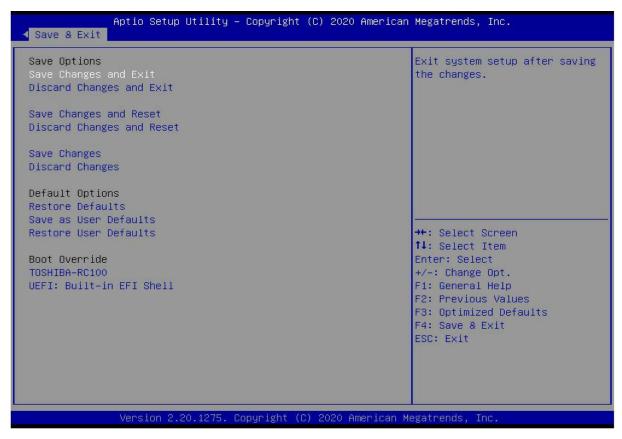


The list of startup options, this list is displayed dynamically and is determined by the number of startup options in the system. When there is no startup item, it will not be displayed.

XXXX Driver BBS Priorities

XXXX device BBS priority setting

#### 5.2.48 Save & Exit menu





Save Changes and Exit

Save the settings and exit the BIOS setup menu;

**Discard Changes and Exit** 

Abandon saving settings and exit BIOS setup menu;

Save Changes and Reset

Save the settings and restart the system;

**Discard Changes and Reset** 

Give up saving the settings and restart the system;

Save Changes

**Discard Changes** 

**Restore Defaults** 



Save as user Defaults

Restore user Defaults

Boot Override

A list of startup options, where a startup option can be selected.

#### 5.3 User Operation Reminder

1. With \_\_option, when user operation is required, understand the operation specification in detail.

2. Whe deriver a strain options, please understand the meaning of the options in combination with the operation manual and the BIOS Setup interface option descriptions.



#### 6.1 PCH configures RAID

#### 6.1.1 Configuring RAID in UEFI Boot Mode

#### **Operation before configuring RAID**

1. During the server startup process, press Delete/Esc as prompted to enter the BIOS Setup interface.

2. Move to the PlatForm page-->PCH Configuration-->PCH Sata Configuration-->Configure SATA as. Configure SATA to RAID mode, as shown in Figure 6-1.

Figure 6-1 Configure SATA to RAID mode:

Aptio Setup Utility – Platform Configurat	Copyright (C) 2020 American <mark>:ion</mark>	Megatrends, Inc.
PCH SATA Configuration		Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
<ul> <li>SATA Controller</li> <li>Configure SATA as</li> <li>SATA test mode</li> <li>SATA RSTE Boot Info</li> <li>► SATA Mode options</li> <li>Support Aggressive Link Power Mana</li> <li>Alternate Device ID on RAID</li> <li>Load EFI Driver for RAID</li> <li>NVRAM CYCLE ROUTER 0 ENABLE</li> <li>NVRAM CRO PCIE Root Port Number</li> </ul>	[Disable]	
NVRAM CYCLE ROUTER 1 ENABLE NVRAM CR1 PCIE Root Port Number NVRAM CYCLE ROUTER 2 ENABLE NVRAM CR2 PCIE Root Port Number	[Disable] [PCI Express Root P] [Disable]	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
SATA Port O Software Preserve Port O Hot Plug Configure as eSATA Mechanical Presence Switch Spin Up Device	[Not Installed] Unknown [Enable] [Enable] [Disable] [Enable] [Disable]	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

#### Figure 6-1

3. Make sure that Storage and Video in CSM Configuration are in UEFI mode, as shown in Figure 6-2, set Storage and Video to UEFI mode



Aptio Setup Utility — Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Compatibility Support Module Configu	ration	Legacy/UEFI ROMs priority
CSM Support	[Enabled]	
CSM16 Module Version	07.83	
GateA20 Active INT19 Trap Response HDD Connection Order	[Upon Request] [Immediate] [Adjust]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Option ROM Policy Network Storage Video Other PCI devices	(UEFI) [UEFI] [UEFI] [UEFI] [UEFI]	<pre>++: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 6-2

4. Restart the server to enter the BIOS Setup interface, move to the Advanced page, you will see the Intel(R) RSTe SATA

Controller, press enter to enter the RAID configuration, as shown in Figure 6-3

Figure 6-3 Intel RSTe SATA Controller



Aptio Setup Utility – Copyright (C) 2020 Americar Main Advanced Platform Configuration Socket Configuration	
<ul> <li>Trusted Computing</li> <li>Serial Port Console Redirection</li> <li>SIO Configuration</li> <li>Option ROM Dispatch Policy</li> <li>PCI Subsystem Settings</li> <li>USB Configuration</li> <li>CSM Configuration</li> <li>NVMe Configuration</li> </ul>	This formset allows the user to manage RAID volumes on the Intel(R) RAID Controller
<ul> <li>T1s Auth Configuration</li> <li>Network Stack Configuration</li> <li>RAM Disk Configuration</li> <li>iSCSI Configuration</li> <li>All Cpu Information</li> <li>Intel(R) VROC SATA Controller</li> <li>Intel(R) Ethernet Connection X722 for 1GbE - 00:24:EC:F2</li> <li>Intel(R) Ethernet Connection X722 for 1GbE - 00:24:EC:F2</li> <li>Driver Health</li> </ul>	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit



### Create RAID

1. Select Create RAID Volume and press enter. Figure 6-4

Figure 6-4 Create RAID



Aptio Setup Utility – Copyright (C) 2020 American Advanced	) Megatrends, Inc.
Intel(R) VROC 6.0.0.1024 SATA Driver ▶ Create RAID Volume	This page allows you to create a RAID volume
Non-RAID Physical Disks: • Port 4, ST1000DM003-1SB102 SN:29A7JLNM, 931.51GB • Port 5, WDC WD1003FBYZ-010FB0 SN:WD-WCAW35PL7F95, 931.51GB	++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

### Figure 6-4

2. Change the name of the created RAID, being careful not to contain special characters. Figure 6-5 Figure 6-5 Create RAID name

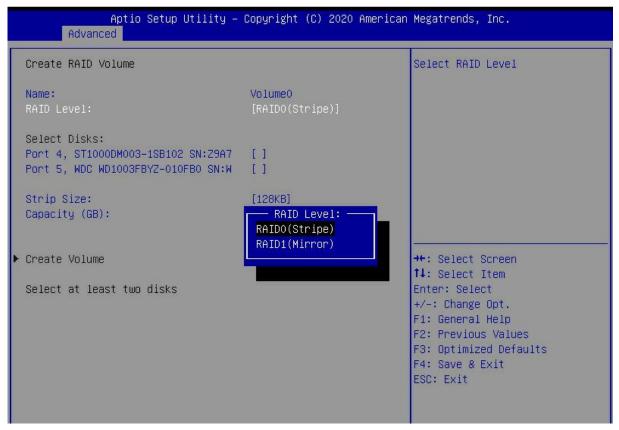


Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Create RAID Volume		Enter a unique volume name that does not contain space at
Name: RAID Level:	Volume0 [RAIDO(Stripe)]	the beginning or backslash and is 16 characters or less.
Select Disks: Port 4, ST1000DM003–1SB102 SN:29A7 Port 5, WDC WD1003FBYZ–010FB0 SN:W		
Strip Size: Capacity (GB):	[128KB] 0.00	
▶ Create Volume		↔: Select Screen
Select at least two disks		Enter: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

### Figure 6-5

3. RAID Level: Select the configuring RAID level, as shown in Figure 6-6, select the configuring RAID level





#### Figure 6-6

4. Select Disks: Press the space bar to select the disks that need to participate in configuring RAID. Figure 6-7Selecting disks for configuring RAID



Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Create RAID Volume		X – to Select Disk
Name: RAID Level:	Volume0 [RAIDO(Stripe)]	
Select Disks: Port 4, ST1000DM003–1SB102 SN:Z9A7 Port 5, WDC WD1003FBYZ–010FB0 SN:W	[X] [X]	
Strip Size: Capacity (GB):	[128KB] 1769.86	
▶ Create Volume		<pre> ++: Select Screen  f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

#### Figure 6-7

5. Select Create Volume and press Enter to configure the RAID.

#### The relevant parameters are described in Table 1-36:

Parameter	Description
Name	The name of the RAID.
	RAID levels, which determine logical disk performance, fault tolerance, and
RAID Level	capacity.
	Select the member disks that make up the RAID. The available disks are
Select Disks	displayed below the Select Disks column. Press Enter to select the disk. [X]
	indicates that the disk has been selected.
Strip Size	Stripe size, the size of the stripe data blocks written on each disk.
Capacity	The capacity of the logical disk.

#### Table 1- 36

After the RAID is created, it will be displayed under the RAID Volumes directory. Select a RAID and press Enter to view the detailed information of the RAID (including RAID name, level, and disk information, etc.).

#### **Configure Hot Spare Disk**

1. As shown in Figure 6-8, select the disk to be configured as a hot spare, and press Enter. Figure 6-8 Selecting a disk to configure as a hot spare



Aptio Setup Utility – Copyright (C) Advanced	2020 American Megatrends, Inc.
<pre>Intel(R) VROC 6.0.0.1024 SATA Driver  Create RAID Volume RAID Volumes: Volume0, RAIDO(Stripe), 1769.86GB, Normal</pre>	Select to see more information about the disk
Non-RAID Physical Disks: ▶ Port 6, ST1000DM003–1SB10C SN:S9A07WVO, 931.51GB ▶ Port 7, ST1000DM003–1SB10C SN:S9A07PJ6, 931.51GB	
	<ul> <li>↔: Select Screen</li> <li>↑↓: Select Item</li> <li>Enter: Select</li> <li>+/-: Change Opt.</li> <li>F1: General Help</li> <li>F2: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> </ul>
	ESC: Exit

Figure 6-8

2. Enter the interface shown in Figure 6-9, select "Mark as Spare", and press Enter. Figure 6-9 Hot spare disk configuration interface



Aptio Setup Utility Advanced	– Copyright (C) 2020 America	n Megatrends, Inc.
PHYSICAL DISK INFO Disk Actions: Mark as Spare Mark as Journaling Drive Turn Locate LED On Port: Controller: Model Number: Serial Number: Size: Status: Block size:	6 SATA ST1000DM003-1SB10C S9A07WV0 931.51GB Non-RAID 512	Mark disk as Spare **: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

### Figure 6-9

3. The interface shown in Figure 6-10 is displayed, select Yes, and press Enter to complete the configuration of the hot spare disk.

Figure 6-10 Confirming the configuration of the hot spare disk



Aptio Setup Utility – Copyright (C) 2020 Ameri Advanced	can Megatrends, Inc.
Mark as Spare	Mark disk as Spare
Are you sure you want to mark the Marking disk as Spare will remove	
▶ Yes ▶ No	
	<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 6-10

#### **Delete RAID**

1. Enter the RSTe configuration interface.

2. As shown in Figure 6-11, select the RAID to be deleted in the RAID Volumes directory, and press Enter.

Figure 6-11 Selecting the RAID to be deleted



Select to see more information about the RAID Volume
<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 6- 11

3. Enter the RAID information interface shown in Figure 6-12, select Delete, and press Enter to delete the RAID. Figure 6-12 RAID information interface



Aptio Setup Advanced	Utility – Copyright (C) 2020 America	an Megatrends, Inc.
RAID VOLUME INFO		
Volume Actions ▶ Delete		
Name: RAID Level: Strip Size: Size: Status: Bootable: Block size:	VolumeO RAIDO(Stripe) 128KB 1769.86GB Normal Yes 512	
RAID Member Disks: ▶ Port 4, ST1000DM003-1SB10 ▶ Port 5, WDC WD1003FBYZ-01	2 SN:Z9A7JLNM, 931.51GB DFBO SN:WD-WCAW35PL7F95, 931.51GB	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### Figure 6- 12

### 6.1.2 Configuring RAID in Legacy Boot Mode

### Set RSTe working mode

- 1. Enter the BIOS Setup interface.
- 2. Move to the PlatForm page-->PCH Configuration-->PCH SATA Configuration



Aptio Setup Utility – Platform Configurat	Copyright (C) 2020 American <mark>tion</mark>	Megatrends, Inc.
PCH SATA Configuration		Enable or Disable SATA Controller
<ul> <li>SATA Controller</li> <li>Configure SATA as</li> <li>SATA test mode</li> <li>SATA RSTE Boot Info</li> <li>SATA Mode options</li> <li>Support Aggressive Link Power Mana Alternate Device ID on RAID</li> <li>Load EFI Driver for RAID</li> <li>NVRAM CYCLE ROUTER 0 ENABLE</li> <li>NVRAM CRO PCIE Root Port Number</li> </ul>	[Disable] [Disable] [Disable]	
NVRAM CYCLE ROUTER 1 ENABLE NVRAM CR1 PCIE Root Port Number NVRAM CYCLE ROUTER 2 ENABLE NVRAM CR2 PCIE Root Port Number	[Disable] [PCI Express Root P] [Disable]	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
SATA Port O Software Preserve Port O Hot Plug Configure as eSATA Mechanical Presence Switch Spin Up Device	[Not Installed] Unknown [Enable] [Enable] [Disable] [Enable] [Disable]	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

### Figure 6-13

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

3. Enter the interface shown in Figure 6-14, select the Configure SATA As item, press Enter, and select the working mode of the RSTe onboard soft RAID.

Figure 6-14 Modifying the working mode of the RAID card



Aptio Setup Utility – Platform Configurat	Copyright (C) 2020 America <mark>ion</mark>	n Megatrends, Inc.
PCH SATA Configuration		<ul> <li>Identify the SATA port is connected to Solid State Drive or Hard Disk Drive</li> </ul>
SATA Controller Configure SATA as SATA test mode SATA RSTE Boot Info SATA Mode options Support Aggressive Link Power Mana Alternate Device ID on RAID Load EFI Driver for RAID NVRAM CYCLE ROUTER O ENABLE	[Enable] [RAID] [Disable] [Enable] [Enable] [Disable] [Disable] [Disable]	
NVRAM CRO PCIE Root Port Number NVRAM CYCLE ROUTER 1 ENABLE NVRAM CR1 PCIE Root Port Number NVRAM CYCLE ROUTER 2 ENABLE NVRAM CR2 PCIE Root Port Number	<pre>[PCI Express Root P] [Disable] [PCI Express Root P] [Disable] [PCI Express Root P]</pre>	<pre>++: Select Screen  f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
SATA Port 0 Software Preserve Port 0 Hot Plug Configure as eSATA Mechanical Presence Switch Spin Up Device	[Not Installed] Unknown [Enable] [Enable] [Disable] [Enable] [Disable]	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

#### Figure 6- 14

#### Enter the RSTe configuration interface

1. Power on or restart the server, and press Ctrl+I when the interface shown in Figure 6-15 is displayed during the

BIOS startup process.

Figure 6-15 BIOS startup interface



Copyrig		fechnology enterprise - Sf Lel Corporation. All Rigi			.0
	defined.				
Phys i	cal Devices:				
		Serial #		Type/Status(Vol	ID)
	MB8588GCEHE	WMAYP7344426		Non-RAID Disk Non-RAID Disk	
	MM1888GBKAL	Configuration Utility	331.36B	HOU-REID DISK	

#### Figure 6-15

If the working modes of both sSATA and SATA controllers are 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 configure RAID according to the The desired disk selection controller.

2. Enter the RSTe configuration interface shown in Figure 6-16 (see Table 1-29 for interface descriptions). Please refer to the key operation tips on the lower border of the interface to navigate and modify settings in the interface. Figure 6-16 RSTe configuration interface



		RAID Volume RAID Volume		sks to Non-RAID ks as Spare	
	Volumes: defined.				
Phys	ical Devices:				
10 1 3	Device Model MB0500GCEHE MB0500GCEHE MM1000GBKAL	Serial # WMAYP8272466 WMAYP7344426 9X65E7PM	465.7GB 465.7GB	Type/Status(Vol Non-RAID Disk Non-RAID Disk Non-RAID Disk	ID)
	[†4]	-Select (ESC)-Exit	t [ENTER]-Select	t Henu	

#### Figure 6-16

Table 1-37 Description of the RSTe configuration interface

Options	Description
	On the upper side of the interface, you can perform the following tasks: 1.Create RAID Volume: Configure RAID volume.
MAIN MENU	<ul><li>2.Delete RAID Volume: Delete RAID volume.</li><li>3.Reset Disks to Non-RAID: Clear the RAID configuration information of the disk.</li><li>4.Mark Disks as Spare: Configure a hot spare disk.</li></ul>
DISK/VOLUME INFORMATION	5.Exit: Exit. On the lower side of the configuration interface, you can view the overview information of the created RAID and physical disks.

#### Table 1- 37

#### Common tasks Configure RAID:

1. Enter the RSTe configuration interface.

2. As shown in Figure 6-17, select Create RAID Volume on the RSTe configuration interface, and press Enter. Figure 6-17 RSTe configuration interface



		RAID Volume RAID Volume	4. Mark Disl 5. Exit	sks to Non-RAID ks as Spare
	Volunes: defined.	T DISK/VOLUME	INFORMATION ]	
Phys ID 0 1	ical Devices: Device Model MB200BGCWDA MM1000GBKAL	Serial # Z1Y1LPGY 9XG5DMC2	1.8TB	Type∕Status(Vol ID) Non-RAID Disk Non-BAID Disk
	(†4)	I-Select [ESC]-Exi	t [ENTER]-Select	t Henu

Figure 6-17

3. Enter the interface shown in Figure 6-18, and set the Name, RAID Level, Disks, Strip Size, and Capacity columns accordingly (see Table 1-30 for parameter descriptions), select Create Volume, and press Enter. Figure 6-18 Create RAID Volume interface



í	CREATE VOLUNE MENU 1
	Name: LD_RAID1 RAID Level: RAID1(Mirror) Disks: Select Disks Strip Size: N/A Capacity: 10 GB Create Volume
	[ HELP ] Press ENTER to create the specified volume.
	[14]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

#### Figure 6-18

Table 1-38 Parameter description

Description	
The name of the RAID.	
RAID level. RAID levels determine logical disk performance, fault tolerance, and	
capacity.	
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 Stripe size, the size of the stripe data blocks written on each disk.	
The capacity of the logical disk.	

#### Table 1- 38

4. Entering the interface shown in Figure 6-19, you can view the detailed information of the RAID (including the RAID name, level, and included disk information, etc.).

Figure 6-19 RAID information interface



	<mark>1. Create</mark> 2. Delete	RAID Volume RAID Volume	4. Ma	set Disks to <b>N</b> on- rk Disks as Spare it N ]	
RAID ID Ø	Volumes: Name LD_RAID1	<b>Level</b> RAID1(Mirror)	Strip N∕A	Size Status 884.9GB Normal	Bootable Yes
Phys ID 0 1	ical Devices: Device Model MB2000GCWDA MM1000GBKAL	Serial # 21X1RRN4 9XG6RFQ7	9	Size Type/Statu 1.8TB Member Dis 31.5GB Member Dis	k(8)
	[11]	-Select [ESC]-Exit	ENTER	-Select Menu	

### Figure 6-19

#### To configure a hot spare disk:

1. Enter the RSTe configuration interface.

2. As shown in Figure 6-20, select Mark Disks as Spare on the RSTe configuration interface, and press Enter. Figure 6-20 RSTe configuration interface



		[	MAIN MENU ]-			
		RAID Volume RAID Volume	3. 1. 5.		ks to Non-RAID s as Spare	
		DISK/V	OLUME INFORMAT	TION 1		
	Volumes: defined.					
Physi	ical Devices:					
ID	Device Model	Serial #		Size	Type/Status(Vol	ID)
8	MB2000GCWDA	ZIYILPGY			Non-RAID Disk	
1	MM1000GBKAL	9XG5DMCZ		931.5GB	Non-RAID Disk	
	[1]	1-Select [ESC	J-Exit [ENT]	ER1-Select	Menu	

Figure 6-20

3. On the interface shown in Figure 6-21, select the disk to be configured as a hot spare disk and press SPACE to select it, then press Enter, enter y in the displayed prompt box, and press Enter to complete the hot spare disk configuration.

Figure 6-21 Select disk



			MARK AS SE	ARE	1
		Marking disk as	Spare will remo	ove all data on the dis)	44
RA	WAR	NING: Marking disk	Spare causes al	I data on the disk to I	e lost.
No Ph ID Ø 1	ID 8 ▶1	Drive Hodel MB2000GCWDA MM1000GBKAL	Serial # 21Y1LPGY 9XG5DMC2	Size Status 1.8TB Non-RA 931.5GB Non-RA)	2 TH 1 TH 1 TH 1 TH
	11.1			ted disks as Spare? (Y) EINTER]-Selection Cor	
		[14]-Select	[ESC]-Exit	[ENTER]-Select Menu	

### Figure 6- 21

4. On the RSTe configuration interface, you can view the hot spare disk information, as shown in Figure 6-22. Figure 6-22 Viewing hot spare disk information on the RSTe configuration interface



		RAID Volume RAID Volume	3. Reset Disks to Non-RAID 1. Mark Disks as Spare 5. Exit
	Volunes: defined.	DISK/VOLUME	INFORMATION ]
	ical Devices:		
ID Ø	Device Model	Serial #	Size Type/Status(Vol ID)
1	MB2000GCWDA MM1000GBKAL	Z1Y1LPGY 9XG5DMCZ	1.8TB Non-RAID Disk 931.5GB Spare Disk
	[1]	1-Select [ESC]-Exi	t [ENTER]-Select Menu

Figure 6- 22

#### **Delete RAID:**

1. Enter the RSTe configuration interface.

2. As shown in Figure 6-23, select Delete RAID Volume on the RSTe configuration interface, and press Enter. Figure 6-23 RSTe configuration interface



		RAID Volune RAID Volune	4. 5.	Reset Disks to Nom Mark Disks as Spar Exit	
RAII ID 0	) Volumes: Name LD_RAID1	Level RAID1(Mirror)	INFORMAT Strip N/A	Size Status 10.06B Normal	Bootable Yes
Phys ID Ø 1	sical Devices: Device Model MB2000GCWDA HM1000GBKAL	Serial # 21X1RRN4 9XG6RFQ7		Size Type/Stat 1.8TB Member Di 931.5GB Member Di	sk(0)
	[14]	-Select [ESC]-Exi	t CEN <u>TE</u>	R]-Select Menu	

Figure 6-23

3. Enter the interface shown in Figure 6-24, select the RAID to be deleted, and press Delete to complete the deletion.

Figure 6-24 Selecting the RAID to be deleted



Nane	Level	Drives	Capacity	Status	Bootable
LD_RAID1	RAID1(Mirror	) 2	18.868	Normal	Yes
		( UPI D )			
		HELP 1			
	Deleting a volum	e will reset	the disks	to non-RAID.	
	WHEN ING: H	LL DISK DATA	WILL BE DE	LEIED.	

Figure 6-24

### 6.2 RAID card configures RAID

### 6.2.1 Configuring RAID in UEFI Boot Mode

#### Enter the RAID card configuration interface

1. During the server startup process, press Delete/Esc as prompted to enter the BIOS Setup interface.

2. Select Advanced>AVAGO MegaRAID<AVAGO MegaRAID SAS 91311-8i>Configuration Utility, and press Enter.

3. Enter the interface shown in Figure 6-25. Five types of configuration tasks are displayed on the interface (see

Table 1-39 for related instructions).

Figure 6-25 RAID card configuration interface, as shown in Figure 6-25



Aptio Setup Utility – Copyright (C) 2017 Advanced	American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Displays configuration options. Some options appear only if the controller supports them. As an example, create virtual drive, create CacheCade virtual drive, make JBOD, make Unconfigured Good, clear configuration, manage foreign configuration, view drive group properties and view global hot spare drives.
Version 2.19.1268. Copyright (C) 2017 Ar	merican Megatrends, Inc. 84

### Figure 6- 25

Table 1-39 Parameter description
----------------------------------

able 1-39 Parameter descri	
Options	Overview
Configuration Management	Select Configuration Management to perform tasks such as creating logical disks, viewing disk group properties, viewing hot spare information, and clearing configurations.
Controller Management	Select Controller Management to view and manage controller properties and perform tasks such as clearing controller events, scheduling and running controller events, and running patrol reads.
Virtual Drive	Select Logical Disk Management to perform tasks such as viewing logical
Management	disk properties, locating logical disks, and running consistency checks.
Drive Management	Select Disk Management to view physical disk properties and perform tasks such as locating disks, initializing disks, and rebuilding after disk failures.
Hardware Components	Select Hardware Components to view supercapacitor properties, manage supercapacitors, and manage peripheral components.

#### Table 1- 39

#### Common tasks

### Switch disk mode:

The RAID card supports switching between the following three disk modes:





1. Unconfigured Good: Indicates that the physical disk is normal and can be used to configure RAID or hot spare disks.

2. Unconfigured Bad: Indicates that there is residual RAID information on the physical disk and needs to be cleared manually.

3. JBOD: Just a Bunch Of Disks, it only concatenates the disks together for capacity expansion, but does not have the RAID function.

Here is an example of switching from Unconfigured Good mode to Unconfigured Bad mode.

1. As shown in Figure 6-26, select Drive Management on the RAID card configuration interface, and press Enter. Figure 6-26 RAID card configuration interface

Configuration Management Controller Management Virtual Drive Management Drive Management Hardware Components	Displays the basic drive properties and performs operations such as assign/unassign a hot spare drive, locate drives, Place Drive offline/online, and rebuild drive. You can also
	view additional properties using the Advanced link. 
	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (	C) 2017 American Megatrends, Inc.

Figure 6-26

2. The interface shown in Figure 6-27 is displayed, select the disk to be configured, and press Enter. Figure 6-27 Drive Management management interface



#### Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced Displays the properties of a specific drive. You can ▶ Drive Port 4 - 7:01:05: SAS, 558GB, (Foreign)Unconfigure... • Drive Port 4 - 7:01:06: SAS, 558GB, (Foreign)Unconfigure... perform several operations ▶ Drive Port 4 - 7:01:07: SAS, 558GB, (Foreign)Unconfigure... (such as Rebuild, Initialize drive), view basic properties of the drive and also click Advanced to view additional properties. ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.

#### Figure 6-27

3. Enter the interface shown in Figure 6-28, select Operation, and press Enter. In the displayed dialog box, select Make Unconfigured Bad, and press Enter.

Datasheet

Figure 6-28 Operation interface



Aptio Advanced	Setup Utility – Copyright (C) 2017 American	Megatrends, Inc.
Operation BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Select operation] Port 4 - 7:01:04 [Unconfigured Good] S58 GB [Disk] HUC101860CSS200 HGST Operation Select operation Start Locate Stop Locate Initialize Drive Drive Erase Make Unconfigured Bad	Lists the operations that you can perform on a drive. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Vers.	ion 2.19.1268. Copyright (C) 2017 American M	egatrends, Inc.

Figure 6- 28

4. Enter the interface shown in Figure 6-29, select Go, and press Enter. Figure 6-29 Select Go



Aptio Setup Uti Advanced	lity – Copyright (C) 2017 America	n Megatrends, Inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Make Unconfigured Bad] Port 4 – 7:01:04 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	Starts the selected operation or opens another form.
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
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### Figure 6- 29

5. Enter the interface shown in Figure 6-30 and complete the operation of switching the disk mode. Figure 6-30 Complete switching disk mode



Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc. B4	

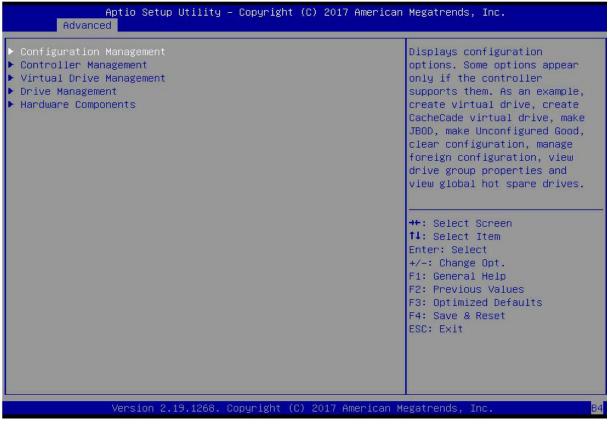
### Figure 6- 30

#### **Create RAID:**

1. As shown in Figure 6-31, select Configuration Management on the RAID card configuration interface, and press Enter.

Figure 6-31 RAID card configuration interface





#### Figure 6-31

2. Enter the interface shown in Figure 6-32, select Create Virtual Drive, and press Enter. Figure 6-32 Select Create Virtual Drive





#### Figure 6- 32

3. On the interface shown in Figure 6-33, select Select RAID Level, set the RAID level, and press Enter. Figure 6-33 Setting the RAID level



Aptio Setup Utility Advanced	– Copyright (C) 2017 America	an Megatrends, Inc.
<ul> <li>Save Configuration Select RAID Level Protect Virtual Drive Select Drives From</li> <li>Select Drives</li> <li>CONFIGURE VIRTUAL DRIVE PARAMETERS Virtual Drive Name Virtual Drive Size Virtual Drive Size Virtual Drive Size Unit Strip Size Read Policy Write Policy I/O Policy Access Policy Drive Cache Disable Background Initialization Default Initialization</li> <li>Save Configuration</li> </ul>	[RAIDO] [Disabled] [Unconfigured Capacity] 3: 0 Select RAID Level RAID0 RAID1 RAID5 RAID6 RAID10 [NO]	Selects the desired RAID level. The RAID levels that can be configured are 0, 1, 5, 6 (if supported), 10, 50, and 60 (if supported). RAID 0 uses drive striping to provide high data throughput, especially for large files in an environment that requires no data redundancy. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268.	Copyright (C) 2017 American	Megatrends, Inc.

Figure 6- 33

4. Enter the interface shown in Figure 6-34, select Select Drives From, set the RAID disk capacity source, and press Enter.

[Unconfigured Capacity] indicates that the capacity comes from the remaining capacity of the RAID-configured disk.

[Free Capacity] indicates that the capacity comes from an empty disk.

Figure 6-34 Setting the disk capacity source of RAID



<ul> <li>Save Configuration Select RAID Level [RAID0] Protect Virtual Drive [Disabled] Select Drives From [Unconfigured Capacity]</li> <li>Select Drives From [Unconfigured Capacity]</li> <li>Select Drive Name Virtual Drive Name Virtual Drive Size 0 Virtual Drive Size 0</li></ul>	Aptio Setup Utility Advanced	– Copyright (C) 2017 Americar	n Megatrends, Inc.
	Select RAID Level Protect Virtual Drive Select Drives From Select Drives CONFIGURE VIRTUAL DRIVE PARAMETERS Virtual Drive Name Virtual Drive Size Virtual Drive Size Unit Strip Size Read Policy Write Policy I/O Policy Access Policy Drive Cache Disable Background Initialization Default Initialization	[Disabled] [Unconfigured Capacity] : 0 [GB] Select Drives From Unconfigured Capacity Free Capacity [Unchanged] [No]	<pre>selection option; Free Capacity utilizes unused (free) drive capacity that is already part of a virtual drive and Unconfigured Capacity creates a virtual drive on unconfigured drives.</pre> ++: Select Screen 14: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset

Figure 6- 34

5. Enter the interface shown in Figure 6-35, select Select Drives, and press Enter.

Figure 6-35 Select Select Drives



<ul> <li>Save Configuration</li> <li>Select RAID Level</li> <li>Protect Virtual Drive</li> <li>Select Drives From</li> <li>Select Drives</li> </ul>	[RAIDO] [Disabled] [Unconfigured Capacity]	Dynamically updates to display as Select Drives or Select Drive Group based on the selection made in Select Drives From.
CONFIGURE VIRTUAL DRIVE PARAMETERS: Virtual Drive Name Virtual Drive Size Virtual Drive Size Unit Strip Size Read Policy Write Policy I/O Policy Access Policy Drive Cache Disable Background Initialization Default Initialization Save Configuration	0 [GB] [256 KB] [Read Ahead] [Write Back] [Direct] [Read/Write] [Unchanged] [No] [No]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>

#### Figure 6-35

6. Enter the interface shown in Figure 6-36, select the disk to be used to configure RAID, [Enabled] means selected, then select Apply Changes, and press Enter. If the status of the disk is JBOD or Unconfigured Bad, it cannot be selected.



Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
<ul> <li>Apply Changes</li> <li>Select Media Type</li> <li>Select Interface Type</li> <li>Logical Sector Size</li> </ul>	[HDD] [Both] [Both]	
CHOOSE UNCONFIGURED DRIVES: Drive Port 0 - 3:01:00: SAS, 558GB Drive Port 0 - 3:01:01: SAS, 558GB Drive Port 0 - 3:01:02: SAS, 558GB Check All Uncheck All Apply Changes	[Enabled] [Disabled] [Disabled] [Disabled]	<pre> ++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>

#### Figure 6-36

7. Enter the interface shown in Figure 6-37, make corresponding settings (see Table 1-32 for parameter descriptions), select Save Configuration, and press Enter.

Figure 6-37 Setting RAID parameters



Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
<ul> <li>Save Configuration Select RAID Level Protect Virtual Drive Select Drives From</li> <li>Select Drives</li> </ul>	[RAIDO] [Disabled] [Unconfigured Capacity]	Assigns a name to identify the virtual drive.
CONFIGURE VIRTUAL DRIVE PARAMETERS: Virtual Drive Name Virtual Drive Size Virtual Drive Size Unit Strip Size Read Policy Write Policy I/O Policy Access Policy Drive Cache Disable Background Initialization Default Initialization ► Save Configuration	1116 [GB] [256 KB] [Read Ahead] [Write Back] [Direct] [Read/Write] [Unchanged] [No] [No]	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>

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#### Figure 6-37

#### Parameter Description

Parameter	Description
Virtual Drive Name	The name of the RAID, only supports letters, numbers and underscores,
Virtual Drive Name	case-insensitive
Virtual Drive Size	RAID capacity
Virtual Drive Size Unit	RAID capacity unit
Stripe Size	Stripe size, the size of the stripe data blocks written on each disk
Dood Doliny	Read cache strategy, divided into Read Ahead (open read cache) and No
Read Policy	Read Ahead (close read cache)
	Write caching strategy, divided into Write Through (write-through
Write Policy	mode), Always Write Back (write-back mode 1) and Write Back (write-
	back mode 2)
I/O Policy	I/O strategy, divided into Cached (cache mode) and Direct (direct read
	and write mode)
Access Deliev	Read and write strategy, divided into Read/Write (read/write), Read
Access Policy	Only (read-only) and Blocked (forbidden operation)
Drive Cache	Disk cache strategy, divided into Enable (open), Disable (close) and
	Unchanged (automatic)
Default Initialization	Default initialization method
Save Configuration	Save the configuration created by the wizard





Table 1- 40

- B
- ♦ Do not use special characters as RAID names.
- ☆ Compared with No Read Ahead, Write Through, and Direct, Read Ahead, Write Back, and Cached have improved performance, but data consistency cannot be guaranteed.
- If the supercapacitor is abnormal, when the write cache policy is set to "Write Back", the firmware will implement "Write Through" for writing data; if the write cache policy is set to "Always Write Back", the firmware write data will implement "Write Back".
  - 8. Enter the interface shown in Figure 6-38, select Confirm to enable it, select Yes, and press Enter. Figure 6-38 Confirm the configuration

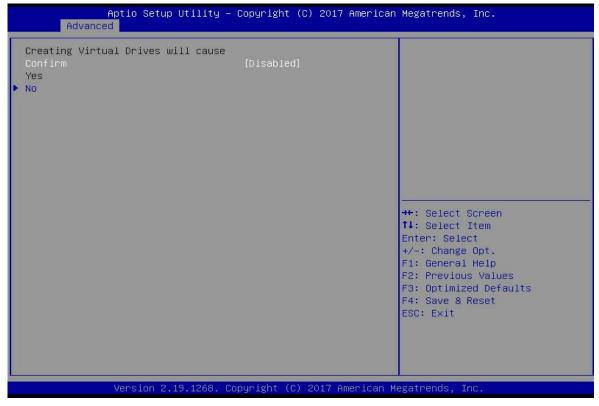


Figure 6- 38

9. Enter the interface shown in Figure 6-39, complete the RAID configuration operation, and select OK to return to the RAID card configuration interface.

Figure 6-39 Complete the RAID configuration





Figure 6-39

10. As shown in Figure 6-40, select Virtual Drive Management on the RAID card configuration interface, and press Enter.

Figure 6-40 RAID card configuration interface



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Manages the virtual drive properties and enables you to view the basic virtual drive properties and perform operations such as background initialization, consistency check. You can also view additional properties using the Advanced link. ++: Select Screen fl: Select Item Enter: Select
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

Figure 6-40

11. On the interface shown in Figure 6-41, you can see the created RAID, select the RAID to be viewed, and press Enter.

Figure 6-41 Virtual Drive Management interface





specific virtual drive. can perform operations ( as Start Locate, Stop Lo Consistency Check), view	Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. anced
	<pre>ive 0: RAIDO, 1116GB, Optimal Displays the properties of a specific virtual drive. You can perform operations (such as Start Locate, Stop Locate, Consistency Check), view basic properties and click Advanced for viewing additional properties.</pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset
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Figure 6- 41

12. Enter the interface shown in Figure 6-42, select View Associated Drives, and press Enter to view the detailed information of the RAID (including RAID name, level, and disk information, etc.).

Figure 6-42 Select View Associated Drives



ity – Copyright (C) 2017 Amer.	ican Megatrends, Inc.
[Select operation] [RAIDO] [Optimal] 1116 GB	Lists the operations that you can perform on a virtual drive.
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
	[Select operation] [RAIDO] [Optimal]

#### Figure 6-42

#### To configure a hot spare disk:

After configuring RAID, a hot spare disk is generally configured to improve data security. A global hot spare disk or a dedicated hot spare disk can be configured as required.

- $\diamond$  Hot spares are only used for RAID levels where redundancy exists.
- ♦ The capacity of the hot spare disk is larger than the capacity of a single RAID member disk to contribute to the RAID.
- ♦ Only disks whose configuration mode is Unconfigured Good are supported as hot spare disks.

Configuring a global hot spare

1. As shown in Figure 6-43, select Drive Management on the RAID card configuration interface, and press Enter. Figure 6-43 RAID card configuration interface



Aptio Setup Utility – Copyright (C) Advanced	2017 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Displays the basic drive properties and performs operations such as assign/unassign a hot spare drive, locate drives, Place Drive offline/online, and rebuild drive. You can also view additional properties using the Advanced link.
Version 2.19.1268. Copyright (C) 2	017 American Megatrends, Inc.

#### Figure 6-43

2. On the interface shown in Figure 6-44, select the disk to be configured as a global hot spare, and press Enter. Figure 6-44 Drive Management management interface





Aptio Setup Utility – Copyright (C) 2017 Americar Advanced	Megatrends, Inc.
<ul> <li>Drive Port 0 - 3:01:00: SAS, 5586B, Online, (512B)</li> <li>Drive Port 0 - 3:01:01: SAS, 5586B, Online, (512B)</li> <li>Drive Port 0 - 3:01:02: SAS, 5586B, Unconfigured Good, (</li> <li>Drive Port 0 - 3:01:03: SAS, 5586B, Unconfigured Good, (</li> </ul>	Displays the properties of a specific drive. You can perform several operations (such as Rebuild, Initialize drive), view basic properties of the drive and also click Advanced to view additional properties. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C) 2017 American ⊧	legatrends, Inc.

Figure 6-44

3. On the interface shown in Figure 6-45, select Operation, press Enter, then select Assign Dedicated Hot Spare Drive, and press Enter.

Figure 6-45 Operation interface



Aptio Se Advanced	tup Utility – Copyright (C) 2017 Americar	) Megatrends, Inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Assign Global Hot S] Port 0 - 3:01:02 [Unconfigured Good] S58 GB [Disk] HUCIO1860CSS200 Operation Select operation Start Locate Stop Locate Initialize Drive Drive Erase Make Unconfigured Bad Assign Global Hot Spare Drive	Lists the operations that you can perform on a drive.
Version	2.19.1268. Copyright (C) 2017 American ⊧	legatrends, Inc.

#### Figure 6-45

4. Enter the interface shown in Figure 6-46, select Go, and press Enter. Figure 6-46 Select Go



Aptio Setup U1 Advanced	tility – Copyright (C) 2017 America	n Megatrends, Inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size	[Assign Global Hot S] Port 0 – 3:01:02 [Unconfigured Good] 558 GB	Starts the selected operation or opens another form.
Type Model Hardware Vendor Advanced	[Disk] HUC101860CSS200 HGST	
		<pre>++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.	.1268. Copyright (C) 2017 American (	Megatrends, Inc.

#### Figure 6-46

5. Enter the interface shown in Figure 6-47, select Confirm to enable it, select Yes, and press Enter. Figure 6-47 Confirm the configuration





Aptio Setup Utility - Advanced	Copyright	(C) 201	l7 American	Megatrends,	Inc.
If you choose a global hot spare d Confirm Yes ▶ No	(Enabled)			<pre>++: Select S 14: Select S Enter: Select +/-: Change F1: General F2: Previous F3: Optimize F4: Save &amp; F ESC: Exit</pre>	ttem ct Opt. Help s Values ed Defaults
Version 2.19.1268. Co	opyright (C	) 2017	American M	egatrends, Ir	16.

#### Figure 6-47

6. Enter the interface shown in Figure 6-48 and complete the operation of configuring the global hot spare disk. Figure 6-48 Complete the configuration of the global hot spare disk



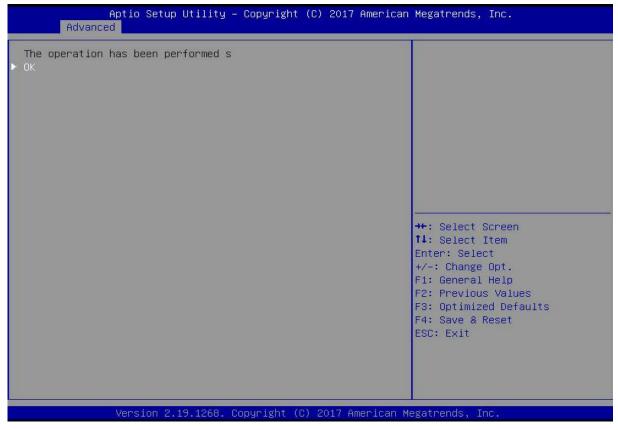


Figure 6-48

#### Delete RAID:

As shown in Figure 6-49, select Virtual Drive Management on the RAID card configuration interface, and press Enter. Figure 6-49 RAID card configuration interface



Aptio Setup Utility – Copyright (C) 20 Advanced	17 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Manages the virtual drive properties and enables you to view the basic virtual drive properties and perform operations such as background initialization, consistency check. You can also view additional properties using the Advanced link. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C) 2017	American Megatrends, Inc.

#### Figure 6-49

The interface shown in Figure 6-50 is displayed, select the logical disk to be deleted, and press Enter. Figure 6-50 Logical disk management interface





tic virtual drive. You erform operations (such art Locate, Stop Locate, stency Check), view basic ties and click Advanced ewing additional ties.
elect Screen elect Item Select change Opt. eneral Help revious Values otimized Defaults ove & Reset cxit
)p Sa

Figure 6- 50

On the interface shown in Figure 6-51, select Operation and press Enter. In the displayed dialog box, select Delete Virtual Drive and press Enter.

Figure 6-51 Operation interface



Aptio Setup Ut Advanced	ility – Copyright (C) 2017 Americ	an Megatrends, Inc.
Operation BASIC PROPERTIES: Name	[Select operation]	Lists the operations that you can perform on a virtual drive.
Raid Level Status Size	[RAIDO] [Optimal] 1116 GB	
<ul> <li>View Associated Drives</li> <li>Advanced</li> </ul>	Operation — Select operation Start Locate Stop Locate Delete Virtual Drive	
	Reconfigure Virtual Drives Fast Initialization Slow Initialization Virtual Drive Erase	<pre> ++: Select Screen  ↓: Select Item Enter: Select +/-: Change Opt.</pre>
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.	1268. Copyright (C) 2017 Americar	n Megatrends, Inc. <mark>B</mark>

Figure 6-51

Enter the interface shown in Figure 6-52, select Go, and press Enter.

Figure 6-52 Select Go



Aptio Setup Utility Advanced	– Copyright (C) 2017 American	n Megatrends, Inc.
Operation ▶ Go BASIC PROPERTIES: Name	[Delete Virtual Drive]	Starts the selected operation or opens another form.
Raid Level Status Size ▶ View Associated Drives ▶ Advanced	[RAIDO] [Optimal] 1116 GB	
		++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Reset ESC: Exit
Version 2.19.1268.	Copyright (C) 2017American M	Megatrends, Inc.

#### Figure 6-52

Enter the interface shown in Figure 6-53, select Confirm to enable it, select Yes, and press Enter. Figure 6-53 Confirm deletion





Aptio Setup Utility - Advanced	Copyright	(C) 2017 Americar	) Megatrends,	Inc.
Deleting a Virtual Drive deletes a Confirm Yes ▶ No	[Enabled]		++: Select fl: Select Enter: Sele +/-: Change F1: General F2: Previou F3: Optimiz F4: Save & ESC: Exit	Item ct Opt. Help s Values ed Defaults
Version 2.19.1268. C	opyright (C	) 2017American M	legatrends, I	nc.

#### Figure 6-53

The interface shown in Figure 6-54 is displayed, and the RAID deletion operation is completed. Figure 6-54 Complete the deletion of RAID





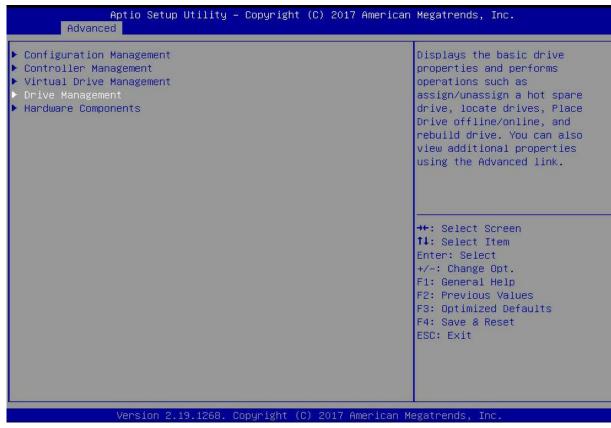
#### Figure 6-54

#### Locate disk location:

Locate physical disks

As shown in Figure 6-55, select Drive Management on the RAID card configuration interface, and press Enter. Figure 6-55 Select Drive Management





#### Figure 6-55

On the interface shown in Figure 6-56, select the disk to be located, and press Enter. Figure 6-56 Select the disk to be located



#### Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced Displays the properties of a specific drive. You can ▶ Drive Port 0 - 3:01:01: SAS, 558GB, Unconfigured Good, (... ▶ Drive Port 0 - 3:01:02: SAS, 558GB, Unconfigured Good, (... perform several operations (such as Rebuild, Initialize drive), view basic properties of the drive and also click Advanced to view additional properties. ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.

#### Figure 6-56

On the interface shown in Figure 6-57, select Operation, and press Enter. In the displayed dialog box, select Start Locate and press Enter.

Datasheet

Figure 6-57 Operation interface



Aptio Advanced	Setup Utility – Copyright (C) 2017 American	h Megatrends, Inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Start Locate] Port 0 - 3:01:00 [Unconfigured Good] S58 GB [Disk] HUC101860CSS200 Operation Select operation Start Locate Stop Locate Initialize Drive Drive Erase Make Unconfigured Bad Assign Global Hot Spare Drive	Lists the operations that you can perform on a drive.
Versi	on 2.19.1268. Copyright (C) 2017 American M	≁egatrends, Inc.

Figure 6-57

Enter the interface shown in Figure 6-58, select Go, and press Enter. Figure 6-58 Select Go



Aptio Setup Uf Advanced	ility – Copyright (C) 2017 Ameri	can Megatrends, Inc.
Operation ▶ Go BASIC PROPERTIES:	[Start Locate]	Starts the selected operation or opens another form.
Drive ID Status Size Type Model Hardware Vendor ► Advanced	Port 0 – 3:01:00 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	
		<pre>++: Select Screen f↓: Select Item Enter: Select</pre>
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19	1268. Copyright (C) 2017 America	an Megatrends, Inc.

#### Figure 6-58

Enter the interface shown in Figure 6-59 and complete the operation of locating the physical disk. Figure 6-59 Complete physical disk location positioning



The operation has been performed s OK	
	++: Select Screen †↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset
	ESC: Exit

Figure 6-59

Locate all disks in a logical disk

As shown in Figure 6-60, select Virtual Drive Management on the RAID card configuration interface, and press Enter.

Figure 6-60 RAID card configuration interface





#### Figure 6-60

On the interface shown in Figure 6-61, select the logical disk to be located, and press Enter. Figure 6-61 Selecting the logical disk to be located





Aptio Setup Utility – Copyright (C) 2017 Am Advanced	erican Megatrends, Inc.
▶ Virtual Drive 0: 111, RAIDO, 1116GB, Optimal	Displays the properties of a specific virtual drive. You can perform operations (such as Start Locate, Stop Locate, Consistency Check), view basic properties and click Advanced for viewing additional properties.
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C) 2017 Amer	ican Megatrends, Inc.

Figure 6-61

On the interface shown in Figure 6-62, select Operation and press Enter. In the displayed dialog box, select Start Locate and press Enter.

Figure 6-62 Operation interface



Aptio Setup L Advanced	Htility – Copyright (C) 2017 Ameri	can Megatrends, Inc.
Operation Go BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Start Locate] 111 [RAIDO] [Optimal] 1116 GB Operation Start Locate Stop Locate Delete Virtual Drive Reconfigure Virtual Drives Fast Initialization Slow Initialization Virtual Drive Erase	Lists the operations that you can perform on a virtual drive. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19	.1268. Copyright (C) 2017 America	n Megatrends, Inc.

Figure 6-62

Enter the interface shown in Figure 6-63, select Go, and press Enter. Figure 6-63 Select Go



Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced		
Operation © Go BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives	[Start Locate] 111 [RAIDO] [Optimal] 1116 GB	Starts the selected operation or opens another form.
▶ Advanced		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.3	1268. Copyright (C) 2017 Amer	ican Megatrends, Inc.

#### Figure 6-63

Enter the interface shown in Figure 6-64, and complete the operation of locating all disk locations in the logical disk.

Figure 6-64 Complete the positioning of all disks in the logical disk





#### Figure 6-64

#### Initialize the logical disk:

This function is used to initialize the internal data space of the logical disk so that it can be recognized and used by the operating system.

As shown in Figure 6-65, select Virtual Drive Management on the RAID card configuration interface, and press Enter.

Figure 6-65 RAID card configuration interface



Advanced Advanced	<i>i</i> .
Configuration Management Controller Management Virtual Drive Management Drive Management Hardware Components	Manages the virtual drive properties and enables you to view the basic virtual drive properties and perform operations such as background initialization, consistency check. You can also view additional properties using the Advanced link.
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
	C) 2017 American Megatrends, Inc.

Figure 6- 65

On the interface shown in Figure 6-66, select the logical disk to be initialized, and press Enter. Figure 6-66 Logical disk management interface



Aptio Setup Utility – Copyright (C) 2017 Amer. Advanced	ican Megatrends, Inc.
▶ Virtual Drive 0: 111, RAIDO, 1116GB, Optimal	Displays the properties of a specific virtual drive. You can perform operations (such as Start Locate, Stop Locate, Consistency Check), view basic properties and click Advanced for viewing additional properties.
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 America	an Megatrends, Inc.

Figure 6-66

Enter the interface shown in Figure 6-67, select Operation, and press Enter. In the dialog box that pops up, select Fast/Slow Initialization and press Enter.

Figure 6-67 Operation interface



Aptio Setup Ut Advanced	ility – Copyright (C) 2017 Americ:	an Megatrends, Inc.
Operation BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives	[Select operation] 111 [RAIDO] [Optimal] 1116 GB	Lists the operations that you can perform on a virtual drive.
▶ Advanced	Operation Select operation Start Locate Stop Locate Delete Virtual Drive Reconfigure Virtual Drives Fast Initialization Slow Initialization Virtual Drive Erase	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.	1268. Copyright (C) 2017 American	Megatrends, Inc.

Figure 6- 67

The difference between Fast Initialization and Slow Initialization is that the former can write data immediately, while the latter needs to wait for all the disk space to be initialized before writing data.

Enter the interface shown in Figure 6-68, select Go, and press Enter.

Figure 6-68 Select Go



Aptio Setup Util: Advanced	ity – Copyright (C) 2017 Americ	can Megatrends, Inc.
Operation > Go BASIC PROPERTIES: Name Raid Level Status Size > View Associated Drives > Advanced	[Fast Initialization] 111 [RAIDO] [Optimal] 1116 GB	Starts the selected operation or opens another form.
Version 2.19.126	58. Copyright (C) 2017 Americar	Megatrends, Inc.

#### Figure 6- 68

Enter the interface shown in Figure 6-69, select Confirm to enable it, select Yes, and press Enter. Figure 6-69 Confirm initialization



### Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced Initializing a Virtual Drive will Confirm [Enabled] No. ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.

Datasheet

#### Figure 6-69

Enter the interface shown in Figure 6-70 to complete the initialization of the logical disk. Figure 6-70 Complete the initialization of the logical disk





#### Figure 6- 70

#### Initialize the physical disk:

As shown in Figure 6-71, select Drive Management on the RAID card configuration interface, and press Enter. Figure 6-71 RAID card configuration interface



Aptio Setup Utility – Copyright Advanced	(C) 2017 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Displays the basic drive properties and performs operations such as assign/unassign a hot spare drive, locate drives, Place Drive offline/online, and rebuild drive. You can also view additional properties using the Advanced link.
	++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C	) 2017 American Megatrends, Inc.

#### Figure 6- 71

Enter the interface shown in Figure 6-72, select the disk to be initialized, and press Enter. Figure 6-72 Disk management interface





Aptio Setup Utility – Copyright (C) 2017 Americar Advanced	Megatrends, Inc.
<ul> <li>Drive Port 0 - 3:01:00: SAS, 558GB, Online, (512B)</li> <li>Drive Port 0 - 3:01:01: SAS, 558GB, Online, (512B)</li> <li>Drive Port 0 - 3:01:02: SAS, 558GB, Unconfigured Good, (</li> <li>Drive Port 0 - 3:01:03: SAS, 558GB, Unconfigured Good, (</li> </ul>	Displays the properties of a specific drive. You can perform several operations (such as Rebuild, Initialize drive), view basic properties of the drive and also click Advanced to view additional properties. ++: Select screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help
Version 2.19.1268. Copyright (C) 2017 American ⊧	F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

Figure 6- 72

On the interface shown in Figure 6-73, select Operation, and press Enter. In the displayed dialog box, select Initialize Drive and press Enter.

Figure 6-73 Operation management interface



Aptio Setup Advanced	Utility – Copyright (C) 2017 America	n Megatrends, Inc.
Operation BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Select operation] Port 0 - 3:01:02 [Unconfigured Good] S58 GB [Disk] HUC101860CSS200 HGST Operation Select operation Start Locate Stop Locate Initialize Drive Drive Erase Make Unconfigured Bad Assign Global Hot Spare Drive	Lists the operations that you can perform on a drive.
Version 2.1	19.1268. Copyright (C) 2017American	Megatrends, Inc.

### Figure 6- 73

Enter the interface shown in Figure 6-74, select Go, and press Enter.

Figure 6-74 Select Go



Aptio Setup Ut. Advanced	ility – Copyright (C) 2017 Ameri	can Megatrends, Inc.
Operation ▶ Go BASIC PROPERTIES: Drive ID Status Size Type	[Initialize Drive] Port O – 3:01:02 [Unconfigured Good] 558 GB [Disk]	Starts the selected operation or opens another form.
Model Hardware Vendor ▶ Advanced	HUC101860CSS200 HGST	
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset</pre>
Version 2.19.1	1268. Copyright (C) 2017 America	ESC: Exit n Megatrends, Inc.

#### Figure 6- 74

Enter the interface shown in Figure 6-75, select Confirm to enable it, select Yes, and press Enter. Figure 6-75 Confirm initialization



Aptio Setup Utility - Advanced	Copyright (C)	2017 American	Megatrends, Inc.
Initializing a Drive may result in Confirm Yes ► No	[Enabled]		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Co	pyright (C) 2	017 American Me	egatrends, Inc.

#### Figure 6- 75

Enter the interface shown in Figure 6-76 to complete the initialization of the physical disk. Figure 6-76 Complete the initialization of the physical disk







#### Erase disk data:

This function is used to delete data inside the disk, including erasing physical disk data and logical disk data. Erase physical disk data

As shown in Figure 6-77, select Drive Management on the RAID card configuration interface, and press Enter. Figure 6-77 RAID card configuration interface



Configuration Management Controller Management Virtual Drive Management Drive Management	Displays the basic drive properties and performs operations such as assign/unassign a hot spare
Hardware Components	drive, locate drives, Place Drive offline/online, and rebuild drive. You can also view additional properties using the Advanced link.
	++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C	) 2017 American Megatrends, Inc.

#### Figure 6- 77

The interface shown in Figure 6-78 is displayed, select the disk whose data is to be erased, and press Enter. Figure 6-78 Disk management interface





Aptio Setup Utility – Copyrig Advanced	t (C) 2017 American Megatrends, Inc.
<ul> <li>Drive Port 0 - 3:01:00: SAS, 558GB, Online,</li> <li>Drive Port 0 - 3:01:01: SAS, 558GB, Online,</li> <li>Drive Port 0 - 3:01:02: SAS, 558GB, Unconfig</li> <li>Drive Port 0 - 3:01:03: SAS, 558GB, Unconfig</li> </ul>	(512B) specific drive. You can ured Good, ( perform several operations
Version 2.19.1268. Copyright	(C) 2017 American Megatrends, Inc.

Figure 6- 78

Enter the interface shown in Figure 6-79, select Operation, press Enter, then select Drive Erase in the displayed dialog box, and press Enter.

Figure 6-79 Operation interface



Aptio Setup Utility Advanced	– Copyright (C) 2017 American	Megatrends, Inc.
Operation Progress > Stop BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor > Advanced	[Select operation] Initialize Drive 2% Port 0 - 3:01:02 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 Operation Select operation Start Locate Stop Locate Drive Erase Make Unconfigured Bad	Lists the operations that you can perform on a drive.
Version 2.19.1268.	Copyright (C) 2017 American M	egatrends, Inc.

Figure 6- 79

Enter the interface shown in Figure 6-80, press Enter, and then select the erase mode in the pop-up dialog box (the default mode is recommended: Simple).

Figure 6-80 Erase Mode interface





Figure 6-80

Enter the interface shown in Figure 6-81, select Go, and press Enter. Figure 6-81 Select Go

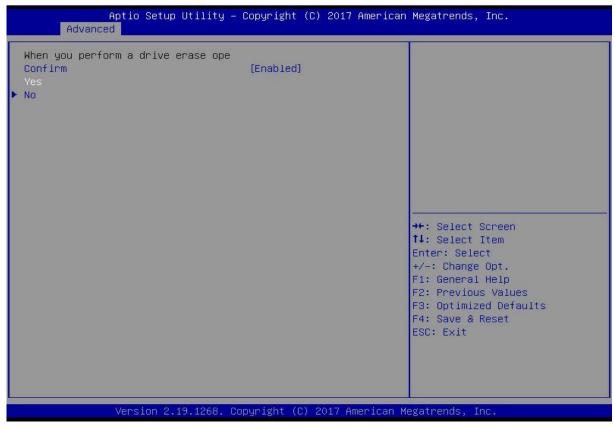


Aptio Setup U Advanced	tility – Copyright (C) 2017 Amer:	ican Megatrends, Inc.
Operation Erase Mode ▶ Go	[Drive Erase] [Simple]	Starts the selected operation or opens another form.
BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor ► Advanced	Port 0 – 3:01:02 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19	.1268. Copyright (C) 2017 America	an Megatrends, Inc.

#### Figure 6- 81

Enter the interface shown in Figure 6-82, select Confirm to enable it, select Yes, and press Enter. Figure 6-82 Confirm Erase





#### Figure 6- 82

Enter the interface shown in Figure 6-83 and complete the operation of erasing the physical disk data. Figure 6-83 Complete erasing physical disk data





#### Figure 6-83

To avoid disk failure, do not perform other operations while erasing physical disk data.

Erase Logical Disk Data

As shown in Figure 6-84, select Virtual Drive Management on the RAID card configuration interface, and press Enter.

Figure 6-84 RAID card configuration interface



Aptio Setup Utility – Copyright (C Advanced	) 2017 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Manages the virtual drive properties and enables you to view the basic virtual drive properties and perform operations such as background initialization, consistency check. You can also view additional properties using the Advanced link.
	++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C)	2017 American Megatrends, Inc.

#### Figure 6-84

On the interface shown in Figure 6-85, select the logical disk whose data is to be erased, and press Enter. Figure 6-85 Logical disk management interface



Advanced Virtual Drive O: 111, RAIDO, 1116GB, Optimal	Displays the properties of a specific virtual drive. You can perform operations (such as Start Locate, Stop Locate, Consistency Check), view basic properties and click Advanced for viewing additional properties.
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>

#### Figure 6-85

Enter the interface shown in Figure 6-86, select Operation, and press Enter. In the displayed dialog box, select Virtual Drive Erase and press Enter.

Figure 6-86 Operation interface



Aptio Setup U Advanced	tility – Copyright (C) 2017 Americ	can Megatrends, Inc.
Operation BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Select operation] 111 [RAIDO] [Optimal] 1116 GB Operation Select operation Start Locate Stop Locate Delete Virtual Drive Reconfigure Virtual Drives Fast Initialization Slow Initialization Virtual Drive Erase	Lists the operations that you can perform on a virtual drive. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19	.1268. Copyright (C) 2017 Americar	n Megatrends, Inc.

Figure 6-86

Enter the interface shown in Figure 6-87, press Enter, and then select the erase mode in the pop-up dialog box (the default mode is recommended: Simple).

Figure 6-87 Erase Mode interface



[Virtual Drive Erase] [Simple] [Disabled]	Performs the erase operation on the virtual drive. The possible modes are Simple, Normal and Thorough.
111 [RAIDO] [Optimal] 1116 GB	
Erase Mode Simple Normal Thorough	<pre> ++: Select Screen  1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
	[Simple] [Disabled] 111 [RAIDO] [Optimal] 1116 GB Erase Mode Simple Normal

#### Figure 6-87

Enter the interface shown in Figure 6-88, select Go, and press Enter. Figure 6-88 Select Go



Aptio Setup Uti. Advanced	lity – Copyright (C) 2017 Americ	an Megatrends, Inc.
Operation Erase Mode Delete After Erase ≻ Go	[Virtual Drive Erase] [Simple] [Disabled]	Starts the selected operation or opens another form.
BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	111 [RAIDO] [Optimal] 1116 GB	
		<pre> ++: Select Screen  14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.12	268. Copyright (C) 2017 American	Megatrends, Inc.

#### Figure 6-88

Enter the interface shown in Figure 6-89, select Confirm to enable it, select Yes, and press Enter. Figure 6-89 Confirm Erase



Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
When you perform virtual drive era Confirm Yes No	[Enab1ed]	<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.

#### Figure 6-89

Enter the interface shown in Figure 6-90 and complete the operation of erasing the logical disk data. Figure 6-90 Completion of erasing logical disk data





Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
► OK	<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American Ma	egatrends, Inc.

#### Figure 6- 90

#### Migrating RAID levels:

This function is used to modify the RAID level to meet the configuration requirements without affecting the current data integrity.

As shown in Figure 6-91, select Virtual Drive Management on the RAID card configuration interface, and press Enter. Figure 6-91 RAID card configuration interface



Aptio Setup Utility – Copyright (C) 201 Advanced	7 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Manages the virtual drive properties and enables you to view the basic virtual drive properties and perform operations such as background initialization, consistency check. You can also view additional properties using the Advanced link.
Version 2.19.1268. Copyright (C) 2017	American Megatrends, Inc.

#### Figure 6- 91

The interface shown in Figure 6-92 is displayed, select the logical disk to be rebuilt, and press Enter. Figure 6-92 Virtual Drive Management management interface



<ul> <li>Virtual Drive 0: 111, RAIDO, 1116GB, Optimal</li> <li>Displays the properties of a specific virtual drive. You can perform operations (such as Start Locate, Stop Locate, Consistency Check), view basic properties and click Advanced for viewing additional properties.</li> <li>**: Select Screen         <ol> <li>Select Item Enter: Select             <li>Change Opt.             </li> <li>General Help             </li> <li>Previous Values             </li> <li>Solution Science Defaults             </li> </li></ol> </li> </ul>	Aptio Setup Utility – Copyright (C) Advanced	2017 American Megatrends, Inc.
	• Virtual Drive 0: 111, RAIDO, 1116GB, Optimal	<pre>specific virtual drive. You can perform operations (such as Start Locate, Stop Locate, Consistency Check), view basic properties and click Advanced for viewing additional properties.  ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset</pre>

#### Figure 6- 92

Enter the interface shown in Figure 6-93, select Operation, and press Enter. In the displayed dialog box, select Reconfigure

Virtual Drive, and press Enter.

Figure 6-93 Operation interface



Aptio Setup Uti Advanced	lity – Copyright (C) 2017 Americ	can Megatrends, Inc.
Operation BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Select operation] 111 [RAIDO] [Optimal] 1116 GB Operation	Lists the operations that you can perform on a virtual drive.
	Select operation Start Locate Stop Locate Delete Virtual Drive Reconfigure Virtual Drives Fast Initialization Slow Initialization Virtual Drive Erase	<pre>++: Select Screen  f↓: Select Item Enter: Select +/-: Change Opt.</pre>
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

#### Figure 6- 93

Enter the interface shown in Figure 6-94, select Go, and press Enter.

Figure 6-94 Select Go



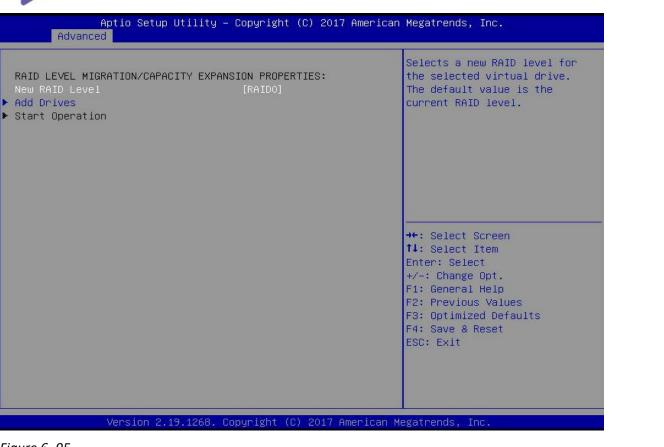
Aptio Setup Utility — Copyright (C) 2017 American Megatrends, Inc. Advanced				
Operation Go BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Reconfigure Virtual] 111 [RAIDO] [Optimal] 1116 GB	Starts the selected operation or opens another form.		
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>		
Version 2.19.1268	. Copyright (C) 2017American	Megatrends, Inc.		

Figure 6-94

On the interface shown in Figure 6-95, set the RAID level, select Add Drives, and press Enter.

Figure 6-95 Advanced interface





#### Figure 6-95

On the interface shown in Figure 6-96, select the disk to be added, make it Enabled, select Apply Changes, and press Enter. Figure 6-96 Add Drives interface



Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced				
<ul> <li>Apply Changes Select Media Type Select Interface Type Logical Sector Size</li> </ul>	[HDD] [Both] [Both]	Submits the changes made to the entire form.		
CHOOSE UNCONFIGURED DRIVES: Drive Port 0 - 3:01:03: SAS, 558GB Check All Uncheck All ► Apply Changes	[Enabled]			
		++: Select Screen		
		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values		
		F3: Optimized Defaults F4: Save & Reset ESC: Exit		
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.		

#### Figure 6- 96

Enter the interface shown in Figure 6-97, select Confirm to enable it, select Yes, and press Enter. Figure 6-97 Confirm migration





Aptio Setup Utility - Advanced	• Copyright	(C) 2017	American	Megatrends,	Inc.
Selecting these Drives will cause Confirm Yes ▶ No	[Enabled]			<pre>++: Select S f1: Select I Enter: Select +/-: Change F1: General F2: Previous F3: Optimize F4: Save &amp; F ESC: Exit</pre>	item St Opt. Help Values Sd Defaults
Version 2.19.1268. 0	opyright (C	) 2017 Am	merican Me	egatrends, Ir	ю.

Figure 6- 97

On the interface shown in Figure 6-98, select Start Operation, and press Enter.

Figure 6-98 Start Operation interface





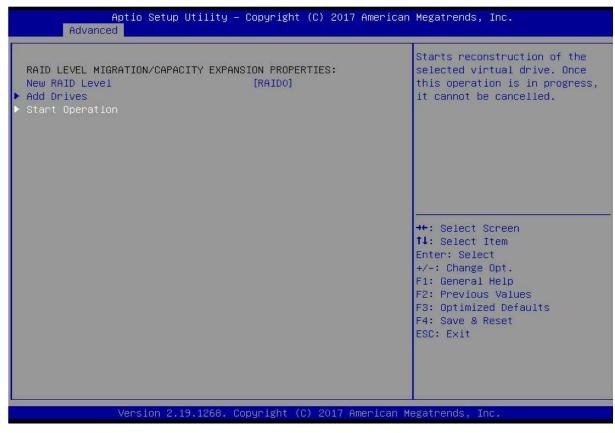


Figure 6-98

Enter the interface shown in Figure 6-99, select OK, and press Enter.

Figure 6-99 Select OK





#### Figure 6-99

On the interface shown in Figure 6-100, you can view the current migration progress.

Figure 6-100 RAID information interface



111 [RAIDO] [Optimal] 1116 GB	
	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
	. Copyright (C) 2017 America

#### Figure 6- 100

#### **Clear disk RAID information:**

This function is used to clear the residual RAID information in the disk, so that the disk can be reused for RAID configuration. This function is often used for disks whose mode is Unconfigured Bad.

Switch the disk mode Unconfigured Bad to Unconfigured Good.

As shown in Figure 6-101, select Configuration Management on the RAID card configuration interface, and press Enter.

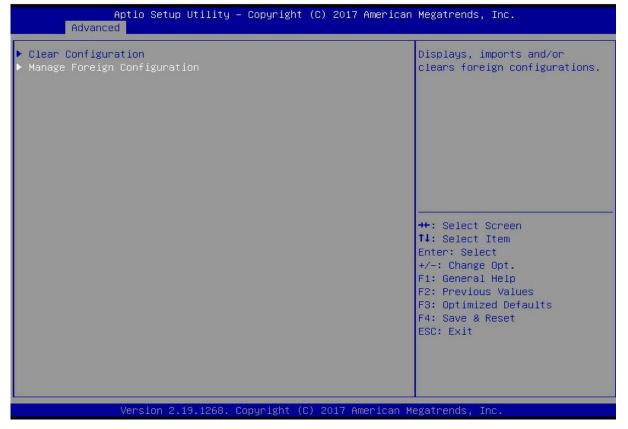


Aptio Setup Utility – Copyright (C) Advanced	2017 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Displays configuration options. Some options appear only if the controller supports them. As an example, create virtual drive, create CacheCade virtual drive, make JBOD, make Unconfigured Good, clear configuration, manage foreign configuration, view drive group properties and view global hot spare drives. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C) 2	017 American Megatrends, Inc.

#### Figure 6- 101

On the interface shown in Figure 6-102, select Manage Foreign Configuration, and press Enter. Figure 6-102 Select Manage Foreign Configuration

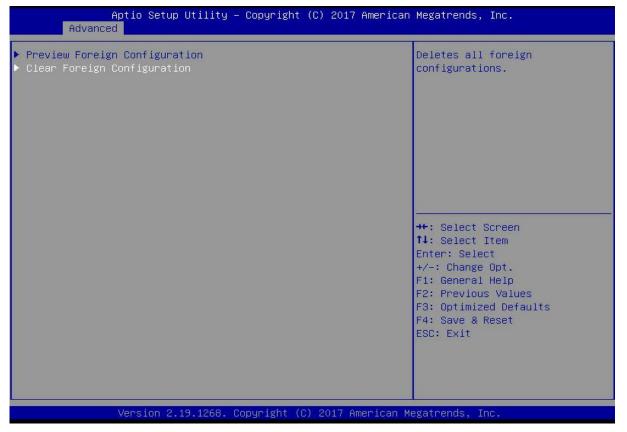




#### Figure 6- 102

Enter the interface shown in Figure 6-103, select Clear Foreign Configuration, and press Enter. Figure 6-103 Select Clear Foreign Configuration





### Figure 6- 103

Enter the interface shown in Figure 6-104, select Confirm to enable it, select Yes, and press Enter.





Aptio Setup Utility - Advanced	Copyright	(C) 2017	American	Megatrends,	Inc.	
Clearing the Foreign Configuration Confirm Yes ▶ No	[Enabled]			++: Select S fl: Select Select Fl: Select Select +/-: Change Fl: General F2: Previous F3: Optimize F4: Save & F ESC: Exit	Item ot Opt. Help s Values ed Defaults	
Version 2.19.1268. C	opyright (C	) 2017 Ar	merican Me	gatrends, Ir	nc.	

Enter the interface shown in Figure 6-105 and complete the operation of clearing disk RAID information.





Figure 6- 105

### 6.2.2 Configuring RAID in Legacy Boot Mode

#### Enter the RAID card configuration interface

During the BIOS startup, when the interface shown in Figure 6-105 is displayed, press Ctrl+R. Figure 6-106 Press Ctrl+R according to the prompt during BIOS startup



1 A		Missing		
	ot Number			
D LUN	VENDOR	PRODUCT	REVISION	CAPACITY
	411420	AUACO N DAID DAD DOCL OF	4 / 50 00 / 104	105480
8 8		AVAGO MegaRAID SAS 9361-81		1024MB 953869MB
		MM1080GBKAL MM1080GBKAL	HPGC HPGC	953869HB
		MN1000GBKAL	HPGC	953869MB
		EG0300FBVFL	HPDC	286102MB
		EG0300FCUBF	HPDS	286102MB
308		EG8388FBVFL	HPDC	286102MB
8	ALLACO	Virtual Drive	RAIDO	5120MB

### Figure 6- 106

Enter the interface shown in Figure 6-107. Please refer to the key operation tips at the lower border of the interface to navigate the interface and modify settings. Figure 6-107 LSI RAID management interface



VD Hgnt PD Hgnt Ctrl Hgnt Properties Virtual Drive Management	8
[-1 LSI MegaRAID 9361-8i (Bus 0x02, Dev 0x00) No Configuration Present ! I-1 Unconfigured Drives ::00: Ready: 278.87 GB ::01: Ready: 278.87 GB :-:04: Ready: 278.87 GB :-:05: Ready: 278.87 GB	Controller: Drive Groups: 8 Virtual Drives: 8 Drives: 6
└──::86: Ready: 278.87 GB ::87: Ready: 931.88 GB	
F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctrl	-P-Prev Page F12-Ctlr

### Figure 6- 107

#### **Common tasks**

#### Configure RAID:

As shown in Figure 6-108, press F2 on the VD Mgmt interface and select Create Virtual Drive. Figure 6-108 Select Create Virtual Drive



VD Hgnt FD Hgnt Ctrl Hgnt Properties Virtual Drive Mana [-] LSI MegaRAID 9361-8i (Bus 0x02, Dev 0x00)	
└── No Configuration Present ! └───────────────────────────── └───────	Create Virtual Drive
—::01: Ready: 278.87 GB —::04: Ready: 278.87 GB —::05: Ready: 278.87 GB	Foreign Config
::06: Ready: 278.87 GB	Manage Preserved Cache
└──::07: Readý: 931.00 GB	Drive Security
	Disable Data Protection
	Make Unconfigured Good Make JBOD
	Advanced Software Options
F1-Help F2-Operations F5-Refresh Ctrl-N-Next	Page Ctrl-P-Prev Page F12-Ctlr

Figure 6- 108

Enter the interface shown in Figure 6-109, set the RAID level, and press Enter. Figure 6-109 Setting the RAID level



AID Level:	RAID-8 RAID-1	PD per Span			
	RAID-5	ID	Турс	Size	
ata Protection:	RAID-6			278.87 68	
	RAID-18	[ ]:-i			
	R610-58		84		
	BAID-68			278.87 G8	
	15 2	[]]:-:!	86 38	278:87 68	
		[ ]:-:	87 512e	931.88 GB	198
- Basic Settings					
Size:		Advan	bes	OK	CANCEL
Nanc:	and the second se				

The interface shown in Figure 6-110 is displayed, select the disk for configuring RAID, and press Enter. Figure 6-110 Select disk

Datasheet



#### VD Mgnt PD Mgnt Ctrl Mgnt Properties Virtual Drive Management Create Neu VD **RAID Level:** PD per Span : HZA. Drives ID Type Size Data Protection: Disable RB 278.87 <u>GB</u> [X]--:--:01 --278.87 GB 81 278.87 278.87 278.87 GB 1--:--:07 512e 931.08 GB - Basic Settings Advanced CANCEL GB OK Size: 278.875 Nane : F1-Help F12-Ctlr

#### Figure 6- 110

Enter the interface shown in Figure 6-111, set the Size and Name accordingly, select Advanced, and press Enter. Figure 6-111 Setting the RAID name and capacity

Datasheet

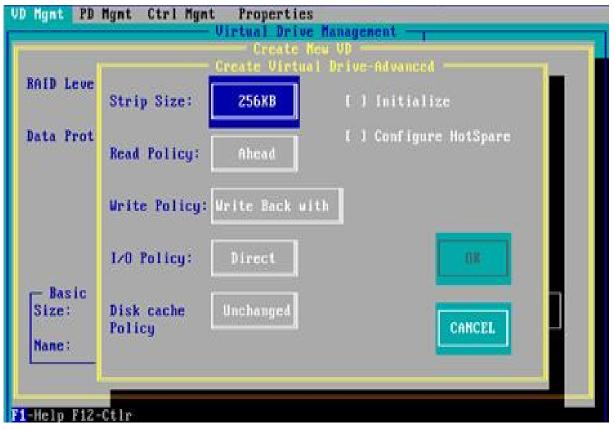


NID Level: RAID-1	PD per Span : MZA	17
ata Protection: Disable	1D         Type         Size           [X]:-:08          278.87         68           [X]:-:01          278.87         68           []]:-:01          278.87         68           []]]:-:01          278.87         68           []]]:-:084          278.87         68           []]]::-:085          278.87         68           []]]::-:086          278.87         68           []]]::-:086          278.87         68           []]]::-:087         512c         931.88         68	88 81   
- Basic Settings	Advanced DK	CANCEL

## Figure 6- 111

Enter the interface shown in Figure 6-112, set relevant parameters, select OK, and press Enter. Figure 6-112 Setting advanced parameters





### Figure 6- 112

Enter the interface shown in Figure 6-113, select OK, and press Enter to complete the RAID configuration operation.

Figure 6-113 Confirm creation



ID Level: RAID-1	PD per Span : NZA	
ata Protection: Disable	ID         Type         Size           [X]:-:88          278.87         68           [X]:-:81          278.87         68           []]:-:84          278.87         68           []]:-:84          278.87         68           []]]:-:85          278.87         68           []]]:-:85          278.87         68           []]]]:-:86          278.87         68           []]]]]]]]]]]]          186         68	80 81   
- Basic Settings	Advanced OK	CANCEL

Select the RAID to be viewed and press Enter to view the detailed information of the RAID (including the RAID name, level, and disk information), as shown in Figure 6-114. Figure 6-114 Viewing RAID information

Datasheet



- General	RAID-1	SSD Caching	
Nanc:	yst		
Size:	20.000 <mark>GB</mark>		
Strip Size:	256 KB		
VD State :	Optinal		
- Operations Operation :		1	
Progress :	N/A		
Time Left :	N/A	Advanced	OR CANCEL

#### Figure 6- 114

### To configure a hot spare disk:

After configuring RAID, a hot spare disk is generally configured to improve data security. Global hot spare disks and dedicated hot spare disks can be configured as required.

Hot spares are only used for RAID levels where redundancy exists.

The capacity of the hot spare disk is larger than the capacity of a single RAID member disk to contribute to the RAID.

Only disks whose configuration mode is Unconfigured Good are supported as hot spare disks.

Configuring a global hot spare

As shown in Figure 6-115, select the disk to be configured as a global hot spare on the PD Mgmt interface, and press F2.

Figure 6-115 Selecting the disk to be configured as a global hot spare



1				-	
21	2	sh	0	ot	ł
au				εu	ŝ

						PAGE-1
		Planc				Secured:
evice)	ID Type	Capacity	State	DG	Vendor	No
9	SAS	278.87 GB	UG		HP	Encryption Capable:
13	SAS	278.87 GB	UG	12	HP	No
14	SAS	278.87 GB	UG		HP	EKM Support:
15	SATA	931.80 GB	UG		ATA	Disabled
16	SAS	278.87 68	Online	89	HP	Connector:
17	SAS	278.87 GB	Online	88	HP	
	000000		1000000000	2.00	1144	Enclosure Model:
						3GP10
						Slot Mumber:
						6
						Logical Sector Size:
						512 B
						Physical Sector Size:
						512 B
						Product ID:
						EG0300FCVBF
						(GoToPage:2)

Enter the interface shown in Figure 6-116, select Make Global HS, and press Enter to complete the configuration of the global hot spare disk.

Figure 6-116 Select Make Global HS



	Back	Plane	l pro	PAGE-1
evice	ID Type	Capacity	Rebuild	
9	SAS	278.87 GB		tion Capable:
13	SAS	278.87 GB	Copyback	Contraction of the second
12	SAS	278.87 GB	fin the second s	pport:
15	SATA	931.00 GB	Locate	bled
16 17	SAS	278.87 GB	Plane delus Pelles	otor:
<b>.</b>	SAS	278.87 GB	Place drive Online Place drive Offline	upre Model:
			THES BILLS BILLING	
			Make Global HS	unber:
			Renove Hot Spare drive	2010 (1997) - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
			Drive Erase	I Sector Size:
			Make JBOD	Buil Sector Size:
			Make unconfigured good	Barri occeur orac.
			none encent (ger ou goon	- ID:
			Prepare for Renoval	BRECUBE

Return to the interface shown in Figure 6-117 and select a hot spare to view information about the global hot spare.

Datasheet

Figure 6-117 Viewing global hot spare disk information



			- Drive Ma	nagei	ient -	PAGE-1
		Plane				Secured :
evice	ID Type	Capacity	State	DG	Vendor	No
9	SAS	278.87 GB	Hotspare	(	HP	Encryption Capable:
13	SAS	278.87 GB	UG		HP	No
14	SAS	278.87 GB	UG		HP	EKM Support:
15	SATA	931.80 GB	UG		ATA .	Disabled
16	SAS	278.87 68	Online	88	HP	Connector:
17	SAS	278.87 68	Online	88	HP	The statement
	33347		1.5.1.5.1.5.1		0.00	Enclosure Model:
						SGP10
						Slot Number:
						Side number.
						United Caster Class
						Logical Sector Size:
						512 B
						Physical Sector Size:
						512 B
						Product ID:
						EG0300FCV8F
						(GoToPage:2)

#### **Remove RAID:**

This function is used to delete RAID that is damaged or difficult to meet your needs. As shown in Figure 6-118, select the logical disk to be deleted on the VD Mgmt interface, and press F2. Figure 6-118 Select the logical disk to be deleted

Datasheet



VD Mynt PD Mynt Ctrl Mynt Properties Virtual Drive Management - [-] LSI MegaRAID 9361-8i (Bus 0x02, Dev 0x00) -[-] Drive Group: 0, RAID 1 -[-] Virtual Drives -[-] Virtual Drives -[+] Drives -[+] Drives -[+] Available size: 258.87 GB	Virtual Drive 8: State: Optimal BAID Level: 1 Drive Group 8:
Hot spare drives I-J Unconfigured Drives ::84: Ready: 278.87 GB ::85: Ready: 278.87 GB ::86: Ready: 278.87 GB ::87: Ready: 931.88 GB	Virtual Drives: 1 Drives: 2 Free Cap.: 258.87 GB Free Areas: 1
F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctrl	-P-Prev Page F12-Ct1r

Figure 6- 118

Enter the interface shown in Figure 6-119, select Delete VD, and press Enter. Figure 6-119 Select Delete VD



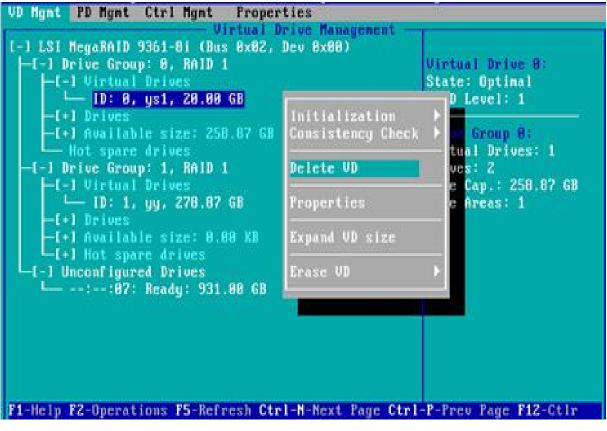


Figure 6- 119

The interface shown in Figure 6-120 is displayed, select YES, and press Enter to complete the RAID deletion operation.

Figure 6-120 Confirm deletion



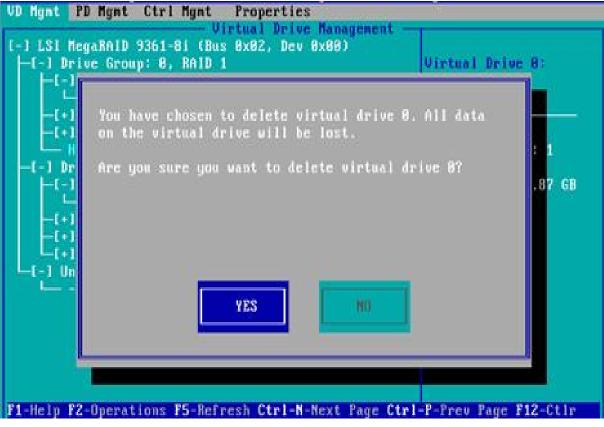


Figure 6- 120

### Locate the disk location:

This function makes it easy for you to quickly find the disk by lighting the blue indicator of the corresponding slot of the disk. A single physical disk or all member disks included in a logical disk can be located.

As shown in Figure 6-121, select the disk to be located on the PD Mgmt interface and press F2.

Figure 6-121 Select the disk to be located



D	-		-	-	-	-	_
		га		n	0	0	T
			$\sim$		6	0	•

			STATE OF STREET	101107-00	800.110.55c	PAGE-1
		Plane				Secured:
evice	ID Type	Capacity	State	DG	Vendor	No
9	SAS	278.87 GB	UG	-	HP	Encryption Capable:
13	SAS	278.87 68	ÜĞ	15	HP	No
14	SAS	278.87 GB	UG		HP	EKM Support:
15	SATA	931.00 GB	UG		ATA	Disabled
16	SAS	278.87 68	Online	88	HP	Connector:
17	SAS	278.87 68	Online	88	HP	
						Enclosure Model:
						SGP10
						Slot Mumber:
						6
						Logical Sector Size:
						512 B
						Physical Sector Size
						512 B
						Product ID:
						EG8388FCUBF
						<gotopage:2></gotopage:2>

Enter the interface shown in Figure 6-122 and select Locate->Start to complete the disk location operation. Figure 6-122 Select Locate- >Start



	1000		1	PAGE-1
	ID Type	Plane Capacity	Rebuild	red:
9 13	SAS SAS	278.87 GB 278.87 GB	Copyback	mtion Capable:
14 15	SAS Sata	278.87 GB 931.80 GB	Locate	> Start
16 17	SAS SAS	278.87 GB 278.87 GB	Place drive Online Place drive Offline	Stop Barnel molt
			Make Global HS Remove Hot Spare drive	0 Junber:
			Drive Erase	I Sector Size:
			Make JBOD Make unconfigured good	B B B B B B B B B B B B B B B B B B B
			Prepare for Removal	<pre>dercoar (GoToPage:2)</pre>

### Figure 6- 122

Locate->Start: Start the disk location operation. Locate->Stop: Stop the locating disk operation.

#### Initialize the logical disk:

This function is used to initialize the internal data space of the disk so that it can be recognized and used by the operating system.

As shown in Figure 6-123, select the disk to be initialized on the VD Mgmt interface, and press F2. Figure 6-123 Selecting the disk to be initialized

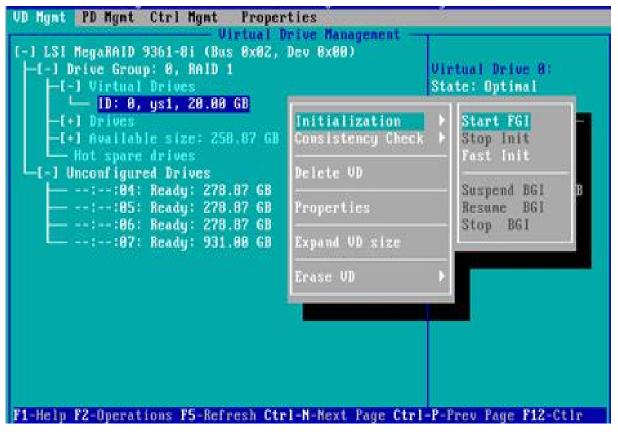


Uirtual Drive Managenen -] LSI MegaRAID 9361-8i (Bus 8x82, Dev 8x88) [-] Drive Group: 8, RAID 1 [-] Virtual Drives [-] Uirtual Drives [-] Drives [-] Prives [-] Available size: 258.87 GB Hot spare drives [-] Unconfigured Drives [::85: Ready: 278.87 GB [::85: Ready: 278.87 GB [::85: Ready: 278.87 GB [::87: Ready: 931.88 G8	Virtual Drive B: State: Optimal RAID Level: 1 Drive Group B: Virtual Drives: 1 Drives: 2 Free Cap.: 258.87 GB Free Areas: 1
F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page (	Ctrl-P-Prev Page F12-Ctlr

Figure 6- 123

Enter the interface shown in Figure 6-124 and select Initialization->Start FGI. Figure 6-124 Select Initialization- >Start FGI





#### Figure 6- 124

BGI: Backgroud Initialization, background initialization, first initialize part of the RAID space for writing data, and the rest of the space is initialized in the background.

FGI: Full Groud Initialization, the whole disk is initialized, all the space of the RAID is initialized, and the data can be written after the initialization is completed.

Enter the interface shown in Figure 6-125, select YES, and press Enter to complete the disk initialization operation. Figure 6-125 Confirm initialization



VD Ngnt P	D Hgnt Ctrl Hgnt Properties Virtual Drive Management -	
	gaRAID 9361-8i (Bus 8x82, Dev 8x80) ve Group: 8, RAID 1	Virtual Drive 8:
	Initialization will destroy data on the w drive. Are you sure you want to continue?	irtual : 1 .87 GB
	YES MO -Operations F5-Refresh Ctrl-N-Next Page Ctr	

Figure 6- 125

#### Erase disk data:

This function is used to delete data inside the disk, including erasing physical disk data and logical disk data. Erase physical disk data

As shown in Figure 6-126, select the physical disk to be erased on the PD Mgmt interface, and press F2. Figure 6-126 Select the physical disk to be erased



				1. 2004.5.2	C. C. Constant	PAGE-1
	Back	Plane				Secured:
evice	ID Type	Capacity	State	DG	Vendor	No
9	SAS	278.87 GB	UG	-	HP	Encryption Capable:
13	SAS	278.87 68	UG	1	HP	No
14	SAS	278.87 GB	UG		HP	EKM Support:
15	SATA	931.88 68	UG		ATA	Disabled
16	SAS	278.87 68	Online	88	HP	Connector:
17	SAS	278.87 GB	Online	88	HP	The second se
						Enclosure Model:
						SGP10
						Slot Mumber:
						6
						Logical Sector Size:
						512 B
						Physical Sector Size:
						512 B
						Product ID:
						EG8388FCV8F
						(GoToPage:2)

Enter the interface shown in Figure 6-127, select the erase mode (the default mode is recommended: Simple), and press Enter.

Datasheet

Figure 6-127 Select Erase Mode



	Back	Plane	Participation of the second	PAGE-1 red:
evice		Capacity	Rebuild	
9 13	SAS SAS	278.87 GB 278.87 GB	Copyback	tion Capable:
4	SAS	278.87 GB	copyback	pport:
15	SATA	931.80 68	Locate	bled
6	SAS	278.87 68		tor:
17	SAS	278.87 GB	Place drive Online Place drive Offline	ware Model:
			Nake Global HS Remove Hot Spare drive Drive Erase	, unber:
			Hake JBOD Make unconfigured good	
			Prepare for Renoval	Stop Erase

Enter the interface shown in Figure 6-128, select Yes, and press Enter to complete the operation of erasing the physical disk data.

Datasheet

Figure 6-128 Confirm Erase







To avoid disk failure, do not perform other operations while erasing physical disk data. Erase Logical Disk Data

As shown in Figure 6-129, select the logical disk to be erased on the VD Mgmt interface, and press F2. Figure 6-129 Select the logical disk to be erased .



VD Mgnt PD Mgnt Ctrl Mgnt Properties Virtual Drive Management [-1 LSI MegaRAID 9361-8i (Bus 0x02, Dev 0x00) -[-1 Drive Group: 0, RAID 1 -[-1 Virtual Drives -[-1 Virtual Drives -[+1 Available size: 258.87 GB -[+1 Available size: 258.87 GB -[+1 Unconfigured Drives [:-:05: Ready: 278.87 GB :-:06: Ready: 278.87 GB :-:07: Ready: 931.00 GB	Virtual Drive 8: State: Optimal BAID Level: 1 Drive Group 8: Virtual Drives: 1 Drives: 2 Free Cap.: 258.87 GB Free Areas: 1
F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ct	rl-P-Prev Page F12-Ctlr

Figure 6- 129

Enter the interface shown in Figure 6-130, select the erase mode (the default mode is recommended: Simple), and press Enter. Figure 6-130 Select Erase Mode

243



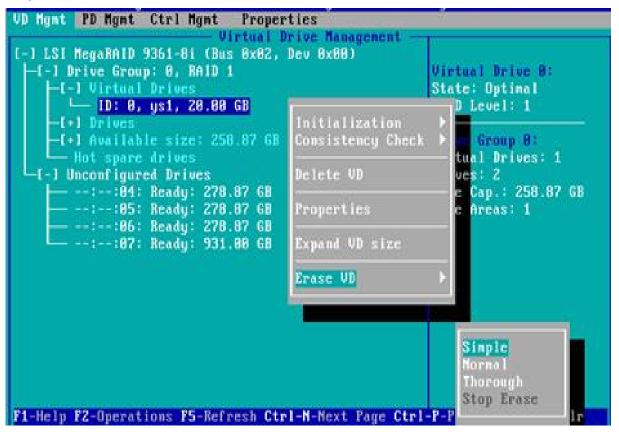


Figure 6- 130

Enter the interface shown in Figure 6-131, select Yes, and press Enter to complete the operation of erasing the logical disk data. Figure 6-131 Confirm Erase





Figure 6- 131

#### **Clear disk RAID information:**

This function is used to clear the residual RAID information in the disk, so that the disk can be reused for RAID configuration. This function is often used for disks whose mode is Unconfigured Bad.

Switch the disk mode Unconfigured Bad to Unconfigured Good.

As shown in Figure 6-132, on the Foreign View interface, select the RAID controller card, press F2, select Foreign Config->Clear, and press Enter.

Figure 6-132 Select Foreign Config->Clear





#### Figure 6- 132

In the displayed dialog box shown in Figure 6-133, select OK and press Enter to complete the operation of clearing disk RAID information.

Figure 6-133 Confirm Clear







### . . . ,

### 7.1 Rapid Deployment of IPMI Process

Figure 7-1 shows the general process of how to quickly deploy the IPMI function of the server.

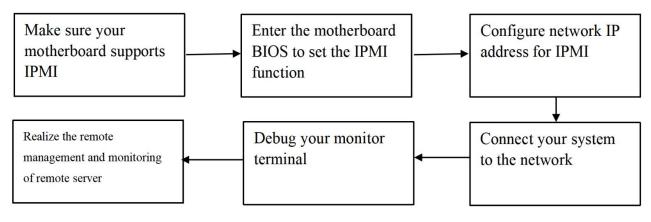


Figure 7-1 IPMI deployment process

### 7.1.1 Make sure the motherboard supports the IPMI function

Check your motherboard manual and confirm that your motherboard supports IPMI, and then find the dedicated IPMI network

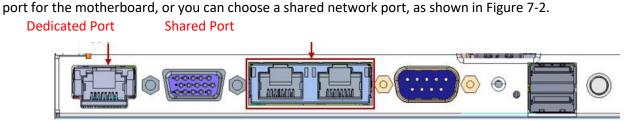


Figure 7-2 Motherboard dedicated network port

### 7.1.2 Enter BIOS to set IPMI function

Reboot your system and press ESC or DEL key while the device is booting to enter the motherboard BIOS system. The BIOS setting interface is shown in Figure 7-3 below.



BIOS Information		Set the Date. Use Tab to
Project Version	G3DCL 0.05 ×64	switch between Date elements.
Build Date and Time	06/19/2020 11:28:13	Default Ranges:
BMC Firmware Revision	1.00.0	Year: 1998-9999
ME Firmware Version	0A:4.1.4.256	Months: 1–12
		Days: Dependent on month
CPLD name		Range of Years may vary.
CPLD version	01	
Build Date and Time	06/11/2020	
Access Level	Administrator	
Platform Information		
Processor	50654 - SKX UO	++: Select Screen
Processor Type	Intel(R) Xeon(R) Bro	↑↓: Select Item
PCH	LBG QS/PRQ - 1G - SO	Enter: Select
RC Revision	0580.D04	+/-: Change Opt.
		F1: General Help
Memory Information		F2: Previous Values
Total Memory	8192 MB	F3: Optimized Defaults
Usable Memory	8192 MB	F4: Save & Exit
		ESC: Exit
System Date	[Fri 06/19/2020]	
System Time	[16:50:43]	

Figure 7-3 Motherboard BIOS setting interface

After entering this interface, use the left and right keys on the keyboard to switch the menu item to the Server Mgmt option, and you will see the page shown in Figure 7-4.

	Utility – Copyright (C) 2017 American Socket Server Mgmt Security Boot	
<ul> <li>BMC Self Test Status</li> <li>BMC Device ID</li> <li>BMC Device Revision</li> <li>BMC Firmware Revision</li> <li>IPMI Version</li> <li>System Event Log</li> <li>BMC network configuration</li> <li>View System Event Log</li> <li>BMC Warm Reset</li> </ul>	PASSED 32 1 1.4.2 2.0	Press <enter> to change the SEL event log configuration. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</enter>
Version 2.1	19.1268. Copyright (C) 2017 American M	egatrends, Inc.





#### Figure 7-4 Server Mgmt interface

After entering this interface, enter the BMC network configuration option through the keyboard, and you will enter the following interface, as shown in Figure 7-5.

	Copyright (C) 2017 Americ Gerver Mgmt	an Megatrends, Inc.
BMC network configuration BMC Dedicated Management Channel Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address Router MAC address	[Unspecified] DynamicAddressBmcDhcp 0.0.0.0 0.0.0.0 11-22-33-aa-bb-cc 0.0.0.0 00-00-00-00-00-00	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
BMC Sharelink Management Channel Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address Router MAC address	[Unspecified] DynamicAddressBmcDhcp 192.168.0.236 255.255.252.0 aa-bb-cc-00-00-01 192.168.1.1 00-00-00-00-00-00	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>

Figure 7-5 BMC network configuration option interface

On this page, you can see two configurable network ports, one is the dedicated network port for Dedicated, and the other is the shared network port for Sharelink. Take the shared network port as an example here. If you connect a dedicated network port, the setting method is the same as the shared network port. Switch to the Configuration Address Source option and press Enter to set the network mode of the network port, as shown in Figure 7-6.



Aptio Setup Ut	ility – Copyright (C) 2017 America Server Mgmt	an Megatrends, Inc.
BMC network configuration BMC Dedicated Management Char Configuration Address source Current Configuration Address Station IP address Subnet mask Station MAC address Router IP address Router MAC address BMC Sharelink Management Ch	- - - s sour DynamicAddressBmcDhcp 0.0.0.0 0.0.0.0 11-22-33-aa-bb-cc 0.0.0.0 Configuration Address source Unspecified Static	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Configuration Address sourc Current Configuration Addre Station IP address Subnet mask Station MAC address	DynamicBmcDhcp DynamicBmcNonDhcp aa-bb-cc-00-00-01	Select Screen Select Item r: Select +/-: Change Opt.
Router IP address Router MAC address	192.168.1.1 00-00-00-00-00	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.	1268. Copyright (C) 2017 American	Megatrends, Inc.

Figure 7-6 Configuring the network port network mode

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

### 7.1.3 IPMI port configuration Static mode

If you choose to configure Static mode for an IPMI port, pay attention to the following issues:

(1) If there are multiple IPMI devices in your local area network, it should be noted that the IP addresses between the devices cannot be repeated, otherwise communication cannot be established.

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

(3) The IP address of the IPMI device can be mapped to the WAN through the routing device to achieve long-distance management.

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

(5) IPMI supports both TCP/IP v4 and TCP/IP v6 protocols.

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 7-7 below. After setting, press F4 to save and exit the BIOS port.



	Copyright (C) 2017 Americ Server Mgmt	an Megatrends, Inc.
		Enter router IP address ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Co	ppyright (C) 2017 American	Megatrends, Inc.



We have completed the operation of configuring the IPMI function.

#### 7.1.4 IPMI configuration Java SOL

- 1. Press the <Del> key when the system starts to enter the BIOS setup interface.
- 2. Switch to the Advanced menu, select Serial Port Console Redirection, and press < Enter>.
- 3. Make sure that the Console Redirection of COMO is in the [Enabled] state, if not, select Console Redirection, and then press the <Enter> key to set the state to [Enabled]. To ensure the normal operation of iBMC, this option is set to [Enabled] by default.

#### 7.2 Quick Start Instructions for IPMI Functions

After completing the previous configuration steps, we can start to log in to the management interface of IPMI. The management interface of IPMI can be accessed using standard web browsers. Here we recommend using Google Chrome browser, Firfox Firefox browser and IE browser. browser (IE 11 and above) for the best browsing experience. Since the new version of the operation interface is based on HTML5, the overhead of computer resources is relatively large. We recommend that users configure more than 8G memory on the client side when using KVM.

#### 7.2.1 Enter the operation interface

Taking the Google Chrome browser as an example, enter the access address of IPMI in the address bar of the browser and press Enter to access the management interface of IPMI. Since all HTTP links have been converted to HTTPS encrypted links, you will enter Figure 7-8. Privacy settings error page shown, other browsers may vary.



Your connection isn't private
Attackers might be trying to steal your information from <b>192.168.0.120</b> (for example, passwords, messages, or credit cards).
NET::ERR_CERT_AUTHORITY_INVALID
Hide advanced Go back
This server couldn't prove that it's <b>192.168.0.120</b> ; its security certificate is not trusted by your computer's operating system. This may be caused by a misconfiguration or an attacker intercepting your connection.
Continue to 192.168.0.120 (unsafe)

#### Figure 7-8 Google Chrome Privacy Settings Error Page

On this page, click "Advanced" >> "Continue" in turn, you can access the IPMI management page normally, and enter the login page, as shown in Figure 7-9.

Login	
Username	
Password	
C Remember Username	
Sign me in	

Figure 7-9 IPMI management login interface

#### 7.2.2 Default Username and Password

Factory default username: admin

Factory default password: admin

When you log in with this username, you will have full administrator rights. It is recommended that you change the password after logging in.

#### 7.2.3 Contents of IPMI Management System

After you log in to the IPMI management system correctly, you can see the page shown in Figure 7-10.



			······································
	=		P 🛦 OSync C Refresh 🗛 Language 🗸 🛓 admin 🗸
Host Offline     Quick Link	Dashboard Control Panel		🕷 Home > Dashboard
🖷 Dashboard	1 d 0 <sup>hrs</sup>	17	25
😗 Sensor	HOST Running Time Since Last	Pending Deassertions	Access Logs
System Inventory	BMC FW Upgrade	More info 🗢	More info •
FRU Information			
네 Logs & Reports >	Firmware	: Edit	Sensor Monitoring
Settings	Information BMC Firmware Revision	A Network	All sensors are good now!
Remote Control	1.13.1 BMC Firmware Build Time	Host System	𝔅 Currently recovered
Image Redirection	Sep 10 2020 17:07:38 CST	System LAN MAC Address1	
F Maintenance	BIOS Revision	00:00:00:00:03:14 System LAN MAC Address2	
🕩 Sign out	005	00:00:00:00:03:15	

#### IPMI management interface menu description

Dashboard

On this page, users can view the basic information of the IPMI management system. Includes firmware information, network information, and sensor monitoring information.

The firmware information includes BMC firmware version information, BIOS version information, mainboard CPLD version information, backplane CPLD version information, and BMC firmware compilation time information.

The network information includes the MAC address of the system network and BMC network information. You can choose to view the shared network port or dedicated network port of the BMC. The 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 reading, real-time curve change of sensor reading, and alarm status.

Sensor

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

System inventory

This page can view server CPU and memory information. In the block diagram, click on the CPU block to view the CPU information. The memory block is displayed in green to indicate that the memory exists. Click the memory block with the mouse to view the memory information.

• Hard disk information

For the backplane with Expander, a green square indicates that the hard disk is in place, otherwise it indicates that it is not in place. The status of the hard disk can be viewed on the right or below the hard disk block. Left-click the green square to view the detailed information of the hard disk, and right-click to locate the hard disk.

• Power consumption

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

FRU information





Select this menu to view basic FRU information.

Logs & Reports

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

Settings

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

Remote control

On this page, KVM, SOL can be started, and power control and UID (server logo light) control can also be performed.

Image redirection

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

Maintenance

You can perform basic maintenance operations on the server, such as BMC firmware update, BIOS firmware update.

• Sign out

Click to log out the current user's login.

#### 7.2.4 Introduction to KVM Remote Management

#### Start KVM remote management

As shown in Figure 7-11, in Remote Control > KVM & Java SOL Remote Control menu, KVM can be started.

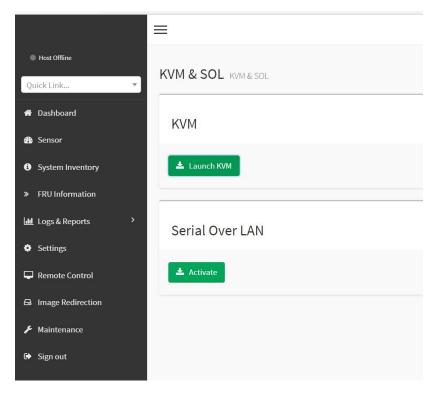


Figure 7-11 Start KVM

#### 7.2.5 KVM page introduction

As shown in Figure 7-12, it is the KVM interface after KVM is started.



Stop KVM								CD Image: Browse File (0 KB) Start Med
deo 👻 🛛 Mouse 🕶	Options -	Send Keys ▼	Hot Keys 🕶	Video Record 🗸	Power -	Active Users -	Help 🕶	A Zoom 100 % 🖵
	BLK7:	Alias(s):						
				x8,0x1)/Pci(	0x0,0x3	)/USB(0x1,0	x0)/USB(0×	x1,0x0)/Unit(0x3)
		Alias(s):						
				x8,0x1)/Pci(	0x0,0x3	)/USB(0×1,0	x0)/USB(0×	<1,0×0)/Unit(0×4)
		Alias(s):						67 - C
				x8,0x2)/Pci(	0x0,0x0	)/Sata(0x2,	0xFFFF,0xC	0)
		Alias(s):		-1				
				x8,0x2)/Pci(	0x0,0x0	)/Sata(0x3,	0xFFFF,0xC	0)
		Alias(s):			A. A. A. A.	V0-+-/0-0		
		2C53C0,0x80			0x0,0x0	//Sala(Uxz,	UXFFFF,UXU	0)/HD(1,GPT,3595CFB5-3383-4F74-AD
		Alias(s):		<i>*</i>				
				00 000) /Dei (	000 000	)/Cata/0v2		0)/HD(2,GPT,01094C58-80F9-4433-AB
		BDC679.0x88			0.00,000	// Jata(0/2,	0/1111.0/0	5771b(2,di 1,01054630-0015-4433-NB
		Alias(s):		00007				
				x8.0x2)/Pci(	0x0.0x0	)/Sata(0x2.	0xFFFF.0xC	)/HD(3,GPT,5CB2F4A7-8281-405C-82
Q		08D653,0xC8			,	,		
		Alias(s):						
		PciRoot(0>	<2)/Pci(0;	x8,0x2)/Pci(	0x0,0x0	/Sata(0x3,	0xFFFF,0xC	0)/HD(2,GPT,06FA830F-B8EB-4386-B7
3	IO-OBEC3DD	3CF4C,0x64	4800,0x200	0000)				
	BLK16:	Alias(s):						
		PciRoot(0>	<2)/Pci(0)	x8,0x2)/Pci(	0x0,0x0	)/Sata(0x3,	0xFFFF,0xC	)/HD(3,GPT,C931ABF9-F265-48E0-82
A	E-6BB3251	L27A75,0x26	54800,0x74	44A2000)				
		in 2 secor	nds to sk.	ip startup.n	<mark>sh</mark> or ai	ny other ke	y to conti	inue.
	hell>							
	hell>							
	hell>							
	hell>							
	hell>							
	hell>							
18	hell> 🛓							

### Figure 7-12 KVM interface

As shown in Figure 7-13, the KVM interface consists of two parts: one part is the menu and shortcut bar, and the other part is the Server remote screen display, that is, the server desktop information returned remotely.



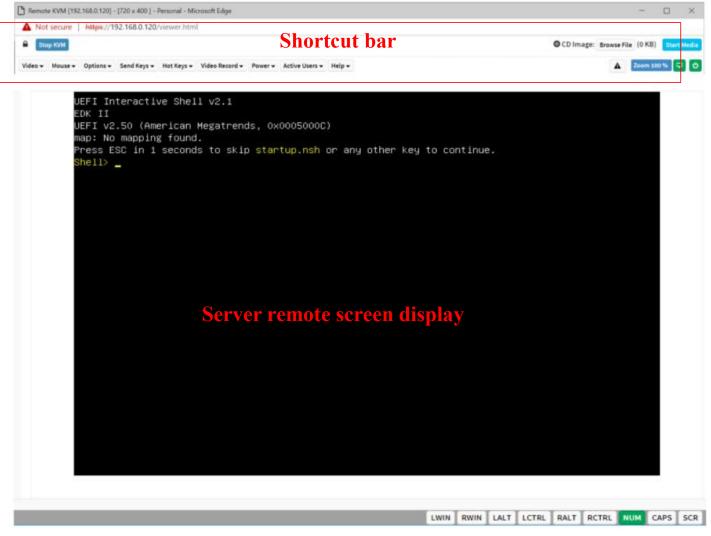


Figure 7-13 Composition of KVM interface

### 7.2.6 Remote control shortcut operation

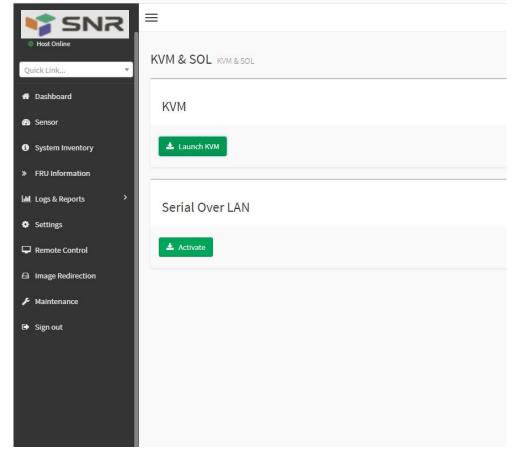
Stop KVM	Stop KVM
CD Image: Browse File (0 KB) Start Media	Hanging on the CD image, generally used to remotely install the operating system
A Zoom 100 % 🖵 🙂	The host display is unlocked, the server is turned on/off

#### Table 1- 41

#### 7.2.7 Introduction to SOL

Click Activate Java SOL on the page shown in Figure 7-14 to open the interface shown below.







- 1. After clicking to activate, the SOL interface shown in Figure 7-15 will appear.
- 2. Press Enter to activate the screen.



BIOS Information		Set the Date. Use Tab to
Project Version	G3DCL 0.05 ×64	switch between Date elements.
Build Date and Time	06/19/2020 11:28:13	Default Ranges:
BMC Firmware Revision	1.00.0	Year: 1998-9999
ME Firmware Version	0A:4.1.4.256	Months: 1–12
		Days: Dependent on month
CPLD name		Range of Years may vary.
CPLD version	01	
Build Date and Time	06/11/2020	
Access Level	Administrator	
Platform Information		
Processor	50654 - SKX UO	++: Select Screen
Processor Type	Intel(R) Xeon(R) Bro	↑↓: Select Item
PCH	LBG QS/PRQ - 1G - SO	Enter: Select
RC Revision	0580.D04	+/-: Change Opt.
		F1: General Help
Memory Information		F2: Previous Values
Total Memory	8192 MB	F3: Optimized Defaults
Usable Memory	8192 MB	F4: Save & Exit
		ESC: Exit
System Date	[Fri 06/19/2020]	
System Time	[16:50:43]	

Figure 7-15 SOL operation interface

Note: The SOL interface operation function has only been tested for BIOS screen synchronization, and other interfaces have not been tested. This time is an operation demonstration and will not be described in detail.

#### 7.3 Other ways to connect to IPMI

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

### 7.3.1 IPMI driver

The AST2500 supports Intel-referenced drivers, available from:

https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-technical-resources.html via Windows Server 2003 R2, Microsoft also An IPMI driver package is provided, you can also use the Open IPMI driver in the system.

AST2500 supports Open IPMI driver for 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 replace the "ipmi\_si" component with "ipmi\_kcs".

### 7.3.2 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 files are designed to help you quickly understand and deploy the IPMI function of the system. We will provide other help files for the detailed IPMI function operation manual.