



Purley Platform 4U L-shaped Server

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User's Manual

V1.2



Foreword

This manual is writing for the Purley dual-socket rack server. It mainly introduces the technical characteristics, system architecture, installation method and basic operation of this product. The Purley dual-socket server is divided into SNR-SR4224RS, SNR-SR4236RS various models, the product has the features of low energy consumption, flexible expansion, high reliability, easy management, easy deployment and so on.

This manual is intended for reference and research by professional system integrators and personal computer technicians, and this product should only be installed and maintained by experienced technicians.

Manual structure

Chapter 1 Safety statement

This chapter describes some environmental conditions that need to be paid attention to when using this product, precautions and a description of the laws and regulations related to this product.

Chapter 2 Product introduction

This chapter provides the specifications of the main components of the system and describes the main features of each model in the Purley L-shaped dual-socket rack server family.

Chapter 3 Installing system components

This chapter describes the usage of Purley, the installation method and main precautions of various main system components of the L-shaped dual-socket rack server.

Chapter 4 System rack installation

This chapter describes the use of Purley, the steps and precautions for installing the L-shaped two-socket rack server with the guide rails that come with it.

Chapter 5 BIOS parameter setting instructions

This chapter mainly introduces the parameter settings and main functions of the system BIOS.

Chapter 6 RAID setup Instructions

This chapter mainly introduces how to configure RAID.

Chapter 7 IPMI deployment

This chapter mainly describes how to quickly deploy IPMI.





Glossary:

Noun	Meaning
Intel [®] Xeon [®]	
Scalable Processors	
Platinum Efficiency Power Supply	Platinum Certified power supply is 80 PLUS Platinum standard, that is, the conversion rate of 20% load is above 90%, that of 50% load is more than 94%, and that of 100% load is more than 91%
M.2	M. 2 interface is a new generation interface standard tailored for Ultrabook, which is Intel® pushed a new interface specification to replace mSATA
C621/C622	Intel [®] Chipset
RJ45	Standard 8-bay modular interface
AST2500	Aspeed [®] BMC Chip
Socket P	One of the Intel [®] processor interface types
-F CPU	Means support for Intel® Omni-Path Host Fabric CPU, Omni-Path high-speed optical cable interconnection technology,up to 100Gbps end-to-end interconnection
8038 Fan	Fan size: 80x 80x 38 mm
LGA3647	Land Grid Array, LGA3647 represents 3647 contactors
CR2032	3V CR2032 lithium manganese battery in the form of button
RS-232	One of the communication interfaces on computer. Asynchronous transmission standard interface, called COM interface
Jtag	Joint Test Action Group
NC Pin	No internal connection
XDP	Extend Debug Port

Abbreviation:

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

Abb.	English Name	Chinese Name
РСН	Platform Controller Hub	That is, the previously collectively referred to as "South Bridge"
GbE	Gigabit Ethernet	Gigabit Ethernet
BMC	Baseboard Management Controller	Substrate management controller
IPMI	Intelligent Platform Management Interface	Intelligent platform management interface
CPU	Central Processing Unit	Central processing unit
SATA	Serial Advanced Technology Attachment	Serial ATA interface specification
SAS	Serial Attached SCSI	SCSI
sSATA	secondary SATA	Extended SATA interface
LAN	Local Area Network	Local area network
VGA	Video Graphics Array	Video transmission standard
MB	Mother Board	motherboard
MIB	Motherboard Interface Board	Motherboard adapter board/side board
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
ΙΟ	Input/Output	Input output
BIOS	Basic Input-Output System	Basic input and output system
CMOS	Complementary Metal Oxide Semiconductor	Complementary metal oxide semiconductor





ME	Management Engine
DDR4	Double Data Rate 4 SDRAM
DIMM	Dual-Inline-Memory-Modules
RDIMM	Registered DIMM
LRDIMM	Load-Reduced DIMM
AEP	Apache Pass
MEZZ CONN	Mezzanine Connector
KVM	Keyboard Video Mouse
CPLD	Complex Programmable Logic Device
ECC	Error Correcting Code
CFM	Cubic Feet Per Minute
RPM	Revolution Per Minute

Conventions:

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

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

Red arrow: point to a position

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

White arrow: represents the next action or result.

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

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

Manual	Release date	Modification
version		
V1.0	2020-June-10	Initial Release
V1.1	2021-June-1	Manual optimization
V1.2	2022-April-20	Manual optimization





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Chapter 1 Safety Statement

1.1 General safety matters

In order to prevent the risks of personal and property losses, please follow the following suggestions.

Please do not open the cover plate of the system by yourself. It should be operated by professional trained maintenance technicians. The triangle mark with lightning symbol may have high voltage or electric shock. Please do not touch it.

Remember: disconnect all cables before carrying out maintenance (There may be more than one cable) It is strictly forbidden to switch on the machine and other live operation before the cover plate is closed.

When it is necessary to open the cover, please wait for the internal equipment to cool down, otherwise you may be scalded.

Do not use this device in humid environment.

If the 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. It can be grounded in different ways, but it is required to be actually connected to the ground. If you are not sure whether the safe grounding protection has been provided, please contact the corresponding organization or electrician for confirmation. If you need cable routing, please contact Shenzhen NAG.

Please use three-core power cord and socket with grounding protection. Incorrect grounding may lead to electric leakage, burning, explosion and even personal injury.

Please make sure that the power socket and power interface in close contact. Loose contact may cause fire hazard.

Please use your computer under the AC voltage of 220V. if you work under the improper voltage, it will lead to electric shock, fire and damage to the computer.

The computer should be well ventilated and far away from heat source and fire source, and should not block the cooling fan, otherwise the computer may cause smoke, fire or other damage due to overheating.

If you smell or see the computer smoking, please turn off the computer immediately and unplug the power cord.

It is required that the power cord can be easily plugged in and out from the power supply and power socket. Please keep the power cord and plug clean and intact, otherwise there may be a risk of electric shock or fire.

Note: if the battery is not replaced properly, there will be explosion danger. Only the same or equivalent type of replacement recommended by the manufacturer is allowed. The waste battery will pollute the environment. Please deal with the replaced old battery according to the relevant instructions.

Keep the computer away from electromagnetic fields.

Keep away from the electronic noise caused by high-frequency equipment such as air conditioner, fan, motor, radio and TV transmitting tower.

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





Please avoid frequent restart or switch, in order to prolong the service life of the computer.

Please keep the environment clean and avoid dust. The working temperature of the equipment is 10 $^{\circ}$ C $^{\sim}$ 40 $^{\circ}$ C and the humidity is 35% ~ 80%.

Users are requested to back up important data in time NAG is not responsible for data loss caused by any circumstances.

This product uses optical drive as class 1 laser equipment.



Figure 1-1 Class 1 Laser Equipment.

1.2 Toxic and hazardous substances or elements in products

Within the 10-year environmental protection service life, the toxic and hazardous substances or elements contained in the product will not leak or mutate under normal use conditions, and the users will not cause severe pollution to the environment or serious damage to their personal and property.

Component	Hazardous Substances					
Component	Pb	Hg	Cd	Cr VI	PBB	PBDE
Chassis / Baffle	Х	0	0	0	0	0
Mechanical components (fan, heat sink, motor, etc.)	Х	0	0	0	0	0
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

	Harmful Substances					
Component	Pb	Hg	Cd	Cr VI	PBB	PBDE
Media read / Store device (CD, etc.)	Х	0	0	0	0	0
Power supply / adapter	Х	0	0	0	0	0
Power cord	Х	0	0	0	0	0



Pointing device (mouse, etc.)	Х	0	0	О	0	0
Keyboard	Х	0	0	0	0	0
UPS	Х	0	0	0	0	0
Complete rack / Rail	X	X	0	0	0	0
Table 1-2						

O 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 NAG 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

The product meets the EMC Class A standard.

1.4 Climate and environmental requirements

• The optimum working temperature of the equipment is 10° C - 40° C. The maximum indoor ambient temperature of the equipment is 40° C.

♦ System battery 3V CR2032 lithium battery





Note: some configurations have been tested at 45° C and 90% (29° C max.dew point) humidity.

Temperature	
Working temperature	$10^\circ\ C^{\sim}40^\circ\ C\ (50^\circ\ F^{\sim}104^\circ\ F)$, the maximum temperature gradient is $10^\circ\!C$ 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 $^\circ$ F to 104° F)
Storage temperature range	-40° C [~] 65 [°] C (-40° F [~] 149 [°] F)
Humidity	
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 10% to 80%



- 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 NAG 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 NAG 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 NAG for help.
- Choosing a suitable environment for the computer is helpful for the stable operation and can prolong the life of the computer.
- NAG 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

Purley 4U dual-socket L-shaped server is a new generation of 4U dual-socket rack-mounted server with a wide range of uses launched by SNR for the needs of the Internet, IDC (Internet Data Center), cloud computing, enterprise market and telecom business applications. It is suitable for IT core business, cloud computing virtualization, high performance computing, distributed storage, big data processing, enterprise or telecom business applications and other complex workloads. The server has the advantages of low energy consumption, strong scalability, high reliability, easy management, and easy deployment. This manual takes 2U as an example.

2.2 System configuration

Purley 4U dual-socket L-shaped server products including 4U 24 bay and 4U36 bay models, except for the hard disk connection method and the maximum number of compatible hard disks, other specifications are the same.

	System			
Model	SL401-D24RE SL401-D36RE			
Chassis	SNR 4U Rack Chassis			
Motherboard	G3DCL-B			
CPU	1st and 2nd Gen. Intel [®] Xeon [®] Scalable Proces	ssors, up to 205W		
Memory	Support 24* DDR4 LRDIMM/RDIMM memory, memory frequency supports 2133/2400/2666/2933MHz, supports a single maximum capacity of 256G, and the whole server system supports a maximum memory capacity of 9TB			
Hard disk drive	 4 U 24 front supports 24* 3.5/2.5-inch hot-swap hard drive bays 4 U 36 front supports 24* 3.5/2.5-inch hot-swap hard drive bays, rear supports 12* 3.5/2.5-inch hot-swap hard drive bays Rear supports a maximum of 4* 3.5-inch hot-swap hard drives or 4* 2.5-inch hot-swap hard drives 			
PCIE expansion specification	Rear supports 6 single-width full-height + 4 single-width half-height			
Expansion slot	Supports up to 10 PCIE 3.0 expansion slots + 1 OCP 3.0			
LAN features	Support 2 RJ45 1Gigabit			
Management interface	1 RJ45 management LAN port			
Display function	Aspeed® AST2500 64MB, 1 standard VGA p connector	oort extended by custom high-density		
M.2	Supports 2 M.2 ports (only NVME disks are	supported)		
USB	4 standard USB3.0 ports are extended by custom high-density connectors, and 1 built-in USB3.0			

2.2.1 System parameters





	ļ						
Power System supports 550W, 800W, 120		System supports 550W, 800W, 1200W, 1300W, 1600W, 2000W, 2200W hot-swap					
	supply						
Fan		N+1 hot-swap redundant fans					
Systen	n size	799.2* 444* 176.5mm (L*W*H)					
M (1	1 1	System board					
model	rboard	G3DCL-B					
Proces	sor	1st and 2nd Gen. Intel [®] Xeon [®] Scalable Processors					
Numb		Supports 24 DDR4 memory slots					
memor	ry						
slots							
Type of		Supports DDR4 LRDIMM/RDIMM memory					
memor suppor	•	Memory frequency supports 2133/2400/2666/2933MHz					
Memo		Support single capacity of 8GB, 16GB, 32GB, 64GB, 128G, 256G					
size	-)	2 appoint single capacity of 0.02, 1002, 0202, 0102, 1200, 2000					
Hard d	lisk	2 sSATA3.0 DOM, 3 MiniSAS 8643 ports					
interfa	ce						
IPMI		Supports IPMI 2.0 over network mapped virtual storage devices and KVM					
IPIVII		Supports Aspeed® AST2500 BMC					
Netwo	rk	Two Intel [®] I350-AM2 1GbE network interface					
card							
PCIE extens	ion	2 PCIe 3.0 x 24; 1 PCIe 3.0 x 16; 2 Slimline x 8					
VGA	1011	Extend a standard VGA port with custom high-density connectors					
USB		1 built-in USB3.0 interface, 4 USB3.0 extended by custom high-density connectors					
Numb	er of	Support 2					
power							
supplie							
Power		System supports 550W, 800W, 1200W, 1300W, 1600W hot-swap redundant platinum					
feature	es	efficiency power supplies (based on actual power)					
Input		100-127Vac/200-240Vac 47Hz~63Hz / 240Vdc (China only)					
voltage		. 101/1					
Output voltage		+12Vdc					
vonug	0						
Numb	er of	4* 8038 temperature-controlled fans					
fans							
Fan vo		12(10.8-12.6) Vdc					
Fan cu		4A(4.4A Max)					
Speed fan	of the	Maximum 14000 +/- 10% RPM					
Fan ai	rflow	3.2m ³ /min (141.9 CFM), minimum 2.63m ³ /min (125.8 CFM)					
Fan ai							
pressu							
		OS					
		CentOS7.5/7.6					
		RHEL 7.4/7.6					
		SLES12 SP3					
		Ubuntu 16.04 LTS					
OS		Fedora28 Windows 10					
		I wandowe III					





Win server 2012 R2/2016/2019 Xenserver 7.1 ESXi6.7 Win server 2012/2016 Hyper-v

	System ambient temperature			
Operating	Operating temperature: 10°C~40°C; Non-operating temperature: -40°C~70°C			
temperature				
Storage	Operating humidity: 35% ~ 80%; Non-operating humidity: 20% ~ 90%			
temperature				
& humidity				
	Safety certification			
Cantification	LIL CE CCC D-LIC			

Certification UL, CE, CCC, RoHS

Table 1-4

2.2.2 System architecture

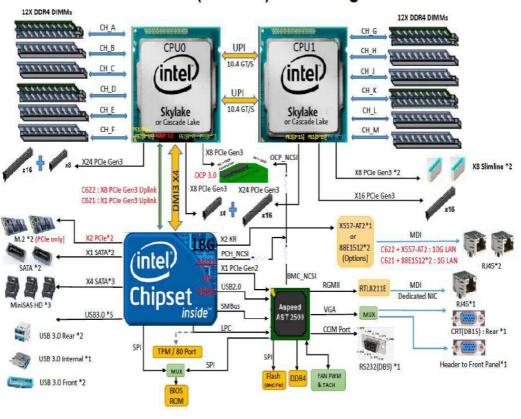
SNR SL series server is a server barebones system based on Intel Purley platform. The system supports 4U height, supports up to 205W CPU, and supports up to 24 pieces of memory; the name of the motherboard is G3DCL-B.

The motherboard features are as follows:

- The CPU adopts 1st and 2nd generation Intel® Xeon® Scalable processors, LGA3647 socket, TDP power consumption is 205W;
- Each CPU supports 6-channel DDR4, each channel supports 2 memories, RDIMM/LRDIMM. And each CPU supports a maximum capacity of 4.5 TB;
- ◆ DDR4 Type: DDR4 2133/2400/2666/2933;
- 3 PCIE RISER slots on the board, among which: RISER1 24 PCIE LANEs are all from CPU0, RISER2 24 PCIE LANEs, of which 8 PCIE LANs come from CPU0, 16 PCIE LANs come from CPU1, RISER3 16 PCIE LANEs from CPU1;
- G3DCL-B motherboard provides 2 M.2 Key M SSD slots, supports 2280 size, only supports PCIe X2 signal;
- 2 Gigabit Ethernet ports are integrated on the motherboard, using 88E1512 chip from PCH;
- South bridge PCH adopts INTEL LEWISBURG C621/C622 series chipset;
- PCH leads out 14 SATA Ports, maximum speed: 6Gb/s, compatible with SATA 1.5Gb/s, 3.0Gb/s; SATA Controller leads out 8 SATA PORTs, while SSATA leads out 6 SATA PORTs, of which SATA PORT has 8 PORTs, according to sequentially introduced into 2* SFF8643 connectors, while the first 4 PORTs of SSATA are introduced into 1* SFF8643 connector, and the latter 2 PORTs are introduced into the 7PIN SATA connector for connecting SATA DOM and DVD;
- BMC chip in this board adopts the AST2500 control chip of ASPEED Company, which is used for IPMI remote management. VGA output port, dedicated 1Gigabit RJ45 management LAN port, and connected to PCH via RMII/NCSI.



The system architecture motherboard block diagram is as follows:



G3DCL-B (Nebula2) Block Diagram

Figure 2-1

2.3 Introduction of system model specifications

SNR-SR4224RS bay model



Figure 2 - 5





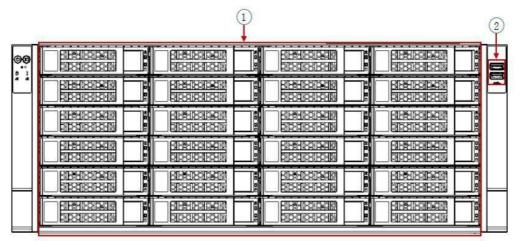
SNR-SR4236RS bay model



Figure 2 - 2.4 Introduction of system components

2.4.1 Front panel components

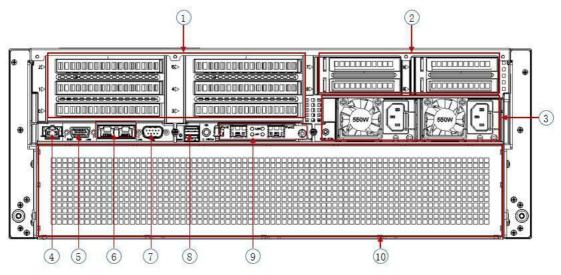
4U machine 3.5 inch bay model



Serial number	Name	Serial number	Name
1	3.5 inch hard drive	2	USB3.0 interface



• SNR-SR4224RS model





Serial number	Name	Serial number	Name
1	Rise module	6	RJ45 Gigabit LAN port
2	Hard disk module	7	COM port
3	Power module	8	USB 3.0 interface
4	Management LAN port	9	OCP3.0 interface
5	VGA interface	10	Front bezel

Table 1-12

• SNR-SR4236RS model

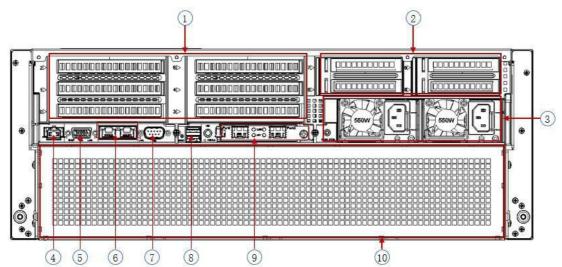
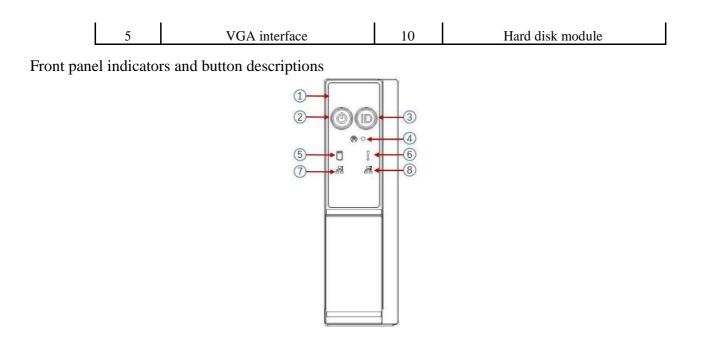


Figure 2-8

Serial	Name	Serial	Name
number		number	
1	Riser module	6	RJ45 Gigabit LAN port
2	Hard disk module	7	COM port
3	Power module	8	USB 3.0 interface
4	Management LAN port	9	OCP3.0 interface









2.4.2 Rear panel components

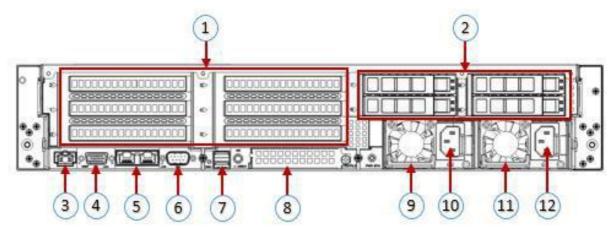


Figure 2-9

Serial	Name	Serial	Name
number	number		
1	Rise module	7	USB 3.0 interface
2	Hard disk module	8	OCP3.0 interface
3	Management network port	9	Power Module 1
4	VGA interface	10	Power Module 1 AC interface
5	RJ45 Gigabit LAN port	11	Power Module 2
6	COM port	12	Power Module 2 AC interface
	Та	ble 1- 14	

 \diamond Note:

Both 1 and 2 can be equipped with rear hard disk modules or Riser modules. This picture is for reference only, and the actual configuration shall prevail.

Rear panel interface description

Name	Туре	No.	Description
VGA interface	DB15	1	For connecting to a display terminal such as a monitor or KVM.
Management network port	GE BASE-T	1	Provide outgoing 1000Mbit/s LAN port. The server can be managed via this interface.
USB interface	USB 3.0	2	Provides an outgoing USB interface 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 LAN port	GE BASE-T	2	Server network port.





Power module AC interface	/	1 or 2	according to your actual needs, but make sure that the rated power of the power supply is greater than the rated power of the server system.
COM port		1	Serial communication port
OCP3.0 interface		1	Install the network card of OCP3.0

Table 1- 15

Rear panel indicators and button descriptions

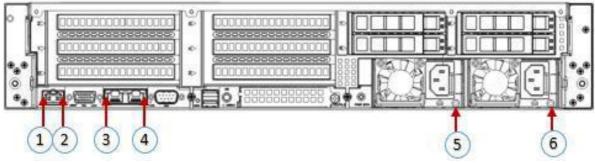


Figure 2-10

Serial	Name	Serial	Name
number		number	
1	Connection status indicator	4	Data transfer status indicator
2	Data transfer status indicator	5	Power Module Indicators
3	Connection status indicator	6	Power Module Indicators

Table 1-16

Indicator/Button	Status Description	
	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-circuit,	
Power module	output over-voltage, short-circuit protection, device failure (excluding all device	
	failures) and other reasons.	
indicators	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.	
Comparties status	Steady green: Indicates 1Gigabit Link.	
Connection status	Steady orange: Indicates a 100M link.	
indicator	Off: 10M Links.	
Data transfer status Yellow (flashing): Indicates that data is being transmitted.		
indicator	Off: Indicates no data transmission.	

Table 1-17





2.4.3 Motherboard components

All models share motherboard components, the interface description is as follows

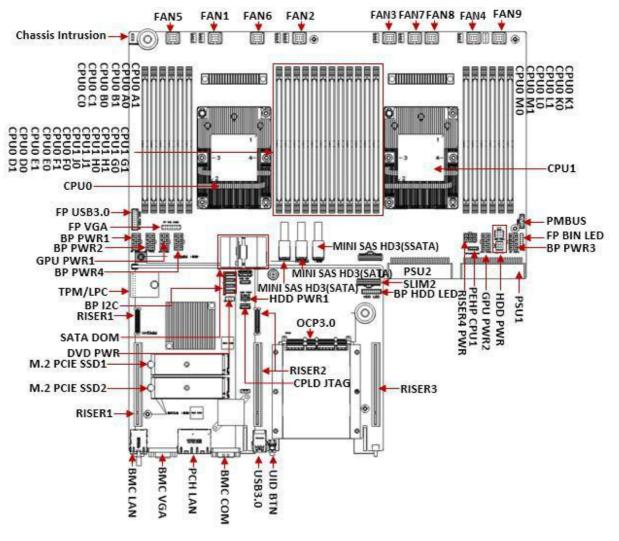


Figure 2-11

2.4.4 HDD backplane components

24-bay expansion backplane as shown TOP side

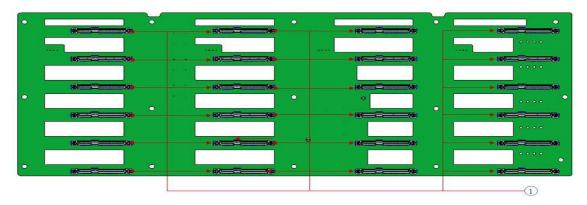


Figure 2-11

Serial	Description	Features
number		





1	SAS/SATA hard drive	1. Maximum support 12G/b SAS hard disk;
1	connector	2. Maximum support 6G/b SATA hard disk;

3. Support SAS/SATA hot-swap hard disk.

Bottom side

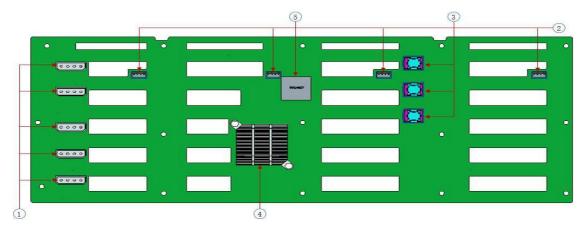


Figure 2-12

Serial number	Description	Features
1	BP power interface	Backplane power transfer connector for 12V and 5V power transfer
2	Fan interface	For 4pin fan interface
3	SFF-8643 12Gb SAS interface	For 12G/b SAS or 6G/b SATA signal transmission
4	Expander Chip Controller	PM8043 SXP 24Sx12G 24-port 12G SAS Expander
5	CPLD	For data logic processing

Table 1-19

12 bay expansion backplane as shown

TOP side

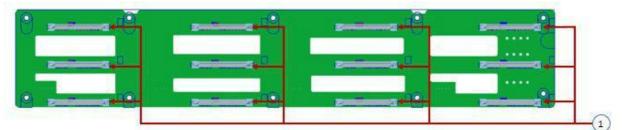
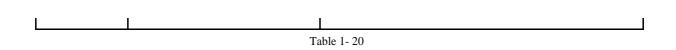


Figure 2-13

	1		
Serial	Description	Features	
number			
1	SAS/SATA hard drive connector	 Maximum support 12G/b SAS hard disk; Maximum support 6G/b SATA hard disk; Supports SAS/SATA hot-swap hard disk 	
24			





Bottom side

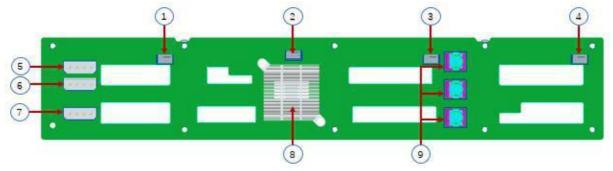


Figure 2-14

Serial number	Description	Features
1,2,3,4	Temperature Controlled Fan Socket	For 12G/b SAS or 6G/b SATA signal transmission.
5,6,7	Power connector	Backplane power transmission connector for 12V power transmission.
8	Expander chip	PM8043 SXP 24Sx12G 24-port 12G SAS Expander
9	MINI SAS HD High Speed Connector	For 12G/b SAS or 6G/b SATA signal transmission.

Table 1-21

SAS/SATA backplane as shown TOP side

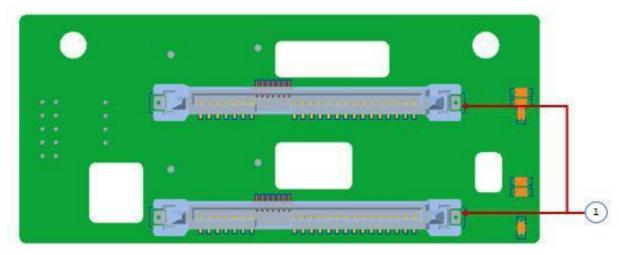


Figure 2-15

Serial number	Description	Features
		1. Maximum support 12G/b SAS hard disk;
1	SAS/SATA connector	2. Maximum support 6G/b SATA hard disk;
		3. Supports SAS/SATA hot-swap hard disk.



Table 1- 22 Bottom side

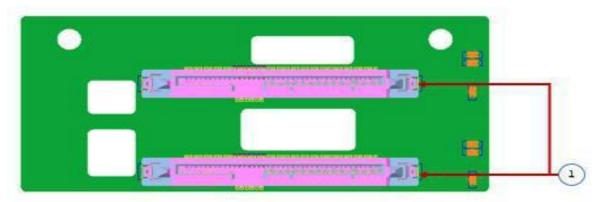
Figure 2-16

Serial number	Description	Features
1	Temperature sensor IC	Temperature sensor chip
2, 5	7PIN SATA interface	SATA disk signal line interface
3	I2C interface	For I2C signal interface
4	SGPIO signal for LED control	Used for hard disk LED positioning lighting and fault LED indication functions.
6	Power interface	Backplane power transfer connector for 12V power transfer

Table 1-23

U.2 backplane as shown

TOP side



Serial number	Description	Features
1		U.2 interface supporting PCIe×4 for connecting to NVME
1	SFF-8639 Connector	SSD

Table 1-24





Bottom side

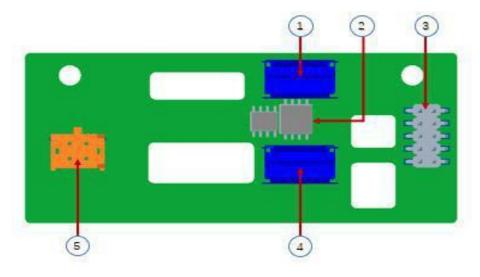
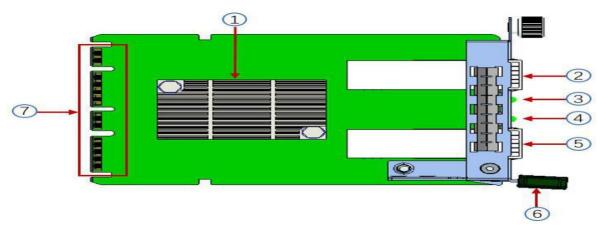


Figure 2- 18			
Serial number	Description	Features	
1, 4	Slimline 4i Connector	Provides PCIe×4 interface to connect to CPU and NVME	
		SSD1 (including CPU PEHP I2C and BMC I2C signals)	
2	CPLD chip	For data logic processing	
3	JATG debugging interface	JTAG debug interface for programming and version	
		upgrade of CPLD	
5	Power outlet	4 Pin power socket for docking with PSU or docking with	
		MB 4 Pin plug to power the board	
Table 1, 25			

Table 1-25

OCP3.0 network card as shown in the figure





Serial	Description	Features	
number			
		It is mainly connected to the network interface controller of	
		the motherboard CPU through PCIe Gen.2 X8, which is	
		converted into a 2-port SFP+ at the network card end, and	
1	Intel 82599ES chip	the 82599ES chip also provides an interface for	

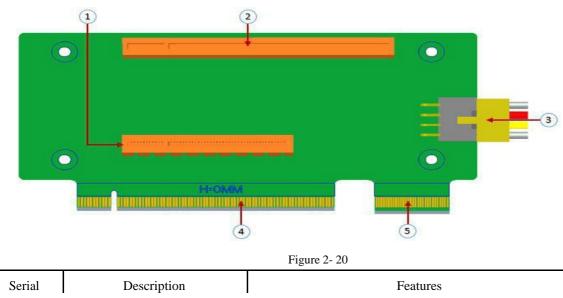


		communication with the motherboard BMC NCSI for information transfer between the BMC and the network card.	
2	SFP+ LAN1	Provide SFP+ 10G optical port signal	
3	LED1	LED status indicator	
4	LED2	LED status indicator	
5	SFP+ LAN2	Provide SFP+ 10G optical port signal	
6	Network card buckle	It is used to lock the network card. When removing the network card, you need to press 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	
	Table 1-26		

LED Indicator Description

Serial number	Description	Features	
LED1	SFP+ LAN1 Link LED	Green/ yellow indicator for indicating LAN1 speed Green: 10 Gigabit LAN speed; Yellow: Gigabit LAN speed No light: no optical port LAN cable	
	SFP+ LAN1 ACT LED	Green light for LAN1 data activity Flashing: data activity ; off: no data activity	
LED2	SFP+ LAN2 Link LED	Green/ yellow indicator for LAN2 speed Green: 10 Gigabit LAN speed; Yellow: Gigabit LAN speed No light: no optical port ALN cable	
	SFP+ LAN2 ACT LED	Green light for LAN2 data activity Flashing: data activity; off: no data activity	

Table 1-27



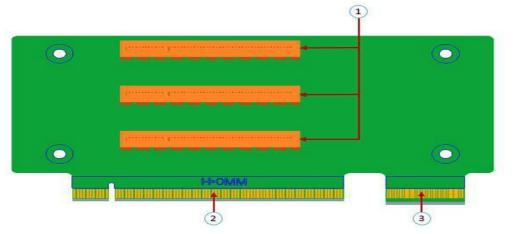
RISER 1 backplane as shown



number			
1	PCIE 3.0 X8 Slot	For PCIe 3.0 X8 devices.	
2	PCIE 3.0 X16 Slot	For PCIe 3.0 X16 devices.	
3	RISER POWER	Riser card power transmission connector for 12V power transmission	
4	PCIE X16Specification	For motherboard PCIe X16 X8 interface	
	Goldfinger		
5	PCIE X8 specification gold finger	For motherboard PCIe X16 X8 interface	

RISER 2 backplane as shown





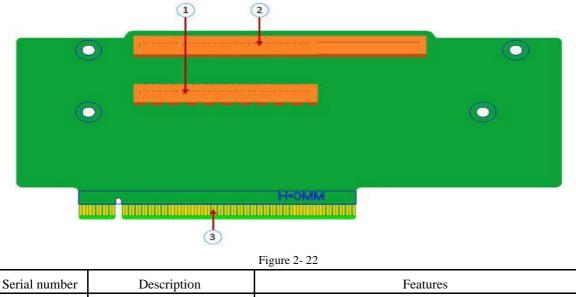


Serial number	Description	Features	
1	PCIE 3.0 X8 Slot	For PCIe 3.0 X8 devices.	
2	PCIE X16 Goldfinger	For motherboard PCIe X16 X8 interface	
3	PCIE X8 Gold Finger	For motherboard PCIe X16 X8 interface	

Table 1- 29

RISER 3 backplane as shown

1



PCIE X16 Slot	For PCIe 3.0 X16 devices.
	20



2	PCIE X8 Slot	For PCIe 3.0 X8 devices.
3	PCIE X16 Specification Goldfinger	For motherboard PCIe X16 interface
		Table 1- 30

RISER 4 backplane as shown

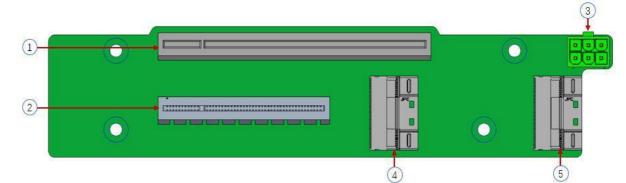


Figure 2-23 Serial number Description Features PCIE X16 slot For PCIe 3.0 X16 devices. 1 2 PCIE X8 slot For PCIe 3.0 X8 devices. Riser card power transmission connector for 12V power 3 Power interface transmission 4.5 Slimline interface For connecting Slimline cables



2.4.5 DIMM slot locations

The motherboard adopts Intel Purley platform, with Intel Xeon SkyLake CPU, supports 12 DDR4 channels, 24 DDR4 slots (when only one memory is inserted, it is preferred to insert the slot in the red frame in the figure below, the plastic color of the slot on the board is blue), supports DDR4 ECC RDIMMs/LRDIMMs server memory, and the memory frequency supports 2133/2400/2666/2933MHz; the location is shown in the following figure:

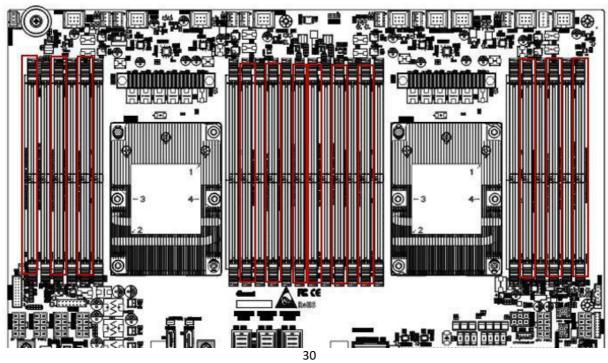




Figure 2-24

2.4.6 Hard disk label

24 bay

General () 		
-		



• 12 bay

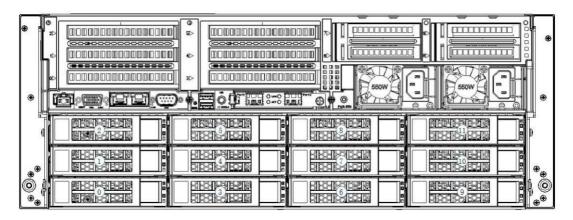


Figure 2-26

2.4.7 Hard disk indicator

2U8/2U12 hard disk indicator

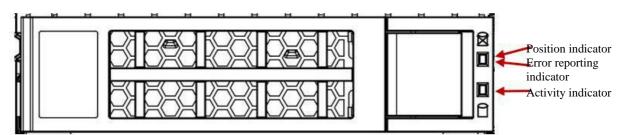


Figure 2- 27					
Features	Activity indicator (green)	Location indicator (blue)	Error indicator (yellow)		
Hard drive in place	On	OFF	OFF		



Hard drive			OFF
activity	Flashing 4Hz/sec	OFF	OFF
Hard disk	0		OFF
positioning	On	Flashing 4Hz/sec	OFF
Hard disk error	On	OFF	On
RAID rebuild	On	OFF	Flashing 1Hz/sec

Table 1- 32

2U 25-bay hard disk indicator

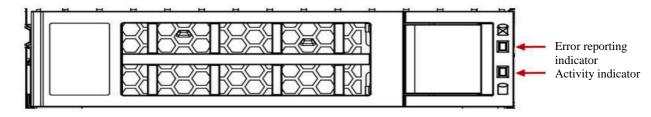


Figure 2- 28				
Hard disk status	Activity indicator (green)	Error indicator (yellow)		
Hard drive is not in place	OFF	OFF		
Hard drive is in place, but no	ON	OFF		
data activity				
The hard drive is in place and	Flashing frequency of the hard	OFF		
active	disk itself			

active	disk itself	
Hard drive failure	N/A	ON
Hard drive is located	N/A	4Hz flashing
Hard disk is in Rebuild state	N/A	1Hz flashing

Table 1- 33





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.

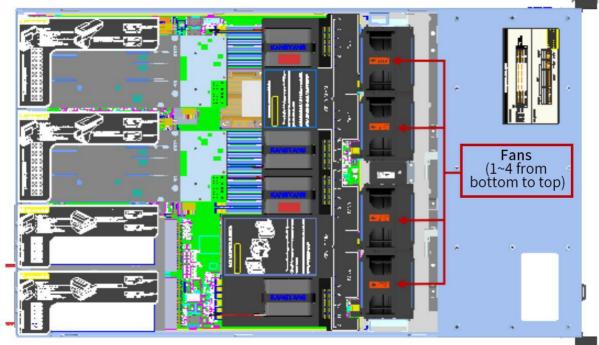


Figure 2-29





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. In accordance with the direction, press the other end of the clamping piece to fix the CPU to the clamping piece.

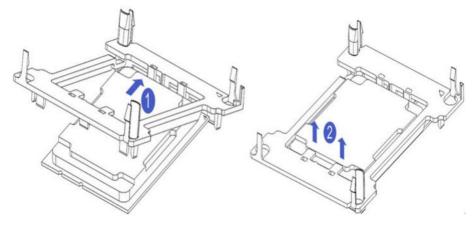
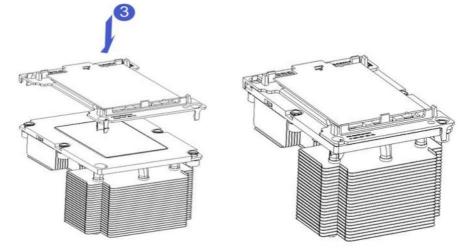


Figure 3-1

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 other materials. (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.



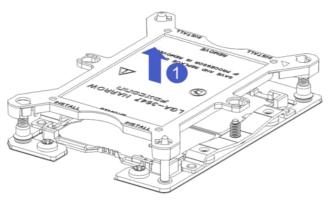




3.2 Installation of heat sink

Installation steps:

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





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 and easily damaged. To avoid damaging the motherboard, do not touch the processor or processor socket contacts.

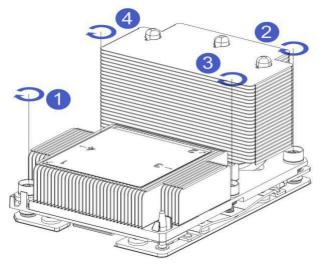


Figure 3-2



3.3 Memory installation

3.3.1 Memory specifications supported

The motherboard supports DDR4 memory of 64GB R-DIMM, 128GB LR-DIMM, 256GB 3DS LRDIMM, up to 2933MHz (2933MT/s is only achieved with odd-number 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 same frequency memory produced by the same manufacturer. Recommended settings are as follows in Tables 3.1 and 3.2:

Memory acces	ss principle: (on	e CPU)												
Processor	Channel	Memory location	Amount of memory (recommended: $1000000000000000000000000000000000000$											
			\checkmark	\checkmark	\checkmark	\checkmark	0	\checkmark	0	\checkmark	0	0	0	\checkmark
			1	2	3	4	5	6	7	8	9	10	11	12
CPU0	А	A1	•	•	•	•	•	•	•	•	•	٠	•	•
		A2							•	•	•	٠	•	•
	В	B1		•	•	•	•	•	•	•	•	•	•	•
		B2								٠	•	٠	•	•
	С	C1			•		•	•	•		•	٠	•	•
		C2									•		•	•





D	D1				•	•	•	•	•	•	•	•	•
D	D2								•		•	•	•
Б	E1				•	•	•	•	•	•	•	•	•
E	E2								•		•	•	•
F	F1						•	•		•	•	•	•
г	F2												•
 Table 3.1													

When installing 1 CPU, there are many rules for memory installation. In order to achieve optimal performance, it is recommended to follow the following specifications:

1 Memory, CPU0_A1

2 Memories: CPU0_A1 / CPU0_B1

3 Memories: CPU0_A1 / CPU0_B1 / CPU0_C1

4 Memories: CPU0_A1 / CPU0_B1 / CPU0_D1 / CPU0_E1

5 Memories: this configuration is not recommended

6 Memories: CPU0_A1 / CPU0_B1 / CPU0_C1 / CPU0_D1 / CPU0_E1 / CPU0_F1

7 Memories: this configuration is not recommended

8 Memories: CPU0_A1/A2, CPU0_B1/B2, CPU0_D1/D2 / CPU0_E1/E2

9 Memories/10 Memories/11 Memories: this configuration is not recommended

12 Memories: insert all

Note: If the above is in the case of the 5th, 7th, 9th, 10th, and 11th memory, the following rules must be followed:

Odd-number memory is inserted into the blue above the motherboard;

For even-number memories, you can refer to the configuration of the most recent memory quantity above, and then increase the memory;

In addition, it should be noted that:

In the same Channel, the memory with large capacity must be inserted into the first one (such as A1 /B1 /C1 /D1 /E1 /F1): blue;





Mixed use of RDIMM and LRDIMM is not allowed;

Memory	access prin	ciple: (2 CP	Us)																							
I					-					-	An	ount	of me	mory	(recon	nmenc	led: √	not re	ecomr	nende	d: 0)					
I		Memory	0		0	\checkmark	0	\checkmark	0	\checkmark	0	0	0	\checkmark	0	0	0		0	0	0	0	0	0	0	\checkmark
Processor	Channel	location																								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		A1	•	٠	•	٠	٠	•	٠	٠	٠	٠	•	٠	٠	٠	٠	٠	٠	٠	٠	•	•	٠	•	•
I	А	A2													•	•	•	•	•	•	•	•	•	•	•	•
I		B1			٠	٠	٠	٠	•	٠	•	•	•	٠	•	٠	٠	•	•	•	•	•	•	•	•	•
I	В	B2															٠	٠	٠	٠	٠	•	•	•	•	٠
I		C1					٠	٠			•	•	•	•	•	٠			•	•	•	•	•	•	•	•
I	С	C2																	٠	•			•	•	•	•
CPU0		D1							٠	٠	٠	٠	٠	•	٠	٠	٠	٠	٠	٠	٠	٠	•	•	•	•
I	D	D2															٠	•			٠	•	•	•	•	•
I		E1							٠	٠	•	•	•	٠	٠	٠	٠	٠	٠	•	•	•	•	•	•	•
I	Е	E2															٠	٠			٠	•	•	•	•	•
I		F1											•	•	•	٠			•	•	•	•	•	•	•	•
I	F	F2																							•	•
		A1		•	٠	٠	٠	٠	٠	٠	٠	•	•	•	٠	٠	٠	٠	٠	•	٠	•	•	•	•	•
1	Α	A2				Ì	Ì									•	٠	•	•	•	•	•	•	•	•	•
I		B1				٠	•	•	•	•	•	•	•	•	•	•	٠	•	•	•	•	•	•	•	•	•
I	В	B2																٠	•	•	•	•	•	•	•	•
I		C1						•	•			•	•	•	•	•	•			•	•	•	•	•	•	•
CPU1	С	C2																		•	•		•	•	•	•
I		D1								•	•	•	•	•	•	•	٠	•	•	•	•	•	•	•	•	•
l	D	D1 D2				1												•	•			•	•	•	•	•
1		E1							t	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1	Е	E2							t							-	<u> </u>	•	•			•	•	•	•	•
	1	1 12										I	I						- 			1		1	1	1
l							<u> </u>							•	•	•	•			•	•	•	•	•	•	•
																										•

Table 3.2





When installing 2 CPUs, in order to achieve optimal performance, it is recommended to install even-number memories, and the number of memory for each CPU remains the same;

2 memories: CPU0_A1 / CPU1_A1

4 memories: CPU0_A1 / CPU0_B1 / CPU1_A1 / CPU1_B1

6 memories: CPU0/CPU2_A1, CPU0/CPU1_B1, CPU0/CPU1_C1

8 memories: CPU0/CPU2_A1, CPU0/CPU1_B1, CPU0/CPU1_D1, CPU0/CPU1_E1

10 memories: Asymmetric, this configuration is not recommended

12 memories: CPU0/CPU1_A1, CPU0/CPU1_B1, CPU0/CPU1_C1, CPU0/CPU1_D1,

CPU0/CPU1_E1, CPU0/CPU1_F1

14 Roots RAM: Asymmetric: This configuration is not recommended

16 memories: CPU0_A1/A2, CPU0_B1/B2, CPU0_D1/D2, CPU0_E1/E2, CPU1_A1/A2, CPU1_B1/B2,

CPU1_D1/D2, CPU1_E1/E2

18 memories/20 memories/22 memories: asymmetric, this configuration is not recommended

24 memories: all inserted

Note: In the same Channel, the memory with large capacity must be inserted into the first one (such as A1 /B1 /C1

/D1 /E1 /F1): blue

Mixed use of RDIMM and LRDIMM is not allowed; if there is only one memory, install it in CPU0_A1.



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.

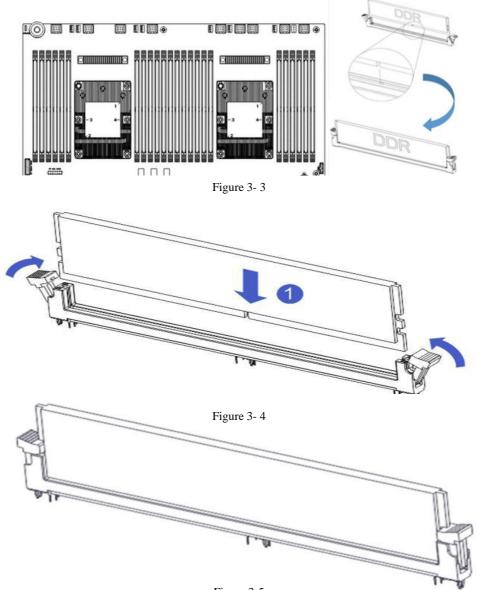


Figure 3-5





3.4 Hard disk installation

To install a 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 slideway on both sides of the tray)

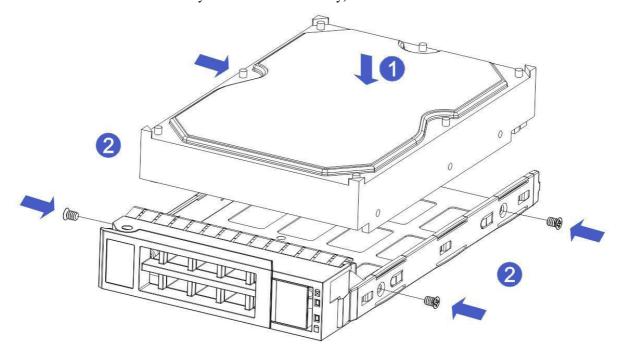


Figure 3-6





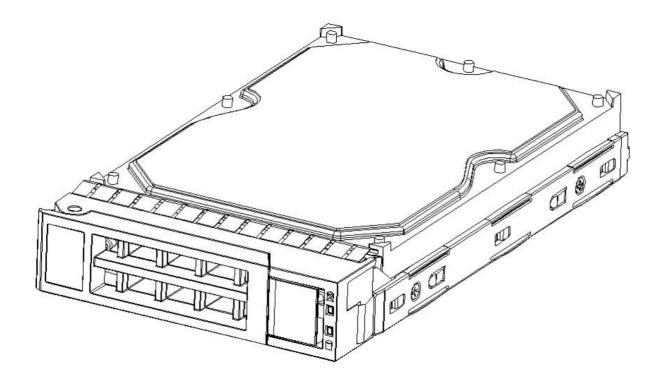


Figure 3-7

Install a 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)

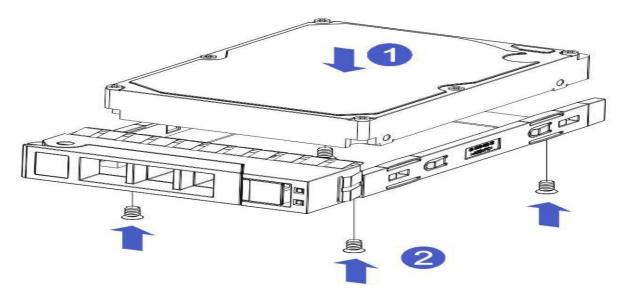


Figure 3-8



Datasheet

Hard disk tray components 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

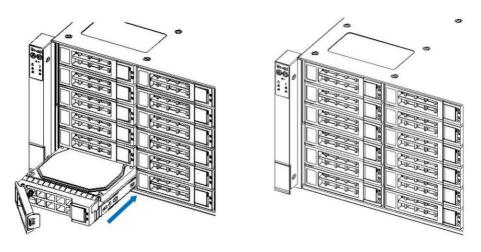
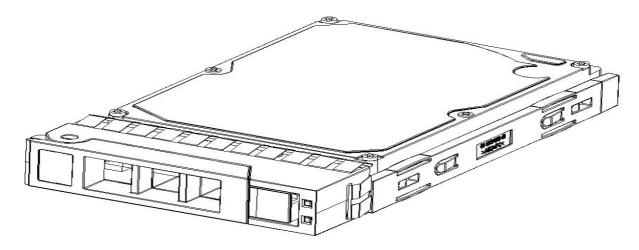


Figure 3-13

3.5 Front hard disk backplane installation



• Front hard disk backplane installation:

1. Align the gourd holes and hanging holes on the left and right sides of the hard disk backplane with the pegs of the hard disk frame, and push 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. Tighten the screws on the hard disk backplane.



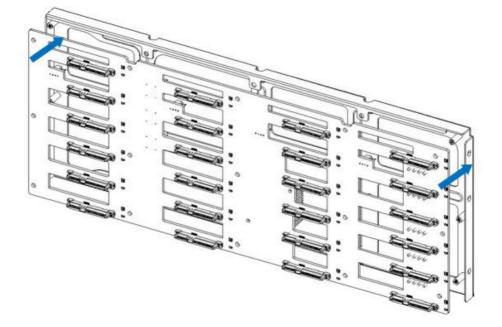


Figure 3-14

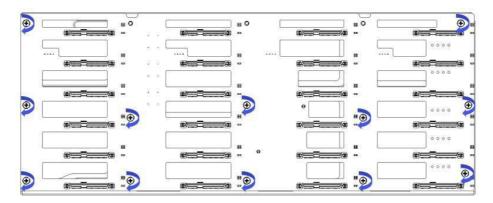
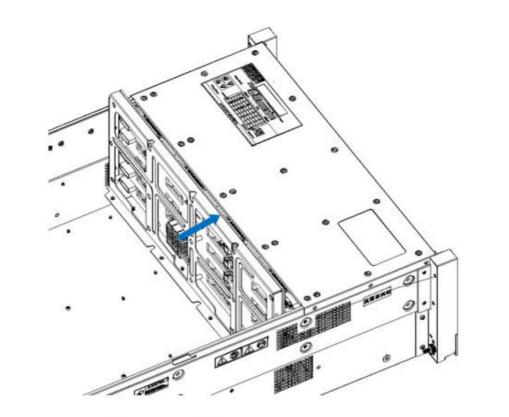


Figure 3-15



4. Place the installed hard disk backplane in the chassis, align the screw holes, and tighten the left screw and base screw.



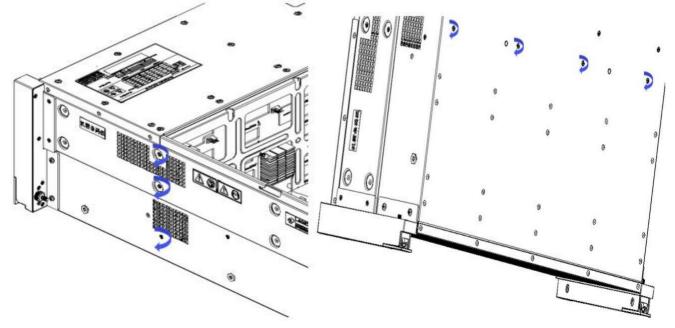


Figure 3-16



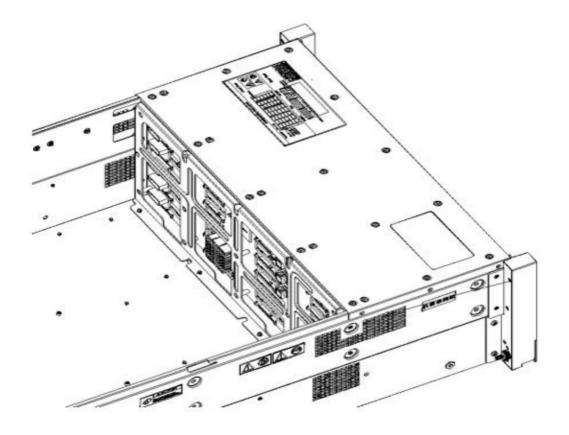


Figure 3-17





3.6 M.2 SSD Installation

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

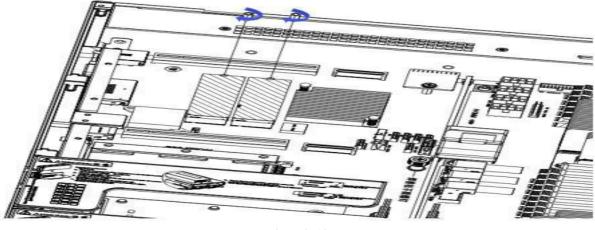


Figure 3-18

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.





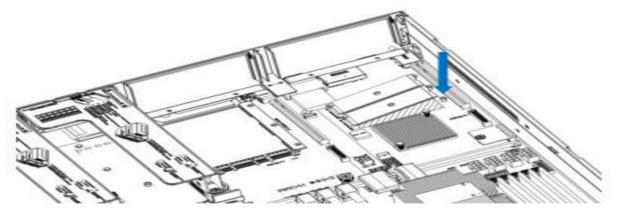


Figure 3-19

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

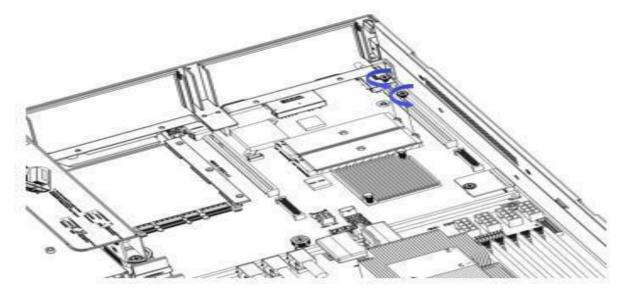


Figure 3- 20





3.7 Installation of PCIE 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

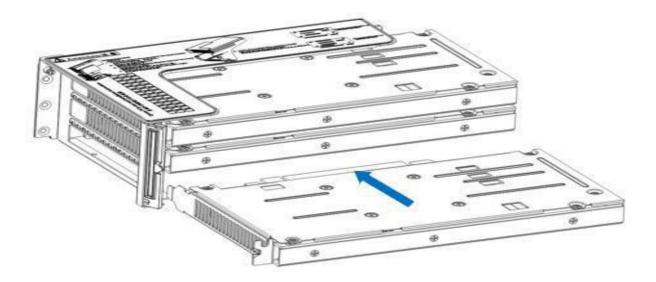
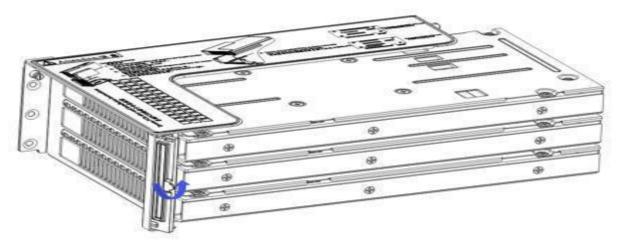




Figure 3-21





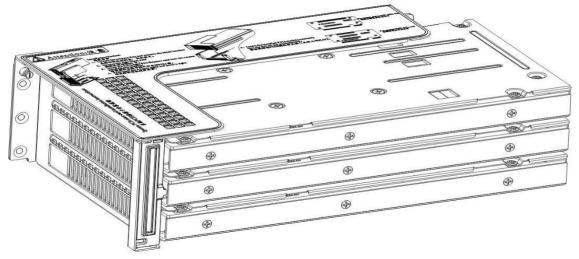


Figure 3-23





3.8 PCIE 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.

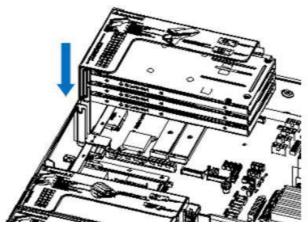


Figure 3-24

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

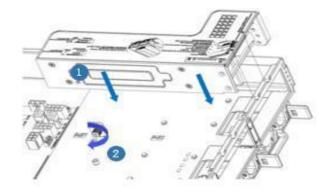


Figure 3-25





3.9 Rear hard disk module backplane installation

Step 1: Rear hard disk module backplane installation

1. Move the backplane limit plunger outwards with your hands, and hold the plunger with your hands - keep the plunger 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 plunger, and the plunger will automatically bounce back to the original position;

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

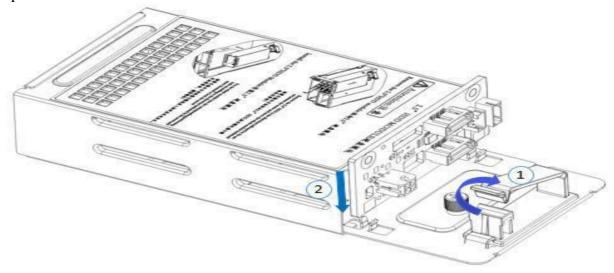


Figure 3-26



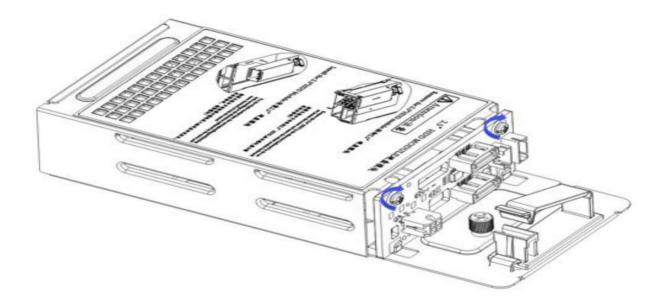


Figure 3-27





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 enclosure components fixed
- Step 3. Lock a captive screw

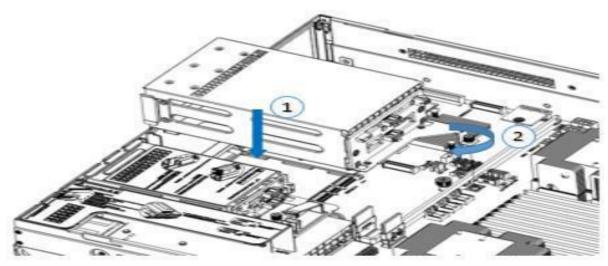


Figure 3-28

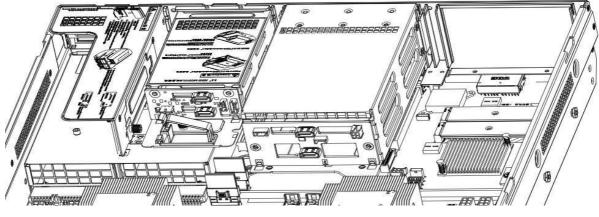


Figure 3-29





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

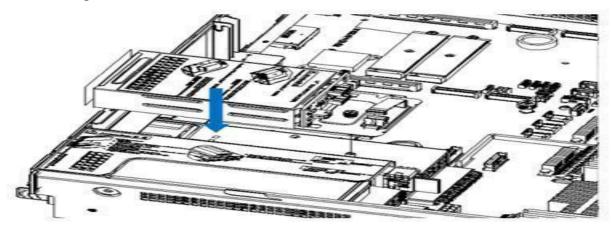


Figure 3-30

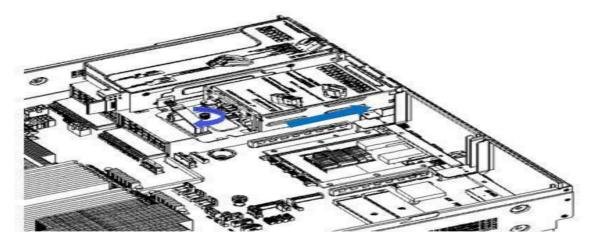


Figure 3-31



3.11 Installation of Power Module

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

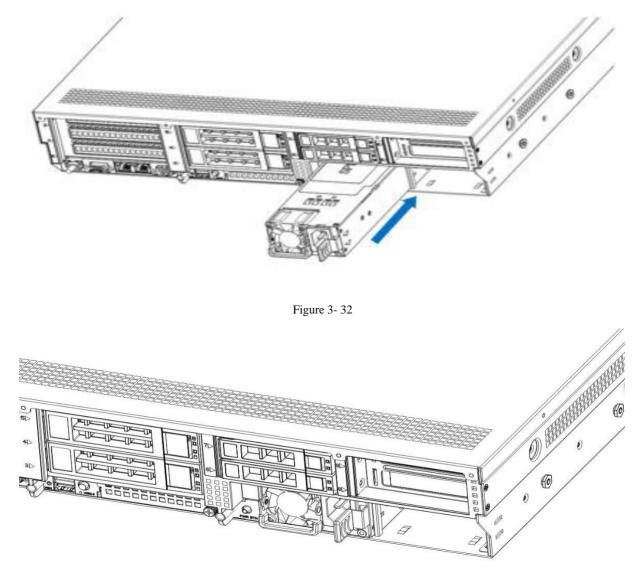


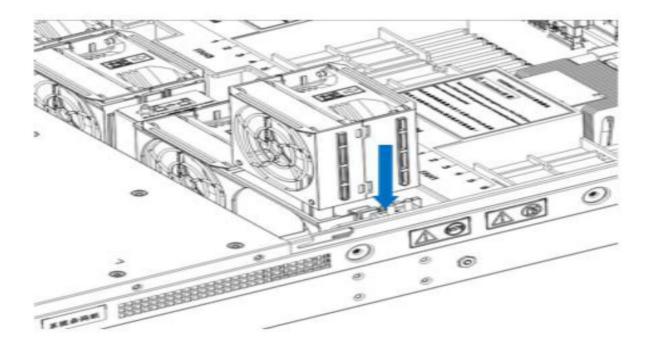
Figure 3-33





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 modu







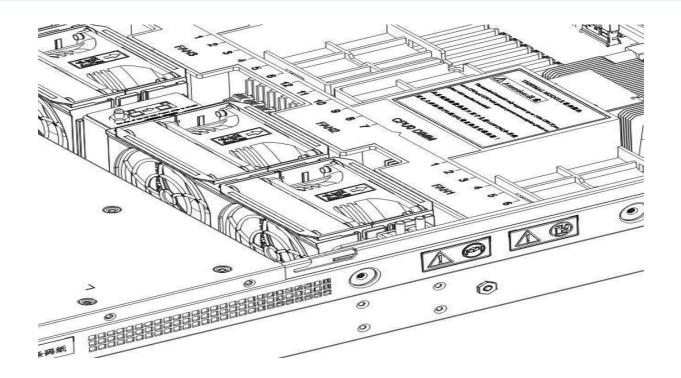


Figure 3-35



3.13 Installation of the wind shield

Steps: Align the wind shield 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

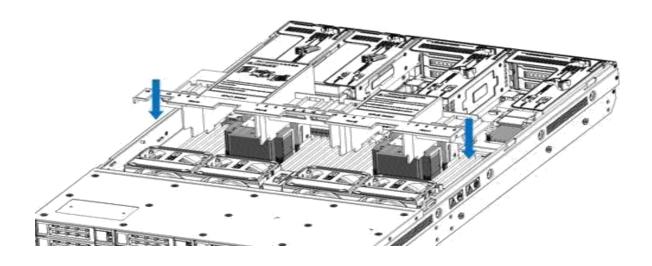


Figure 3-36

3.14 Installation of the upper cover of the chassis

Steps: Install the back upper cover of chassis

1. Align the upper cover peg with the opening of the chassis and place it downwards

2. Rotate the upper cover lock in the direction of the arrow to lock it in place

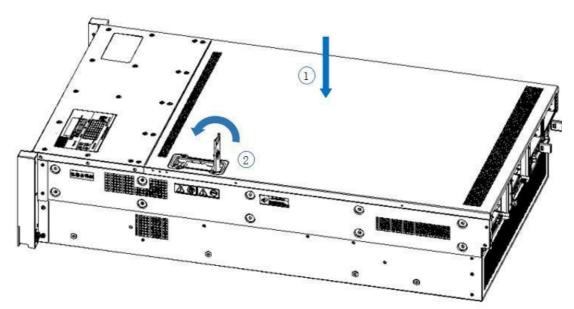


Figure 3-37





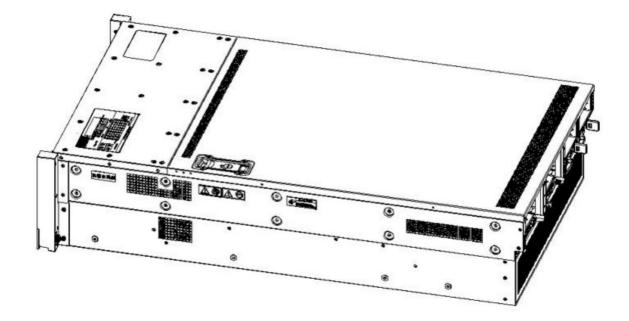


Figure 3-38





Chapter 4 System Rack Installation

4.1 Installing the inner rail of the guide rail

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

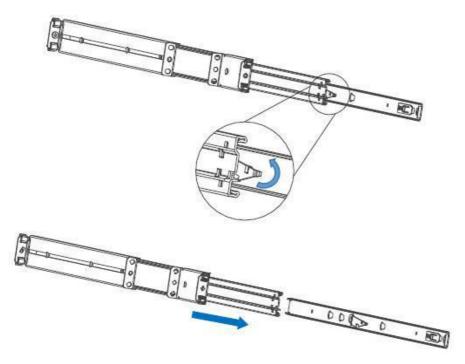


Figure 4-1

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

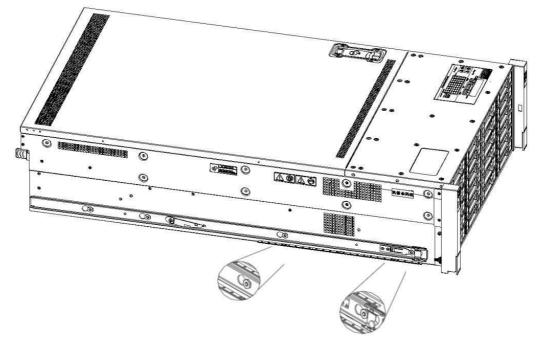


Figure 4-2



4.2 Installing the outer rails to the rack

Step 3. Install the outer rail on the cabinet racket 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.

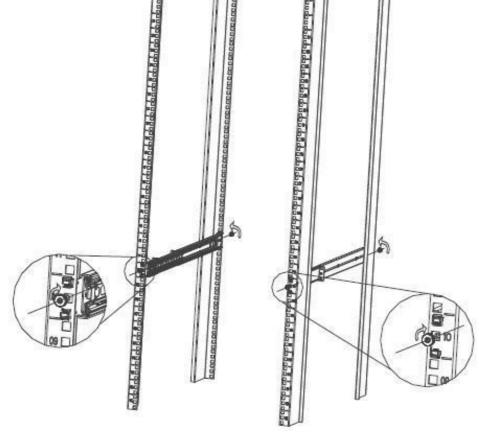


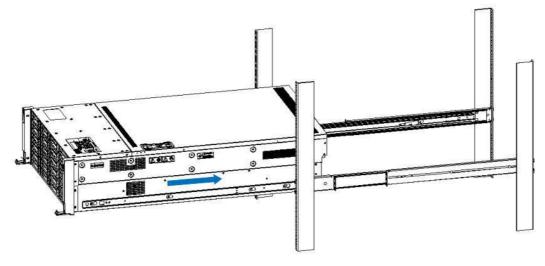
Figure 4-3



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 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.

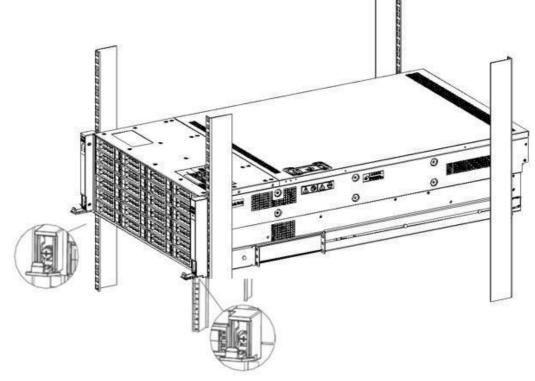


Figure 4-5





Chapter 5 BIOS Parameter Setting Instructions

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 or <ESC> to enter setup, <F7> to enter Boot Menu.";

3. Press the 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

→←:	Menu switch (Select Screen)
1↓:	Item switch (Select Item)
Enter:	OK (Select)
+/-:	Change Opt.
F1:	General Help
F2:	Previous Values
F3:	Optimized Defaults
F4:	Save changes and restart the system (Save & Reset)
ESC:	Exit (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 Project Version	G3DCL 0.05 x64	Set the Date. Use Tab to 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 U0	++: 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 FSC: Fxit
System Date	[Fri 06/19/2020]	LOOT EXIT
System Time	[16:50:43]	

Figure 5-1

BIOS Information

Project Version:

Displays the version information of the single board BIOS.

Build Date and Time:

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

BMC Firmware Revision:

Displays the version information of the single board BMC.

ME Firmware Version:

Displays the version information of the single board ME.

CPLD Name:

Displays the name information of the single board CPLD.

CPLD Version:

Displays the version information of the single board CPLD.

Build Date and Time:

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

Access Level:

Displays the access rights of the current user of the single 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 single board of 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 America 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 	
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2020 American	Megatrends, Inc.



Trusted Computing

Trusted Execution Module configuration. Serial Port Console Redirection

SIO Configuration

Option ROM Dispatch Policy

PCI Subsystem Settings

CSM Configuration

NVMe Configuration

Network Stack Configuration

iSCSI Configuration

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



5.2.4 Trusted Computing

TPM20 Device Found Firmware Version:	7.62	Enables or Disables BIOS 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 TPM 20 InterfaceType	[1.3] [TIS]	+/-: Change Opt. F1: General Help
Device Select	[Auto]	F1: General Help F2: Previous Values
Device Select	[HULO]	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 Utility Advanced	– Copyright (C) 2020 Ama	erican 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 & Exit ESC: Exit</pre>

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: Enable redirection.

Default: Disabled



5.2.6 Console Redirection Settings

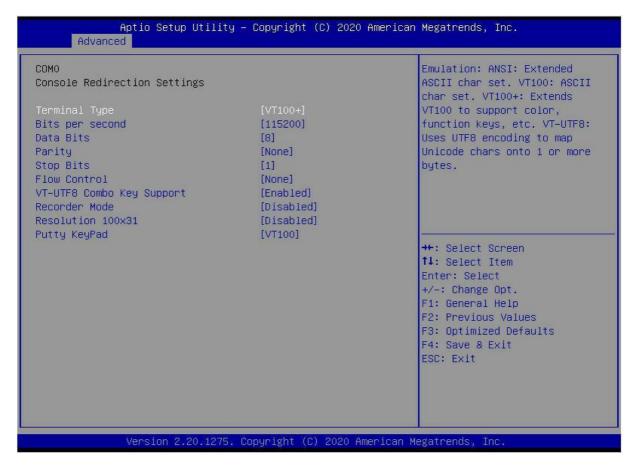


Figure 5-5

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: Enable 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

Super IO Chip Logical Device(s) Configuration Of [*Active*] Serial Port Cha WARNING: Logical Devices state on the left side of the co #**:	ew and Set Basic properties the SIO Logical device. ke IO Base, IRQ Range, DMA annel and Device Mode.
t1:	
F1: F2: F3: F4:	: Select Screen : Select Item ter: Select -: Change Opt. : General Help : Previous Values : Optimized Defaults : Save & Exit C: Exit

Figure 5-6



5.2.8 [*Active*] Serial Port





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

Aptio Setup Utility – Advanced	Copyright (C) 2020 Americar	n Megatrends, Inc.
AMI ROM Dispatch Policy : A5.01.18 Restore if Failure Primary Video Ignore	[Disabled] [Enabled]	If system fails to boot and this option is set to 'Enabled', software will reset settings of this page as well
Device Group Default ROM Policy (Selected at CSM Setup Page) : Network Class : UEFI Mass Storage Class : UEFI Display Class : UEFI Other Devices : UEFI		as CSM page to its default values automatically.
Device Class Option ROM Dispatch Po.	and the second s	
On Board Mass Storage Controller On Board Mass Storage Controller		↔: Select Screen
On Board Display Controller	[Enabled]	1↓: Select Item
Slot # 1 Empty	[Enabled]	Enter: Select
Slot # 2 Empty	[Enabled]	+/−: Change Opt.
Slot # 3 Empty	[Enabled]	F1: General Help
Slot # 4 Empty	[Enabled]	F2: Previous Values
Slot # 5 Empty	[Enabled]	F3: Optimized Defaults
Slot # 6 Empty Slot # 7 Empty	[Enabled] [Enabled]	F4: Save & Exit ESC: Exit
Slot # 8 Mass Storage Controller		LUG. LAIT
WARNING: Changing Device(s) Option H	ROM	
Version 2.20.1275. C	opyright (C) 2020 American ⊧	legatrends, Inc.

Figure 5-8

Manage Option ROM Dispatch 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:

Enabled

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 Utilit Advanced	y – Copyright (C) 2020 (American Megatrends, Inc.
PCI Bus Driver Version	A5.01.18	Enables or Disables 64bit capable Devices to be Decoded
PCI Devices Common Settings:		in Above 4G Address Space
Above 4G Decoding	[Enabled]	(Only if System Supports 64
SR-IOV Support	[Enabled]	bit PCI Decoding).
		↔: 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	erican Megatrends, Inc.

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 Utili Advanced	ty — Copyright (C) 2020 Amer.	ican Megatrends, Inc.
Compatibility Support Module Com	nfiguration	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	[UEFI] [UEFI] [UEFI] [UEFI] [UEFI]	++: 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	5. Copyright (C) 2020 America	an Megatrends, 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 Always Default: Upon Request

INT19 Trap Response

Interrupt, capture signal response settings, the menu options are: Immediate: respond immediately Postponed 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 startup 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 Advanced	Megatrends, Inc.
NVMe Configuration	
► TOSHIBA-RC100	<pre>**: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2020 American Me	gatrends, Inc.

Figure 5-11





Advanced		
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	
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.2).1275. Copyright (C) 2020 Ameri	can Megatpends _ Inc

Figure 5-12

Displays detailed information about NVMe hard drives.

5.2.13 Network Stack Configuration

Network Stack Ipv4 PXE Support Ipv4 HTTP Support Ipv6 PXE Support Ipv6 HTTP Support IPSEC Certificate PXE boot wait time	[Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Enabled] 0	Enable/Disable UEFI Network Stack
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit



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

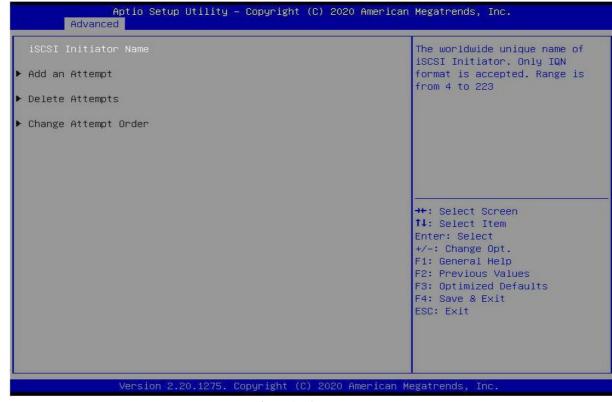


Figure 5-14

iSCSI configuration

5.2.15 Platform Configuration menu

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





PCH SATA Configuration

PCH sSATA Configuration

USB Configuration

Miscellaneous Configuration

Server ME Configuration

Runtime Error Logging

5.2.16 PCH SATA Configuration

Aptio Setup Utiz Platform Cont	Lity – Copyright (C) 2020 Ame iguration	erican Megatrends, Inc.
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 ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.12	275. Copyright (C) 2020 Ameri	ican Megatrends, Inc. 84

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: Disable 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

Aptio Setup Utilit Platform Config	y – Copyright (C) 2020 Ame uration	rican Megatrends, Inc.
PCH sSATA Configuration sSATA Controller Configure sSATA as SATA test mode sSATA Port O	[Enable] [AHCI] [Disable] [Not Installed]	Enable or Disable SATA Controller
Port 0 sSATA Port 1 Port 1 sSATA Port 2 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] [Not Installed] [Enable] [Not Installed] [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 Ameri	can Megatrends, Inc. 84



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: Disable 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

Aptio Setup Util Platform Conf	ity – Copyright (C) 2020 f iguration	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 2.20.12	75. Copyright (C) 2020 Ame	erican Megatrends, 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

XHCI overcurrent pin switch, the menu options are:

Enable

Disable

Default: Enable



5.2.19 Miscellaneous Configuration

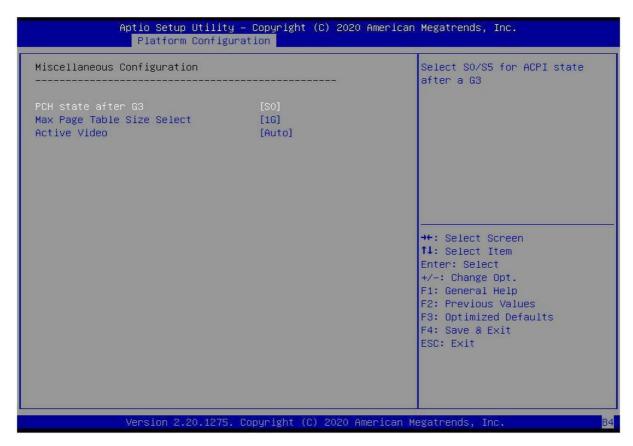


Figure 5-19

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

Default: S0

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

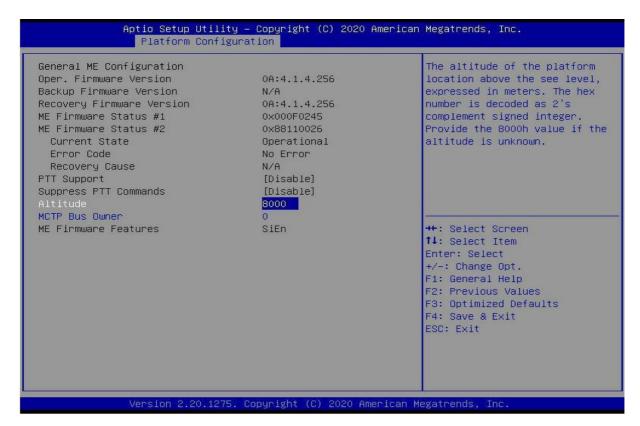


Figure 5-20

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

5.2.21 Runtime Error Logging

	Aptio Setup Utility — Copyright Platform Configuration	(C) 2020 American	Megatrends, Inc.
Runtime Error	r Logging		System Error Enable/Disable setup options.
System Errors	s [Enable]		Secup options.
			<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.20.1275. Copyright (C) 2020 American Mu	egatrends, Inc. 84





System Errors

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

5.2.22 Socket Configuration menu

Aptio Setup Utility – Copyright (C) 2020 American Main Advanced Platform Configuration Socket Configuration	
 Processor Configuration Common RefCode Configuration UPI Configuration Memory Configuration IIO Configuration Advanced Power Management Configuration 	<pre>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>></pre>
Version 2.20.1275. Copyright (C) 2020 American Mu	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			A Change Per-Socket Settings
Per–Socket Configuration			
Processor BSP Revision	50654 - SKX	UO UO	
Processor Socket	Socket O	Socket 1	
Processor ID	00050654*	00050654	
Processor Frequency	1.700GHz	1.700GHz	
Processor Max Ratio	11H	11H	
Processor Min Ratio	08H	08H	
Microcode Revision	0200005A	0200005A	
L1 Cache RAM	64KB	64KB	
L2 Cache RAM	1024KB	1024KB	
L3 Cache RAM	8448KB	8448KB	
Processor O Version			++: Select Screen
Intel(R) Xeon(R) Bronze 3104 C	PU @ 1.70GHz		↑↓: Select Item
Processor 1 Version			Enter: Select
Intel(R) Xeon(R) Bronze 3104 C	PU @ 1.70GHz		+/-: Change Opt. F1: General Help
Hyper-Threading [ALL]	[Enable]		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

) 2020 Americ Configuration	an Megatrends, Inc.
Processor Frequency Processor Max Ratio Processor Min Ratio Microcode Revision L1 Cache RAM L2 Cache RAM L3 Cache RAM Processor 0 Version Intel(R) Xeon(R) Bronze 3104 C Processor 1 Version Intel(R) Xeon(R) Bronze 3104 C		1.700GH2 11H 08H 0200005A 64KB 1024KB 8448KB	▲ Enable/disable AES-NI support
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	(Enable) (Disable) (Disable) (Enable) (Enable) (Enable) (Enable) (Disable) (32KB &Way (Disable) (Enable)	Without ECC]	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>



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

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



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



5.2.25 UPI Configuration

UPI Status Degrade Precedence [Topology Precedence] Link Speed Mode [Fast] Link Frequency Select [Auto] Link L0p Enable [Auto] Link L1 Enable [Auto] UPI Failover Support [Auto] SNC [Disable] XPT Prefetch [Auto] Legacy VGA Socket 0 Hegacy VGA Stack 0 #f: S Enter +/-: F1: G F2: P F3: 0 F4: S	Aptio Setup Utility –	Copyright (C) 2020 American Socket Configuration	Megatrends, Inc.
↑↓: S Enter +/-: F1: G F2: P F3: O F4: S	UPI Status Degrade Precedence Link Speed Mode Link Frequency Select Link LOp Enable Link L1 Enable UPI Failover Support SNC XPT Prefetch KTI Prefetch	[Fast] [Auto] [Auto] [Auto] [Auto] [Disable] [Auto] [Enable]	UPI Status Help
	Legacy VGA Stack	0	<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Figure 5-26

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

status Degrade Precedence

When the system settings conflict, set the Topology Precedence to lower the feature, or lower the Topology by setting the 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 L0p Enable

Link L0p switch, the menu options are: Disable Enable Auto Default: Auto





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 VGAs, 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	
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		

Figure 5-27

Enforce POR

To enforce POR settings, the menu options are:

Auto

POR

Disable

Default: Auto

Memory Frequency

Memory frequency setting, the menu options are:

Auto

800

1000

1066

1200

1333

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

CPUO 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 H0: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	



Display current in-place memory details **5.2.28 Memory Map**

Aptio Setup Utility -	Copyright (C) 2020 America Socket Configuration	
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
Version 2.20.1275. C	Copyright (C) 2020 American	Megatrends, Inc.

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

Memory RAS Configuration Setup Static Virtual Lockstep Mode [Disable] Mirror mode [Disable] UEFI ARM Mirror [Disable] Memory Rank Sparing [Disable] Correctable Error Threshold 7fff SDDC [Disable] ADDDC Sparing [Disable] Set NGN Die Sparing [Enable] Patrol Scrub [Enable] Patrol Scrub Interval 24 Patrol Scrub Address Mode [System Physical Ad] Version 2.20.1275. Copyright (C) 2020 American	Enable Static Virtual Lockstep mode ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit



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 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

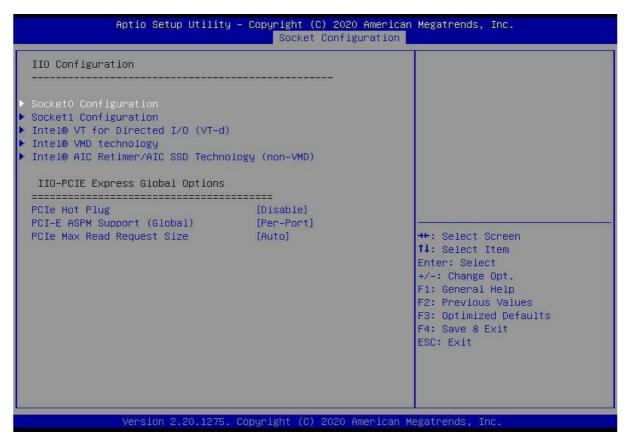


Figure 5-31

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 CPU0, 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

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

Aptio Setup Utility — ((C) 2021 American t Configuration	Megatrends, Inc.
PCI-E Completion Timeout Value Sck1 RP Correctable Err	[Auto] [Auto] [Auto] [Auto] [Enable] [260ms to [Disable] [Disable] [Disable]	900ms]	Selects PCIe port Bifurcation for selected slot(s)
Socket 1 PcieBr3D00F0 - Port 3A Socket 1 PcieBr3D02F0 - Port 3A Socket 1 PcieBr3D02F0 - MCP 0 / Port Socket 1 PcieBr5D00F0 - MCP 1	48		<pre>++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</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 America Socket Configuration	
Advanced Power Management Configuration 	P State Control Configuration Sub Menu, include Turbo, XE and etc.
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2020 American	Megatrends, Inc.

Figure 5-32

CPU P State Control

Hardware PM State Control

Hardware power management state control submenu;

CPU C State Control

Package C State Control

CPU-Advanced PM Tuning

CPU performance and power saving tuning submenu;

Socket RAPL Configuration



5.2.32 CPU P State Control

Aptio Setup Utility	y – Copyright (C) 2020 Ame Socket Configurat	
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
		++: 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 Amer.	ican 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 Default: Enable



5.2.33 Hardware PM State Control

Aptio Setup Utility	y – Copyright (C) 2020 Amer Socket Configurati	
Hardware PM State Control Hardware P–States EPP Enable	[Native Mode] [Enable]	Disable: Hardware chooses a 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)
		<pre>++: Select Screen +↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 Americ	an Megatrends, Inc.

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 Default: Enable



5.2.34 CPU C State Control

Aptio Setup Utilit	ty – Copyright (C) 2020 Am Socket Configura	
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 & Exit ESC: Exit</pre>
Version 2.20.1275	5. Copyright (C) 2020 Amer	ican Megatrends, 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 Default: Enable



5.2.35 Package C State Control

Aptio Setup Ut.	ility – Copyright (C) 2020 Socket Configu	
Package C State Control		Package C State limit
Package C State	[Auto]	
		<pre> ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.	1275. Copyright (C) 2020 Ar	merican Megatrends, Inc.

Figure 5-36

Package C State

Package C status settings, the menu options are:

C0/C1 state

C2 state

C6(non Retention) state

C6(Retention) state

No Limit

Default: Auto



5.2.36 CPU-Advanced PM Tuning

Aptio Setup Util.	ity – Copyright (C) 2020 Ame Socket Configurat	
CPU – Advanced PM Tuning		Energy Perf BIAS Sub Menu
▶ Energy Perf BIAS SAPM Control	[Enable]	
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2, 20, 12	75. Copyright (C) 2020 Ameri	

Figure 5-37

Energy Perf BIAS

CPU energy saving performance related options settings



5.2.37 Energy Perf BIAS

Aptio Setup Utility	– Copyright (C) 2020 America Socket Configuration	
Energy Perf BIAS Power Performance Tuning ENERGY_PERF_BIAS_CFG mode Workload Configuration	Socket 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 14: 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

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

	ility – Copyright (C) 2020 Am nfiguration Socket Configura	merican Megatrends, Inc. ation 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 Policy OS Watchdog Timer OS Wtd Timer Timeout OS Wtd Timer Policy System Event Log BMC network configuration View System Event Log BMC User Settings	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) ++: 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 Amer	rican Megatrends, Inc.

Figure 5-39

Displays 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 min utes
- Defaul
- t: 6
- minute
- s



Datasheet

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

View System Event Log menu View the System Event Log Control Menu

BMC User Settings menu



5.2.39 System Event Log menu

Enabling/Disabling Options		Change this to enable or
SEL Components	[Enabled]	disable event logging for
Frasing Settings		error/progress codes during boot.
Frase SEL	[No]	
Nhen SEL is Full	[Do Nothing]	
Custom EFI Logging Options		
og EFI Status Codes	[Error code]	
NOTE: All values changed here d effect until computer is		
		→+: Select Screen
		↑↓: Select Item
		Enter: Select
		+/−: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit

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

Both: Record Error code & Progress code Error code: Only record Error code Progress code: Only record Progress code

Default value: Error code

5.2.40 BMC network configuration menu

BMC network configuration		▲ Select to configure LAN
****		channel parameters staticall
Configure IPV4 support		or dynamically(by BIOS or
***		BMC). Unspecified option will
		not modify any BMC network
BMC Sharelink Management channel		parameters during BIOS phase
Configuration Address source	[Unspecified]	
Current Configuration Address sour	DynamicAddressBmcDhcp	
Station IP address	0.0.0.0	
Subnet mask	0.0.0.0	
Station MAC address	00-24-EC-F2-7D-DD	
Router IP address	0.0.0	
Router MAC address	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
	00-24-EC-F2-7D-DE	F3: Optimized Defaults
	192.168.1.1	F4: Save & Exit
Router MAC address	9C-A6-15-57-5B-D9	ESC: Exit
**		
Configure IPV6 support		

Figure 5-41



Datasheet

BMC Dedicated Management channel		Select to configure LAN
Configuration Address source	[Unspecified]	channel parameters statically
Current Configuration Address sour	DynamicAddressBmcDhcp	or dynamically(by BIOS or
Station IP address Subnet mask	192.168.1.210 255.255.255.0	BMC). Unspecified option will
Subnet mask Station MAC address	255.255.255.0 00-24-EC-E2-7D-DE	not modify any BMC network parameters during BIOS phase
Router IP address	192.168.1.1	paralleters during bios phase
Router MAC address	9C-A6-15-57-5B-D9	

Configure IPV6 support		

BMC Sharelink Management channel		++: Select Screen
		↑↓: Select Item
IPV6 Support	[Enabled]	Enter: Select
		+/-: Change Opt.
Configuration Address source	[Unspecified]	F1: General Help
Current Configuration Address sour	DynamicAddressBmcDhcp	F2: Previous Values
Station IPV6 address		F3: Optimized Defaults F4: Save & Exit
FEB0::224:ECFF:FEF2:7DDD		ESC: Exit
		Loo. LAIT
Prefix Length		
64		

Figure 5-42

Aptio Setup Utility –	Copyright (C) 2020 Americar	Megatrends, Inc. Server Mgmt
IPV6 Router1 IP Address :: IPV6 address status IPV6 DHCP Algorithm	Active SLAAC	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 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. Cc	pyright (C) 2020 American ⊬	legatrends, Inc.

Figure 5-43

Configure IPV4 support

BMC sharelink Management Channel Configuration Address source

Datasheet



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 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, 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 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 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	5E 20 00 04 14 32
04.200.200	15:35:17	Button/Switch	OA O2 FF FF Generator ID: BMC - LUN #0
	15:35:22		(Channel #0)
	15:35:32		Sensor Number: 0x32 SCSI
	15:35:32		Bus(Parallel)
	05:27:46		Event Description: Record
01/11/18			Type-0x02. Assertion Event.
	05:28:31	OS Boot	Type oxoe. Itsel cion Event.
Contraction of the local distance	05:28:31		
	05:41:12		
	05:41:12	DEM Record DD	++: Select Screen
	05:41:14		14: Select Item
	05:41:14		Enter: Select
1	05:41:14	Voltage	+/-: Change Opt.
01/11/18		Voltage	F1: General Help
04/15/75	16:12:16	Processor	F2: Previous Values
04/15/75	16:12:16	Button/Switch	F3: Optimized Defaults
	16:12:39		F4: Save & Exit
04/15/75	16:12:39		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 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2	2020 American Megatrends, Inc.

Figure 5-45

Add User

Add user submenu Delete User Delete User Submenu Change User Setting Modify User Settings Submenu



5.2.43 Add User

Aptio Setup Ut.	ility — Copyright (C) 2020 A	merican 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 +: 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 5-46

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 LimitUser permission settings, menu options are:ReservedCallbackUserOperatorAdministratorAfter the setting is successful, "Set User Access Command Passed" will be prompted, and the BMC User will take



5.2.44 Delete User

Aptio Setup Utility — Copyright (C) 20	020 American Megatrends, Inc. Server Mgmt
BMC Delete User Details User Name User Password	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. Copyright (C) 2020) American Megatrends, 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 show 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.



5.2.45 Change User Setting

Aptio Setup Utili	ty – Copyright (C) 2020 f	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
		<pre>**: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275	5. Copyright (C) 2020 Ame	erican Megatrends, 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

Aptio Setup Utility – Main Advanced Platform Configura	Copyright (C) 2020 American tion Socket Configuration	
Password Description		Set Administrator Password
If ONLY the Administrator's passwor then this only limits access to Set only asked for when entering Setup. If ONLY the User's password is set, is a power on password and must be boot or enter Setup. In Setup the U have Administrator rights. The password length must be in the following range: Minimum length	up and is then this entered to	
Maximum length Administrator Password User Password	20	→++: Select Screen ↑↓: Select Item Enter: Select
Administrator Password User Password	Not Installed Not Installed	+/−: Change Opt. F1: General Help
TCG Storage Security Configuration: ▶ TOSHIBA-RC100		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. C	opyright (C) 2020 American M	legatrends, Inc.

Figure 5-49

Administrator Password

Select this option to set an administrator password;

User Password

Select 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

Display the user password status, if the system has a user password, it displays Installed, if there is no user password, it displays Not Installed;

Hard Disk 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.



5.2.47 Boot menu

Aptio Setup Utilit Main Advanced Platform Config	ty — Copyright (C) 2020 America guration Socket Configuration	and the second s
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot Optimized Boot	<mark>1</mark> [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></pre>
Version 2.20.1275	5. 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

OFF

Default: On

Quiet Boot

To turn Quiet Boot on and off, the menu options are: Disabled: Close Quiet Boot, and POST information will be displayed at this time Enabled: Turn on 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: Close Quiet Boot

Enabled: Turn on 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

5.2.48 Save & Exit menu

Aptio Setup Utility – Copyright (C) ≺ Save & Exit	2020 American Megatrends, Inc.
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Changes Discard Changes Default Options Restore Defaults Save as User Defaults	Exit system setup after saving the changes.
Restore User Defaults Boot Override TOSHIBA-RC100 UEFI: Built-in EFI Shell	++: 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) 2	2020 American Megatrends, Inc.

Figure 5-51

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





Load BIOS factory settings; 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. When the user operates, please understand the operating specifications in detail.

2. When operating options, please understand the meaning of the options in combination with the operation manual and the BIOS Setup interface option descriptions.





Chapter 6 RAID Setup Instructions

6.1 PCH configuring RAID

6.1.1 Configuring RAID in UEFI Boot Mode

6.1.2 Configure RAID operation

During the server startup process, press Delete/Esc as prompted to enter the BIOS Setup interface. 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 America <mark>ion</mark>	n Megatrends, Inc.
PCH SATA Configuration		 Identify the SATA port is connected to Solid State Drive
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 0 ENABLE NVRAM CR0 PCIE Root Port Number		or Hard Disk Drive
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] [PCI Express Root P]	<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

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





CSM Support CSM16 Module Version GateA20 Active	[Enabled] 07.83	
GateA20 Active	07.83	
and the state of the second	[Upon Request]	
INT19 Trap Response	[Immediate]	
HDD Connection Order	[Adjust]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
		++: Select Screen
Option ROM Policy	[UEFI]	↑↓: Select Item
Network	[UEFI]	Enter: Select
Storage	[UEFI]	+/-: Change Opt.
/ideo	[UEFI]	F1: General Help
)ther PCI devices	[UEFI]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit



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

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

Figure 6-3





Create RAID

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

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

Figure 6-4

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	n 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.
	[(MIDO(S() IPE)]	15 10 Characters or 1655.
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 14: Select Item
Select at least two disks		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit





RAID Level: Select the RAID level of the configuration, as shown in Figure 6-6, select the RAID level of the configuration

Aptio Setup Utility – Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Create RAID Volume		Select RAID Level
Name: RAID Level:	Volume0 [RAIDO(Stripe)]	
Select Disks: Port 4, ST1000DM003–1SB102 SN:29A7 Port 5, WDC WD1003FBYZ–010FB0 SN:W	[] []	
Strip Size: Capacity (GB):	[128KB] RAID Level: RAIDO(Stripe) RAID1(Mirror)	
▶ Create Volume		↔: Select Screen ↓: Select Item
Select at least two disks		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Figure 6-6

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

Figure 6-7 Selecting 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 ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>



the relevant pa	arameters are described in Table 1-36:
Parameter	Remarks
Name	The name of the RAID.
RAID	RAID levels, which determine logical disk performance, fault tolerance,
Level	and capacity.
Select	Select the member disks that make up the RAID. The available disks
D' 1	are displayed below the Select Disks column. Press Enter to select the
Disks	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

Select Create Volume and press Enter to configure the RAID. The relevant parameters are described in Table 1-36:

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

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) 2020 Americ Advanced	can Megatrends, Inc.
Intel(R) VRDC 6.0.0.1024 SATA Driver	Select to see more information about the disk
▶ Create RAID Volume	
RAID Volumes:	
 VolumeO, RAIDO(Stripe), 1769.86GB, Normal 	
Non-RAID Physical Disks: ▶ Part 6, ST1000DM003-1SB10C SN:S9A07WV0, 931.51GB	
▶ Port 7, ST1000DM003-1SB10C SN:S9A07PJ6, 931.51GB	
	++: Select Screen
	†↓: Select Item Enter: Select
	+/-: Change Opt.
	F1: General Help F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit ESC: Exit
	LSC. EAT

Figure 6-8

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



PHYSICAL DISK INFO		Mark disk as Spare
Disk Actions:		
Mark as Spare		
Mark as Journaling Drive		
Turn Locate LED On		
Port:	6	
Controller:	SATA	
Model Number:	ST1000DM003-1SB10C	
Serial Number:	S9A07WV0	
Size:	931.51GB	
Status:	Non-RAID	
Block size:	512	++: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Figure 6-9

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) 203 Advanced	20 American 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	
	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Figure 6-10





Delete RAID

Enter the RSTe configuration interface. 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

Aptio Setup Utility – Copyright (C) 2020 American Advanced	Megatrends, Inc.
Intel(R) VROC 6.0.0.1024 SATA Driver	Select to see more information about the RAID Volume
▶ Create RAID Volume	
RAID Volumes: ▶ Volume0, RAIDO(Stripe), 1769.86GB, Normal	
Non-RAID Physical Disks: ▶ Port 6, ST1000DM003-1SB10C SN:S9A07WV0, 931.51GB ▶ Port 7, ST1000DM003-1SB10C SN:S9A07PJ6, 931.51GB	
	<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>



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

RAID VOLUME INFO		
Volume Actions		
▶ Delete		
Name:	Volume0	
RAID Level:	RAIDO(Stripe)	
Strip Size:	128KB	
Size:	1769.86GB	
Status:	Normal	
Bootable:	Yes	
Block size:	512	
RAID Member Disks:		++: Select Screen
	02 SN:29A7JLNM, 931.51GB	14: Select Item
	10FB0 SN:WD-WCAW35PL7F95, 931.51GB	Enter: Select
- FUNC 3, MDC MD1003FB12-0	10FB0 3N-MD-WCHW33FL7F33, 331.316B	+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit





6.1.3Configuring RAID in Legacy Boot Mode

Set RSTe working mode

Enter the BIOS Setup interface.

Move to the PlatForm page-->PCH Configuration-->PCH SATA Configuration

Aptio Setup Utility – Platform Configurat	Copyright (C) 2020 America ion	n Megatrends, Inc.
PCH SATA Configuration		▲ Enable or Disable SATA Controller
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 0 ENABLE NVRAM CRO PCIE Root Port Number NVRAM CR1 PCIE Root Port Number NVRAM CR1 PCIE Root Port Number NVRAM CR2 PCIE Root Port Number SATA Port 0 Software Preserve Port 0 Hot Plug Configure as eSATA Mechanical Presence Switch Spin Un Device	<pre>[Enable] [RAID] [Disable] [Enable] [Enable] [Disable] [Disable] [Disable] [Disable] [PCI Express Root P] [Disable] [PCI Express Root P] [Disable] [PCI Express Root P] [Not Installed] Unknown [Enable] [Enable] [Enable] [Enable] [Disable] [Enable] [Disable] [Enable] [Enable] [Disable]</pre>	<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

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.

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 American ion	n Megatrends, Inc.
PCH SATA Configuration		Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
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 0 ENABLE NVRAM CRO PCIE Root Port Number	[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]	++: Select Screen †↓: Select Item Enter: Select +/-: Change Opt. F1: General Help
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

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

```
Intel(R) Rapid Storage Technology enterprise - SATA Option ROM - 4.3.0.1018
Copyright(C) 2003-14 Intel Corporation. All Rights Reserved.
  RAID Volumes:
  None defined.
  Physical Devices:
        Device Model
                                                                Size Type/Status(Vol ID)
  ID
                            Serial #
        MB0500GCEHE
                                                            465.76B Non-RA1D Disk
                            WMAYP7344426
  1
        MM1000GBKAL
                             9XG5E7PH
                                                            931.5GB Non-RAID Disk
  3
Press (HIRE) to enter Configuration Utility...
```





If the working modes of both the sSATA and SATA controllers are set to RAID, the prompt "Press <CTRL-I> to enter Configuration Utility" will appear twice during the BIOS startup process, corresponding to the sSATA and SATA controllers in turn. Please configure RAID according to the The desired disk selection controller.

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

8 MB0500GCEHE WMAYP8272466 465.7G	
8 MB0500GCEHE WMAYP8272466 465.76	
	e Type/Status(Vol ID) B Non-RAID Disk B Non-RAID Disk B Non-RAID Disk

Figure 6-16

Table 1-37 Description of the RSTe configuration interface

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

Common tasks

Table 1- 37

Enter the RSTe configuration interface.



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	3. Reset Disks to Non-RAID 4. Mark Disks as Spare 5. Exit	
	Volumes: defined.	DISK/VOLUME		8
Phus	ical Devices:			
ID 8 1	Device Model MB2000GCWDA MM1000GBKAL	Serial # Z1Y1LPGY 9XG5DMCZ	Size Type/Status(Vol 1.8TB Non-RAID Disk 931.5GB Non-RAID Disk	ID)
	[11]	I-Select [ESC]-Exi	t [ENTER]-Select Menu	
		Figure 6-	- 17	

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

Name: RAID Level: Disks: Strip Size:	LD_RAID1 RAID1(Mirror) Select Disks N/A 10 GB Create Volume
Press ENTER t	[HELP]
[14]Change [TAB]-Nex	t [ESC]-Previous Menu [ENTER]-Select



Table 1-38 Parameter description

Parameter	Remarks
Name	The name of the RAID.
RAID	RAID level. RAID levels determine logical disk performance, fault tolerance,
Level	and capacity.
D' 1	Select the member disks that make up the RAID. After selecting the Disks
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.
Capacity	The capacity of the logical disk.

Table 1-38

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

		RAID Volume RAID Volume		Reset Disks to Non- Mark Disks as Spare Exit	
RAID ID Ø	Volunes: Name LD_RAID1	Level RAID1(Mirror)	Strip N∕A	Size Status 884.968 Normal	Bootable Yes
	ical Devices: Device Model MB2000GCWDA MM1000GBKAL	Serial # Z1X1RRN4 9XG6RFQ7		Size Type/Statu 1.8TB Member Dis 931.5GB Member Dis	us(Vol ID) sk(8)
	[+1]	-Select [ESC]-Exit	(FNT	R]-Select Menu	

Figure 6-19

To configure a hot spare disk:

Enter the RSTe configuration interface.

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



	C MAIN	MENU J
	e RAID Volume e RAID Volume	 Reset Disks to Non-RAID Mark Disks as Spare Exit
	DISK/VOLUME	
RAID Volumes: None defined.	L BIORAGEOUE	
Physical Devices:	¥	
ID Device Model	Serial #	Size Type/Status(Vol ID)
8 MB2000GCWDA 1 MM1000GBKAL	Z1Y1LPGY 9XG5DMCZ	1.8TB Non-RAID Disk 931.5GB Non-RAID Disk
[t]	1]-Select [ESC]-Exi	t [ENTER]-Select Menu

Figure 6-20

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



Figure 6-21





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

	Create RAID Vo Delete RAID Vo	lune	3. Reset Dis <mark>1. Mark Dis</mark> 5. Exit	sks to Non-RAID 35 as Spare
RAID Volumes None defined	:	DISK/VOLUME II	NFORMATION 1	
Physical Dev ID Device 0 MB2000G 1 MM1000G	Model Seri CWDA Z1Y1	LPGY	1.8TB	Type/Status(Vol ID) Mon-RAID Disk Spare Disk
	[14]-Select	[ESC]-Exit	[ENTER]-Select	t Menu

Figure 6-22

Delete RAID:

Enter the RSTe configuration interface.

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

Figure 6-23 RSTe configuration interface



	2. Delete H	ATD Volune	5. E	lark Disks as Spar Exit	e
RAID	Volumes:				
ID	Nane	Level	Strip	Size Status	Bootabl
0	LD_RAID1	RAID1(Mirror)	N/A	10.0GB Normal	Yes
Physi	cal Devices:				
ID	Device Model	Serial #		Size Type/Stat	us(Vol ID)
8	MB2000GCWDA	Z1X1RRN4		1.8TB Member Di	
1	MM1000GBKAL	9XG6RFQ7		931.5GB Member Di	sk(0)

Figure 6-23

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	-[DELETE VOLUME Drives	MENU]- Capacity	Status	Bootable
LD_RAID1	RAID1(Nir	ror) Z	10.868	Nornal	Yes
		C HELP]			
	Deleting a vo	lume will reset	the disks	to non-RAID.	
		: ALL DISK DATA			
	whan 100	a HLL DISK DHIH	WILL DE DE	LETED.	
	[14]Select [ESC1-Previous Me	nu [DEL]-	Delete Volume	
		Figure 6- 24	4		



6.2 RAID card configuring RAID

6.2.1 Configuring RAID in UEFI Boot Mode

Enter the RAID card configuration interface

During the server startup process, press Delete/Esc as prompted to enter the BIOS Setup interface. Select Advanced>AVAGO MegaRAID<AVAGO MegaRAID SAS 91311-8i>Configuration Utility, ad press Enter

and press Enter.

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) 20 Advanced	017 American Megatrends, Inc.
 Configuration Management Controller Management Virtual Drive Management Drive Management Hardware Components 	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.
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Figure 6-25

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 Management	Select Logical Disk Management to perform tasks such as viewing logical 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 Select Hardware		Select Hardware Components to view supercapacitor properties,			
Options (Overview			
Components 1		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.

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

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

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.

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

Aptio Setup Utility — C Advanced	opyright (C) 2017 American Megatrends, Inc.
 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.
Version 2.19.1268. Cop	yright (C) 2017 American Megatrends, Inc.

Figure 6-26

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





	Adva			tup Ut	ility -	Copyright	(C) 2017 Ame	erican	Megatrends, Inc.
DriveDrive	Port Port	4 - 4 -	7:01:05 7:01:06	: SAS, : SAS,	558GB, 558GB,	(Foreign)l (Foreign)l	nconfigure nconfigure nconfigure		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. C	opyright (C	:) 2017 Ameri	ican Me	egatrends, Inc.

Figure 6-27

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. Figure 6-28 Operation interface

Aptio Advanced	Setup Utility – Copyright (C) 2017 Americar	n 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 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
Versi	on 2.19.1268.Copyright (C) 2017 American ⊧	legatrends, Inc.

Figure 6-28

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



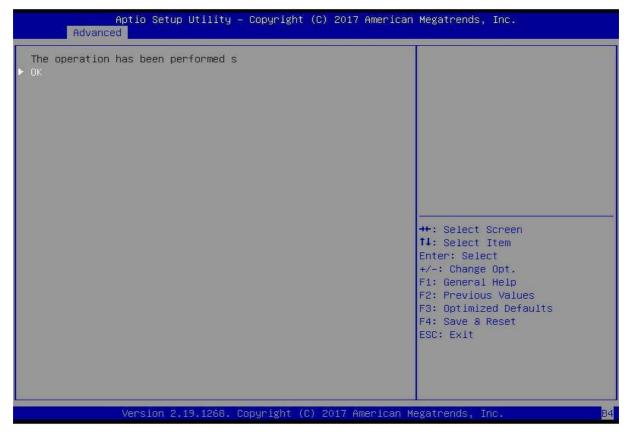


Figure 6-29 Select Go

Operation Go	[Make Unconfigured Bad]	Starts the selected operation or opens another form.
BASIC PROPERTIES:		
Drive ID	Port 4 - 7:01:04	
Status Size	[Unconfigured Good] 558 GB	
Туре	[Disk]	
Mode1	HUC101860CSS200	
Hardware Vendor Advanced	HGST	
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset
		ESC: Exit

Figure 6-29

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









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

Aptio Setup Utility – Copyright (C) Advanced	2017 American Megatrends, Inc.
 Configuration Management Controller Management Virtual Drive Management Drive Management Hardware Components 	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, 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. B4

Figure 6-31

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

Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
 Create Virtual Drive Create Profile Based Virtual Drive Clear Configuration 	Creates a virtual drive by selecting the RAID level, drives, and virtual drive parameters. ++: 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 Ma	egatrends, Inc.

Figure 6-32



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 American	Megatrends, Inc.
 Save Configuration Select RAID Level Protect Virtual Drive Select Drives From Select Drives CONFIGURE VIRTUAL DRIVE PARAMETER: 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 Select RAID Level RAID0 RAID1 RAID5 RAID6 RAID10	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 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 M	legatrends, Inc.

Figure 6-33

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



Datasheet

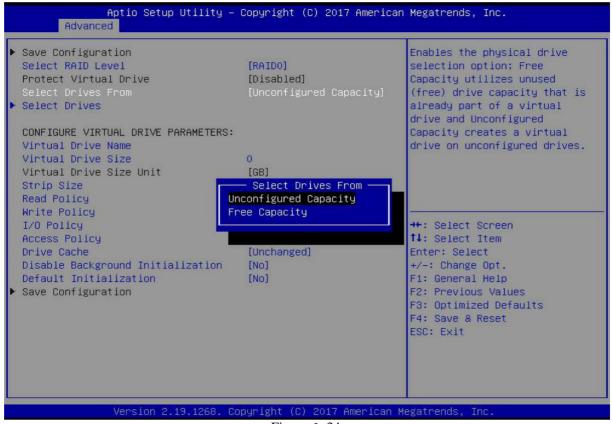


Figure 6-34

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

Figure 6-35 Select Select Drives

Aptio Setup Utility - Advanced	Copyright (C) 2017 Americar	n Megatrends, Inc.
 Save Configuration Select RAID Level Protect Virtual Drive Select Drives From Select Drives 	[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]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
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Figure 6-35





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.
 Apply Changes Select Media Type Select Interface Type Logical Sector Size 	(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 Drive Port 0 - 3:01:03: SAS, 558GB Check All Uncheck All	[Enabled] [Disabled] [Disabled] [Disabled]	
▶ Apply Changes		<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.

Figure 6-36

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

Advanced Save Configuration Select RAID Level Protect Virtual Drive Select Drives From	Copyright (C) 2017 American [RAIDO] [Disabled] [Unconfigured Capacity]	Megatrends, Inc. Assigns a name to identify the virtual drive.
 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 Save Configuration 	1116 [GB] [256 KB] [Read Ahead] [Mrite Back] [Direct] [Read/Write] [Unchanged] [No] [No]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.1268. Co	pyright (C) 2017 American M	legatrends, Inc.

Figure 6-37





Parameter Description

Virtual Drive Name	The name of the RAID, only supports letters, numbers and		
	underscores, 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		
Read Policy	Read cache strategy, divided into Read Ahead (open read cache) and No Read Ahead (close read cache)		
Write Policy	Write caching strategy, divided into Write Through (write-through 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 Policy	Read and write strategy, divided into Read/Write (read/write), Read 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



Datasheet

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". 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



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

Apt Advanced	io Setup Utility – Copyr	ight (C) 2017 f	American Megatrends,	Inc.
The operation has ▶ OK			++: Select : f4: Select Enter: Select +/-: Change F1: General F2: Previou: F3: Optimiz F4: Save & 1 ESC: Exit	Item ot Opt. Help s Values ed Defaults Reset
Ve	rsion 2.19.1268. Copyrig	ht (C) 2017 Ame	erican Megatrends, I	nc.

Figure 6-39



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

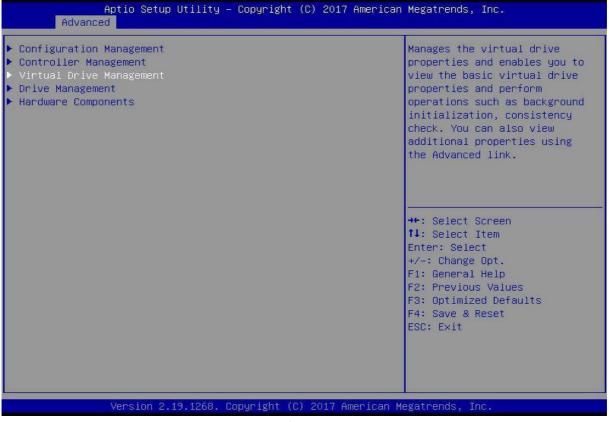


Figure 6-40



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

Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
Virtual Drive O: 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 t1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
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Figure 6-41

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





Advanced	lity – Copyright (C) 2017 Amer	itan Megatrenus, int.
Operation	[Select operation]	Lists the operations that you
BASIC PROPERTIES:		can perform on a virtual drive.
Name		
Raid Level	[RAIDO]	
Status	[Optimal]	
Size ▶ View Associated Drives	1116 GB	
 View Associated Drives Advanced 		
Huvanceu		
		++: Select Screen
		14: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit
	268. Copyright (C) 2017 Americ	

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. 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 6-43, select Drive Management on the RAID card configuration interface, and press Enter.

Figure 6-43 RAID card configuration interface



Datasheet

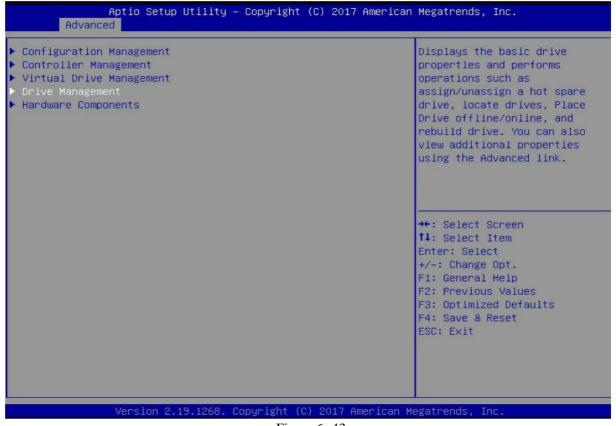


Figure 6-43

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

 Drive Port 0 - 3:01:00: SAS, 5586B, Online, (512B) Drive Port 0 - 3:01:01: SAS, 5586B, Unconfigured Good, (Drive Port 0 - 3:01:03: SAS, 5586B, Unconfigured Good, (Drive Port 0 - 3:01:03: SAS, 5586B, Unconfigured Good, (Guida 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 F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit 	1	Ap [.] Advanced	tio Setu	p Utility −	Copyright	: (C) 2017	American	Megatrends, Inc.
	▶ Drive F ▶ Drive F	Port 0 – 3 Port 0 – 3	:01:01: :01:02:	SAS, 558GB, SAS, 558GB,	Online, Unconfigu	(512B) ured Good,		<pre>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 t1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset</pre>

Figure 6-44





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 Setur Advanced) Utility – Copyright (C) 2017 Americar	h 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] 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.
Version 2.	.19.1268. Copyright (C) 2017 American ⊧	legatrends, Inc.

Figure 6-45





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

Advanced	ility – Copyright (C) 2017 American	r Megatrenus, inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Assign Global Hot S] Port O – 3:01:02 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	Starts the selected operation or opens another form. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt.
	1268. Copyright (C) 2017 American M	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

Figure 6-46

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) 2017 Amer	rican Megatrends,	Inc.
If you choose a global hot spare d Confirm Yes No	[Enabled]		++: Select S f4: Select S Enter: Select +/-: Change F1: General F2: Previous F3: Optimize F4: Save & F ESC: Exit	Item Ct Opt. Help s Values ed Defaults
Version 2.19.1268. Co	pyright (C Figure		can Megatrends, In	ю.

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







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) 2017 American Megatrends, Inc. Advanced Configuration Management Manages the virtual drive Controller Management properties and enables you to view the basic virtual drive Drive Management properties and perform Hardware Components operations such as background initialization, consistency check. You can also view additional properties using the Advanced link. ↔+: 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,

Figure 6-44

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



Datasheet

Apti Advanced	o Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
	AIDO, 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 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Ven	sion 2.19.1268. Copyright (C)	2017 American Megatrends, Inc.

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

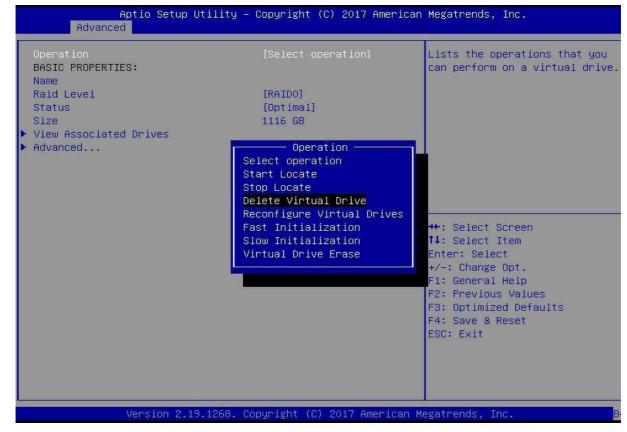


Figure 6-51





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

Operation Go BASIC PROPERTIES:	[Delete Virtual Drive]	Starts the selected operation or opens another form.
Name Raid Level Status Size View Associated Drives Advanced	[RAIDO] [Optimal] 1116 GB	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

Figure 6-5 2

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



Figure 6-5 3





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 6-5 4

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

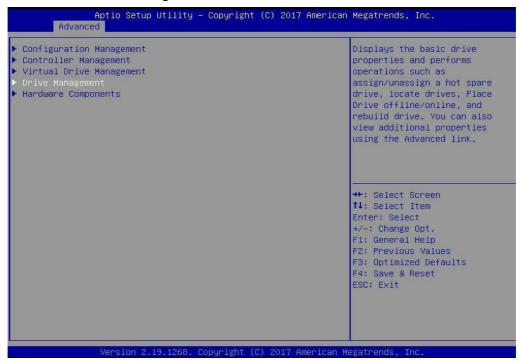


Figure 6-5 5





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

 Drive Port 0 - 3:01:00: SAS, 5586B, Unconfigured Good, (Drive Port 0 - 3:01:01: SAS, 5586B, Unconfigured Good, (Drive Port 0 - 3:01:02: SAS, 5586B, Unconfigured Good, (Drive Port 0 - 3:01:02: SAS, 5586B, Unconfigured Good, (Drive Port 0 - 3:01:02: SAS, 5586B, Unconfigured Good, (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 F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit 	Aptio Setup Ut. Advanced	ility – Copyright (C)	2017 American	Megatrends, Inc.
11: Select ItemEnter: Select+/-: Change Opt.F1: General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & Reset	▶ Drive Port 0 - 3:01:01: SAS,	558GB, Unconfigured G	iood, (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
				<pre>†↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset</pre>

Figure 6-5 6

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

Figure 6-57 Operation interface

Drive +: Select Screen 1: Select Item nter: Select /-: Change Opt. 1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
ne

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



Figure 6-58 Select Go

Operation Go	[Start Locate]	Starts the selected operation or opens another form.
BASIC PROPERTIES: Drive ID	Port 0 – 3:01:00	
Status	[Unconfigured Good]	
Size Type	558 GB [Disk]	
Model	HUC101860CSS200	
Hardware Vendor Advanced	HGST	
		++: Select Screen
		↑↓: Select Item Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

Figure 6-5 8

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

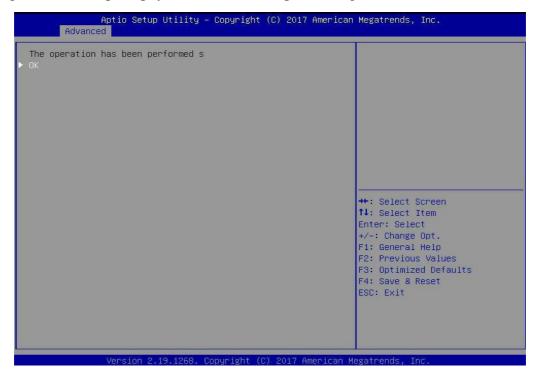


Figure 6-5 9

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

Aptio Setup Utility – Copyright (C) Advanced	2017 American Megatrends, Inc.
 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
Version 2.19.1268. Copyright (C) 2	017 American Megatrends, Inc.

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 Americ Advanced ▶ Virtual Drive 0: 111, RAIDO, 1116GB, Optimal	Displays the properties of a
♥ VI (UAI D) IVE 0. III, KHIDO, IIIUGD, Op(Immai	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 & Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American	

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	Itility – 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 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.
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 Ut: Advanced	ility – Copyright (C) 2017 Am	erican Megatrends, Inc.
Operation Go BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Start Locate] 111 [RAIDO] [Optimal] 1116 GB	Starts the selected operation or opens another form.
		++: 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 Amer Figure 6-63	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

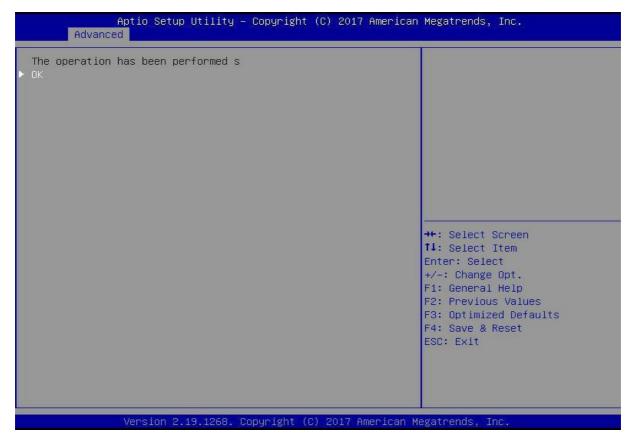


Figure 6-64

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





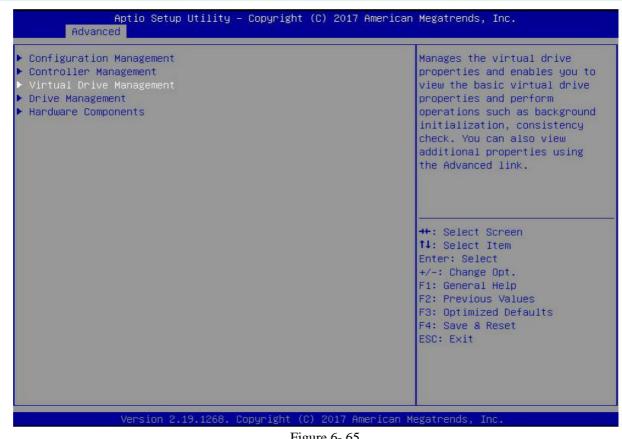


Figure 6-65

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



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

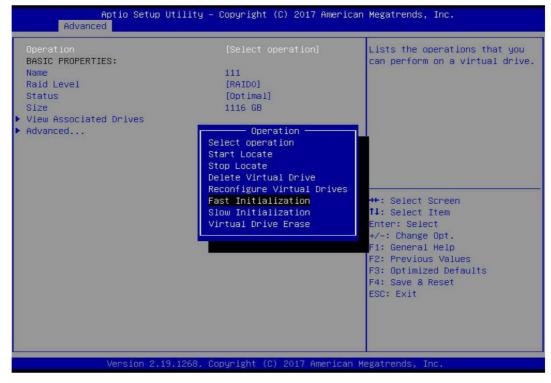


Figure 6-67

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	an 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.
		<pre> ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.12	68. Copyright (C) 2017 American	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 Advanced) 2017 American Megatrends, Inc.
Initializing a Virtual Drive will Confirm [Enabled] Yes No	<pre>**: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C)	2017 American Megatrends Inc

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







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



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

rt 0 - 3:01:0	0: SAS, 558GB, 1: SAS, 558GB		2B)	Displays the properties of a
	2: SAS, 558GB,	Unconfigured		<pre>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.</pre>
				F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
				t 0 – 3:01:03: SAS, 558GB, Unconfigured Good, (





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 Uti Advanced	lity – Copyright (C) 2017 Americar	h 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 2.19.1	268. Copyright (C) 2017American ⊧	legatrends, Inc.

Figure 6-73





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

Aptio Setup L Advanced	Itility – Copyright (C) 2017 Ameri	can Megatrends, Inc.
Operation ▶ Go BASIC PROPERTIES:	[Initialize Drive]	Starts the selected operation or opens another form.
Drive ID Status Size Type Model Hardware Vendor ► Advanced	Port 0 – 3:01:02 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19).1268. Copyright (C) 2017 America	n Megatrends, Inc.





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) 20	017 American	Megatrends,	Inc.
Initializing a Drive may result in Confirm Yes No	[Enabled]		++: Select S TJ: Select I Enter: Selec +/-: Change F1: General F2: Previous F3: Optimize F4: Save & F ESC: Exit	tem t Opt. Help Values d Defaults
Version 2.19.1268. Co	pyright (C) 201	7 American Me	gatrends, Ir	iC.

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

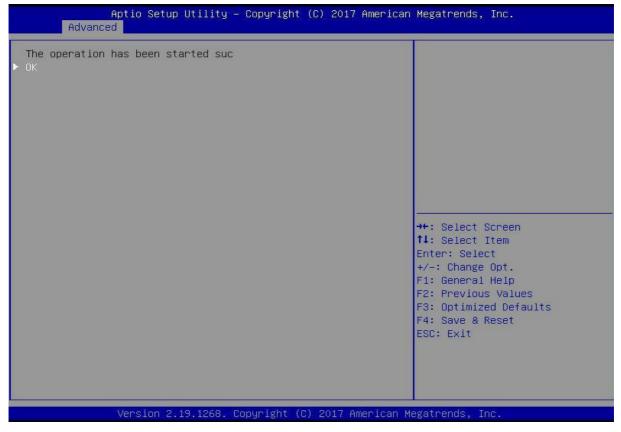


Figure 6-76





Aptio Setup Utility – Copyright (C) 2017 American Advanced Erase disk data:) Megatrends, Inc.
This function is oused to delete data in side the disk? hcluding era Drive Port 0 - 3:01:01: SAS, 5586B, Online, (512B) disk data.orive Port 0 - 3:01:02: SAS, 5586B, Unconfigured Good, (Erase physical disk data ^{03:} SAS, 5586B, Unconfigured Good, (As shown in Figure 6-77, select Drive Management on the RAII and press Enter. Figure 6-77 RAID card configuration interface	perform several operations (such as Rebuild, Initialize drive), view basic properties
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American M	legatrends Inc
	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 M	egatrends, Inc.



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



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

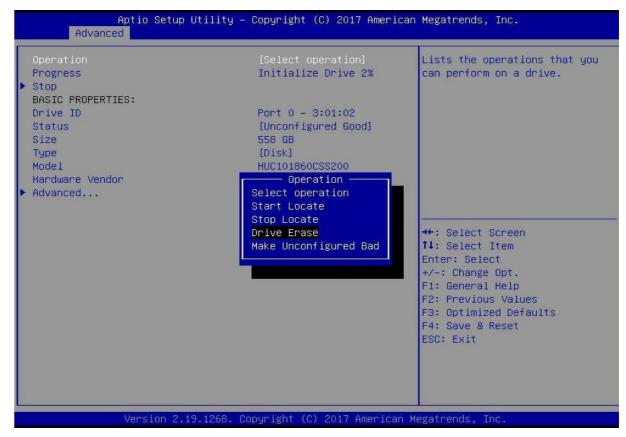


Figure 6-79

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

Aptio Setup Ut Advanced	ility – Copyright (C) 2017 Ameri	can Megatrends, Inc.
Operation Erase Mode Progress Stop BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Drive Erase] [Simple] Initialize Drive 4% Port 0 - 3:01:02 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 Erase Mode Simple Normal Thorough	Performs the erase operation on the drive. The possible modes are Simple, Normal and Thorough.
Version 2.19.	1268. Copyright (C) 2017 America	n Megatrends. Inc.

Figure 6-80

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

Aptio Setup L Advanced	Jtility – Copyright (C) 2017 Ameri	.can Megatrends, Inc.
Operation Erase Mode ▶ Go BASIC PROPERTIES:	[Drive Erase] [Simple]	Starts the selected operation or opens another form.
Drive ID Status Size Type Model Hardware Vendor Advanced	Port 0 – 3:01:02 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	
		<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & 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

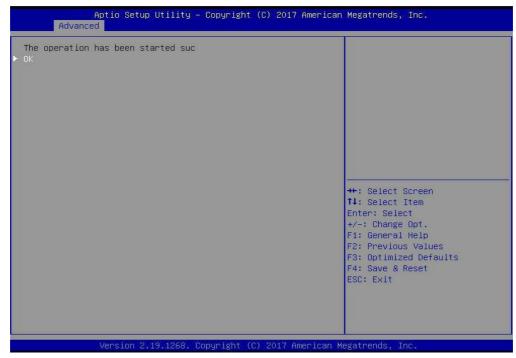


Figure 6-83

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) 201 Advanced	7 American Megatrends, Inc.
Advanced 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 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 Megatrends, Inc.

Figure 6-46

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



Datasheet

Advanced Advanced	Megatrends, Inc.
• 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. ++: 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 ⊨	legatrends, Inc.

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 L Advanced	Jtility – 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.
Version 2.19	9.1268. Copyright (C) 2017 American	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

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Operation Erase Mode Delete After Erase Go BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Virtual Drive Erase] [Simple] [Disabled] 111 [RAIDO] [Optimal] 1116 GB Erase Mode Simple Normal Thorough	Performs the erase operation on the virtual drive. The possible modes are Simple, Normal and Thorough. ++: 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 Co	pyright (C) 2017 American M	egatrends Inc

Figure 6-87

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

Aptio Setup Utili Advanced	ty – 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	
r huvanceu		<pre>→+: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
		F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.126	3. Copyright (C) 2017 American	Megatrends, Inc.



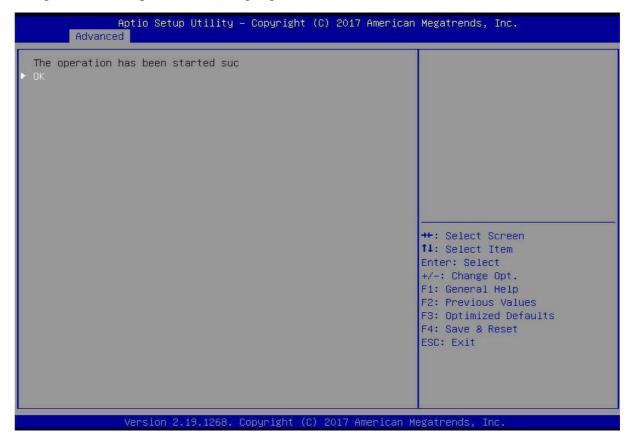
Enter the interface shown in Figure 6-89, select Confirm to enable it, select Yes, and press Enter. Figure 6-89 Confirm Erase

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Advanced When you perform virtual drive era Confirm Yes No	[Enabled]	++: 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. 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



Datasheet



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

 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.
	<pre>→+: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>

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

Aptio Setup Utility – Copyright (C) 2017 American M Advanced	Megatrends, Inc.
2 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	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 f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American Me	gatrends, Inc.





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 Ut Advanced	ility – Copyright (C) 2017 Ameria	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.
- HuvanuEu	Select operation Start Locate Stop Locate Delete Virtual Drive Reconfigure Virtual Drives Fast Initialization Slow Initialization Virtual Drive Erase	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.	1268. Copyright (C) 2017 America	n Megatrends, Inc.

Figure 6-93

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

Operation	[Reconfigure Virtual]	Starts the selected operation
Go		or opens another form.
BASIC PROPERTIES: Name	111	
Raid Level	[RAIDO]	
Status	[Optimal]	
Size	1116 GB	
View Associated Drives		
Advanced		
		++: Select Screen
		t↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit





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

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced		
RAID LEVEL MIGRATION/CAPACITY EXPANSION PROPERTIES: New RAID Level [RAIDO] Add Drives > Start Operation	Selects a new RAID level for the selected virtual drive. The default value is the current RAID level. ++: Select Screen 14: Select Item	
Version 2.19.1268. Copyright (C) 2017 Americ	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit	

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		
 Apply Changes Select Media Type Select Interface Type Logical Sector Size CHOOSE UNCONFIGURED DRIVES: Drive Port 0 - 3:01:03: SAS, 55868 Check All Uncheck All Apply Changes 	[HDD] [Both] [Both] [Enabled]	Submits the changes made to the entire form.
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>





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 Ame	erican Megatrends, Inc.	
Advanced Selecting these Drives will cause Confirm Yes No	[Enabled]	<pre>**: Select Screen **: Select Screen **: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>	
Version 2 19 1268	Copyright (C) 2017 Ameri	ican Medatronds Inc	

Figure 6-97

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

Aptio Setup Utility – Copyright (C) 2017 Ameri Advanced	ican Megatrends, Inc.
RAID LEVEL MIGRATION/CAPACITY EXPANSION PROPERTIES: New RAID Level [RAIDO] Add Drives Start Operation	Starts reconstruction of the selected virtual drive. Once this operation is in progress, it cannot be cancelled.
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 America	an Megatrends, Inc.





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

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Operation Progress BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	<pre>[Select operation] Reconstruction 0% 111 [RAIDO] [Optimal] 1116 GB</pre>	Lists the operations that you can perform on a virtual drive. ++: 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) 2017 American M	egatrends, Inc.





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.
 Configuration Management Controller Management Virtual Drive Management Drive Management Hardware Components 	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) 20	17 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



Datasheet

Clearing the Foreign Configuration		
Confirm Yes No	[Enabled]	
		<pre>**: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>
		n Megatrends, Inc.

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

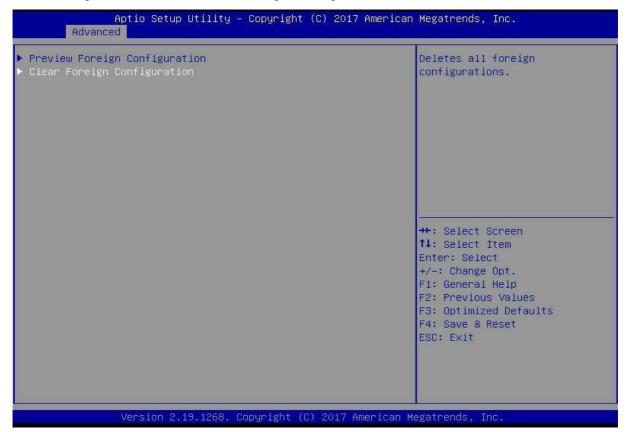


Figure 6- 103

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



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

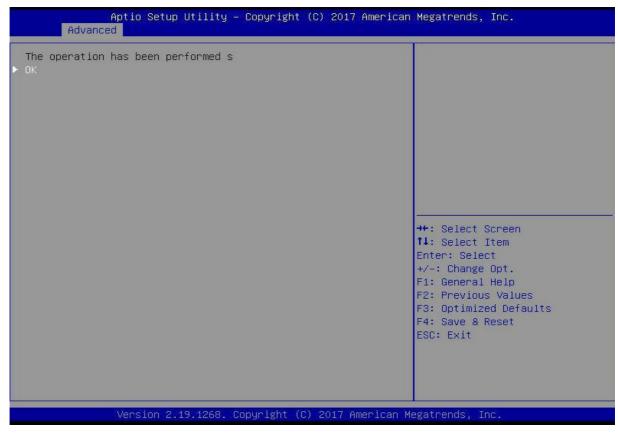


Figure 6- 105



6.2.2 Configuring RAID in Legacy Boot Mode

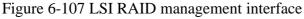
Enter the RAID card configuration interface

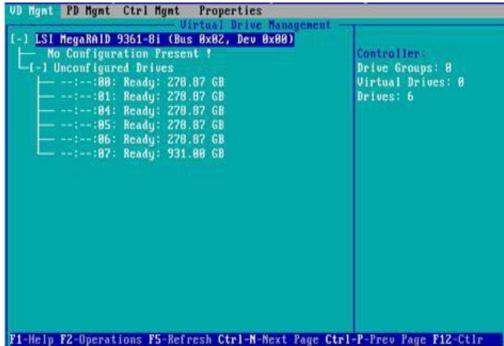
During the BIOS startup, when the interface shown in Figure 6-105 is displayed, press Ctrl+R. Figure 6-106 Press Ctrl+R according to the prompt during BIOS startup

	Status: t Number		01	
D LUN	VENDOR	PRODUCT	REVISION	CAPACITY
8 8 838 848 288 298 388		AVAGO MegaRAID SAS 9361-Bi MM1000GBKAL MM1000GBKAL MM1000GBKAL EG0300FBVFL EG0300FBVFL EG0300FBVFL Virtual Drive	4.658.80-6121 HPGC HPGC HPGC HPDC HPDS HPDC RAIDØ	1024HB 953869HB 953869HB 953869HB 286102HB 286102HB 286102HB 286102HB 5120HB

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.









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

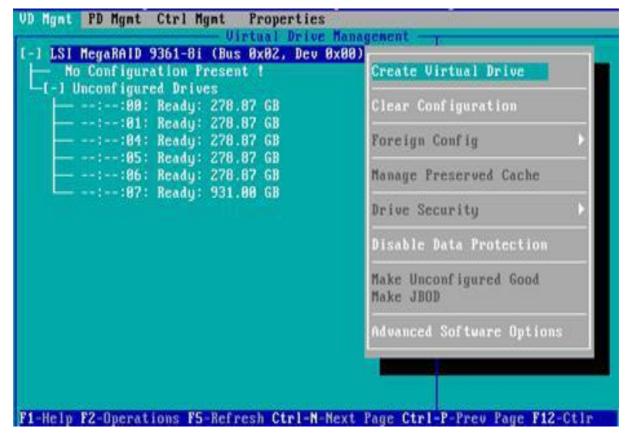


Figure 6- 108

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	PD per Span	: <u>N/A</u>		
	RAID-5	ID	Type :		
ata Protection:	RAID-6	[]:-:08			
	RAID-18	[1::81		28.87 GB	
	RAID-50	[]::84		78.87 GB	
	BAID-68	[]::85		78.87 GB	199
	1000	[]:-:86			
		[]:-:87	512e 9	31.88 GB	100
- Basic Settings		-	-		
Size:		Advance		08	CANCEL
The second second		100406000			
Nane:					



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

Figure 6-110 Select disk

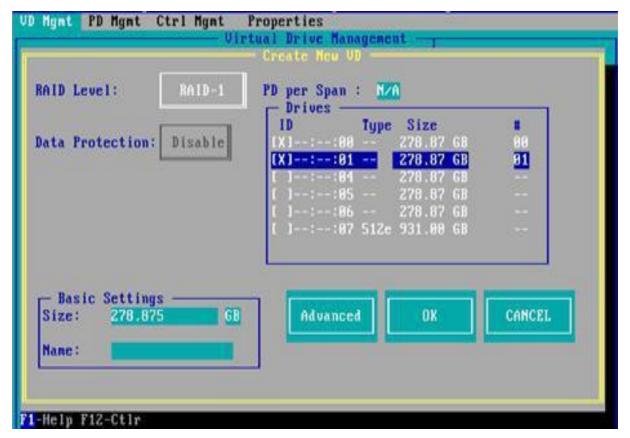


Figure 6- 110

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





AID Level:		r Span : 🕅)	
	ID	Type	Size	
ata Protection: Di		-::00		80 81
		-::84		0.1
		-::85		
		-::06		100
		:-:07 512e	931.88 GB	-
- Basic Settings Size: <mark>20.000</mark>		Advanced	OK	CANCEL
Nane: Js1_				

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

	Create	cale New VD Virtual Drive-Advanced	
AID Leve	Strip Size: 256K	B [] I Initialize	
ata Prot	Read Policy: Ahea	t 1 Configure Hot	Spare
	Write Policy: Write B	lack with	
	I/O Policy: Direc		ĸ
Basic Size: Name:	Disk cache Policy	ged	ICEL



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 Drives	
ata Protection: Disable	ID Type Size IX1::88 278.87 GB IX1::81 278.87 GB IX1::81 278.87 GB I 1:-:84 278.87 GB I 1:-:85 278.87 GB I 1:-:85 278.87 GB I 1:-::85 278.87 GB I 1::-::86 278.87 GB I 1::-::86 278.87 GB	80 81
Basic Settings	Advanced OK	CANCEL

Figure 6- 113

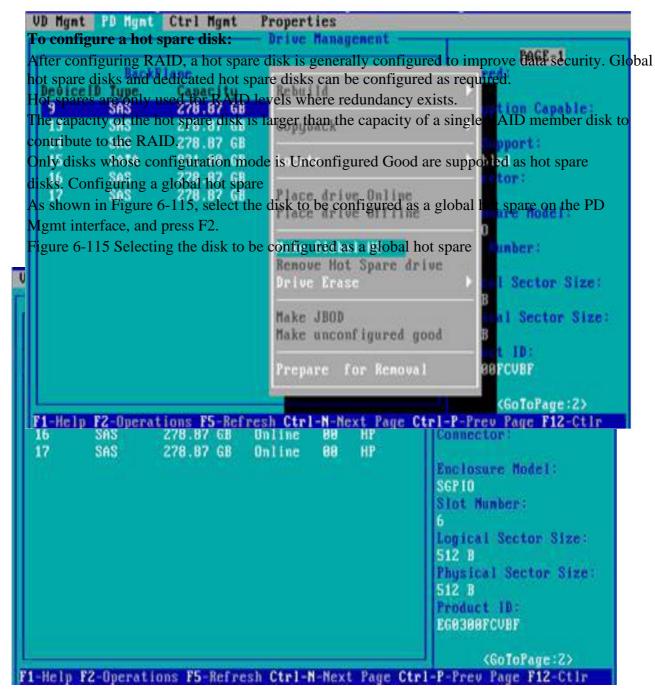
Select the RAID to be viewed and press Enter to view the detailed information of the RAID (including the RAID name, level, and disk information), as shown in Figure 6-114. Figure 6-114 Viewing RAID information

- General	SSD Caching Details
lane: <u>Js1</u>	
Size: 20.000 GB	
Strip Size: 256 KB	
VD State : Optimal	
- Operations	
Progress : M/A	
Time Left : N/A	Advanced DR CANCEL

Figure 6- 114







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





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

		- Drive Man	was.		PAGE-1
evice ID 9 13 14 15 16 17	lanc Capacity 278.87 GB 278.87 GB 278.87 GB 931.80 GB 278.87 GB 278.87 GB	State Hotspare UG UG Online Online	D6 88 88	Vendor HP HP ATA HP HP	Secured: No Encryption Capable: No EKM Support: Disabled Connector: Enclosure Model: SGPIO Slot Number: 6 Logical Sector Size: 512 B Physical Sector Size 512 B Physical Sector Size 512 B Product ID: EG0300FCUBF
					(GoToPage:2)

Figure 6-117 Viewing global hot spare disk information

Figure 6- 117

Delete 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





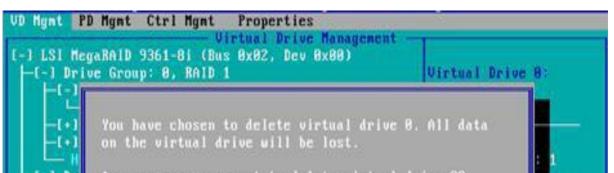
Enter the interface shown in Figure 6-119, select Delete VD, and press Enter. Figure 6-119 Select Delete VD

LD: 0, ys1, 20.00 GB -[+] Drives -[+] Available size: 258.87 GB	Initialization Consistency Check	
<pre>Int spare drives Interpretation Interpretatio Interpretation Interpretation Interpretation</pre>	Delete VD	- tual Drives: 1 ves: 2
	Properties	— z Cap.: 258.87 GB z Arcas: 1
	Expand VD size	
	Erase 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





						PAGE-1
		lane			The second second	Secured:
eviceID		Capacity	State	DG	Vendor	No
9	SAS	278.87 GB	UG		HP	Encryption Capable:
13	SAS	278.87 GB	UG		HP	No
14	SAS	278.87 GB	UG		HP	EKM Support:
15	SATA	931.00 GB	UG		ATA	Disabled
16	SAS	278.87 GB	Online	88	HP	Connector:
17	SAS	278.87 GB	Online	88	HP	a second s
						Enclosure Model:
						SGP 10
						Slot Mumber:
						6
						Logical Sector Size:
						512 B
						Physical Sector Size:
						512 B
						Product ID:
			Figure 6-	- 120		EG0300FCUBF

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



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

Figure 6-122 Select Locate->Start

VD Mgmt	PD Mgnt	Ctrl Mgnt	Properties - Drive Management	
<u>.</u>	Back	lane		PAGE-1
Device 9	ID Type SAS	Capacity 278.87 GB	Rebuild	tion Capable:
13	SAS	278.87 GB	Copyback	Citra capitores
14 15	SAS Sata	278.87 GB 931.88 GB	Locate	> Start
16 17	SAS SAS	278.87 GB 278.87 GB	Place drive Online Place drive Offline	Stop Rennen mit
			Make Global HS Remove Hot Spare drive	fumber:
			Drive Erase	
			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 esh Ctrl-N-Next Page Ctrl-	GoToPage:2> P-Prev Page F12-Ctlr

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

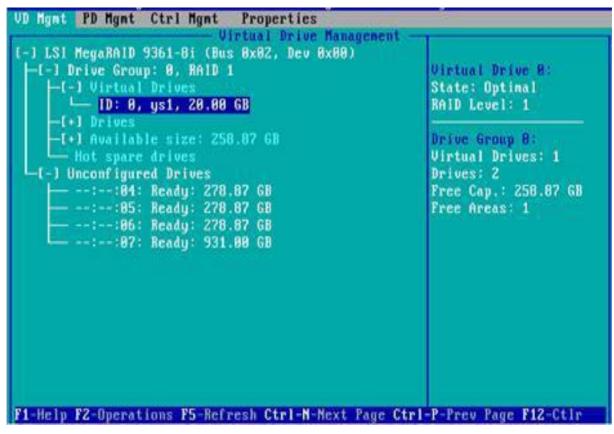


Figure 6- 123

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





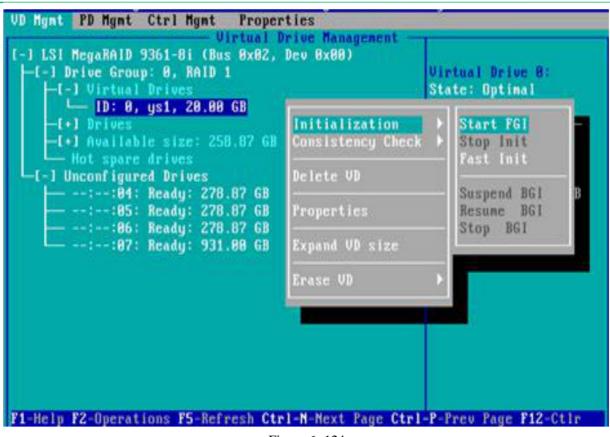


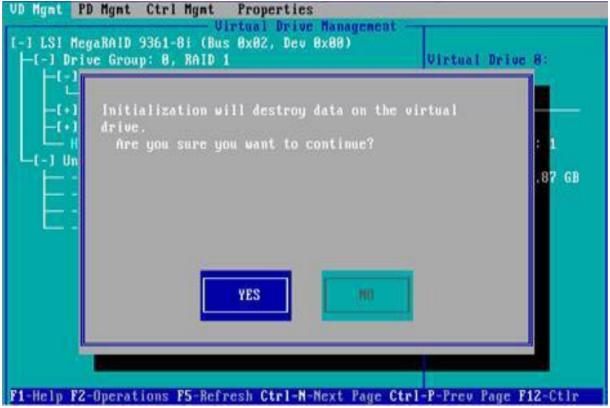
Figure 6- 124

BGI: Background 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 Ground 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





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

		- Drive Ma	mage	Monte.	PAGE-1
evice 9 13 14 15 16 17	lane Capacity 278.87 GB 278.87 GB 278.87 GB 931.99 GB 278.87 GB 278.87 GB	State UG UG UG UG Online Online	06 - - - 88 88	Vendor HP HP ATA HP HP	Secured: No Encryption Capable: No EKM Support: Disabled Connector: Enclosure Model: SGP10 Slot Mumber: 6 Logical Sector Size: 512 B Physical Sector Size 512 B
					Product ID: EG0300FCUBF (GoToPage:2)

Figure 6- 126

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

Figure 6-127 Select Erase Mode

Datasheet



	Back	Plane		PAGE-1
	ID Type	Capacity	Rebuild	A second seco
9 13 14	SAS SAS SAS	278.87 GB 278.87 GB 278.87 GB	Copyback	<pre>ption Capable: ppport:</pre>
15 16	SATA	931.80 GB 278.87 GB	Locate	bled tor:
17	SAS	278.87 GB	Place drive Online Place drive Offline	ure Model:
			Make Global HS Remove Hot Spare drive Drive Erase	, unber:
			Make JBOD Make unconfigured good	
			Prepare for Removal	Stop Erase

Figure 6- 127

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



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 .

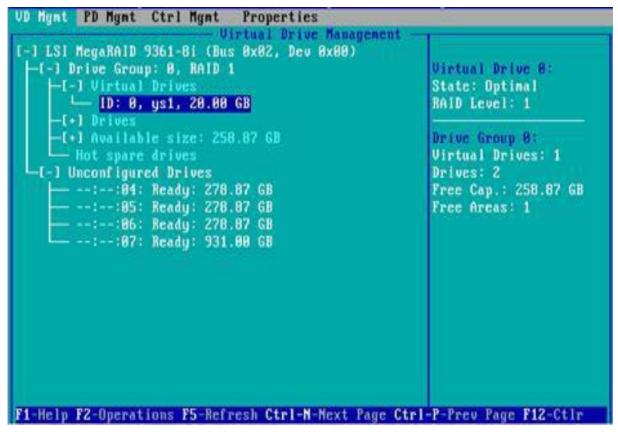


Figure 6- 129





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

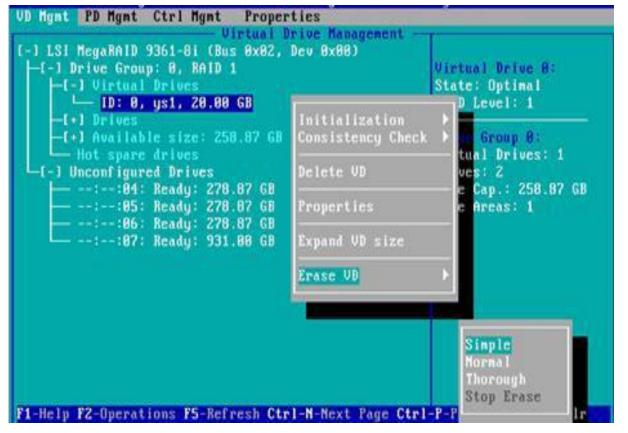


Figure 6- 130

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



Figure 6-133



Chapter 7 IPMI Deployment

7.1 Deployment of IPMI Process

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

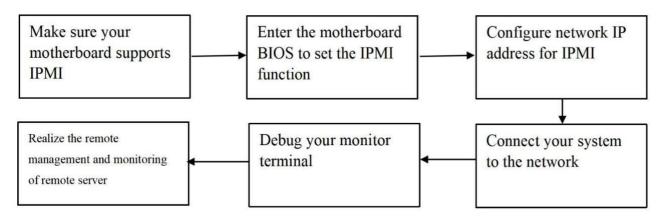


Figure 7-1 IPMI deployment process

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 port for the motherboard, or you can choose a shared network port, as shown in Figure 7-2.

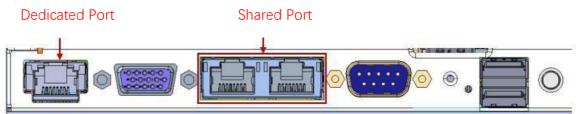


Figure 7-2 Motherboard dedicated network port

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.



Datasheet

BIOS Information	G3DCL 0.05 x64	Set the Date. Use Tab to switch between Date elements.
Project Version Build Date and Time	06/19/2020 11:28:13	and the second
BMC Firmware Revision	1.00.0	Default Ranges: Year: 1998-9999
ME Firmware Version	04:4.1.4.256	Months: 1-12
ME FINNWAR'E VERSION	0H:4.1.4.256	Days: Dependent on month
CPLD name		Range of Years may vary.
CPLD version	01	Hunge of fears may vary.
Build Date and Time	06/11/2020	
Daria Date and Time	00/11/2020	
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 A Socket Server Mgmt Security	
 BMC Self Test Status BMC Device ID BMC Device Revision BMC Firmware Revision IPMI Version System Event Log BMC network configuration View System Event Log BMC Warm Reset 	PASSED 32 1 1.4.2 2.0	Press <enter> to change the SEL event log configuration. ++: Select Screen 11: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</enter>
Version 2.1	9.1268. Copyright (C) 2017 Ame	rican Megatrends, 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.



Datasheet

Current Configuration Address sourDynaStation IP address0.0.Subnet mask0.0.Station MAC address11-2Router IP address0.0.Router MAC address00-0BMC Sharelink Management Channel0Configuration Address source[UnsCurrent Configuration Address sourDyna	0.0 2–33–aa–bb–cc	channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Configuration Address source[UnsCurrent Configuration Address sourDynaStation IP address0.0.Subnet mask0.0.Station MAC address11-2Router IP address0.0.Router MAC address0.0.BMC Sharelink Management Channel00-0Configuration Address source[UnsCurrent Configuration Address sourceDyna	mmicAddressBmcDhcp 0.0 22–33–aa–bb–cc 0.0 00–00–00–00	BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Station IP address0.0.Subnet mask0.0.Station MAC address11-2Router IP address0.0.Router MAC address00-0BMC Sharelink Management Channel0Configuration Address source[UnsCurrent Configuration Address sourceDyna	0.0 0.0 22–33–aa–bb–cc 0.0 00–00–00–00	parameters during BIOS phase
Subnet mask 0.0. Station MAC address 11-2 Router IP address 0.0. Router MAC address 00-0 BMC Sharelink Management Channel 00 Configuration Address source [Uns Current Configuration Address sour Dyna	0.0 22-33-aa-bb-cc 0.0 00-00-00-00-00 specified]	
Station MAC address 11-2 Router IP address 0.0. Router MAC address 00-0 BMC Sharelink Management Channel 00 Configuration Address source [Uns Current Configuration Address source Dyna	22–33–aa–bb–cc 0.0 00–00–00–00–00 specified]	++: Select Screen
Router IP address 0.0. Router MAC address 00-0 BMC Sharelink Management Channel 0000 Configuration Address source [Uns Current Configuration Address source]	0.0 00-00-00-00-00 specified]	++: Select Screen
Router MAC address 00-0 BMC Sharelink Management Channel Configuration Address source [Uns Current Configuration Address sour Dyna	00-00-00-00 specified]	++: Select Screen
BMC Sharelink Management Channel Configuration Address source [Uns Current Configuration Address sour Dyna	specified]	
Configuration Address source [Uns Current Configuration Address sour Dyna		++: Select Screen
Current Configuration Address sour Dyna		++: Select Screen
	amicAddressBmcDhcp	Htt: Select Screen
Station IP address 192.	100 0 000	
Subnet mask 255.	168.0.236 255.252.0	↑↓: Select Item Enter: Select
	b-cc-00-00-01	+/-: Change Opt.
	168.1.1	F1: General Help
	00-00-00-00-00	F2: Previous Values
	0 00 00 00 00	F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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 Utility	y – Copyright (C) 2017 Americ Server Mgmt	an Megatrends, Inc.
BMC network configuration BMC Dedicated Management Channel Configuration Address source Current Configuration Address sou Station IP address Subnet mask Station MAC address Router IP address	[Unspecified] ur DynamicAddressBmcDhcp 0.0.0.0 0.0.0.0 11-22-33-aa-bb-cc 0.0.0.0	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 Ch Sta Configuration Address sourc Dyna	Configuration Address source becified ric amicBmcDhcp amicBmcNonDhcp aa-bb-cc-00-00-01 192.168.1.1 00-00-00-00-00	Select Screen Select Item r: 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 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 interface configuration Static mode

If you choose to configure Static mode for an IPMI interface, 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 interface.

	Copyright (C) 2017 Americ Server Mgmt	an Megatrends, Inc.
BMC network configuration		Enter router IP address
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	
BMC Sharelink Management Channel Configuration Address source Station IP address Subnet mask Station MAC address Router IP address Router MAC address	[Static] 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 fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit</pre>

Figure 7-7 Satic Mode Settings

We have completed the operation of configuring the IPMI function.



Datasheet

7.1.4 IPMI configuration Java SOL

- 1. Press the 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 COM0 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 192.168.0.120 (for example, passwords, messages, or credit cards).
NET-ERR_CERT_AUTHORITY_INVALID
Hide advanced Go back
This server couldn't prove that it's 192.168.0.120 ; 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.

Figure 7-9 IPMI management login interface

7.2.2 Default Username and Password

Factory default username: admin

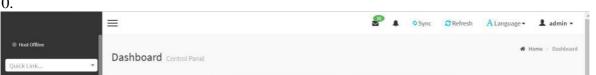
Factory default password: admin

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.





IPMI management interface menu description

(1) 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, Motherboard 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.

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

(2) 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.

(3) System list

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.

(4) 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.

(5) Power consumption

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

(6) FRU information

Datasheet



Select this menu to view basic FRU information.

(7) Logs & Reports

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

(8) Settings

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

(9) Remote control

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

(10) Mirror redirection

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

(11) Maintenance

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

(12) Cancellation

Click to log out the current user's login.





7.2.4 Introduction to KVM Remote Management

Launch KVM remote management

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

line v	KVM & SOL KVM & SOL
ard	KVM
Inventory	Launch KVM
ormation	
Reports >	Serial Over LAN
s	
2 Control	📥 Activate
Redirection	
nance	



7.2.5 KVM page introduction

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

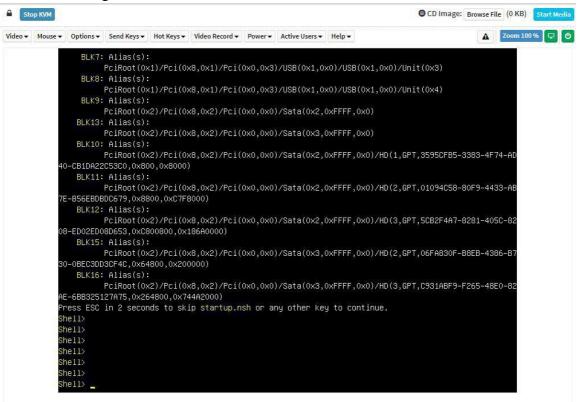


Figure 7-12 KVM interface

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

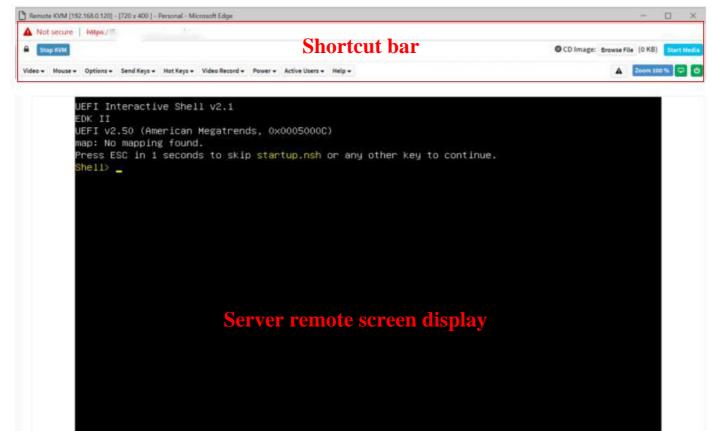




Figure 7-13 Composition of KVM interface

7.2.6 Remote control shortcut operation

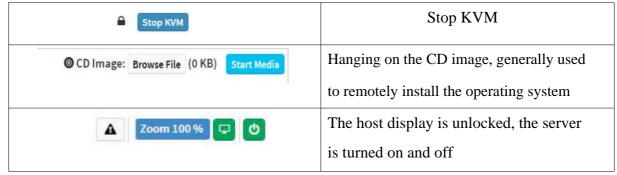


Table 1-41

7.2.7 Introduction to SOL

Click Activate Java SOL on the page shown in Figure 7-14 to open the interface shown in Figure 3-7 below.

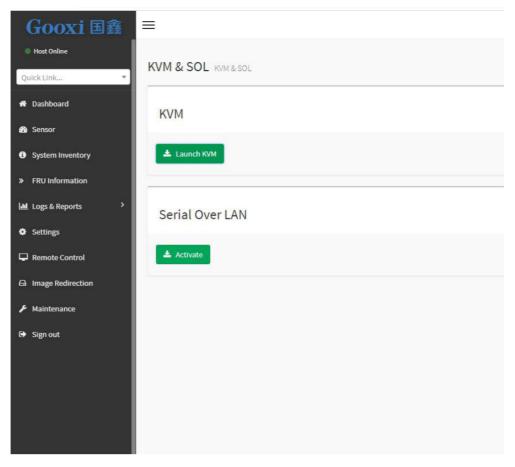




Figure 7-14 Enabling Java SOL

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

BIOS Information Project Version	G3DCL 0.05 ×64	Set the Date. Use Tab to 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.
Memory Information		F1: General Help F2: Previous Values
Total Memory	8192 MB	F3: Optimized Defaults
Usable Memory	8192 MB	F4: Save & Exit
System Date	[Fri 06/19/2020]	ESC: Exit
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, and also from Microsoft 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.