





# ROME platform 2U two-way server quasi-system



**User operation manual V1.0** 



### Foreword

This manual is the user's operation manual of SNR RE series of ROME dual-channel high-density server quasi-system, which mainly introduces and explains the characteristic parameters, system architecture, installation mode and basic operation of this product. This ROME dual-channel high-density server of SNR is divided into various models, such as 2U8, 2U12, 2U25, 4U24 and 4U36. This product has low energy consumption and flexible expansion This manual is mainly for 2U models (model: SNR-SR2208RE; SNR-SR2212RE; SNR-SR2225RE).

This manual is for the reference of professional system integrators and personal computer technicians. This product should only be installed and maintained by experienced technicians.



# **Manual framework**

#### The first chapter safety statement

This section describes some environmental conditions, precautions and explanations of laws and regulations related to this product.

#### **Chapter II Product Introduction**

This section provides the specifications of the main components of the system and describes the main characteristics of each model of SNR RE series.

#### **Chapter III Installation of System Components**

This section describes the installation methods and main precautions of various main system components using Rome dual cabinet server.

#### The fourth chapter cabinet installation system

This section describes the steps and precautions for installing and putting on the rack by using the guide rails provided with Rome dual-channel cabinet server.

#### The fifth chapter BIOS parameter setting instructions

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

#### **Chapter VI Description of RAID Settings**

This chapter mainly introduces how to set up RAID.

#### **Chapter 7 IPMI Rapid Deployment**

This chapter focuses on how to deploy IPMI quickly.

#### **Chapter VIII Technical Specifications of Products**

This chapter focuses on the main technical specifications of Rome 2-socket server quasi-system



#### **Explanation:**

noun	interpretation
AMD EPYC™ 7002	ROME series processors
White gold medal efficiency power supply	The white gold certified power supply is the "80 PLUS Platinum" standard, that is, the conversion rate of 20% load is Over 90%, the conversion rate of 50% load is over 94%, and the conversion rate of 100% load is over 91%
M.2	M.2 interface is a new generation interface standard tailored for Ultrabook, which is Intel <sup>®</sup> A new interface specification introduced to replace mSATA
RJ45	Common name of standard 8-bit modular interface
AST2500	Aspeed <sup>®</sup> BMC chip
8038 fan	A fan measuring 80x80x38mm
LGA4094	The full name is Land Grid Array, grid array package, and LGA4094 represents 4094 contacts
CR2032	It is 3V CR2032 lithium manganese battery, which is shaped like a button, referred to as button cell or lithium manganese button battery for short
RS-232	One of the communication interfaces on the computer is the asynchronous transmission standard interface, which is called COM port
Jtag	Joint Test Action Group, a joint test working group, is mainly used for chip internal testing
NC Pin	Empty pin

#### Abbreviation

Explain the abbreviations used in this paper, and provide the full English name and Chinese explanation of each abbreviation, as shown in the following table:

abbreviation	original text	Chinese meaning
GbE	Gigabit Ethernet	gigabit Ethernet
BMC	Baseboard Management Controller	baseboard management controller
IPMI	Intelligent Platform Management	intelligent platform management interface
	Interface	
CPU	Central Processing Unit	СРИ
SATA	Serial Advanced Technology	Serial ATA interface specification
	Attachment	
SAS	Serial Attached SCSI	Serial SCSI
sSATA	secondary SATA	Expand SATA interface
LAN	Local Area Network	local area network
VGA	Video Graphics Array	Video transmission standard
MB	Mother Board	mainboard
BP	Backplane	rear panel



PCIE	Peripheral Component Interconnect	Extended bus standard for high-speed serial computers
	Express	
USB	Universal Serial Bus	Universal serial bus
FW	Firmware	firmware
TPM	Trusted Platform Module	Trusted platform module
ю	Input/Output	in-out
BIOS	Basic Input-Output System	Basic Input/Output System
CMOS	Complementary Metal Oxide	complementary metal oxide semiconductor
	Semiconductor	
ME	Management Engine	Management engine
DDR4	Double Data Rate 4 SDRAM	The fourth generation double data rate synchronous dynamic random
		access memory
		reservoir
DIMM	Dual-Inline-Memory-Modules	Dual in-line memory module
RDIMM	Registered DIMM	Two-wire memory module with register
LRDIMM	Load-Reduced DIMM	Low load DIMM
KVM	Keyboard Video Mouse	By directly connecting the keyboard, video and mouse ports,
		Ability to access and control computers
CPLD	Complex Programmable Logic Device	Complex programmable logic device
ECC	Error Correcting Code	error correcting code
CFM	Cubic Feet Per Minute	Cubic feet per minute
RPM	Revolution Per Minute	Turn every minute





#### Symbolic convention:

Note: If it is used to transmit equipment or environmental safety warning messages, it may lead to equipment replacement, data loss, equipment performance degradation or other unpredictable results.

Narning: used to warn of potential dangerous situations, which may lead to death or serious

personal injury. Red arrow: indicates pointing to a certain position.

Blue arrow: indicates the action of pulling out or

inserting downward or inserting obliquely. Empty arrow:

indicates the next action or result.

Dark blue rotating arrow 1: indicates clockwise screwing or

outward pulling. Dark blue rotating arrow 2: It represents the

action of turning the screw counterclockwise or screwing it

inward



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### **Chapter one Safety statement**

### 1.1 General safety matters

#### To prevent the risk of significant personal and property damage, 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. Please do not touch the triangle marking part with lightning symbol because there may be high voltage or electric shock.

Remember: disconnect all cables before carrying out

maintenance.(there may be more than one cable) it is strictly forbidden

to start the machine before the cover plate is closed.

When it is necessary to open the cover, please wait for the internal equipment to cool before performing, otherwise it is easy to cause scald to you. Do not use this equipment 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 must be physically connected to the ground. If you are not sure whether the grounding protection is safe, please contact the appropriate organization or electrician for confirmation. Please for advice if you need to route the winch cable.

Please use three core power cord and socket with grounding protection. Incorrect grounding may lead to leakage, burning, explosion and even personal injury. Please make sure that the power socket and the power interface are in close contact. Loose contact may cause fire hazard.

Please use your computer under the voltage of 220V AC. working at an inappropriate voltage will cause electric shock, fire

and damage to the computer.

The computer should be well ventilated and away from heat sources and fire sources. Do 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 to be able to plug and pull the power cord from the power supply and power socket conveniently. Please keep the power cord and plug clean and intact, otherwise there may be electric shock or fire hazard.

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

Keep the computer away from electromagnetic fields.

Keep away from electronic noise caused by high-frequency safety equipment such as air-conditioning fan, large motor, radio and television transmitting tower.

Please do not plug the backplane or move the computer while the computer is running, otherwise the computer may be down or damaged. Please try to avoid frequent restart or on-off to prolong the service life of the computer.

Please keep the environment clean and avoid dust. The working environment temperature of the equipment is 10 °C ~ 35 °C, and the humidity is  $35\% \sim 80\%$ .

Please back up important data in time. NAG is not responsible for data loss caused by any circumstances. This product uses optical disc drive for class 1 laser equipment.





Figure 1-1

### **1.2** Name and content identification table of toxic and harmful substances or elements in products

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

Dort nomo	Harmful substances							
Part name								
	Lead	Mercury	Cadmium	Hexavalent	Polybrominated	Polybrominated		
	(PB)	(Hg)	(CD)	chromium	biphenyls	diphenyl		
				(CR VI)	(PBB)	ethers (PBDE)		
Chassis / bezel	Х	0	0	0	0	0		
Mechanical components (fan,	х	О	о	о	0	0		
radiator, motor, etc.)								
Printed circuit components - PCA*	х	О	о	о	0	О		
Cable / wire / connector	х	Ο	О	О	0	0		
Hard disk drive	х	0	0	0	0	0		

Table 1-1

Part name		Harmful substances					
		Mer cury (Hg)	Cad mium (CD)	Hexavale nt chromiu m (CR VI)	Polybromina ted biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)	
Media reading / storage device (CD, etc.)	x	0	0	0	о	0	
Power supply unit / power adapter	х	0	0	0	0	0	
power cord	х	0	0	0	0	0	
Pointing devices (mouse, etc.)	х	0	0	0	0	0	
keyboard	х	0	0	0	0	0	
UPS	х	0	0	0	0	0	
Complete cabinet/ rail products	х	х	0	0	0	0	

Table 1-2

O - It means that the content of the toxic and harmful substance in all homogeneous materials of the component is below the limit requirement specified in GB / t26572-2011 "limit requirements for restricted substances in electronic and electrical products".

X - indicates that the content of the toxic and harmful substance in at least one homogeneous material of the component exceeds the limit requirement 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: this table shows the status of toxic and harmful substances in all possible components of SNR server, memory and workstation products. Customers can refer to this table for the toxic and harmful substances in each part of the purchased products.



### 1.3 Warning notice

This product meets the EMC class a standard.

### **1.4** Climatic and environmental requirements

- The best working temperature of the equipment is 10 °C 40 °C; the maximum indoor environment temperature of • the equipment is 45 °C.
- System battery: 3 V CR2032 lithium battery.

Note: some configurations have been verified for performance at 45 ° C and 90% (29 ° C maximum dew point) humidity.

temperature				
working temperature	10 $^\circ~$ C to 40 $^\circ~$ C (41 $^\circ~$ f to 104 $^\circ~$ f) with a maximum			
5 1	temperature gradient of 10 $\degree$ C per hour			
Continuous operating temperature range	5 $^\circ$ C to 40 $^\circ$ C (41 $^\circ$ f to 104 $^\circ$ f) without direct light			
(below altitude 950	on the equipment.			
M or 3117 ft)				
Storage temperature range	$^-$ 40 $^\circ$ C to 70 $^\circ$ C ( $^-$ 40 $^\circ$ f to 158 $^\circ$ f)			
humidity				
storage	The relative humidity ranges from 5% to 95% at a			
	maximum dew point of 33 $^\circ$ C (91 $^\circ$ f).The air must			
	never condense.			
Continuous operating humidity	When the maximum dew point is 26 $\degree$ C (78.8 $\degree$ f), the			
percentage range	relative humidity is 10%			
	То 80%.			

Table 1 – 3

- If the computer environment lightning protection facilities are poor or not, please shut down the computer in thunderstorm weather, and unplug the power line, network cable, telephone line, etc. connected to the computer.
- Please use genuine operating system and software, and configure it correctly. NAG is not responsible for the maintenance of server failures caused by operating system and software.
- Please do not disassemble the chassis or increase or decrease the server hardware configuration. 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 identify and troubleshoot 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 of the computer and can prolong the service life of the computer. NAG reserves the right of final interpretation of the above clauses

#### 1.5 Other important descriptions

( if the equipment is marked with a sign, it means that the equipment with the logo is only designed and evaluated according to 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 sign, it means that the equipment with the label is only designed and evaluated

according to the 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 using in tropical climate conditions".



# **Chapter two Product introduction**

### 2.1 System introduction

SNR RE series dual channel server quasi system is a dual channel cabinet server which is widely used by SNR for Internet, IDC (Internet Data Center), cloud computing, enterprise market and telecom business application. 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 workload. The server has the advantages of low energy consumption, strong scalability, high reliability, easy management and deployment.

### 2.2 system configuration

SNR RE series server quasi system includes 2u8 disk, 2u12 disk and 2u25 disk. In addition to different hard disk connection mode and compatible maximum number of hard disk, other specifications are the same.

#### **2.2.1** system parameter

	System Unification
System model	SNR-SR2208RE; SNR-SR2212RE; SNR-SR2225RE
Chassis	SNR 2U cabinet chassis
mainboard	G1DLRO-B
CPU	Support 2 AMD epyc <sup>™</sup> 7002 processor
Memory	Support DDR4 rdimm / Irdimm / 3dsIrdimm / nvdimm-n server Memory and memory frequency support 2666 / 2933 / 3200mhz; A single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs, and two CPUs support a total of 32 DDR4 slots; the single capacity is 16GB, 32GB, 64GB, 128GB, 256gb, and the maximum memory capacity of the whole machine is 8tb. Note: in order to make the system more stable, it is recommended to use amd compatibility list memory.
Hard disk	Front support 8 / 12 / 25 3.5 or 2.5-inch hot swap hard disks The rear supports four 3.5-inch and four 2.5-inch hot swappable hard disks or eight 2.5-inch hot swappable hard disks Plug in hard disk
Network function	Support two RJ45 gigabit network ports
Management interface	1 RJ45 IPMI management network port
Display function	Aspeed <sup>®</sup> ast2500 64MB, with 1 standard VGA extended by custom high density connector Interface
M.2	Support two m.2 interfaces
USB	Two standard USB3.0 interfaces are extended by custom high-density connectors, and one is built-in USB3.0
Expansion	Supports up to 11 PCIe expansion slots



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# Datasheet

Slots			
Power Supply	The system supports 550W, 800W, 1200W, 1300W, 1600W hot swap		
,	redundant white		
	Gold efficiency power supply		
System fan	The system supports 4 8038 temperature control fans (8056 temperature		
	control fans are optional)		
System size	798mm * 433.4mm * 87.6mm (L * w * h)		
Contains india	2u8 net weight 17.8kg, gross weight 24.55kg		
System weight	The net weight and gross weight of 2u12 are 17.4kg and 28.55kg		
	respectively		
	2u25 net weight 18.5 kg, gross weight 29.55 kg		
System board			
Motherboard	G1DLRO-B		
Motherboard model	G1DLRO—B		
Motherboard model processor	G1DLRO−B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (Iga4094)		
Motherboard model processor Number of	G1DLRO−B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (lga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU		
Motherboard model processor Number of memory slots	G1DLRO−B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (Iga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU		
Motherboard model processor Number of memory slots Memory	G1DLRO—B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (Iga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU Support DDR4 2666 / 2933 / 3200 rdimm / Irdimm / 3ds-Irdimm/		
Motherboard model processor Number of memory slots Memory support types	G1DLRO—B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (Iga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU Support DDR4 2666 / 2933 / 3200 rdimm / Irdimm / 3ds-Irdimm/ Nvdimm-n server memory		
Motherboard model processor Number of memory slots Memory support types	G1DLRO—B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (lga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU Support DDR4 2666 / 2933 / 3200 rdimm / Irdimm / 3ds-Irdimm/ Nvdimm-n server memory 16GB, 32GB, 64GB (RDIMM)		
Motherboard model processor Number of memory slots Memory support types Memory size	G1DLRO—B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (lga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU Support DDR4 2666 / 2933 / 3200 rdimm / Irdimm / 3ds-Irdimm/ Nvdimm-n server memory 16GB, 32GB, 64GB (RDIMM) 32GB, 64GB (LRDIMM)		
Motherboard model processor Number of memory slots Memory support types Memory size	G1DLRO—B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (lga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU Support DDR4 2666 / 2933 / 3200 rdimm / Irdimm / 3ds-Irdimm/ Nvdimm-n server memory 16GB, 32GB, 64GB (RDIMM) 32GB, 64GB (LRDIMM) 64GB, 128GB, 256GB (LRDIMM 3DS)		
Motherboard model processor Number of memory slots Memory support types Memory size Hard disk	G1DLRO—B AMD EPYC <sup>™</sup> 7002 Series CPU dual socket P (lga4094) Supports 32 DDR4 DIMM sockets with 16 memory modules per CPU Support DDR4 2666 / 2933 / 3200 rdimm / Irdimm / 3ds-Irdimm/ Nvdimm-n server memory 16GB, 32GB, 64GB (RDIMM) 32GB, 64GB (LRDIMM) 64GB, 128GB, 256GB (LRDIMM 3DS) Two sata3.0 DOM ports (7pin), two sata3.0 (7pin), three minisas		

	Support IPMI 2.0			
IPMI	IPMI 2.0 supports network mapped virtual storage devices and KVM			
	Support aspeed®ast2500 BMC			
network card	Two Intel®i350-am2 1gbe network interfaces			
Expansion of PCle	2 pcies4.0 X32; 1 pcie4.0 x16;			
	1 pcie4.0 X8; 2 pcies4.0 x2; 2 slimline X8;			
VGA	Extend a standard VGA interface with custom high-density connector			
USB	One built-in USB3.0 interface and two USB3.0 extensions through custom			
	high-density connectors			
System power sup	ply			
Quantity of	Support 2			
power supply				
Power supply	The system supports 550W, 800W, 1200W, 1300W, 1600W hot swap			
characteristics	redundant white			
	Gold efficiency power supply			
input voltage	100-127Vac/200-240Vac 47Hz ~ 63Hz / 240vdc (mainland China only)			



SN	R

output voltage	+12Vdc		
System fan			
Number of fans	The system supports 4 8038 temperature control fans (8056 temperature		
	control fans are optional)		
Fan voltage	12(10.8-12.6) Vdc		
Fan current	4A (4.4A Max)		
Fan speed	14000 + / - 10% RPM maximum		
Fan airflow	3.2m 3 / min (141.9 CFM), minimum 2.63m m3 / min (125.8 CFM)		
Fan pressure	Minimum 657.5 PA, maximum 800 pa		
Operating system	support		
	Windows Server 2016/2019		
	Vmware vSphere 6.7 u3		
	Vmware vSphere 6.5 EP15		
Support	Citrixt Hyperxisor 8.1		
operating	Redhat RHEL 8.0.2		
system	Redhat RHEL 7.6.6		
	Suse SLES 15 SP1		
	Suse SLES 14 SP4		
	Canonical Ubuntu 18.04.3 LTS		
	Canonical Ubuntu 16.04.6 LTS		
System ambient te	emperature		
System operating	Operating temperature: 10 °C ~ 40 °C; non-operating temperature: - 40 °C ~		
temperature	70 °C		
System	Operating humidity: 35% - 80%; non-operating humidity: 20% - 90%		
temperature and			
humidity			
Safety certification	1		
authentication	UL CE CCC ROHS		





### 2.2.2 system architecture

SNR RE series server is a server quasi system based on AMD Rome platform. The system supports 2U height and the

maximum support is 280W

CPU, supporting up to 32 memories. The system uses a general motherboard, the motherboard name is g1dlro-b, and the front panel can support 8 / 12 / 25 SATA / SAS hard disks, of which 8 disks are referred to as 2u8, 12 disks are referred to as 2u12, and 25 disks are referred to as 2u25.

The main board features are as follows:

- The CPU adopts AMD epyc<sup>™</sup> 7002 series processor, Iga4094 seat, TDP power consumption 280W;
- A single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs, and two CPUs support a total of 32 DDR4 slots; a single CPU supports a single capacity of 16GB, 32GB, 64GB, 128GB, 256gb, and the maximum memory capacity of the whole machine is 8tb;
- DDR4 type: DDR4 2666 / 2933 / 3200mhz ecc-rdimm / Irdimm / 3ds Irdimm / nvdimm-n;
- There are three groups of PCIe riser slots on the board, including: riser1 32 PCIe lanes from cpu0, 32 PCIe lanes of riser2 from CPU1, and 16 PCIe lanes of riser3 from CPU1;
- The g1dlro-b motherboard provides two m.2 key m SSD slots, supports 2280 size, and only supports pcie4.0 x2 signal;
- Two gigabit network ports are integrated on the motherboard, using i350-am2 chip;
- The BMC chip in the board adopts ast2500 control chip of a speed company, which is used for IPMI remote management, VGA output port and dedicated Gigabit RJ45 management network port.

The main board diagram of system architecture is as follows:



Figure 2-1



### 2.3 Introduction of system model specifications

#### SNR-SR2208RE



?

Figure 2	-2
----------	----

Product	SNR-SR2208RE
name	
processor	Supports two AMD epyc 7002 series processors
	Up to 280W
Motherboa	G1DLRO-B
rd model	
	Support DDR4 rdimm / Irdimm / 3ds Irdimm / nvdimm-n server memory;
Memory (system)	Memory frequency supports 2666 / 2933 / 3200mhz; A single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs, and two CPUs support a total of 32 DDR4 slots; a single CPU supports a single capacity of 16GB, 32GB, 64GB, 128GB, 256gb, and the maximum memory capacity of the whole machine is 8tb
	Note: in order to make the system more stable, it is recommended to use amd
	compatibility list memory
Expansion	1 PCle 4.0 X32 from cpu0 1 PCle 4.0 X32 from CPU1 1 1 PCle 4.0 x16 from CPU1
Caru	1 Pcie4.0 X8 from cpu0 (ocp3.0 interface)
	2 Pcie4.0 X8 from CPU1 (slimline)
	Front end supports up to 8 3.5 / 2.5-inch SAS / SATA (HDD / SSD)
Hard disk	The rear supports up to four 2.5-inch and four 3.5-inch SAS / SATA (HDD / SSD) or
	eight 2.5-inch
	Inch SAS / SATA (HDD / SSD); on board 3 * 8643 interface, 2 * SATA DOM, 2 * sata3.0
M.2 SSD	2 x m.2 pcie4.0 X2 (2280)
LAN	Two Gigabit RJ45 data network ports on board
	Front port: 2 USB3.0
External	Post port: 1 VGA, 2 USB3.0, 1 management network port, 2 RJ45 data network ports,
μοτι	1
	DB-9 COM ports





Administrat	The onboard IBMC management module supports IPMI, sol, KVM over IP, virtual		
ion	media and other management features		
System fan	Support up to 4 8038 fans (optional 8056 fans)		
Power	Platinum grade 550W, 800W, 1200W, 1300W, 1600W hot swap redundant power		
Supply	supply		
	International power adaptation)		
Dimensions	2U cabinet type, 798 * 433.4 * 87.6mm		



#### SNR-SR2212RE



#### Figure 2-3

Product name	SNR-SR2212RE
processor	It supports two AMD epyc 7002 series processors with a maximum support of 280W
Motherboard	G1DLRO-B
model	
	Support DDR4 rdimm / Irdimm / 3ds Irdimm / nvdimm-n server memory;
	Memory frequency supports 2666 / 2933 / 3200mhz;
Memory	A single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs, and two
(system)	CPUs support a total of 32 DDR4 slots; a single CPU supports a single capacity of
	16GB, 32GB, 64GB, 128GB, 256gb, and the maximum memory capacity of the
	whole machine is 8tb
	Note: in order to make the system more stable, it is recommended to use amd
	compatibility list memory
	1 PCIe 4.0 X32 from cpu0 1 PCIe
Expansion card	4.0 X32 from CPU1 1 1 PCIe 4.0
	x16 from CPU1
	Pcie4.0 X8 from cpu0 (ocp3.0 interface);
	0 x 8 from CPU1 (slimline);
	Up to 12 3.5 / 2.5 inch SAS / SATA (HDD / SSD)
Hard disk	The rear supports four 2.5-inch and four 3.5-inch SAS / SATA (HDD / SSD) or eight
	2.5-inch
	Inch SAS / SATA (HDD / SSD); on board 3 * 8643 interface, 2 * SATA DOM, 2 *
	sata3.0
M.2 SSD	2 x m.2 pcie4.0 X2 (2280)
LAN	Two Gigabit RJ45 data network ports on board
	Front port: 2 USB3.0
External	Post port: 1 VGA, 2 USB3.0, 1 management network port, 2 RJ45 data network
port	ports, 1



	DB-9 COM ports
Administration	The onboard IBMC management module supports IPMI, sol, KVM over IP, virtual
	media and other management features
	nature
System fan	Support up to 4 8038 fans (optional 8056 fans)
Power Supply	Platinum grade 550W, 800W, 1200W, 1300W, 1600W hot swap redundant power
	supply (according to
	Actual power adaptation)
Dimensions	2U cabinet type, 798 * 433.4 * 87.6mm



#### SNR-SR2225RE



Figure 2-4

Product name	SNR-SR2225RE		
processor	It supports two AMD epyc 7002 series processors with a maximum support of		
	280W		
Motherboard	G1DLRO-B		
model			
	Support DDR4 rdimm / Irdimm / 3ds Irdimm / nvdimm-n server memory;		
Memory (system)	Memory frequency supports 2666 / 2933 / 3200mhz; A single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs, and two CPUs support a total of 32 DDR4 slots; a single CPU supports a single capacity of 16GB, 32GB, 64GB, 128GB, 256gb, and the maximum memory capacity of the whole machine is 8tb		
	Note: in order to make the system more stable, it is recommended to use amd		
	compatibility list memory		
Expansion	4.0 X32 from CPU1 1 1 PCIe 4.0 x16 from CPU1		
Caru	1 Pcie4.0 X8 from cpu0 (ocp3.0 interface)		
	2 Pcie4.0 X8 from CPU1 (slimline)		
	Up to 25 2.5 inch SAS / SATA (HDD / SSD)		
Hard disk	The rear supports four 2.5-inch and four 3.5-inch SAS / SATA (HDD / SSD) or eight		
	2.5-inch		
	Inch SAS / SATA (HDD / SSD); on board 3 * 8643 interface, 2 * SATA DOM, 2 * sata3.0		
M.2 SSD	2 x m.2 pcie4.0 X2 (2280)		
LAN	Two Gigabit RJ45 data network ports on board		
	Front port: 2 USB3.0		
External port	Post port: 1 VGA, 2 USB3.0, 1 management network port, 2 RJ45 data network		
	ports, 1		
	DB-9 COM ports		
Admi	The onboard IBMC management module supports IPMI, sol, KVM over IP, virtual		
nistr	media and other management features		
ation nature			



System fan	Support up to 4 8038 fans (optional 8056 fans)
Pow	Platinum grade 550W, 800W, 1200W, 1300W, 1600W hot swap redundant power
er	supply (according to
Supp	Actual power adaptation)
ly	
Dimensions	2U cabinet type, 798 * 433.4 * 87.6mm



### 2.4 Introduction of system components

### **2.4.1** Front panel assembly



SNR-SR2212RE



Figure 2-6

Serial numb	name	Serial numb	name
er		er	
1	3.5-inch hard disk	3	USB3.0 interface
2	VGA interface		



#### SNR-SR2225RE



Serial numb	name	Serial numb	name
er		er	
1	3.5-inch hard disk	3	USB3.0 interface
2	VGA interface		

#### Front panel interface description Table 1-10

name	type	explai	
		n	
VGA interface	DB15	Used to connect a display terminal, such as a display or KVM.	
USB interface	USB 3.0	The USB interface is provided, through which the USB device can be connected. Note: please make sure the USB device is in good condition when using the external USB device	
		Good, otherwise it may cause the server to work abnormally.	

Table 1 - 11

Description of front panel indicator lights and buttons



Figure 2-8



Serial numb	Indicator light / button	Serial numb	Indicator light / button
er		er	
1	Power switch button / indicator	5	System alarm indicator
2	Uid button / indicator	6	Network port 1 connection status indicator
3	Reset restart server button	7	Network port 2 connection status indicator
4	Hard disk indicator		

LED status			
description			
identifi	Indicator light / button	Status	
cation		description	
	Power indicator	Power indicator Description: Green (always on): indicates that the device has been powered on normally. Green (flashing): indicates that the device is in standby mode. Green off: indicates that the device is not powered on.	
		Description of power button:	
		Press the button briefly in the power on state, and the OS will	
		shut down normally.	
		Press and hold the button for 6 seconds in the power on state	
		Forced power down.	
		When the power is on, press the button briefly to start the machine.	
		The uid button / indicator is used to locate the server to be operated conveniently. It can be remotely controlled by pressing	
		the uid button or BMC command to turn off or light on.	
	Uid button / indicator	Description of uid indicator light:	
		Blue (on / off): indicates that the server is located. Off:	
		indicates that the server is not located.	
		Uid button Description: short press the button to open / close	
		Positioning lamp.	
R	Reset restart server button	Press to restart the server	
	Hard disk indicator	Flashing green light: hard disk is running normally	
am		System alarm indicator. Including system alarm, fan alarm, power	
	System alarm indicator	alarm, etc., which can be viewed through IPMI management software	
		The Ethernet port indicator of the corresponding	
Jun	Network port connection status	network card Green (always on): indicates that the	
	indicator	network port is connected normally. Off: indicates	
	indicator	that the naturally part is not in use or fails	
		Note: it corresponds to two ige network ports on the	
		motherboard.	





. )		The Ethernet port indicator of the corresponding
/	Network port connection status	network card. Green (always on): indicates that the
	indicator	network port is connected normally. Off: indicates
		that the network port is not in use or fails.
		Note: it corresponds to two 1ge network ports on the
		motherboard.



### 2.4.2 Back panel assembly



#### $\diamond$ explain:

Serial numb	name	Serial numb	name
er		er	
1	Riser 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	AC interface of power module 1
5	RJ45 gigabit network port	11	Power module 2
6	COM port	12	AC interface of power module 2



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

#### Description of rear panel interface

name	type	number	explai
			n
VGA interface	DB15	1	Used to connect a display terminal, such as a display or
			KVM.
Management	GE BASE-T	1	Provide 1000mbit / s Ethernet port. Through this
network port			interface, the server can be managed.
USB interface	USB 3.0	2	The USB interface is provided, through which the USB device can be connected.
			be careful:
			Please confirm USB device status when using external
			USB device
			Good, otherwise the server may work abnormally.
RJ45 Gigabit	GEBASE-T	2	Server service network port.
Network			
mouth			
AC interface of power module	/	1 or 2	You can choose the number of power supply according to your actual needs, but make sure that the rated power of the power supply is greater than the rated power of the whole machine Rate.
COM port		1	Serial communication port
Ocp3.0 interface		1	Installing ocp3.0 network card

Table 1-15

#### Description of rear panel indicator lights and buttons



Figure 2-10

Serial	name	Serial	name
numb		numb	
er		er	
1	Connection status	5	Uid indicator
	indicator		
2	Data transmission status	6	Power module
	indicator		indicator
3	Connection status	7	Power module
	indicator		indicator
4	Data transmission status		
	indicator		

# **SNR**

# Datasheet

Table 1 - 16			
Indicator light /	Status		
button	descriptio		
	n		
Power module indicator	Green (always on): indicates that the input and output are normal. Red (always on): indicates that the input is normal, and there is no output due to power over temperature protection, power output over-current / short circuit, output over-voltage, short-circuit protection, device failure (excluding all device failures). Green (1Hz / flashing): it indicates that the input is normal, the power supply is turned off due to power on or on position; the input voltage is too low.		
	Green (4Hz / flashing): indicates that firmware is in the process of		
	online upgrade.		
	Off: indicates no AC power input.		
Connection status indicator	Long green light: indicates Gigabit link. Orange long light: it means 100MB link. Off: 10 mega link.		
Data transmission statusYellow (flashing): indicates that data is being transmitted.indicatorOff: indicates no data transmission.			
Uid indicator When it is on, the blue light will be on; if it is off, it will be o use the IPMI page Or the uid button on the server			



### 2.4.3 Motherboard assembly

All models share the motherboard components, and the interface description is shown in Figure 2-11



Figure 2-11

number	Module name
1	4Pin interface for 4U chassis fan control
2	Memory slot (corresponding to cpu0)
3	Memory slot (corresponding to CPU1)
4	CPUO
5	CPU1
6	GPU power 2 * 4 pin interface
7	BP power 2 * 4 pin interface
8	Sff8643 SATA interface
9	USB3.0 interface
10	BP I2C interface



11	PCIE4.0 X8
12	M.2
13	PCIE4.0 X16
14	1350
15	PCIE4.0 X16
16	IPMI RJ45 1Gb
17	VGA
18	LAN RJ45 1Gb*2
19	DB-9 COM port
20	USB3.0
21	OCP 82599
22	CPU1 PCIE4.0 X16
23	CPU1 PCIE4.0 X8
24	BP HDD LED
25	Slimline PCIE4.0 X8
26	CPRS PSU
27	GPU Power
28	CPRS PSU
29	RISER POW
30	BP Power
31	FP BIN LED
32	PMBUS/BP5 I2C
33	FP VGA
34	FP USB3.0
35	Chassis Infrusion
36	Motherboard handle



### 2.4.4 Hard disk backplane assembly

### SNR-SR2208RE expansion backplane is shown in the figure

#### Top surface



Table 1 - 19

#### **Bottom surface**



Figure 2-13

Serial	desc	funct
number	ribe	ion
1、2	ATX power input	Backplane power transmission connector for
		12V power transmission
3、4	Sff-8643 12gb SAS interface	Backplane panel signal interface
5、6、7、8	Temperature control fan	For 4Pin fan interface
	socket	



### SNR-SR2212RE expansion backplane is shown in the figure

### Top surface





Seria	desc	funct
l l	ribe	ion
num		
ber		
1	SAS / SATA hard disk	<ol> <li>The maximum support is 12g / b SAS hard disk;</li> <li>Support 6G / b SATA hard disk at most;</li> </ol>
		3. Support SAS / SATA hard disk hot swap.

#### **Bottom surface**





Serial	desc	funct
number	ribe	ion
1、2、3、4	Temperature control fan socket	For 4Pin fan interface
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 connection Connector	Used for 12g / b SAS or 6G / b SATA signal transmission



#### SNR-SR2225RE expansion backplane is shown in the figure

#### Top surface





Seria l num ber	desc ribe	funct ion
1	SAS / SATA hard disk connector	<ol> <li>The maximum support is 12g / b SAS hard disk;</li> <li>Support 6G / b SATA hard disk at most;</li> <li>Support SAS / SATA hard disk hot swap.</li> </ol>
	Tak	1 1 22

Table 1 - 23

#### **Bottom surface**



Figure 2-17

Seria I	desc ribe	funct ion
num ber		
1	Power connector	Backplane power transmission connector for 12V power transmission
2	Mini SAS HD high speed connector	Used for 12g / b SAS or 6G / b SATA signal transmission
3、5	Back plate buckle	Secure the backplane to the backplane bracket
4	Expander chip	PM8043 SXP 24Sx12G





#### The SAS / SATA backplane is shown in the figure

#### Top surface



Serial	descri	functi
numb	be	on
er		
1	SAS / SATA connector	1. The maximum support is 12g / b SAS hard disk; 2. Support 6G / b SATA hard disk at most;
		3. Support SAS / SATA hard disk hot swap.

Table 1-25

#### Bottom surface



Figure 2-19

Serial numb er	descri be	functi on
1	Temperature sensor IC	Temperature sensor chip
2、5	7pin SATA interface	Signal line interface of SATA disk
3	I2C interface	For I2C signal interface
4	Sgpio lighting signal	For hard disk led positioning light and fault LED indication function
6	Power interface	Backplane power transmission connector for 12V power transmission



#### U. 2 the back plate is shown in the figure

#### Top surface



Serial numb	descri be	function
er		
1	Sff-8639 connector	U.2 interface supporting pciex4 for connecting nvme SSD

#### Bottom surface

Table 1-27



	~ ~ ~
Figure	2-21

Serial numb	descri be	functi on
er		
1、4	Slimline 4I connector	Provide PCIe × 4 interface to connect CPU and nvme ssd1
		(package
		Including CPU pehp I2C and BMC I2C signals)
2	CPLD chip	For data logic processing
3	JATG debug interface	JTAG debug interface for CPLD programming and version
5	Power supply socket	4 pin power socket for docking PSU or MB 4 Pin
		The plug supplies power to the board


#### Riser 1 / 2 backplane is shown in the figure



Serial	descri	functi
numb	be	on
er		
1、2	PCIe 4.0 X8 slot	For connecting pcie4.0 X8 devices
3	PCle 4.0 x16 slot	For connecting pcie4.0 x16 devices
4	Power supply port	Riser card power transmission connector for 12V power transmission
5	PCI x16 specification gold finger	Used to connect the PCIe x16 interface
6/7	PCI X8 specification gold finger	Used to connect the PCIe X8 interface

#### Table 1 - 29

#### Riser 3 backplane is shown in the figure



Figure 2-23

Serial	descri	functi								
numb	be	on								
er										
1	PCIe x16 slot	Used to connect pcie4.0 x16 devices								
2	PCIe X8 slot	Used to connect pcie4.0 X8 devices								
3 PCI x16 specification gold finger		Used to connect the mainboard's PCIe x16 interface								
	Table 1-30									



Riser 4 backplane is shown in the figure



### 2.4.5 DIMM slot location

The motherboard adopts the Rome platform, with two amd SP3 Rome CPUs, and supports 8 DDR4 channels, each channel supports 2 DIMMs, and the two CPUs support 32 DDR4 slots (if only one memory is inserted, the socket in the red box below is preferred, and the plastic color of the socket on the board is blue), DDR4 rdimm / Irdimm / 3ds Irdimm / nvdimm-n server memory is supported, and the memory frequency supports 2666 / 2933 / 3200mhz;

Note: to make the system more stable, it is recommended to use amd compatibility list memory. The location is shown in the following figure:

following figure:



Figure 2-25



### k label

#### SNR-SR2208RE



Figure 2-26

#### SNR-SR2212RE

©0	two hu	ndr	ed and	ele	ven	 ·····	Ö
<u> </u>							

Figure 2-27

#### SNR-SR2225RE

	H.	H	11	4	2.11				He h		jë i li	H.H		Hu H	High	Hu H	Hu H	11 15 M	HI10 H	Ho H	Hto H	H 19 H	Hah			Han H	Ha H	M
00																							$\square$					
1 D A A	0	Å.	00	200	20						000		000						000									ā
	Q	2		ļ	2)	3	4	5	6	$\mathcal{O}$	8	9	10	01	12	13	14	Q5	16	10	18	19	20	21	22	23	24	
	Ô	ĝ	20		20	20	20	200	20	22	200	200	200	220	200	200	220	220	200	200	220	20	20	50	20		20	
	┢╴		F	h		h	h	h	h		h		h	h	h	П	H	FT	H	h	h	H	h	h	h	h		
	Ŀ	-1		Ŀ		님					님	님		님		닖	닖	닖			님	님			님	님		

Figure 2-28

### **2.4.7** Hard disk indicator

8-bay / 12 Bay hard disk indicator:



Figure 2-29

function	Activity indicator (green)	Positioning indicator (blue)	Error indicator (yellow)
Hard disk in place	Everb	OFF	OFF
Hard disk activity	Flicker 4Hz / S	OFF	OFF
Hard disk positioning	Everb right	Flicker 4Hz / S	OFF
Hard disk error	Everb	OFF	Everb right
Raid rebuild	Everb right	OFF	Flash 1 Hz / sec





Hard disk status	Activity indicator (green)	Error indicator (yellow)		
Hard disk not in place	OFF	OFF		
Hard disk in place, but no data activity	ON	OFF		
The hard disk is in place and active	Flash rate of hard disk itself	OFF		
hard disk failure	N/A	ON		
Hard disk is located	N/A	4Hz flicker		
Hard disk in rebuild state	N/A	1 Hz flicker		

Table 1 - 33



### 2.4.8 PCIe slot distribution rear view



Figure 2-30

IO module 1 provides slot slot 0-2, IO module 2 provides slot slot 3-5, IO module 3 provides slot slot slot 6-7, and IO module 4 provides slot slot slot 8-9.

IO module 1 can be equipped with two 3.5-inch hard disk modules / full height expansion modules.(1 out of 2)

When selecting a 3.5-inch hard disk module (the module supports up to two 3.5-inch SAS / SATA hard disks), slot0-2 can not access any devices.

#### IO module 2 is the same as IO module 1.

#### IO module 3 can be configured with two 2.5-inch hard disk modules / half height expansion modules.(1 out of 2)

When you select the PCIe expansion module, slot6 can connect to the pciex8 device, slot7 can connect the pciex16 device.

**N**ote: (the motherboard location is 1 PCIe x16, and the PCIe expansion module is an x16 and an x8); when a 2.5-inch hard disk module is selected (the module supports two 2.5-inch SAS / SATA hard disks at most), slot6-7 cannot be connected to any device.

#### IO module 4 is optional: two 2.5-inch hard disk modules / half height expansion modules for PCIe.(1 out of 2)

When you select the PCIe expansion module, slot8 can connect to the pciex8 device, slot9 can connect the pciex16 device.

**N**ote: (this motherboard is located in two silmline X8, and the PCIe expansion module is an x16 and an x8); when selecting a 2.5-inch hard disk module

(the module can support two 2.5-inch SAS / SATA hard disks at most). Slot8-9 cannot be connected to any device.



### 2.4.9 System fan

The server supports variable fan speeds. Generally, the fan rotates at the lowest speed. If the server temperature rises, the fan will increase the speed to cool down.



Figure 2-31



### **Chapter three** Installing system components

### 3.1 Removing and installing the CPU

Before you begin installing the CPU, read the following guidelines:

- Make sure the motherboard supports the CPU.
- Before installing the CPU, be sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the hardware.
- Remove all cables from the power outlet.
- Disconnect all communication cables from their ports.
- Place the system unit on a flat and stable surface.
- Follow the instructions to turn on the system.

#### warning!

Serious damage can result if the server is not shut down properly before you start installing components. Do not attempt the steps described in the following sections unless you are a qualified service technician.

#### Install the CPU as follows:

- 1. Loosen the three fixing screws of the CPU cover in sequence  $(1 \rightarrow 2 \rightarrow 3)$ .
- 2. Flip to open the CPU cover.
- 3. Use the handle on the CPU bay to remove the CPU Bay from the CPU cabinet.
- 4. Using the handle on the CPU Bay, insert the new CPU bay with the CPU installed into the CPU frame.

note: make sure that the CPU is installed in the CPU Bay in the correct direction, with triangles aligned on the CPU with the upper left corner of the CPU carrier.5. Turn the CPU cabinet with the CPU installed into the appropriate position in the CPU slot.

- 6. Flip the CPU cover into place over the CPU slot.
- 7. Tighten the CPU cover screws in sequence  $(1 \rightarrow 2 \rightarrow 3)$  to fix the CPU cover in place.
- 8. Repeat steps 1-7 for the second CPU.
- 9. To remove the CPU, perform steps 1-7 in the reverse order.



Figure 3-1





```
Figure 3-2
```



Figure 3-3



### 3.2 Removing and installing radiator

Before you begin installing the heat sink, read the following guidelines:

- Before installing the heat sink, be sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the hardware.
- Remove all cables from the power outlet.
- Disconnect all communication cables from their ports.
- Place the system unit on a flat and stable surface.
- Follow the instructions to turn on the system.

### Narning!

If you do not shut down the server before you start installing components, you can cause serious damage. Do not attempt the steps described in the following sections unless you are a qualified service technician.

∧ Note: when installing the heat sink to the CPU, use Philips ා 2-lobe screwdriver to tighten the 4 fixing nuts in 1-4 order.

Screw tightening torque: 0 ± 0.5 KGF cm (22.0 ± 1.0 LBF in).

#### Install the radiator as follows:

- 1. Loosen the screws that hold the radiator in place in the reverse order (4  $\rightarrow$  3  $\rightarrow$  2  $\rightarrow$  1).
- 2. Lift and remove the heat sink from the system.
- 3. To install the radiator, reverse steps 1-2, while ensuring that the set screws are tightened in sequence  $(1 \rightarrow 2 \rightarrow 3 \rightarrow 4)$ , as shown in the figure below.



Figure 3-4



### 3.3 Installation of memory

### **3.3.1** Memory support specifications

The motherboard supports DDR4 Rdimm / Irdimm / 3ds Irdimm / nvdimm-n server memory, memory frequency support

1866 / 2133 / 2400 / 2666 / 3200mhz; support single capacity of 16GB, 32GB, 64GB, 128GB, 256gb, the maximum support of the whole machine

#### 8tb memory capacity ..

note: in this motherboard, please use the memory module with the same CAS delay value. It is recommended that you use the memory with the same capacity and frequency produced by the same manufacturer. The recommended settings are shown in table 1-34

Access principle of memory module: (1 CPU)																		
processor	passage	Memory		Am	iount of	memor	ry (reco	mmend	ed: √ no	ot recon	nmende	ed: 0)						
	way	location	0	0	0	٧	0	٧	0	v	0	0	0	٧	0	v	0	v
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	А	A1	•	•	•	٠	•	•	•	•	•	•	•	•	•	•	•	•
		AO									•	•	•	•	•	•	•	•
	В	B1		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		BO											•	•	•	•	•	•
CPU0	с	C1			•		•	•	•	•	•	•	•	•	•	•	•	•
		CO													•	•	•	•
	D	D1							•	•	•	•	•	•	•	•	•	•
		D0															•	•
	E	E1				•	•	•	•	•	•	•	•	•	•	•	•	•
		EO										•	•	•	•	•	•	•
	F	F1				•	•	•	•	•	•	•	•	•	•	•	•	•
		FO												•	•	•	•	•
	G	G1						•	•	•	•	•	•	•	•	•	•	•
		G0														•	•	•
	н	H1								•	•	•	•	•	•	•	•	•
		HO																•

Table 1-34

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

- memory. This configuration is not recommended
- Root memory: this configuration is not recommended
- Root memory: this configuration is not recommended
- Root memory: cpu0\_A1 / CPU0\_B1 / CPU0\_E1 / CPU0\_F1
- Root memory: this configuration is not recommended
- Root memory: cpu0\_A1 / CPU0\_B1 / CPU0\_C1 / CPU0\_D1 / CPU0\_E1 / CPU0\_F1
- Root memory: this configuration is not recommended
- Root memory: cpu0\_A1 ,CPU0\_B1,CPU0\_C1,CPU0\_D1,CPU0\_E1,CPU0\_F1,CPU0\_G1,CPU0\_H1
- Root memory / 11 root memory / 13 root memory / 15 root memory: this configuration is not recommended
- Root memory: cpu0\_A1/A0,CPU0\_B1,CPU0\_C1,CPU0\_D1,CPU0\_E1/E0,CPU0\_F1,CPU0\_G1,CPU0\_H1
- memory: cpu0\_A1/A0,CPU0\_B1/B0,CPU0\_C1,CPU0\_D1,CPU0\_E1/E0,CPU0\_F1/F0,CPU0\_G1, CPU0\_H1
- memory: cpu0\_A1/A0 ,CPU0\_B1/B0,CPU0\_C1/C0,CPU0\_D1,CPU0\_E1/E0,CPU0\_F1/F0,CPU0\_G1/G0, CPU0\_H1
- memory: full

Note: in case of the first / 2 / 3 / 5 / 7 / 9 / 11 / 13 / 15 root memory, the following rules must be followed:

- A single number of memory inserted into the motherboard above the blue;
- For double root memory, you can refer to the configuration of the most recent memory, 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 / G1 / H1): blue; it is not allowed to mix rdimm and Irdimm.

**N**ote: when installing two CPUs, in order to achieve optimal performance, it is recommended to install dual memory achieve the same amount of memory per CPU.

### 3.3.2 How to install memory

The 16 memory slots controlled by CPU 0 on the motherboard are: Dimma1, A2, dimmb1, B2, DIMM C1, C2, DIMM D1, D2, DIMM E1, E2, DIMM F1, F2, DIMM G1, G2 and DIMM H1, H2; the 16 memory slots controlled by CPU 1 are dimma3,



Figure 3-5

A4, dimmb3, B4, dimmc3, C4, dimmd3, D4, DIMM E3, E4, DIMM F3, F4, DIMM G3, G4 and DIMM H3, H4. Pay attention to the memory gap consistent with the DIMM slot gap, and snap each DIMM module into place vertically to prevent incorrect installation.

A note: be careful when installing or removing DIMM memory modules to prevent any possible damage to the DIMMs or

#### their respective sockets.

Installation: insert the memory module vertically and press the location of the memory slot snap, taking care to align the bottom of the notch. The simulation of inserting a memory module is as follows:



Figure 3-6

Use your thumb to push inward the release tabs near both ends of the memory module socket to secure the memory in the socket. As shown in Figure 3-7:





Remove: gently push the release tabs near both ends of the memory module socket with your thumb. This should free memory from the socket. The demonstration of removing memory module is shown in Figure 3-8



Figure 3-8



### 3.4 Installation of hard disk

#### • Installation of 3.5-inch hard disk:

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



Figure 3-10



#### • Installation of 2.5-inch hard disk

1. Place the hard disk in the tray

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







The hard disk tray assembly is installed in the chassis

1. With the hard disk wrench on, push it into the chassis

2. When the gold finger of the hard disk touches the backplane device, turn the wrench in the direction of the arrow

3. Schematic diagram of hard disk installation in place





### 3.5 Installation of front hard disk backplane

#### • Front hard disk backplane installation:

1. First, take out the hard disk frame, align the screw hole on the top of the hard disk backplane with the screw hole of the

hard disk frame, and then install and fix the hard disk frame and hard disk backplane with screws.

2. Put the hard disk frame installed with the hard disk backplane down to the corresponding position of the chassis, move the hard disk frame appropriately, make the screw holes at the bottom of the frame align with the protruding screw holes of the chassis, and then install the screws to fix them.





### 3.6 M. 2 SSD installation



Step 1: install the positioning stud according to the length of m.2 card to be installed.

Figure 3-17

Step 2: install the m.2 card

1. Insert the m.2 card connector into the motherboard connector as shown in the figure.

2. Press the other end of the m.2 card to the alignment stud plane in step 1.

Step 3: install the fixing screws of the m.2 card.



Figure 3-19





### 3.7 PCI-E expansion card installation

Step: install the PCIe card

- 1. Install the PCIe card in the direction shown in the figure
- 2. Rotate the PCIe card latch
- 3. According to the arrow scheme, lock the lock of the PCIe card



Figure 3-20



Figure 3-21



Figure 3-22



### 3.8 PCI-E module installation

Installation steps of riser1-3 module: place the rear window PCIe component vertically and downward - align the PCIe slot, align the positioning hole, and place it flush with the rear window.



Figure 3-23

Installation steps of riser4 module: place the rear window PCIe component vertically and downward - align the PCIe slot with the positioning hole, place it flush with the rear window, and then lock the side screw



Figure 3-24

#### Step 1: rear hard disk module backplane installation

1. Move the back-plate limit shrapnel outward with your hand, and hold the shrapnel with your hand -- keep the shrapnel

open

2. After aligning the pin hole of the hard disk backplane with the pin of the hard disk module bracket, push it forward, and then put it down in place, release the limit spring piece of the hard disk, and the spring piece will automatically spring back to its original position;

3. Turn over the fixed parts on the hard disk backplane and follow the diagram -- the fixed parts can be placed flat.





Figure 3-25



Figure 3-2

### 3.10 installation of rear hard disk module

### • Installation of rear 3.5 inch hard disk module

Step 1. Place HDD tray vertically down and flush with the rear window step 2. Fix the rear HDD tray assembly



#### Step 3. Lock a loose screw



Figure 3-27





#### • Installation of rear 2.5 inch hard disk module

1. Place vertically downward and align with the guide pin at the lower end

2. After leveling, push it to the end in the direction of the arrow,

3. Lock the screw



Figure 3-29



Figure 3-30



### 3.11 Installation of power supply module

Step: push the power supply to the bottom in the direction of the arrow, and the spring wrench on the right side makes a click sound, indicating that it is installed in place;



Figure 3-31



Figure 3-32



### 3.12 Installation of fan module

Step: place the fan module vertically downward in the direction of the arrow (note that the fan module faces)



Figure 3-34



### 3.13 Installation of wind deflector

Steps: align the wind guide module with the hanging points on the left and right sides, and place it vertically downward - the height is lower than the box height







### 3.14 Installation of optical drive

Step: install the optical drive

1. Install the fixing part of the optical drive in the direction of the arrow, and lock the pan head screw



Figure 3-36

2. Align the opening of the optical drive position on the chassis, and push the optical drive in the direction of the arrow until the fixed parts are locked automatically.



Figure 3-37



Figure 3-38



### 3.15 Installation of upper cover of chassis

Step 1: install the rear upper cover of the chassis

- 1. The hanging nail of the upper cover shall be aligned with the opening position of the box body and placed downward
- 2. Rotate the upper cover latch in the direction of the arrow to lock it in place





## **Chapter four** System cabinet installation

### 4.1 Installation of inner rail of guide rail

Step 1. Prepare two sliding rail and pull out the inner rail.

Step 2. Fix the inner rail on both sides of the chassis. Figure 4-1



Figure 4-2



### 4.2 Install the outer rail to cabinet

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

Note: when installing the guide rail, align with the U-Mark, and install it in place with a snap, and use M5 screw to firm it.





### 4.3 Install the server to cabinet

Step 4. Align the chassis with the inner rail to the outer rail for installation.

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



Figure 4-4

Step 5. When the chassis cannot slide forward, the screws shall be firmly fixed and installed.

Note: when maintaining the equipment, loosen the panel screws and pull the chassis gently. Do not push and pull the



chassis casually to avoid damaging the equipment.

Figure 4-5



## **Chapter five BIOS parameter setting description**

### 5.1 Enter the BIOS Setup interface

Operation steps:

- 1. Power on the server motherboard and connect the keyboard;
- During the post process, pay attention to the prompt of entering BIOS Setup interface at the bottom left of the logo screen, "press < del > or < ESC > to enter setup, < F7 > to enter boot menu.";
- 3. Press the < del > or < ESC > key on the keyboard to enter the BIOS Setup interface;

### 5.2 Setup menu parameter description

### 5.2.1 Navigation key description

$\rightarrow \leftarrow$ :	Menu switch (select scree	n)				
↑↓:	Item switch (select item)					
Enter:	Select					
+/-:	Change opt					
F1:	General help					
F2: F3: ESC:	Previous values Optimized defaults F4: Exit	Save & reset				



### 5.2.2 Main menu description

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

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc. Main Advanced Server Mgmt Event Logs security Boot save Exit								
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time	American Megatrends The cont UEFI 2.7; PI 1.6 GDLR.0664 08/24/202014:42:51	Choose the system default language						
CPLD name CPLD version Build Date and Time Access Level	G1DLRO 04 08/03/2020 Administrator							
CPU Information Processor 0 Processor 1	2300MH1 1100m 2300MH 1100m	++ Select Screen  ↑ : Select Item Enter: Select +/- Change Opt. E1: General Help						
Total Memory	Total Memory: 32 GB (DDR4)	F2: Previous Values F3: Optimized Defaults F4: Save Exit						
System Language System Date System Time	[English] [ed08/26/2020] [17:44:42]	ESC: EXIT						
Version 2.20.1275. C	opyright (C) 2020 American Megatrends, Inc.							

Figure 5-1

#### BIOS Information Project Version:

Displays the version information of the board BIOS.

#### **Build Date and Time:**

Displays the compilation date and time of the board BIOS.

#### **CPLD Name:**

Display the name information of the board CPLD.

#### **CPLD Version:**

Display the version information of CPLD.

#### **Build Date and Time:**

Display the compilation date and time of the board CPLD.

#### Access Level:

Display the current user permission of the board. CPU Information Processor x:

CPU model information.

Memory information Total Memory:





Displays the total memory capacity of 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 "weekday / 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 "- to decrease the value by 1.
- Press the number key: change the value directly.

#### System Time:

Displays and sets 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 "- to decrease the value by 1.
- Press the number key: change the value directly.

### 5.2.3 Advanced menu description

The advanced interface contains advanced configuration items of BIOS system.

Aptio Setup Utility — Copyright (C) 2020 American Main <mark>Advanced</mark> Server Mgmt Event Logs Security Boot Save	Megatrends, Inc. & Exit
<ul> <li>Trusted Computing</li> <li>PSP Firmware Versions</li> <li>Boot Feature</li> <li>NB Configuration</li> <li>PCIE Port Bifurcation</li> <li>ACPI Settings</li> <li>Serial Port Console Redirection</li> <li>CPU Configuration</li> <li>SID Configuration</li> <li>PCI Subsystem Settings</li> <li>USB Configuration</li> <li>CSM Configuration</li> <li>SATA Configuration</li> <li>SATA Configuration</li> <li>TIs Auth Configuration</li> <li>AMD Mem Configuration Status</li> <li>iSCSI Configuration</li> <li>Intel(R) I350 Gigabit Network Connection - 00:A0:C9:00:00:01</li> </ul>	Trusted Computing Settings **: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American M	egatrends, Inc.

Figure 5-2



# • Trusted computing can be trusted to perform module configuration.

• PSP firmware versions platform security processor firmware version.

Boot Feature

Start the function configuration page.

• NB configuration NB configuration. • The branch of the PCIe port bifurcation. ACPI settings ACPI settings. • Serial port console redirection configuration. • CPU configuration CPU configuration. • SiO configuration SiO configuration. • PCI subsystem settings PCI subsystem settings. • CSM configuration CSM configuration. • Nvme configuration nvme configuration. SATA configuration SATA configuration.

• Network stack configuration.

• ISCSI configuration.

 Intel (R) i350 gigabit network connection - XX: XX: XX: XX: XX: XX Intel network card UEFI OPROM configuration

## Datasheet



### 5.2.4 Trusted Computing

TPM20 Device Found		Enables or Disables BIOS
Firmware Version:	seven pol nt sk two	support for security device.
Vendor:	IFX	0.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]	
Plat form Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	++ Select Screen
Endorsement Hierarchy	[Enabled]	1 : Select Item
TPI/12.0 UEFI Spec Version	[TCG_ 2]	Enter: Select
Physical Presence Spec Version	[1.3]	+/- Change Opt.
TPM 20 InterfaceType	[TIS]	F1: General Help
Device Select	[Auto]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save Exit
		ESC: Exit

Figure 5-3

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



### 5.2.5 PSP Firmware Versions

Displays the PSP firmware version and related information.



Figure 5-4



### 5.2.6 Boot Feature

Aptio Setup Utility ( Advanced	Copyright (C) 2020 American Megatrer	nds, İnc.
Quiet Boot Option ROM Messages Bootup NumLock State INT19 Trap Response Ac Loss Control	[Enabled] [Force BIOS] [On] [Immediate] [Always On]	Enables or disables Quiet Boot option ++ Select Screen 1 : Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version ON 2.20.127	5. Copyright () 2020 American Megatren	nds, Inc >.

Figure 5-5

#### Quiet Boot

Turn the quiet boot function on and off. The menu options are:

- Disabled: Turn off quiet boot and post information will be displayed
- Enabled: Open quiet boot and the OEM logo will be
- displayed. The default value is enabled

#### **Option ROM Messages**

Use this function to set the option ROM display mode. The menu options are:

• Force BIOS: Option ROM display mode is set by BIOS

• Keep Current: Option ROM display mode is set by the current Rom. the default value is force BIOS

#### Bootup Numlock State

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

- •On : open
- $\bullet$  OFF : Off
- default: on

#### INT19 Trap Response

Interrupt, capture signal response settings, menu options are:

• Immediate: be prompt in responding


## 5.2.7 NB Configuration



Figure 5-6

cTDP Control

Set CTDP control, menu options:

- Manual: ManualAuto: Auto
- default: Auto

#### IOMMU

IOMMU switch, menu options:

- Enabled: enabled
- Disabled: off
- Auto: Auto default: Auto

ACS Enable

ACS switch, menu options:

• Enabled: enabled



• Disabled: off

• Auto: Auto default: Auto

Package Power Limit Control

Set package power limit control, menu options:

- Manual: Manual
- Auto: Auto default: Auto

#### APBDIS

Set apbdis, menu options:

•0

•1

• Auto: Auto default: Auto

DF Cstates

DF cstates switch, menu options:

• Disabled: off

• Enabled: enabled • Auto: Auto default: Auto

4-link xGMI max speed

4-way XGMI maximum speed, menu options:

- 10.667Gbps
- •13Gbps
- •16Gbps
- •18Gbps
- Auto: Auto default: Auto

Preferred IO

Set priority IO, menu options:

Manual: Manual
Auto: Auto default: Auto

• Memory configuration.

# Datasheet



### 5.2.8 Memory Configuration



Figure 5-7

Memory interleaving

Memory cross access switch, menu options:

- Disabled: off
- Auto: Auto default: Auto

Memory interleaving size

Memory cross access specification, menu options:

- 256 bytes: 256 bytes
- 512 bytes: 512 bytes
- •1 KB
- •2 KB
- Auto: Auto default: Auto

#### Chipselect interleaving

Set the cross memory block on DRAM chip of control node 0, menu options:

- Disabled: off
- Auto: Auto default: Auto

BankGroupSwap



Bank group switch, menu options:

- Enabled: enabled
- Disabled: off
- Auto: Auto
- default: Auto

DRAM scrub time

Set the time to wipe the memory, menu options:

- Disabled: off
- •1 hours: 1 hour
- •4 hours: 4 hours
- •8 hours: 8 hours
- •16 hours: 16 hours
- 24 hours: 24 hours
- •48 hours: 48 hours

• Auto: Auto default: Auto

• Socket 0 / 1 information slot 0 / 1 information;

### 5.2.9 Socket 0/1 Information



Figure 5-8



## 5.2.10 PCIE Port Bifurcation

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc. Advanced		
Slimline Port Pcie Riser1 Pcie Riser2 Pcie Riser3	[x8] [16] [×16] [×4×4×44]	Setting Slimline Bifurcation +++ 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 American Megatre	ends, Inc.

Figure 5-9

Slimline Port

Set the slimline branch, and the menu options are as follows:

- •X4X4
- •X8

Default value: x8

Pcie Riser1

Set the branch of PCIe riser1, and the menu options are as follows:

- •X8X8
- •X16

Default: x16

Pcie Riser2

Set the branch of PCIe riser2, and the menu options are as follows:

- •X8X8
- •X16
- Default: x16



Pcie Riser3

Set the branch of PCIe riser3, and the menu options are as follows:

- •X8X8
- •X16
- •X4X4X4X4

Default value: x4x4x4x4

## 5.2.11 ACPI Settings

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc. Advanced		
Advanced ACPI Settings Enable AER Cap INUMA nodes per socket ACPI SRAT L3 Cache As NUMA Domain	[Auto] [Auto] [Auto]	Enables Advanced Error Reporting Capability ++ Select Screen : Select Item Ente: Select +/- Change Opt. E1: General Help E2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version 2.20.1275. Copy	right (C) 2020 American	Megatrends. Inc.

Figure 5-10

Enable aer cap PCI aer configuration switch.

- Disabled: off.
- Enabled: enabled.
- Auto: Auto.Default value: Auto

#### NUMA Nodes Per Socket

This function specifies the expected number of NuMA nodes for each slot.

- NPSO
- •NPS1
- •NPS2
- •NPS4



• Auto: Auto.Default value: Auto

#### ACPI SRAT L3 Cache As NUMA Domain

Use this option to turn ACPI SRAT L3 cache on or off as a NUMA domain.

• Disabled: off.

• Enabled: enabled.

• Auto: Auto.Default value: Auto

## 5.2.12 Serial Port Console Redirection

**Console Redirection** 

Aptio Setup Utility Copyright (C Advanced	) 2020 American Megatrends, Inc.	
COMO Console Redirection Console Redirection Settings Legacy Console Redirection Legacy Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection Console Redirection Settings	[Disabled]	
		++ Select Screen 1 : 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 5-11

The console redirection function switch can redirect the information output from the console (such as graphics card) to the serial port.

• Disabled: turns off redirection.

• Enabled: enables

- redirection.Default value: disabled
- Console redirection settings console redirection settings.
- Legacy console redirection settings traditional console redirection settings.

Serial port for out of band management / windows emergency management service (EMS).





#### **Console Redirection**

The console redirection function switch can redirect the information output from the console (such as graphics card) to the serial port.

- Disabled: turns off redirection.
- Enabled: enables redirection. Default value: disabled
- Console redirection settings console redirection settings.

## 5.2.13 Console Redirection Settings

#### Terminal Type

Aptio Setup Utility Cop Advanced	wright ()2020 American Megatre	ends, Inc.
COMO Console Redirection Settings Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT - UTF8 Combo Key Support Recorder Mode Resolution10031 Putty KeyPad	[T100+] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [VT100	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes: ++ 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. Co	pyright (C)2020 American Megatr	ends, Inc.
	Figure 5-12	

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

- •VT100
- VT100+
- VT-UTF8
- ANSI

Default value: VT100+

Bits per second Serial port redirection rate, the value range is 9600 ~ 115200, the default value is 115200

Data Bits



Serial port redirection data bit length, menu options are:

- •8
- •7

Default: 8

#### Parity

Serial port redirection check switch, menu options are:

- •None: no check
- Even: even check
- Odd check
- Mark: the check bit is always 1
- Space: check bit is always
- 0 default: None

Mark and space checks are not allowed to detect errors.

#### Stop Bits

The end flag bit of serial port data packet. The menu options are as follows:

- •1
- •2

۰Z

Default value: 1

#### Flow Control

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

- None: turn off serial port redirection control flow
- Hardware RTS / CTS: Request send / clear
- send default: None

#### VT-UTF8 Combo key support

ANSI / VT100 terminal vt-utf8 combination key support switch, menu options are:

- Disabled: turn off vt-utf8 key combination support of ANSI / VT100 terminal
- Enabled: enable ANSI / VT100 terminal vt-utf8 key
- combination support. Default value: enabled

#### Recorder Mode

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

- Enabled: enabled
- Disabled: off
- default: Disabled



## 5.2.14 Legacy Console Redirection Settings



Figure 5-13

**Redirection COM Port** 

Select redirect COM port, and the menu options are:

•COM0

Default value: COM0

Resolution

Resolution, menu options are:

- •80x24
- •80x25

Default value: 80x24

Redirect After POST

Redirect after post. The menu options are:

- Always Enable
- BootLoader

Default value: always enable



## 5.2.15 CPU Configuration

#### SMT Control



Symmetrical multithreading switch. Changing this option will make a power cycle to ensure that the setting takes effect

- Disabled: off
- Auto: Auto default: Auto

#### Core Performance Boost

Global C state control switch, menu options:

- Disabled: off
- Auto: Auto default: Auto

#### **Global C-state Control**

Core performance improvement switch, menu options:

- Disabled: off
- Enabled: enabled
- Auto: Auto default: Auto
- L1 Strean HW Prefetcher
- L1 stream HW prefetch switch, menu options:
- Enabled: enabled



Disabled: offAuto: Auto

default: Auto

#### L2 Strean HW Prefetcher

L2 stream HW prefetch switch, menu options:

- Enabled: enabled
- Disabled: off

• Auto: Auto default: Auto

SVM Mode

CPU virtualization switch.

• Disabled: off.

• Enabled: enabled.Default value: enabled

#### SMEE

Secure memory encryption control switch.

• Disabled: off.

• Enabled: enabled.Default value: enabled

• Node 0 / 1 configuration node 0 / 1 configuration;

# Datasheet



## 5.2.16 Node 0/1 Configuration

Display some details of CPU detected by motherboard.

Aptio Setup Utility Copyright (C) 2020 American M Advanced	vlegatrends, Inc.
Node Information AMD EPYC 7452 32 - Core Processor 32 Cores 64 Threads Running 2213 MHz 1100 mV Processor Family: 17h Processor Model: 30h - 3Fh Microcode Patch Level: 8301038Cache per Core ; L1 Instruction Cache: 32 KB/8-way L1 Data Cache: 32 KB/8-way L2 Cache: 512 KB/8-way L3 Cache per Socket: 128 MB/16-way _	++ 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 American Iv	/legatrends, Inc.

Figure 5-15



## 5.2.17 SIO Configuration



Figure 5-16



## 5.2.18 [\*Active\*] Serial Port



Figure 5-17

Use This Device

With this device, the menu options are:

- Enabled: enabled
- Disabled: turn off the default value: enabled

#### Possible

Select the optimal setting for the serial port according to the demand, and the menu options are as follows:

- 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



### 5.2.19 PCI Subsystem Settings

AMI PCI Driver Version AS	5.01.19	Globally Enables or Disables
PCI Settings Common fr	or all Devices	64bit capable Devices to be
Above 4G Decoding	[Enabled]	Space (Oply if System Supports
SR-IOV Support	[Disabled]	64 bit PCI Decoding)
BME DMA Mitigation	[Disabled]	er sit ver bessennig).
Hot-Plug Support	[Enabled]	
OnBrd/Ext VGA Select	[Onboard]	
Change Settings of the	Following PCI Devices:	
Slot 1 Empty	[FROM BRG (NOT FOUND)]	
Slot 4 Empty	[FROM BRG (NOT F OUND)]	
Slot 5 Empty I	[FROM BRG (HOT FOUND)]	
Slot 6 Empty	[FROIWIBBRG (NOT FOUND)]	++ Select Screen
Slot 7 Empty	[FRONBREG (NOT FOUND)]	1 : Select Item
Slot 8 Empty	[FROM BRG ; (NOT FOUND)]	Enter: Select
Slot 9 Empty	[IFROM BRG (NOT FOUND)]	+/- Change Opt.
Slot #10 Empty	[FROM BRG (NOT FOUND)]	F1: General Help
Slot #11 Empty	[FROM BRG (NOT FOUND)]	F2: Previous Values
Slot #12 Empty	[FROM BRG (NOT FOUND)]	F3: Optimized Defaults
Slot #13 Empty	[FROM BRG (NOT FOUND)]	F4: Save Exit
Slot #14 Empty	[FROM BRG (NOT FOUND)]	ESC: Exit
Slot #15 Empty	[FROM BRG (NOT FOUND)]	
Slot #16 Empty	[FROM RG (NOT FOUND)]	
Slot #17 Empty	IBRG (NOT FOUND) )]	×

Figure 5-18

#### Above 4G Decoding

4G memory space resource decoding control switch, menu options are:

- Enabled: enabled
- Disabled: turn off the default value: enabled

#### **SR-IOV Support**

SR-IOV supports switch setting, menu options are:

• Enabled: enabled

• Disabled: turn off the default value: enabled

#### BME DMA Mitigation

After the SMM is locked, reopen the PCI bridge and close the bus control attribute during PCI enumeration. The menu options are:

are.

- Enabled: enabled
- Disabled: off default: Disabled

Hot-Plug Support

Global hot swap switch: when the system has a slot with hot swap capability and this option is on, a setting interface will be provided to select the PCI resources reserved for hot swap. The menu options are:

• Enabled: enabled



• Disabled: turn off the default value: enabled

# Datasheet

OnBrd/Ext VGA Select

Select the VGA output port, and the menu options are:

Onboard: onboard

- External: external default: onboard
- default: onboard

• Slot #X .....

Modify the on-board PCI device or PCI slot settings.

## 5.2.20 USB Configuration



Figure 5-19

Display USB controller and USB device information.

#### Legacy USB Support

USB in legacy environment supports control switch, menu options are:

• Enabled: enabled

• Disabled: turn off the default value: enabled

XHCI Hand-off





Change the xhci control switch. This function is effective for operating systems that do not support changing xhci control. It is generally driven by xhci to change the control of xhci.

• Enabled: enabled • Disabled: turn off the default value:

enabled

#### USB Mass Storage Driver Support

USB storage device drive control switch, menu options are:

• Enabled: enabled

• Disabled: turn off the default value: enabled

Port 60/64 Emulation

60 / 64 port analog switch, menu options are:

Enabled: enabledDisabled: turn off

the default value: enabled

## 5.2.21 CSM Configuration

Aptio Setup Utility Advanced	Copyright (C) 2020 American Megatrends	s, Inc.
Compatibility Support Module Config	guration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	secon point eight three	
GateA20 Active HDD Connection Order	[Upon Request] [Adjust]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Network Storage Video Other PCI devices	[UEFI] [UEFI] [Legacy] [UEFI]	++ 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 () 2020 American Megatrends	s, Inc.

Figure 5-20

CSM Support

To turn on or off the compatible support module, the menu options are:

Disabled: close



• Enabled: Open default value: enabled

#### GateA20 Active

A20 address line control mode settings, menu options are:

- Upon Request: if necessary
- Always: always

Default value: upon request

#### Boot option filter

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

- UEFI and legacy: UEFI and legacy startup items
- UEFI only: UEFI startup entry

• Legacy only: Legacy boot entry default: UEFI and legacy

**Option ROM execution** 

Select option ROM execution mode

#### Network

Network card, menu options are:

- UEFI: UEFI mode
- •Legacy: legacy mode default: UEFI

#### Storage

Network card, menu options are:

- UEFI: UEFI mode
- Legacy: legacy mode default: UEFI

#### Video

Network card, menu options are:

- UEFI: UEFI mode
- Legacy: legacy mode default: Legacy

Other PCI devices network card, menu options are:

• UEFI: UEFI mode

• Legacy: legacy mode default: UEFI



## 5.2.22 NVMe Configuration

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc. Advanced	
NVMe Configuration	
TOSHIBA-RC100	++ Select Screen 1 : Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit

Figure 5-21

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc Advanced		
Seg: Bus: Dev: Func Model Number Total Size Vendor ID Device ID Hamespace:1	00:01:00:00 TOSHIBA-RC100 120.0GB 0113 Size: 120.0 GB	++ Select Screen 1 : Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version 2.20.12	75. Copyright (C) 2020 American Megatrends	s, Inc.

Figure 5-22



**SATA Configuration** 5.2.23

SATA Configuration		Disable or enable OnChip SATA
SATA Enable	[Auto]	controller
SATA Controller (S: 00 B: 43 D: 00 F	: 00)	
Port 0	Hot Present	
Port 1 .	Not Present	
Port 2	Not Present	
Port 3	Not Present	
Port 4	Not Present	
Port 5	Not Present	
Port 6	Not Present	
Port 7	Not Present	
ATA Controller (S: 00 B: 44 D: 00 F: )	00)	++ Select Screen
Port 0	Not Present	↑↓: Select Item
Port 1	Not Present	Enter Select
Port 2	Not Present	+/- Change Opt.
Port 3	Not Present	F1: General Help
Port 4	Not Present	F2: Previous Values
Port 5	Not Present	F3: Optimized Defaults
Port 6 ·	Hot Present	F4: Save Exit
Port 7	Not Present	ESC: Exit

Figure 5-23

Display the current system SATA related information. SATA Enable

On chip internal SATA controller switch, menu options are:

- Disabled: close
- Enabled: open
- Auto: Auto default: Auto



## 5.2.24 Tls Auth Configuration

TLS authentication configuration

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc. Advanced	
Server CA Configuration	Press <enter> to configure Server CA.</enter>
▶Client Cert Configuration	
	++ Select Screen f: 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 Megatre	ends, Inc.

Figure 5-24



## 5.2.25 Network Stack Configuration



Figure 5-25

Network Stack

Network stack control switch, menu options are:

- Enabled: enabled
- Disabled: off
- default: Disabled

Ipv4 PXE Support

IPv4 UEFI PXE function control switch, menu options are:

- Enabled: enabled
- Disabled: off default: Disabled

Ipv4 HTTP Support

IPv4 HTTP function control switch, menu options are:

- Enabled: enabled
- Disabled: off
- default: Disabled

Ipv6 PXE Support IPv6 UEFI PXE function control switch, menu options are:

- Enabled: enabled
- Disabled: off



Ipv6 HTTP Support

IPv6 HTTP function control switch, menu options are:

- Enabled: enabled
- Disabled: off
- default: Disabled

PXE boot wait time

PXE boot waiting time: the user can input the PXE boot waiting time. The waiting process can press "ESC" to abort PXE boot. The default value is 0.

Media detect count

The number of device in place detection. The user can input the device detection times of the device network card. The default value is 1

## 5.2.26 iSCSI Configuration

**ISCSI** configuration

Aptio Setup Utility Copyright () 2020 Advanced	American Megatrends, Inc.
iscsl Initiator Name	The worldwide unique name of iscSI Initiator. Only IQH
►Add an Attempt	format is accepted. Range is from 4 to 223
► Delete Attempts	
►Change Attempt Order	
	++ Select Screen f: Select Item Enter: Select +/- Change Opt. F1: General Help
	F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version 2 201275 Convright 0 2020	American Megatrands Inc
Children 2.20.2210. Copyright () 2020	Figure 5-26



### 5.2.27 Server MGMT menu



Figure 5-27

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

#### **BMC Support**

Link BMC interface switch settings, menu options are:

• Enabled : open

• Disabled : Turn off the default value: enabled

Wait For BMC

Specify the time to wait for BMC. The menu options are:

• Enabled : open

• Disabled : Turn off the default value: disabled

 System event log menu system event log control menu
 BMC network configuration menu BMC

network configuration menu

• View system event log menu view system event log control menu

• BMC user settings menu BMC user settings menu



Press < ENTER > for BMC hot restart

#### System Event Log 5.2.28

Aptio Setup Utility Copy	right (C) 2020 American Megatre	nds, Inc. Server blgmt_
Enabling/Disabling Options		Change this to enable or
SEL Components	[Enabled]	disable event logging for
Franker Cattings		error/progress codes during
Erasing Setungs	[Lio]	DOOL
When SEL is Full	[Do Nothing]	
When see is run	[Do Houmig]	
Custom EFI Logging Options		
Log EFI Status Codes	[Error code]	
NOTE: All values changed here not take effect until computer is restarted.		++ 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. Co	opyright (C) 2020 American Meg	gatrends, Inc.

Figure 5-28

#### SEL Components

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

- Enabled: enabled
- Disabled: turn off the default value: enabled

Erase SEL

Clear system event logging control switch, menu options:

- No: No
- Yes, on next reset
- Yes, on every reset: clear the default value every time you restart: no

When SEL is Full

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

• Do nothing: do nothing

• Erase immediately: clear the default value immediately: do nothing



#### Log EFI Status Codes

Configuration record EFI status codes, menu options:

- Disabled: do not record
- Both: record error code & progress code
- Error code: only the error code is recorded

• Progress Code: only progress code is recorded. Default value: error code

## 5.2.29 BMC network configuration

		Select to configure LAN
www.www.www.www.www.www.		channel parameters statically
Configure IPV4 support		or dynamically/by BIOS or
		BMC) Unspecified option will
Dies		not modify any BMC network
BMC Sharelink Management channel		parameters during BIOS phase
Configuration Address source	[Unspecified]	participation starting press probe
Current Configuration Address sour		
Station address	0.0.0	
Subnet mask	0.0.0.0	
Station MAC address	00-24-EC-F2-7D-DD	
Router IP address	0.0.0.0	
Router MAC address	00-00-00-00-00-00-00	
		++ Select Screen
BMC Dedicated Management channel		1 : 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	IF2: Previous Values
Station MAC address	00-24-EC-F2-7D-DE	t Optimized Defaults
Router IP address	192.168.1.1	F4: Save Exit
Router MAC address	9C-A6-15-57-5B-D9	ESC: Exit
Dire		

Figure 5-29



		Server Mgmt
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	192.168.1.210	BMC). Unspecified option will
Subnet mask	255.255.255.0	not modify any BMC network
Station MAC address	00-24-EC-F2-7D-DE	parameters during BIOS phase
Router IP address	192.168.1.1	
Router MAC address	9C-A6-15-57-5B-D9	
*****folimi		
Configure IPV6 support		
***Pice		
BMC Sharelink Management channel		++ Select Screen ↑ · Select Item
IP∀6 Support	[Enabled]	Enter: Select
Configuration Address sources	[] Incoasified]	+/- Change Opt.
Configuration Address source	Dispectived	F2: Drovious Values
current conliguration Address sour	DynamicAddressbincDhcp	F2. Optimized Defaulte
Station IDI//6 address		F4: Save Evit
FE60., 224: ECFF: FEF2: 7000		ESC. EXIL
Prefix Length		

Figure 5-30

	angne (a) 2020 Annene an Ivregau en las,	Server Mgn _ nt
IP√6 Router1 IP Address =		Select to configure LAN     channel parameters statically     or dynamically(by BIOS or     BIMC). Unspecified option will
IP√6 address status	Active	not modify any BMC network
IPV6 DHCP Algorithm	SLAAC	parameters during BIOS phase
BMC Dedicated Management channel		
IP∀6 Support	[Enabled]	
Configuration Address source	[Unspecified]	
Current Configuration Address sour	DynamicAddressBmcDhcp	
Station IPV6 address		++ Select Screen
FE80: 224: ECFF: FEF2: 7DDE		Enter: Select
Prefix Length		+/- Change Opt.
wy four		F2: Previous Values
IPV6 Router1 IP Address		E4: Save Exit
::		ESC: Exit
IP\/6 address status	Active	
ID//C DLICD Algorithm	SLAAC	<b>•</b>

Figure 5-31

Configure IPV4 support BMC sharelink Management Channel



Configuration Address source

Configure BMC IP address assignment mode, menu options are:

- Unspecified: does not change BMC parameters
- Static: BIOS static IP settings
- Dynamic bmcdhcp: BMC runs DHCP to allocate IP dynamically

• Dynamic bmcnondhcp: BMC runs non DHCP protocol to dynamically allocate IP.

Default value: unspecified

change from unspecified to other parameters. After saving and restarting the execution, the option will restore the unspecified value. It is not necessary to configure BMC IP every time the boot process is started.

When the configuration address source option is unspecified, the network parameter information (IPv4) of the shared network interface of the system will be displayed, including the current IP configuration mode, BMC IP, subnet mask, MAC address, routing IP and routing Mac;

BMC Dedicated Management Channel Configuration Address source

Configure BMC IP address assignment mode, menu options are:

- Unspecified: does not change BMC parameters
- Static: BIOS static IP settings
- Dynamic bmcdhcp: BMC runs DHCP to allocate IP dynamically

• Dynamicbmcnondhcp: BMC runs non DHCP protocol to dynamically allocate IP.

Default value: unspecified

🕰 change from unspecified to other parameters. After saving and restarting the execution, the option will restore the unspecified value,

There is no need to configure BMC IP for each boot process.

When the configuration address source option is not specified, the network parameter information (IPv4) of the system private network interface will be displayed, including the current IP configuration mode, BMC IP, subnet mask, MAC address, routing IP, and routing Mac;

Configure IPV6 support

BMC Sharelink Management Channel IPV6 Support

Select whether to support IPv6. The menu options are as follows:

• Enable: support IPv6

• Disabled: IPv6 is not

supported. Default: enabled

Change from unspecified to other parameters. After saving and restarting the execution, the option will restore the unspecified value,

There is no need to configure BMC IP for each boot process.

When the configuration address source option is not specified, the network parameter information (IPv6) of the shared network port of the

system will be displayed; BMC classified management channel IPV6 Support

Select whether to support IPv6. The menu options are as follows:

• Enable: support IPv6

Disabled: IPv6 is not

supported. Default: enabled

Change from unspecified to other parameters. After saving and restarting the execution, the option will restore the unspecified value,





There is no need to configure BMC IP for each boot process.

When the configuration address source option is unspecified, the network parameter information (IPv6) of the system private network port will be displayed;

## 5.2.30 View System Event Log

lo. of log e	entries SEL 13	64	HEX:
DATE	TIME	SENSOR TYPE	4B0002354DA8 3 Electronaded inflan four thousand one hundled 32 02 FF FF
04/28/20	15:35:17	Button/Switch	Generator ID: BMC -LUN #0
04/28/20	15:35:22	Button/Switch	(Channel #0)
04/28/20	15:35:32	System Event	Sensor Number: 0x32 SCSI
04/28/20	15:35:32	System Event	Bus(Parallel)
01/11/18	05:27:46	System Event	Event Description: Record
01/11/18	05:27:46	System Event	Type-0x02. Assertion Event.
01/11/18	05:28:31	OS Boot	
01/11/18	05:28:31	OEM Record DC	
01/11/18	05:41:12	OS Stop/Shutdown	
01/11/18	05:41:12	OEM Record DD+	++ Select Screen
01/11/18	05:41:14	Voltage	1 : Select Item
01/11/18	05:41:14	Voltage	Enter: Select
01/11/18	05:41:14	Voltage	+/- Change Opt.
01/11/18	05:41:14	Voltage	F1: General Help
04/15/75	16:12:16	Processor	F2: Previous Values
04/15/75	16:12:16	Button/Switch	F3: Optimized Defaults
04/15/75	16:12:39	System Event	F4: Save Exit
04/15/75	16:12:39	System Event	ESC: Exit
01/11/18	05:46:17	System Event	
01/11/18	05:46:17	System Event	
01/11/18	05:47:00	Button/Switch	

Figure 5-32

View system event log information.

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



## 5.2.31 BMC User Setting

Aptio Setup Utility Copyright () 2020 American Megatrends, Inc.			
BMC User Settings	Press <enter> Add a User.</enter>		
> Add User			
► Delete User			
Change User Settings	++ Select Screen 1 : 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

#### • Add User

Add user submenu

 Delete user delete user submenu
 Change user set

• Change user setting modify user settings submenu



## 5.2.32 Add User

Aptio Setup Utility	Copyright (C) 2020 American Mega	atrends, Inc. Server Mgmt
BMC Add User Details User Name User Password User Access Channel No User Privilege Limit	[Disable] 0 [Reserved]	Enter BMC User Name
		++ Select Screen f: 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 Megat	rends, Inc.

Figure 5-34

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



### 5.2.33 Delete User

User Password : User password settings, password characters must include upper and lower case letters, special characters and numbers, at least 8 characters, maximum 20 characters.

Channal No : BMC channel settings, enter 1 or 8

user privilege limit

User rights settings, menu options are:

- Reserved
- Callback
- User
- Operator
- Administrator

After the setting is successful, "set user access command passed" will be prompted, and BMC user will take effect immediately.

Aptio Setup Utility Copyright (C) 2020	American Megatrends, Inc. Server Mgmt
BMC Delete User Details User Name User Password	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 () 2020 Ar	merican Megatrends, Inc.

Figure 5-35

User Name : Ent that name of the user to be delete.

User Password : Enter the password of the user to be deleted. After entering the password correctly, the prompt "User Delete! !!", the deleted user will take effect immediately in BMC, and the user will not be able to log in to BMC Web interface.



## 5.2.34 Change User Setting

Aptio Setup Utility Copyright (C) 2020 American Megatrends, Inc. Server Mgmt			
Aptio Setup Utility C BMC Change User Settings User Name User Password Change User Password User Access Channel No User Privilege Limit	[Disable] 0 [Reserved]	atrends, Inc. Server Mgmt Enter BMC User Name ++ Select Screen ↑: Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit	
Version 2011 2.20.127	5. Copyright () 2020 American Megat	rends, Inc.	

Figure 5-36

User Name : Ent that user name to be modify.

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

User

User rights switch settings, menu options are:

• Enabled : Open it

• Disabled : Closing default value: Disabled

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

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

Privilege Limit

Modify the user permission settings, menu options are:

- Reserved
- Callback
- User
- Operator
- Administrator



### 5.2.35 Event Logs



Figure 5-37

Change SMBIOS Event Log Settings to change SMBIOS event logging settings.
View SMBIOS Event Log to view SMBIOS event log.



## 5.2.36 Change SMBIOS Event Log Settings

Aptio Setup Utility Copy	right () 2020 American Megatren	ds, Inc.
Enabling/Disabling Options Smbios Event Log	[Enabled]	Change this to enable or disable all features of Smbios
Erasing Settings Erase Event Log When Log is Full	[No] [Do Hothing]	Event Logging during boot.
Smbios Event Log Standard Settings Log System Boot Event MECI METW	[Enabled] ene sixty	
Custom Options Log EFI Status Code Convert EFI Status Codes to Standard Smbios Type	[Enabled] [Disabled]	++ Select Screen : Select Item Enter: Select +/- Change Opt.
NOTE: All values changed here do not ta effect until computer is restarted.	ke	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version 2.20.1275. Cop	pyright ()2020 American Megatre	nds, Inc.

Figure 5-38

Smbios Event Log

Smbios event logging switch, menu options:

• Enabled: on

• Disabled: turn off the default value: Enabled

Erase SEL

Clear the system event record control switch, menu options:

• No: No

• Yes, On next reset: clear next restart

• Yes, On every reset: clear the default value: No.

When SEL is Full

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

• Do nothing: do nothing

• Erase immediately: clear the default value immediately: do nothing

Log System Boot Event

Set to start recording system startup events, menu options:

• Disabled: do not record




• Enabled: record default: enabled

#### MECI

Enter increment for multiple event counters.Enter a number between 1 and 255.The default setting is 1.

#### METW

This is used to determine how long (in minutes) multiple event counters should wait before generating a new event log.Enter a number between 0 and 99.The default setting is 60.

### 5.2.37 Security menu

Aptio Setup Utility Copyright () 2020 American Megatrends, Inc. Main Advanced Server Mgmt Event Logs security Boot Save		
Password Description		Set Administrator Password
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length	3	
Maximum length	3 20	
Administrator Password User Password		++ Select Screen ↑: Select Item Enter: Select +/- Change Opt. F1: General Help
▶Secure Boot		F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.		

Figure 5-39

Administrator Password

Select this option to set the administrator password;

#### User Password

Select this option to set the user password;

#### Administrator Password

The status of administrator password is displayed. If the system has administrator password, it will display installed. If there is no administrator password, it will display not installed;

#### User Password

Display the status of user password, the system has user password, displays installed, does not exist user password, displays not installed;



### 5.2.38 Secure Boot



Figure 5-40

Secure Boot

Safety start switch, menu options are:

Enabled: on

• Disabled: off default: Disabled

Secure Boot Mode

Safe start mode, menu options are:

 Standard: Standard
 Custom: custom default value: Custom

• Restore Factory Keys

Force the system into user mode.Install the factory default secure boot key database.

• Key Management

It allows professional users to modify security startup policy variables without full authentication.



### 5.2.39 Boot menu



#### Figure 5-41

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

#### **Boot Option Priorities**

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

XXX driver BBS priorities



### 5.2.40 Save & Exit menu

Aptio Setup Utility Copyright (C) 2020 America Main Advanced Server Mgmt Event Logs Security Boot save Exit	n Megatrends, Inc.
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset	▲ Exit system setup after saving the changes
Save Changes Discard Changes Default Options Restore Defaults	
Save as User Defaults Restore User Defaults Boot Override	++ Select Screen ↑↓: Select Item Enter: Select
All Virtual CDROMO 1.00 All Virtual CDROMO 1.00 All Virtual CDROM1 1.00 All Virtual CDROM2 1.00 AMI Virtual CDROM3 1.00 SanDisk	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC Evit
AMI Virtual HDisk0 1.00 AMI Virtual HDisk1 1.00 AMI Virtual HDisk2 1.00	E SC. EAR
Version 2.20.1275. Copyright (C) 2020 American I	Megatrends, Inc.

Figure 5-42

Save Changes and Exit

Save the settings and exit the BIOS Setup menu;

**Discard Changes and Exit** 

Discard saving settings and exit BIOS Setup menu;

Save changes and reset save the settings and restart the system;

Discard changes and reset to discard the saved settings and restart the system;

Save changes saves the settings;

Discard changes discards the save settings;

**Restore Defaults** 

Load BIOS factory settings;

Save as user Defaults



Save as user default settings;

Restore user defaults overloads the user default configuration;

#### Boot Override

List of startup options, where you can select startup options.

### 5.3 User operation reminder

- 1. With Apption, you need to understand the operation specification in detail when you need to operate.
- 2. When operating the options, please understand the meaning of the options in combination with the operating manual and BIOS Setup interface options.



### **Chapter six Description of raid settings**

### 6.1 LSI 9361-8i group raid

### 6.1.1 Configuring raid in UEFI boot mode

- > Enter the raid card configuration interface
- a) During the server startup process, press Delete / ESC according to the prompt to enter the BIOS Setup interface.
- b) Select advanced > Avago MegaRAID < Avago MegaRAID SAS 91311-8i > configuration utility and press enter.

Enter the interface shown in Figure 6-1, which shows five categories of configuration tasks (see table 1-35 for related instructions).



Figure 6-1

#### ♦ Table 1-35 parameter description

option	program specification
Configuration	Select configuration management to perform tasks, such as creating
Management	logical disks, viewing disk group properties, viewing hot backup
	information
	And clear the configuration.
Controller	Select controller management to view and manage controller
Management	properties and perform tasks such as clearing controller events,
	scheduling
	And run controller events, and run patrol read.
Virtual Drive	Select logical drive management to perform tasks such as viewing
Management	logical drive properties, locating logical drive, and running a
	Sex test.



Drive Management	Select disk management to view physical disk properties and perform tasks such as locating disks, initializing disks and disks
	Rebuild after failure.
Hardware	Select hardware components to view super capacitor properties.
Components	manage supercapacitors and manage peripheral components.



### > Common tasks switch disk mode:

Raid card supports switching the following three disk modes.

- 1. Unconfigured good: indicates that the physical disk is normal and can be used to configure raid or hot spare.
- 2. Unconfigured bad: indicates that the physical disk has residual raid information, which needs to be cleared manually.

3. JBOD: just a bunch of disks, which only concatenates the disks together to expand the capacity, but does not have the raid function. Here, we take the example of switching from unconfigured good mode to unconfigured bad mode.

a) As shown in Figure 6-2, select drive management in the raid card configuration interface and press enter.



Figure 6-2

b) Enter the interface shown in Figure 6-3, select the disk to be configured, and press enter.







Figure 6-3

c) Enter the interface shown in Figure 6-4, select operation, press enter, and then select make unconfigured bad in the pop-up dialog box, and press enter.



Figure 6-4

d) Enter the interface shown in Figure 6-5, select go and press enter.



Aptio Setup Ut Advanced	ility – Copyright (C) 2017 America	n Megatrends, Inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Modent	[Make Unconfigured Bad] Port 4 – 7:01:04 [Unconfigured Good] 558 GB [Disk] HUC101860CSS200 HGST	Starts the selected operation or opens another form.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.	1268. Copyright (C) 2017 American	Megatrends, Inc. B4
	Figure 6-5	

e) Enter the interface shown in Figure 6-6 to complete the operation of switching disk mode.





#### Create Raid:

a) As shown in Figure 6-7, select configuration management in the raid card configuration interface and press enter.

Aptio Setup Utility – Copyright (C) 2017 Americar Advanced	n Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Displays configuration options. Some options appear only if the controller supports them. As an example, create virtual drive, create CacheCade virtual drive, make JBOD, make Unconfigured Good, clear configuration, manage foreign configuration, view drive group properties and view global hot spare drives. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.19.1268. Copyright (C) 2017American ⊨	Megatrends, Inc. B4

Figure 6-7

b) Enter the interface shown in Figure 6-8, select create virtual drive, and press enter.

Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
<ul> <li>Create Virtual Drive</li> <li>Create Profile Based Virtual Drive</li> <li>Clear Configuration</li> </ul>	Creates a virtual drive by selecting the RAID level, drives, and virtual drive parameters.
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American Me	egatrends, Inc.



c) Enter the interface shown in Figure 6-9, select select RAID level, set RAID level, and press enter.

Aptio Setup Utility Advanced	– Copyright (C) 2017 Americar	n Megatrends, Inc.
Advanced 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	[RAIDO] [Disabled] [Unconfigured Capacity] S: 0 Select RAID Level RAID0 RAID1 RAID5 RAID6 RAID0 RAID10 [No]	Selects the desired RAID level. The RAID levels that can be configured are 0, 1, 5, 6 (if supported), 10, 50, and 60 (if supported). RAID 0 uses drive striping to provide high data throughput, especially for large files in an environment that requires no data redundancy. ++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
Version 2 19 1268	Conunight (P) 2017 American k	F3: Optimized Defaults F4: Save & Reset ESC: Exit

Figure 6-9

- d) Enter the interface shown in Figure 6-10, select select drives from, set the source of RAID disk capacity, and press enter.
- ♦ [unconfigured capacity] indicates the remaining capacity of the disk from which the raid has been configured.
- ♦ [free capacity] indicates that the capacity comes from an empty disk.





Figure 6-10

e) Enter the interface shown in Figure 6-11, select select drives and press enter.

Aptio Setup Utility Copyrig Advanced	ht ()2017 American Megatrends	, Inc.
<ul> <li>Save Configuration</li> <li>Select RAID Level</li> <li>Protect Virtual Drive</li> <li>Select Drives From</li> <li>Select Drives</li> </ul>	[RAIDO] [Disabled] [Unconfigured Capacity]	Dynamically updates to display 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/0 Policy Access Policy Drive Cache Disable Background Initialization Default Initialization Save Configuration	0 [GB] [256KB] [Read Ahead] [Write Back] [Direct] [Read/] [Unchanged] [Ho] [No]	++ Select Screen 1 : Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Reset ESC: Exit
Version 2.19.1268. Copyrigh	t (C) 2017 American Megatrends, Inc	

#### Figure 6-11

f) Enter the interface shown in Figure 6-12, select the disk to be used to configure raid, [enabled] indicates that it is selected, then select apply changes and press enter. If the state of the disk is JBOD or unconfigured bad, it cannot be selected.





Figure 6-12

g) Enter the interface shown in Figure 6-13, make corresponding settings (see table 1-36 for parameter description), then select save configuration and press enter.

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc. Advanced Save Configuration Assigns a name to identify the Select RAID Level [RAIDO] virtual drive. Protect Virtual Drive [Disabled] Select Drives From [Unconfigured Capacity] Select Drives CONFIGURE VIRTUAL DRIVE PARAMETERS: Virtual Drive Size 1116 Virtual Drive Size Unit [GB] [256 KB] Strip Size Read Policy [Read Ahead] Write Policy [Write Back] ++: Select Screen I/O Policy [Direct] [Read/Write] ↑↓: Select Item Access Policy [Unchanged] Enter: Select Drive Cache +/-: Change Opt. Disable Background Initialization [No] Default Initialization [No] F1: General Help Save Configuration F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc. Figure 6-13





$\diamond$ parameter	explain		
Virtual Drive Name	The name of raid. Only letters, numbers and underscores		
Virtual Drive Size	Capacity size of raid		
Virtual Drive Size Unit	Capacity unit of raid		
Stripe Size	Stripe size, the size of the stripe data block written on each disk		
Read Policy	The read cache strategy is divided into read ahead and no read ahead (turn off read caching)		
Write Policy	The write cache policy is divided into write through and always write Back and write back		
I/O Policy	I / O strategy, divided into cached (cache mode) and direct (direct read-write) Mode)		
Access Policy	Read / write policies are divided into read / write, read only and blocked		
Drive Cache	The disk cache policy is divided into enable, disable and Unchanged (automatic)		
Default Initialization	Default initialization method		
Save Configuration	Save the configuration created by the wizard		

Table 1 - 36



∻ Do not use special characters as RAID names.

- ∻ Compared with no read ahead, write through and direct, the performance of read ahead, write back and cached is
- improved, but the data consistency cannot be guaranteed. If the super capacitor is abnormal, when "write back" is selected as the write cache policy, the "write through" is implemented for the firmware write data; when "always write back" is selected for the write cache policy, the "write ∻ back" is implemented for the firmware write data.
- h) Enter the interface shown in Figure 6-14, select confirm to enable it, select Yes, and press enter.



Creating virtual Drives will cause	In installe all	
Confirm	[Disabled]	
Yes No		
110		
		++ Select Screen
		: Select Item
		Enter: Select
		+/- Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save Reset
		ESC: Exit

Figure 6-14

i) Enter the interface shown in Figure 6-15, complete the RAID configuration operation, and select OK to return to the raid card configuration interface.



Figure 6-15

j) As shown in Figure 6-16, select virtual drive management in the raid card configuration interface and press enter.





Figure 6-16

k) Enter the interface shown in Figure 6-17 to see the created raid. Select the raid to view and press enter.



Figure 6-17

I) Enter the interface shown in Figure 6-18, select view associated drives, and press enter to view the detailed information of the raid (including raid name, level, disk information, etc.).



Advanced	opyright (C) 2017 American Megatrends,	inc.
Operation BASIC PROPERTIES:	[Select operation]	Lists the operations that you can perform on a virtual drive.
Raid Level . Status Size	[RAIDO] [Optimal] 1116GB	
<ul> <li>Advanced</li> </ul>		
		++ Select Screen 1 : 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 Megatrend:	s, Inc.



### To configure a hot spare:

After the raid is configured, the hot spare disk is generally configured to improve the data security. Global hot spare or



dedicated hot spare can be configured as required.

- $\diamond$  The hot spare is only used for RAID levels with redundancy.
- ♦ The capacity of the hot spare disk is larger than the capacity that a single member disk of a raid contributes to the raid.
- ♦ Only disks with unconfigured good configuration mode are supported as hot spare disks.
- ♦ Configure global hot spare
  - a) As shown in Figure 6-19, select drive management in the raid card configuration interface and press enter.



Figure 6-1

b) Enter the interface shown in Figure 6-20, select the disk to be configured as global hot spare, and press enter.





- c) Enter the interface shown in Figure 6-21, select operation, press enter, then select assign assigned hot spare drive and press enter.
- d) Enter the interface shown in Figure 6-22, select go and press enter.

Operation	[Assign Global Hot S]	Lists the operations that you
BASIC PROPERTIES: Drive ID Status Size Type Model	ort0- 3:01:02 [Unconfigured Good] 558B [Disk] Huct01860055200	
Hardware Vendor Advanced	Select operation Start Locate Stop Locate Initialize Drive	
	Drive Eræse Make Unconfigured Bad Assign_Global Hot Spare Drive	+ Select Screen + Select Item nter: Select /- Change Opt. 1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save Reset ESC: Exit
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Figure 6-21





Figure 6-22

e) Enter the interface shown in Figure 6-23, select confirm to enable it, select Yes, and press enter.



Figure 6-23

f) Enter the interface shown in Figure 6-24 to complete the configuration of global hot spare.





Figure 6-24

#### **Delete Raid:**

a) As shown in Figure 6-25, select virtual drive management in the raid card configuration interface and press enter.

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



b) Enter the interface shown in Figure 6-26, select the logical disk to be deleted, and press enter.

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.
	<pre>1+: Select item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American Me	gatrends, Inc.



c) Enter the interface shown in Figure 6-27, select operation, press enter, and then select Delete virtual drive in the pop-up dialog box, and press enter.





d) Enter the interface shown in Figure 6-28, select go and press enter.

Aptio Setup Utility Co Advanced	opyright (C)2017 American Megatren	ds, Inc.
Operation Go BASIC PROPERTIES: Name Raid Level	[Delete Virtual Drive]	Starts the selected operation or opens another form.
Status Size	[Optimal] 1116GB	
<ul> <li>View Associated Drives</li> <li>Advanced</li> </ul>		
		++ Select Screen 1 : 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 American Megatrend	is, inc.

- e) Enter the interface shown in figure 6-29, select confirm to enable it, select Yes, and press enter.
- f) Enter the interface shown in Figure 6-30 to complete the raid deletion operation.

Aptio Setup Utility Advanced	Copyright (C)2017 America	an Megatrends, Inc.
Advanced Deleting a Virtual Drive deletes a Confirm Yes Ho	[Enabled]	++ Select Screen ↑: Select Item Enter: 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 ()2017 American Megatr	ends, Inc.





Figure 6-30

Locate the disk location:

- 1. Locating physical disks
- a) As shown in Figure 6-31, select drive management in the raid card configuration interface and press enter.





Figure 6-31

b) Enter the interface shown in figure 6-32, select the disk to be located and press enter.

	Adv	ance	Aptio ed	Setu	ıp Uti	ility –	Copyright	(C) 2017	American	Megatrends, Inc.
 Drive Drive Drive	Port Port Port	0 - 0 - 0 -	- 3:01 - 3:01 - 3:01	:00: :01: :02:	SAS, SAS, SAS,	558GB, 558GB, 558GB,	Unconfigu Unconfigu Unconfigu	red Good, red Good, red 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.
										<pre> ++: Select Screen  fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
			Vens	ion 2	.19.1	L268. Co	opyright (	C) 2017 Ai	merican M	egatrends, Inc.



c) Enter the interface shown in figure 6-33, select operation, press enter, and then select Start locate in the pop-up dialog box and press enter.



Aptio Setup Advanced	Utility – Copyright (C) 2017 America	n Megatrends, Inc.
Operation Go BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	[Start Locate] Port 0 - 3:01:00 [Unconfigured Good] 558 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, Conuright (C) 2017 American (	Megatrends, Inc.

d) Enter the interface shown in figure 6-34, select go and press enter.

Operation ≻ Go	[Start Locate]	Starts the selected operation or opens another form.
BASIC PROPERTIES: Drive ID Status Size Type Model Hardware Vendor Advanced	Port 0 – 3:01:00 [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 &amp; Reset ESC: Exit</pre>

Figure 6-34

e) Enter the interface shown in Figure 6-35 to complete the operation of locating the physical disk.



Aptio Setup Utility — Copyright (C) 2017 America Advanced	an Megatrends, Inc.
The operation has been performed s • OK	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American	Megatrends, Inc.

- 2. Locate all disks in the logical drive
- a) As shown in Figure 6-36, select virtual drive management in the raid card configuration interface and press enter.



Figure 6-36





b) Enter the interface shown in figure 6-37, select the logical disk to be located and press enter.

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

- C) Enter the interface shown in figure 6-38, select operation, press enter, and then select Start locate in the pop-up dialog box and press enter.
- d) Enter the interface shown in figure 6-39, select go and press enter.







Figure 6-39

e) Enter the interface shown in figure 6-40 to complete the operation of locating all the disk positions in the logical disk.





#### Initialize logical drive:

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

a) As shown in figure 6-41, select virtual drive management in the raid card configuration interface and press enter.

Aptio Setup Utility – Copyright Advanced	(C) 2017 American Megatrends, Inc.
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	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 6-41

b) Enter the interface shown in figure 6-42, select the logical disk to be initialized, and press enter.





#### Figure 6-42

c) Enter the interface shown in figure 6-43, select operation, press enter, and then select fast / slow initialization in the pop-up dialog, and press enter.

Operation	[Select operation]	Lists the operations that you
BASIC PROPERTIES:		can perform on a virtual drive.
Name	and a second the second s	
Raid Level	[RAIDO]	
Status	[Optimal]	
Size	1116GB	
View Associated Drives		
Advanced	Operation —	
	Select operation	
	Start Locate	
	Stop Locate	
	Delete virtual Drives	
	East Initialization	+ Select Screen
	Slow Initialization	· Select Item
	Virtual Drive Erase	Enter Select
		+/- Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save Reset
		ESC: Exit



The difference between fast initialization and slow initialization is that the former can write data immediately, while the latter needs to wait for all disk space

Data cannot be written until initialization is complete



d) Enter the interface shown in figure 6-44, select go and press enter.

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

Figure 6-44

e) Enter the interface shown in figure 6-45, select confirm to enable it, select Yes, and press enter.



Figure 6-45





f) Enter the interface shown in figure 6-46 to complete the initialization of logical disk.

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

Figure 6-46

#### Initialize physical disk:

a) As shown in figure 6-47, select drive management in the raid card configuration interface and press enter.

Aptio Setup Utility – Copyright (C Advanced	) 2017 American Megatrends, Inc.	
<ul> <li>Configuration Management</li> <li>Controller Management</li> <li>Virtual Drive Management</li> <li>Drive Management</li> <li>Hardware Components</li> </ul>	Displays the basic drive properties and performs operations such as assign/unassign a hot spare drive, locate drives, Place Drive offline/online, and rebuild drive. You can also view additional properties using the Advanced link. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit	
Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.		



b) Enter the interface shown in Figure 6-48, select the disk to be initialized, and press enter.

Advance	Aptio Setup Utility – d	Copyright (C) 2017 Ame	rican Megatrends, Inc.
<ul> <li>▶ Drive Port 0 -</li> </ul>	3:01:00: SAS, 558GB, 3:01:01: SAS, 558GB, 3:01:02: SAS, 558GB, 3:01:03: SAS, 558GB,	Online, (5128) Online, (5128) Unconfigured Good, ( 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.
	Version 2.19.1268. C	opyright (C) 2017 Ameria	can Megatrends, Inc.

- c) Enter the interface shown in figure 6-49, select operation, press enter, and then select initialize drive in the pop-up dialog box, and press enter.
- d) Enter the interface shown in Figure 6-50, select go and press enter.





Aptio Setup Util Advanced	Lity – Copyright (C) 2017 Ameri	ican Megatrends, Inc.	
Operation > Go BASIC PROPERTIES:	[Initialize Drive]	Starts the selected operation or opens another form.	
Drive ID Status	Port 0 – 3:01:02 [Unconfigured Good]		
Size Type	558 GB [Disk]		
Model Hardware Vendor	HUC101860CSS200 HGST		
▶ Advanced			
		++: Select Screen fl: Select Item	
		<pre>Enter: Select +/-: Change Opt. E1: Ceneral Help</pre>	
		F2: Previous Values	
		F4: Save & Reset ESC: Exit	
Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.			

Figure 6-50

e) Enter the interface shown in figure 6-51, select confirm to enable it, select Yes, and press enter.


f) Enter the interface shown in figure 6-52 to complete the initialization of the physical disk.

Aptio Setup Utility - Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Initializing a Drive may result in Confirm Yes ▶ No	[Enabled]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version 2.19.1268. C	Eigure 6-51	egatrends, Inc.
Aptio Setup Utility -	- Copyright (C) 2017 American	n Megatrends, Inc.
Advanced Advanced		
The operation has been started suc ▶ OK		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help
Version 2,19,1268, 0	Copyright (C) 2017 American M	F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

Figure 6-52





### Erase disk data:

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

- 1. Erasing physical disk data
- a) As shown in figure 6-53, select drive management in the raid card configuration interface and press enter.



Figure 6-53

b) Enter the interface shown in figure 6-54, select the disk to be erased, and press enter.







Figure 6-54

C) Enter the interface shown in figure 6-55, select operation, press enter, and then select drive erase in the pop-up dialog box and press enter.



Figure 6-55

d) Enter the interface shown in figure 6-56, press enter, and then select erase mode in the pop-up dialog box (simple is recommended as the default mode).



#### e) Enter the interface shown in figure 6-57, select go and press enter.



BASIC PROPERTIES: Drive ID Port 0 - 3:01:02 [Unconfigured Good] Status Size 558 GB [Disk] Туре Mode1 HUC101860CSS200 Handware Vendor HGST Advanced... ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.

Figure 6-57



f) Enter the interface shown in figure 6-58, select confirm to enable it, select Yes, and press enter.



Figure 6-58

g) Enter the interface shown in figure 6-59 to complete the operation of erasing physical disk data.



Figures 6-59

IN THE SECTION OF SECTION AND A SECTION A SEC



- 2. Erasing logical disk data
- a) As shown in Figure 6-60, select virtual drive management in the raid card configuration interface and press enter.



Figure 6-60

b) Enter the interface shown in figure 6-61, select the logical disk to be erased, and press enter.





C) Enter the interface shown in figure 6-62, select operation, press enter, and then select virtual drive erase in the pop-up dialog box, and press enter.

Aptio Setup Utili Advanced	ty – Copyright (C) 2017 America	n 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 2.19.126	3. Copyright (C) 2017 American	Megatrends, Inc.

Figure 6-62

d) Enter the interface shown in figure 6-63, press enter, and then select erase mode in the pop-up dialog box (simple is recommended as the default

mode).





e) Enter the interface shown in figure 6-65, select go and press enter.

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

Figure 6-65

f) Enter the interface shown in figure 6-66, select confirm to enable it, select Yes, and press enter.



Figure 6-66

g) Enter the interface shown in figure 6-67 to complete the operation of erasing logical disk data.





Figure 6-67

### **Migration RAID level:**

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

a) As shown in figure 6-68, select virtual drive management in the raid card configuration interface and press enter.









b) Enter the interface shown in figure 6-69, select the logical disk to be rebuilt, and press enter.





c) Enter the interface shown in figure 6-70, select Operation and press Enter, then select Reconfigure Virtual Drive in the pop-up dialog box and press enter.



d) Enter the interface shown in figure 6-71, select Go and press enter.



Figure 6-71





Aptio Setup Utility – Copyright (C) 2017 Ame Advanced	rican Megatrends, Inc.
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 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 Ameri	can Megatrends, Inc.

Figure 6-72

f) Enter the interface shown in figure 6-73, select the disk to be added, make it Enabled, select Apply Changes, and press enter.

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

Figure 6-73

g) Enter the interface shown in figure 6-74, select Confirm to Enabled it, select Yes and press enter.



Selecting these Drives will cause		
Confirm	[Enabled]	
res		
lo		
		++ Select Screen
		: Select Item
		Enter: Select
		+/- Change Opt.
		E1: General Help
		E2: Provious Values
		E2. Ontimized Defaulto
		PS. Optimized Defaults
		F4: Save Reset
		ESC: Exit



- h) Enter the interface shown in figure 6-75, select Start Operation and press enter.
- i) Enter the interface shown in figure 6-76, select OK and press enter.







Aptio Setup Utility Copyright (C) 2017 American	n Megatrends, Inc.
The operation has been started suc OK	++ Select Screen ↑↓: Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Reset ESC: Exit
Version 2.19.1268. Copyright (C)2017 American	Megatrends, Inc.

Figure 6-76

j) Enter the interface shown in Figure 6-77 to view the current migration progress.

Aptio Setup Utili Advanced	ty – Copyright (C) 2017 Ameri	ican Megatrends, Inc.
Operation Progress BASIC PROPERTIES: Name Raid Level Status Size View Associated Drives Advanced	[Select operation] Reconstruction 0% 111 [RAIDO] [Optimal] 1116 GB	Lists the operations that you can perform on a virtual drive.
Version 2.19.126	8. Copyright (C) 2017 America	an Megatrends, Inc.

Figure 6-77



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

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

- a) Switch the disk mode Unconfigured Bad to Unconfigured Good.
- b) Select Configuration Management in the RAID card configuration interface as shown in figure 6-78, and press Enter.





c) Enter the interface shown in figure 6-79, select manage foreign configuration, and press enter.



Aptio Setup Utility Copyright (C) 2017 Ar Advanced	nerican Megatrends, Inc.
<ul> <li>Clear Configuration</li> <li>Manage Foreign Configuration</li> </ul>	Displays, imports and/or clears foreign configurations
	++ 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 A	merican Megatrends, Inc.

Figure 6-79

d) Enter the interface shown in figure 6-80, select clear foreign configuration, and press enter.



Figure 6-80

e) Enter the interface shown in figure 6-81, select confirm to enable it, select Yes, and press enter.





Figure 6-81

f) Enter the interface shown in Figure 6-8 to complete the operation of clearing disk raid information.



Figure 6-82





### 6.1.2 Configuring raid in legacy boot mode

### Enter the raid card configuration interface

a) During BIOS startup, after the interface as shown in figure 6-83 appears, press Ctrl + R.

AVAGD N Version Copyrig F/W In HA -8 Battery PCI SIG	tegaRAID n 6.31.03 pht(c) 20 itializin (Bus 2 De g Status: pt Number	SAS-MFI BIOS .0 (Build January 25, 2016) 16 AVAGO Technologies g Devices 100% v 0) AVAGO MegaRAID SAS 9361- Missing : 4	81	
ID LUN	VENDOR	PRODUCT	REVISION	CAPACITY
88 8 1939 1948 1288 1298 1398 1398 8	AVAGD ATA ATA ATA HP HP HP AVAGD	AVAGO MegaRAID SAS 9361-8i MM1000GBKAL MM1000GBKAL MM1000GBKAL EG0300FBVFL EG0300FBVFL EG0300FBVFL Virtual Drive	4.650.00-6121 HPGC HPGC HPGC HPDC HPDC HPDC RAID0	1024HB 953869HB 953869HB 953869HB 286102HB 286102HB 286102HB 286102HB 5120HB
1 Virtu 1 Virtu Press	al Drive al Drive (Ctrl> <r></r>	<ul> <li>(s) found on the host adapter</li> <li>(s) handled by BIOS</li> <li>to Run MegaRAID Configuration</li> </ul>	m Utility	

#### Figure 6-83

b) Enter the interface shown in figure 6-84.Please refer to the key operation tips at the bottom border of the interface to realize navigation and modify settings in the interface.



VD Mgnt PD Mgnt Ctrl Mgnt Properties	
[-1 LSI MegaRAID 9361-8i (Bus 0x02, Dev 0x00) No Configuration Present ! [-1 Unconfigured Drives ::00: Ready: 278.87 GB ::01: Ready: 278.87 GB ::04: Ready: 278.87 GB ::05: Ready: 278.87 GB ::06: Ready: 278.87 GB ::07: Ready: 931.00 GB	Controller: Drive Groups: 8 Virtual Drives: 8 Drives: 6
F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctr	-P-Prev Page F12-Ctir

Figure 6-84





### Common tasks

Configure Raid:

c) As shown in figure 6-85, on the VD MGMT interface, press F2 and select create virtual drive.



Figure 6-85

d) Enter the interface shown in figure 6-86, set the RAID level, and press enter.



ID Level:	RAID-8	PD per Span : NZA	
	RAID-5	ID Type Size	
a Protection:	RAID-6	L J::00 278.87 GB	
	RAID-18	L 1::01 278.87 GB	
	RA10-58	[ 1::84 278.87 GB	
	BA1D-68	[ 1::85 278.87 GB	
		L 1::86 278.87 G8	122
		L 1::07 512c 931.00 GB	
Basic Setting: ze:		ndvanced OK	CANCEL
1966			0.00000000
ant.			

#### Figure 6-86

e) Enter the interface shown in figure 6-87, select the disk to configure raid, and press enter.

ID Level: RolD-1	Drives	-
ata Protection: Disable	10 Type Size	99
The freeder of the practice	[X]::81 278.87 GB	31
	[ ]::84 278.87 GB	
	[ 1::05 278.87 GB	
	[ ]::86 278.87 GB	
- Basic Settings	Advanced OK	CANCEL

Figure 6-2

f) Enter the interface shown in figure 6-88, set the size and name, select advanced and press enter.



AID Level: RAID-1	PD per Span : NZA	
ata Protection: Disable	ID         Type         Size           IX1:-:08          278.87         68           IX1:-:01          278.87         68           I         1:-:04          278.87         68           I         1:-:05          278.87         68           I         1:-:06          278.87         68           I         1:-:06          278.87         68           I         1::-:06          278.87         68           I         1::-:06          278.87         68           I         1::-:06          278.87         68	8 81  
- Basic Settings	Advanced OK	CANCEL

Figure 6-88

g) Enter the interface shown in figure 6-89, set relevant parameters, then select OK and press enter.

OID Leve		Create Virtua	1 Drive-Advanced
ntp Leve	Strip Size:	256KB	( ) Initialize
ata Prot	Read Policy:	Ahead	I 1 Configure HotSpare
	Write Policy:	Write Back wi	th
	1/0 Policy:	Direct	OK-
- Basic Size: Name:	Disk cache Policy	Unchanged	CANCEL

Figure 6-89

h) Enter the interface shown in figure 6-90, select OK, and press enter to complete the RAID configuration operation.



ID Level: Reib-1	PD per Span : NZA	
ta Protection: Dizable	ID         Type         Size           IX1:-:88          278.87         68           IX1:-:81          278.87         68           IX1:-:81          278.87         68           I         1:-:84          278.87         68           I         1:-:85          278.87         68           I         1:-:85          278.87         68           I         1:-:86          278.87         68           I         1::-:86          278.87         68           I         1::-:86          278.87         68           I         1::-:86          278.87         68           I         1::-:86          278.87         68	88 81  
Basic Settings lize: 20.000 GB	Advanced OK	CANCEL

#### Figure 6-90

i) Select the raid to be viewed and press enter to view the detailed information of the raid (including raid name, level, disk information, etc.), as shown in figure 6-91.

### To configure a hot spare:

- General RAID Level: RAID-	United at	- SSD Caching SSD Caching	Details	
Nanc: <u>1</u> 951				
Size: 28.88	B GB			
Strip Size: 256 K	3			
VD State : Optim	1			
- Operations	cration			
Progress : N/A				
		Advanced	OK	CANCEL

Figure 6-91



After the raid is configured, the hot spare disk is generally configured to improve the data security. Global hot spare and dedicated hot spare can be configured as required.

**国**说明

- $\diamond$  The hot spare is only used for RAID levels with redundancy.
- ♦ The capacity of the hot spare disk is larger than the capacity that a single member disk of a raid contributes to the raid.
- ♦ Only disks with unconfigured good configuration mode are supported as hot spare disks.
- 1. Configure global hot spare
- a) As shown in figure 6-92, select the disk to be configured as a global hot spare in the PD MGMT interface, and press F2.

BackPlaneBackPlaneDeviceID TypeCapacityStateD6Vendor9SAS278.87 GBUG-HP13SAS278.87 GBUG-HP14SAS278.87 GBUG-HP15SATA931.88 GBUG-ATA16SAS278.87 GBOnline98HP17SAS278.87 GBOnline98HP17SAS278.87 GBOnline98HP18Sas278.87 GBOnline98HP19Sas278.87 GBOnline98HP19Sas278.87 GBOnline98HP10Sas278.87 GBOnline98HP17SAS278.87 GBOnline98HP18SasSasSasSasSas19SasSasSasSasSas19SasSasSasSasSas10SasSasSasSasSas19SasSasSasSasSas10SasSasSasSasSas10SasSasSasSas10SasSasSasSas19SasSasSasSas19Sas	VD Mgmt	PD Mynt	Ctrl Mgnt	Properti - Drive M	es anage	nent —	
100101090.07	Device I 9 13 14 15 16 17	Back SAS SAS SAS SATA SAS SAS SAS	Plane Capacity 278.87 GB 278.87 GB 278.87 GB 931.68 GB 278.87 GB 278.87 GB	State UG UG UG Online Online	DG - - - - - - - - - - - - - - - - - - -	Vendor HP HP ATA HP HP	PAGE=1 Secured: No Encryption Capable: No EXM Support: Disabled Connector: Enclosure Model: SGPIO Slot Mumber: 6 Logical Sector Size: 512 B Physical Sector Size: 512 B Physical Sector Size: 512 B Product ID: EG8360FCUBF (GoToPage:2)

Figure 6-92



b) Enter the interface shown in figure 6-93, select make global HS, and press enter to complete the configuration of global hot spare.

a na Bhanna	The Revenues		Drive Management	PAGE-1
Device	Back ID Type	Plane Capacity	Rebuild	red:
9 13	SAS SAS	278.87 GB 278.87 GB	Copyback	tion Capable:
11 15 16	SATA	931.80 GB	Locate	bled
17	SAS	278.87 68	Place drive Online Place drive Offline	ure Model:
			Make Global HS Renove Hot Spare drive Drive Erase	Sumber:
			Make JBOD Make unconfigured good	al Sector Size:
			Prepare for Removal	BBFCVBF
				<gotopage:2></gotopage:2>

Figure 6-93

C) Return to the interface shown in figure 6-94 and select the hot spare to view the global hot spare information.

#### **Delete Raid:**

VD Mgnt	PD Mgnt	Ctrl Mgmt	Properties	ane	acot -	
Device I 9 13 14 15 16 12	BackP B Type SAS SAS SAS SATA SAS SAS	Cerringat Capacity 278.87 GB 278.87 GB 278.87 GB 931.00 GB 278.87 GB 278.87 GB 278.87 GB	State Hotspare UG UG Online Daline	DG 	Vendor HP HP ATA HP	PAGE-1 Secured: No Encryption Capable: No EKM Support: Disabled Connector:
17	SAS	278.87 GB	Online	88	HP	Enclosure Model: SGPIO Slot Mumber: 6 Logical Sector Size: 512 B Physical Sector Size: 512 B Product ID: EG0300FCVBF
	-					(GoToPage:2)
1-Help	F2-Operat	ions F5-Refr	esh Ctrl-N	Nex	t Page Ctr	1-P-Prev Page F12-Ctlr



This function is used to delete raid that is damaged or difficult to meet the requirements.

a) As shown in figure 6-95, select the logical disk to be deleted in the VD MGMT interface and press F2.



Figure 6-95

b) Enter the interface shown in figure 6-96, select Delete VD and press enter.





c) Enter the interface shown in figure 6-97, select Yes and press enter to complete the raid deletion operation.





### Locate the disk location:

This function lights up the blue indicator of the corresponding slot of the disk, so that you can quickly find the disk. You can locate all member disks contained in a single physical disk or a logical disk.

a) As shown in figure 6-98, select the disk to be located in the PD MGMT interface and press F2.

VD Mgmt	PD Mgmt	Ctrl Mgnt	Propertie	es	nent -	
Device I 9 13 14 15 16 17	BackP D Type SAS SAS SAS SATA SAS SAS	lanc Capacity 278.87 GB 278.87 GB 278.87 GB 931.00 GB 278.87 GB 278.87 GB 278.07 GB	- Drive R State UG UG UG Online Online	DG    00 00	Vendor HP HP HP ATA HP HP	PAGE=1 Secured: No Encryption Capable: No EKM Support: Disabled Connector: Enclosure Model: SGPIO Slot Mumber: 6 Logical Sector Size: 512 B Physical Sector Size: 512 B Physical Sector Size:
P1 He IN	F2-Onerst	Long P5-Refe	ech finla	N.Nev	Page Ctv	GoToPage:2>

Figure 6-98

b) Enter the interface shown in figure 6-99 and select locate - > start to complete the disk positioning operation.



11	Barbi	lane		PAGE=1
evice	ID Type	Capacity	Bebuild	
9 13	SAS	278.87 GB 278.87 GB	Copyback	Mtion Capable:
19	SATA	931.00 GB	Locate	Start
10	SAS	278.87 GB	Place drive Online Place drive Offline	
			Make Global HS Remove Hot Spare drive	unber:
			Drive Erase )	B
			Make JBOD Make unconfigured good	t ID:
			Prepare for Removal	BBECOBE

Figure 6-99

- 12 说明
- ♦ Locate  $\rangle$  start: start the disk location operation.
- ♦ Locate  $\rangle$  stop: stop locating the disk.



### Initialize logical drive:

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

a) As shown in figure 6-100, select the disk to be initialized in the VD MGMT interface and press F2.



Figure 6-100

b) Enter the interface shown in figure 6-101 and select initialization -  $\rangle$  start FGI.





Figure 6-101



- ♦ BGI: background initialization, initialization in the background. Part of the raid space is initialized for writing data, and the rest space is initialized in the background.
- FGI: full gross initialization, which initializes all the space of raid, and writes data after initialization.



c) Enter the interface shown in figure 6-102, select Yes, and press enter to complete the initialization operation.

VD Ngmt P	) Mgmt Ctrl Mgmt Properties Virtual Drive Management (aRAID 9361-8i (Bus 0x02, Dev 0x00)	
-[-] Driv -[-] -[+] -[+] -[+] Un -[-] Un -[-] Un	ve Group: 0, RAID 1 Initialization will destroy data on the v drive. Are you sure you want to continue?	Virtual Drive 8:
F1-Help F2	YES (1) Operations F5-Refresh Ctrl-N-Next Page Ctr	·1-P-Prev Page F12-Ct1r
	Figure 6-102	



### Erase disk data:

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

- 1. Erasing physical disk data
- a) As shown in figure 6-103, select the physical disk to be erased on the PD MGMT interface, and press F2.

U)	D Mgnt	PD Mgmt	Ctrl Mgnt	Propertie	25	and a	
-				- NLING U	mage	icat	PAGE=1
П		Back	Plane				Secured:
	Devicel	D Type	Capacity	State	06	Vendor	No
	9	SAS	278.87 GB	UG	100	HP	Encryption Capable:
П	13	SAS	278.87 GB	UG		HP	No
Ш	14	SAS	278.87 GB	UG		HP	EKM Support:
Ш	15	SATA	931.00 GB	UG		ATA	Disabled
Ш	16	SAS	278.87 68	Online	88	HP	Connector:
Ш	17	SAS	278.87 GB	Online	88	HP	
Ш							Enclosure Hodel:
Ш							SGP 10
Ш							Slot Number:
Ш							6
Ш							Logical Sector Size:
Ш							512 B
Ш							Phusical Sector Size:
Ш							512 B
Ш							Product ID:
Ш							FEGODOFCUNE
							10030010001
l							(GoToPage:2)
F	1-Help	F2-Opera	tions F5-Refr	esh Ctrl-	-Next	Page Ctr	1-P-Prev Page F12-Ctlr

Figure 6-103

b) Enter the interface shown in figure 6-104, select erase mode (the default mode is recommended: simple), and press enter.



BackPlane		Plane	ped:	
evice	ID Type	Capacity	Rebuild	A Constant
13	SAS	278.87 GB 278.87 GB 931.00 GB 278.87 GB 278.87 GB 278.87 GB	Copyback	Pitton Capable:
15	SATA		Locate	bled
17	SAS		Place drive Online Place drive Offline	ure Model:
			Make Global HS Renove Hot Spare drive Drive Erase	, unber:
			Make JBOD Make unconfigured good	Nornal Thorough
			Prepare for Removal	Stop Lrase

Figure 6-104

c) Enter the interface shown in figure 6-105, select Yes, and press enter to complete the operation of erasing the physical disk data.



Figure 6-105



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

- 2. Erasing logical disk data
- a) As shown in figure 6-106, select the logical disk to be erased in the VD MGMT interface, and press F2.



Figure 6-106



b) Enter the interface shown in figure 6-107, select erase mode (the default mode is recommended: simple), and press enter.



Figure 6-107

c) Enter the interface shown in figure 6-108, select Yes, and press enter to complete the operation of erasing logical disk data.






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

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

- a) Switch the disk mode Unconfigured Bad to Unconfigured Good.
- b) As shown in figure 6-109, in the foreign view interface, select raid card, press F2, select foreign config > clear, and press enter.



Figure 6-109

c) In the pop-up dialog box shown in figure 6-110, select OK and press enter to complete the operation of clearing disk raid information.



AVAG	O MegaRAID SAS 9361-81 BIOS Configuration	Utility 5.16-0302
VD Mgat PD	) Mgnt Ctrl Mgnt Properties Foreign Vi	CU
[-] AVAGO M  -[-] Driv  -[-] V	legaRAID SAS 9361-81 (Bus 2, Dev 8)4 Pe Group: 8, Raid 6 Mirtual Drives	Foreign Config Preview Controller:
-(+) -(-) -(-) -(-)	Foreign configuration will be lost? Are you sure?	2
L.	OK	
F1-Help F2-	Operations F5-Refresh Ctrl-N-Next Page Ctr	1-P-Prev Page F12-Ctlr

Figure 6-11

# Chapter 7 IPMI rapid deployment

## 7.1 Rapid deployment of IPMI process





## 7.1.1 Confirm that the motherboard supports IPMI function

Check your motherboard manual and confirm that your motherboard supports IPMI, and then find the dedicated IPMI network port of the motherboard, or select the shared network port, as shown in Figure 7-2.



Figure 7-2 special network port of main board



## 7.1.2 Enter BIOS to set IPMI function

Restart your system. Press ESC or del to enter the BIOS system of the motherboard while the device is booting. The BIOS setting interface is shown in Figure 7-3.

Aptio Setup Utilit Main Advanced Server Migmt Event Logs secu	y Copyright (C) 2020 American Me nity Boot save Exit	gatrends, lnc.
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time	American Megatrends for point UEFI 2.7; PI 1.6 GDLR.0664 08/24/202014:42:51 G1DLRO	Choose the system default language
CPLD Hame CPLD version Build Date and Time	04 08/03/2020	
Access Level CPU Information Processor 0 Processor 1	Administrator 2300MH1 1100m 12300MH 1100m	· ++ Select Screen ↑ : Select Item Enter: Select
Memory Information Total Memory	Total Memory: 32 GB (DDR4)	+/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
System Language System Date System Time	[English] [ed08/26/2020] [17:44:42]	F4: Save Exit ESC: Exit
Version 2 20 1275 (	opyright (C) 2020 American Megatrends Inc.	

Figure 7-3 BIOS setting interface of motherboard

After entering the interface, switch the menu item to the server MGMT option by pressing the left and right keys on the

keyboard, and you will see the page as shown in Figure 7-4.

Aptio Set	up Utility Copyright (C) 2020 America	an Megatrends, Inc.
Main Advanced	Event Logs Security Boot save Exit	
BMC Self Test Status BMC Device ID BMC Device Revision BMC Firmware Revision IPMI Version BMC Interface(s) BMC Support Wait For BMC	FAILED refer one one one one one one one one	Configure BMC network parameters
<ul> <li>Bmc self test log</li> <li>BMC network configuration</li> <li>View System Event Log</li> <li>BMC User Settings BMC Warm Reset</li> </ul>		++ Select Screen 1 : Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save Exit ESC: Exit
Version 2.2	20. 1275. Copyright (C) 2020 American Megatre	nds, Inc.



#### Figure 7-4 server MGMT interface

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

Aptio Setup Utility -	Copyright (C) 2017 America erver Mgmt	an Megatrends, Inc.
BMC network configuration BMC Dedicated Management Channel Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address Router MAC address	[Unspecified] DynamicAddressBmcDhcp 0.0.0.0 0.0.0.0 11-22-33-aa-bb-cc 0.0.0.0 00-00-00-00-00-00	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
BMC Sharelink Management Channel Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address Router MAC address	[Unspecified] DynamicAddressBmcDhcp 192.168.0.236 255.255.252.0 aa-bb-cc-00-00-01 192.168.1.1 00-00-00-00-00-00	++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values 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 dedicated network port, and the other is sharelink shared network port. Here with

For example, if you connect a private network port, the setting method is the same as that of 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.

BMC network configuration		Select configure LAN
BMC Dedicated Management Chappel		channel parameters statically
Configuration Address source	[Unspecified]	BMC) Unspecified option will
Current Configuration Address sour	DynamicAddressBmcDhcn	not modify any BMC network
Station IP address	0000	parameters during BIOS phase
Subnet mask	0.0.0.0	
Station MAC address	11-22-33-aa-bb-C	
Router IP address	0.0.0	
Router MAC address		
	Unspecified	
3MC Sharelink Management Ch 👘 🐂	Static	
Configuration Address sourc	DynamicBmcDhcp	
Current Configuration Addre 🛛 👘	ynamicBmcHonDhcp	Select Screen
Station IP address		Select Item
Subnet m <i>a</i> sk		r: Select
Station MAC address	aa-bb-C-00-00-01	+/- Change Opt.
Router IP address	192.168.1.1	F1: General Help
Router MAC address	00-00-00-00-00-00	F2: Previous Values
		F3: Optimized Defaults
		F4: Save Reset
		ESC: Exit



Figure 7-6 configuration of network port network mode

There are four network modes that can be configured in the interface, namely unspecified, static, dynamic BMC DHCP and dynamic BMC on DHCP.Static mode is static mode, you can manually set IP address, and DHCP is dynamic mode. Setting this option can make BMC automatically obtain IP address from DHCP server.IPMI interface configuration static mode

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

- (1) If there are multiple IPMI devices in your LAN, it should be noted that the IP addresses between devices cannot be duplicated, otherwise communication cannot be established.
- (2) If the IP address of your IPMI device is an intranet address, the terminal device communicating with it must be in the same network segment as the address of the IPMI device.
- (3) The IP address of IPMI device can be mapped to Wan through routing device to realize remote management.
- (4) IPMI port has the function of obtaining IP address through DHCP.
- (5) IPMI supports TCP / IP V4 and TCP / IP V6.

Configure the IP address and subnet mask according to your actual situation. For example, 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.After setting, press F4 to save and exit BIOS interface.

So far, we have completed the operation of configuring IPMI function.

BMC network configuration		Enter router IP address
BMC Dedicated Management Channel Configuration Address source Current Configuration Address sour Station IP address Subnet mæk Station MAC address Router IP address Router MAC address BMC Sharelink Management Channel Configuration Address source Station IP address Subnet mæsk Station MAC address Router IP address	[Unspecified] DynamicAddressBmcDhcp 0.0.0 0.0.0 11-22-33-aa-bb-c 0.0.0 00-00-00-00-00 [Static] 192.168.0.236 255.255.252.0 aa-bb-c-00-00-01 192.168.1.1 00-00-00-00-00-00	++ Select Screen : Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save Reset ESC: Exit

Figure 7-7 Satic mode setting



### 7.1.3 IPMI configuration Java sol

- 1. When the system starts, press the < del > key to enter the BIOS setting interface.
- 2. Switch to the Advanced menu, select serial port console redirection and press the < ENTER > key.
- 3. Make sure that the console redirection of COMO is in the [enabled] state. If not, select console redirection and press < ENTER > key to set the status to [enabled]. In order to ensure the normal operation of IBMC, the factory has set this option to [enabled] by default.

## 7.2 Introduction of IPMI function

After completing the previous configuration steps, we can start to log in to the IPMI management interface. The IPMI management interface can be accessed by using a standard web browser. Here, we recommend using Google Chrome browser, firebox fox browser and IE browser (ie 11 or above) to get the best browsing experience. Since the new version of the operating interface is based on HTML5, which costs a lot of computer resources, we recommend that the client configure more than 8g of memory when using KVM.

## 7.2.1 Enter the operation interface

Take Google Chrome as an example. Enter the IPMI access address in the address bar of the browser and press enter to access the IPMI management interface. Since the HTTP links have been converted to encrypted links of HTTPS, the privacy setting error page as shown in Figure 7-8 will be entered, and the contents of other browsers may be different.

		Figure 7-8 Google Chrome privacy settin	gs error page		1	83	82. F
<b>网络白豆菜</b> 根果	×		4.400002				24
€ ⇒ 0		https://192.168.0.236	\$	0	8	*	ŧ
	A						
	Wash to be						
	芯的连接	个是私省连接					
	攻击者可能会。 息)。 <u>了解</u> 还	(例如:) 	8码、通讯内容或信用卡信				
	NET:ERR_CERT_A	UTHORITY_INVALID					
	🗌 জাইচাৰ Goog		unna. Brazan				
	商业		ARCON				

On this page, click "advanced" > > "continue to go" to access the IPMI management page normally and enter the login page, as shown in Figure 7-9.



÷	÷	୯ ଅ	No	37/1	92168.02	36/					$\dot{\Omega}$	Ø	۹.	¥
									_					
							Residence form							
							- CD		L					
							Respondent grant fing to tree							
								Brown	1					
							Borgot	1000						

Figure 7-9 IPMI management login interface

## 7.2.2 Default user name and password

Factory default user name: admin factory default password: admin

When you log in with this user name, you will get all administrator rights. It is recommended that you change your

password after logging in.

## 7.2.3 Content of IPMI management system

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

Gooxi Guoxin						8	0	Oten	Allegands 🔒 altrin -
e nos nil Bigburgo	仪Surface control								# 工页 Roard only
•	1 d 7 hrs	test funde dans terry	x	=1					
<b>6</b> (552)	Since the last upgrade, the host runtime	Suspend doasentions	-	Access top		4			
System kt :		OK,n (		•	cost letter >				
) PU	0 firmer etc.	A 100000	-	Server mentang					1
Log & Report	B.IC versos	autom)	1						
sat up	100 IBAC composer times	MAC 2004-51					8		
Carline sees	AQ[3202016-23-57047	002402+202		Current recovery					
Image redextion	BCS versus	00.24 ec 2.99 da :							
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nolius	0100000								
	Transister time of BOS	002-4ECF2 00CB							
	G242020144221	UHCP							
		kel address							
	Version C	1921681-214							
	CLD name	PV retwork mode							
	CIDIPO	DHCP							
	Cplotime								
	07(22/2020	224 (1612)	0						

Figure 7-10 home page of IPMI management system



#### **IPMI** management interface menu description

#### (1) Dashboard

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

network information and sensor monitoring information.

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

Network information includes MAC address of system network and BMC network information. You can choose to view the shared network port or private network port of BMC.BMC network information includes BMC network MAC address information, IPv4 network mode information, IPv4 address information, IPv6 network mode information and IPv6 address information.

Sensor monitoring information will display the current alarm sensor information in real time, including sensor name, sensor 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 field. When the alarm is cleared, 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 the CPU box to view the CPU information. If the memory block is displayed in green, it means that the memory exists. Click the memory block to view the memory information.

(4) Hard disk information

For the backplane with expander, the green square indicates that the hard disk is in place, otherwise it is not. The status of the hard disk can be viewed at the right or bottom of the hard disk box .Left click on the green box to view the details 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 latest power consumption can be viewed.

(6) Fru information

Select this menu to view the basic information of fru.

(7) Log & Report

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

(8) set up

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

(9) Remote control

In this page, you can start KVM, sol, power control, uid (server flag light) control.

(10) Image redirection

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

(11) maintain

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

(12) cancellation

Click to log off the current user's login.





## 7.2.4 Introduction to KVM remote management

#### Start KVM remote management

As shown in Figure 7-11, KVM can be started under remote control KVM & Java sol remote control menu.



Figure 7-11 start KVM

Figure 7-12 shows the KVM interface after starting KVM.



Figure 7-12 KVM interface

As shown in Figure 7-13, the KVM interface includes two parts: one is the menu and shortcut button, the other is



# Datasheet

the window of remote desktop, that is, the server desktop information returned remotely.

t ş <u>af</u> e				
op_KVLI		Quick	(CD Image: Browse File (0 KB 3)	arti
ouse Options Send Keys Ho	: Keys Video Record Power Active Users Help	operation	A Zoom 100%	ľ
BLK7: Ali	æ(s).			
Р	;iRoot(0x1)/Pci(0x8,0x1)/Pci(0x0,0x3)/USB(	(0x1,0x0)/USB(0x1,0x0)/Unit(0x3)		
BLK8: A	ias(s):			
P	ciRoot(0x1)/Pci(0x8,0x1)/Pci(0x0,0x3)/USB(0)	<1,0x0)/USB(0x1,0x0)/Unit(0x4)		
BLK9: AI	as(s):			
P	iRoot(0x2)/Pci(0x8, 0x2)/Pci(0x0, 0x0)/Sata(	0x2, 0xFFFF,0x0)		
BLK13: AI	as():			
Р	:iRoot(0x2)/Pci(0x8, 0x2)/Pci(0x0, 0x0)/Sata(	0x3, 0xFFFF, 0x0)		
BLK10: AI	as(s):		encounter attraction for the fraction of the form	
•	ciRoot(0x2)/Pci(0x8,0x2)/Pci(0x0,0x0)/Sata(0)	x2,0xFFFF,0x0)/HD(1,GPT, 3595CFB5-3383-	-4F74_AD	
40-CB1DA22C5	3C0,0800,0800 <u>0</u> )			
BLK11: AI	as(s):			
- Frank in the second s	ciRoot(0x2)/Pci(0x8, 0x2)/Pci(0x0, 0x0)/Sata(	0x2, 0xFFFF, 0x0)/HD(2, GPT, 01094C58-8	0F9-4433-AB	
7E-B56 EBDBD	C679,0×8800,×C7F8000)			
BLK12: Ali	15(S):			
	<pre>IROOt(UX2)/ PCI(UX8, UX2)/ PCI(UX0, UX0)/ 5 PXC0000000 ×1054 0000</pre>	Sata(0x2, 0xFFFF, 0x0)/ HD(, GPT, 5CB2F	F4A7-8281-405C-82	
	DAC600600, A166A0000)			
BLKID. A	ilas(s).	DIA OFFEE DIA VILO A OFF OFFARADE PR	250 4206 DZ	
	E4C 064900 0200000	0x3, 0xFFFF, 0x0//HD(2, GPT, 06FA830F-B8	SEB-4380-B/	
BLK16: AL	as0:			
P	asy. iBoot(0x2)/Pci(0x8_0x2)/Pci(0x0_0x0)/Sat		9-E265-48E0-82	
AE-6BB325127	A75.0264800.0744A2000)			
Press ESC 2 se	onds to skip startup, nsh any other key to	o continue.		
shell>				
Shell>				
>				
Shell>	Serv	er remote		
>				
Shell>				
Shell>				

Figure 7-13 KVM interface composition

## 7.2.5 Remote control shortcut operation

🔒 🛛 Stop КУІМ	Stop KVM
⊙CD image: Browse File (0KB) Start media     Table 1 - :	Hanging on CD image, usually used for remote installation of operating
	system
🛕 Zoom 100% 🖵 😃	The host display is unlocked and the





## 7.2.6 Introduction to sol

Click to activate Java sol under the page shown in Figure 7-14 to open the interface as shown in Figure 7-14.

Gooxi Guoxin	
Host Online	
Quick Link 🔻	KVM SOL KVMesol
🖀 Dashboard	KVM
🚯 Sensor 🕐	
System Inventory	📥 Launch KVM
> FRU Information	
Logs Reports >	Serial Over LAN
Settings	
🖵 Remote Control	🛓 Activate
Image Redirection	
🔎 Maintenance	
Sign out	

Figure 7-14 enable Java sol

1. Click to activate, the sol interface as shown in Figure 7-15 will appear.

2. Press enter to activate the screen.

BIOS Information				Choose the system	
BIOS Vendor	American Megatrends			* default language	
Core Version	the pontone tour			*	
Compliancy	UEFI 2.7; PI 1.6			*	
Project Version	G1DLR 0.07 x64			*	
Build Date and Time	Date and Time 09/27/20214:2			*	
				*	
CPLD name	G1DLRO			*	
CPLD version	04			*	
Build Date and Time	7/22/202			*	
				* 🔀 Select Screen	
Access Level	Administrator			* : Select Item	
				* Enter: Select	
CPU Information				+ +/- Change Opt.	
Processor		@0240MHz1		+ F1: General Help	
Processor 1		(2401/1Hz1		+ F2: Previous ∨alues	
				+ F3: Optimized Defaults	
Memory_Information				v F4: Save Exit	
				ESC: Exit	



Note: only BIOS screen synchronization has been tested for sol interface operation function, and other interfaces have not been tested. This is an operation demonstration without specific description.



## 7.3 Other ways to connect to IPMI

Ast2500 firmware meets IPMI 2.0 specification, so users can use the standard IPMI driver assigned by the operating system.

## 7.3.1 IPMI driver

Ast2500 supports Intel referenced drivers, which can be obtained from the following websites: <u>https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-technical-resources.html</u> Through Windows Server 2003 R2, Microsoft also provides IPMI driver package. You can also use the open IPMI driver in the system.

Ast2500 supports open IPMI driver of Linux kernel. Use the following command to load IPMI driver: "modprobe IPMI"\_devintf" "modprobe ipmi\_If you are using an older version of the Linux kernel, you need to use IPMI\_KCs "replace" IPMI\_Si "component.

## 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 documents are designed to help you quickly understand and deploy the IPMI functions of the system. We will provide other help documents for the detailed functional operation manual of IPMI.



# **Chapter 8 Product specifications**

function	technical specificatio				
	ns				
Series models	2u8, 2u12, 2u25 disk server quasi system				
size	2U: 798*433.4*87.6mm				
processor	Supports two AMD epyc 7002 series processors, with				
	a maximum of 240W (TDP) / 64 cores				
Memory type	Support DDR4 rdimm / Irdimm / 3ds Irdimm / nvdimm-n server memory, internal The storage frequency supports 1866 / 2133 / 2400 / 2666 / 3200mhz; a single CPU supports 8 DDR4 channels, each channel supports 2 DIMMs, and two CPUs support 32 DDR4 slots; the single capacity is 16GB, 32GB, 64GB, 128GB, 256gb, and the maximum memory capacity of the whole machine is 8tb.				
Storage controller	Internal storage: 4 SATA ports, 2 pcie4.0 x2 m.2 interfaces, 3 minisas 8643 interfaces, and 2 slimline X8 interfaces				
Driver	Front panel supports up to 8 / 12 / 25 hot swap 3.5 / 2.5 inch SAS / SATA (HDD / SSD) The rear supports 4 2.5 inch and 4 3.5 inch hot swap SAS / SATA (HDD / SSD) or 8 2.5 inch hot swap SAS / SATA (HDD / SSD)				
External port	Front port: 1 VGA, 2 USB3.0				
	Post: 1 VGA, 1 db-9com port, 2 USB3.0, 1 RJ45 Gigabit management network port, 2 Gigabit RJ45 service				
	network port				
BMC	ASPEED AST2500				
PCIe extension	2 pcies4.0 X32; 2 pcies4.0 x16				
	1 x 4.0 x 8; 2 x 4.0 x 2				
TPM	support				
Power Supply	Platinum grade 550W, 800W, 1200W, 1600W hot swap redundant power supply (adapted according to actual power				
BMC chip	ASPEED AST2500				
IPMI compatible	IPMI2.0				
Management	1 dedicated RJ45 management network port				
operating system	Windows Server 2016/2019 Vmware vSphere 6.7 u3 Vmware vSphere 6.5 EP15 Citrixt Hyperxisor 8.1 Redhat RHEL 8.0.2 Redhat RHEL 7.6.6 Suse SLES 15 SP1 Suse SLES 14 SP4				
	Canonical Ubuntu 18.04.3 LTS				
	Canonical Ubuntu 16.04.6 LTS				
Energy	CECP、CELP				
saving	193				
certification					



Security	CCC、CE、FCC
certification	
RoHS	Meet the requirements
working	10°C ~ 40°C
temperature	
Working	35%~80%
humidity	
Storage	-40°C ~ 70°C
temperature	
Storage	Humidity: 20% ~ 90% (including packaging)
humidity	

Table 1 - 38