

GIGABYTE™

R292-4S0

R292-4S1

2U Quad 3rd Generation Intel® Xeon® Scalable Processors Rack-mount Server

User Manual

Rev. 1.0

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Documentation Classifications

In order to assist in the use of this product, GIGABYTE provides the following types of documentation:

- User Manual: detailed information & steps about the installation, configuration and use of this product (e.g. motherboard, server barebones), covering hardware and BIOS.
- User Guide: detailed information about the installation & use of an add-on hardware or software component (e.g. BMC firmware, rail-kit) compatible with this product.
- Quick Installation Guide: a short guide with visual diagrams that you can reference easily for installation purposes of this product (e.g. motherboard, server barebones).

Please see the support section of the online product page to check the current availability of these documents.

For More Information

For related product specifications, the latest firmware and software, and other information please visit our website at <http://www.gigabyte.com>




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For any general sales or marketing enquiries, you may also message GIGABYTE server directly by email: server.grp@gigabyte.com

Conventions

The following conventions are used in this user's guide:

	NOTE! Gives bits and pieces of additional information related to the current topic.
	CAUTION! Gives precautionary measures to avoid possible hardware or software problems.
	WARNING! Alerts you to any damage that might result from doing or not doing specific actions.

Server Warnings and Cautions

Before installing a server, be sure that you understand the following warnings and cautions.



WARNING!

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

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



WARNING!

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



WARNING!

This server is equipped with high speed fans. Keep away from hazardous moving fan blades during servicing.



WARNING!

This equipment is not suitable for use in locations where children are likely to be present.



CAUTION!

- Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.
- Danger of explosion if battery is incorrectly replaced.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

Electrostatic Discharge (ESD)



CAUTION!

ESD CAN DAMAGE DRIVES, BOARDS, AND OTHER PARTS. WE RECOMMEND THAT YOU PERFORM ALL PROCEDURES AT AN ESD WORKSTATION. IF ONE IS NOT AVAILABLE, PROVIDE SOME ESD PROTECTION BY WEARING AN ANTI-STATIC WRIST STRAP ATTACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges without any component and pin touching. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

System power on/off: To remove power from system, you must remove the system from rack. Make sure the system is removed from the rack before opening the chassis, adding, or removing any non hot-plug components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the cables attached to the system before servicing it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface on the server) when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

**CAUTION!**

Risk of explosion if battery is replaced incorrectly or with an incorrect type. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Table of Contents

Chapter 1 Hardware Installation	10
1-1 Installation Precautions	10
1-2 Product Specifications	11
1-3 System Block Diagram	14
Chapter 2 System Appearance	16
2-1 Front View	16
2-2 Rear View	17
2-3 Front Panel LED and Buttons	18
2-4 Rear System LAN LEDs	19
2-5 Power Supply Unit (PSU) LED	20
2-6 Hard Disk Drive LEDs	21
2-7 Expansion PCIe Slot Configuration	22
Chapter 3 System Hardware Installation	23
3-1 Removing Chassis Cover	24
3-2 Removing and Installing the Fan Duct	25
3-3 Removing the Heat Sink	26
3-4 Installing the CPU	27
3-5 Installing the Memory	29
3-5-1 Six Channel Memory Configuration	29
3-5-2 Installing the Memory	30
3-5-3 DIMM Population Table	30
3-5-4 Processor and Memory Module Matrix Table	31
3-5-5 Intel Optane DCPMM DIMM Population Rule	32
3-6 Installing the PCI Expansion Card	33
3-7 Installing the Mezzanine Card	34
3-7-1 OCP 3.0	34
3-8 Installing the Hard Disk Drive	35
3-9 Installing the M.2 Device and Heat Sink	36
3-10 Removing and Installing the Fan Wall	37
3-11 Replacing the Fan Assembly	38
3-12 Replacing the Power Supply	39
3-13 Cable Routing	40
Chapter 4 Motherboard Components	49

4-1	Motherboard Components	49
4-2	Jumper Setting	51
Chapter 5	BIOS Setup	52
5-1	The Main Menu	54
5-2	Advanced Menu	57
5-2-1	Trusted Computing	58
5-2-2	Serial Port Console Redirection	59
5-2-3	SIO Configuration	63
5-2-4	PCI Subsystem Settings	64
5-2-5	USB Configuration	66
5-2-6	Network Stack Configuration	67
5-2-7	Post Report Configuration	68
5-2-8	NVMe Configuration	69
5-2-9	Chipset Configuration	70
5-2-10	Tls Auth Configuration	71
5-2-11	iSCSI Configuration	72
5-2-12	Intel(R) X710 10GBASE-T Network Connection	73
5-2-13	VLAN Configuration	75
5-2-14	IPv4 Network Configuration	77
5-2-15	Driver Health	78
5-3	Chipset Menu	79
5-3-1	Processor Configuration	80
5-3-2	Common RefCode Configuration	82
5-3-3	UPI Configuration	83
5-3-4	Memory Configuration	85
5-3-5	IIO Configuration	88
5-3-6	Advanced Power Management Configuration	90
5-3-7	PCH Configuration	92
5-3-8	Miscellaneous Configuration	94
5-3-9	Server ME Configuration	95
5-3-10	Runtime Error Logging Settings	96
5-3-11	Power Policy	98
5-4	Server Management Menu	100
5-4-1	System Event Log	102
5-4-2	View FRU Information	103
5-4-3	BMC Self Test Log	104
5-4-4	BMC VLAN Configuration	105
5-4-5	BMC Network Configuration	106
5-4-6	IPv6 BMC Network Configuration	107

- 5-5 Security Menu 108
 - 5-5-1 Secure Boot 109
- 5-6 Boot Menu 111
- 5-7 Save & Exit Menu 113
- 5-8 BIOS POST Beep code (AMI standard) 115
 - 5-8-1 PEI Beep Codes 115
 - 5-8-2 DXE Beep Codes 115











Chapter 1 Hardware Installation

1-1 Installation Precautions

The motherboard/system contain numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user manual and follow these procedures:

- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

1-2 Product Specifications

	System Dimension	<ul style="list-style-type: none"> ◆ 2U ◆ 438 x 87.5 x 858 (W x H x D, mm)
	CPU	<ul style="list-style-type: none"> ◆ 3rd Generation Intel® Xeon® Scalable Processors ◆ Intel® Xeon® Platinum 8300 Processors, Intel® Xeon® Gold 6300 Processors ◆ 6 UPI Links per processor ◆ TDP: <ul style="list-style-type: none"> » R292-4S0: up to 165W » R292-4S1: up to 250W ◆ 4 x LGA 4189, Socket P5
	Chipset	<ul style="list-style-type: none"> ◆ Intel® C621A Express Chipset
	Memory	<ul style="list-style-type: none"> ◆ Total 48 x DIMM slots ◆ DDR4 memory supported only ◆ 6-channel memory architecture ◆ RDIMM modules up to 64GB supported ◆ LRDIMM modules up to 128GB supported ◆ Supports Intel® Optane™ Persistent Memory 200 series ◆ 1.2V modules: 3200 (1DPC)/2933 (2DPC) MHz
	LAN	<ul style="list-style-type: none"> ◆ 2 x 10Gb/s BASE-T LAN ports (Intel® X710-AT2) ◆ NCSI function supported ◆ 1 x 10/100/1000 management LAN
	Video	<ul style="list-style-type: none"> ◆ Integrated in Aspeed® AST2500 ◆ 2D Video Graphic Adapter with PCIe bus interface ◆ 1920x1200@60Hz 32bpp, DDR4 SDRAM
	Storage	<ul style="list-style-type: none"> ◆ 10 x 2.5" NVMe/ SAS/ SATA hot-swappable HDD/SSD bays ◆ SAS card is required for SAS devices support
	SATA	<ul style="list-style-type: none"> ◆ Supported
	SAS	<ul style="list-style-type: none"> ◆ Supported via add-on SAS Card
	RAID	<ul style="list-style-type: none"> ◆ Intel® SATA RAID 0/1/10/5

**Expansion Slot R292-4S0**

Total 6 x PCIe x16 slots

Supports 4 x FHFL double slot GPU Cards or 6 x FHFL PCIe HBAs

- ◆ Riser Card CRS202A: 2 x PCIe x16 slot (Gen3 x16), FHFL
- ◆ Riser Card CRS2040: 2 x PCIe x16 slot (Gen3 x16), FHFL
- ◆ Riser Card CRS2029: 2 x PCIe x16 slot (Gen3 x16), FHFL
- ◆ 1 x OCP3.0 mezzanine slot
 - PCIe Gen3 x16
 - Supports OCP3.0 SFF standard
- ◆ 1 x M.2 slot:
 - M-key
 - PCIe Gen3 x2
 - Supports NGFF-2280 cards

**Expansion Slot R292-4S1**

Total 8 x PCIe x16 slots

- ◆ Riser Card CRS202A: 2 x PCIe x16 slot (Gen3 x16), FHFL
- ◆ Riser Card CRS2040: 4 x PCIe x16 slot (Gen3 x16), FHFL
- ◆ Riser Card CRS2029: 2 x PCIe x16 slot (Gen3 x16), FHFL
- ◆ 1 x OCP3.0 mezzanine slot
 - PCIe Gen3 x16
 - Supports OCP3.0 SFF standard
- ◆ 1 x M.2 slot:
 - M-key
 - PCIe Gen3 x2
 - Supports NGFF-2280 cards

**Internal I/O**

- ◆ 10 x SlimSAS 8i connectors (Gen3 x8)
- ◆ 1 x M.2 slot
- ◆ 1 x VROC connector

**Front I/O**





- ◆ 2 x USB 3.0
- ◆ 1 x Power button with LED
- ◆ 1 x ID button with LED
- ◆ 1 x Reset button
- ◆ 1 x NMI button
- ◆ 1 x System status LED
- ◆ 1 x HDD activity LED
- ◆ 2 x LAN activity LEDs

**Rear I/O**

- ◆ 2 x USB 3.0
- ◆ 1 x VGA
- ◆ 1 x COM
- ◆ 2 x RJ45
- ◆ 1 x MLAN
- ◆ 1 x ID button with LED

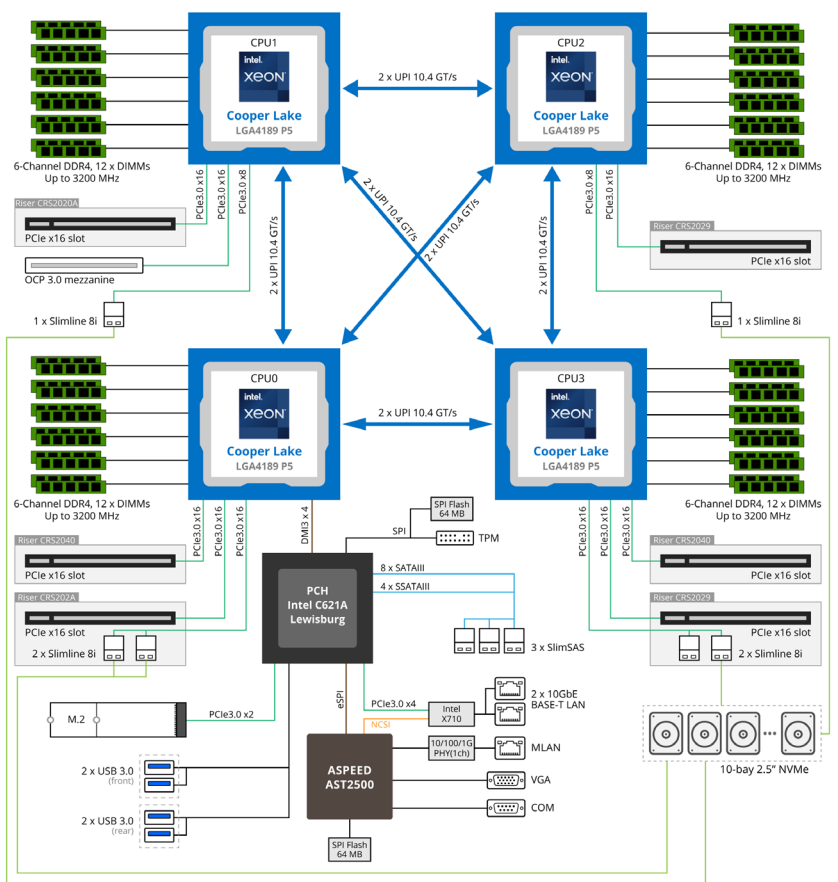
**Backplane I/O**

- ◆ CBP10A5: 10 x NVMe/ SAS/ SATA hybrid ports

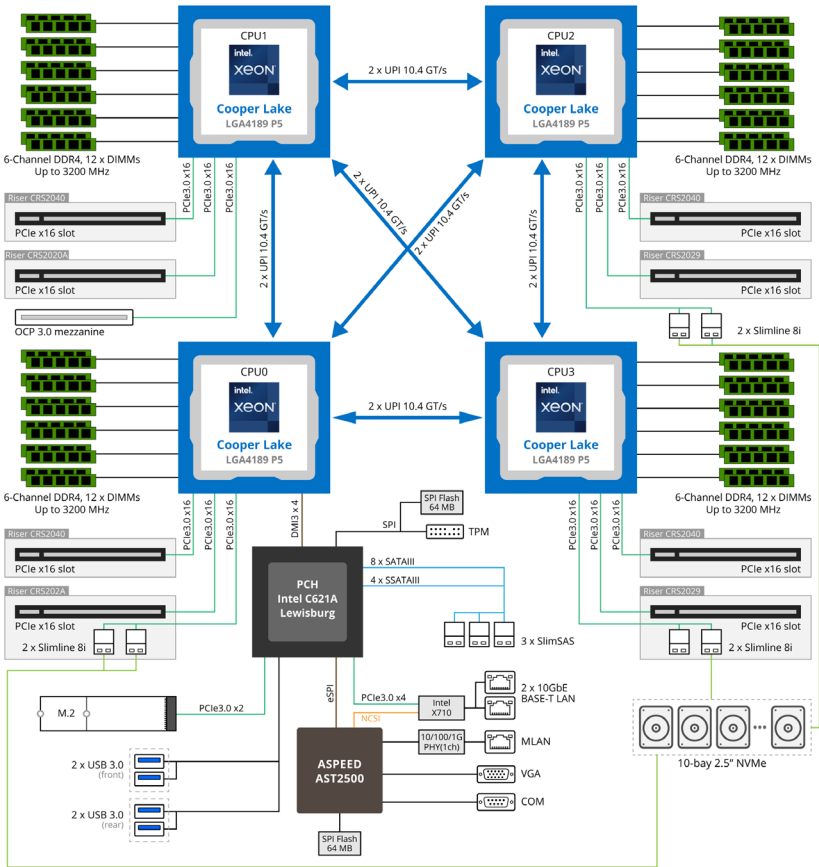
	TPM	<ul style="list-style-type: none"> ◆ 1 x TPM header with SPI interface ◆ Optional TPM2.0 kit: CTM010
	Power Supply	<ul style="list-style-type: none"> ◆ 2+0 3200W 80 PLUS Platinum Power Supply (R292-4S0) ◆ 1+1 3200W 80 PLUS Platinum Redundant Power Supply (R292-4S1) ◆ Input: <ul style="list-style-type: none"> - 100-127V~/ 14A - 180-219V~/ 16A - 220-239V~/ 16A - 240-264V~/ 16A 50/ 60Hz or 240V 16A ◆ Output: <ul style="list-style-type: none"> - 1100W@100-127V - 2434W@180-219V - 3111W@220-239V - 3234W@240-264V <p>NOTE: * The system power supply requires C19 type power cord</p>
	System Management	<p>Aspeed® AST2500 management controller Avocent® MergePoint IPMI 2.0 web interface:</p> <ul style="list-style-type: none"> ◆ Network settings ◆ Network security settings ◆ Hardware information ◆ Users control ◆ Services settings ◆ IPMI settings ◆ Sessions control ◆ LDAP settings ◆ Power control ◆ Fan profiles ◆ Voltages, fans and temperatures monitoring ◆ System event log ◆ Events management (platform events, trap settings, email settings) ◆ Serial Over LAN ◆ vKVM & vMedia (HTML5)
	Operating Properties	<ul style="list-style-type: none"> ◆ Operating temperature: 10°C to 35°C ◆ Operating humidity: 8-80% (non-condensing) ◆ Non-operating temperature: -40°C to 60°C ◆ Non-operating humidity: 20%-95% (non-condensing)
<p>* We reserve the right to make any changes to the product specifications and product-related information without prior notice.</p>		

1-3 System Block Diagram

R292-4S0 System Block Diagram

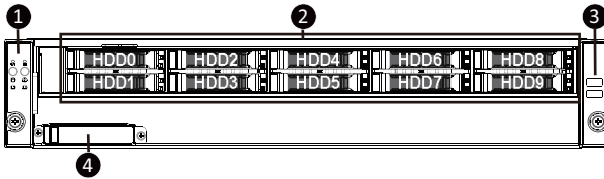


R292-4S1 System Block Diagram



Chapter 2 System Appearance

2-1 Front View

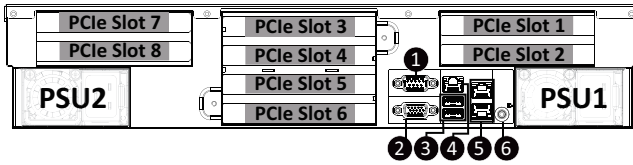


No.	Description
1.	Front Panel LEDs and Buttons
2.	2.5" HDD Bays
3.	Front USB 3.0 Ports
4.	Mezzanine Card Connector (OCP 3.0/ SFF Type)



- Please Go to Chapter **2-3 Front Panel LED and Buttons** for detail description of function LEDs.

2-2 Rear View

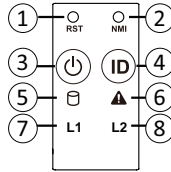


No.	Description
1.	Serial Port
2.	VGA Port
3.	USB 3.0 Port x 2
4.	10/100/1000 Server management LAN port
5.	10GbE BASE-T LAN Port x 2
6.	USB 3.0 Port x 2



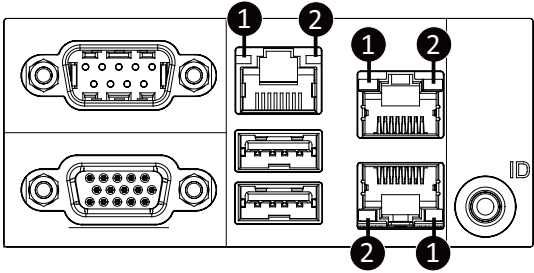
- Please Go to Chapter **2-7 Expansion PCIe Slot Configuration** for detail description of PCIe slot configuration.

2-3 Front Panel LED and Buttons



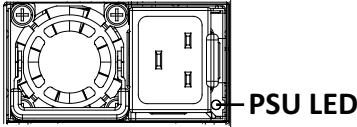
No.	Name	Color	Status	Description
1.	Reset Button			Press the button to reset the system.
2.	NMI button			Press the button server generates a NMI to the processor if the multiple-bit ECC errors occur, which effectively halt the server.
3.	Power button with LED	Green	On	System is powered on
		Green	Blink	System is in ACPI S1 state (sleep mode)
		N/A	Off	<ul style="list-style-type: none"> System is not powered on or in ACPI S5 state (power off) System is in ACPI S4 state (hibernate mode)
4.	ID Button			Press the button to activate system identification
5.	HDD Status LED	Green	On	HDD locate
			Blink	HDD access
		Amber	On	HDD fault
		Green/Amber	Blink	HDD rebuilding
		N/A	Off	No HDD access or no HDD fault.
6.	System Status LED	Green	Solid On	System is operating normally.
			Solid On	Critical condition, may indicate: System fan failure System temperature
		Amber	Blink	Non-critical condition, may indicate: Redundant power module failure Temperature and voltage issue Chassis intrusion
			N/A	Off
7/8.	LAN 1/2 Active/Link LEDs	Green	Solid On	Link between system and network or no access.
		Green	Blink	Data trasmission or receiving is occuring
		N/A	Off	No data transmission or receiving is occuring

2-4 Rear System LAN LEDs



No.	Name	Color	Status	Description
1.	1GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1GbE Link/ Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or receiving is occurring
		N/A	Off	No data transmission or receiving is occurring
1.	10GbE Speed LED	Yellow	On	5Gbps, 2.5Gbps, 1Gbps data rate
		Green	On	10Gbps data rate
		N/A	Off	100 Mbps data rate
2.	10GbE Link/ Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or receiving is occurring
		N/A	Off	No data transmission or receiving is occurring

2-5 Power Supply Unit (PSU) LED



State	Description
OFF	No AC power to all power supplies
1Hz Green Blinking	AC present / only standby on / Cold redundant mode
2Hz Green Blinking	Power supply firmware updateing mode
Amber	AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power
	Power supply critical event causing shut down: failure, OCP, OVP, fan failure and UVP
1Hz Amber Blinking	Power supply warning events where the power supply continues to operate: high temp, high power, high current and slow fan

2-6 Hard Disk Drive LEDs



RAID SKU		LED1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
No RAID configuration (via PCH, HBA)	Disk LED (LED on Back Panel)	Green	ON(*1)	OFF		BLINK (*2)	OFF
		Amber	OFF	OFF		OFF	OFF
	Removed HDD Slot (LED on Back Panel)	Green	ON(*1)	OFF		--	--
		Amber	OFF	OFF		--	--
RAID configuration (via HW RAID Card or SW RAID Card)	Disk LED	Green	ON	OFF		BLINK (*2)	OFF
		Amber	OFF	ON	(Low Speed: 2 Hz)	OFF	OFF
	Removed HDD Slot	Green	ON(*1)	OFF	(*3)	--	--
		Amber	OFF	ON	(*3)	--	--

LED 2	HDD Present	No HDD
Green	ON	OFF

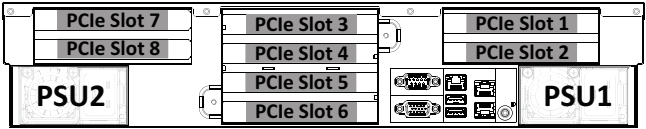
NOTE:

*1: Depends on HBA/Utility Spec.

*2: Blink cycle depends on HDD's activity signal.

*3: If HDD is pulled out during rebuilding, the disk status of this HDD is regarded as faulty.

2-7 Expansion PCIe Slot Configuration



R292-4S0				
PCIe Slot 1	✓	GPU1	RAID Card1	--
PCIe Slot 2	✓	--	RAID Card2	LAN Card 2
PCIe Slot 3	✓	GPU3	--	--
PCIe Slot 4	--	--	--	--
PCIe Slot 5	✓	GPU0	--	LAN Card 3
PCIe Slot 6	--	--	--	--
PCIe Slot 7	✓	--	--	LAN Card 1
PCIe Slot 8	✓	GPU2	--	--

R292-4S1			
PCIe Slot 1	✓	RAID Card 1	--
PCIe Slot 2	✓	RAID Card 2	LAN Card 3
PCIe Slot 3	✓	--	--
PCIe Slot 4	✓	--	LAN Card 1
PCIe Slot 5	✓	--	LAN Card 4
PCIe Slot 6	✓	--	LAN Card 6
PCIe Slot 7	✓	--	LAN Card 2
PCIe Slot 8	✓	--	--

Chapter 3 System Hardware Installation



Pre-installation Instructions

Computer components and electronic circuit boards can be damaged by electrostatic discharge. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the simple guidelines below to avoid damage to your computer or injury to yourself.

- Always disconnect the computer from the power outlet whenever you are working inside the computer case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal system of the computer case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging until you are ready to use the component for the installation.

3-1 Removing Chassis Cover

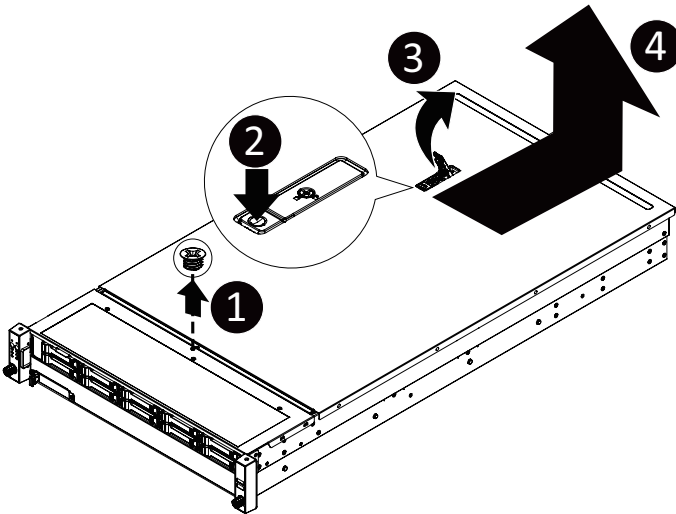


Before you remove or install the system cover

- Make sure the system is not turned on or connected to AC power.

Follow these instructions to remove the chassis cover:

1. Remove the screw securing the chassis cover.
2. Push button to unlock the handle.
3. Pull the grip handle to open the panel cover.
4. Slide the cover forward towards the rear of the system and then remove the cover in the direction indicated by the arrow.
5. To reinstall the chassis cover reverse steps 1-4.



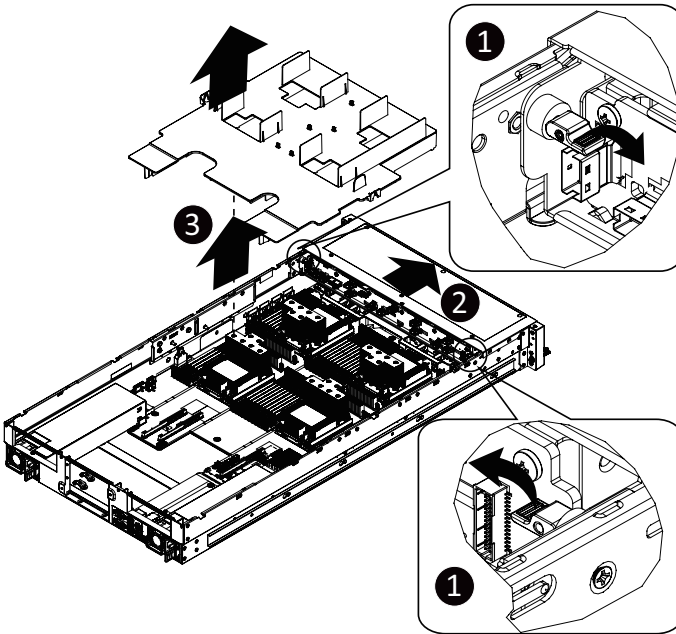
3-2 Removing and Installing the Fan Duct



Please remove the PCIe riser first and then remove Fan Wall before removing the Fan duct.

Follow these instructions to remove/install the fan duct:

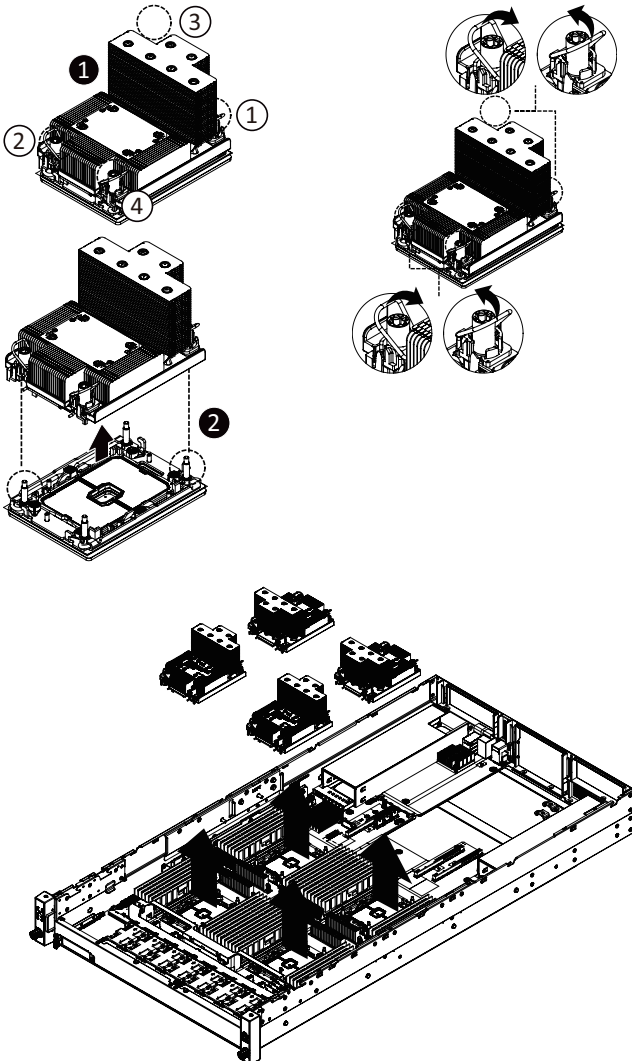
1. Remove the system front cover and then unlock the latches on both sides of the system.
2. Slide the front hard drive cage to the front of the system.
3. Lift up to remove the fan duct.
4. To install the fan duct, align the fan duct with the guiding groove. Push down the fan duct into chassis until its firmly seats.



3-3 Removing the Heat Sink

Follow these instructions to remove/install the fan duct:

1. Loosen the captive screws securing the heatsink in place in reverse order (4→3→2→1), then move the rotating wires into the unlatch position.
2. Lift and remove the heat sink from the system.
3. To reinstall the heat sink reverse steps 1-2 while ensuring that you tighten the captive screws in sequential order (1→2→3→4) as seen in the image below.



3-4 Installing the CPU



Read the following guidelines before you begin to install the CPU:

- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system unit on a flat and stable surface.
- Open the system according to the instructions.

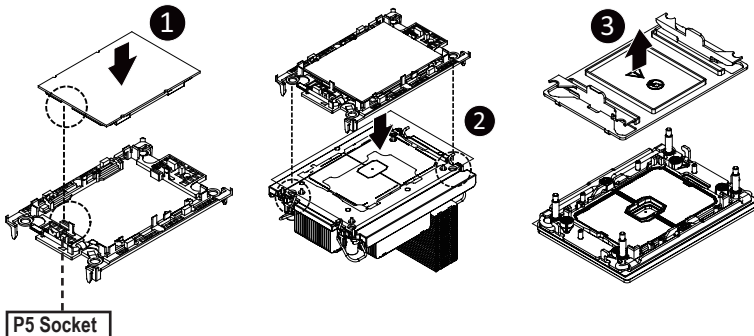


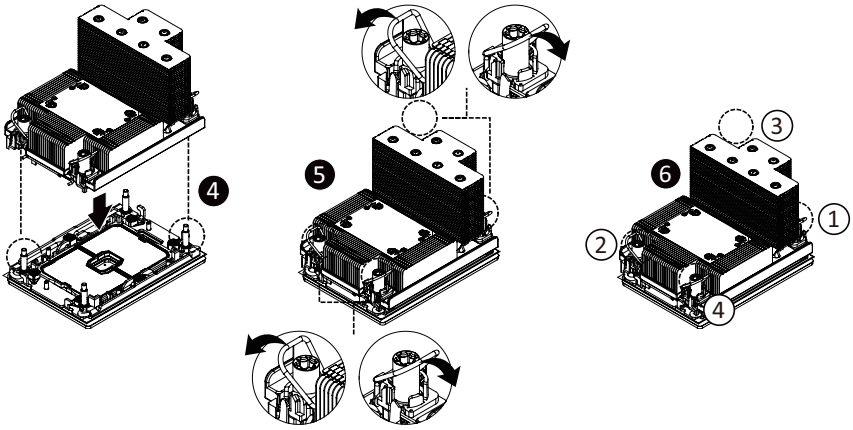
WARNING!

Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Follow these instructions to install the CPU:

1. Align and install the processor on the carrier.
NOTE: Apply thermal compound evenly on the top of the CPU. Remove the protective cover from the underside of the heat sink.
2. Carefully flip the heatsink cover. Then install the carrier assembly on the bottom of the heatsink and make sure the gold arrow is located in the correct direction.
3. Remove the CPU cover.
NOTE: Save the CPU cover in the event that you need to remove the CPU from the socket.
4. Align the heatsink with the CPU socket by the guide pins and make sure the gold arrow is located in the correct direction. Then place the heatsink onto the top of the CPU socket.
5. Position the rotating wires into the latch position.
6. Tighten the screws in a sequential order (1→2→3→4).
NOTE: When disassembling the heatsink, loosen the screws in reverse order (4→3→2→1) and then move the rotating wires into the unlatch position.





3-5 Installing the Memory

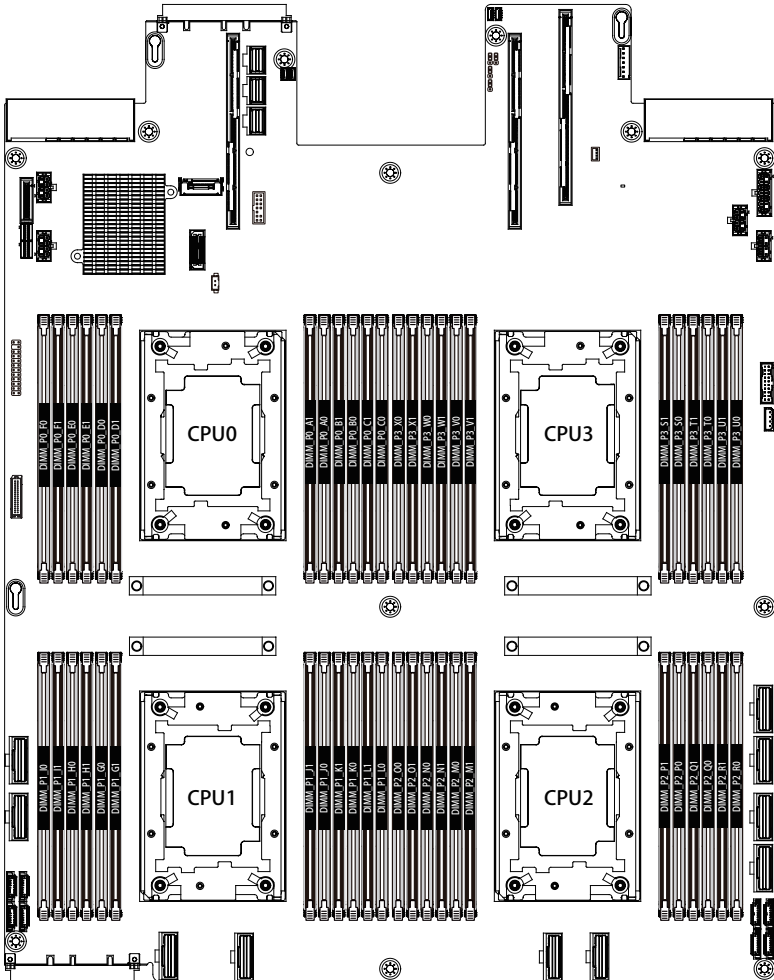


Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

3-5-1 Six Channel Memory Configuration

This motherboard provides 48 DDR4 memory slots and supports Six Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.



3-5-2 Installing the Memory

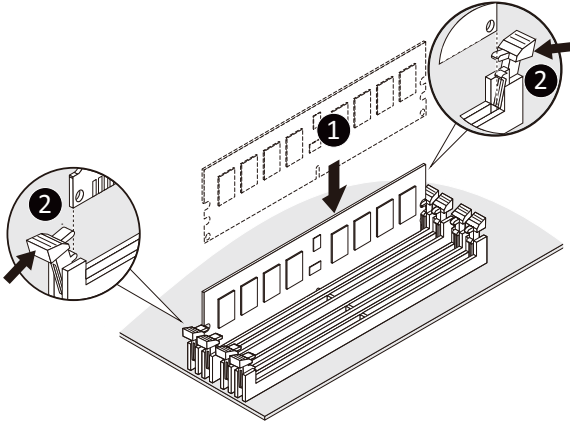


Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module.

Be sure to install DDR4 DIMMs on this motherboard.

Follow these instructions to install the Memory:

1. Insert the DIMM memory module vertically into the DIMM slot, and push it down.
2. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.
3. Reverse the installation steps when you want to remove the DIMM module.



3-5-3 DIMM Population Table

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slots per Channel(SPC) and DIMM per Channel (DPC)	
		8Gb	16Gb	1DPC	2DPC
				1.2V	1.2V
RDIMM	SRx8	8GB	16GB	3200	3200
RDIMM	SRx4	16GB	32GB		
RDIMM	DRx8	16GB	32GB		
RDIMM	DRx4	32GB	64GB		
RDIMM 3DS	(4R/8R)x4	2H-64GB	2H-128GB	3200	3200
		4H-128GB	4H-256GB		
LRDIMM	QRx4	64GB	128GB	3200	3200
LRDIMM 3DS	(4R/8R)x4	4H-128GB	2H-128GB	3200	3200
			4H-256GB		

NOTE!

- DIMM must be populated in sequential alphabetic order, starting with slot DIMM0.

3-5-4 Processor and Memory Module Matrix Table

Memory Q'ty for each CPU	CPU0												CPU1											
	F0	F1	E0	E1	D0	D1	A1	A0	B1	B0	C1	C0	I0	I1	H0	H1	G0	G1	J1	J0	K1	K0	L1	L0
1 DIMM								v												v				
4 DIMM			v		v			v		v					v		v			v		v		
6 DIMM	v		v		v			v		v		v	v		v		v			v		v		v
12 DIMM	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v

Memory Q'ty for each CPU	CPU2												CPU3											
	O0	O1	N0	N1	M0	M1	P0	Q1	Q0	R1	R0	X0	X1	W0	W1	V0	V1	S1	S0	T1	T0	U1	U0	
1 DIMM								v											v					
4 DIMM			v		v			v		v				v		v			v		v			
6 DIMM	v		v		v			v		v		v	v		v		v			v		v		v
12 DIMM	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v

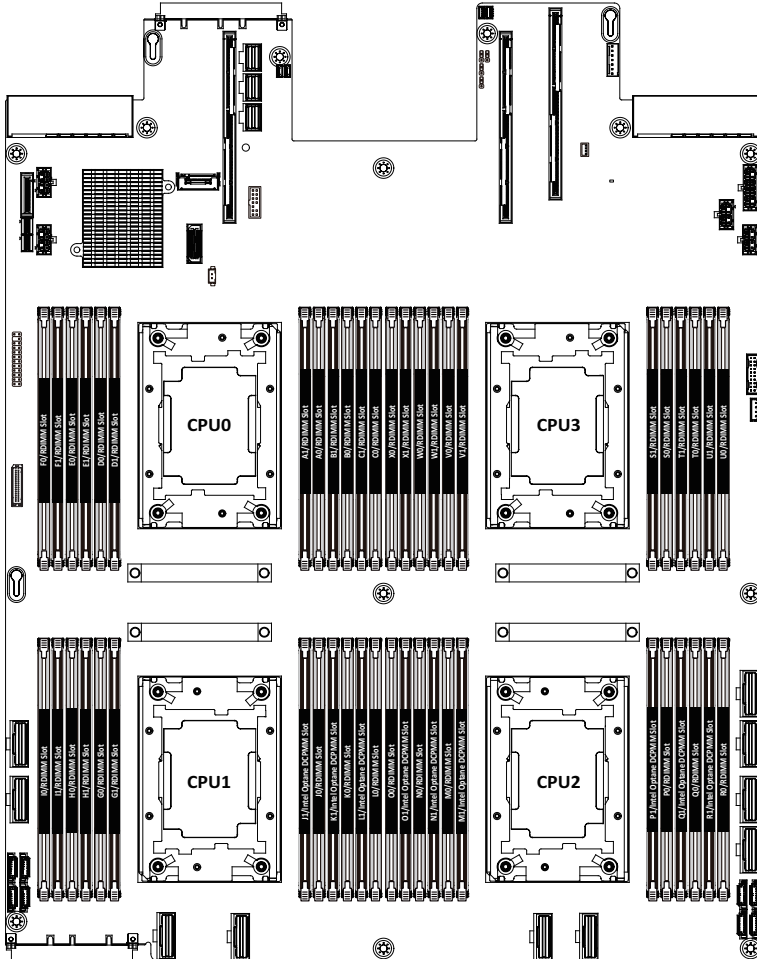
NOTE!

- There should be at least one DDR4 DIMM per socket.
- If only one DIMM is populated in a channel, then populate it in the slot furthest away from CPU of that channel.
- Channel 0's on each memory controller (A/D, J/G, P/M, S/V) must be populated with same total capacity per channel (if populated).
- Channel 1's on each memory controller (B/E, K/H, Q/N, T/W) must be populated with same total capacity per channel (if populated).
- Channel 2's on each memory controller (C/F, L/I, R/O, U/X) must be populated with same total capacity per channel (if populated).

3-5-5 Intel Optane DCPMM DIMM Population Rule

Thermal conditions for DCPMM DIMM support:

- The ambient temperature must be at or below 35°C
- The 3rd Generation Intel® Xeon® Scalable Processors used must have a maximum TDP of
 - » R292-4S0: 165W
 - » R292-4S1: 250W
- A maximum of 9 pcs 512G DCPMM may be installed
 - The DCPMM must be installed into the DIMM slot #1 next to the corresponding RDIMM in slot #0



3-6 Installing the PCI Expansion Card



- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to installing a PCIe card.

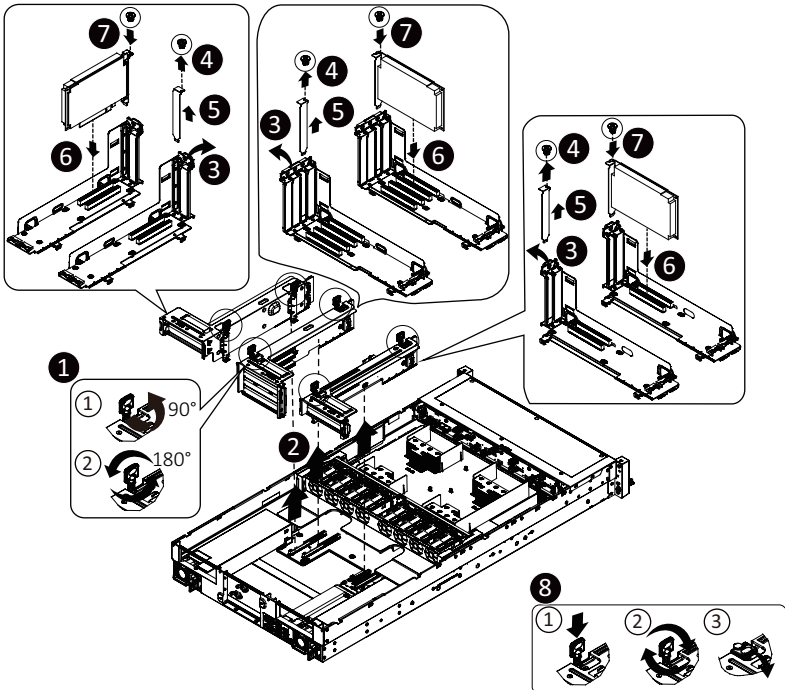
Failure to observe these warnings could result in personal injury or damage to equipment.



- The PCIe riser assembly does not include a riser card or any cabling as standard. To install a PCIe card, a riser card must be installed.

Follow these instructions for a PCI Expansion card:

1. To operate riser bracket latch, lift the handle 90 degrees and turn the handle 180 degrees in the unlatched position.
2. Lift up the riser bracket out of system.
3. Open the PCIe card holder latch.
4. Remove the screw securing the slot cover to the riser bracket.
5. Remove the slot covers from the riser bracket.
6. Orient the PCIe card with the riser guide slot and push in the direction of the arrow until the PCIe card sits in the PCIe card connector.
7. Secure the PCIe card with the screw.
8. Reverse the previous steps to install the riser bracket and ensure the riser bracket latch is firmly locked into place.



3-7 Installing the Mezzanine Card

3-7-1 OCP 3.0

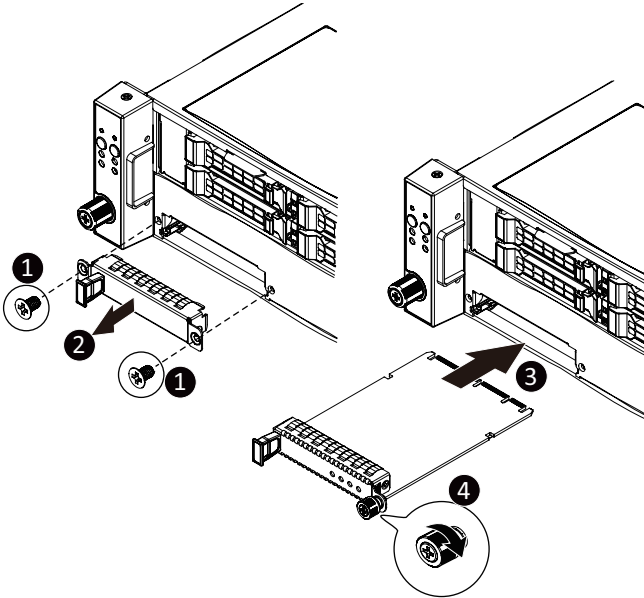


Use of the following type of OCP 3.0 NIC is recommended:

- OCP 3.0 SFF with Pull Tab
- OCP 3.0 SFF with Ejector Latch

Follow these instructions to install an OCP 3.0 mezzanine card:

1. Remove the two screws securing the mezzanine card slot cover.
2. Remove the slot cover from the system.
3. Insert the OCP 3.0 mezzanine card into the card slot ensuring that the card is firmly connected to the connector on the motherboard.
4. Tighten the thumbnail screw to secure the OCP 3.0 mezzanine card in place.
5. Reverse steps 3-4 to replace the OCP 3.0 mezzanine card.



3-8 Installing the Hard Disk Drive

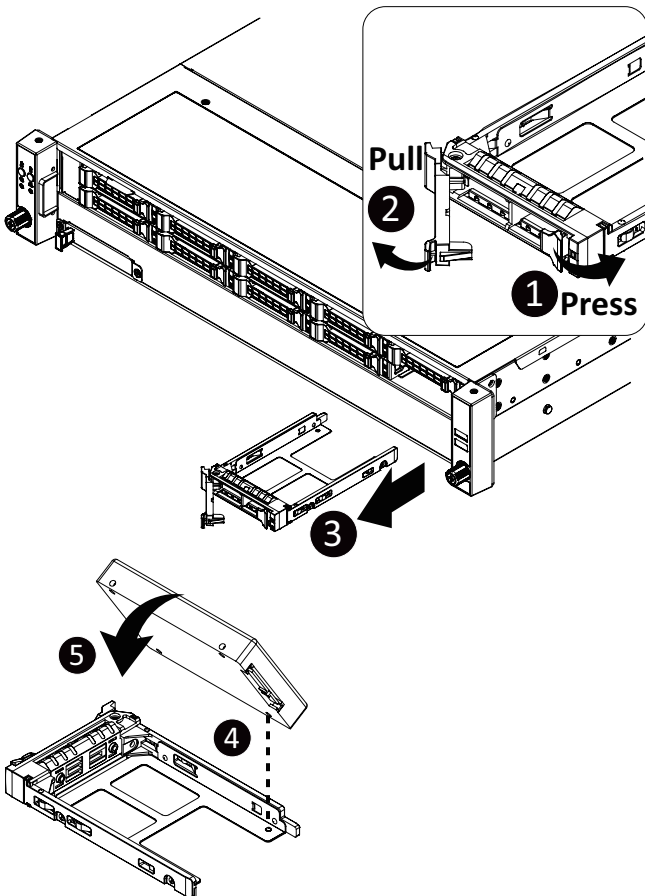


Read the following guidelines before you begin to install the HDD:

- Take note of the drive tray orientation before sliding it out.
- The tray will not fit back into the bay if inserted incorrectly.
- Make sure that the HDD is connected to the HDD connector on the backplane.

Follow these instructions to install a 2.5" HDD:

1. Press the release button.
2. Extend the locking lever.
3. Pull the locking lever in the direction indicated to remove the 2.5" HDD tray.
4. Orient the hard disk drive to the opening on the rear of the hard disk drive is aligned to the positioning stud on the HDD tray.
5. Slide the hard disk drive into the HDD tray.
6. Reinsert the HDD tray into the slot and close the locking lever.



3-9 Installing the M.2 Device and Heat Sink



WARNING:

Installation of the thermal pad over the M.2 device is required when installing an M.2 device. Lack of the thermal pad may result in the system overheating and throttle the system performance.

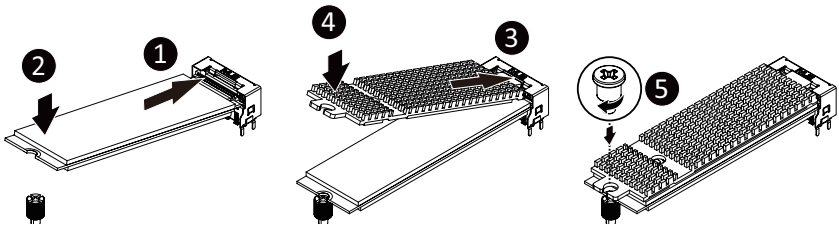


CAUTION

The position of the stand-off screw will depend on the size of the M.2 device. The stand-off screw is pre-installed for 22110 cards as standard. Refer to the size of the M.2 device and change the position of the stand-off screw accordingly.

Follow these instructions to install the M.2 device and heat sink:

1. Insert the M.2 device into the M.2 connector.
2. Press down on the M.2 device.
3. Install the thermal pad of the M.2 device to the M.2 device.
4. Press down on the thermal pad.
5. Secure the M.2 device and its thermal pad to the motherboard with a single screw.
6. Reverse steps 1-4 to remove the M.2 device.



3-10 Removing and Installing the Fan Wall

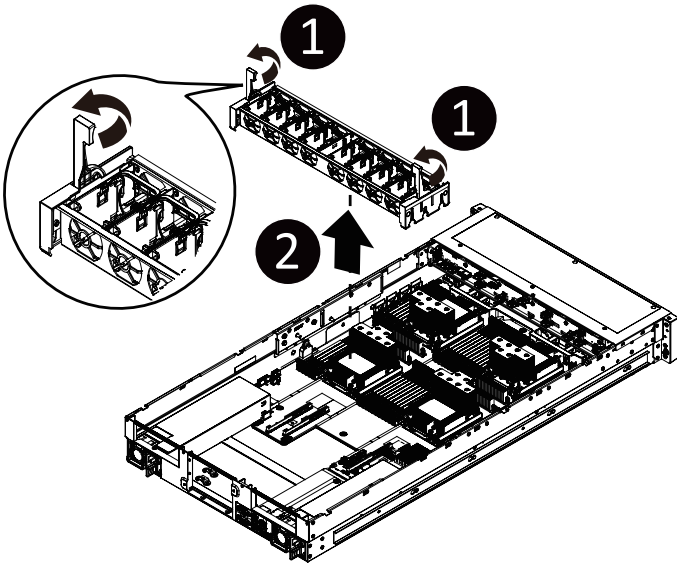


- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to replacing a system fan.

Failure to observe these warnings could result in personal injury or damage to equipment.

Follow these instructions to remove the fan wall:

1. Open the latch on both sides of the fan wall.
2. Lift up the fan wall from the system.
3. Reverse the previous steps to install the fall wall.



3-11 Replacing the Fan Assembly



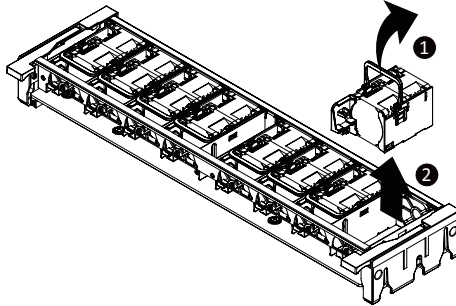
- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to replacing a system fan.

Failure to observe these warnings could result in personal injury or damage to equipment.

Follow these instructions to replace the fan assembly:

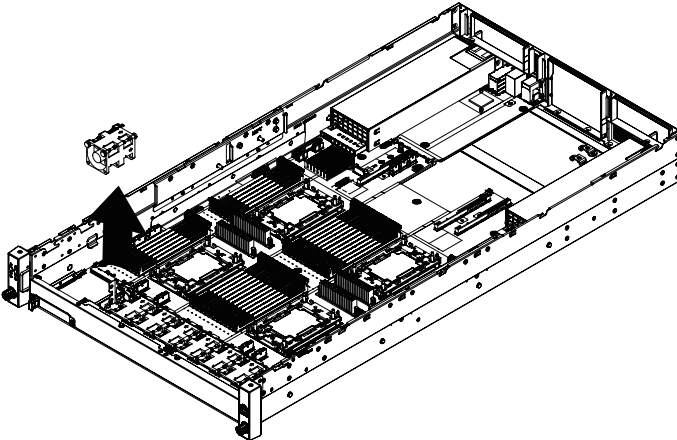
Fan Wall

1. Open the fan latch.
2. Lift up the fan assembly from the chassis.
3. Reverse the previous steps to install the replacement fan assembly.



Front System Fan

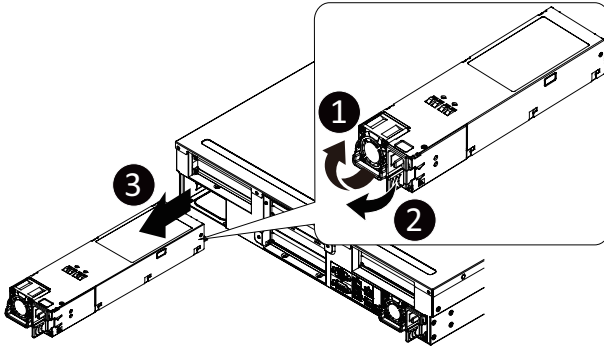
1. Lift up the fan assembly from the chassis.
2. Reverse the previous steps to install the replacement fan assembly.



3-12 Replacing the Power Supply

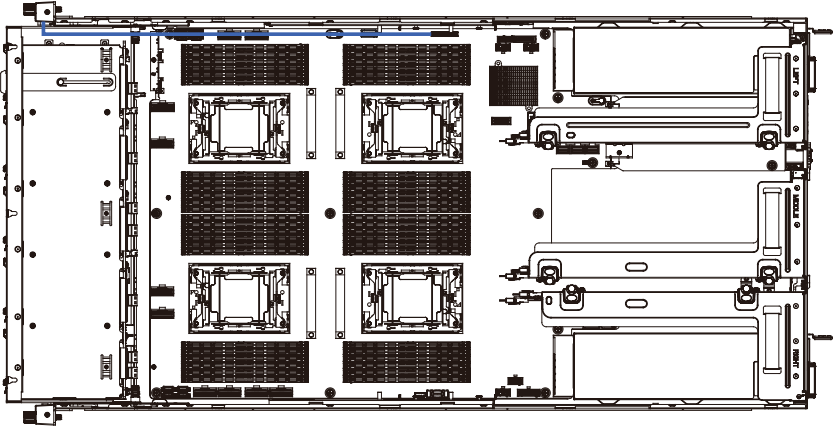
Follow these instructions to replace the power supply:

1. Press the retaining clip on the right side of the power supply along the direction of the arrow.
2. Pull out the power supply handle at the same time and pull out the power supply.
3. Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement power supply.

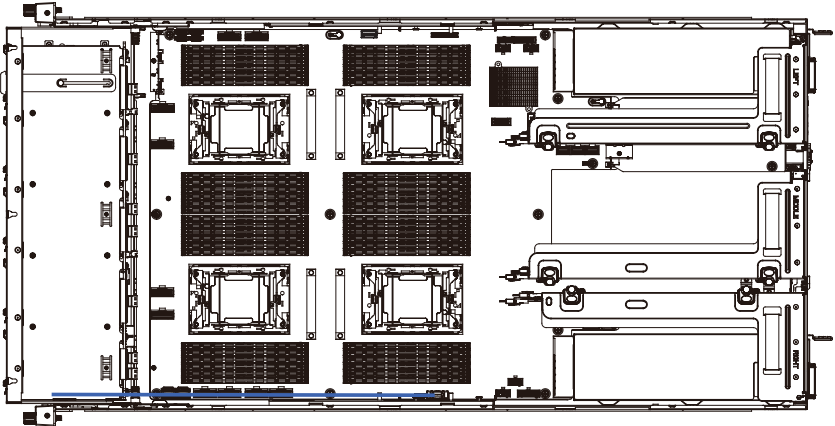


3-13 Cable Routing

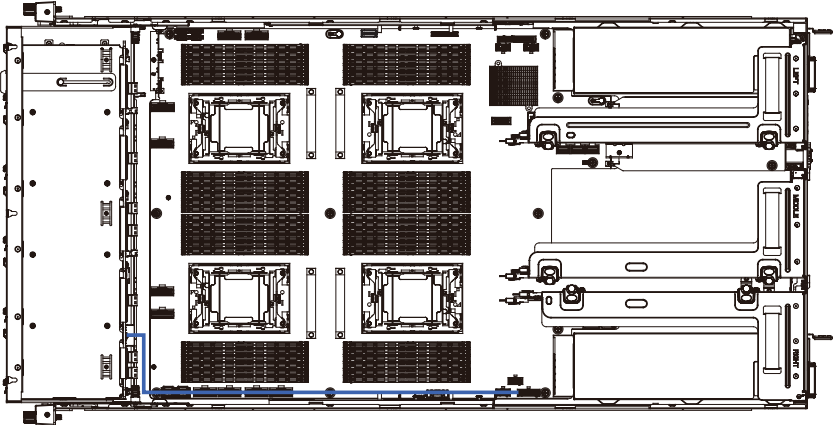
Front Switch Cable/Front LED Cable



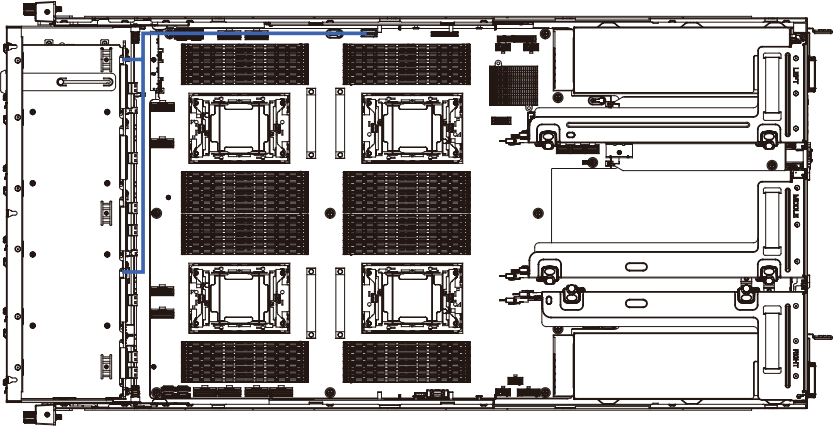
Front Panel USB 3.0 Cable



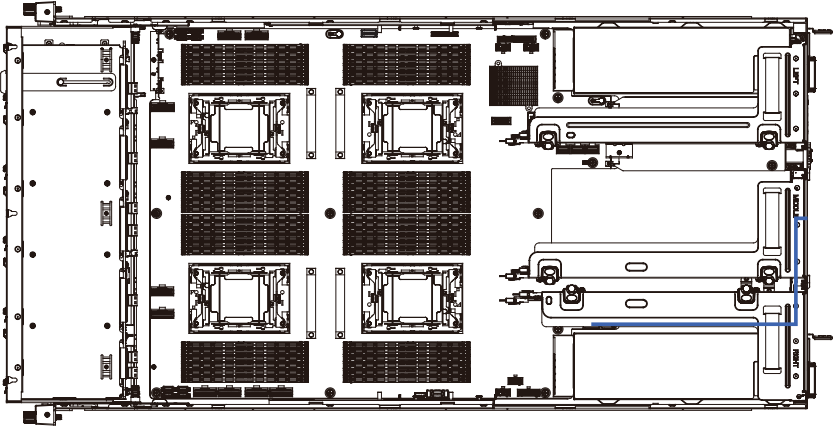
Front HDD Backplane Board Power Cable



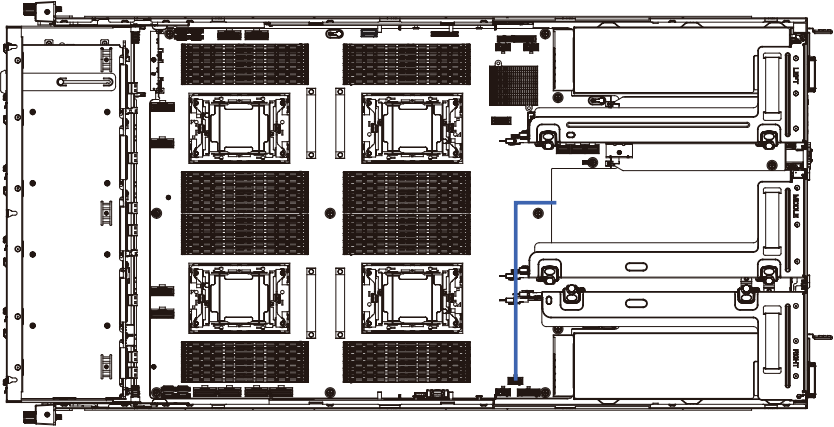
Front HDD Backplane Board Signal Cable



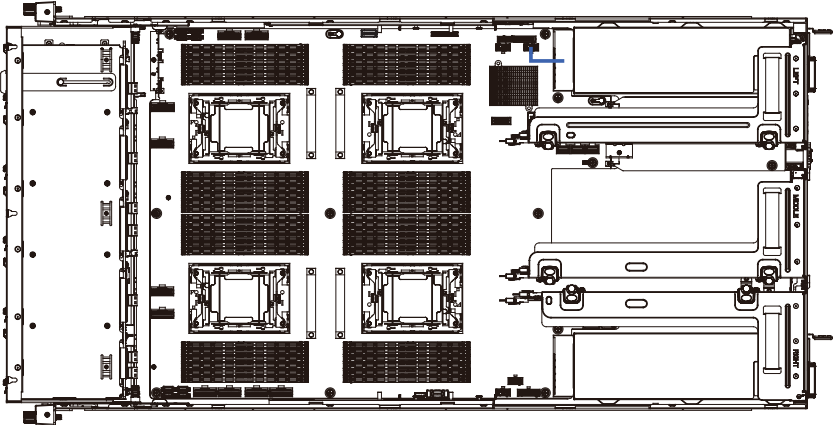
Rear Fan Cable



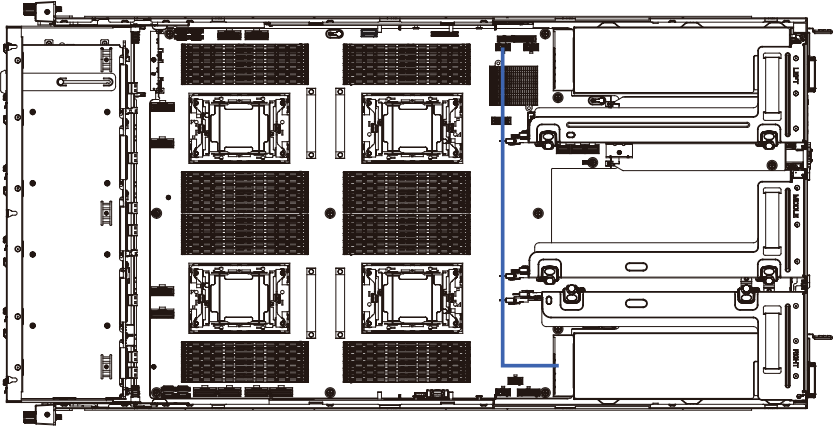
GPU Card#0 Power Cable (for R292-4S0 only)



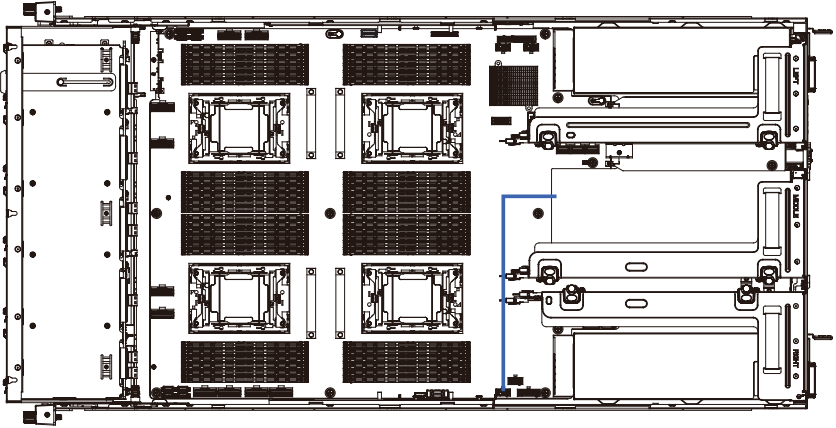
GPU Card#1 Power Cable (for R292-4S0 only)



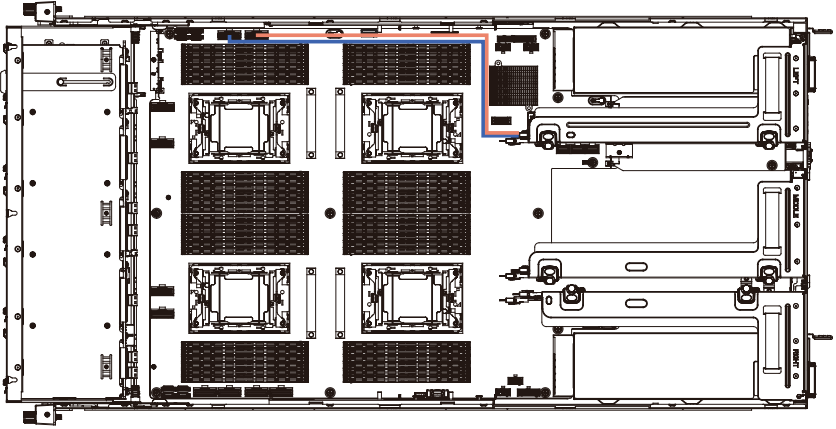
GPU Card#2 Power Cable (for R292-4S0 only)



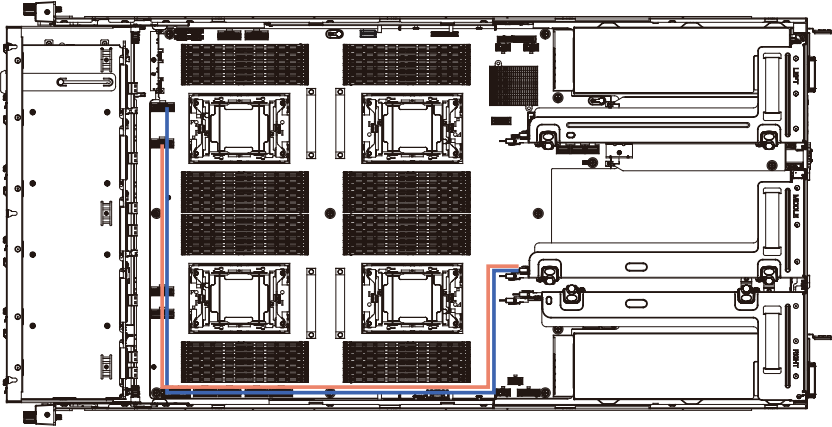
GPU Card#3 Power Cable (for R292-4S0 only)



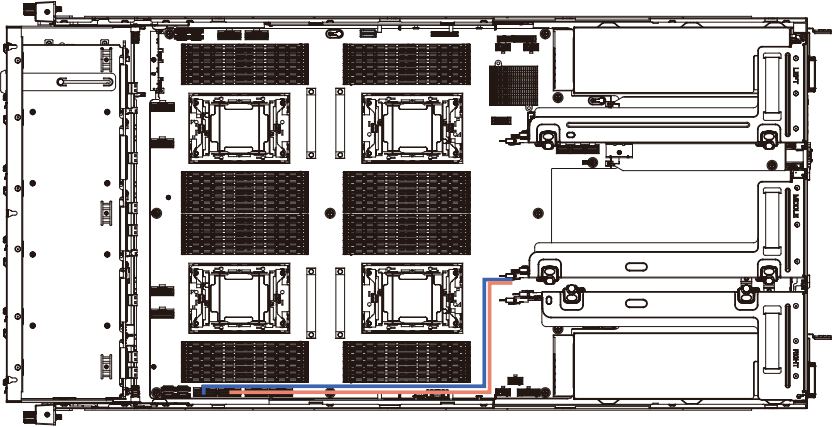
Riser Card#1 Top Signal Cable



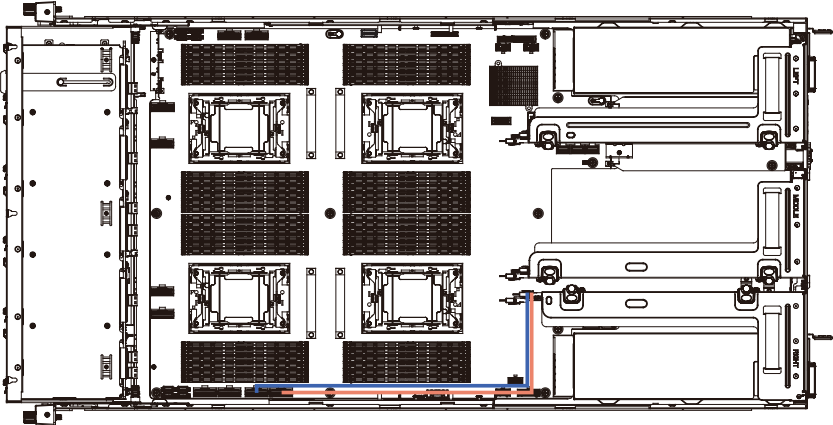
Riser Card#2 Top Signal Cable (for R292-4S1 only)



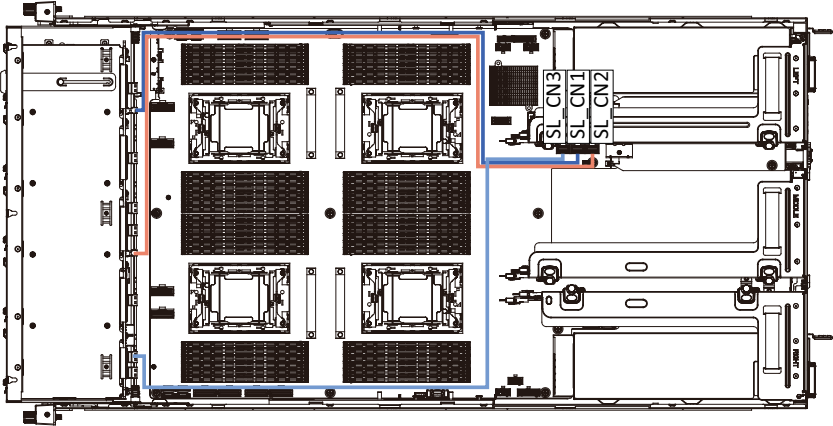
Riser Card#2 Bottom Signal Cable (for R292-4S1 only)



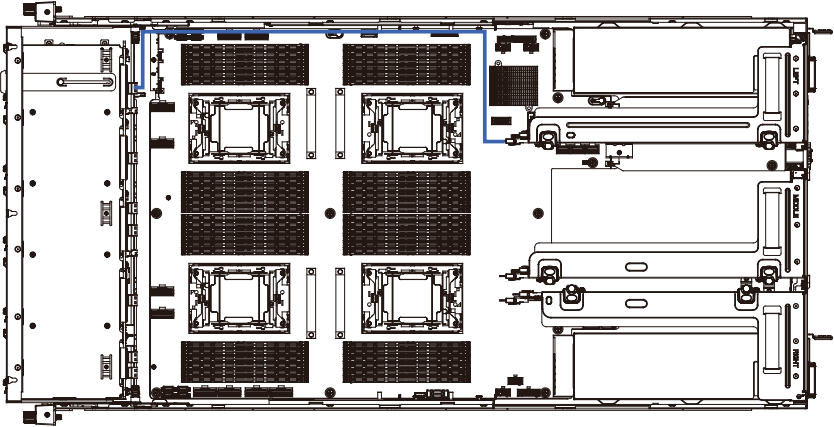
Riser Card#3 Bottom Signal Cable



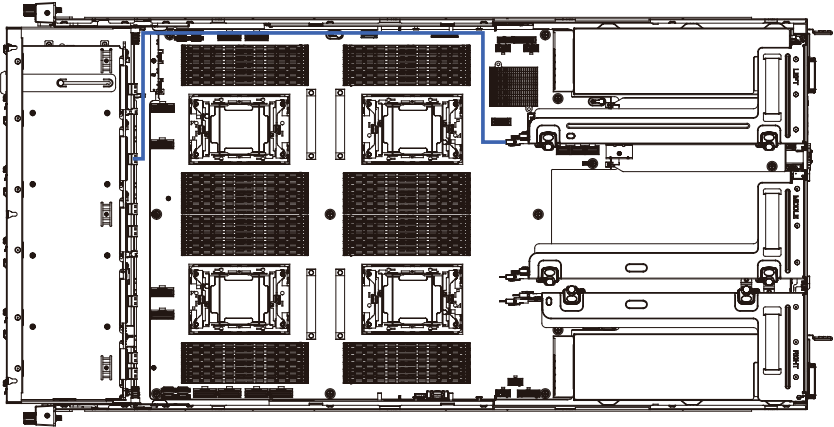
SlimLine SAS Cable #1/#2/#3



NVMe Card #0/#1

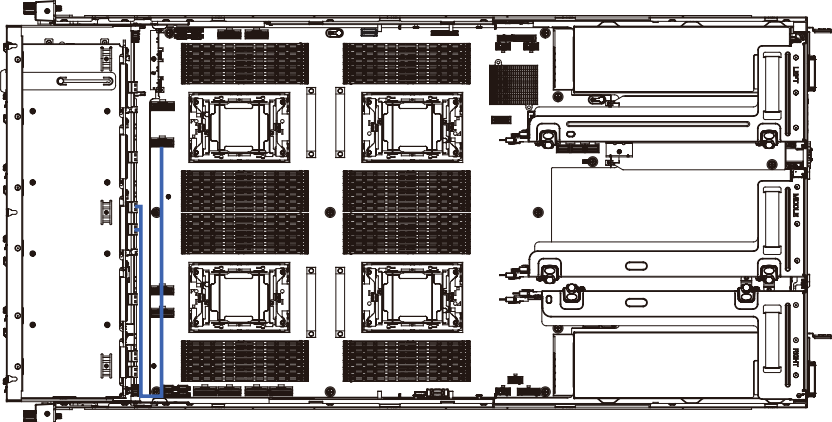


NVMe Card #2/#3

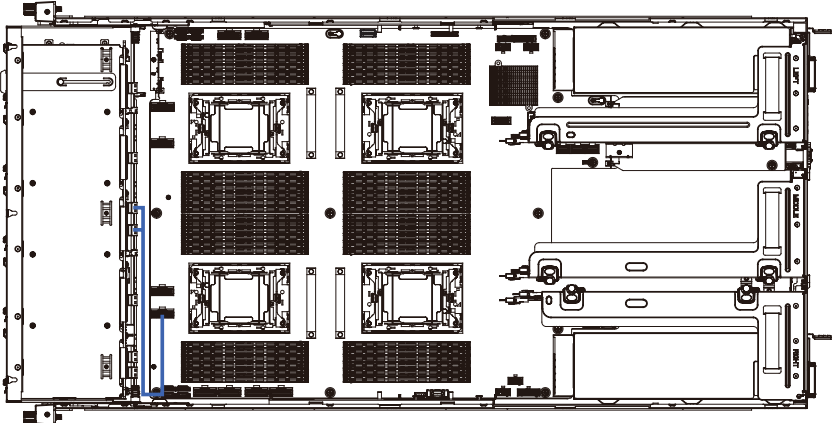


NVMe Card #4/#5

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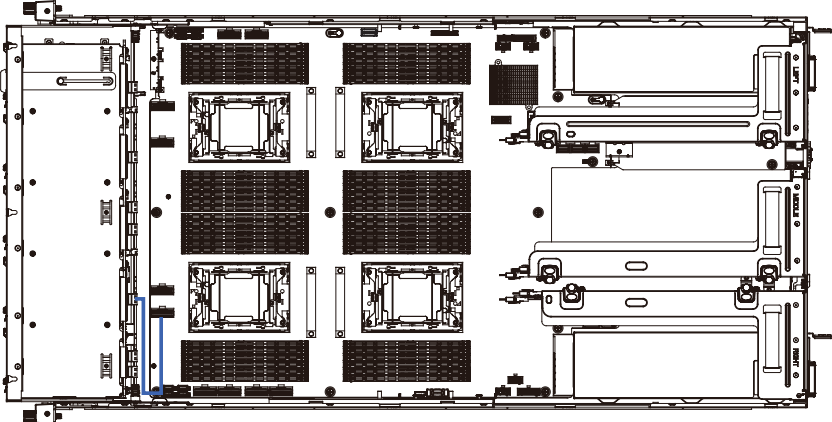


<R292-4S1>

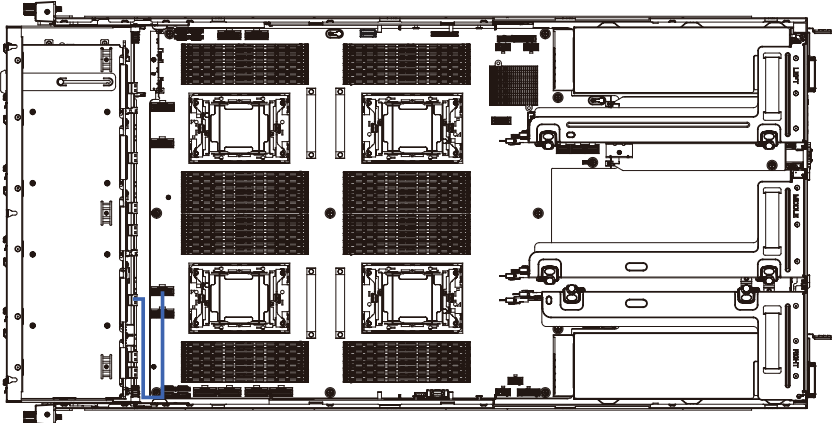


NVMe Card #6/#7

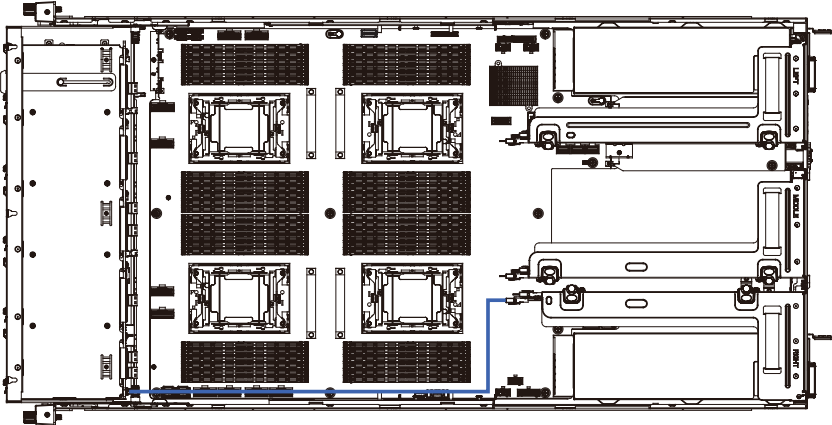
<R292-4S0>



<R292-4S1>

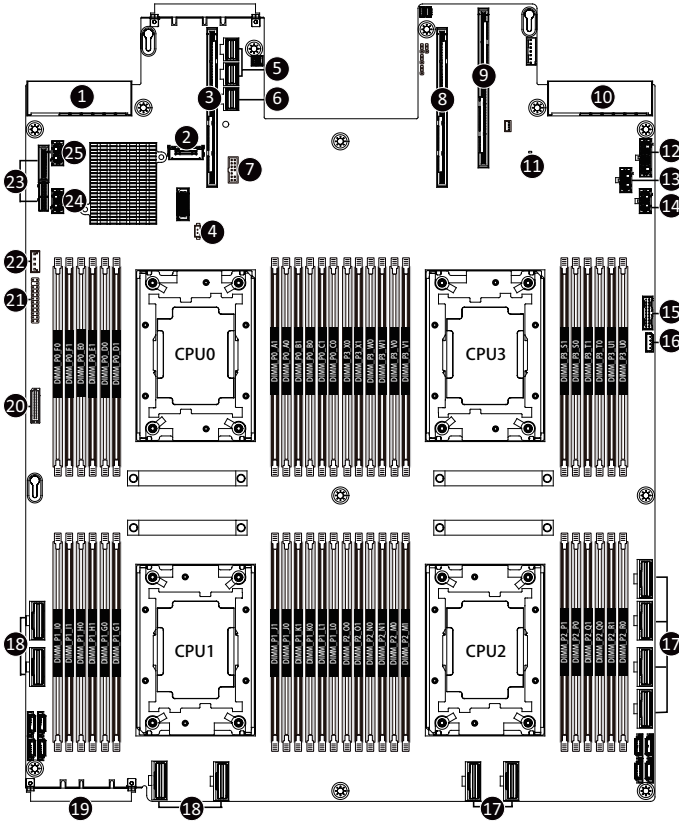


NVMe Card #8/#9



Chapter 4 Motherboard Components

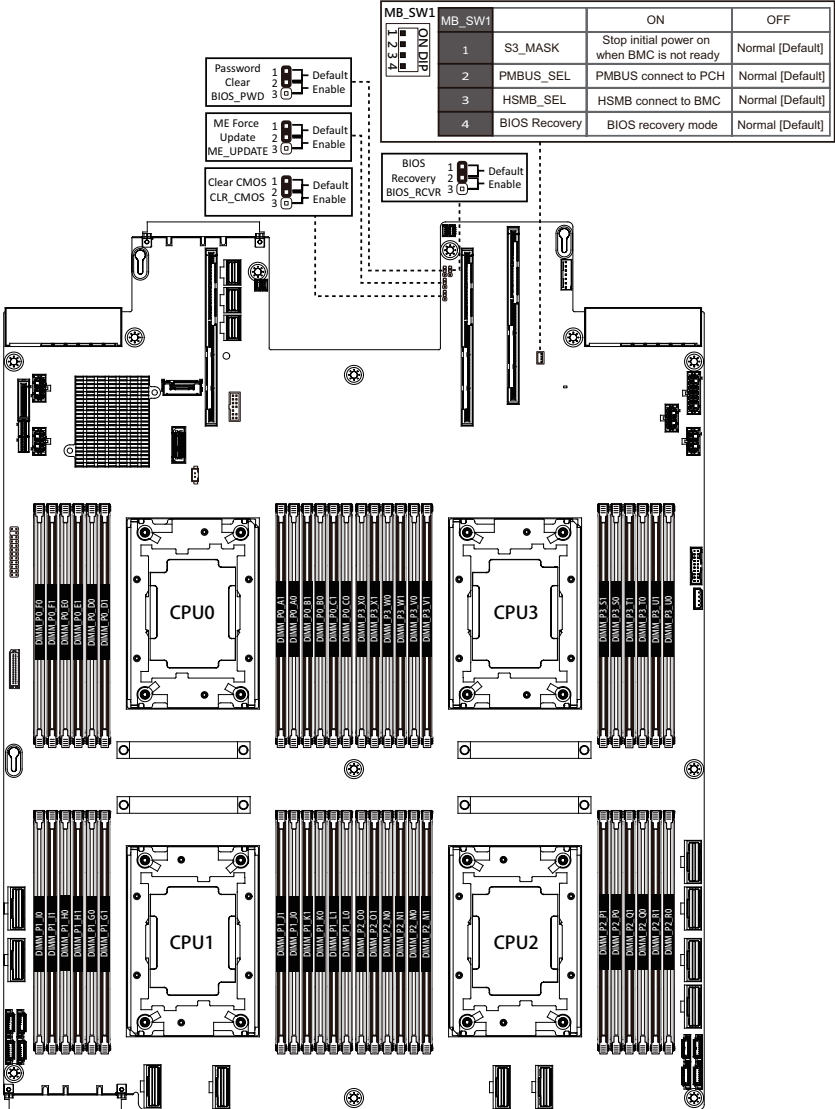
4-1 Motherboard Components



Item	Description
1	Power Supply Connector #1 (Primary)
2	M.2 Connector (PCIe Gen3 x2, Supports NGFF-2280)
3	Riser Connector #1 (2*PCIe Gen3 x16/Proprietary slot)
4	System Battery
5	Slimline SAS 4i Connectors (SATA 6Gb/s Signal)
6	Slimline SAS 4i Connector (sSATA 6Gb/s Signal)
7	TPM Module Connector (SPI Interface)
8	Riser Connector #2 (2*PCIe Gen3 x16/Proprietary slot)
9	Riser Connector #3 (2*PCIe Gen3 x16/Proprietary slot)
10	Power Supply Connector #2 (Secondary)
11	BMC Firmware Readiness LED

12	2 x 7 Pin HDD Back Plane Board Power Connector
13	2 x 4 Pin P12V GPU Power Connector
14	2 x 4 Pin P12V GPU Power Connector
15	Front Panel USB 3.0 Connector
16	IPMB Connector
17	Slimeline SAS 8i Connectors (PCIe Gen3 x8 Signal for CPU2)
18	Slimeline SAS 8i Connectors (PCIe Gen3 x8 Signal for CPU1)
19	OCP Mezzanine Connector (OCP3.0/SFF Type/Gen3 x16)
20	HDD Back Plane Board Connector
21	Front Panel Header
22	SATA RAID Upgrade Key
23	Fan Wall Power Connector
24	2 x 4 Pin P12V GPU Power Connector
25	2 x 4 Pin P12V GPU Power Connector

4-2 Jumper Setting



Chapter 5 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the EFI on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters, loading the operating system etc. The BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the key during the POST when the power is turned on.



- BIOS flashing is potentially risky, if you do not encounter any problems when using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

<<-><->>	Move the selection bar to select the screen
<↑><↓>	Move the selection bar to select an item
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<F1>	Show descriptions of general help
<F3>	Restore the previous BIOS settings for the current submenus
<F9>	Load the Optimized BIOS default settings for the current submenus
<F10>	Save all the changes and exit the BIOS Setup program

■ **Main**

This setup page includes all the items of the standard compatible BIOS.

■ **Advanced**

This setup page includes all the items of AMI BIOS special enhanced features.

(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

■ **Chipset**

This setup page includes all the submenu options for configuring the functions of the Platform Controller Hub.

■ **Server Management**

Server additional features enabled/disabled setup menus.

■ **Security**

Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.

A supervisor password allows you to make changes in BIOS Setup.

A user password only allows you to view the BIOS settings but not to make changes.

■ **Boot**

This setup page provides items for configuration of the boot sequence.

■ **Save & Exit**

Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)

Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

5-1 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter other sub-menu.

Main Menu Help

The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.



- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

```
Aptio Setup - AMI
Main Advanced Chipset Server Mgmt Security Boot Save & Exit

BIOS Information
Project Name MRQ2-4S0-00
Project Version D06
Build Date and Time 08/24/2020 21:19:23

BMC Information
BMC Firmware Version 12.45.05

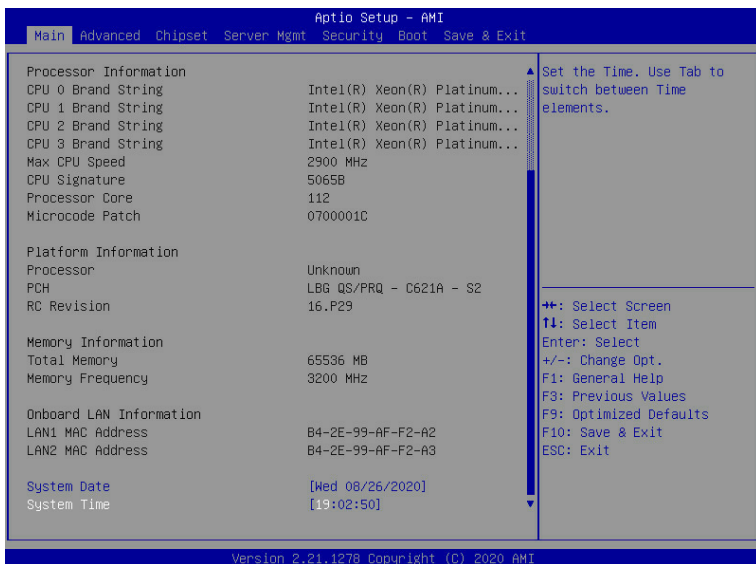
Processor Information
CPU 0 Brand String Intel(R) Xeon(R) Platinum...
CPU 1 Brand String Intel(R) Xeon(R) Platinum...
CPU 2 Brand String Intel(R) Xeon(R) Platinum...
CPU 3 Brand String Intel(R) Xeon(R) Platinum...
Max CPU Speed 2900 MHz
CPU Signature 5065B
Processor Core 112
Microcode Patch 0700001C

Platform Information
Processor Unknown
PCH LBG QS/PRQ - C621A - S2
RC Revision 16.P29

Memory Information
Total Memory 65536 MB

F2: Select Screen
F1: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F8: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

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```

Parameter	Description
BIOS Information	
Project Name	Displays the project name information.
Project Version	Displays version number of the BIOS setup utility.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
BMC Information^(Note1)	
BMC Firmware Version ^(Note1)	Displays BMC firmware version information.
Processor Information	
CPU Brand String/ Max CPU Speed / CPU Signature / Processor Core / Microcode Patch	Displays the technical information for the installed processor(s).
Platform Information	
Processor/ PCH/ RC Revision	Displays the platform information of the installed processor(s) and PCH.
Memory Information	
Total Memory ^(Note2)	Displays the total memory size of the installed memory.
Memory Frequency ^(Note2)	Displays the frequency information of the installed memory.

(Note1) Functions available on selected models..

(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

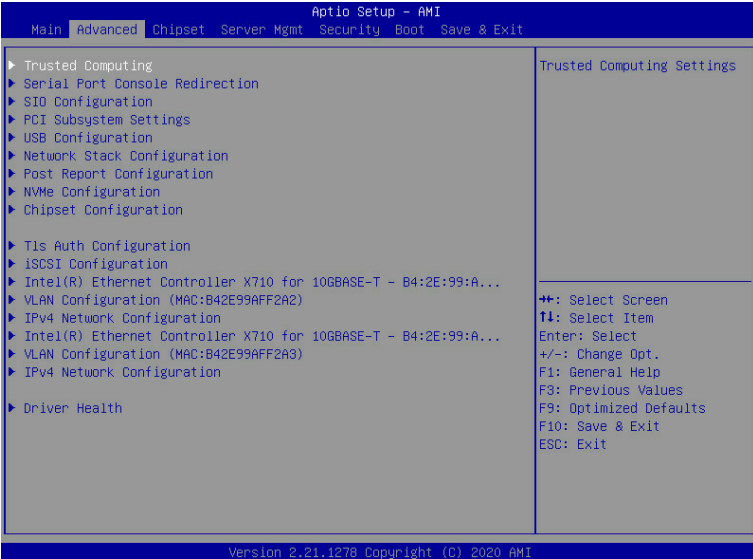
Onboard LAN Information	
LAN1 MAC Address ^(Note)	Displays LAN MAC address information.
LAN2 MAC Address ^(Note)	Displays LAN MAC address information.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

(Note) The number of LAN ports listed will depend on the motherboard / system model.

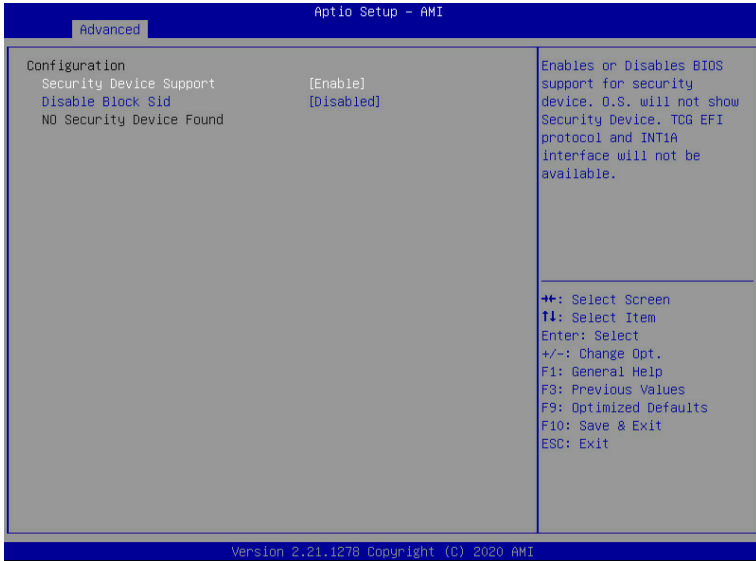
5-2 Advanced Menu

The Advanced Menu displays submenu options for configuring the function of various hardware components. Select a submenu item, then press <Enter> to access the related submenu screen.

When Boot Mode Select is set to UEFI (Default)



5-2-1 Trusted Computing



Parameter	Description
Configuration	
Security Device Support	<p>Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Disable Block Sid	<p>Enable/Disable Override to allow SID authentication in TCG Storage device.</p> <p>Options available: Enabled, Disabled. Default setting is Disabled.</p>

5-2-2 Serial Port Console Redirection



Parameter	Description
COM1 Console Redirection ^(Note)	<p>Console redirection enables the users to manage the system from a remote location.</p> <p>Options available: Enabled, Disabled. Default setting is Disabled.</p>
COM1 Console Redirection Settings	<p>Press [Enter] to configure advanced items.</p> <p>Please note that this item is configurable when COM1 Console Redirection is set to Enabled.</p> <ul style="list-style-type: none"> ◆ Terminal Type <ul style="list-style-type: none"> – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is VT100+. ◆ Bits per second <ul style="list-style-type: none"> – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 38400, 57600, 115200. Default setting is 115200. ◆ Data Bits <ul style="list-style-type: none"> – Selects the number of data bits used for console redirection. – Options available: 7, 8. Default setting is 8.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
COM1 Console Redirection Settings (continued)	<ul style="list-style-type: none"> ◆ Parity <ul style="list-style-type: none"> – A parity bit can be sent with the data bits to detect some transmission errors. – Even: parity bit is 0 if the num of 1's in the data bits is even. – Odd: parity bit is 0 if num of 1's in the data bits is odd. – Mark: parity bit is always 1. Space: Parity bit is always 0. – Mark and Space Parity do not allow for error detection. – Options available: None, Even, Odd, Mark, Space. Default setting is None. ◆ Stop Bits <ul style="list-style-type: none"> – Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit. – Options available: 1, 2. Default setting is 1. ◆ Flow Control <ul style="list-style-type: none"> – Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. – Options available: None, Hardware RTS/CTS. Default setting is None. ◆ VT-UTF8 Combo Key Support <ul style="list-style-type: none"> – Enable/Disable the VT-UTF8 Combo Key Support. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Recorder Mode^(Note) <ul style="list-style-type: none"> – When this mode enabled, only texts will be send. This is to capture Terminal data. – Options available: Enabled, Disabled. Default setting is Disabled. ◆ Resolution 100x31^(Note) <ul style="list-style-type: none"> – Enable/Disable extended terminal resolution. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Putty KeyPad^(Note) <ul style="list-style-type: none"> – Selects FunctionKey and KeyPad on Putty. – Options available: VT100, LINUX, XTERMR6, SC0, ESCN, VT400. Default setting is VT100.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
Legacy Console Redirection	
Legacy Console Redirection Settings	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Redirection COM Port <ul style="list-style-type: none"> – Selects a COM port for Legacy serial redirection. – Default setting is COM1. ◆ Resolution <ul style="list-style-type: none"> – Selects the number of rows and columns used in Console Redirection for legacy OS support. – Options available: 80x24, 80x25. Default setting is 80x24. ◆ Redirect After POST <ul style="list-style-type: none"> – When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. – Options available: Always Enable, BootLoader. Default setting is Always Enable.
Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS) Console Redirection ^(Note)	<p>EMS console redirection allows the user to configure Console Redirection Settings to support Out-of-Band Serial Port management.</p> <p>Options available: Enabled, Disabled. Default setting is Disabled.</p>
Serial Port for Out-of-Band EMS Console Redirection Settings	<p>Press [Enter] to configure advanced items.</p> <p>Please note that this item is configurable when Serial Port for Out-of-Band Management EMS Console Redirection is set to Enabled.</p> <ul style="list-style-type: none"> ◆ Out-of-Band Mgmt Port <ul style="list-style-type: none"> – Microsoft Windows Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Default setting is COM1. ◆ Terminal Type EMS <ul style="list-style-type: none"> – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is VT100+. ◆ Bits per second EMS <ul style="list-style-type: none"> – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 38400, 57600, 115200. Default setting is 115200.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
Serial Port for Out-of-Band EMS Console Redirection Settings(continued)	<ul style="list-style-type: none">◆ Flow Control EMS<ul style="list-style-type: none">– Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.– Options available: None, Hardware RTS/CTS, Software Xon/Xoff. Default setting is None.

5-2-3 SIO Configuration



Parameter	Description
AMI SIO Driver Version	Displays the AMI SIO driver version information.
Super IO Chip Logical Device(s) Configuration	Press [Enter] to configure advanced items.
[*Active*] Serial Port	<ul style="list-style-type: none"> ◆ Use This Device <ul style="list-style-type: none"> – When set to Enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Current: <ul style="list-style-type: none"> – Displays the serial port base I/O address and IRQ. ◆ Possible: <ul style="list-style-type: none"> – Configures the serial port base I/O address and IRQ. 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 setting is Use Automatic Settings.

5-2-4 PCI Subsystem Settings

Aptio Setup - AMI

Advanced

PCI Bus Driver Version	A5.01.22	▲ Enable/Disable PCI-Express Slot #1 I/O ROM.
PCI Express Slot #1 I/O ROM	[Enabled]	
PCI Express Slot #2 I/O ROM	[Enabled]	
PCI Express Slot #3 I/O ROM	[Enabled]	
PCI Express Slot #4 I/O ROM	[Enabled]	
PCI Express Slot #5 I/O ROM	[Enabled]	
PCI Express Slot #6 I/O ROM	[Enabled]	
PCI Express Slot #7 I/O ROM	[Enabled]	
PCI Express Slot #8 I/O ROM	[Enabled]	
PCI Express Slot #9 I/O ROM	[Enabled]	
PCI Express Slot #10 I/O ROM	[Enabled]	
PCI Express Slot #11 I/O ROM	[Enabled]	
PCI Express Slot #12 I/O ROM	[Enabled]	
PCI Express Slot #13 I/O ROM	[Enabled]	
PCI Express Slot #14 I/O ROM	[Enabled]	
PCI Express Slot #15 I/O ROM	[Enabled]	
PCI Express Slot #16 I/O ROM	[Enabled]	
PCI Express Slot #17 I/O ROM	[Enabled]	
PCI Express Slot #18 I/O ROM	[Enabled]	
PCI Express Slot #19 I/O ROM	[Enabled]	
PCI Express Slot #20 I/O ROM	[Enabled]	
PCI Express Slot #21 I/O ROM	[Enabled]	
PCI Express Slot #22 I/O ROM	[Enabled]	
PCI Express Slot #23 I/O ROM	[Enabled]	
PCI Express Slot #24 I/O ROM	[Enabled]	

▲ Select Screen
 T1: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

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Advanced

PCI Express Slot #10 I/O ROM	[Enabled]	▲ If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.
PCI Express Slot #11 I/O ROM	[Enabled]	
PCI Express Slot #12 I/O ROM	[Enabled]	
PCI Express Slot #13 I/O ROM	[Enabled]	
PCI Express Slot #14 I/O ROM	[Enabled]	
PCI Express Slot #15 I/O ROM	[Enabled]	
PCI Express Slot #16 I/O ROM	[Enabled]	
PCI Express Slot #17 I/O ROM	[Enabled]	
PCI Express Slot #18 I/O ROM	[Enabled]	
PCI Express Slot #19 I/O ROM	[Enabled]	
PCI Express Slot #20 I/O ROM	[Enabled]	
PCI Express Slot #21 I/O ROM	[Enabled]	
PCI Express Slot #22 I/O ROM	[Enabled]	
PCI Express Slot #23 I/O ROM	[Enabled]	
PCI Express Slot #24 I/O ROM	[Enabled]	
Onboard LAN1 & LAN2 Controller	[Enabled]	
Onboard LAN1 I/O ROM	[Enabled]	
Onboard LAN2 I/O ROM	[Enabled]	
PCI Devices Common Settings:		
Above 4G Decoding	[Enabled]	
SR-IOV Support	[Enabled]	

▲ Select Screen
 T1: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

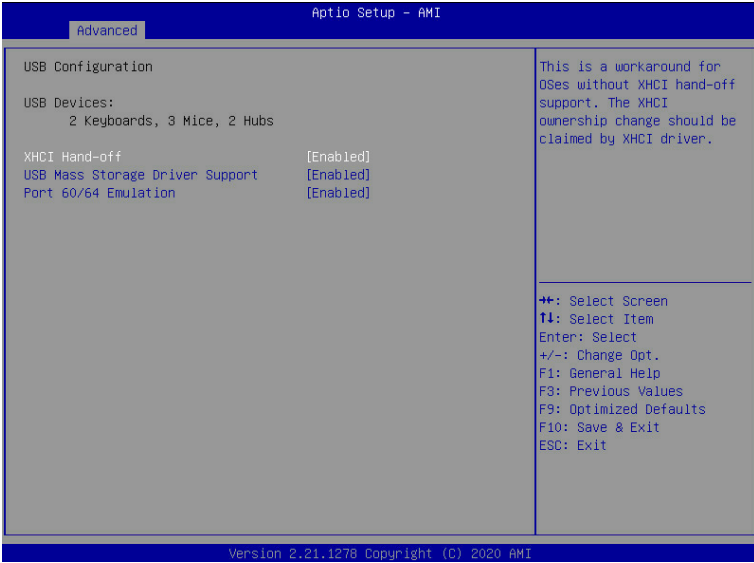
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Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
PCI Express Slot # I/O ROM ^(Note1)	When enabled, this setting will initialize the device expansion ROM for the related PCI-E slot. Options available: Enabled, Disabled. Default setting is Enabled .
Onboard LAN1/ LAN2 Controller ^(Note2)	Enable/Disable the onboard LAN1/ LAN2 controller. Options available: Enabled, Disabled. Default setting is Enabled .
Onboard LAN1/ LAN2 I/O ROM ^(Note2)	Enable/Disable the onboard LAN1/ LAN2 devices, and initializes device expansion ROM. Options available: Enabled, Disabled. Default setting is Enabled .
PCI Devices Common Settings	
Above 4G Decoding	Enable/Disable memory mapped I/O to 4GB or greater address space (Above 4G Decoding). Options available: Enabled, Disabled. Default setting is Enabled .
SR-IOV Support	If the system has SR-IOV capable PCIe devices, this item Enable/Disable Single Root IO Virtualization Support. Options available: Enabled, Disabled. Default setting is Enabled .

(Note1) This section is dependent on the available PCIe Slot.

(Note2) This section is dependent on the available LAN controller.

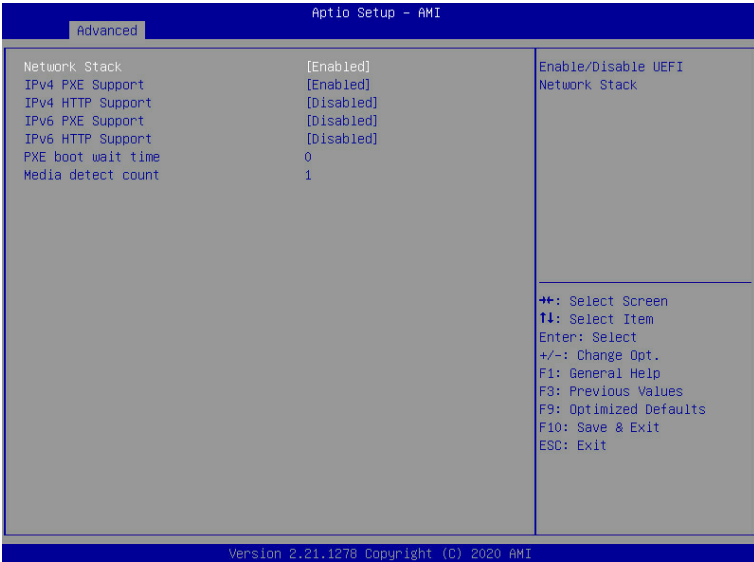
5-2-5 USB Configuration



Parameter	Description
USB Configuration	
USB Devices:	Displays the USB devices connected to the system.
XHCI Hand-off	Enable/Disable the XHCI (USB 3.0) Hand-off support. Options available: Enabled, Disabled. Default setting is Enabled .
USB Mass Storage Driver Support ^(Note)	Enable/Disable the USB Mass Storage Driver Support. Options available: Enabled, Disabled. Default setting is Enabled .
Port 60/64 Emulation	Enables the I/O port 60h/64h emulation support. This should be enabled for the complete USB Keyboard Legacy support for non-USB aware OS. Options available: Enabled, Disabled. Default setting is Enabled .

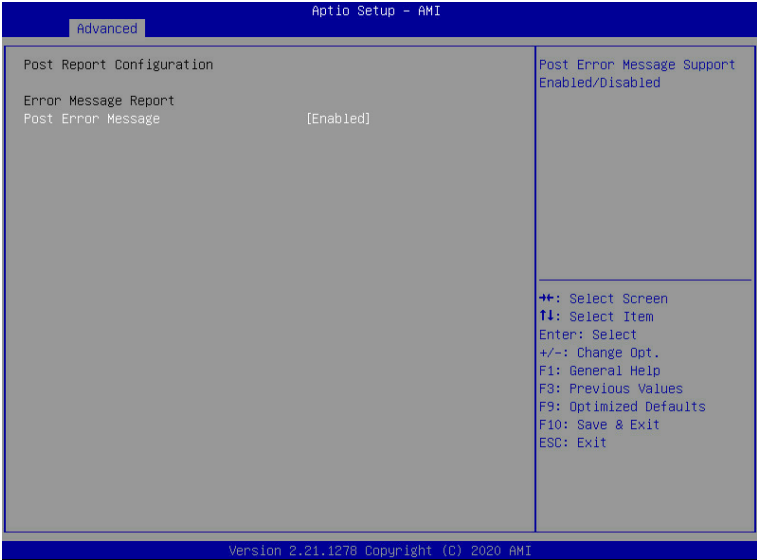
(Note) This item is present only if you attach USB devices.

5-2-6 Network Stack Configuration



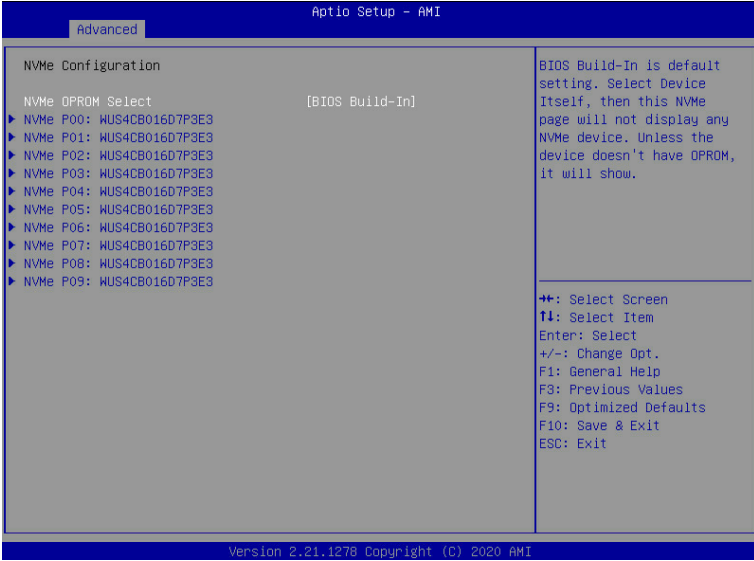
Parameter	Description
Network Stack	Enable/Disable the UEFI network stack. Options available: Enabled, Disabled. Default setting is Enabled .
Ipv4 PXE Support	Enable/Disable the Ipv4 PXE feature. Options available: Enabled, Disabled. Default setting is Enabled .
Ipv4 HTTP Support	Enable/Disable the Ipv4 HTTP feature. Options available: Enabled, Disabled. Default setting is Disabled .
Ipv6 PXE Support	Enable/Disable the Ipv6 PXE feature. Options available: Enabled, Disabled. Default setting is Enabled .
Ipv6 HTTP Support	Enable/Disable the Ipv6 HTTP feature. Options available: Enabled, Disabled. Default setting is Disabled .
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot. Press the <+> / <-> keys to increase or decrease the desired values.
Media detect count	Number of times the presence of media will be checked. Press the <+> / <-> keys to increase or decrease the desired values.

5-2-7 Post Report Configuration



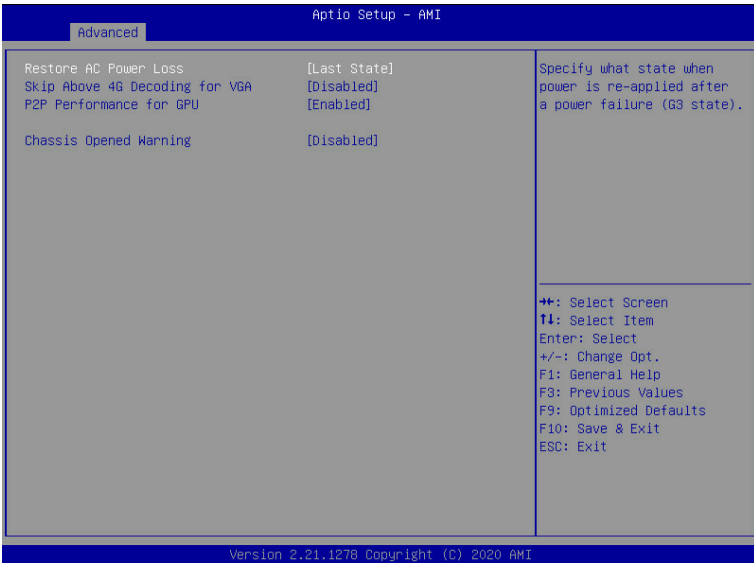
Parameter	Description
Post Report Configuration	
Error Message Report	
Post Error Message	Enable/Disable the POST Error Message support. Options available: Enabled, Disabled. Default setting is Enabled .

5-2-8 NVMe Configuration



Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system.
NVMe OPROM Select	Options available: BIOS Build-In, NVMe Device. Default setting is BIOS Build-In .
NVMe Device #	Press [Enter] for configuration of advanced items.

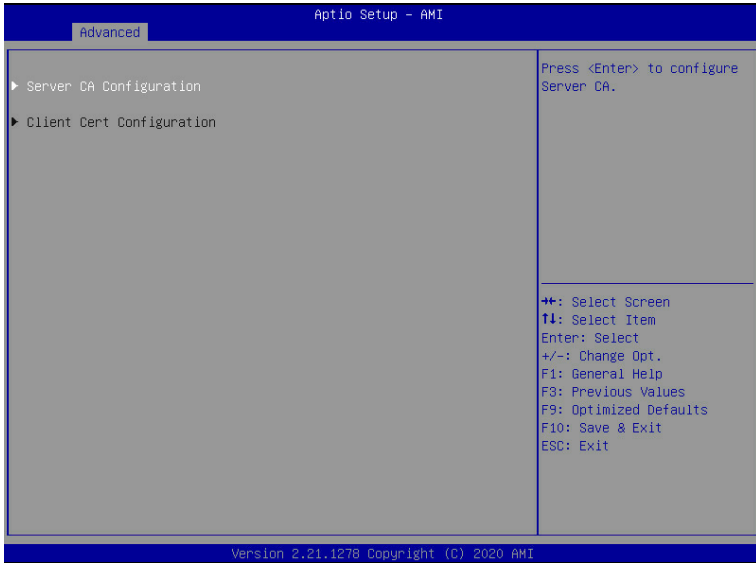
5-2-9 Chipset Configuration



Parameter	Description
Restore on AC Power Loss ^(Note)	Defines the power state to resume to after a system shutdown that is due to an interruption in AC power. When set to Last State, the system will return to the active power state prior to shutdown. When set to Power Off, the system remains off after power shutdown. Options available: Last State, Power Off, Power On, Unspecified. The default setting depends on the BMC setting.
Skip Above 4G Decoding for VGA	Enable/Disable 64bit capable devices to be decoded in Skip Above 4G Address VGA Space. Options available: Enabled, Disabled. Default setting is Disabled .
P2P Performance for GPU	Enable/Disable the GPU performance control. Options available: Enabled, Disabled. Default setting is Enabled .
Chassis Opened Warning	Enable/Disable the chassis intrusion alert function. Options available: Enabled, Disabled, Clear. Default setting is Disabled .

(Note) When the power policy is controlled by BMC, please wait for 15-20 seconds for BMC to save the last power state.

5-2-10 Tls Auth Configuration



Parameter	Description
Server CA Configuration	<p>Press [Enter] for configuration of advanced items.</p> <ul style="list-style-type: none"> ◆ Enroll Cert <ul style="list-style-type: none"> – Press [Enter] to enroll a certificate <ul style="list-style-type: none"> • Enroll Cert Using File • Cert GUID <ul style="list-style-type: none"> Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes and Exit ◆ Delete Cert
Client Cert Configuration	Press [Enter] for configuration of advanced items.

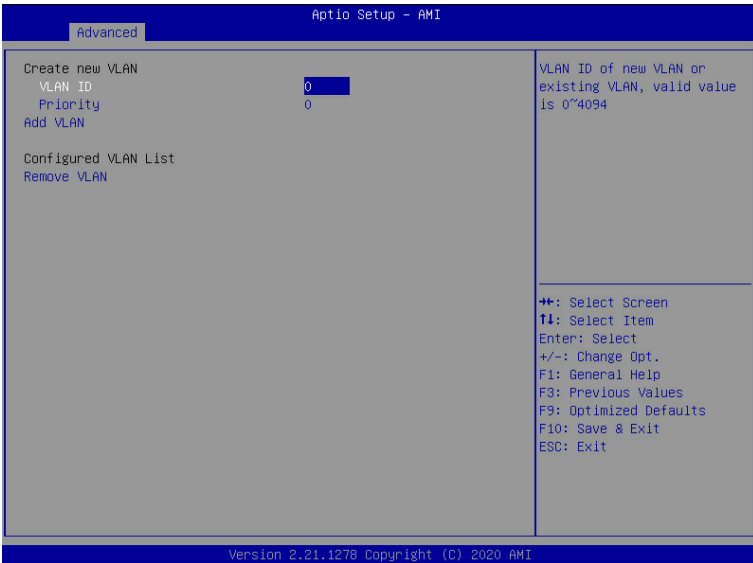
5-2-11 iSCSI Configuration



Parameter	Description
Attempt Priority	<p>Press [Enter] configure advanced items.</p> <ul style="list-style-type: none"> ◆ Attempt Priority <ul style="list-style-type: none"> – Options available: Host Attempt, Redfish Attempt, Rsd Attempt. Default setting is Host Attempt. ◆ Commit Changes and Exit
Host iSCSI Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ iSCSI Initiator Name <ul style="list-style-type: none"> – Only IQN format is accepted. Range: from 4 to 223 ◆ Add an Attempt ◆ Delete Attempts ◆ Change Attempt Order

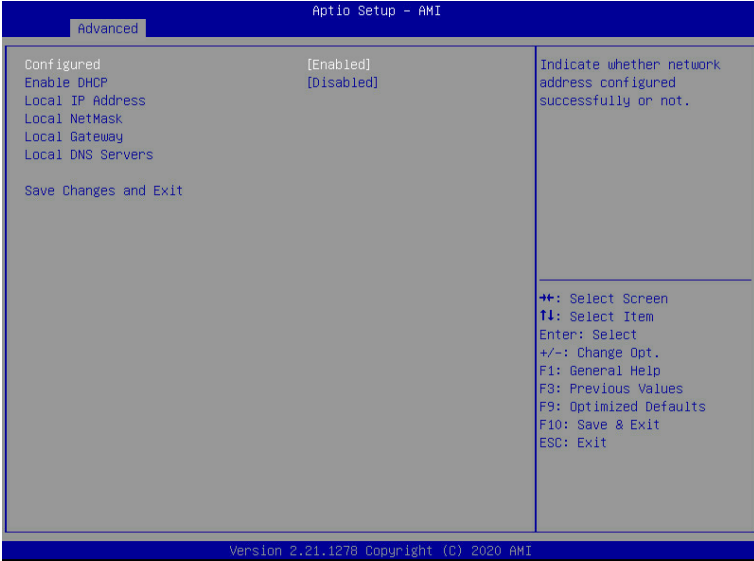
Parameter	Description
NIC Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Link Speed <ul style="list-style-type: none"> – Allows for automatic link speed adjustment. – Options available: Auto Negotiated, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, 100 Mbps Full. Default setting is Auto Negotiated. ◆ Wake On LAN <ul style="list-style-type: none"> – Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ LLDP Agent <ul style="list-style-type: none"> – Enable/Disable the FW-LLDP(Firmware Link Layer Discovery Protocol) Agent. Please note that FW-LLDP Agent is required for DCB to function. – Options available: Enabled, Disabled. Default setting is Enabled.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

5-2-13 VLAN Configuration



Parameter	Description
Enter Configuration Menu	<p data-bbox="338 158 674 181">Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> <li data-bbox="338 189 522 213">◆ Create new VLAN <li data-bbox="338 221 451 244">◆ VLAN ID <ul style="list-style-type: none"> <li data-bbox="376 247 804 271">– Sets VLAN ID for a new VLAN or an existing VLAN. <li data-bbox="376 275 937 299">– Press the <+> / <-> keys to increase or decrease the desired values. <li data-bbox="376 304 666 327">– The valid range is from 0 to 4094. <li data-bbox="338 335 437 359">◆ Priority <ul style="list-style-type: none"> <li data-bbox="376 362 852 385">– Sets 802.1Q Priority for a new VLAN or an existing VLAN. <li data-bbox="376 390 937 413">– Press the <+> / <-> keys to increase or decrease the desired values. <li data-bbox="376 418 636 442">– The valid range is from 0 to 7. <li data-bbox="338 450 463 473">◆ Add VLAN <ul style="list-style-type: none"> <li data-bbox="376 476 905 500">– Press [Enter] to create a new VLAN or update an existing VLAN. <li data-bbox="338 508 551 531">◆ Configured VLAN List <li data-bbox="338 539 495 562">◆ Remove VLAN <ul style="list-style-type: none"> <li data-bbox="376 566 732 589">– Press [Enter] to remove an existing VLAN.

5-2-14 IPv4 Network Configuration



Parameter	Description
Configured	Indicates whether network address is configured successfully or not. Options available: Enabled, Disabled. Default setting is Disabled .
Enable DHCP ^(Note)	Options available: Enabled, Disabled. Default setting is Enabled .
Local IP Address ^(Note)	Press [Enter] to configure local IP address.
Local NetMask ^(Note)	Press [Enter] to configure local NetMask.
Local Gateway ^(Note)	Press [Enter] to configure local Gateway
Local DNS Servers ^(Note)	Press [Enter] to configure local DNS servers
Save Changes and Exit	Press [Enter] to save all configurations.

(Note) This item appears when **Configured** is set to **Enabled**.

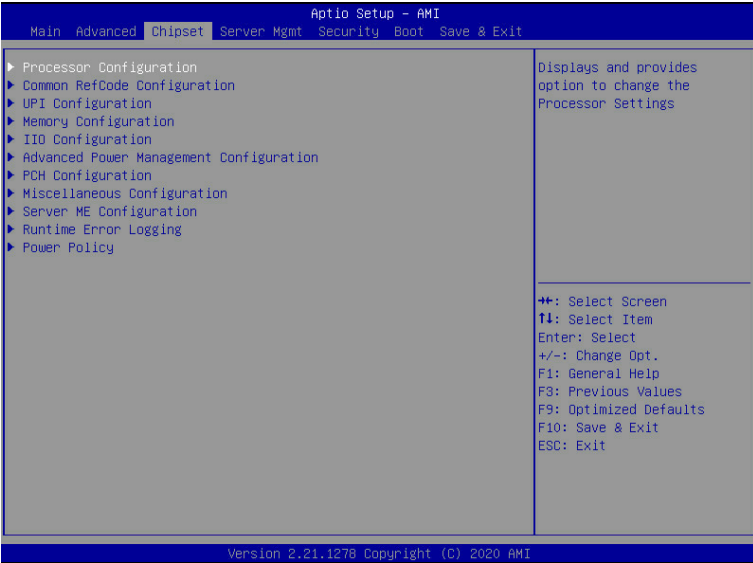
5-2-15 Driver Health



Parameter	Description
Driver Health	Displays driver health status of the devices/controllers if installed

5-3 Chipset Menu

Chipset Setup menu displays submenu options for configuring the function of Platform Controller Hub(PCH). Select a submenu item, then press <Enter> to access the related submenu screen.



5-3-1 Processor Configuration

Aptio Setup - AMI

Chipset

Processor Configuration		

▶ Per-Socket Configuration		
Processor Socket	Socket 0	Socket 1
Processor ID	0005065B*	0005065B
Processor Frequency	2.900GHz	2.900GHz
Processor Max Ratio	1DH	1DH
Processor Min Ratio	0AH	0AH
Microcode Revision	0700001C	0700001C
L1 Cache RAM(Per Core)	64KB	64KB
L2 Cache RAM(Per Core)	1024KB	1024KB
L3 Cache RAM(Per Package)	39424KB	39424KB
Processor 0 Version	Intel(R) Xeon(R) Platin um 8380HL CPU @ 2.90GHz	
Processor 1 Version	Intel(R) Xeon(R) Platin um 8380HL CPU @ 2.90GHz	
Processor Socket	Socket 2	Socket 3
Processor ID	0005065B	0005065B
Processor Frequency	2.900GHz	2.900GHz
Processor Max Ratio	1DH	1DH
Processor Min Ratio	0AH	0AH
Microcode Revision	0700001C	0700001C
L1 Cache RAM(Per Core)	64KB	64KB
L2 Cache RAM(Per Core)	1024KB	1024KB
L3 Cache RAM(Per Package)	39424KB	39424KB

Change Per-Socket Settings

++: Select Screen
 T1: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

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Aptio Setup - AMI

Chipset

Processor Socket	um 8380HL CPU @ 2.90GHz	Socket 2	Socket 3
Processor ID	0005065B	0005065B	0005065B
Processor Frequency	2.900GHz	2.900GHz	2.900GHz
Processor Max Ratio	1DH	1DH	1DH
Processor Min Ratio	0AH	0AH	0AH
Microcode Revision	0700001C	0700001C	0700001C
L1 Cache RAM(Per Core)	64KB	64KB	64KB
L2 Cache RAM(Per Core)	1024KB	1024KB	1024KB
L3 Cache RAM(Per Package)	39424KB	39424KB	39424KB
Processor 2 Version	Intel(R) Xeon(R) Platin um 8380HL CPU @ 2.90GHz		
Processor 3 Version	Intel(R) Xeon(R) Platin um 8380HL CPU @ 2.90GHz		
Hyper-Threading [ALL]	[Enable]		
Hardware Prefetcher	[Enable]		
L2 RFO Prefetch Disable	[Disable]		
Adjacent Cache Prefetch	[Enable]		
DCU Streamer Prefetcher	[Enable]		
DCU IP Prefetcher	[Enable]		
Enable Intel(R) TXT	[Disable]		
VMX	[Enable]		
Enable SMX	[Disable]		
AES-NI	[Enable]		

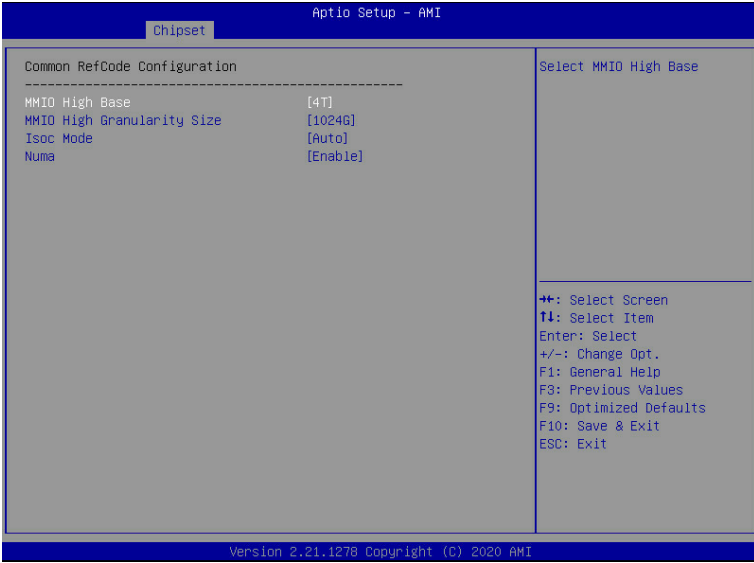
Enable/disable AES-NI support

++: Select Screen
 T1: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

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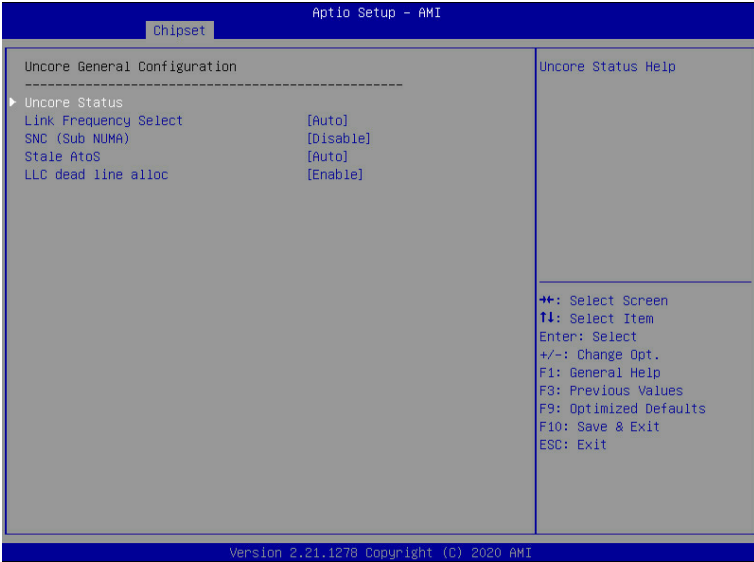
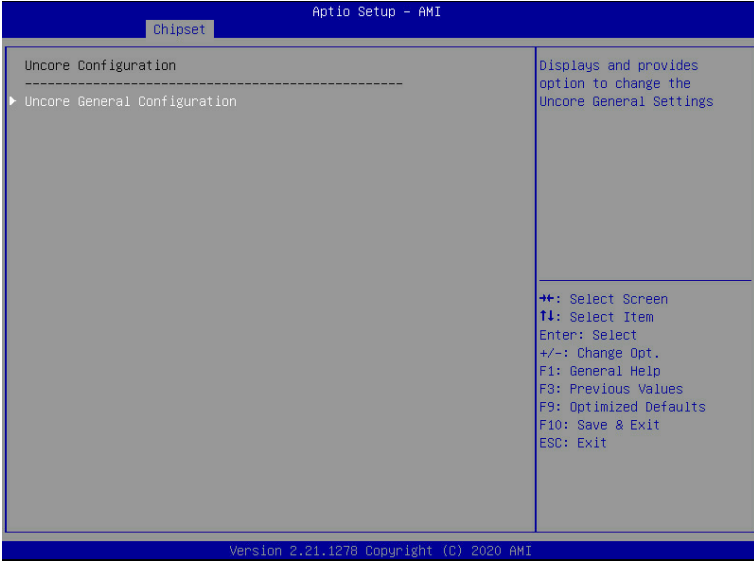
Parameter	Description
Processor Configuration	
Pre-Socket Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ CPU Socket 0/1/2/3 Configuration <ul style="list-style-type: none"> – Core Disable Bitmap(Hex) <ul style="list-style-type: none"> • Number of Cores to enable. 0 means all cores. FFFFFFFF means to disable all cores. The maximum value depends on the number of CPUs available. Press the numeric keys to adjust desired values.
Processor Socket / Processor ID / Processor Frequency / Processor Max Ratio / Processor Min Ratio / Microcode Revision / L1 Cache RAM(Per Core) / L2 Cache RAM(Per Core) / L3 Cache RAM(Per Core) / Processor # Version	Displays the technical specifications for the installed processor(s).
Hyper-Threading [All]	<p>The Hyper Threading Technology allows a single processor to execute two or more separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads, thereby improving performance.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Hardware Prefetcher	<p>Select whether to enable the speculative prefetch unit of the processor.</p> <p>Options available: Enable, Disable. Default setting is Disable.</p>
L2 RF0 Prefetch Disable	Options available: Enable, Disable. Default setting is Disable .
Adjacent Cache Prefetch	<p>When enabled, cache lines are fetched in pairs. When disabled, only the required cache line is fetched.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
DCU Streamer Prefetcher	<p>Prefetches the next L1 data line based upon multiple loads in same cache line.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
DCU IP Prefetcher	<p>Prefetches the next L1 Data line based upon sequential load history.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Enable Intel(R) TXT	<p>Enable/Disable the Intel Trusted Execution Technology support function.</p> <p>Options available: Enable, Disable. Default setting is Disable.</p>
VMX (Vanderpool Technology)	<p>Enable/Disable the Vanderpool Technology. This will take effect after rebooting the system.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Enable SMX	<p>Enable/Disable the Safer Mode Extensions (SMX) support function.</p> <p>Options available: Enable, Disable. Default setting is Disable.</p>
AES-NI	<p>Enable/Disable the AES-NI support.</p> <p>Options available: Enable, Disable. Default setting is Disable.</p>

5-3-2 Common RefCode Configuration



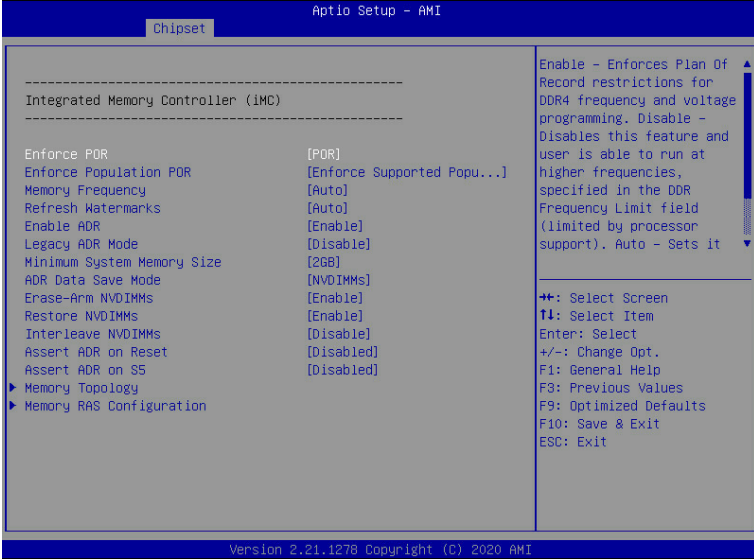
Parameter	Description
Common RefCode Configuration	
MMIO High Base	Selects the MMIO High Base setting. Options available: 56T, 40T, 32T, 24T, 16T, 4T, 2T, 1T, 512G, 3584T. Default setting is 4T .
MMIO High Granularity Size	Selects the allocation size used to assign memory-mapped I/O (MMIO) resources. Total mmio space can be up to 32x granularity. Per stack mmio resource assignments are multiples of the granularity where 1 unit per stack is the default allocation. Options available: 1G, 4G, 16G, 64G, 256G, 1024G. Default setting is 1024G .
Isoc Mode	Enable/Disable the Isochronous support in order to meet the QoS requirements (Quality of Service). Options available: Auto, Enable, Disable. Default setting is Auto .
Numa (Non-Uniform Memory Access)	Enable/Disable Non-uniform Memory Access (NUMA) support to improve the system performance. Options available: Enable, Disable. Default setting is Enable .

5-3-3 UPI Configuration



Parameter	Description
UnCore Configuration	
	Press [Enter] to configure advanced items. <ul style="list-style-type: none"> ◆ Uncore Status <ul style="list-style-type: none"> – Press [Enter] to view the Uncore status. ◆ Link Frequency Select <ul style="list-style-type: none"> – Selects the UPI link frequency. – Options available: 9.6GB/s, 10.4GB/s, Auto, Use Per Link Setting. Default setting is Auto.
UnCore General Configuration	<ul style="list-style-type: none"> ◆ SNC (Sub NUMA) <ul style="list-style-type: none"> – Enable/Disable Sub NUMA Cluster function. – Options available: Disable, Enable, Auto. Default setting is Disable. ◆ Stale AtoS <ul style="list-style-type: none"> – Enable/Disable Stale A to S directory optimization. – Options available: Disable, Enable, Auto. Default setting is Disable. ◆ LLC dead line alloc <ul style="list-style-type: none"> – Enable/Disable fill dead lines in LLC. – Options available: Disable, Enable, Auto. Default setting is Auto.

5-3-4 Memory Configuration



Parameter	Description
Integrated Memory Controller (iMC)	
Enforce POR	When set to Enable, the system enforces Plan Of Record restrictions for DDR4 frequency and voltage programming. Options available: POR, Disable. Default setting is POR .
Enforce Population POR	Enable/Disable memory population POR enforcement. Options available: Disable Enforcement, Enforce Supported Populations, Enforce Validated Populations. Default setting is Enforce Supported Populations .
Memory Frequency	Configures the maximum memory frequency. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory support (limited by processor support). Default setting is Auto .
Refresh Watermarks	Options available: Auto, High WM, Low WM. Default setting is POR .
Enable ADR	Enables the detecting and enabling of ADR (Asynchronous DRAM Refresh) function. Options available: Enable, Disable. Default setting is Enable .
Legacy ADR Mode	Enable/Disable the Legacy ADR Mode. Options available: Enable, Disable. Default setting is Disable .
Minimum System Memory Size	Configures the minimum memory size. Options available: 2GB, 4GB, 6GB, 8GB. Default setting is 2GB .

Parameter	Description
ADR Data Save Mode	Specifies the Data Save Mode for ADR. Batterybacked or Type 01 NVDIMM. Options available: Disable, Batterybacked DIMMs, NVDIMMs. Default setting is NVDIMMs .
Erase-Arm NVDIMMs	Enable/Disable Erasing and Arming NVDIMMs. Options available: Enable, Disable. Default setting is Enable .
Restore NVDIMMs	Enable/Disable Automatic restoring of NVDIMMs. Options available: Enable, Disable. Default setting is Enable .
Interleave NVDIMMs	Controls if NVDIMMs are interleaved together or not. Options available: Enable, Disable. Default setting is Disable .
Assert ADR on Reset	Enable/Disable Assert ADR on Reset. Options available: Enable, Disable. Default setting is Disable .
Assert ADR on S5	Enable/Disable Assert ADR on S5. Options available: Enable, Disable. Default setting is Disable .
Memory Topology	Press [Enter] to view memory topology with DIMM population information.
Memory RAS Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ RAS Type <ul style="list-style-type: none"> – Displays the RAS type. ◆ Mirror Mode <ul style="list-style-type: none"> – Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half. Enables the Mirror Mode will disable the XPT Prefetch. – Options available: Disabled, Full Mirror Mode, Partial Mirror Mode. Default setting is Disabled. ◆ Memory Rank Sparring <ul style="list-style-type: none"> – Enable/Disable Memory Rank Sparring. This feature is only available on 1LM. – Options available: Disabled, Enabled. Default setting is Disabled. ◆ Correctable Error Threshold <ul style="list-style-type: none"> – Correctable Error Threshold (1-32767) used for sparing, tagging, and leaky bucket. – Press the <+> / <-> keys to increase or decrease the desired values. ◆ Trigger SW Error Threshold <ul style="list-style-type: none"> – Enable/Disable Sparring trigger SW Error Match Threshold. – Options available: Disabled, Enabled. Default setting is Disabled. ◆ Sparring SW Error Match Threshold <ul style="list-style-type: none"> – Correctable Error Threshold (1-32767) used for bank level information. – Press the <+> / <-> keys to increase or decrease the desired values.

Parameter	Description
Memory RAS Configuration (continued)	<ul style="list-style-type: none"> ◆ Correctable Error Time Window <ul style="list-style-type: none"> – Correctable Error time window based interface in hour (0-24). – Press the <+> / <-> keys to increase or decrease the desired values. ◆ Leaky bucket time window based interface <ul style="list-style-type: none"> – Enable/Disable leaky bucket time window based interface. – Options available: Disabled, Enabled. Default setting is Disabled. ◆ Leaky bucket low bit <ul style="list-style-type: none"> – Configures leaky bucket low bit (1-63). – Press the <+> / <-> keys to increase or decrease the desired values. ◆ Leaky bucket high bit <ul style="list-style-type: none"> – Configures leaky bucket high bit (1-63). – Press the <+> / <-> keys to increase or decrease the desired values. ◆ Puls One <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Disabled.

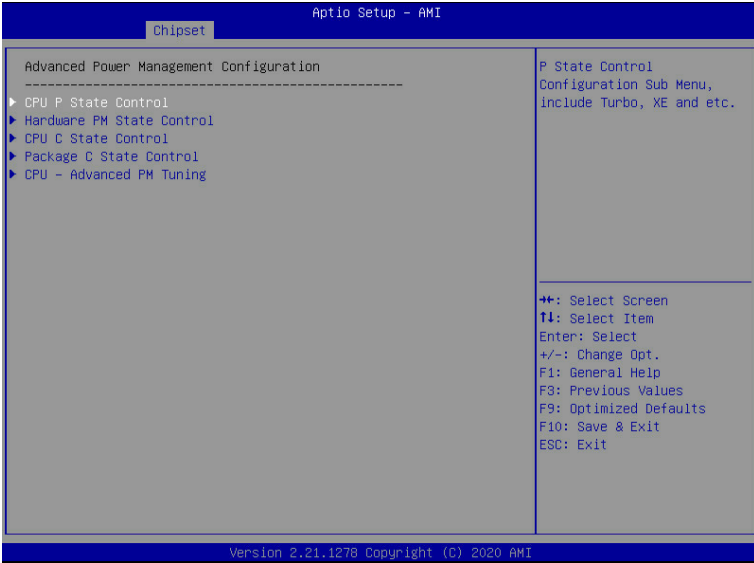
5-3-5 IIO Configuration



Parameter	Description
IIO Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Intel® VT for Directed I/O (VT-d) <ul style="list-style-type: none"> – Enable/Disable the Intel VT for Directed I/O (VT-d) support function by reporting the I/O device assignment to VMM through DMAR ACPI Tables. – Options available: Yes, No. Default setting is Yes. ◆ ACS Control <ul style="list-style-type: none"> – Enable: Programs ACS only to Chipset PCIe Root Ports Bridges. – Disable: Programs ACS to all PCIe bridges. – Default setting is Disable. ◆ Interrupt Remapping <ul style="list-style-type: none"> – Enable/Disable the interrupt remapping support function. – Options available: Auto, Yes, No. Default setting is No. ◆ Posted Interrupt <ul style="list-style-type: none"> – Enable/Disable the VT_D posted interrupt. – Options available: Yes, No. Default setting is Yes. ◆ ATS <ul style="list-style-type: none"> – Enable/Disable Non-Isoch VT_D Engine ATS support. – Options available: Yes, No. Default setting is Yes. ◆ Coherency Support (Non-Isoch) <ul style="list-style-type: none"> – Enable/Disable Non-Isoch VT_D Engine Coherency support. – Options available: Yes, No. Default setting is Yes.
Intel® VT for Directed I/O (VT-d)	

Parameter	Description
Intel® VMD technology	Press [Enter] to configure advanced items. <ul style="list-style-type: none">◆ Intel® VMD technology◆ Intel® VMD Configuration<ul style="list-style-type: none">– Enable/Disable the Intel VMD support function.– Options available: Enable, Disable. Default setting is Disable.
MCTP	Enable/Disable MCTP (Management Component Transport Protocol). Options available: Yes, No. Default setting is No .

5-3-6 Advanced Power Management Configuration

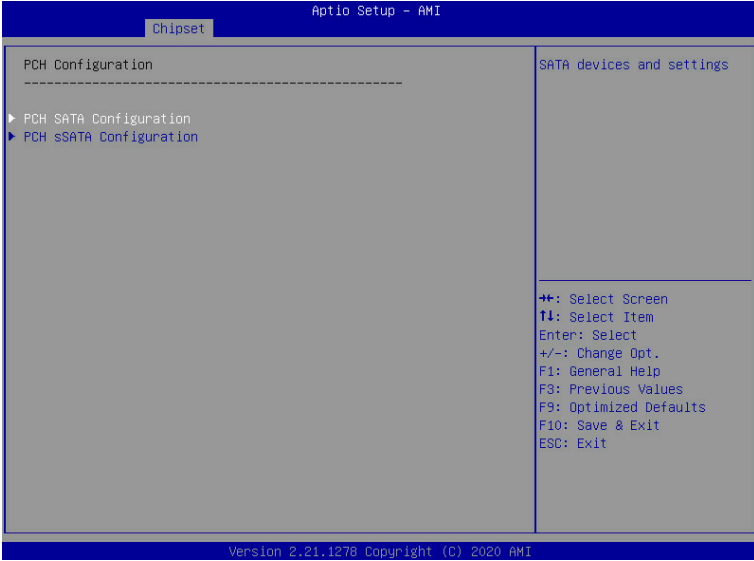


Parameter	Description
Advanced Power Management Configuration	
CPU P State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ SpeedStep (Pstates) <ul style="list-style-type: none"> – Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. – Options available: Enable, Disable. Default setting is Enable. ◆ Turbo Mode <ul style="list-style-type: none"> – When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance. When this item is disabled, the processor will not overclock any of its core. – Options available: Enable, Disable. Default setting is Enable.

Parameter	Description
Hardware PM State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Hardware P-States <ul style="list-style-type: none"> – When this item is disabled, the processor hardware chooses a P-state based on OS Request (Legacy P-States). – In Native mode, the processor hardware chooses a P-state based on OS guidance. – In Out of Band mode, the processor hardware autonomously chooses a P-state (with no OS guidance). – Options available: Disable, Native Mode, Out of Band Mode, Native Mode with No Legacy Support. Default setting is Native Mode.
CPU C State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ CPU C6 Report <ul style="list-style-type: none"> – Allows you to determine whether to let the CPU enter C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C6 state is a more enhanced power-saving state than C1. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ Enhanced Halt State (C1E)^(Note) <ul style="list-style-type: none"> – Core C1E auto promotion control. Takes effect after reboot. – Options available: Enable, Disable. Default setting is Enable.
Package C State Control	<p>Configures the state for the C-State package limit.</p> <p>Options available: C0/C1 state, C2 state, C6(non Retention) state, C6(Retention) state, No Limit, Auto.</p> <p>Default setting is Auto.</p>
CPU - Advanced PM Tuning	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Energy Perf BIAS <ul style="list-style-type: none"> – Enters the Energy Perf BIAS submenu. ◆ Power Performance Tuning^(Note) <ul style="list-style-type: none"> – Tunes the Power Performance Configuration mode. When enabled, uses IA32_ENERGY_PERF_BIAS input from the core. When disabled, uses alternate performance BIAS input from ENERGY_PERF_BIAS_CONFIG. – Options available: OS Controls EPB, BIOS Controls EPB. Default setting is OS Controls EPB. ◆ Energy_PERF_BIAS_CFG mode <ul style="list-style-type: none"> – Selects the Energy Performance Bias Configuration Mode. – Options available: Performance, Balanced Performance, Balanced Power, Power. Default setting is Balanced Performance. – Please note that this item is configurable when Power Performance Tuning is set to BIOS Controls EPB.

(Note) Advanced items prompt when this item is defined.

5-3-7 PCH Configuration



Parameter	Description
PCH Configuration	Press [Enter] to configure advanced items.
PCH SATA Configuration	<ul style="list-style-type: none"> ◆ SATA Controller <ul style="list-style-type: none"> – Enable/Disable SATA controller. – Options available: Enable, Disable. Default setting is Enable. ◆ Configure SATA as <ul style="list-style-type: none"> – Configures on chip SATA type. – AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality. Then the RAID function is disabled and cannot be access the RAID setup utility at boot time. – RAID Mode: When set to RAID, the SATA controller enables both its RAID and AHCI functions. You will be allowed to access the RAID setup utility at boot time. – Options available: AHCI, RAID. Default setting is AHCI. ◆ Alternate Device ID on RAID^(Note 1) <ul style="list-style-type: none"> – Enable/Disable Alternate Device ID on RAID mode. – Options available: Enable, Disable. Default setting is Disabled ◆ SATA Port 0/1/2/3/4/5/6/7 <ul style="list-style-type: none"> – The category identifies SATA hard drives that are installed in the computer. System will automatically detect HDD type.

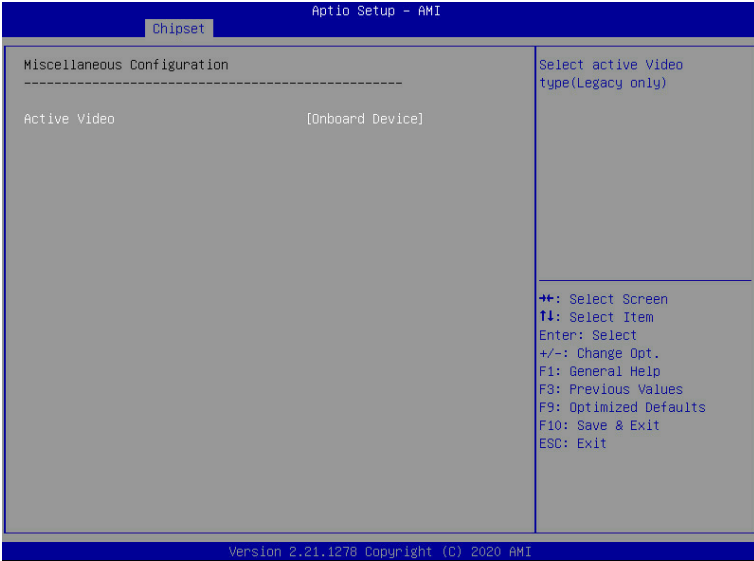
(Note 1) Only appears when HDD sets to **RAID Mode**.

Parameter	Description
PCH SATA Configuration (continued)	<ul style="list-style-type: none"> ◆ Port 0/1/2/3/4/5/6/7 <ul style="list-style-type: none"> – Enable/Disable Port 0/1/2/3/4/5/6/7 device. – Options available: Enable, Disable. Default setting is Enable. ◆ Hot Plug (for Port 0/1/2/3/4/5/6/7)^(Note 2) <ul style="list-style-type: none"> – Enable/Disable HDD Hot-Plug function. – Options available: Enable, Disable. Default setting is Disable. ◆ Spin Up Device (for Port 0/1/2/3/4/5/6/7)^(Note 2) <ul style="list-style-type: none"> – On an edge detect from 0 to 1, the PCH starts a COM reset initialization to the device. – Options available: Enable, Disable. Default setting is Disable.
PCH sSATA Configuration	<ul style="list-style-type: none"> ◆ sSATA Controller <ul style="list-style-type: none"> – Enable/Disable sSATA controller. – Options available: Enable, Disable. Default setting is Enable. ◆ Configure sSATA as <ul style="list-style-type: none"> – Configures on chip SATA type. – AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality. Then the RAID function is disabled and cannot be access the RAID setup utility at boot time. – RAID Mode: When set to RAID, the SATA controller enables both its RAID and AHCI functions. You will be allowed to access the RAID setup utility at boot time. – Options available: AHCI, RAID. Default setting is AHCI. ◆ Alternate Device ID on RAID^(Note 1) <ul style="list-style-type: none"> – Enable/Disable Alternate Device ID on RAID mode. – Options available: Enable, Disable. Default setting is Disable. ◆ sSATA Port 0/1/2/3/4/5 <ul style="list-style-type: none"> – The category identifies sSATA hard drives that are installed in the computer. System will automatically detect HDD type. ◆ Port 0/1/2/3/4/5 <ul style="list-style-type: none"> – Enable/Disable Port 0/1/2/3/4/5 device. – Options available: Enable, Disable. Default setting is Enable. ◆ Hot Plug (for Port 0/1/2/3/4/5)^(Note 2) <ul style="list-style-type: none"> – Enable/Disable HDD Hot-Plug function. – Options available: Enable, Disable. Default setting is Disable. ◆ Spin Up Device (for Port 0/1/2/3/4/5)^(Note 2) <ul style="list-style-type: none"> – On an edge detect from 0 to 1, the PCH starts a COM reset initialization to the device. – Options available: Enable, Disable. Default setting is Disabled.

(Note 1) Only appears when HDD sets to **RAID** Mode.

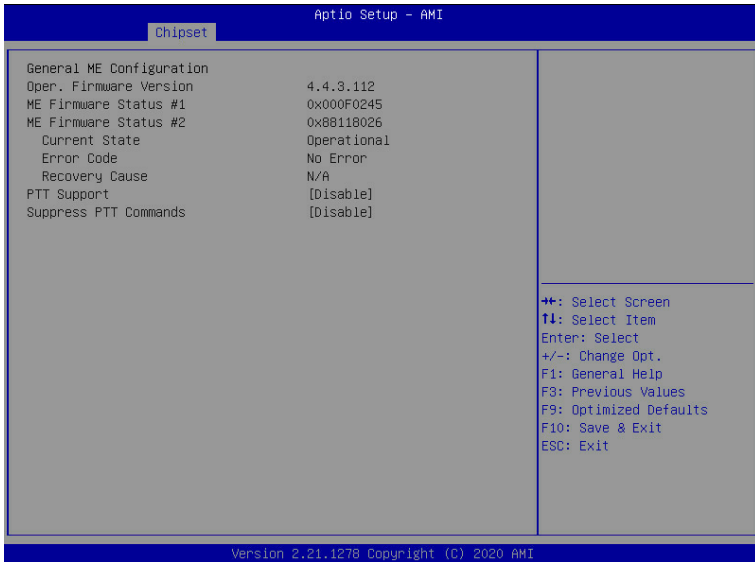
(Note 2) Only Supported when HDD is in **AHCI** or **RAID** Mode.

5-3-8 Miscellaneous Configuration



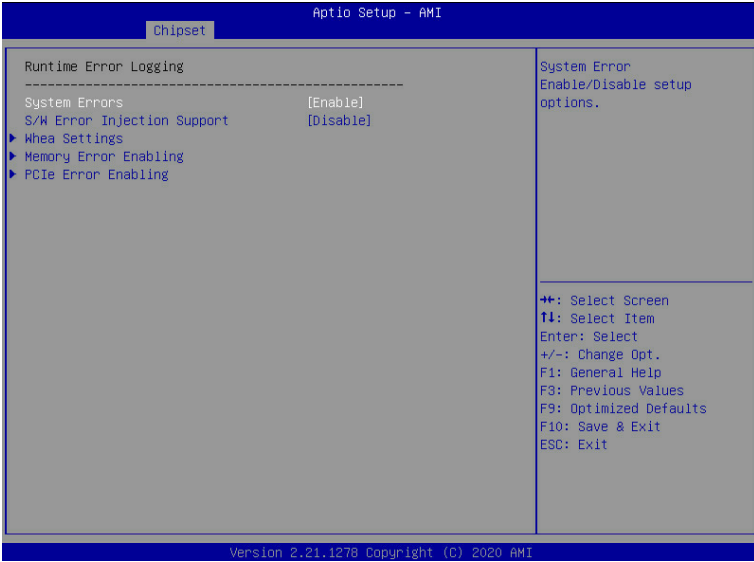
Parameter	Description
Miscellaneous Configuration	
Active Video	Selects the active video type. Options available: Auto, Onboard Device, PCIe Device. Default setting is Auto .

5-3-9 Server ME Configuration



Parameter	Description
General ME Configuration	
Oper. Firmware Version	Displays the operational firmware version.
ME Firmware Status #1/#2	Displays ME Firmware status information.
Current State	Displays ME Firmware current status information.
Error Code	Displays ME Firmware status error code.
Recovery Cause	Displays ME Firmware recovery cause.
PTT Support	Displays if the system supports the Intel® Platform Trust Technology.
Suppress PTT Commands	Displays if the system supports to Bypass TPM2 commands submitting to PTT Firmware.

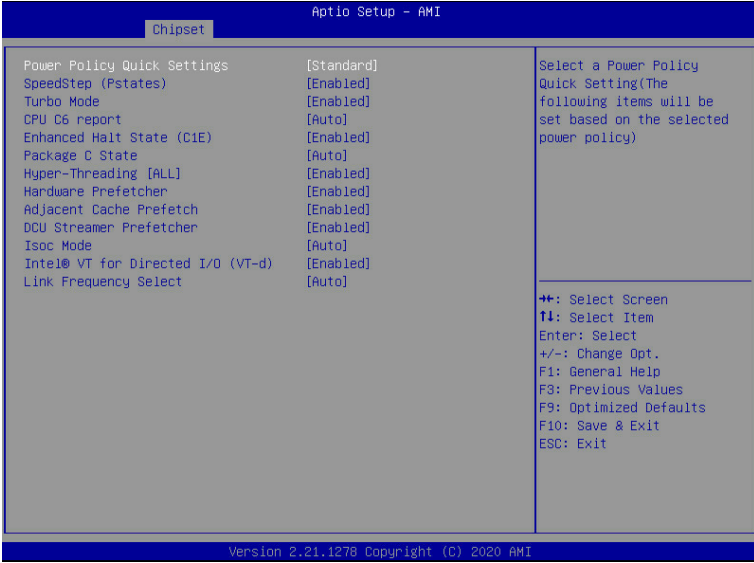
5-3-10 Runtime Error Logging Settings



Parameter	Description
Runtime Error Logging	
System Errors	Enable/Disable system error logging function. Options available: Enable, Disable. Default setting is Enable .
S/W Error Injection Support	Enable/Disable software injection error logging function. Options available: Enable, Disable. Default setting is Disable .
Whea Settings	Press [Enter] to configure advanced items. <ul style="list-style-type: none"> ◆ WHEA (Windows Hardware Error Architecture) Support <ul style="list-style-type: none"> - Enable/Disable WHEA Support. - Options available: Enable, Disable. Default setting is Enable.
Memory Error Enabling	Press [Enter] to configure advanced items. <ul style="list-style-type: none"> ◆ Memory Error <ul style="list-style-type: none"> - Enable/Disable Memory Error. - Options available: Enable, Disable. Default setting is Enable. ◆ Memory Corrected Error <ul style="list-style-type: none"> - Enable/Disable Memory Corrected Error. - Options available: Enable, Disable. Default setting is Enable. ◆ Uncorrected Error disable Memory <ul style="list-style-type: none"> - Enable/Disable the Memory that triggers Uncorrected Error. - Options available: Enable, Disable. Default setting is Disable.

Parameter	Description
PCIe Error Enabling	<p data-bbox="309 142 642 166">Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> <li data-bbox="309 170 851 252">◆ PCIe Error <ul style="list-style-type: none"> <li data-bbox="344 200 580 224">– Enable/Disable PCIe error. <li data-bbox="344 228 846 252">– Options available: Enable, Disable. Default setting is Enable. <li data-bbox="309 257 923 338">◆ Uncorrected Error <ul style="list-style-type: none"> <li data-bbox="344 286 923 310">– Enables and escalates Uncorrectable/Recoverable Errors to error pins. <li data-bbox="344 315 846 338">– Options available: Enable, Disable. Default setting is Enable. <li data-bbox="309 343 846 424">◆ Fatal Error Enable <ul style="list-style-type: none"> <li data-bbox="344 373 749 396">– Enables and escalates Fatal Errors to error pins. <li data-bbox="344 401 846 424">– Options available: Enable, Disable. Default setting is Enable. <li data-bbox="309 429 940 545">◆ Assert NMI on SERR <ul style="list-style-type: none"> <li data-bbox="344 459 940 514">– Enable/Disable BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. <li data-bbox="344 519 846 542">– Options available: Enable, Disable. Default setting is Enable. <li data-bbox="309 550 940 663">◆ Assert NMI on PERR <ul style="list-style-type: none"> <li data-bbox="344 580 940 635">– Enable/Disable BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. <li data-bbox="344 639 846 663">– Options available: Enable, Disable. Default setting is Enable.

5-3-11 Power Policy

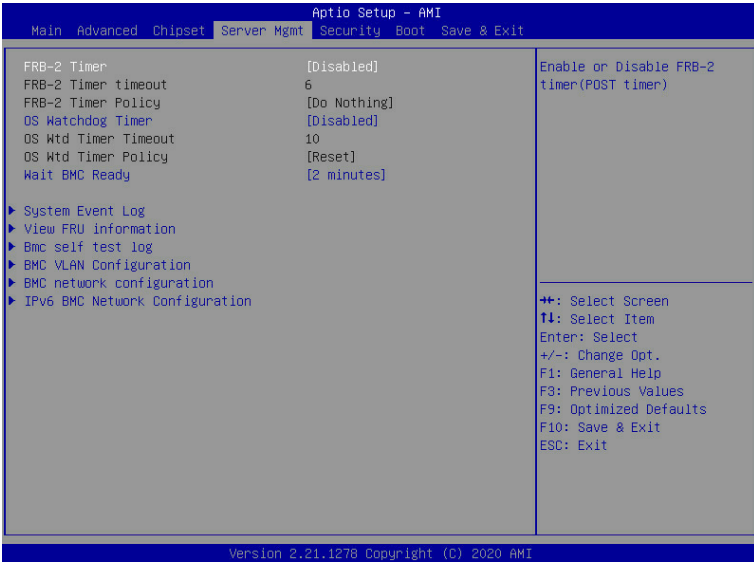


Parameter	Description
Power Policy Quick Settings	Selects a Power Policy Quick Setting. Options available: Standard, Best Performance, Energy Efficient, Turbo Lock. Default setting is Standard .
SpeedStep (Pstates)	Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. Options available: Enabled, Disabled. Default setting is Enabled .
Turbo Mode	When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance. When this item is disabled, the processor will not overclock any of its core. Options available: Enabled, Disabled. Default setting is Enabled .
CPU C6 report	Allows you to determine whether to let the CPU enter C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C6 state is a more enhanced powersaving state than C1. Options available: Disabled, Enabled, Auto. Default setting is Auto .
Enhanced Halt State (C1E) ^(Note)	Core C1E auto promotion control. Takes effect after reboot. Options available: Enabled, Disabled. Default setting is Enabled .

(Note) Advanced items prompt when this item is defined.

Parameter	Description
Package C State	Configures the state for the C-State package limit. Options available: C0/C1 state, C2 state, C6(non Retention) state, C6(Retention) state, No Limit, Auto. Default setting is Auto .
Hyper-Threading [ALL]	The Hyper Threading Technology allows a single processor to execute two or more separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads, thereby improving performance. Options available: Enabled, Disabled. Default setting is Enabled .
Hardware Prefetcher	Select whether to enable the speculative prefetch unit of the processor. Options available: Enabled, Disabled. Default setting is Disabled .
Adjacent Cache Prefetch	When enabled, cache lines are fetched in pairs. When disabled, only the required cache line is fetched. Options available: Enabled, Disabled. Default setting is Enabled .
DCU Streamer Prefetcher	Prefetches the next L1 data line based upon multiple loads in same cache line. Options available: Enabled, Disabled. Default setting is Enabled .
Isoc Mode	Enable/Disable the Isochronous support in order to meet the QoS requirements (Quality of Service). Options available: Auto, Enabled, Disabled. Default setting is Auto .
Intel® VT for Directed I/O (VT-d)	Enable/Disable the Intel VT for Directed I/O (VT-d) support function by reporting the I/O device assignment to VMM through DMAR ACPI Tables. Options available: Enabled, Disabled. Default setting is Enabled .
Link Frequency Select	Selects the UPI link frequency. Options available: 12.8GB/s, 14.4GB/s, 16.4GB/s, Auto. Default setting is Auto .

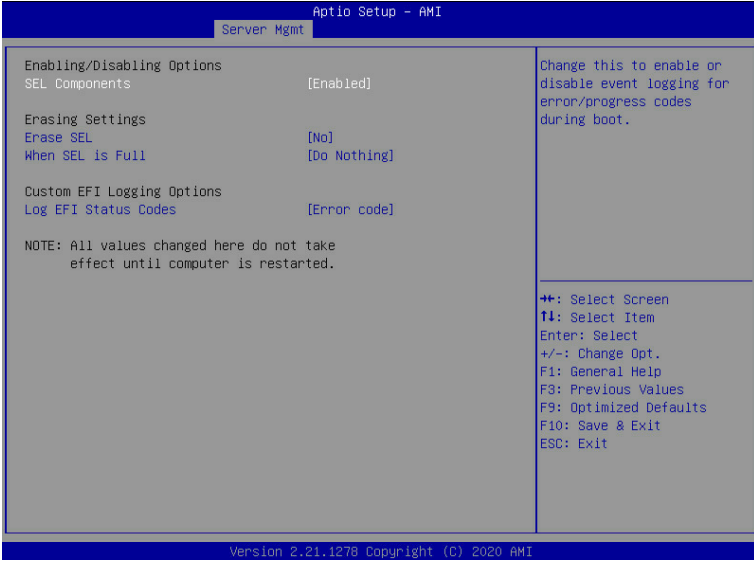
5-4 Server Management Menu



Parameter	Description
FRB-2 Timer	Enable/Disable FRB-2 timer (POST timer). Options available: Enabled, Disabled. Default setting is Enabled .
FRB-2 Timer timeout	Configures the FRB2 Timer timeout. The value is between 1 to 30 minutes. Default setting is 6 minutes . Please note that this item is configurable when FRB-2 Timer is set to Enabled.
FRB-2 Timer Policy	Configures the FRB2 Timer policy. Options available: Do Nothing, Reset, Power Down, Power Cycle. Default setting is Do Nothing . Please note that this item is configurable when FRB-2 Timer is set to Enabled.
OS Watchdog Timer	Enable/Disable OS Watchdog Timer function. Options available: Enabled, Disabled. Default setting is Disabled .
OS Wtd Timer Timeout	Configures OS Watchdog Timer. The value is between 1 to 30 minutes. Default setting is 10 minutes . Please note that this item is configurable when OS Watchdog Timer is set to Enabled.
OS Wtd Timer Policy	Configure OS Watchdog Timer Policy. Options available: Reset, Do Nothing, Power Down, Power Cycle. Default setting is Reset . Please note that this item is configurable when OS Watchdog Timer is set to Enabled.

Parameter	Description
Wait BMC Ready	POST wait BMC ready and reboot system. Options available: Disabled, 2 minutes, 4 minutes, 6 minutes. Default setting is 2 minutes .
System Event Log	Press [Enter] to configure advanced items.
View FRU Information	Press [Enter] to view the FRU information.
BMC Self test log	Press [Enter] to configure advanced items.
BMC VLAN Configuration	Press [Enter] to configure advanced items.
BMC network Configuration	Press [Enter] to configure advanced items.
IPv6 BMC Network Configuration	Press [Enter] to configure advanced items.

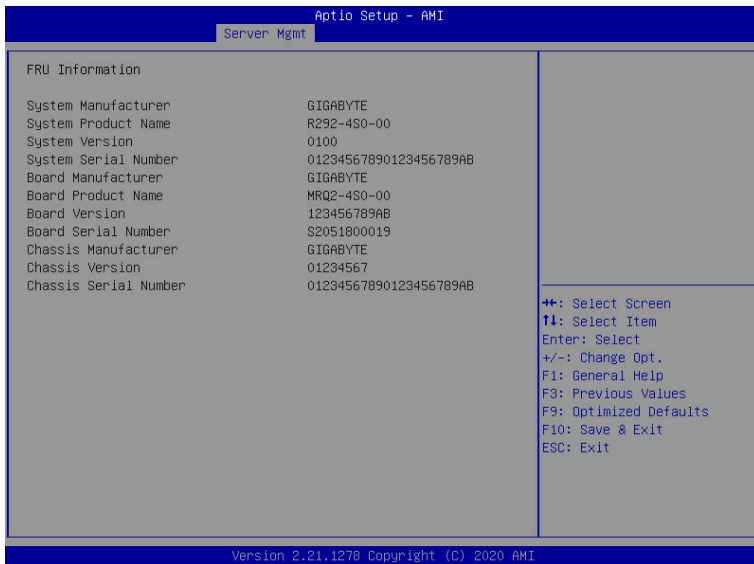
5-4-1 System Event Log



Parameter	Description
Enabling / Disabling Options	
SEL Components	Change this item to enable or disable all features of System Event Logging during boot. Options available: Enabled, Disabled. Default setting is Enabled .
Erasing Settings	
Erase SEL	Choose options for erasing SEL. Options available: No; Yes, On next reset; Yes, On every reset. Default setting is No .
When SEL is Full	Choose options for reactions to a full SEL. Options available: Do Nothing, Erase Immediately, Delete Oldest Record. Default setting is Do Nothing .
Custom EFI Logging Options	
Log EFI Status Codes	Enable/Disable the logging of EFI Status Codes (if not already converted to legacy). Options available: Disabled, Both, Error code, Progress code. Default setting is Error code .

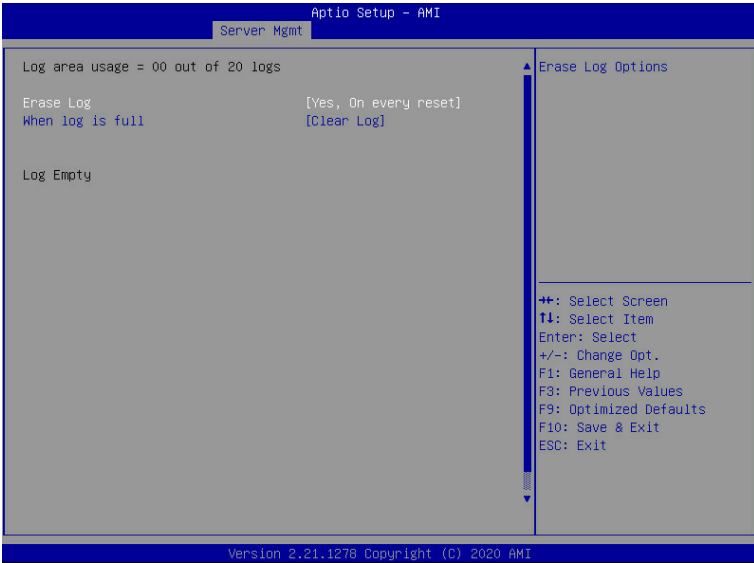
5-4-2 View FRU Information

The FRU page is a simple display page for basic system ID information, as well as System product information. Items on this window are non-configurable.



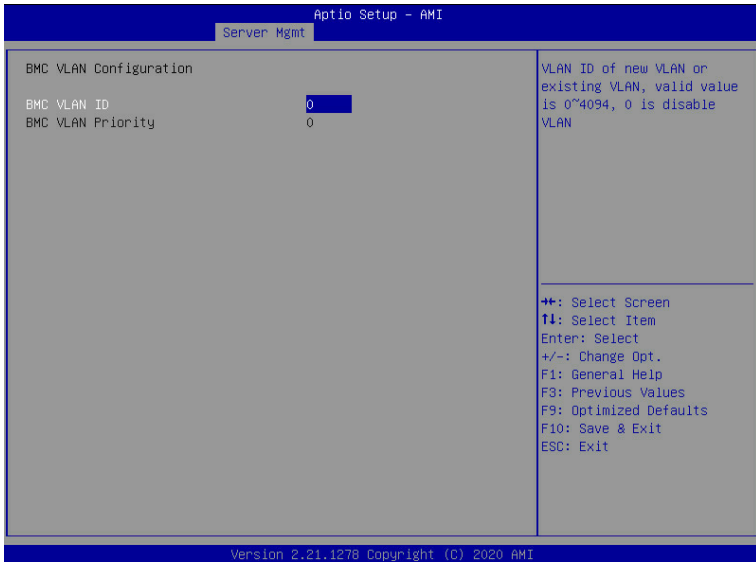
(Note) The model name will vary depends on the product you purchased

5-4-3 BMC Self Test Log



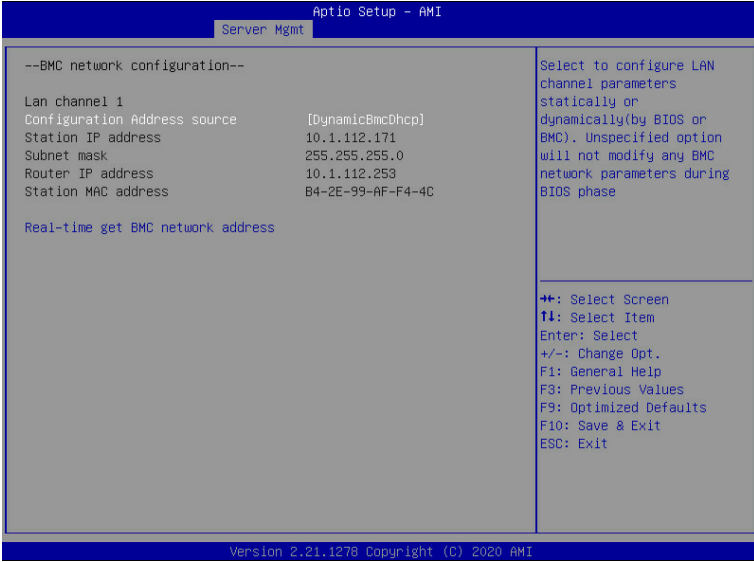
Parameter	Description
Erase Log	Choose options for erasing log. Options available: No; Yes, On every reset. Default setting is Yes, On every reset.
When log is full	Selects the action to be taken when log is full. Options available: Clear Log, Do not log any more. Default setting is Clear Log.

5-4-4 BMC VLAN Configuration



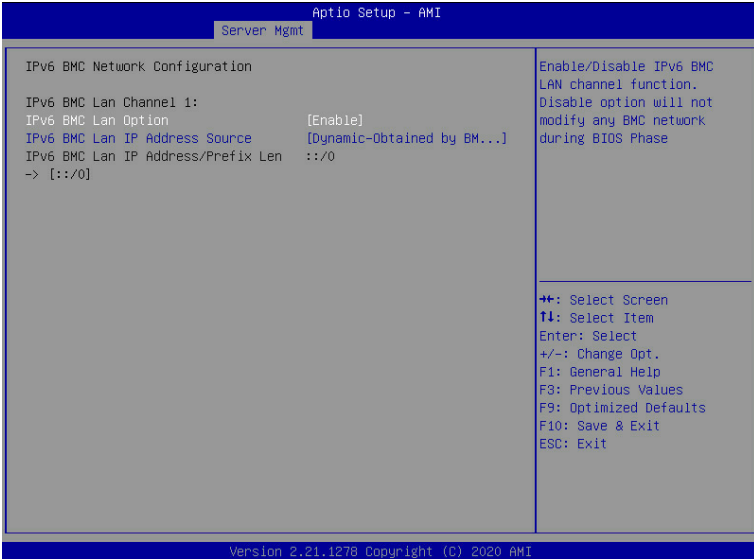
Parameter	Description
BMC VLAN Configuration	
BMC VLAN ID	Select to configure BMC VLAN ID. The valid range is from 0 to 4094. When set to 0, BMC VLAN ID will be disabled.
BMC VLAN Priority	Select to configure BMC VLAN Priority. The valid range is from 0 to 7. When BMC VLAN ID is set to 0, BMC VLAN Priority will not be selected.

5-4-5 BMC Network Configuration



Parameter	Description
BMC network configuration	
Lan Channel 1	
Configuration Address source	Selects to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase. Options available: Unspecified, Static, DynamicBmcDhcp, DynamicBmcNonDhcp. Default setting is DynamicBmcDhcp .
Station IP address	Displays IP Address information.
Subnet mask	Displays Subnet Mask information. Please note that the IP address must be in three digitals, for example, 192.168.000.001.
Router IP address	Displays the Router IP Address information.
Station MAC address	Displays the MAC Address information.
Real-time get BMC network address	Press [Enter] will set LAN mode and Address source and then get IP, Subnet, Gateway and MAC address.

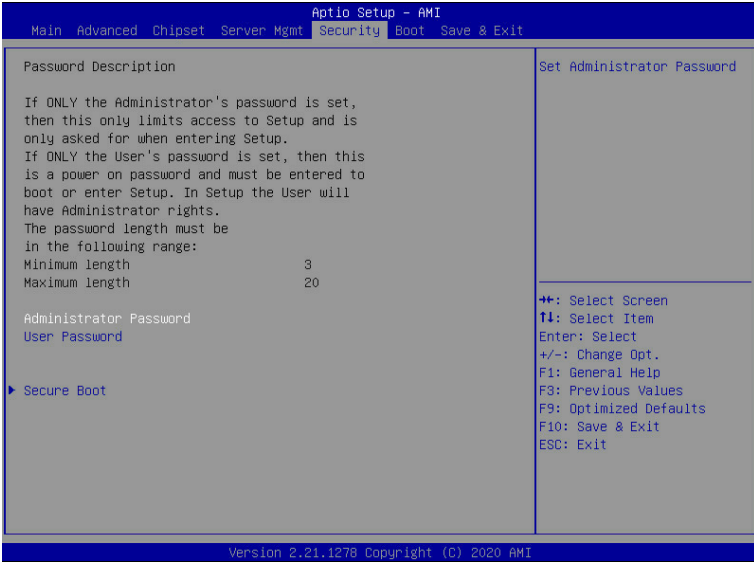
5-4-6 IPv6 BMC Network Configuration



Parameter	Description
IPv6 BMC network configuration	
IPv6 BMC Lan Channel 1	
IPv6 BMC Lan Option	Enable/Disable IPv6 BMC LAN channel function. When this item is disabled, the system will not modify any BMC network during BIOS phase. Options available: Unspecified, Disable, Enable. Default setting is Enable .
IPv6 BMC Lan IP Address Source	Selects to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Options available: Unspecified, Static, Dynamic-Obtained by BMC running DHCP. Default setting is Enable Dynamic-Obtained by BMC running DHCP .
IPv6 BMC Lan IP Address/Prefix Length	Check if the IPv6 BMC LAN IP address matches those displayed on the screen.

5-5 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.



There are two types of passwords that you can set:

- Administrator Password
Entering this password will allow the user to access and change all settings in the Setup Utility.
- User Password
Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

Parameter	Description
Administrator Password	Press [Enter] to configure the administrator password.
User Password	Press [Enter] to configure the user password.
Secure Boot	Press [Enter] to configure advanced items.

5-5-1 Secure Boot

The Secure Boot submenu is applicable when your device is installed the Windows® 8 (or above) operating system.



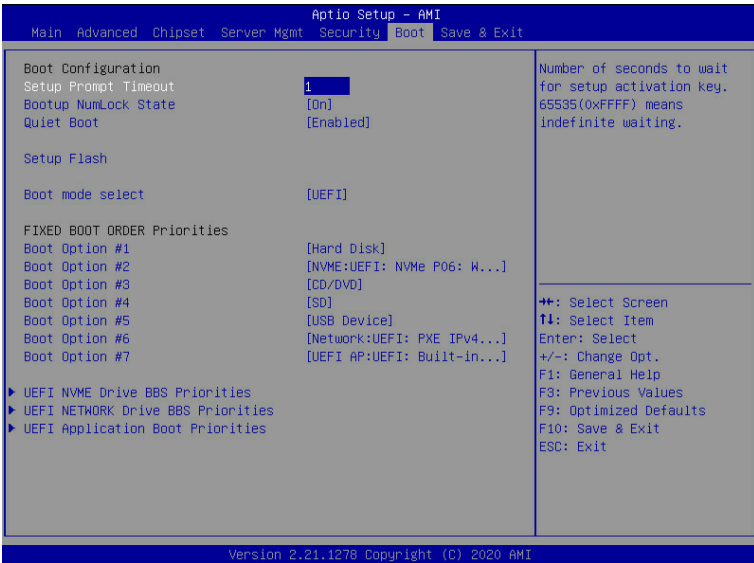
Parameter	Description
System Mode	Displays if the system is in User mode or Setup mode.
Secure Boot	Enable/ Disable the Secure Boot function. Options available: Enabled, Disabled. Default setting is Disabled .
Secure Boot Mode ^(Note)	Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all files being loaded before Windows loads to the login screen have not been tampered with. When set to Standard, it will automatically load the Secure Boot keys form the BIOS databases. When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database. Options available: Standard, Custom. Default setting is Standard .
Restore Factory Keys	Forces the system to user mode and installs factory default Secure Boot key database.
Reset To Setup Mode	Installs the default keys when system is in setup mode.

(Note) Advanced items prompt when this item is set to **Custom**.

Parameter	Description
Key Management	<p data-bbox="335 156 665 180">Press [Enter] to configure advanced items.</p> <p data-bbox="335 185 936 235">Please note that this item is configurable when Secure Boot Mode is set to Custom.</p> <ul style="list-style-type: none"> <li data-bbox="335 243 946 352">◆ Factory Key Provision <ul style="list-style-type: none"> <li data-bbox="367 266 946 321">– Allows to provision factory default Secure Boot keys when system is in Setup Mode. <li data-bbox="367 326 904 352">– Options available: Enabled, Disabled. Default setting is Disabled. <li data-bbox="335 357 925 431">◆ Restore Factory Keys <ul style="list-style-type: none"> <li data-bbox="367 381 925 404">– Installs all factory default keys. It will force the system in User Mode. <li data-bbox="367 409 606 431">– Options available: Yes, No. <li data-bbox="335 435 904 517">◆ Enroll Efi Image <ul style="list-style-type: none"> <li data-bbox="367 459 904 517">– Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (db). <li data-bbox="335 522 702 572">◆ Restore DB defaults <ul style="list-style-type: none"> <li data-bbox="367 545 702 572">– Restore DB variable to factory defaults. <li data-bbox="335 577 899 627">◆ Secure Boot variable <ul style="list-style-type: none"> <li data-bbox="367 600 899 627">– Displays the current status of the variables used for secure boot. <li data-bbox="335 631 803 744">◆ Platform Key (PK) <ul style="list-style-type: none"> <li data-bbox="367 655 803 682">– Displays the current status of the Platform Key (PK). <li data-bbox="367 686 680 713">– Press [Enter] to configure a new PK. <li data-bbox="367 718 601 744">– Options available: Update. <li data-bbox="335 749 946 885">◆ Key Exchange Keys (KEK) <ul style="list-style-type: none"> <li data-bbox="367 773 946 854">– Displays the current status of the Key Exchange Key Database (KEK). <li data-bbox="367 804 909 854">– Press [Enter] to configure a new KEK or load additional KEK from storage devices. <li data-bbox="367 859 670 885">– Options available: Update, Append. <li data-bbox="335 890 909 1027">◆ Authorized Signatures (DB) <ul style="list-style-type: none"> <li data-bbox="367 914 909 937">– Displays the current status of the Authorized Signature Database. <li data-bbox="367 942 946 992">– Press [Enter] to configure a new DB or load additional DB from storage devices. <li data-bbox="367 997 670 1023">– Options available: Update, Append. <li data-bbox="335 1031 904 1168">◆ Forbidden Signatures (DBX) <ul style="list-style-type: none"> <li data-bbox="367 1055 904 1078">– Displays the current status of the Forbidden Signature Database. <li data-bbox="367 1083 893 1133">– Press [Enter] to configure a new dbx or load additional dbx from storage devices. <li data-bbox="367 1138 670 1165">– Options available: Update, Append. <li data-bbox="335 1172 931 1309">◆ Authorized TimeStamps (DBT) <ul style="list-style-type: none"> <li data-bbox="367 1196 931 1219">– Displays the current status of the Authorized TimeStamps Database. <li data-bbox="367 1224 909 1274">– Press [Enter] to configure a new DBT or load additional DBT from storage devices. <li data-bbox="367 1279 670 1306">– Options available: Update, Append. <li data-bbox="335 1313 920 1450">◆ OsRecovery Signatures <ul style="list-style-type: none"> <li data-bbox="367 1337 920 1361">– Displays the current status of the OsRecovery Signature Database. <li data-bbox="367 1365 888 1415">– Press [Enter] to configure a new OsRecovery Signature or load additional OsRecovery Signature from storage devices. <li data-bbox="367 1420 670 1447">– Options available: Update, Append.

5-6 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

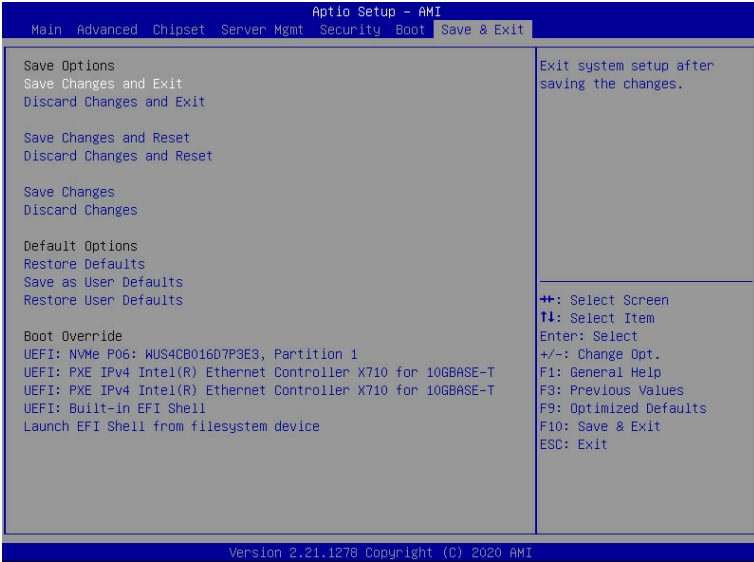


Parameter	Description
Boot Configuration	
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function. Options available: On, Off. Default setting is Off .
Quiet Boot	Enable/Disable showing the logo during POST. Options available: Enabled, Disabled. Default setting is Enabled .
Setup Flash	Press [Enter] to run setup flash.
Boot mode select	Selects the boot mode. Options available: LEGACY, UEFI. Default setting is UEFI .

Parameter	Description
FIXED BOOT ORDER Priorities	
Boot Option #1 / #2 / #3 / #4 / #5	<p>Press [Enter] to configure the boot priority. By default, the server searches for boot devices in the following sequence:</p> <ol style="list-style-type: none"> 1. Hard drive. 2. CD-COM/DVD drive. 3. USB device. 4. Network. 5. UEFI.
UEFI NVME Drive BBS Priorities	Press [Enter] to configure the boot priority.
UEFI Network Drive BBS Priorities	Press [Enter] to configure the boot priority.
UEFI Application Boot Priorities	Press [Enter] to configure the boot priority.

5-7 Save & Exit Menu

The Save & Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press <Enter>.



Parameter	Description
Save Options	
Save Changes and Exit	Saves changes made and closes the BIOS setup. Options available: Yes, No.
Discard Changes and Exit	Discards changes made and exits the BIOS setup. Options available: Yes, No.
Save Changes and Reset	Restarts the system after saving the changes made. Options available: Yes, No.
Discard Changes and Reset	Restarts the system without saving any changes. Options available: Yes, No.
Save Changes	Saves changes done so far to any of the setup options. Options available: Yes, No.
Discard Changes	Discards changes made and closes the BIOS setup. Options available: Yes, No.
Default Options	

Parameter	Description
Restore Defaults	Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly. Options available: Yes, No.
Save as User Defaults	Saves the changes made as the user default settings. Options available: Yes, No.
Restore User Defaults	Loads the user default settings for all BIOS setup parameters. Options available: Yes, No.
Boot Override	Press [Enter] to configure the device as the boot-up drive.
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available file system devices.

5-8 BIOS POST Beep code (AMI standard)

5-8-1 PEI Beep Codes

# of Beeps	Description
1	Memory not Installed.
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

5-8-2 DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met