GIGABYTE™

H262-Z6B-ICU1
H262-Z6B-ICP1

HCI Server – AMD DP 2U 4 Nodes Immersion Server Gen4 NVMe

2200W (240V) 80 PLUS Platinum redundant PSU (ICU1)
3000W (240V) 80 PLUS Titanium redundant PSU (ICP1)

User Manual

Rev. 1.0

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Documentation Classifications

In order to assist in the use of this product, Giga Computing 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/Enterprise

For GIGABYTE distributors and resellers, additional sales & marketing materials are available from our reseller portal: http://reseller.b2b.gigabyte.com

For further technical assistance, please contact your GIGABYTE representative or visit https://esupport.gigabyte.com/ to create a new support ticket

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 all the power cords from the power supplies to disconnect power to the equipment.

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 dam-age the contacts inside the jumper, causing intermittent problems with the function con-trolled 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.

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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

NOTE:

We reserve the right to make any changes to the product specifications and product-related information without prior notice.

System Dimension	◆ 2U 4-Node - Rear access ◆ 440 (W) x 87.5 (H) x 840 (D) mm
CPU	◆ AMD EPYC™ 7003 series processor family ◆ Dual processors, 7nm technology ◆ Up to 64-core, 128 threads per processor ◆ TDP up to 225W, cTDP up to 240W Conditional support 280W NOTE: 1. If only 1 CPU is installed, some PCIe or memory functions might be unavailable 2. Contact GIGABYTE sales rep or technical support for more details about supporting 240W - 280W CPU 3. Compatible with AMD EPYC™ 7002 series processor family
Socket	**Per Node:** ◆ 2 x LGA 4094 **Total:** ◆ 8 x LGA 4094 ◆ Socket SP3
Chipset	◆ System on Chip
Memory	**Per Node:** ◆ 16 x DIMM slots **Total:** ◆ 64 x DIMM slots ◆ DDR4 memory supported only ◆ 8-Channel memory per processor architecture ◆ RDIMM modules up to 128GB supported ◆ LRDIMM modules up to 128GB supported ◆ 3DS RDIMM/LRDIMM modules up to 256GB supported ◆ Memory speed: Up to 3200 MHz

LAN	**Per Node:** ◆ 2 x 1GbE LAN ports (1 x Intel® I350-AM2) ◆ 1 x Dedicated management port **Total:** ◆ 8 x 1GbE LAN ports (1 x Intel® I350-AM2) ◆ 4 x Dedicated management ports ◆ 1 x 10/100/1000 *CMC global management port *CMC: Chassis Management Controller, to monitor all status of computing nodes
Video	◆ Integrated in Aspeed® AST2500 ◆ 2D Video Graphic Adapter with PCIe bus interface ◆ 1920x1200@60Hz 32bpp, DDR4 SDRAM Management chip on CMC board: ◆ Integrated in Aspeed® AST2520A2-GP
Storage	**Per node:** ◆ 2 x 2.5" Gen4 U.2 hot-swappable SSD bays 1 x M.2 slot from CPU_0: ◆ M-key ◆ PCIe Gen4 x4 ◆ Supports NGFF-2280/22110 cards **Total:** ◆ 8 x 2.5" Gen4 U.2 hot-swappable SSD bays ◆ **All storage bays are compatible with SATA devices** 4 x M.2 slot from CPU_0: ◆ M-key ◆ PCIe Gen4 x4 ◆ Supports NGFF-2280/22110 cards

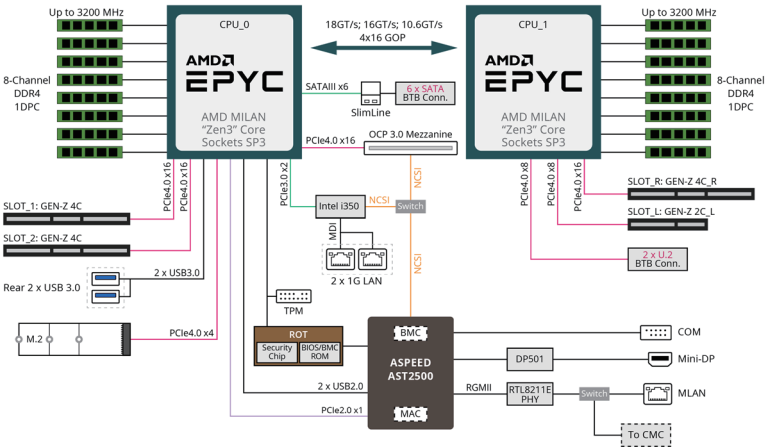
Expansion Slots	**Per node:** ◆ 2 x Low profile half-length slots with PCIe x16 (Gen4 x16 bus) from CPU_0 ◆ 1 x OCP 3.0 mezzanine slot with PCIe Gen4 x16 bandwidth 1 x M.2 slot from CPU_0: ◆ M-key ◆ PCIe Gen3 x4 ◆ Supports NGFF-2242/2260/2280/22110 cards ◆ CPU TDP is limited to 155W if using M.2 device **Total:** ◆ 8 x Low profile half-length slots with PCIe x16 (Gen4 x16 bus) from CPU_0 ◆ 4 x OCP 3.0 mezzanine slots with PCIe Gen4 x16 bandwidth ◆ 4 x M.2 slots from CPU_0: ◆ M-key ◆ PCIe Gen3 x4 ◆ Supports NGFF-2242/2260/2280/22110 cards ◆ CPU TDP is limited to 155W if using M.2 device
Internal I/O	**Per Node:** ◆ 1 x M.2 slot ◆ 1 x COM header ◆ 1 x TPM header ◆ 1 x BMC SGPIO header ◆ 1 x JTAG BMC header ◆ 1 x PLD header ◆ 1 x Clear CMOS jumper ◆ 1 x IPMB connector
Front I/O	**Per node:** ◆ 1 x Power button with LED ◆ 1 x ID button with LED ◆ 1 x Status LED ◆ 1 x System reset button **Total:** ◆ 4 x Power button with LED ◆ 4 x ID button with LED ◆ 4 x Status LED ◆ 4 x System reset button ◆ *1 x CMC status LED ◆ *1 x CMC reset button ***Only one CMC status LED and reset button per system**

Rear I/O	**Per node:** ◆ 2 x USB 3.2 Gen1 ◆ 1 x Mini-DP ◆ 2 x RJ45 ◆ 1 x RJ45 MLAN ◆ 1 x ID LED **Total:** ◆ 8 x USB 3.2 Gen1 ◆ 4 x Mini-DP ◆ 8 x RJ45 ◆ 4 x RJ45 MLAN ◆ 4 x ID LED ◆ *1 x CMC global management port ***Only one CMC global management port per system**
Backplane I/O	◆ 8 x ports ◆ Speed and bandwidth: SATA 6Gb/s or SAS 12Gb/s or PCIe Gen4 x4 per port
TPM	◆ 1 x TPM header with SPI interface ◆ Optional TPM2.0 kit: CTM010
Power Supply (ICU1)	◆ 2 x 2200W redundant PSUs ◆ 80 PLUS Platinum AC Input: ◆ 100-127V~/ 14A, 47-63Hz ◆ 200-240V~/ 12.6A, 47-63Hz DC Input: ◆ 240Vdc/ 12.6A ◆ DC Output: ◆ Max 1200W/ 100-127V~ ◆ + 12.12V/ 95.6A ◆ + 12Vsb/ 3.5A ◆ Max 2200W/ 200-240V~ ◆ + 12.12V/ 178.1A ◆ + 12Vsb/ 3.5A NOTE: The system power supply requires C19 type power cord

Power Supply (ICP1)	◆ Dual 3000W 80 PLUS Titanium power supply AC Input: ◆ 100-127V~/ 15.5A, 50-60Hz ◆ 200-220V~/ 15.5A, 50-60Hz ◆ 220-240V~/ 15.5A, 50-60Hz DC Input: ◆ 240Vdc/ 15.5A DC Output: ◆ Max 1000W/ 100-127V~ ◆ + 12.2V/ 81A ◆ + 12Vsb/ 3A ◆ Max 2600W/ 200-220V~ ◆ + 12.2V/ 213A ◆ + 12Vsb/ 3A ◆ Max 3000W/ 220-240V~ ◆ + 12.2V/ 240A ◆ + 12Vsb/ 3A NOTE: The system power supply requires C19 type power cord
System Management	◆ Aspeed® AST2500 management controller ◆ GIGABYTE Management Console (AMI MegaRAC SP-X) web interface ◆ Dashboard ◆ JAVA Based Serial Over LAN ◆ HTML5 KVM ◆ Sensor Monitor (Voltage, RPM, Temperature, CPU Status …etc.) ◆ Sensor Reading History Data ◆ FRU Information ◆ SEL Log in Linear Storage / Circular Storage Policy ◆ Hardware Inventory ◆ Fan Profile ◆ System Firewall ◆ Power Consumption ◆ Power Control ◆ LDAP / AD / RADIUS Support ◆ Backup & Restore Configuration ◆ Remote BIOS/BMC/CPLD Update ◆ Event Log Filter ◆ User Management ◆ Media Redirection Settings ◆ PAM Order Settings ◆ SSL Settings ◆ SMTP Settings

Operating Properties	◆	Non-operating temperature: -40°C to 60°C
	◆	Non-operating humidity: 20%-95% (non-condensing)

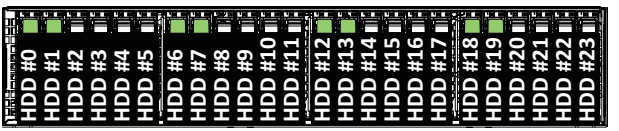
1-3 System Block Diagram



- **Please Go to Chapter 4 Motherboard Components for Riser Slot information.**

Chapter 2 System Appearance

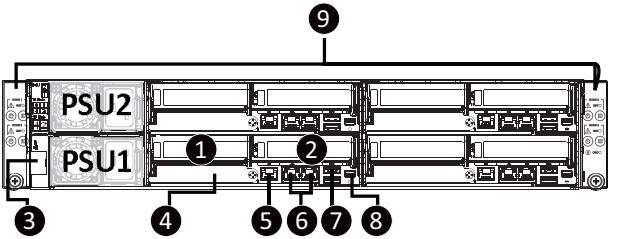
2-1 Front View



Green HDD Latches Support NVMe

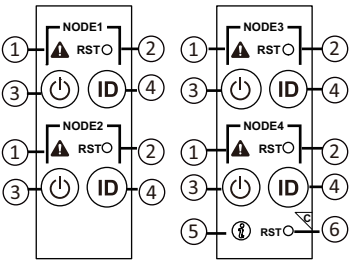
- **Please Go to Chapter 2-3 Front Panel LED and Buttons for detail description of function LEDs.**

2-2 Rear View



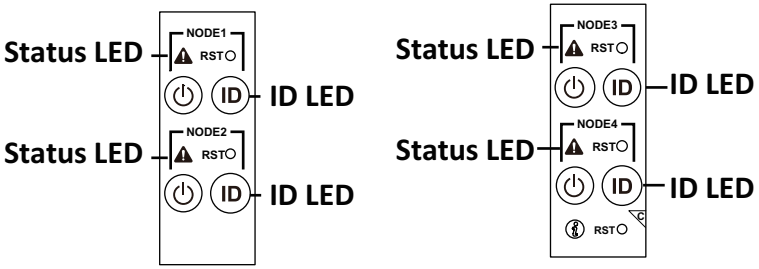
No.	Decription
1.	PCIe Card Slot #1
2.	PCIe Card Slot #2
3.	CMC LAN Port
4.	Mezzanine Card Slot (Option/OCP V3.0 Card)
5.	10/100/1000 Server Management LAN Port
6.	GbE LAN Port x 2
7.	USB 3.0 Port x 2
8.	Mini DP Port
9.	System Rear Panel LEDs and buttons

2-3 Front Panel LED and Buttons



No.	Name	Color	Status	Description
1.	System Status LED			This LED represents the RoT function LED behavior. Please see the following section for detail LED behavior.
2.	Reset Button	--	--	Press this button to reset the system.
3.	Power button with LED	Green	On	System is powered on
		Green	Blink	System is in ACPI S1 state (sleep mode)
		N/A	Off	• System is not powered on or in ACPI S5 state (power off) • System is in ACPI S4 state (hibernate mode)
4.	ID Button with LED			This LED represents the RoT function LED behavior. Please see the following section for detail LED behavior.
5.	Enclosure	Green	On	System is operating normally.
		Amber	On	Critical condition, may indicates: Power module failure System fan failure Power supply voltage issue System temperature
			Blink	Non-critical condition, may indicates: Redundant power module failure Temperature and voltage issue
6.	CMC Reset Button	--	--	Press this button to reset the CMC.

2-4 RoT LEDs



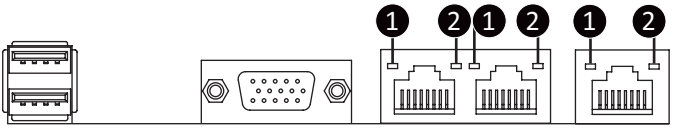
	LED on Front panel(Note5)	
	ID LED	Status LED
EC Firmware (FW) Authentication fail or not exit		
EC FW is broken or not exit (Note1)	OFF	OFF
Authenticating/Recovering BMC/BIOS Images		
Authenticating Images	OFF	OFF
Recovering BMC Active Flash	Blinks Blue 4 times per second	Blinks Green 4 times per second
Recovering BIOS Active Flash	Blinks Blue 4 times per second	Blinks Amber 4 times per second
Authentication (AUTH) Pass		
Recovering BIOS Active Flash	OFF	OFF
BMC : AUTH pass after doing recovery **BIOS : AUTH pass after doing recovery**	OFF	OFF
BMC : AUTH pass after doing recovery **BIOS : AUTH pass**	OFF	OFF
BMC : AUTH pass **BIOS : AUTH pass after doing recovery**	OFF	OFF
Active Flash Authentication (AUTH) Fail		
BMC : AUTH Fail(Note2)	Blinks Blue 1 time per second	Blinks Green 1 time per second
BIOS : AUTH fail(Note2)	Blinks Blue 1 time per second	Blinks Amber 1 time per second

BMC : AUTH fail after doing recovery(Note3)	Blinks Blue 2 times per second [ON OFF OFF]	Blinks Green 2 times per second [ON OFF OFF]
BIOS : AUTH fail after doing recovery(Note3)	Blinks Blue 2 times per second [ON OFF OFF]	Blinks Amber 2 times per second [ON OFF OFF]
Backup Flash Authentication Fail(Note4)		
BMC : AUTH fail	Blinks Blue 2 times per second [ON OFF ON OFF]	Blinks Green 2 times per second [ON OFF ON OFF]
BIOS : AUTH fail	Blinks Blue 2 times per second [ON OFF ON OFF]	Blinks Amber 2 times per second [ON OFF ON OFF]

NOTE!

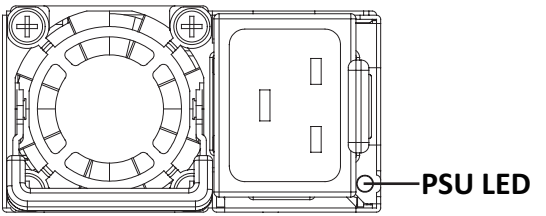
1. EC FW is broken or not exited result in Microchip CEC1702 cannot load EC FW for authentication.
2 (1) Authentication fail include below scenarios
   Configuration table is missing or modified
   Public key is missing or modified
   Protected area or signature is modified
   Flash empty
3. if active flash is still authentication failed after recovery sequence, Microchip CEC1702 stop the process and showing LED behavior.
4. If backup flash authentication is failed cause by configuration table, public key or protected area is broken. Microchip CEC1702 stop the process and showing LED behavior.
5. Front panel LED is controlled by BMC or Microchip CEC1702. Once Microchip CEC1702 is working(Auth or recovery), the front panel LED is controlled by Microchip CEC1702 and vice versa.

2-5 Rear System LAN LEDs



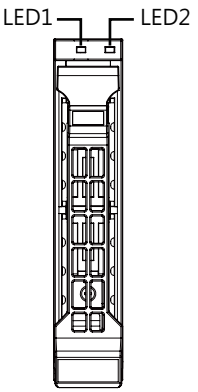
No.	Name	Color	Status	Description
1.	1GbE Speed LED	Yellow	On	1Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1GbE Link/ Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or receiving is occurring
		N/A	Off	No data transmission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

2-6 Power Supply Unit LED



State	Description
OFF	No AC power to all power supplies
0.5Hz 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
0.5Hz Amber Blinking	Power supply warning events where the power supply continues to operate: high temp, high power, high current and slow fan

2-7 Hard Disk Drive LEDs



RAID SKU		LED1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
No RAID configuration (via 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.

Chapter 3 System Hardware Installation

Pre-installation Instructions

Computer components and electronic circuit boards can be damaged 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.

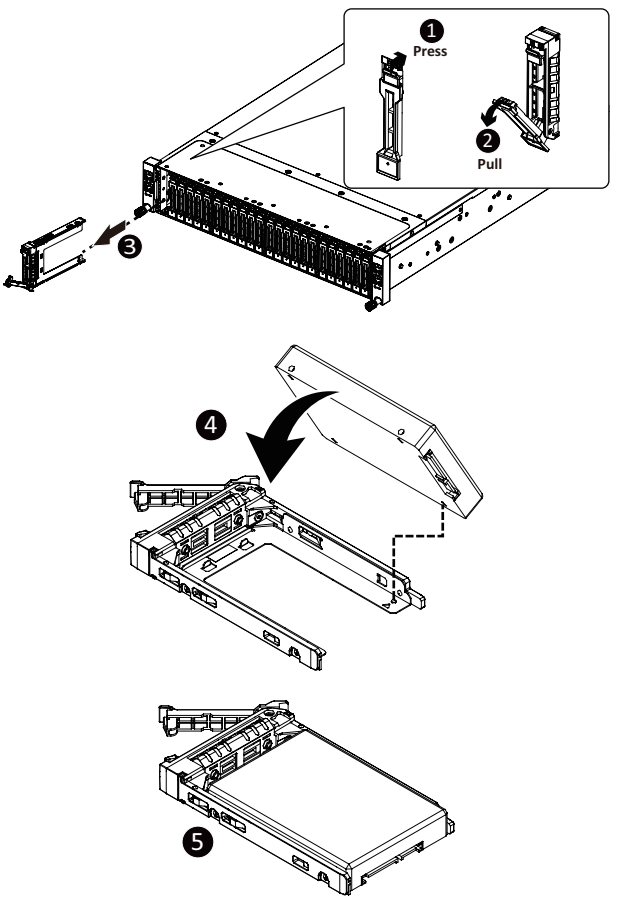
3-1 Installing the Hard Disk Drive

Read the following guidelines before you begin to install the Hard disk drive:

- **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 the Hard disk drive:

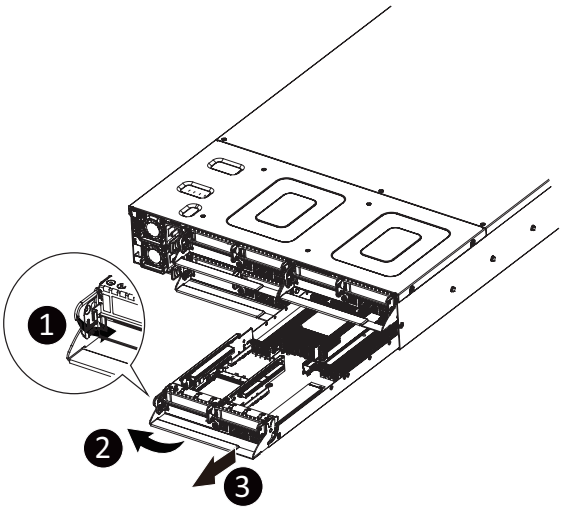
1. Press the release button.
2. Extend the locking lever.
3. Pull the locking lever to remove the HDD tray.
4. Align the hard disk drive with the positioning stud on the HDD tray.
5. Slide hard disk drive into the blank HDD tray.
6. Reinsert the HDD tray into the slot and close the locking lever.



3-2 Removing the Node

Follow these instructions to remove a node:

1. Press the release latch while simultaneously pushing down the tray handle for the node.
2. Pull the node out of the system.
3. To install the node, push the node back into the system.



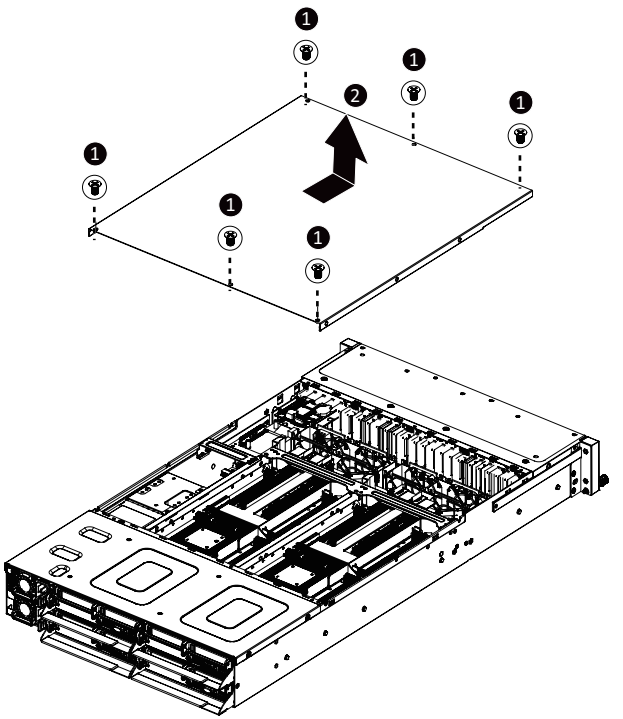
3-3 Removing Chassis Cover

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 system cover:

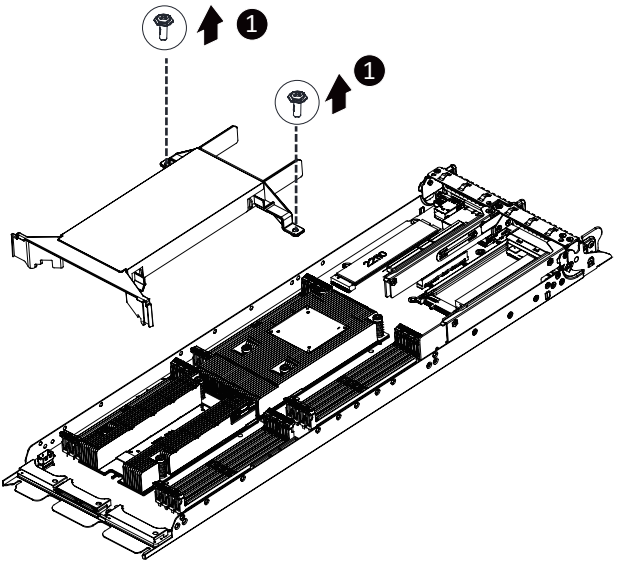
1. Loosen and remove the six screws securing the back cover.
2. Slide the cover to the rear of the system and remove the cover in the direction of the arrow.



3-4 Removing and Installing the Fan Duct

Follow these instructions to remove/install the fan duct:

1. Remove the two screws securing the fan ducts.
2. Lift up to remove the fan ducts
3. To install the fan duct, align the fan duct with the guiding groove. Push down the fan duct into chassis until its firmly seats, then install the four screws to secure the fan ducts in place.



3-5 Removing and Installing the Heatsink

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

- **Always turn off the computer and unplug the power cord from the power outlet before installing the heatsink 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 remove the heatsink:

1. Loosen the four captive screws securing the heatsink to the system.
2. Lift and remove the heatsink.

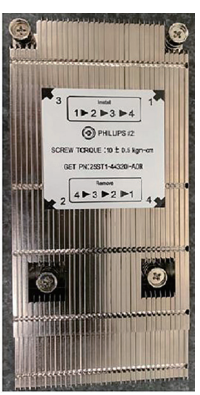
WARNING!

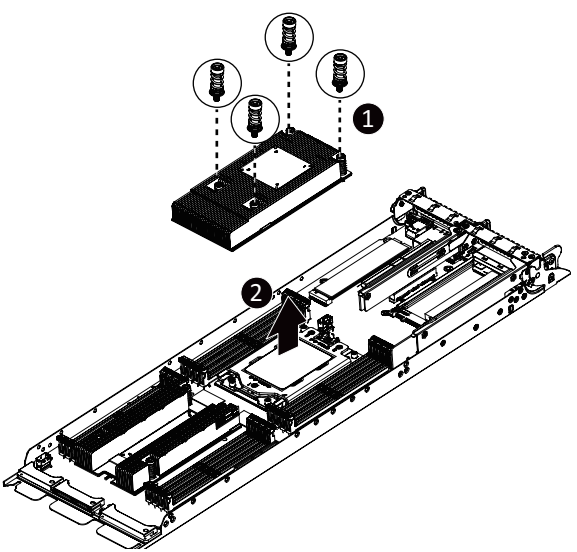
CPU0 and CPU1 use different CPU heatsinks. See the following images for using the correct heatsink.

Failure to observe the warning could result in damage to the equipment.

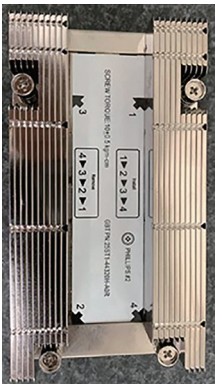
- **When installing the heatsink to CPU, use PHILLIPS #2-Lobe driver to tighten 4 captive nuts in sequence as 1-4.**
- **The screw tightening torque: 0 ± 0.5 kgf-cm (22.0± 1.0 lbf-in).**

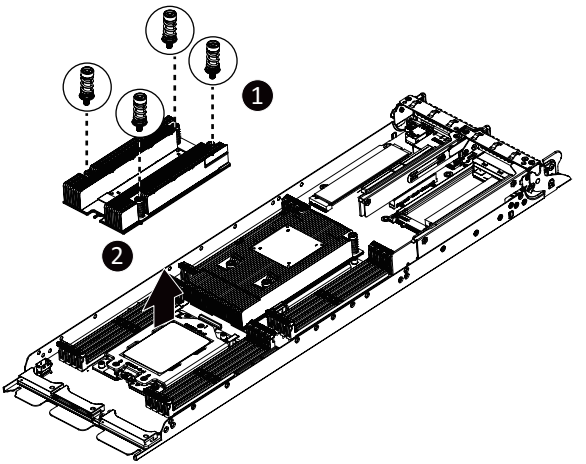
CPU0 Heatsink





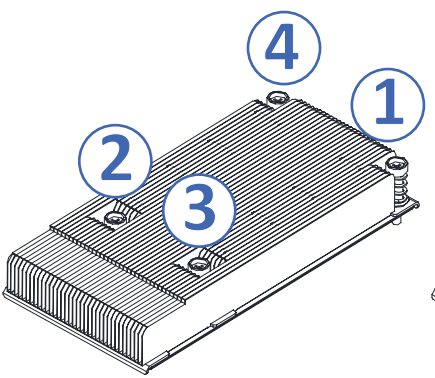
CPU1 Heatsink:



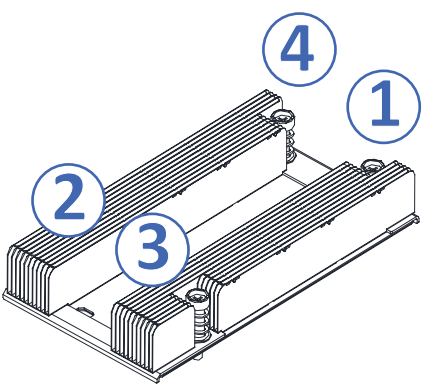


To install the heatsink, reverse the steps above while ensuring that you tighten the captive screws in sequential order (1→2→3→4) as seen in the image below.

CPU0 Heatsink



CPU1 Heatsink:



3-6 Installing the CPU

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

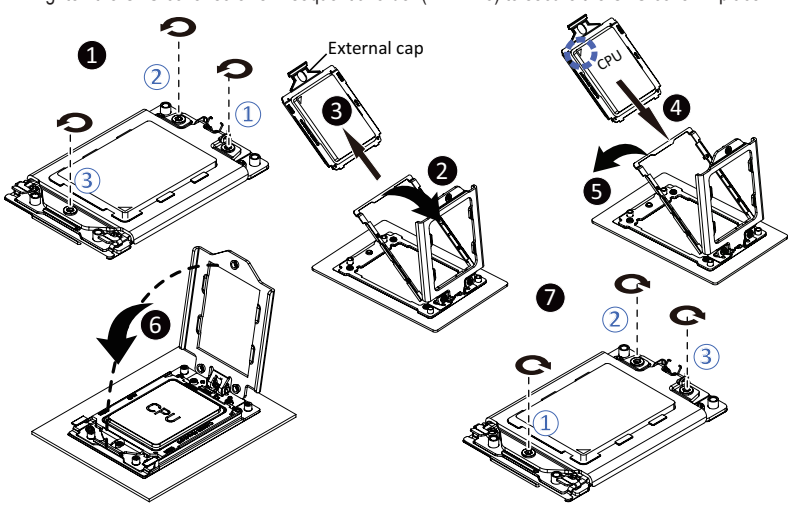
- **Make sure that the motherboard supports the CPU.**
- **Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.**
- **Unplug all cables from the power outlets.**
- **Disconnect all telecommunication cables from their ports.**
- **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. Loosen the three captive screws in sequential order (1→2→3) securing the CPU cover.
2. Flip open the CPU cover.
3. Remove the CPU cap with CPU from the CPU frame using the handle on the CPU cap.
4. Using the handle on the CPU cap insert the new CPU cap with CPU installed into the CPU frame.
   NOTE: Ensure the CPU is installed in the CPU cap in the correct orientation, with the gold triangle on the CPU aligned to the top left corner of the CPU cap.
5. Flip the CPU frame with CPU installed into place in the CPU socket.
6. Flip the CPU cover into place over the CPU socket.
7. Tighten the CPU cover screws in sequential order (1→2→3) to secure the CPU cover in place.



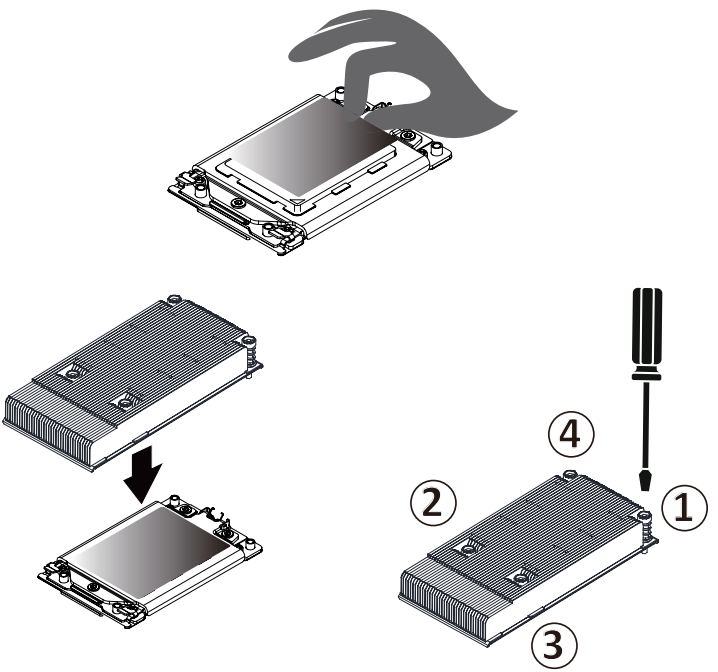
- **When installing the heat sink over the CPU, use T30-Lobe driver to tighten the 4 captive nuts in sequential order (1→2→3→4).**
- **The screw tightening torque: 8 ± 0.5kgf-cm (17.0± 1.0 lbf-in)**

3-6-1 Installing Thermal Pad onto CPU

- **Strongly recommended to use gloves and mask when handling the thermal pad.**
- **The thermal pad contains Indium foil, so it is strongly recommended to use gloves when replacing the thermal pad.**

Follow these instructions to install the thermal pad:

1. Place the thermal pad on the top of CPU.
2. Install the CPU heatsink.
   When installing the heatsink to CPU, use a Torx T20 screwdriver to tighten 4 captive nuts in sequence as 1-4. The screw tightening torque: 10 ± 0.5 kgf-cm.



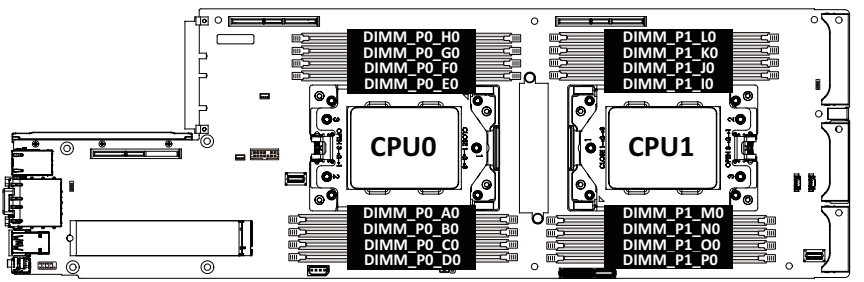
3-7 Installing Memory

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.**

3-7-1 Eight Channel Memory Configuration

This motherboard provides 16 DDR4 memory sockets and supports Eight Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling eight Channel memory mode will be eight times of the original memory bandwidth.



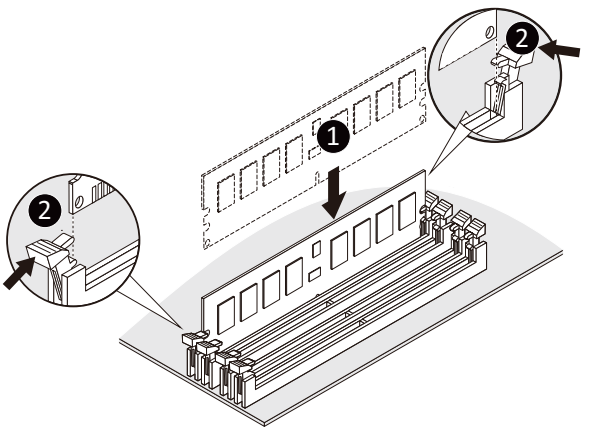
3-7-2 Installing the Memory

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.



3-7-3 Processor and Memory Module Matrix Table

Processor and Memory Module Matrix Table																
CPU#	Channel A/I		Channel B/J		Channel C/K		Channel D/L		Channel E/M		Channel F/N		Channel G/O		Channel H/P	
8 DIMMs																
CPU0		A1		B1		C1		D1		E1		F1		G1		H1
16 DIMMs																
CPU0	A0	A1	B0	B1	C0	C1	D0	D1	E0	E1	F0	F1	G0	G1	H0	H1
16 DIMMs																
CPU0		A1		B1		C1		D1		E1		F1		G1		H1
CPU1		I1		J1		K1		L1		M1		N1		O1		P1
32 DIMMs																
CPU0	A0	A1	B0	B1	C0	C1	D0	D1	E0	E1	F0	F1	G0	G1	H0	H1
CPU1	I0	I1	J0	J1	K0	K1	L0	L1	M0	M1	N0	N1	O0	O1	P0	P1

3-7-4 Memory Population Table

- When only one DIMM is used, it must be populated in memory slot DIMM1.

EPYC Memory Speed based on DIMM Population (One DIMM per Channel)

DIMM Type	DIMM Population	Max EPYC 7003 DDR Frequency (MHz)
	DIMM 0	
RDIMM	1R (1 Rank)	3200
	2R or 2DR (2 Ranks)	3200
LRDIMM	4DR (4 Ranks)	3200
	2S2R (4 Ranks)	3200
	2S4R (8 Ranks)	3200

EPYC Memory Speed based on DIMM Population (Two DIMM per Channel)

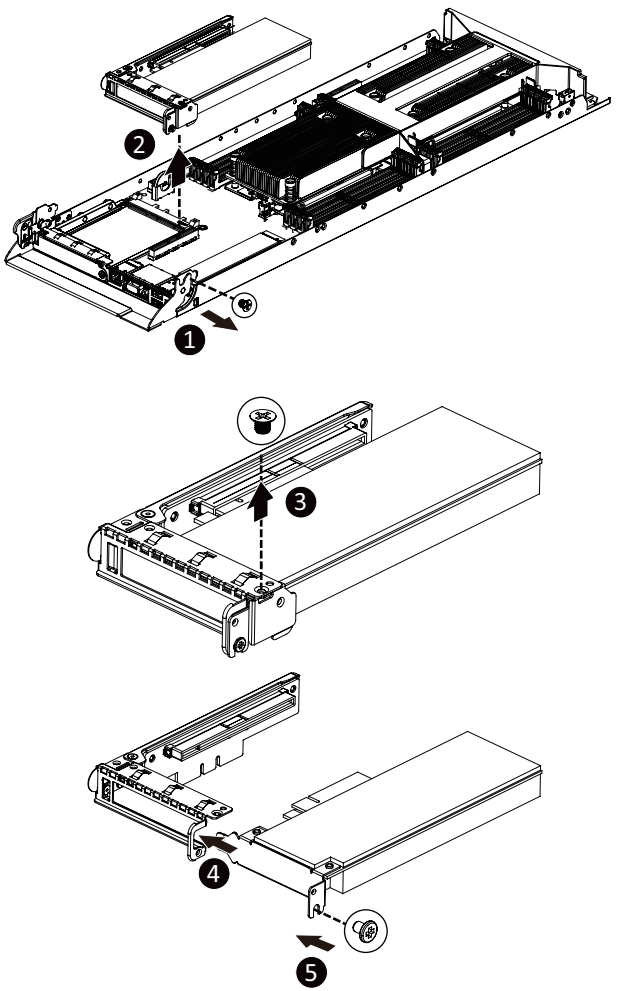
DIMM Type	DIMM Population		Max EPYC 7003 DDR Frequency (MHz)
	DIMM 0	DIMM 1	
RDIMM	--	1R	3200
	1R	1R	2933
	--	2R or 2DR	3200
	1R	2R or 2DR	2933
	2R or 2DR	2R or 2DR	2933
LRDIMM	--	4DR	3200
	4DR	4DR	2933
	--	2S2R (4 Ranks)	3200
	--	2S4R (8 Ranks)	3200
	2S2R (4 Ranks)	2S2R (4 Ranks)	2933

3-8 Installing the PCI Expansion Card

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

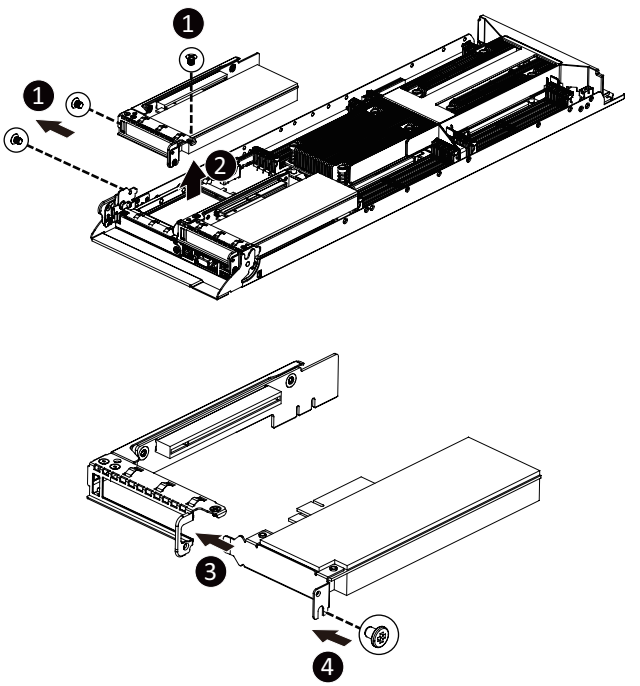
Follow these instructions to install the right PCI Expansion card:

1. Remove the two screws securing the riser bracket to the system.
2. Lift up the riser bracket out of system.
3. Align the PCI-E card to the riser guide slot and push in the direction of the arrow until the PCI-E card sits in the PCI card connector.
4. Secure the PCI-E card with a screw.
5. Reverse steps 1 - 3 to install the riser bracket back into the system.



Follow these instructions to install the left PCI Expansion card:

1. Remove the three screws on the riser bracket to the system.
2. Lift up the riser bracket out of system.
3. Remove the screw securing the side bracket to the riser bracket.
4. Remove the side bracket
5. Align the PCI-E card to the riser guide slot and push in the direction of the arrow until the PCI-E card sits in the PCI card connector.
6. Secure the PCI-E card with a screw.
7. Install the side bracket to the riser bracket.
8. Secure the side bracket to the riser bracket with a screw.
9. Reverse steps 1 - 2 to install the riser bracket back into the system.



3-9 Installing the Mezzanine Card

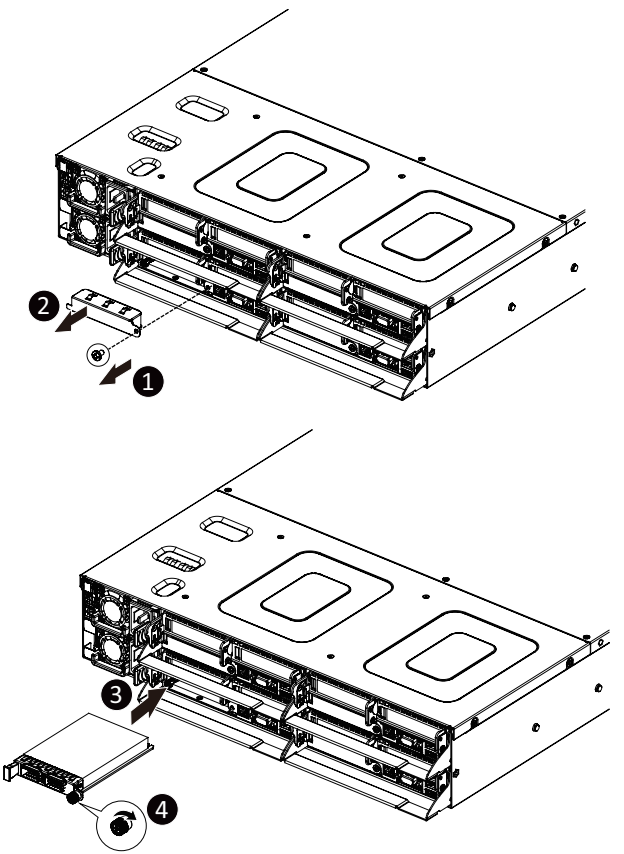
3-9-1 Installing the OCP 3.0 Mezzanine Card

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:

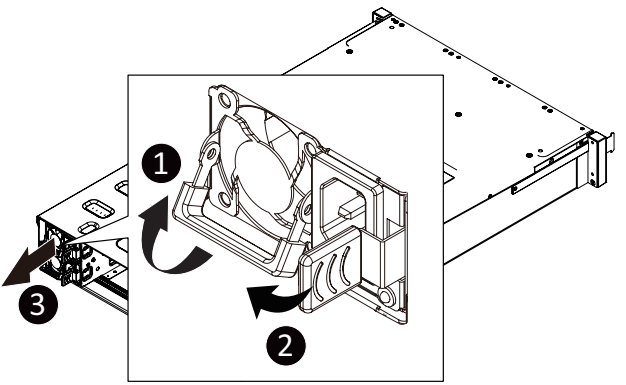
1. Remove the one screw securing the OCP 3.0 card slot cover.
2. Remove the slot cover from the system.
3. Insert the OCP 3.0 card into the card slot ensuring that the card is firmly connected to the connector on the motherboard.
4. Tighten the thumbnail screw to secure the OCP 3.0 card in place.
5.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



3-10 Replacing the Power Supply

Follow these instructions to replace the power supply:

1. Pull up the power supply handle and press the retaining clip on the right side of the power supply along the direction of the arrow. At the same time, pull out the power supply by using its handle.
2. Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement power supply.



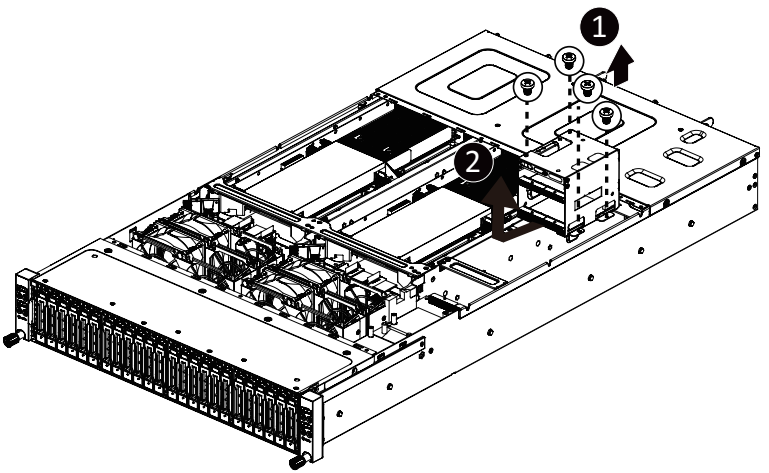
3-11 Replacing Power Distribution Board Cage

Before you remove or install the power distribution board cage:

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

Follow these instructions to remove the power distribution board cage:

1. Loosen and remove the four screws securing the cage.
2. While holding the cage, slide the cage to the front of the system and remove the cage in the direction of the arrow.



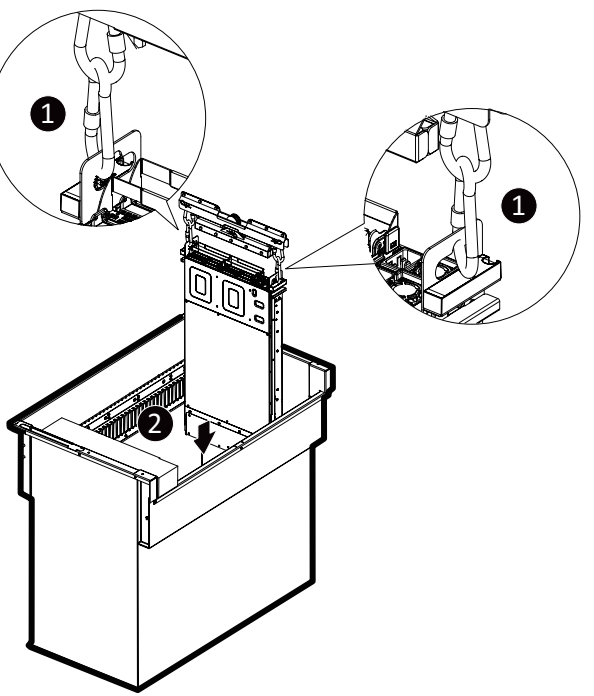
3-12 Installing Server into the Tank

- **Make sure the crane can handle at least 60 KG before installing the server into a tank.**
- **Only licensed professionals are authorized to access the restricted access location.**
- **The power supply fan is disabled by default, so the server must be immersed in the fluid before powering on.**
- **Consult with immersion cooling tank vendor to ensure compatibility and read their tank manual thoroughly.**

- **Strongly recommended to use gloves when handling the coolant.**
- **Before handling coolant, handlers must read the material safety data sheet (MSDS) for their safety.**
- **The thermal pad contains Indium foil, so it is strongly recommended to use gloves when replacing the thermal pad.**

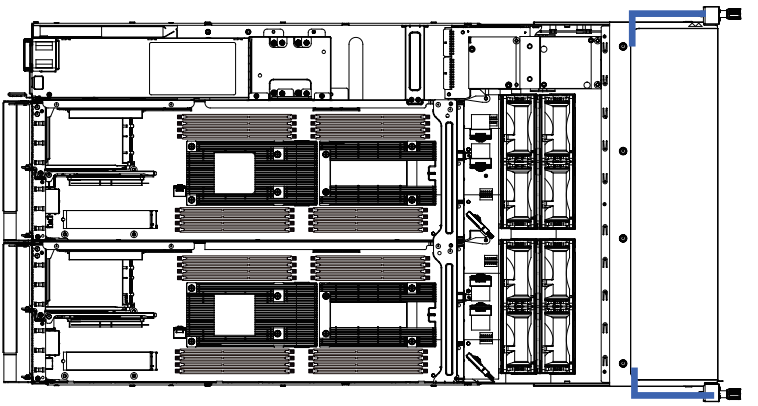
Follow these instructions to install server into the tank:

1. Attach the two carabiners to server handles.
2. Put the server into the tank vertically.

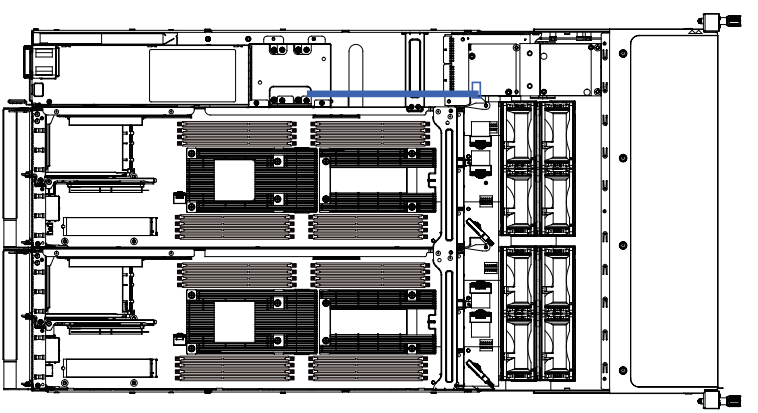


3-13 Cable Routing

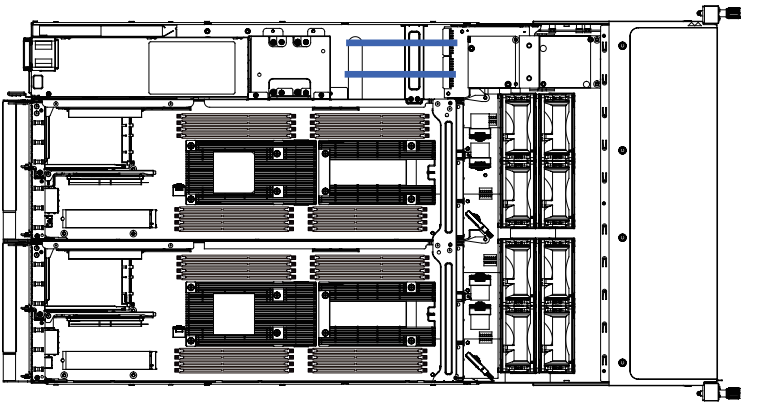
Front Switch Cable/Front LED Cable



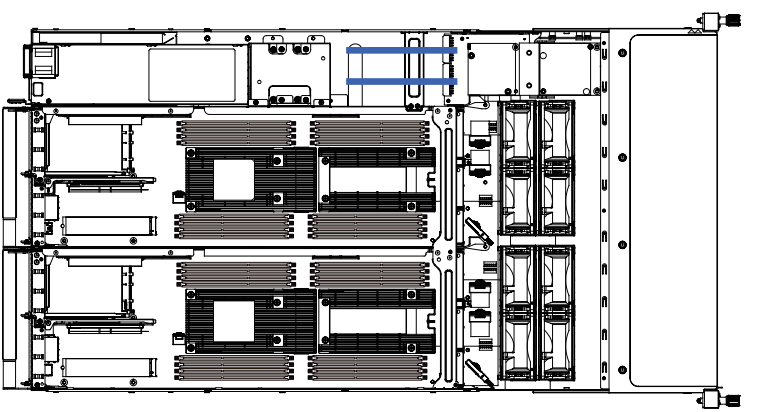
PMBus Cable



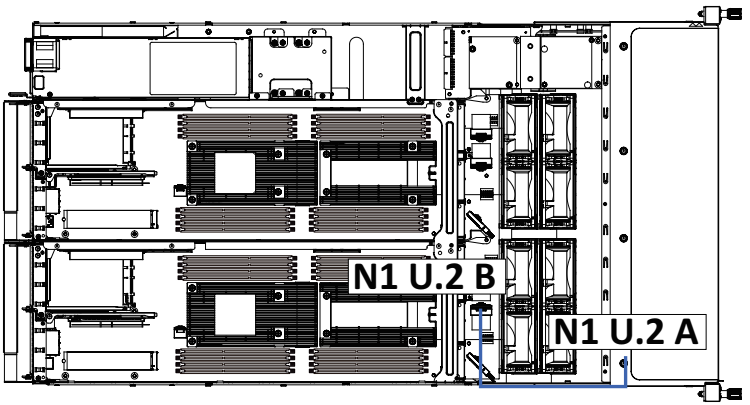
Power Distribution Board to Middle BoardCable (Top)



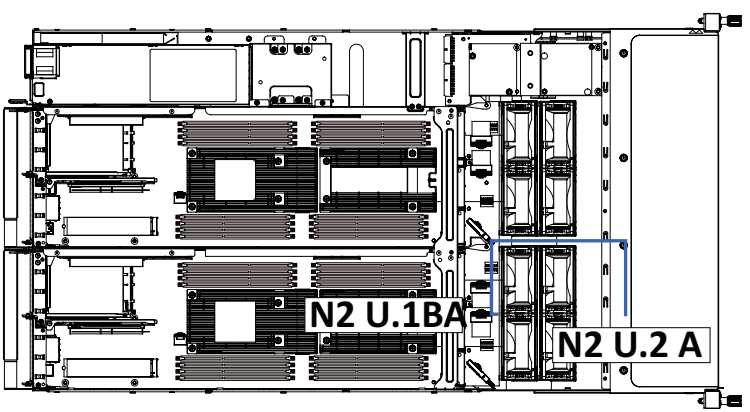
Power Distribution Board to Middle BoardCable (Bottom)



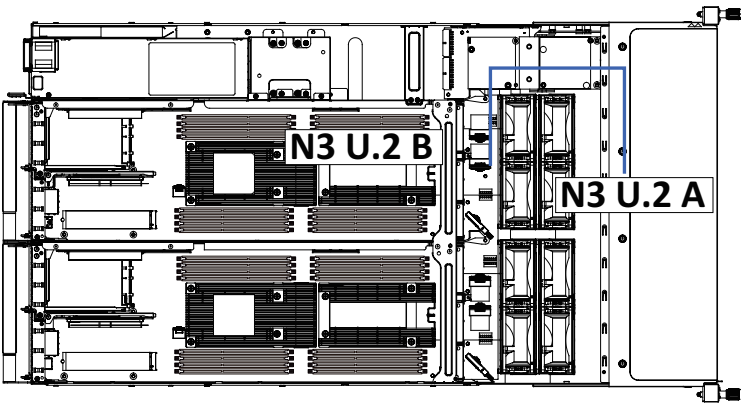
Top Middle Board to HDD Back Plane Board Cable (NVMe/Node1)



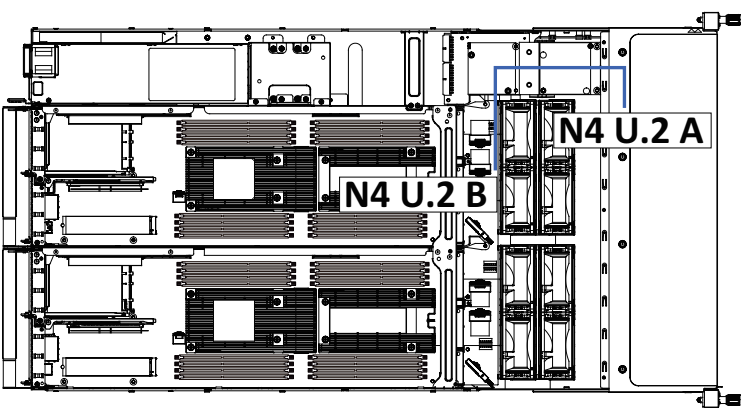
Bottom Middle Board to HDD Back Plane Board Cable (NVMe/Node2)



Top Middle Board to HDD Back Plane Board Cable (NVMe/Node3)

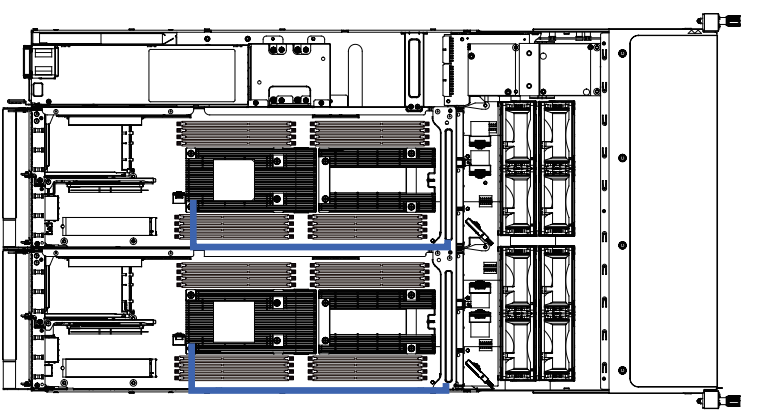


Bottom Middle Board to HDD Back Plane Board Cable (NVMe/Node4)



LAN Bridge Cable

On-Board SATA to HDD Back Plane Board Cable



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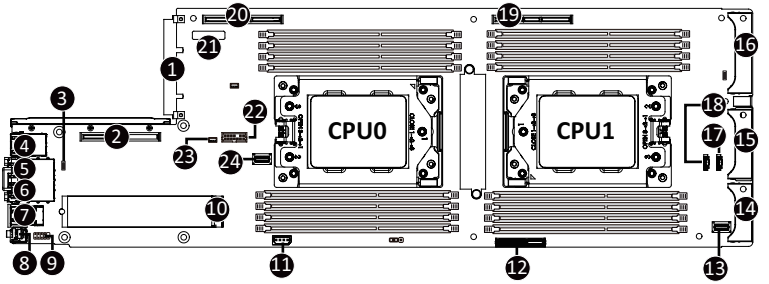
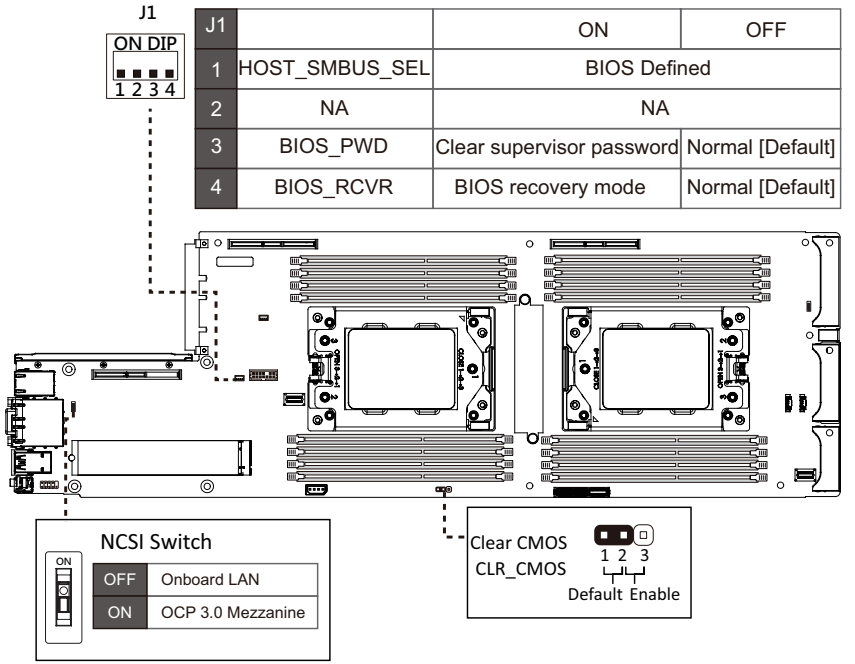
Chapter 4 Motherboard Components

4-1 Motherboard Components



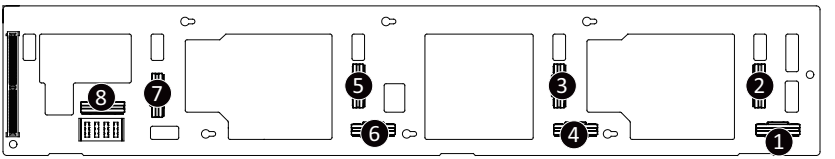
Item	Description
1	OCP Mezzanine 3.0 Connector
2	Proprietary PCIe Slot #2 (Gen 4/x16 slot/GENZ_2)
3	NCSI Switch
4	Server Management LAN Port
5	GbE LAN Port #2
6	GbE LAN Port #1
7	USB 3.0 Port x 2
8	Mini DP Port
9	Serial Port Cable Connector
10	M.2 Connector (PCIe x4, Supports NGFF-22110)
11	IPMB Connector
12	Proprietary PCIe Slot #L (Gen 4/x8 slot/GENZ_L)
13	SlimLine SAS Connector (SL4_SATA0/PCIe/SATA)
14	Power & PCIe/SATA Connector
15	Power & PCIe/SATA Connector
16	Power & PCIe/SATA Connector
17	SGPIO Connector #B
18	SGPIO Connector #A
19	Proprietary PCIe Slot #R (Gen 4/x16 slot/GENZ_R)
20	Proprietary PCIe Slot #1 (Gen 4/x16 slot/GENZ_1)
21	System Battery Socket
22	TPM Connector
23	Function Jumper Switch
24	SlimLine SAS Connector (SATA0)

4-1-1 Jumper Setting



J1		ON	OFF
1	HOST_SMBUS_SEL	BIOS Defined	
2	NA	NA	
3	BIOS_PWD	Clear supervisor password	Normal [Default]
4	BIOS_RCVR	BIOS recovery mode	Normal [Default]

4-1-2 CBPH082



Item	Description
1	SlimLine SAS Connector (N1 SATA)
2	SlimLine SAS Connector (N1 U.2 A)
3	SlimLine SAS Connector (N2 U.2 A)
4	SlimLine SAS Connector (N2 SATA)
5	SlimLine SAS Connector (N3 U.2 A)
6	SlimLine SAS Connector (N3 SATA)
7	SlimLine SAS Connector (N4 U.2 A)
8	SlimLine SAS Connector (N4 SATA)

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 <DEL> 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 4 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.)
- **AMD CBS**
  This setup page includes the common items for configuration of AMD motherboard-related information.
- **AMD PBS Option**
  This setup page includes the common items for configuration of AMD CPM RAS related settings.
- **Chipset**
  This setup page includes all the submenu options for configuring the functions of the North Bridge.
- **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.

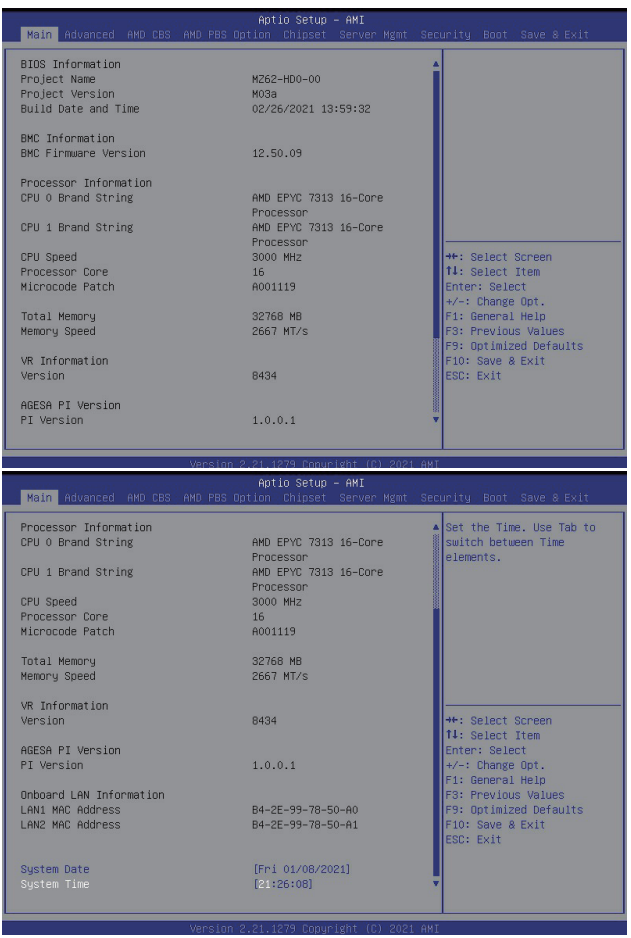
Main Menu Help

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.



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	
BMC Firmware Version	Displays BMC firmware version information.
CPU Brand String / CPU Speed / Processor Core / Microcode Patch	Displays the technical information for the installed processor(s).
Total Memory(Note3)	Displays the total memory size of the installed memory.
Memory Frequency(Note3)	Displays the frequency information of the installed memory.
VR Information Version	Displays VR version information.
AGESA PI Version PI Version	Displays AGESA PI version information.
Onboard LAN Information	
LAN1 MAC Address(Note1)	Displays LAN MAC address information.
LAN2 MAC Address (Note2)	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.

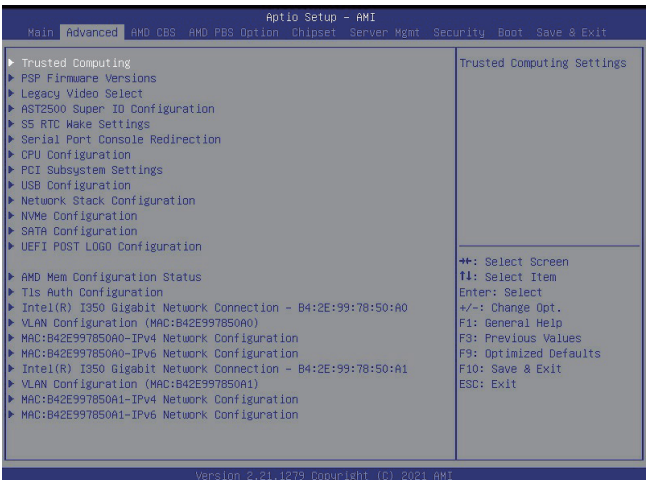
(Note1) The number of LAN ports listed will depend on the motherboard / system model.

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

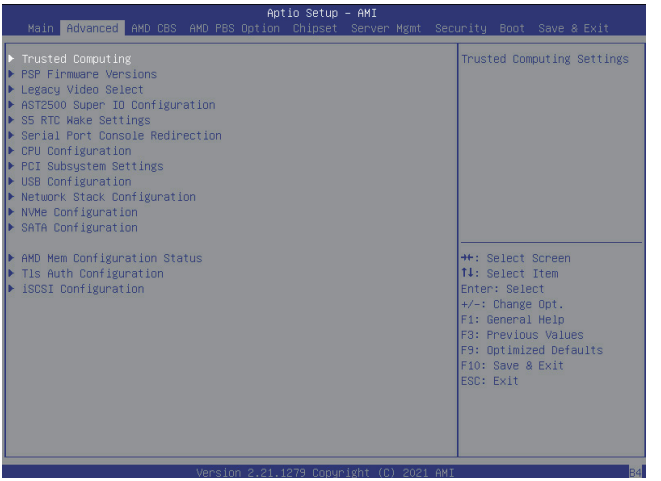
5-2 Advanced Menu

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.

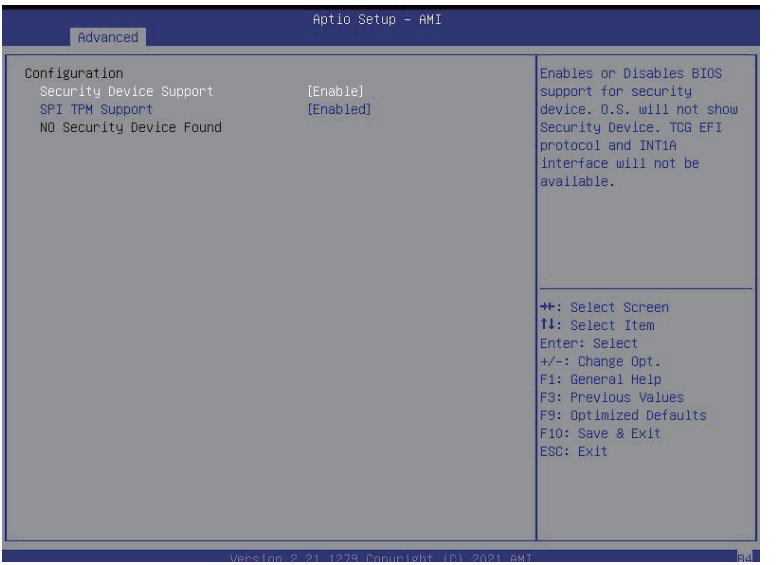
When Boot Mode Select is set to UEFI (Default)



When "Boot Mode Select" is set to Legacy in the Boot > Boot Mode Select section



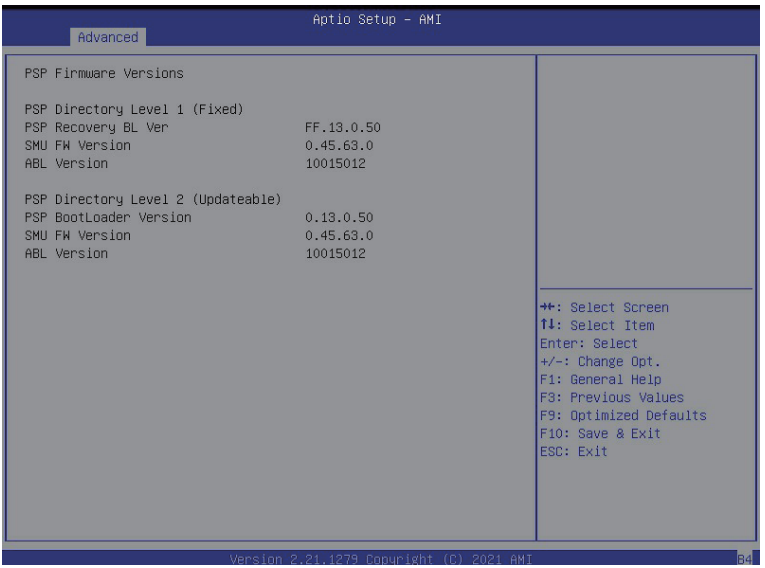
5-2-1 Trusted Computing



Parameter	Description
Configuration	
Security Device Support	Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available. Options available: Enable/Disable. Default setting is **Enable**.
SPI TPM Support	Select Enable to activate TPM support feature. Options available: Enabled/Disabled. Default setting is **Disabled**

5-2-2 PSP Firmware Versions

The PSP Firmware Versions page displays the basic PSP firmware version information. Items on this window are non-configurable.

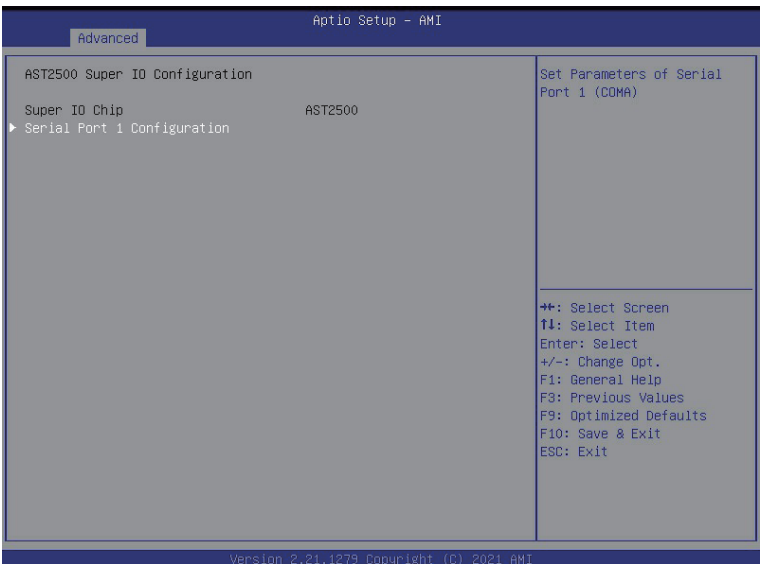


5-2-3 Legacy Video Select

Parameter	Description
OnBrd/Ext VGA Select(Note)	Selects between onboard or external VGA support. Options available: Auto, Onboard, External. Default setting is **Onboard**.

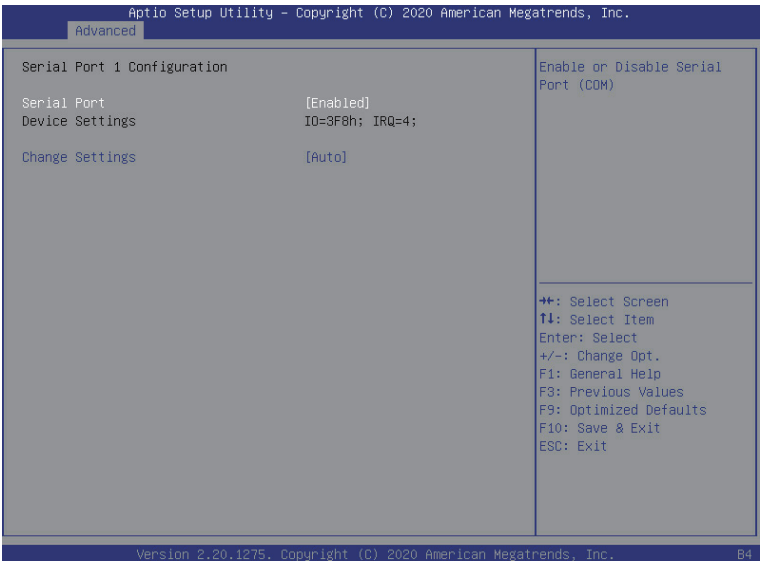
(Note) This configurable option will be displayed when "Boot Mode Select" is set to **Legacy** in the Boot > Boot Mode Select section.

5-2-4 AST2500 Super IO Configuration



Parameter	Description
AST2500 Super IO Configuration	
Super IO Chip	Displays the super IO chip information
Serial Port 1 Configuration	Press [Enter] for configuration of advanced items.

5-2-4-1 Serial Port 1 Configuration



Parameter	Description
Serial Port 1 Configuration	
Serial Port(Note1)	Enable/Disable the Serial Port (COM). When set to Enabled allows you to configure the Serial port 1/2 settings. When set to Disabled, displays no configuration for the serial port. Options available: Enabled/Disabled. Default setting is **Enabled**.
Devices Settings(Note2)	Displays the Serial Port 1/2 device settings.
Change Settings(Note2)	Select an optimal settings for Super IO Device. Options available for Serial Port 1: Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; Default setting is **Auto**. Options available for Serial Port 2: Auto IO=2F8h; IRQ=3; IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; Default setting is **Auto**. **Please note that this item is configurable when Serial Port is set to Enabled.**

(Note1) Advanced items prompt when this item is defined.

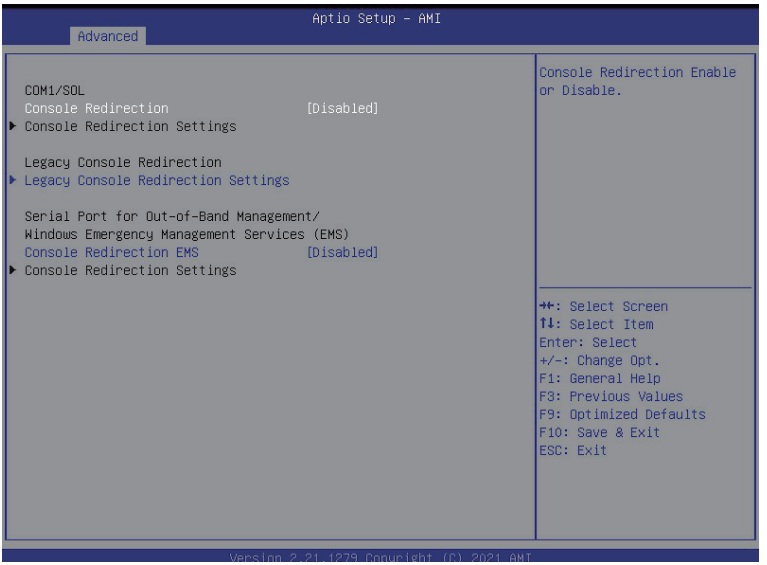
(Note2) This item appears when **Serial Port** is set to **Enabled**.

5-2-5 S5 RTC Wake Settings

Parameter	Description
Wake System from S5(Note1)	Enable/Disable system wake on alarm event. Options available: Disabled/Fixed Time. When Fixed Time enabled, system will wake on the hr::min::sec specified. Default setting is **Disabled**.

(Note1) Advanced items prompt when this item is defined.

5-2-6 Serial Port Console Redirection



Parameter	Description
COM1 Serial Over LAN (Note))	Select whether to enable console redirection for specified device. Console redirection enables the users to manage the system from a remote location. Options available: Enabled/Disabled. Default setting is **Disabled**.
COM1 Serial Over LAN Console Redirection Settings	Press [Enter] to configure advanced items. **Please note that this item is configurable when COM1/Serial Over LAN & COM2 Console Redirection is set to Enabled.** ◆ Terminal Type – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is **ANSI**. ◆ Bits per second – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 38400, 57600, 115200. Default setting is **115200**. ◆ Data Bits – 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/Serial Over LAN Console Redirection Settings (continued)	◆ Parity – 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 – 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 – 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 – Enable/Disable the VT-UTF8 Combo Key Support. – Options available: Enabled/Disabled. Default setting is **Enabled**. ◆ Recorder Mode(Note) – 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) – Enable/Disable extended terminal resolution. – Options available: Enabled/Disabled. Default setting is **Enabled**. ◆ Putty KeyPad(Note) – Selects FunctionKey and LeyPad on Putty. – Options available: VT100, LINUX, XTERMR6, SC0, ESCN, VT400. Default setting is **VT100**.

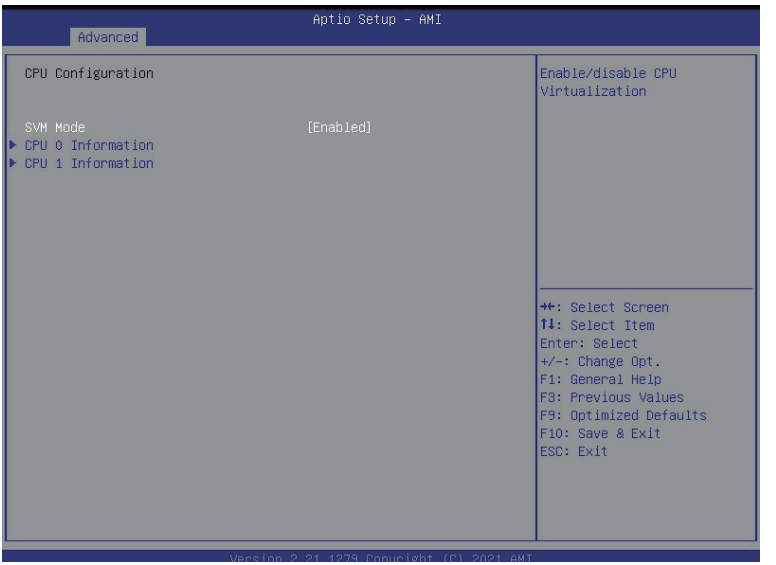
(Note) Advanced items prompt when this item is defined.

Parameter	Description
Legacy Console Redirection	
Legacy Console Redirection Settings	Press [Enter] to configure advanced items. ◆ Redirection COM Port – Selects a COM port for Legacy serial redirection. – Options available: COM1/Serial Over LAN, COM2. Default setting is **COM1/Serial Over LAN**. ◆ Resolution – 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 – 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)	EMS console redirection allows the user to configure Console Redirection Settings to support Out-of-Band Serial Port management. Options available: Enabled/Disabled. Default setting is **Disabled**.
Serial Port for Out-of-Band EMS Console Redirection Settings	Press [Enter] to configure advanced items. **Please note that this item is configurable when Serial Port for Out-of-Band Management EMS Console Redirection is set to Enabled.** ◆ Out-of-Band Mgmt Port – Microsoft Windows Emerency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Options available: COM1/Serial Over LAN, COM2. Default setting is **COM1/Serial Over LAN**. ◆ Terminal Type – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is **ANSI**. ◆ Bits per second – 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.

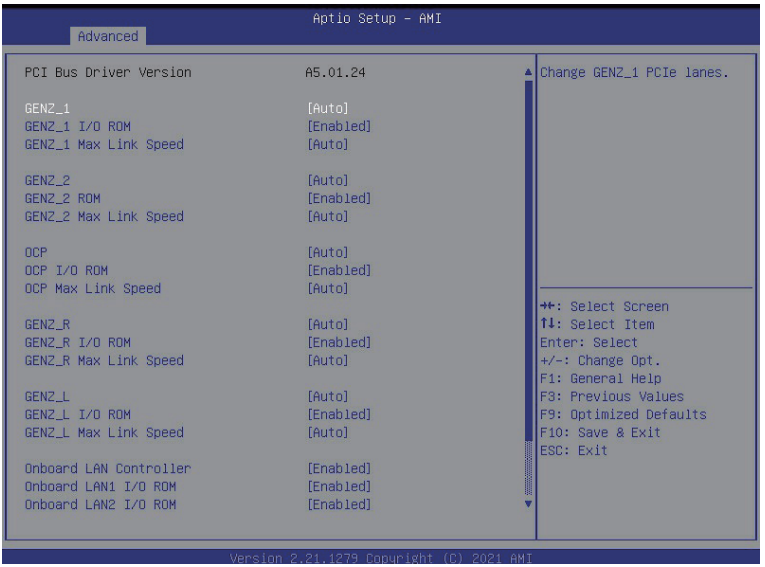
Parameter	Description
Serial Port for Out-of-Band EMS Console Redirection Settings(continued)	◆ Flow Control – Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, 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**.

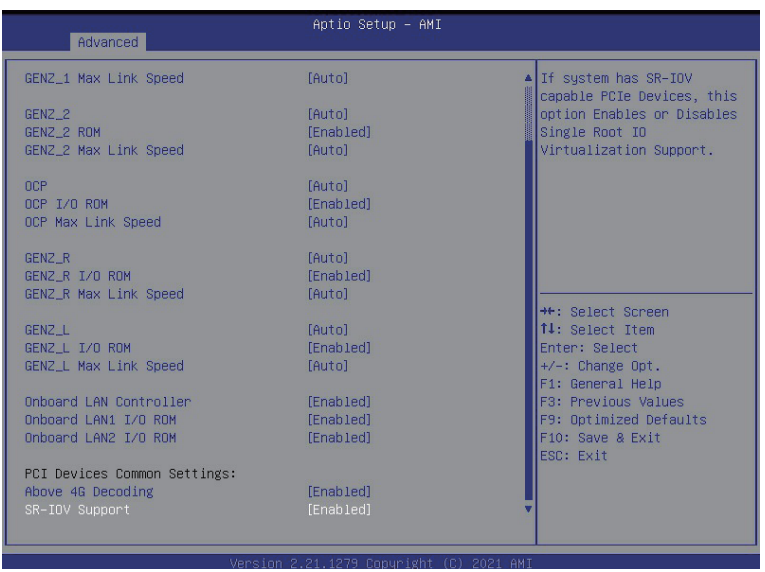
5-2-7 CPU Configuration



Parameter	Description
SVM Mode	Enable/Disable the CPU Virtualization. Options available: Enabled/Disabled. Default setting is **Enabled**.
SMEE	Controls the Secure Memory Encryption Enable (SMEE) function. Options available: Enabled/Disabled. Default setting is **Enabled**.
CPU 0/1 Information	Press [Enter] to view more information related to CPU0/1.

5-2-8 PCI Subsystem Settings



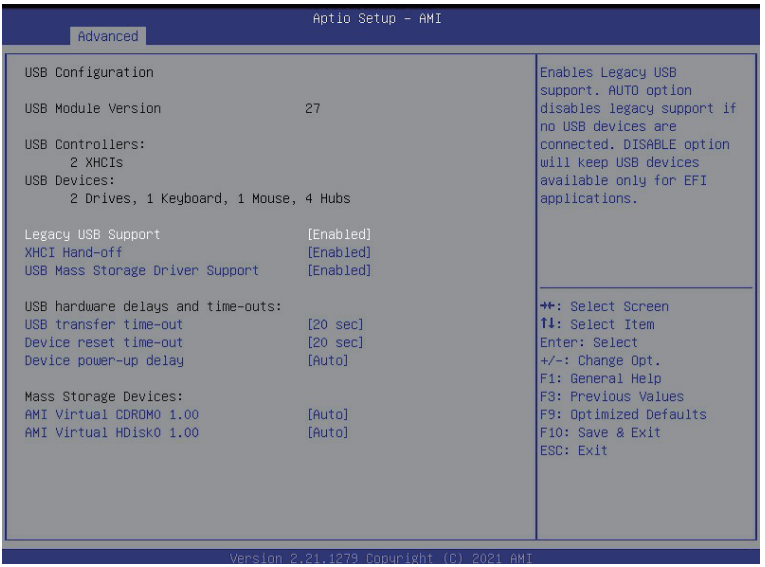


Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
GENZ_#(Note1) Lanes Configuration OCP Lanes Configuration	Change the PCIe lanes. Options available: Disabled, Auto, x16, x8x8, x8x4x4, x4x4x8, x4x4x4x4. Default setting is **Auto**.
GEN_# I/O ROM (Note1) OCP 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**.
PCIE_# Link Speed(Note1) OCP Link Speed(Note1)	Configure mezzanine PCIe max link speed. Options available: Auto/Maximum/Gen1/Gen2/Gen3. Default setting is **Auto**.
Onboard LAN Controller(Note2)	Enable/Disable the onboard LAN devices. Options available: Enabled/Disabled. Default setting is **Enabled**.
Onboard LAN I/O ROM(Note2)	Enable/Disable the onboard LAN 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.

5-2-9 USB Configuration

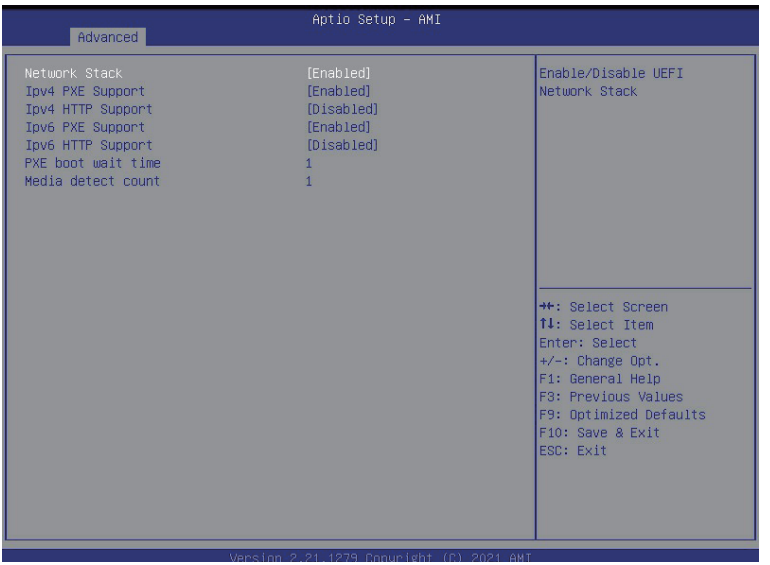


Parameter	Description
USB Configuration	
USB Module Version	Displays the USB version.
USB Controllers	Displays the supported USB controllers.
USB Devices	Displays the USB devices connected to the system.
Legacy USB Support	Enable/disable the Legacy USB support fuction. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. Options available: Auto/Enabled/Disabled. Default setting is **Enabled**.
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**.
USB hardware delays and time-outs	
USB transfer time-out	The time-out value for Control, Bulk, and Interrupt transfers. Options available: 1 sec/5 sec/10 sec/20 sec. Default setting is **20 sec**.
USB resetr time-out	Options available: 1 sec/5 sec/10 sec/20 sec. Default setting is **20 sec**.

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

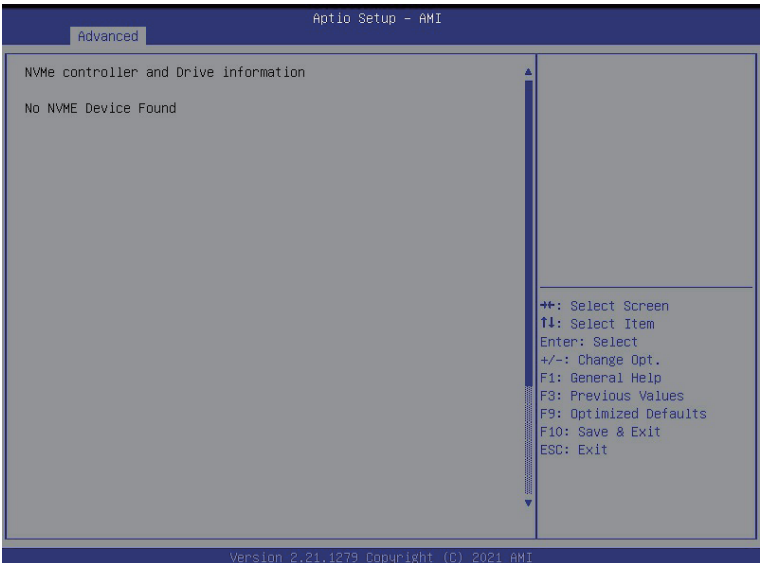
Parameter	Description
Device reset time-out	USB mass storage device Start Unit command time-out. Options available: 10 sec/20 sec/30 sec/40 sec. Default setting is **20 sec**.
Device power-up delay	Maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor. Options available: Auto/Manual. Default setting is **Auto**.
Mass Storage Devices	
AMI Virtual CDROM0 1.00 / AMI HDisk0 1.00 / Generic Flash Disk 8.07 / ADATA USB Flash Drive 1100	Mass storage device emulation type. AUTO enumerates devices according to their media format. Optical drives are emulated as CDROM, drives with no media will be emulated according to a drive type. Options available: Auto/Floppy/Forced FDD/Hard Disk/CD-ROM. Default setting is **Auto**.

5-2-10 Network Stack Configuration



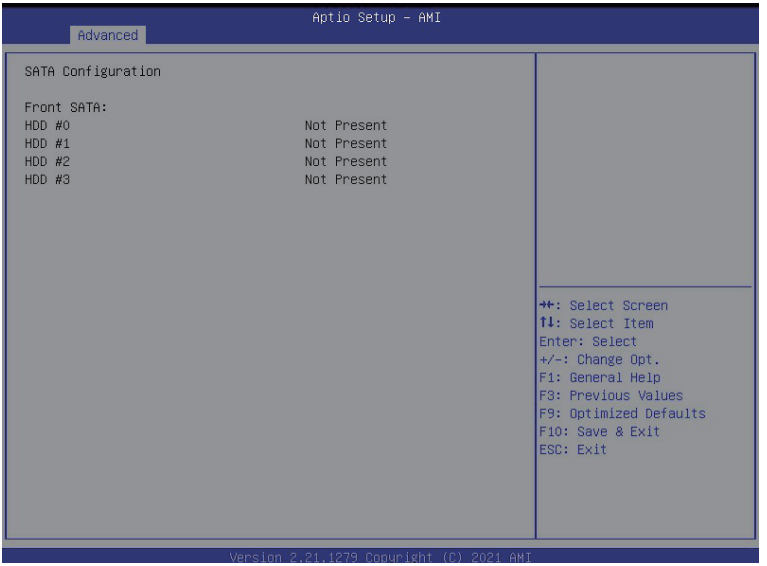
Parameter	Description
Network Stack	Enable/Disable the UEFI network stack. Options available: Enabled/Disabled. Default setting is **Enabled**.
Ipv4 PXE Support	Enable/Disable the Ipv4 PXE feature. Options available: Enabled/Disabled. Default setting is **Enabled**.
Ipv4 HTTP Support	Enable/Disable the 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.

5-2-11 NVMe Configuration



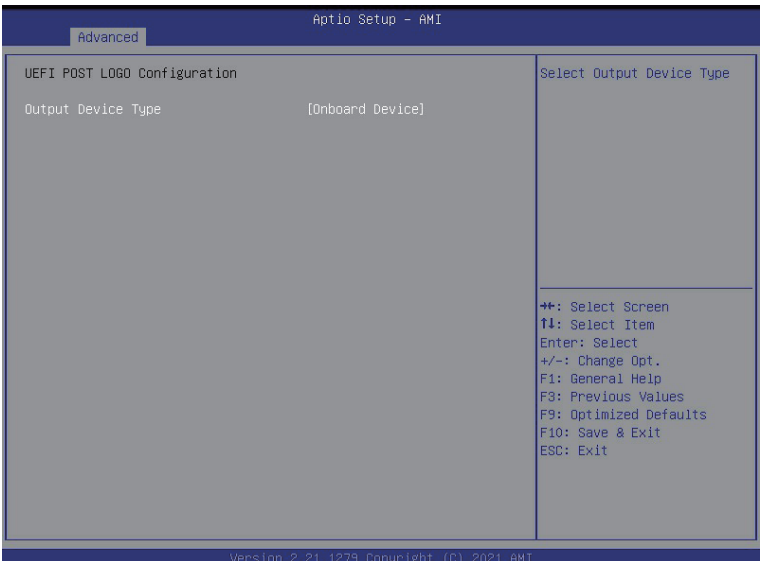
Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system

5-2-12 SATA Configuration



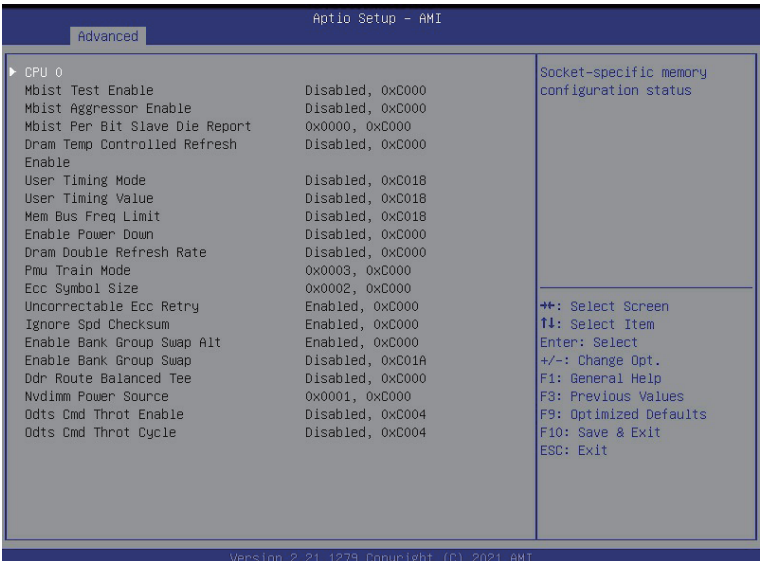
Parameter	Description
SATA Configuration	Displays the installed HDD devices information. System will automatically detect HDD type.

5-2-13 UEFI POST LOGO Configuration



Parameter	Description
UEFI Configuration	
Output Device Type	Select output device. Options available: First loaded Device,Onboard Device,External Device, Specific Device. Default setting is **Onboard Deviceevice**.

5-2-14 AMD Mem Configuration Status

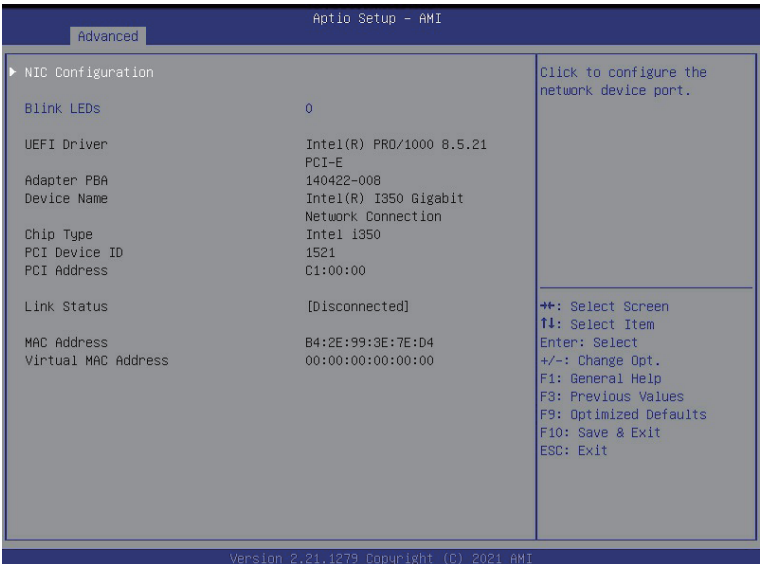


Parameter	Description
CPU0	Press [Enter] to view the memory configuration status related to CPU 0.

5-2-15 Tls Auth Configuration

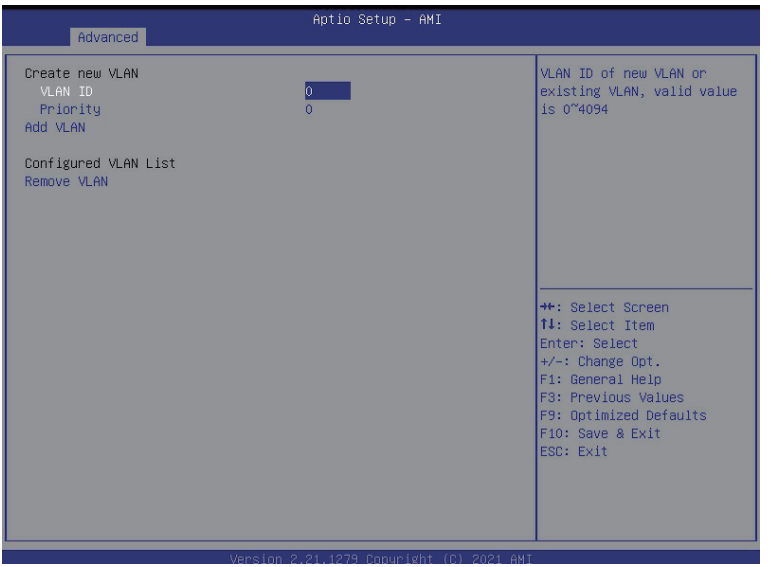
Parameter	Description
Server CA Configuration	Press [Enter] for configuration of advanced items. ◆ Enroll Cert – Press [Enter] to enroll a certificate • Enroll Cert Using File • Cert GUID Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes and Exit ◆ Delete Cert
Client Cert Configuration	Press [Enter] for configuration of advanced items.

5-2-16 Intel(R) Ethernet Controller I350



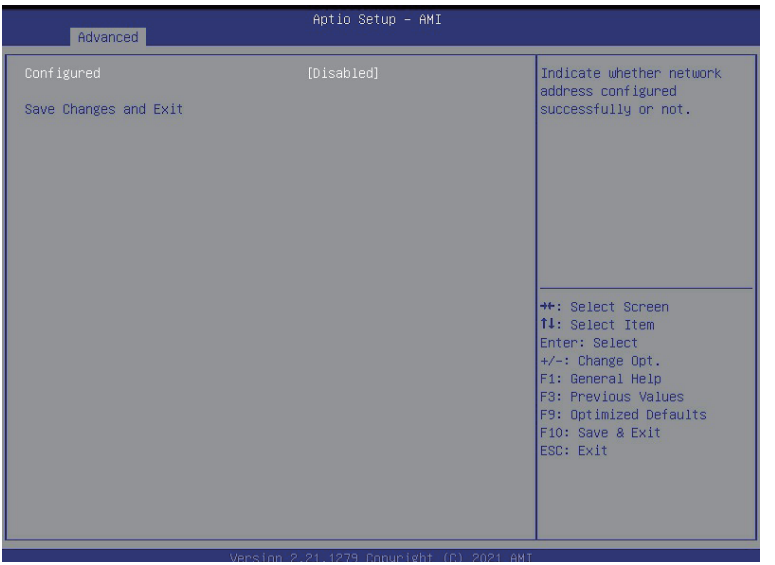
Parameter	Description
Firmware Image Properties	Press [Enter] to configure advanced items.
NIC Configuration	Press [Enter] to configure advanced items. ◆ Link Speed – Allows for automatic link speed adjustment. – Options available: Auto Negotiated, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, 100 Mbps Full. Default setting is **Auto Negotiated**. ◆ Wake On LAN – 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**.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values.
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.

5-2-17 VLAN Configuration



Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Create new VLAN ◆ VLAN ID – Sets VLAN ID for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 4094. ◆ Priority – Sets 802.1Q Priority for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 7. ◆ Add VLAN – Press [Enter] to create a new VLAN or update an existing VLAN. ◆ Configured VLAN List ◆ Remove VLAN – Press [Enter] to remove an existing VLAN.

5-2-18 MAC 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.

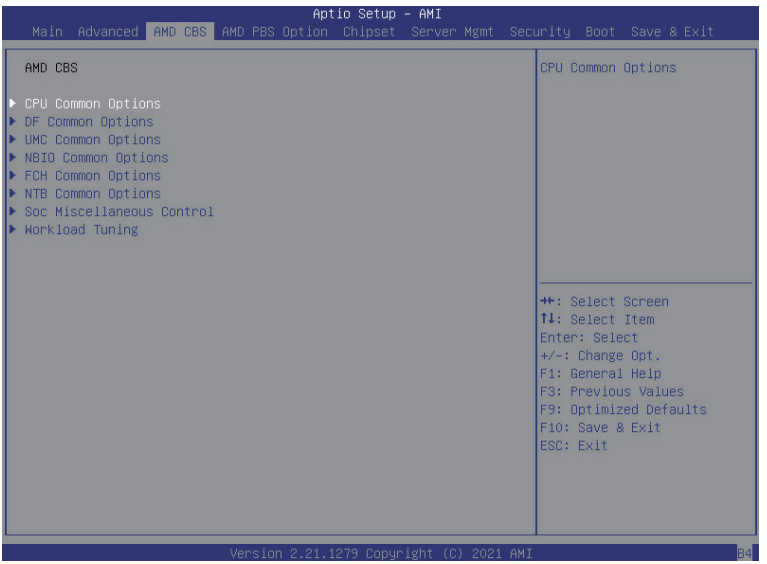
(Note) This item appears when **Configured** is set to **Enabled**.

5-2-19 MAC IPv6 Network Configuration

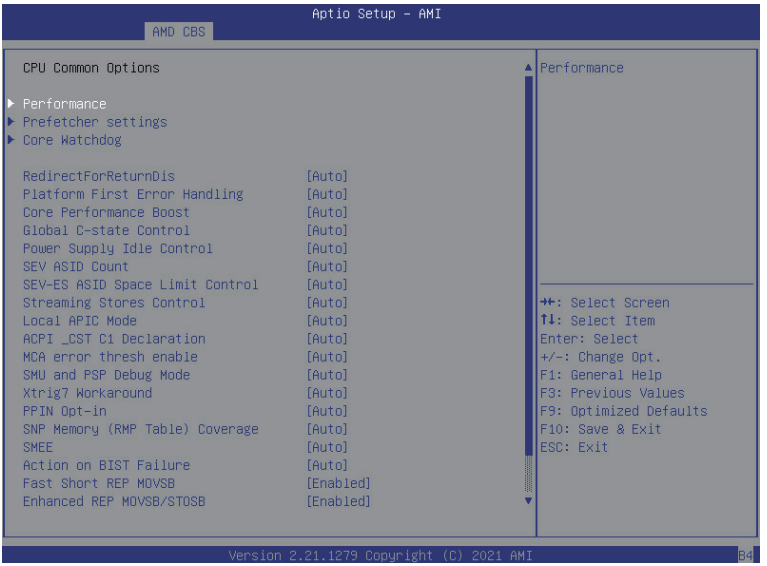
Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Displays the MAC Address information. ◆ Interface ID – The 64 bit alternative interface ID for the device. The string is colon separated. e.g. ff:dd:88:66:cc:1:2:3. ◆ DAD Transmit Count – The number of consective Neighbor solicitation messages sent while performing Duplicate Address Detection on a tentative address. A value of zero indicates that Duplicate Address Detection is not performed. ◆ Policy – Options available: automatic/manual. Default setting is **automatic**. ◆ Save Changes and Exit – Press [Enter] to save all configurations.

5-3 AMD CBS Menu

AMD CBS menu displays submenu options for configuring the CPU-related information that the BIOS automatically sets. Select a submenu item, then press [Enter] to access the related submenu screen.



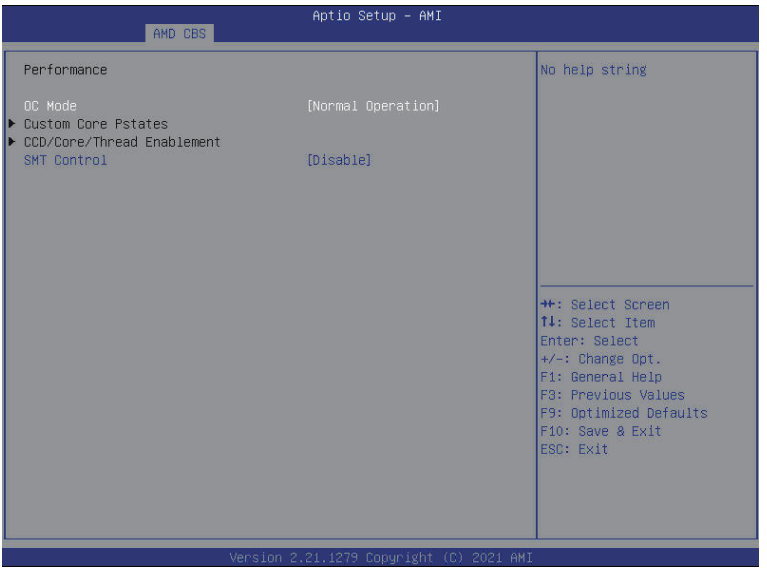
5-3-1 CPU Common Options



Parameter	Description
CPU Common Options	
Performance	Press [Enter] for configuration of advanced items.
Prefetcher settings	Press [Enter] for configuration of advanced items.
Core Watchdog	Press [Enter] for configuration of advanced items.
RedirectForReturnDis	From a workaround for GCC/C000005 issue for XV Core on CZ A0, setting MSRC001_1029 Decode Configuration (DE_CFG) bit 14 [DecfgNoRdrctForReturns] to 1. Options available: Auto, 1, 0. Default setting is **Auto**.
Platform First Error Handling	Enable/Disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Core Performance Boost	Enable/Disable the Core Performance Boost function. Options available: Auto/Disabled. Default setting is **Auto**.
Global C-State Control	Controls the IO based C-state generation and DF C-states. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Power Supply Idle Control	Configures the Power Supply Idle Control. Options available: Auto, Low Current Idle, Typical Current Idle. Default setting is **Auto**.
SEV ASID Count	Specifies the maximum valid ASID, which affects the maximum system physical address space. Options available: Auto, 253 ASIDs, 509 ASIDs. Default setting is **Auto**.

Parameter	Description
SEV-ES ASID Space Limit Control	Space limit control for SEV-ES ASIDs. Options available: Auto/Manual. Default setting is **Auto**.
Streaming Stores Control	Enable/Disable the Streaming Stores functionality. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Local APIC Mode	Sets the Local APIC Mode. Options available: Auto, xAPIC, x2APIC. Default setting is **Auto**.
ACPI_CST C1 Decaration	Determines whether or not to declare the C1 state to the OS.. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
MCA error thresh enable	Enable MCA error thresholding. Options available: Auto, False, True. Default setting is **Auto**.
SMU and PSP Debug Mode	When this option is enabled, specific uncorrected errors detected by the PSP FW or SMU FW will hand and not reset the system. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Xtrig7 Workaround	Options available: Auto, No Workaround, Bronze Workaround, Sliver Workaround. Default setting is **Auto**.
PPIN Opt-in	Enable/Disable the PPIN feature. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
SNP Memory (RMP Table) Coverage	Enabled: Enter system memory is covered. Options available: Auto, Enabled, Disabled, Custom. Default setting is **Auto**.
SMEE	Control secure memory encryption enable. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Action on BIST Failure	Action to take when a CCD BIST failure is detected. Options available: Auto, Do nothing, Down-CCD. Default setting is **Auto**.
Fast Short REP MOVSB	Default is 1, cab be set to zero for analysis purpose as long as OS supports it. Options available: Enabled, Disabled. Default setting is **Enabled**.
Enhanced REP MOVSB/ STOSB	Default is 1, cab be set to zero for analysis purpose as long as OS supports it. Options available: Enabled, Disabled. Default setting is **Enabled**.
REP-MOV/STOS Steaming	Allows REP-MOV/STOS to use non-caching streaming stores for large sizes. Options available: Enabled, Disabled. Default setting is **Enabled**.
X3D	Override of X3D technology. Options available: Auto, Disable, 1 stack, 2 stack, 4 stack. Default setting is **Auto**.
IBS hardware work around	Set if using IBS execution sampling without software workaround for erratum 1,285. May impac performance.. Options available: Enabled, Auto. Default setting is **Enabled**.

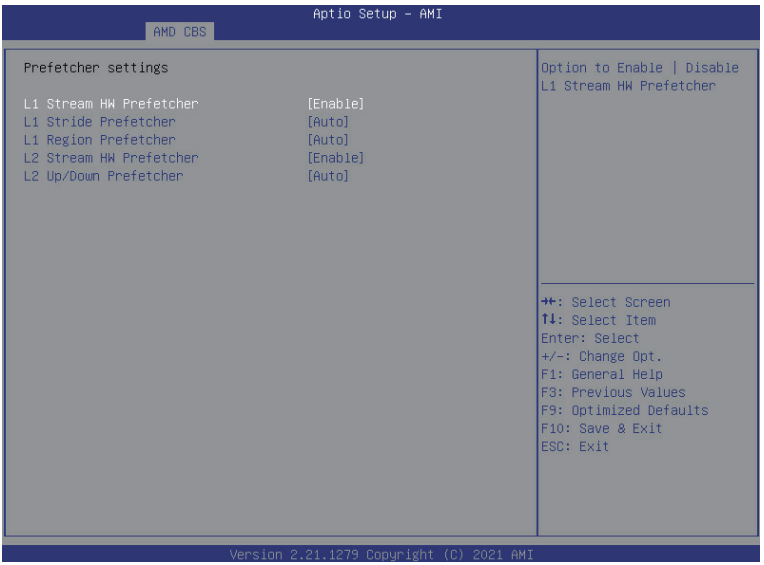
5-3-1-1 Performance



Parameter	Description
Performance	
OC Mode(Note1)	Option Available: Normal Operation, Customized Default setting is **Normal Operation**.
Custom Core Pstates	Allows you to accept or decline enabling Custom Core Pstates. When accepted, you can disable or customize core pstates.
CCD/Core/Thread Enablement	Allows you to accept or decline enabling CCDs, processor cores and threads. When accepted, you can control the number of CCDs to be used, the number of cores to be used, and whether to enable or disable Simultaneous Multithreading Technology (SMT) support.
SMT Control	Can be used to disable symmetric multithreading. To re-enable SMT, a POwer CYCLE is needed after select the 'Enable' option. Select 'Auto' base on BIOS PCD. (PcdAmdSmtMode) default setting. Option Available: Enable, Disable. Default setting is **Disable**.

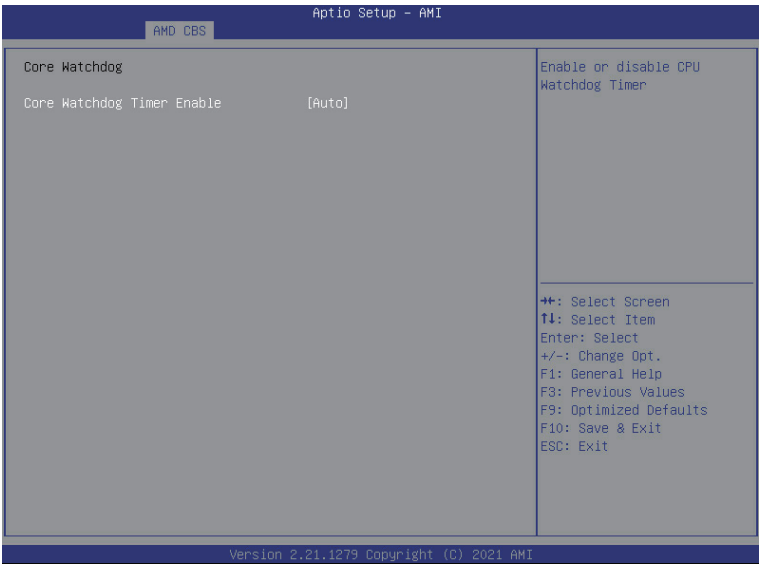
(Note1) Advanced items are configurable when this item is defined.

5-3-1-2 Prefetcher Settings



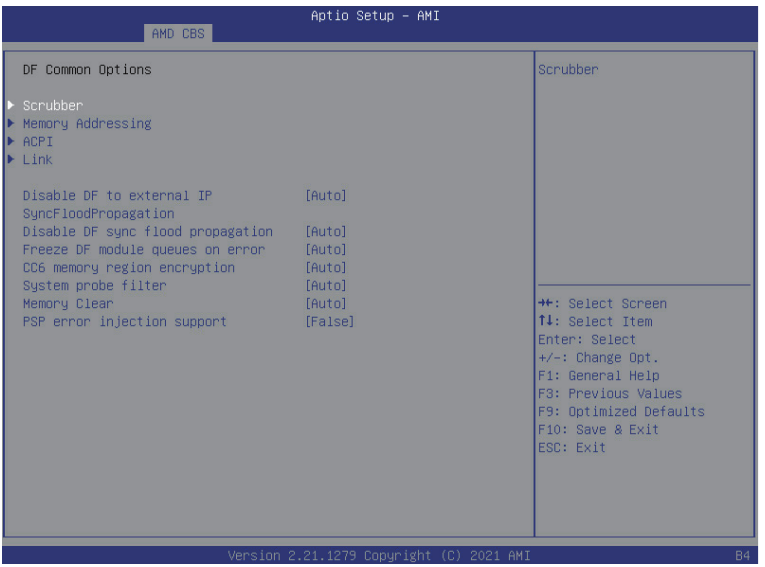
Parameter	Description
Prefetcher settings	
L1 Stream HW Prefetcher	Enable/Disable L1 Stream HW Prefetcher. Options available: Auto, Enable, Disabled. Default setting is **Enable**.
L1 Stride Prefetcher	Use memory access history of individual instruction to fetch additional lines Enable/Disable L1 Stream HW Prefetcher. Options available: Auto, Enable, Disable. Default setting is **Auto**.
L1 Region Prefetcher	Use memory access history to fetch additional lines when the data access for a given instruction tends to be followed by other data accesses. Options available: Auto, Enable, Disable. Default setting is **Enable**.
L2 Stream HW Prefetcher	Enable/Disable L2 Stream HW Prefetcher. Options available: Auto, Enable, Disabled. Default setting is **Enable**.
L2 Up/Down Prefetcher	Use memory access history to determine whether to fetch the next or previous line for all memory accesses. . Options available: Auto, Enable, Disable. Default setting is **Auto**.

5-3-1-3 Core Watchdog



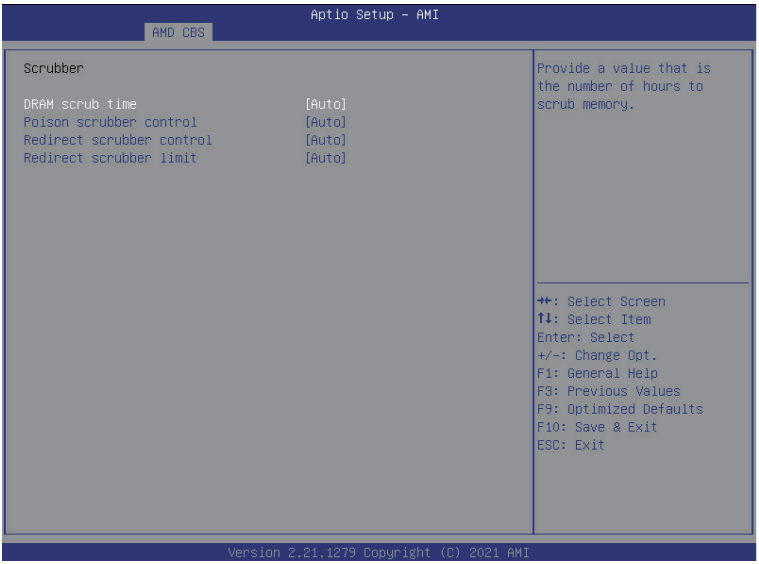
Parameter	Description
Core Watchdog	
Core Watchdog Timer Enable	Enable/Disable CPU Watchdog Timer. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-3-2 DF Common Options



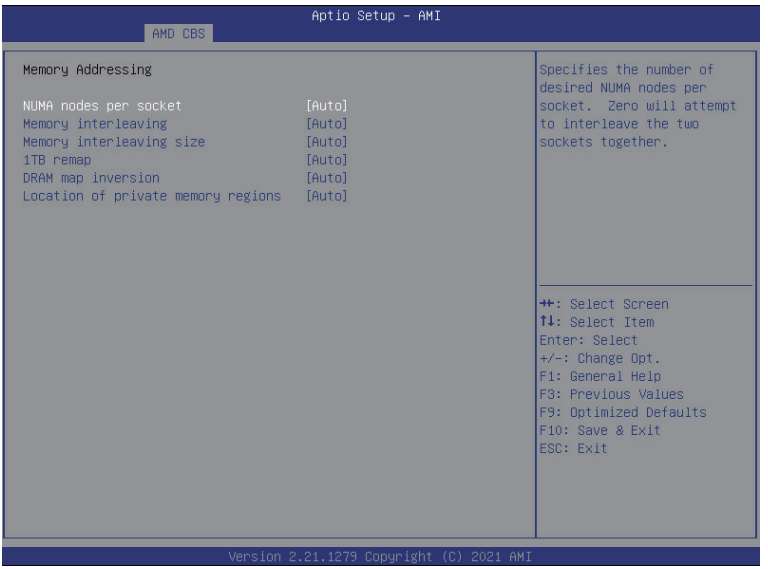
Parameter	Description
DF Common Options	
Scrubber	Press [Enter] for configuration of advanced items.
Memory Addrssing	Press [Enter] for configuration of advanced items.
ACPI	Press [Enter] for configuration of advanced items.
Link	Press [Enter] for configuration of advanced items.
Disable DF to external IP sync flood propagation	Enable/Disable SyncFlood to UMC & downstream slaves. Options available: Auto, Sync flood disabled, Sync flood enabled. Default setting is **Auto**.
Disable DF sync flood propagation	Enable/Disable DF Sync Flood propagation. Options available: Auto, Sync flood disabled, Sync flood enabled. Default setting is **Auto**.
Frezze DF module queues on error	Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
CC6 memory region encryption	Controls whether or not the CC6 save/restor memory is encrypted. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
System probe filter	Enable/Disable Systme probe filter. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Memory Clear	Enable/Disable the Memory Clear feature. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
PSP error injection support	Enable/Disable PSP error injection support. Options available: False/True. Default setting is **False**.

5-3-2-1 Scrubber



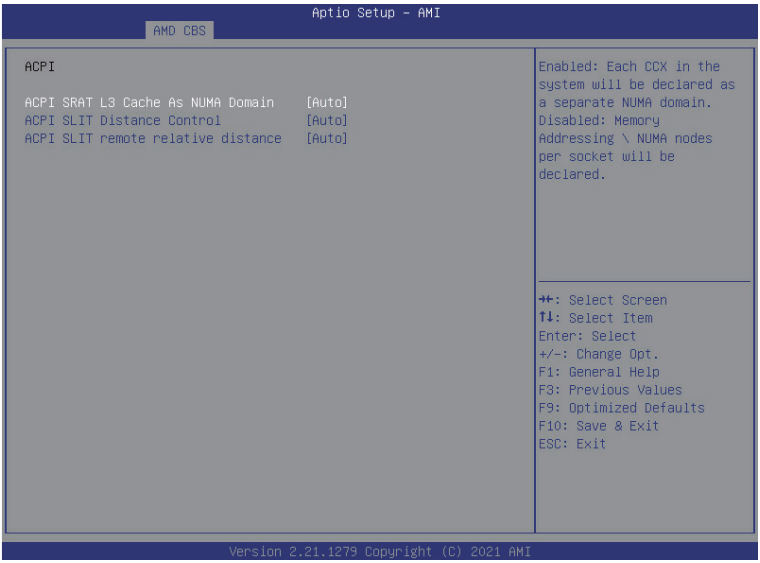
Parameter	Description
Scrubber	
DRAM scrub time	Provide a value that is the number of hours to scrub memory. Options available: Auto, Disabled, 1 hour, 4 hours, 8 hours, 16 hours, 24 hours, 48 hours. Default setting is **Auto**.
Poison scrubber control	Enable/Disable the Poison scrubber control feature. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Redirect scrubber control	Enable/Disable the Redirect scrubber control feature. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Redirect scrubber limit	Sets the redirect scrubber limit. Options available: Auto, 2, 4, 8, Infinite. Default setting is **Auto**.

5-3-2-2 Memory Addressing



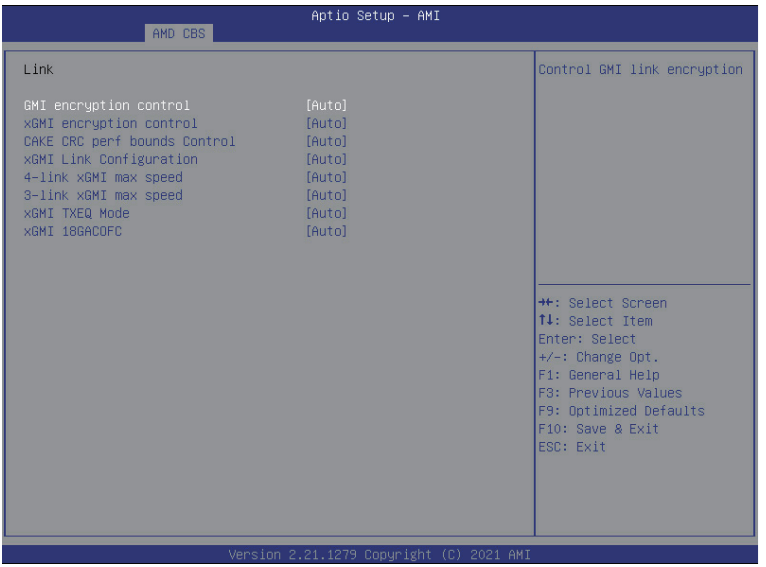
Parameter	Description
Memory Addressing	
NUMA nodes per socket	Specifies the number of desired NUMA nodes per socket. Options available: Auto, NPS0, NPS1, NPS2, NPS4. Default setting is **NPS4**.
Memory inerleaving	Enable/Disable the Memory interleaving feature. Options available: Auto/Disabled. Default setting is **Auto**.
Memory interleaving size	Controls the memory interleaving size. This determines the starting address of the interleave (bit 8, 9, 10 or 11). Options available: Auto, 256Bytes, 512Bytes, 1KB, 2KB. Default setting is **Auto**.
1TB remap	Enable/Disable to remap DRAM out of the space just below the 1TB boundary. The ability to remap depends on DRAM configuration, NPS, and interleaving selection, and may not always be possible. Options available: Auto, Do not remap, Attempt to remap. Default setting is **Auto**.
DRAM map inversion	Enable/Disable the DRAM map inversion function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Location of private memory regions	Control whether or not the rpivate memory regions (PSP, SMU, and CC6) are at the top of DRAM or distributed. Note that distributed requires memory on all dies. Note that it will always be at the top of DRAM if some dies don't have memory regardless of this. Options available: Auto, Distributed, Consolidated. Default setting is **Auto**.

5-3-2-3 ACPI



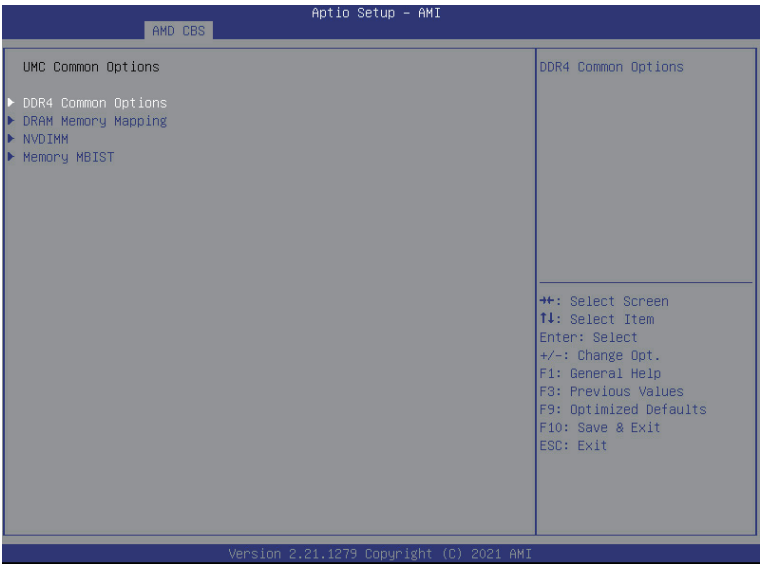
Parameter	Description
ACPI	
ACPI SRAT L3 Cache As NUMA Domain	Enable/Disable the ACPI SRAT L3 Cache As NUMA Domain function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
ACPI SLIT Distance Control	Determines how the SLIT distances are declared. Options available: Auto/Manual. Default setting is **Auto**.
ACPI SLIT remote relative distance	Sets the remote socket distance for 2P systems as near (2.8) or far (3.2). Options available: Auto, Near, Far. Default setting is **Auto**.

5-3-2-4 Link



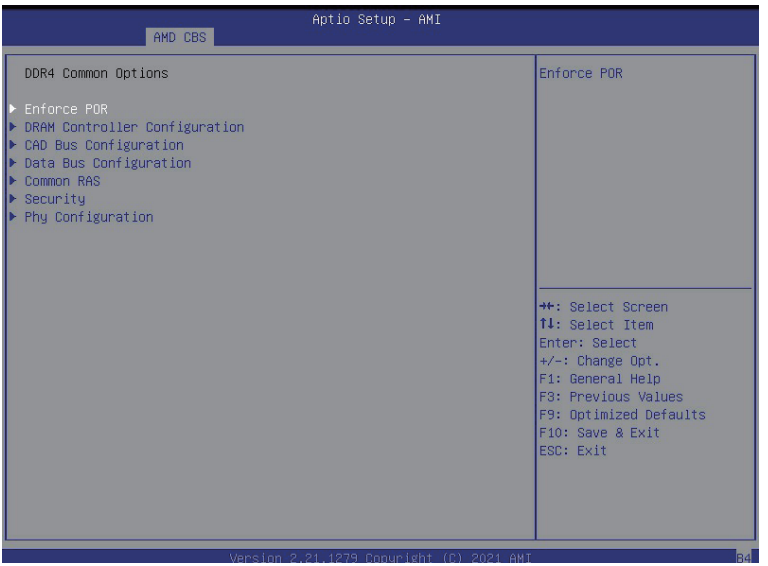
Parameter	Description
Link	
GMI encryption control	Enable/Disable GMI link encryption. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
xGMI encryption control	Enable/Disable xGMI link encryption. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
CAKE CRC perf bounds Control	Options available: Auto/Manual. Default setting is **Auto**.
4-link xGMI max speed	Specifies the max speed of 4-link xGMI. Options available: Auto, 10.667Gbps, 13Gbps, 16Gbps, 18Gbps. Default setting is **10.667Gbps**.
3-link xGMI max speed	Specifies the max speed of 3-link xGMI. Options available: Auto, 10.667Gbps, 13Gbps, 16Gbps, 18Gbps. Default setting is **10.667Gbps**.
xGMI TXEQ Mode	Configures xGMI TXEQ/RX vetting Mode. Options available: Auto, TXEQ_Disabled, TXEQ_Lane, TXEQ_Link, TXEQ_RX_Vet. Default setting is **10.667Gbps**.
xGMI 18GACOFC	Configures xGMI 18GACOFC. Options available: Auto, Enable, Disable. Default setting is **Auto**.

5-3-3 UMC Common Options



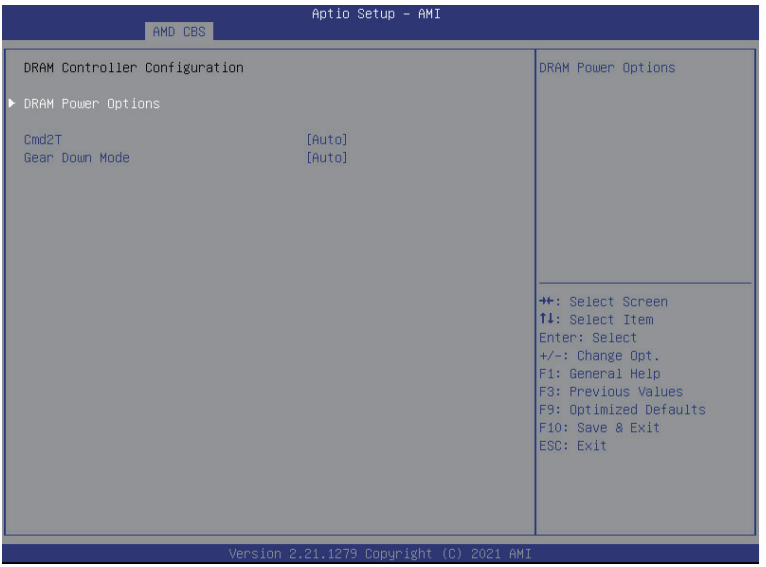
Parameter	Description
UMC Common Options	
DDR4 Common Options	Press [Enter] for configuration of advanced items.
DRAM Memory Mapping	Press [Enter] for configuration of advanced items.
NVDIMM	Press [Enter] for configuration of advanced items.
Memory MBIST	Press [Enter] for configuration of advanced items.

5-3-3-1 DDR4 Common Options



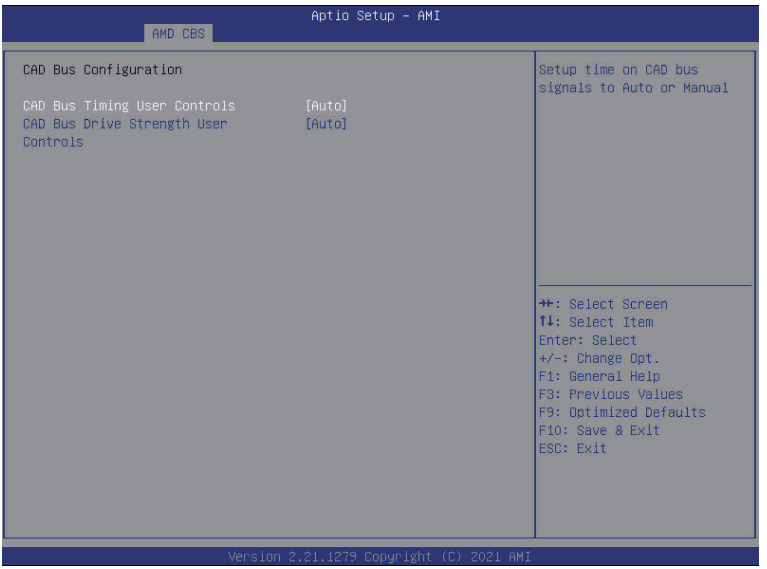
Parameter	Description
DDR4 Common Options	
Enforce POR	Press [Enter] to configure the Plan of Record (POR) to enable / disable restrictions for DDR4 frequency and voltage programming. Memory speeds will be capped at AMD guidelines. **Note: To enable 2 DIMMs per Channel at 3200MHz function, select [Accept] at warning message, change Overclock from [Auto] to [Enabled], and then set memory speed to 3200MHz.**
DRAM Controller Configuration	Press [Enter] to configure DRAM Controller Configuration.
CAD Bus Configuration	Press [Enter] to configure CAD Bus Configuration.
Data Bus Configuration	Press [Enter] to configure Data Bus Configuration.
Common RAS	Press [Enter] to configure Common RAS.
Security	Press [Enter] to configure Security.
Phy Configuration	Press [Enter] to configure Security.

5-3-3-1-1 DRAM Controller Configuration



Parameter	Description
DRAM Controller Configuration	
DRAM Power Options	Press [Enter] to configure DRAM Power OptionsMa. ◆ Power Down Enable – Enable/Disable DDR power down mode. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ Power Down Entry Delay ◆ SubUrgRefLowerBound ◆ UrgRefLimit ◆ DRAM Maximum Activate Count – Options available: Auto, Unlimited MC, 200K,300K, 400K, 500K, 600K, 700K. Default setting is **Auto**. ◆ DRAM Refresh Rate – Options available: 7.8 usec, 3.9 usec. Default setting is **7.8 usec**. ◆ Self-Refresh Exit Staggering – Options available:Disabled, Trfc/3, Trfc/4. Default setting is **Disabled**.
Cmd2T	Selects the Cmd2T mode on ADDR/CMD. Options available: Auto, 1T, 2T. Default setting is **Auto**.
Gear Down Mode	Enable/Disable the Gear Down Mode function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-3-3-1-2 CAD Bus Configuration



Parameter	Description
CAD Bus Configuration	
CAD Bus Timing User Controls	Setup time on CAD bus signals to Auto or Manual. Options available: Auto/Manual. Default setting is **Auto**.
CAD Bus Drive Strength User Controls	Drive Strength on CAD bus signals to Auto or Manual. Options available: Auto/Manual. Default setting is **Auto**.

5-3-3-1-3 Data Bus Configuration

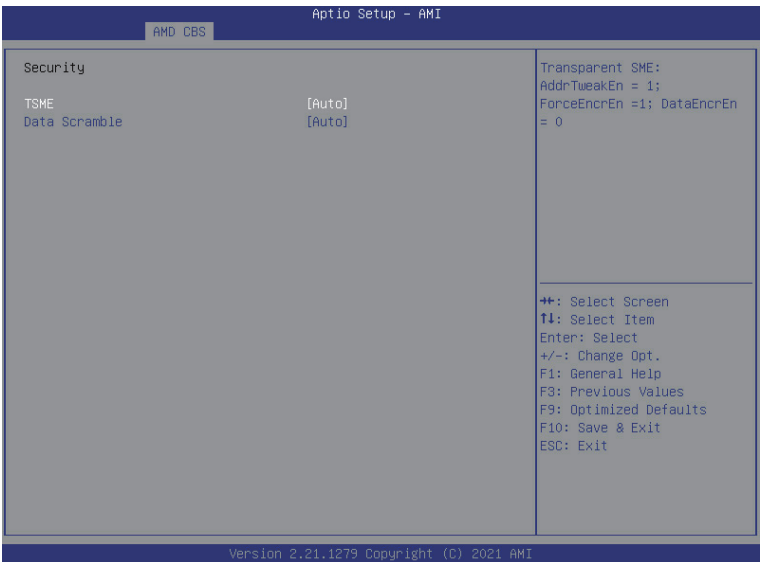
Parameter	Description
Data Bus Configuration	
Data Bus Configuration User Controls	Specifies the mode for drive strength to Auto or Manual. Options available: Auto/Manual. Default setting is **Auto**.

5-3-3-1-4 Common RAS

Parameter	Description
Common RAS	
Data Poisoning	Enable/Disable the Data Poisoning function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DRAM Post Package Repair	Enable/Disable the DRAM Post Package Repair function. Options available: Enabled/Disabled. Default setting is **Auto**.
RCD Parity	Enable/Disable the RCD Parity function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DRAM Address Command Parity Retry	Enable/Disable the DRAM Address Command Parity Retry function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Max Parity Error Replay	Configures the Max Parity Error Replay. (0~0x3f) Default setting is **8**. **Please note that this item is configurable when DRAM Address Command Parity Retry is set to Enabled.**
Write CRC Enable	Enable/Disable the Write CRC function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DRAM Write CRC Enable and Retry Limit	Enable/Disable DRAM Write CRC Enable and Retry Limit. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Max Write CRC Error Replay	Configures the Max Write CRC Error Replay. (0~0x3f) Default setting is **8**. **Please note that this item is configurable when DRAM Write CRC Enable and Retry Limit is set to Enabled.**

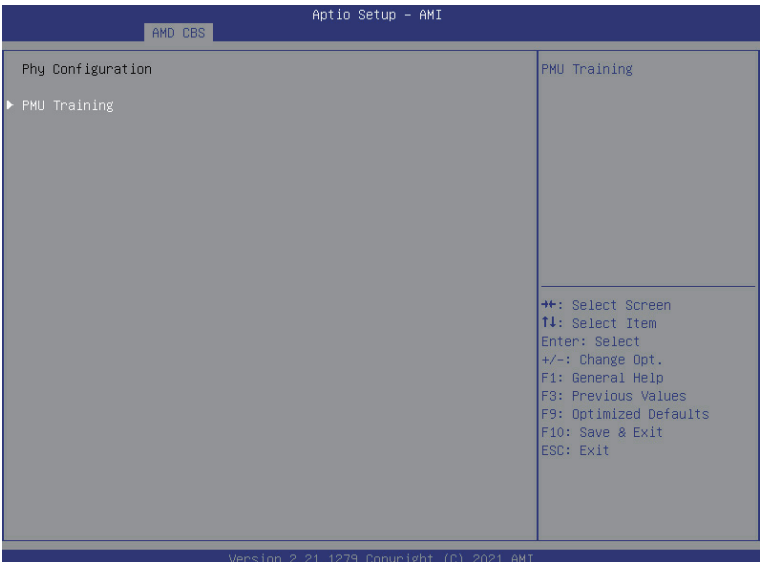
Parameter	Description
Disable Memory Error Injection	Options available: False/True. Default setting is **True**.
ECC Configuration	Press [Enter] to configure advanced items. ◆ DRAM ECC Symbol Size – Configures the DRAM ECC Symbol Size. – Options available: Auto, x4, x8, x16. Default setting is **Auto**. ◆ DRAM ECC Enable – Enable/Disable DRAM ECC. When set to Auto, it will set ECC to enable. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ DRAM UECC Retry – Enable/Disable DRAM UECC Retry. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-3-3-1-5 Security



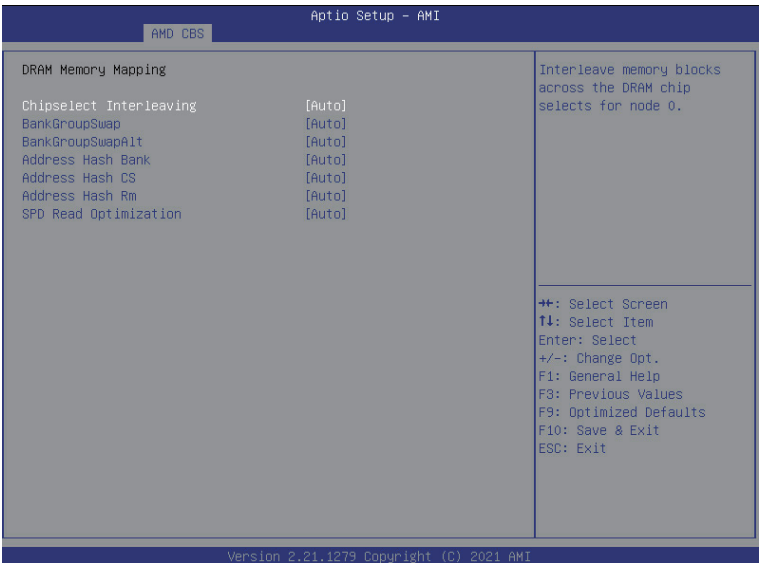
Parameter	Description
Security	
TSME	Enable/Disable Transparent SME. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Data Scramble	Enable/Disable Data Scrambling. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-3-3-1-6 Phy Configuration



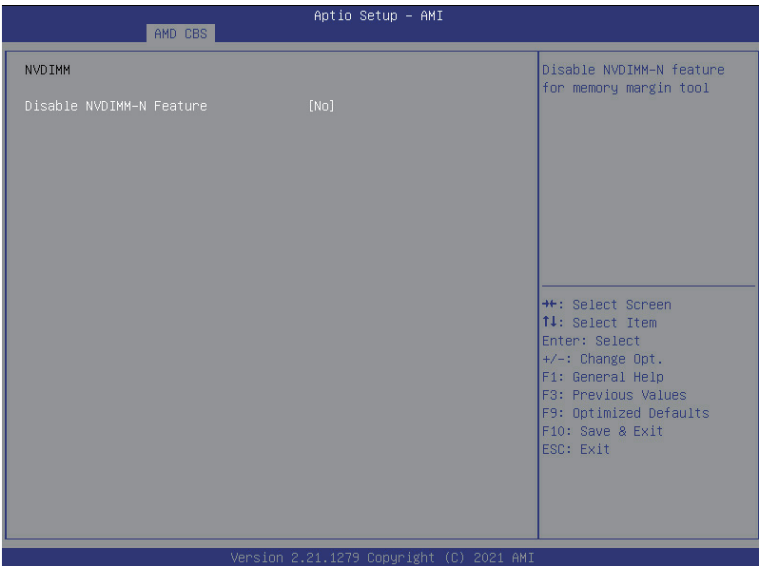
Parameter	Description
Phy Configuration	
PMU Training	Press [Enter] to configure PMU Training. ◆ DFE Traing – Enable/Disable DDR power down mode. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ FFE Write Training – Auto, Enabled, Disabled. Default setting is **Auto**. ◆ PMU Pattern Bits Controls – Auto, Manual. Default setting is **Auto**.

5-3-3-2 DRAM Memory Mapping



Parameter	Description
DRAM Memory Mapping	
Chipselect Interleaving	Interleave memory blocks across the DRAM chip selects for CPU 0. Options available: Auto/Disabled. Default setting is **Auto**.
BankGroupSwap	Configures the BankGroupSwap. BankGroupSwap (BGS) is a new memory mapping option in AGESA that alters how applications get assigned to physical locations within the memory modules. When this option sets to Auto, it is null: No help string. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
BankGroupSwapAlt	Configures the BankGroupSwapAlt. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Address Hash Bank	Enable/Disable bank address hashing. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Address Hash CS	Enable/Disable CS address hashing. Options available: Auto, Enabled, Disabled. Default setting is **Auto**
Address Hash Rm	Enable/Disable RM address hashing. Options available: Auto, Enabled, Disabled. Default setting is **Auto**
SPD Read Optimization	Enable/Disable SPD Read Optimization. Options available: Auto, Enabled, Disabled. Default setting is **Auto**

5-3-3-3 NVDIMM



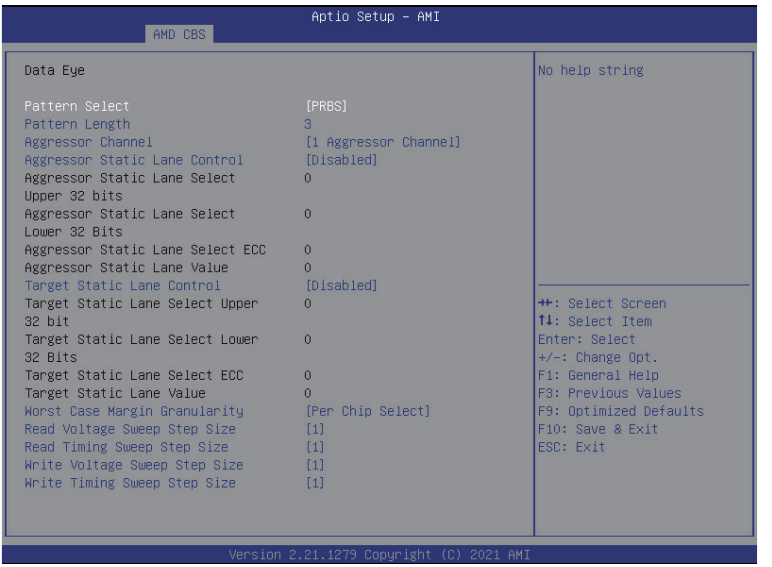
Parameter	Description
NVDIMM	Disable NVDIMM-N feature for memory margin tool. Options available: No, Yes. Default setting is **No**.

5-3-3-4 Memory MBIST

Parameter	Description
Memory MBIST	
MBIST Enable	Enable/Disable the Memory MBIST function. Options available: Enabled/Disabled. Default setting is **Disabled**.
MBIST Test Mode(Note)	Selects MBIST Test Mode. **Interface Mode**: Tests Single and Multiple CS transactions and Basic Connectivity. **Data Eye Mode**: Measures Voltage vs. Timing. Options available: Auto, Both, Interface Mode, Data Eye Mode. Default setting is **Auto**.
MBIST Aggressors(Note)	Enable/Disable MBIST Aggressor test. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
MBIST Per Bit Slave Die Reporting(Note)	Enable/Disable to report 2D data eye results in ABL log for each DQ, Chipselect, and Channel. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Data Eye	Press [Enter] to configure advanced items.
Memory Healing BIST	Enable/Disable memory healing BIST. Options available: Auto, Enabled, Disabled. Default setting is **Disabled**.

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

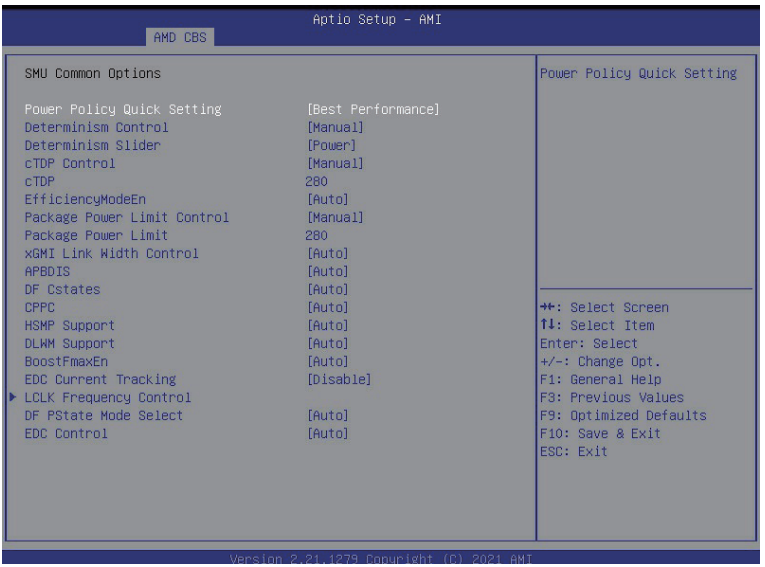
5-3-3-4-1 Data Eye



Parameter	Description
Data Eye	
Pattern Select	Options available: PRBS, SSO, Both. Default setting is **PRBS**.
Pattern Length	Determines the pattern length. The possible options are N=3....12.
Aggressor Channel	This item helps read the aggressors channels. Options available: Disabled, 1 Aggressor Channel, 3 Aggressor Channels, 7 Aggressor Channels. Default setting is **1 Aggressor Channel**.
Aggressor Static Lane Control	Enable/Disable the Aggressor Static Lane Control function. Options available: Enabled/Disabled. Default setting is **Disabled**.
Aggressor Static Lane Select Upper 32 bits	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Aggressor Static Lane Select Lower 32 bits	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Aggressor Static Lane Select ECC	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Aggressor Static Lane Value	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Target Static Lane Control	Enable/Disable the Target Static Lane Control function. Options available: Enabled/Disabled. Default setting is **Disabled**.

Parameter	Description
Target Static Lane Select Upper 32 bits	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Target Static Lane Select Lower 32 bits	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Target Static Lane Select ECC	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Target Static Lane Value	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Data Eye Type	This item determines which results are expected to be captured for Data Eye. Options available: 1D Voltage Sweep, 1D Timing Sweep, 2D Full Data Eye, Worst Case Margin Only. Default setting is **Worst Case Margin Only**.
Worst Case Margin Granularity	Configures Worst Case Margin Granularity. Options available: Per Chip Select, Per Nibble. Default setting is **Worst Case Margin Only**.
Read Voltage Sweep Step Size	Configures the step size for read Data Eye voltage sweep. Options available: 1, 2, 4. Default setting is **2**.
Read Timing Sweep Step Size	Configures the step size for read Data Eye timing sweep. Options available: 1, 2, 4. Default setting is **1**.
Write Voltage Sweep Step	Configures the step size for write Data Eye voltage sweep. Options available: 1, 2, 4. Default setting is **2**.
Write Timing Sweep Step Size	Configures the step size for write Data Eye timing sweep. Options available: 1, 2, 4. Default setting is **1**.

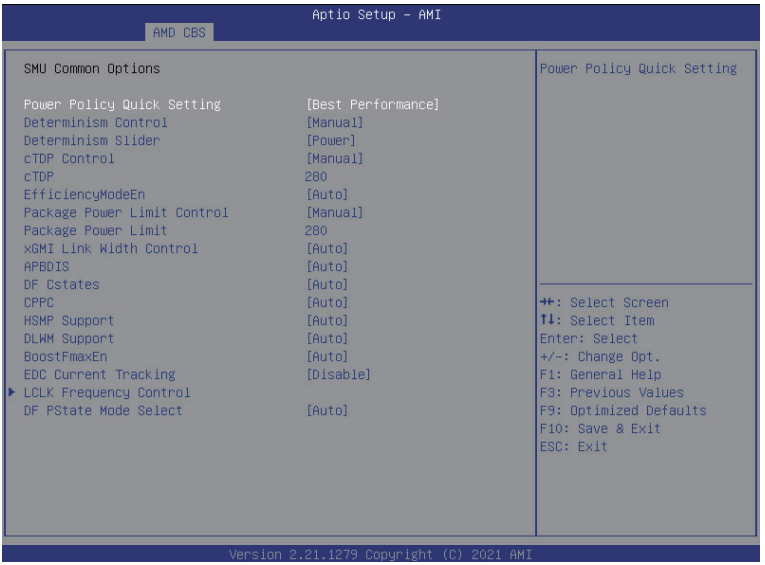
5-3-4 NBIO Common Options



Parameter	Description
NBIO Common Options	
IOMMU	Enable/Disable the IOMMU function. Options available: Enabled/Disabled. Default setting is **Disabled**.
DMAr Support	Enable DMAr system protection during POST. Options available: Auto,Enabled/Disabled. Default setting is **Auto**.
PCIe ARI Support	Enable/Disable Alternative Routng-ID Interpretation. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
PCIe ARI Enumeration	ARI Forwarding Enable for each downstream port. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
PCIe Ten Bit Tag Support	Enable/Disable PCIe ten bit tags for supported devices. (Auto=Disabled) Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
SMU Common Options	Press [Enter] for configuration of advanced items.
NBIO RAS Common Options	Press [Enter] for configuration of advanced items.
Enable AER Cap	Enable/Disable Advanced Error Reporting Capability. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Early Link Speed	Configures Early Link Speed. Options available: Auto, Gen1, Gen2. Default setting is **Auto**.

Parameter	Description
Hot Plug Handling mode	Controls the Hot Plug Handling mode. Options available: Auto, A0 Mode, OS First (No Error Handling), OS First (Error Handling-Not Implemented), Firmware First (Not Implemented). Default setting is **Auto**.
Presence Detect Select mode	Controls the Presence Detect Select mode. Options available: Auto, OR, AND. Default setting is **Auto**.
Preferred IO Device	Configures Preferred IO Device. Options available: Auto, Manual. Default setting is **Auto**.
Loopback Mode	Enabled/Disabled PCIe Loopback mode. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
CV test	Set this to Enabled to support running PCIECV tool. Auto: preserve hardware defaults. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
CAC Weight Adjustment	EDC Mode select. Options available: Auto, Enabled, Disabled. Default setting is **Auto.**
SEV-SNP Support	Options available: Enable, Disable. Default setting is **Enable**.
SRIS	Options available: Auto, Enable, Disable. Default setting is **Auto**.
EDC Control	Options available: Auto, Enable, Disable. Default setting is **Auto**.

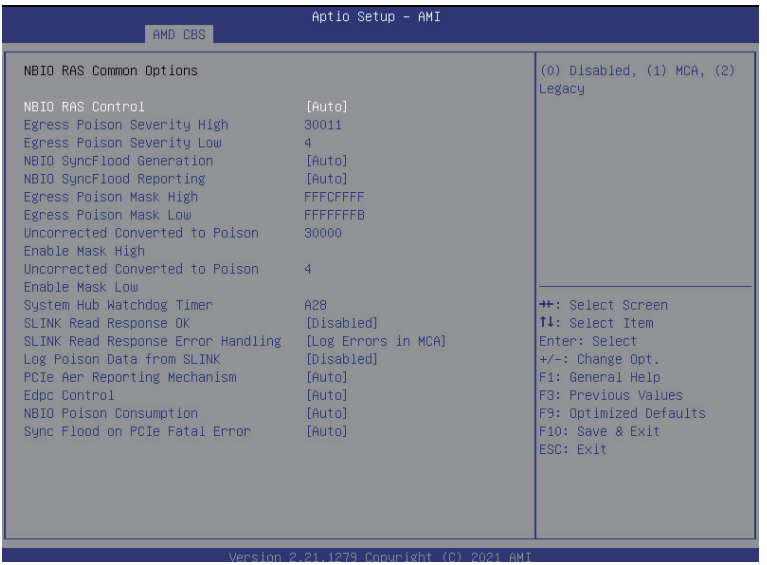
5-3-4-1 SMU Common Options



Parameter	Description
SMU Common Options	
Power Policy Quick Setting	Options available: Standard, Best Performance, Energy Efficient. Default setting is **Standard**.
Determinism Control	Selects use the fused Determinism or set customized Determinism. Options available: Auto/Manual. Default setting is **Auto**.
Determine Slider	Options available: Auto/Power, Performance. Default setting is **Power**.
cTDP Control	Selects use the fused TDP or set customized TDP. **TDP is used to define the RC thermal model only** Options available: Auto/Manual. Default setting is **Auto**.
cTDP	Display cTDP information.
EfficiencyModeEn	Options available: Auto/Enabled. Default setting is **Auto**.
Package Power Limit Control	Selects use the fused PPT or set customized PPT. **PPT will be used as the ASIC power limit** Options available: Auto/Manual. Default setting is **Auto**.
Package Power Limit	Display Package Power Limit information
xGMI Link Width Control	Options available: Auto/Enabled. Default setting is **Auto**.
APBDIS	Options available: Auto, 0, 1. Default setting is **Auto**.

Parameter	Description
DF Cstates	Enable/Disable DF C-states. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
CPPC	Enable/Disable the CPPC feature. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
HSMP Support	Select HSMP support enable or disable. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DLMM Support	Select DLMM support enable or disable. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
BoostFmaxEn	Options available: Auto/Enabled. Default setting is **Auto**.
EDC Current	Options available: Enable, Disable. Default setting is **Disable**.
LCLK Frequency Control	Press [Enter] for advanced configuration.
DF PSTATE Mode Select	Option available: Normal, limit Highest, Limit All, Auto. Default setting is **Auto**.

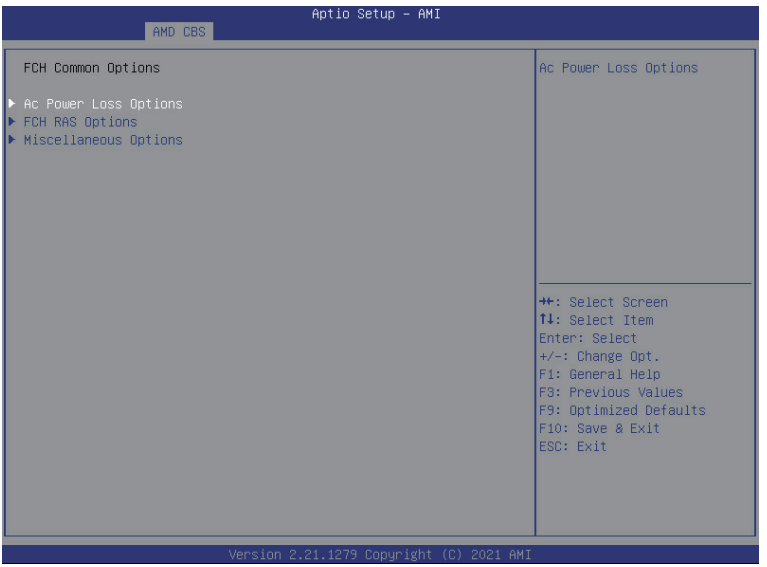
5-3-4-2 NBIO RAS Common Options



Parameter	Description
NBIO RAS Common Options	
NBIO RAS Control	Options available: Disabled, MCA, Legacy. Default setting is **MCA**.
Egress Poison Serverity High	Configures the Egress Poison High Serverity. Each bit set to 1 enables High serverity on the associated IOHC egress port. A bit of 0 indicates LOW serverity.
Egress Poison Serverity Low	Configures the Egress Poison Low Serverity. Each bit set to 1 enables High serverity on the associated IOHC egress port. A bit of 0 indicates LOW serverity.
NBIO SyncFlood Generation	The value may be used to mask SyncFlood caused by NBIO RAS options. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
NBIO SyncFlood Reporting	The value may be used to enanle SyncFlood reporting to APML. Options available: Enabled/Disabled. Default setting is **Disabled**.
Egress Poison Mask High	Enables mask for masking of errors logged in EGRESS_POISON_ STATUS. For each bit set to 1, errors are masked. For each bit set to 0, errors trigger response actions.
Egress Poison Mask Low	Enables mask for masking of errors logged in EGRESS_POISON_ STATUS. For each bit set to 1, errors are masked. For each bit set to 0, errors trigger response actions.

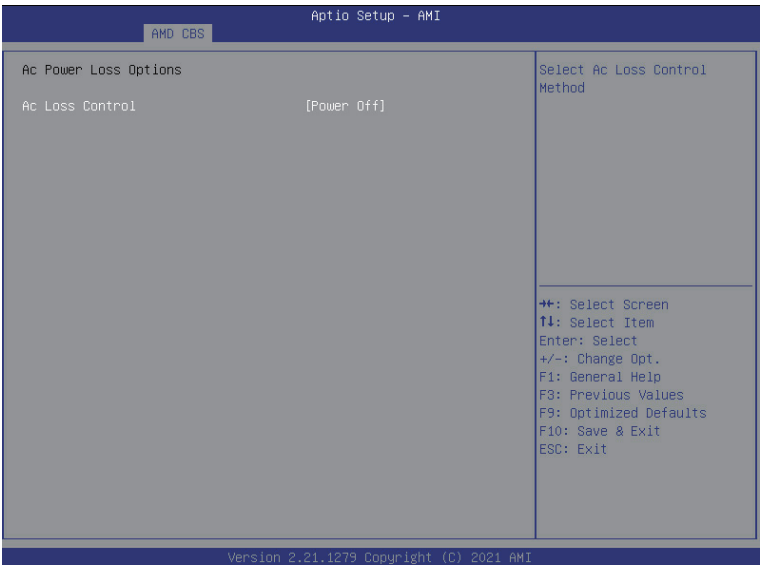
Parameter	Description
Uncorrected Converted to Poison Enabke Mask High	Enables mask for masking of uncorrectable parity errors on internal arrays.
Uncorrected Converted to Poison Enabke Mask Low	Enables mask for masking of uncorrectable parity errors on internal arrays.
System Hub Watchdog Timer	Specifies the timer interval of the SYSHUB Watchdog timer in miliseconds.
SLINK Read Response OK	This item specifies whether SLINK read response errors are converted to an Okay response. Options available: Enabled/Disabled. Default setting is **Disabled**.
SLINK Read Response Error Handling	Options available: Enabled, Trigger MCOMMIT Error, Log Errors in MCA. Default setting is **Log Errors in MCA**.
Log Poison Data from SLINK	Enable/Disable the Log Poison Data from SLINK feature. Options available: Enabled/Disabled. Default setting is **Disabled**.
PCIe Aer Reporting Mechanism	Selects the method of reporting AER errors from PCI Express. Options available: Auto, Firmware First, OS First, MCA. Default setting is **Auto**.
Edpc Control	Options available: Auto, Enabled, Disabled. Default setting is **Disabled**.
NBIO Poison Consumption	Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Sync Flood on PCIe Fatal Error	Options available: Auto, True, False. Default setting is **Auto**.

5-3-5 FCH Common Options



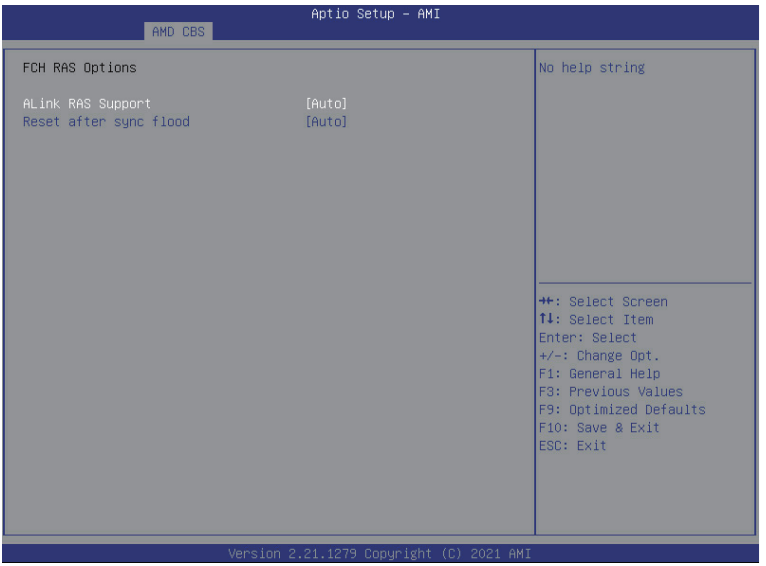
Parameter	Description
FCH Common Options	
AC Power Loss Options	Press [Enter] for configuration of advanced items.
FCH RAS Options	Press [Enter] for configuration of advanced items.
Miscellaneous Options	Press [Enter] for configuration of advanced items.

5-3-5-1 AC Power Loss Options



Parameter	Description
AC Power Loss Options	
AC Loss Control	Selects the AC Loss Control Method. Options available: Power Off, Power On, Last State. Default setting is **Power off**.

5-3-5-2 FCH RAS Options

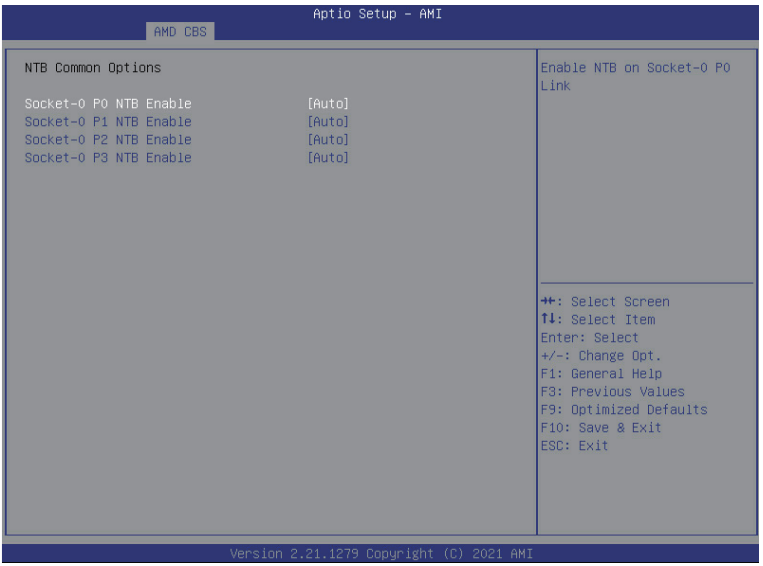


Parameter	Description
FCH RAS Options	
ALink RAS Support	Enable/Disable the ALink RAS Support. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Reset after sync flood	Enables AB to forward downstream sync-flood message to system controller. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-3-5-3 Miscellaneous Options

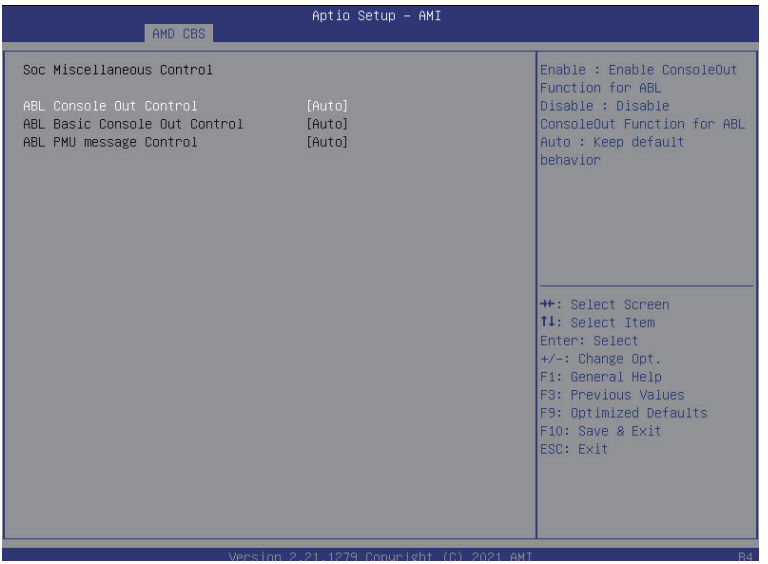
Parameter	Description
Miscellaneous Options	
Boot Time Enable	Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-3-6 NTB Common Options



Parameter	Description
NTB Common Options	
Socket-0 P0 NTB Enable	Options available: Auto/Enable. Default setting is **Auto**.
Socket-0 P1 NTB Enable	Options available: Auto/Enable. Default setting is **Auto**.
Socket-0 P2 NTB Enable	Options available: Auto/Enable. Default setting is **Auto**.
Socket-0 P3 NTB Enable	Options available: Auto/Enable. Default setting is **Auto**.

5-3-7 SOC Miscellaneous Control



Parameter	Description
SOC Miscellaneous Control	
ABL Console Out Control	Enable/Disable the ConsoleOut function for ABL. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
ABL PMU message Control(Note)	To Control the total number of PMU debug messages. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

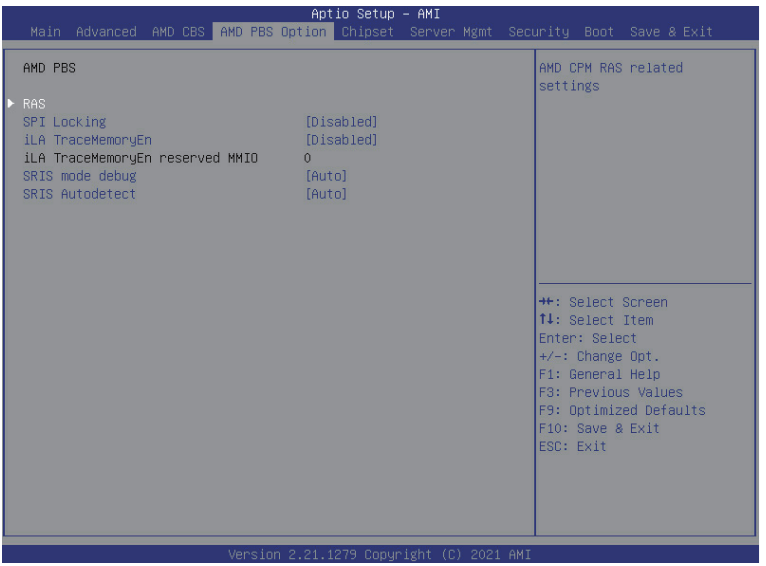
(Note) This item appears when **ABL Console Out Control** is set to **Enabled**.

5-3-8 Workload Tuning

Parameter	Description
Workload Tuning	
Workload Profile	Select the profile for different workloads. Default setting is **Auto**.
Performance Tracing	Enable to allow capturing performance traces. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.

5-4 AMD PBS Menu

AMD PBS Option menu displays submenu options for configuring the function of AMD PBS. Select a submenu item, then press [Enter] to access the related submenu screen.



Parameter	Description
RAS	Press [Enter] for configuration of advanced items.
SPI Locking	Enable/Disable SPI Locking for protect ROM part. Options available: Enabled/Disabled. Default setting is **Disabled**.
iLA TraceMemoryEn	Reserved 1M bytes MMIO space on 1M boundary when iLA TraceMemoryEn disabled. Options available: Enabled/Disabled. Default setting is **Disabled**.
iLA TraceMemoryEn reserved MMIO	Reserved function.
SRIS mode debug	Control SRIS mode debug. Options available: Auto/Enabled/Disabled. Default setting is **Auto**.
SRIS Autodetect	Control SRIS Autodetect. Options available: Auto/Enabled/Disabled. Default setting is **Auto**.

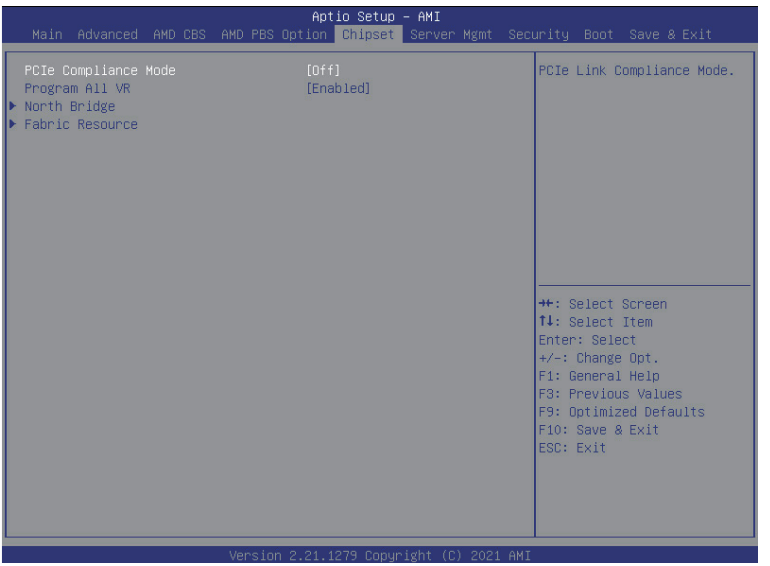
5-4-1 RAS

Parameter	Description
RAS Periodic SMI Control	Enable/Disable the Periodic SMI for polling [MCA Threshold] error. Options available: Enabled/Disabled. Default setting is **Enabled**.
SMI Threshold	Configures the SMI Threshold value.
SMI Scale	Configures the SMI Scale value.
SMI Scale Unit	Defines the unit of time scale. Options available: millisecond, second, minute. Default setting is **millsecond**.
SMI Period	Configures the SMI Period.
GHES Notify Type	Selects the Notification type for deferred/ corrected errors. Options available: Polled/SCI. Default setting is **Polled**.
GHES UnCorr Notify Type	Selects the Notification type for uncorrected errors. Options available: Polled/NMI. Default setting is **NMI**.
PCIe GHES Notify Type	Selects the Notification type for PCIe corrected errors. Options available: Polled/SCI. Default setting is **Polled**.
PCIe UnCorr GHES Notify Type	Selects the Notification type for PCIe uncorrected errors. Options available: Polled/NMI. Default setting is **NMI**.
PCIe Root Port Corr Err Mask Reg	Initialize the PCIe AER Corrected Error Mask register of Root Port.

Parameter	Description
PCIe Root Port UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of Root Port.
PCIe Root Port UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Serverity register of Root Port.
PCIe Device Corr Err Mask Reg	Initialize the PCIe AER Corrected Error Mask register of PCIe device.
PCIe Device UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of PCIe device.
PCIe Device UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Serverity register of PCIe device.
CCIX GHES Deferred ERR Notify Type	Selects the Notification type for CCIX deffered error. Options available: Polled/SCI. Default setting is **Polled**.
CCIX GHES Corrected Err Notify Type	Selects the Notification type for CCIX corrected error. Options available: Polled/SCI. Default setting is **Polled**.
DDR4 DRAM Hard Post Package Repair	This feature allows spare DRAM rows to replace malfunctioning rows via an in-field repair mechanism. Options available: Enabled/Disabled. Default setting is **Disabled**.
HEST DMC Structure Support	HEST DMC (Deferred Machine Check) Structure Support. Options available: Enabled/Disabled. Default setting is **Disabled**.
RAS EINJ Mode	BIOS: Send APEI EINJ actions to PSP via CPM EINJSMI callback; PSP: Send APEI EINJ actions to RSP via PSP Mailbox. Option available: BIOS, PSP. Default setting is **PSP**.

5-5 Chipset Setup Menu

Chipset Setup menu displays submenu options for configuring the function of the North Bridge. Select a submenu item, then press <Enter> to access the related submenu screen.

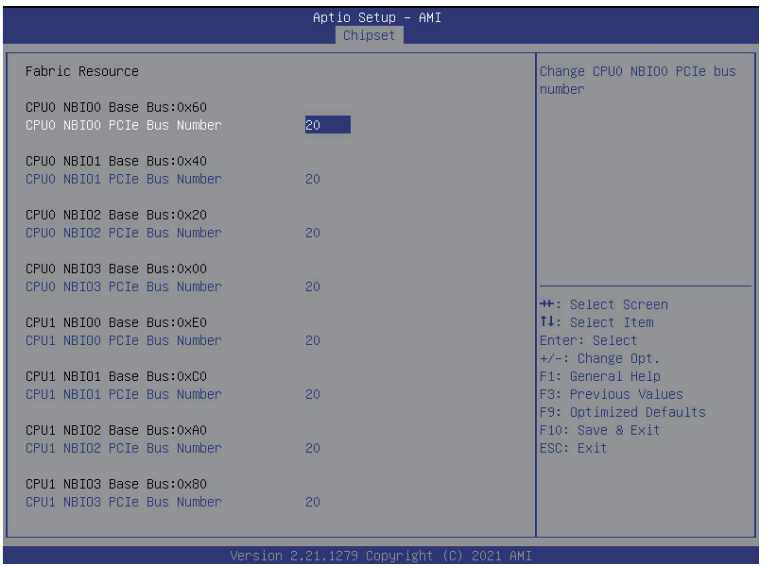


Parameter	Description
PCIe Compliance Mode	Options available: On/Off. Default setting is **Off.**
Program All VR	Enable/Disable program all VR on MB. Options available: Enabled/Disabled. Default setting is **Enabled**.
North Bridge	Press [Enter] for configuration of advanced items.
Fabric Resource	Press [Enter] for configuration of advanced items.

5-5-1 North Bridge

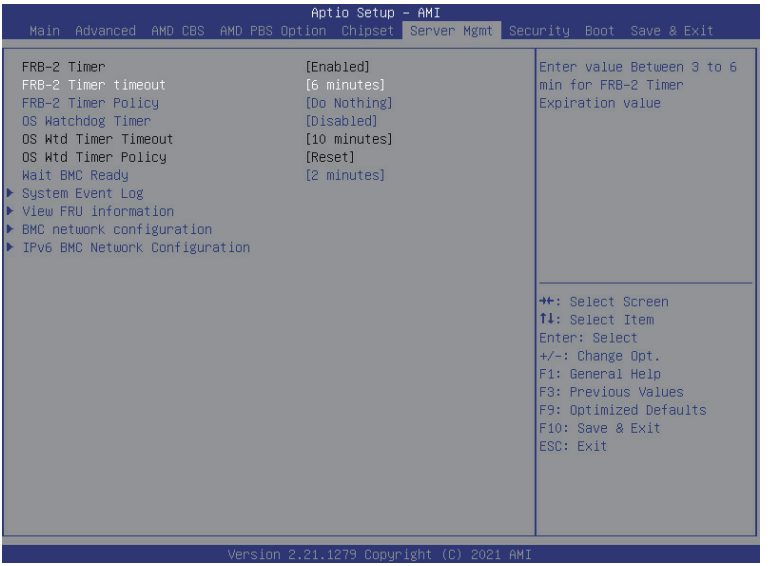
Parameter	Description
North Bridge Configuration Memory Information	
Total Memory	Displays the total memory information.
CPU0 Information	Press [Enter] to view information related to CPU 0.
CPU1 Information	Press [Enter] to view information related to CPU 1.

5-5-2 Fabric Resource



Parameter	Description
Fabric Resource	
Socket 0/1 NBIO_# PCIe Bus Number	Change Socket 0/1 NBIO_# PCIe Bus Number.

5-6 Server Management Menu



Parameter	Description
FRB-2 Timer	Display the FRB-2 Timer staus. This item is not configurable.
FRB-2 Timer timeout	Configures the FRB2 Timer timeout. Options available: 3 minutes, 4 minutes, 5 minutes, 6 minutes. Default setting is **6 minutes**.
FRB-2 Timer Policy	Configures the FRB2 Timer policy. Options available: Do Nothing, Reset, Power Down, Power Cycle. Default setting is **Do Nothing**.
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. Options available: 5 minutes, 10 minutes, 15 minutes, 20 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. Default setting is **Reset**. **Please note that this item is configurable when OS Watchdog Timer is set to Enabled.**

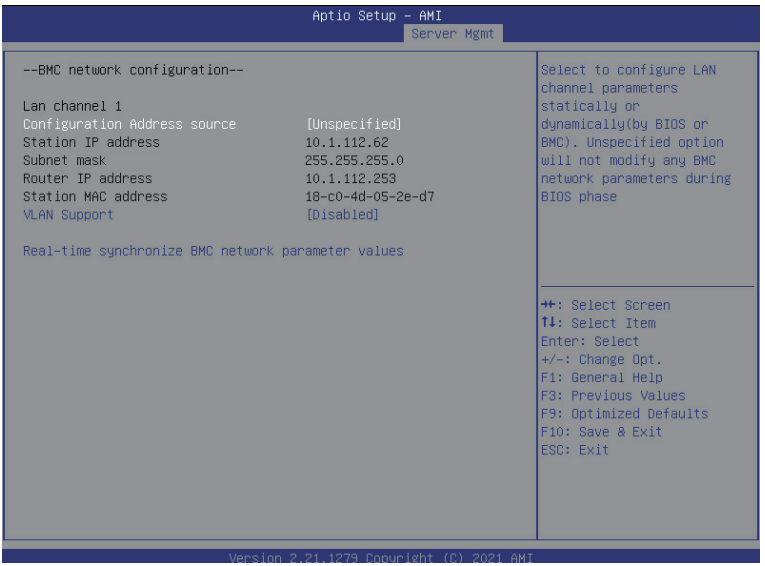
Parameter	Description
Wait BMC Ready	POST wait BMC ready and reboot system. Options available: Disabled/2 minutes/4 minutes/6 minutes. Default setting is **2 minutes**.
System Event Log	Press [Enter] to configure advanced items.
View FRU Information	Press [Enter] to view the FRU information.
BMC network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

5-6-1 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. 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 and Progress code. Default setting is **Error code**.

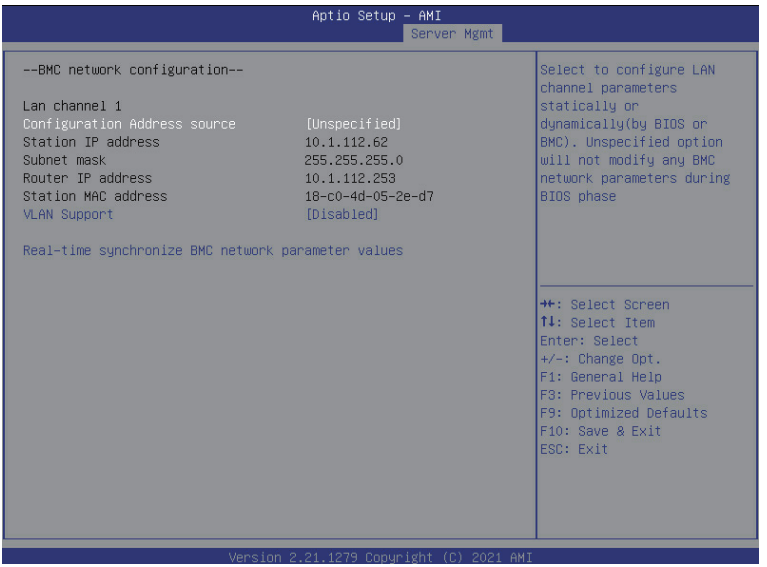
5-6-2 View FRU Information

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.



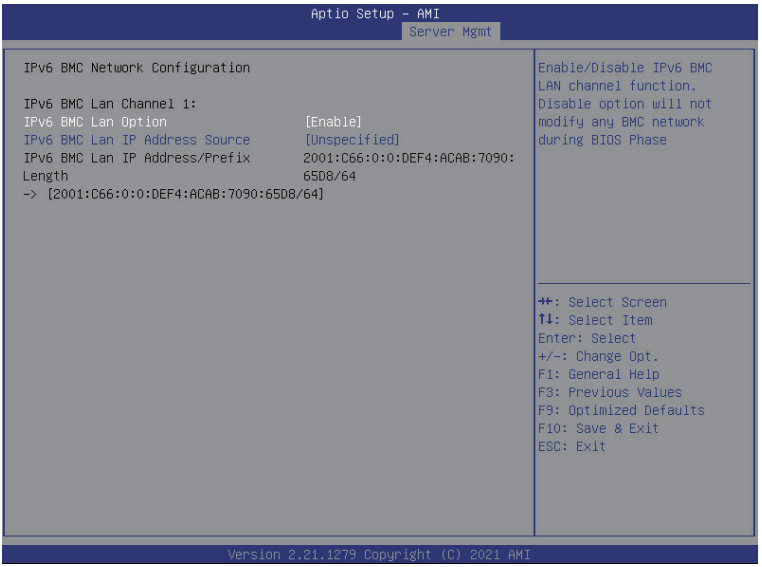
(Note) The model name will vary depends on the product you purchased

5-6-3 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. 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.
VLAN Support	Set to BMC enabled/diisabled VLAN. Options available: Enabled, Disabled. Default setting is **Disabled**.
Real-time get BMC network address	Press [Enter] will set LAN mode and Address source and then get IP, Subnet, Gateway and MAC address.

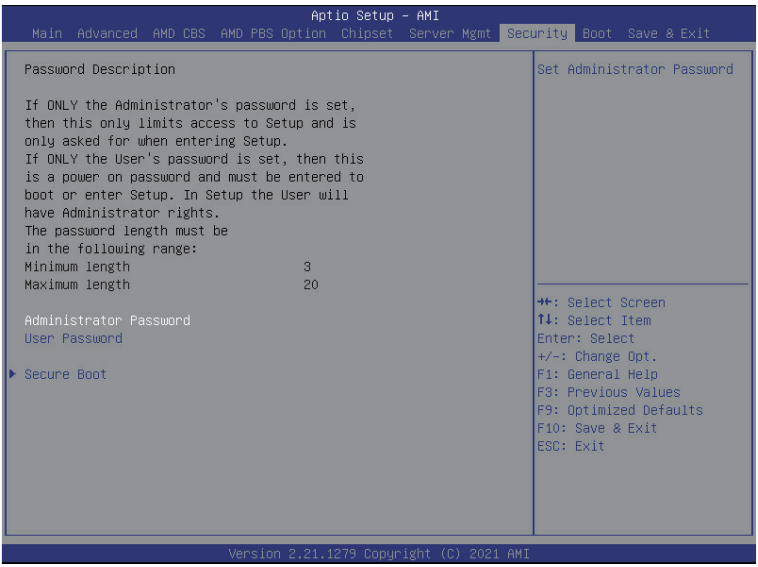
5-6-4 IPv6 BMC Network Configuration



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.

5-7 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.

5-7-1 Secure Boot

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

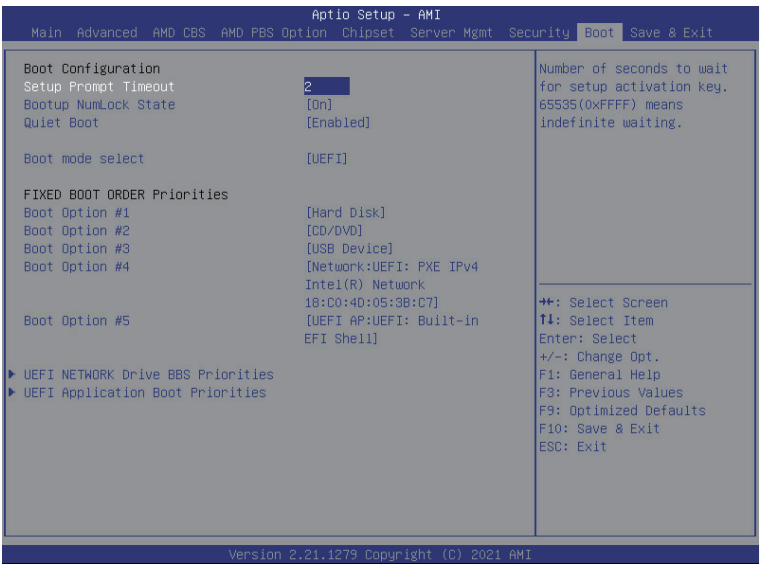
Parameter	Description
System Mode	Displays if the system is in User mode or Setup mode.
Secure Boot	Enable/ Disable the Secure Boot function. Options avaiable:Enabled/Disabled. Default setting is **Disabled**.
Secure Boot Mode(Note)	Secure Boot requires all the applications that are running during the 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 factury default Secure Boot key database.
Reset to Setup Mode(Note)	
Enter Audit Mode	Enter Audit Mode workflow. Transitions from User to Audit. Mode will result in erasing of PK variable.

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

Parameter	Description
Key Management	Press [Enter] to configure advanced items. **Please note that this item is configurable when Secure Boot Mode is set to Custom.** ◆ Factory Key Provision – Allows to provision factory default Secure Boot keys when system is in Setup Mode. – Options available: Enabled/Disabled. Default setting is **Disabled**. ◆ Restore Factory Keys – Installs all factory default keys. It will force the system in User Mode. – Options available: Yes/No. ◆ Enroll Efi Image – Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (db). ◆ Restore DB defaults – Restore DB variable to factory defaults. ◆ Secure Boot variable – Displays the current status of the variables used for secure boot. ◆ Platform Key (PK) – Displays the current status of the Platform Key (PK). – Press [Enter] to configure a new PK. – Options available: Set New. ◆ Key Exchange Keys (KEK) – Displays the current status of the Key Exchange Key Database (KEK). – Press [Enter] to configure a new KEK or load additional KEK from storage devices. – Options available: Set New/Append. ◆ Authorized Signatures (DB) – Displays the current status of the Authorized Signature Database. – Press [Enter] to configure a new DB or load additional DB from storage devices. – Options available: Set New/Append. ◆ Forbidden Signatures (DBX) – Displays the current status of the Forbidden Signature Database. – Press [Enter] to configure a new dbx or load additional dbx from storage devices. – Options available: Set New/Append. ◆ Authorized TimeStamps (DBT) – Displays the current status of the Authorized TimeStamps Database. – Press [Enter] to configure a new DBT or load additional DBT from storage devices. – Options available: Set New/Append. ◆ OsRecovery Signatures – Displays the current status of the OsRecovery Signature Database. – Press [Enter] to configure a new OsRecovery Signature or load additional OsRecovery Signature from storage devices. – Options available: Set New/Append.

5-8 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.

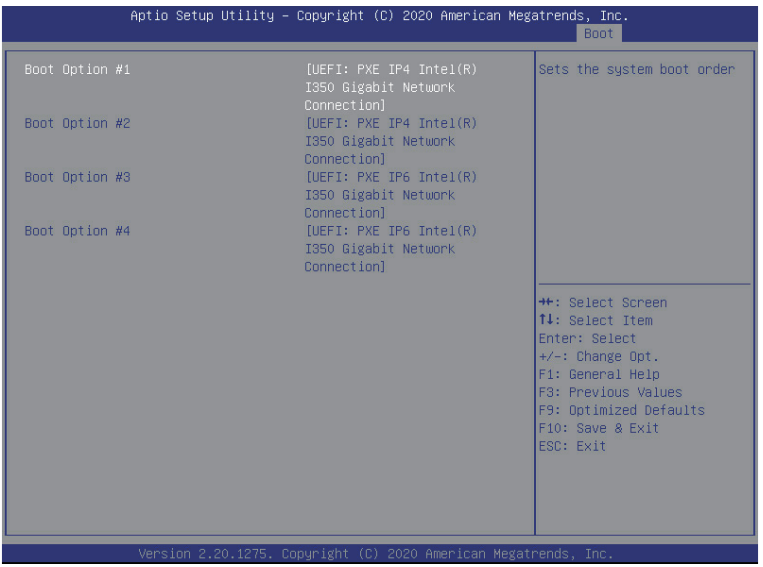


Parameter	Description
Boot Configuration	
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function. Options available: On/Off. Default setting is **Off**.
Quiet Boot	Enable/Disable showing the logo during POST. Options available: Enabled/Disabled. Default setting is **Enabled**.
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	Press [Enter] to configure the boot priority. By default, the server searches for boot devices in the following sequence: 1. Hard drive. 2. CD-COM/DVD drive. 3. USB device. 4. Network. 5. UEFI.
UEFI Network Drive BBS Priorities	Press [Enter] to configure the boot priority.
UEFI Application Boot Priorities	Press [Enter] to configure the boot priority.

5-8-1 UEFI NETWORK Drive BBS Priorities

The UEFI network drive BBS priorities submenu allows you to specify the boot device priority from the available UEFI network drives during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.



5-8-2 UEFI Application Boot Priorities

The UEFI application boot priorities submenu allows you to specify the boot device priority from the available UEFI applications during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

5-9 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	Saves changes done so far to any of the setup options. Options available: Yes/No.
Default Options	
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.
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 filesystem devices.

5-10 BIOS POST Beep code (AMI standard)

5-10-1 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

5-10-2 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

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