GIGABYTE™

H223-V10-AAW1

HPC/AI Arm Server
NVIDIA Grace Hopper Superchip
2U 2-Node 8-Bay Gen5 NVMe

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! Pieces of additional information related to the current topic.
	CAUTION! Precautionary measures to avoid possible hardware or software problems.
	WARNING! Alerts to any damage that might result from doing or not doing specific actions.

Server Warnings and Cautions

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

WARNING!

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

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.

- Shock Hazard! Disconnect all power supply cords before servicing.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

WARNING!

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

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

This equipment is intended to be used in Restrict Access Location. The access can only be gained by Skilled person. Only authorized by well trained professional person can access the restrict access location.

•

This equipment is not intended for use by children.

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.

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.

Warning Stability hazard

The slide-rail may tip over causing serious personal injury

- Before extending the rack to its installation position, read the installation instructions.
- Do not put any load on the slide-rail mounted equipment in the installation position.
- Do not leave the slide-rail mounted equipment in the installation position.

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 touching any components or connectors. After removing a board from its protective ESD bag 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 ESD bag. Do not slide the board over any surface.

System power on/off: To service components within the server, please ensure the power has been disconnected.
e.g. Remove the node from the server chassis (to disconnect power) or disconnect the power from the server chassis.
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 chassis and disconnect the cables attached to the system before servicing the chassis. 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 sensi-tive 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 fin-gertips 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.

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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:

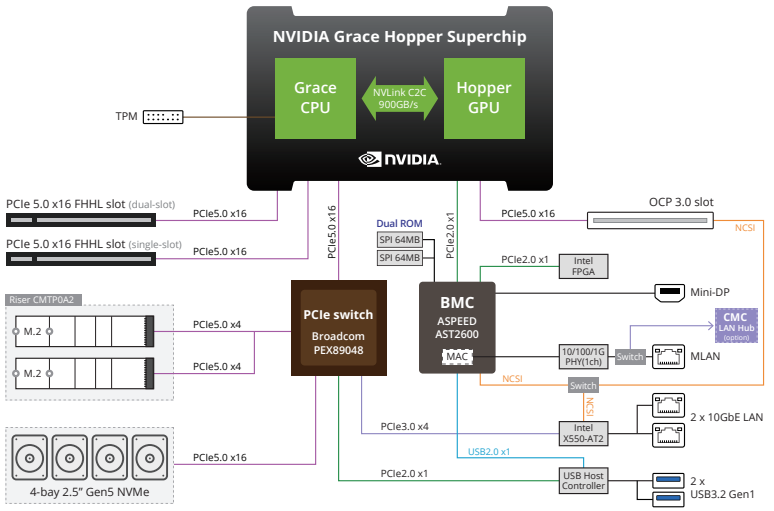
We reserve the right to make any changes to the product specifications and product-related information without prior notice.

System Dimension	◆ 2U 2-Node - Rear access ◆ 440 (W) x 87.5 (H) x 850 (D) mm
Superchip	**Per Node:** NVIDIA GH200 Grace Hopper Superchip: ◆ 1 x NVIDIA Grace™ CPU ◆ 1 x NVIDIA Hopper™ GPU ◆ Connected with NVIDIA® NVLink®-C2C ◆ TDP up to 1000W (CPU + GPU + memory)
Memory	**Per Node:** NVIDIAGrace CPU: ◆ 480GB of LPDDR5X memory with ECC ◆ Memory bandwidth up to 512GB/s NVIDIA Hopper GPU: ◆ 96GB HBM3 [1] ◆ Memory bandwidth up to 4TB/s [1] [1] Modules with 144GB of HBM3e GPU memory and 4.9TB/s memory bandwidth are also available. Please contact our sales representatives for more details.
LAN	**Rear:** 4 x 10Gb/s LAN (2 x Intel® X550-AT2) ◆ Support NCSI function ◆ 2 x 10/100/1000 Mbps Management LAN ◆ 1 x CMC Management LAN
Video	◆ Integrated in ASPEED® AST2600 x 2 ◆ 2 x Mini-DP

Storage	**Front hot-swap:** ◆ 8 x 2.5" Gen5 NVMe **Internal M.2:** ◆ 4 x M.2 (2280/22110), PCIe Gen5 x4, from PEX89048
Expansion Slots	**PCIe Cable x 4:** ◆ 2 x FHHL x16 (Gen5 x16), Dual slot [1] ◆ 2 x FHHL x16 (Gen5 x16), Single slot 2 x OCP NIC 3.0 (Gen5 x16) Support NCSI function [1] When BlueField-3 DPUs are installed, the ambient temperature is limited to 25°C
Front I/O	◆ 2 x Power buttons with LED ◆ 2 x ID buttons with LED ◆ 2 x Reset buttons ◆ 2 x System status LEDs ◆ 1 x CMC status LED ◆ 1 x CMC reset button
Rear I/O	◆ 4 x USB 3.2 Gen1 ports (Type-A) ◆ 2 x Mini-DP ◆ 4 x RJ45 ports ◆ 2 x MLAN ports ◆ 2 x ID LEDs ◆ 1 x CMC port
Backplane Board	◆ Speed and bandwidth: ◆ PCIe Gen5 x4
Security Modules	1 x TPM header with SPI interface ◆ **Optional** TPM2.0 kit: CTM012
Power Supply	◆ 2+1 3000W 80 PLUS Titanium redundant power supplies [1] AC Input: ◆ 100-240V~ [1] The system power supply requires C19 power cord [Note] Please refer to GIGABYTE Website for detail power supply specification.

	System Management	◆ ASPEED® AST2600 Baseboard Management Controller ◆ ASPEED® AST2520 Chassis Management Controller ◆ GIGABYTE Management Console web interface ◆ Dashboard ◆ 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 ◆ Advanced power capping ◆ 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	◆ Operating temperature: 10°C to 35°C ◆ Operating humidity: 8-80% (non-condensing) ◆ Non-operating temperature: -40°C to 60°C ◆ Non-operating humidity: 20%-95% (non-condensing)

1-3 System Block Diagram



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

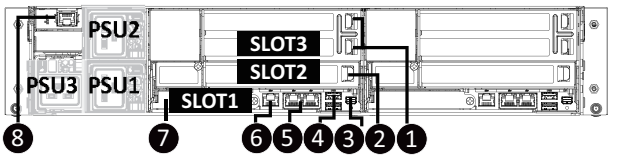
Chapter 2 System Appearance

2-1 Front View

No.	Decription
1.	Front Panel LEDs and buttons

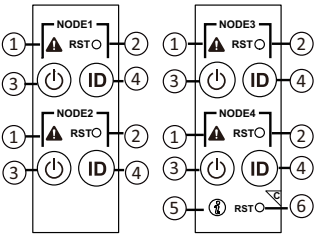
- **Please Go to Chapter 2-3 Front Panel LED and Buttons for detail description of function LEDs.**

2-2 Rear View



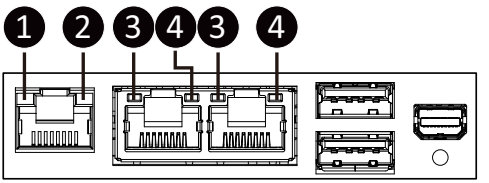
No.	Decription
1.	Full-Height Dual Slot
2.	Full-Height Single Slot
3.	Mini DP Port
4.	2 x USB 3.2 Gen1
5.	2 x 1GbE LAN Port
6.	BMC Server Management LAN Port
7.	OCP 3.0 Slot (SFF Type)
8.	CMC LAN Port

2-3 Front Panel LED and Buttons



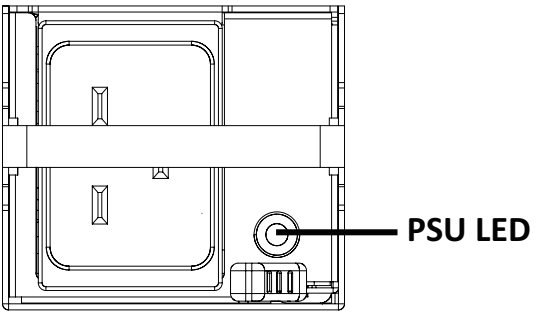
No.	Name	Color	Status	Description
1.	System Status LED	Green	Solid On	System is operating normally.
		Amber	Solid On	Critical condition, may indicate: System fan failure System temperature
			Blink	Non-critical condition, may indicate: Redundant power module failure Temperature and voltage issue Chassis intrusion
		N/A	Off	System is not ready, may indicate: POST error NMI error Processor or terminator missing
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	Blue	On	System identification is active.
		N/A	Off	System identification is disabled.
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 Rear System LAN LEDs



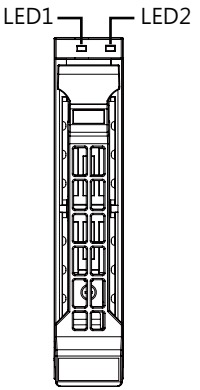
No.	Name	Color	Status	Description
1.	1GbE Speed LED	Yellow	On	1Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1GbE Link/ Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or receiving is occurring
		N/A	Off	No data transmission or receiving is occurring
3.	1GbE Speed LED	Yellow	On	10Gbps data rate
		Green	On	1Gbps data rate
		N/A	Off	100 Mbps data rate
4.	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

2-5 Power Supply Unit LED



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

2-6 Hard Disk Drive LEDs



LED #1	HDD Present	HDD Access	No HDD
Green	ON	BLINK (*1)	OFF

LED #2	HDD Locate	Fault
Green	BLINK (*1)	OFF
Yellow	OFF	ON

NOTE:

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

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.

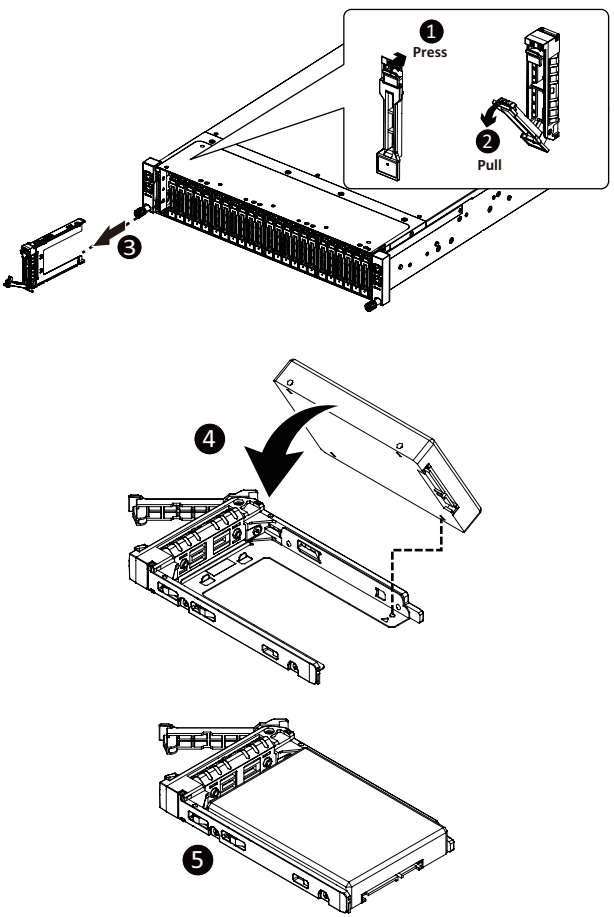
3-1 Installing the Hard Disk Drive

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.



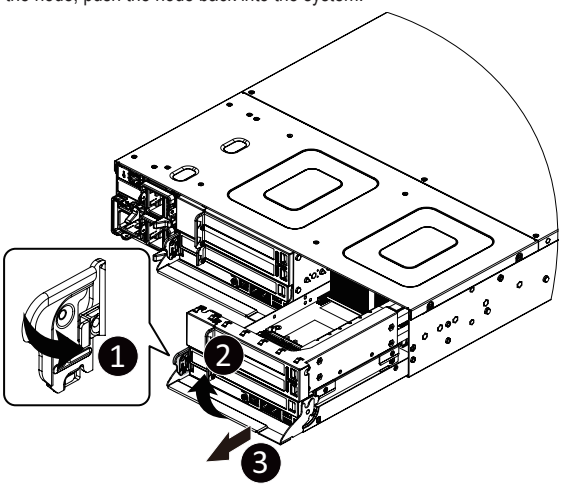
3-2 Removing the Node

Read the following guidelines before you begin to replace a node:

- **To make sure the system operates normally, please power off only the node that will be replaced or reconfigured.**

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.



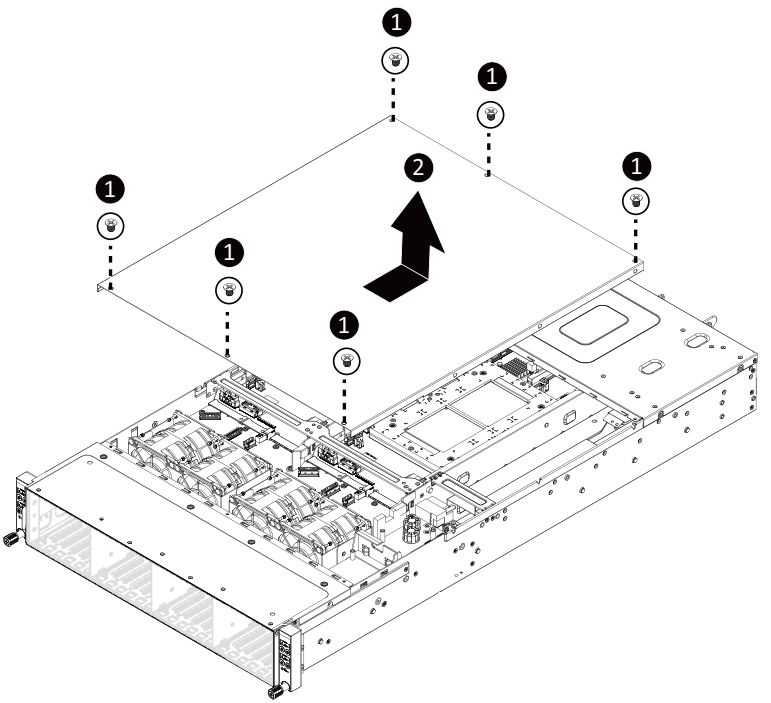
3-3 Removing Chassis Cover

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.

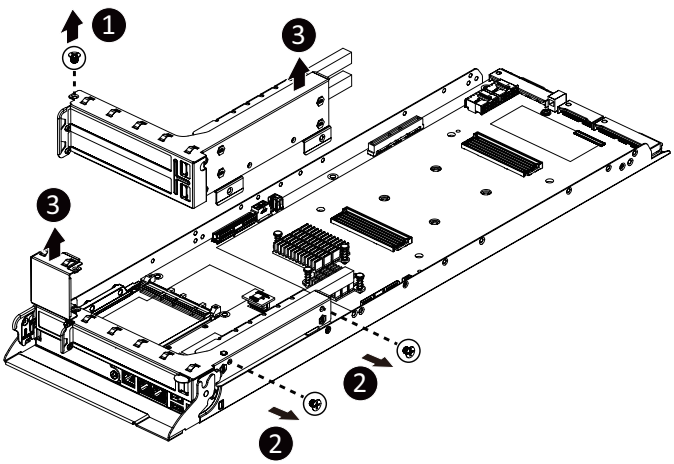


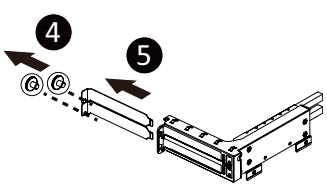
3-4 Installing the PCI Expansion Card

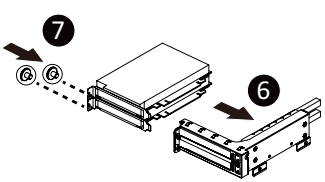
- **The PCI riser assembly does not include a riser card or any cabling as standard. To install a PCI card, a riser card must be installed.**

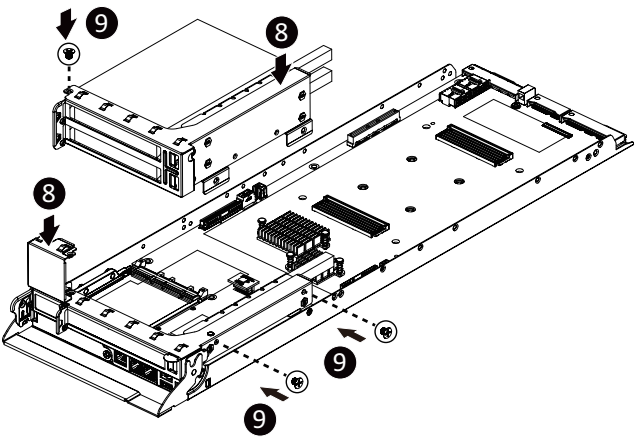
Follow these instructions to install the PCI Expansion card:

1. Remove the screw on the riser bracket.
2. Remove the three screws at the two side of the compute node.
3. Lift up the riser bracket and the coolant pipe bracket out of compute node.
4. Remove the screw securing the side bracket to the riser bracket.
5. Align the PCIe 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 PCIe card with a screw.
7. Secure the side bracket to the riser bracket with a screw.
8. Reverse steps 1 - 4 to install the riser bracket and the coolant pipe bracket back into the system.





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3-5 Installing the Mezzanine Card

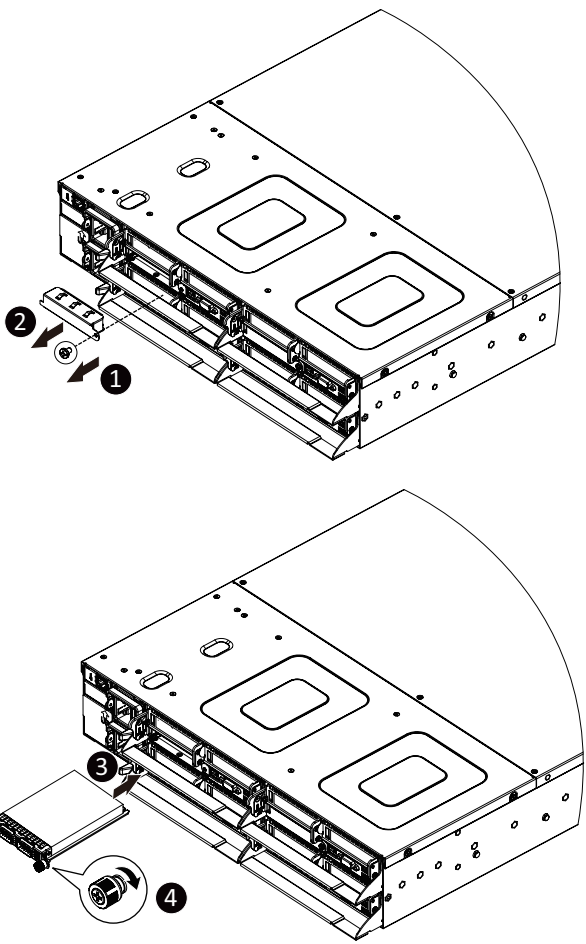
3-5-1 Installing the OCP 3.0 Mezzanine Card

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.



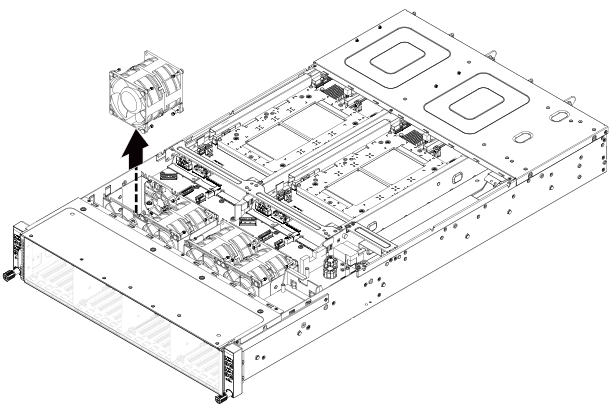
3-6 Replacing the Fan Assembly

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

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

Follow these instructions to replace the fan assembly:

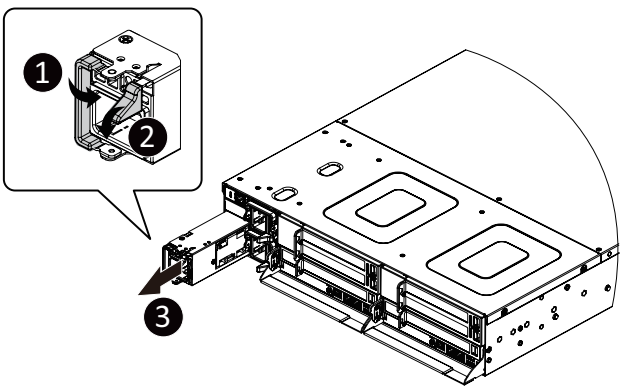
1. Lift up the fan assembly from the chassis.
2. Reverse the previous steps to install the replacement fan assembly.



3-7 Replacing the Power Supply

Follow these instructions to replace the power supply:

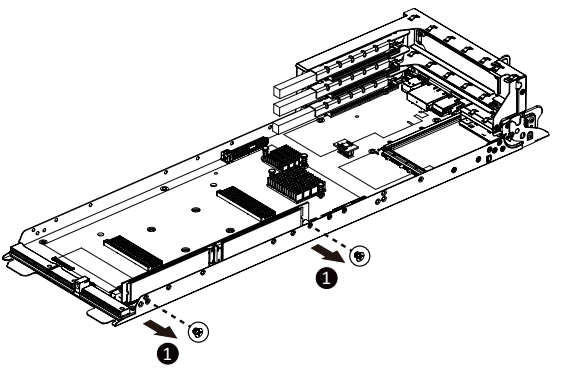
1. Pull up the power supply handle and press the retaining clip on the right side of the power supply along the direction of the arrow. At the same time, pull out the power supply by using its handle.
2. Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement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

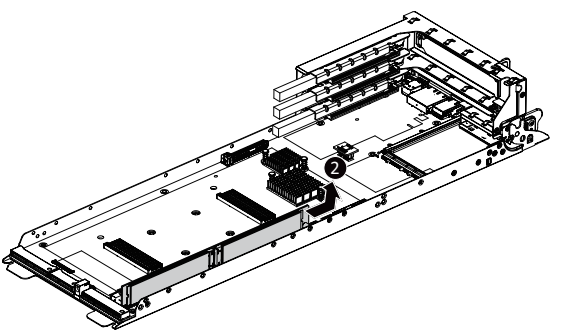


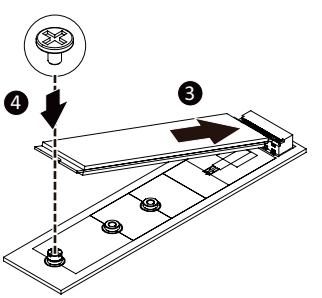
3-8 Installing the M.2 Device

Follow these instructions to install the M.2 device:

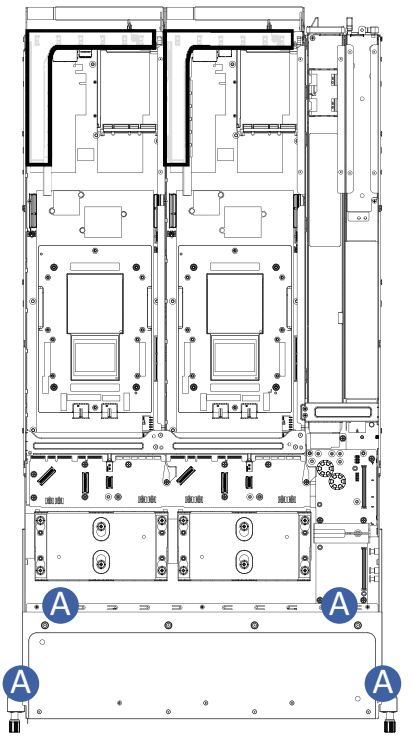
1. Remove the screws securing the M.2 riser.
2. Remove the M.2 riser from the system.
3. Insert the M.2 SSD module into the slot.
4. Secure it with the screw, tightening as necessary to fasten the M.2 SSD module in place.



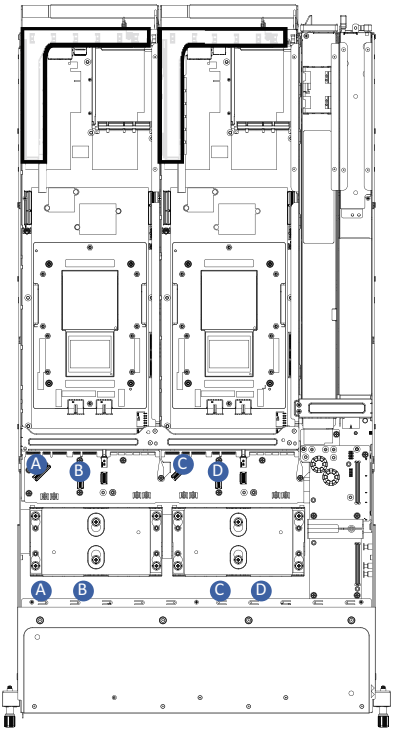




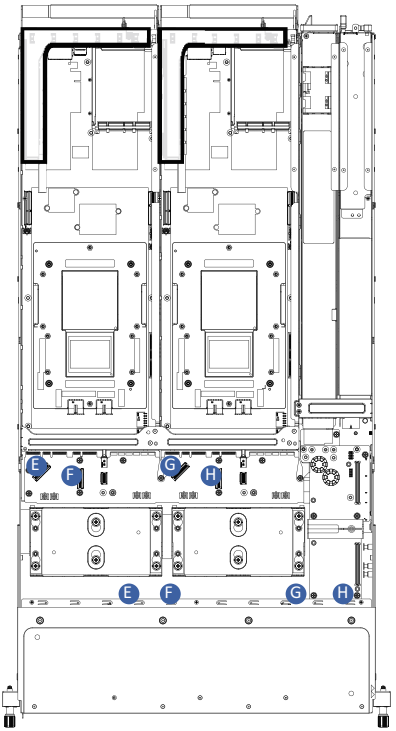
3-9 Cable Routing



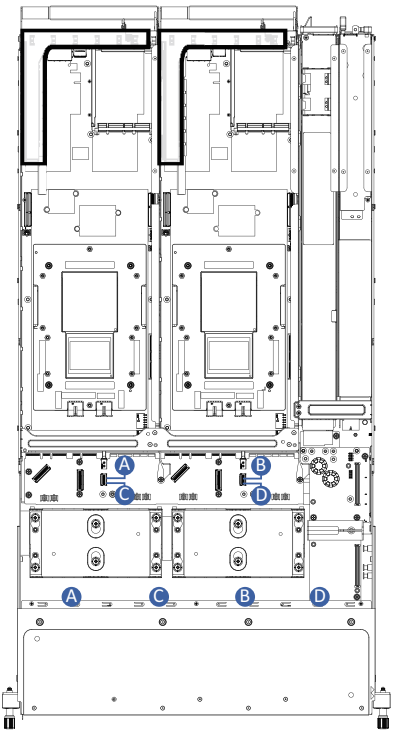
A	Front Panel LEDs and Buttons Cable	Motherboard: FP_1 Front IO Board: FP_1	
		Front IO Board: FP_1	



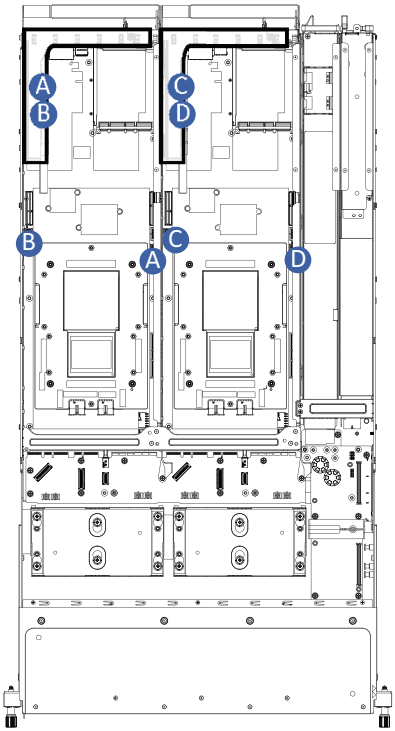
A	Top Middle Board to HDD Back Plane Board Cable (NVMe/Node1)	Middle Board: N1_U2_B
		Front HDD Board: N1 U.2 A
B	Top Middle Board to HDD Back Plane Board Cable (NVMe/Node1)	Middle Board: N1_U2_A
		Front HDD Board: N1 U.2 B
C	Top Middle Board to HDD Back Plane Board Cable (NVMe/Node3)	Middle Board: N3_U2_B
		Front HDD Board: N3 U.2 A
D	Top Middle Board to HDD Back Plane Board Cable (NVMe/Node3)	Middle Board: N3_U2_A
		Front HDD Board: N3 U.2 B



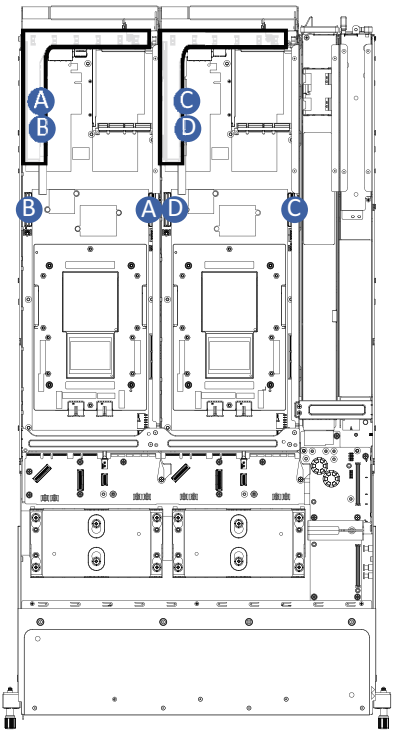
E	Bottom Middle Board to HDD Back Plane Board Cable (NVMe/Node2)	Middle Board: N2_U2_B
		Front HDD Board: N2 U.2 A
F	Bottom Middle Board to HDD Back Plane Board Cable (NVMe/Node2)	Middle Board: N1_U2_A
		Front HDD Board: N2 U.2 B
G	Bottom Middle Board to HDD Back Plane Board Cable (NVMe/Node4)	Middle Board: N4_U2_B
		Front HDD Board: N4 U.2 A
H	Bottom Middle Board to HDD Back Plane Board Cable (NVMe/Node4)	Middle Board: N1_U2_A
		Front HDD Board: N4 U.2 B



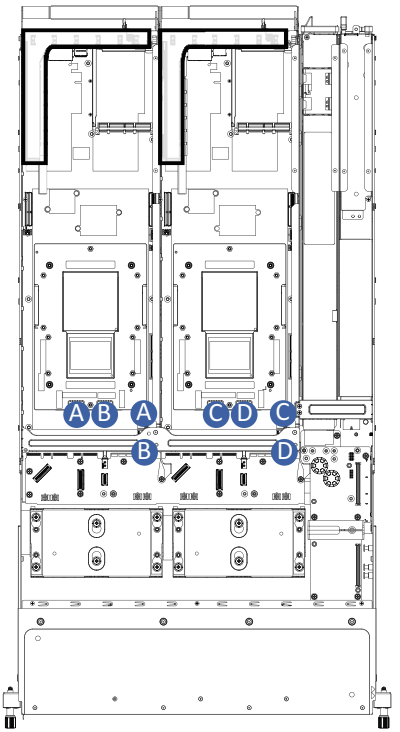
A	Top Middle Board to HDD Back Plane Board Signal Cable	Middle Board: N1_SATA
		Front HDD Board: N1 SATA
B	Top Middle Board to HDD Back Plane Board Signal Cable	Middle Board: N3_SATA
		Front HDD Board: N3 SATA
C	Bottom Middle Board to HDD Back Plane Board Signal Cable	Middle Board: N2_SATA
		Front HDD Board: N2 SATA
D	Bottom Middle Board to HDD Back Plane Board Signal Cable	Middle Board: N4_SATA
		Front HDD Board: N4 SATA



A	PCIe Riser Power Cable	Motherboard: AIC_PWR1
		Riser: Cable
B		Motherboard: AIC_PWR0
		Riser: Cable
C		Motherboard: AIC_PWR1
		Riser: Cable
D		Motherboard: AIC_PWR0
		Riser: Cable



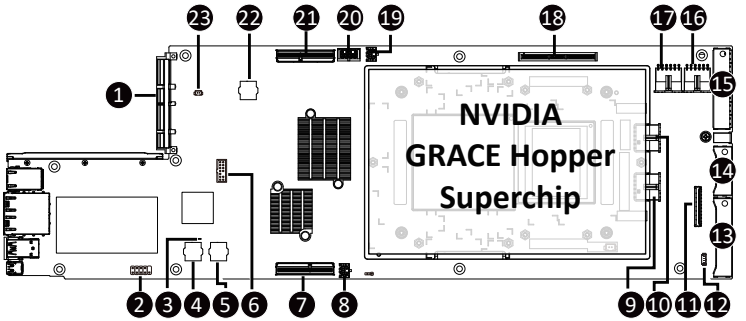
A	PCIe Riser Signal Cable (Top Node)	Riser: Cable
		Motherboard: U2_P0_PE1
B	PCIe Riser Signal Cable (Bottom Node)	Riser: Cable
		Motherboard: U2_P0_PE0
C	PCIe Riser Signal Cable (Top Node)	Riser: Cable
		Motherboard: U2_P0_PE1
D	PCIe Riser Signal Cable (Bottom Node)	Riser: Cable
		Motherboard: U2_P0_PE0



A	CG1 Module Power Cable	CG1 Module: --
		Motherboard: 12VHPWR1
B		CG1 Module: --
		Motherboard: 12VHPWR0
C		CG1 Module: --
		Motherboard: 12VHPWR1
D		CG1 Module: --
		Motherboard: 12VHPWR0

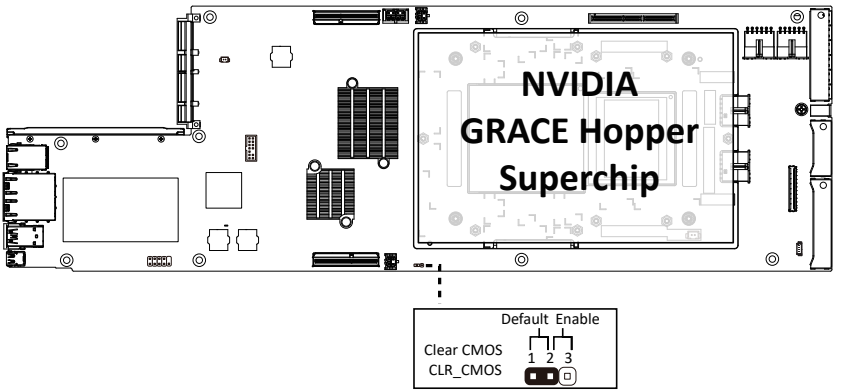
Chapter 4 Motherboard Components

4-1 Motherboard Components



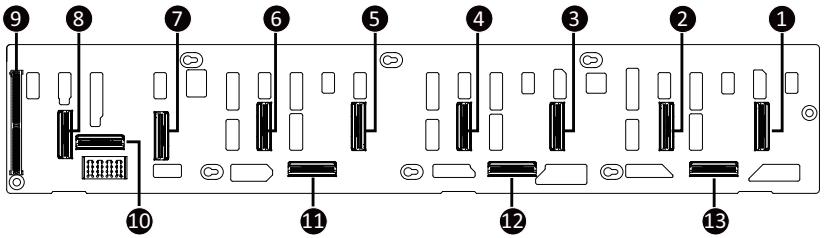
Item	Description
1	OCP 3.0 Connector (PCIe Gen5 x16)
2	Serial Cable Connector
3	BMC Readiness LED
4	BMC Flash ROM #1
5	BMC Flash ROM #2
6	TPM Module Connector
7	MCIO Connector (U2_P0_PE2/PCIe Gen5)
8	PCIe Power Connector (AIC_PWR_0)
9	Power Connector for GH Superchip
10	Power Connector for GH Superchip
11	CABLINE-CA II PLUS Connector (U2_1)
12	PSOUT Connector
13	PCIe/NVMe Connector (CA_1_2)
14	PCIe/NVMe Connector (CA_1_1_GF_1_1)
15	Power Connector (PCON5/PCON4/PCON6/PCON2/PCON1/PCON3)
16	12V Power Connector (12VHPWR_0)
17	12V Power Connector (12VHPWR_1)
18	Proprietary PCIe Slot (Gen 5/ x16 slot/GENZ_0)
19	PCIe Power Connector (AIC_PWR_1)
20	2 x 4 Pin 12V Power Connector (P12V_S1)
21	MCIO Connector (U2_P0_PE1/PCIe Gen5)
22	SPI Flash ROM
23	System Battery Cable Connector

4-2 Jumper Setting



4-3 Backplane Board Storage Connector

4-3-1 CBPH7O1



Item	Description
1	SlimLine SAS Connector (N1 U.2 A)
2	SlimLine SAS Connector (N1 U.2 B)
3	SlimLine SAS Connector (N2 U.2 A)
4	SlimLine SAS Connector (N2 U.2 B)
5	SlimLine SAS Connector (N3 U.2 A)
6	SlimLine SAS Connector (N3 U.2 B)
7	SlimLine SAS Connector (N4 U.2 A)
8	SlimLine SAS Connector (N4 U.2 B)
9	Proprietary PCIe Slot (x8 slot/ GF_HDD)
10	SlimLine SAS Connector (N4 SATA)
11	SlimLine SAS Connector (N3 SATA)
12	SlimLine SAS Connector (N2 SATA)
13	SlimLine SAS Connector (N1 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.)
- **Chipset**
  This setup page includes all the submenu options for configuring the functions of the Platform Controller Hub.
- **Server Management**
  Server additional features enabled/disabled setup menus.
- **Security**
  Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.
  A supervisor password allows you to make changes in BIOS Setup.
  A user password only allows you to view the BIOS settings but not to make changes.
- **Boot**
  This setup page provides items for configuration of the boot sequence.
- **Save & Exit**
  Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)
  Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

5-1 The Main Menu

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

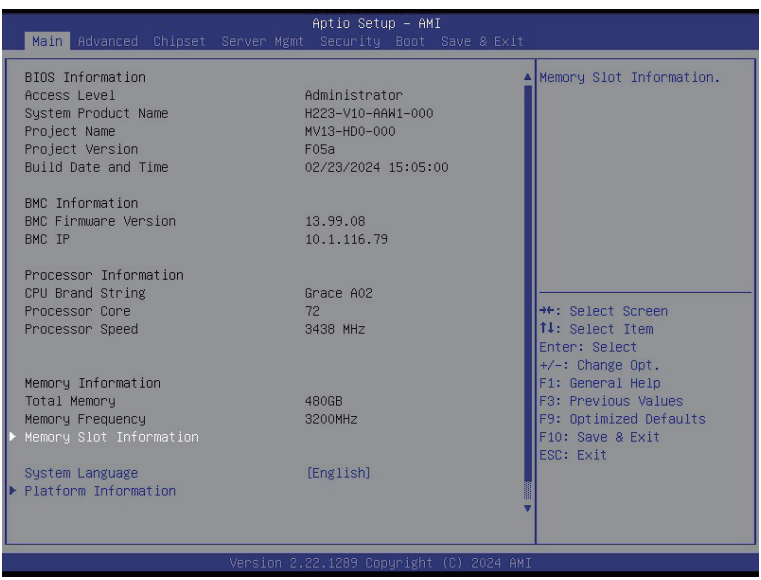
Main Menu Help

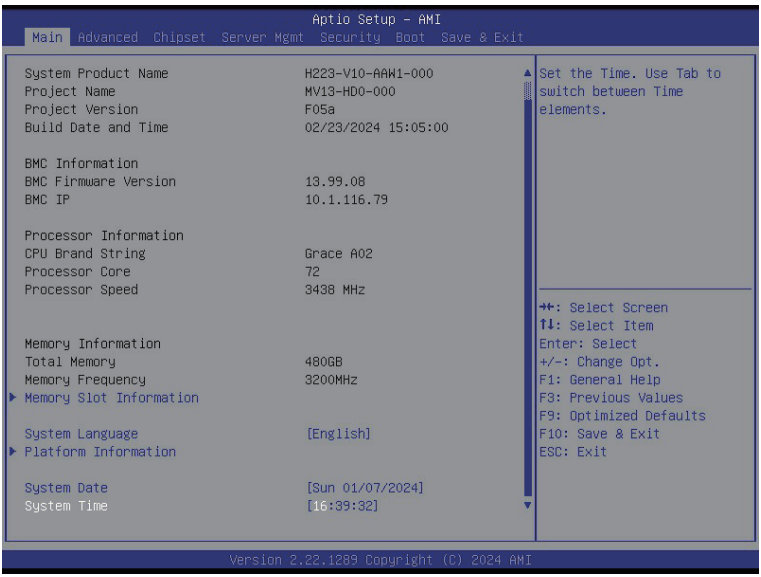
The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

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

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





Parameter	Description
BIOS Information	
Access Level	Displays the current access level depending on the type of password protection used. (If no password is set, the default will display as Administrator.) The Administrator level allows you to make changes to all BIOS settings; the User level only allows you to make changes to certain BIOS settings but not all.
System Product Name	Displays the system product name information.
Project Name	Displays the project name information.
Project Version	Displays version number of the BIOS setup utility.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
BMC Information(Note1)	
BMC Firmware Version(Note1)	Displays BMC firmware version information.
BMC IP	Displays BMC IP information.

(Note1) Functions available on selected models.

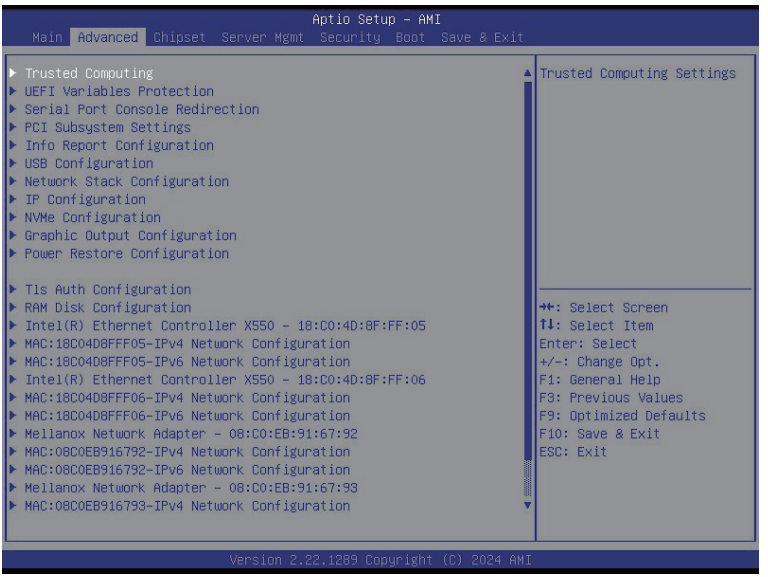
(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

Processor Information	
CPU Brand String/ Max CPU Speed	Displays the technical information for the installed processor(s).
Memory Information(Note2)	
Total Memory	Displays the total memory size of the installed memory.
Memory Frequency	Displays the installed memory frequency information.
Memory Slot Information	Press [Enter] for advanced items.
Memory Frequency	Displays the frequency information of the installed memory.
System Language	Press [Enter] to select preferred language.
Platform Information	Press [Enter] for advanced items.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

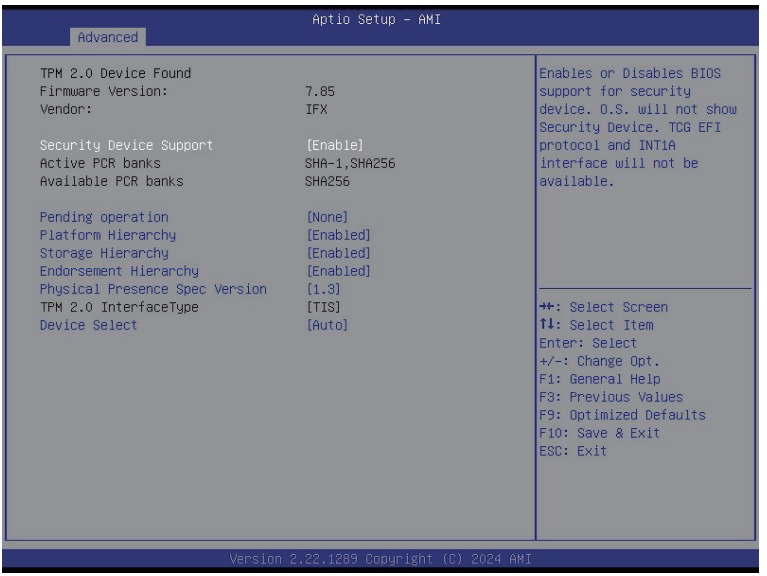
(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

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.



5-2-1 Trusted Computing

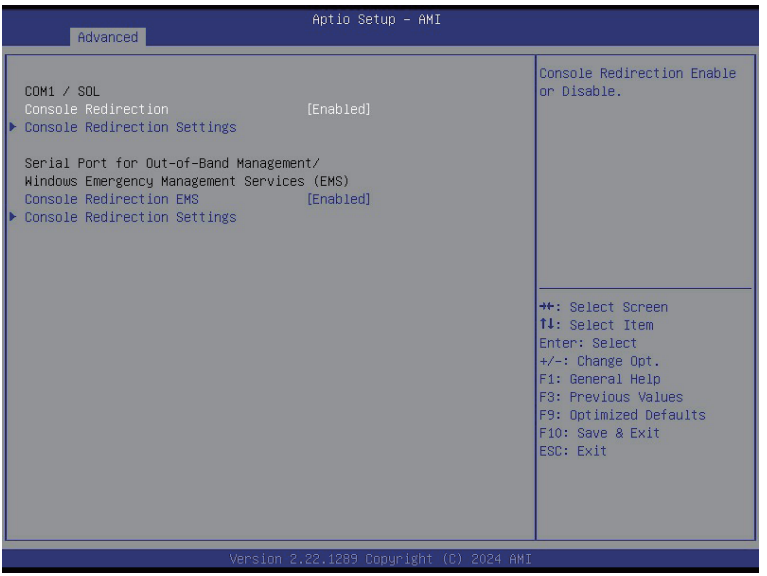


Parameter	Description
Configuration	
Security Device Support	Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available. Options available: Disable, Enable. Default setting is **Enable**.

5-2-2 UEFI Variables Protection

Parameter	Description
Password protection of Runtime Variables	Control he NVRAM Runtime Variables protection through System Admin Password. Options available: Disable, Enable. Default setting is **Enable**.

5-2-3 Serial Port Console Redirection



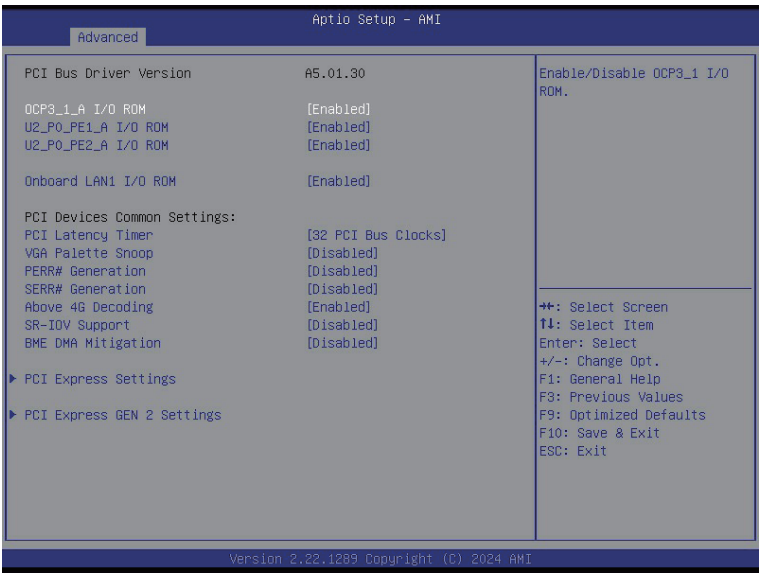
Parameter	Description
COM1 Console Redirection(Note)	Console redirection enables the users to manage the system from a remote location. Options available: Enabled, Disabled. Default setting is **Disabled**.
COM1 Console Redirection Settings	Press [Enter] to configure advanced items. **Please note that this item is configurable when COM1 Console Redirection is set to Enabled.** ◆ Terminal Type – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100PLUS, VT-UTF8, ANSI. Default setting is **VT100PLUS**. ◆ 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 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 – 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 – Enable/Disable extended terminal resolution. – Options available: Enabled, Disabled. Default setting is **Enabled**. ◆ Putty KeyPad – Selects Function Key and KeyPad on Putty. – Options available: VT100, LINUX, XTERMR6, SC0, ESCN, VT400. Default setting is **VT100**.

Parameter	Description
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 Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Default setting is **COM1**. ◆ Terminal Type EMS – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100PLUS, VT-UTF8, ANSI. Default setting is **VT100PLUS**. ◆ Bits per second EMS – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 57600, 115200. Default setting is **115200**. ◆ Flow Control EMS – 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**.

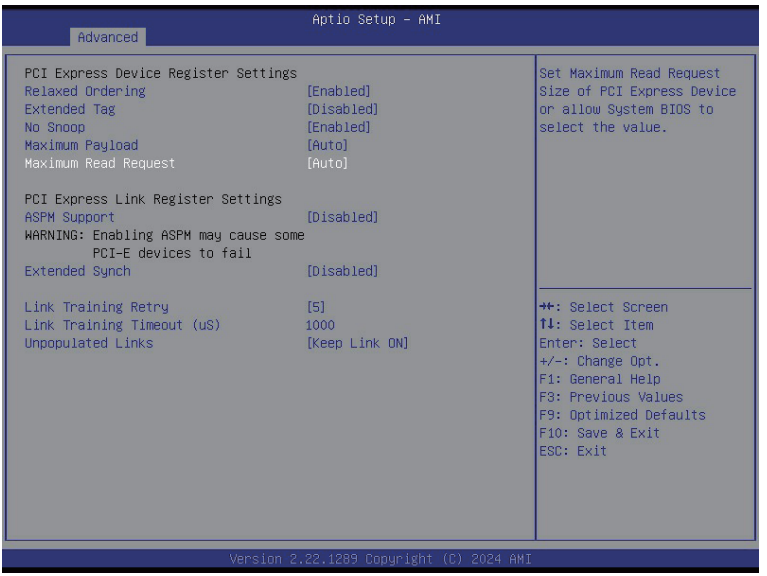
5-2-4 PCI Subsystem Settings



Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
OCP3_1_A ROM(Note1) U2_P0_PE1_A ROM(Note1) U2_P0_PE2_A ROM(Note1)	When enabled, this setting will initialize the device expansion ROM for the related PCI-E slot. Options available: Enabled, Disabled. Default setting is **Enabled**.
Onboard LAN1/ LAN2 Controller(Note2)	Enable/Disable the onboard LAN controller. Options available: Enabled, Disabled. Default setting is **Enabled**.
Onboard LAN1/ LAN2 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	
PCI Latency Timer	Value to be programmed into PCI Latency Timer Register. Options available: 32 PCI Bus Clock, 64 PCI Bus Clock, 96 PCI Bus Clock, 128 PCI Bus Clock, 160 PCI Bus Clock, 192 PCI Bus Clock, 224 PCI Bus Clock, 248 PCI Bus Clock. Default setting is **32 PCI Bus Clock**.
VGA Palette Snoop	Enables or Disables VGA Palette Registers Snooping. Options available: Enabled, Disabled. Default setting is **Disabled**.
PERR# Generation	Enables or Disables PCI Device to generate PERR#. Options available: Enabled, Disabled. Default setting is **Disabled**.
SERR# Generation	Enables or Disables PCI Device to generate SERR#. Options available: Enabled, Disabled. Default setting is **Disabled**.
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 **Disabled**.
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**.
BME DMA Mitigation	Re-enable Bus Master Attributes disabled during PCI enumeration PCI Bridges after SMM Locked. Options available: Enabled, Disabled. Default setting is **Disabled**.

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

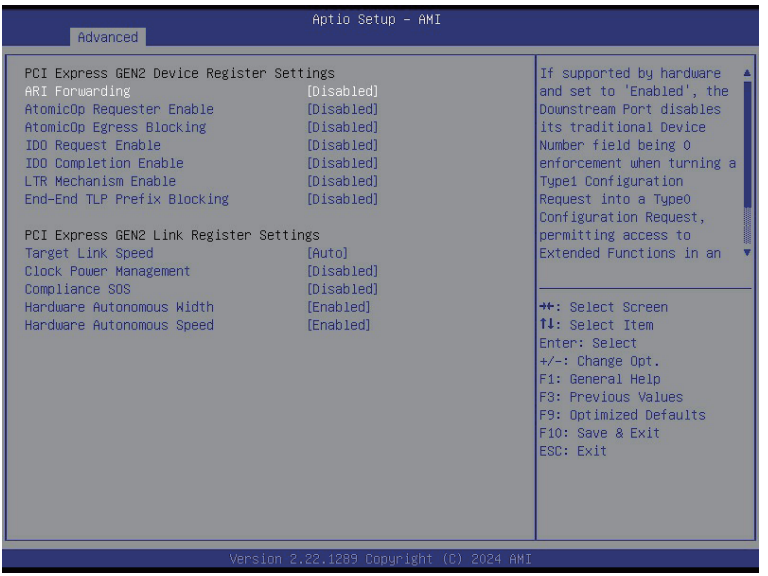
5-2-4-1 PCI Express Device Register Settings



Parameter	Description
PCI Express Device Register Settings	Press [Enter] for configuration of advanced items.
Relaxed Ordering	Enable/Disable PCI Express Device Relaxed Ordering feature. Options available: Enabled, Disabled. Default setting is **Enabled**.
Extended Tag	When this feature is enabled, the system will allow device to use 8-bit Tag field as are requester. Options available: Enabled, Disabled. Default setting is **Disabled**.
No Snoop	Enable/Disable PCI Express Device No Snoop option. Options available: Enabled, Disabled. Default setting is **Enabled**.
Maximum Payload	Set maximum payload for PCI Express Device or allow system BIOS to select the value. Options available: Auto,128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes. Default setting is **Auto**.
Maximum Read Request	Set maximum Read Request size for PCI Express Device or allow system BIOS to select the value. Options available: Auto,128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes. Default setting is **Auto**.

Parameter	Description
PCI Express Link Register Settings	
ASPM Support	Set the ASPM level Force L0s - Force all links to L0s Sate. Options available: Auto, Disabled, L0s. Default setting is **Disabled**.
Extended Synch	When this feature is enabled, the system will allow generation of Extended Synchronization patterns. Options available: Enabled, Disabled. Default setting is **Disabled**.
Link Training Retry	Define the number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful. Press <+> / <-> keys to increase or decrease the desired values.
Link Training Timeout (us)	Define the number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Press <+> / <-> keys to increase or decrease the desired values. Value rang is from 10 to 10000 us.
Unpopulated Links	When this item is set to 'Disable Link, the system will operate power save feature for those unpopulated PCI Express links. Options available: Keep Link ON, Disable Link Default setting is **Keep Link ON**.

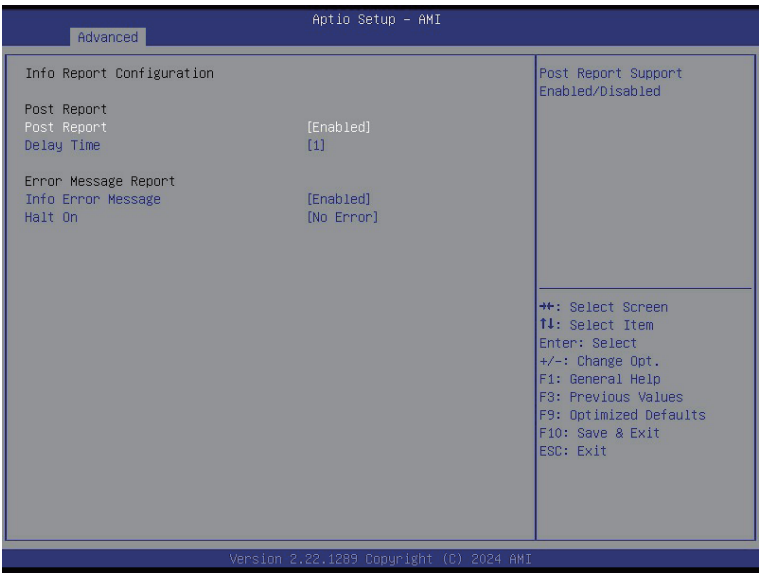
5-2-4-2 PCI Express GEN 2 Settings



Parameter	Description
PCI Express GEN2 Setting	PCI Express GEN2 Device Register Settings ◆ Completion Timeout – In device Functions that support Completion Timeout programmability, allows system software to modify the Completion Timeout value. 'Default' 50us to 50ms. If 'Shorter' is selected, software will use shorter timeout ranges supported by hardware. If 'Longer' is selected, software will use longer timeout ranges. Options available: Default/Shorter/Longer/Disabled. Default setting is **Default**. ◆ ARI Forwarding – If supported by hardware and set to 'Enabled', the Downstream Port disables its traditional Device Number field being 0 enforcement when turning a Type1 Configuration Request into a Type0 Configuration Request, permitting access to Extended Functions in an ARI Device immediately below the Port. Options available: Default/Shorter/Longer/Disabled. Default setting is **Default**. ◆ AtomicOp Requester Enable – If supported by hardware and set to 'Enabled', this function initiates AtomicOp Requests only if Bus Master Enable bit is in the Command Register Set. Options available: Enabled/Disabled. Default setting is **Disabled**. ◆ AtomicOp Egress Blocking – If supported by hardware and set to 'Enabled', outbound AtomicOp Requestsvia Egress Ports will be blocked. Options available: Enabled/Disabled. Default setting is **Disabled**. ◆ IDO Request Enable – If supported by hardware and set to 'Enabled', this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated.. Options available: Enabled/Disabled. Default setting is **Disabled**.

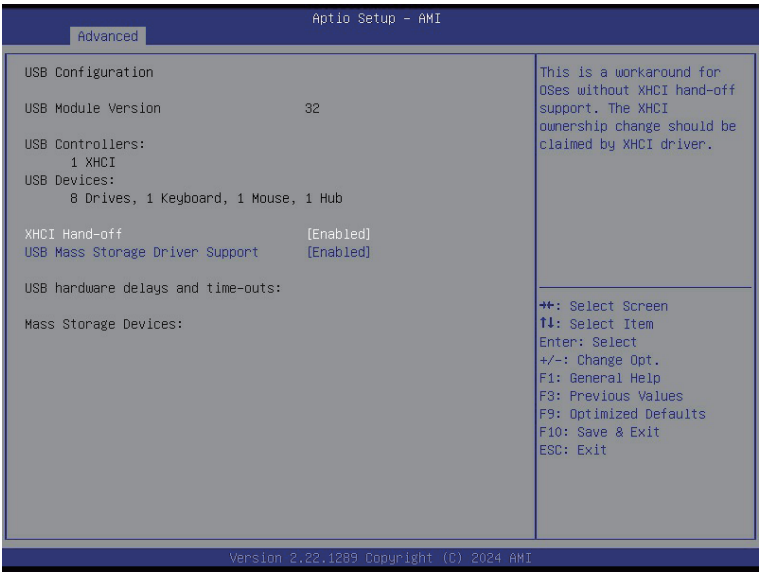
Parameter	Description
	PCI Express GEN2 Device Register Settings ◆ IDO Request Enable – If supported by hardware and set to 'Enabled', this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated. Options available: Enabled/Disabled. Default setting is **Disabled**. ◆ IDO Completion Enable – If supported by hardware and set to 'Enabled', this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated. Options available: Enabled/Disabled. Default setting is **Disabled**. ◆ LTR Mechanism Enable – If supported by hardware and set to 'Enabled', this enables the Latency Tolerance Reporting (LTR) Mechanism. Options available: Enabled/Disabled. Default setting is **Disabled.** ◆ End-End TLP Prefix Blocking – If supported by hardware and set to 'Enabled', this function will block forwarding of TLPs containing End-End TLP Prefixes.
PCI Express GEN2 Setting	Options available: Enabled/Disabled. Default setting is **Disabled.** PCI Express GEN2 Device Link Settings ◆ Compliance SOS – If supported by hardware and set to 'Enabled', this will force LTSSM to send SKP Ordered Sets between sequences when sending Compliance Pattern or Modified Compliance Pattern. Options available: Enabled/Disabled. Default setting is **Disabled.** ◆ Hardware Autonomous Width – If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link width except width size reduction for the purpose of correcting unstable link operation. Options available: Enabled/Disabled. Default setting is **Disabled.** ◆ Hardware Autonomous Speed – If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link speed except speed rate reduction for the purpose of correcting unstable link operation Options available: Enabled/Disabled. Default setting is **Disabled.**

5-2-5 Info Report Configuration



Parameter	Description
Info Report Configuration	
Post Report	Post report enabled/disabled. Options available: Enabled, Disabled. Default setting is **Enabled**.
Delay Time	Press <+>/<-> to configure the value.
Error Message Report	
Info Error Message	Enable/Disable the POST Error Message support. Options available: Enabled, Disabled. Default setting is **Enabled**.
Halt On	Options available: No Error, All Error. Default setting is **No Error**.

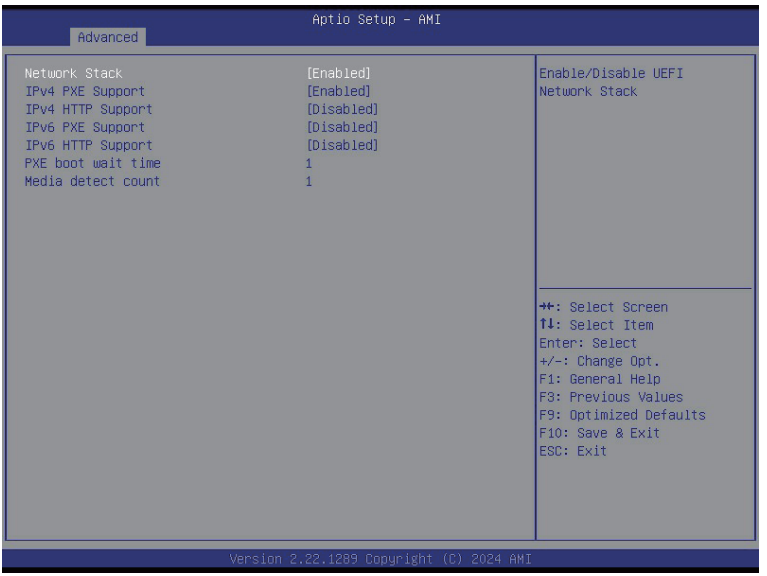
5-2-6 USB Configuration



Parameter	Description
USB Configuration	
USB Module Version	Displays the USB module version information.
USB Controllers	Displays the supported USB controllers.
USB Devices:	Displays the USB devices connected to the system.
XHCI Hand-off	Enable/Disable the XHCI 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: Disabled, Enabled. Default setting is **Enabled**.
USB hardware delays and time-outs	
USB transfer time-out	Selects the time-out value for USB Control/Bulk/Interrupt transfers. 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.

5-2-7 Network Stack Configuration

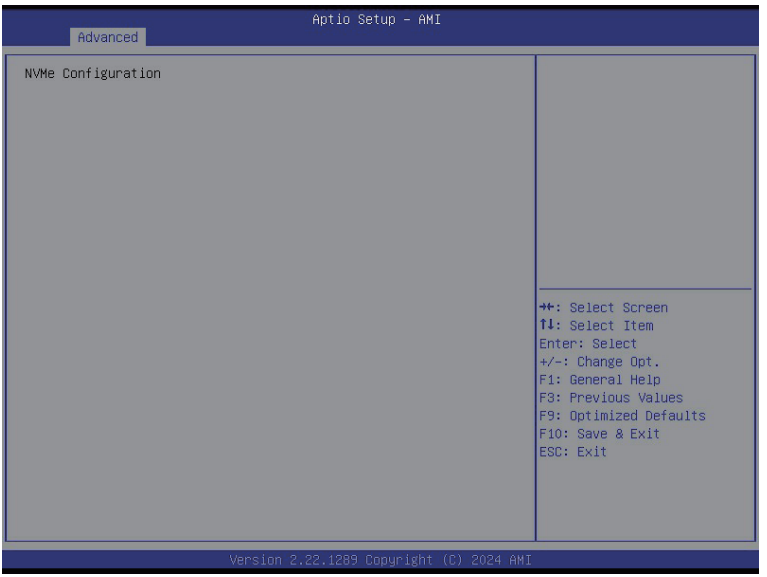


Parameter	Description
Network Stack	Enable/Disable the UEFI network stack. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv4 PXE Support	Enable/Disable the Ipv4 PXE feature. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv4 HTTP Support	Enable/Disable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

5-2-8 IP Configuration Settings

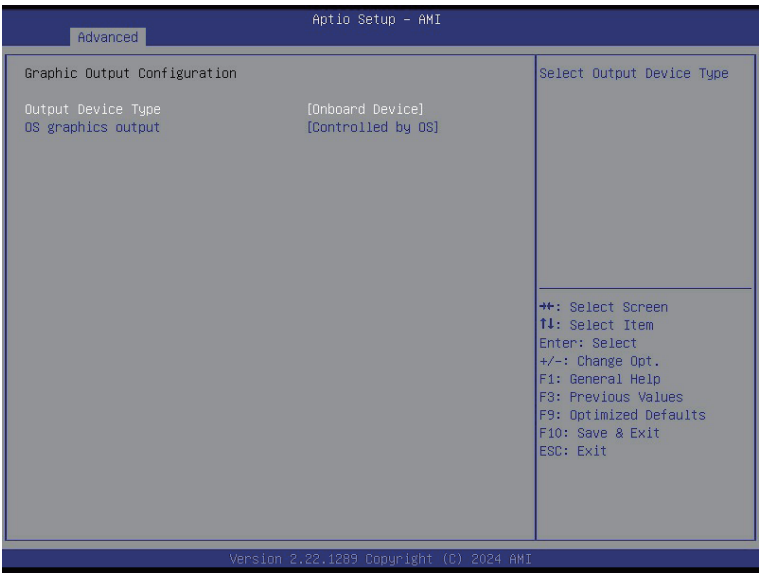
Parameter	Description
Auto Configuration	Allows user to set IP. Options available: Disabled, Every Boot, On Demand. Default setting is **Disabled**.

5-2-9 NVMe Configuration



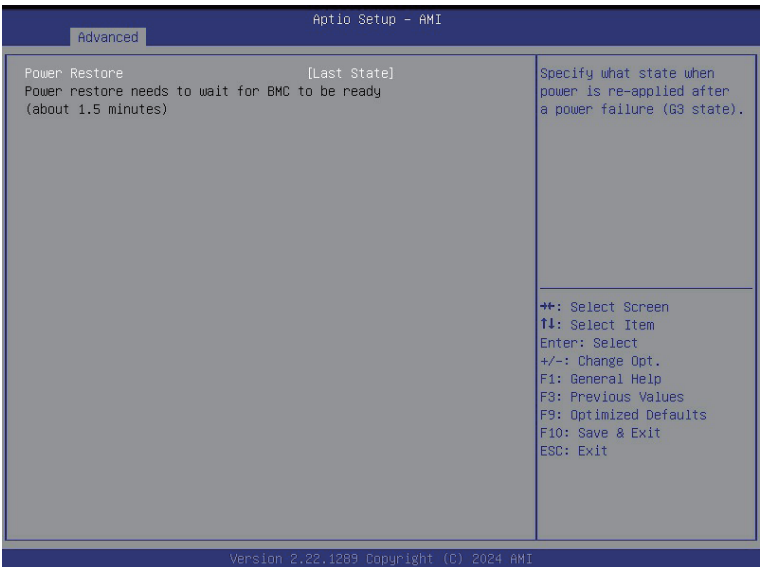
Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system.

5-2-10 Graphic Output Configuration



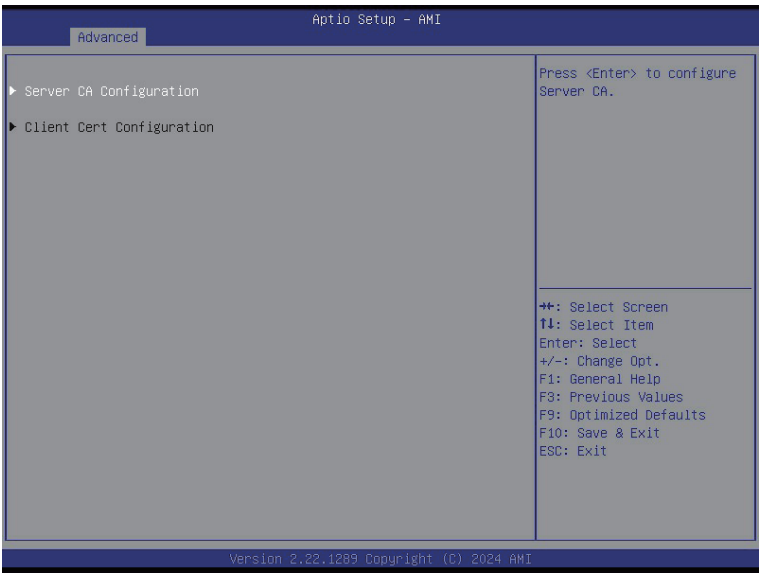
Parameter	Description
Output Device Type	Selects output device type. Options available: First loaded Device, Onboard Device, External Device, Specific Device. Default setting is **Onboard Device**.
OS graphics output	Selects OS graphic output. Options available: Controlled by OS. Default setting is **Controlled by OS**.

5-2-11 Power Restore Configuration



Parameter	Description
Power Restore	Specify what state when power is re-applied after a power failure (G3 state). Options available: Last State/Power On/Power Off. Default setting is **Last State**.

5-2-12 Tls Auth Configuration

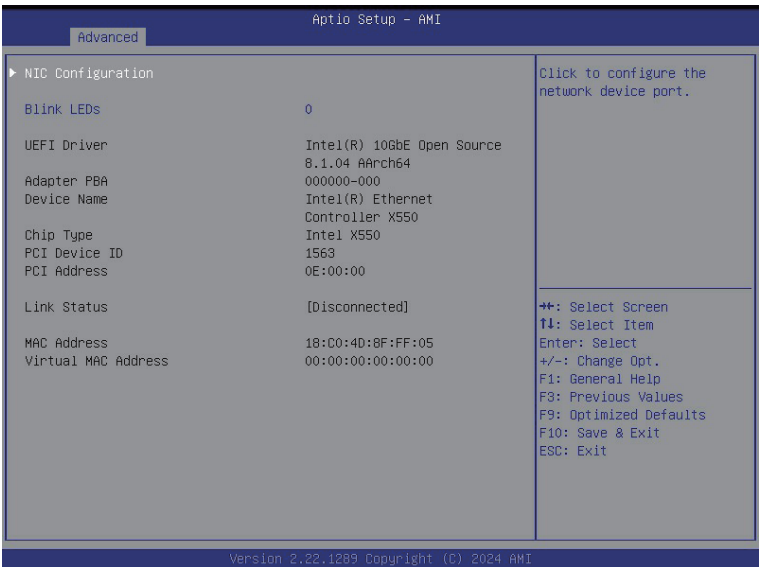


Parameter	Description
Server CA Configuration	Press [Enter] for configuration of advanced items. ◆ Enroll Cert – Press [Enter] to enroll a certificate • Enroll Cert Using File • Cert GUID Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes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

5-2-13 RAM Disk Configuration

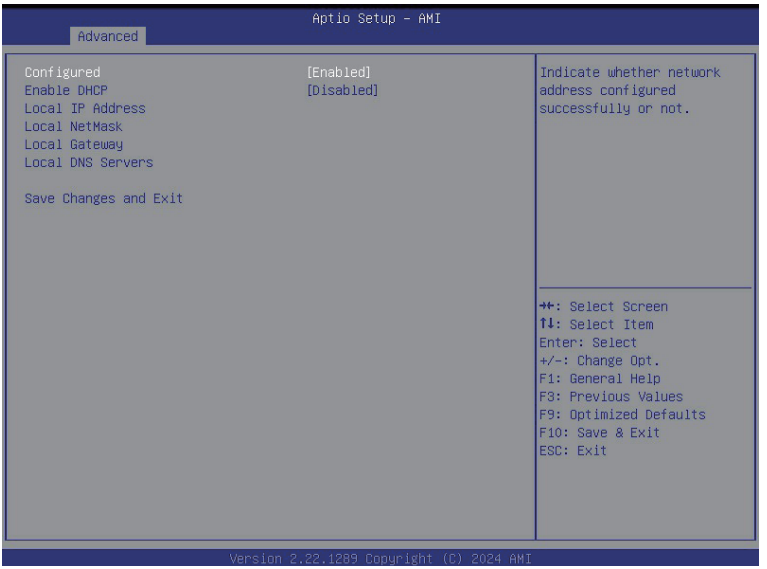
Parameter	Description
Disk Memory Type	Specifies the type of memory to use from available memory pool in system to create a disk. Options available: Boot Service Data, Reserved. Default setting is **Boot Service Data**.
Create Raw	Creates a raw RAM disk. ◆ Size (Hex) – Input a valid RAM disk size that should be multiple of the RAM disk block size. ◆ Create & Exit ◆ Discard & Exit
Create from file	Creates a RAM disk from a given file.
Created RAM disk list	
Remove selected RAM disk(s)	Selects the RAM disk(s) to remove.

5-2-14 Intel(R) Ethernet Controller X550



Parameter	Description
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.

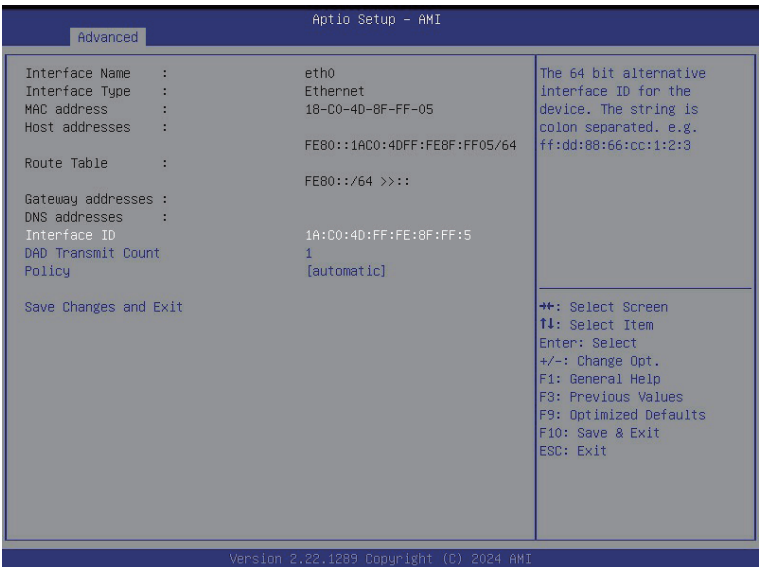
5-2-15 MAC IPv4 Network Configuration



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 **Disabled.**
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.

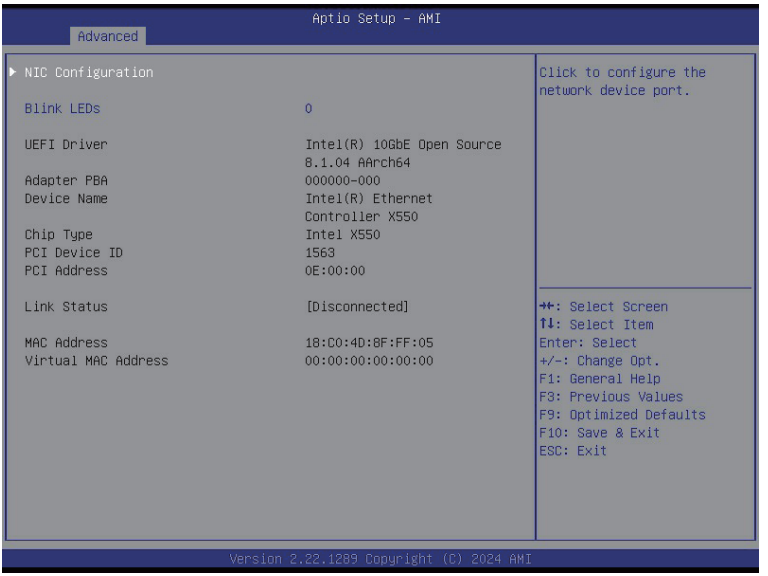
(Note) This item appears when **Configured** is set to **Enabled**.

5-2-16 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 consecutive 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.

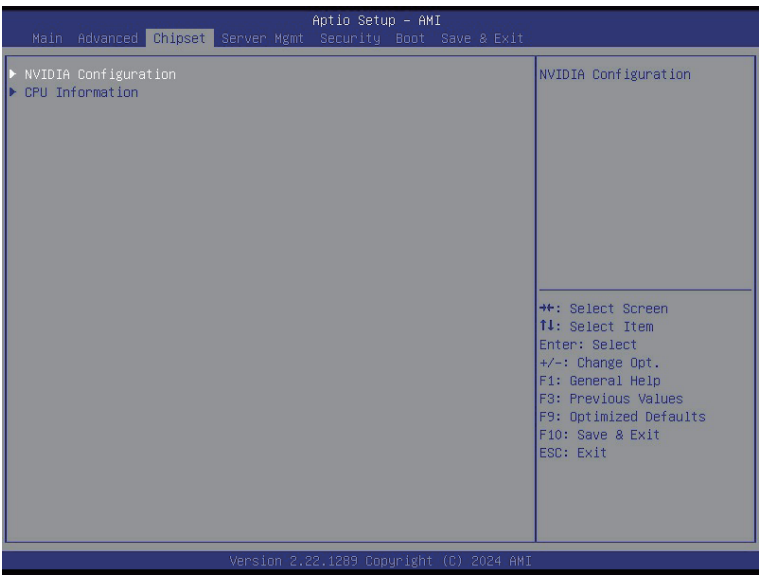
5-2-17 Driver Health



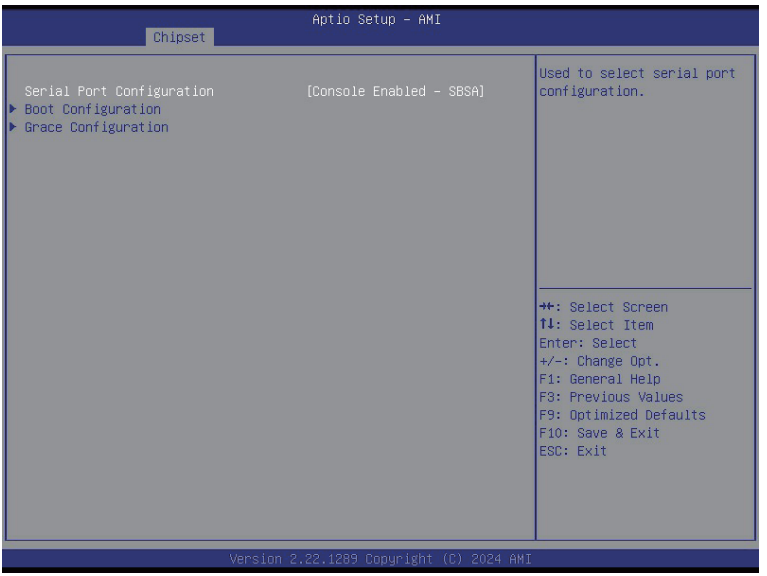
Parameter	Description
Driver Health	Displays driver health status of the devices/controllers if installed

5-3 Chipset Menu

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

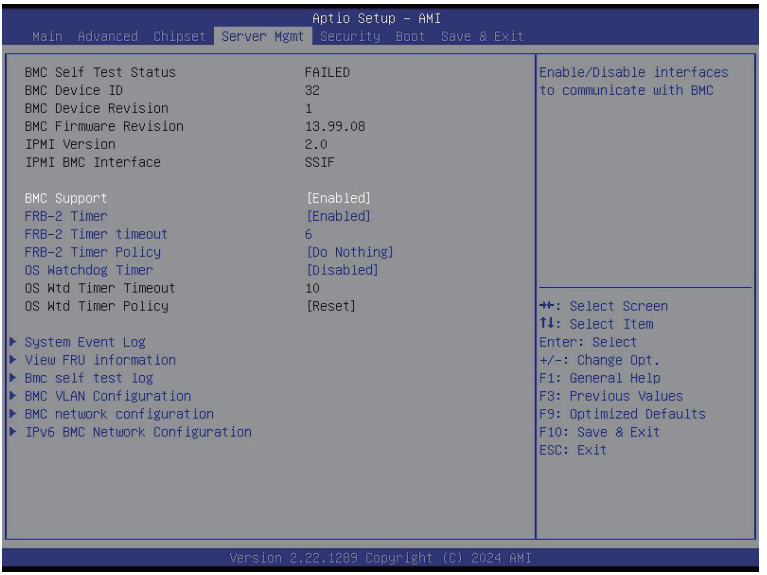


5-3-1 NVIDIA Configuration



Parameter	Description
NVIDIA Configuration	Press [Enter] to configure advanced items. ◆ Serial Port Configuration – Used to select serial port configuration. • Option available: Console Enabled -SBSA, Port Disabled, Serial Deebug Enabled -SBSA. Default setting is **Console Enabled -SBSA**.
Boot Configuration	Press [Enter] to configure advanced items. ◆ Enable ACPI Timer – Enable/Disable ACPI Timer. • Option available: Enabled, Disabled. Default setting is **Disabled**.
Grace Configuration	Press [Enter] to configure advanced items. ◆ EGM – Used to enable EGM mode. • Option available: Enabled, Disabled. Default setting is **Disabled**. ◆ EGM Hypervisor reserved memory – This item is configurable when EGM is set to enabled. ◆ UPHY spread spectrum – Enable UPHY spread spectrum. • Option available: Enabled, Disabled. Default setting is **Disabled**. ◆ Mods Secure Partition – Enable Mods secure partition to allow running system diagnostics. • Option available: Enabled, Disabled. Default setting is **Enabled**. ◆ Performance Version – Specify Desired Performance Version. • Option available: Default, C1-NCM. • Default setting is **C1-NCM**. ◆ Error Injection – Enable Error Injection ACPI Table. • Option available: Enabled, Disabled. Default setting is **Enabled**. ◆ Socket 0/1 Configuration – Press [Enter] for advanced configuration for socket 0 and 1.

5-4 Server Management Menu

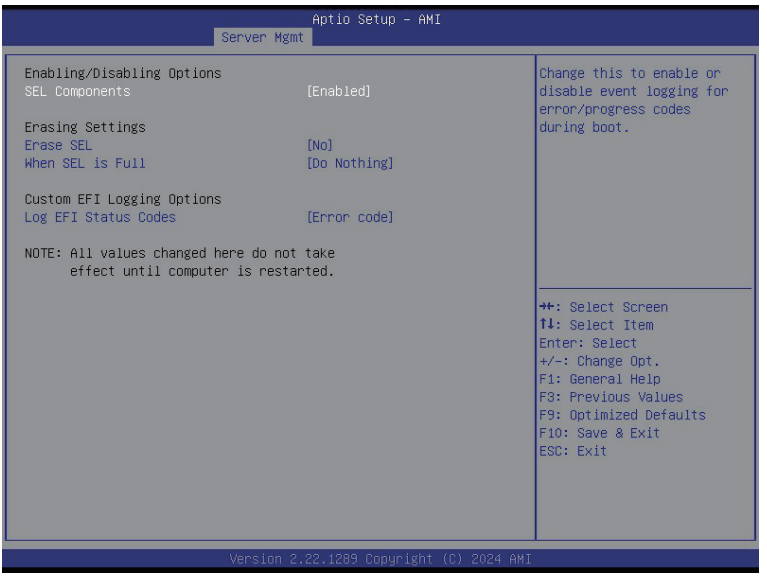


Parameter	Description
BMC Support	Enable/Disable interfaces to communicate with BMC. Options available: Enabled, Disabled. Default setting is **Enabled**.
FRB-2 Timer	Enable/Disable FRB-2 timer (POST timer). Options available: Enabled, Disabled. Default setting is **Enabled**.
FRB-2 Timer[(Note1)] timeout	Configures the FRB2 Timer timeout. The value is between 1 to 30 minutes. Default setting is **6 minutes**.
FRB-2 Timer Policy[(Note1)]	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[(Note2)]	Configures OS Watchdog Timer. The value is between 1 to 30 minutes. Default setting is **10 minutes**.
OS Wtd Timer Policy[(Note2)]	Configure OS Watchdog Timer Policy. Options available: Reset, Do Nothing, Power Down, Power Cycle. Default setting is **Reset**.

(Note1) This item is configurable when **FRB-2 Timer** is set to **Enabled**.
(Note2) This item is configurable when **OS Watchdog Timer** is set to **Enabled**.

Parameter	Description
System Event Log	Press [Enter] to configure advanced items.
View FRU Information	Press [Enter] to view the FRU information.
BMC self test log	Press [Enter] to configure advanced items.
BMC VLAN Configuration	Press [Enter] to configure advanced items.
BMC network Configuration	Press [Enter] to configure advanced items.
IPv6 BMC Network Configuration	Press [Enter] to configure advanced items.

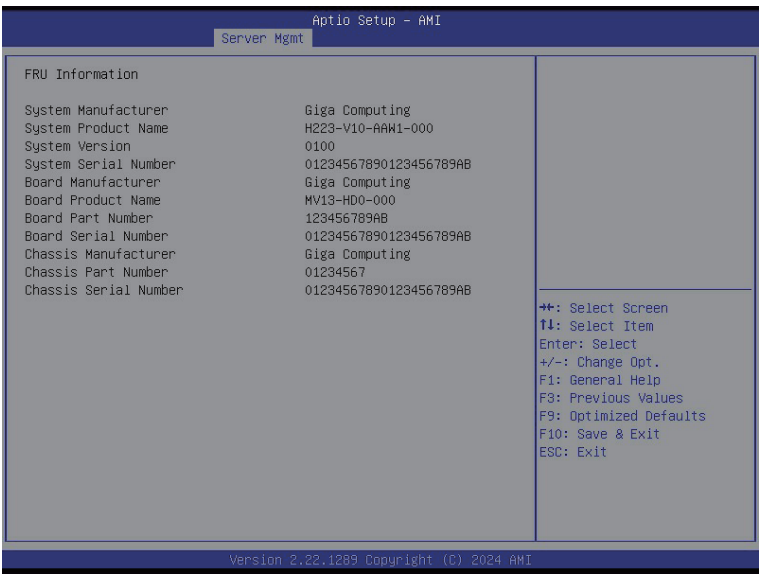
5-4-1 System Event Log



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

5-4-2 View FRU Information

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



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

5-4-3 BMC self test log

Parameter	Description
Erase Log	Options available: No/Yes, On next reset/Yes, On every reset. Default setting is **No**.
When Log is full	Configuration for reactions to a full log. Option available: Do not log any more/Clear Log. Default setting is **Do not log any more**.

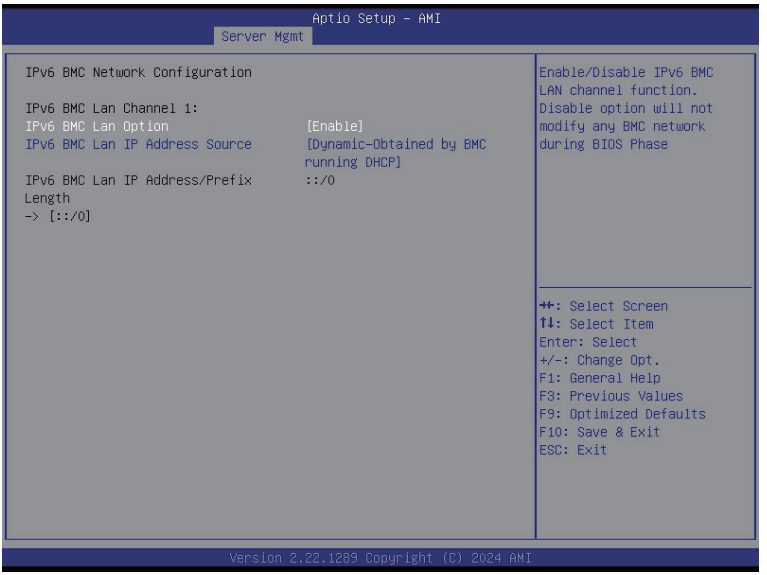
5-4-4 BMC VLAN Configuration

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

5-4-5 BMC Network Configuration

Parameter	Description
BMC network configuration	
Select NCSI and Dedicated LAN	Options available: Do Nothing, Model1(Dedicated), Model2(NCSI), Mode3(Failover). Default setting is **Do Nothing**.
Lan Channel 1	
Configuration Address source	Selects to configure LAN channel parameters statically or dynamically (DHCP). 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.
Real-time get BMC network address	Press [Enter] will set LAN mode and Address source and then get IP, Subnet, Gateway and MAC address.

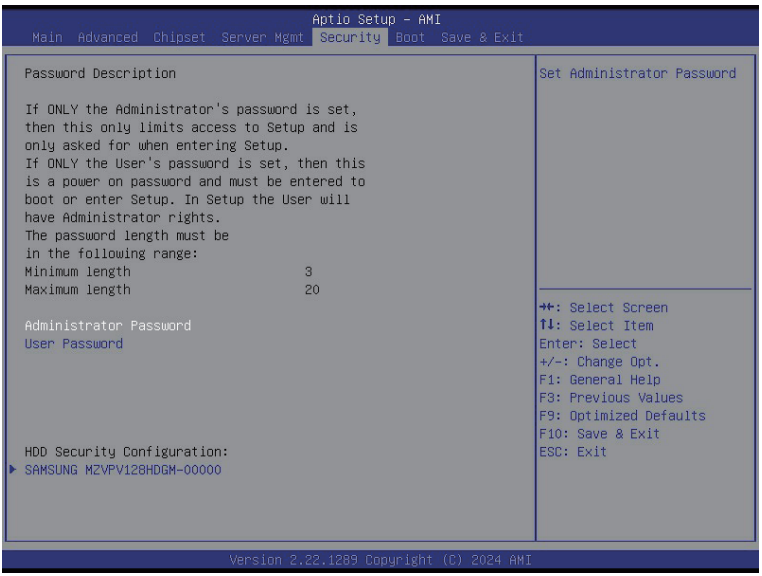
5-4-6 IPv6 BMC Network Configuration



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

5-5 Security Menu

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



There are two types of passwords that you can set:

- Administrator Password

  Entering this password will allow the user to access and change all settings in the Setup Utility.

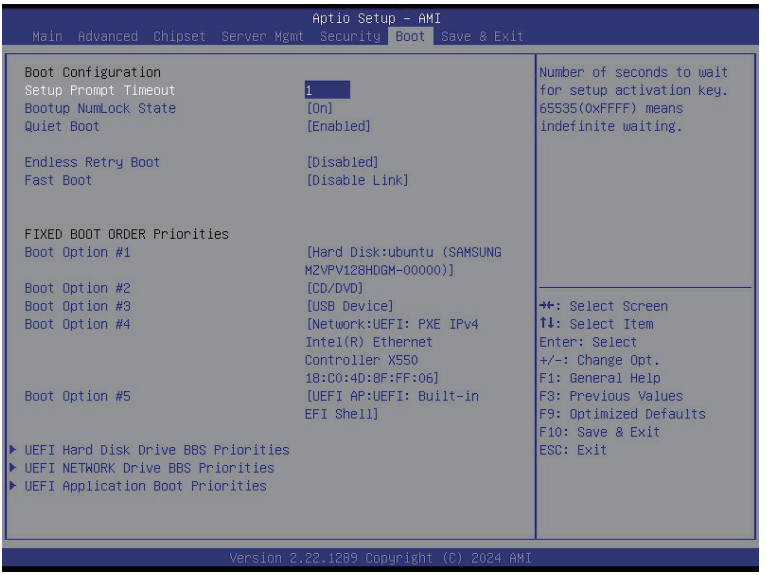
- User Password

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

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

5-6 Boot Menu

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

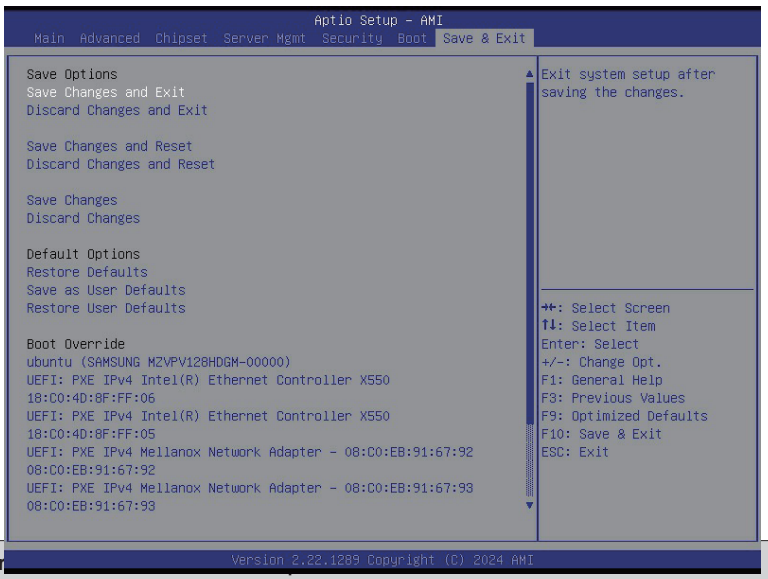


Parameter	Description
Boot Configuration	
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function. Options available: On, Off. Default setting is **On**.
Quiet Boot	Enable/Disable showing the logo during POST. Options available: Enabled, Disabled. Default setting is **Enabled**.
Endless Retry Boot	Options available: Disable, Enable. Default setting is **Disable**.
Fast Boot	Enables or disables Fast Boot to shorten the OS boot process.

Parameter	Description
FIXED BOOT ORDER Priorities	
Boot Option #1 / #2 / #3 / #4 / #5	Press [Enter] to configure the boot order 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 Application Boot Priorities	Press [Enter] to configure the boot priority.

5-7 Save & Exit Menu

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

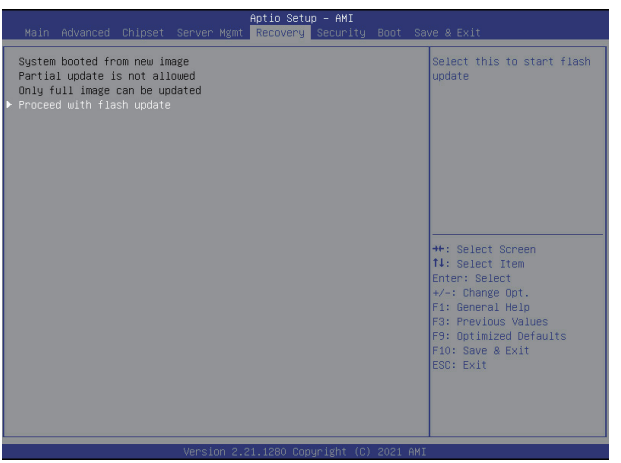
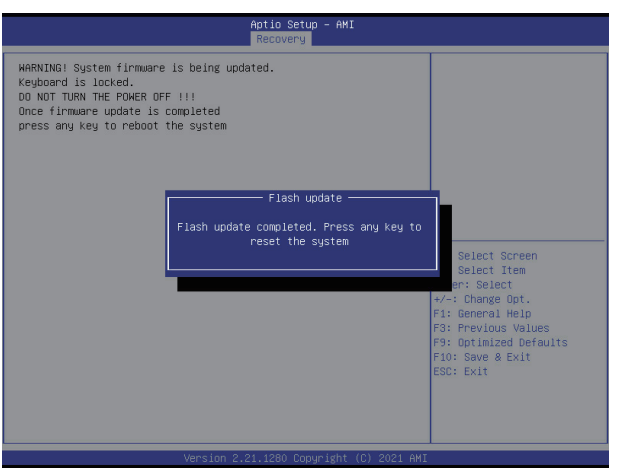


Par	
Save Options	
Save Changes and Exit	Saves changes made and closes the BIOS setup. Options available: Yes, No.
Discard changes and exit	Discards changes made and exits the BIOS setup. Options available: Yes, No.
Save Changes and Reset	Restarts the system after saving the changes made. Options available: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

Parameter	Description
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.
Save the User Default Values	Saves the changes made as the user default settings. Options available: Yes, No.
Restore the User Default Values	Loads the user default settings for all BIOS setup parameters. Options available: Yes, No.
Boot Device Priority	Press [Enter] to configure the device as the boot-up drive.
Launch EFI Shell	Attempts to Launch EFI Shell application (Shell.efi) from one of the available file system devices.

5-8 BIOS Recovery

The system has an embedded recovery technique. In the event that the BIOS becomes corrupt the boot block can be used to restore the BIOS to a working state. To restore your BIOS, please follow the instructions listed below:

Recovery Instruction:

1. Copy the XXX.rom to USB diskette.
2. Setting BIOS Recovery jump to enabled status.
3. Boot into BIOS recovery.
4. Run Proceed with flash update.
5. BIOS updated.