GIGABYTE™

W771-Z00

AMD® Ryzen™ Threadripper™ PRO Tower GPU Workstation

User Manual

Rev. 1.0

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Disclaimer

Documentation Classifications

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

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

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

For More Information

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

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.

- 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.

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 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.

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 discon-nect 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 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.

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.

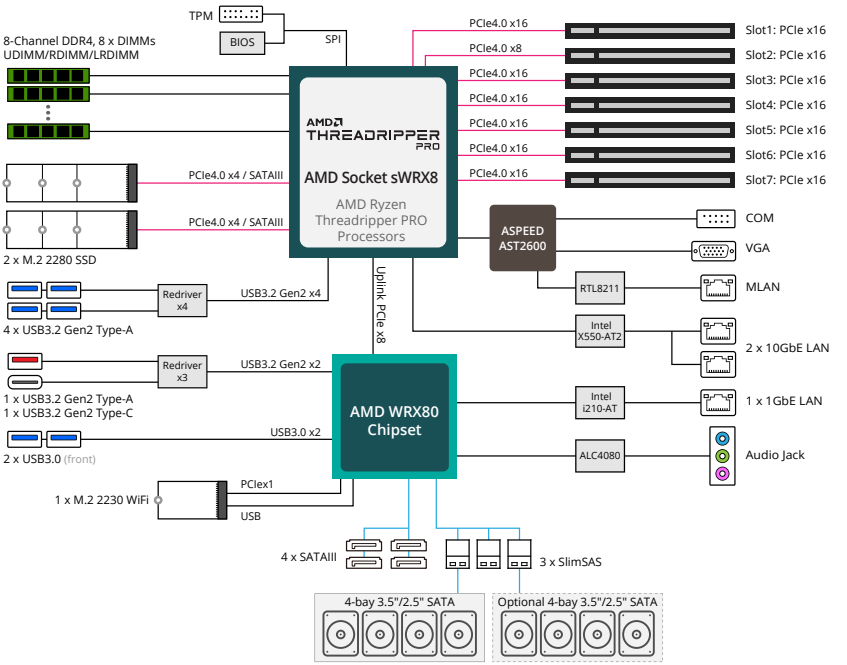
System Dimension	◆ 680 x 175 x 438 (W x H x D, mm)
CPU	◆ AMD® Ryzen™ Threadripper™ PRO 3000WX Processor ◆ Processor up to 64-core, 128 threads ◆ TDP up to 280W
Chipset	◆ AMD® WRX80
Memory	◆ 8 x DIMM slots ◆ DDR4 memory module supported only ◆ 8 channel memory architecture ◆ Support for 3200/2933/2666/2400/2133 MHz; ECC & non-ECC; buffered & unbuffered; UDIMM, RDIMM, 3DS R-DIMM, LRDIMM ◆ Total up to 2TB of system memory (256GB single LRDIMM capacity)
LAN	◆ 2 x 10GbE LAN (Intel® X550-AT2) ◆ 1 x GbE LAN (Intel® i210) ◆ 1 x 10/100/1000 management LAN
Video	◆ Integrated in Aspeed® AST2600 ◆ 2D Video Graphic Adapter with PCIe bus interface ◆ 1920x1200@60Hz 32bpp
Audio	◆ Realtek® ALC4080 HD audio codec ◆ Supports 7.1 channel configurations ◆ 3 ports Audio Jack (Audio in/Audio out/Mic)
Storage	◆ 4 x 3.5" / 2.5" SATAIII hot-swappable HDD/SSD bays ◆ Additional 4 x 3.5" / 2.5" SATAIII hot-swappable HDD/SSD bays (Option) ◆ 2 x M.2 slot for storage (M-Key; NGFF-2242/2280; PCIe Gen4 x4 or SATA III 6Gb/s) ◆ SAS card is required for SAS devices support
RAID	◆ RAID 0, RAID 1, RAID 5 and RAID 10
Peripheral Drives	◆ 1 x 5.25" space reserved for ODD device

Expansion Slot	◆ Slot_7: 1 x PCIe x16 (Gen4 x16) slot ◆ Slot_6: 1 x PCIe x16 (Gen4 x16) slot ◆ Slot_5: 1 x PCIe x16 (Gen4 x16) slot ◆ Slot_4: 1 x PCIe x16 (Gen4 x16) slot ◆ Slot_3: 1 x PCIe x16 (Gen4 x16) slot ◆ Slot_2: 1 x PCIe x16 (Gen4 x8) slot ◆ Slot_1: 1 x PCIe x16 (Gen4 x16) slot ◆ 2 x M.2 slot for storage: - M-key - PCIe Gen4 x4 or 4x SATA 6Gb/s - Supports NGFF-2242/2280 card ◆ 1 x M.2 slot for Wi-Fi: - E-key - Supports NGFF-2230 card
Internal I/O	◆ 1 x 24-pin ATX main power connector ◆ 2 x 8-pin ATX 12V power connector ◆ 1 x CPU Fan header ◆ 1 x PCH Fan header ◆ 8 x System Fan headers ◆ 2 x USB 3.0 headers for 4 ports ◆ 1 x PMBus connector ◆ 4 x SATA III 6Gb/s ports ◆ 2 x M.2 slot for storage ◆ 1 x M.2 slot for Wi-Fi ◆ 3 x U.2 connector ◆ 1 x Front panel header ◆ 1 x Back plane board header ◆ 1 x PMBus header ◆ 1 x IPMB header ◆ 1 x TPM header ◆ 1 x COM header 6 x System fan headers ◆ 1 x USB 3.0 header ◆ 2 x COM headers ◆ 1 x TPM header ◆ 1 x Front panel header ◆ 1 x HDD back plane board header ◆ 1 x PMBus connector ◆ 1 x IPMB connector ◆ 1 x Clear CMOS jumper ◆ 1 x BIOS recovery jumper

Front I/O	◆ 1 x Front Panel Lock ◆ 2 x USB 3.0 ◆ 1 x Power button ◆ 1 x Reset button ◆ 1 x Power LED ◆ 1 x Hard drives status LED ◆ 1 x System status LED ◆ 1 x UID LED ◆ 2 x LAN activity/link LEDs ◆ 4 x Hard drive bays
Rear I/O	◆ 1 x VGA ◆ 1 x ID Button ◆ 2 x USB 3.2 gen2 (Type-A + Type-C®) ◆ 1 x RJ45 (GbE LAN) ◆ 1 x MLAN ◆ 4 x USB 3.2 gen2 Type-A ◆ 2 x RJ45 (red) (10GbE LAN) ◆ 1 x 3 in 1 Audio jacks 1 x Power switch with LED
TPM	◆ 1 x TPM header with SPI interface ◆ Optional TPM2.0 kit: CTM010
Power Supply	◆ 2 x 2000W redundant PSUs ◆ 80 PLUS Platinum ◆ AC Input: - 100-127V~/ 13A, 50-60Hz - 200-240V~/ 12A, 50-60Hz ◆ DC Output: - Max 2000W/ 240-300V +12.2V/ 166.7A +12Vsb/ 3A - Max 1560w / 180-220V +12.2V/ 130A +12Vsb/ 3A - Max 996W/ 90-140V +12.2V/ 83A +12Vsb/ 2.1A

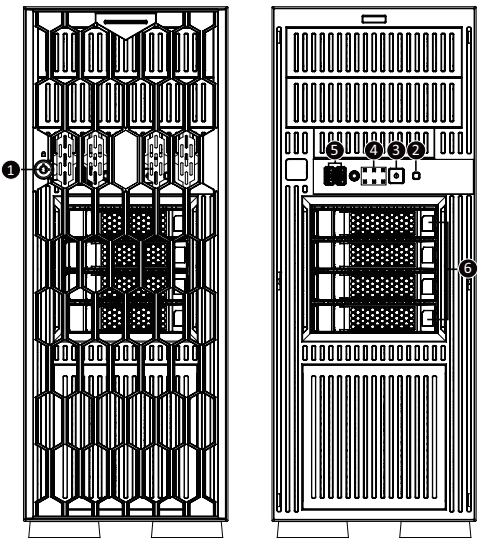
System Management	ASPEED® AST2600 Management Controller GIGABYTE Management Console (AMI MegaRAC SP-X) web interface ◆ Dashboard ◆ JAVA Based Serial Over LAN ◆ HTML5 KVM ◆ Sensor Monitor (Voltage, RPM, Temperature, CPU Status …etc.) ◆ Sensor Reading History Data ◆ FRU Information ◆ SEL Log in Linear 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	◆ 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



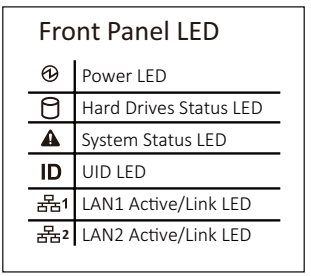
Chapter 2 System Appearance

2-1 Front View



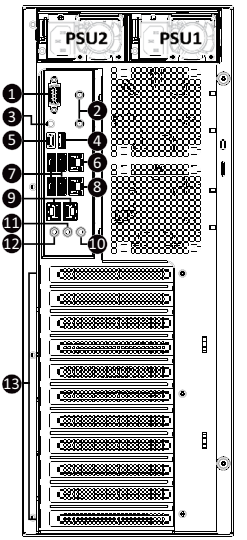
No.	Description	No.	Description
1.	Front Bezel Door Lock	4.	Front Panel LEDs
2.	Reset Button	5.	USB 3.0 Port x 2
3.	Power Button	6.	Hard Disk Drives

2-2 Front Panel LED



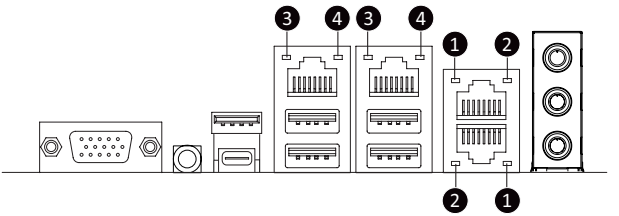
Name	Color	Status	Description
Power LED	Blue	On	System is powered on
HDD Status LED	Amber	On	HDD is busy
System Status LED	Red	On	Error signal
UID LED	Blue	On	The machine is located
LAN1/LAN2 Status LED	Green	On	Internet is busy

2-3 Rear View



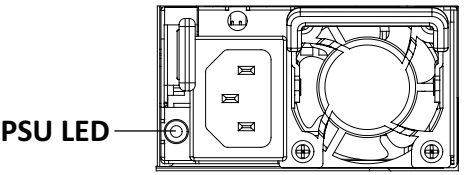
No.	Description	No.	Description
1.	VGA Port	8.	10/100/1000 Sever Management LAN Port
2.	Antenna Port x 2	9.	10GbE LAN Port x 2
3.	ID Button with LED	10.	Line In Port (Blue)
4.	USB 3.2 Type A Port	11.	Line Out Port (Green)
5	USB 3.2 Type C Port	12.	Mic In Port (Pink)
6.	GbE LAN Port	13.	PCIe Card Bay
7.	USB 3.2 Port x 4	--	

2-4 Rear Panel System LAN LEDs



No.	Name	Color	Status	Description
1.	10GbE Speed LED	Green	On	10 Gbps data rate
		Yellow	On	5Gbps, 2.5Gbps, 1Gbps data rate
		N/A	Off	100 Mbps data rate
2.	10GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission or reception is occurring.
3.	1GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
4.	1GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission or reception is occurring.

2-5 Power Supply Unit (PSU) LED



State	Description
OFF	No AC power to all power supplies
1Hz Green Blinking	AC present / only standby on / Cold redundant mode
2Hz Green Blinking	Power supply firmware updating 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

	LED1 (Green)	LED1 (Red)	LED2 (Blue)
Indicator	Drive activity	Drive locate/fault/rebuild	Drive present
Behavior	BLINK: Drives is active ON or OFF: Idle (depend on drive)	ON: Fault BLINK 4Hz: Locate BLINK 1Hz: Rebuild	ON: Drive is plugged in OFF: No drive

Chapter 3 System Hardware Installation

Pre-installation Instructions

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

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

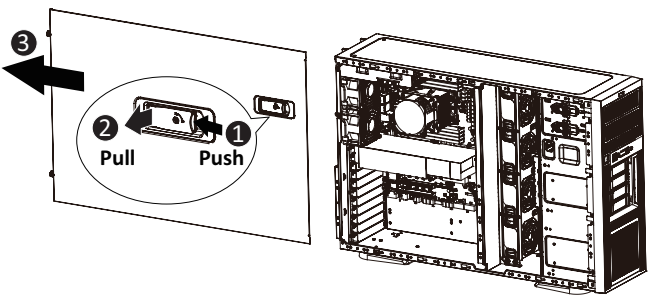
3-1 Removing and Installing the Chassis Cover

Before you remove or install the chassis cover

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

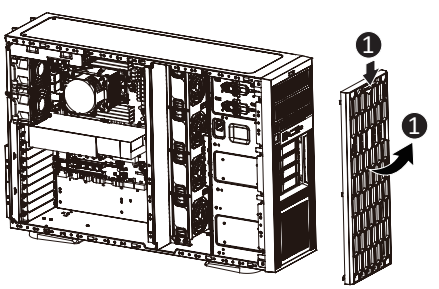
Follow these instructions to remove/install the chassis cover:

1. Push button to unlock the handle.
2. Pull the grip handle to open the panel cover.
3. Slide the cover towards the rear of the system and then remove the cover in the direction indicated by the arrow.
4. Follow steps 1-3 in reverse order to re-install the top cover



Follow these instructions to remove/install the front bezel door:

1. Press the latch on the top of the front bezel door. Then Tilt and lift up the door.



3-2 Removing and installing the Heat Sink

Read the following guidelines before you begin to remove/install the heat sink:

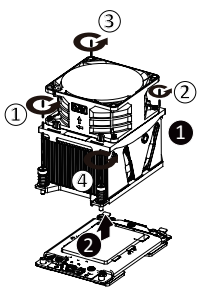
- Always turn off the computer and unplug the power cord from the power outlet before installing the heat sink to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system unit on a flat and stable surface.
- Open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

WARNING!

Failure to 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/install the heat sink:

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



When installing the heat sink to CPU, use PHILLIPS #2-Lobe driver to tighten 4 captive nuts in sequence as 1-4. The screw tightening torque: 10 ± 0.5 kgf-cm.

3-3 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.

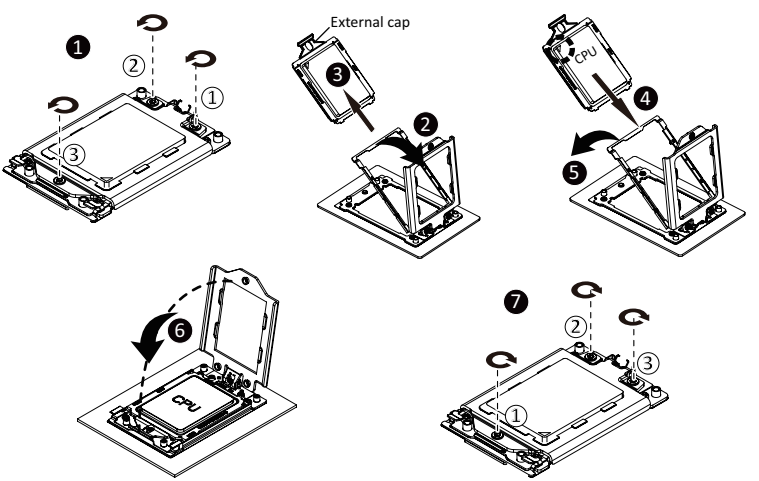
WARNING!

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 securing the CPU cover in sequential order (1 → 2 → 3).
2. Flip open the CPU cover.
3. Remove the CPU carrier from the CPU frame using the handle on the CPU carrier.
4. Using the handle on the CPU carrier insert the new CPU carrier with CPU installed into the CPU frame.

   NOTE: Ensure the CPU is installed in the CPU carrier in the correct orientation, with the triangle on the CPU aligned to the top left corner of the CPU carrier.
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.



- Tighten the CPU cover screws, use T20-Lobe driver to tighten 3 captive nuts in sequence as 1-3.
- The screw tightening torque: 16.1 ± 1.2 kgf-cm.

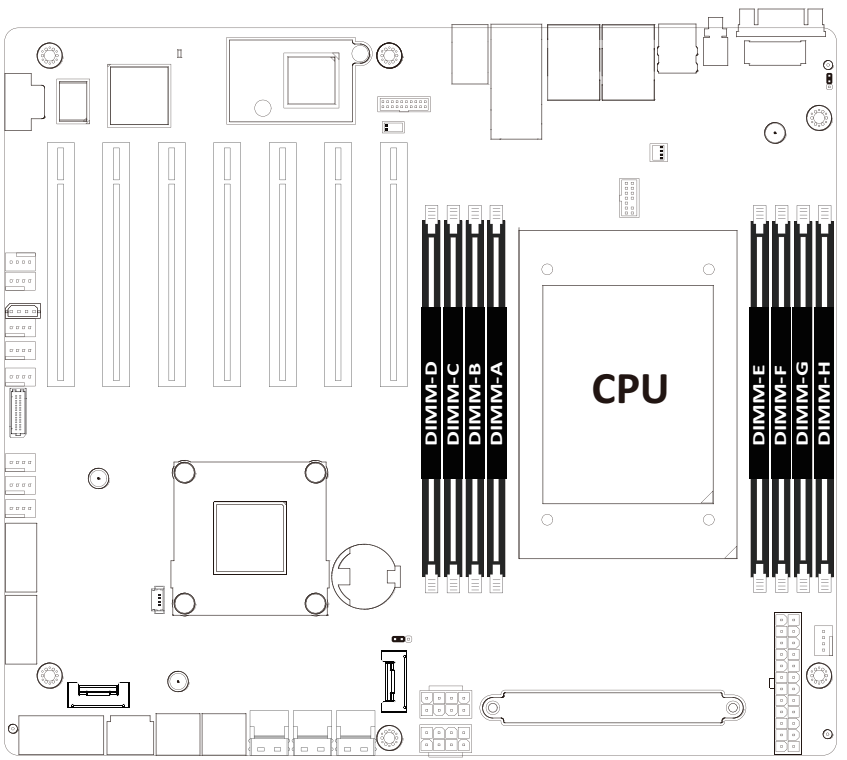
3-4 Installing the Memory

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

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

3-4-1 Eight Channel Memory Configuration

This motherboard provides 8 DDR4 memory slots and supports Eight Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.



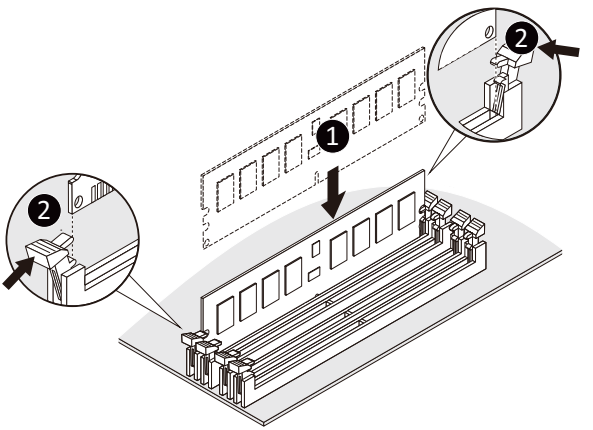
3-4-2 Installing the Memory

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.



Note:

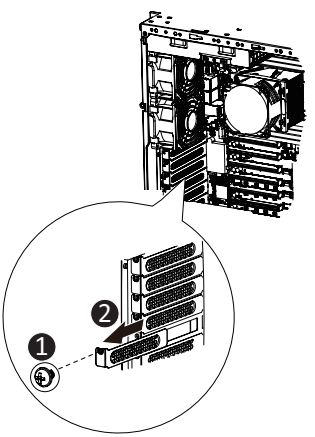
- 8 Channel DDR4 up to 3200MHz Memory Support
- Supports 1 DIMM per Channel
- Support for UDIMM (ECC), RDIMM, 3DS RDIMM.

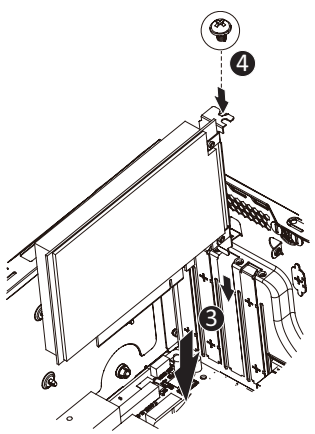
3-5 Installing the PCI Expansion Card

- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to installing a PCIe card.
- Failure to observe these warnings could result in personal injury or damage to equipment.

Follow these instructions to install the PCI Expansion card:

1. Remove the screw securing the slot cover to the PCIe bracket.
2. Remove the slot cover from the PCIe bracket.
3. Align the PCIe card onto the slot and push in the direction of the arrow until the PCIe card sits in the PCIe card connector.
4. Secure the PCIe card with the screw.
5. Reverse the previous steps to remove the PCIe card.





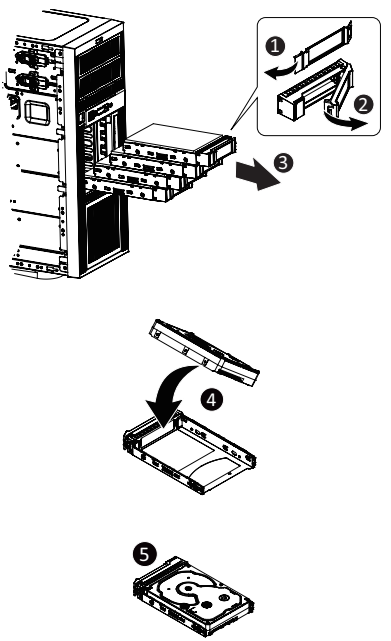
3-6 Installing the Hard Disk Drive

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 hard disk drive is connected to the hard disk drive connector on the backplane.

Follow these instructions to install a 3.5" hard disk drive:

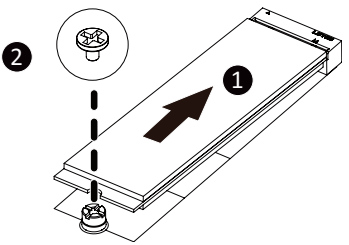
1. Press the release button.
2. Extend the locking lever.
3. Pull the locking lever in the direction indicated to remove the HDD tray.
4. Align the hard disk drive with the positioning stud on the HDD tray.
5. Slide the hard disk drive into the HDD tray.
6. Reinsert the HDD tray into the slot and close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



3-7 Installing and Removing the M.2 SSD Module

Follow the steps below to install an optional M.2 SSD module on your motherboard.

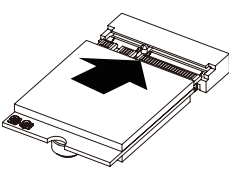
Step1. Insert the M.2 SSD module into the slot.
Step2. Secure it with the screw, tightening as necessary to fasten the M.2 SSD module in place.



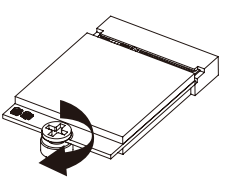
3-8 Installing and Removing the M.2 WiFi Module

Follow the steps below to install a M.2 WiFi module on your motherboard.

Step1. Carefully Insert the M.2 WiFi module into the slot.



Step2. Secure it with the screw, tightening as necessary to fasten the M.2 WiFi module in place.



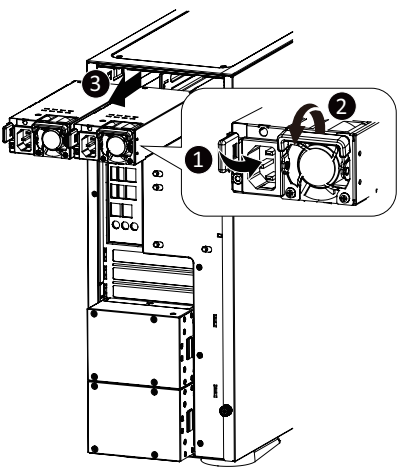
3-9 Removing and Installing the Power Supply

CAUTION!

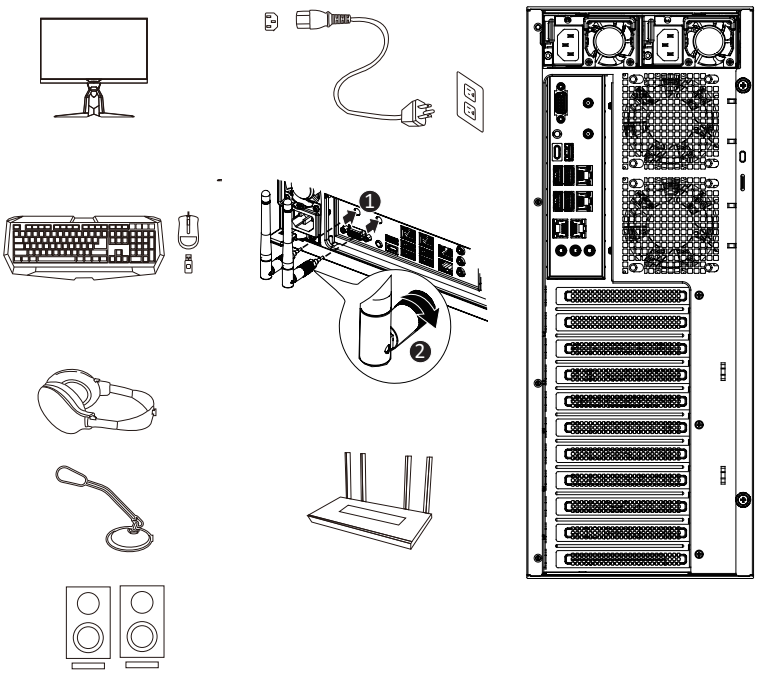
- In order to reduce the risk of injury from electric shock, disconnect AC power from the power supply before removing the power supply from the system.
- Please see Section 2-2 "Rear View" for installation sequence.

Follow these instructions to replace the power supply:

1. Flip and then grasp the power supply handle.
2. Press the retaining clip on the top side of the power supply in the direction indicated.
3. Pull out the power supply using the handle.
4. Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement power supply.

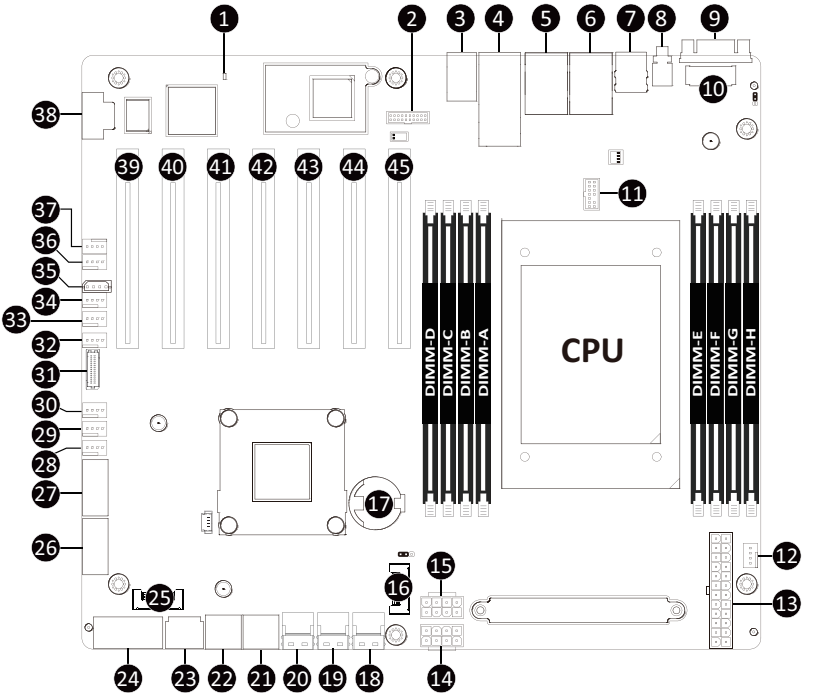


3-10 Peripheral Devices Connection



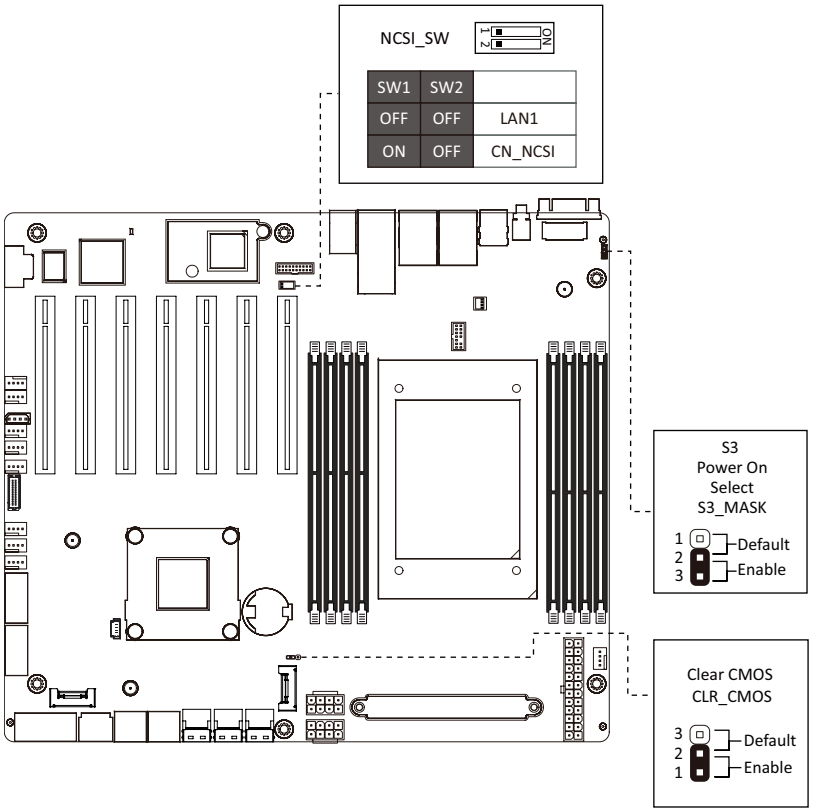
Chapter 4 Motherboard Components

4-1 Motherboard Components



Item	Description
1	BMC Firmware Readiness LED
2	NCSI Connector
3	Audio Connectors
4	10GbE LAN Ports
5	Server Management LAN Port (Top)/USB 3.2 Ports (Bottom)
6	GbE LAN Port (Top)/USB 3.2 Ports (Bottom)
7	USB 3.2 Type A Port (Top)/USB 3.2 Type C Port (Bottom)
8	ID Button with LED
9	VGA Port
10	M.2 Slot (WiFi/BT module, Support NGFF-2230)
11	TPM Connector
12	CPU Fan Connector
13	2x12 Pin Main Power Connector
14	2x4 Pin 12V Power Connector (for CPU)
15	2x4 Pin 12V Power Connector (for PCIe)
16	M.2 Slot (PCIe Gen4 x4, Support NGFF-2280)
17	Battery Socket
18	SlimLine SAS 4i Connector (SATA III/PCIe Gen4 x4 Signal)
19	SlimLine SAS 4i Connector (SATA III/PCIe Gen4 x4 Signal)
20	SlimLine SAS 4i Connector (SATA III/PCIe Gen4 x4 Signal)
21	SATA III 6Gb/s Connector #0/#1
22	SATA III 6Gb/s Connector #2/#3
23	PMBus Connector
24	Front Panel Header
25	M.2 Slot (PCIe Gen4 x4, Support NGFF-2280)
26	Front Panel USB 3.2 Connector #2
27	Front Panel USB 3.2 Connector #1
28	System Fan Connector #7
29	System Fan Connector #8
30	System Fan Connector #6
31	HDD Back Plane Board Connector
32	System Fan Connector #1
33	System Fan Connector #2
34	System Fan Connector #3
35	IPMB Connector
36	System Fan Connector #4
37	System Fan Connector #5
38	Serial Port Connector
39	PCIe x16 Slot (Gen4 x16)
40	PCIe x16 Slot (Gen4 x8)
41	PCIe x16 Slot (Gen4 x16)
42	PCIe x16 Slot (Gen4 x16)
43	PCIe x16 Slot (Gen4 x16)
44	PCIe x16 Slot (Gen4 x16)
45	PCIe x16 Slot (Gen4 x16)

4-2 Jumper Setting



Chapter 5 BIOS Setup

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

To access the BIOS Setup program, press the <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.

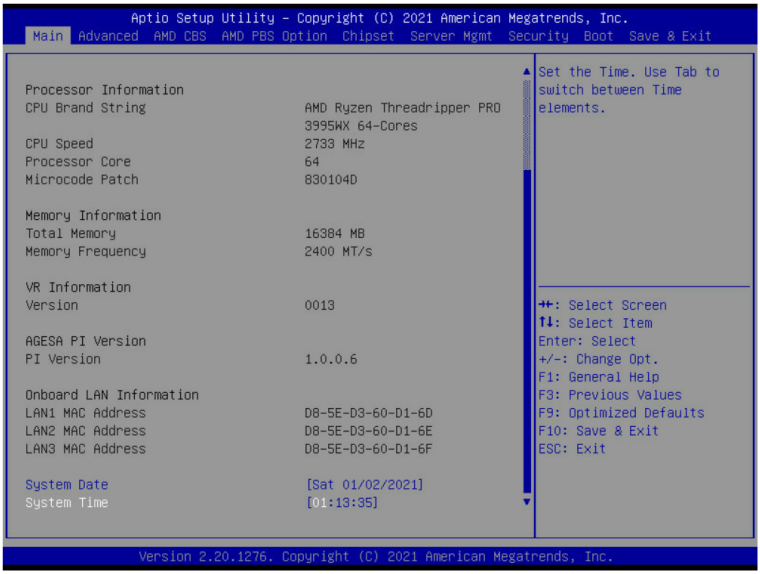
Main Menu Help

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(Note1)	
BMC Firmware Version(Note1)	Displays BMC firmware version information.
Processor Information	
CPU Brand String/ CPU Brand String/ CPU Speed / Processor Core / Microcode Patch	Displays the technical specifications for the installed processor(s).
Memory Information	
Total Memory(Note2)	Displays the total memory size of the installed memory.
Memory Frequency(Note2)	Displays the frequency information of the installed memory.
VR Information Version	Displays VR version information.

(Note1) Functions available on selected models.

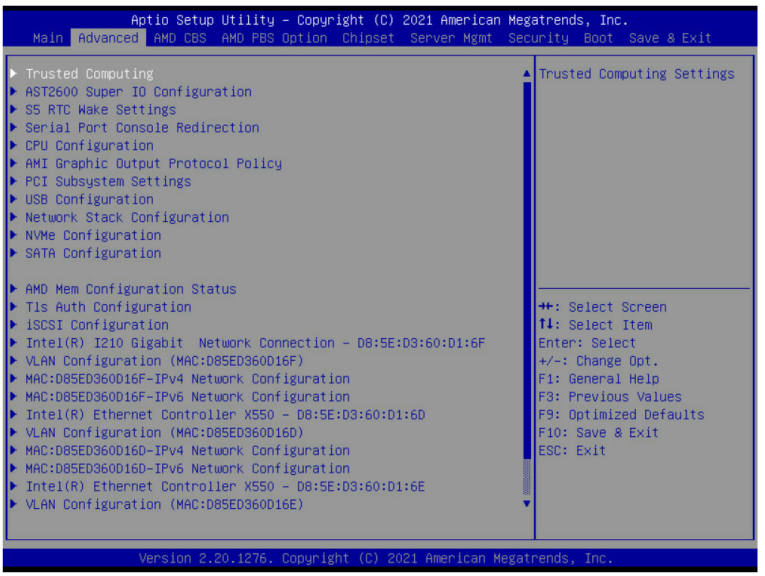
(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

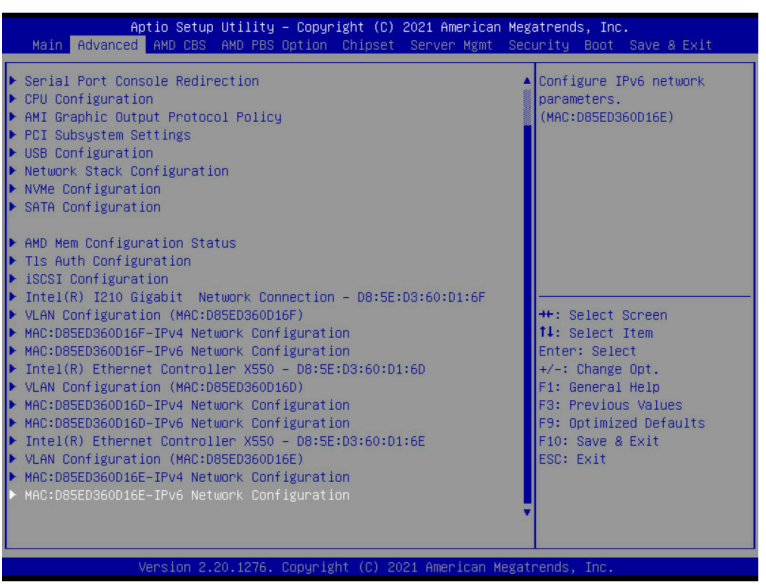
Parameter	Description
AGESA PI Version	
PI Version	Displays AGESA PI version information.
Onboard LAN Information	
LAN# MAC Address(Note3)	Displays LAN MAC address information.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

(Note3) The number of LAN ports listed will depend on the motherboard / system model.

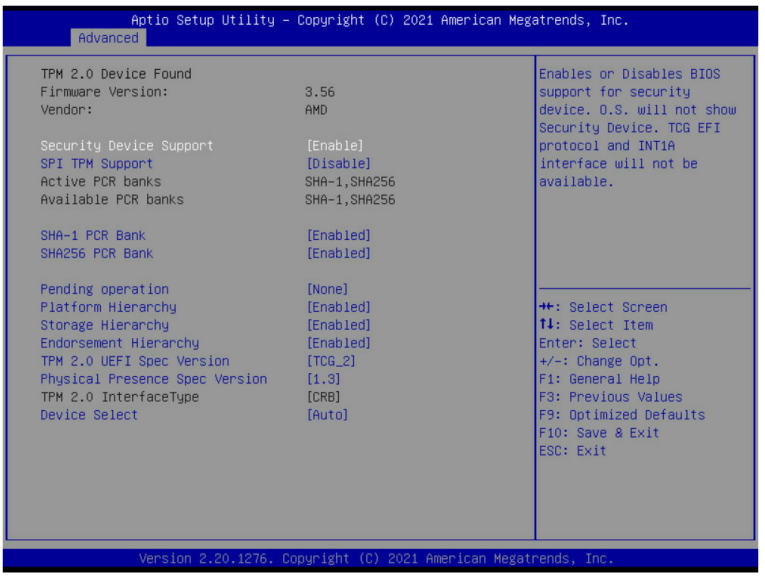
5-2 Advanced Menu

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





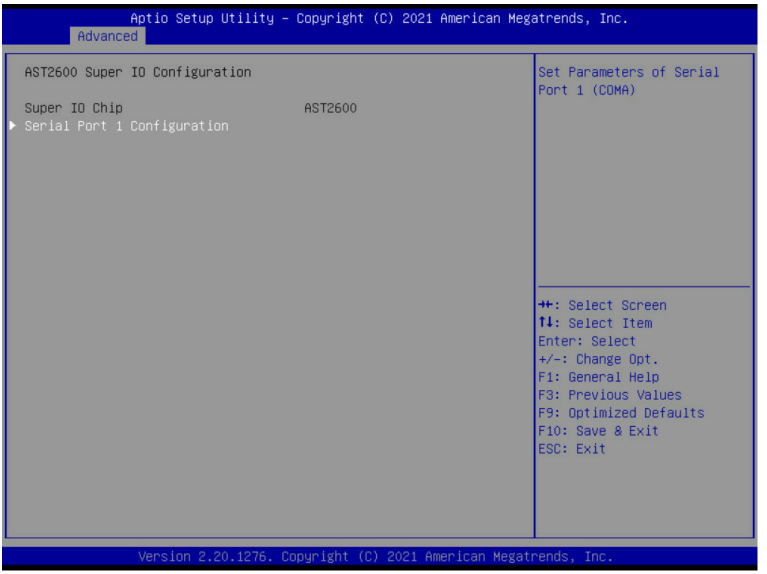
5-2-1 Trusted Computing



Parameter	Description
TPM20 Device Found	
Firmware Version	Displays the firmware version information.
Vendor	Displays the vendor information.
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	Enable/Disable SPI TPM Support. Options available: Enable, Disable. Default setting is **Disable**.
Active PCR banks	Displays active Platform Configuration Register (PCR) banks.
Available PCR banks	Displays available PCR banks.
SHA-1 PCR Bank	Enable/Disable SHA-1 PCR bank. Options available: Enabled, Disabled. Default setting is **Enabled**.
SHA256 PCR Bank	Enable/Disable SHA256 PCR bank. Options available: Enabled, Disabled. Default setting is **Enabled**.

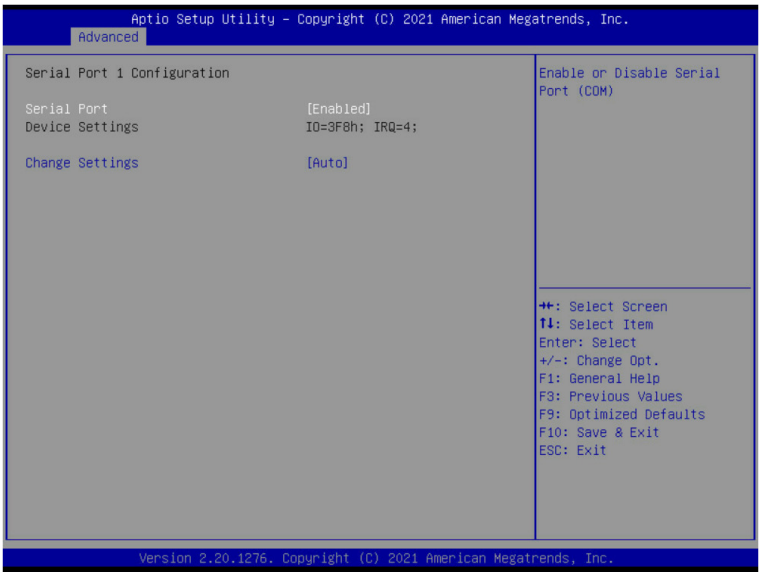
Parameter	Description
Pending operation	Schedule an operation for the security device. NOTE: Your computer will reboot during restart in order to change the state of a security device. Options available: None, TPM Clear. Default setting is **None**.
Platform Hierarchy	Enable/Disable platform hierarchy. Options available: Enabled, Disabled. Default setting is **Enabled**.
Storage Hierarchy	Enable/Disable storage hierarchy. Options available: Enabled, Disabled. Default setting is **Enabled**.
Endorsement Hierarchy	Enable/Disable endorsement hierarchy. Options available: Enabled, Disabled. Default setting is **Enabled**.
TPM2.0 UEFI Spec Version	Selects the TCG2 spec version support. Options available: TCG_1_2, TCG_2. Default setting is **TCG2**.
Physical Presence Spec Version	Selects the physical presence spec version. Options available: 1.2, 1.3. Default setting is **1.3**.
TPM 20 InterfaceType	Displays the TPM 2.0 interface type.
Device Select	Selects the TPM device. Options available: TPM 1.2, TPM 2.0, Auto. Default setting is **Auto**.

5-2-2 AST2600 Super IO Configuration



Parameter	Description
AST2600 Super IO Configuration	
Super IO Chip	Displays the super IO chip information
Serial Port 1 Configuration	Press [Enter] for configuration of advanced items.

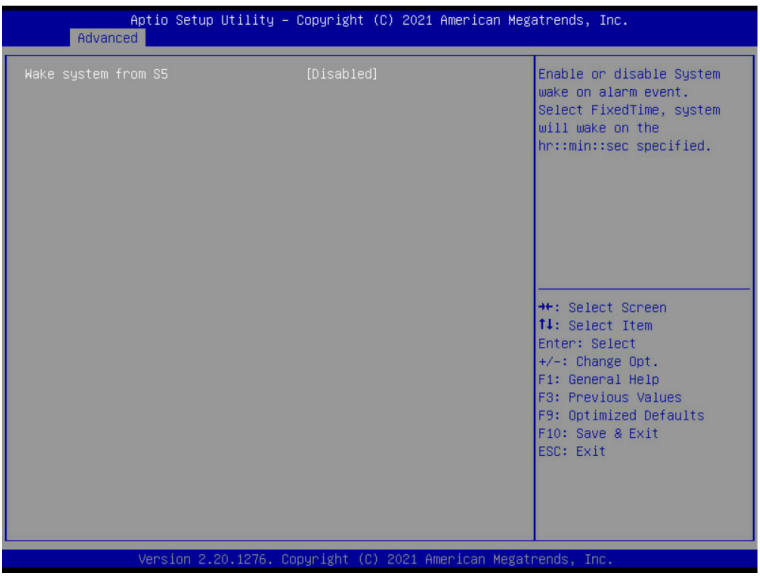
5-2-2-1 Serial Port 1 Configuration



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 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 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**.

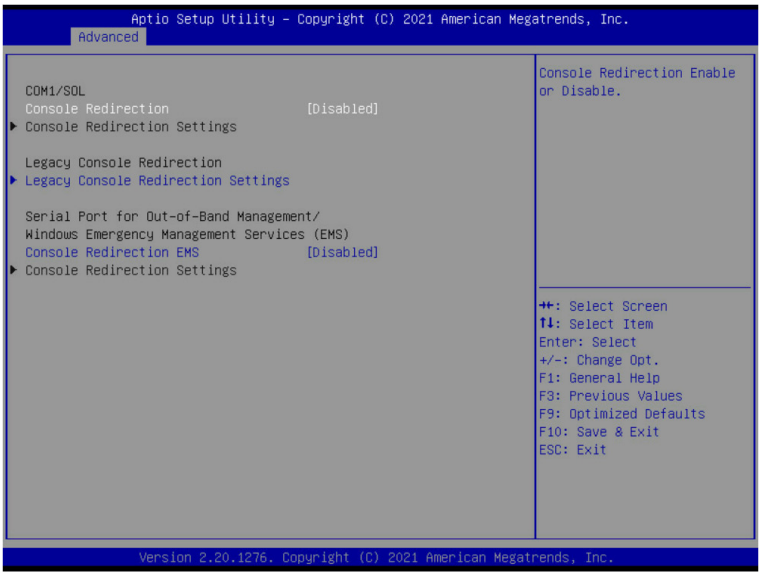
(Note1) Advanced items prompt when this item is defined.
(Note2) This item appears when **Serial Port** is set to **Enabled**.

5-2-3 S5 RTC Wake Settings



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

5-2-4 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 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.

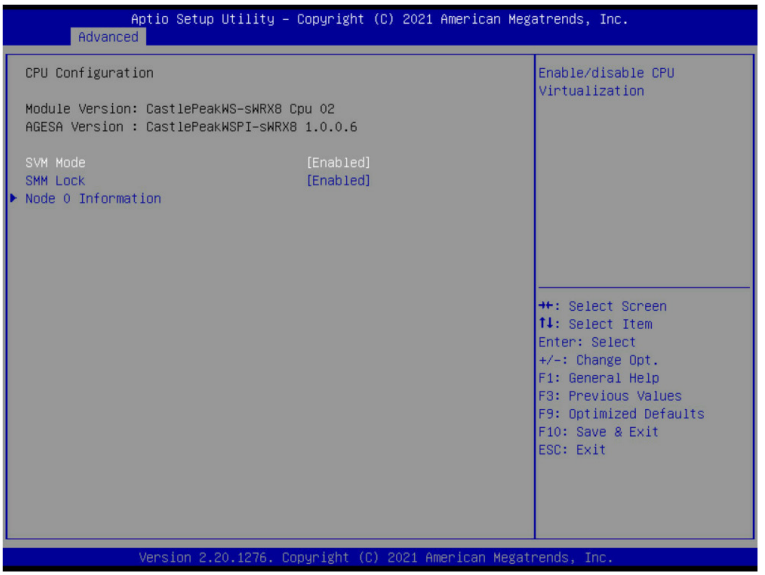
Parameter	Description
COM1/Serial Over LAN Console Redirection Settings (continued)	◆ Parity – A parity bit can be sent with the data bits to detect some transmission errors. – Even: parity bit is 0 if the num of 1's in the data bits is even. – Odd: parity bit is 0 if num of 1's in the data bits is odd. – 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 – 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 FunctionKey and KeyPad on Putty. – Options available: VT100, LINUX, XTERMR6, SC0, ESCN, VT400. Default setting is **VT100**.

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. – Default setting is **COM1/SOL**. ◆ 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 Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Default setting is **COM1/SOL**. ◆ Terminal Type EMS – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is **VT-UTF8**. ◆ Bits per second EMS – 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.

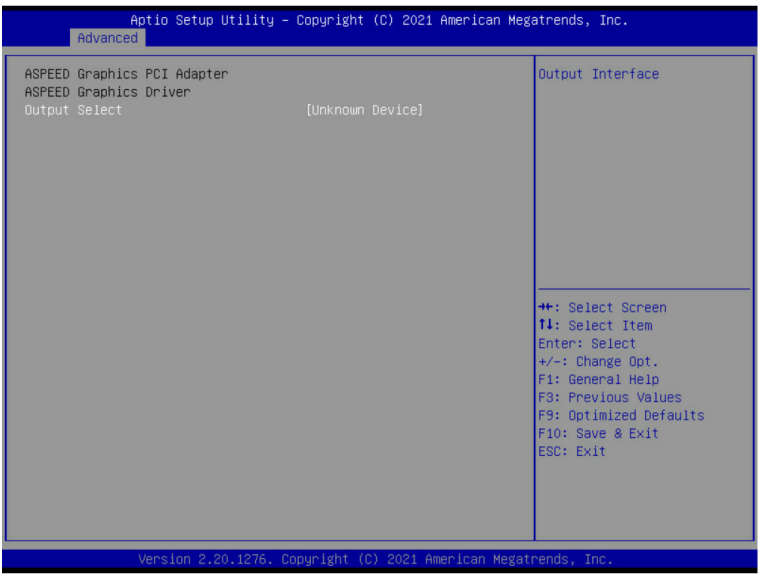
Parameter	Description
Serial Port for Out-of-Band EMS Console Redirection Settings(continued)	◆ Flow Control EMS – Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty,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

5-2-5 CPU Configuration



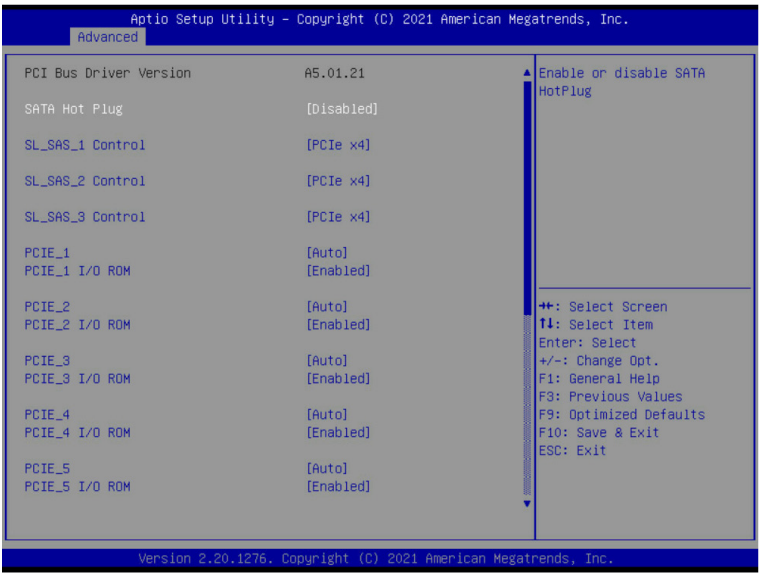
Parameter	Description
CPU Configuration	
Module Version	Displays the module version information.
AGESA Version	Displays the AGESA version information.
SVM Mode	Enable/Disable the CPU Virtualization. Options available: Enabled, Disabled. Default setting is **Enabled**.
SMM Lock	Enable/Disable the CPU Lock. Options available: Enabled, Disabled. Default setting is **Enabled**.
Node 0 Information	Press [Enter] to view the information related to CPU 0.

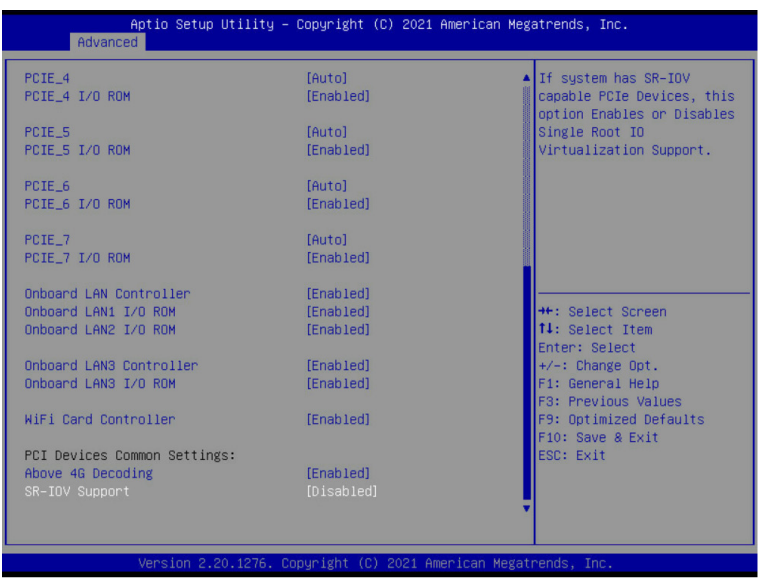
5-2-6 AMI Graphic Output Protocol Policy



Parameter	Description
ASPEED Graphics PCI Adapter	
ASPEED Graphics Driver	
Output Select	Selects Monitor Output by Graphic Output Protocol.

5-2-7 PCI Subsystem Settings





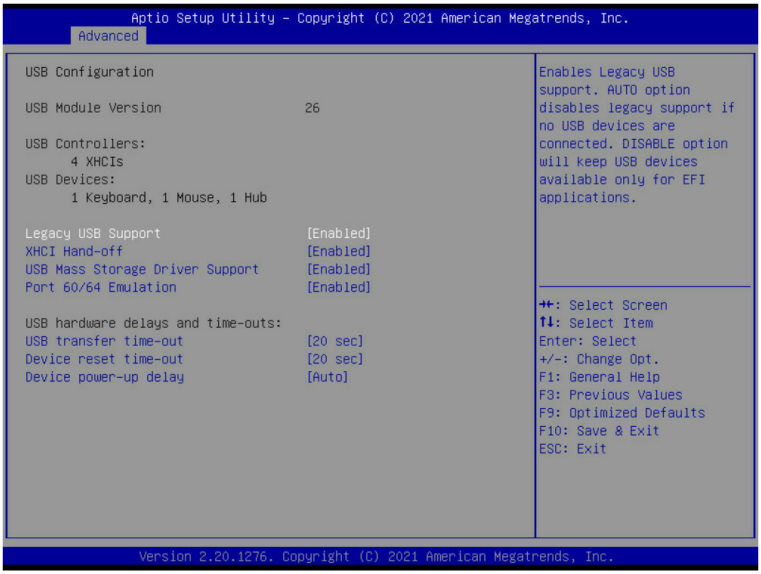
Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
SATA Hot Plug	Enable/Disable SATA Hot Plug. Options available: Enabled, Disabled. Default setting is **Disabled**.
SL_SAS_# Control(Note1)	Change Slimline SAS function to SATA/NVMe setting. Options available: Disabled, SATA, PCIe x4. Default setting is **PCIe x4**.
PCIE_# (Note2)	Change the PCIe lanes. Options available: Disabled, Auto, x8, x4x4, x16, x8x8, x8x4x4, x4x4x8, x4x4x4x4. Default setting is **Auto**.
PCI_# I/O ROM(Note2)	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 LAN Controller(Note3)	Enable/Disable the onboard LAN devices. Options available: Enabled, Disabled. Default setting is **Enabled**.
Onboard LAN I/O ROM(Note3)	Enable/Disable the onboard LAN devices, and initializes device expansion ROM. Options available: Enabled, Disabled. Default setting is **Enabled**.
WiFi Card Controller	Enable/Disable WiFi Card Controller. 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 **Disabled**.

(Note1) This section is dependent on the available Slimline SAS controller.

(Note2) This section is dependent on the available PCIe Slot.

(Note3) This section is dependent on the available LAN controller.

5-2-8 USB Configuration

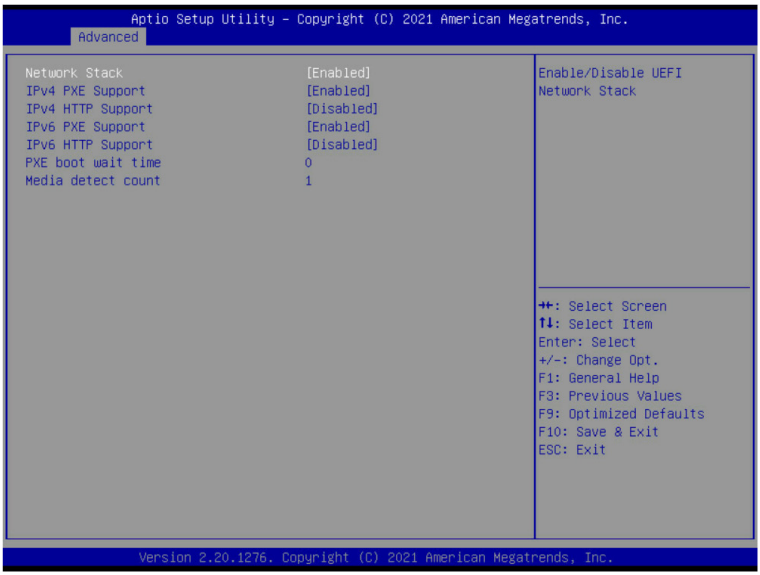


Parameter	Description
USB Configuration	
USB Module Version	Displays the USB module version information.
USB Controllers	Displays the supported USB controllers.
USB Devices:	Displays the USB devices connected to the system.
Legacy USB Support	Enable/Disable the Legacy USB support function. AUTO option 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**.
Port 60/64 Emulation	Enables the I/O port 60h/64h emulation support. This should be enabled for the complete USB Keyboard Legacy support for non-USB aware OS. Options available: Enabled, Disabled. Default setting is **Enabled**.

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

Parameter	Description
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**.
Device reset time-out	Selects the time-out value during a USB mass storage device reset. 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**.

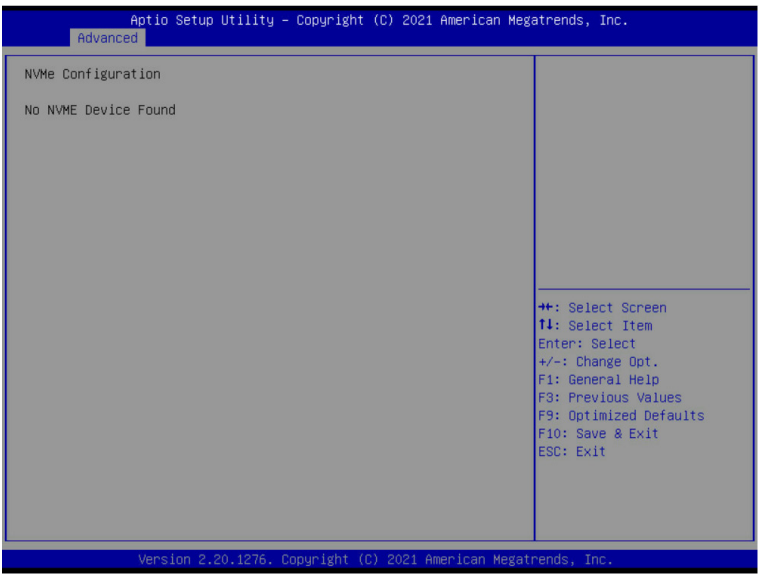
5-2-9 Network Stack Configuration



Parameter	Description
Network Stack	Enable/Disable the UEFI network stack. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv4 PXE Support(Note)	Enable/Disable the Ipv4 PXE feature. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv4 HTTP Support(Note)	Enable/Disable the Ipv4 HTTP feature. Options available: Enabled, Disabled. Default setting is **Disabled**.
Ipv6 PXE Support(Note)	Enable/Disable the Ipv6 PXE feature. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv6 HTTP Support(Note)	Enable/Disable the Ipv6 HTTP feature. Options available: Enabled, Disabled. Default setting is **Disabled**.
PXE boot wait time(Note)	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(Note)	Number of times the presence of media will be checked. Press the <+> / <-> keys to increase or decrease the desired values.

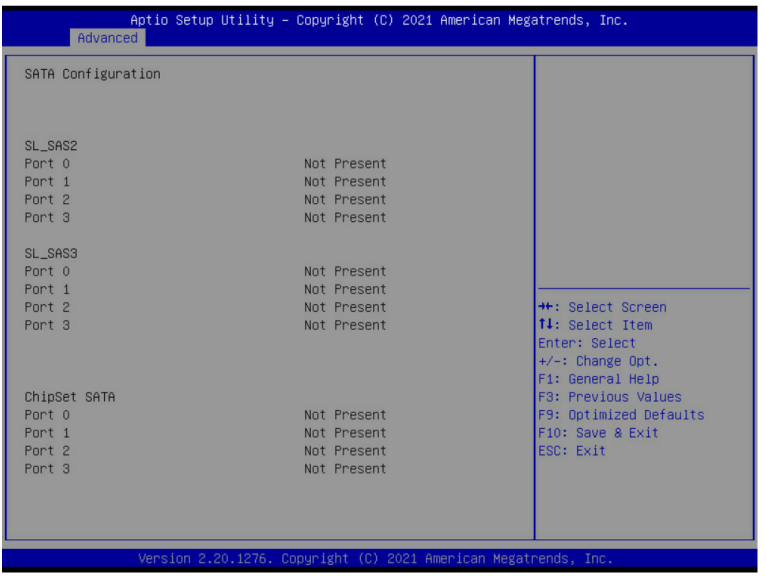
(Note) This item appears when **Network Stack** is set to **Enabled**.

5-2-10 NVMe Configuration



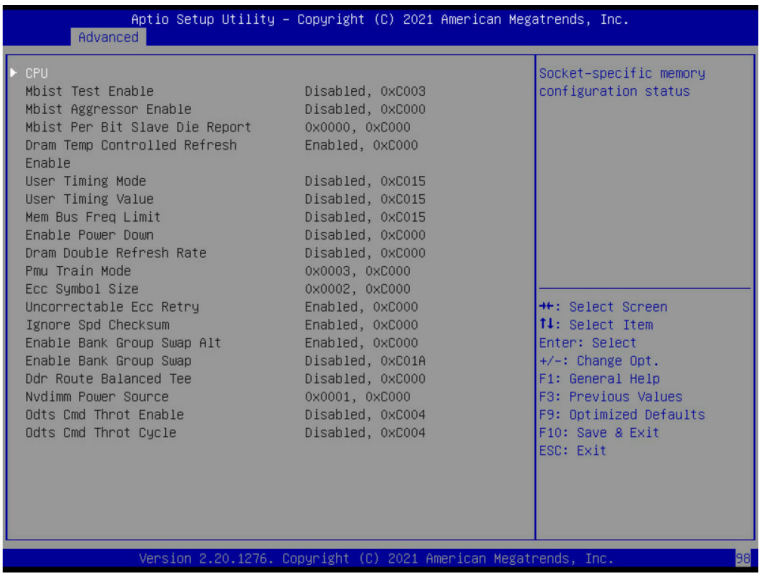
Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system.

5-2-11 SATA Configuration



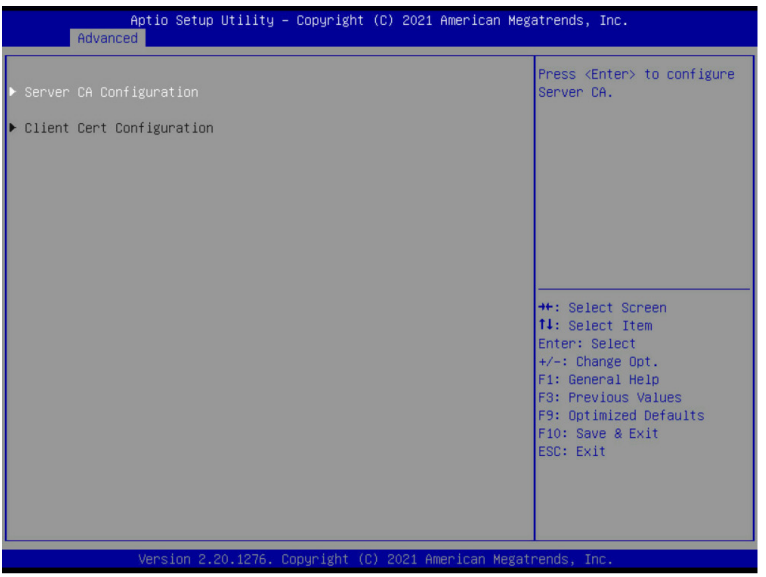
Parameter	Description
SATA Configuration	Displays the installed HDD devices information. System will automatically detect HDD type.

5-2-12 AMD Mem Configuration Status



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

5-2-13 Tls Auth Configuration

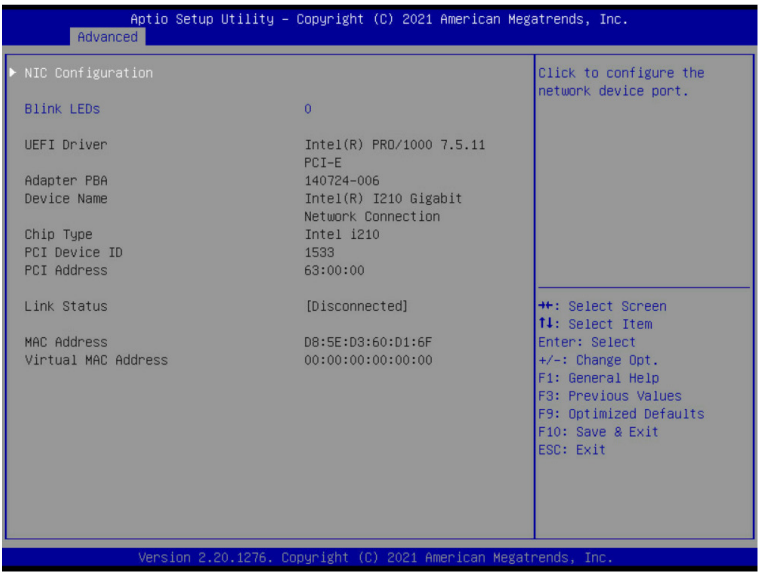


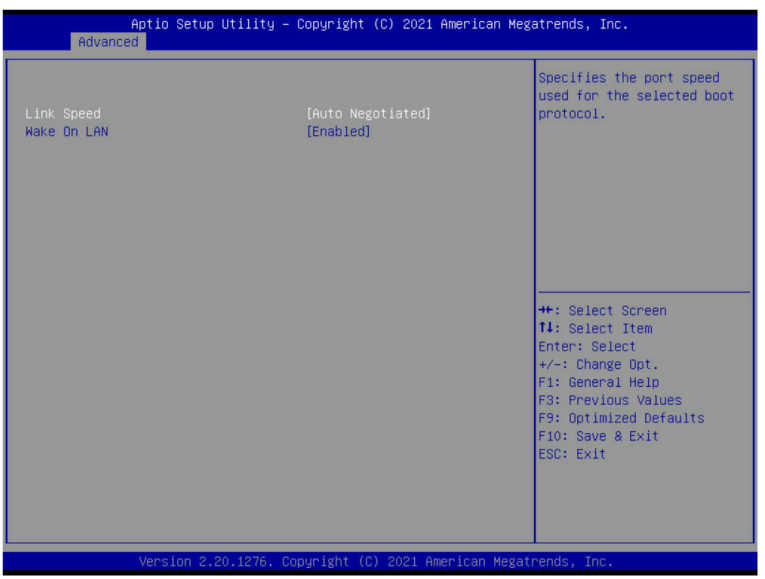
Parameter	Description
Server CA Configuration	Press [Enter] for configuration of advanced items. ◆ Enroll Cert – Press [Enter] to enroll a certificate • Enroll Cert Using File • Cert GUID Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes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

5-2-14 iSCSI Configuration

Parameter	Description
Attempt Priority	Press [Enter] to configure advanced items. ◆ Attempt Priority – Change the priority using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list. ◆ Commit Changes and Exit
Host iSCSI Configuration	Press [Enter] to configure advanced items. ◆ iSCSI Initiator Name – Press [Enter] and name iSCSI Initiator. Only IQN format is accepted. Range: from 4 to 223 ◆ Add an Attempt ◆ Delete Attempts ◆ Change Attempt Order

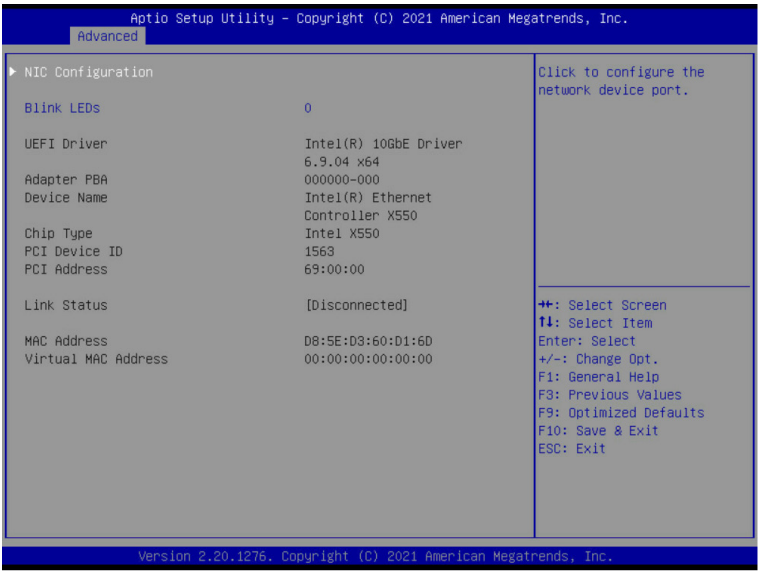
5-2-15 Intel(R) I210 Gigabit Network Connection

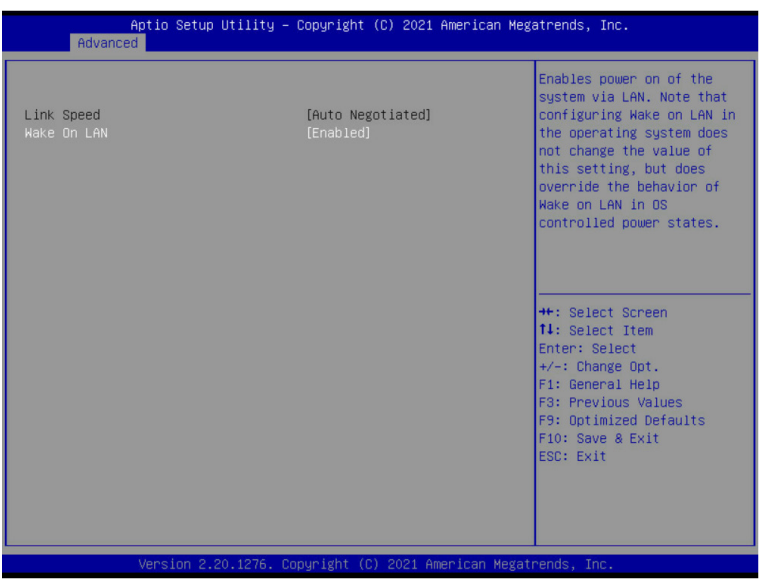




Parameter	Description
NIC Configuration	Press [Enter] to configure advanced items. ◆ Link Speed – Allows for automatic link speed adjustment. – Options available: Auto Negotiated, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, 100 Mbps Full. Default setting is **Auto Negotiated**. ◆ Wake On LAN – Enables 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: Disabled, Enabled. Default setting is **Enabled**.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

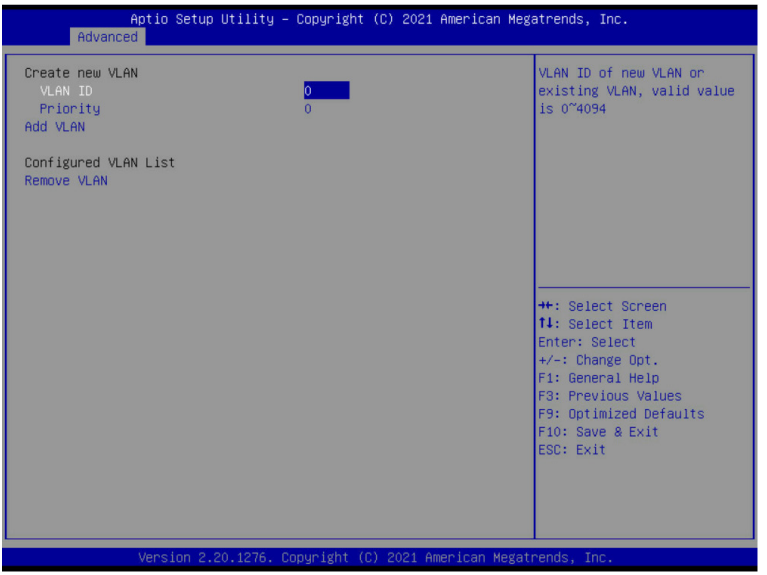
5-2-16 Intel X550 10GBASE-T Network Connection





Parameter	Description
NIC Configuration	Press [Enter] to configure advanced items. ◆ Link Speed – Allows for automatic link speed adjustment. – 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: Disabled, Enabled. Default setting is **Enabled**.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

5-2-17 VLAN Configuration



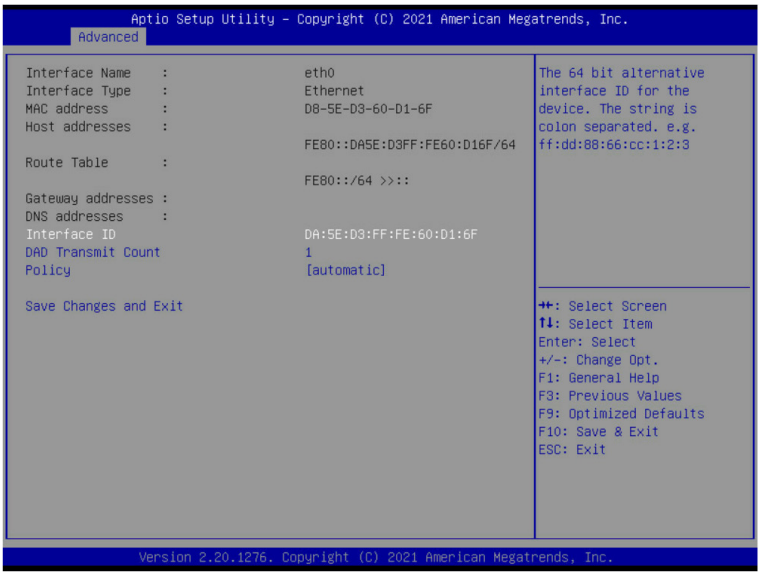
Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Create new VLAN ◆ VLAN ID – Sets VLAN ID for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 4094. ◆ Priority – Sets 802.1Q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

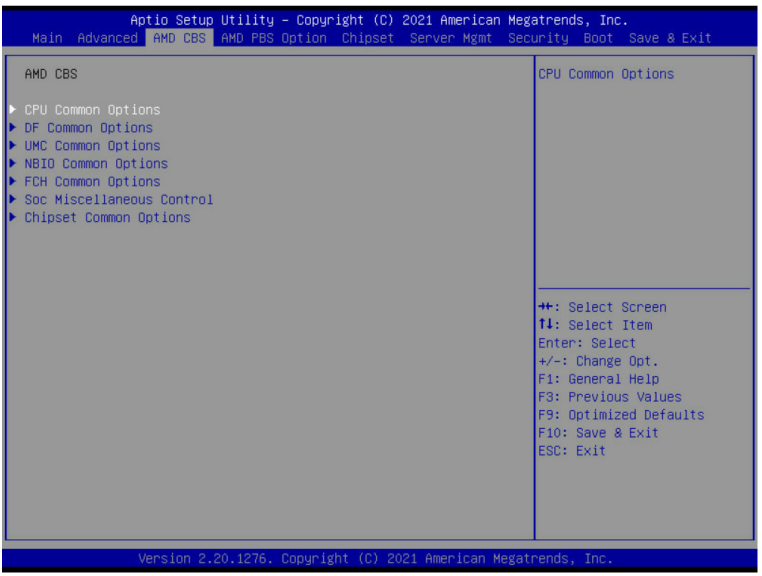
5-2-19 MAC IPv6 Network Configuration



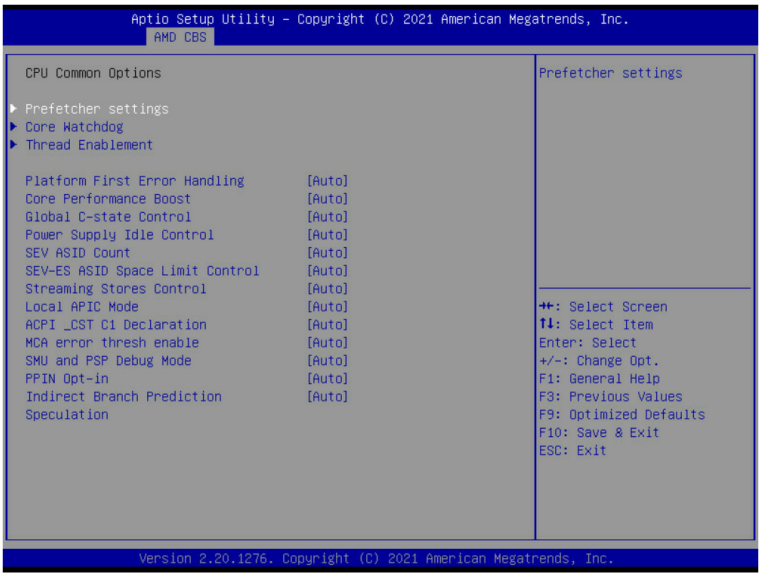
Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Displays the MAC Address information. ◆ Interface ID – The 64 bit alternative interface ID for the device. The string is colon separated. e.g. ff:dd:88:66:cc:1:2:3. ◆ DAD Transmit Count – The number of consecutive 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.

5-3 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

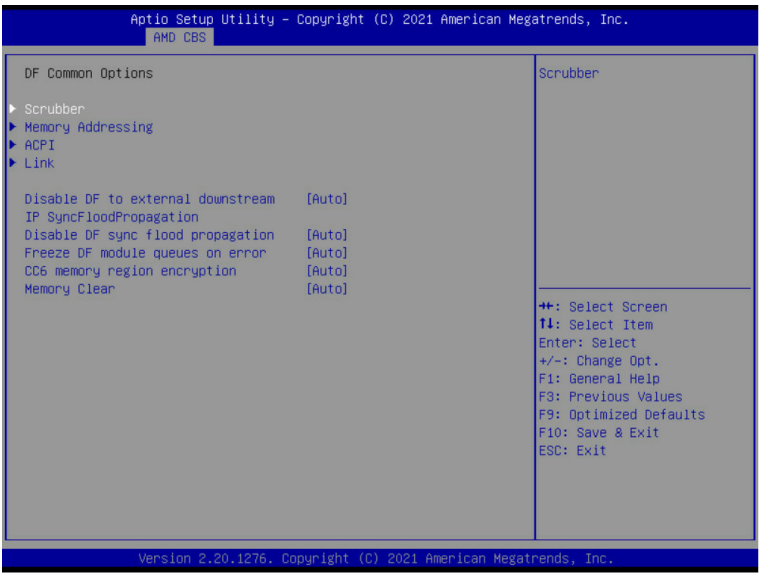


Parameter	Description
CPU Common Options	
Prefetcher settings	Press [Enter] for configuration of advanced items. ◆ L1 Stream HW Prefetcher – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ L2 Stream HW Prefetcher – Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Core Watchdog	Press [Enter] for configuration of advanced items. ◆ Core Watchdog Timer Enable – Enable/Disable CPU Watchdog Timer. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ Core Watchdog Timer Interval(Note) – Specifies the CPU Watchdog Timer interval. – Default setting is **Auto**. ◆ Core Watchdog Timer Severity(Note) – Specifies the CPU Watchdog Timer Severity. – Options available: Auto, No Error, Transparent, Corrected, Deferred, Uncorrected, Fatal. Default setting is **Auto**.
Thread Enablement	Press [Enter] for configuration of advanced items. ◆ SMT Control – Enable/Disable Symmetric Multithreading. – Options available: Auto, Disable. Default setting is **Auto**.

(Note) This item appears when **Core Watchdog Timer Enable** is set to **Enabled**.

Parameter	Description
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**.
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	Options available: Compatibility, xAPIC, x2APIC, Auto. Default setting is **Auto**.
ACPI_CST C1 Declaration	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**.
PPIN Opt-in	Enable/Disable the PPIN feature. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Indirect Branch Prediction Speculation	Enabled: Enter system memory is covered. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

5-3-2 DF Common Options

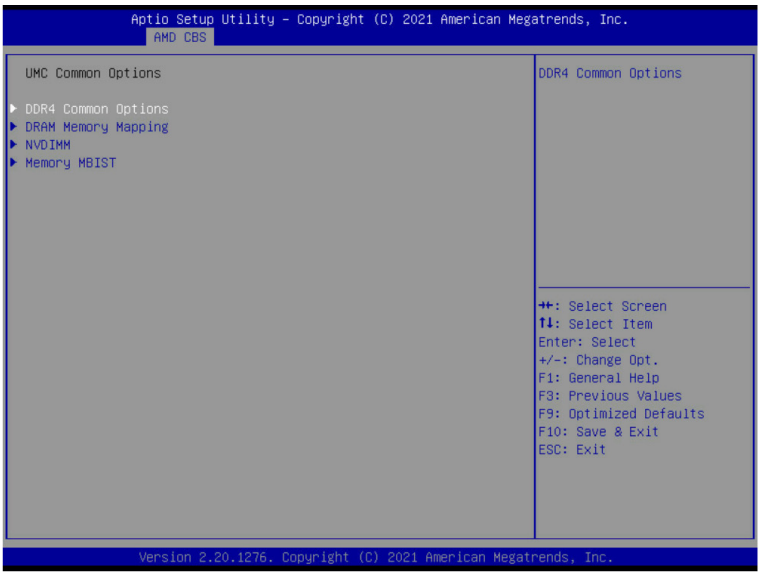


Parameter	Description
DF Common Options	
Scrubber	Press [Enter] for configuration of advanced items. ◆ DRAM scrub time – Provide a value that is the number of hours to scrub memory. – Options available: Auto, Disabled, 1 hour, 4 hours, 8 hours, 16 hours, 24 hours, 48 hours. Default setting is **Auto**. ◆ 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**.
Memory Addressing	Press [Enter] for configuration of advanced items. ◆ NUMA nodes per socket – Specifies the number of desired NUMA nodes per socket. – Options available: Auto, NPS0, NPS1, NPS2, NPS4. Default setting is **Auto**. ◆ Memory interleaving – Enable/Disable the Memory interleaving feature. – Options available: Auto, Disabled. Default setting is **Auto**.

Parameter	Description
Memory Addressing (continued)	◆ 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**.
ACPI	Press [Enter] for configuration of advanced items. ◆ ACPI SRAT L3 Cache As NUMA Domain – Enable/Disable report each L3 cache as a NUMA Domain to the OS. – 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**.
Link	Press [Enter] for configuration of advanced items. ◆ 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. Default setting is **Auto**. ◆ 3-link xGMI max speed – Specifies the max speed of 3-link xGMI. Default setting is **Auto**. ◆ xGMI TXEQ Mode – Configures xGMI TXEQ/RX vetting Mode. – Options available: Auto, TXEQ_Disabled, TXEQ_Lane, TXEQ_Link, TXEQ_RX_Vet. Default setting is **Auto**.

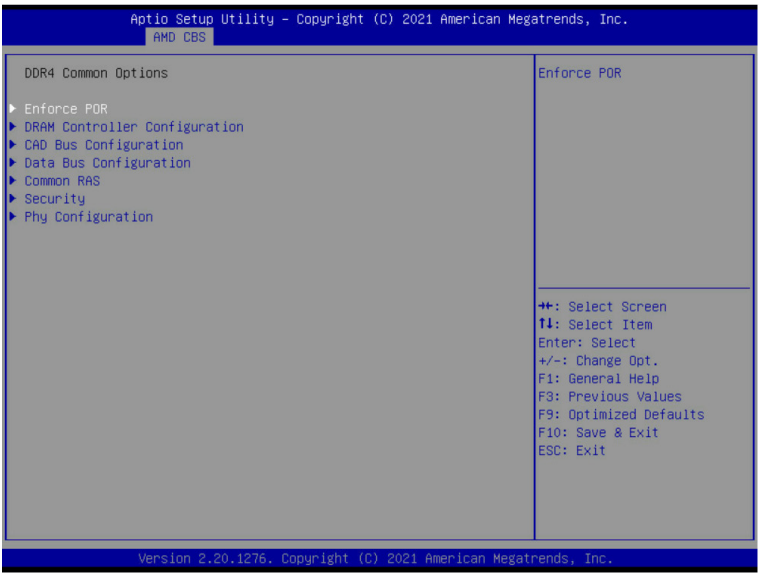
Parameter	Description
Disable DF to external IP sync flood propagation	Enable/Disable SyncFlood to UMC & downstream slaves. Options available: Auto, Sync flood disabled, Sync flood enabled. Default setting is **Auto**.
Disable DF sync flood propagation	Enable/Disable DF Sync Flood propagation. Options available: Auto, Sync flood disabled, Sync flood enabled. Default setting is **Auto**.
Freeze 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**.
Memory Clear	Enable/Disable the Memory Clear feature. Options available: Auto, Enabled, Disabled. 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

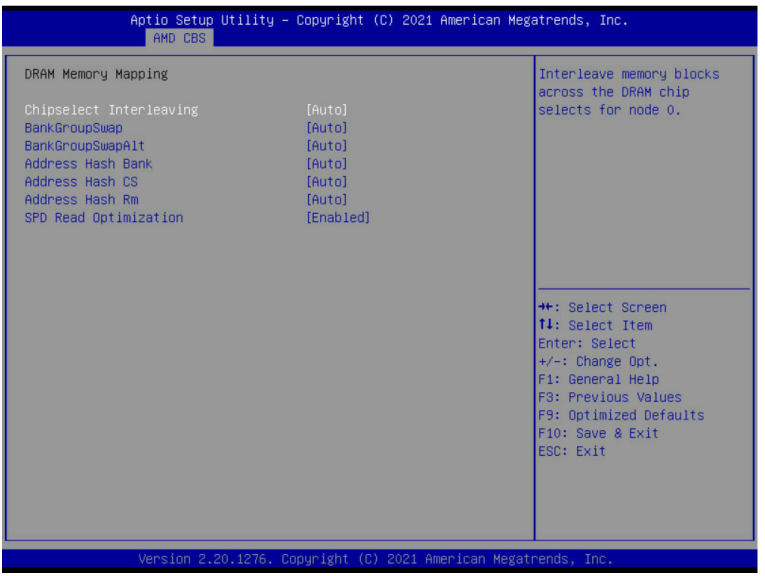


Parameter	Description
DDR4 Common Options	
Enforce POR	Press [Enter] to enable / disable restrictions for DDR4 frequency and voltage programming. Memory speeds will be capped at AMD guidelines. ◆ Decline ◆ Accept – Overclock » Enable/Disable Memory Overclock Settings » Options available: Auto, Enabled. Default setting is **Auto.**
DRAM Controller Configuration	Press [Enter] for configuration of advanced items. ◆ DRAM Power Options – Power Down Enable » Enable/Disable DDR power down mode. » Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ 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**.

Parameter	Description
CAD Bus Configuration	Press [Enter] for configuration of advanced items. ◆ 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**.
Data Bus Configuration	Press [Enter] for configuration of advanced items. ◆ Data Bus Configuration User Controls – Specifies the mode for drive strength to Auto or Manual. – Options available: Auto, Manual. Default setting is **Auto**.
Common RAS	Press [Enter] for configuration of advanced items. ◆ 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: Enable, Disable, Default. Default setting is **Default**. ◆ 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.** ◆ Disable Memory Error Injection – Options available: False, True. Default setting is **True**. ◆ ECC Configuration – 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**.

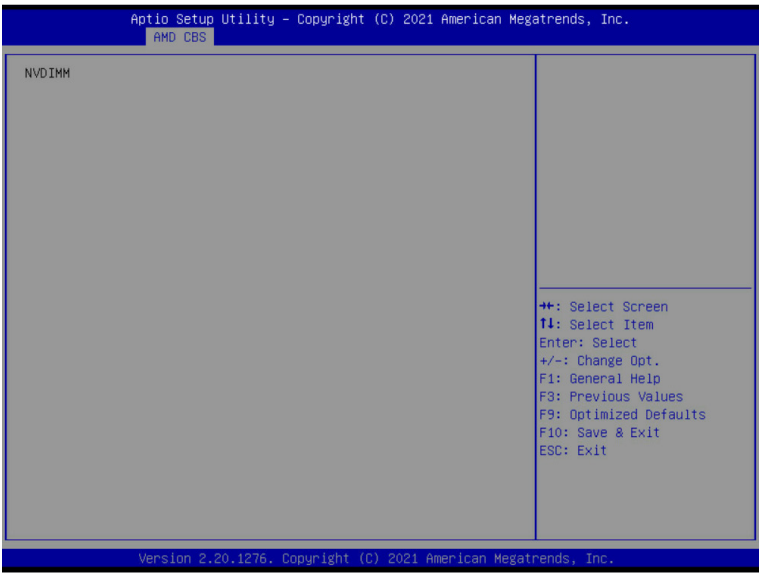
Parameter	Description
Security	Press [Enter] for configuration of advanced items. ◆ TSME – Enable/Disable transparent secure memory encryption. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ Data Scramble – Enable/Disable Data Scrambling. Options available: Auto, Enabled, Disabled. Default setting is **Auto**..
Phy Configuration	Press [Enter] for configuration of advanced items. ◆ PMU Training – DFE Read Training » Perform 2D Read Training with DFE on. » Options available: Auto, Enable, Disable. Default setting is **Auto**. – FFE Write Training » Perform 2D Write Training with FFE on. » Options available: Auto, Enable, Disable. Default setting is **Auto**. – PMU Pattern Bits Control » Options available: Auto, Manual. Default setting is **Auto**. – MR6VrefDQ Control » Options available: Auto, Manual. Default setting is **Auto**. – CPU Vref Training Seed Control » Options available: Auto, Manual. Default setting is **Auto**.

5-3-3-2 DRAM Memory Mapping



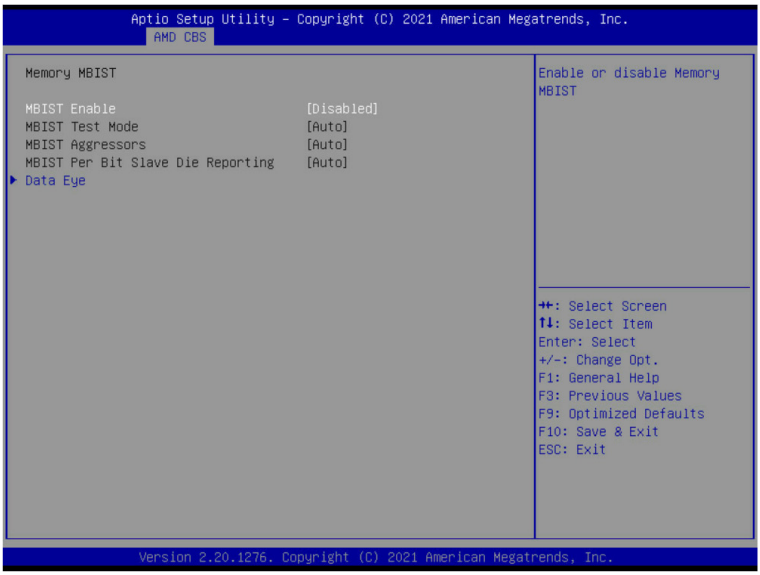
Parameter	Description
DRAM Memory Mapping	
Chipselect Interleaving	Interleave memory blocks across the DRAM chip selects for node 0. Options available: Auto, Disabled. Default setting is **Auto**.
BankGroupSwap	Configures the BankGroupSwap. BankGroupSwap (BGS) is a new memory mapping option in AGESA 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	Displays the information of the devices/controllers if installed

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. ◆ Pattern Select – Options available: PRBS, SSO, Both. Default setting is **PRBS**. ◆ Pattern Length – Determines the pattern length. The possible options are N=3....12.

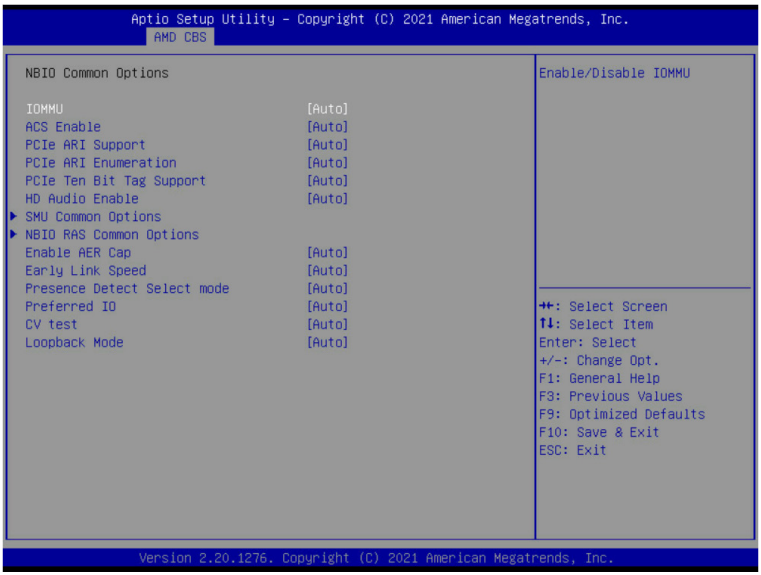
(Note) This item is available when **MBIST Enable** is set to **Enabled**.

Parameter	Description
Data Eye (Continued)	◆ 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(Note1) ◆ Aggressor Static Lane Select Lower 32 bits(Note1) ◆ Aggressor Static Lane Select ECC(Note1) ◆ Aggressor Static Lane Value(Note1) ◆ Target Static Lane Control – Enable/Disable the Target Static Lane Control function. – Options available: Enabled, Disabled. Default setting is **Disabled**. ◆ Target Static Lane Select Upper 32 bits(Note2) ◆ Target Static Lane Select Lower 32 bits(Note2) ◆ Target Static Lane Select ECC(Note2) ◆ Target Static Lane Value(Note2) ◆ Worst Case Margin Granularity – Options available: Per Chip Select, Per Nibble. Default setting is **Per Chip Select**. ◆ Read Voltage Sweep Step Size – Options available: 1, 2, 4. Default setting is **1**. ◆ Read Timing Sweep Step Size – Options available: 1, 2, 4. Default setting is **1**. ◆ Write Voltage Sweep Step Size – Options available: 1, 2, 4. Default setting is **1**. ◆ Write Timing Sweep Step Size – Options available: 1, 2, 4. Default setting is **1**.

(Note1) This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.

(Note2) This item is configurable when **Target Static Lane Control** is set to **Enabled**.

5-3-4 NBIO Common Options



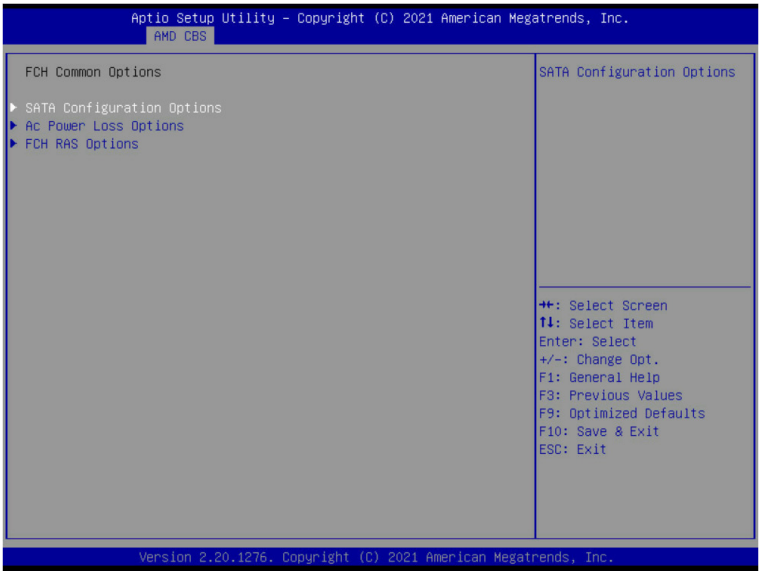
Parameter	Description
NBIO Common Options	
IOMMU	Enable/Disable the IOMMU function. Options available: Enabled, Disabled, Auto. Default setting is **Auto**.
ACS Enable	AER must be enabled for ACS enable to work. Options available: Auto, Enable, Disabled. Default setting is **Auto**.
PCIe ARI Support	Enable/Disable Alternative Routing-ID Interpretation. Options available: Auto, Enable, Disable. Default setting is **Auto**.
PCIe ARI Enumeration	ARI Forwarding Enable for each downstream port. Options available: Auto, Enable, Disable. Default setting is **Auto**.
PCIe Ten Bit Tag Support	Enable/Disable PCIe ten bit tags for supported devices. (Auto=Disabled) Options available: Auto, Enable, Disable. Default setting is **Auto**.
HD Audio Enable	Options available: Auto, Enable, Disabled. Default setting is **Auto**.
SMU Common Options	Press [Enter] for configuration of advanced items. ◆ 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**.

Parameter	Description
SMU Common Options (continued)	◆ Fan Control – Press [Enter] for configuration of advanced items. – Fan Table Control » Options available: Auto, Manual. Default setting is **Auto**. ◆ 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**. ◆ APBDIS – Options available: Auto, 0, 1. Default setting is **Auto**. ◆ DF Cstates – Enable/Disable DF C-states. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ CPPC – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ CPPC Preferred Cores – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ NBIO LCLK DPM – Press [Enter] for configuration of advanced items. – NBIO DPM Control – This setting controls how the NBIO Power Management is controlled. – Options available: Auto, Manual. Default setting is **Auto**.
NBIO RAS Common Options	Press [Enter] for configuration of advanced items. ◆ NBIO RAS Global Control – Options available: Auto, Manual. Default setting is **Auto**. ◆ NBIO RAS Control – Options available: Disabled, MCA, Legacy. Default setting is **MCA**. ◆ Egress Poison Severity High – Configures the Egress Poison High Severity. Each bit set to 1 enables High severity on the associated IOHC egress port. A bit of 0 indicates LOW severity. ◆ Egress Poison Severity Low – Configures the Egress Poison Low Severity. Each bit set to 1 enables High severity on the associated IOHC egress port. A bit of 0 indicates LOW severity. ◆ 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**.

Parameter	Description
NBIO RAS Common Options (continued)	◆ NBIO SyncFlood Reporting – The value may be used to enable SyncFlood reporting to APML. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ 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. ◆ Uncorrected Converted to Poison Enable Mask High – Enables mask for masking of uncorrectable parity errors on internal arrays. ◆ Uncorrected Converted to Poison Enable 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 milliseconds. ◆ 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 **Auto**. ◆ 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**.
Enable AER Cap	Enable/Disable Advanced Error Reporting Capability. Options available: Auto, Enable, Disabled. Default setting is **Auto**.

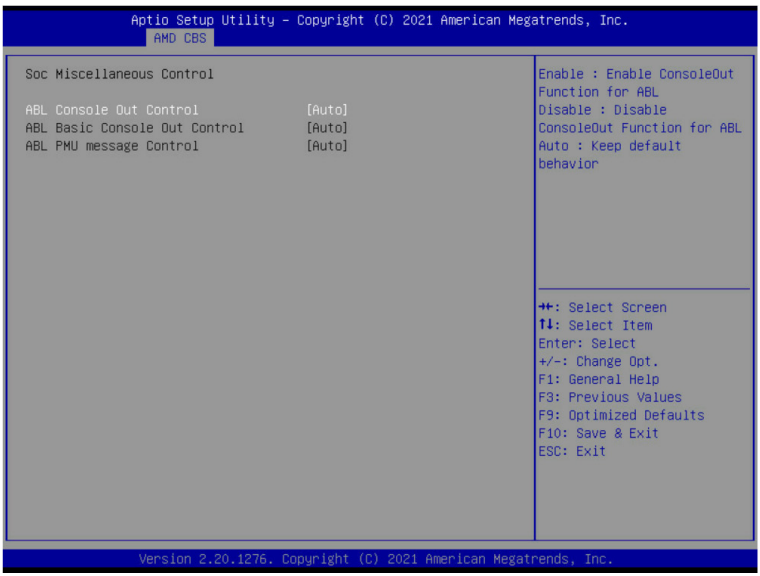
Parameter	Description
Early Link Speed	Configures Early Link Speed. Options available: Auto, Gen1, Gen2. Default setting is **Auto**.
Presence Detect Select mode	Controls the Presence Detect Select mode. Options available: Auto, OR, AND. Default setting is **Auto**.
Preferred IO	Preferred IO select type. Manual: Bus Number manually. Auto: Default. Options available: Auto, Manual. Default setting is **Auto**.
CV test	Enable/Disable the running PCIECV tool support. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Loopback Mode	Enable/Disable PCIe Loopback Mode. Options available: Enable, Disable. Default setting is **Disable**.

5-3-5 FCH Common Options



Parameter	Description
FCH Common Options	
SATA Configuration Options	Press [Enter] for configuration of advanced items. ◆ SATA Enable – Enable/Disable OnChip SATA controller. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
AC Power Loss Options	Press [Enter] for configuration of advanced items. ◆ AC Loss Control – Selects the AC Loss Control Method. – Options available: Power Off, Power On, Last State. Default setting is **Last State**.
FCH RAS Options	Press [Enter] for configuration of advanced items. ◆ ALink RAS Support – Enable/Disable the ALink RAS Support. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ Reset after sync flood – Enable/Disable AB to forward downstream sync-flood message to system controller. – Options available: Auto, Enable, Disable. Default setting is **Auto**.

5-3-6 SOC Miscellaneous Control



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

(Note) This item is configurable when **ABL Console Out Control** is set to **Enable**.

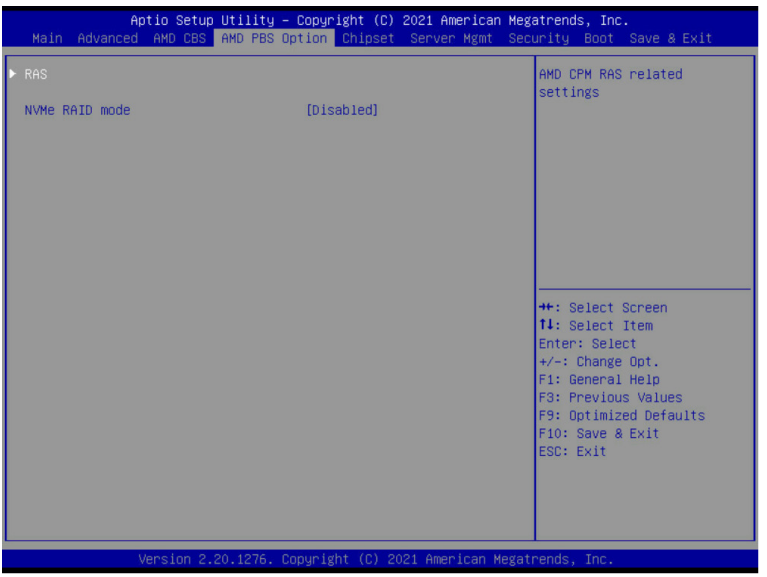
5-3-7 Chipset Common Options

Parameter	Description
Chipset Common Options	
Chipset SATA Configuration Options	Press [Enter] for configuration of advanced items. ◆ Chipset SATA0/1 Enable(Note) – Enable/Disable Bixby SATA controller. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ Chipset SATA Mode – Select Bixby SATA Type. – Options available: AHCI, AHCI as ID 0x7904, Auto, RAID. Default setting is **AHCI**.

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

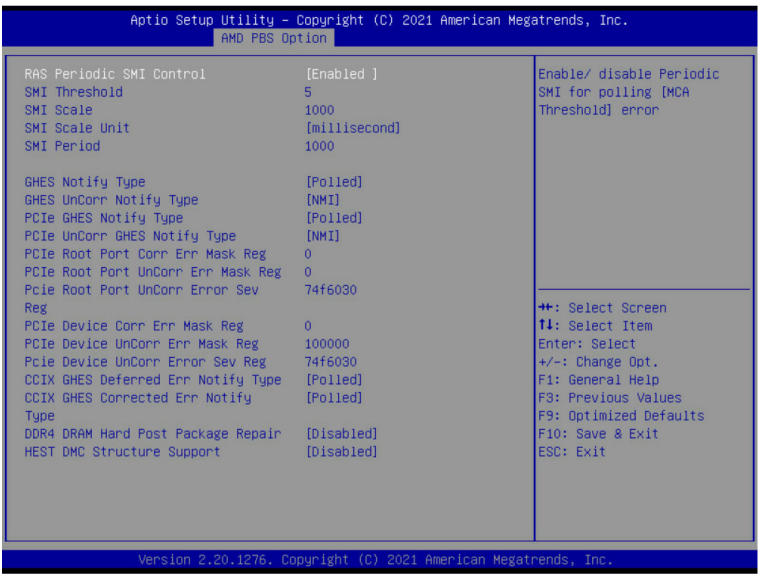
5-4 AMD PBS Menu

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.
NVMe RAID mode	Enable/Disable NVMe RAID Mode. Options available: Enabled, Disabled. Default setting is **Disabled**.

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 **millisecond**.
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.

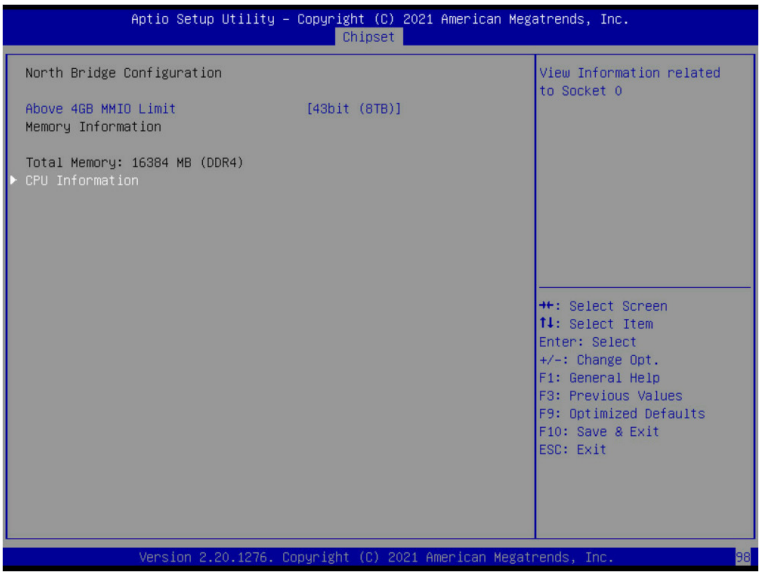
Parameter	Description
PCIe Root Port UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of Root Port.
PCIe Root Port UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Severity register of Root Port.
PCIe Device Corr Err Mask Reg	Initialize the PCIe AER Corrected Error 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 Severity register of PCIe device.
CCIX GHES Deferred ERR Notify Type	Selects the Notification type for CCIX deferred 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**.

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.

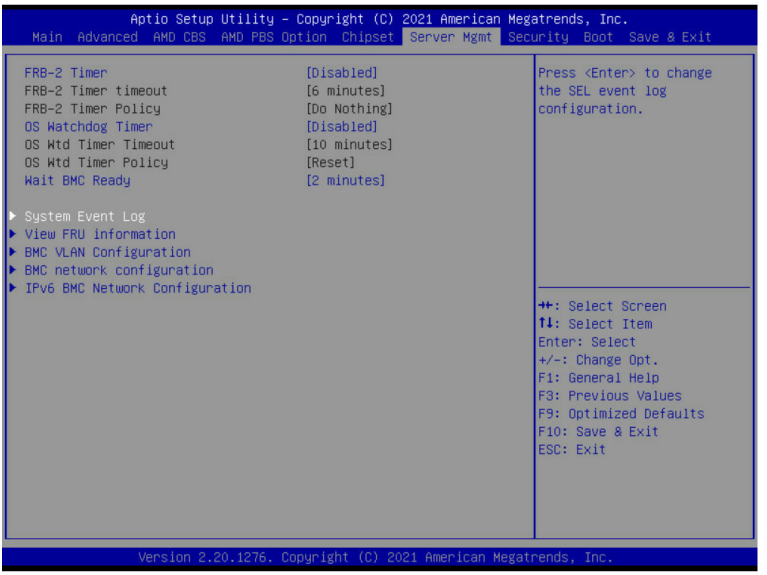
Parameter	Description
Onboard Audio	Enable/Disable Onboard Audio. Options available: Enabled, Disabled. Default setting is **Enabled**.
Program All VR	Enable/Disable program all VR on MB. Options available: Enabled, Disabled. Default setting is **Enabled**.
North Bridge	Press [Enter] for configuration of advanced items.

5-5-1 North Bridge



Parameter	Description
North Bridge Configuration	
Above 4GB MMIO Limit	Selects Above 4GB MMIO Limit to 38~43 bits limit. This option works only when "Above 4G decoding" is enabled. Options available: 40bit (1TB), 41bit (2TB), 42bit (4TB), 43bit (8TB). Default setting is **43bit (8TB)**.
Memory Information	
Total Memory	Displays the total memory information.
CPU Information	Press [Enter] to view information related to CPU.

5-6 Server Management Menu

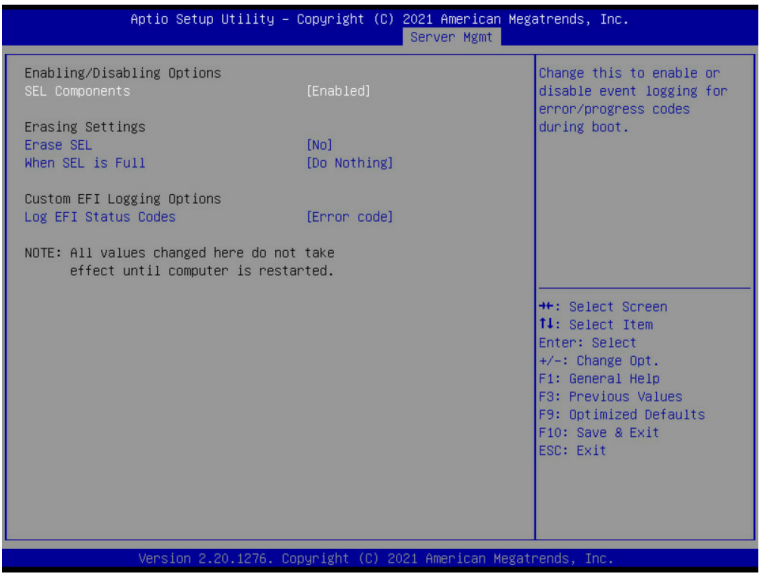


Parameter	Description
FRB-2 Timer	Enable/Disable FRB-2 timer (POST timer). Options available: Enabled, Disabled. Default setting is **Enabled**.
FRB-2 Timer(Note1) timeout	Configures the FRB2 Timer timeout. Options available: 3 minutes, 4 minutes, 5 minutes, 6 minutes. Default setting is **6 minutes**.
FRB-2 Timer Policy(Note1)	Configures the FRB2 Timer policy. Options available: Do Nothing, Reset, Power Down. 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. Options available: 5 minutes, 10 minutes, 15 minutes, 20 minutes. Default setting is **10 minutes**.
OS Wtd Timer Policy(Note2)	Configure OS Watchdog Timer Policy. Options available: Reset, Do Nothing, Power Down. Default setting is **Reset**.
Wait BMC Ready	Post wait BMC ready and reboot system. Options available: Disabled, 2 minutes, 4 minutes, 6 minutes. Default setting is **2 minutes**.

(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 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.

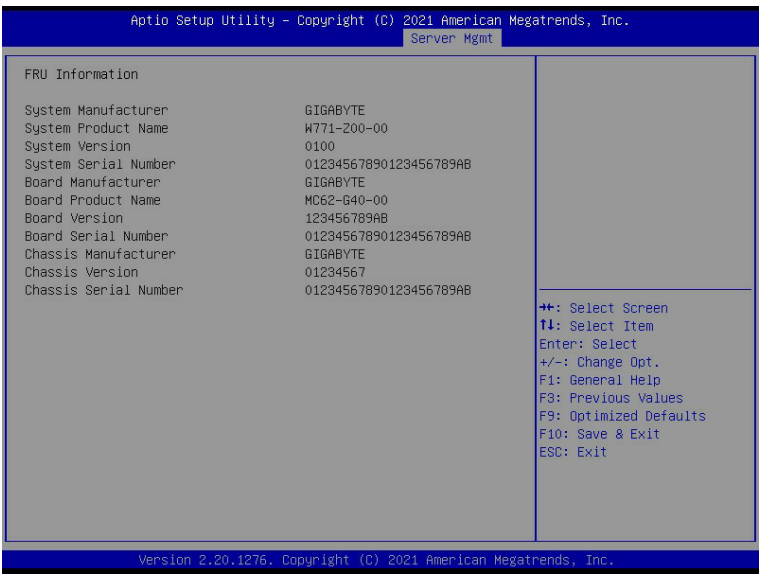
5-6-1 System Event Log



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, 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**.

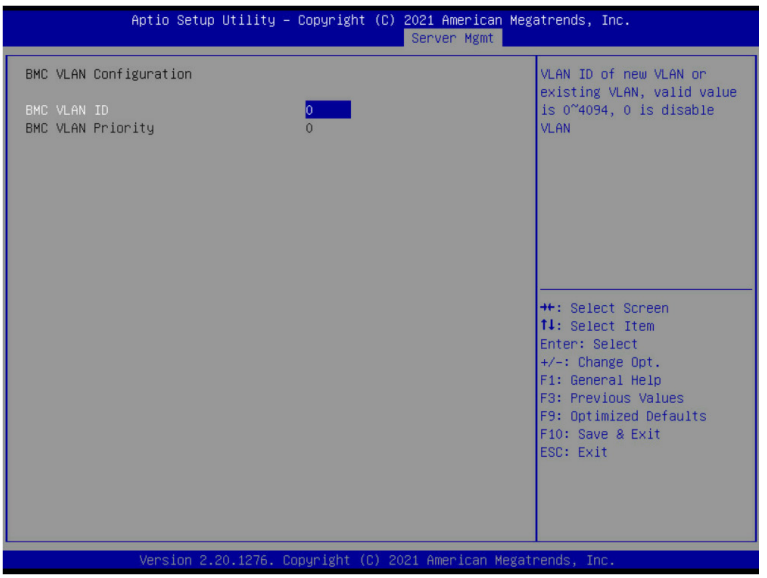
5-6-2 View FRU Information

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 VLAN Configuration

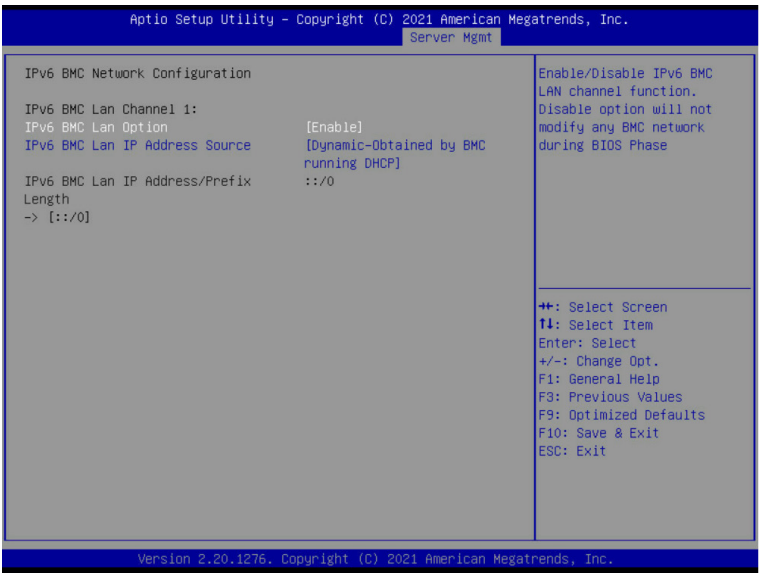


Parameter	Description
BMC VLAN Configuration	
BMC VLAN ID	Sets VLAN ID for a new VLAN or an existing VLAN. Press the <+> / <-> keys to increase or decrease the desired values. The valid range is from 0 to 4094.
BMC VLAN Priority	Sets 802.1Q Priority for a new VLAN or an existing VLAN. Press the <+> / <-> keys to increase or decrease the desired values. The valid range is from 0 to 7.

5-6-4 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.
Real-time synchronize BMC network parameter values	Press [Enter] will set Address source(Static/DHCP) to BMC and then get Station IP address, Subnet mask and Router IP address from BMC.

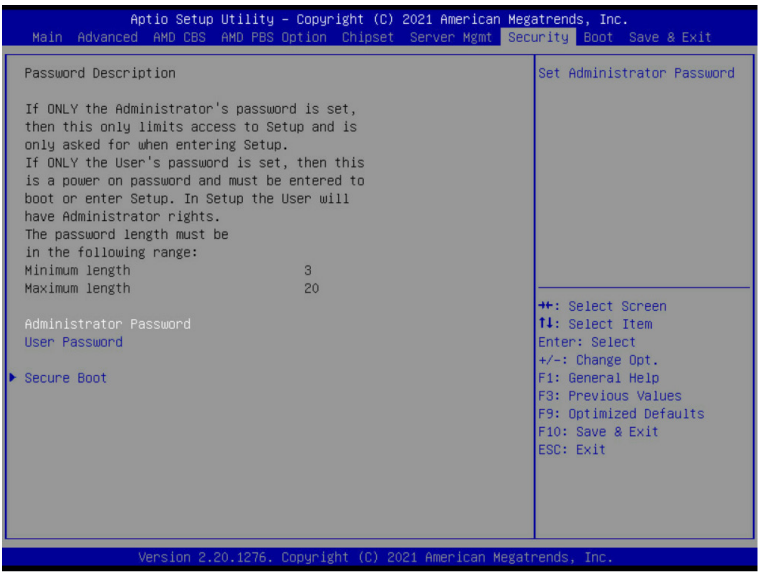
5-6-5 IPv6 BMC Network Configuration



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.

5-7 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.

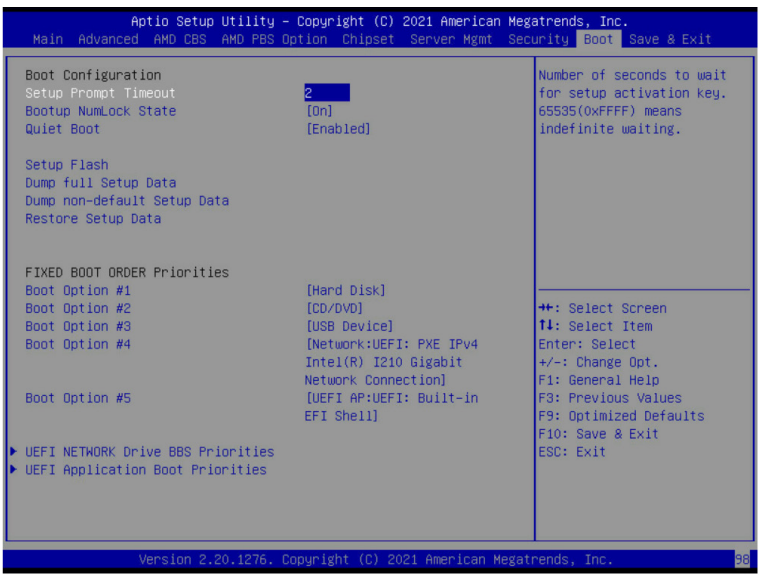
Parameter	Description
System Mode	Displays if the system is in User mode or Setup mode.
Secure Boot	Enable/ Disable the Secure Boot function. Options available: Enabled, Disabled. Default setting is **Disabled**.
Secure Boot Mode(Note)	Secure Boot requires all the applications that are running during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

(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: Update. ◆ 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: Update, 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: Update, 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: Update, 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: Update, 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: Update, 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.

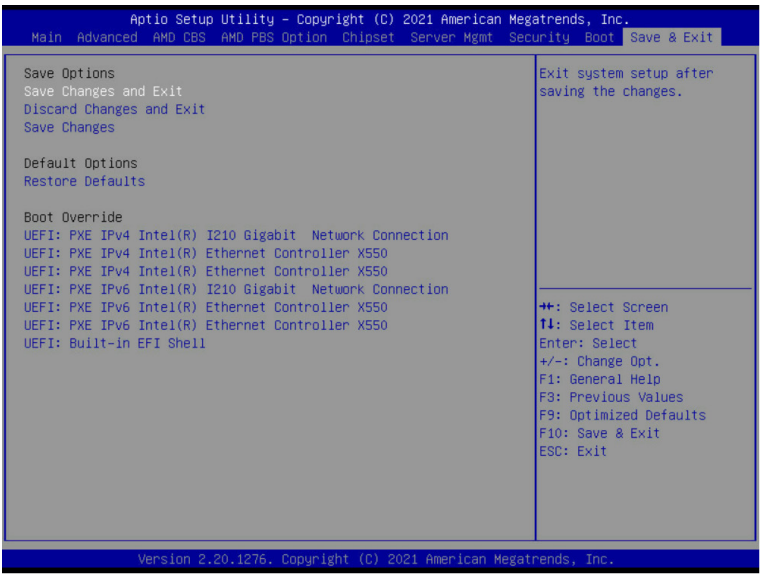


Parameter	Description
Boot Configuration	
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function. Options available: On, Off. Default setting is **Off**.
Quiet Boot	Enable/Disable showing the logo during POST. Options available: Enabled, Disabled. Default setting is **Enabled**.
Setup Flash	Press [Enter] to run setup flash.
Dump full Setup Data	Press [Enter] to dump full setup data to file.
Dump non-default Setup Data	Press [Enter] to dump non-default setup data to file.
Restore Setup Data	Press [Enter] to restore setup data from file (cJson format).

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.

5-9 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.

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