

GIGABYTE™

XL44-SX0-AAS2

NVIDIA MGX™ Server - Intel® Xeon® 6700/6500-Series Processors
4U DP 8 x PCIe Gen5 GPUs

User Manual

Rev. 1.0

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Documentation Classifications

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

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

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

For More Information

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

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

Conventions

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

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

Server Warnings and Cautions

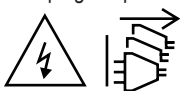
Before installing a server, be sure that you understand the following warnings and cautions.



WARNING!

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

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



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



WARNING!

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



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



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

•



This equipment is not intended for use by children.

**CAUTION!**

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

**CAUTION!**

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

Warning Stability hazard

The slide-rail may tip over causing serious personal injury

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



Electrostatic Discharge (ESD)

CAUTION!

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

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

System power on/off: To service components within the server, please ensure the power has been disconnected.

e.g. Remove the node from the server chassis (to disconnect power) or disconnect the power from the server chassis.

Make sure the system is removed from the rack before opening the chassis, adding, or removing any non hot-plug components.

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

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

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

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

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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



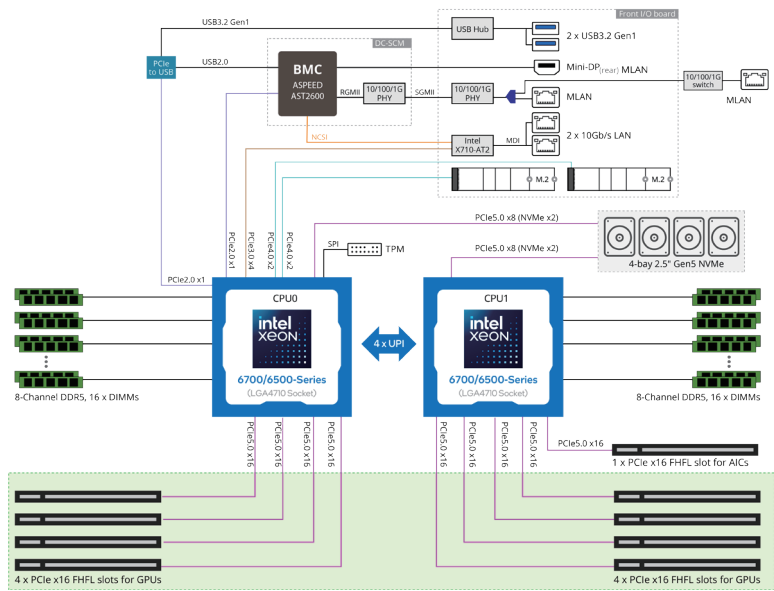
NOTE:

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

	System	◆ 4U
	Dimension	◆ 438 (W) x 176.6 (H) x 802.5 (D) mm
	CPU	Intel® Xeon® 6 Processors ◆ Intel® Xeon® 6700-Series Processors ◆ Intel® Xeon® 6500-Series Processors Dual processor, TDP up to 350W [Note] If only 1 CPU is installed, some PCIe or memory functions might be unavailable.
	Socket	◆ 2 x LGA 4710 ◆ Socket E2
	Chipset	◆ System on Chip
	Memory	◆ 32 x DIMM slots ◆ Support DDR5 RDIMM/MRDIMM^[1] ◆ 8-Channel memory per processor ◆ RDIMM: Up to 6400 MT/s (1DPC), 5200 MT/s (2DPC) ◆ MRDIMM: Up to 8000 MT/s [1] MRDIMMs are only supported with Intel® Xeon® 6 Processors with P-cores and in a 1DPC configuration.
	LAN	Front (I/O board): ◆ 2 x 10Gb/s LAN (1 x Intel® X710-AT2) ◆ Support NCSI function ◆ 1 x 10/100/1000 Mbps Management LAN Rear (MLAN board): ◆ 1 x 10/100/1000 Mbps Management LAN
	Video	◆ Integrated in ASPEED® AST2600 ◆ 1 x Mini-DP
	Storage	Front hot-swap: 4 x 2.5" Gen5 NVMe ◆ (2 x NVMe from CPU_0, 2 x NVMe from CPU_1) Internal M.2 (I/O board): ◆ 2 x M.2 (2280/22110), PCIe Gen4 x2, from CPU_0

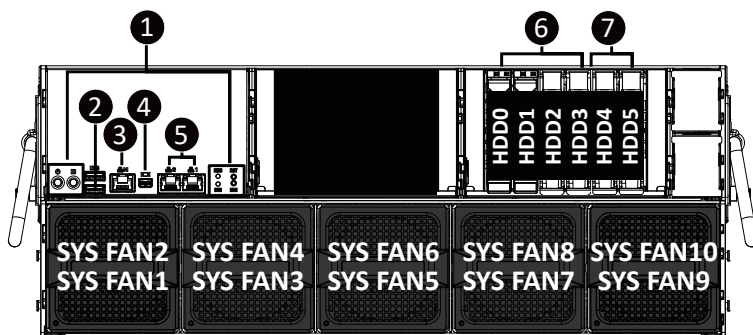
	Expansion Slots	4 x FHFL x16 (Gen5 x16), from CPU_0, for GPUs 4 x FHFL x16 (Gen5 x16), from CPU_1, for GPUs 1 x FHFL x16 (Gen5 x16), from CPU_1
	Front I/O	I/O board: 2 x USB 3.2 Gen1 ports (Type-A) 1 x Mini-DP 2 x RJ45 ports 1 x MLAN port (default) 1 x Power button with LED 1 x ID button with LED 1 x NMI button 1 x Reset button 1 x Storage activity LED 1 x System status LED
	Rear I/O	MLAN board: 1 x MLAN port
	Security Modules	1 x TPM header with SPI interface Optional TPM2.0 kit: CTM012 1 x PRoT connector (only enabled on RoT SKU)
	Power Supply	4 x 3200W 80 PLUS Titanium redundant power supply^[1] [1] The system power supply requires C19 power cord. [Note] Please refer to GIGABYTE Website for detail power supply specification.
	Operating Properties	- Operating temperature: 10°C to 30°C - Operating humidity: 8% to 80% (non-condensing) - Non-operating temperature: -40°C to 60°C - Non-operating humidity: 20% to 95% (non-condensing)

1-3 System Block Diagram



Chapter 2 System Appearance

2-1 Front View

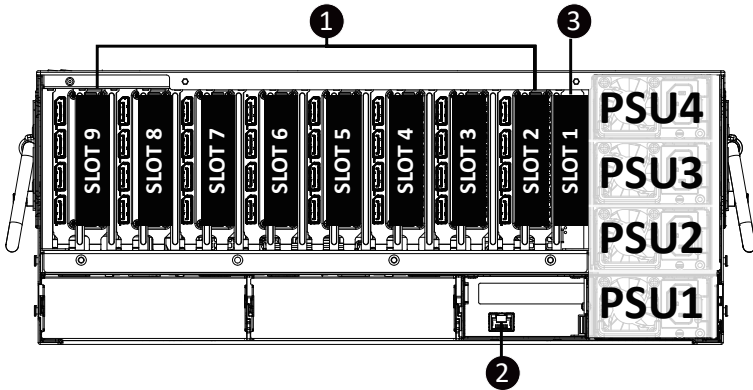


No.	Description
1.	Front Panel LEDs and Button
2.	USB 3.2 Gen1 Port X 2
3.	Management LAN Port
4.	Mini DisplayPort
5.	Data LAN Port x 2
6.	2.5" Hard Drives
7.	Dummy Slots



- When a RAID card is installed, the dummy slot corresponding to HDD4 and HDD5 will become visible.
- Refer to section **2-3 Front Panel LEDs and Buttons** for a detailed description of the function of the LEDs.
- Refer to section **2-4 Front System LAN LEDs** for a detailed description of the function of the LEDs.

2-2 Rear View

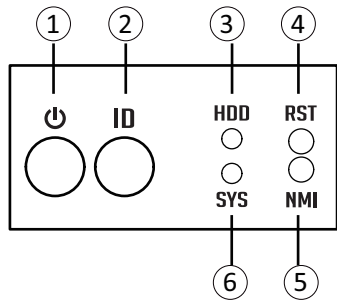


No.	Description
1.	GPU Card Slot x 8
2.	Management LAN Port
3.	NVIDIA ConnectX-7 NIC Card



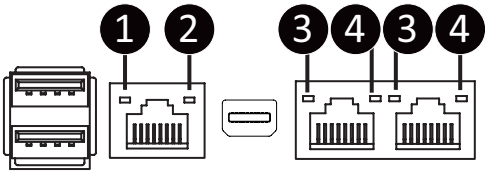
- Refer to section **2-5 Rear System LAN LEDs** for a detailed description of the function of the LEDs.

2-3 Front Panel LEDs and Buttons



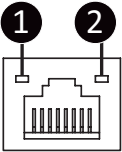
No.	Name	Color	Status	Description
1.	Power button with LED	Green	On	Indicates the system is powered on.
		N/A	Off	System is not powered on or in ACPI S5 state (power off)
2.	ID Button with LED	Blue	On	System identification is active.
		N/A	Off	System identification is disabled.
3.	HDD Status LED	Green	On	Indicates locating the HDD.
			Blink	Indicates accessing the HDD.
		Amber	On	Indicates HDD error.
		Green/Amber	Blink	Indicates HDD rebuilding.
		N/A	Off	Indicates no HDD access or no HDD error.
4.	System Status LED	Green	Solid On	System is operating normally.
		Amber	Solid On	Critical condition, may indicate: System fan failure System temperature
			Blink	Non-critical condition, may indicate: Redundant power module failure Temperature and voltage issue Chassis intrusion
		N/A	Off	System is not ready, may indicate: POST error NMI error Processor or terminator missing
5.	Reset Button	--	--	Press this button to reset the system.
6.	NMI button	--	--	Press this button for the server to generate a NMI to the processor. If multiple-bit ECC errors occur, the server will effectively be halted.

2-4 Front System LAN LEDs



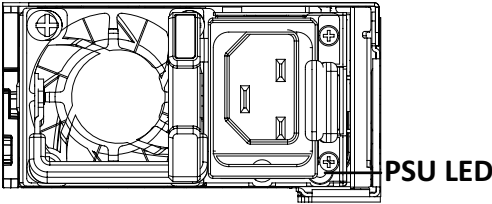
No.	Name	Color	Status	Description
1.	1 GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1 GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission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



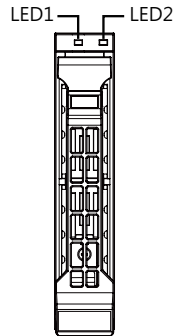
No.	Name	Color	Status	Description
1.	1 GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1 GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission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

2-6 Power Supply Unit LED



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

2-7 Hard Disk Drive LEDs



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

LED 2	HDD Present	No HDD
Green	ON	OFF

NOTE:

*1: Depends on HBA/Utility Spec.

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

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

Chapter 3 System Hardware Installation



Pre-installation Instructions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. 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

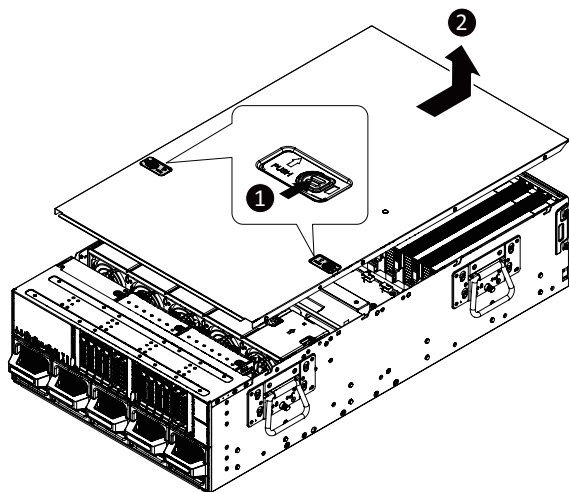


Before you remove or install the system cover

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

Follow these instructions to remove the chassis cover:

1. Unlock the plastic handle and pull the grip handle to open the panel cover.
2. Slide the cover cover to the rear of the system and then remove the cover in the direction indicated by the arrow.
3. To reinstall the chassis cover follow steps 1-4 in reverse order.



3-2 Removing and Installing the Hard Disk Drive

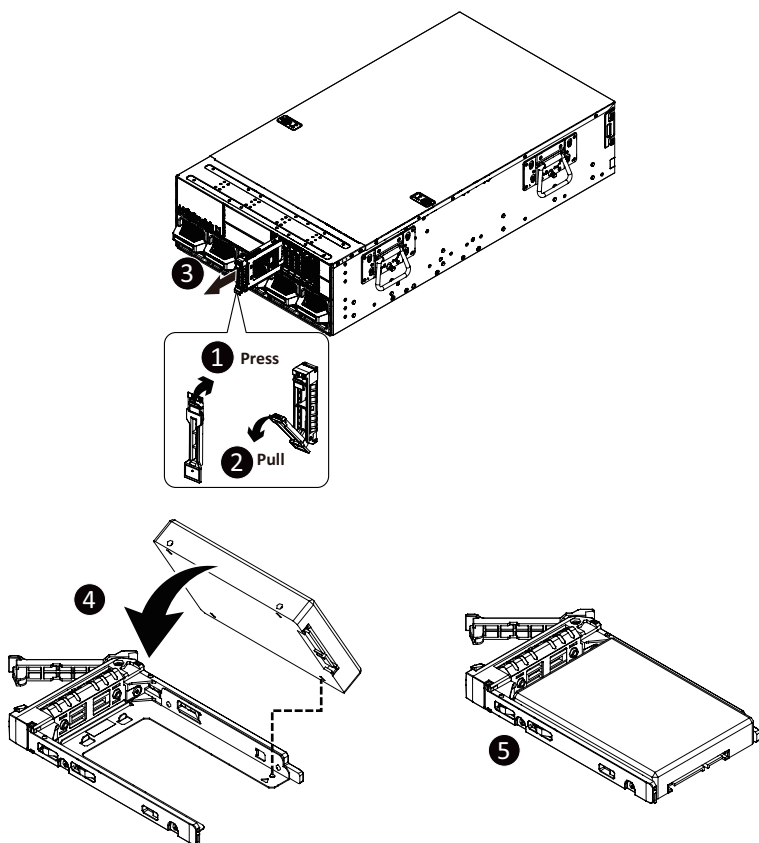


Read the following guidelines before you begin to install the hard disk drive:

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

Follow these instructions to install a 2.5" hard disk drive:

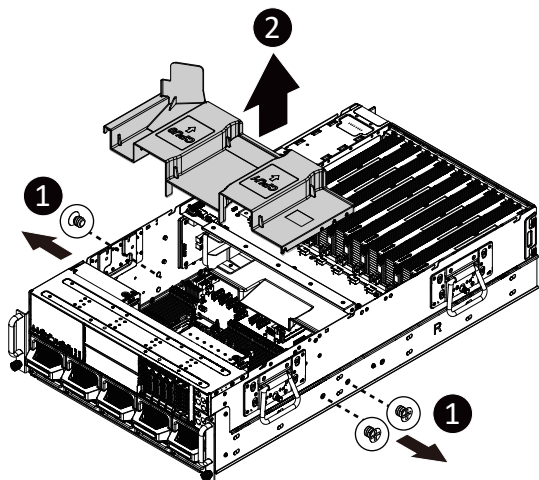
1. Press the release button.
2. Extend the locking lever.
3. Pull the locking lever in the direction indicated to remove the 3.5" HDD tray.
4. Pull the sides of the HDD tray in the direction indicated.
5. Slide the hard disk drive into the HDD tray.
6. Push the sides of the HDD tray back in the direction indicated to secure the hard disk drive in place.
7. Reinsert the HDD tray into the slot and close the locking lever.



3-3 Removing and Installing the Fan Duct

Follow these instructions to remove the fan duct:

1. Remove the three screws from the chassis.
2. Lift up to remove the fan duct.
3. To reinstall the fan duct, align the fan duct with the guiding groove. Push down the fan duct until it is firmly seated on the system and follow steps 1-2 in reverse order.



3-4 Removing and Installing the Heat Sink



Read the following guidelines before you begin to 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.

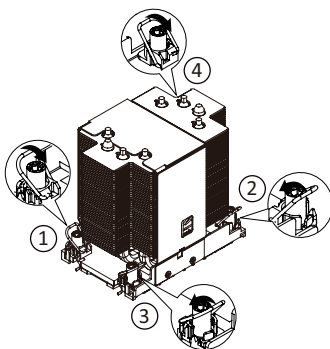


WARNING!

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 install the heat sink:

1. Loosen the 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 install the heat sink, reverse steps 1-2 while ensuring that you tighten the captive screws in sequential order (1→2→3→4) as seen in the image below.



3-5 Installing the CPU and Heat Sink



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

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

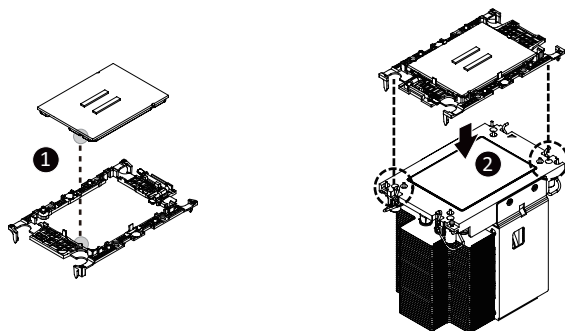


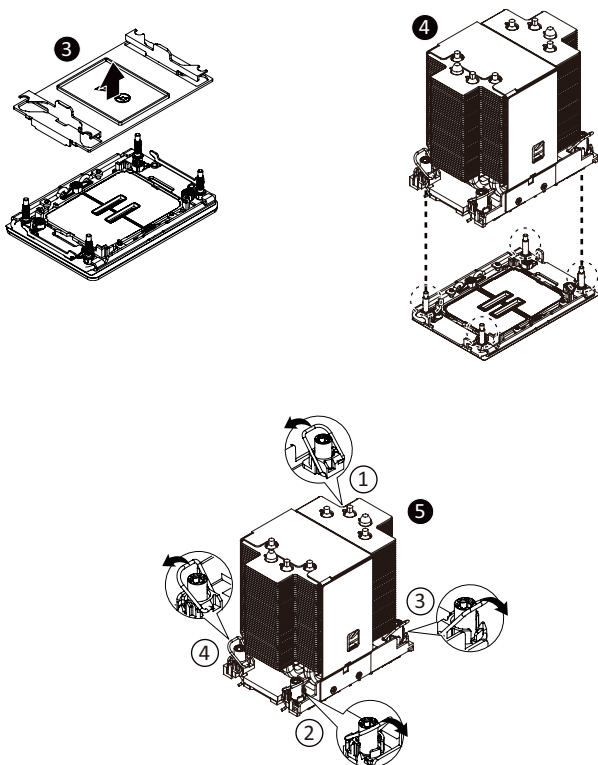
WARNING!

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

Follow these instructions to install the CPU:

1. Align the processor to the carrier so that the gold triangle on the processor aligns with the triangle on the carrier, and then install the processor into the carrier.
NOTE: Apply thermal compound evenly on the top of the CPU.
2. Carefully flip the heatsink over. Align the carrier assembly so that the triangle on the carrier aligns with the triangle on the heatsink, and then install the carrier assembly onto the bottom of the heatsink.
3. Remove the CPU socket cover.
NOTE: Save and replace the CPU socket cover if the processor is removed from its socket.
4. Align the heatsink to the CPU socket using the guide pins and make sure the gold triangle is in the correct orientation. Then place the heatsink onto the top of the CPU socket.
5. Secure the heatsink by tightening the screws in sequential order (1→2→3→4).
NOTE: When removing the heatsink, loosen the screws in reverse order (4→3→2→1).





NOTE!

- The carrier code is marked on each carrier and matches a code laser marked on to the IHS(Integrated Heat Spreader) to ensure the right parts are used together.
- When installing the heatsink to CPU,use T30-Lobe driver to tighten 4 captive nuts in sequence as 1-4.
- The screw tightening torque: 8 ± 0.5 kgf-cm.

3-6 Removing and Installing Memory

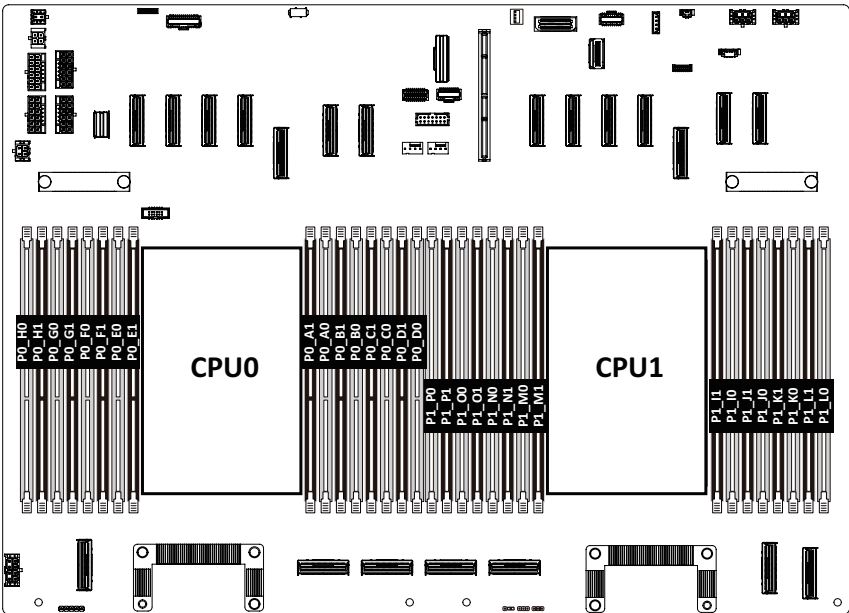


Read the following guidelines before you begin to install the memory:

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

3-6-1 Eight Channel Memory Configuration

This motherboard provides 32 DDR5 memory sockets and supports Eight Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.



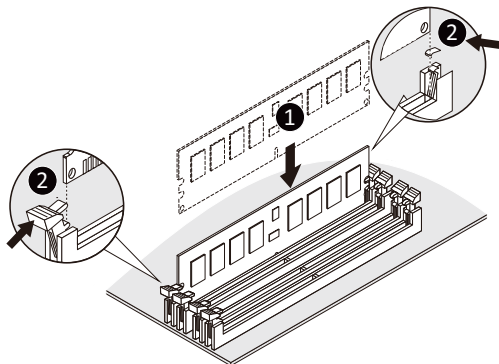
3-6-2 Removing and Installing a Memory Module



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 DDR5 DIMMs on to this motherboard.

Follow these instructions to install a DIMM module:

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



3-6-3 Memory Population Table

For detailed memory population guidelines, click the link below to view the [Memory Population Table](#).

3-6-4 Processor and Memory Module Matrix Table

Memory Q'ty for each CPU	CPU0																CPU1															
	H0	H1	G0	G1	F0	F1	E0	E1	A1	A0	B1	B0	C1	C0	D1	D0	P0	P1	O0	O1	N0	N1	M0	M1	I1	I0	J1	J0	K1	K0	L1	L0
1 DIMM											v															v						
4 DIMM			v				v			v				v					v				v			v				v		
8 DIMM	v		v		v		v			v		v		v		v	v		v		v		v			v		v		v		v
12 DIMM	v		v	v	v		v	v	v	v		v	v	v		v	v		v	v	v		v	v	v	v		v	v	v		v
16 DIMM	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v

NOTE:

- Xeon 6700E-series do not support 12 DIMMs Configuration

3-7 Replacing and Installing the GPU Card



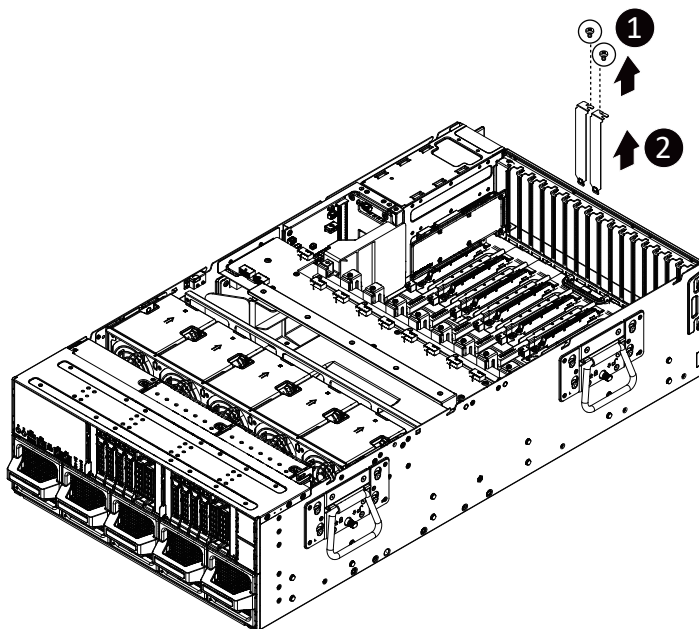
- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered off and all power sources have been disconnected from the server prior to installing a GPU card.
- Failure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

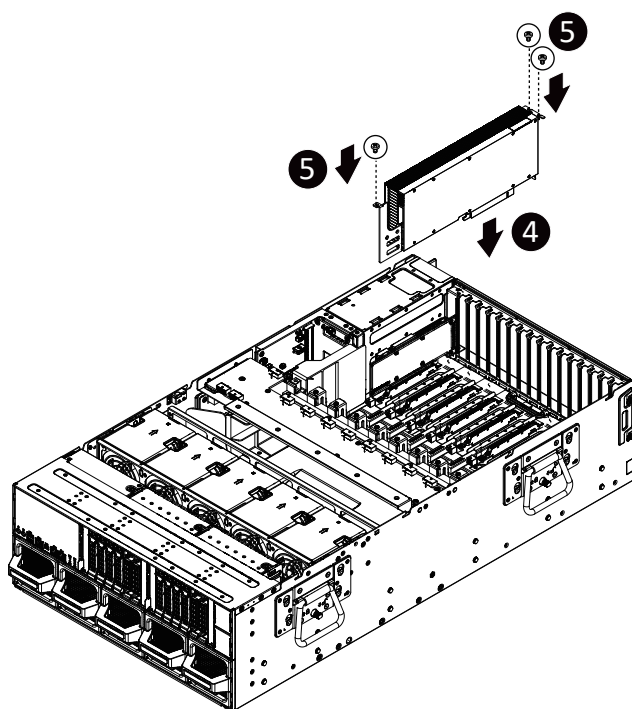
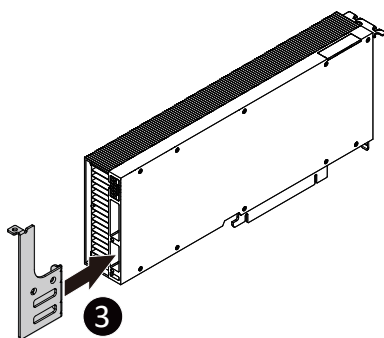


- The GPU riser assembly does not include a support bracket as standard. To install a GPU card, a support bracket must be installed.

Follow these instructions to replace a GPU card:

1. Remove screws securing the two GPU card brackets.
2. Lift up the GPU card out of system.
3. Attach the GPU card support bracket.
4. Orient the GPU card with the riser guide slot and push in the direction of the arrow until the GPU card sits in the card connector.
5. Secure the GPU card support bracket and GPU card with screws.
6. Repeat steps 1-5 to replace the GPU card into the system.





3-8 Installing the M.2 Device and Heat Sink

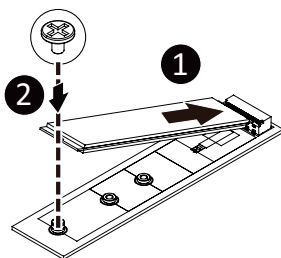


CAUTION

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

Follow these instructions to install the M.2 device:

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



3-8-1 M.2 device with Heatsink



WARNING:

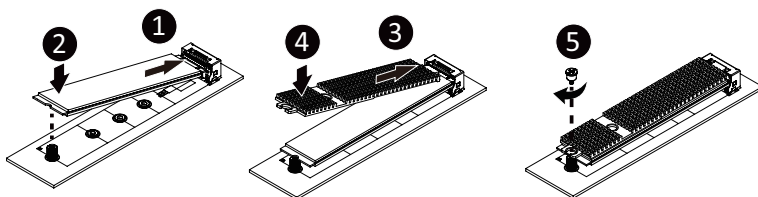
Please ensure a heatsink is attached to any M.2 device installed into the system. Installing an M.2 device without any heatsink may result in the system overheating or system performance being throttled.



- Please Go to for specific M.2 Slot location.
- To install/remove the M.2 module and Heatsink use a No. 1 Phillips-head screwdriver with a screw torque of $1.5 \pm 0.2 \text{ kgf}\cdot\text{cm}$

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

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



3-9 Replacing the Fan Assembly

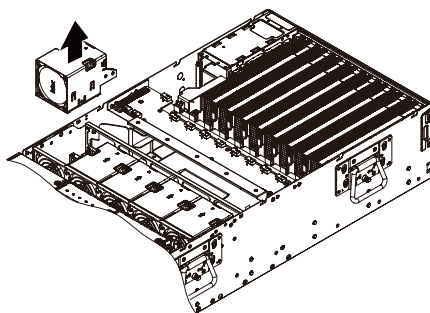


- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to replacing a system fan.

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

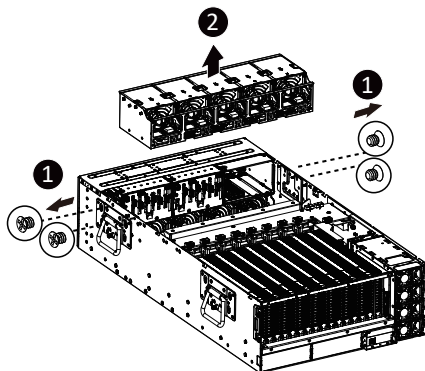
Follow these instructions to replace a fan assembly:

1. Using the latches, lift up the fan assembly from the chassis.
2. Reverse the previous steps to install the replacement fan assembly.



Follow these instructions to replace a system fan wall assembly:

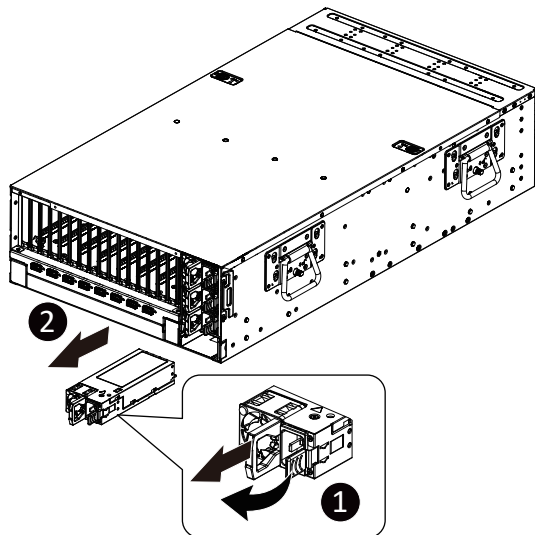
1. Remove the screws securing the fan wall assembly.
2. Lift up the fan wall assembly from the chassis.
3. Reverse the previous steps to install the replacement fan assembly.



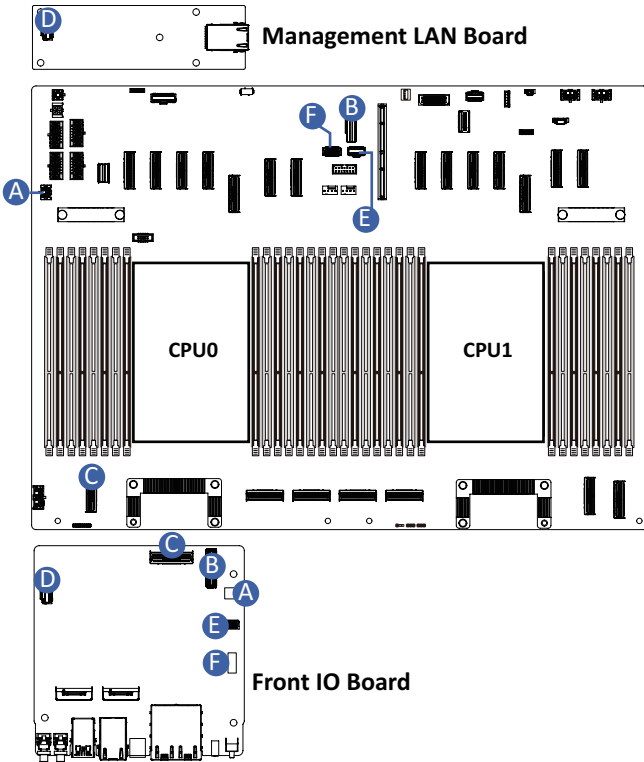
3-10 Removing and Installing the Power Supply

Follow these instructions to replace the power supply:

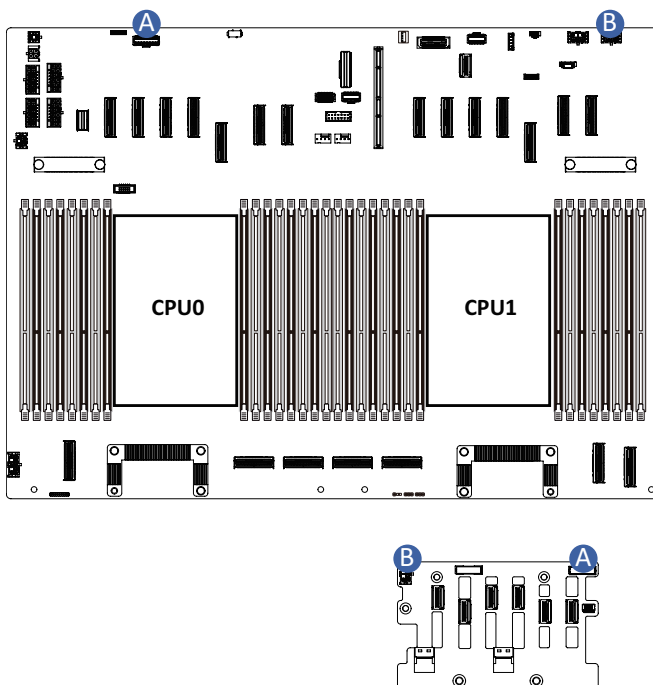
1. Flip up and then grasp the power supply handle.
2. Press the retaining clip on the right side of the power supply unit in the direction indicated.
3. Pull out the power supply unit using the handle.
4. Insert the replacement power supply unit firmly into the chassis. Connect the AC power cord to the replacement power supply.
5. Repeat steps 1-4 for replacement of the second power supply.



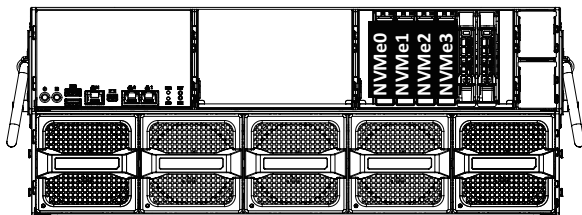
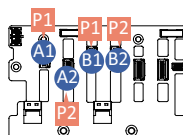
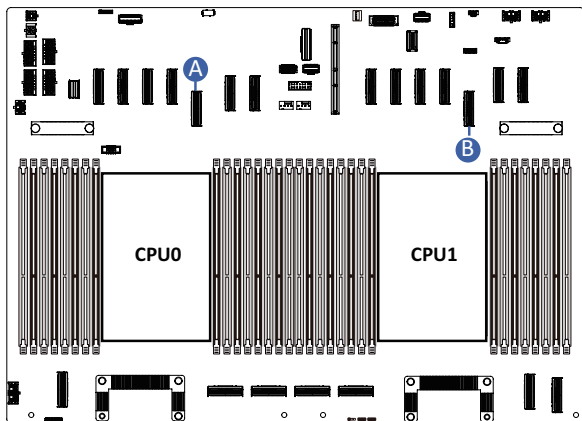
3-11 Cable Routing



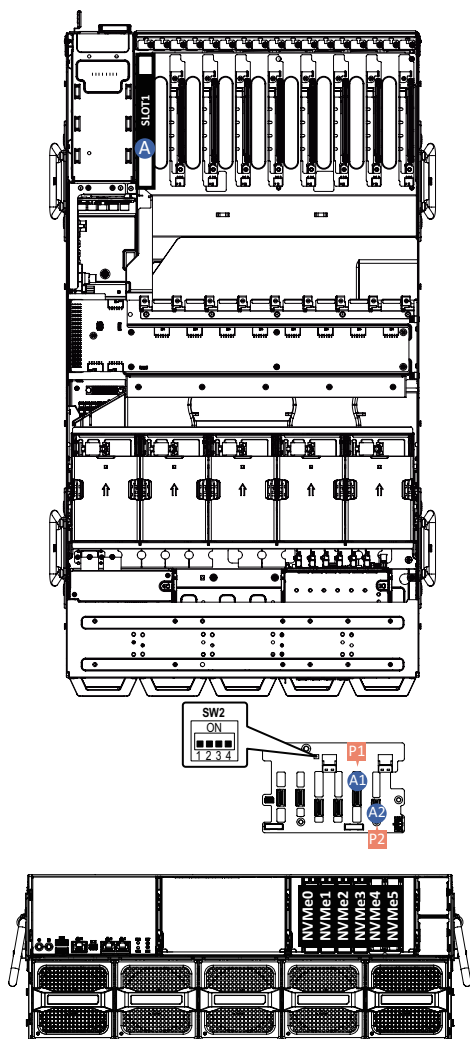
A	Front IO Power Cable	Motherboard: IO_PWR
		Front IO Board: PWR_FP
B	Front IO Signal Cable	Motherboard: IO_SLIM
		Front IO Board: FP_IO
C	Front IO MICO Signal Cable	Motherboard: IO_MCIO
		Front IO Board: MCIO
D	Management LAN Cable	Front IO Board: REAR_LAN
		Management LAN Board: CN_LAN1
E	JLFP Cable	Motherboard: JLFP
		Front IO Board: JLFP
F	NCSI Cable	Motherboard: NCSI_CONN
		Front IO Board: NCSI



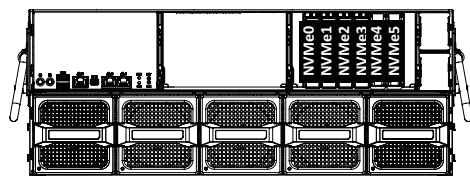
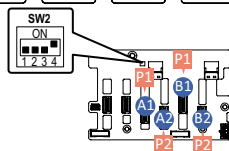
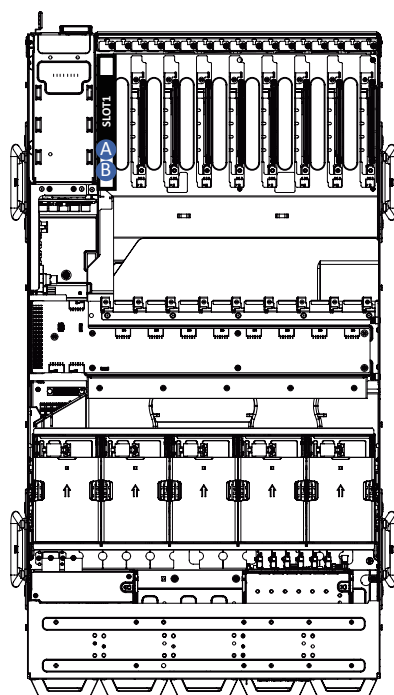
A	HDD Backplane Board Signal Cable	Motherboard: BP_1
		Front Left HDD Board: BP_1
B	HDD Backplane Board Power Cable	Motherboard: BP_PWR1
		Front Right HDD Board: BP_PWR



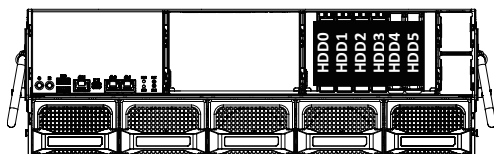
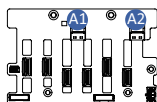
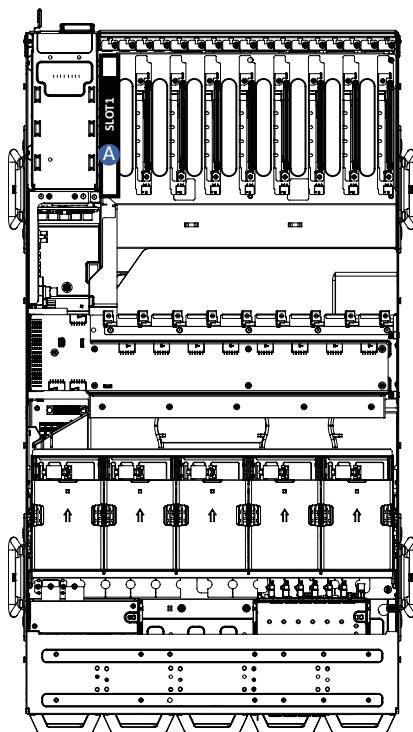
A	NVMe 0-1 Cable	Motherboard: U2_P0_PE1	B	NVMe 2-3 Cable	Motherboard: U2_P1_PE1
		Front HDD Board: A1: U.2_0 A2: U.2_1			Front HDD Board: B1: U.2_0 B2: U.2_1



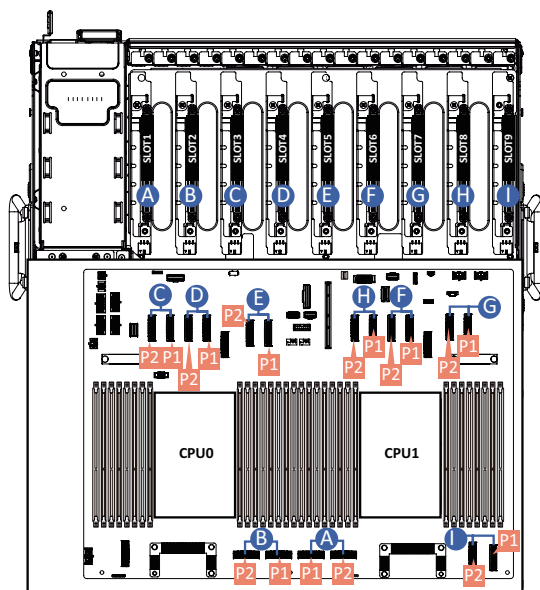
A	NVMe 8i Tri-Mode RAID Card Cable	RAID Card: C0
		Front HDD Board: A1: U.2_4 A2: U.2_5



A	NVMe 16i Tri-Mode RAID Card Cable	RAID Card: C0
		Front HDD Board: A1: U.2_2 / A2: U.2_3
RAID Card: C1		
B		Front HDD Board: B1: U.2_4 / B2: U.2_5
Front HDD Board: SW2 Pin 4 set to ON		

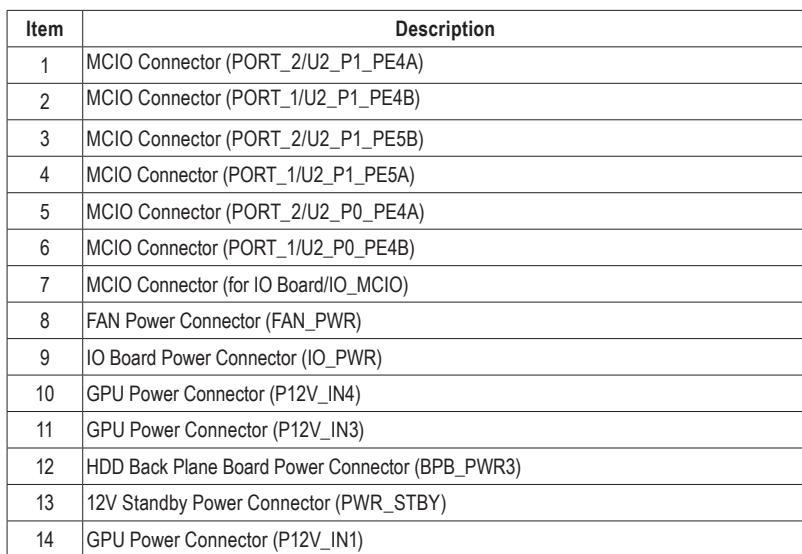


A	SATA 8i Tri-Mode Card HDD 0-5	RAID Card: C0
		Front HDD Board: A1: SL_SAS0 A2: SL_SAS1



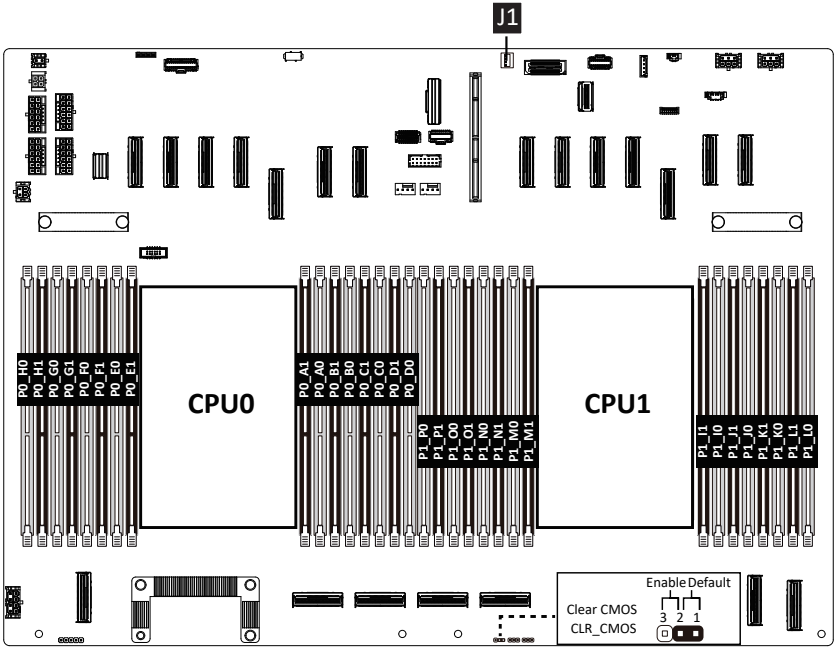
A	PCIe Signal Cable	Motherboard: Left: U2_P1_PE5A Right: U2_P1_PE5B	F	PCIe Signal Cable	Motherboard: Left: U2_P1_PE0A Right: U2_P1_PE0B
		PCIe Slot 1			PCIe Slot 6
B	PCIe Signal Cable	Motherboard: Left: U2_P0_PE4A Right: U2_P0_PE4B	G	PCIe Signal Cable	Motherboard: Left: U2_P1_PE2A Right: U2_P1_PE2B
		PCIe Slot 2			PCIe Slot 7
C	PCIe Signal Cable	Motherboard: Left: U2_P0_PE3A Right: U2_P0_PE3B	H	PCIe Signal Cable	Motherboard: Left: P1_PE3A Right: P1_PE3B
		PCIe Slot 3			PCIe Slot 8
D	PCIe Signal Cable	Motherboard: Left: U2_P0_PE0A Right: U2_P0_PE0B	I	PCIe Signal Cable	Motherboard: Left: CPU1_PE4A Right: CPU1_PE4B
		PCIe Slot 4			PCIe Slot 9
E	PCIe Signal Cable	Motherboard: Left: U2_P0_PE2A Right: U2_P0_PE2B	--		
		PCIe Slot 5			

4-1 Motherboard Components



Item	Description
15	GPU Power Connector (P12V_IN2)
16	HDD Backplane Board Connector
17	SlimLine 4i Connector (NVSW)
18	MCIO Connector (PORT_1/U2_P0_PE3B)
19	MCIO Connector (PORT_2/U2_P0_PE3A)
20	MCIO Connector (PORT_1/U2_P0_PE0B)
21	MCIO Connector (PORT_2/U2_P0_PE0A)
22	MCIO Connector (U2_P0_PE1)
23	MCIO Connector (PORT_2/U2_P0_PE2A)
24	MCIO Connector (PORT_1/U2_P0_PE2B)
25	NCSI Connector (for Front IO Board)
26	JLFP Connector (for Front IO Board)
27	SlimLine 8i Connector (IO_SLIM)
28	TPM Module Connector
29	DC-SCM (BMC Module) Connector (DC_SCI)
30	MCIO Connector (PORT_1/U2_P1_PE3B)
31	MCIO Connector (PORT_2/U2_P1_PE3A)
32	MCIO Connector (PORT_1/U2_P1_PE0B)
33	MCIO Connector (PORT_2/U2_P1_PE0A)
34	MCIO Connector (U2_P1_PE1)
35	MCIO Connector (PORT_2/U2_P1_PE2A)
36	MCIO Connector (PORT_1/U2_P1_PE2B)
37	HDD Back Plane Board Power Connector (BPB_PWR1)
38	HDD Back Plane Board Power Connector (BPB_PWR2)
39	System Battery Cable Connector
40	VROC Module Connector
41	MICO 4i Connector (PDB_IO)

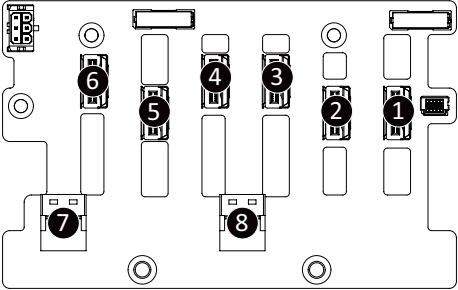
4-2 Jumper Setting



J1		ON	OFF
1	--	--	--
2	BIOS_RCVR	BIOS recovery mode	Normal [Default]
3	BIOS_PWD	Clear supervisor password	Normal [Default]
4	RST BMC_EN	ID button to enable BMC reset	Normal [Default]

4-3 Backplane Board Storage Connector

4-3-1 CBPX060



Item	Description
1	MCIO 4i (SFF-TA1016/U_2_0)
2	MCIO 4i (SFF-TA1016/U_2_1)
3	MCIO 4i (SFF-TA1016/U_2_2)
4	MCIO 4i (SFF-TA1016/U_2_3)
5	MCIO 4i (SFF-TA1016/U_2_4)
6	MCIO 4i (SFF-TA1016/U_2_5)
7	SlimSAS Connector (SFF-8654/SL_SAS0)
8	SlimSAS Connector (SFF-8654/SL_SAS1)

Chapter 5 BIOS Setup

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

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



- BIOS flashing is potentially risky, if you do not encounter any problems when using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 4 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

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

■ **Main**

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

■ **Advanced**

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

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

■ **Chipset**

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

■ **Server Management**

Server additional features enabled/disabled setup menus.

■ **Security**

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

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

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

■ **Boot**

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

■ **Save & Exit**

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

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

5-1 The Main Menu

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

Main Menu Help

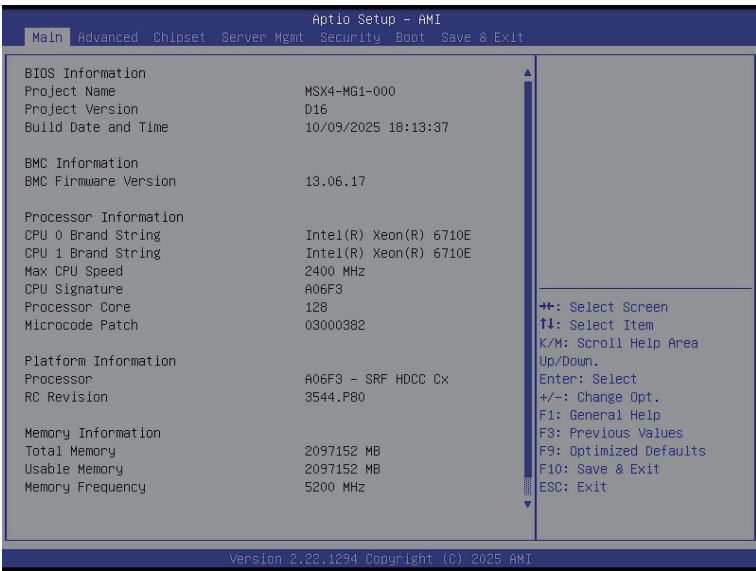
The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

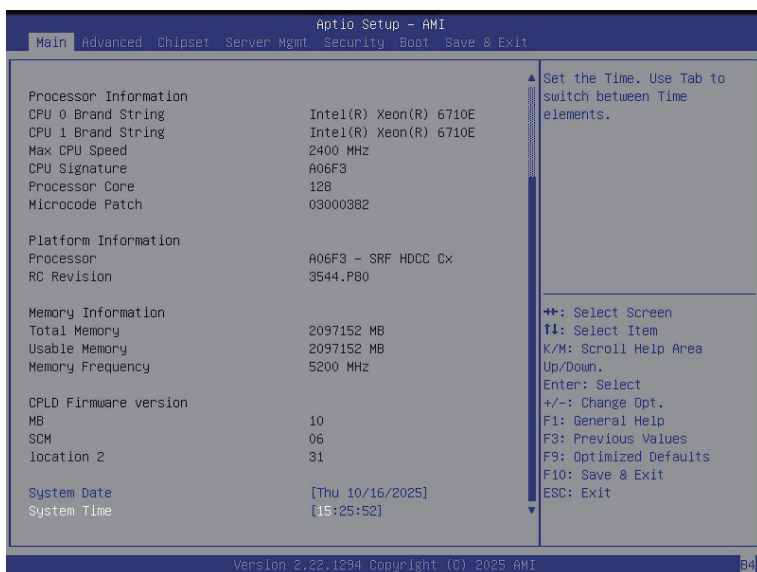
Submenu Help

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



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





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

(Note1) Functions available on selected models.

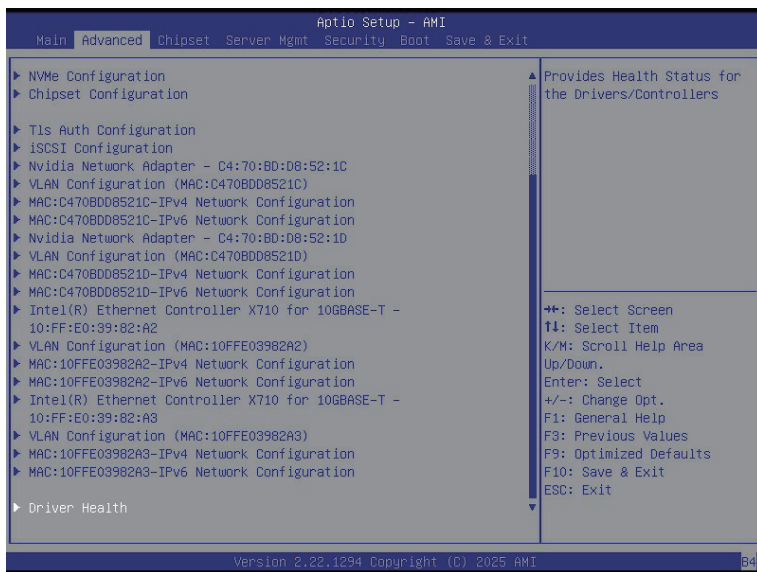
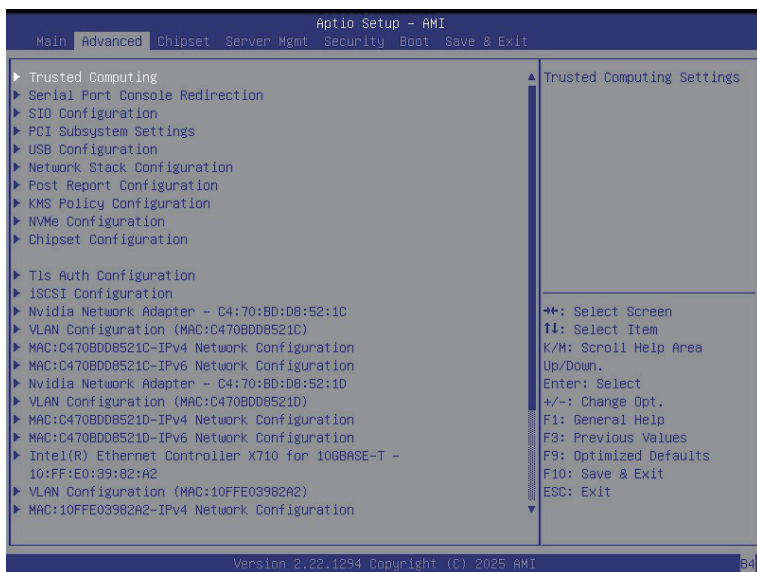
(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

Parameter	Description
Memory Frequency	Displays the frequency information of the installed memory.
Onboard LAN Information ^(Note3)	
LAN# MAC Address	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.

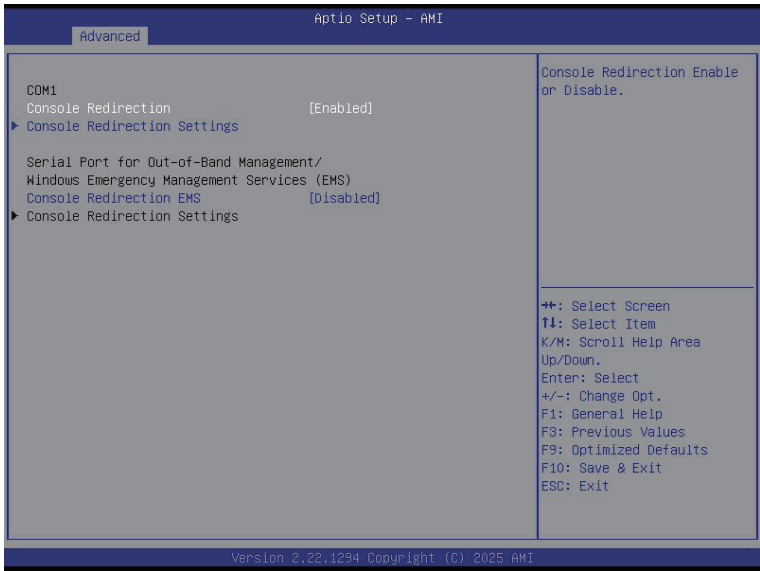


5-2-1 Trusted Computing



Parameter	Description
Configuration	
TPM v1.2 Support	Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available. Options available: Disable, Enable. Default setting is Enable .

5-2-2 Serial Port Console Redirection



Parameter	Description
COM1 Console Redirection ^(Note)	Console redirection enables the users to manage the system from a remote location. Options available: Enabled, Disabled. Default setting is Disabled .
COM1 Console Redirection Settings	Press [Enter] to configure advanced items. Please note that this item is configurable when COM1 Console Redirection is set to Enabled. ◆ Terminal Type – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100PLUS, VT-UTF8, ANSI. Default setting is VT100PLUS. ◆ Bits per second – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 38400, 57600, 115200. Default setting is 115200. ◆ Data Bits – Selects the number of data bits used for console redirection. – Options available: 7, 8. Default setting is 8.

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

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

Parameter	Description
Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS) Console Redirection ^(Note)	EMS console redirection allows the user to configure Console Redirection Settings to support Out-of-Band Serial Port management. Options available: Enabled, Disabled. Default setting is Disabled.
Serial Port for Out-of-Band EMS Console Redirection Settings	Press [Enter] to configure advanced items. Please note that this item is configurable when Serial Port for Out-of-Band Management EMS Console Redirection is set to Enabled. ◆ Out-of-Band Mgmt Port – Microsoft Windows Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Default setting is COM1. ◆ Terminal Type EMS – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100PLUS, VT-UTF8, ANSI. Default setting is VT100PLUS. ◆ Bits per second EMS – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 57600, 115200. Default setting is 115200. ◆ Flow Control EMS – Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. – Options available: None, Hardware RTS/CTS, Software Xon/Xoff. Default setting is None.

5-2-3 SIO Configuration



Parameter	Description
AMI SIO Driver Version	Displays the AMI SIO driver version information.
Super IO Chip Logical Device(s) Configuration	
	Press [Enter] to configure advanced items.
	◆ Use This Device – When set to Enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Logical Device Settings/Current: – Displays the serial port base I/O address and IRQ. ◆ Possible: – Configures the serial port base I/O address and IRQ.
[*Active*] Serial Port	Use Automatic Settings IO=3F8h; IRQ=4; DMA; IO=3F8h; IRQ=4; DMA; IO=2F8h; IRQ=4; DMA; IO=3E8h; IRQ=4; DMA; IO=2E8h; IRQ=4; DMA; Default setting is Use Automatic Settings .

5-2-4 PCI Subsystem Settings

Aptio Setup - AMI		
Advanced		
PCI Bus Driver Version	A5.01.32	Enable/Disable SLOT1 I/O ROM ++: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
SLOT1 I/O ROM	[Enabled]	
SLOT1 Lanes	[Auto]	
SLOT1 Max Link Speed	[Auto]	
SLOT2 I/O ROM	[Enabled]	
SLOT3 I/O ROM	[Enabled]	
SLOT4 I/O ROM	[Enabled]	
SLOT5 I/O ROM	[Enabled]	
SLOT6 I/O ROM	[Enabled]	
SLOT7 I/O ROM	[Enabled]	
SLOT8 I/O ROM	[Enabled]	
SLOT9 I/O ROM	[Enabled]	
NVSW I/O ROM	[Enabled]	
NVSW Max Link Speed	[Auto]	
LAN I/O ROM	[Enabled]	

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Aptio Setup - AMI		
Advanced		
LAN I/O ROM	[Enabled]	If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.
LAN Lanes	[Auto]	
LAN Max Link Speed	[Auto]	
QSFP1 I/O ROM	[Enabled]	
QSFP2 I/O ROM	[Enabled]	++: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
QSFP3 I/O ROM	[Enabled]	
QSFP4 I/O ROM	[Enabled]	
M.2A I/O ROM	[Enabled]	
M.2A Max Link Speed	[Auto]	
M.2B I/O ROM	[Enabled]	
M.2B Max Link Speed	[Auto]	
PCI Devices Common Settings:		
Re-Size BAR Support	[Disabled]	
SR-IOV Support	[Enabled]	

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

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

Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
SLOT_# I/O ROM ^(Note1)	When enabled, this setting will initialize the device expansion ROM for the related PCI-E slot. Options available: Enabled, Disabled. Default setting is Enabled .
SLOT_# Lanes ^(Note1)	Change the PCIe lanes. Default setting is Auto .
SLOT_# Max Link Speed ^(Note1)	Configure PCIe max link speed. Options available: Auto, Gen1, Gen2, Gen3, Gen4, Gen5. Default setting is Auto .
NVSW # I/O ROM	When enabled, this setting will initialize the device expansion ROM for the related NV Switch slot. Options available: Enabled, Disabled. Default setting is Enabled .
NVSW Max Link Speed	Configure NV Switch slot max link speed. Options available: Auto, Gen1, Gen2, Gen3, Gen4, Gen5. Default setting is Auto .
LAN I/O ROM ^(Note2)	Enable/Disable the onboard LAN controller. Options available: Enabled, Disabled. Default setting is Enabled .
LAN Lanes ^(Note2)	Change the LAN lanes. Default setting is Auto .
LAN Max Link Speed ^(Note2)	Configure LAN max link speed. Options available: Auto, Gen1, Gen2, Gen3, Gen4, Gen5. Default setting is Auto .
QSFP_# I/O ROM ^(Note3)	When enabled, this setting will initialize the device expansion ROM for the related QSFP LAN connector. Options available: Enabled, Disabled. Default setting is Enabled .
QSFP_# Lanes ^(Note3)	Change the QSFP LAN lanes. Default setting is Auto .
QSFP_# Max Link Speed ^(Note4)	Configure QSFP LAN max link speed. Options available: Auto, Gen1, Gen2, Gen3, Gen4, Gen5. Default setting is Auto .
M2A/B I/O ROM ^(Note4)	Enable/Disable M2A I/O ROM. Options available: Enabled, Disabled. Default setting is Enabled .
M2A/B_Max Link Speed ^(Note4)	Configure M2 PCIe max link speed. Options available: Auto, Gen1, Gen2, Gen3, Gen4, Gen5. Default setting is Auto .

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

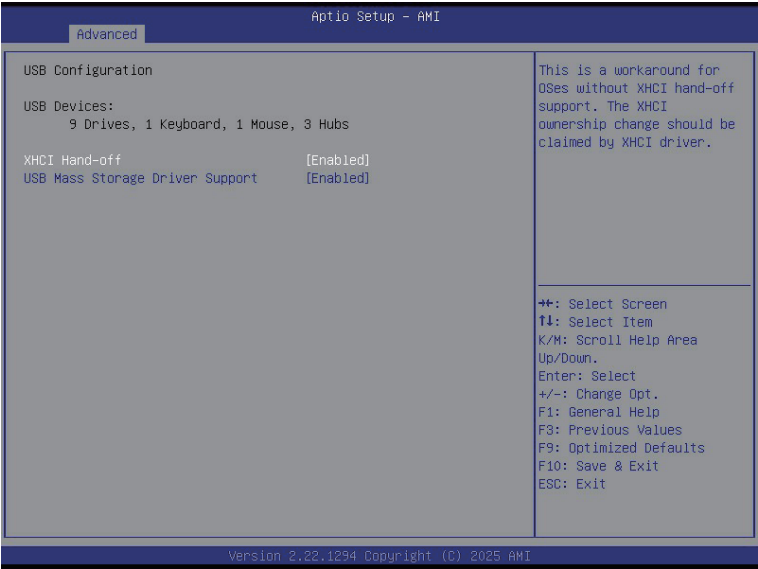
(Note2) This section is dependent on the available LAN controller.

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

(Note4) This section is dependent on the available M2 module.

Parameter	Description
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 Disabled .
SR-IOV Support	If the system has SR-IOV capable PCIe devices, this item Enable/Disable Single Root IO Virtualization Support. Options available: Enabled, Disabled. Default setting is Enabled .

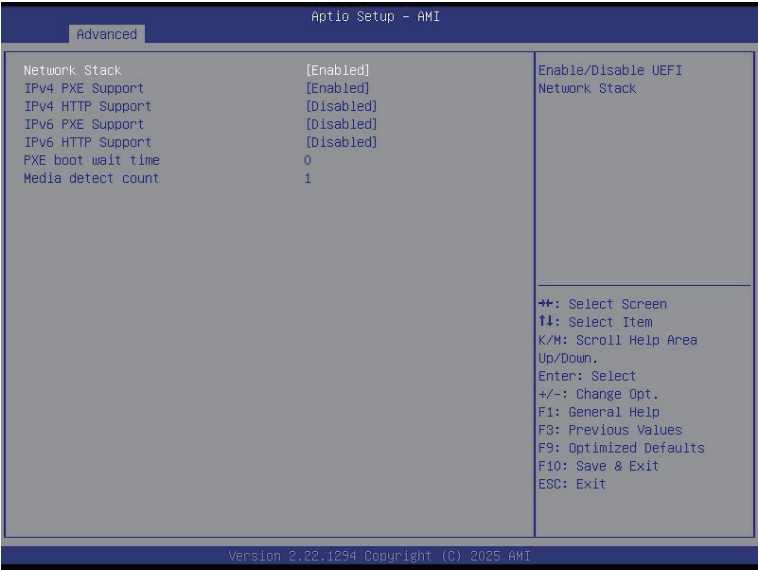
5-2-5 USB Configuration



Parameter	Description
USB Configuration	
USB Devices:	Displays the USB devices connected to the system.
XHCI Hand-off	Enable/Disable the XHCI (USB 3.0) Hand-off support. Options available: Enabled, Disabled. Default setting is Enabled .
USB Mass Storage Driver Support ^(Note)	Enable/Disable the USB Mass Storage Driver Support. Options available: Enabled, Disabled. Default setting is Enabled .

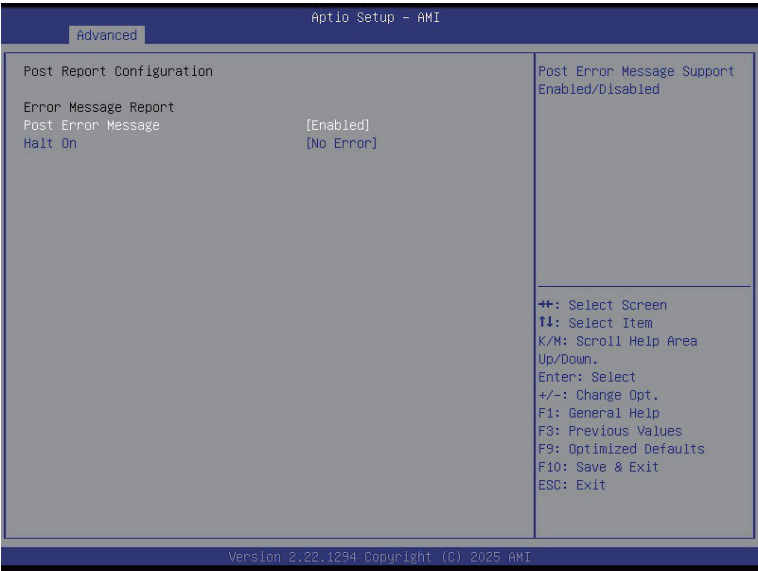
(Note) This item is present only if you attach USB devices.

5-2-6 Network Stack Configuration



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

5-2-7 Post Report Configuration



Parameter	Description
Post Report Configuration	
Error Message Report	
Post Error Message	Enable/Disable the POST Error Message support. Options available: Enabled, Disabled. Default setting is Enabled .
Halt On	Options available: No Error, All Error. Default setting is No Error .

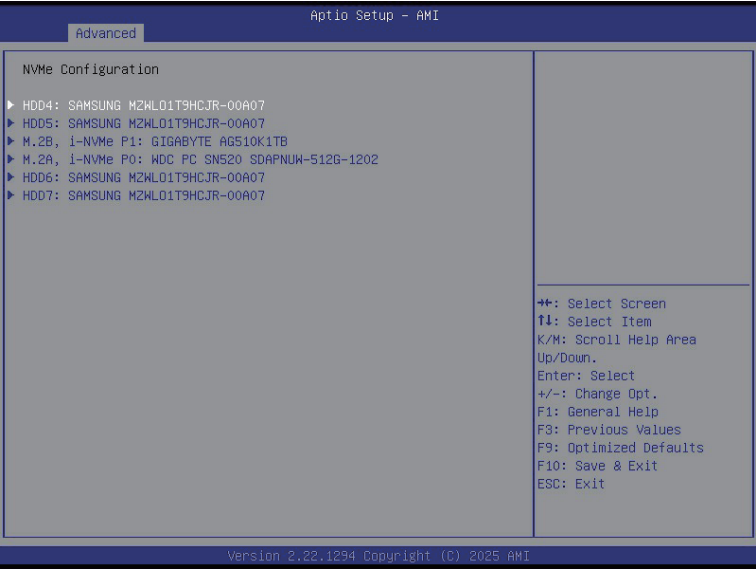
5-2-8 KMIP Server Configuration



Parameter	Description
KMIP Option	Options available: Enabled, Disabled. Default setting is Disabled .
KMIP Server Retry Count	Define KMS KMIP Server Retry Count.

Parameter	Description
KMIP Server Configuration	Press [Enter] to configure advanced items. ◆ KMIP Server IP address – Enter IPv4 address in dotted-decimal notation. ◆ KMIP TCP Port number – Enter KMIP TCP Port number 100...9999. – Default setting is 5696. ◆ Time Zone – Enter the correct time zone for this server. – Default setting is GMT+8. ◆ Client Credentials – Use User and password credentials to authenticate the client. – Options available: Disabled, Enabled. ◆ Client UserName – Enter Client identity: UserName. – Name Length: 0-63 characters. ◆ Client Password – Enter Client identity: Password. – Password Length: 0-31 characters. ◆ KMS TLS Certificate / Size – CA Certificate/ Client Private Key/ Client Certificate. – Enroll factory defaults or load the KMS TLS certificates – from the file.

5-2-9 NVMe Configuration



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

5-2-10 Chipset Configuration



Parameter	Description
Restore on AC Power Loss ^(Note)	Defines the power state to resume to after a system shutdown that is due to an interruption in AC power. When set to Last State, the system will return to the active power state prior to shutdown. When set to Power Off, the system remains off after power shutdown. Options available: Last State, Power Off, Power On, Unspecified. The default setting depends on the BMC setting.
P2P Bridge IO Size	Specifies P2P Bridge IO aligned to the size. Options available: 0x100, 0x150, 0x1000. Default setting is 0x1000 .
SATA HDD Security Frozen	Enable/Disable this item to send freeze lock command to SATA HDD. Options available: Enabled, Disabled. Default setting is Enabled .
NVMe SSD Security Frozen	Attempt to send freeze lock command to NVMe SSDs during boot. Options available: Enabled, Disabled. Default setting is Enabled .
NVMe LED Control	Enable/Disable allow user control NVMe LED. It only available the NVMe device direct connect to CPU. Options available: Disable, Enable. Default setting is Disable .
Display TCG Admin Password Message Box	Options available: Disable, Enable. Default setting is Disable .

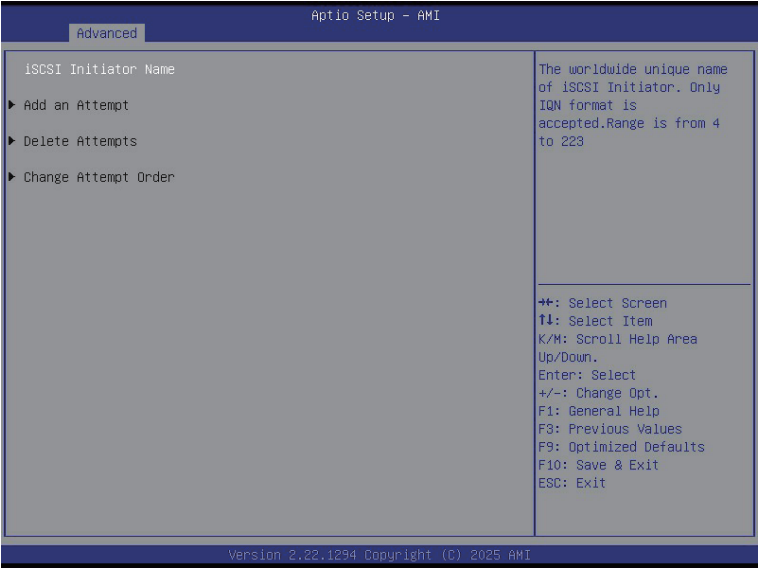
(Note) When the power policy is controlled by BMC, please wait for 15-20 seconds for BMC to save the last power state.

5-2-11 Tls Auth Configuration



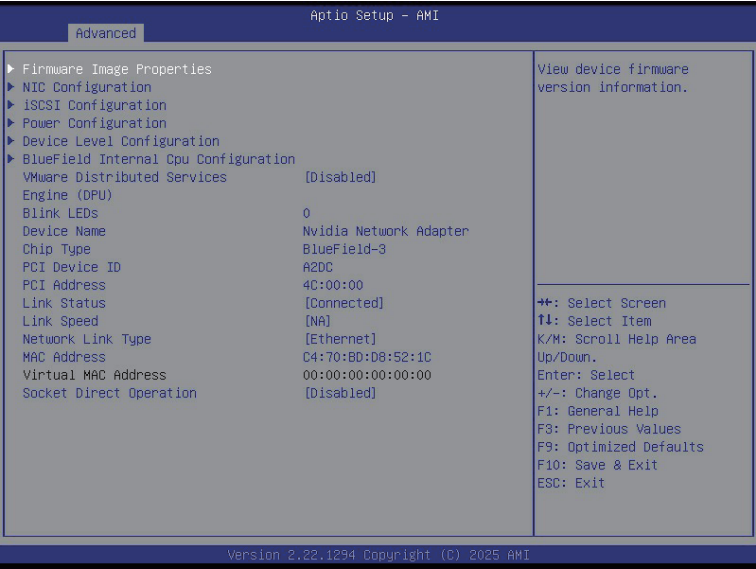
Parameter	Description
Server CA Configuration	Press [Enter] for configuration of advanced items. ◆ Enroll Cert – Press [Enter] to enroll a certificate • Enroll Cert Using File • Cert GUID - Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes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

5-2-12 iSCSI Configuration



Parameter	Description
Host iSCSI Configuration	Press [Enter] to configure advanced items. ◆ iSCSI Initiator Name – Only IQN format is accepted. Range: from 4 to 223 ◆ Add an Attempt ◆ Delete Attempts ◆ Change Attempt Order

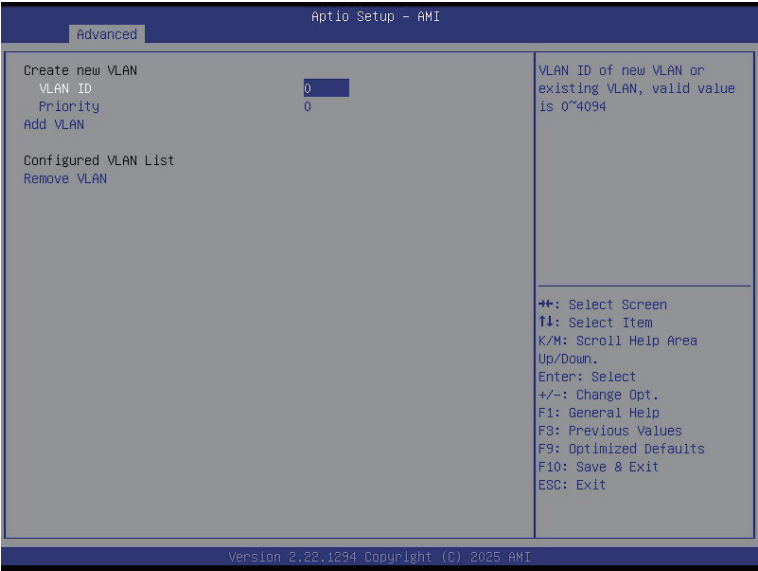
5-2-13 Nvidia Network Adapter



Parameter	Description
Firmware Image Properties	Press [Enter] to view device firmware version information
NIC Configuration	Press [Enter] to configure advanced items.
iSCSI Configuration	Press [Enter] to configure advanced items.
Power Configuration	Press [Enter] to configure advanced items. - RT PPS ENABLED ONPOWERUP - Options available: Disabled, Enabled.
Device Level Configuration	Press [Enter] to configure advanced items. - Virtualization Mode - Options available: SR-IOV, None. - PXE Boot Filters - Options available: Enabled. - PCI Virtual Functions Advertised - Configure the number of Virtual Functions supported on this device.
BlueField Internal Cpu Configuration	Press [Enter] to configure advanced items.
VMware Distributed Services Engine (DPU)	Options available: Enabled, Disabled. Default setting is Disabled .
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).

Parameter	Description
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.
Link Speed	Displays the technical specifications for the Network Interface Controller.
Network Link Type	Options available: InfiniBand, Ethernet .
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.
Socket Direct Operation	Options available: Disabled .

5-2-14 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.

5-2-15 MAC IPv4 Network Configuration



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

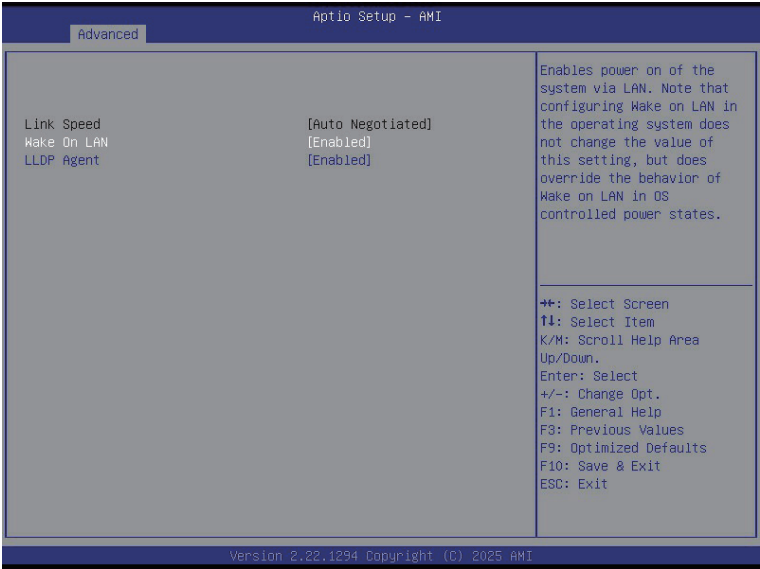
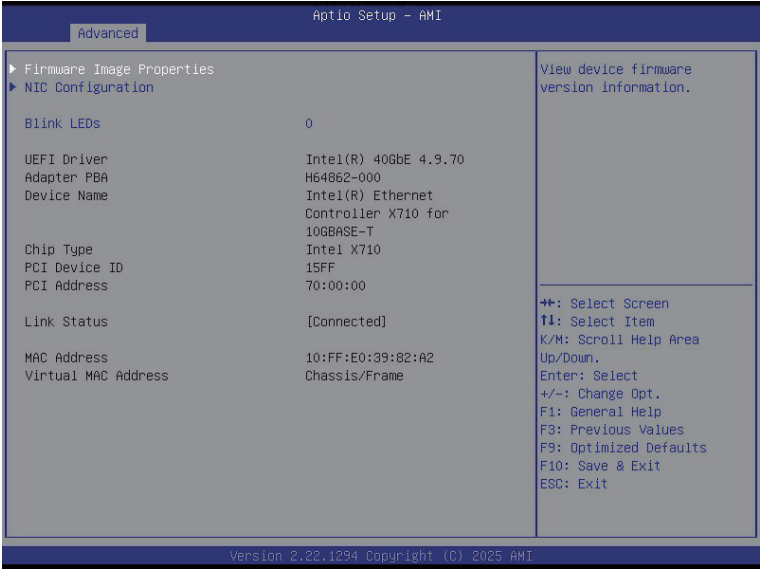
(Note) This item appears when **Configured** is set to **Enabled**.

5-2-16 MAC IPv6 Network Configuration



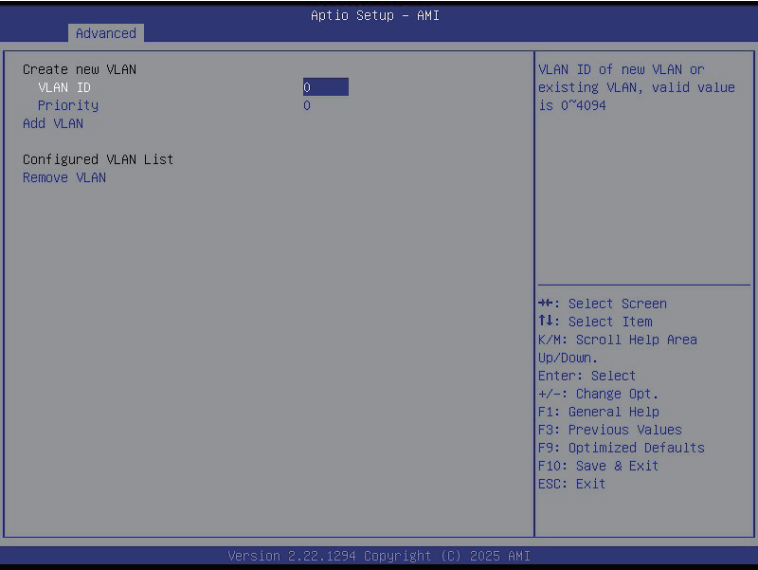
Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. - Displays the MAC Address information. - Interface ID - The 64 bit alternative interface ID for the device. The string is colon separated. e.g. ff:dd:88:66:cc:1:2:3. - DAD Transmit Count - The number of consecutive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

5-2-17 Intel(R) Ethernet Controller X710 for 10GBASE-T



Parameter	Description
Firmware Image Properties	Press [Enter] to view device firmware version information
NIC Configuration	Press [Enter] to configure advanced items. ♦ Link Speed – Allows for automatic link speed adjustment. – Options available: Auto Negotiated, 100 Mbps Half, 100 Mbps Full, 1000 Mbps Half, 1000 Mbps Full. Default setting is Auto Negotiated. ♦ Wake On LAN – Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states. – Options available: Enabled, Disabled. Default setting is Enabled. ♦ LLDP Agent – Options available: Enabled, Disabled. Default setting is Enabled.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

5-2-18 VLAN Configuration



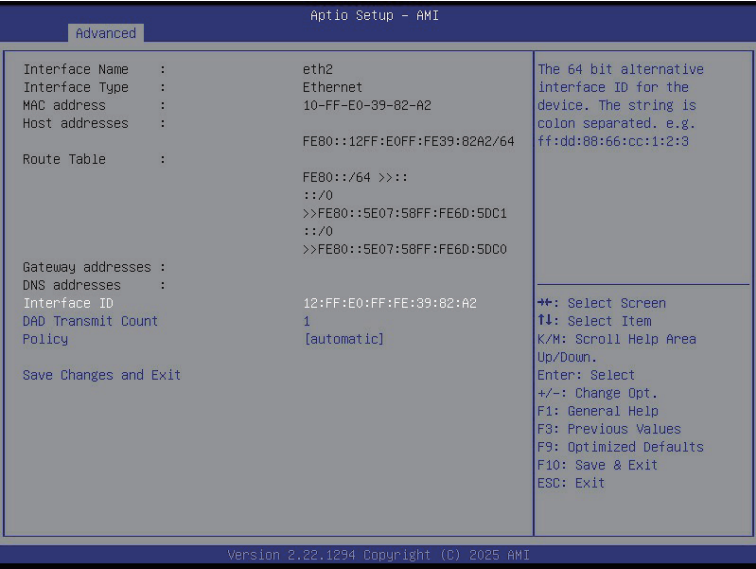
Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Create new VLAN ◆ VLAN ID – Sets VLAN ID for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 4094. ◆ Priority – Sets 802.1Q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

5-2-19 MAC IPv4 Network Configuration



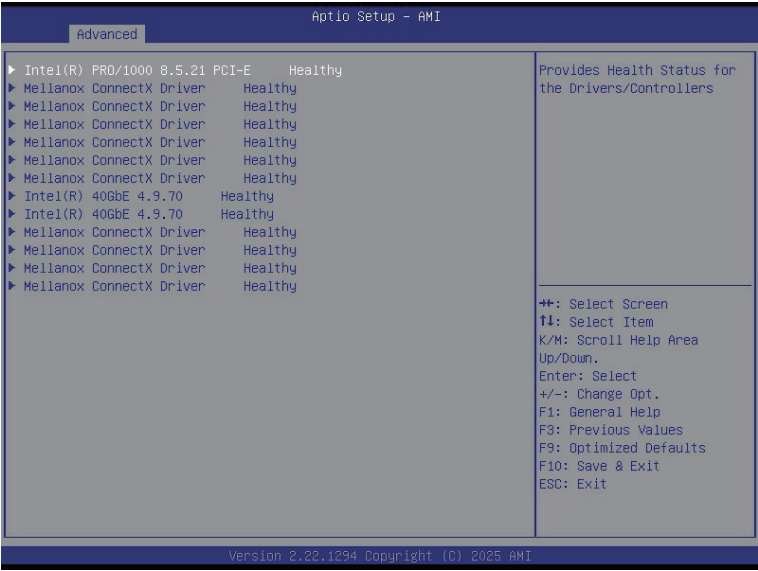
Parameter	Description
Configured	Indicates whether network address is configured successfully or not. Options available: Enabled, Disabled. Default setting is Disabled .
Enable DHCP ^(Note)	Options available: Enabled, Disabled. Default setting is Disabled .
Local IP Address ^(Note)	Press [Enter] to configure 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.

5-2-20 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. • Save Changes and Exit – Press [Enter] to save all configurations.

5-2-21 Driver Health

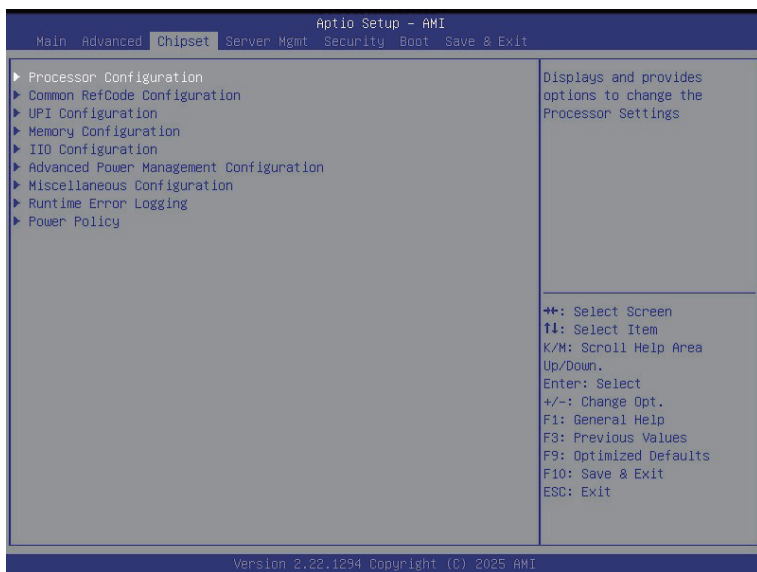


Parameter	Description
Driver Health	Displays driver health status of the devices/controllers if installed

5-3 Chipset Menu

Chipset Setup menu displays submenu options for configuring the function of chipset.

Select a submenu item, then press <Enter> to access the related submenu screen.



5-3-1 Processor Configuration

Chipset		Aptio Setup - AMI	
Processor Configuration		Change Per-Socket Settings	

▶ Per-Socket Configuration			
Processor Socket	Socket 0	Socket 1	
Processor ID	000A06F3*	000A06F3	
Processor Frequency	2.400GHz	2.400GHz	
Processor Max Ratio	18H	18H	
Processor Min Ratio	08H	08H	
Microcode Revision	03000382	03000382	
L1 Cache RAM(Per Core)	96KB	96KB	
L2 Cache RAM(Per Package)	65536KB	65536KB	
L3 Cache RAM(Per Package)	98304KB	98304KB	
Processor 0 Version	Intel(R) Xeon(R) 6710E		
Processor 1 Version	Intel(R) Xeon(R) 6710E		

Hardware Prefetcher	[Enable]		
Adjacent Cache Prefetch	[Enable]		
DCU IP Prefetcher	[Enable]		
L1 Next Page Prefetcher	[Enable]		
Enable Intel(R) TXT	[Disable]		
VMX	[Enable]		
Enable SMX	[Disable]		
AES-NI	[Enable]		
		++: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down: Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
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Chipset		Aptio Setup - AMI	
PRMRR Min Size per domain		128 MiB	
PRMRR Max Size per domain		512 GiB	

Processor Reserved Memory [Outputs]			
PRMRR Size per domain		16 MiB	
PRM Size per socket		16 MiB	
PRM Size per system		16 MiB	

Software Guard Extension (SGX) [Outputs]			
SGX activation state		Deactivated	
SGX error code [HEX]		16	

Software Guard Extension (SGX) [Inputs]			
SGX Factory Reset		[Enabled]	
SW Guard Extensions (SGX)		[Disabled]	
SGX Package Info In-Band Access		[Disabled]	
SGX PRMRR Size Requested		[Auto]	

In Field Scan (IFS)			

▶ In Field Scan (IFS)			
		++: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down: Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
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Parameter	Description
Processor Configuration	
Pre-Socket Configuration	Press [Enter] to configure advanced items. • CPU Socket 0 Configuration – Core Disable Bitmap(Hex) • Number of Cores to enable. 0 means all cores. FFFFFFFF means to disable all cores. The maximum value depends on the number of CPUs available. Press the numeric keys to adjust desired values.
Processor Socket / Processor ID / Processor Die Type / Processor Frequency / Processor Max Ratio / Processor Min Ratio / Microcode Revision / L1 Cache RAM(Per Core) / L2 Cache RAM(Per Core) / L3 Cache RAM(Per Package) / Processor # Version	Displays the technical specifications for the installed processor(s).
Hardware Prefetcher	Select whether to enable the speculative prefetch unit of the processor. Options available: Enable, Disable. Default setting is Enable .
Adjacent Cache Prefetch	When enabled, cache lines are fetched in pairs. When disabled, only the required cache line is fetched. Options available: Enable, Disable. Default setting is Enable .
DCU IP Prefetcher	Enable/Disable DCU IP Prefetcher. Options available: Enable, Disable. Default setting is Enable .
L1 Next Page Prefetcher	Options available: Enable, Disable. Default setting is Enable .
Enable Intel(R) TXT	Enable/Disable the Intel Trusted Execution Technology support function. Options available: Enable, Disable. Default setting is Disable .
VMX	Enable/Disable the Vanderpool Technology. This will take effect after rebooting the system. Options available: Enable, Disable. Default setting is Enable .
Enable SMX	Enable/Disable the Safer Mode Extensions (SMX) support function. Options available: Enable, Disable. Default setting is Disable .
AES-NI	Enable/Disable the AES-NI support. Options available: Enable, Disable. Default setting is Enable .
Debug Consent	Options available: Enable, Disable. Default setting is Disable .
Memory Encryption (TME) ^(Note)	Enable/Disable memory encryption (TME). Options available: Enabled, Disabled. Default setting is Disabled .
Total Memory Encryption Multi-Tenant (TME-MT)	Options available: Enabled, Disabled. Default setting is Disabled .

Parameter	Description
Memory Integrity	Options available: Disabled , Enabled
Trust Domain Extensions (TDX) ^(Note)	Options available: Disabled , Enabled.
Trust Domain Extensions - Connect (TDX Connect)	Options available: Disabled , Enabled.
TDX Secure Arbitration Mode Loader (SEAM Loader)	Options available: Disabled , Enabled.
TME-MT/TDX key split	Designate number of bits for TDX usage. The rest will be used by TME-MT
SGX error code [HEX]	Displays hexadecimal SGX internal error code
SGX Factory Reset	Options available: Disabled , Enabled.
SW Guard Extensions (SGX)	Options available: Disabled , Enabled.
SGX Package Info In-Band Access	Options available: Disabled , Enabled.
In-Field Scan (IFS)	Press [Enter] to configure advanced items. ◆ Enable SAF^(Note) – Options available: Disabled, Enabled. ◆ SAF PRMRR Size Requested – Configures SAF size region inside of PRM - just a constituent that may not be equal to the total PRM size. ◆ Enable SBFT^(Note) – Options available: Disabled, Enable SBFT and SGX, Enabled. ◆ SBFT PRMRR Size Requested – Configures SBFT size region inside of PRM - just a constituent that may not be equal to the total PRM size.

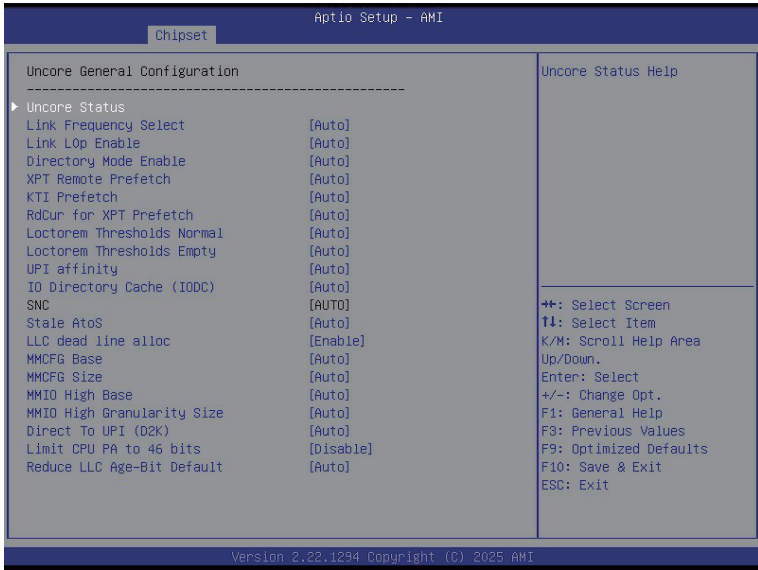
(Note) Advanced items prompt when this item is defined.

5-3-2 Common RefCode Configuration



Parameter	Description
Common RefCode Configuration	
Virtual Numa ^(Note)	Divide physical NUMA nodes into evenly sized virtual NUMA nodes in ACPI table. This may improve Windows performance on CPUs with more than 64 logical processors. Options available: Enable, Disable .
Number of Virtual Numa Nodes	The number of virtual NUMA nodes per physical NUMA nodes.

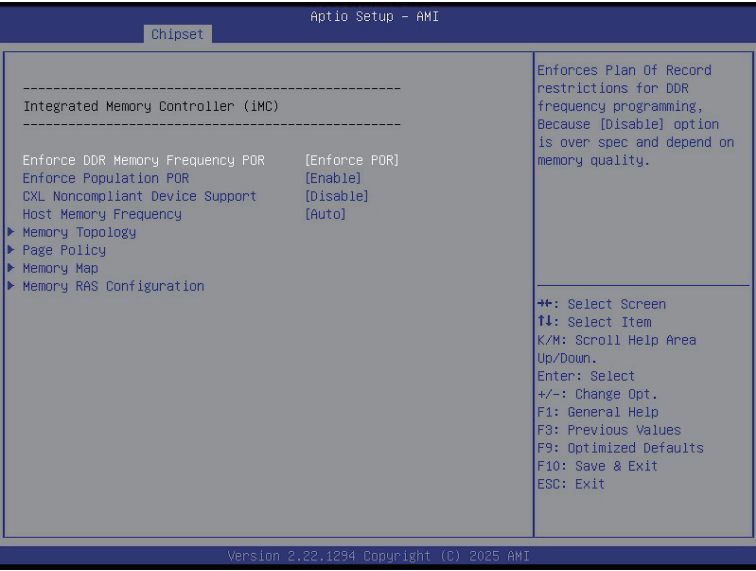
5-3-3 UPI Configuration



Parameter	Description
	Press [Enter] to configure advanced items.
	◆ Uncore Status – Press [Enter] to view the Uncore status. ◆ Link Frequency Select – Selects the UPI link frequency. – Options available: 12.8GT/s, 14.4GT/s, 16.0GT/s, Auto, Use Per Link Setting. Default setting is Auto. ◆ Link L0p Enable – Options available: Disable, Enable, Auto. ◆ Directory Mode Enable – Options available: Disable, Enable, Auto. ◆ XPT Remote Prefetch – Options available: Disable, Enable, Auto. ◆ KIT Prefetch – Options available: Disable, Enable, Auto. ◆ RsCur for XPT Prefetch – Options available: Disable, Enable, Auto. ◆ Loctorem Thresholds Normal – Options available: Disable, Enable, Auto. ◆ Loctorem Thresholds Empty – Options available: Disable, Enable, Auto.
Uncore General Configuration	

Parameter	Description
Uncore General Configuration (continued)	◆ UPI affinity – Options available: Disable, Enable, Auto. ◆ IO Directirt Cache (IODC) – Options available: Disable, Auto, Enable for Remote Invltom Hybrid Push, Enable for Remote Inltom AllocFlow, Enable for Remote Invltom Hybrid AllocNonAlloc, Enable for Remote Invltom and Remote WCILF. ◆ SNC – Enable/Disable Sub NUMA Cluster function. – Options available: Auto, Disable, Enable SNC2 (2-clusters), Enable SNC4 (4-clusters). Default setting is Auto. ◆ Stale AtoS – Enable/Disable Stale A to S directory optimization. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ LLC dead line alloc – Enable/Disable fill dead lines in LLC. – Options available: Disable, Enable, Auto. Default setting is Enable. ◆ MMCFG Base – Options available: 1G, 1.5G, 1.75G, 2G, 2.25G, 3G, Auto. – Default setting is Auto. ◆ MMCFG Size – Options available: 64M, 128M, 256M, 512M, 1G, 2G, Auto . – Default setting is Auto. ◆ MMIO High Base – Options available: 56T, 40T, 32T, 24T, 16T, 4T, 2T, 1T, 512G, 3584T. – Default setting is Auto. ◆ MMIO High Granularity Size – Selects the allocation size used to assign mmioh resources. – Options available: 1G, 4G, 16G, 64G, 256G, 1024G. Default setting is 64G. ◆ Limit CPU PA to 46 bits – Options available: Disable, Enable, Auto. Default setting is Disable. ◆ Reduce LLC Age-Bit Default – Options available: Disable, Enable, Auto. – Enable, Auto. Default setting is Auto.

5-3-4 Memory Configuration



Parameter	Description
Integrated Memory Controller (iMC)	
Enforce DDR Memory Frequency POR	When set to Enable, the system enforces Plan Of Record restrictions for DDR frequency programming. Options available: POR , Disable.
Enforce Population POR	Default setting is Enable .
CXL Noncompliant Device Support	Default setting is Disable .
Host Memory Frequency	Default setting is Auto .

Parameter	Description
Memory Topology	Press [Enter] to view memory topology with DIMM population information.
Memory Map ^(Note1)	Press [Enter] to configure advanced items. ♦ Volatile Memory Mode – Selects 1LM or 2LM mode for volatile memory. – Options available: 1LM, 2LM. Default setting is 2LM.
Memory RAS Configuration	Press [Enter] to configure advanced items. ♦ Mirror Mode^(Note2) – Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half. Enables the Mirror Mode will disable the XPT Prefetch. – Options available: Disabled, Full Mirror Mode, Partial Mirror Mode. Default setting is Disabled. ♦ Partial Mirror 1 Size (GB) – Selects multiplier of 1GB for the size of the SAD to be created. ♦ Correctable Error Threshold – Correctable Error Threshold (0x01-0x7fff) used for sparing, and leaky bucket. – Press the <+> / <-> keys to increase or decrease the desired values. ♦ Trigger SW Error Threshold^(Note2) – Enable/Disable Sparing trigger SW Error Match Threshold. – Options available: Disabled, Enabled. Default setting is Disabled. ♦ SW Per Bank Threshold – SW Per Bank Threshold (1-0x7FFF) used for DDR bank level error. – Press the <+> / <-> keys to increase or decrease the desired values. ♦ SW Correctable Error Time Window – SW Correctable Error time window based interface in hour (0-24). – Press the <+> / <-> keys to increase or decrease the desired values. ♦ Leaky bucket time window based interface^(Note2) – Enable/Disable leaky bucket time window based interface. – Options available: Disabled, Enabled. Default setting is Disabled.

(Note1) Advanced items prompt when HBM CPU is installed.

(Note2) Advanced items prompt when this item is defined.

Parameter	Description
Memory RAS Configuration (continued)	♦ Leaky bucket time window based interface Hour – Leaky bucket time window based interface hour used for DDR (0-24). – Press the <+> / <-> keys to increase or decrease the desired values. ♦ Leaky bucket time window based interface Minute – Leaky bucket time window based interface minute used for DDR (0-60). – Press the <+> / <-> keys to increase or decrease the desired values. ♦ Leaky bucket low bit – Configures leaky bucket low bit (0x1 - 0x29). – Press the <+> / <-> keys to increase or decrease the desired values. ♦ Leaky bucket high bit – Configures leaky bucket high bit (0x1 - 0x29). – Press the <+> / <-> keys to increase or decrease the desired values. ♦ ADDDC Sparing^(Note) – Enable/Disable ADDDC Sparing. – Options available: Disabled, Enabled. Default setting is Disabled. ♦ Enable ADDDC Error Injection – Options available: Disabled, Enabled. Default setting is Enabled. ♦ Patrol Scrub – Options available: Disabled, Enable at End of POST. Default setting is Enable at End of POST. ♦ Patrol Scrub Interval – Selects the number of hours (1-24) required to complete full scrub. A value of zero means auto. ♦ DDR5 ECS – Options available: Disabled, Enabled, Enable ECS with Result Collection. Default setting is Enabled.

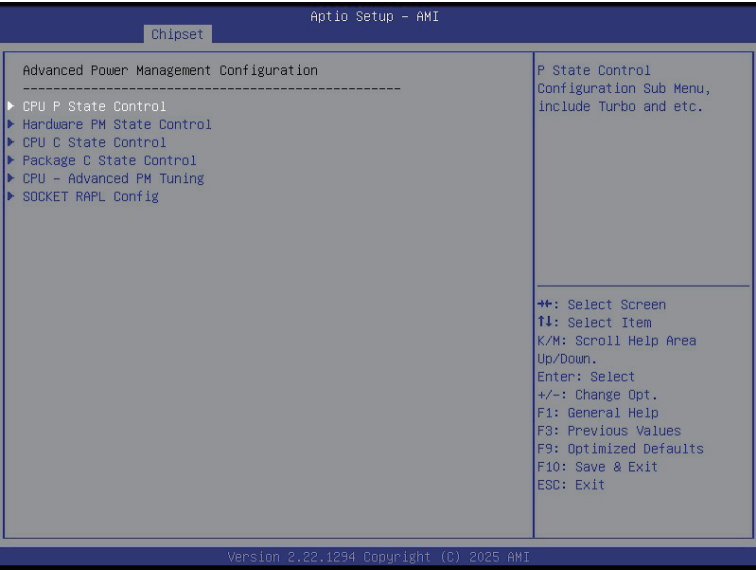
(Note) Advanced items prompt when this item is defined.

5-3-5 IIO Configuration



Parameter	Description
IIO Configuration	
Intel VMD Configuration	Enable/Disable Intel VMD technology. Options available: Enable, Disable. Default setting is Disable .
Intel VT for Directed I/O (VT-d)	Press [Enter] to configure advanced items. ◆ DMA Control Opt-In Flag – Enable/Disable DMA_CTRL_PLATFORM_OPT_IN_FLAG in DMAR table in ACPI. Not compatible with Direct Device Assignment (DDA). ◆ Pre-boot DMA Protection – Options available: Enable, Disable. Default setting is Disable. ◆ PCIe ACSCTL – Options available: Enable, Disable. Default setting is Disable. ◆ Cache Allocation – Options available: Enable, Disable. Default setting is Enable.
Global Configuration	Press [Enter] to configure advanced items. ◆ Max Read Request Size – Options available: Auto, 128B, 256B, 512B, 1024B, 2048B, 4096B. Default setting is Auto. ◆ Relaxed Ordering – Options available: Enable, Disable. Default setting is Enable.

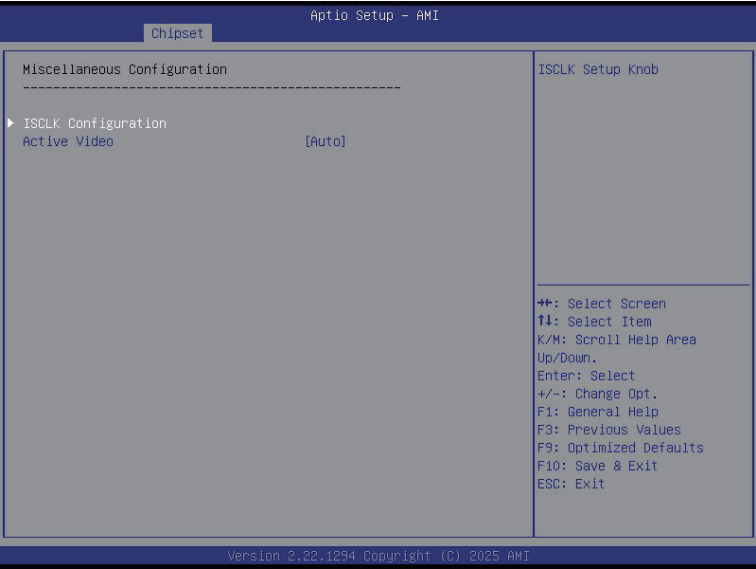
5-3-6 Advanced Power Management Configuration



Parameter	Description
CPU P State Control	Press [Enter] to configure advanced items. - SpeedStep (Pstates) - Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. - Options available: Enable, Disable. Default setting is Enable. - Turbo Mode - When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance. When this item is disabled, the processor will not overclock any of its core. - Options available: Enable, Disable. Default setting is Enable.
Hardware PM State Control	Press [Enter] to configure advanced items. - Hardware P-States - When this item is disabled, the processor hardware chooses a P-state based on OS Request (Legacy P-States). - In Native mode, the processor hardware chooses a P-state based on OS guidance. - In Out of Band mode, the processor hardware autonomously chooses a P-state (with no OS guidance). - Options available: Disable, Native Mode, Out of Band Mode, Native Mode with No Legacy Support. Default setting is Native Mode.

Parameter	Description
CPU C State Control	Press [Enter] to configure advanced items. ◆ Enable Monitor MWAIT – Allows Monitor and MWAIT instructions. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ CPU C6 Report – Enable/Disable CPU C6(ACPI C3) report to OS. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ Enhanced Halt State (C1E) – Core C1E auto promotion control. Takes effect after reboot. – Options available: Enable, Disable. Default setting is Enable.
Package C State Control	Press [Enter] to configure advanced items. ◆ Package C State – Configures the state for the C-State package limit. – Options available: C0/C1 state, C2 state, C6(non Retention) state, C6(Retention) state, No Limit, Auto. Default setting is Auto.
CPU - Advanced PM Tuning	Press [Enter] to configure advanced items. ◆ Energy Perf BIAS – Press [Enter] to configure advanced items. » Power Performance Tuning • Options available: OS Controls EPB, BIOS Controls EPB, PECI Controls EPB. Default setting is OS Controls EPB. » Energy_PERF_BIAS_CFG mode^(Note) • Options available: Performance, Balanced Performance, Balanced Power, Power. Default setting is Balanced Performance.
SOCKET RAPL Config	Press [Enter] to configure advanced items. ◆ PL1 Power Limit – Press the <+> / <-> keys to increase or decrease the desired values. ◆ PL1 Time Window • Default setting is 1. ◆ PL2 Power Limit – Press the <+> / <-> keys to increase or decrease the desired values. ◆ PL2 Time Window • Default setting is 1.

5-3-7 Miscellaneous Configuration



Parameter	Description
Miscellaneous Configuration	
ISCLK Configuration	Press [Enter] to configure advanced items. – SSC1 Enable – Options available: Enable, Disable. Default setting is Enable. – SSC2 Enable – Options available: Enable, Disable. Default setting is Enable.
Active Video	Selects the active video type. Options available: Auto, Onboard Device, PCIE Device, Specific PCIE Device. Default setting is Auto .

5-3-8 Runtime Error Logging Settings

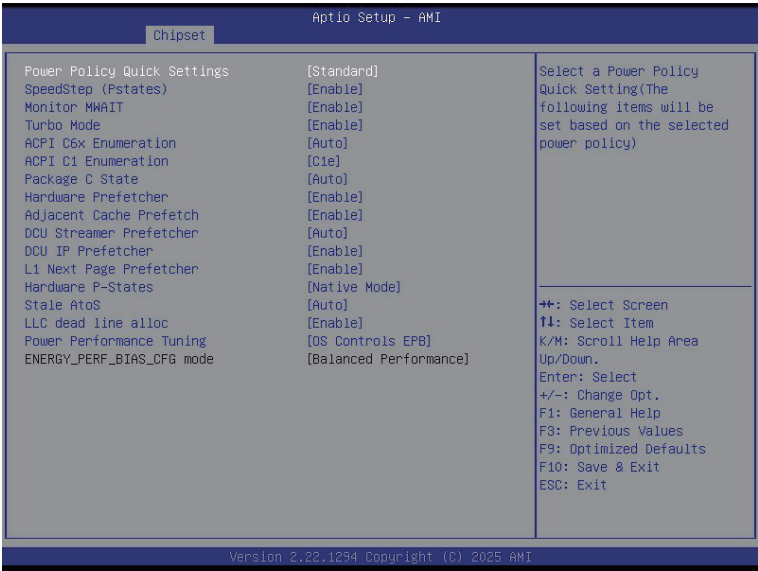


Parameter	Description
Runtime Error Logging	
System Errors	Enable/Disable system error logging function. Options available: Enable , Disable.
S/W Error Injection Support	Enable/Disable software injection error logging function. Options available: Enable, Disable .
Whea Settings	Press [Enter] to configure advanced items. ◆ WHEA (Windows Hardware Error Architecture) Support – Enable/Disable WHEA Support. – Options available: Enable, Disable.
Memory Error Enabling	Press [Enter] to configure advanced items. ◆ Memory Corrected Error – Enable/Disable Memory Corrected Error. – Options available: Enable, Disable. ◆ Uncorrected Error disable Memory – Enable/Disable the Memory that triggers Uncorrected Error. – Options available: Enable, Disable.

Parameter	Description
PCIe Error Enabling	Press [Enter] to configure advanced items. ◆ PCIe Error – Enable/Disable PCIe error. – Options available: Enable, Disable. ◆ Uncorrected Error^(Note) – Enables and escalates Uncorrectable/Recoverable Errors to error pins. – Options available: Enable, Disable. ◆ Fatal Error Enable^(Note) – Enables and escalates Fatal Errors to error pins. – Options available: Enable, Disable. ◆ Assert NMI on SERR^(Note) – Enable/Disable BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. – Options available: Enable, Disable. ◆ Assert NMI on PERR^(Note) – Enable/Disable BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. – Options available: Enable, Disable.

(Note) This item appears when **PCIe Error** is set to **Enable**.

5-3-9 Power Policy



Parameter	Description
Power Policy Quick Settings	Selects a Power Policy Quick Setting. Options available: Standard, Best Performance, Energy Efficient. Default setting is Standard .
SpeedStep (Pstates)	Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. Options available: Enable, Disable. Default setting is Enable .
Monitor MWAIT	Allows Monitor and MWAIT instructions. Options available: Enable, Disable. Default setting is Enable .
Turbo Mode	When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance. When this item is disabled, the processor will not overclock any of its core. Options available: Enable, Disable. Default setting is Enable .
ACPI C6x Enumeration	Options available: Disable, C6S as ACPI C2, C6S as ACPI C3, C6S-P as ACPI C2, C6S-P as ACPI C3, Auto. Default setting is Auto .
ACPI C1 Enumeration	Options available: C1, C1e. Default setting is C1e .
Package C State	Configures the C-State package limit. Options available: C0/C1 state, C2 state, C6(non Retention) state, C6(Retention) state, No Limit, Auto. Default setting is Auto .

Parameter	Description
Hardware Prefetcher	Options available: Enable, Disable. Default setting is Enable .
Adjacent Cache Prefetch	Options available: Enable, Disable. Default setting is Enable .
DCU Streamer Prefetcher	Options available: Enable, Disable. Default setting is Enable .
L1 Next page Prefetcher	Options available: Enable, Disable. Default setting is Enable .
Hardware P-States	Options available: Disable, Native mode, Out of Band mode, Native Mode with No Legacy Support. Default setting is Native Mode .
Stale AtoS	Options available: Auto, Enable, Disable. Default setting is Auto .
LLC dead line alloc	Options available: Auto, Enable, Disable. Default setting is Enable .
Power Performance Tuning	Options available: OS Controls EPB, BIOS Controls EPB, PECI Controls EPB. Default setting is BIOS Controls EPB .
ENERGY_PERF_BIAS_CFG mode	Performance, Balanced Performance, Balanced Power, Power. Default setting is Balanced Performance .

5-4 Server Management Menu



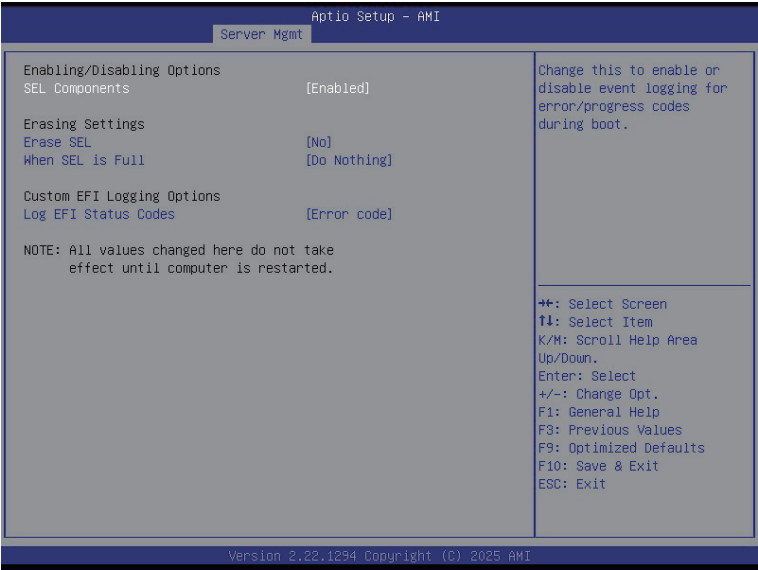
Parameter	Description
FRB-2 Timer	Enable/Disable FRB-2 timer (POST timer). Options available: Enabled, Disabled. Default setting is Enabled .
FRB-2 Timer ^(Note1) timeout	Configures the FRB2 Timer timeout. The value is between 1 to 30 minutes. Default setting is 6 minutes .
FRB-2 Timer Policy ^(Note1)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

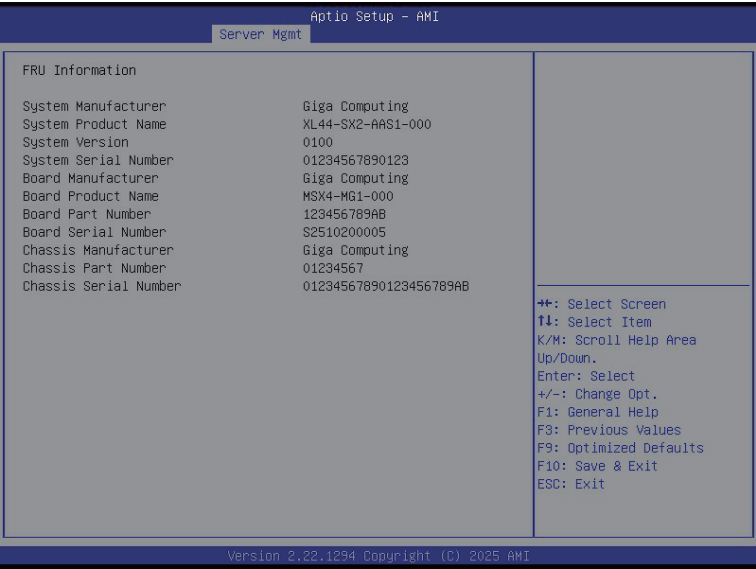
5-4-1 System Event Log



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

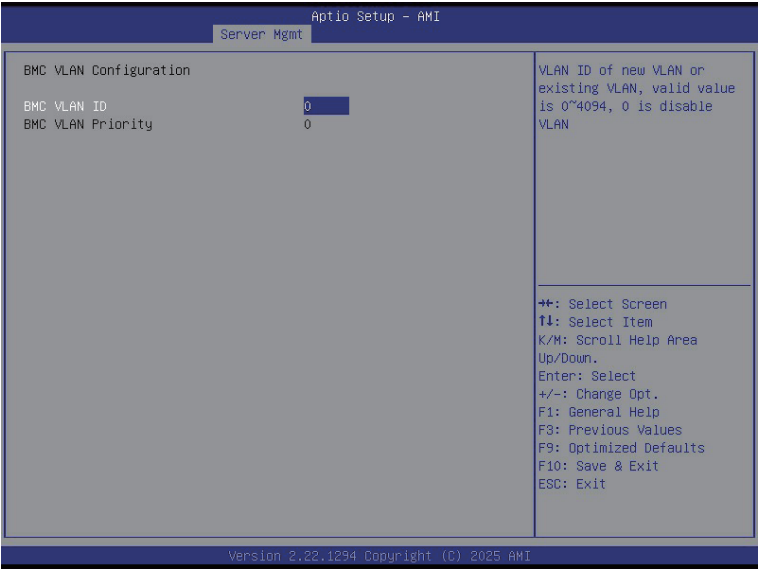
5-4-2 View FRU Information

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



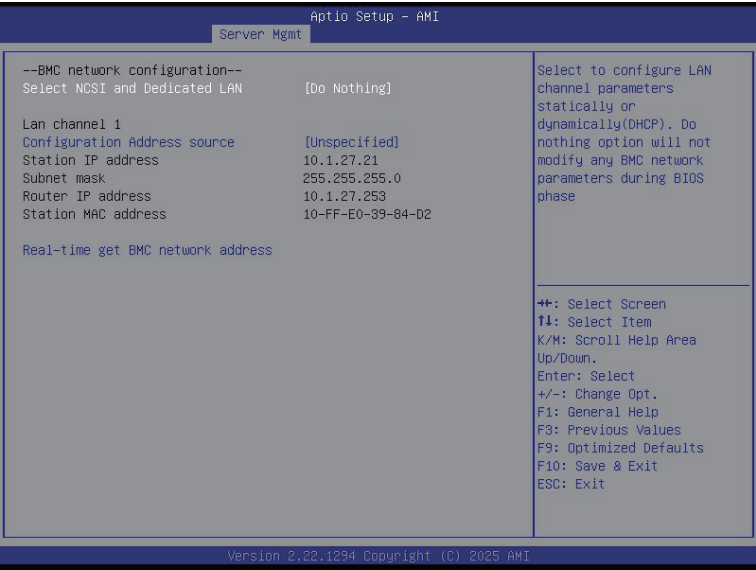
(Note) The model name will vary depends on the product you purchased

5-4-3 BMC VLAN Configuration



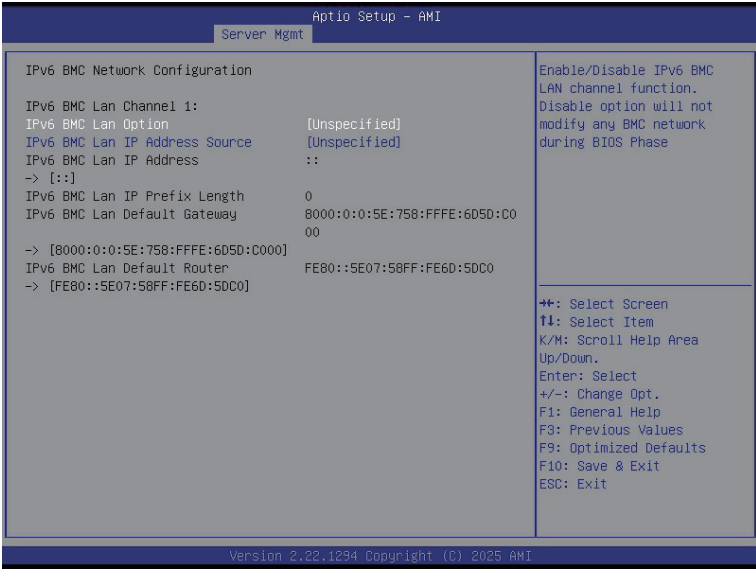
Parameter	Description
BMC VLAN Configuration	
BMC VLAN ID	Select to configure BMC VLAN ID. The valid range is from 0 to 4094. When set to 0, BMC VLAN ID will be disabled.
BMC VLAN Priority	Select to configure BMC VLAN Priority. The valid range is from 0 to 7. When BMC VLAN ID is set to 0, BMC VLAN Priority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

5-4-4 BMC Network Configuration



Parameter	Description
BMC network configuration	
Select NCSI and Dedicated LAN	Options available: Do Nothing, Model1(Dedicated), Model2(NCSI), Mode3(Failover). Default setting is Do Nothing .
Lan Channel 1	
Configuration Address source	Selects to configure LAN channel parameters statically or dynamically (DHCP). Options available: Unspecified, Static, DynamicBmcDhcp. Default setting is DynamicBmcDhcp .
Station IP address	Displays IP Address information.
Subnet mask	Displays Subnet Mask information. Please note that the IP address must be in three digitals, for example, 192.168.000.001.
Router IP address	Displays the Router IP Address information.
Station MAC address	Displays the MAC Address information.
Real-time get BMC network address	Press [Enter] will set LAN mode and Address source and then get IP, Subnet, Gateway and MAC address.

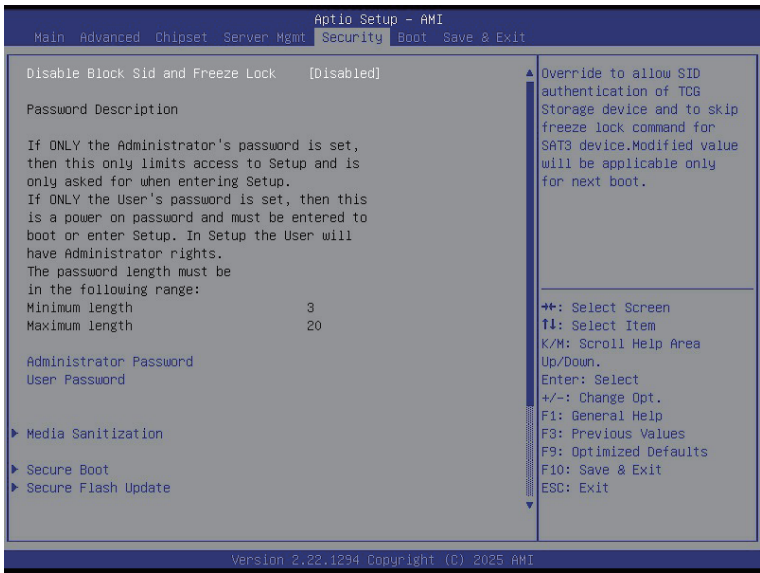
5-4-5 IPv6 BMC Network Configuration



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.

5-5 Security Menu

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



There are two types of passwords that you can set:

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

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

5-5-1 Secure Boot

The Secure Boot feature is applicable if supported by your Operating System. If your Operating System is not supporting Secure Boot, the system will hang when starting the 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 the Operating System loads to the login screen have not been tampered with. When set to Standard, it will automatically load the Secure Boot keys from 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	Reset the system to Setup Mode.

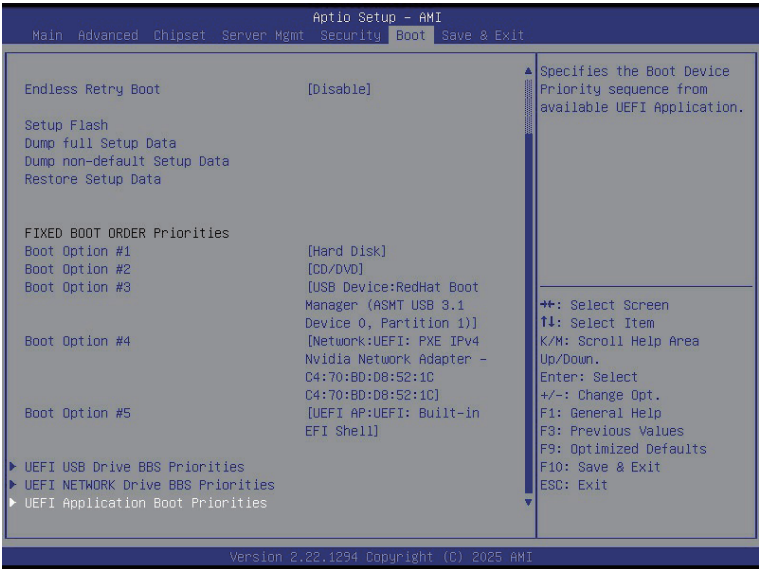
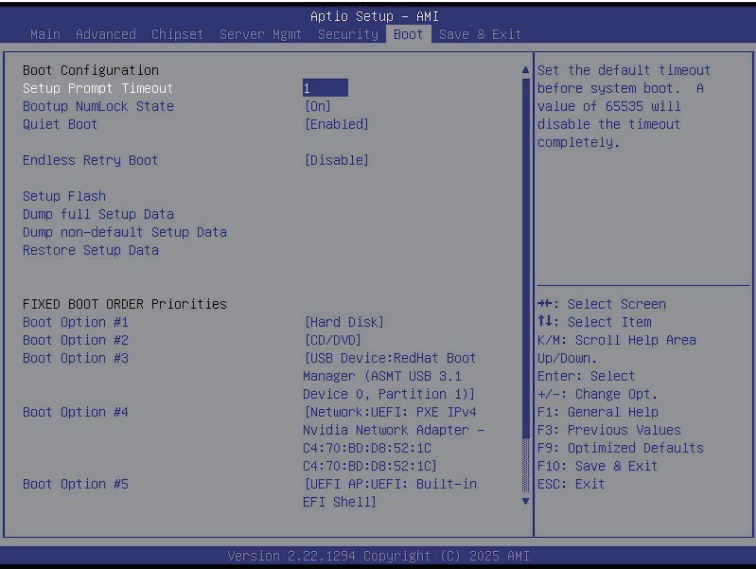
(Note) Advanced items prompt when this item is set to **Custom**.

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. ◆ Reset To Setup Mode – Reset the system to Setup Mode. – Options available: Yes, No. ◆ Enroll Efi Image – Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (db). ◆ Export Secure Boot variables – Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device. ◆ 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.

Parameter	Description
Key Management (continued)	♦ 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.

5-6 Boot Menu

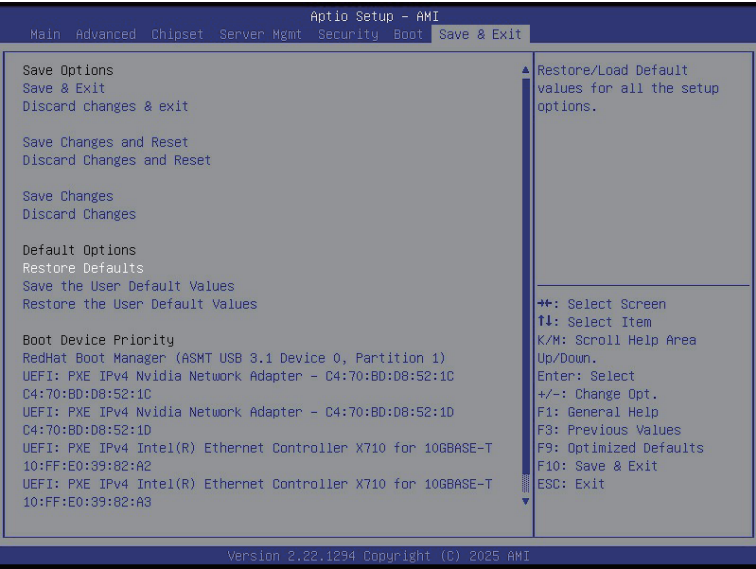
The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.



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

5-7 Save & Exit Menu

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



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

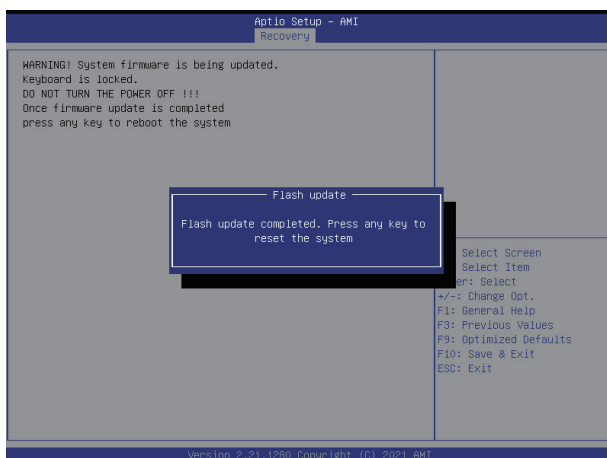
Parameter	Description
Restore Defaults	Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system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

5-8 BIOS Recovery

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

Recovery Instruction:

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





Designed by

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