OPEN

Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

STABLE

Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation

Motherboard

MECAI-GH200

User Manual

English

Version 1.00
Published Sep. 2024

Copyright Notice:

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

Setting up the Server in a Restricted Access Location/Restricted Access Area

- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Leave enough clearance (25 inches in the front and 30 inches in the back of the rack) to allow the front door to be opened completely and to allow for sufficient airflow.
- This product is for installation merely in a Restricted Access Location.
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.
- Only skilled person and Instructed person can remove the chassis covers to access the inside of the system.

ASRock Rack's Website: www.ASRockRack.com

Replaceable Batteries

CAUTION

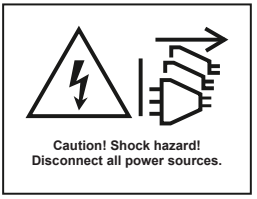
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Warning

When removal of the chassis lid required for servicing:

- Turn off power and unplug any power cords/cables, and
- Reinstall the chassis lid before restoring power.



Important Safety Instructions

Pay close attention to the following safety instructions before performing any of the operation. Basic safety precautions should be followed to protect yourself from harm and the product from damage:

- Operation of the product should be carried out by suitably trained, qualified, and certified personnel only to avoid risk of injury from electrical shock or energy hazard.
- Disconnect the power cord from the wall outlet when installing or removing main system components, such as the motherboard and power supply unit.
- Place the system on a stable and flat surface.
- Use extreme caution when working with high-voltage components.
- When handling parts, use a grounded wrist strap designed to prevent static discharge.
- Keep the area around the system clean and clutter-free.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags when not in use.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- The power cord must be connected to a socket or outlet with a ground connection.

Contents

Chapter 1 Introduction

Thank you for purchasing MECAI-GH200, a reliable barebone system produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

This guide provides the instructions of insertion and extraction of chassis components, such as chassis covers, system fans, power supplies, hard disk drive trays, and other main components this system supports. If the system is pre-installed a serverboard, please refer to the serverboard user manual for the information about the serverboard components, specifications and BIOS settings.

System	ASRock Rack Server Board
MECAI-GH200	ARLINGTON-MB

Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice.

The illustrations shown in this manual are for reference purposes only and may not exactly match the model purchased.

If requiring technical support related to this system, please visit the website for specific information about the using model.
http://www.asrockrack.com/support/

1.1 Shipping Box Contents

Item	Quantity
Server L10: MEC2U-GH200	1
Rail kit	1
Accessory box - 2 Power cords - 1 Quick installation guide - 1 M2 screw - 1 M3 screw	

If any items are missing or appear damaged, please contact the authorized dealer.

1.2 Specifications

MECAI-GH200	
System	
Form Factor	2U NVIDIA® MGX™
Dimensions	420 x 438 x 87mm (16.5" x 17.2" x 3.4")
Support MB	ARLINGTON-MB
Front Panel	
Buttons	Reset, UID w/LED, Power w/LED
I/O Ports	1 Mini DisplayPort (VGA), 1 Micro USB (COM), 1 Type-A (USB3.2 Gen1)
IPMI LAN	1 dedicated IPMI
External Drive Bay / Storage	
Front Side Drive Bay	2 E1.S (PCIe5.0 x4), supports 9.5mm width
Internal Side	2 M-key (PCIe5.0 x4), supports 22110/2280 form factor
Power Supply	
Type	1+1 CRPS
Output Watts	1000W @ 100-127Vac input / 2000W @ 200-240Vac input
Efficiency	80-PLUS Titanium
AC Input	Low-line: 100-127Vrms, 50/60Hz 12A High-line: 200-240Vrms, 50/60Hz 10A
System Fan	
Fan	6 PWM Hot-swap 60x76mm fans
Processor System	
CPU	NVIDIA® GH200 Grace Hopper Superchip: 1x Grace CPU 1x Hopper H100 GPU NVLink-C2C for CPU-GPU interconnect
Thermal Design Power	Up to 1000W (CPU + GPU + Memory)
Supported Type	Grace CPU: Supports LPDDR5X memory with ECC Hopper H100 GPU: Supports HBM3 or HBM3e (coming soon)
Max. Capacity per DIMM	Grace CPU: 480GB Hopper H100 GPU: 96GB (HBM3) or 144GB (upcoming HBM3e)
Max. DIMM Frequency	Grace CPU: 512GB/s Hopper H100 GPU: 4TB/s (HBM3) or 4.9TB/s (upcoming HBM3e)

PCIe Expansion Slots	
PCIe x16	1 HHHL single-slot PCIe5.0 x16 for NVIDIA® ConnectX-7 NICs 1 FHHL dual-slot PCIe5.0 x16 for NVIDIA® BlueField-3 DPUs
Server Management	
BMC Controller	ASPEED AST2600
IPMI Dedicated GLAN	1 Realtek RTL8211F for dedicated management GLAN
Environment	
Temperature	Operation temperature: 10°C ~ 35°C Non operation temperature: -40°C ~ 70°C
Humidity	Non operation humidity: 20% ~ 90% (Non condensing)

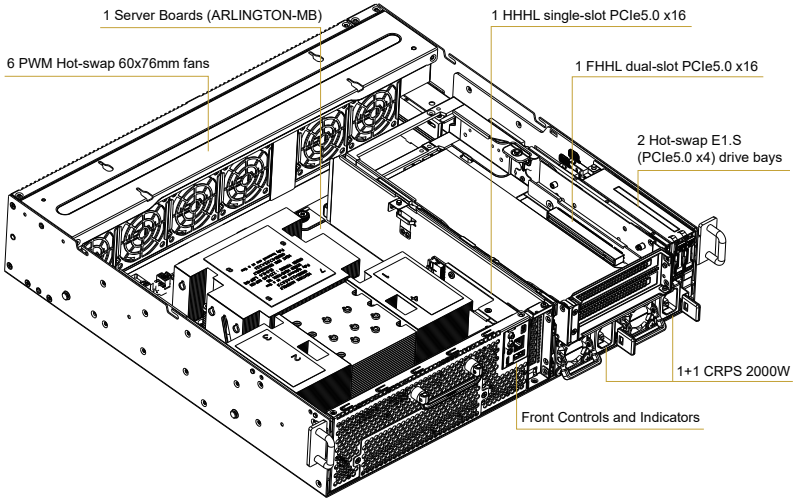
**Please be noted that the functions are supported depending on the type of the server board.*

Please refer to the user manual of the motherboard you use for detailed information about motherboard components and features.

Chapter 2 Server System Overview

This chapter provides diagrams showing the location of important components of the server system.

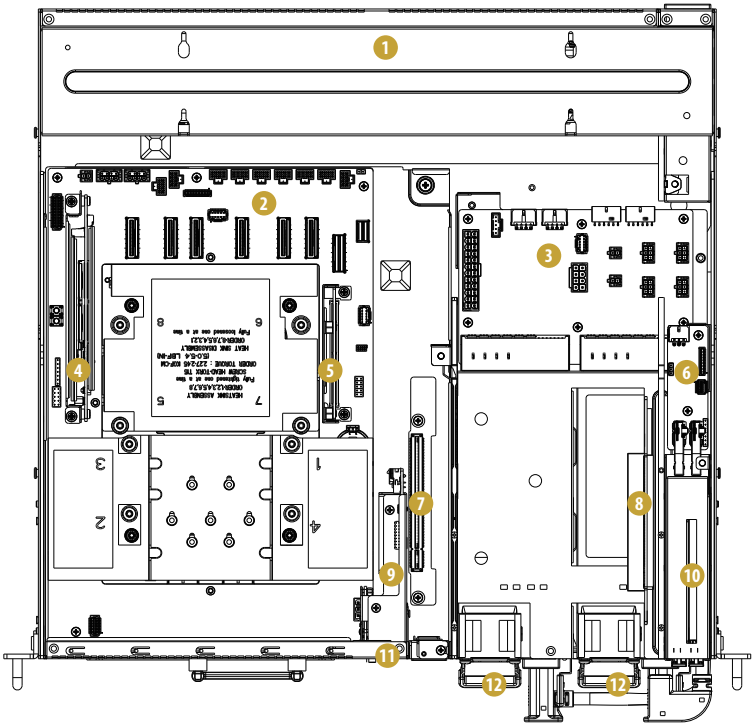
2.1 System Components



**The illustrations in this User Manual are for references only. The actual product may be slightly different by SKU.*

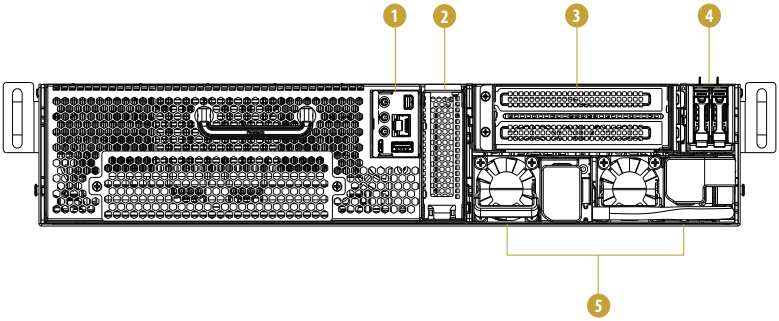
English

2.2 Internal Features



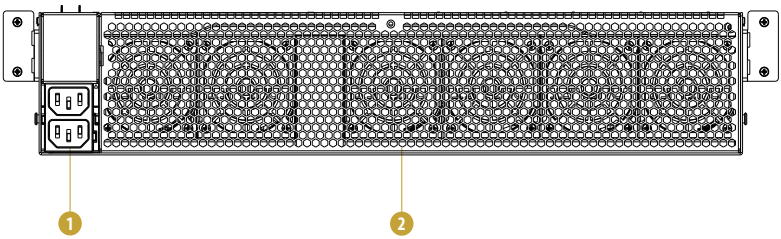
No.	Description
1	6 PWM hot-swap 60x76mm fans
2	Server board (ARLINGTON-MB)
3	PDB board
4	M.2 riser slot connected to M.2 riser board for 2 M-Key
5	BMC slot connected to BMC board
6	E1S board for 2 hot-swap E1.S (PCIe5.0 x4) drives
7	HHHL single-slot PCIe5.0 x16 for NVIDIA® ConnectX-7 NICs
8	FHHL dual-slot PCIe5.0 x16 for NVIDIA® BlueField-3 DPUs
9	IOR+IOL boards
10	2 E1.S (PCIe5.0 x4) drive bays
11	Control panel and LED indicators
12	1+1 CRPS 2000W

2.3 System Front Panel



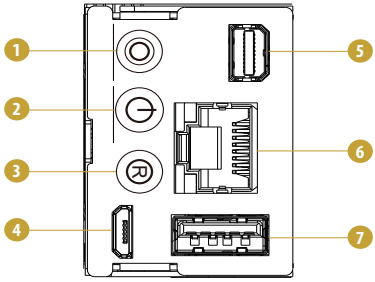
No.	Description
1	Control Panel & I/O Shield (depends on the specification of the server board)
2	HHHL PCIe5.0 x16 riser card drive bay
3	FHHL PCIe5.0 x16 riser drive bay
4	2 E1.S PCIe5.0 x4 drive bay
5	1+1 CRPS

2.4 System Rear Panel



No.	Description
1	2 Power ports for 1+1 CRPS 2000W connections
2	Rear Vent

2.5 Control Panel



No.	Description
1	UID Button w/ LED
2	Power Button w/ LED
3	System Reset Button
4	Micro USB Port (COM)
5	Mini DisplayPort (VGA)
6	IPMI RJ-45 LAN Port w/ LEDs
7	Type-A USB Port (USB3.2 Gen1)

** Please note that the functions are supported depending on the type of the server board.*

ID Button

Press the ID button to toggle the front panel ID LED and the baseboard ID LED on and off. This allows user to locate the server working on behind a rack of servers.

Power Button

Press the power switch button to toggle the system power on and standby/sleep modes. To remove all power from the system completely, disconnect the power cord from the server.

System Reset Button

Press the system reset button to reboot the server without shutting it off and initialize the system.

Status LED Definitions

Power LED	
Status	**Description**
Green	Power on
Off	Power off

ID LED	
Status	**Description**
Blue	System identification is active
Off	System identification is disabled

System Fault LED	
Status	**Description**
Solid Light	System fault
Off	System normal

IPMI LAN LED			
Activity / Link LED		**Speed LED**	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10Mbps connection
Blink	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection

Chapter 3 Hardware Installation and Maintenance

This chapter helps user how to assemble the chassis and install components.

Before You Begin

Before working with the server, pay close attention to the "Important Safety Instructions" at the beginning of this manual.

1. Make sure the server is powered off.
   Power down the server if it is still running.
   (1) Press the Power button to power off the server from full-power mode to standby-power (sleep) mode. The Power LED at the front turns from solid green to blinking green.
   (2) Disconnect the power cord first from the AC outlet and then from the server. The power LED turns off.

> *The server is not completely powered down when pressing the Power button on the front panel. The Power button lets the server toggle between Power On and Standby (Sleep) modes. Some internal circuitry remain active in the Standby mode. To remove all power from the system completely, be sure to disconnect the power cord from the server.*

2. Ensure having a clean and stable working environment. Avoid dust and dirt because contaminants may cause malfunctions.
3. Ground yourself properly before touching any system component. A discharge of static electricity may damage components. Wear a grounded wrist strap if available.

Installing Procedures

The followings are prerequisite to be installed.

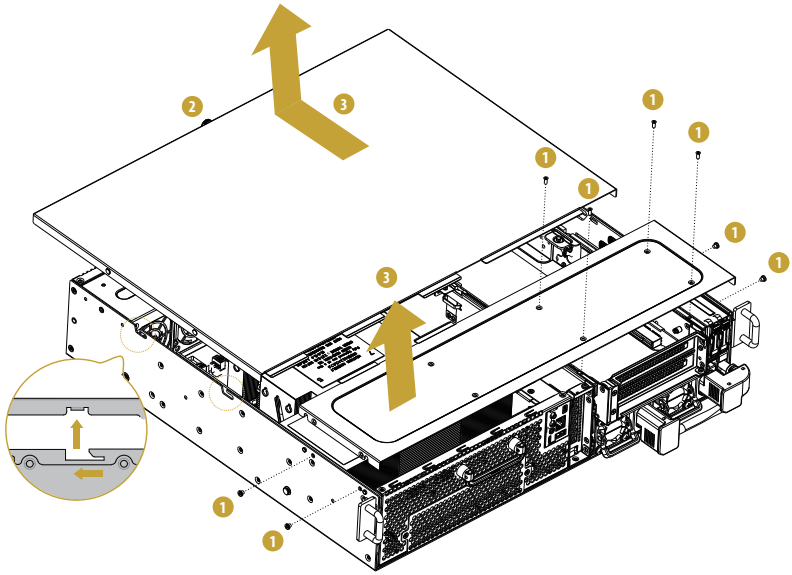
- Server Board (Pre-installed)
- Power Distribution Board (Pre-installed)
- E1S Board (Pre-installed)
- Power Supply Units (Pre-installed)
- System Fans (Pre-installed)
- Front Panel (Pre-installed)

> 1. *Some components are already pre-installed. Simply properly connect the required cables before or after installation. See the Quick Installation Guide for more details.*
> 2. *Refer to the user manual of the server board used for instructions on how to install server board components.*

3.1 Server Top Cover

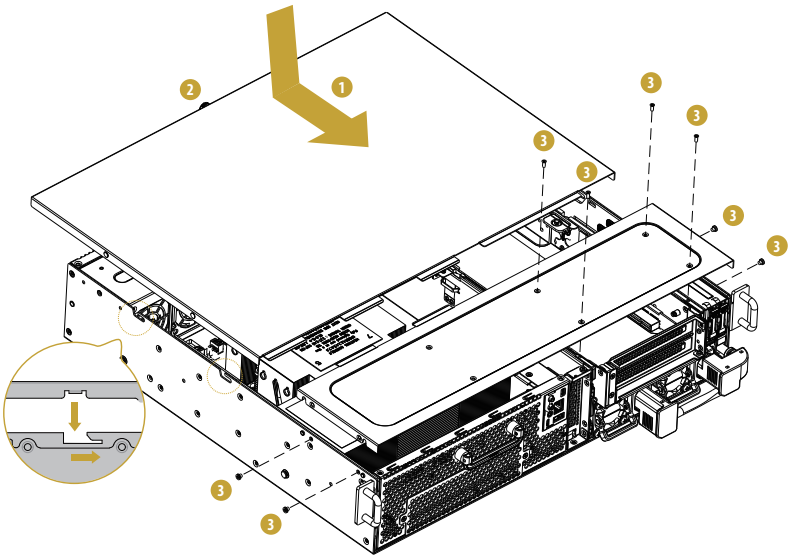
Removing the server top cover

> *1. Before removing the top cover, power off the server and unplug the power cord.*
> *2. The system must be operated with the chassis top cover installed to ensure proper cooling.*



1. Remove the top rear cover screws.
2. Release the thumbscrew on the back of the chassis.
3. Remove the top front cover and push the top rear cover toward the rear side of the chassis to remove it.

Installing the server top cover

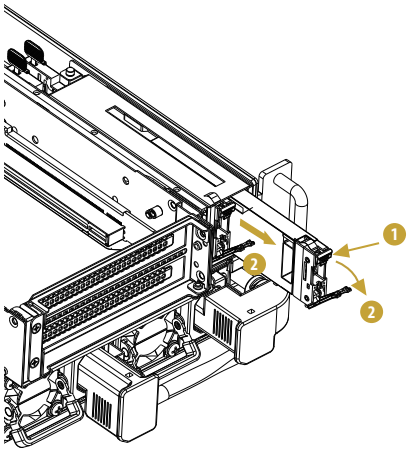


1. Lower the top rear cover on the chassis and make sure both of the side latches align with the cutouts. Slide the top rear cover toward the front side.
2. Secure the top rear cover with the thumbscrew.
3. Install the top front cover and secure it with the screws.

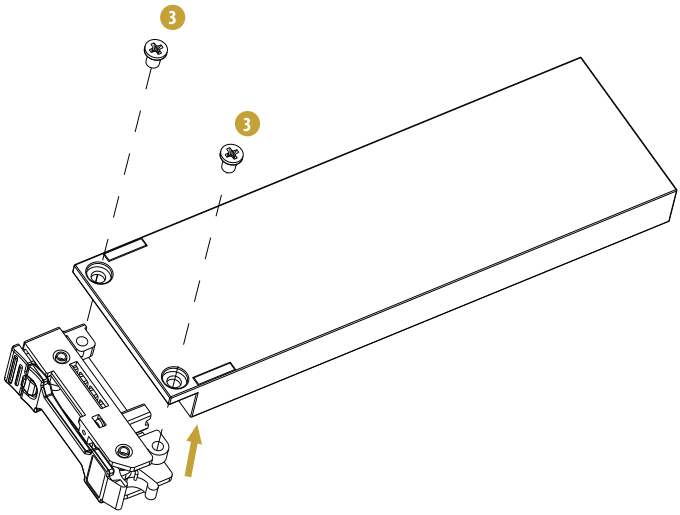
3.2 E1.S Drive

Installing the E1.S drive

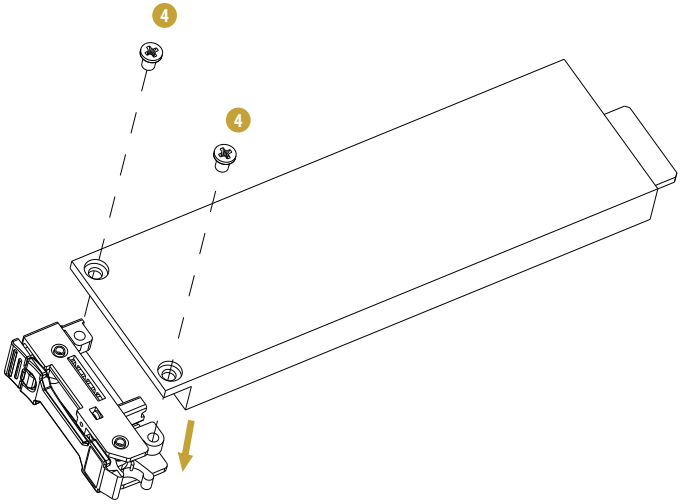
1. Press the latch on the E1.S locking cover to unlock the lever.
2. Hold the lever to pull out the E1.S assembly from the drive bay.



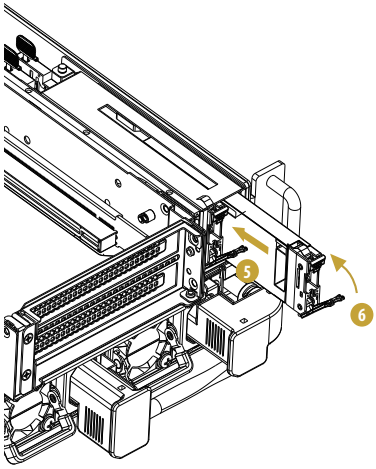
3. Release the screws to remove the E1.S frame from the locking cover.



4. Install the E1.S drive to the locking cover with two screws.



5. Slide the E1.S assembly into the drive bay until it is fully seated.
6. Push in the lever to lock the E1.S assembly into place.



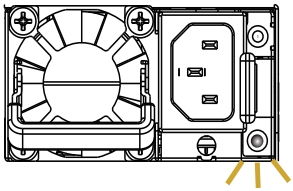
3.3 Power Supply

The system can accommodate two AC power supplies in the bay at the front of the chassis. One power supply is required for full load operation, with the other power supply purely as a redundant, load-sharing backup. It can be removed without affecting system operation.

Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.

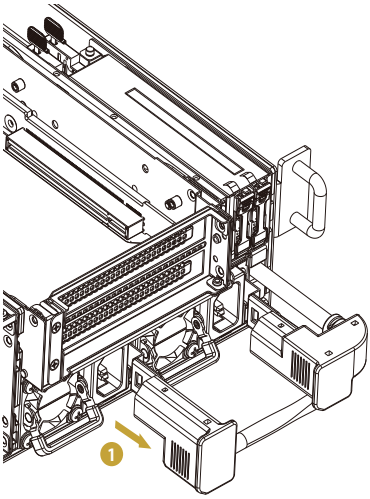
Removing the power supply unit

To remove a failed power supply, identify the failed power supply by checking the power supply LED on the PSU.

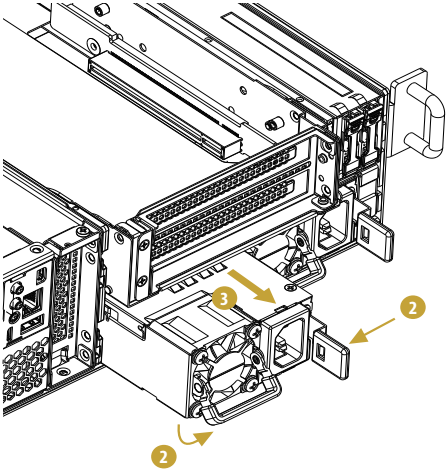


Status	Description
Green	Output ON and OK
Off	No AC power to PS
1Hz Blink Green	AC present / PS off or PS in Smart redundant state / Off line mode
1Hz Blink Amber	PS warning events during PS Operation; high temp., high power, high current, slow fan, UV (include standby mode)
Amber	- Shutdown issues from PS; failure, OCP, OVP, fan fail (include standby mode) - AC cord unplugged or AC power lost; with a second power supply in parrallel still with AC input power.
2Hz Blink Green	PS FW updating

1. Remove the power cords.



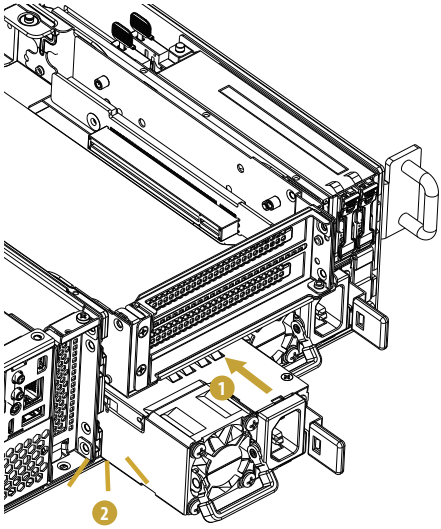
2. Hold onto the power supply handle while pressing the locking lever towards the power supply handle.
3. Pull out the power supply from the chassis.



Installing the power supply unit

To install a new power supply, please follow the steps below.

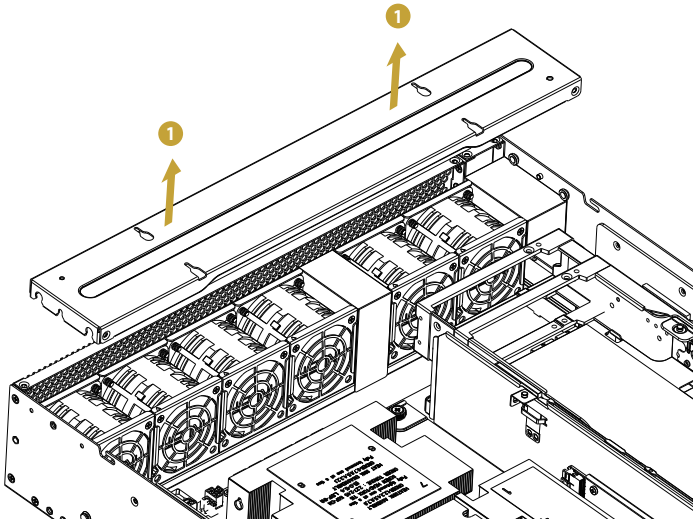
1. Carefully slide the PSU all the way into the power supply bay.
2. Make sure the power supply clicks into place and is well installed.



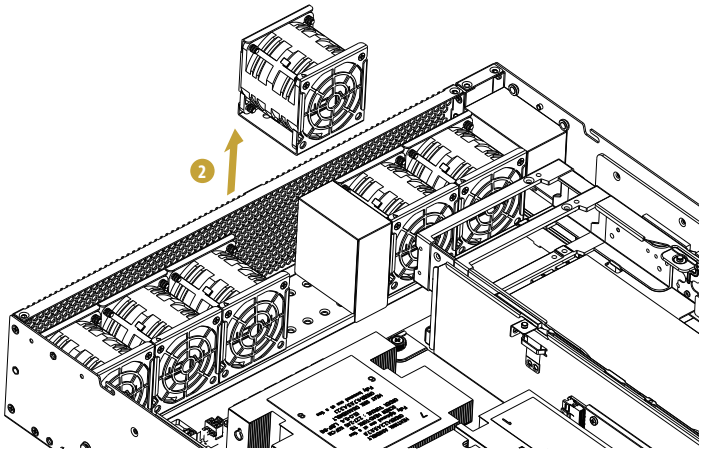
3.4 System Fan

Replacing the System Fan

1. Lift the fan cover up and remove it directly.



2. Lift to remove the failed fan and replace a new one.

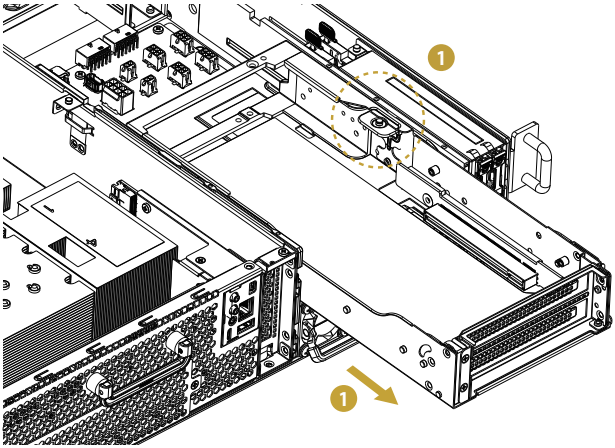


3.5 Add-in Card

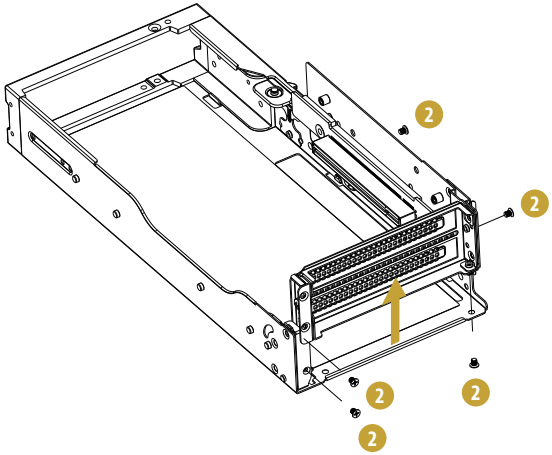
1. *Install an add-in card to the chassis only when having a riser board installed on the server board.*
2. *Before installing the add-in card, power off the server and unplug the related cables.*

Installing the add-in card

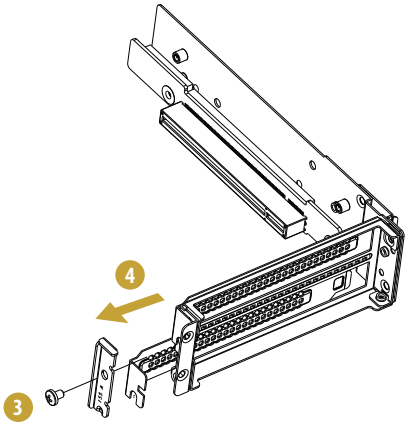
1. Release the latch on the riser card tray to remove the tray from the chassis.



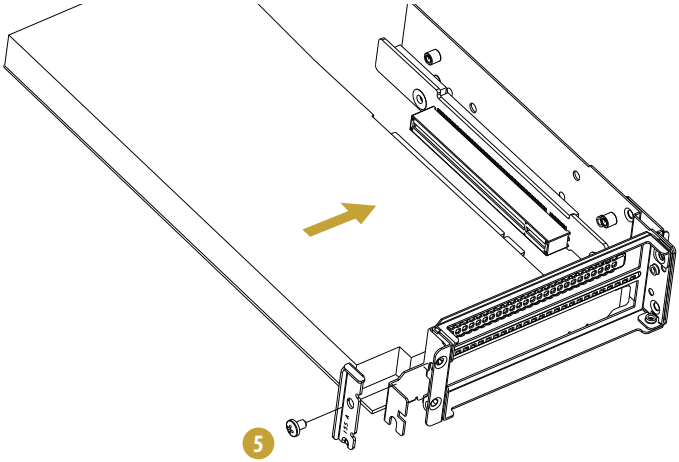
2. Remove the screws to lift up the riser card bracket.



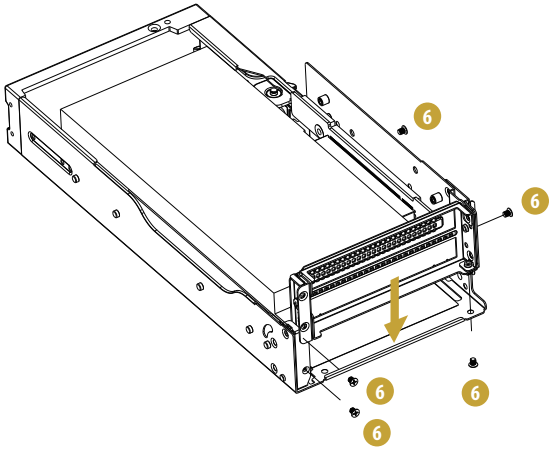
3. Remove the screw securing the blanking plate on the riser card bracket.
4. Slide the blanking plate out sideways.



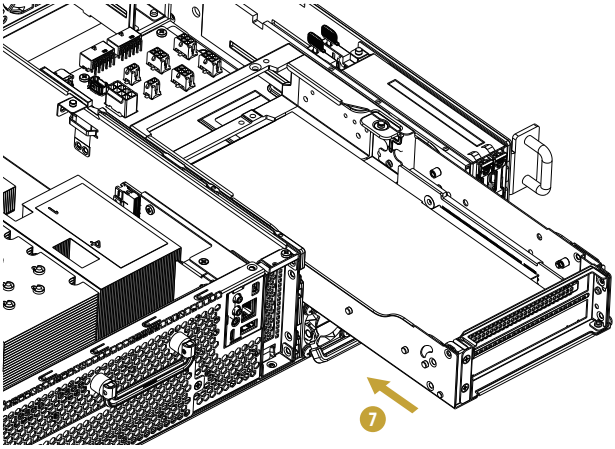
5. Install the add-in card to the bracket and secure it with the screw.



6. Install the riser card bracket including the add-in card onto the tray and secure it with the screws that was previously set aside.



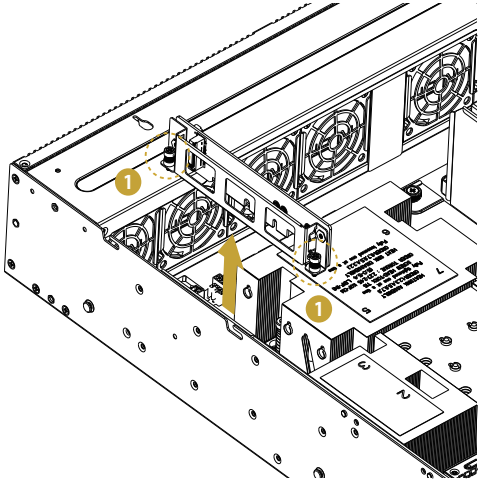
7. Align the assembly with riser card bay of the chassis. Place it into the chassis.



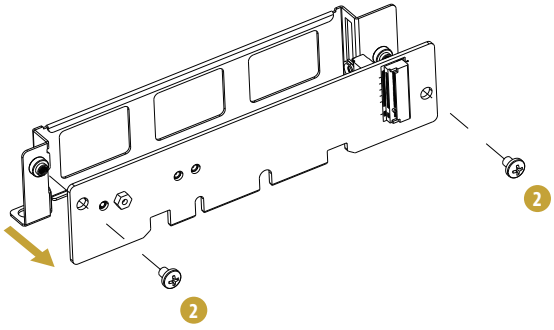
3.5 M.2

Installing the M.2

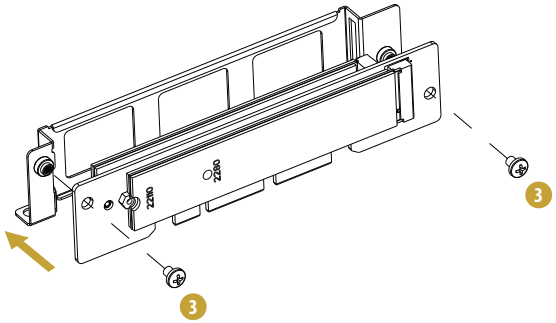
1. Release the screws on both sides of the M.2 frame to lift it up.



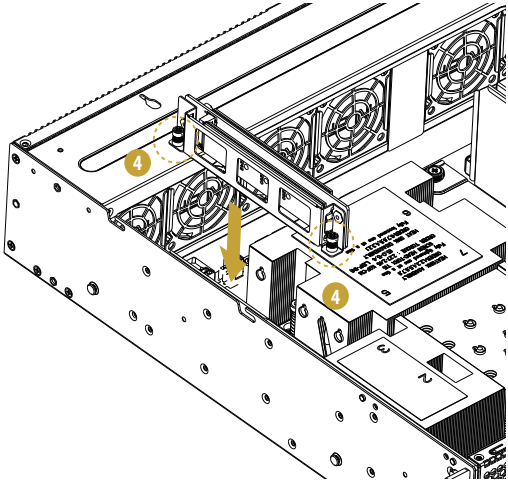
2. Release the screws to remove the bracket from the M.2 frame.



3. Install the M.2 card to the bracket and secure it to the M.2 frame with screws.

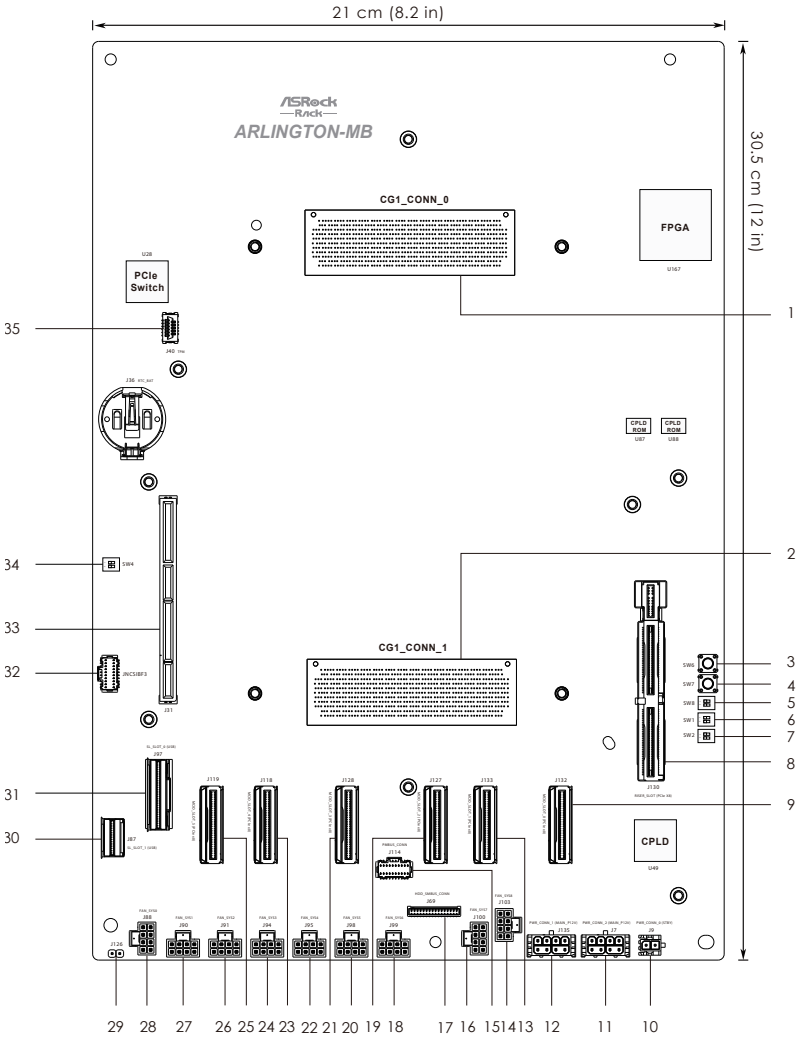


4. Install the M.2 assembly to the chassis and secure it with screws.



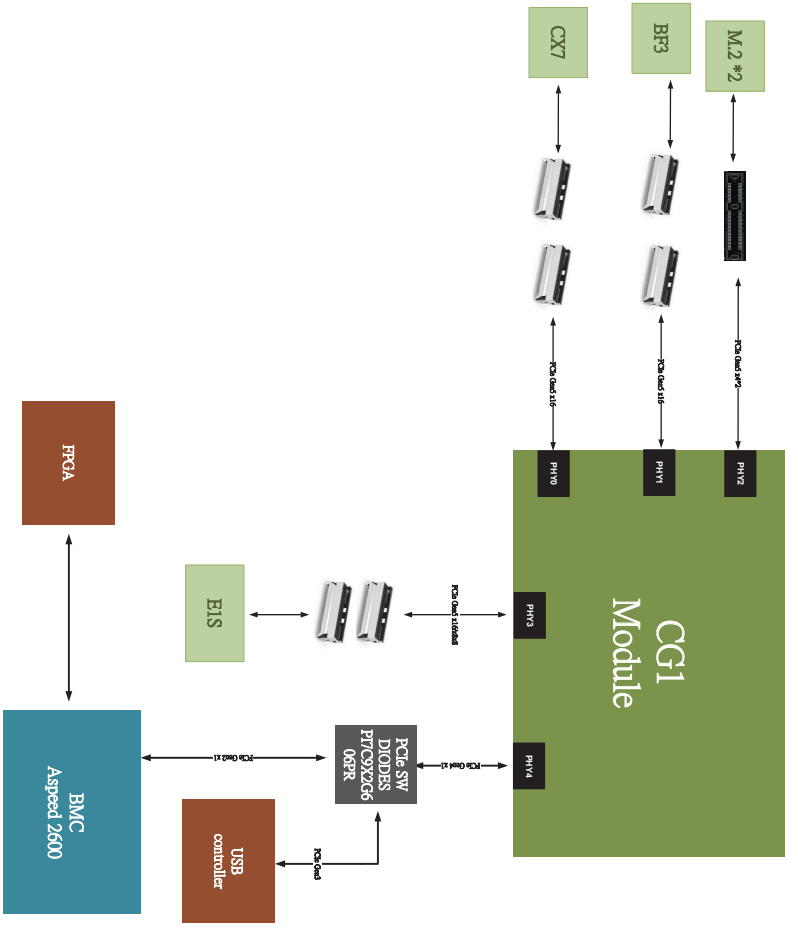
Appendix A

A-1 Motherboard Layout



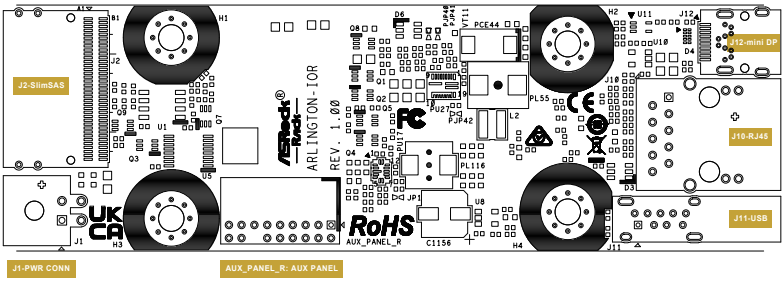
No.	Description
1	CPU Group Module Connector (CG1_CONN_0)
2	CPU Group Module Connector (CG1_CONN_1)
3	Power Button (SW6)
4	System Reset Button (SW7)
5	TPM Select Switch (SW8)
6	FAN PWM Switch (SW1)
7	FAN CPLD Switch (SW2)
8	GenZ 2C Slot for M.2 Riser Board (J130)
9	Mini Cool Edge IO Connector (PCIe5.0 x8) (J132)
10	ATX 12V (AUX) Power Connector (J9)
11	ATX 12V (Main) Power Connector (J7)
12	ATX 12V (Main) Power Connector (J135)
13	Mini Cool Edge IO Connector (PCIe5.0 x8) (J133)
14	System FAN Connector (J103)
15	PSU SMBus Connector (J114)
16	System FAN Connector (J100)
17	HDD SMBus Connector (J69)
18	System FAN Connector (J99)
19	Mini Cool Edge IO Connector (PCIe5.0 x8) (J127)
20	System FAN Connector (J98)
21	Mini Cool Edge IO Connector (PCIe5.0 x8) (J128)
22	System FAN Connector (J95)
23	Mini Cool Edge IO Connector (PCIe5.0 x8) (J118)
24	System FAN Connector (J94)
25	Mini Cool Edge IO Connector (PCIe5.0 x8) (J119)
26	System FAN Connector (J91)
27	System FAN Connector (J90)
28	System FAN Connector (J88)
29	Chassis Intrusion Header (J126)
30	Front Panel Board Connector (J87)
31	SlimSAS Slot for IOR Card (J97)
32	NSCI Connector (JNCSIBF3)
33	GenZ 4C+ Slot for BMC Board (J31)
34	Global / Write Protect & UART Switch (SW4)
35	TPM Connector (J40)

A-2 Block Diagram (ARLINGTON-MB)

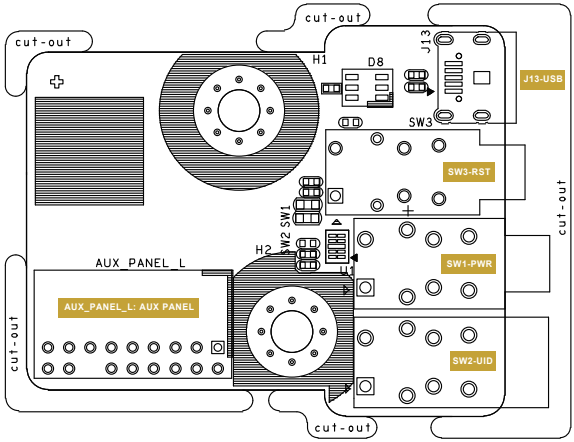


A-3 Riser Board/Card Layout

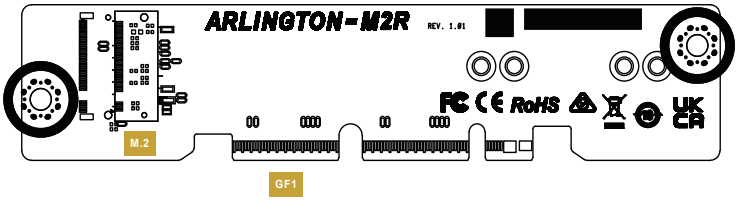
I/O Card-IOR



I/O Card-IOL

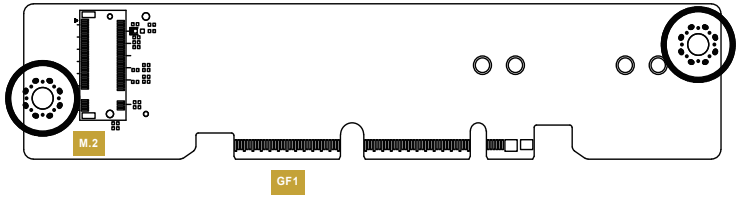


M2R Card-Top View

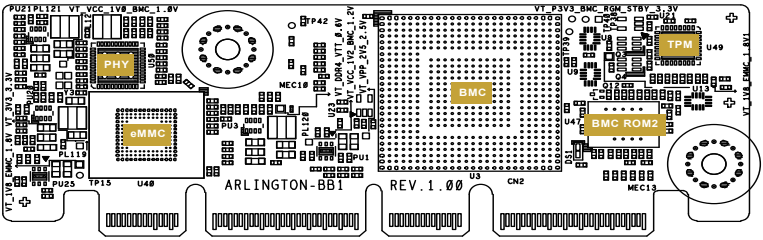


English

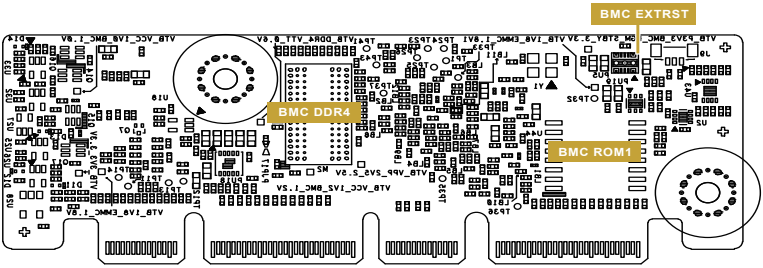
M2R Card-Bottom View



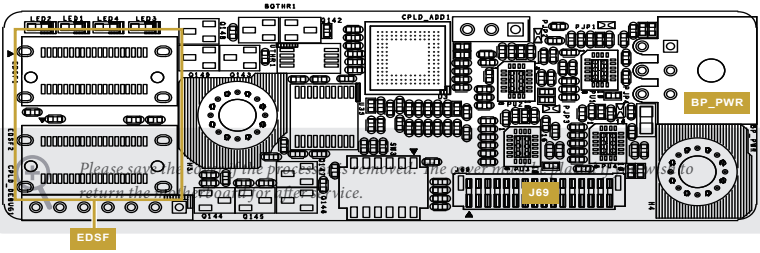
BMC Card-Top View



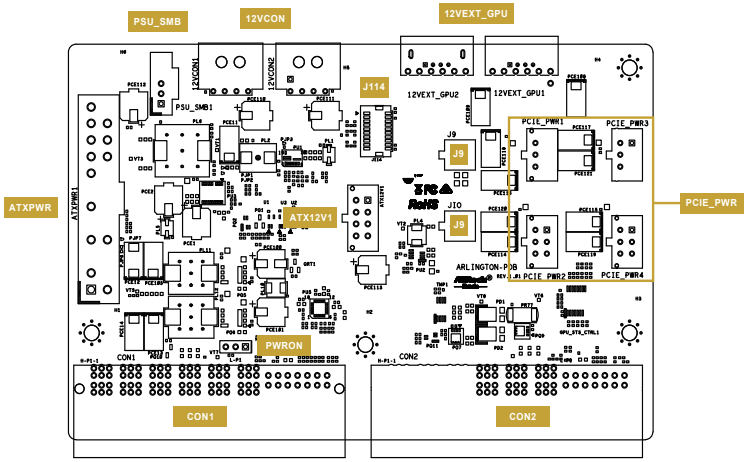
BMC Card-Bottom View



E1S Board



PDB Board


PSU_SMB
12VCON
12VEXT_GPU
ATXPWR
ATX12V1
PCIE_PWR
PWRON
CON1
CON2
J114
J9
J10
12VEXT_GPU2
12VEXT_GPU1
PCIE_PWR1
PCIE_PWR3
PCIE_PWR2
PCIE_PWR4
ARLINGTON-PDB

A-4 BIOS Setup

A-4.1 Menu Bar

The top of the screen has a menu bar with the following selections:

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
Server Mgmt	To manage the server
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use < ← > key or < → > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen.

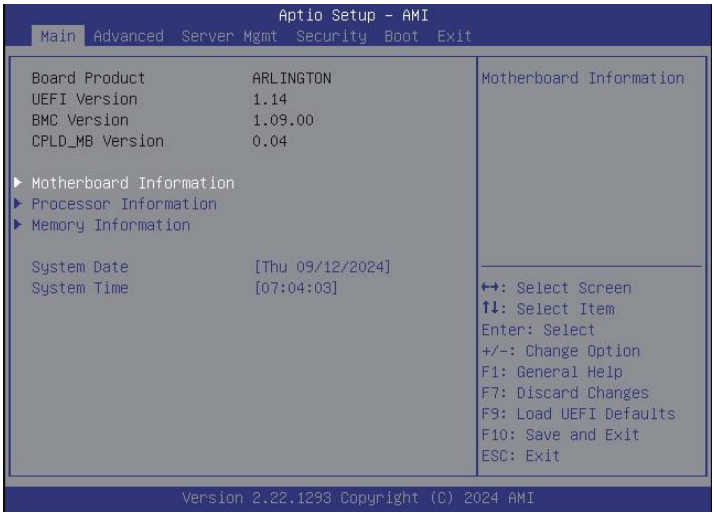
A-4.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
/	Moves cursor left or right to select Screens
/	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Tab>	Switch to next function
<Enter>	To bring up the selected screen
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the UEFI SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

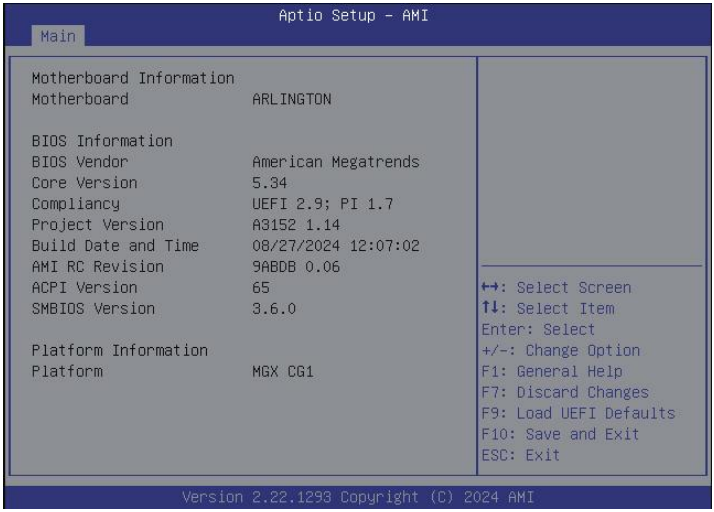
A-4.3 Main Screen

Once entering the UEFI SETUP UTILITY, the Main screen will appear and display the system overview. The Main screen provides system overview information and allows user-to set the system time and date.



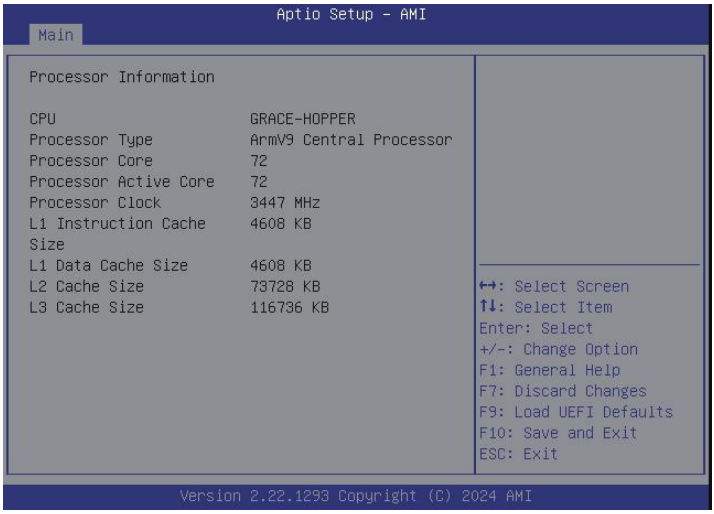
A-4.3.1 Mother Board Information

Press <Enter> to view the information of the motheboard.



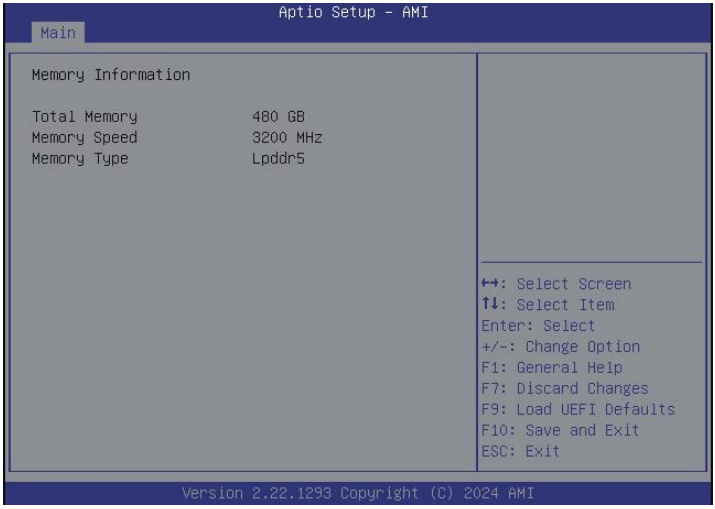
A-4.3.2 Processor Information

Press <Enter> to view the information of the processor.



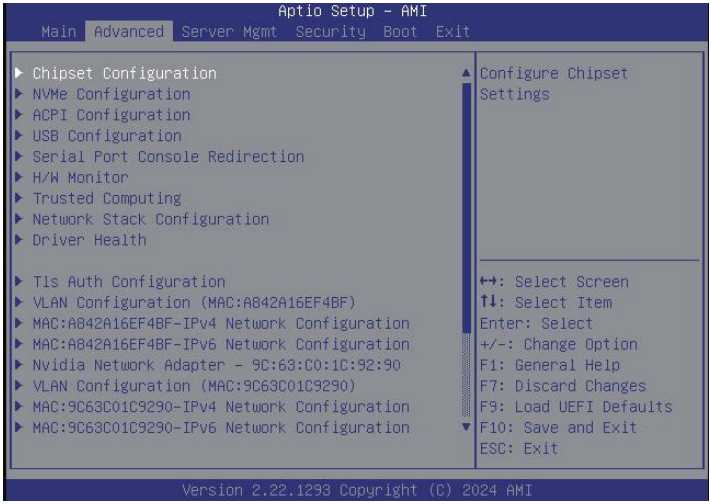
A-4.3.3 Memory Information

Press <Enter> to view the information of the memory.



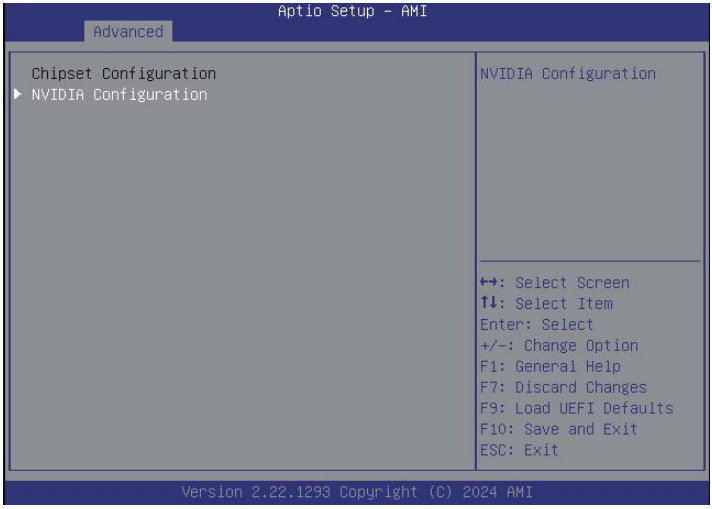
A-4.4 Advanced Screen

In this section, set the configurations for the following items: Chipset Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Serial Port Console Redirection, H/W Monitor, Trusted Computing, Network StackConfiguration, Driver Health, Tls Auth Configuration and VLAN Configuration.



Setting wrong values in this section may cause the system to malfunction.

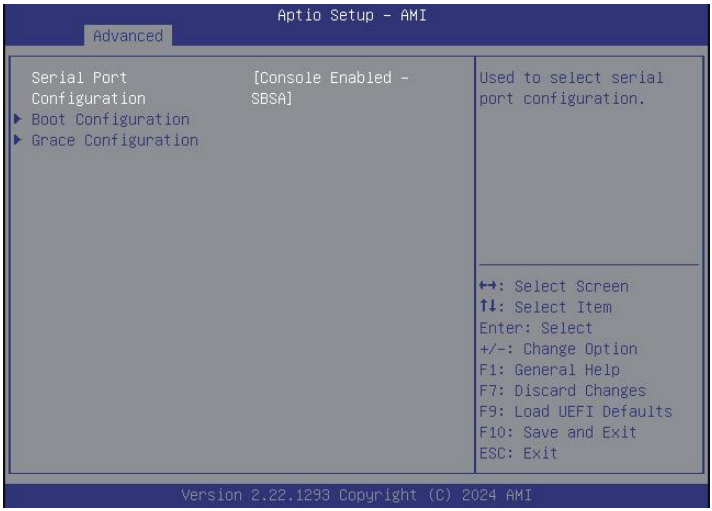
A-4.4.1 Chipset Configuration



NVIDIA Configuration

Select this item to configure the NVIDIA parameters.

A-4.4.1.1 NVIDIA Configuration



Serial Port Configuration

Used to select serial port configuration.

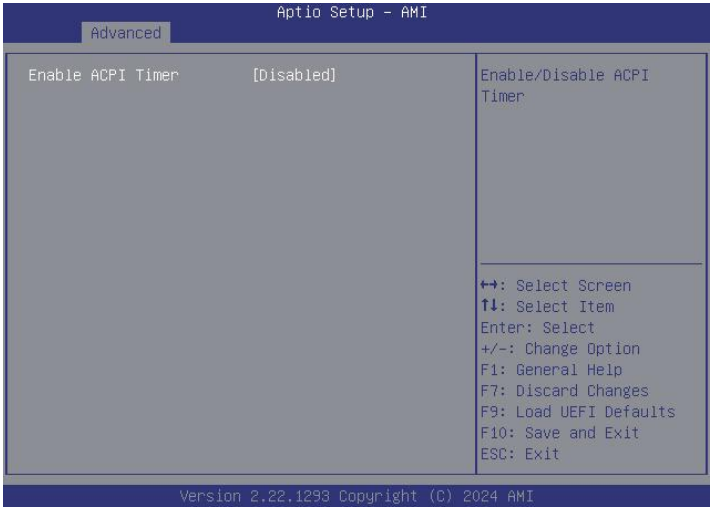
Boot Configuration

This item allows user to configure the Boot options.

Grace Configuration

This item allows user to configure the Grace options.

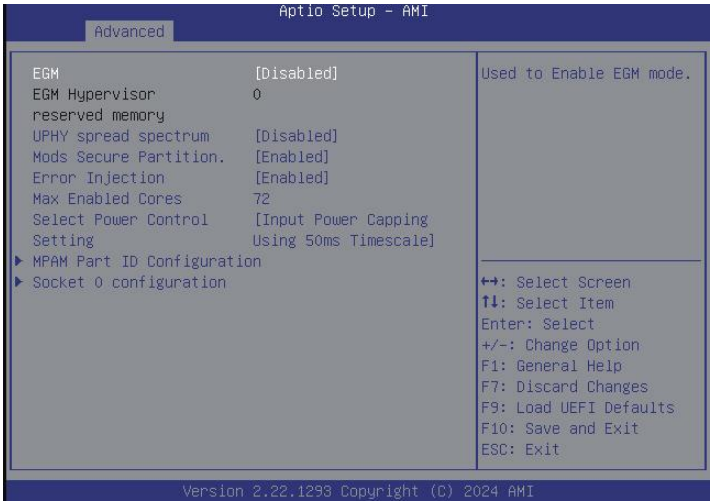
A-4.4.1.1.1 Boot Configuration



Enable ACPI Timer

Select this item to enable or disable ACPI Timer.

A-4.4.1.1.2 Grace Configuration



EGM

Used to enable EGM mode.

EGM Hypervisor Reserved Memory

Memory in MB to reserve for hypervisor.

UPHY Spread Spectrum

Select this item to enable UPHY spread spectrum.

Mods Secure Partition

Select this item to enable mods secure partition to allow running system diagnostics.

Error Injection

Select this item to enable Error Injection ACPI Table.

Max Enabled Cores

Specify desired number of cores for system. Enter 0 for system default. Input greater value than system maximum would be rejected.

Select Power Control Setting

This item allows user to select Input Power Capping Timescale value.

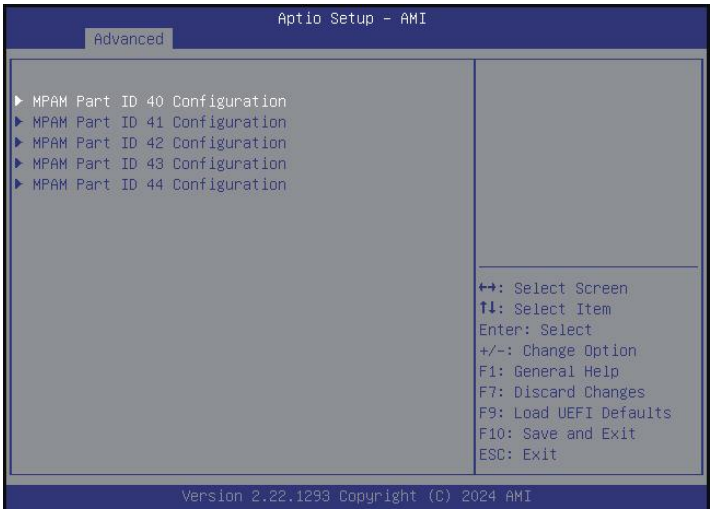
MPAM Part ID Configuration

This item allows user to configure MPAM non arch part id.

Socket 0 Configuration

Select this item to enter the Socket 0 Configuration options.

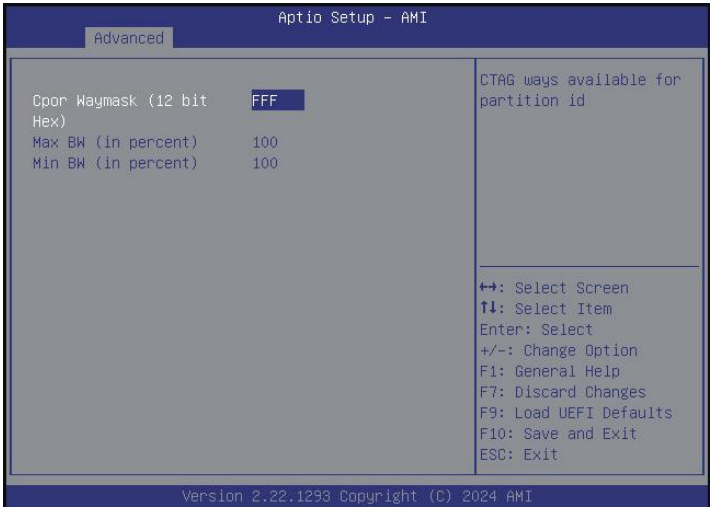
A-4.4.1.1.2.1 MPAM Part ID Configuration



MPAM Part ID 40/41/42/43/44 Configuration

Configure MPAM Part ID 40/41/42/43/44 parameters.

A-4.4.1.1.2.1.1 MPAM Part ID 40/41/42/43/44 Configuration



Cpor Waymask (12 bit Hex)

CTAG ways available for partition id.

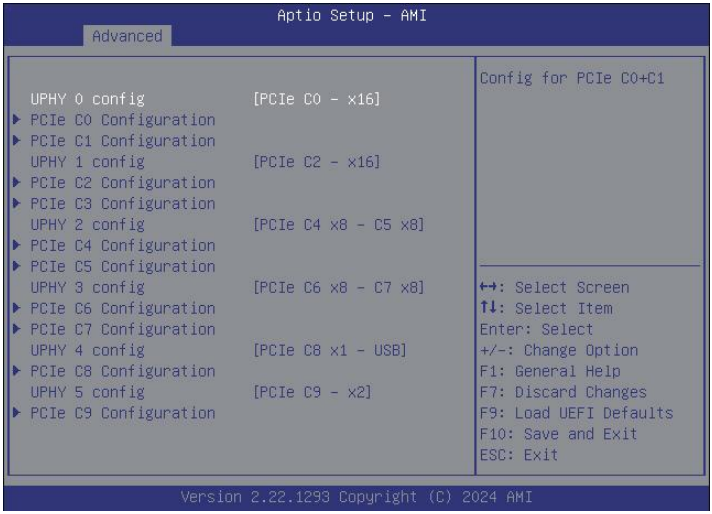
Max BW (in percent)

Maximum ingress BW for partition id in %.

Min BW (in percent)

Minimum ingress BW for partition id in %.

A-4.4.1.1.2.2 Socket 0 Configuration



UPHY 0 config

The item is used to modify UPHY 0 config.

PCIe C0/C1 Configuration

Config detail settings for PCIe C0 or C1.

UPHY 1 config

The item is used to modify UPHY 1 config.

PCIe C2/C3 Configuration

Config detail settings for PCIe C2 or C3.

UPHY 2 config

The item is used to modify UPHY 2 config.

PCIe C4/C5 Configuration

Config detail settings for PCIe C4 or C4.

UPHY 3 config

The item is used to modify UPHY 3 config.

PCIe C6/C7 Configuration

Config detail settings for PCIe C6 or C7.

UPHY 4 config

The item is used to modify UPHY 4 config.

PCIe C8 Configuration

Config detail settings for PCIe C8.

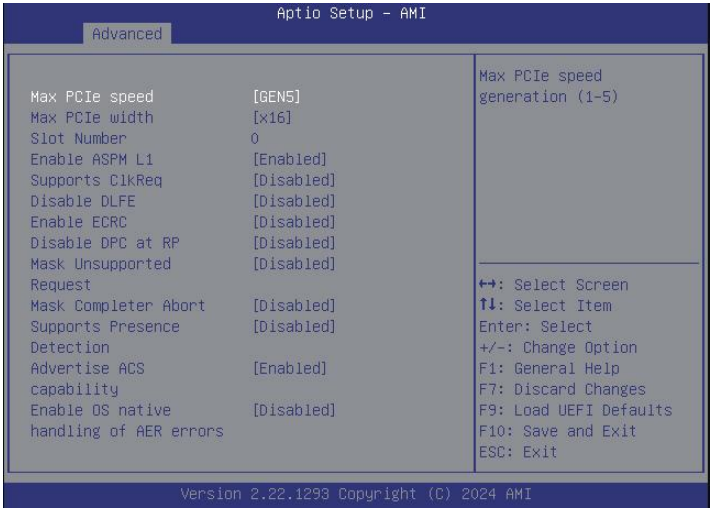
UPHY 5 config

The item is used to modify UPHY 5 config.

PCIe C9 Configuration

Config detail settings for PCIe C9.

A-4.4.1.1.2.2.1 PCIe C0/C1/C2/C3/C4/C5/C6/C7/C8/C9 Configuration



Max PCIe speed

Max PCIe speed generation (1-5).

Max PCIe width

Max PCIe width (x1-x16).

Slot Number

Configure the Slot Number.

Enable ASPM L1

Select this item to enable or disable the ASPM L1.

Supports ClkReq

Availablility of CLKREQ signal from RP to EP.

Disable DLFE

Select this item to enable or disable DL Feature Exchange.

Enable ECRC

Select this item to enable or disable ECRC in the controller's hierarchy.

Disable DPC at RP

Select this item to disable DPC at RP if a DPC capable PCIe switch is connected to RP.

Mask Unsupported Request

Select this item to enable or disable the Mask Unsupported Request in the Root Port.

Mask Completer Abort

Select this item to enable or disable the Mask Completer Abort in the Root Port.

Supports Presence Detection

Supports Presence Detecton for the slot owned by the Root Port.

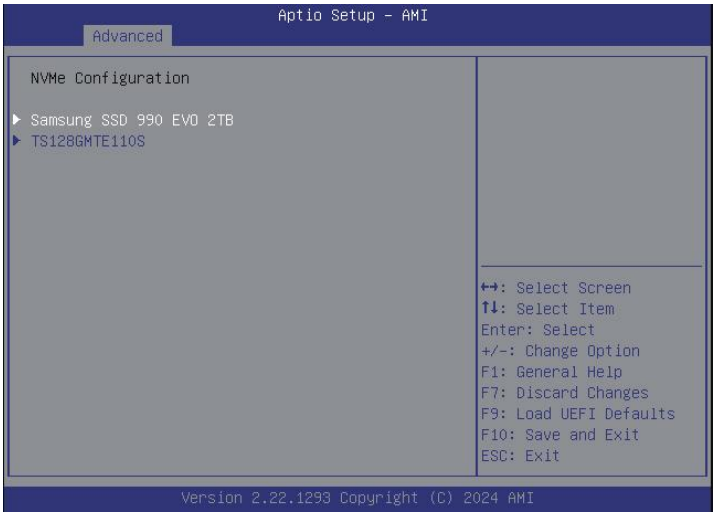
Advertise ACS Capability

Select this item to enable or disable the Advertise ACS capability for the slot owned by the Root Port.

Enable OS native handling of AER errors

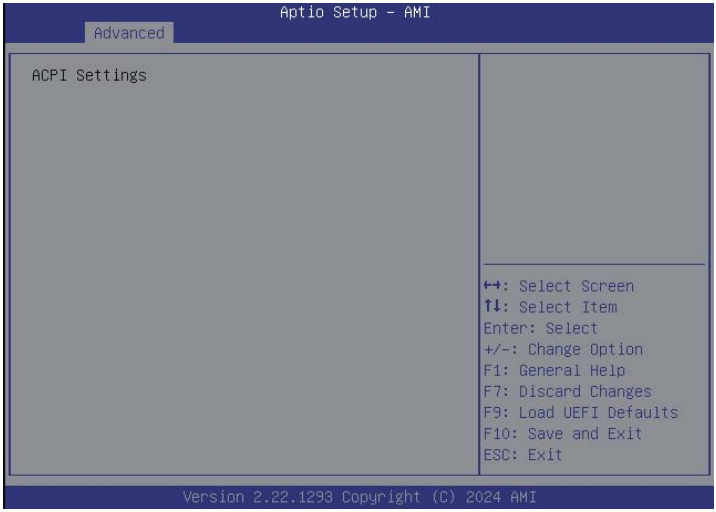
Select this item to enable or disable OS native handling of AER errors as opposed to Firmware-First handling. Please note that selecting this option disables the advertisement of DPC support in the respective root port.

A-4.4.2 NVMe Configuration



This item displays NVME device on the page like above picture, User could enter NVME device page to get more detail information about the NVME device.

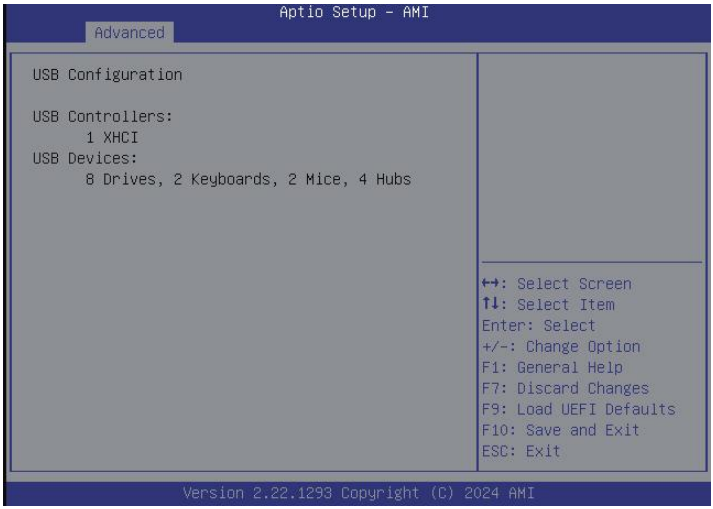
A-4.4.3 ACPI Configuration



ACPI Settings

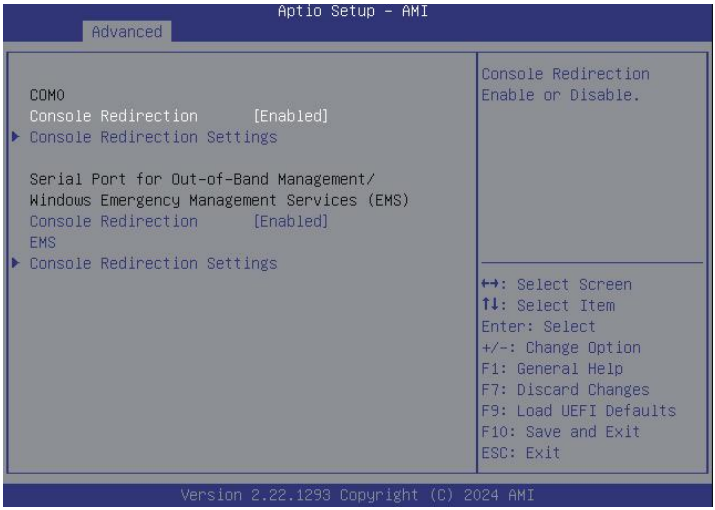
This item allows user to configure ACPI Settings.

A-4.4.4 USB Configuration



This displays the USB Controllers and USB Devices information.

A-4.4.5 Serial Port Console Redirection



COM0 / SOL

Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, user can select a COM Port to be used for Console Redirection.

Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings

Terminal Type

Use this item to select the preferred terminal emulation type for out-of-band management. It is recommended to select [VT-UTF8].

Option	Description
VT100	ASCII char set
VT100Plus	Extends VT100 to support color, function keys, etc.
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII char set

Bits Per Second
Use this item to select the serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [38400], [57600], [115200], [230400], [460800], and [921600].

Data Bits
Use this item to set the data transmission size. The options include [7] and [8] (Bits).

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. They can be used as an additional data bit.

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.

Flow Control
Use this item to set the flow control to 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 restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None] and [Hardware RTS/CTS].

VT-UTF8 Combo Key Support
Use this item to enable or disable the VT-UTF8 Combination Key Support for ANSI/ VT100 terminals.

Recorder Mode
With this mode enabled only text will be sent. This is to capture Terminal data.

Resolution 100x31
Use this item to enable or disable extended terminal resolution support.

Putty Keypad
Use this item to select Function Key and Keypad on Putty.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

Console Redirection EMS

Use this option to enable or disable Console Redirection EMS. If this item is set to Enabled, user can select a COM Port to be used for Console Redirection.

Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Out-of-Band Mgmt Port

Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

Terminal Type EMS

Use this item to select the preferred terminal emulation type for out-of-band management. It is recommended to select [VT-UTF8].

Option	Description
VT100	ASCII char set
VT100Plus	Extends VT100 to support color, function keys, etc.
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII char set

Bits Per Second EMS

Use this item to select the serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [38400], [57600], [115200], [230400], [460800], and [921600].

Flow Control EMS

Use this item to set the flow control to 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 restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None], [Hardware RTS/CTS], and [Software Xon/Xoff].

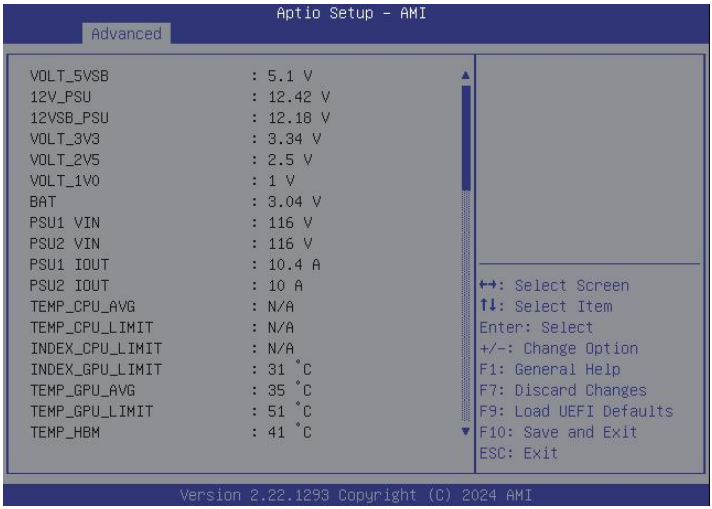
Data Bits EMS

Parity EMS

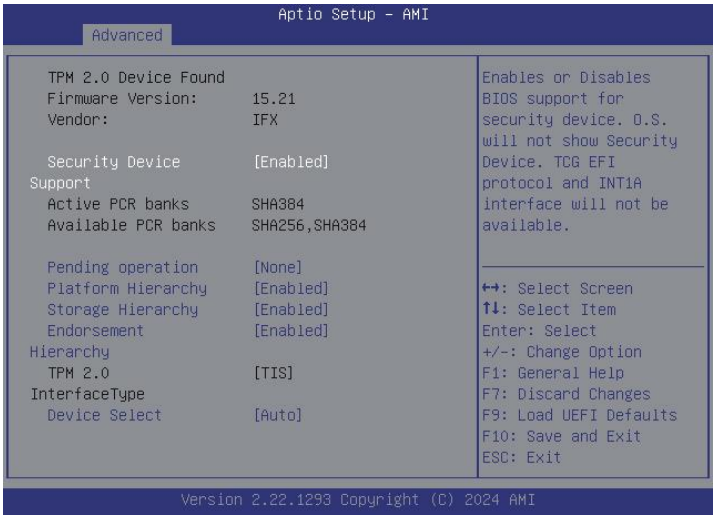
Stop Bits EMS

A-4.4.6 H/W Monitor

In this section, it allows user to monitor the status of the hardware on the system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



A-4.4.7 Trusted Computing



NOTE: Options vary depending on the version of the connected TPM module.

Security Device Support

Enable to activate Trusted Platform Module (TPM) security for the hard diskdrives.

Active PCR banks

This item displays active PCR Banks.

Available PCR Banks

This item displays available PCR Banks.

Pending Operation

Schedule an Operation for the Security Device.
NOTE: The computer will reboot during restart in order to change State of the Device.

Platform Hierarchy

Use this item to enable or disable Platform Hierarchy.

Storage Hierarchy

Use this item to enable or disable Storage Hierarchy.

Endorsement Hierarchy

Use this item to enable or disable Endorsement Hierarchy.

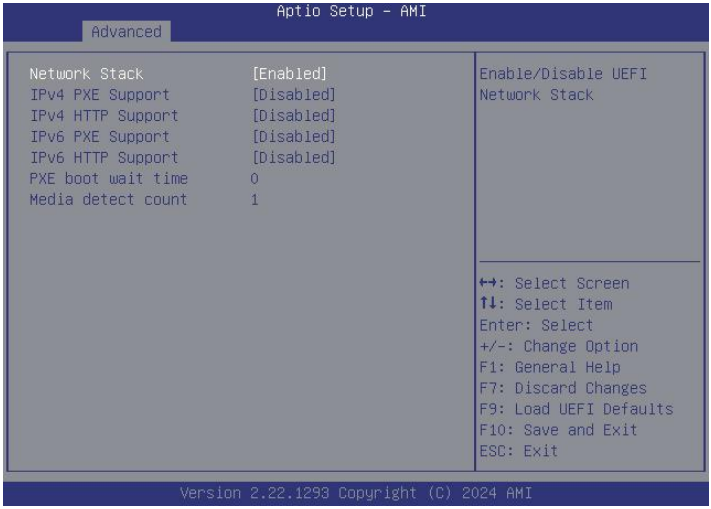
TPM 2.0 InterfaceType

Select the Communication Interface to TPM 2.0 Device

Device Select

Use this item to select the TPM device to be supported. TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

A-4.4.8 Network Stack Configuration



Network Stack

Use this to enable or disable UEFI Network Stack.

IPv4 PXE Support

Use this to enable or disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

IPv4 HTTP Support

Use this to enable or disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.

IPv6 PXE Support

Use this to enable or disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

IPv6 HTTP Support

Use this to enable or disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.

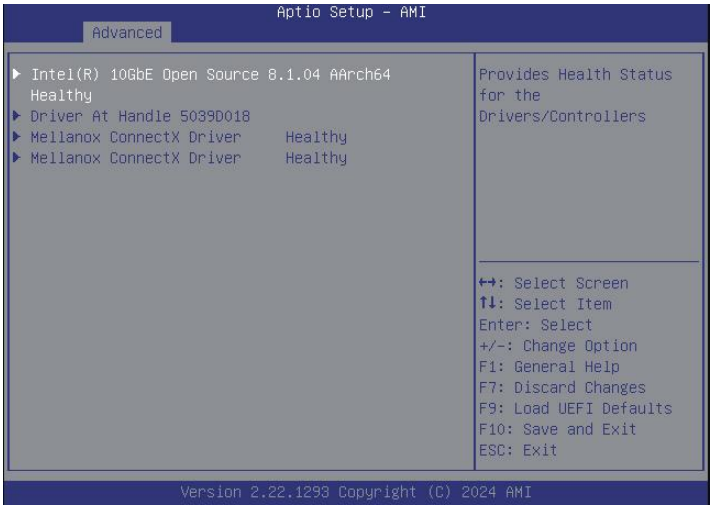
PXE boot wait time

Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

A-4.4.9 Driver Health



This item displays the health status of driver.

A-4.4.10 Tls Auth Configuration

Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

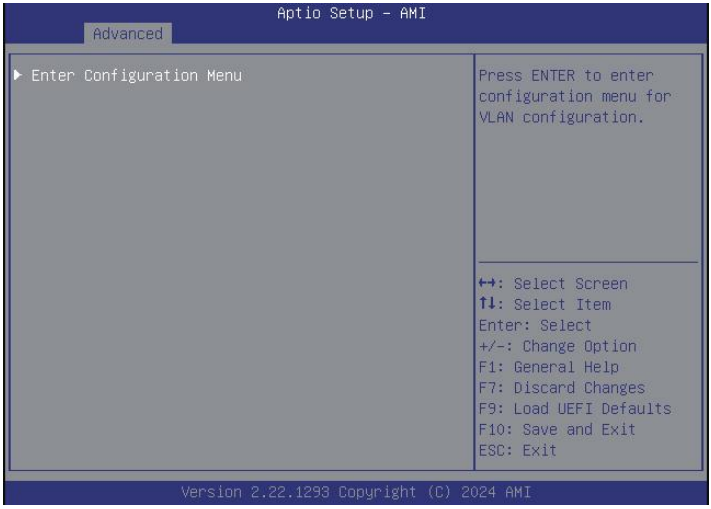
Enroll Cert

Press <Enter> to enroll cert.

Delete Cert

Press <Enter> to delete cert.

A-4.4.11 VLAN Configuration



Enter Configuration Menu

Press ENTER to enter configuration menu for VLAN configuration.

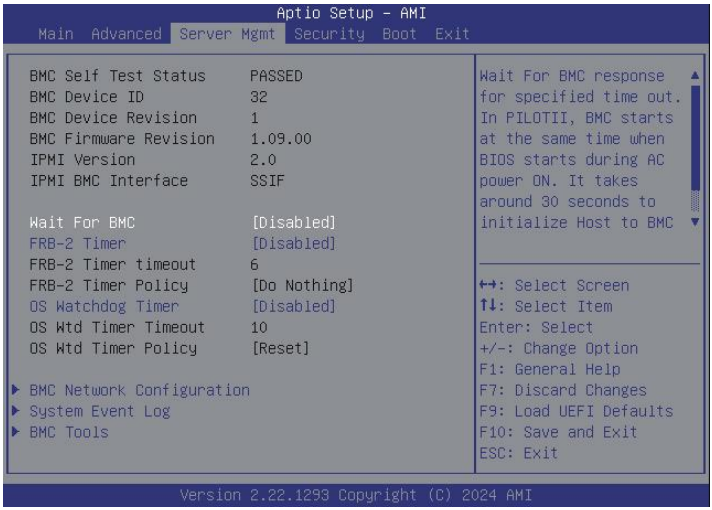
VLAN ID
Specifies the VLAN ID of new VLAN or existing VLAN, the valid value is 0~4094.

Priority
Specifies the 802.1Q Priority, the valid value is 0~7.

Add VLAN
Use this item to create a new VLAN or update existing VLAN.

Remove VLAN
Use this item to remove selected VLANS.

A-4.5 Server Mgmt



Wait For BMC

Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.

FRB-2 Timer

Use this item to enable or disable FRB-2 timer (POST timer)

FRB-2 Timer Timeout

Enter value Between 1 to 30 min for FRB-2 Timer Expiration.

FRB-2 Timer Policy

Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.

OS Watchdog Timer

Use this item to enable or disable OS Watchdog Timer. If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.

OS Wtd Timer Timeout

Enter the value Between 1 to 30 min for OS Boot Watchdog Timer Expiration. Not available if OS Boot watchdog Timer is disabled.

OS Wtd Timer Policy

Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot watchdog Timer is disabled.

BMC Network Configuration

Use this to configure BMC network parameters.

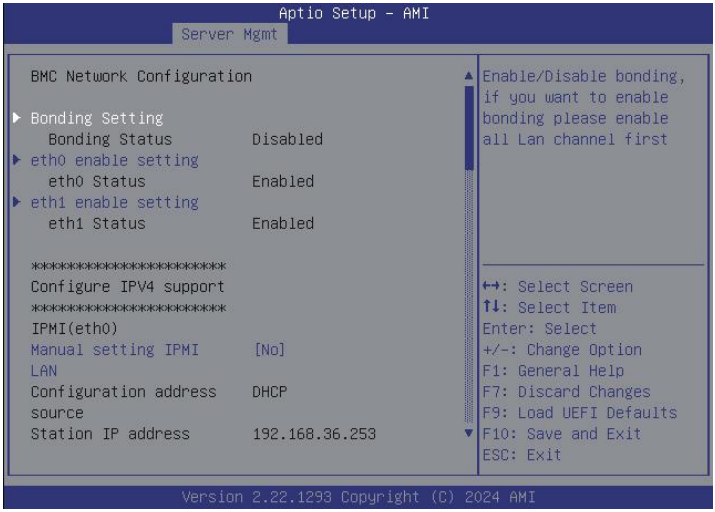
System Event Log

Press <Enter> to change the SEL event log configuration.

BMC Tools

Use this item to configure about restore AC power loss and load BMC default setings.

A-4.5.1 BMC Network Configuration



Bonding Setting

Select this item to enabled or disabled bonding, if you want to enable bonding please enable all Lan channel first.

eth0 Enable setting

BMC LAN enable setting.

eth1 Enable setting

BMC LAN enable setting.

Manual setting IPMI LAN

When “Manual setting IPMI LAN Configuration” is set to default “No”, the IP address will follow DHCP. If you would like to set as Static IP, please toggle the settings to “Yes”, and the changes for IPMI LAN configuration will take place after rebooting.

Configuration Address Source

Select to configure BMC network parameters statically or dynamically(by BIOS or BMC). Configuration options: [Static] and [DHCP].

Static: Manually enter the IP Address, Subnet Mask and Gateway Address in the BIOS for BMC LAN channel configuration.
DHCP: IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server.

Station IP address (It could be configured when "Configuration address source" item is "Static")
Static IP Address 0.0.0.0 – 255.255.255.255
Current subnet mask (It could be configured when "Configuration address source" item is "Static")
Subnet mask 0.0.0.0 – 255.255.255.255
Current router IP address (It could be configured when "Configuration address source" item is "Static")
Router IP address 0.0.0.0 – 255.255.255.255

The default login information for the IPMI web interface is:
Username: admin
Password: admin

For more instructions on how to set up remote control environment and use the IPMI management platform, please refer to the IPMI Configuration User Guide or go to the Support website at: http://www.asrockrack.com/support/faq.asp

VLAN

Enable or disable Virtual Local Area Network.

If [Enabled] is selected, configure the items below.
VLAN ID: Select this item to configure the VLAN ID setting, value ranges from 1 to 4094. VLAN ID 0, 4095 are reserved.
VLAN Priority: Select this item to configure the VLAN Priotity setting. the Maximum value is 7 and the Minimum value is 0.

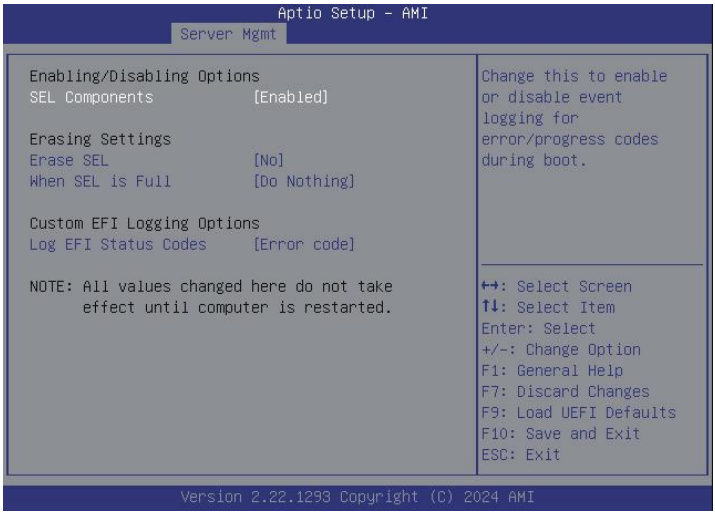
IPV6 Support

Enable or disable LAN IPV6 Support.

Manual setting IPMI LAN(IPV6)

Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.
Station IPV6 address (It will appear when "Manual setting IPMI LAN(IPV6)" item is "Static")
Enter IPV6 address
Prefix Length (It will appear when "Manual setting IPMI LAN(IPV6)" item is "Static")
Change the prefix length
IPV6 Router IP Address (It will appear when "Manual setting IPMI LAN(IPV6)" item is "Static")
Change the IPV6 Router1 IP Address

A-4.5.2 System Event Log



SEL Components

Change this to enable or disable event logging for error/progress codes during boot.

Erase SEL

Use this to choose options for earsing SEL.

When SEL is Full

Use this to choose options for reactions to a full SEL.

Log EFI Status Codes

Use this item to disable the logging of EFI Status Codes or log only error code or only progress code or both.

A-4.5.3 BMC Tools

Restore AC Power Loss

This allows user to select the power state after a power failure. If [Power Off] is selected, the power will remains off when the power recovers.

If [Power On] is selected, the system will start to boot up when the power recovers.

Load BMC Default Settings

Use this item to Load BMC Default Settings

A-4.6 Security

This section allows user to set or change the supervisor/user password for the system. For the user password item is allowed user to clear it.

Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

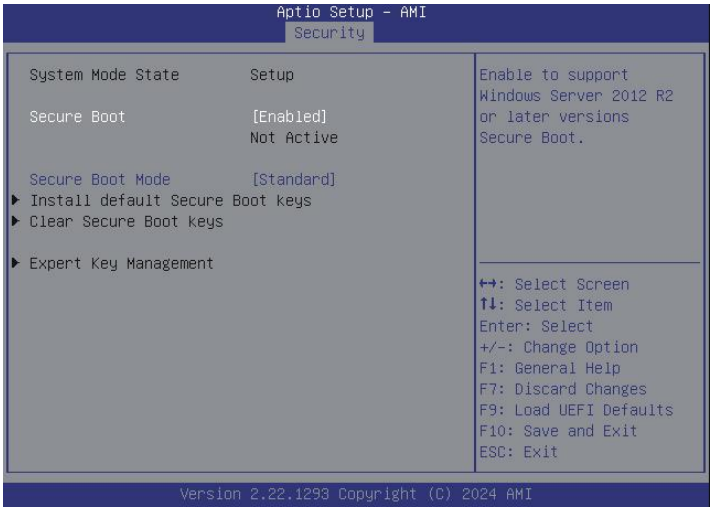
User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Secure Boot configuration.

A-4.6.1 Secure Boot



Secure Boot

Enable to support Windows Server 2012 R2 or later versions Secure Boot.

Secure Boot Mode

Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

Install default Secure Boot keys

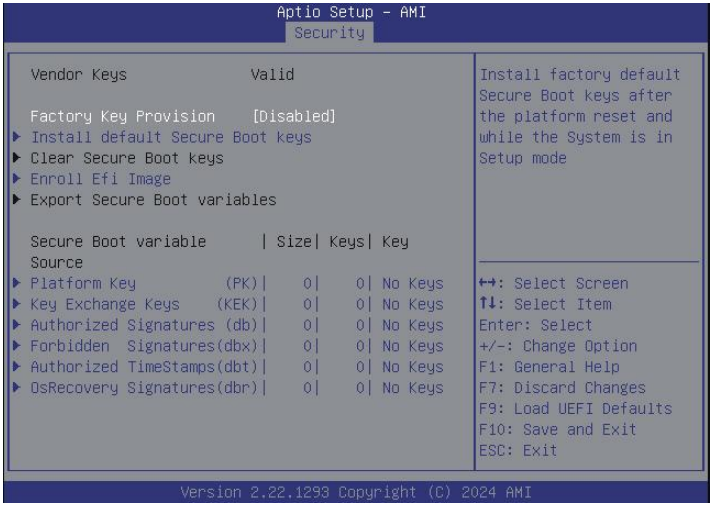
Please install default secure boot keys if it's the first time you use secure boot.

Clear Secure Boot keys

Force System to Setup Mode - clear all Secure Boot Variables. Change takes effect after reboot

A-4.6.2 Expert Key Management

In this section, enables expert users to modify Secure Boot Policy variables without variable authentication.



Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

Install Default Secure Boot Keys

Please install default secure boot keys if it's the first time to use secure boot.

Clear Secure Boot Keys

Force System to Setup Mode - clear all Secure Boot Variables. Change takes effect after reboot.

Enroll Efi Image

Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

Export Secure Boot Variables

Save NVRAM content of Secure Boot variable to a file.

Platform Key (PK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Key Exchange Keys (KEK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Authorized Signatures (db)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Forbidden Signatures (dbx)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Authorized TimeStamps (dbt)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

OsRecovery Signatures (dbr)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

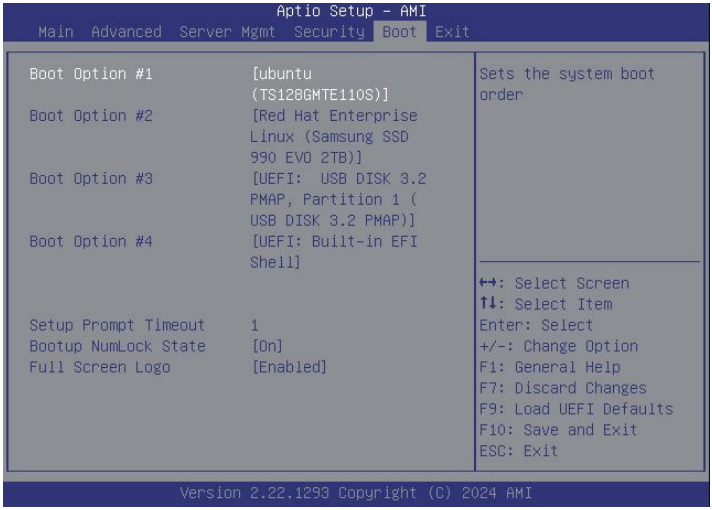
2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

A-4.7 Boot Screen

In this section, it will display the available devices on the system for user to configure the boot settings and the boot priority.



Boot Option #1/#2/#3/#4/#5/#6

Use this to set the system boot order.

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

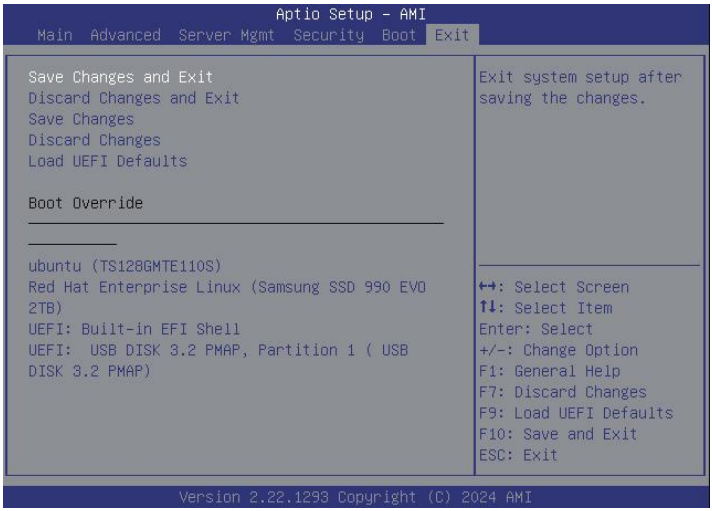
Bootup NumLock State

Select the keyboard NumLock state.

Full Screen Logo

Enable to display the boot logo or disable to show normal POST message.

A-4.8 Exit Screen



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.

Discard Changes

Discard Changes done so far to any of the setup options.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

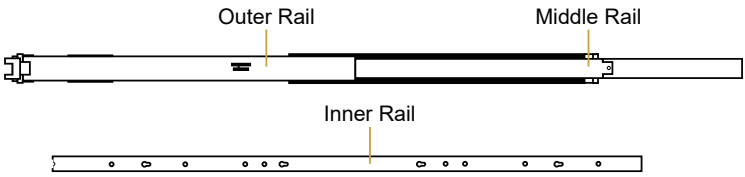
Appendix B

B-1 Installing the Server in a Rack

This section describes how to rackmount the MECAI-GH200 server with slide rail assembly.

The rails installation instructions in this manual are example only, the actual rail assembly procedure may differ slightly.

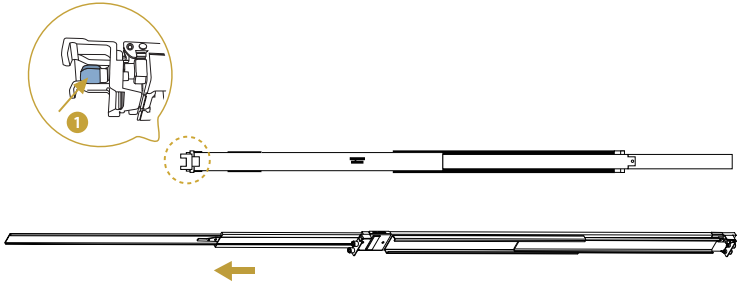
The rail assembly consists of outer, middle and inner rail.



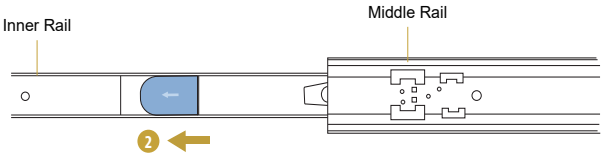
Some slide rails are labeled with either L or R, please identify prior to rail installation. Please install the rail labeled with L on the left side of rack, and the rail labeled with R on the right side of rack.

Prepare rail kit for installation

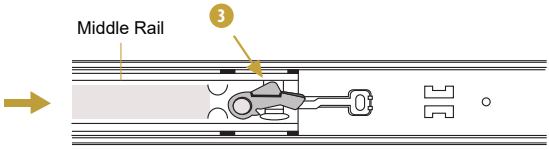
1. Press the blue button to fully extend the inner rail from the rail assembly.



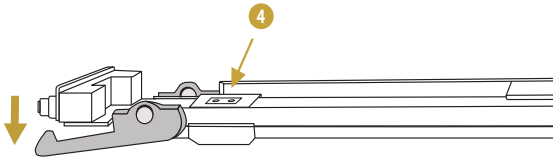
2. Slide the blue latch to remove the inner rail from the middle rail.



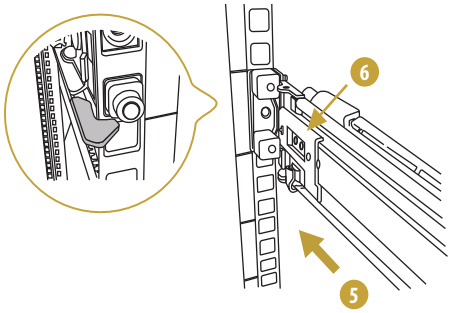
3. Rotate the positioning latch to retract the middle rail back.



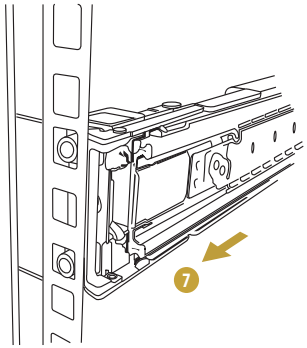
4. Slide the locking plate on the rear rail to release the hook.



5. Align and mount the rear bracket to the rack post.
6. Slide locking plate on the rear rail to fix the hook.



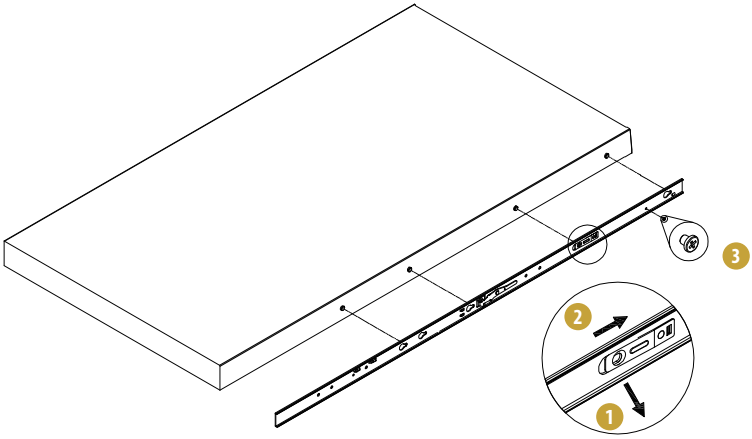
7. Pull forward the front bracket and fix it to the front rack post.



Attach the inner rail to the chassis

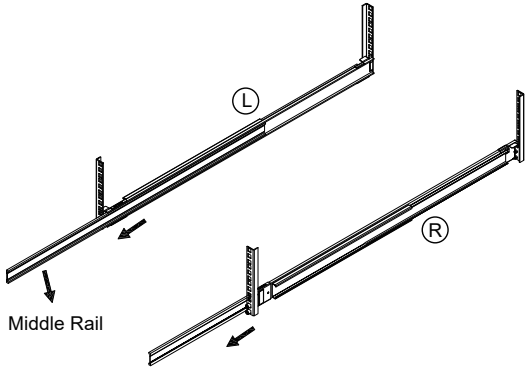
The illustrations shown here are for reference purposes only and may not exactly match the rail model purchased.

1. Lift the clip on the inner rail.
2. Slide the inner rail toward the chassis rear.
3. Tight the rail screw for extra security.

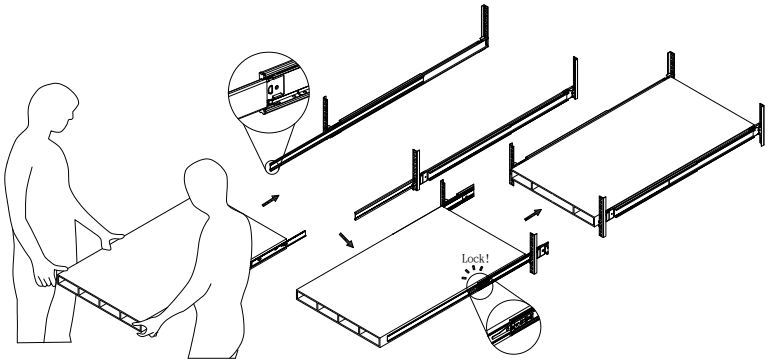


Mount the server in rack

1. Make sure the outer rail is locked to rack securely.
2. Fully extend the middle rail out of the outer rail until locked.



3. Aim the rail to push server into rack.



1. The server is heavy. For safe lifting, two or more persons are required to install the server into the rack.
2. When connecting cables to the server, make sure there is enough cable slack so sliding the server in and out of the rack without accidentally unplugging a cable.

Contact Information

Contact ASRock Rack or want to know more about ASRock Rack, you're welcome to visit ASRock Rack's website at http://www.asrockrack.com; or contact the dealer for further information. For technical questions, please submit a support request form at https://event.asrockrack.com/tsd.asp

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