Lanner

Edge Computing Appliance Platform

Hardware Platforms for Edge Computing

ECA-6051
User Manual

Version: 1.1

Date of Release:2025-03-11

About this Document

This manual describes the overview of the various functionalities of this product, and the information you need to get it ready for operation. It is intended for those who are:

- responsible for installing, administering and troubleshooting this system or Information Technology professionals.
- assumed to be qualified in the servicing of computer equipment, such as professional system integrators, or service personnel and technicians.

The latest version of this document can be found on Lanner's official website, available either through the product page or through the Lanner Download Center page with a login account and password.

Conventions & Icons

The icons are used in the manual to serve as an indication of interest topics or important messages.

Icon	Usage
 **Note or Information**	This mark indicates that there is something you should pay special attention to while using the product.
 **Warning or Important**	This mark indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

To obtain additional documentation resources and software updates for your system, please visit the Lanner Download Center. As certain categories of documents are only available to users who are logged in, please be registered for a Lanner Account at http://www.lannerinc.com/ to access published documents and downloadable resources.

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In addition to contacting your distributor or sales representative, you could submit a request at our **Lanner Technical Support** and fill in a support ticket to our technical support department.

Documentation Feedback

Your feedback is valuable to us, as it will help us continue to provide you with more accurate and relevant documentation. To provide any feedback, comments or to report an error, please email contact@lannerinc.com. Thank you for your time.

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note

1. An unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Important

1. Operations in the 5.15-5.25GHz band are restricted to indoor usage only.
2. This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Safety Guidelines

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check the circuit.

Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- Portez des lunettes de sécurité pour protéger vos yeux.
- N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont présentes.
- Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

Lithium Battery Caution

- There is risk of explosion if the battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions.
- Installation should be conducted only by a trained electrician or only by an electrically trained person who knows all installation procedures and device specifications which are to be applied.
- Do not carry the handle of power supplies when moving to another place.
- Please conform to your local laws and regulations regarding safe disposal of lithium battery.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- Leaving a battery in an extremely high temperature environment can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.
- CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.
- ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions."

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).
- Product shall be used with Class 1 laser device modules.
- The unit is only for Skilled person to install and maintenance
- The device can only be used in a fixed location such as a lab or a machine room. When you install the device, ensure that the protective earthing connection of the socket-outlet is verified by a skilled person.

Sécurité de fonctionnement

- L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.
- Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).
- Le produit doit être utilisé avec des modules de dispositifs laser de classe 1.
- Cette machine est réservée aux techniciens à installer et à entretenir
- L'appareil ne peut être utilisé que dans un lieu fixe, tel qu'un laboratoire ou une salle de machines. Lorsque vous installez l'appareil, assurez-vous que le raccordement à la terre de protection de la prise de courant a fait l'objet d'une vérification par une personne qualifiée.

Mounting Installation Precautions

The following should be put into consideration for rack-mount or similar mounting installations:

- Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.
- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient

temperature (Tma) specified by the manufacturer.

- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Grounding - Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Installation & Operation

- This equipment must be grounded. The power cord for product should be connected to a socket-outlet with earthing connection.
  Cet équipement doit être mis à la terre. La fiche d'alimentation doit être connectée à une prise de terre correctement câblée

- Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
  Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.

- The machine can only be used in a restricted access location and must be installed by a skilled person.
  Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

Warning

Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.
"Product shall be used with Class 1 laser device modules."

Avertissement

Équipement de classe I. Ce matériel doit être relié à la terre. La fiche d'alimentation doit être raccordée à une prise de terre correctement câblée. Une prise de courant mal câblée pourrait induire des tensions dangereuses sur des parties métalliques accessibles.
"Le produit doit être utilisé avec des modules de dispositifs laser de classe 1."

Electrical Safety Instructions

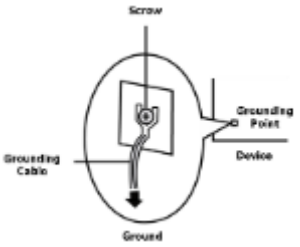
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect the ground wire after turning off the power. A ground wire is required and the part connecting the conductor must be greater than 4 mm2 or 10 AWG.

Consignes de sécurité électrique

- Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.
- Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm2 ou 10 AWG.

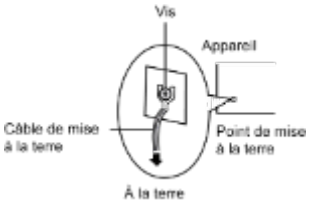
Grounding Procedure for DC Power Source

- Connect the grounding cable to the ground.
- The protection device for the DC power source must provide 30 A current.
- This protection device must be connected to the power source before DC power.



Procédure de mise à la terre pour source d'alimentation CC

- Branchez le câble de mise à la terre à la terre.
- L'appareil de protection pour la source d'alimentation CC doit fournir 30 A de courant.
- Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation CC.



Instruction for the installation of the conductor to building earth by a skilled person.

Table of Contents

CHAPTER 1: PRODUCT OVERVIEW

The ECA-6051 is a Modular Building Block Platform supporting industrial automation, AI-RAN, Large Language Model application with multiple GPU and DPU cards expansion.

Main Features

- Intel® Xeon® 6 Processor Family (Codenamed Sierra Forest-SP/Granite Rapids-SP)
- 8x DDR5 6400MHz RDIMM OR 8x DDR5 8000MHz MRDIMM System Memory (By CPU)
- 2x PCIe*16 FHFL, 1x PCIe*16 FHHL Or 1x PCIe*16 LP (By SKU)
- 1x GbE RJ45, 1x USB 3.0
- 2x M.2 NVMe, 2x E1.S SSD
- 6x Smart Fans, 2x 1600W 1+1 ATX CRPS PSU

Package Content

Your package contains the following items:

- 1x Edge Server Platform
- 1x CPU Heatsink
- 1x Type-C Console Cable, 1x RJ45 LAN Cable
- 2x Power Cable
- 1x Short Ear Rack Mount Kit with screws
- 1x Slide Rackmount Rail Kit with screws

Ordering Information

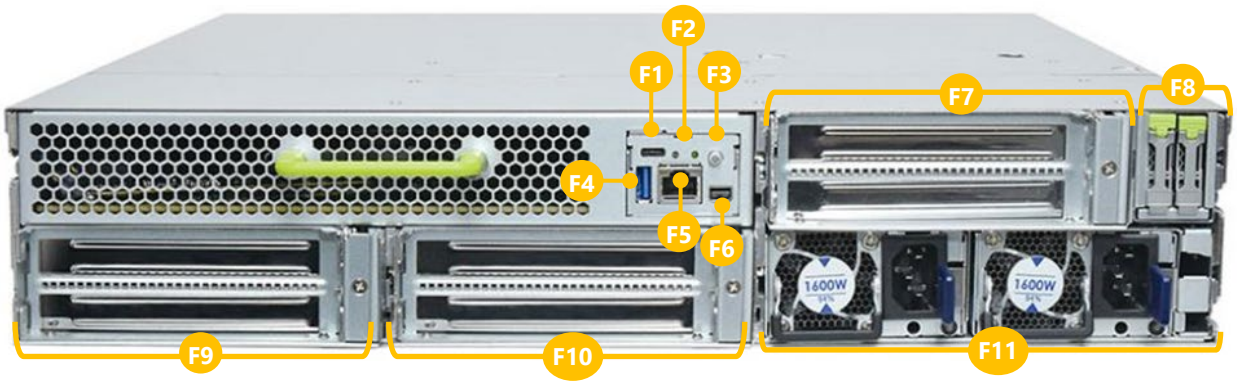
SKU No.	Description
ECA-6051A	Intel® Xeon® 6 Processor Family, 3x PCIe Card Extension Support (2x FHFL 350W, 1x FHHL Double Width), 2x E1.S SSD tray, 2x 1600W AC PSU
ECA-6051B	Intel® Xeon® 6 Processor Family, 2x PCIe Card Extension Support (1x FHFL 350W, 1x LP), 2x E1.S SSD tray, 2x 1600W AC PSU

System Specifications

Form Factor		2U 19" Rackmount
Platform	Processor Options	Intel® Xeon® 6 Processor Family (Sierra Forest-SP/ Granit Rapids-SP)
	CPU Socket	1x LGA 4710
	Security Acceleration	Intel® QuickAssist Technology
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR5 6400MHz RDIMM (Sierra Forest-SP); DDR5 8000MHz MRDIMM (Granite Rapids-SP)
	Max. Capacity	Up to 1028GB
	Socket	8x 288-Pin DIMM
Networking	Ethernet Ports	1x 1GbE RJ45 MGMT Port
LOM	IO Interface	1x LOM Port
	IPMI slot	Yes, IAC-AST2601 (MGX customized IPMI) Module (Onboard)
I/O Interface	Power Button	1x Power Switch
	LED Indicator	Status / Programmable, refer to **Appendix A**
	Console Port	1x Type-C Console Port (Default Bard Rate: 115200)
	USB Port	1x USB 3.0 Port
	VGA Port	1x Mini-DP Port (for VGA Only)
	Power Input	1600W AC PSU
Storage	HDD/SSD Support	2x E1.S SSD Trays
	Onboard Slots	2x M.2 2280/22110 M-Key for NVMe
Expansion	PCIe	SKU A: 2x FHFL (PCIe*16, Double-Slot); 1x FHHL (PCIe*16) SKU B: 1x FHFL (PCIe*16, Double-Slot); 1x LP (PCIe*16)
Miscellaneous	Watchdog	Yes
	Internal RTC w/ Li Battery	Yes
	TPM	Yes
Cooling	Processor	Passive CPU heat sink
	System	6x Smart Fans
Environmental Parameters	Operating Temperature	0~ 40C
	Storage Temperature	-40C ~ 70C
	Humidity (RH)	5%~95% (Non-Condensing)
System Dimensions	(WxDxH)	438 x 420 x 88mm
	Weight	17 KG
Package Dimensions	(WxDxH)	700 x 603 x 285mm
	Weight	20.93 KG
Power	Type/Watts	1600W AC CPRS PSU
	Input	200-240 VAC, 9.5A, 50~60Hz
OS Support		Linux
Approvals and Compliance		RoHS Directive (EU) 2015/863, CE/FCC Class A, UL

Front Panel

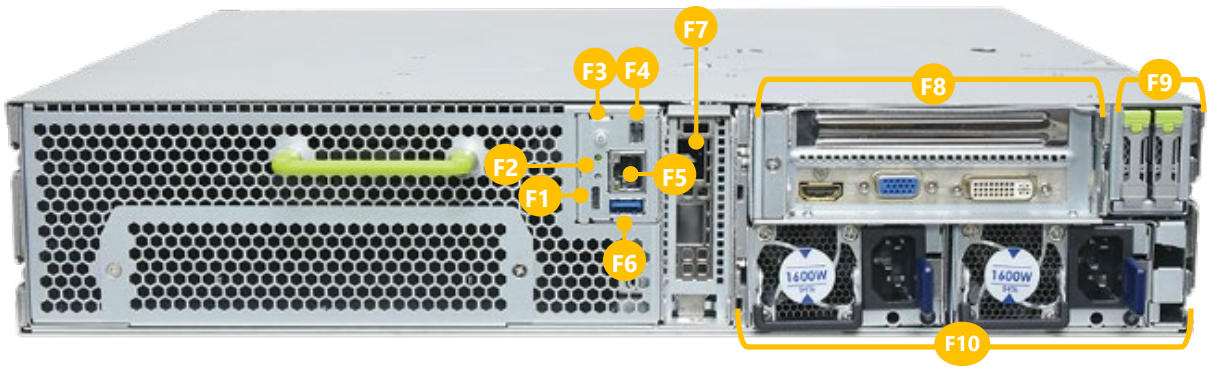
ECA-6051A



No.	Description	
F1	Console Port	1x Type-C Console Port
F2	LED Indicators	Status / Programmable LED Indicators, refer to Appendix A
F3	Power Button	1x Power Button
F4	USB Port	1x USB 3.0 Port
F5	MGT Port	1x 1GbE RJ45 Management Port
F6	Display Port	1x Mini-DP Port (for VGA Only)
F7	PCIe Expansion	1x PCIe*16 FHFL, Double-Slot
F8	SSD/HDD	2x E1.S SSD Trays
F9	PCIe Expansion	1x PCIe*16 FHFL, Double-Slot
F10	PCIe Expansion	1x PCIe*16 FHHL, Double-Slot
F11	Power Supply	AC 1+1 CRPS Redundant Power Supply

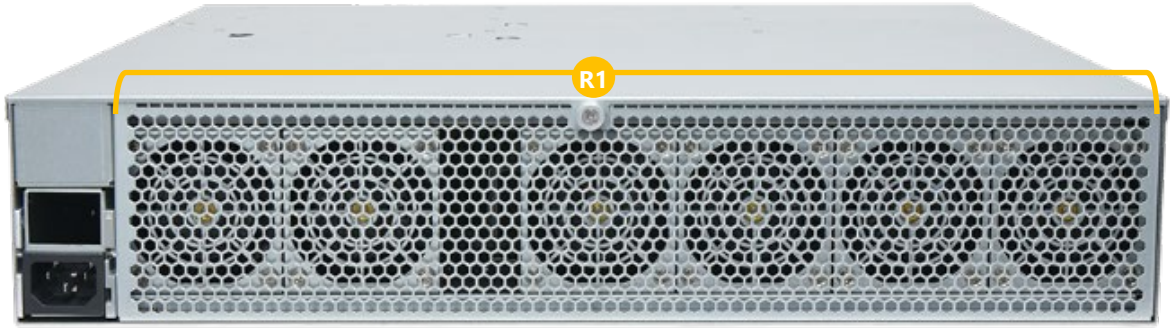
Front Panel

ECA-6051B



No.	Description	
F1	Console Port	1x Type-C Console Port
F2	LED Indicators	Status / Programmable LED Indicators
F3	Power Button	1x Power Button
F4	Display Port	1x Mini-DP Port (for VGA Only)
F5	MGT Port	1x 1GbE RJ45 Management Port
F6	USB Port	1x USB 3.0 Port
F7	PCIe Expansion	1x PCIe*16 LP, Single-Slot
F8	PCIe Expansion	1x PCIe*16 FHFL, Double-Slot
F9	SSD/HDD	2x E1.S SSD Trays
F10	Power Supply	AC 1+1 CRPS Redundant Power Supply

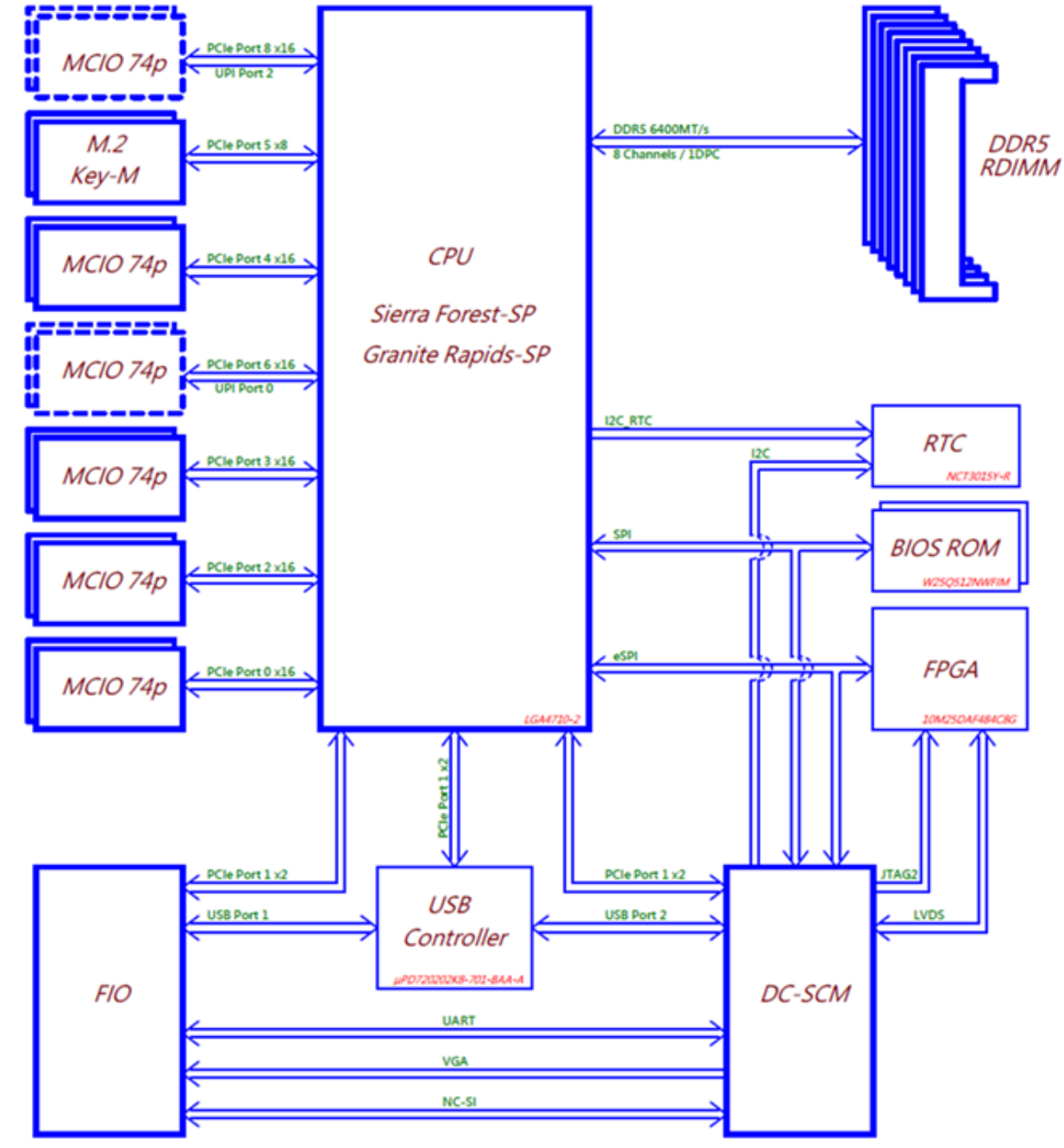
Rear Panel



No.	Description	
R1	Smart Fan	6x Smart Cooling Fans

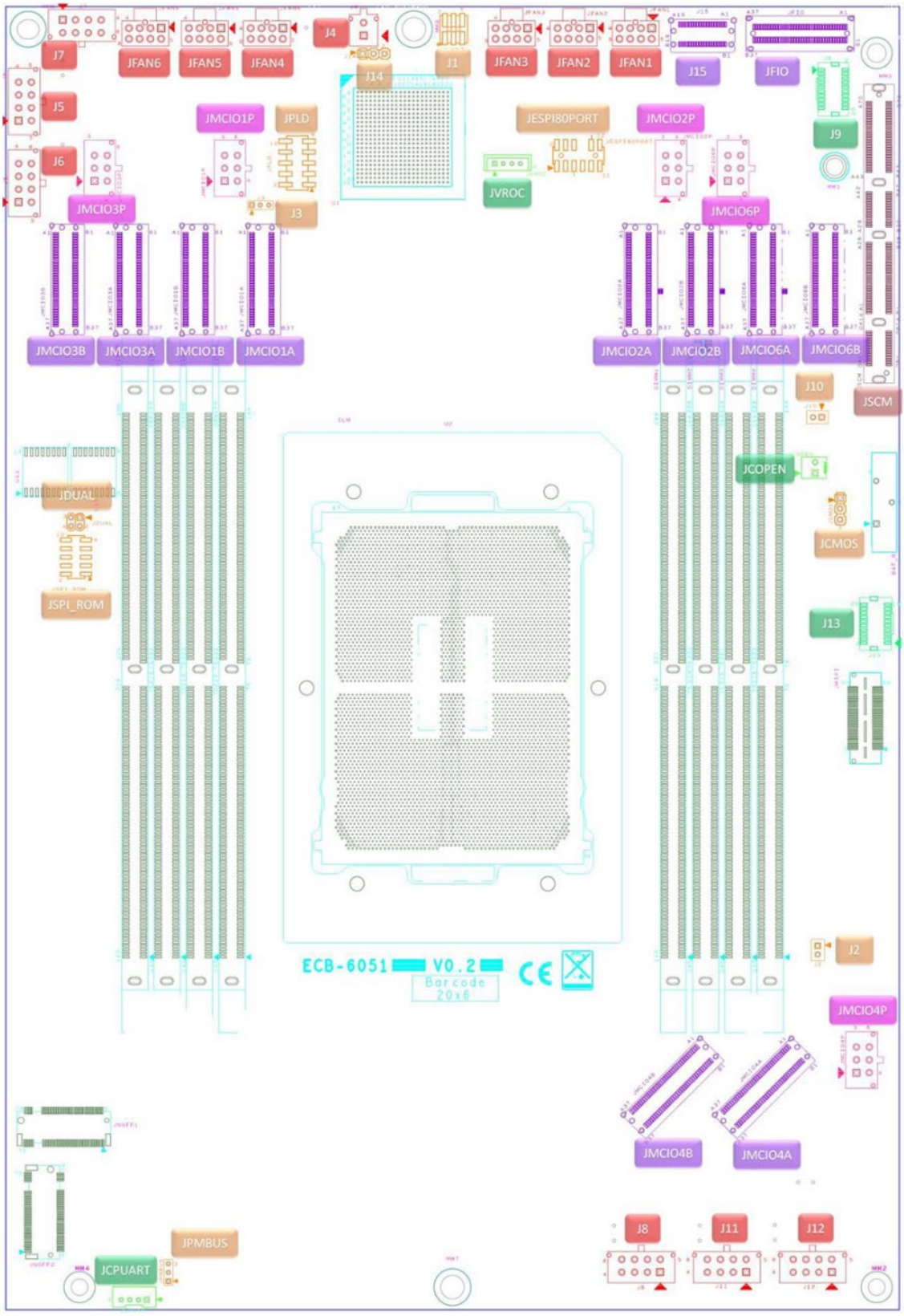
CHAPTER 2: MOTHERBOARD INFORMATION

Block Diagram



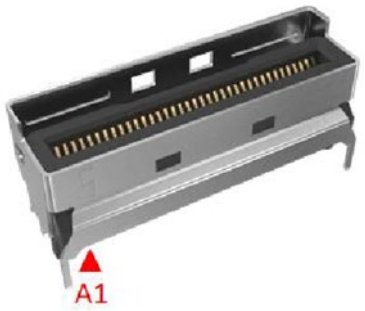
Internal Jumpers and Connector

The pin headers on the motherboard are often associated with important functions. With the shunt (Jumper) pushed down on the designated pins (the pin numbers are printed on the circuit board, surrounding the pin header), certain feature can be enabled or disable. When changing the jumpers, make sure your system is completely turned off.



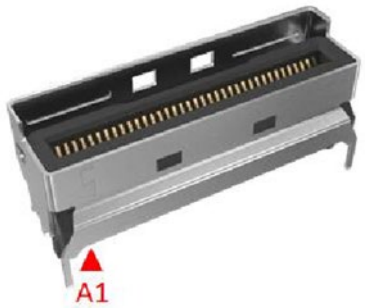
JMCIO1x / JMCIO3x / JMCIO6x : For PCIe Extension Card Implementation

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	PCIE_RX_DP0	2	PCIE_TX_DP0
A3	PCIE_RX_DN0	B3	PCIE_TX_DN0
A4	GND	B4	GND
A5	PCIE_RX_DP1	B5	PCIE_TX_DP1
A6	PCIE_RX_DN1	B6	PCIE_TX_DN1
A7	GND	B7	GND
A8	P3V3_AUX	B8	SMB_SCL
A9	NC	B9	SMB_SDA
A10	GND	B10	GND
A11	CLK_100M_DP	B11	PERST_P0_N
A12	CLK_100M_DN	B12	PRESENT_P0_N
A13	GND	B13	GND
A14	PCIE_RX_DP2	B14	PCIE_TX_DP2
A15	PCIE_RX_DN2	B15	PCIE_TX_DN2
A16	GND	B16	GND
A17	PCIE_RX_DP3	B17	PCIE_TX_DP3
A18	PCIE_RX_DN3	B18	PCIE_TX_DN3
A19	GND	B19	GND
A20	PCIE_RX_DP4	B20	PCIE_TX_DP4
A21	PCIE_RX_DN4	B21	PCIE_TX_DN4
A22		B22	GND
A23	PCIE_RX_DP5	B23	PCIE_TX_DP5
A24	PCIE_RX_DN5	B24	PCIE_TX_DN5
A25	GND	B25	GND
A26	NC	B26	PWRBRK_N
A27	NC	B27	PE_WAKE_N
A28	GND	B28	GND
A29	NC	B29	NC
A30	NC	B30	NC
A31	GND	B31	GND
A32	PCIE_RX_DP6	B32	PCIE_TX_DP6
A33	PCIE_RX_DN6	B33	PCIE_TX_DN6
A34	GND	B34	GND
A35	PCIE_RX_DP7	B35	PCIE_TX_DP7
A36	PCIE_RX_DN7	B36	PCIE_TX_DN7
A37	GND	B37	GND



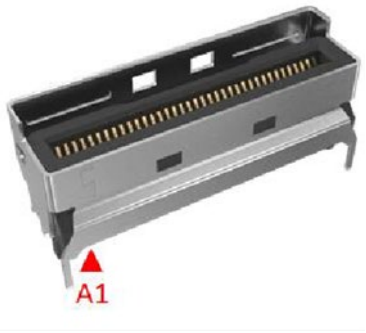
JMCIO2x / JMCIO4x : For PCIe Extension Card & Riser Card (ERC-60511) Implementation

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	PCIE_RX_DP0	2	PCIE_TX_DP0
A3	PCIE_RX_DN0	B3	PCIE_TX_DN0
A4	GND	B4	GND
A5	PCIE_RX_DP1	B5	PCIE_TX_DP1
A6	PCIE_RX_DN1	B6	PCIE_TX_DN1
A7	GND	B7	GND
A8	P3V3_AUX	B8	SMB_SCL
A9	VPP_ALERT_N	B9	SMB_SDA
A10	GND	B10	GND
A11	CLK_100M_A_DP	B11	PERST_P0_A_N
A12	CLK_100M_A_DN	B12	PRESENT_P0_A_N
A13	GND	B13	GND
A14	PCIE_RX_DP2	B14	PCIE_TX_DP2
A15	PCIE_RX_DN2	B15	PCIE_TX_DN2
A16	GND	B16	GND
A17	PCIE_RX_DP3	B17	PCIE_TX_DP3
A18	PCIE_RX_DN3	B18	PCIE_TX_DN3
A19	GND	B19	GND
A20	PCIE_RX_DP4	B20	PCIE_TX_DP4
A21	PCIE_RX_DN4	B21	PCIE_TX_DN4
A22		B22	GND
A23	PCIE_RX_DP5	B23	PCIE_TX_DP5
A24	PCIE_RX_DN5	B24	PCIE_TX_DN5
A25	GND	B25	GND
A26	VPP_SDA	B26	PWRBRK_N
A27	VPP_SCL	B27	PE_WAKE_N
A28	GND	B28	GND
A29	CLK_100M_B_DP	B29	PERST_P0_B_N
A30	CLK_100M_B_DN	B30	PRESENT_P0_B_N
A31	GND	B31	GND
A32	PCIE_RX_DP6	B32	PCIE_TX_DP6
A33	PCIE_RX_DN6	B33	PCIE_TX_DN6
A34	GND	B34	GND
A35	PCIE_RX_DP7	B35	PCIE_TX_DP7
A36	PCIE_RX_DN7	B36	PCIE_TX_DN7
A37	GND	B37	GND



JFIO: For I/O Board (EIO-60511) Implementation

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	SGMII_HPM_SCM_DP	2	SGMII_SCM_HPM_DP
A3	SGMII_HPM_SCM_DN	B3	SGMII_SCM_HPM_DN
A4	GND	B4	GND
A5	V_BMC_GFX_VSYNC	B5	SMB_BMC_DDC_SDA
A6	V_BMC_GFX_RED	B6	V_BMC_GFX_GRN
A7	GND	B7	GND
A8	PWR_BTN_N	B8	NC
A9	PWR_LED_N	B9	NC
A10	RST_BTN_N	B10	NC
A11	UID_BTN_N	B11	SCM_FPGA_UART_TXD
A12	UID_LED_N	B12	SCM_FPGA_UART_RXD
A13	GND	B13	GND
A14	RST_FIO_PERST_N	B14	NC
A15	IRQ_FIO_WAKE_LVC3_N	B15	NC
A16	GND	B16	GND
A17	STATUS_LED_GREEN_N	B17	STATUS_LED_AMBER_N
A18	NC	B18	NC
A19	GND	B19	GND
A20	NC	B20	NC
A21	NC	B21	FIO_PRESENT_N
A22		B22	GND
A23	NC	B23	NC
A24	NC	B24	V_BMC_GFX_HSYNC
A25	GND	B25	GND
A26	SMB_HOST_FIO_SCL	B26	FM_USBOCI1_N
A27	SMB_HOST_FIO_SDA	B27	USB_PPON1
A28	MB_PRSNT_N	B28	RST_BMC_PHY_N
A29	I3C_DBG_TYPEC_SCL	B29	NC
A30	I3C_DBG_TYPEC_SDA	B30	NC
A31	GND	B31	GND
A32	SMB_BMC_DDC_SCL	B32	USB2_P1_DP
A33	V_BMC_GFX_BLU	B33	USB2_P1_DN
A34	GND	B34	GND
A35	USB3_P1_RX_P	B35	USB3_P1_TX_P
A36	USB3_P1_RX_N	B36	USB3_P1_TX_N
A37	GND	B37	GND



J15: For I/O Board (EIO-60511) Implementation

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	PCIE_RX_DP0	2	PCIE_TX_DP0
A3	PCIE_RX_DN0	B3	PCIE_TX_DN0
A4	GND	B4	GND
A5	PCIE_RX_DP1	B5	PCIE_TX_DP1
A6	PCIE_RX_DN1	B6	PCIE_TX_DN1
A7	GND	B7	GND
A8	P3V3_AUX	B8	P5V_AUX
A9	P3V3_AUX	B9	P5V_AUX
A10	GND	B10	GND
A11	CLK_100M_DP	B11	SCM_BMC_UART1_TXD
A12	CLK_100M_DN	B12	SCM_BMC_UART1_RXD
A13	GND	B13	GND
A14	PCIE_RX_DP2	B14	PCIE_TX_DP2
A15	PCIE_RX_DN2	B15	PCIE_TX_DN2
A16	GND	B16	GND
A17	PCIE_RX_DP3	B17	PCIE_TX_DP3
A18	PCIE_RX_DN3	B18	PCIE_TX_DN3
A19	GND	B19	GND

JFAN1~ JFAN6: For Cooling Fan Implementation

Pin	Description	Pin	Description
1	GND	5	GND
2	P12V	6	P12V
3	TECH_1	7	TECH_2
4	PWM	8	PRESENT#

J4: For 12V Standby Input Power Connectivity

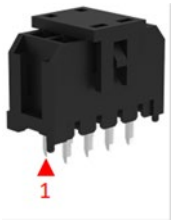
Pin	Description	Pin	Description
1	GND	2	P12V_AUX

J5~J7: For 12V_NORTH Input Power Connectivity

Pin	Description	Pin	Description
1	GND	5	P12V_NORTH
2	GND	6	P12V_NORTH
3	GND	7	P12V_NORTH
4	GND	8	P12V_NORTH

J8 / J11 / J12: For 12V_SOUTH Input Power Connectivity

Pin	Description	Pin	Description
1	GND	5	P12V_SOUTH
2	GND	6	P12V_SOUTH
3	GND	7	P12V_SOUTH
4	GND	8	P12V_SOUTH



JMCIOxP: For PCIe extension Card Power Supply

Pin	Description	Pin	Description
1	GND	4	P12V
2	GND	5	P3V3
3	GND	6	P3V3_AUX

JESPI80PORT: For Lanner eSPI Debug Fixture Connectivity

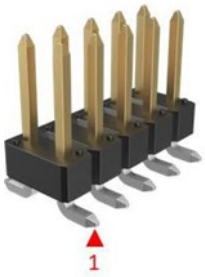
Pin	Description	Pin	Description
1	ESPI_CLK	2	ESPI_IO1
3	ESPI_RST#	4	ESPI_IO0
5	ESPI_CS#	6	P3V3
7	ESPI_IO3	8	Key
9	ESPI_IO2	10	GND
11	P3V3_AUX	12	NC

JSPI_ROM: For SPI Flash Fixture Connectivity

Pin	Description	Pin	Description
1	SPI_HOLD#	2	SPI_CS1#
3	SPI_CS0#	4	SPI_1V8
5	SPI_MISO	6	SPI_IO3
7	NC	8	SPI_CLK
9	GND	10	SPI_MOSI

JPLD: For CPLD Fixture Connectivity

Pin	Description	Pin	Description
1	JTAG_PLD_TCK	2	GND
3	JTAG_PLD_TDO	4	P2V5_AUX
5	JTAG_PLD_TMS	6	NC
7	NC	8	JTAG_PLD_JTAGEN
9	JTAG_PLD_TDI	10	GND



JCMOS: For Clear CMOS

Pin	Description
1-2	Normal
2-3	Clear CMOS

J1: For Dual BIOS Feature Selection

Pin	Description
1-3	Boot from BIOS1
3-5	Boot from BIOS2
2-4	Dual BIOS enable
4-6	Dual BIOS disable

J2: For Enable Delayed Authentication Mode

Pin	Description
1-x	Disable
1-2	Enable

J3: For Clear Password

Pin	Description
1-2	Normal
2-3	Clear Password

J10: For I3C Debug Mux Selection

Pin	Description
1-x	BMC
1-2	TypeC

J14: For Force Power-ON without Sequence Control

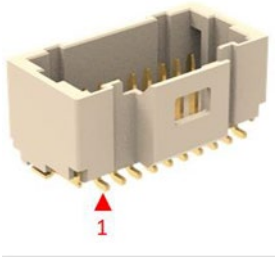
Pin	Description
1-2	Disable
2-3	Enable

JPMBUS: For Power VR Management Debug

Pin	Description
1	GND
2	SCL
3	SDA

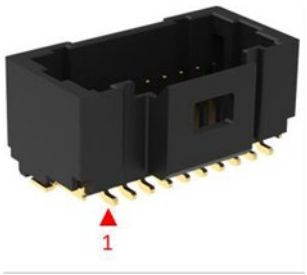
J9: For NC-SI Function (EIO-60511) Connectivity

Pin	Description	Pin	Description
1	GND	2	RMII_PKG_ID1
3	RMII_SCM_RXD0	4	CLK_50M_RMII_CLK
5	RMII_SCM_RXD1	6	GND
7	RMII_SCM_CRS_DV	8	NC
9	GND	10	RMII_PKG_ID0
11	RMII_SCM_TX_EN	12	GND
13	RMII_SCM_TXD0	14	NC
15	RMII_SCM_TXD1	16	NC
17	NC	18	GND
19	RMII_ARB_OUT	20	RMII_ARB_IN



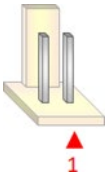
J13: For PSU Control Sideband (EPB-60511) Connectivity

Pin	Description	Pin	Description
1	PSU1_PRESENT_N	2	PSU2_PRESENT_N
3	NC	4	NC
5	PWROK_PSU	6	NC
7	NC	8	NC
9	PSON_PSU_N	10	PMBUS_ALERT_N
11	PSU_VIN_GOOD	12	PMBUS_SDA
13	NC	14	PMBUS_SCL
15	NC	16	GND
17	NC	18	SENSE_PSU_P
19	NC	20	SENSE_PSU_N

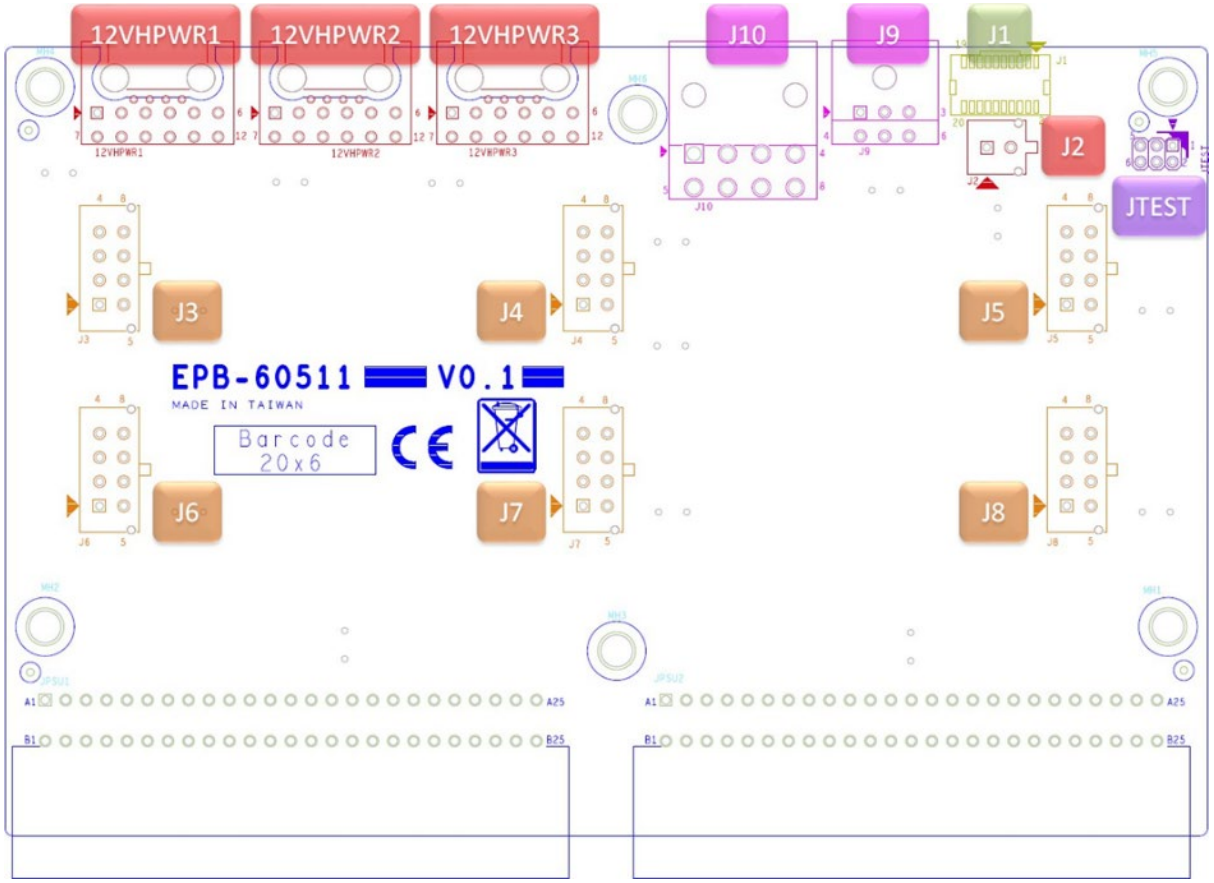


JCOPEN: For Chassis Intrusion Detect

Pin	Description
1	GND
2	Intruder

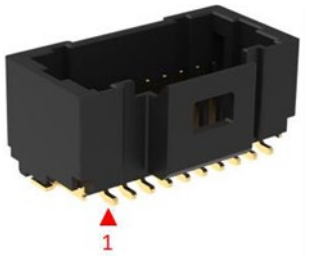


Power Board



J1: For PSU Control Sideband Connectivity

Pin	Description	Pin	Description
1	PSU1_PRESENT_N	2	PSU2_PRESENT_N
3	NC	4	NC
5	PWROK_PSU	6	NC
7	NC	8	NC
9	PSON_PSU_N	10	PMBUS_ALERT_N
11	PSU_VIN_GOOD	12	PMBUS_SDA
13	NC	14	PMBUS_SCL
15	NC	16	GND
17	NC	18	SENSE_PSU_P
19	NC	20	SENSE_PSU_N

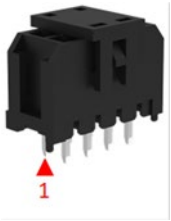


J2: For PSU 12V Standby Output Power Connectivity

Pin	Description	Pin	Description
1	GND	2	P12V_AUX

J3~J8: For PSU 12V Output Power Connectivity

Pin	Description	Pin	Description
1	GND	5	P12V
2	GND	6	P12V
3	GND	7	P12V
4	GND	8	P12V



J9: For Riser Card (ERC-60511) 12V Power Connectivity

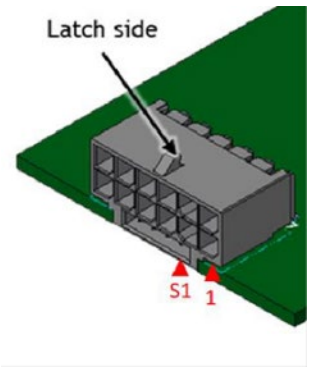
Pin	Description	Pin	Description
1	P12V	4	GND
2	P12V	5	GND
3	P12V	6	GND

J10: For PCIe 12V Power Connectivity

Pin	Description	Pin	Description
1	P12V	5	GND
2	P12V	6	SENSE0
3	P12V	7	GND
4	SENSE1	8	GND

12VHPWR1~ 12VHPWR3: For PCIe 12V Power Connectivity

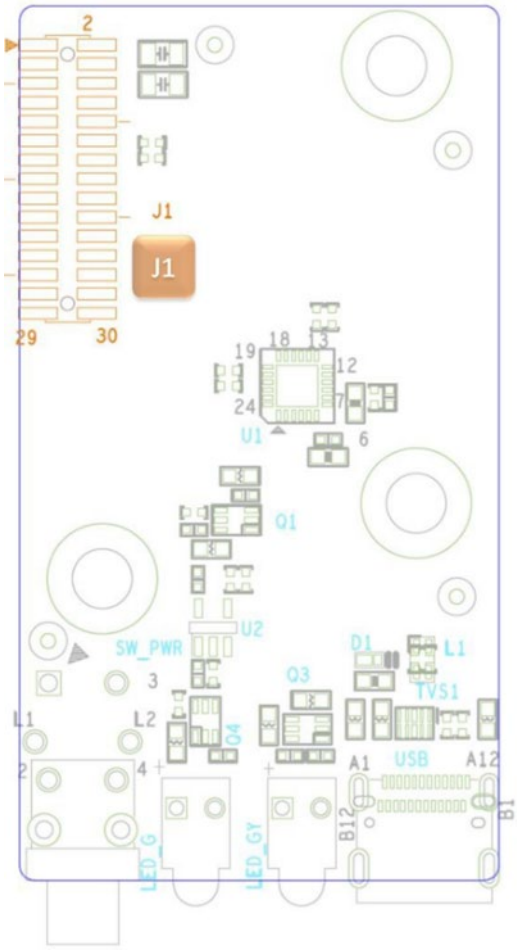
Pin	Description	Pin	Description
1	P12V	7	GND
2	P12V	8	GND
3	P12V	9	GND
4	P12V	10	GND
5	P12V	11	GND
6	P12V	12	GND
S1	CARD_PWR_STABLE	S3	SENSE0
S2	CARD_CBL_PRES_N	S4	SENSE1



JTEST: For Force PSU Power-on and Debug Purpose

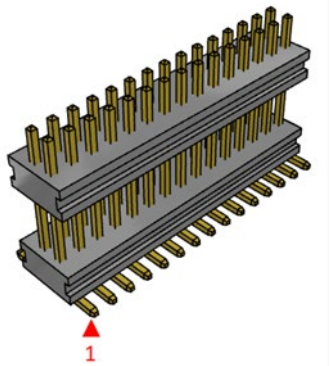
Pin	Description	Pin	Description
1	PMBUS_SDA	2	NC
3	GND	4	PSON_PSU_N
5	PMBUS_SCL	6	GND

IO Board

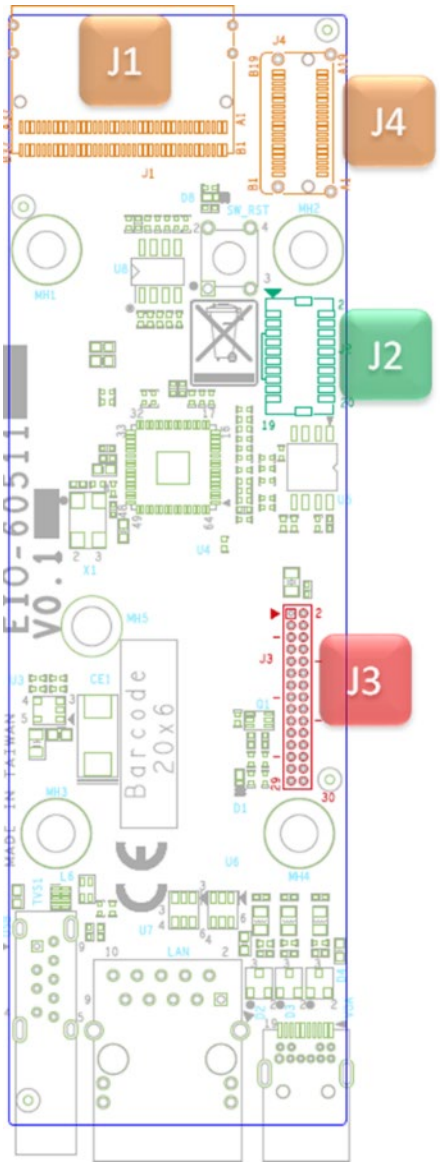


J1: For EIO-60511 Stack Board Connectivity

Pin	Description	Pin	Description
1	P5V_AUX	2	P5V_AUX
3	NC	4	NC
5	UART2_TX	6	UART1_TX
7	UART2_RX	8	UART1_RX
9	GND	10	GND
11	NC	12	I3C_DBG_SCL
13	NC	14	I3C_DBG_SDA
15	GND	16	GND
17	GND	18	NC
19	NC	20	STATUS_LED_AMBER_L
21	NC	22	STATUS_LED_GREEN_L
23	NC	24	UID_LED_BLUE_L
25	NC	26	PWR_LED_L
27	GND	28	NC
29	NC	30	PWR_BTN_L



IO Board



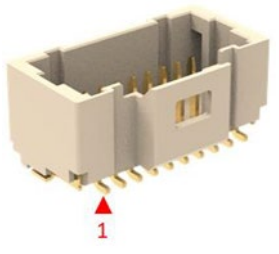
J1: For IO Function Connectivity

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	NC	2	NC
A3	NC	B3	NC
A4	GND	B4	GND
A5	SMB_BMC_DDC_SDA	B5	V_BMC_GFX_VSYNC
A6	V_BMC_GFX_GRN	B6	V_BMC_GFX_RED
A7	GND	B7	GND
A8	NC	B8	PWR_BTN_N
A9	NC	B9	PWR_LED_N
A10	NC	B10	RST_BTN_N
A11	UART2_TX	B11	NC
A12	UART2_RX	B12	UID_LED_N

A13	GND	B13	GND
A14	NC	B14	RST_FIO_PERST_N
A15	NC	B15	IRQ_FIO_WAKE_LVC3_N
A16	GND	B16	GND
A17	STATUS_LED_AMBER_N	B17	STATUS_LED_GREEN_N
A18	NC	B18	NC
A19	GND	B19	GND
A20	NC	B20	NC
A21	GND	B21	NC
A22	GND	B22	GND
A23	NC	B23	NC
A24	V_BMC_GFX_HSYNC	B24	NC
A25	GND	B25	GND
A26	FM_USBOCI1_N	B26	SMB_HOST_FIO_SCL
A27	USB_PPON1	B27	SMB_HOST_FIO_SDA
A28	NC	B28	NC
A29	NC	B29	I3C_DBG_TYPEC_SCL
A30	NC	B30	I3C_DBG_TYPEC_SDA
A31	GND	B31	GND
A32	USB2_P1_DP	B32	SMB_BMC_DDC_SCL
A33	USB2_P1_DN	B33	V_BMC_GFX_BLU
A34	GND	B34	GND
A35	USB3_P1_TX_P	B35	USB3_P1_RX_P
A36	USB3_P1_TX_N	B36	USB3_P1_RX_N
A37	GND	B37	GND

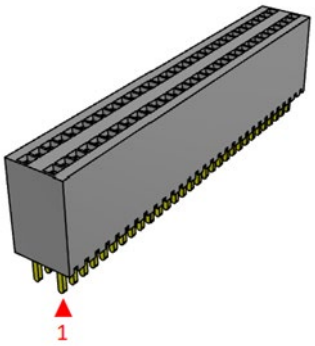
J2: For NC-SI Function Connectivity

Pin	Description	Pin	Description
1	GND	2	NC
3	RMII_SCM_RXD0	4	CLK_50M_RMII_CLK
5	RMII_SCM_RXD1	6	GND
7	RMII_SCM_CRS_DV	8	NC
9	GND	10	NC
11	RMII_SCM_TX_EN	12	GND
13	RMII_SCM_TXD0	14	NC
15	RMII_SCM_TXD1	16	NC
17	NC	18	GND
19	NC	20	NC



J3: For EIO-60512 Stack Board Connectivity

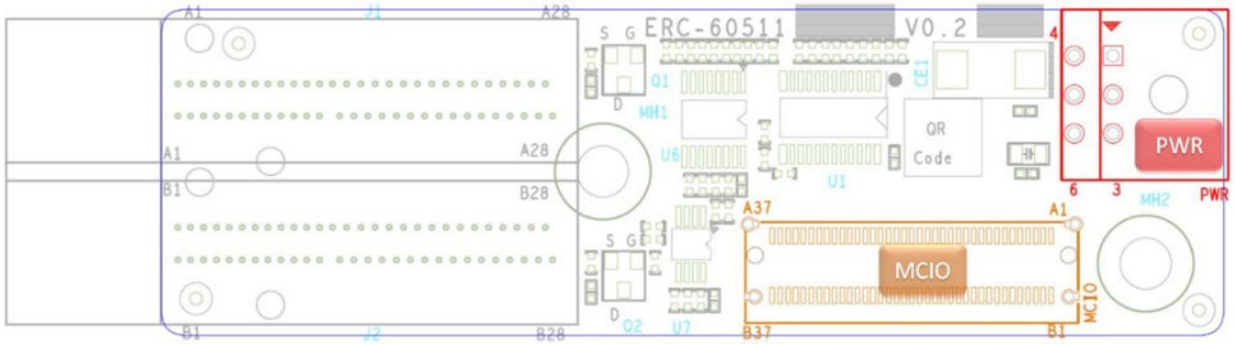
Pin	Description	Pin	Description
1	P5V_AUX	2	P5V_AUX
3	NC	4	NC
5	UART1_TX	6	UART2_TX
7	UART1_RX	8	UART2_RX
9	GND	10	GND
11	I3C_DBG_SCL	12	NC
13	I3C_DBG_SDA	14	NC
15	GND	16	GND
17	NC	18	GND
19	STATUS_LED_AMBER_L	20	NC
21	STATUS_LED_GREEN_L	22	NC
23	UID_LED_BLUE_L	24	NC
25	PWR_LED_L	26	NC
27	NC	28	GND
29	PWR_BTN_L	30	NC



J4: For PCIe Function Connectivity

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	PCIE_TX_DP0	2	PCIE_RX_DP0
A3	PCIE_TX_DN0	B3	PCIE_RX_DN0
A4	GND	B4	GND
A5	PCIE_TX_DP1	B5	PCIE_RX_DP1
A6	PCIE_TX_DN1	B6	PCIE_RX_DN1
A7	GND	B7	GND
A8	P5V_AUX	B8	P3V3_AUX
A9	P5V_AUX	B9	P3V3_AUX
A10	GND	B10	GND
A11	UART1_TX	B11	CLK_100M_DP
A12	UART1_RX	B12	CLK_100M_DN
A13	GND	B13	GND
A14	PCIE_TX_DP2	B14	PCIE_RX_DP2
A15	PCIE_TX_DN2	B15	PCIE_RX_DN2
A16	GND	B16	GND
A17	PCIE_TX_DP3	B17	PCIE_RX_DP3
A18	PCIE_TX_DN3	B18	PCIE_RX_DN3
A19	GND	B19	GND

Riser Card

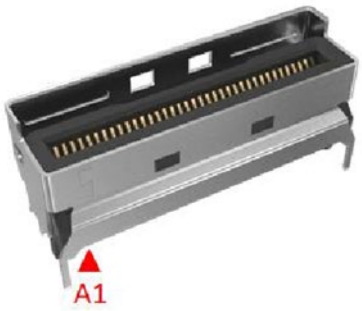


PWR: For 12V Power Input Connectivity

Pin	Description	Pin	Description
1	P12V	4	GND
2	P12V	5	GND
3	P12V	6	GND

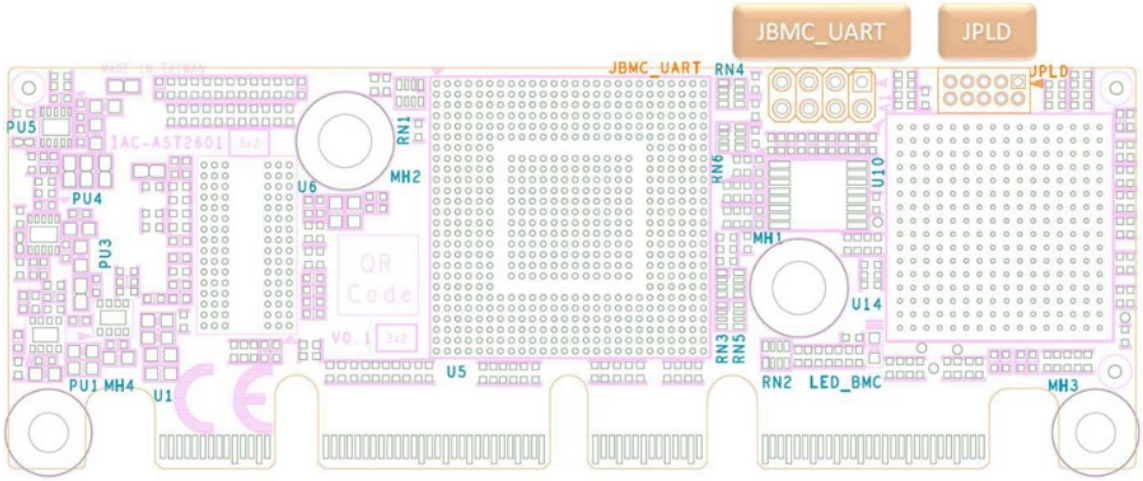
MCIO: For PCIe Function Connectivity

Pin	Description	Pin	Description
A1	GND	B1	GND
A2	PCIE_RX_DP0	2	PCIE_TX_DP0
A3	PCIE_RX_DN0	B3	PCIE_TX_DN0
A4	GND	B4	GND
A5	PCIE_RX_DP1	B5	PCIE_TX_DP1
A6	PCIE_RX_DN1	B6	PCIE_TX_DN1
A7	GND	B7	GND
A8	P3V3_AUX	B8	SMB_SCL
A9	VPP_ALERT_N	B9	SMB_SDA
A10	GND	B10	GND
A11	CLK_100M_A_DP	B11	PERST_P0_A_N
A12	CLK_100M_A_DN	B12	PRESENT_P0_A_N
A13	GND	B13	GND
A14	PCIE_RX_DP2	B14	PCIE_TX_DP2
A15	PCIE_RX_DN2	B15	PCIE_TX_DN2
A16	GND	B16	GND
A17	PCIE_RX_DP3	B17	PCIE_TX_DP3
A18	PCIE_RX_DN3	B18	PCIE_TX_DN3
A19	GND	B19	GND
A20	PCIE_RX_DP4	B20	PCIE_TX_DP4
A21	PCIE_RX_DN4	B21	PCIE_TX_DN4
A22		B22	GND
A23	PCIE_RX_DP5	B23	PCIE_TX_DP5



A24	PCIE_RX_DN5	B24	PCIE_TX_DN5
A25	GND	B25	GND
A26	VPP_SDA	B26	PWRBRK_N
A27	VPP_SCL	B27	PE_WAKE_N
A28	GND	B28	GND
A29	CLK_100M_B_DP	B29	PERST_P0_B_N
A30	CLK_100M_B_DN	B30	PRESENT_P0_B_N
A31	GND	B31	GND
A32	PCIE_RX_DP6	B32	PCIE_TX_DP6
A33	PCIE_RX_DN6	B33	PCIE_TX_DN6
A34	GND	B34	GND
A35	PCIE_RX_DP7	B35	PCIE_TX_DP7
A36	PCIE_RX_DN7	B36	PCIE_TX_DN7
A37	GND	B37	GND

IAC-AST2601 IPMI Module



JPLD: For CPLD Fixture Connectivity

Pin	Description	Pin	Description
1	JTAG_PLD_TCK	2	GND
3	JTAG_PLD_TDO	4	P2V5_AUX
5	JTAG_PLD_TMS	6	NC
7	NC	8	JTAG_PLD_JTAGEN
9	JTAG_PLD_TDI	10	GND

JBMC_UART: For BMC UART Connectivity

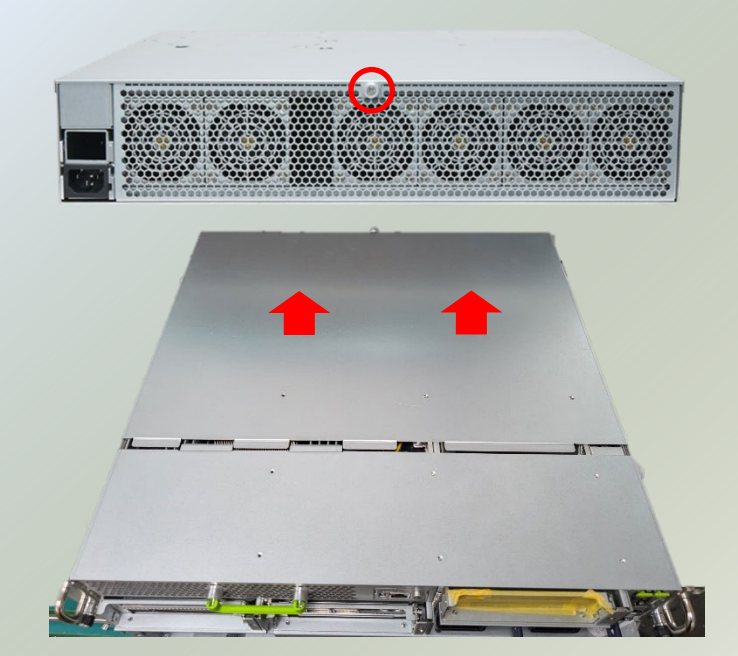
Pin	Description	Pin	Description
1	UART2_RX	2	UART5_RX
3	UART2_TX	4	UART5_TX
5	GND	6	GND
7	BMC_BOOT_STRAP	8	BMC_BOOT_UART

CHAPTER 3: HARDWARE SETUP

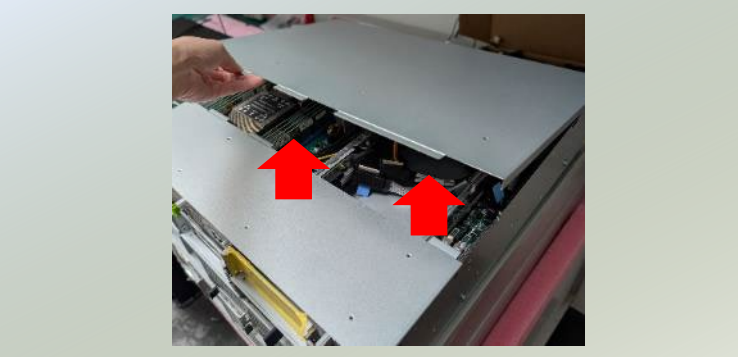
To minimize the risk of personal injury, electric shock, or system damage, ensure all power connections are disconnected to fully shut down the device. Additionally, wear ESD protection gloves while carrying out the procedures in this chapter.

Opening the Chassis

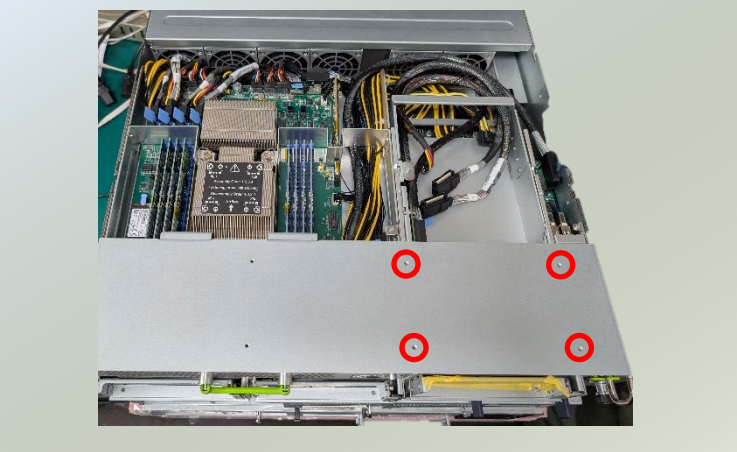
1. Power off the system.
2. Unscrew the one (1) screws on the rear panel. Gently slide the cover backwards a bit.



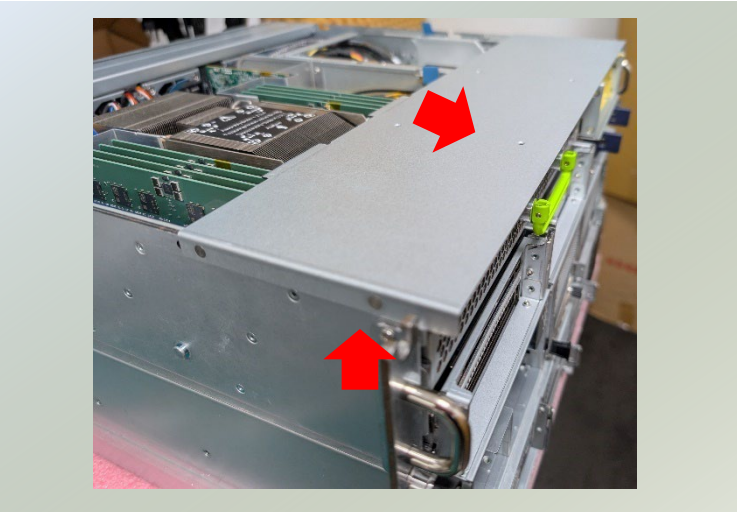
3. Lift the cover up to remove.



4. Unscrew the four (4) screws on the top panel.



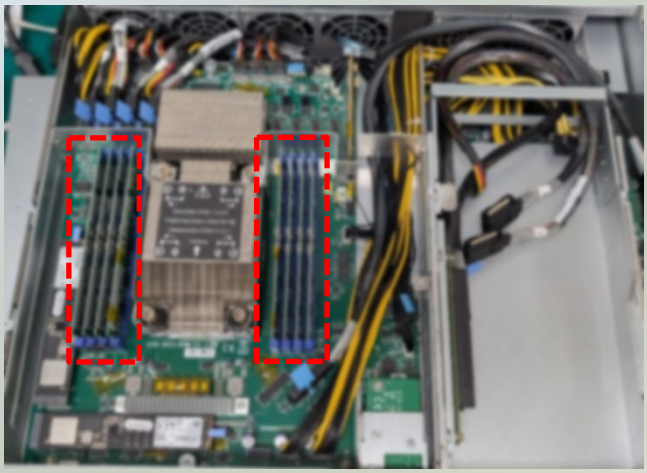
5. Gently slide the cover forwards a bit.
6. Lift the cover up to remove.



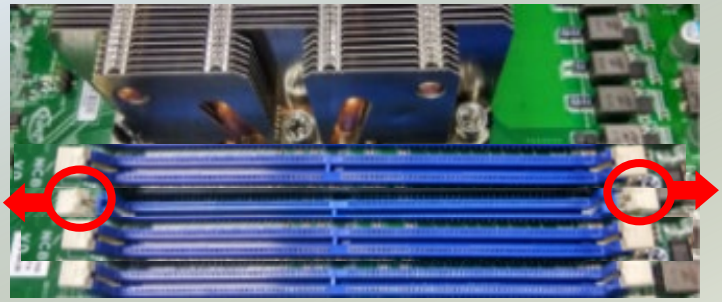
Installing the System Memory

The motherboard supports DDR5 registered DIMM memory for heavy-duty operations. The CPU have 8 DIMM sockets (4 on each side). Please follow the steps below to install the DIMM memory modules.

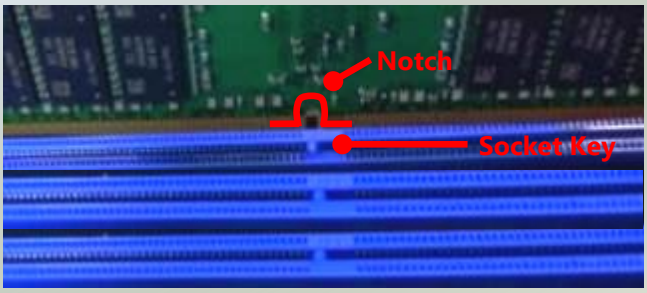
1. Power off the system.
2. Locate the DIMM memory slots on the motherboard.



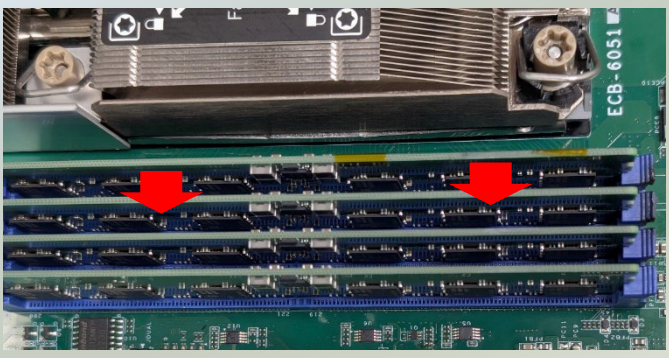
3. Pull open the DIMM slot latches.



4. Align the notch of the DIMM module with the socket key in the slot.



5. Insert the module into the slot until it is firmly seated.

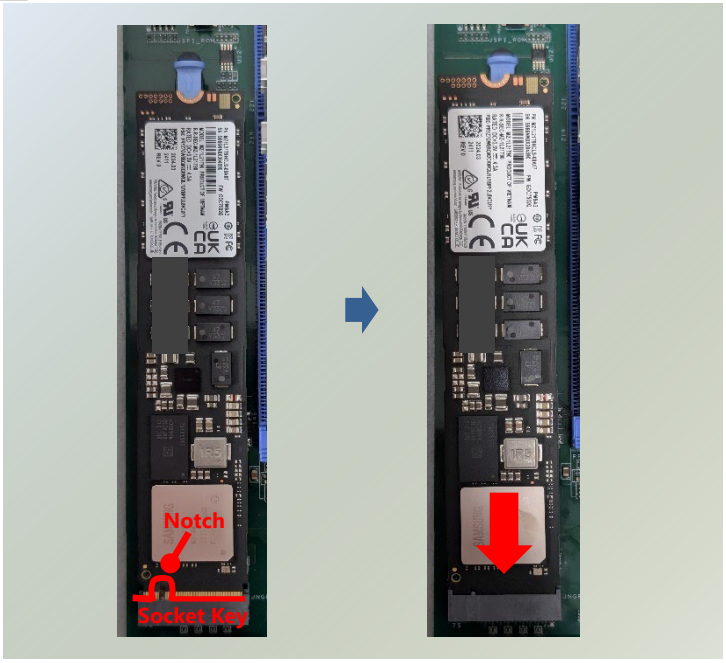


Installing M.2 NVMe Storage Card (Optional)

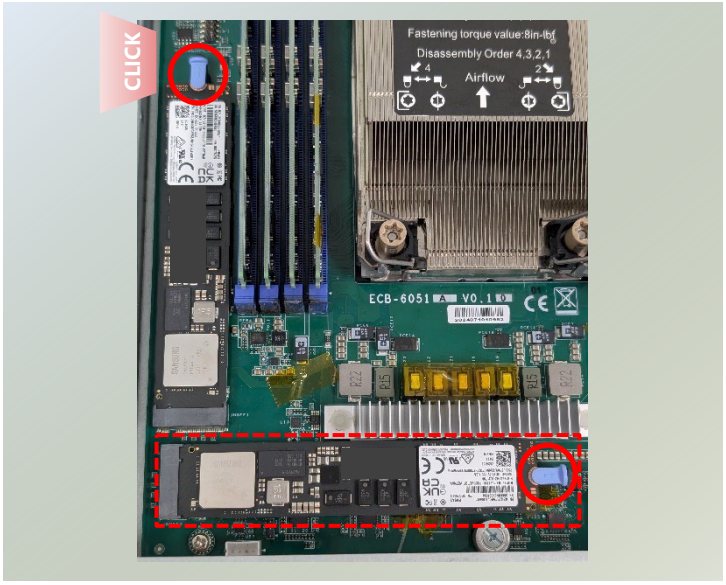
The system supports two M.2 M-Key for NVMe storage module expansion. Please follow the steps for installation.

1. Power off the system and open the chassis cover.
2. Locate the M.2 slots on the motherboard.

3. Align the notch of the NVMe module with the socket key in the pin slot.
4. Insert the NVMe module pins at 30 degrees into the socket until it is fully seated.



5. Gently press down until it is firmly seated by the blue clip.
6. Repeat steps if a second NVMe module will be inserted.

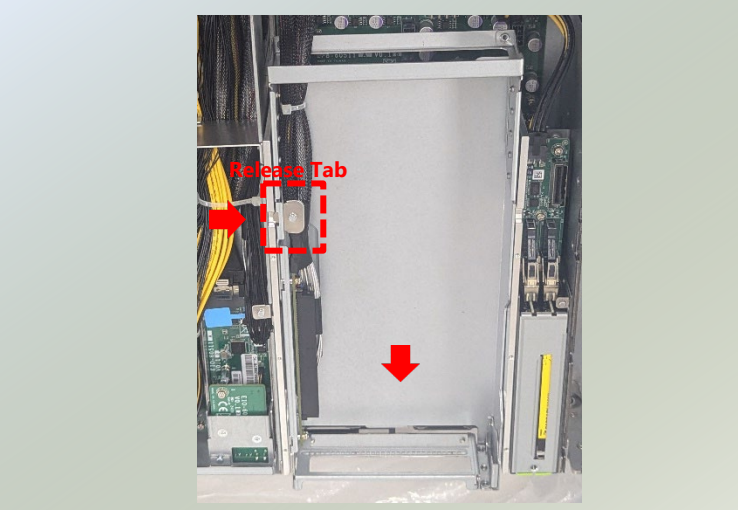


Installing the FHFL GPU Module I (Optional)

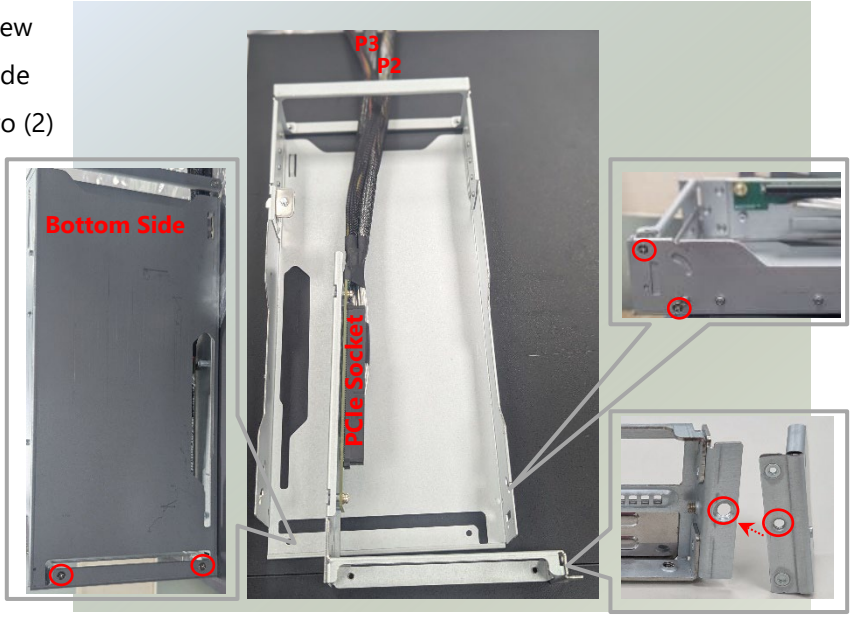
The ECA-6051 supports module expansion, including one PCIe x16 FHFL double-deck slot for GPU modules like the NVIDIA L40S. GPU installation is complex and must be handled carefully. Review the instructions in this section to ensure you have the required knowledge and meet all necessary requirements.

1. Power off the system and open the chassis cover.
2. Locate the PCIe Slot on the right side of the system.

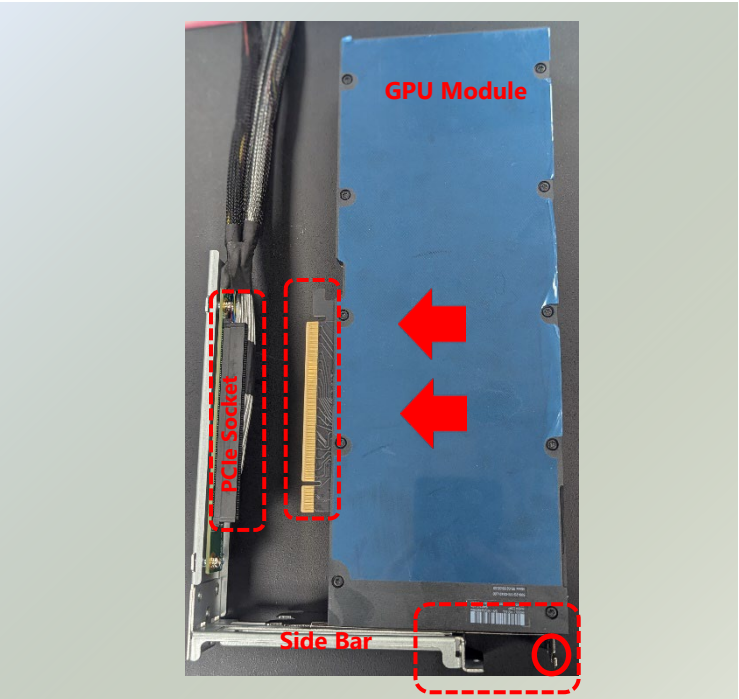
3. Press down on the release tab on the PCIe bracket and slide the bracket out.



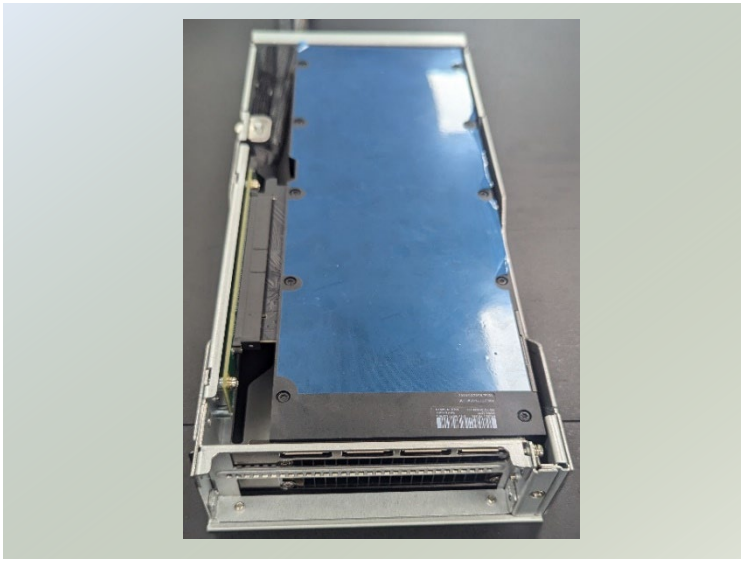
4. Pick up the PCIe bracket, and unscrew the two (2) screws located on the side of the bracket, then unscrew the two (2) screws found on the bottom of the bracket. And one (1) screw at the front of the bracket.



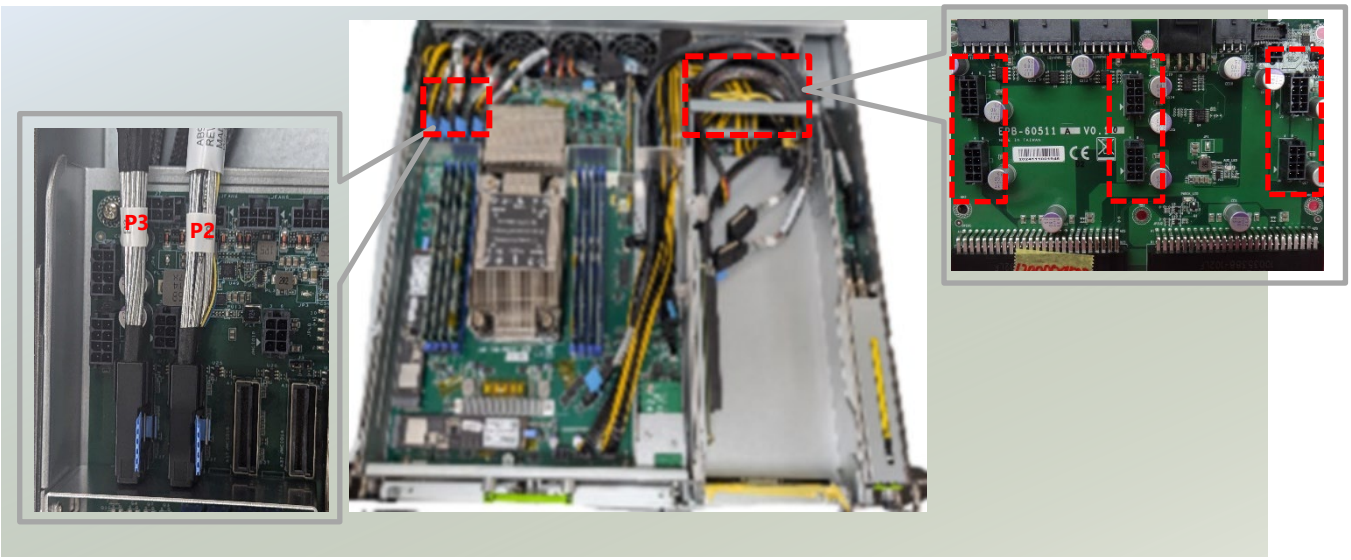
5. Align the GPU module to the PCIe socket. Slide the GPU module into the PCIe socket until it is completely seated. Make sure the side bar slides in properly. Secure the GPU module to the PCIe bracket with one (1) screw.



6. Secure the PCIe socket to the bracket with the original five (5) screws. Then hold down on the release tab and secure the PCIe bracket to the system.



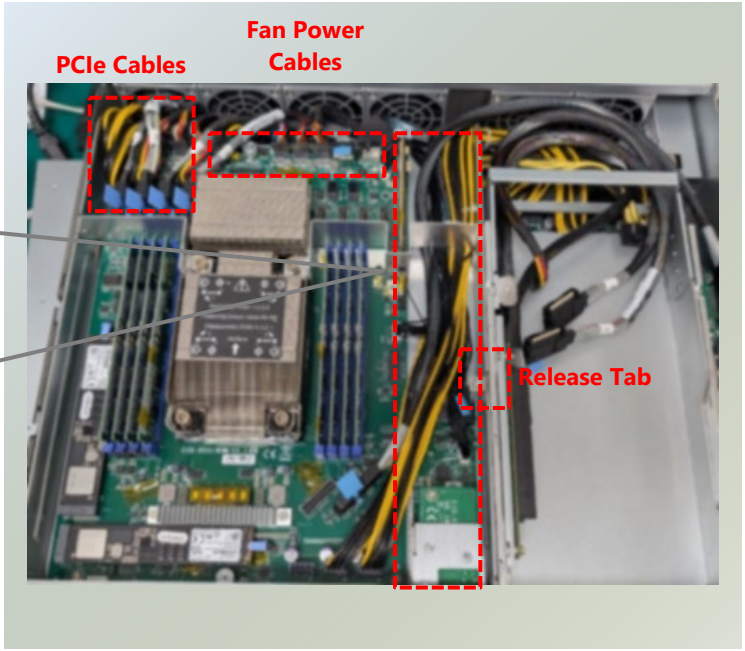
7. Lastly, insert P2 and P3 and Power Cable to the motherboard. And insert the 12V 2x6 Auxiliary power cable.



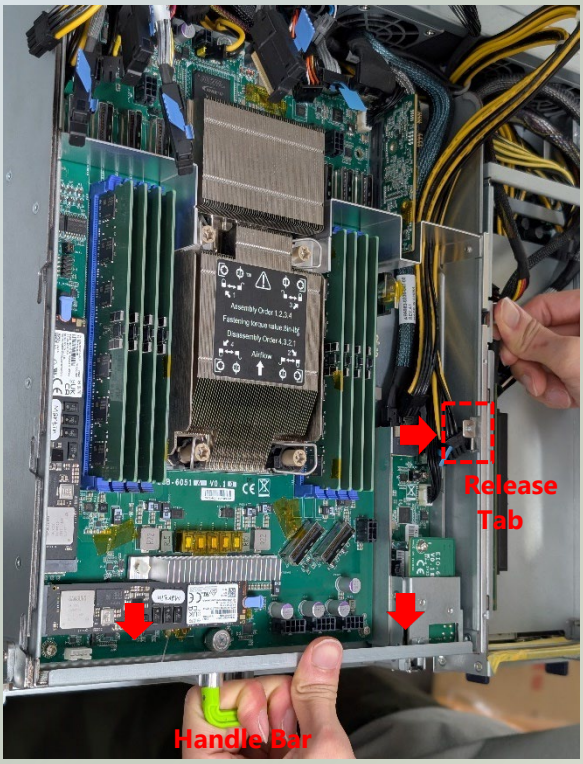
Installing the FHFL GPU Module II (ECA-6051A Only)

The ECA-6051A supports a second GPU module expansion, one PCIe x16 FHFL double-deck slot for GPU module like the NVIDIA L40S. GPU installation is complex and must be handled carefully. Review the instructions in this section to ensure you have the required knowledge and meet all necessary requirements.

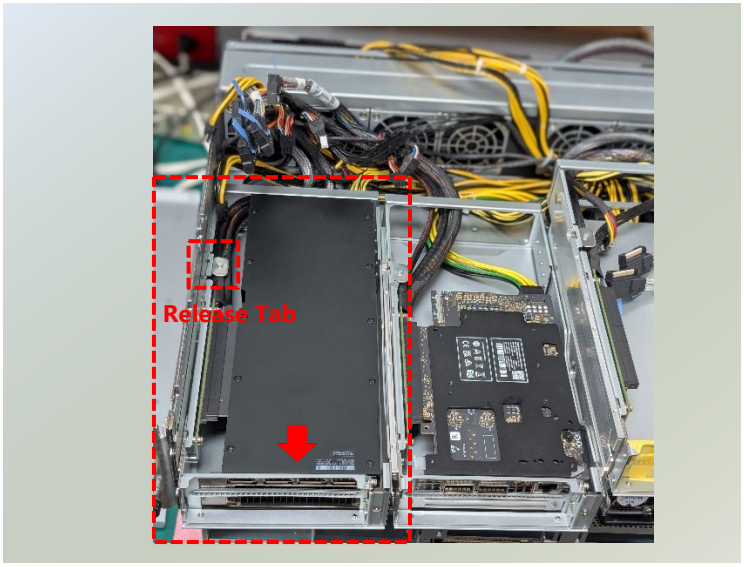
1. Power off the system and open the chassis cover.
2. Remove all the PCIe Cables and Fan Power Cables.



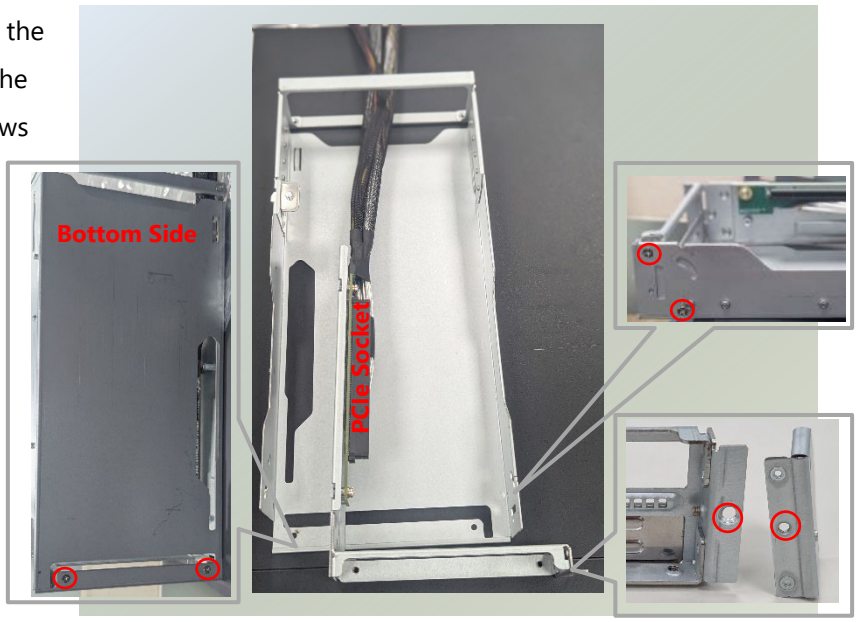
3. Press down on the release tab on the module tray, hold on to the handle, and slide the module tray out.



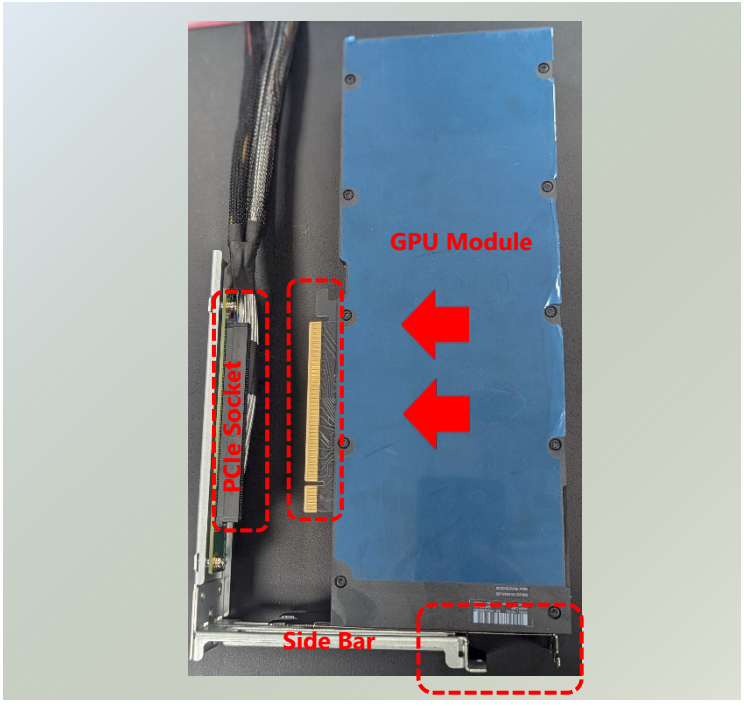
4. Locate the PCIe Slot on the left side. Press down on the release tab on the PCIe bracket and slide the bracket out.



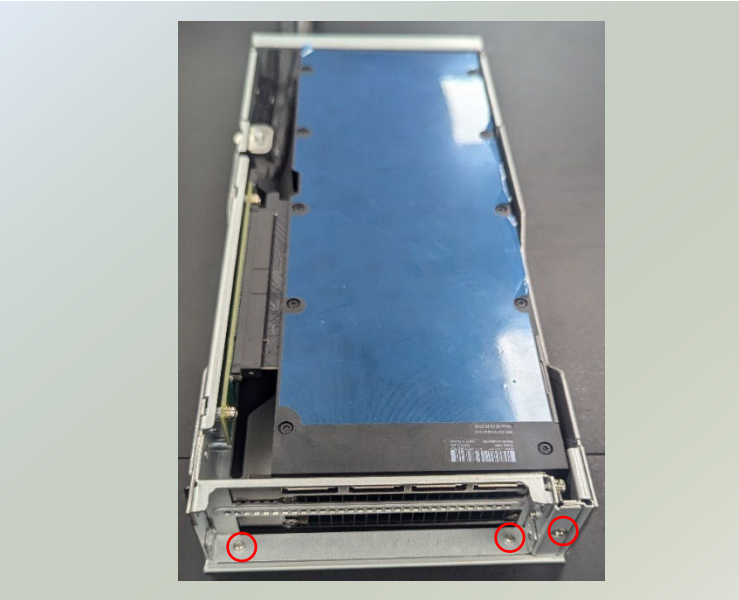
5. Pick up the PCIe bracket, and unscrew the two (2) screws located on the side of the bracket, then unscrew the two (2) screws found on the bottom of the bracket. And one (1) screw at the front of the bracket.



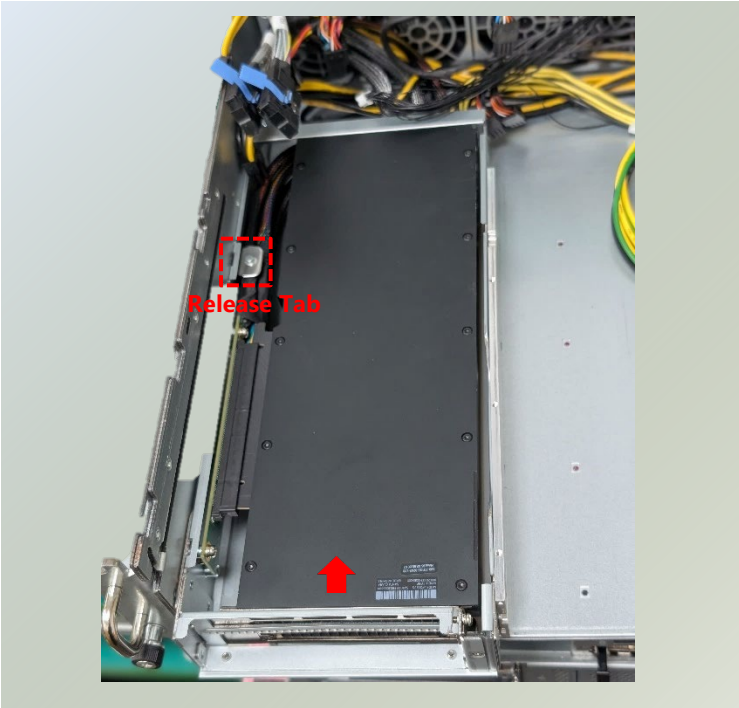
6. Align the GPU module to the PCIe socket. Slide the GPU module into the PCIe socket until it is completely seated. Make sure the side bar slides in properly. Secure the GPU module to the PCIe bracket with one (1) screw.



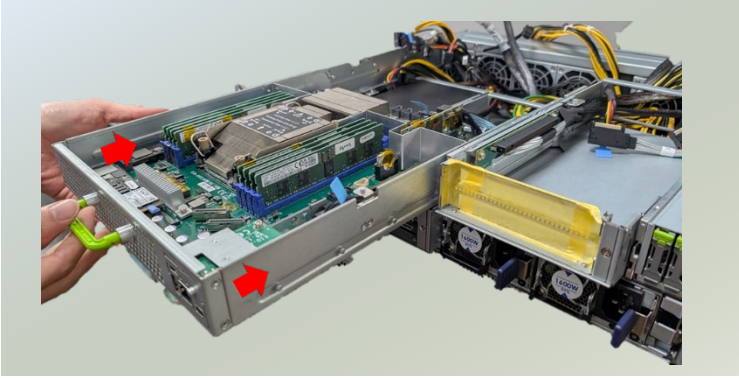
6. Secure the PCIe socket to the bracket with the original five (5) screws.



7. Then hold down on the release tab and secure the PCIe bracket to the system.



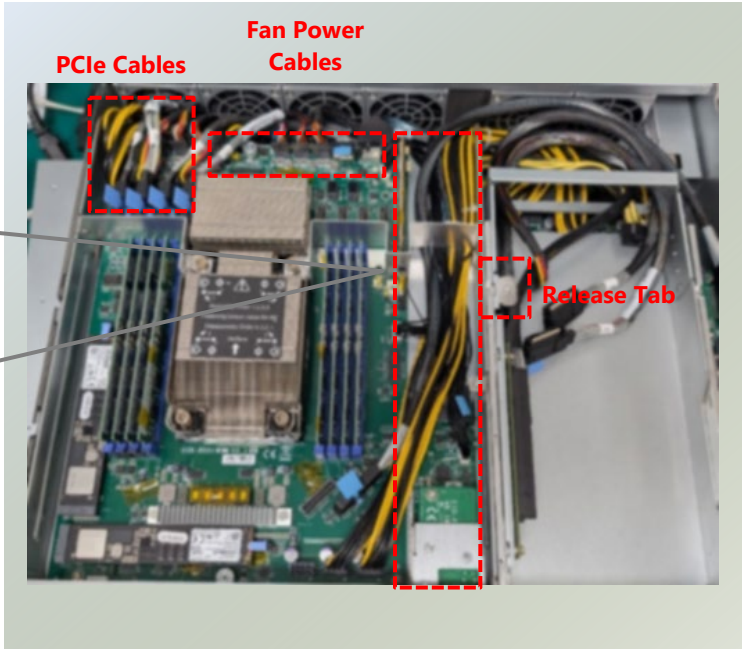
8. Gently slide the module tray back into place. Reconnect the PCIe power cables and fan power cables securely.



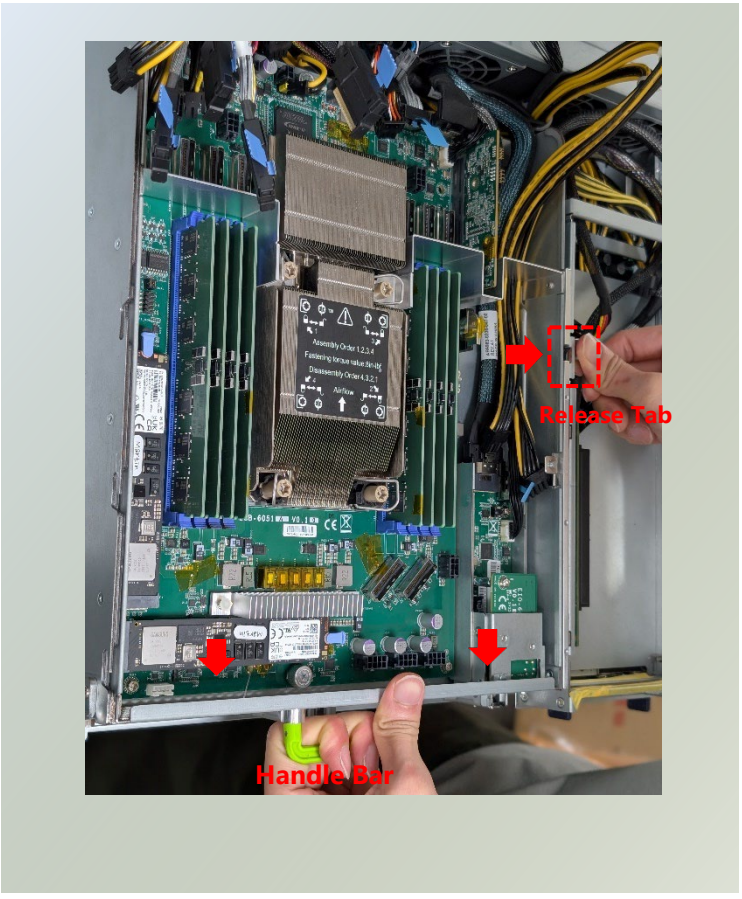
Installing FHHL DPU Module (ECA-6051A Only)

The ECA-6051A supports an additional PCIe x16 FHHL dual slot for GPU/DPU module like the NVIDIA Bluefield-3 DPU. GPU/DPU installation is complex and must be handled carefully. Review the instructions in this section to ensure you have the required knowledge and meet all necessary requirements.

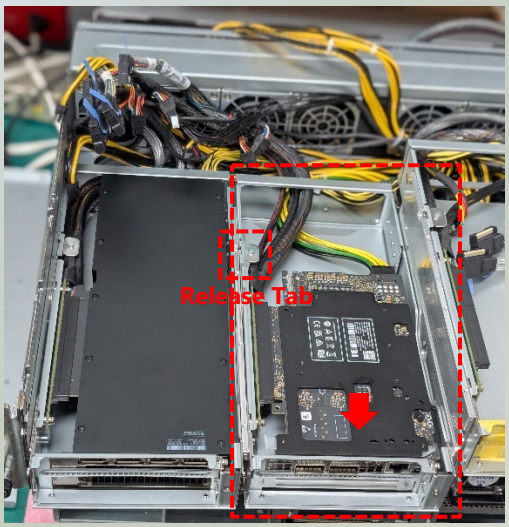
1. Power off the system and open the chassis cover.
2. Remove all the PCIe Cables and Fan Power Cables.



3. Press down on the release tab on the module tray, hold on to the handle, and slide the module tray out.

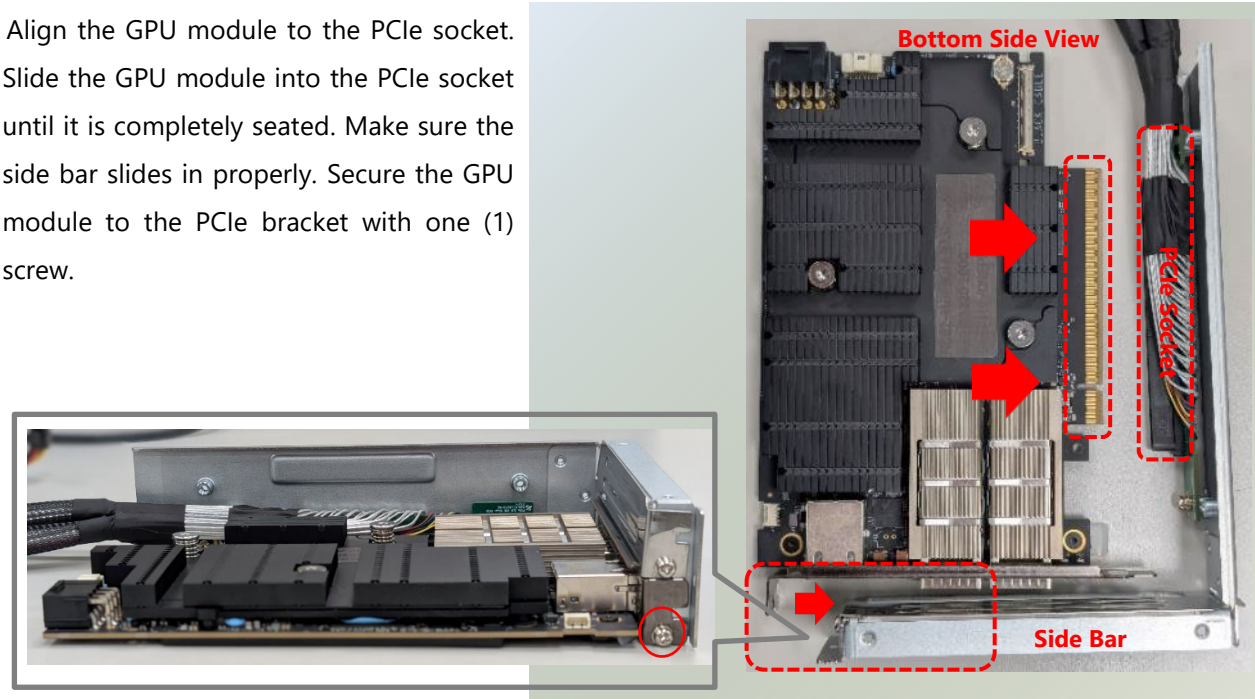


4. Locate the PCIe Slot on the right side. Press down on the release tab on the PCIe bracket and slide the bracket out.

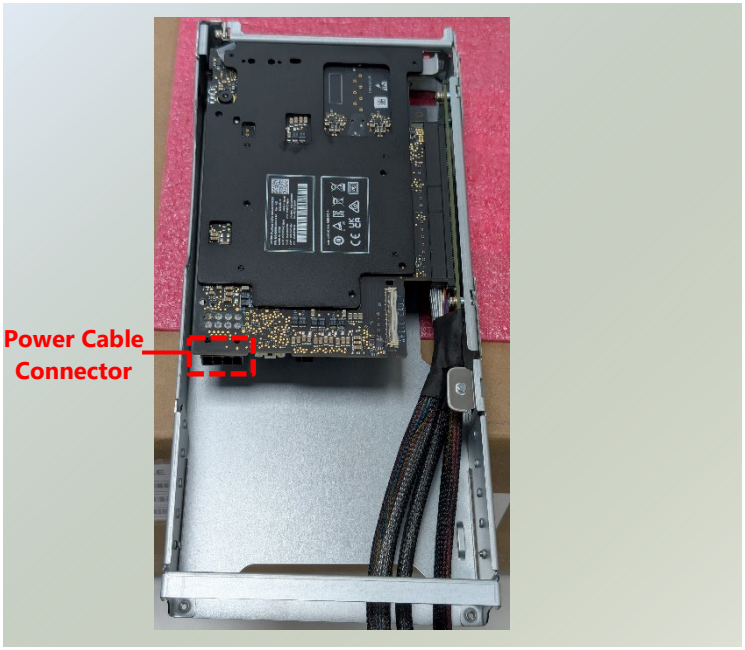


5. Pick up the PCIe bracket, and unscrew the two (2) screws located on the side of the bracket, then unscrew the two (2) screws found on the bottom of the bracket. And one (1) screw at the front of the bracket.

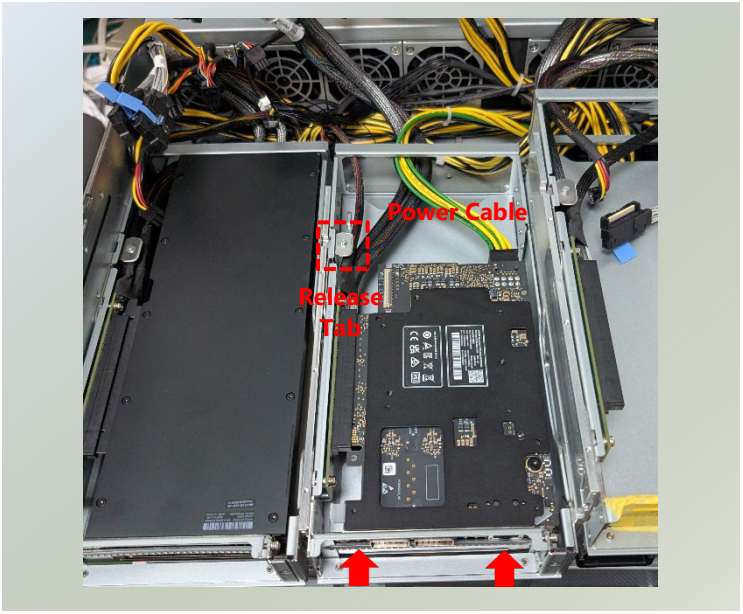
6. Align the GPU module to the PCIe socket. Slide the GPU module into the PCIe socket until it is completely seated. Make sure the side bar slides in properly. Secure the GPU module to the PCIe bracket with one (1) screw.



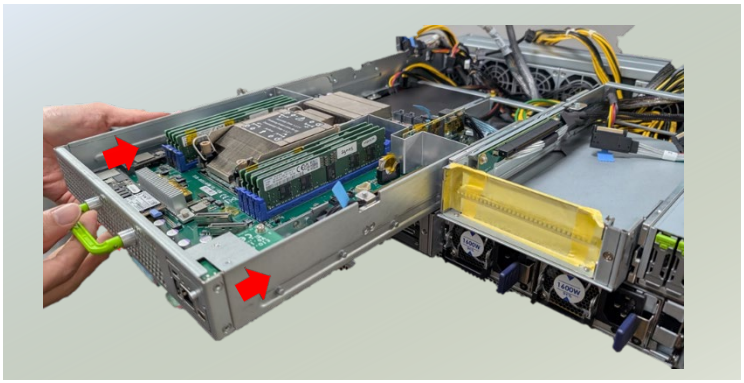
6. Flip the PCIe tray over and secure the PCIe socket to the bracket using the original five (5) screws.



7. Then hold down on the release tab and secure the PCIe bracket to the system.



8. Gently slide the module tray back into place. Reconnect the PCIe power cables and fan power cables securely.

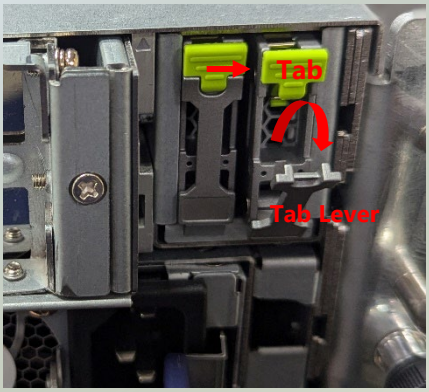


Installing the Storage Drives (Optional)

This system supports two E1.S SSD trays. Please follow the instructions to install the disk drives.

1. Power off the system. Locate the E1.S SSD trays on the front panel.

2. To remove the tray, push the green tab for the tab lever to slide open, and then hold the tab lever to pull out the tray.



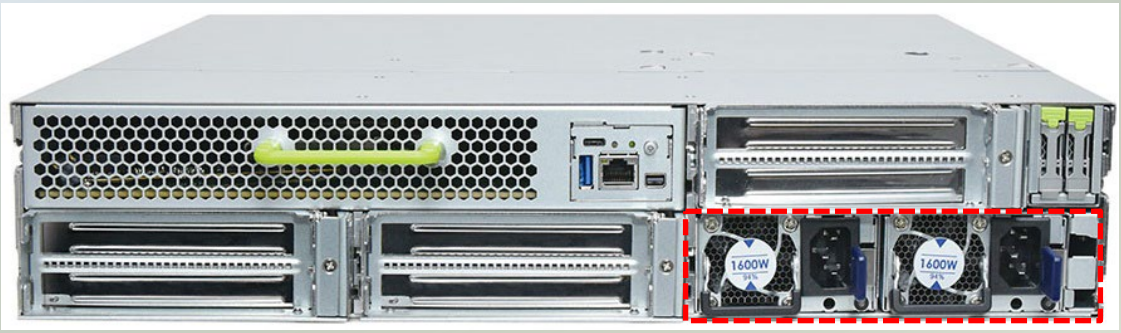
3. Align the E1.S SSD with the tray and secure it using two (2) screws on the underside.

4. Gently slide the tray in until it is securely seated, then press the tab lever until it clicks, indicating it is locked in place.

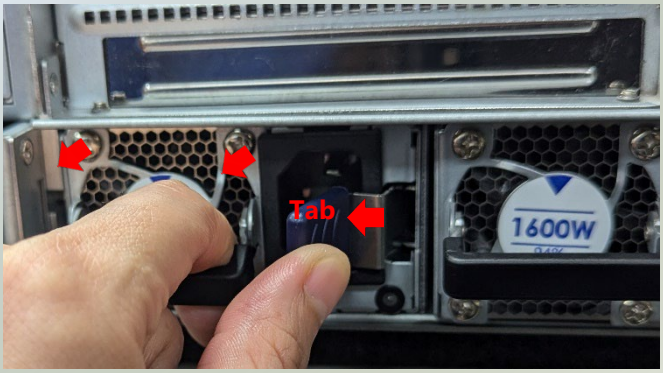
Replacing the Power Supply Units

Power supply units may wear down eventually. Please be noted that ECA-6051 series supports 1600W AC PSUs. Please prepare the power supply units that matching this capacity.

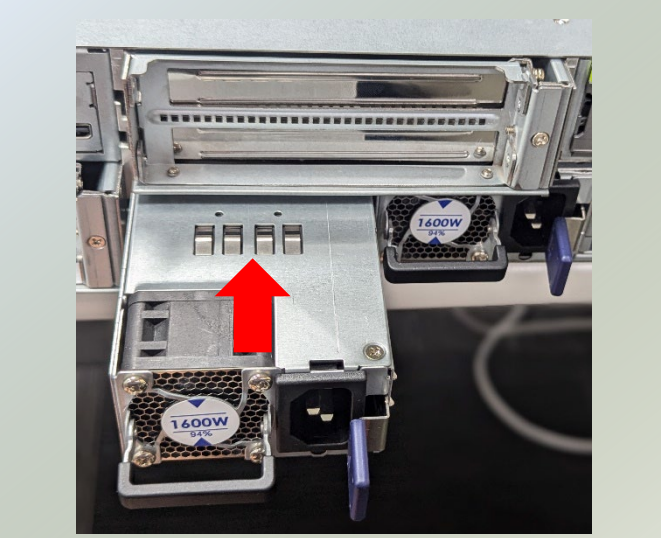
1. Power off the system. Locate the power supply units on the front panel.



2. Press on the tab and hold the handle to pull out the power supply unit.

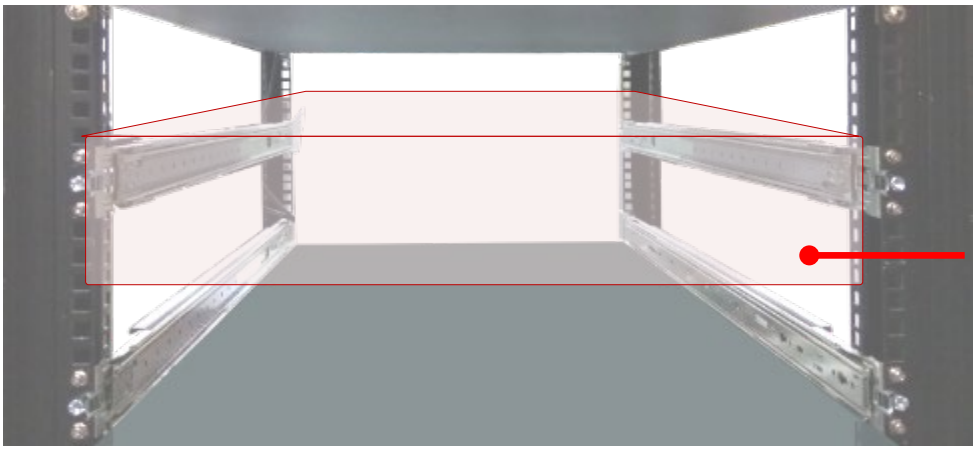


3. Insert a new power supply unit. Push the unit in until it clicks into place. Repeat steps if replacing a second power supply unit.



Mounting the System

The system offers the option to be rack-mounted using the separately sold Slide Railmount Kit. While this installation method is somewhat complex, the sliding rack-mount rails facilitate easy access to the system and ensure it is securely anchored in the rack. Please proceed with the following steps for installation.



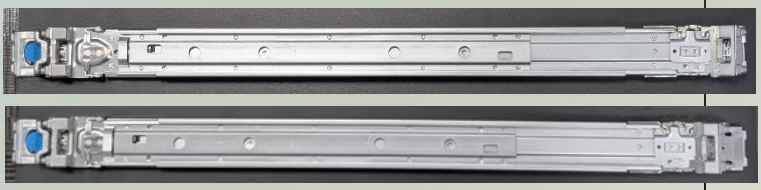
The Slide Rail-Mount Rail Kit ensures secure placement and ample weight support for the system.

1. The Slide Rail Kit shall include the following items:

- #1 pack of 12pcs M4x4 screws (Default in Accessory Package)
- #2 pack of 2pcs M4x4 screws
- 2x Slide Rails

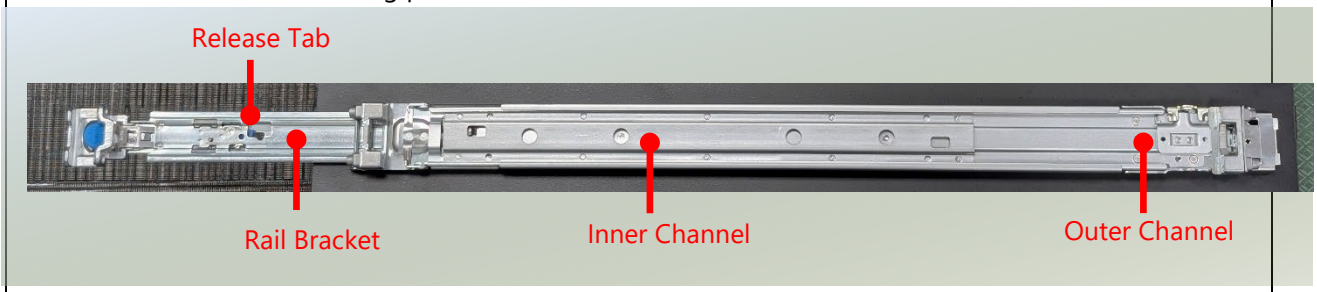
#1 Screw Pack

#2 Screw Pack



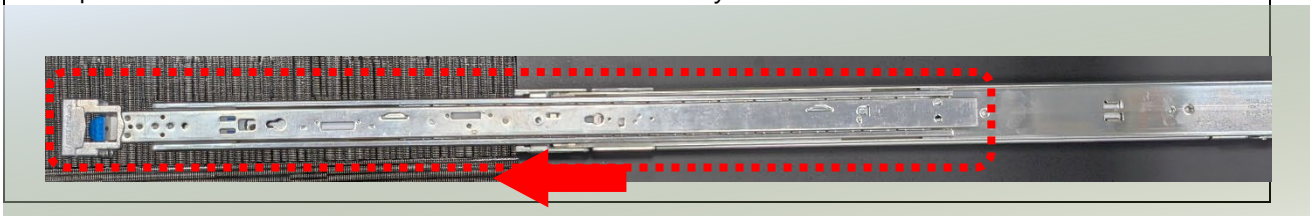
Slide Rails

The rail consists of the following parts:

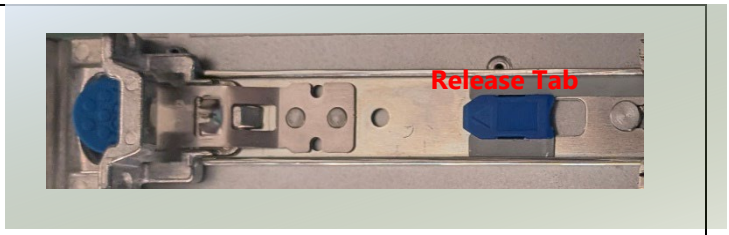


Attaching the Rail Brackets

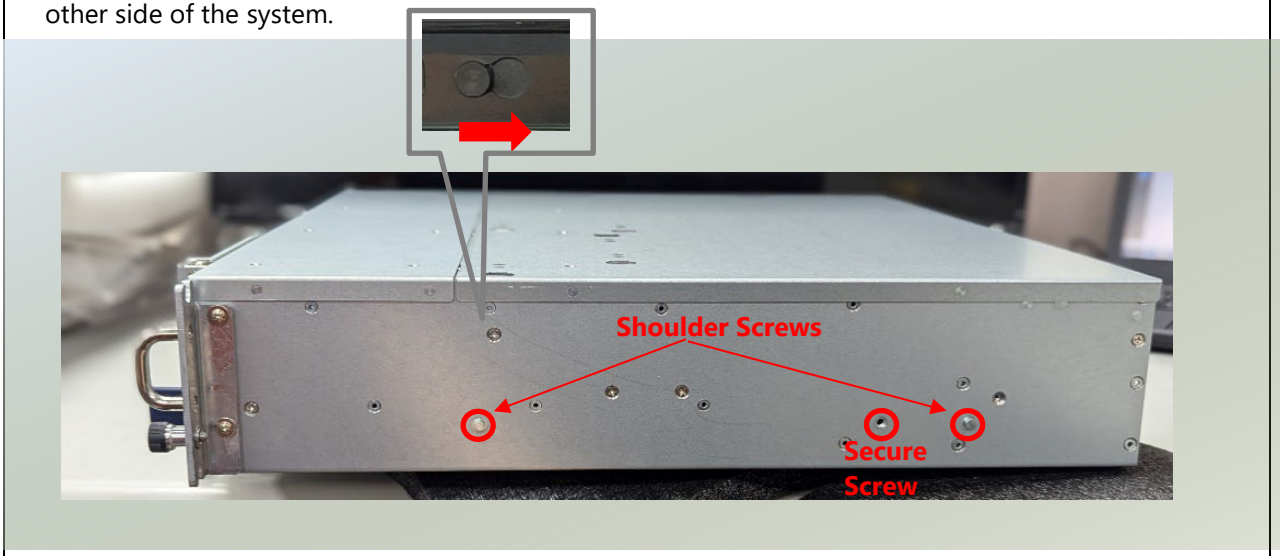
1. Unpack a slide rail and slide the **inner channel** all the way to the end.



2. Remove the **rail bracket** from the **inner channel** by pushing the **Release Tab** on the **rail bracket** outwards while sliding it out. Stretch the **rail bracket** to the fullest.



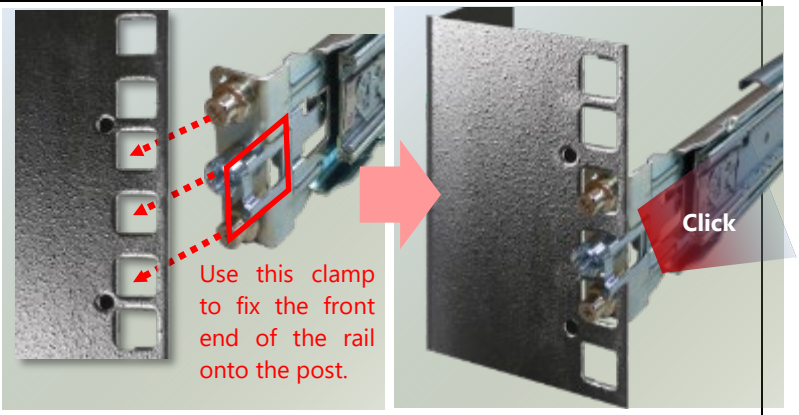
3. Align the side mounting rail keyholes to the built-in two shoulder screws on the side of the system chassis. Slide and lock the side mounting rail in place and use one screw to secure. Repeat for the other side of the system.



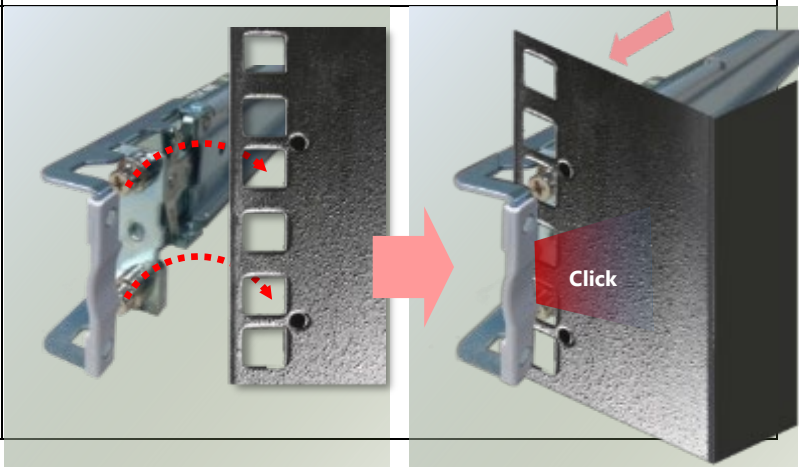
Installing the Slide Rails

Next, you shall install the slide rail assemblies onto the rack.

1. This slide-rails does NOT require screw-fixing. Simply aim at three (3) available screw holes on the rack front and snap the rail (outer channel) front into the rack post, as shown in the image below. You should hear a "click" sound once it is firmly attached.

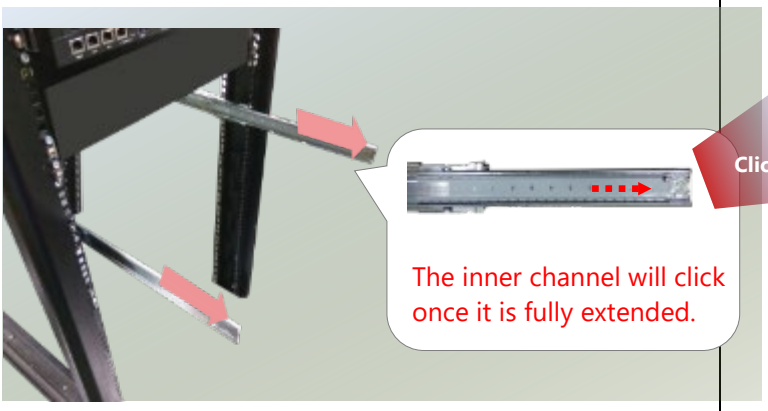


2. For the rear rack installation, slide the rail (outer channel) to aim and engage the bolts on the rail's rear end with the two (2) available holes on the post, and the rail assembly will click into place.

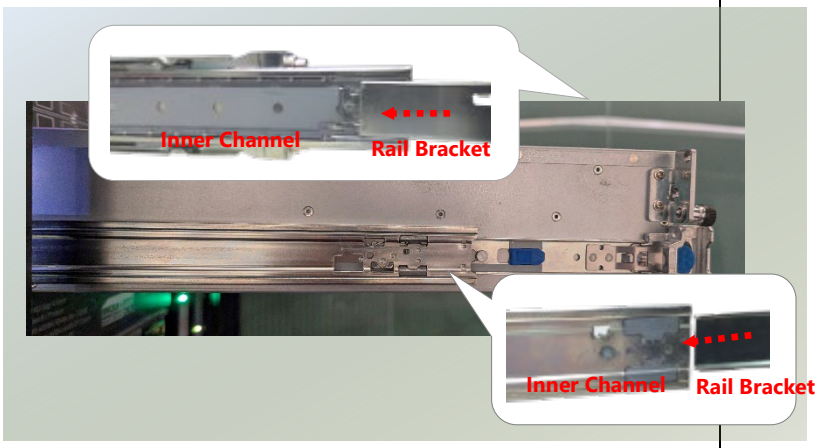


Installing the System into the Rack

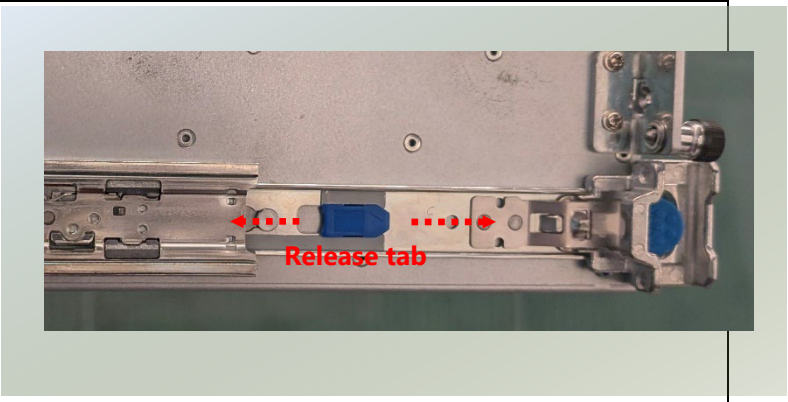
1. Extend both **inner channels** to their maximum length. A click sound will indicate when they are fully stretched and locked into place.



2. While facing the front of the system, hold the chassis, gently align the **rail brackets** with the **inner channel** as depicted in the image, and then slide the system into the cabinet.



3. While sliding the system in, make sure to press and hold the **release tab** on each of the brackets.



4. The system is now successfully installed in the rack.

CHAPTER 4: BIOS SETUP

BIOS is a firmware embedded on an exclusive chip on the system's motherboard. Lanner's BIOS firmware offering including market-proven technologies such as Secure Boot and Intel Boot Guard technology deliver solid commitments for the shield protection against malware, uncertified sequences and other named cyber threats.

Note: BIOS updates on Birch Stream platform devices (e.g., ECA-6051) may take significantly longer (13-15 minutes) compared to Eagle Stream platform devices (6-8 minutes) when performed via PC.

BIOS Setup

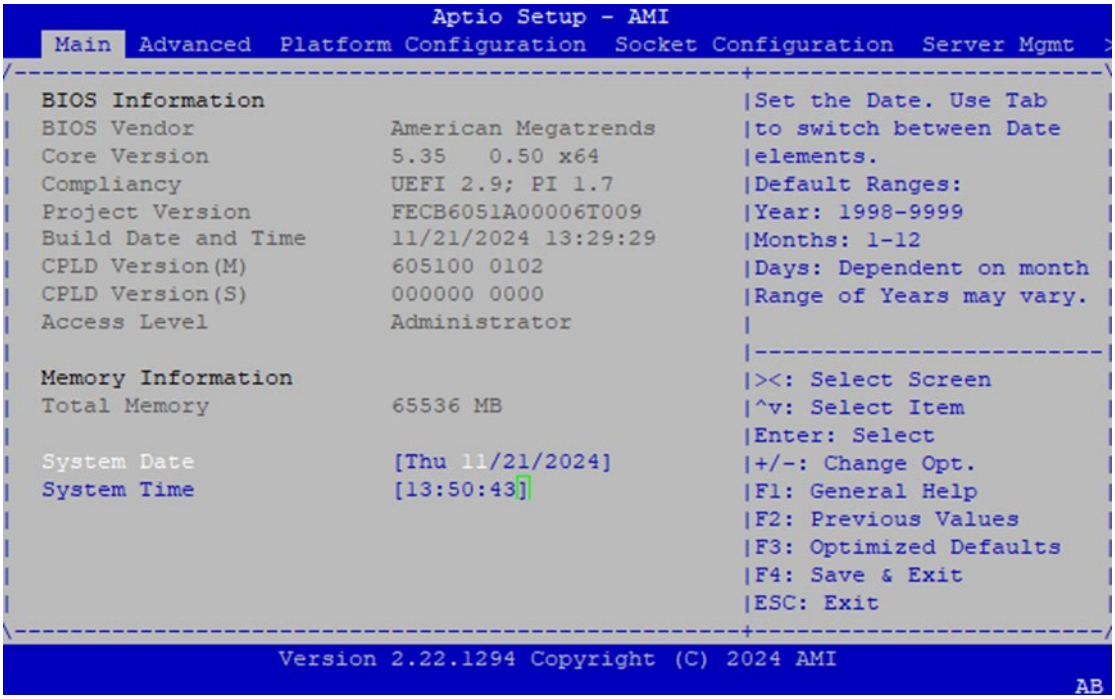
To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. Pressing the **<Tab>** or **<Del>** key immediately allows you to enter the Setup utility, and then you will be directed to the BIOS main screen. The instructions for BIOS navigations are as below:

Control Keys	Description
→←	select a setup screen
↑↓	select an item/option on a setup screen
<Enter>	select an item/option or enter a sub-menu
+/-	adjust values for the selected setup item/option
F1	display General Help screen
F2	retrieve previous values, such as the last configured parameters during the last time you entered BIOS
F3	load optimized default values
F4	save configurations and exit BIOS
<Esc>	exit the current screen

Main Page

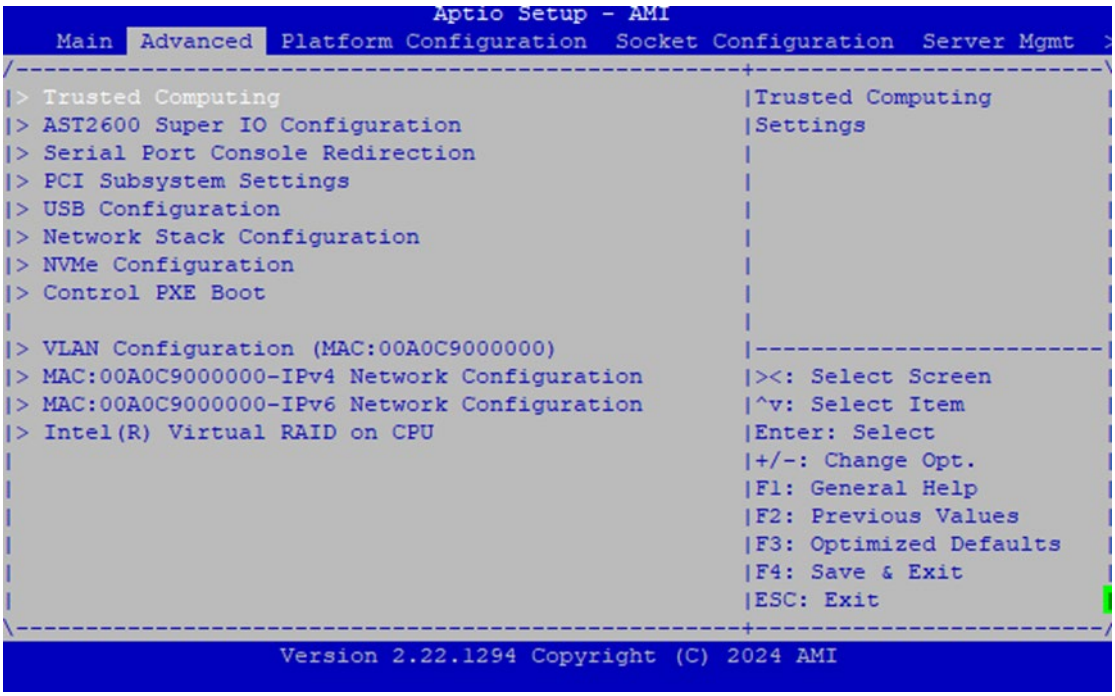
Setup main page contains BIOS information and project version information.



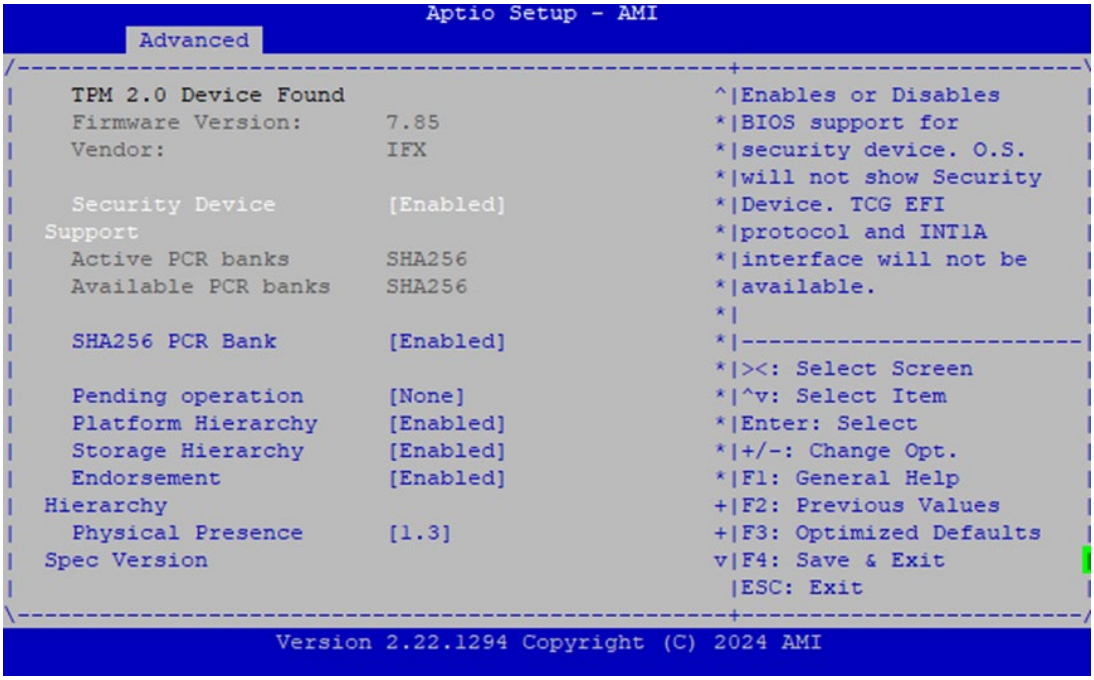
Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version : AMI Kernel version, CRB code base, X64 Compliancy : UEFI version, PI version BIOS Version : BIOS release version Build Date and Time : MM/DD/YYYY CPLD Version(M): MB CPLD release version CPLD Version(S): BMC Card CPLD release version Access Level: Administrator / User
Memory Information	Total Memory: by case
System Date	To set the Date, use**<Tab>**to switch between Date elements. Default Range of Year: 2005-2099 Default Range of Month: 1-12 Days: dependent on Month.
System Time	To set the Date, use**<Tab>**to switch between Date elements.

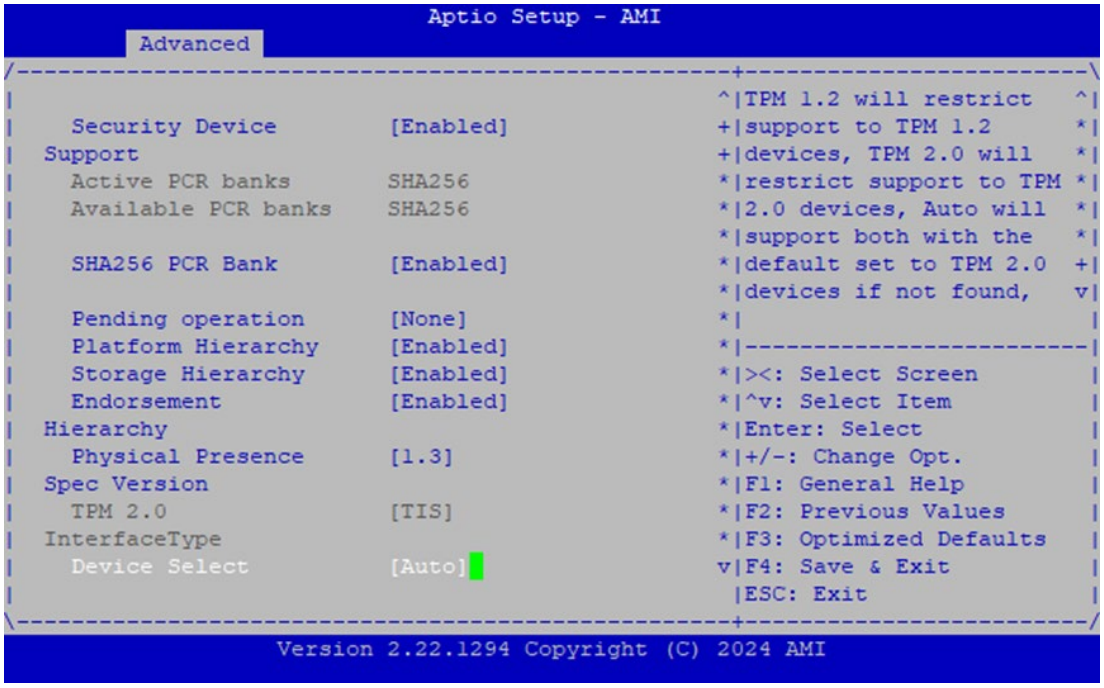
Advanced Page

Select the **Advanced** menu item from the BIOS setup screen to enter the "Advanced" setup screen. Users can select any of the items in the left frame of the screen.



Trusted Computing (TPM 2.0)

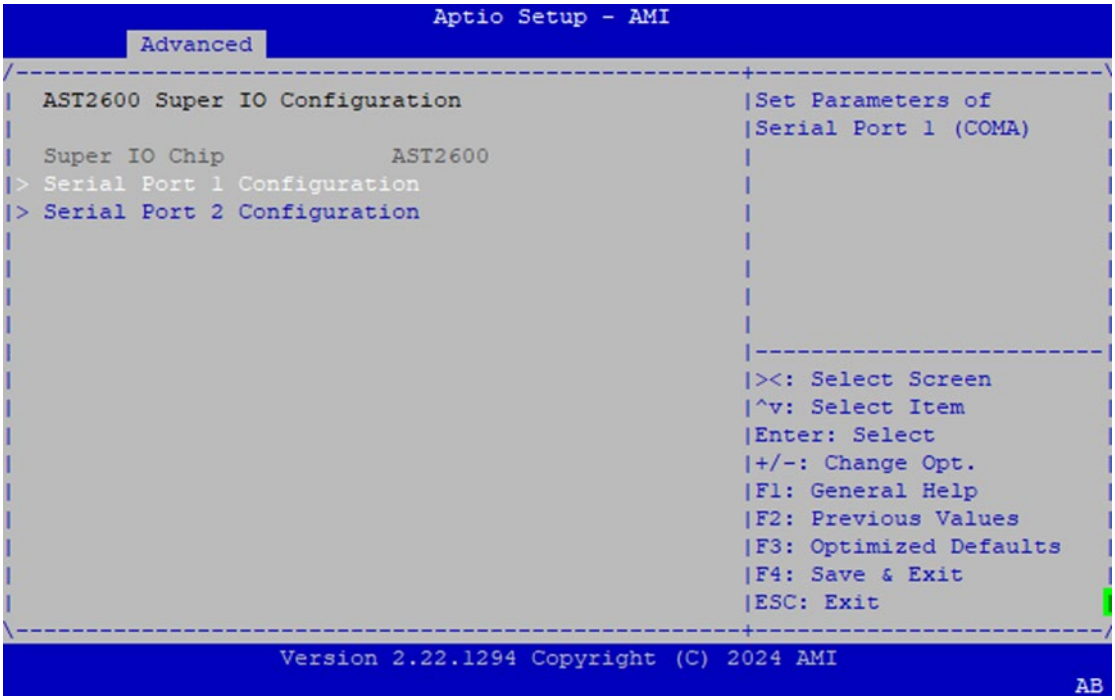




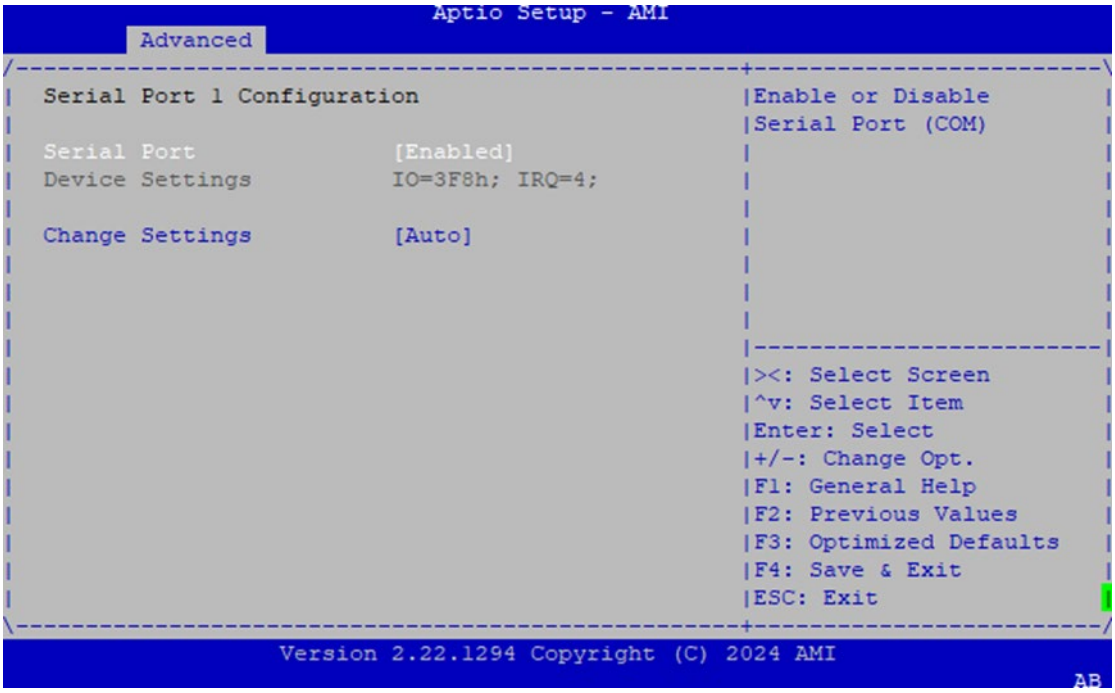
Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA256 PCR Bank	Enabled Disabled	Enable or Disable SHA256 PCR Bank
Pending operation	None TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

Platform Hierarchy	Enabled Disabled	Enable or Disable Platform Hierarchy
Storage Hierarchy	Enabled Disabled	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	Enabled Disabled	Enable or Disable Endorsement Hierarchy
Physical Presence Spec Version	1.2 1.3	Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.
TPM 2.0 Interface Type	TIS	Select the Communication Interface to TPM 20 Device.
Device Select	TPM 1.2 TPM 2.0 Auto	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 not found, TPM 1.2 devices will be enumerated

Super IO Configuration

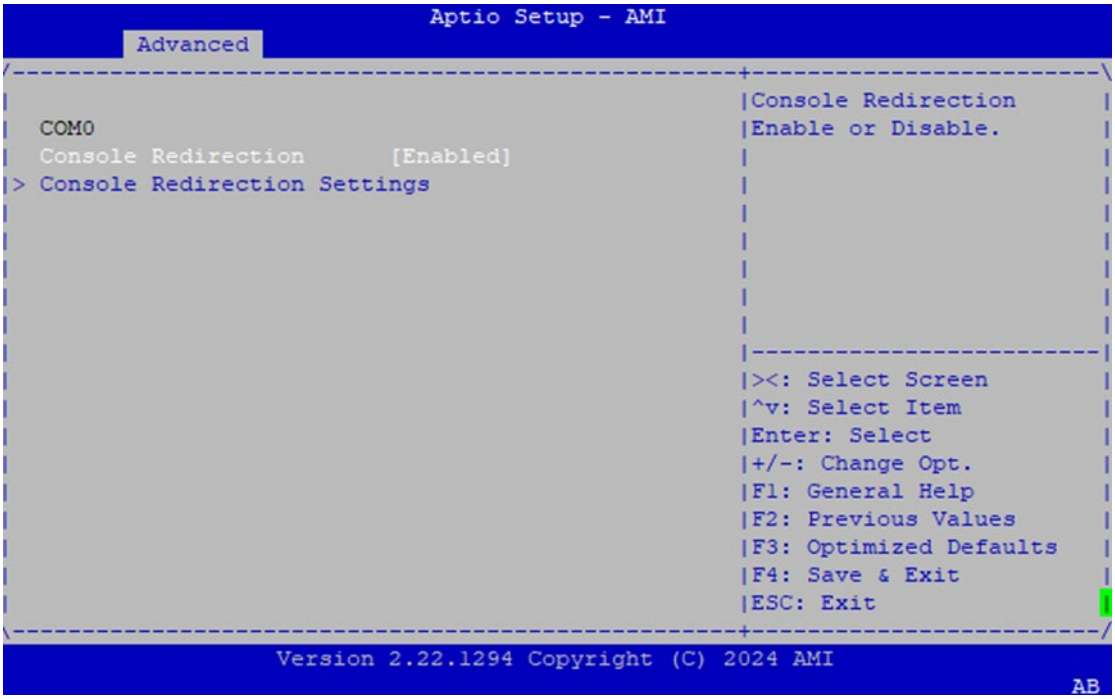


Serial Port 1 Configuration



Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port (COM)
Device Settings	IO=3F8h; IRQ = 4	N/A
Change Settings	Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for Super IO Device

Serial Port Console Redirection



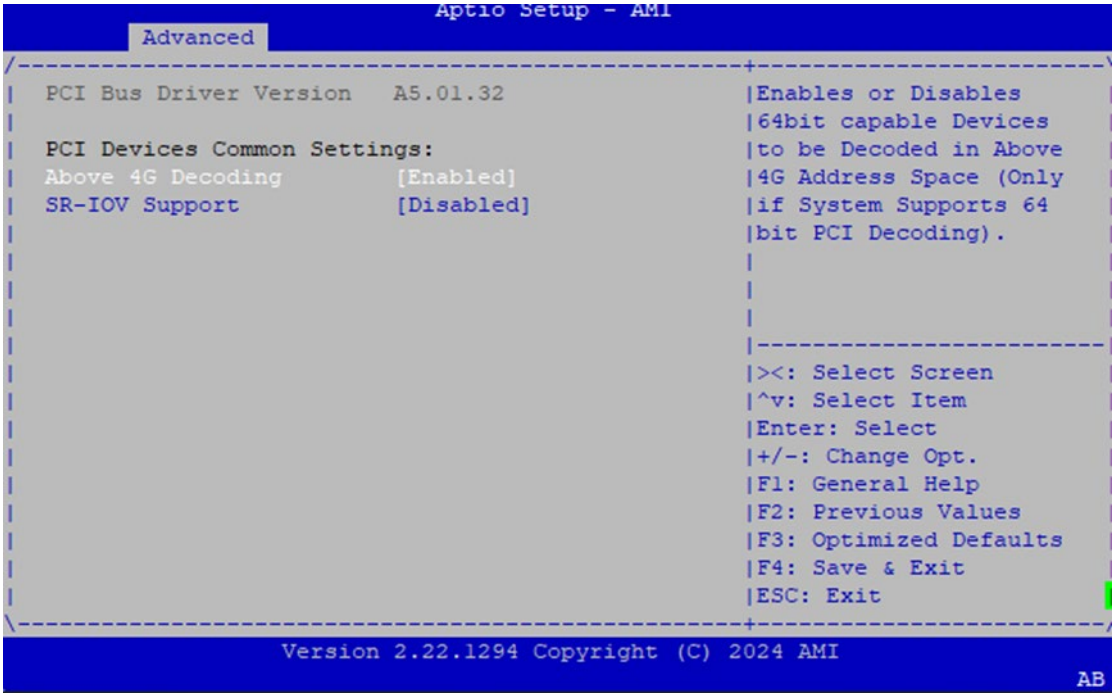
Feature	Options	Description
Console Redirection	Enabled Disabled	Console Redirection Enable or Disable.

Console Redirection Settings

Feature	Options	Description
Terminal Type	VT100 VT100Plus VT-UTF8 ANSI	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8	Data Bits
Parity	None Even Odd Mark Space	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	1 2	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.

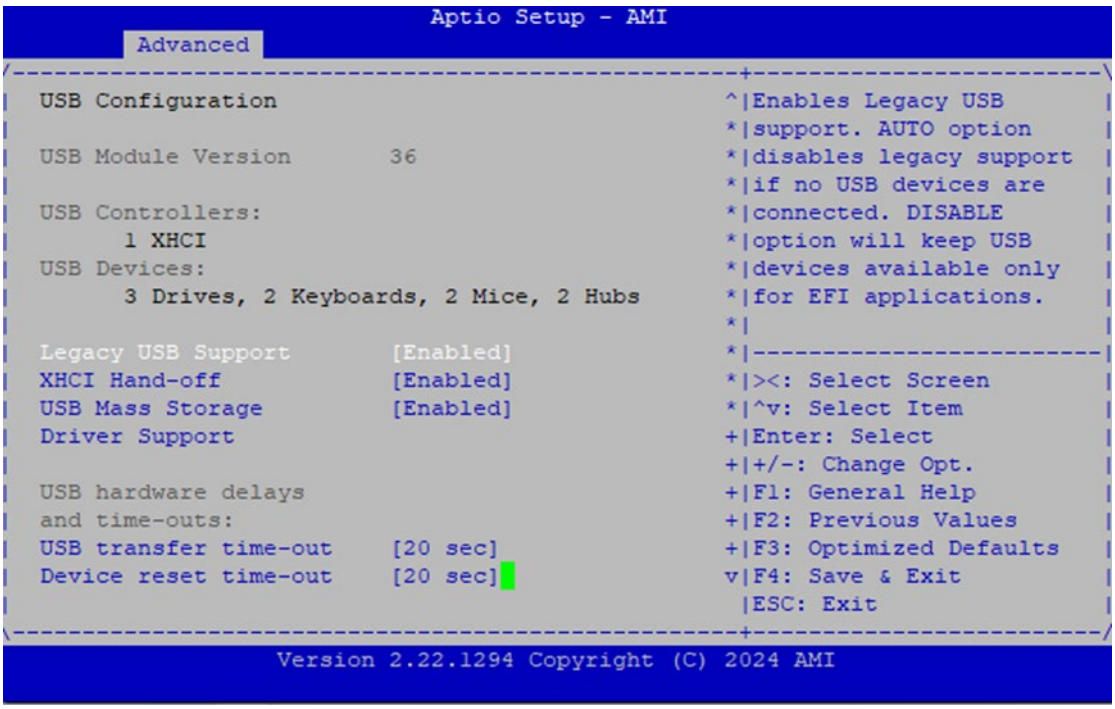
Flow Control	None Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
VT-UTF8 Combo Key Support	Disabled Enabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution
Putty Keypad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects Function Key and Keypad on Putty.

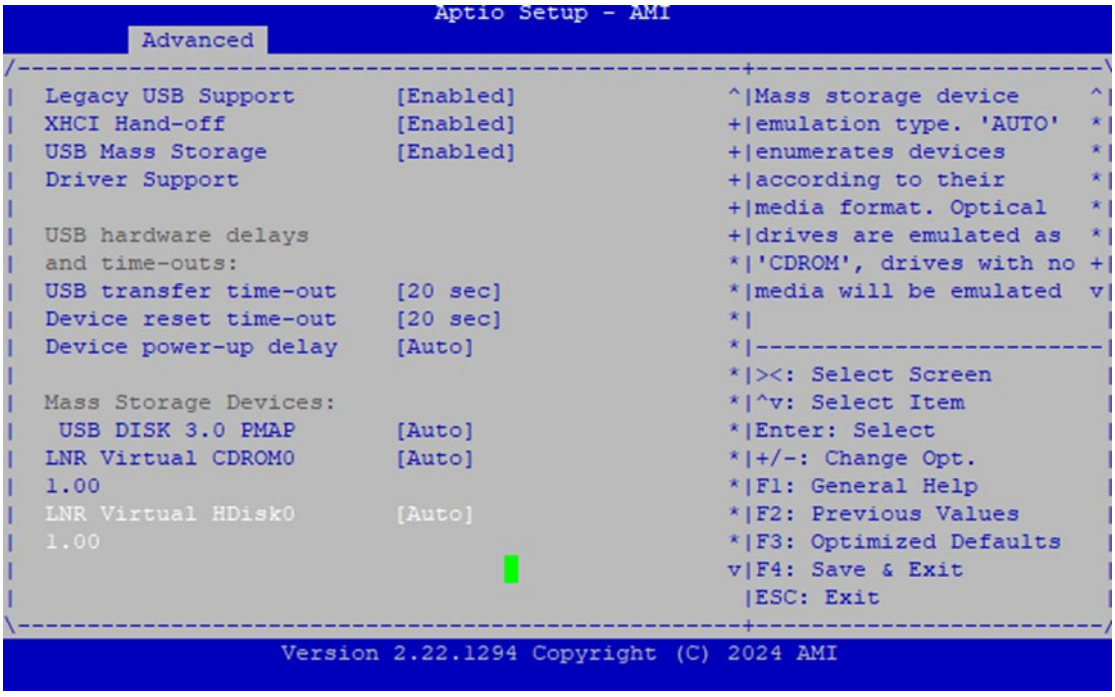
PCI Subsystem Settings



Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64-bit PCI Decoding)
SR-IOV Support	Disabled Enabled	If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

USB Configuration

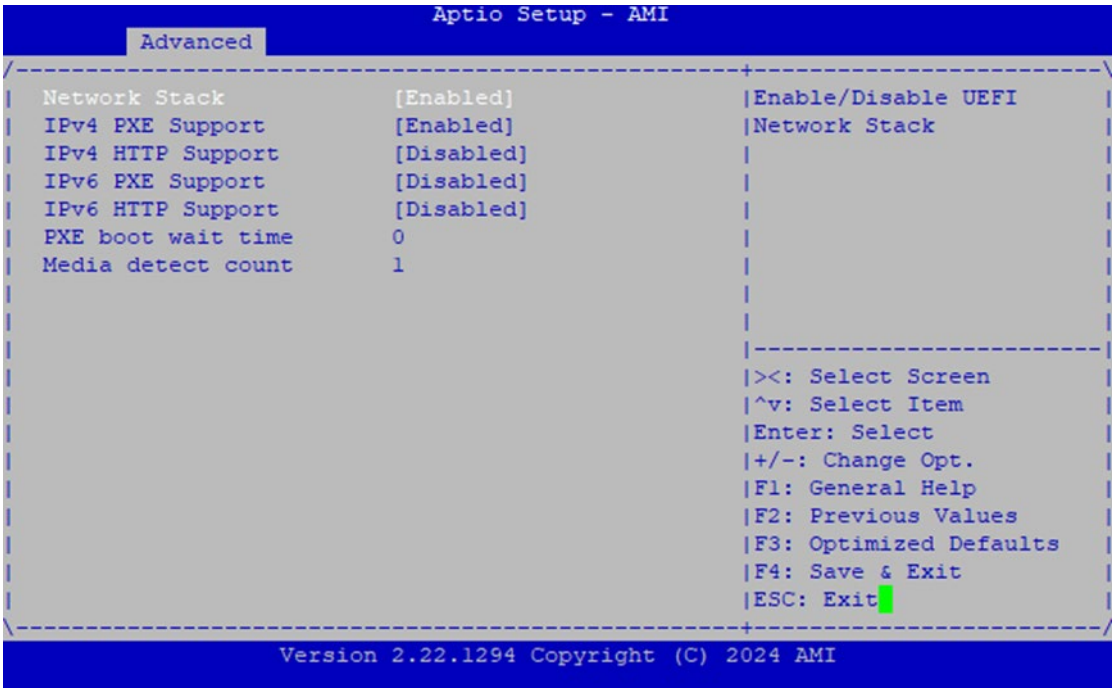




Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enables or disables USB Mass Storage Driver Support.

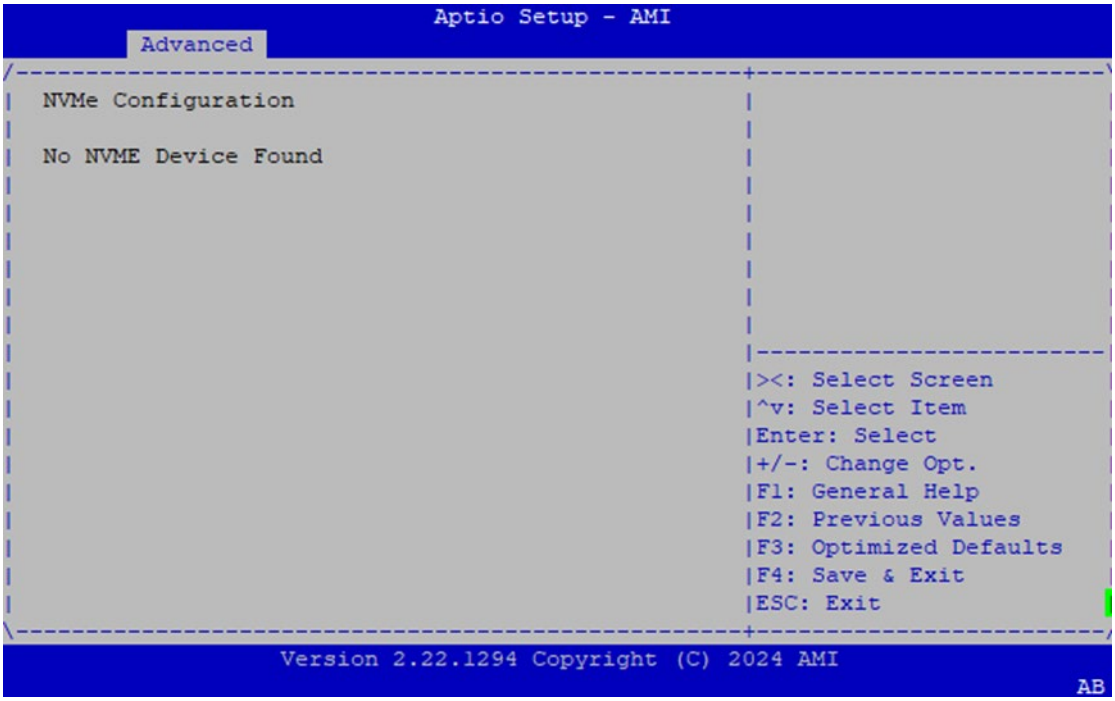
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	1 sec 5 sec 10 sec 20 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Network Stack Configuration

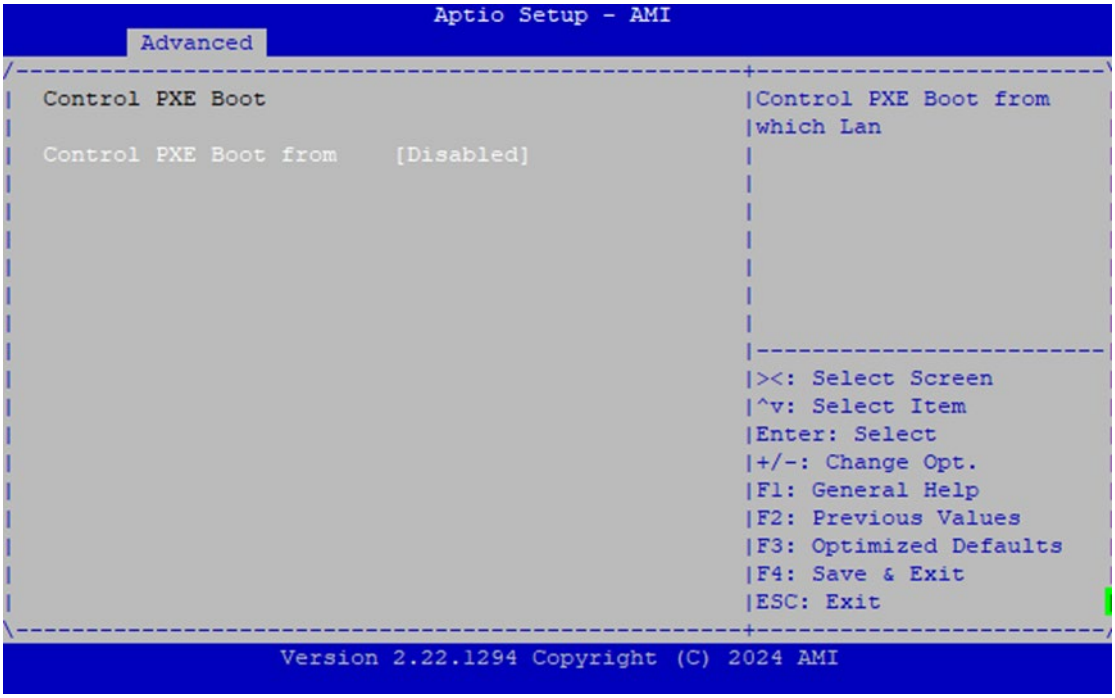


Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack
IPv4 PXE Support	Disabled Enabled	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	Disabled Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
IPv6 PXE Support	Disabled Enabled	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
IPv6 HTTP Support	Disabled Enabled	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
PXE boot wait time	0	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	1	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

NVMe Configuration

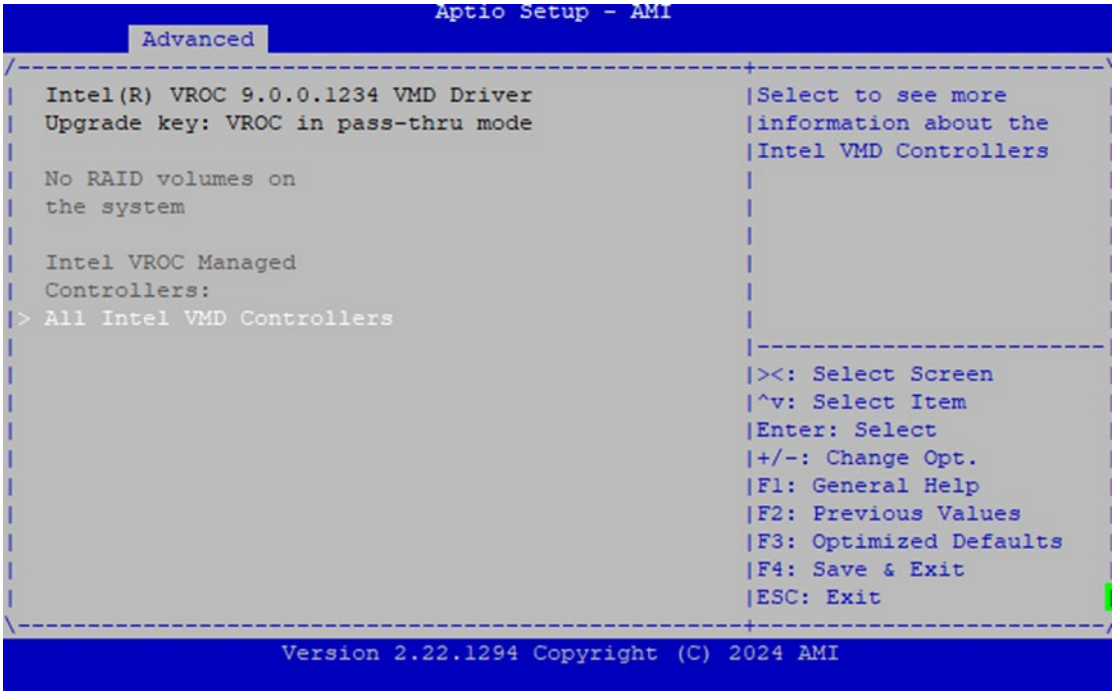


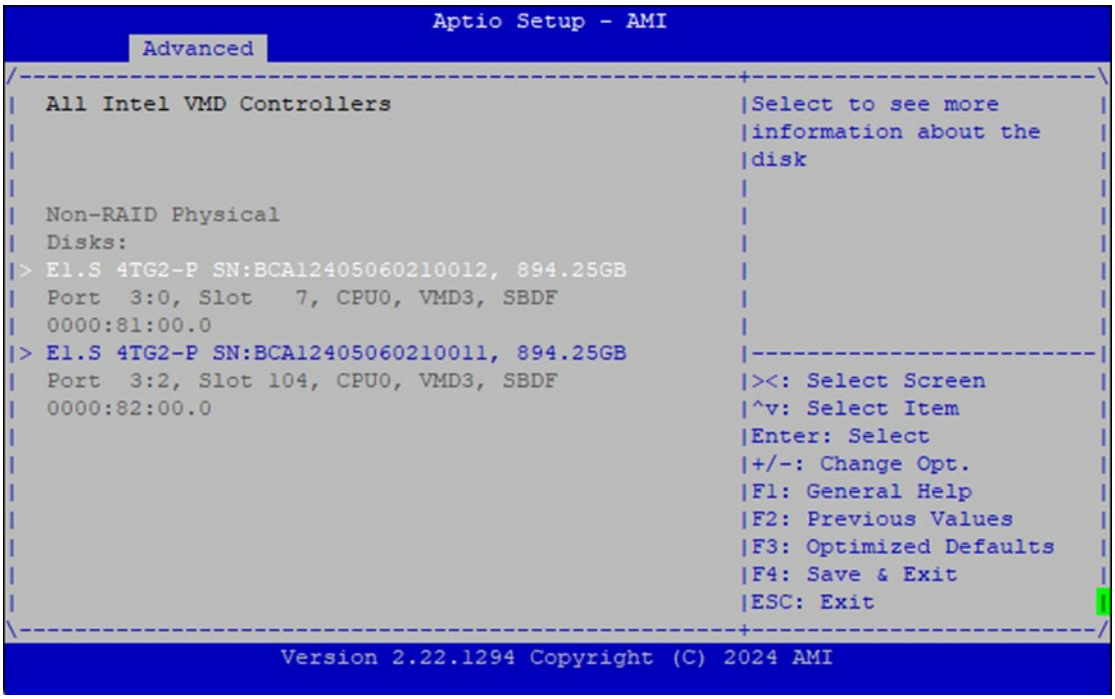
Control PXE Boot



Feature	Options	Description
Control PXE Boot from	Disable Enable	Control PXE Boot from which Lan Note: LAN port is set with Intel I210, the setup menu item is Enable or Disable PXE Boot function via Intel I210 LAN port

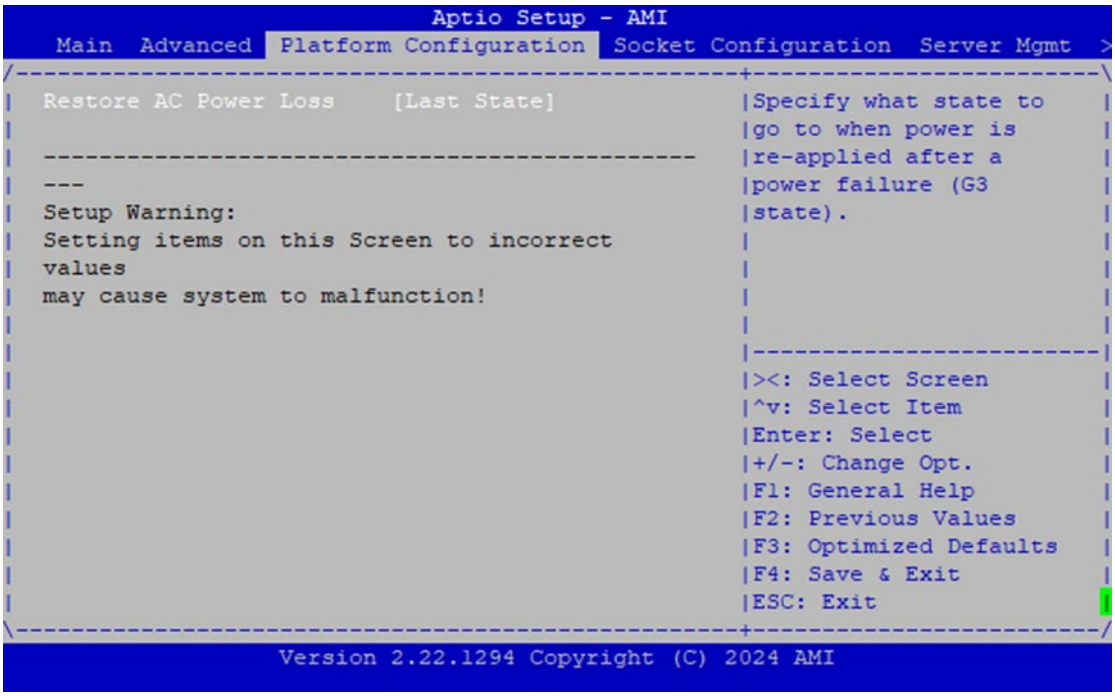
Intel VROC


Aptio Setup – AMI
Advanced
Intel(R) VROC 9.0.0.1234 VMD Driver
Upgrade key: VROC in pass-thru mode
No RAID volumes on
the system
Intel VROC Managed
Controllers:
> All Intel VMD Controllers
Select to see more
information about the
Intel VMD Controllers
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2024 AMI


Aptio Setup – AMI
Advanced
All Intel VMD Controllers
Non-RAID Physical
Disks:
> E1.S 4TG2-P SN:BCA12405060210012, 894.25GB
Port 3:0, Slot 7, CPU0, VMD3, SBDF
0000:81:00.0
> E1.S 4TG2-P SN:BCA12405060210011, 894.25GB
Port 3:2, Slot 104, CPU0, VMD3, SBDF
0000:82:00.0
Select to see more
information about the
disk
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2024 AMI

Platform Configuration

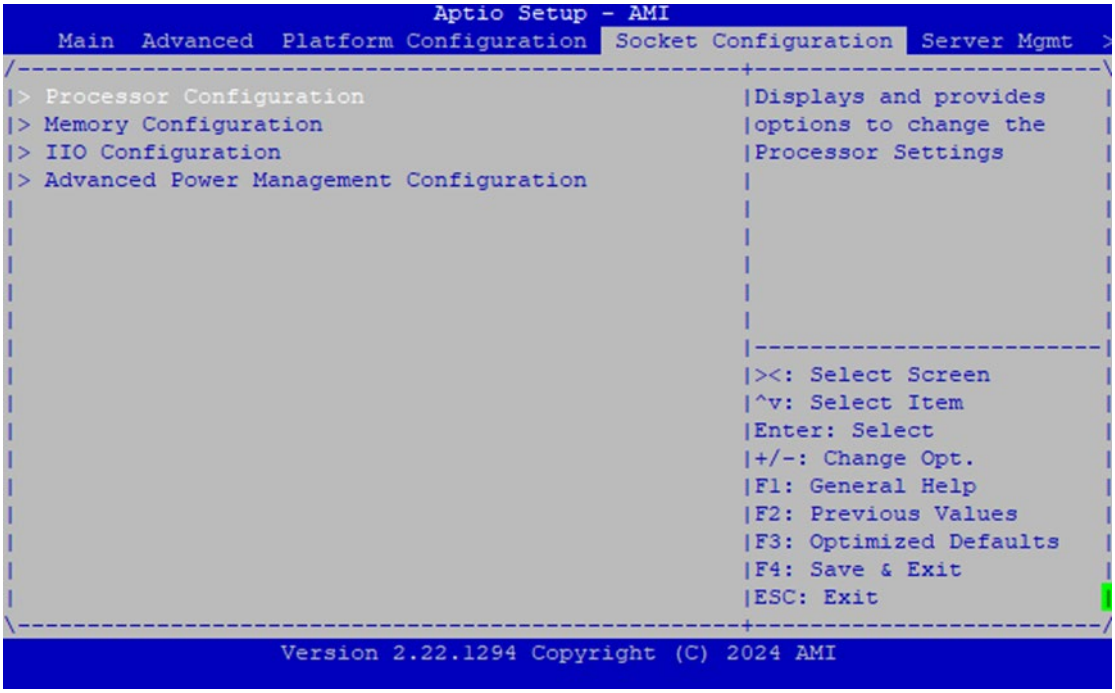
Select the Platform menu item from the BIOS setup screen to enter the Platform Setup screen. Users can select any of the items in the left frame of the screen.



Feature	Options	Description
Restore AC Power Loss	Power On Power Off Last State	Specify what state to go to when power is re-applied after a power failure (G3 state).

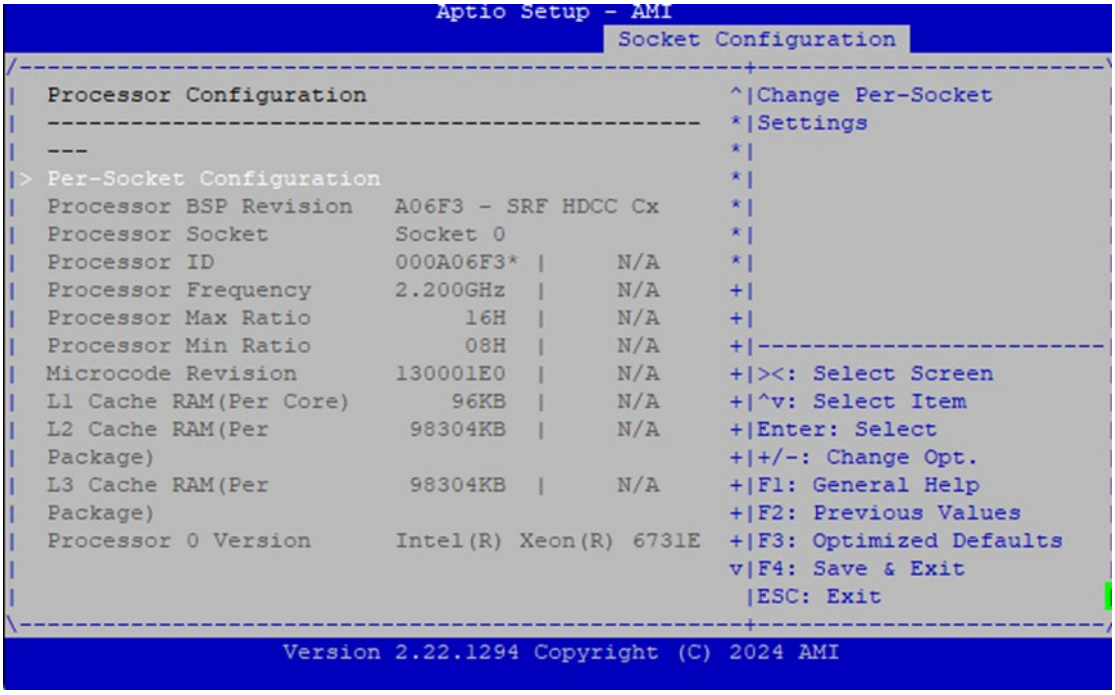
Socket Configuration

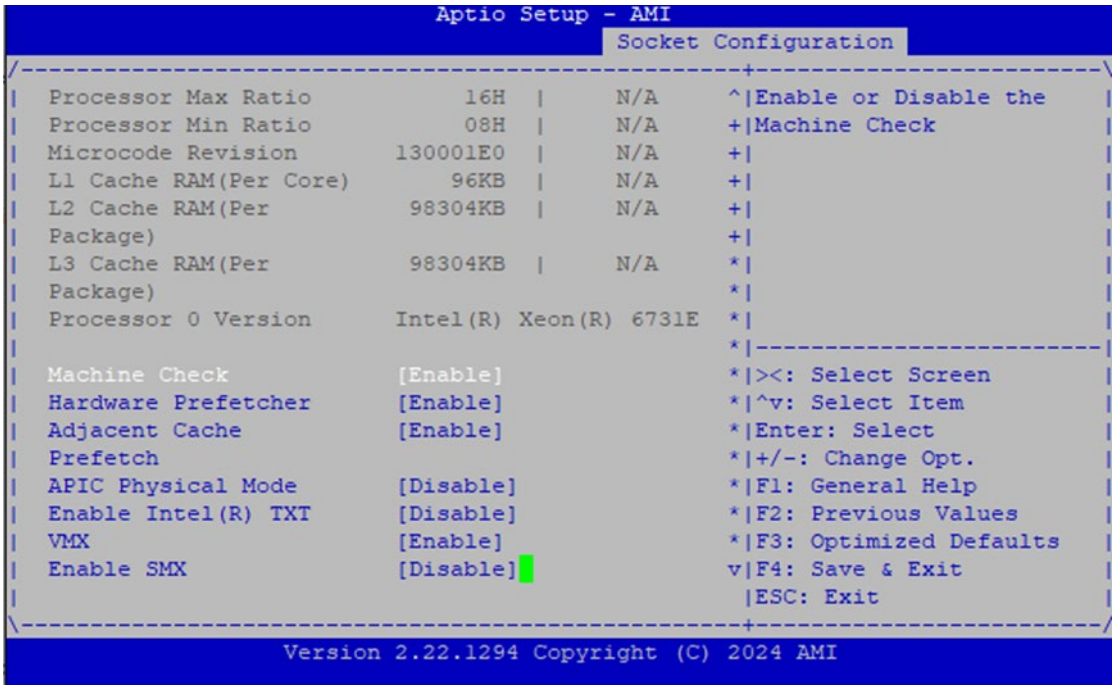
Select the Socket menu item from the BIOS setup screen to enter the Socket Setup screen. Users can select any of the items in the left frame of the screen.



Feature	Options	Description
Processor Configuration	None	Displays and provides option to change the Processor Settings
Memory Configuration	None	Displays and provides option to change the Memory Settings
IIO Configuration	None	Displays and provides option to change the IIO Settings
Advanced Power Management Configuration	None	Displays and provides option to change the Power Management Settings

Processor Configuration

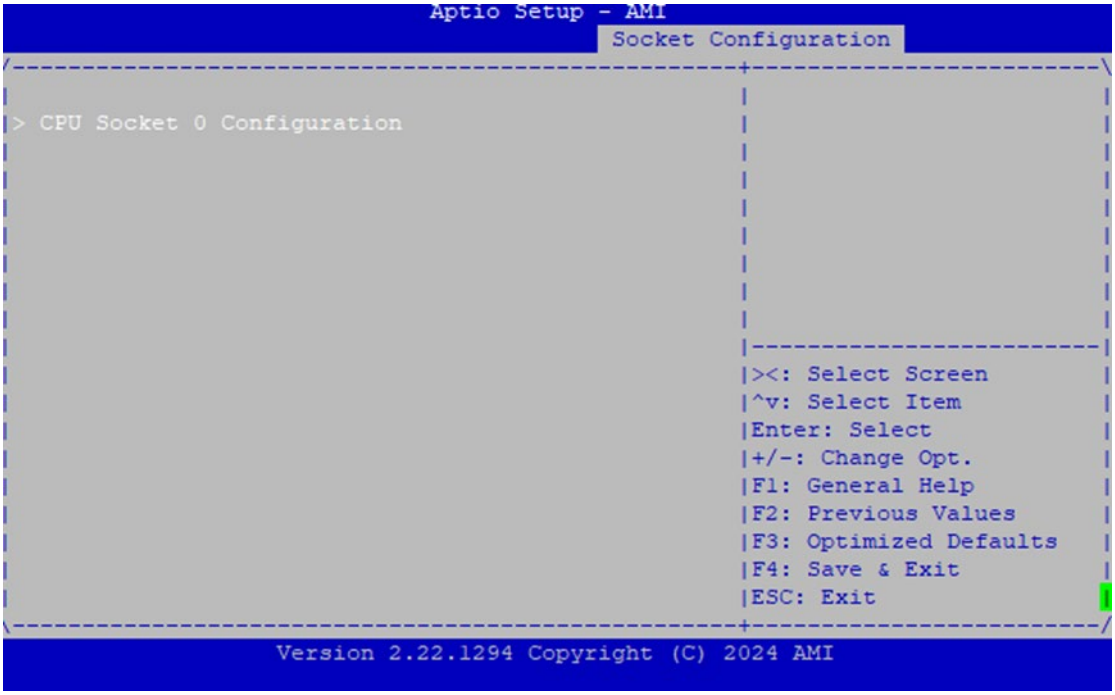




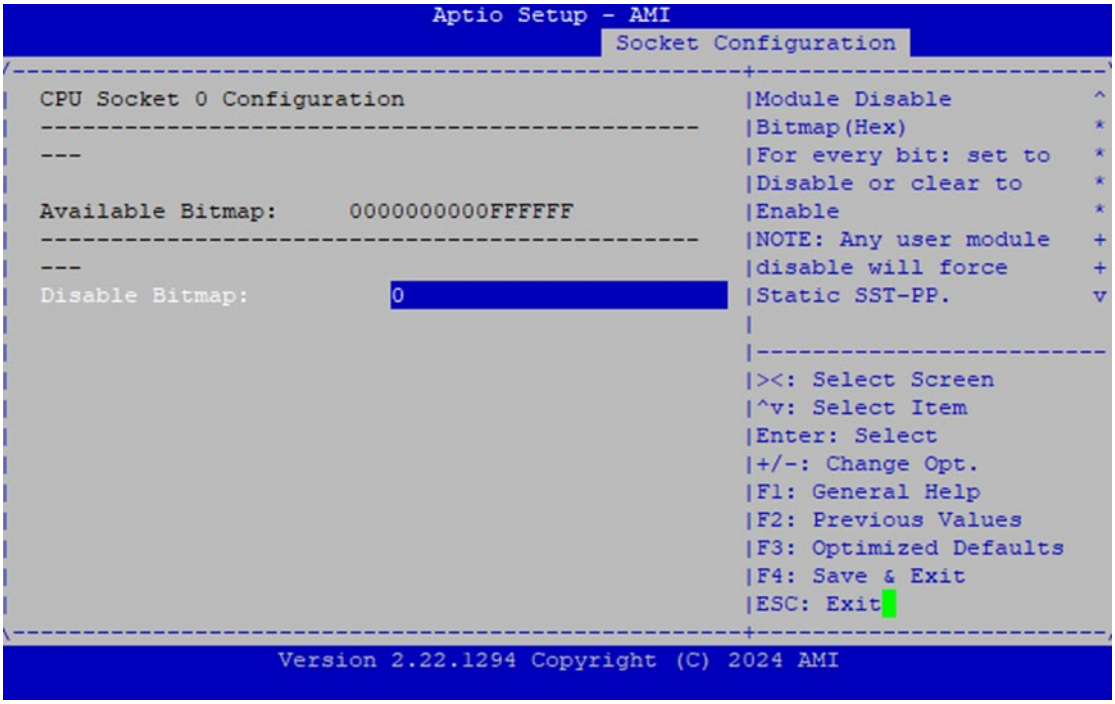
Feature	Options	Description
Machine Check	Disabled Enabled	Enable or Disable the Machine Check
Hardware Prefetcher	Disabled Enabled	MLC Streamer Prefetcher (MSR 1A4h Bit[0])
Adjacent Cache Prefetcher	Disabled Enabled	MLC Spatial Prefetcher (MSR 1A4h Bit[1])
APIC Physical Mode	Disabled Enabled	Enable/Disable the APIC physical destination mode

Enable Intel® TXT	Disabled Enabled	Enables Intel(R) TXT
VMX	Disabled Enabled	Enables the Vanderpool Technology, which takes effect after reboot.
Enable SMX	Disabled Enabled	Enables Safer Mode Extensions

Per-Socket Configuration

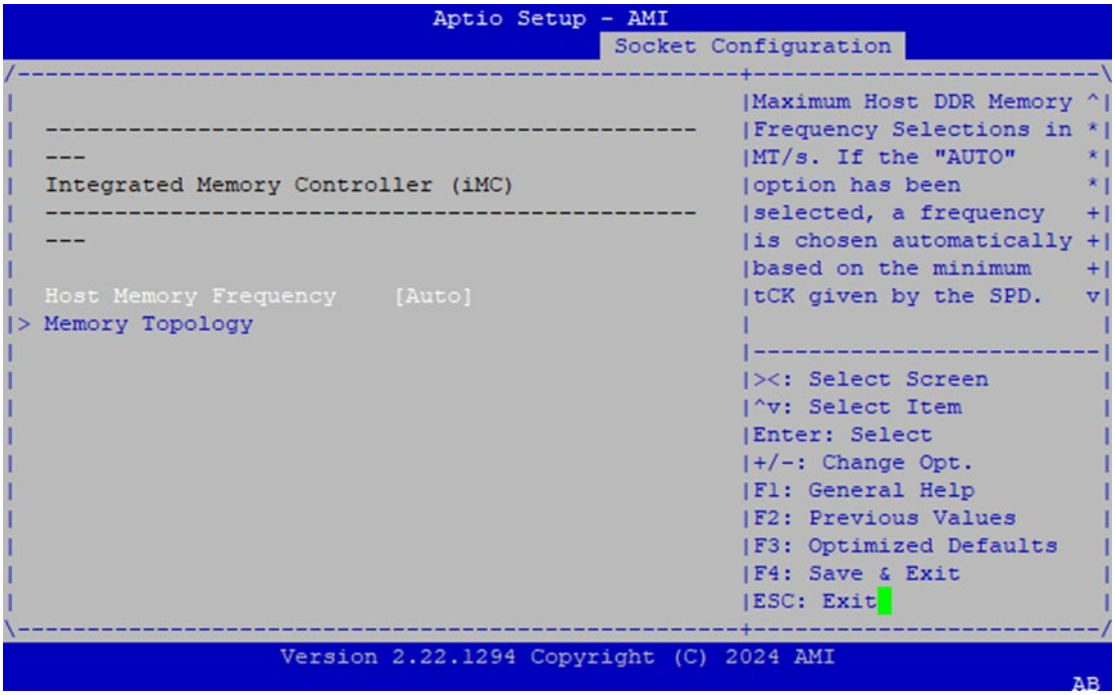


CPU Socket0 Configuration



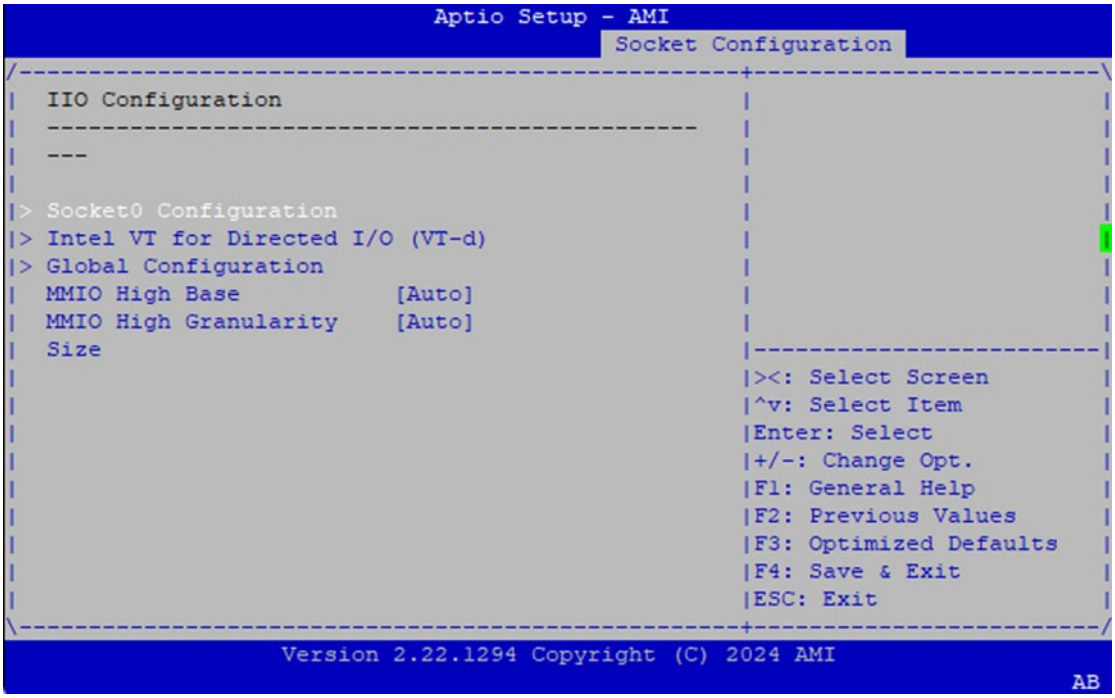
Feature	Options	Description
Disable Bitmap (Hex)	0	0: Enable all cores. FFFFFFFFFF: Disable all cores least one core per CPU must be enabled. Disabling all cores is an invalid configuration.

Memory Configuration



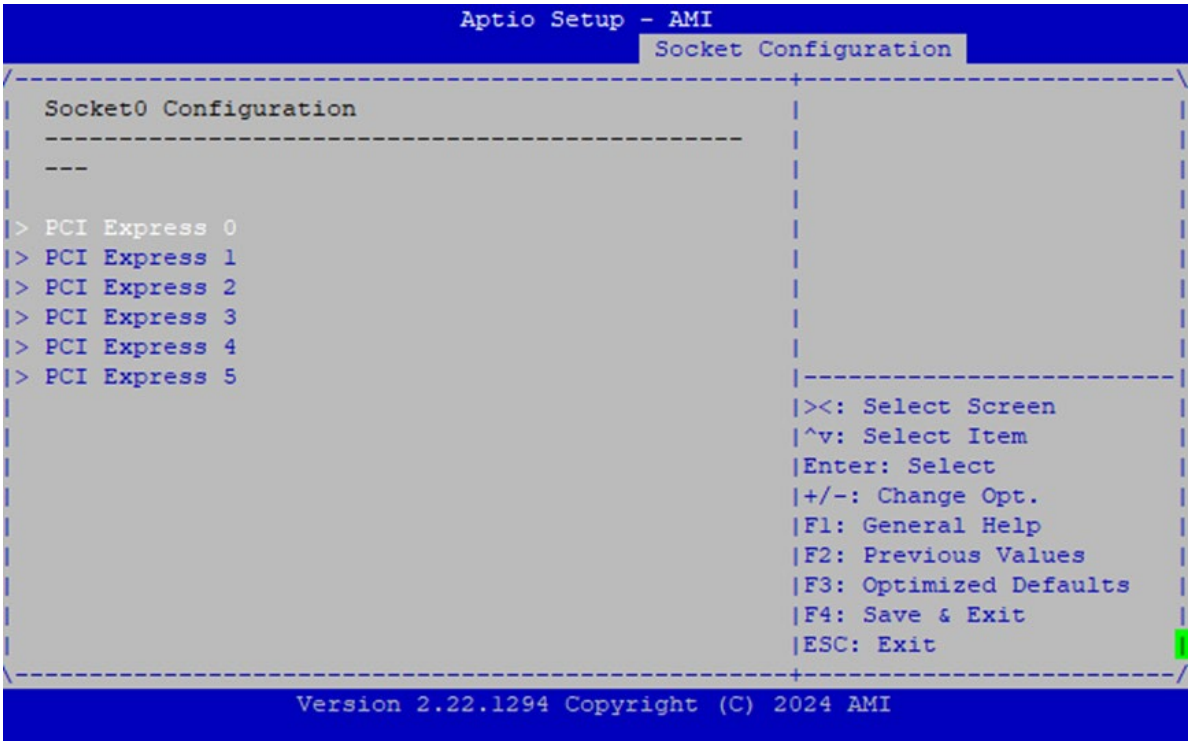
Feature	Options	Description
Host Memory Frequency	Auto 4800 5200 5600 6000 6400	Maximum Memory Frequency Selections in MT/s. If the "AUTO" option has been selected, a frequency is chosen automatically based on the minimum tCK given by the SPD. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory support (limited by processor support)
Memory Topology	None	Displays memory topology with Dimm population information

IIO Configuration

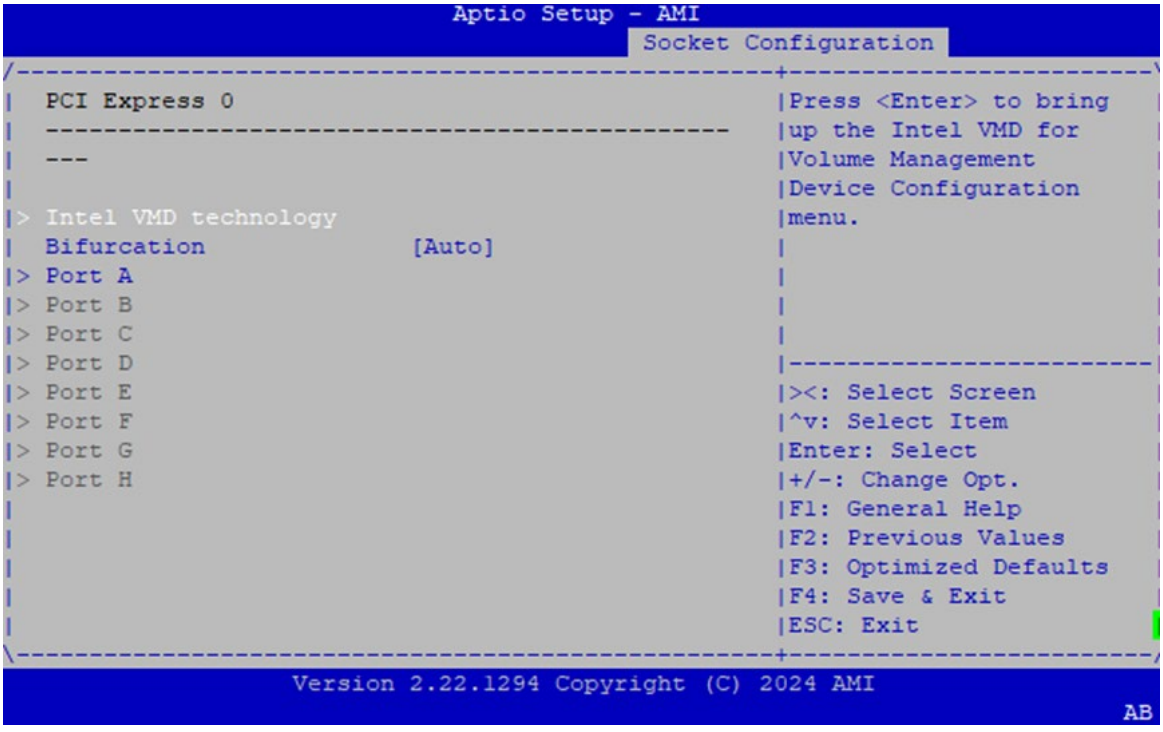


Feature	Options	Description
Socket0 Configuration	None	PCI Express Root Port setting page.
Intel VT for Directed I/O (VT-d)	None	Intel VT-d technology setting page. Note: If no understand setting affection, please do not change setting in page.
Global Configuration	None	For all PCI Express Root Port setting page.
MMIO High Base	60T 30T 56T 40T 32T 24T 16T 4T 2T 1T 512G Auto	Select MMIO High Base
MMIO High Granularity Size	1G 4G 16G 32G 64G 256G 1024G Auto	Selects the allocation size used to assign mmioh resources. Per stack mmioh resource assignments are multiples of the granularity where 1 unit per stack is the default allocation.

Socket0 Configuration



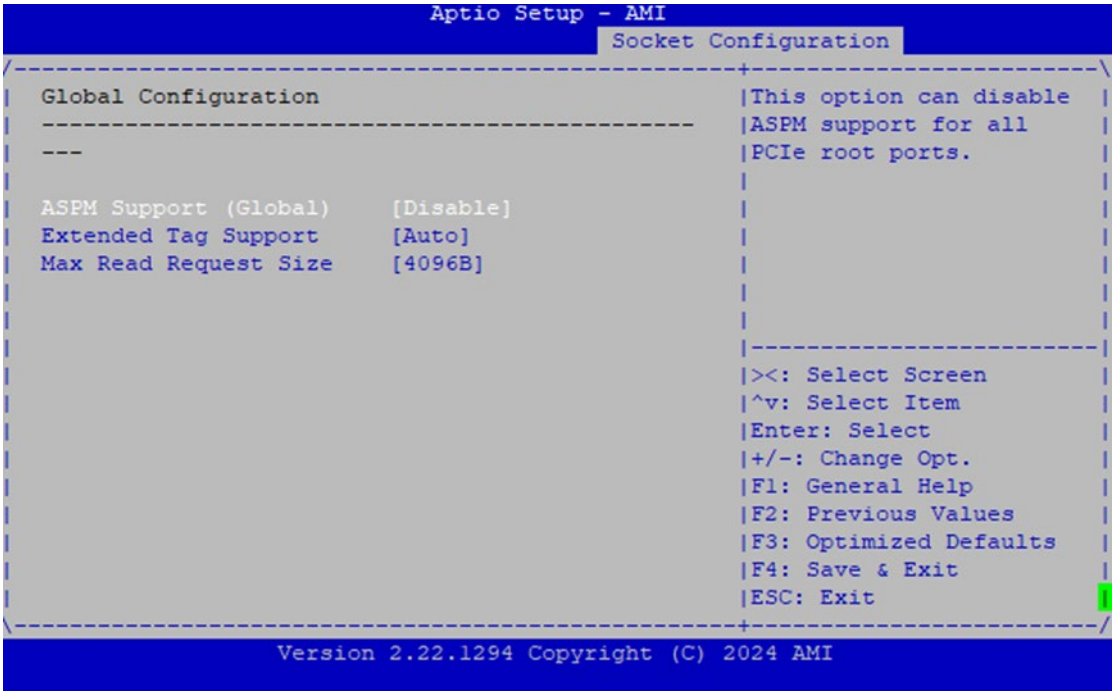
Feature	Options	Description
PCI Express 0~5	None	PCI Express 0~5 can adjust root port setting, such as bifurcation, VMD… Note: Base on HW design, PCI Express 1 will affect BMC and External USB Port



Feature	Options	Description
Intel VMD technology	None	Settings related to VMD Enable or Disable Note: need to collocate with VMD setting of Port A~H

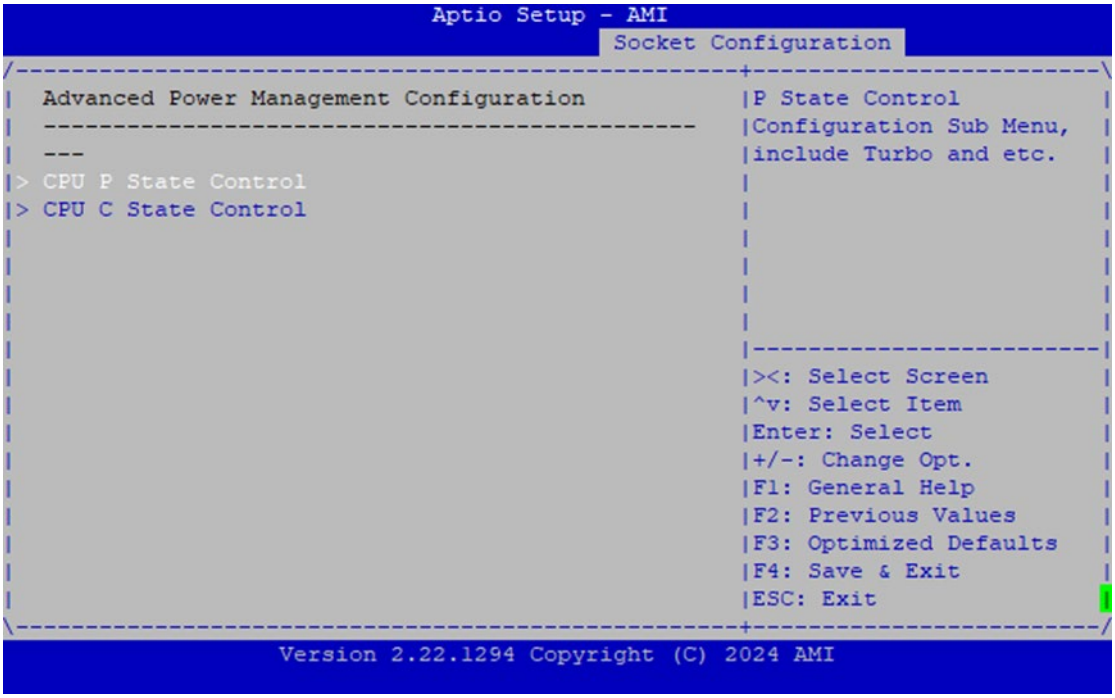
Bifurcation	Auto x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	Selects PCIe port Bifurcation for selected slot(s) "Port Format: xGxExCxA" "The port can further be x2x2" "Disable - disable all PCIe lanes and the controller. Note: if no special device or configuration change, please do not adjust this item
Port A~H	None	Settings related to PCI Express Port. Note: if no special device or configuration change, please do not adjust this item Note: PCI Express 1 Port F can control external USB Port, if user want to disable external USB port can go to PCI Express 1 Port F page then “Link Disable” set “Yes” and press F4 do Save and Reset, but it will cause keyboard no function in KVM, Console Redirection is normal

Global Configuration

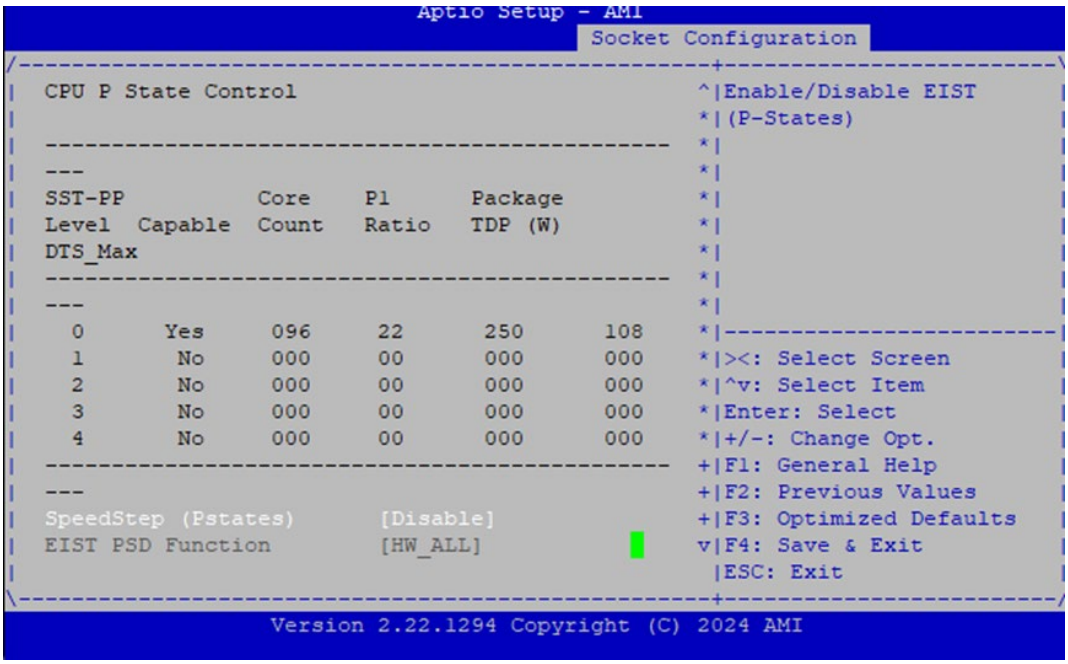


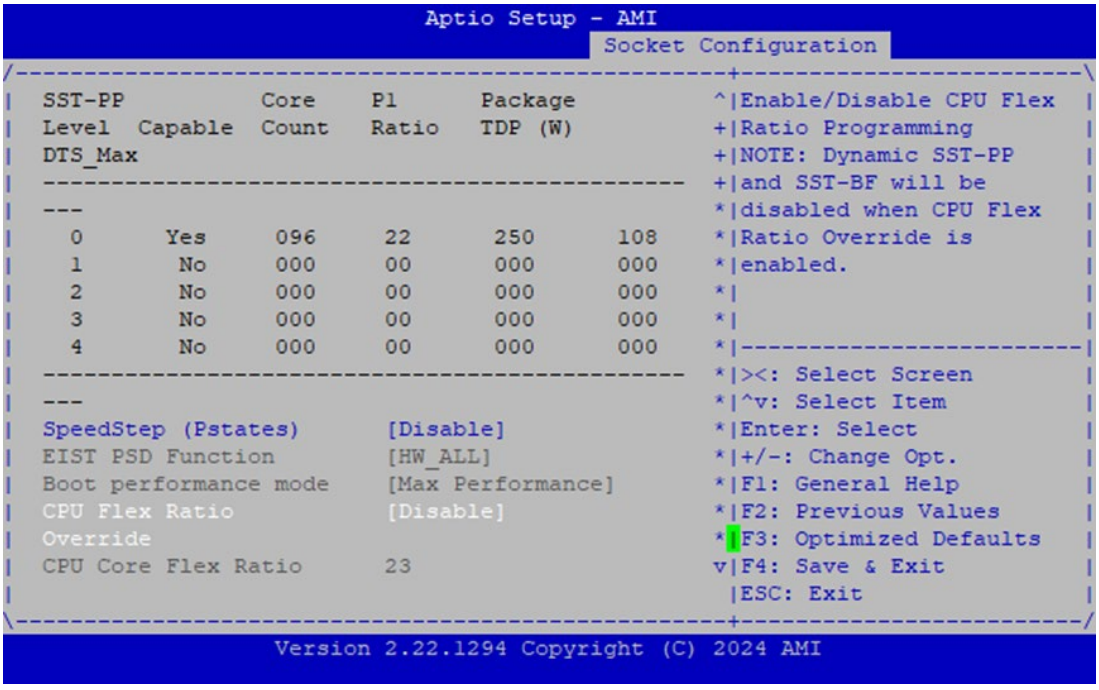
Feature	Options	Description
ASPM Support (Global)	Disable Per-Port	This option can disable ASPM support for all PCIe root ports.
Extended Tag Support	Disable Auto	This option can disable 8-bit Tag support in all PCIe root ports. 'Auto' keeps hardware default.
Max Read Request Size	Auto 128B 256B 512B 1024B 2048B 4096B	Set Max Read Request Size in End Points

Advanced Power Management Configuration



CPU P State Control

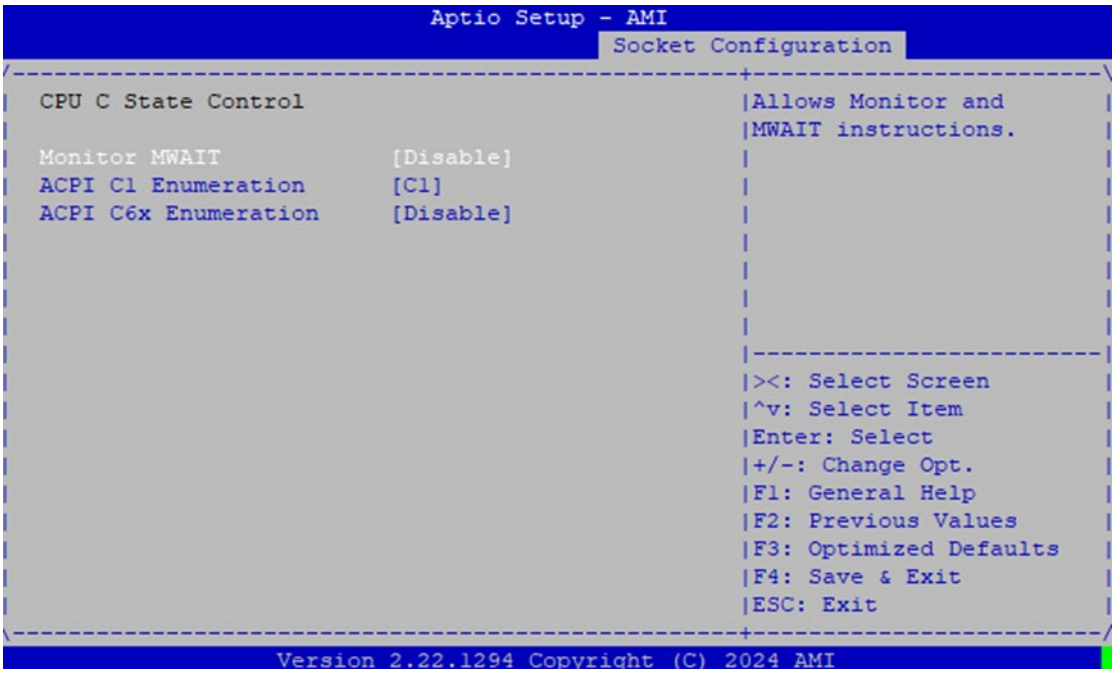




Feature	Options	Description
SpeedStep (Pstates)	Disabled Enabled	Enables or disables EIST (P-States)
EIST PSD Function	HW_ALL SW_ALL	Choose HW_ALL/SW_ALL in _PSD return
Boot performance mode	Max Performance Max Efficiency	Select the performance state that the BIOS will set before OS hand off.
Turbo Mode	Disable Enable	Enable/Disable processor Turbo Mode

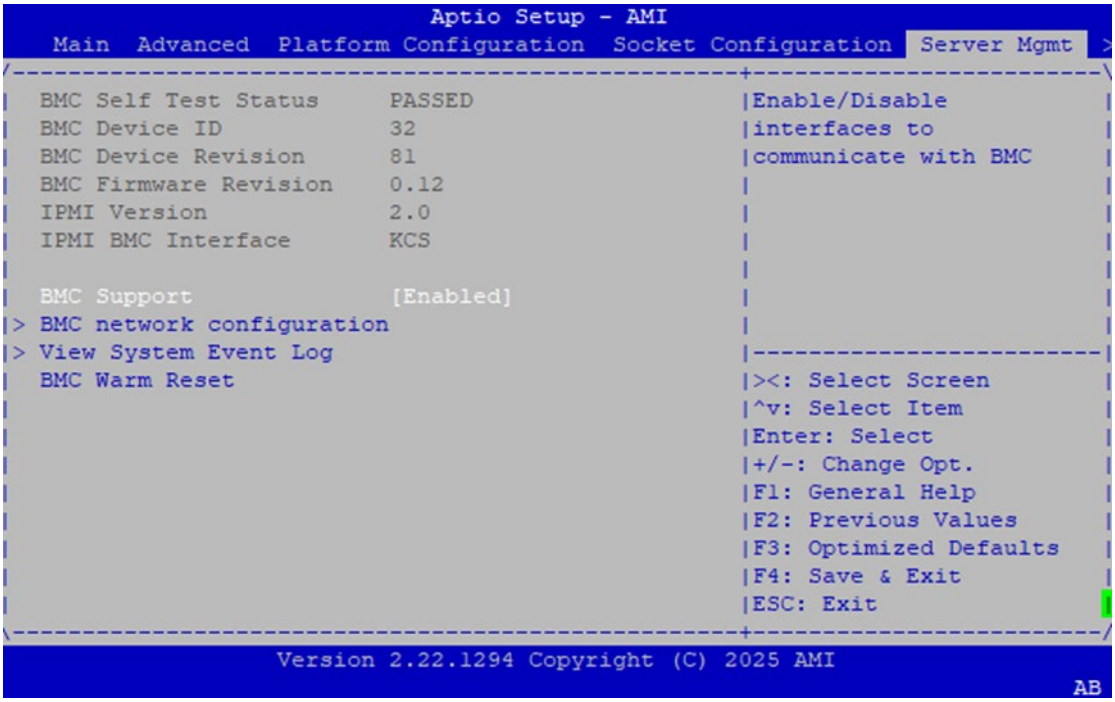
Energy Efficient Turbo	Enable Disable	Enable/Disable Energy Efficient Turbo. Enable: MSR 0x1FC Bit [19] = 0 Disable: MSR 0x1FC Bit [19] = 1.
CPU Flex Ratio Override	Disabled Enabled	Enable/Disable CPU Flex Ratio Programming NOTE: Dynamic SST-PP and SST-BF will be disabled when CPU Flex Ratio Override is enabled.
CPU Core Flex Ratio	23	Non-Turbo Mode Processor Core Ratio Multiplier

CPU C State Control



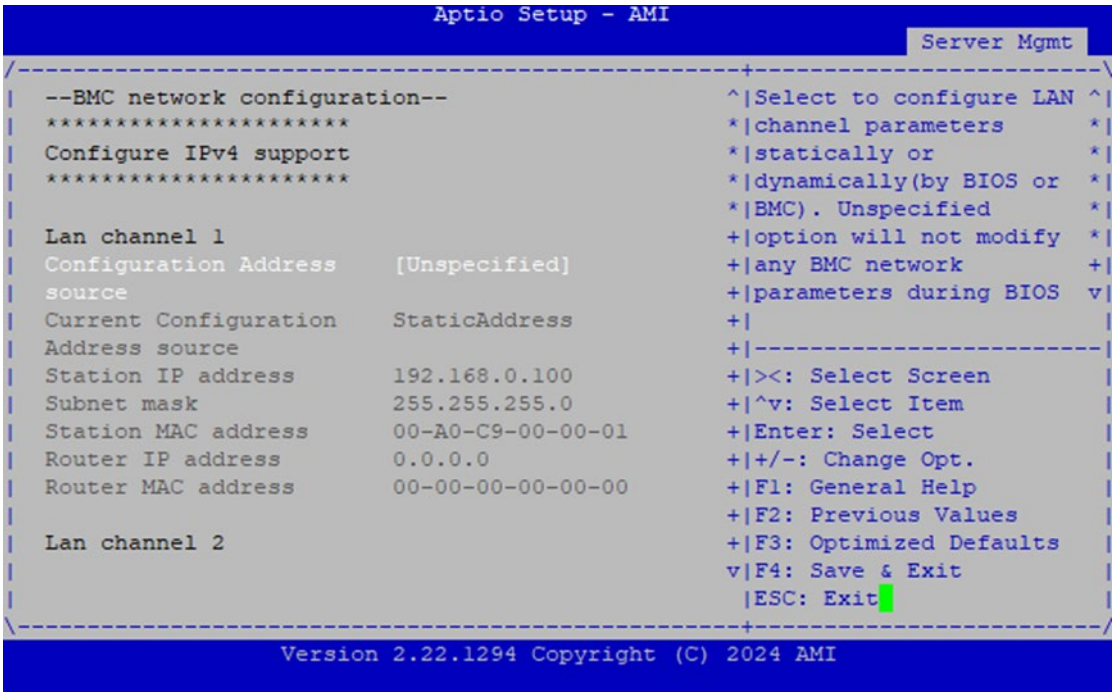
Feature	Options	Description
Monitor MWAIT	Disable Enable	Allows Monitor and MWAIT instructions.
ACPI C1 Enumeration	C1 C1e	Enumerate C1/C1e as ACPI C1.
ACPI C6x Enumeration	Disabled C6S as ACPI C2 C6S as ACPI C3 C6S-P as ACPI C2 C6S-P as ACPI C3 Auto	**AUTO**: Maps to C6S-P as ACPI C2 **Disable**: Don't enumerate any C6S state in ACPI **C6S as ACPI C2/C3**: Enumerate C6S as ACPI C2/C3 state. PkgC6 is not allowed **C6S-P as ACPI C2/C3**: Enumerate C6S-P as ACPI C2/C3 state. PkgC6 is allowed.

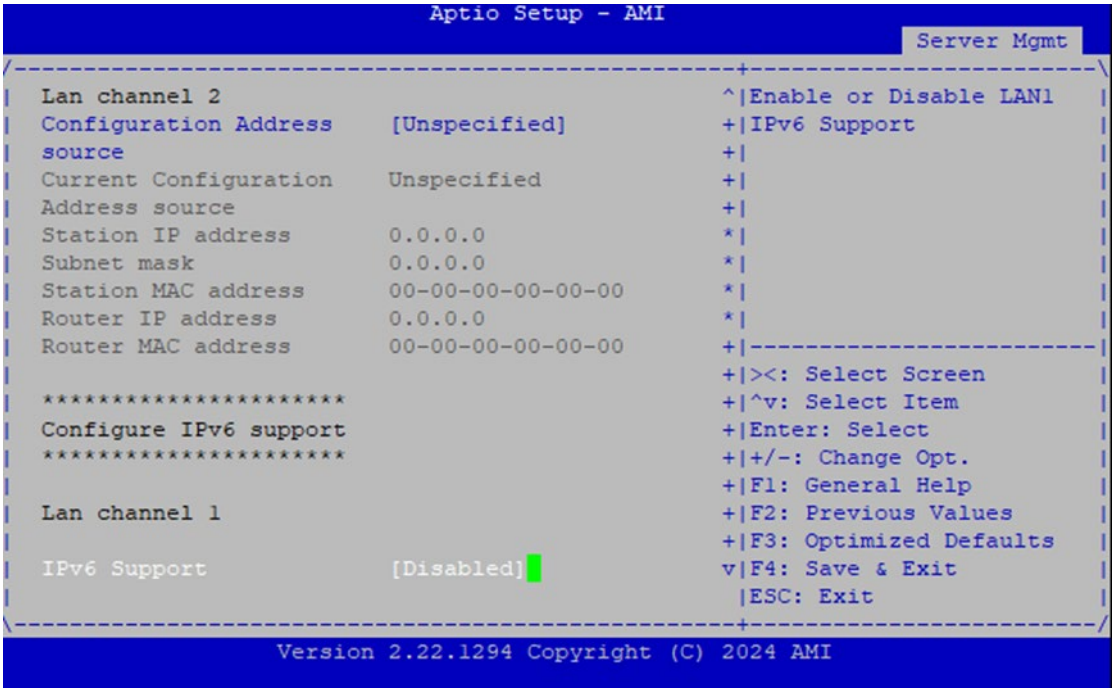
Server Mgmt

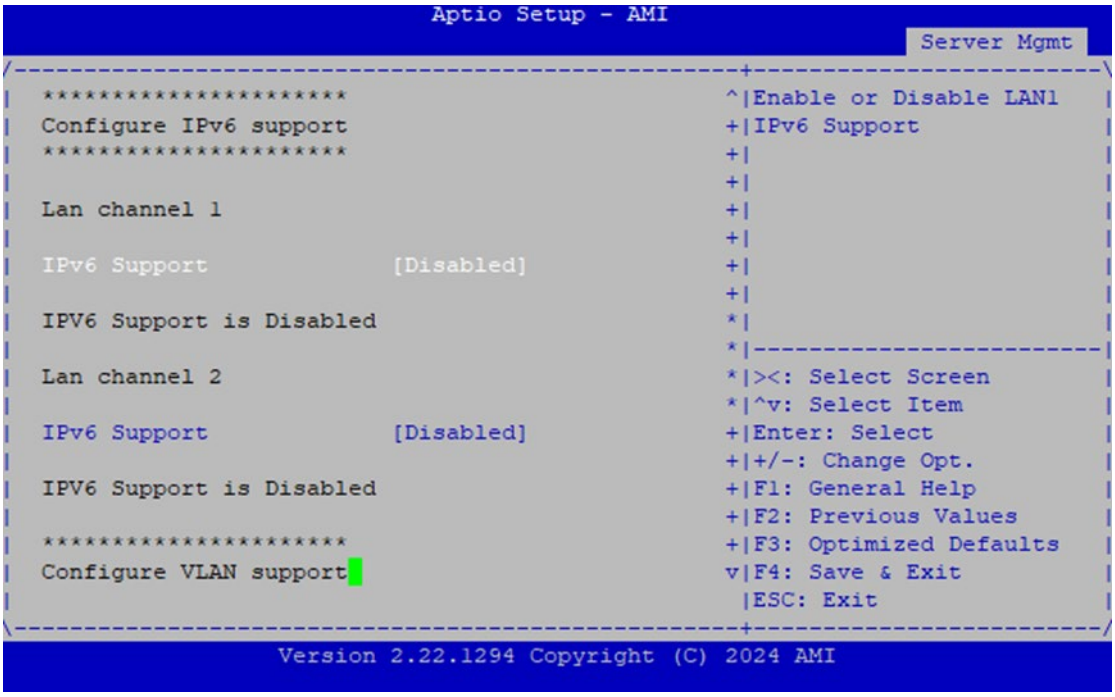


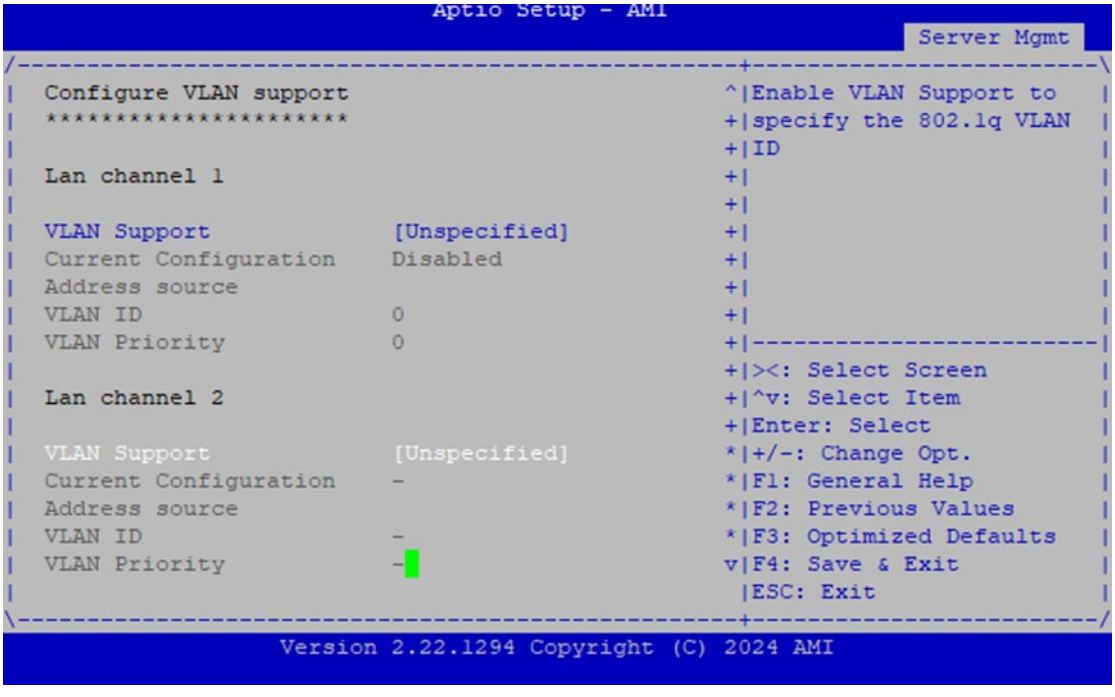
Feature	Options	Description
BMC Self Test Status	N/A	BMC self test result
BMC Device ID	N/A	BMC Device information
BMC Device Revision	N/A	BMC Device information
BMC Firmware Revision	N/A	BMC Firmware information
IPMI Version	N/A	IPMI information
IPMI BMC Interface	N/A	IPMI interface type
BMC Support	Enabled Disabled	Enable or disables interfaces to communicate with BMC.
BMC network configuration	N/A	Configure BMC network parameters.
View System Event Log	N/A	Press **<Enter>** to view the System Event Log Records
BMC Warm Reset	N/A	Press **<Enter>** to do Warm Reset BMC.

BMC Network Configuration



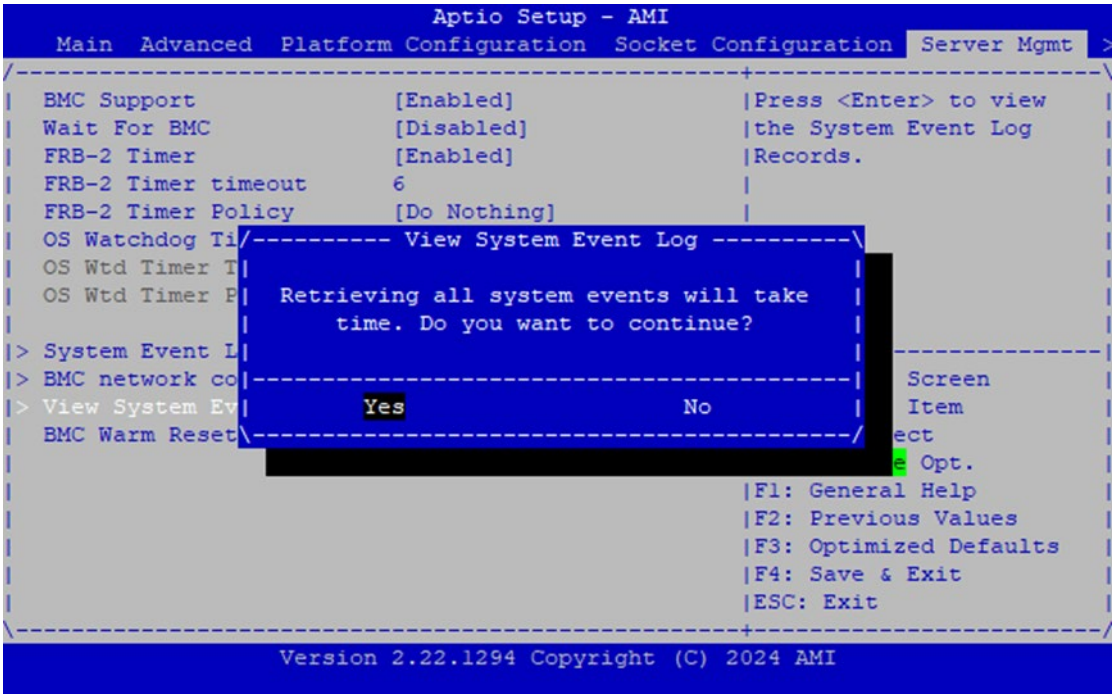






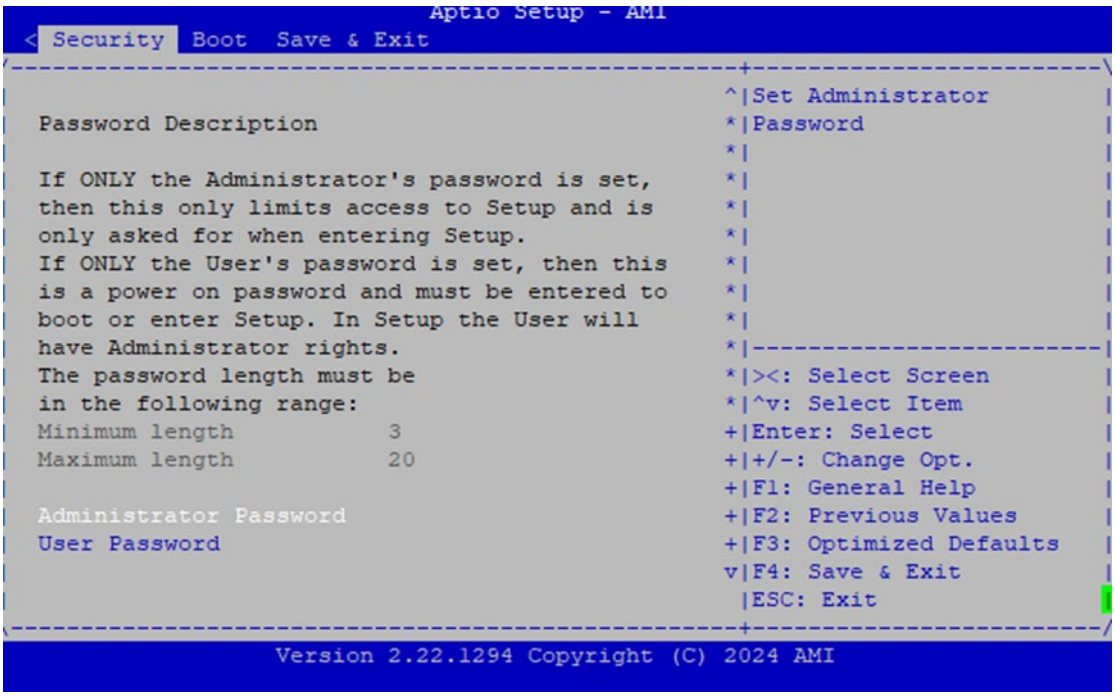
Feature	Options	Description
Configuration Address source	Unspecified Static DynamicBmcDhcp DynamicBmcNoDhcp	Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). The **unspecified** option will not modify any BMC network parameters during BIOS phase.

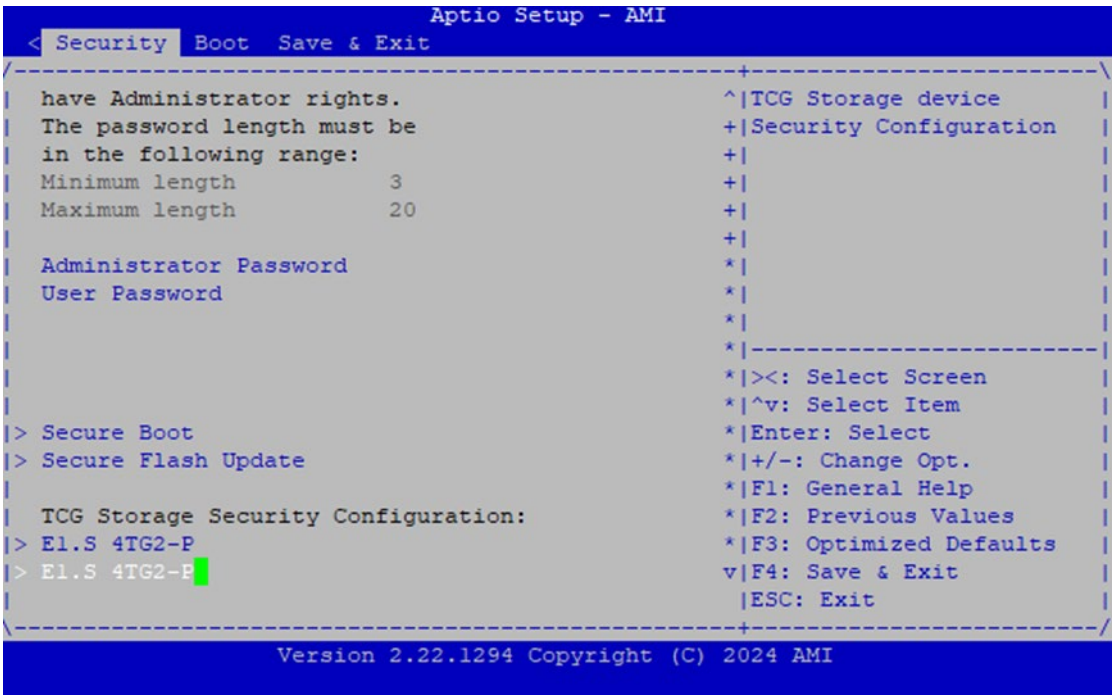
View System Event Log



Security

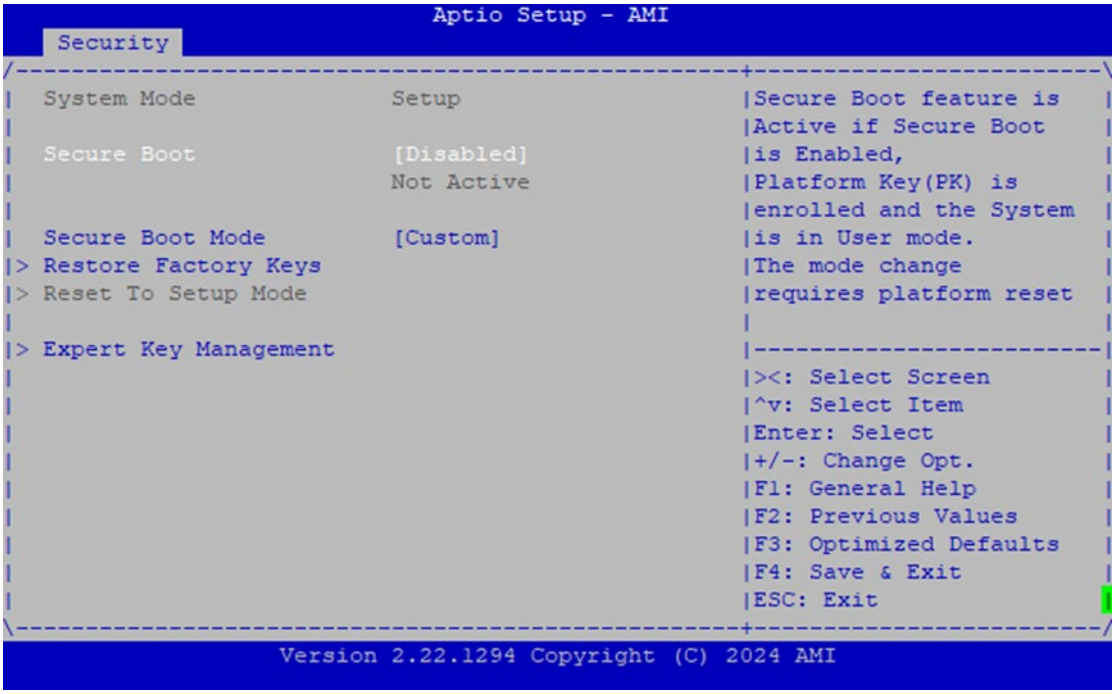
Select the Security menu item from the BIOS setup screen to enter the Security Setup screen. Users can select any of the items in the left frame of the screen.





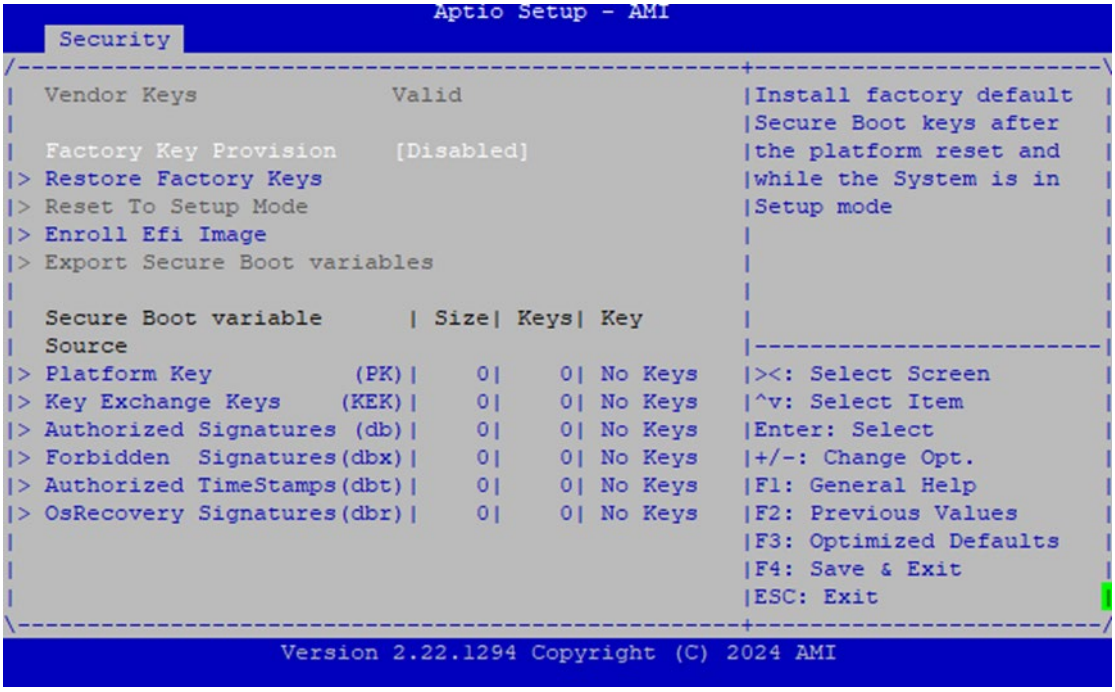
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the User will have Administrator rights.

Secure Boot



Feature	Options	Description
Secure Boot	Disabled Enabled	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset
Secure Boot Mode	Standard Custom	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

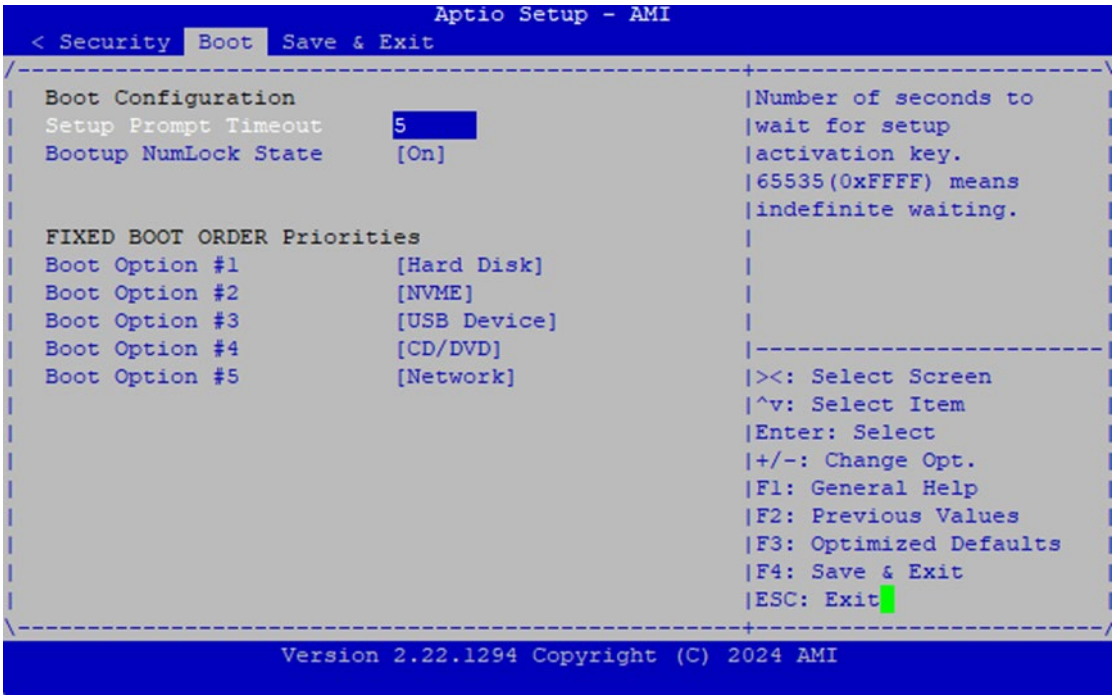
Key Management



Feature	Options	Description
Factory Key Provision	Disabled Enabled	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode
Restore Factory keys	None	Force System to User Mode. Install factory default Secure Boot key databases.
Enroll Efi Image	None	Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

Boot Menu

Select the Boot menu item from the BIOS setup screen to enter the Boot Setup screen. Users can select any of the items in the left frame of the screen.

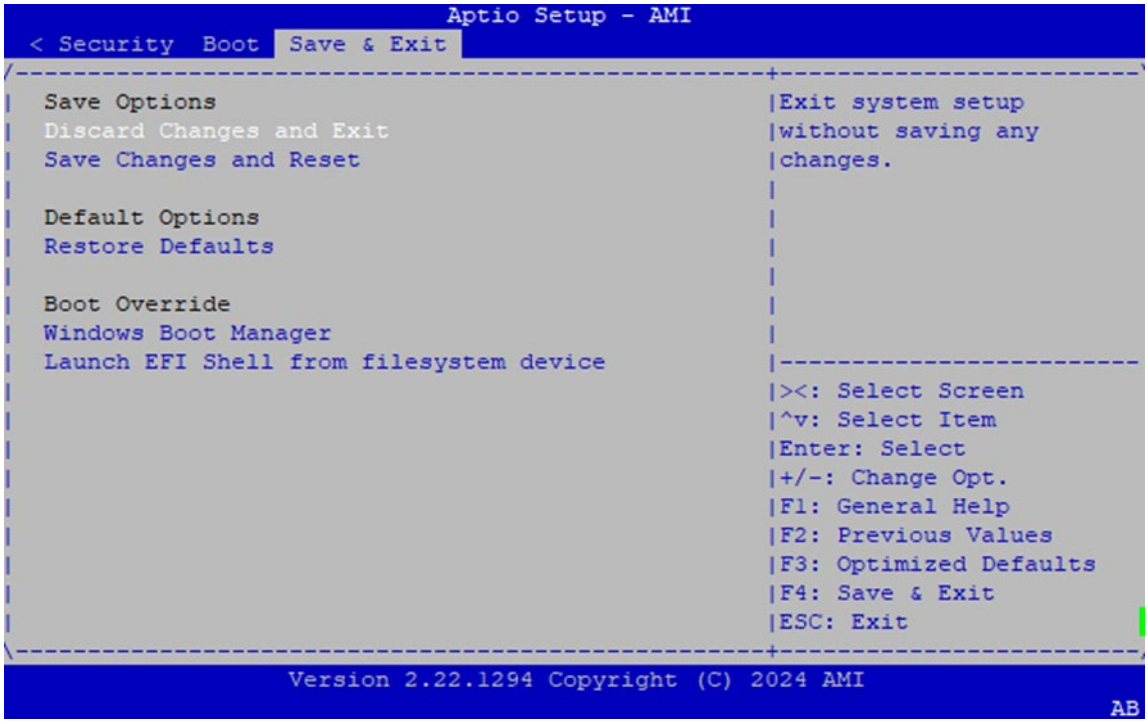


Feature	Options	Description
Setup Prompt Timeout	5	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state

- Choose boot priority from boot option group.
- Choose specifies boot device priority sequence from available Group device.

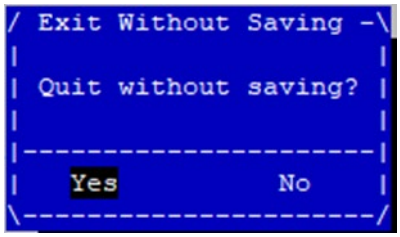
Save & Exit Menu

Select the Save and Exit menu item from the BIOS setup screen to enter the Save and Exit Setup screen. Users can select any of the items in the left frame of the screen.



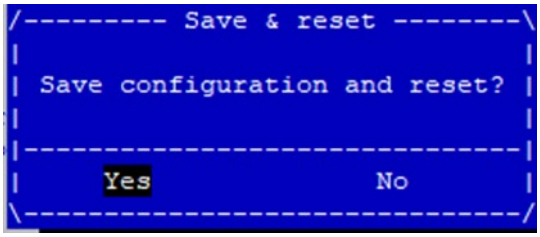
■ Discard Changes and Exit

Select this option to quit Setup without saving any modifications to the system configuration. The following window will appear after the "**Discard Changes and Exit**" option is selected. Select "**Yes"** to Discard changes and Exit Setup.



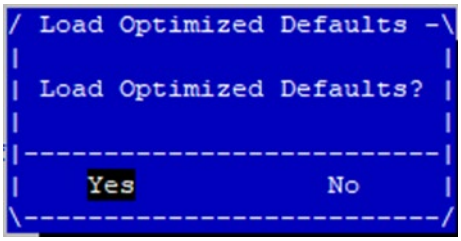
■ Save Changes and Reset

When Users have completed the system configuration changes, select this option to save the changes and exit from BIOS Setup in order for the new system configuration parameters to take effect. The following window will appear after selecting the "**Save Changes and Exit**" option is selected. Select "**Yes**" to Save Changes and Exit Setup.



■ Restore Defaults

Restore default values for all setup options. Select "**Yes"** to load Optimized defaults.

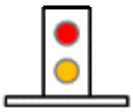


Note

The items under Boot Override may not have the same image as above, as it would depend on the actual devices connected on system.

APPENDIX A: LED INDICATOR EXPLANATIONS

System Status / Programmable



Red/Green: System Status

Amber: Programmable LED

LED	COLOR	LED ACTION	DESCRIPTION
System Status	Green	Steady	Control by GPIO
	Red	Steady	Control by GPIO
	Off	N/A	Control by GPIO (Default) or NO Power On
Programmable LED	Amber	Blinking	Programmable Function by User
	Off	N/A	NO Data Access or NO Power On

Power Button

Green: Power

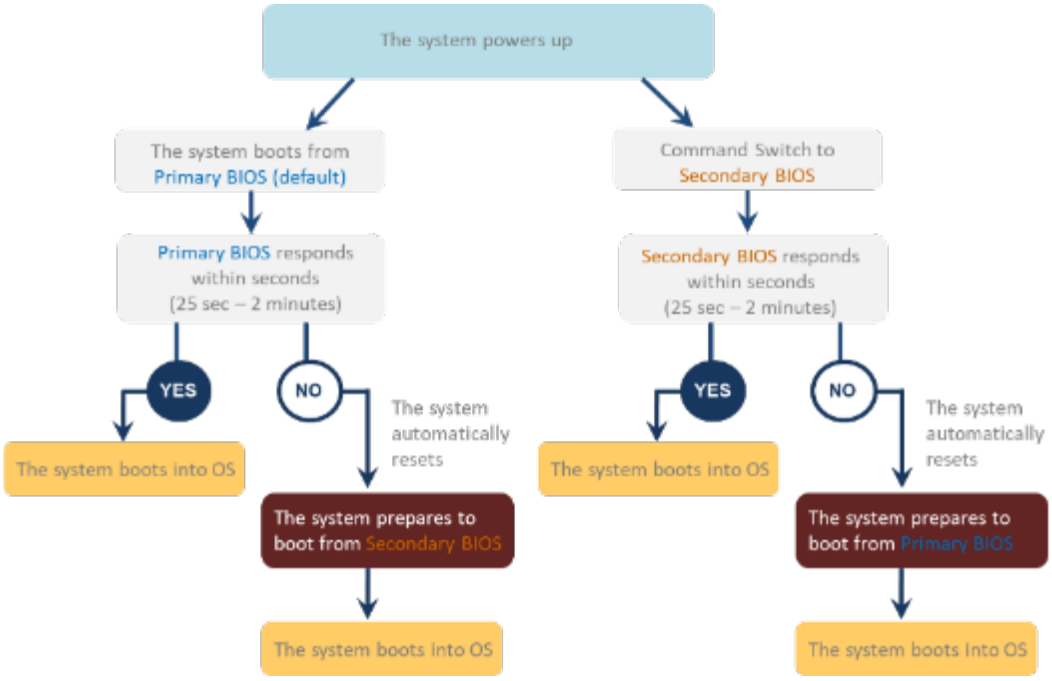
LED	COLOR	LED ACTION	DESCRIPTION
Power	Green	Steady	When System Power ON
	Off	N/A	NO Power On

APPENDIX B: DUAL BIOS INTRODUCTION

Failure when booting up BIOS is not uncommon and can occur most often during a power failure, a mishandled BIOS update, a malware attack resulting in data corruption. When it happens, recovering procedures consume considerable time and effort. Lanner understands this pain and have empowered our products with the Dual BIOS feature.

How Dual BIOS Works

Dual BIOS features two physical BIOS ROMs soldered onto the motherboard, carrying two separate BIOS images. If the Primary BIOS (default) is not functioning correctly and fails to respond within seconds (~25 seconds to 2 minutes, depend upon appliance), the system will invoke a bootup from the Secondary BIOS, automatically restarting the system and launch the operating system.



2nd Gen Dual BIOS

To provide increased flexibility and usage protection, Lanner has released the 2nd Gen Dual BIOS function on Lanner appliances. With 2nd Gen Dual BIOS, both the primary BIOS and secondary BIOS can be updated and flashed using the BIOS Tool to run different versions of BIOS ROMS independently for maximum compatibility. This additionally allow users to switch BIOS ROMS for booting up, toggling between primary BIOS and secondary BIOS.

- **Flexible recovery timer control**

Users can designate the amount of time before recovery BIOS launch. The amount of time is no longer fixed to 7 minutes.

- **Flexible Dual BIOS ROMs control.**

Users can flash both the Primary BIOS and Secondary BIOS, thus run different versions of BIOS ROMS independently for maximum compatibility.

- **Flexible Dual BIOS ROMs switch**

The 2nd Gen Dual BIOS allow users to choose one of the BIOS ROMS (Primary BIOS/Secondary BIOS) for booting up. Use software command prompt to toggle between Primary BIOS and Secondary BIOS.

	Gen1 Dual BIOS	Gen2 Dual BIOS
Function	Primary / Recovery 2ND BIOS for recovery purpose	Primary / Secondary (Peer to Peer) Both BIOS can let the system work
Detection Time	7 min	Seconds (By platform design)
2nd BIOS updated	Only using the SPI facility	By BIOS tool command or SPI facility
MAC/DMI	Only for BIOS1	For both BIOS
CPLD Interface	GPIO	LPC or eSPI (By Platform)

Figure 1. Gen 1 vs Gen 2 Dual BIOS comparison chart

Few things can shut down a computer as completely as a corrupted BIOS. With Dual BIOS feature, you will be guaranteed to enter a healthy OS to perform thorough troubleshooting before the situation is irreparable.

Get Ready for BIOS Update

Flashing a BIOS needs to be carefully completed, especially pertaining to a corrupted BIOS, which can lead to an unusable system if done incorrectly. To get ready for a BIOS update, acquire the following BIOS resources from Lanner technical support:

- Firmware and Flash Tool
- BIOS Engineering Spec

Before you start, make sure you select the correct firmware version, correct BIOS (Primary or Secondary) and go through the instructions for BIOS update in *BIOS Engineering Spec* thoroughly. If you cannot be certain if this version is correct for your system, please contact Lanner Technical Support.

Note:
1. Dual BIOS feature cannot work with BIOS Boot Guard function
2. To update BIOS, it is mandatory to have both BIOS updated first. This is to avoid both BIOS having ME code variations, which could lead to unexpected risk and errors.
3. When the system enters BIOS menu or Option ROM, the system will not reboot automatically.

Warning
DO NOT power off or reset the system during BIOS updating process.

Disclaimer
Under no circumstances will Lanner accept responsibility or liability for damages of any kind whatsoever resulting or arising directly or indirectly from a BIOS update.

APPENDIX C: TERMS AND CONDITIONS

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for the repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:
   - Improper or inadequate maintenance by the customer
   - Unauthorized modification, misuse, or reversed engineering of the product
   - Operation outside of the environmental specifications for the product.

RMA Service

Requesting an RMA#

1. To obtain an RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
4. Mark the RMA# clearly on the box.

Note: Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

RMA No:	Reasons to Return: ▫ Repair(Please include failure details) ▫ Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____ Shipping by: ▫ Air Freight ▫ Sea ▫ Express_____ ▫ Others:_____	

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
	09: Cache RMA Problem	15: PS2	21: Shut Down
03: CMOS Data Lost	10: Memory Socket Bad	16: LAN	22: Panel Fail
04: FDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
05: HDC Fail	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)
06: Bad Slot			

Request Party

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date