

# Lanner

## Network Appliance Platform

Hardware Platforms for Network Computing

## NCA-5710 User Manual

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# 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

This document utilizes different font types and icons in order to make selected text more transparent and explicable to users. This document contains the following conventions:

### Font Conventions

Example	Convention	Usage
<code>iptables -F</code>	Monospace, shaded	A command to be entered at a shell command-line
<b>Setup</b> page	Bold	A title of a dialog box or a page
<b>&lt;Enter&gt;</b>	Between a pair of inequality signs	A physical keyboard button
"Menu"	Between a pair of quotation marks	A menu option or a software button to be clicked
<i>Readme.txt</i>	In Italic	A filename or a file path
<u>IPMI User Guide</u>	Underlined	The name of another document or a chapter in this document

### Icon Descriptions

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.

For troubleshooting the issues with your system, please visit the [Lanner Q&A](#) page for diagnostic procedures and troubleshooting steps.

## Technical Support

In addition to contacting your distributor or sales representative, you could submit a request to our **Lanner Technical Support** at <http://www.lannerinc.com/technical-support> where you can fill in a support ticket to our technical support department.

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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 to [contact@lannerinc.com](mailto: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.

## 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.

## 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).

## 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).

### **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 (T<sub>ma</sub>) 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).



## Electrical Safety Instructions

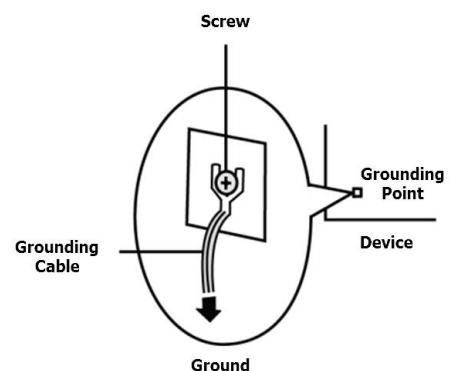
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect the ground wire after turning off the power. A ground wire is required and the part connecting the conductor must be greater than 4 mm<sup>2</sup> 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 mm<sup>2</sup> ou 10 AWG.

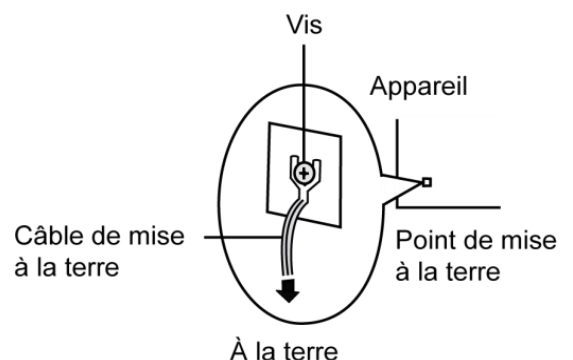
## Grounding Procedure for DC Power Source

- ▶ Loosen the screw of the earthing point.
- ▶ 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

- ▶ Desserrez la vis du terminal de mise à la terre.
- ▶ 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.





**CAUTION:** TO DISCONNECT POWER, REMOVE ALL POWER CORDS FROM UNIT.

注意：要断开电源，请将所有电源线从本机上拔下。

**WARNUNG:** Wenn Sie das Gerät zwecks Wartungsarbeiten vom Netz trennen müssen, müssen Sie beide Netzteile abnehmen.

**ATTENTION:** DÉBRANCHER LES TOUT CORDONS D'ALIMENTATION POUR DÉCONNECTER L'UNITÉ DU SECTEUR.

- ▶ 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 has installation instructions by a skilled person (for Fan side).  
Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

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# CHAPTER 1: PRODUCT OVERVIEW

Thank you for choosing NCA-5710. The NCA-5710, powered by Intel® Xeon® Processor Scalable Family and Intel® C627/C621 chipset, features optimized computing power and virtualization capacity in a compact 1U form factor with dual CPU sockets, 4x NIC module slots and up to 384GB DDR4 system memory. It delivers a multitude of advanced networking features for maximizing packet processing efficiency and cryptography acceleration.

## Package Content

Your package contains the following items:

- ▶ 1x NCA-5710 Network Security Platform
- ▶ 2x Power Cable
- ▶ 1x Short Ear Rack Mount Kit with screws
- ▶ 1x Console Cable
- ▶ 1x LAN Cable (Grey)

## Ordering Information

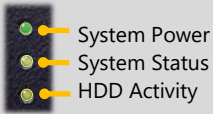
SKU No.	Main Features
NCA-5710A	2x Skylake SP (165W) + C621 + 4x RJ45 MGMT
NCA-5710B	2x Skylake SP (165W) + C621 + 4x RJ45 MGMT + BMC
NCA-5710C	2x Skylake SP (165W) + C627 + 4x 10G SFP+ with LED + BMC

# System Specifications

<b>Form Factor</b>		1U 19" Rackmount
<b>Platform</b>	Processor Options	Intel® Xeon® Processor Scalable Family (Skylake-SP)
	CPU Socket	2x LGA3647
	Chipset	Intel® C621/627
	Security Acceleration	Intel® QuickAssist Technology (By SKU)
<b>BIOS</b>		AMI SPI Flash BIOS
<b>System Memory</b>	Technology	DDR4 2666 MHz REG DIMM
	Max. Capacity	384GB
	Socket	12x 288pin DIMM
<b>Networking</b>	Ethernet Ports	4x GbE RJ45 or 4x 10G SFP+ Lewisburg Internal MAC
	Bypass NIC Module Slot	Depends on NIC module specifications 4
<b>LOM</b>	IO Interface	1x RJ45 (Optional) *Share with ETH0
	OPMA slot	IPMI Chip Onboard (SKU B & C)
<b>I/O Interface</b>	Reset Button	1
	LED	Power/Status/Storage
	Power Button	1x ATX Power Switch
	Console	1x RJ45, 1x mini USB
	USB	2x USB 3.0
	LCD Module	N/A (Optional)
	Display	1x Internal Pin Header
Power input	AC power inlet on PSU	
<b>Storage</b>	HDD/SSD Support	2x 2.5" Internal Bays
	Onboard Slots	1x M.2
<b>Expansion</b>	PCIe	1x PCI-E*16 FH/HL (Optional)
	mini-PCIe	N/A
	SIM card Slot	N/A
<b>Miscellaneous</b>	Watchdog	Yes
	Internal RTC with Li Battery	Yes
	TPM	Yes (Optional)
<b>Cooling</b>	Processor	Passive CPU heat sink
	System	6x individual hot-swappable cooling fans with smart fan
<b>Environmental Parameters</b>	Temperature	0~40°C Operating -40~70°C Non-Operating
	Humidity (RH)	5~90% Operating 5~ 95% Non-Operating
<b>System Dimensions</b>	(WxDxH)	610mm x 438mm x 44mm
	Weight	24kg
<b>Package Dimensions</b>	(WxDxH)	841mmx588mmx215mm
	Weight	18kg
<b>Power</b>	Type/Watts	850W 1+1 ATX Redundant PSUs
	Input	AC 100~240V @47~63 Hz
<b>Approvals and Compliance</b>		RoHS, CE/FCC Class A

# Front Panel



No.	Description	
F1	Reset Button	For hardware /software reset, default is software reset. The setting is configurable by changing the <i>JRST1</i> jumper on motherboard.
F2	LED Indicators	 <ul style="list-style-type: none"> <li><span style="color: green;">●</span> System Power</li> <li><span style="color: yellow;">●</span> System Status</li> <li><span style="color: red;">●</span> HDD Activity</li> </ul>
F3	Console Port	1x RJ45 console port
F4	USB Ports	2x USB 3.0 port
F5	RJ45/SFP+ Ports	4x RJ45 port with LED or 4x 10G SFP+ port (by model)
F6	MGMT/LOM Port	1x RJ45 for MGMT or LOM share port (by model)
F7	Micro USB	1x console port
F8	NCS2 Module	4x STD NIC Module



**Note**

Please refer to Appendix A: LED Indicator Explanations for descriptions of the LED Indicators.

## Rear Panel



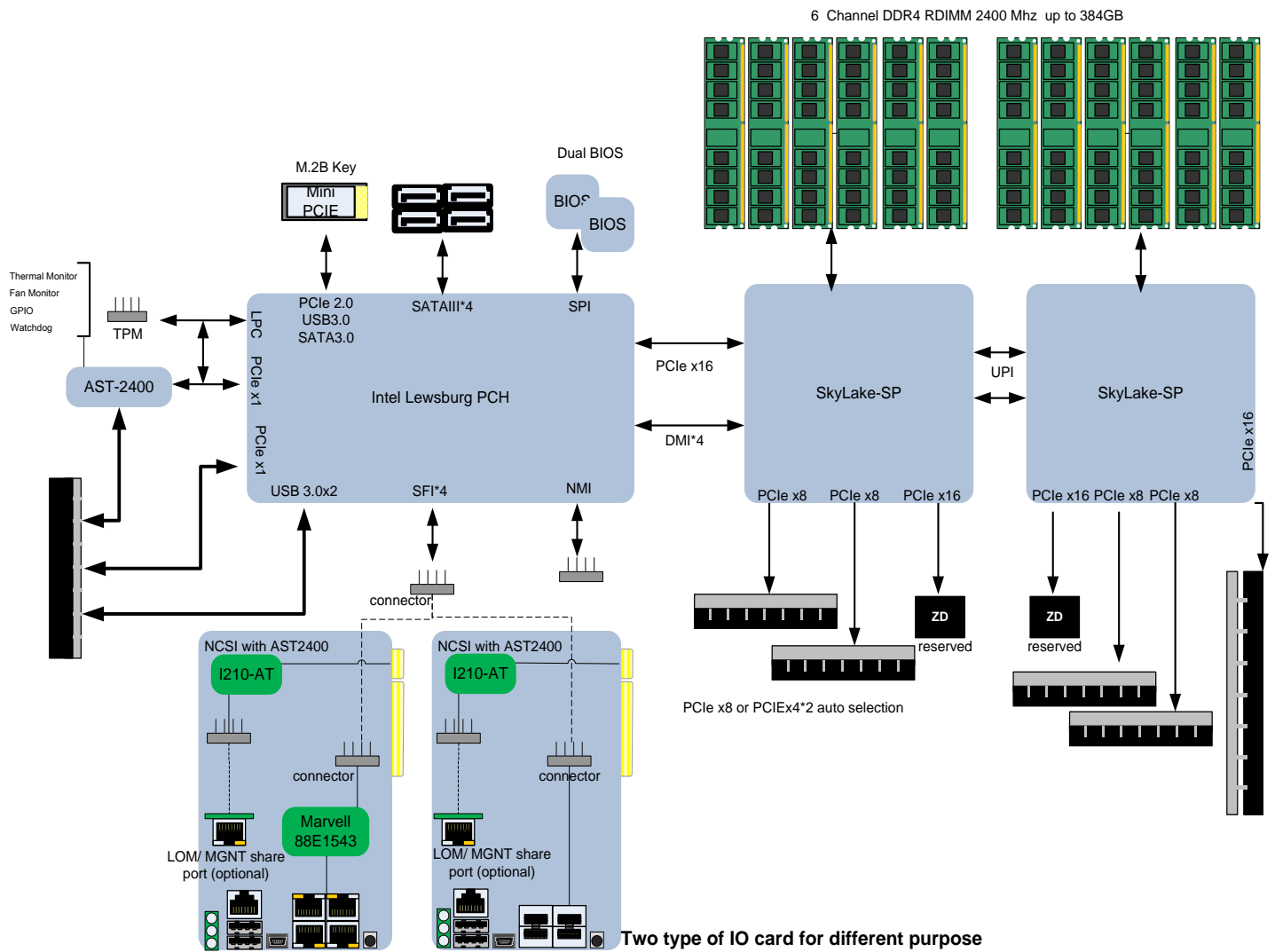
No.	Description	
R1	Grounding Stud	1x grounding stud for connecting the grounding wire
R2	ESD Jack	1x ESD Jack
R3	Fans	6 x hot-swappable cooling fans with smart fan
R4	Power Switch	1x Power Button
R5	Alarm Off Button	1x Alarm Off Button to disable the system alarm
R6	Power Supply	2x 850W 1+1 ATX Redundant PSUs



# Motherboard Information

## Block Diagram

The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.

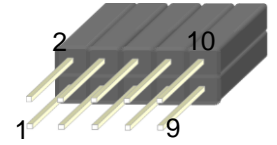




## Internal Jumper & Connectors

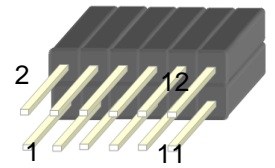
### JUSB1: USB2.0

Pin No.	Description	Pin No.	Description
1	+P5V_USB1	2	+P5V_USB1
3	USB20_L_N3	4	USB20_L_N4
5	USB20_L_P3	6	USB20_L_P4
7	USBGND1	8	USBGND1
9	USBGND1	10	USBGND1



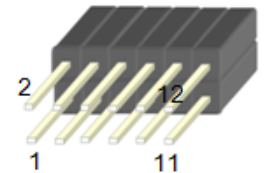
### JTPM1

Pin No.	Description	Pin No.	Description
1	IRQ_SERIAL	2	LPC_LFRAME#
3	LPC_LAD0	4	CLK_24M_LPC
5	LPC_LAD1	6	+P3V3_AUX
7	LPC_LAD2	8	
9	LPC_LAD3	10	+P3V3
11	TPM_RST#	12	GND



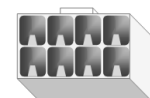
### JVGA1

Pin No.	Description	Pin No.	Description
1	DAC_RO	2	GND
3	DAC_GO	4	GND
5	DAC_BO	6	GND
7	HSYNC_O	8	
9	VSYNC_O	10	GND
11	DDC_DATA	12	DDC_CLK



### JATX6: 8 Pin Power Connector


Pin No.	Description	Pin No.	Description
1	GND	2	+P5V
3	GND	4	+P5V_SB
5	GND	6	+P12V_STBY_PSU
7	GND	8	+P12V_STBY_PSU



**JNMI1**

Pin No.	Description	Pin No.	Description
1	GND	2	NMIBTN#

**JATX2 & JATX4: 8 pin Power Connector**

Pin No.	Description
1	GND
2	GND
	GND
	GND
5	+12V
6	+12V
7	+12V
8	+12V

**JSATA1~JSATA4: SATA**

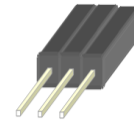
Pin No.	Description
1	GND
2	TX_P
3	TX_N
4	GND
5	RX_N
6	RX_P
7	GND

**JFAN1~6: FAN Connector**

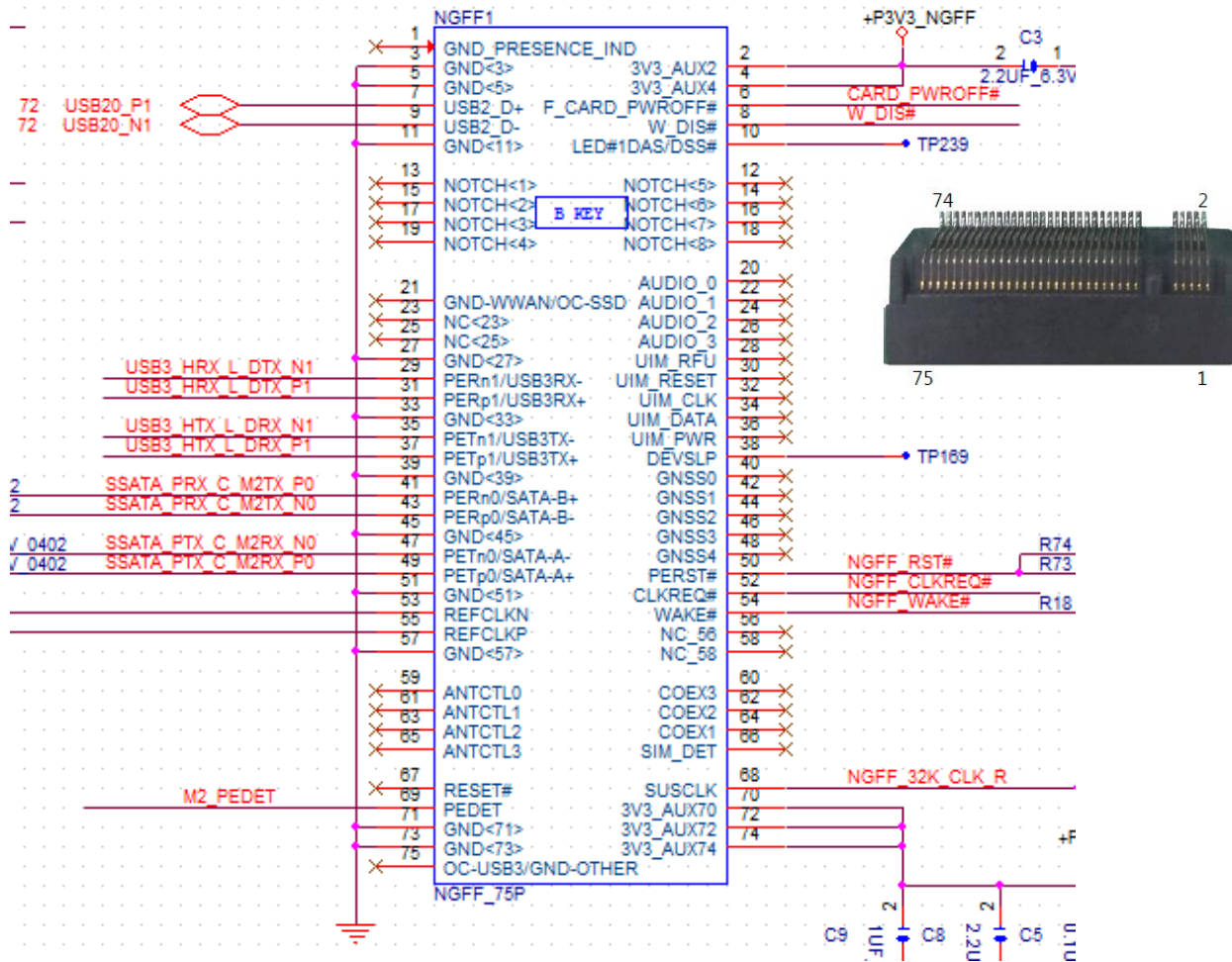
Pin No.	Description
1	PWM Status
2	RPM Sense
3	RPM Sense
4	12V
5	Ground

**JRST1:** Controls the software reset method of the Reset button on front panel.

Pin	Description	Pin	Description
1,2	HW reset	2,3	SW reset (Default)

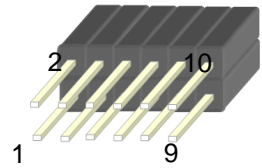


**NGFF1:** M.2 Connector B Key

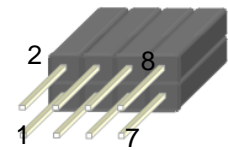


**JCOMA2:** COM PORT

Pin No.	Description	Pin No.	Description
1	BMC_COM2_DCD#	2	BMC_COM2_DSR#
3	BMC_COM2_RX	4	BMC_COM2_RTS
5	BMC_COM2_TX	6	BMC_COM2_CTS#
7	BMC_COM2_DTR	8	
9	COM2_GND2	10	

**JPMB1:** PMBUS

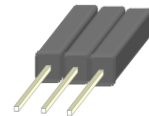
Pin No.	Description	Pin No.	Description
1	PSU_TTL1	2	PSU_TTL2
3	ATX_PSON#	4	GND
5	ATXPWGD	6	PMBUS_CLK
7	PMBUS_DAT	8	PMBUS_ALERT#

**JOPEN1:** Case open


Pin No.	Description	Pin No.	Description
1	GND	2	FM_INTRUDER#

**JCMOS1:** Clear CMOS

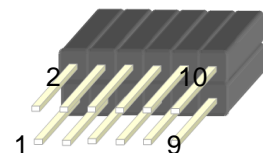
Pin No.	Description	Pin No.	Description
1	VRTC	2	PCH_RTCRST#
3	GND		



Pin	Description	Pin	Description
1.2	Normal (Default)	2.3	Clear CMOS


**JSPIROM1:** Flash BIOS

Pin No.	Description	Pin No.	Description
1	SPI_HD1#	2	SPI_CS1#_DUAL
3	SPI_CS0#_DUAL	4	+P3V3_SPI_ME
5	SPI_MISO	6	SPI_PCH_IO3
7		8	SPI_CLK
9	GND	10	SPI_MOSI

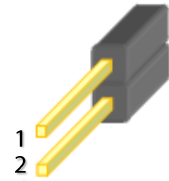


**JGP1:** EXT GPIO header

Pin No.	Description	Pin No.	Description
1	GPO_B_1	2	GPI_B_1
3	GPO_B_2	4	GPI_B_2
5	GPO_B_3	6	GPI_B_3
7	GPO_B_4	8	GPI_B_4
9	GND	10	GND

**JPWR1:** Power on

Pin No.	Description	Pin No.	Description
1	GND	2	ATX_PSON#



## CHAPTER 2: HARDWARE INSTALLATION

To reduce the risk of personal injury, electric shock, or damage to the system, please remove all power connections to completely shut down the device. Also, please wear ESD protection gloves when conducting the steps narrated in this chapter.



### Installing the CPU

Please note that the system delivered to you is already installed with the processor and that this processor, LGA3647, comes with rather sophisticated design; therefore, the assembly of which must be handled with exclusive tools and extreme care by professionals. It is strongly recommended that you not make any adjustments to, remove or even re-install the processor on your own. If handling the processor on your own is inevitable, please read through the instructions in this section and refer to the [official tutorial](#) released by Intel® to make sure you have acquired the necessary knowledge and comply with the requirements.

Installing the processor onto the motherboard involves two stages:

1. Mount the processor onto the heat sink to make a PHM (Processor + Heat Sink Module)
2. Install the PHM onto the motherboard.

#### Tools Required

Tool	Description
<b>Torque screwdriver</b> (Star T30)	Set to <u>1.36 N.m.</u> or <u>12 in-lbf</u> for tightening the nuts which fasten the PHM on the bolster plate. 
<b>ESD Protection</b> (ESD gloves, ESD-safe work surface, etc.)	During the entire assembly process, at least wear a pair of ESD gloves to avoid damaging or contaminating the electronic parts while enhancing your own safety. 

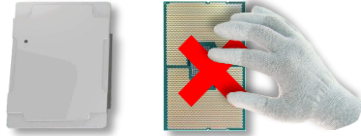
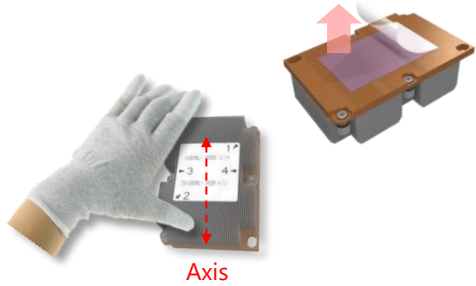
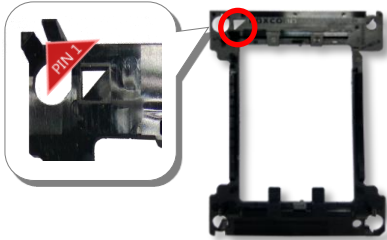
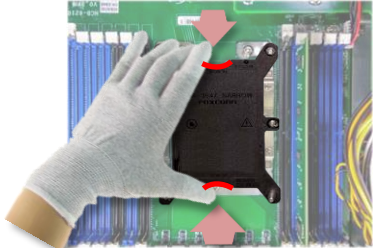
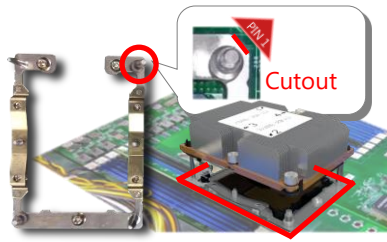


#### Note

The images of tools shown in this document are merely for reference; the actual tools you use might differ.

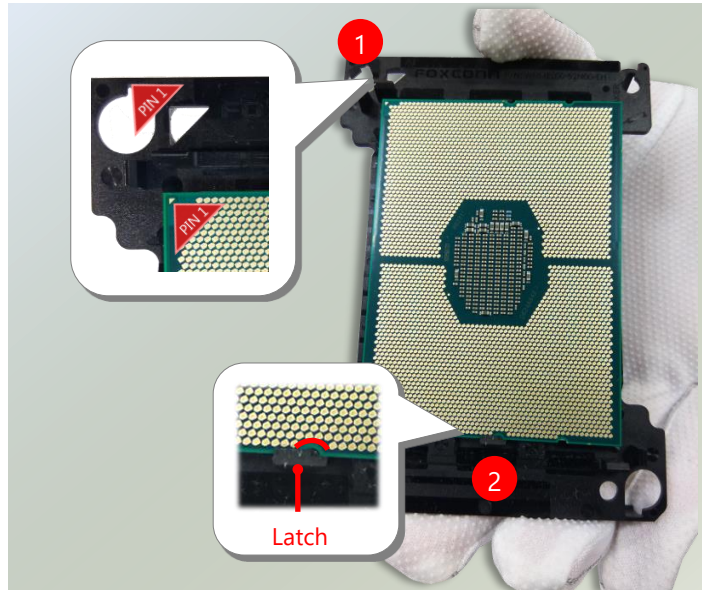


## Parts Explanation

Item	Description	
<p><b>Processor</b></p>	<p>Please avoid touching the gold fingers or package lands of the processor even if you are wearing ESD gloves.</p>	
<p><b>Heat Sink</b></p>	<p>If a TIM (Thermal Interface Material) protective film is already attached to the base of the heat sink, remove it before you mount the processor on it.</p> <p>When holding it, please grip it along the axis of its fins with your thumb and your index finger.</p>	
<p><b>Processor Carrier</b></p>	<p>This is packed along with the processor. Before performing any assembly involving this part, please locate <b>PIN1</b> on one of the corners, an important indicator used to align this carrier with the processor and the bolster plate correctly.</p>	
<p><b>Dust Cover</b></p>	<p>This cover is used to protect the package land surface of the processor from contamination. To remove it from the processor, grasp the holding features with your thumb and your index finger while pulling the cover off vertically.</p>	
<p><b>Bolster Plate</b></p>	<p>A robust bolster plate is used to assist in PHM alignment for installation, while effectively helping eliminate PCB bowing during compression. Please locate the <b>Cutout</b> on one of the four corners before starting PHM installation.</p>	

## Mounting the CPU onto the Heat Sink

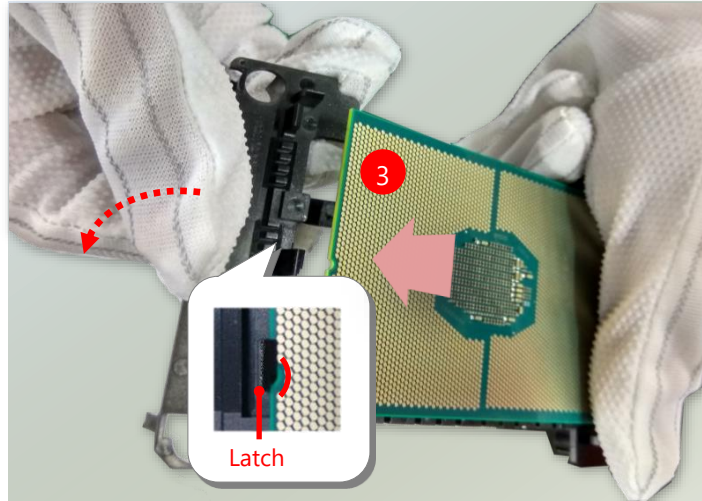
1. Align the **PIN1** indicator on the processor with that on the carrier.
2. Gently insert one side of the processor into the carrier and make sure the alignment feature is aligned with the latch of the carrier.



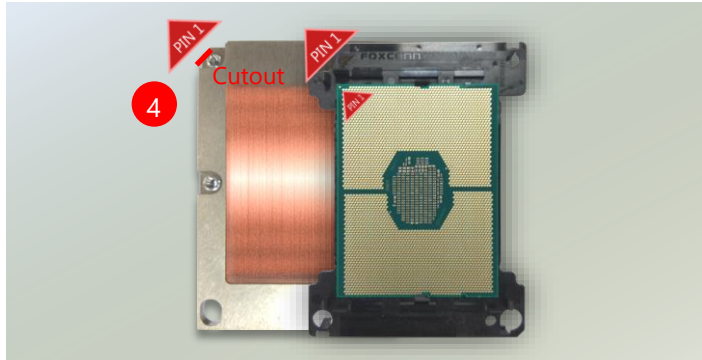
### Note

During assembly, it is essential to have (1) PIN1 on the processor aligned with that on the carrier, and (2) the alignment features on the top and the bottom of the CPU aligned with the corresponding carrier latches.

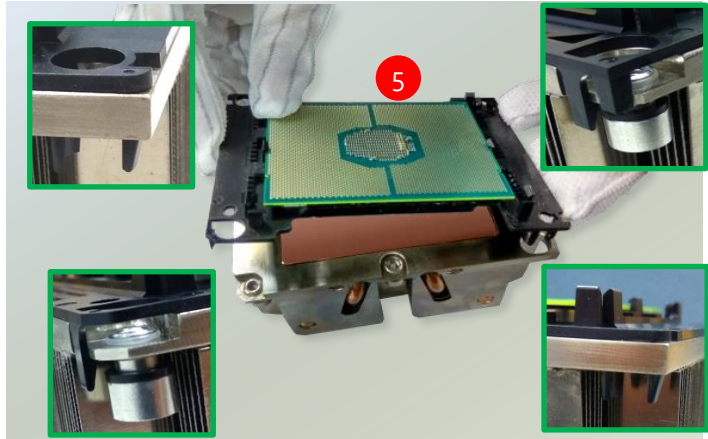
3. For the other end of the carrier, align the alignment feature of the processor with the carrier latch, and then gently bend over the carrier end to have the latch secured on the processor.



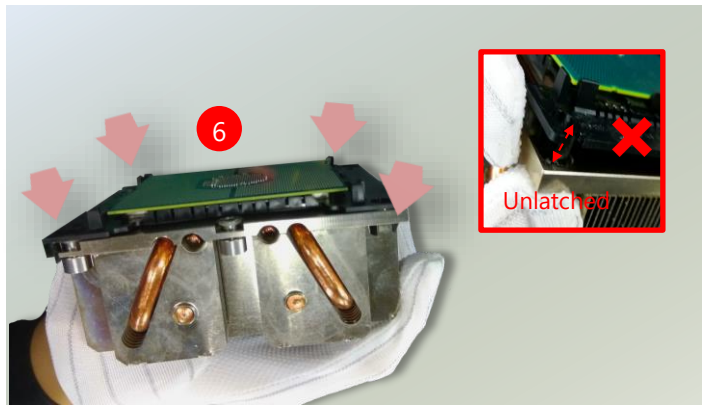
4. Align **PIN1** of the processor with the corner cutout of the heat sink (if there are two corner cutouts on one heat sink, either will do).



5. With a little pressure, push the four corners of the carrier down to engage their latching features with the corresponding corners of the heat sink. You might hear a clicking sound when the latch clicks into place.



6. Inspect the four corners to make sure the latches are all engaged. If correctly latched, the corners of the carrier should be tightly attached to the heat sink, with no gap in-between observed.



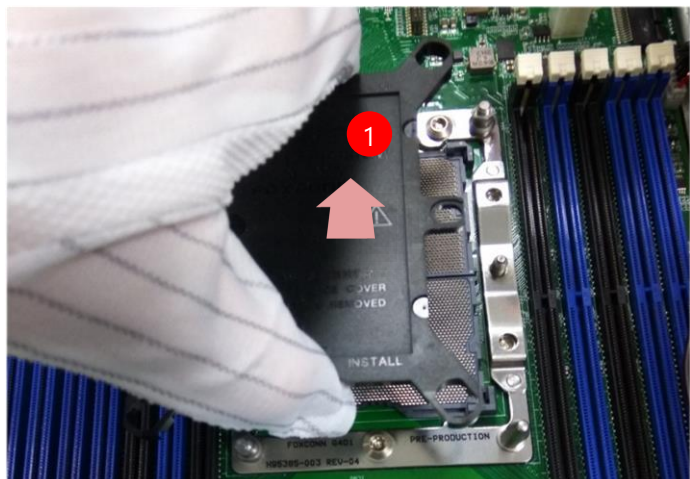
## Installing the PHM onto the Motherboard

1. Remove the dust cover from the socket contacts of the motherboard.

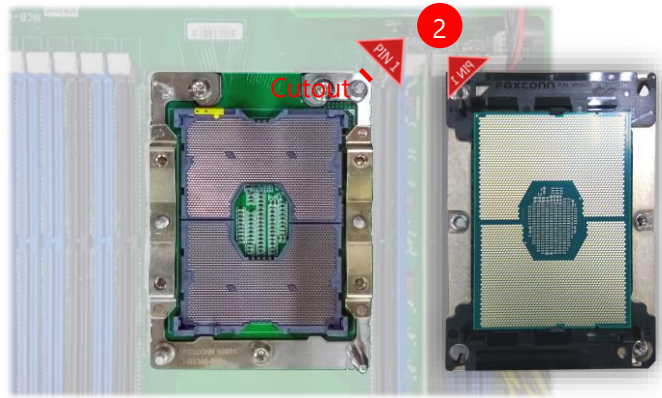


### Note

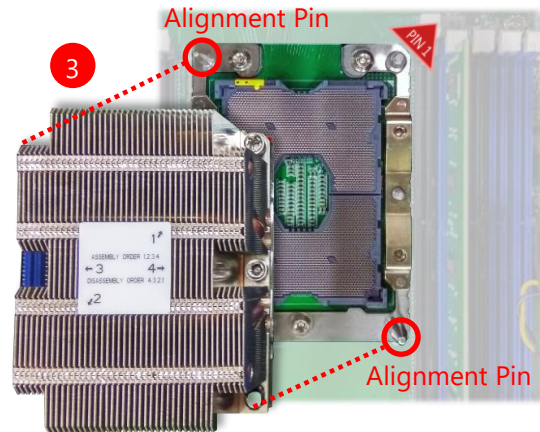
Inspect the surface of the socket under sufficient light to ensure there is no contamination or damage prior to the PHM installation.



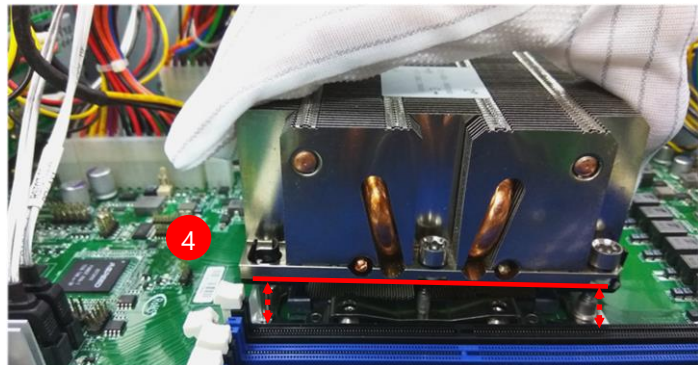
2. Flip the PHM over to align **PIN1** of the carrier with the **Cutout** of the bolster plate.



3. Flip the PHM over, so the package land of the processor will face the socket. Lower the PHM vertically to engage it to the alignment pins of the bolster plate.



4. Make sure the PHM is sitting horizontally on the bolster plate.



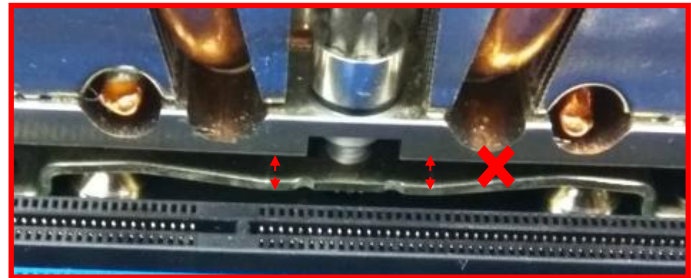
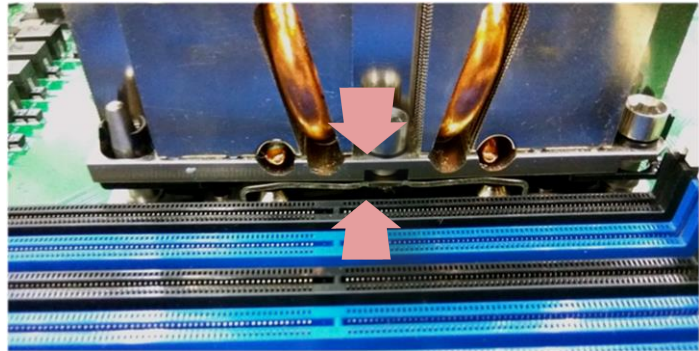
5. Use a torque driver to tighten the four nuts to 12 in-lbf into the bolster plate following the sequence indicated on the heat sink (#1→#2→#3→#4).





Note

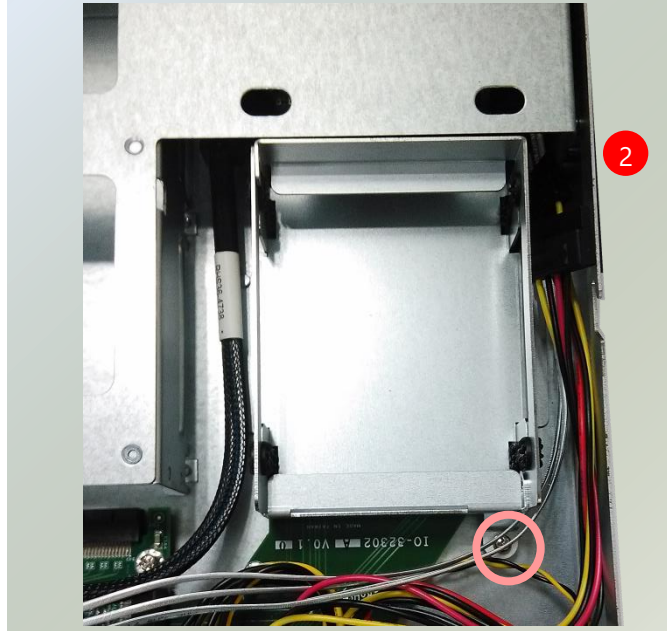
When fastening #3 and #4 nuts, the gap between the metal spring leaf of the bolster plate and the PHM will gradually diminish as you drive the nuts.



## Installing the Disk Drive(s)

NCA-5710 is built with two 2.5" HDD/SSD slot (HDD preferred) drive bay. The following will discuss disk drive installation procedures based on their HDD/SSD designs.

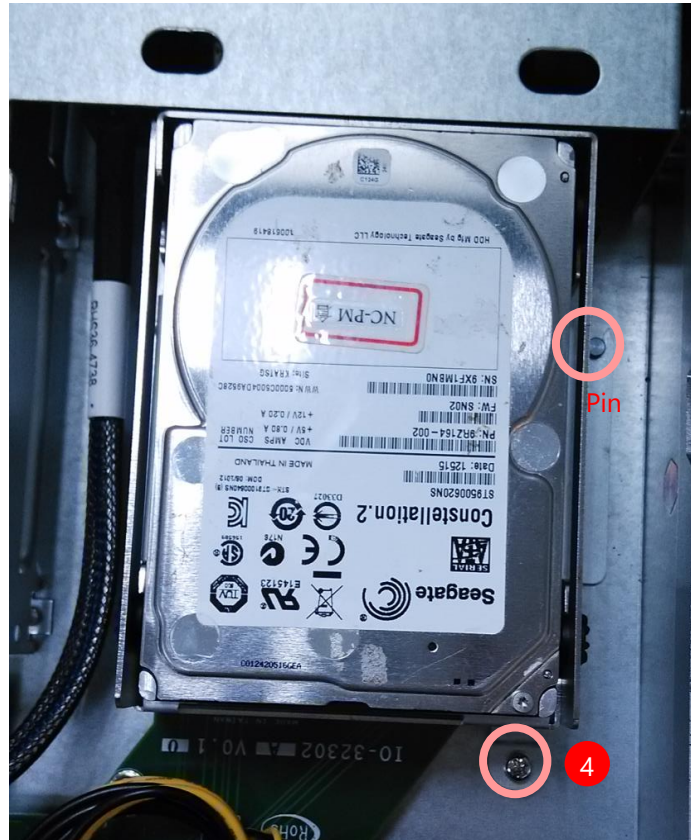
1. Power off the system.
2. Loosen the screw that fixes the tray onto the motherboard.



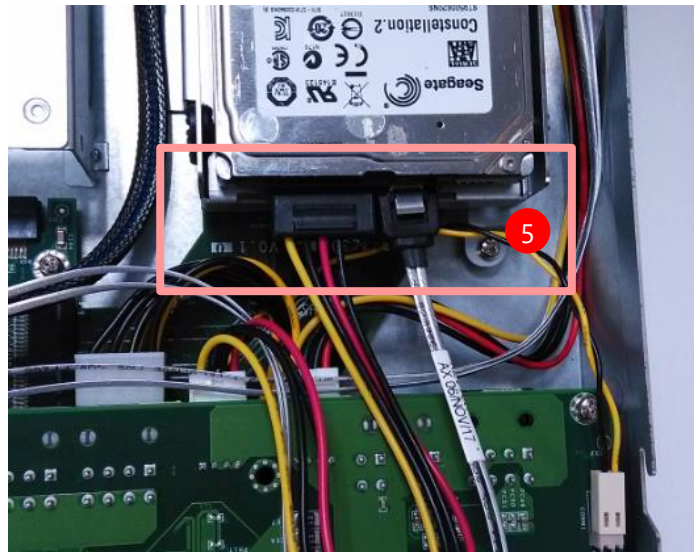
3. Mount the disk onto the empty tray. Make sure the disk connector faces towards the SATA contacts inside the system.



4. Install the tray back to the original position with the screw. Make sure the notch of the tray's side engages properly into the pin as shown in the picture.



5. Connect the SATA cable and SATA power cable to the hard disk.



## Installing the NIC Modules

NCA-5710 comes with 4 NIC Ethernet module slots for network bandwidth expansion. Please follow the steps for installation.

1. On the front panel, select a NIC Ethernet module slot.

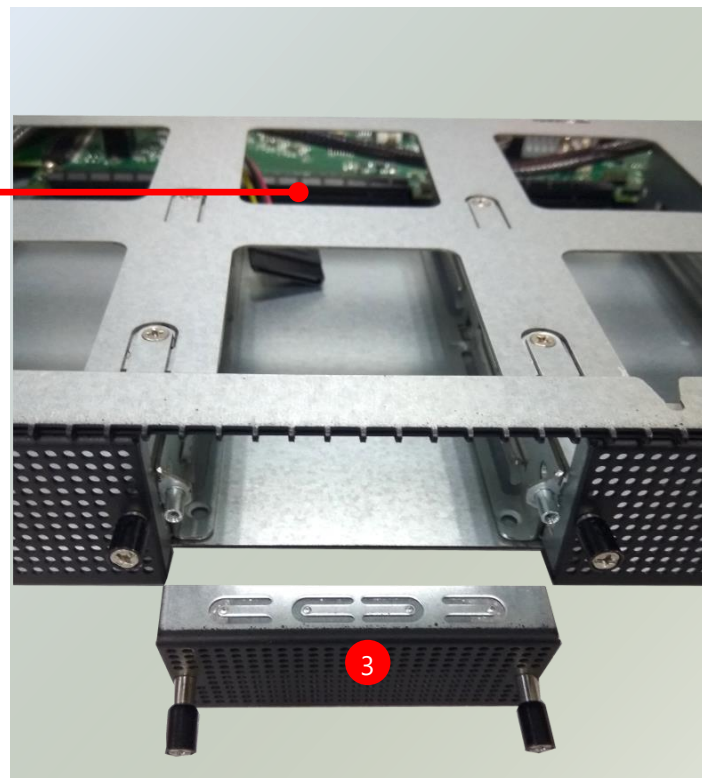


2. Loosen the two lock-screws.



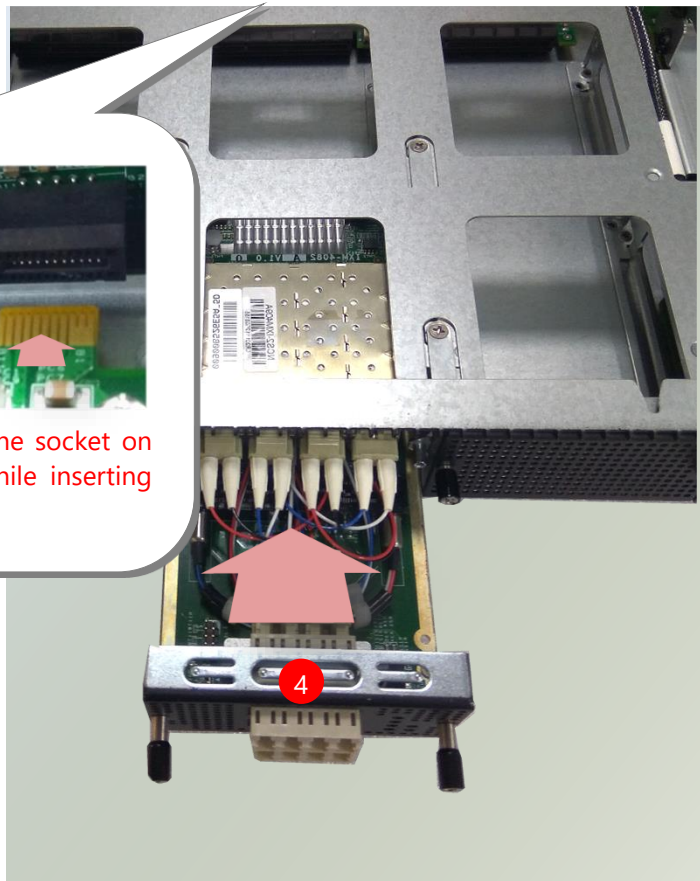
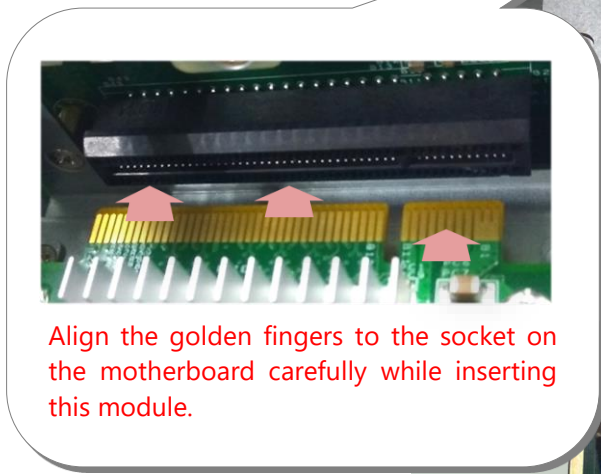
3. Remove the door and locate the socket for module insertion.

Socket

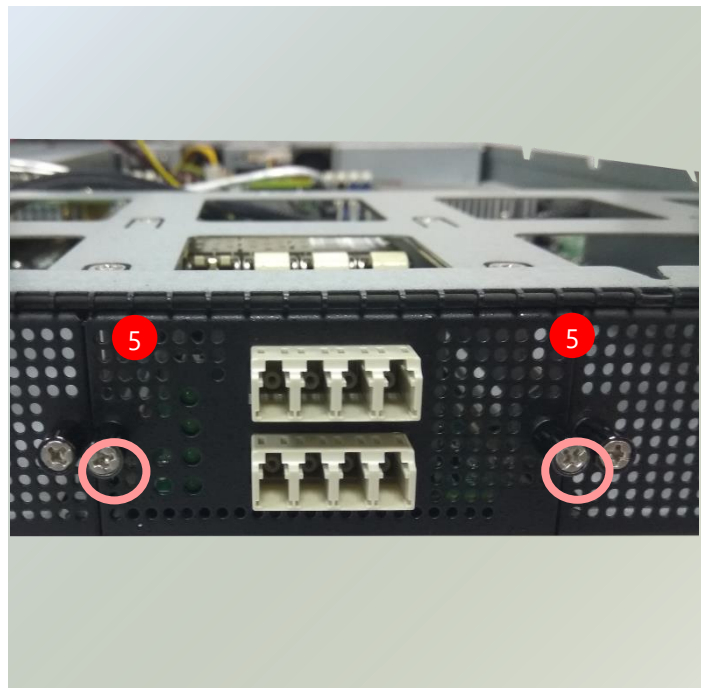




4. Insert your NIC module. (The module shown in the image below is for reference only).

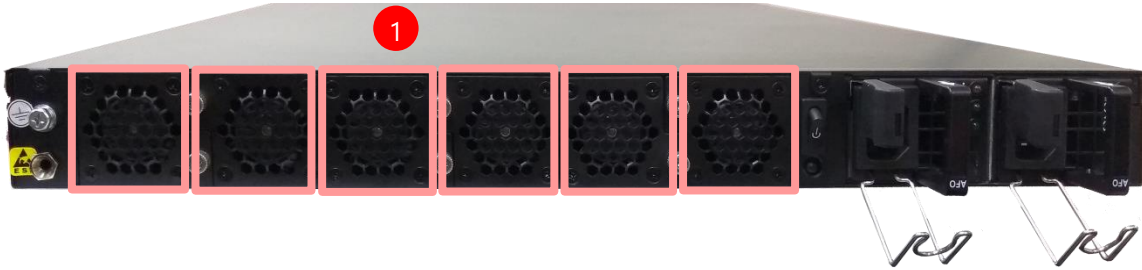


5. Once the module is firmly seated, tighten the two lock-screws.

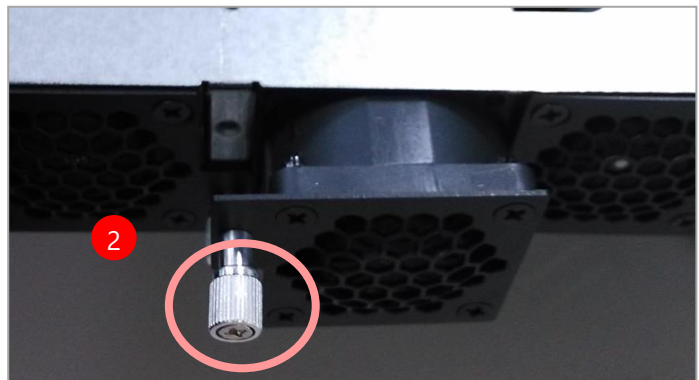


## Replacing the Cooling Fans

Cooling fans may wear down eventually. Please refer to the steps below for replacing cooling fans. When using a new cooling fan, simply reverse the steps to install the fan back onto the enclosure and the system.



1. Locate the cooling fans at the rear panel.
2. Loosen the lock-screw that fixes the fan on the rear panel and take out the worn fan.

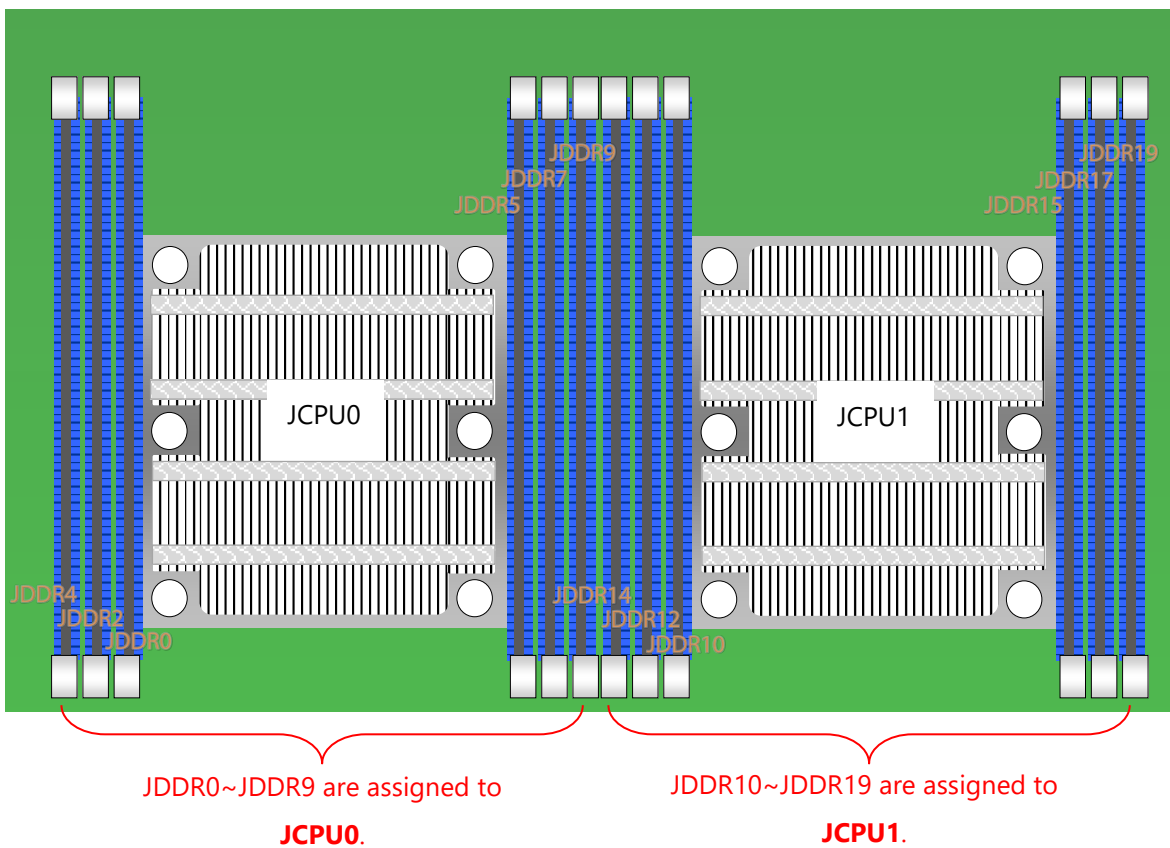


# Installing the System Memory

The motherboard supports 12 memory slots for DDR4 registered DIMM. **JCPU0** requires at least 1 memory module to boot and run from.

## Supported System Memory Summary

Total Slots	12 (6 slots per processor)
Number of Channels	6 (Channel 0~5, 1 DIMM per channel) per processor
Supported DIMM Capacity	4GB, 8GB, 16GB, 32GB
Memory Size	Maximum 384 GB RDIMM (32GB*12)
Memory Type	DDR4 1.2 V ECC RDIMM 2666/2400/2133 MHZ
Minimum DIMM Installed	<b>JCPU0</b> requires at least 1 memory module to boot and run from.



## DIMM Population Guidelines

Please do follow the memory module installation instructions to install the DIMMs, and make sure

- At least one CPU is installed
- If two CPUs are installed, install at least 1 DIMM for **JCPU0**.
- Try to split the DIMMs evenly across the CPUs.
- Please use memory modules of the same capacity, speed and from the same manufacturer to avoid compatibility issues.

### Recommended DIMM Population Scheme

The table below shows the recommended schemes for DIMM population. To guarantee balanced system performance, please install identical DIMMs of the same capacity, speed, number of ranks, and from the same manufacturer.

	Processor	JCPU0						JCPU1						
		JDDR #	4	2	0	5	7	9	14	12	10	15	17	19
Number of DIMMs Installed for 1 CPU	1 DIMM			○										
	2 DIMMs		○	○										
	3 DIMMs	○	○	○										
	4 DIMMs		○	○	○	○								
	6 DIMMs	○	○	○	○	○	○							
Number of DIMMs Installed for 2 CPUs	2 DIMMs			○						○				
	4 DIMMs		○	○					○	○				
	6 DIMMs	○	○	○				○	○	○				
	8 DIMMs		○	○	○	○			○	○	○	○		
	10 DIMMs	○	○	○	○	○	○		○	○	○	○		
12 DIMMs	○	○	○	○	○	○	○	○	○	○	○	○	○	

### DDR4 Memory Support vs. System Memory Speed

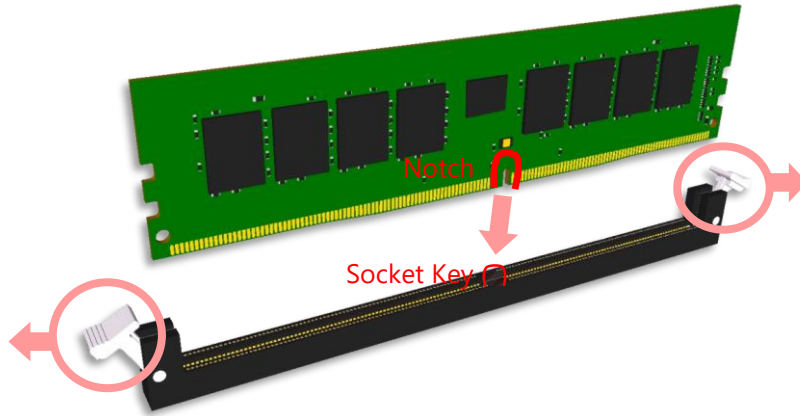
The table below lists the supported DDR4 types and the theoretical overall system memory speed. For optimal system speed, please install identical DIMMs of the same capacity, speed, number of ranks, and from the same manufacturer.

Type	DIMM Rank	Data Width	DIMM Capacity (GB)		Speed (MT/s)
			DRAM Density		Voltage (V): 1.2V 1 DIMM per Channel
			4Gb	8Gb	
RDIMM	SR	x4	8GB	16GB	2666 MT/s
		x8	4GB	8GB	
	DR	x8	8GB	16GB	
		x4	16GB	32GB	

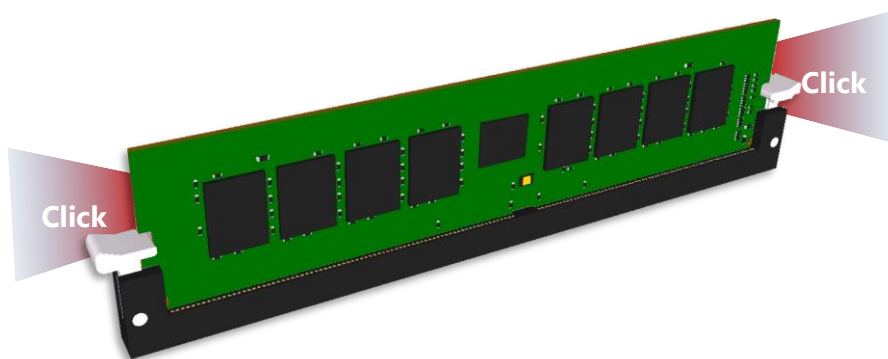
## Memory Module Installation Instructions

Please follow the steps below to install the DIMM memory modules.

1. Power off the system.
2. Pull open the DIMM slot latches.
3. Align the notch of the module with the socket key in the slot and carefully insert the card into the slot.

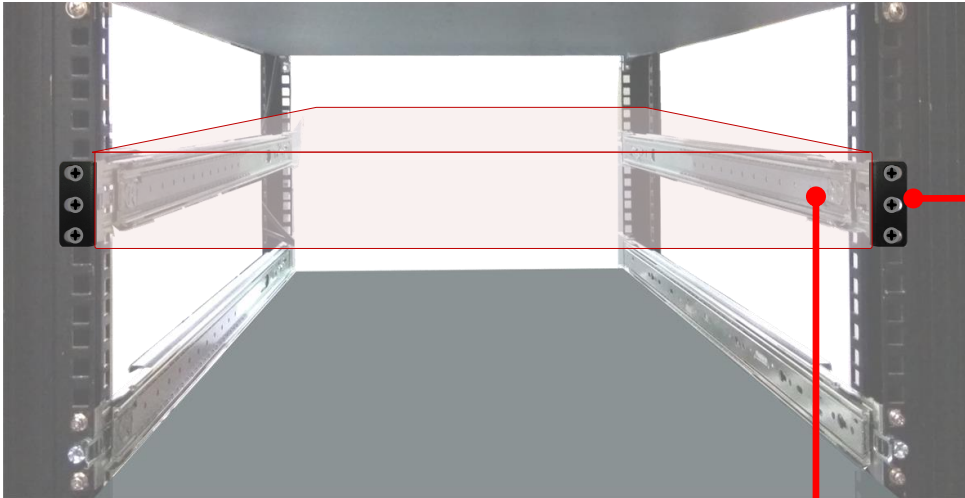


4. Push the module down into the slot until it is firmly seated. Press vertically on both corners of the card until it clicks into place.



## Mounting the System

- ▶ With **Slide Rail Kit + Short Ear Brackets**



The Ear Brackets fix the system onto the front rack posts.

The Slide Rails can secure the system while making the equipment more easily accessible.

## Installing the System Using the Slide Rail Kit (with Short Mounting Ear Brackets)

1. Check the package contents of the Slide Rail Kit. The kit shall include the following items:

- ▶ 1x pack of M4X4L screws (for securing the sliding rail on the system)
- ▶ 2 x Slide Rails



The rail consists of the following parts:



### **Attaching the Rail Brackets**

2. Unpack a slide rail and slide the Inner Channel all the way to the end.



3. Stretch the Rail Bracket to the fullest.



4. Remove the Rail Bracket from the Inner Channel by pushing the Release Tab on the Rail Bracket outwards while sliding it out.



5. Align the Rail Bracket to the side of the chassis and make sure the screw-holes on it match and properly engage the **four** buttons on the side panel as shown in the picture.



6. Carefully pull the Rail Bracket backward to have the buttons locked into the **four** screw holes as shown in the picture.



7. Repeat Steps 5-6 to attach the Rail Bracket to the other side of the chassis.





**Assembling the Ear Brackets**

1. Check the package contents, which shall include the items below:
  - ▶ 1x pack of screws
  - ▶ 2x Ear Brackets



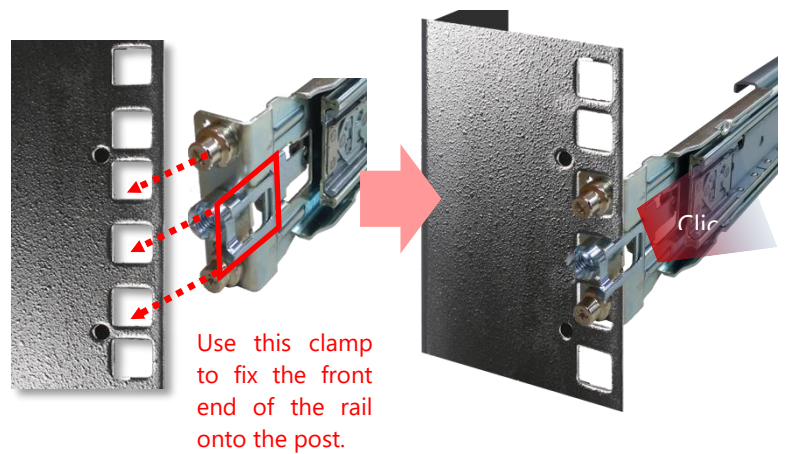
2. Install the Ear Brackets on both sides of the system using the provided screws.



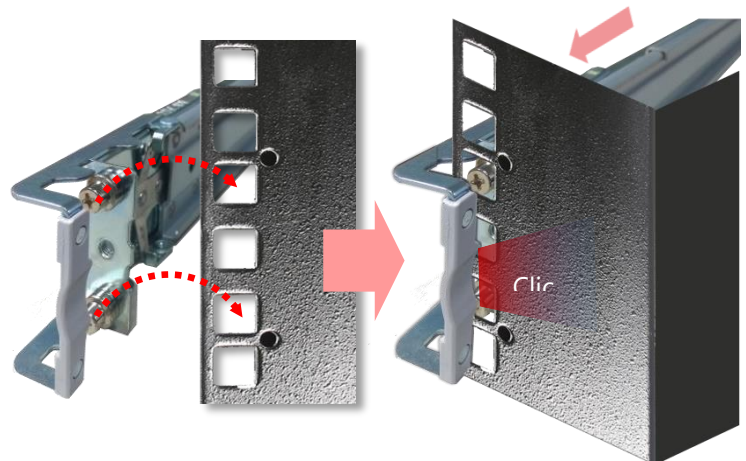
**Installing the Slide Rails**

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

1. This slide-rail kit does NOT require screw-fixing. Simply aim at **3** available screw holes on the rack front and snap the rail front into the rack post as shown in the image. You should hear a “click” sound once it is firmly attached.

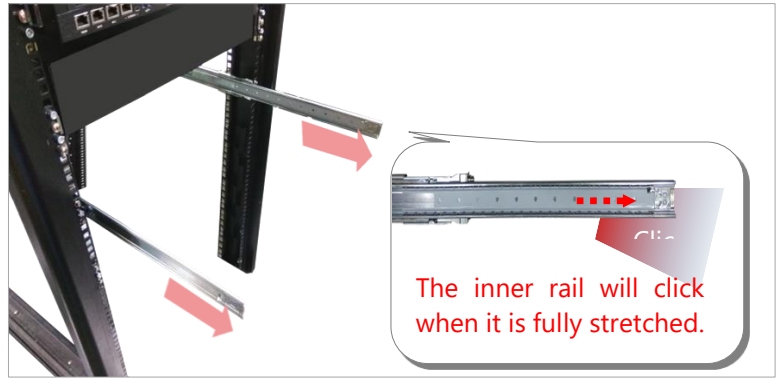


2. For the rear rack installation, slide the rail to aim and engage the bolts on the rail’s rear end with the 2 available holes on the post, and the rail assembly will click into place.



### **Installing the System into the Rack**

1. Stretch both of the Inner Channels out to their fullest extent. You will hear a click sound when they are fully stretched and stop.



2. Hold the system with its front facing you, lift the chassis and gently engage the Rail Brackets on the model while aligning them with the slide-rail assemblies as shown in the image, and then push the system into the cabinet.



While pushing in the system, please also push and hold the Rail Lock tab on both Rail Brackets.



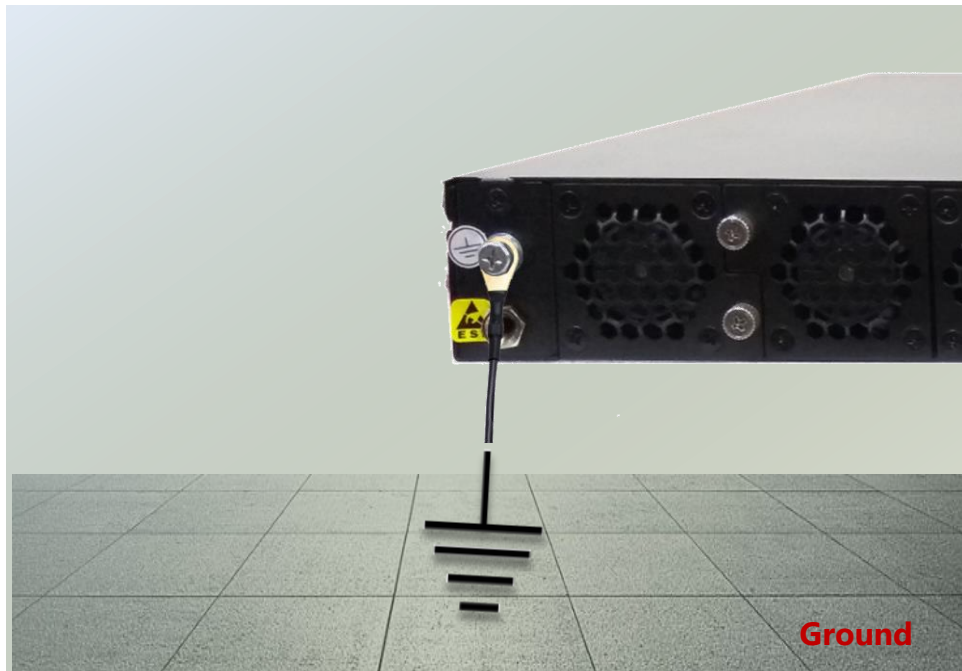
3. Secure the Ear Brackets onto both front posts with provided screws.



## Connecting the Grounding Cable

Before connecting any other cable to this system, you should first attach the grounding cable to the system's grounding stud.

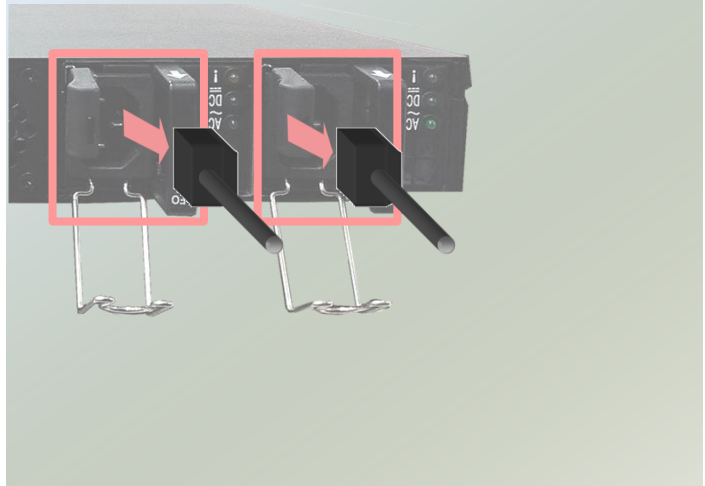
1. Obtain a proper grounding cable.
2. Position the grounding cable against the grounding stud on the system's rear panel, and then tighten the nut to secure the cable.
3. Secure the other end of the grounding cable to the earth ground in your site (through a grounding point on the rack if necessary).



## Replacing the Power Supply Units

Power supply units may wear down eventually. Please be noted that NCA-5710 series supports 850W PSU. Please prepare the power supply units matching this capacity.

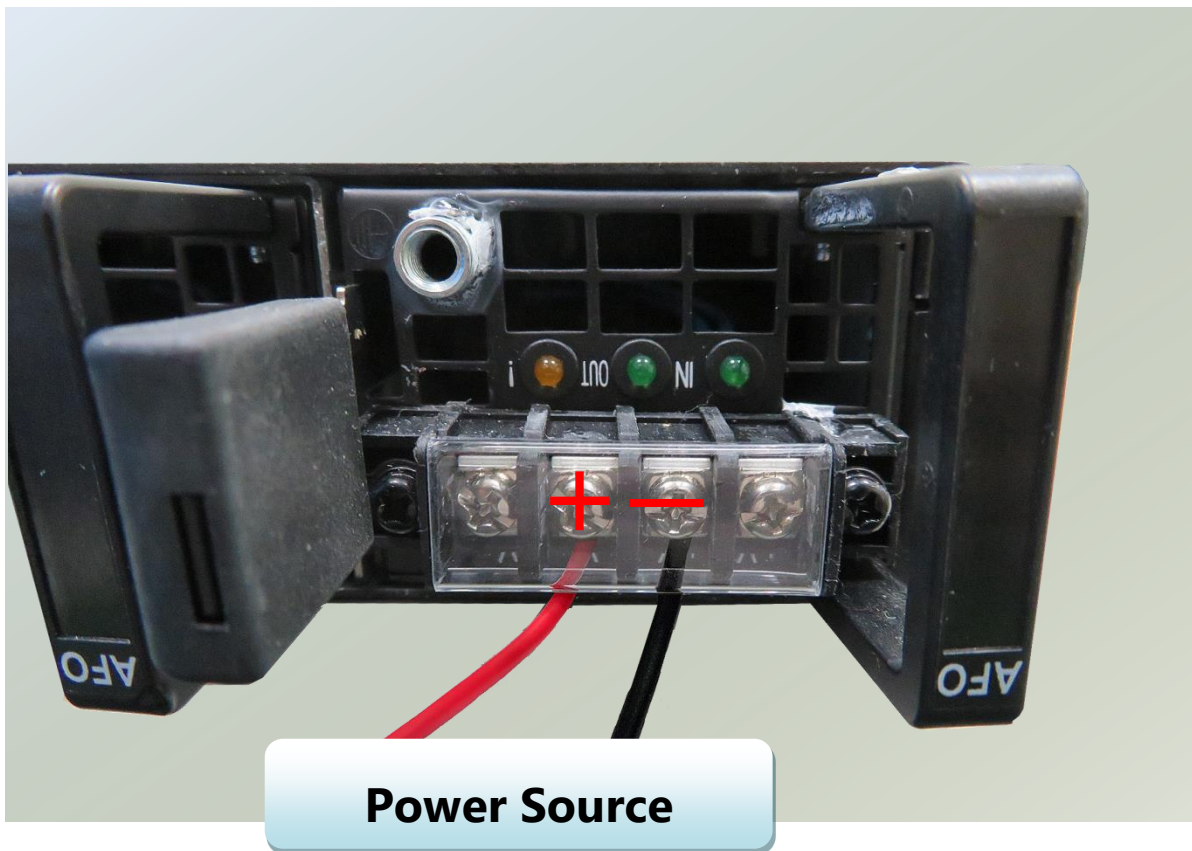
1. On the rear panel, locate the power supply units and disconnect the power cords.
2. Pull the original unit out and replace it with the new one.



## DC Power Supply Installation

Follow the instructions below to connect the DC power cord to the connector on the PSU. This instruction is for the installation of the conductor to build earthing by a skilled person.

1. Loosen the + and - screws.
2. Respectively attach the two cables to the connectors: the red cable to the right (Positive Pole) and the black cable to the left (Negative Pole).
3. Fasten the screws.
4. Connect the power cables to the power source.



- ▶ This product is intended to be supplied by a UL Listed DC power source, rated **-48- -60Vdc, 21A** minimum,  $T_{ma} = 40 \text{ degrees C}$ , and the altitude of operation = **5000m**.
- ▶ The cable should be **12AWG (21A minimum, 60V minimum)**.

If you need further assistance with purchasing the power source, please contact to Lanner Electronics Inc. for further information.

# CHAPTER 3: SOFTWARE SETUP

## Remote Server Management

### Overview

This chapter will introduce the features of Lanner's BMC firmware and how to perform server remote management through it. Lanner has implemented IPMI 2.0 based on ASPEED service processor, performing all the BMC defined by IPMI 2.0. In addition, Lanner's BMC firmware runs an embedded web-server for full configuration using Web UI, which has a low learning curve.

### BMC Main Features

Feature		Description
<b>IPMI 2.0 Standard Features</b>	System Interface support	<ul style="list-style-type: none"> <li>• KCS (System Interface Support)</li> <li>• LAN (RMCP+)</li> </ul>
	IPMI 2.0 based Management	<ul style="list-style-type: none"> <li>• BMC stack with an IPMI 2.0 implementation</li> <li>• Sensor monitoring</li> <li>• System power management</li> </ul>
	System Management	<ul style="list-style-type: none"> <li>• Watchdog timer</li> <li>• Fan speed monitor and control</li> <li>• FRU information</li> </ul>
	Event Log	<ul style="list-style-type: none"> <li>• System Event Log (SEL)</li> </ul>
	Text Console Redirection: SOL	<ul style="list-style-type: none"> <li>• Support in IPMI stack for SOL to remotely access BIOS and text console before OS booting</li> </ul>
	User Management	<ul style="list-style-type: none"> <li>• IPMI based user management</li> <li>• Multiple user permission level</li> </ul>
<b>Non-IPMI functions</b>	Web User Interfaces	<ul style="list-style-type: none"> <li>• BMC management via web user interface</li> <li>• Integrated KVM and Virtual Media</li> </ul>
	User authorization	<ul style="list-style-type: none"> <li>• RADIUS support</li> <li>• LDAP support</li> </ul>
	Security	<ul style="list-style-type: none"> <li>• SSL and HTTPS support</li> </ul>
	Maintenance	<ul style="list-style-type: none"> <li>• Auto sync time with NTP server</li> <li>• Remote firmware update by Web UI or Linux tool</li> </ul>

## Firmware Function Description

### System Power Management

The BMC implements chassis power and resets functions for system administrators to control and manage the system power behavior. These functions can be activated by sending the IPMI 2.0 compatible chassis commands to the BMC over messaging interfaces. The following list summarizes the supported functions.

- Chassis power on
- Chassis power off
- Chassis power cycle
- Chassis power reset
- Chassis power soft
- Server's power status report

### Watchdog Timer

The BMC provides an IPMI 2.0 compatible watchdog timer which can prevent the system from system hanging.

### User Management

The BMC supports 9 IDs for IPMI user accounts. The maximum length of the username and password are 16 and 20 respectively, and the possible privilege levels are Callback, User, Operator, and Administrator. Moreover, the account creator is allowed to enable/disable the user account at any time. If not specified, the default user accounts are listed follows:

User Name	Password	User Access	Characteristics
admin	admin	Enabled	Password can be changed

### Keyboard, Video, Mouse (KVM) Redirection

- The BMC provides keyboard, video, and mouse (KVM) redirection over LAN. This application is available remotely from the embedded web server.
- Support video recording, recorded videos to be downloaded & playable.

### Virtual Media Redirection

- The BMC provides remote virtual CD, HD and FD redirection. CD image could be mounted directly in KVM window.
- Efficient USB 2.0 based CD/DVD redirection with a typical speed of 20XCD.
- Completely secured transmission.

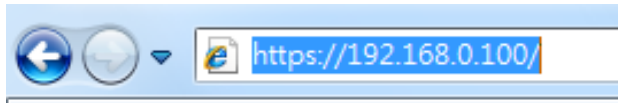
## IPMI Commands Support List

COMMANDS	NETFN	CMD
<b>IPM Device “Global” Commands</b>		
Get Device ID	APP (06h)	00h
Cold Reset	APP (06h)	02h
Warm Reset	APP (06h)	03h
Get Device GUID	APP (06h)	08h
<b>BMC Watchdog Timer Commands</b>		
Reset Watchdog Timer	APP (06h)	22h
Set Watchdog Timer	APP (06h)	24h
Get Watchdog Timer	APP (06h)	25h
<b>BMC Device and Messaging Commands</b>		
Get System GUID	APP (06h)	37h
Get Channel Info	APP (06h)	42h
Set User Access	APP (06h)	43h
Get User Access	APP (06h)	44h
Set User Name	APP (06h)	45h
Get User Name	APP (06h)	46h
Set User Password	APP (06h)	47h
<b>Chassis Device Commands</b>		
Get Chassis Capabilities	Chassis (00h)	00h
Get Chassis Status	Chassis (00h)	01h
Chassis Control	Chassis (00h)	02h
Chassis Reset	Chassis (00h)	03h
<b>SDR Device Commands</b>		
Get SDR Repository Info	Storage (0Ah)	20h
Get SDR Repository Allocation Info	Storage (0Ah)	21h
Get SDR	Storage (0Ah)	23h
Get SDR Repository Time	Storage (0Ah)	28h
<b>LAN Device Commands</b>		
Set LAN Configuration Parameters	Transport (0Ch)	01h
Get LAN Configuration Parameters	Transport (0Ch)	02h



## Using BMC Web UI

In the address bar of your Internet browser, input the IP address of the remote server to access the BMC interface of that server.



Initial access of BMC prompts you to enter username and password. A screenshot of the login screen is given below:

A screenshot of the BMC login page. It features a blue gradient background. On the left, the labels "Username:" and "Password:" are displayed in a bold, black font. To the right of each label is a white rectangular input field. Below the password field is a button labeled "Login" in a black font.

### *Login Page*

- ▶ **Username:** Enter your username in this field.
- ▶ **Password:** Enter your password in this field.
- ▶ **Login:** After entering the required credentials, click the **Login** to log in to Web UI.



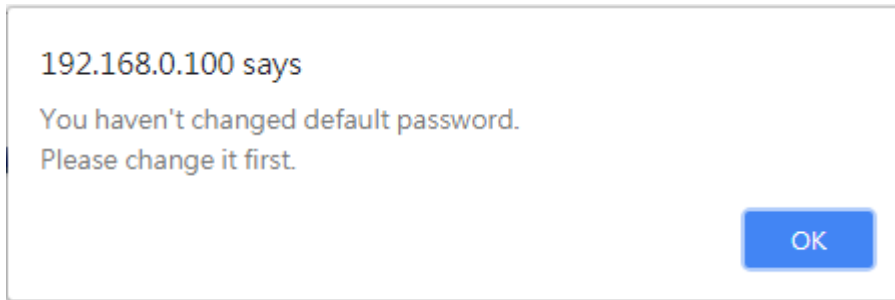
### **Note**

- (1) If not specified, the default IP to access BMC is <https://192.168.0.100>(Console Management Port).
- (2) Please use **https** to access Web UI.

## Default User Name and Password

- ▶ **Username:** admin
- ▶ **Password:** admin

The default username and password are in lower-case characters. When you log in using the default username and password, you will get full administrative rights, and it will ask you to change the default password once you log in. The dialog is shown below:



*Change the default password - Dialog*

Clicking **OK** will take you to the User Management Configuration page to set a password.

 A screenshot of a web form titled "Change Password (The Maximum Password Length is 16 Characters)". It has three input fields: "Username" with the value "admin", "Password", and "Confirm Password". A "Modify" button is located at the bottom right of the form.

*Change the default password – Set password*



### Note

Duplicate usernames shouldn't exist across various authentication methods like LDAP, RADIUS or IPMI since the privilege of one Authentication method is overwritten by another authentication method during logging in, and hence the correct privilege cannot be returned properly.

## Web UI Layout

The BMC Web UI consists of various menu items:

## Menu Bar

The menu bar displays the following:

- ▶ Dashboard
- ▶ Configuration
- ▶ Remote Control
- ▶ Maintenance

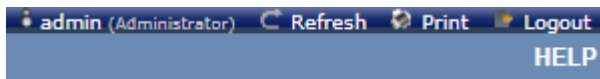
A screenshot of the menu bar is shown below:



*Menu Bar*

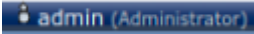

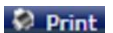

## Quick Button and Logged-in User

The user information and quick buttons are located at the top right of the Web UI.



*User Information*

The logged-in user information shows the logged-in user's username, privilege, with the quick buttons allowing you to perform the following functions:


- ▶ **User information:** The icon  shows the logged-in user name and privilege.
- ▶ **Refresh:** Click the icon  to reload the current page.
- ▶ **Print:** Click the icon  to print the current page.
- ▶ **Logout:** Click the icon  to log out of the Web UI.

## Logged-in User and Its Privilege Level

This option shows the logged-in username and privilege. There are four kinds of privileges:

- ▶ **User:** Only valid commands are allowed.
- ▶ **Operator:** All BMC commands are allowed except for the configuration commands that can change the behavior of the out-of-hand interfaces.
- ▶ **Administrator:** All BMC commands are allowed.
- ▶ **No Access:** Login access denied.

## Help

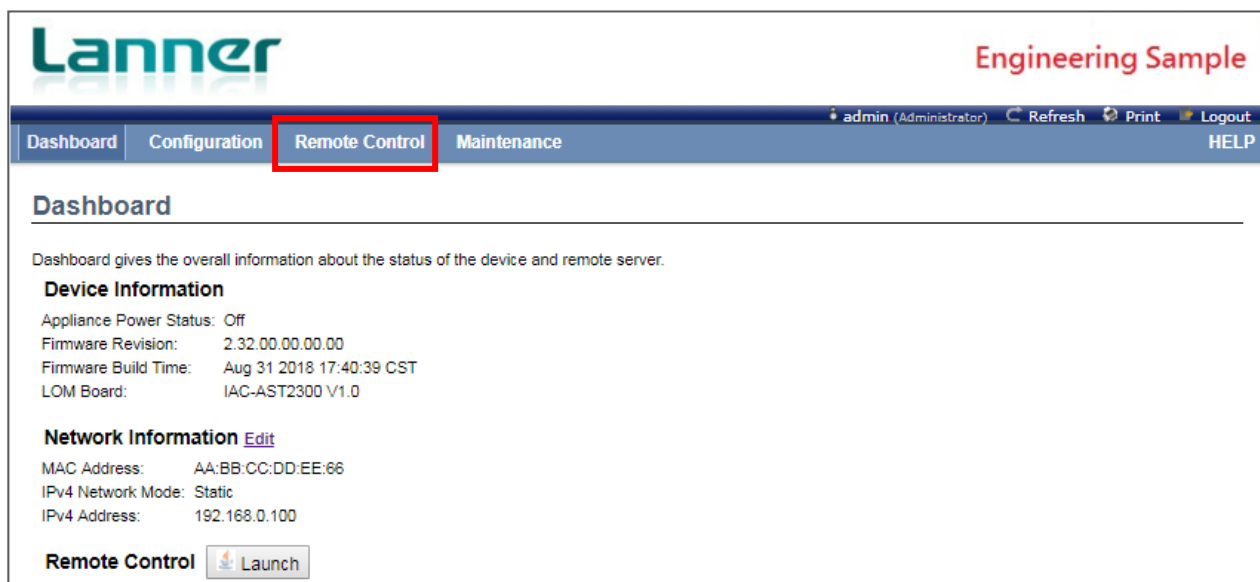
**Help:** The **Help** icon  is located at the top right of each page in Web UI. Click this help icon to view more detailed field descriptions.

# Installing Operating System

If your system is shipped without an operating system, install the supported operating system using the following resources.

## Via IPMI Interface

1. Download the ISO image and make a bootable DVD from it.
2. Connect a DVD player or other type of readers (floppy disk, or a drive) to a computer.
3. Connect to your target system from this computer. (Refer to *Using BMC Web UI* for instructions on how to access the target system through Web UI.
4. After entering the main screen, select "Remote Control">"Console Redirection," and then click on "Java Console."

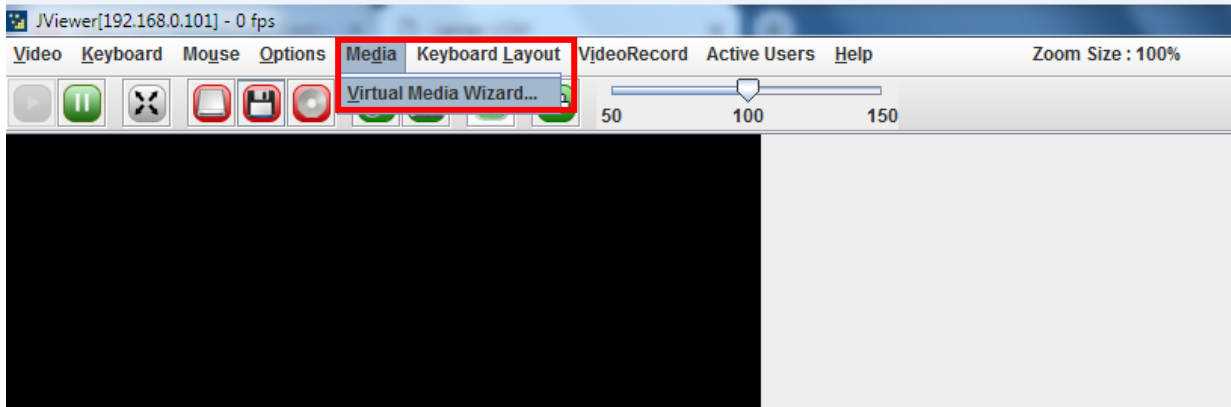


The screenshot shows the Lanner BMC Web UI. The top navigation bar includes "Dashboard", "Configuration", "Remote Control" (highlighted with a red box), and "Maintenance". The "Remote Control" menu is open, showing "Console Redirection" and "Java Console" (highlighted with a red box). The main content area displays "Dashboard" information, including "Device Information" (Appliance Power Status: Off, Firmware Revision: 2.32.00.00.00.00, Firmware Build Time: Aug 31 2018 17:40:39 CST, LOM Board: IAC-AST2300 V1.0) and "Network Information" (MAC Address: AA:BB:CC:DD:EE:66, IPv4 Network Mode: Static, IPv4 Address: 192.168.0.100). A "Remote Control" section has a "Launch" button.

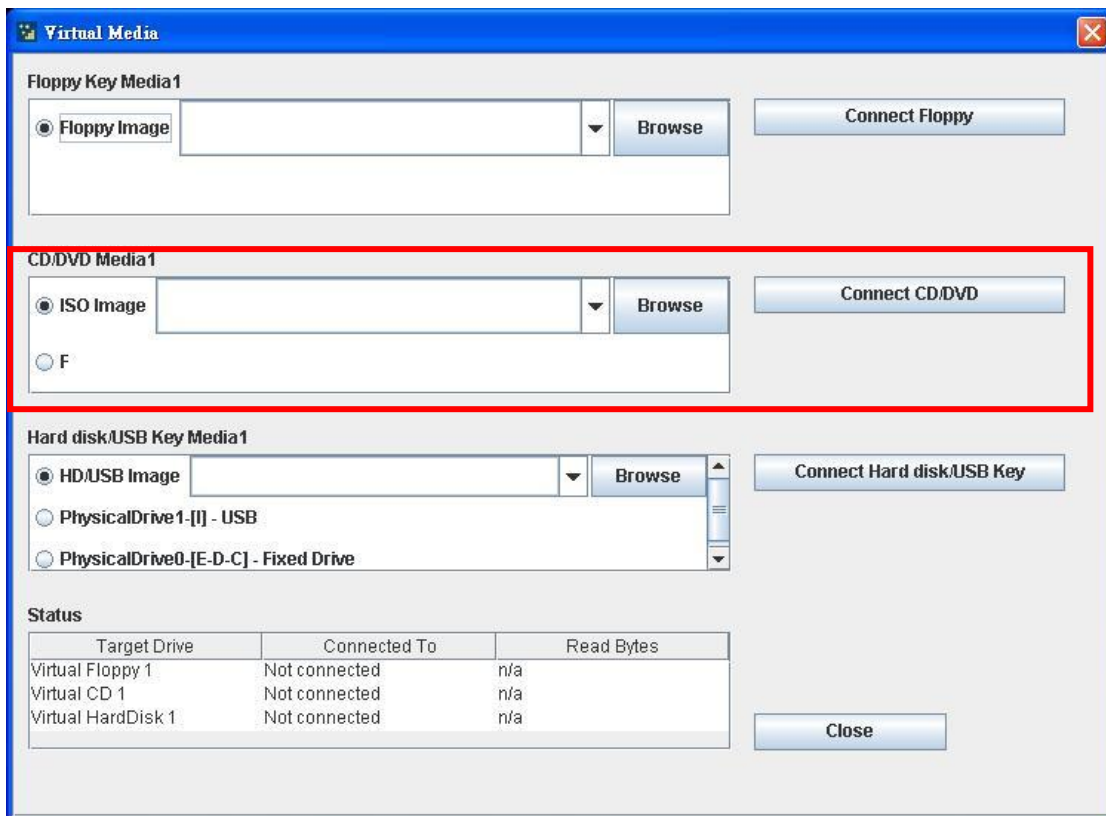


The screenshot shows the "Console Redirection" section of the Lanner BMC Web UI. It contains the text "Press the button to launch the redirection console and manage the server remotely." and a "Java Console" button (highlighted with a red box).

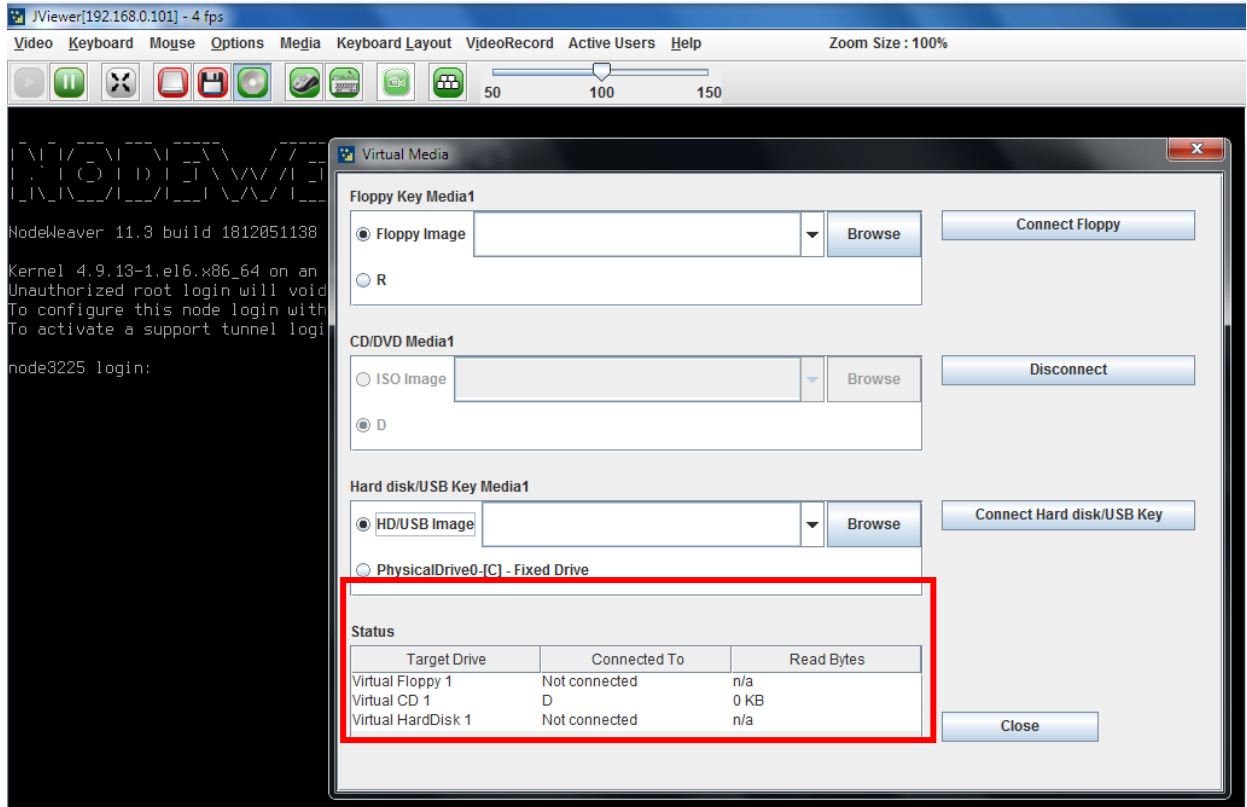
5. After a JViewer screen pops up, select "Media" and then "Virtual Media Wizard" from the toolbar.



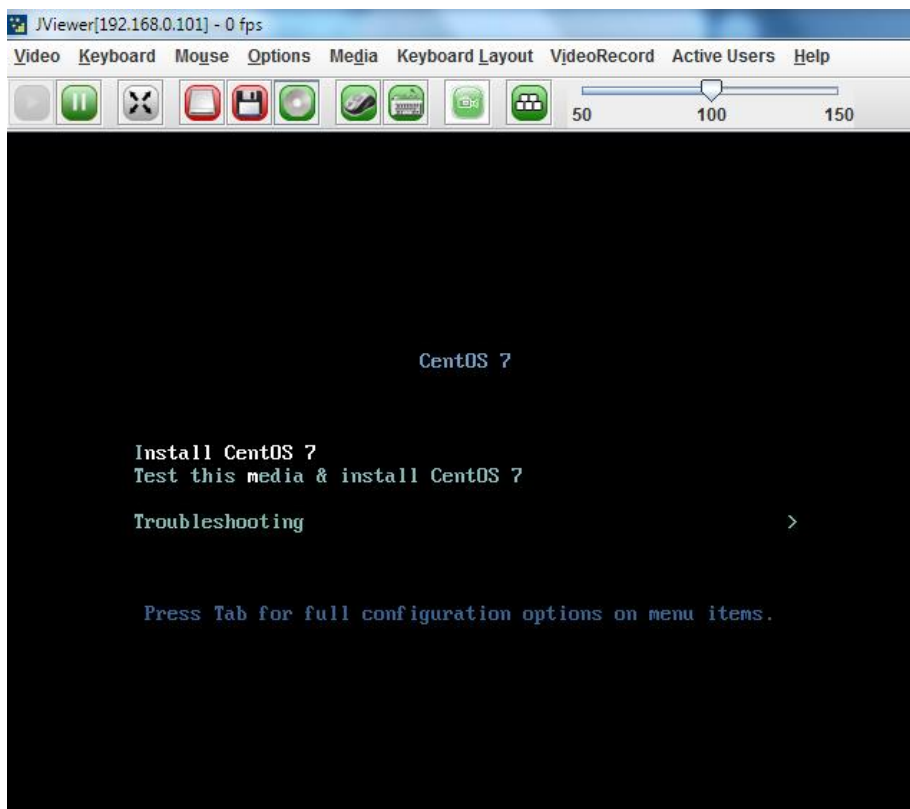
6. On **Virtual Media** screen, select your media type to load the image. For example, click on "Browse" of **CD/DVD Media 1** and then "Connect CD/DVD."



7. The **Status** window will display the connection status.



8. The installation process will automatically start. Please follow the onscreen instruction to complete the rest of the steps and restart the target system manually.



## 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.

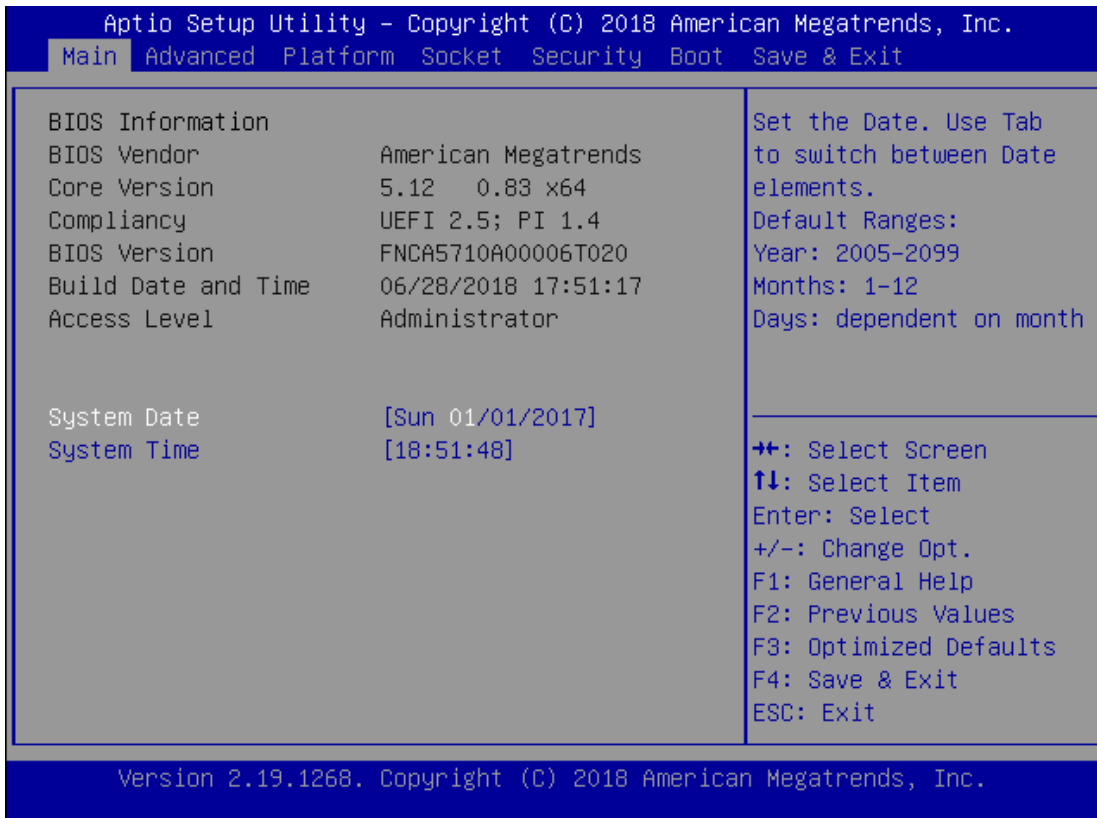
### Main Setup

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

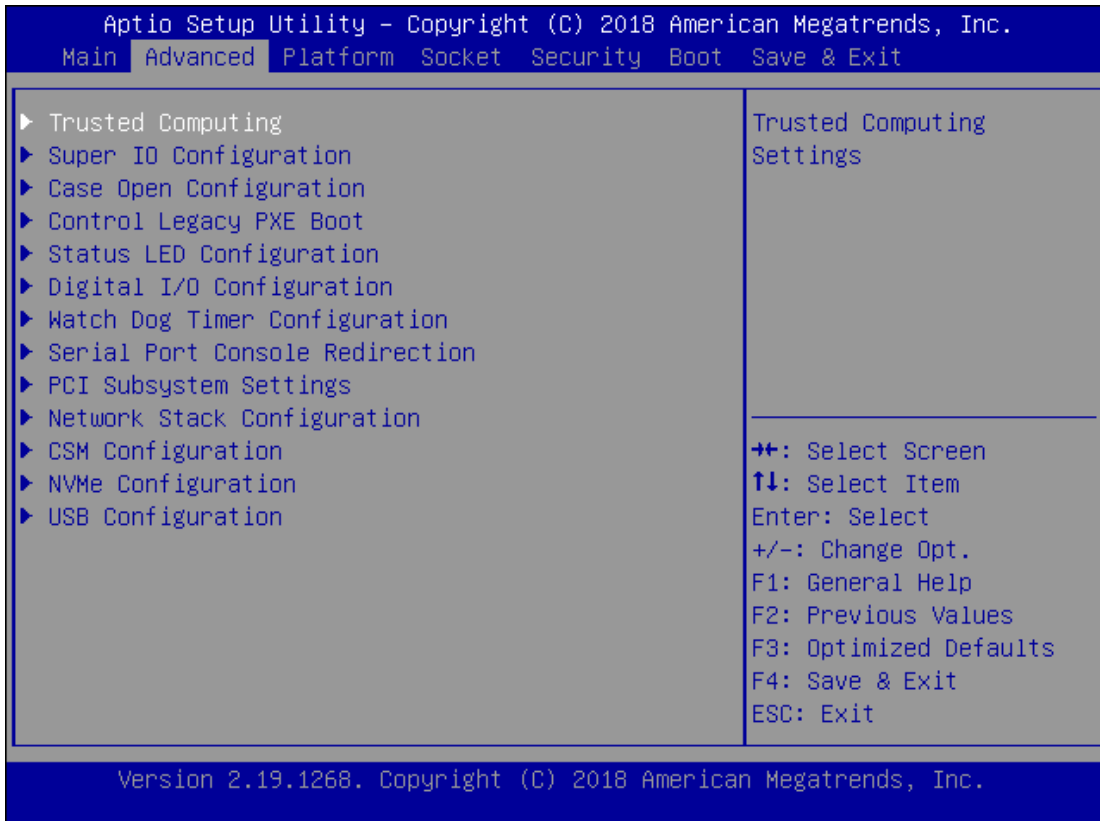
**Setup** page contains BIOS information and project version information.



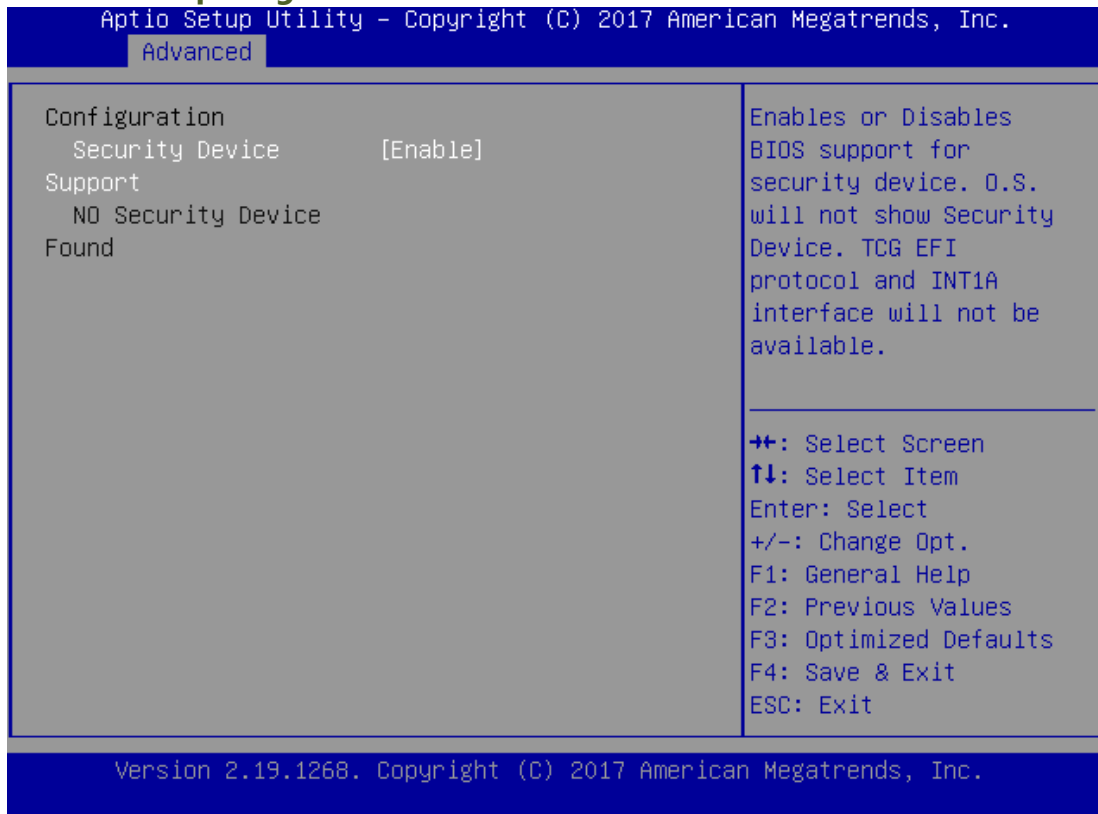
Feature	Description
BIOS Information	<p><b>BIOS Vendor:</b> American Megatrends</p> <p><b>Core Version:</b> AMI Kernel version, CRB code base, X64</p> <p><b>Compliancy:</b> UEFI version, PI version</p> <p><b>Project Version:</b> BIOS release version</p> <p><b>Build Date and Time:</b> MM/DD/YYYY</p> <p><b>Access Level:</b> Administrator / User</p>
System Date	<p>To set the Date, use <b>&lt;Tab&gt;</b> to switch between Date elements. Default</p> <p><b>Range of Year:</b> 2005-2099</p> <p><b>Default Range of Month:</b> 1-12</p> <p><b>Days:</b> dependent on Month.</p>
System Time	To set the Date, use <b>&lt;Tab&gt;</b> to switch between Date elements.



## Advanced Page

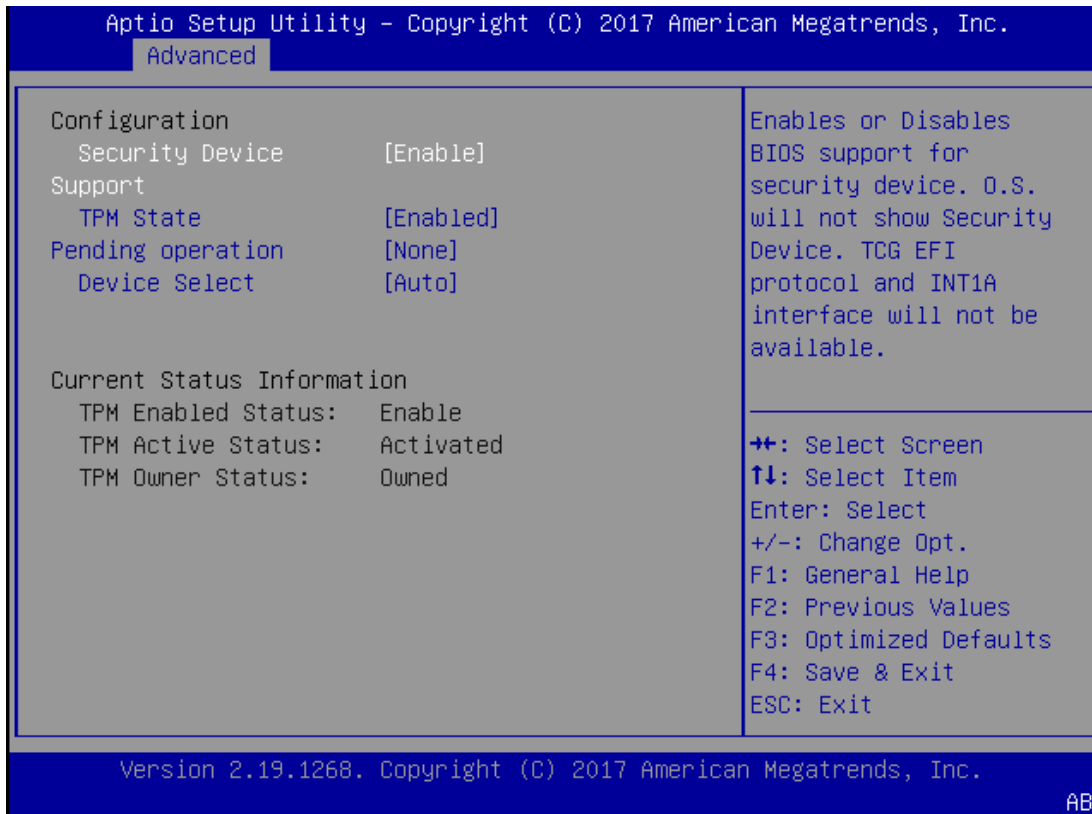




## Trusted Computing



Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

**Trusted Computing (TPM1.2)**



Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
TPM State	Enabled Disabled	Enables or disables Security Device.  <b>Note</b> Your computer will reboot during restart in order to change state of the device.
Pending operation	None TPM Clear	Schedules an Operation for the Security Device.  <b>Note</b> Your computer will reboot during restart in order to change state of the device.
Device Select	TPM 1.2 TPM 2.0 Auto	<b>TPM 1.2</b> will restrict support to TPM 1.2 devices; while <b>TPM 2.0</b> will restrict support to TPM 2.0 devices; <b>Auto</b> will support both with the default set to TPM 2.0 devices. If not found, TPM 1.2 devices will be enumerated.

**Trusted Computing (TPM2.0)**

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Advanced

TPM20 Device Found		▲ 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.
Vendor: NTC		
Firmware Version: 1.3		
Security Device Support	[Enable]	
Active PCR banks	SHA-1,SHA256	
Available PCR banks	SHA-1,SHA256	
SHA-1 PCR Bank	[Enabled]	↔: Select Screen
SHA256 PCR Bank	[Enabled]	↑↓: Select Item
Pending operation	[None]	Enter: Select
Platform Hierarchy	[Enabled]	+/-: Change Opt.
Storage Hierarchy	[Enabled]	F1: General Help
Endorsement Hierarchy	[Enabled]	F2: Previous Values
		F3: Optimized Defaults
		▼ F4: Save & Exit
		ESC: Exit

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Advanced

Active PCR banks	SHA-1,SHA256	▲ 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,
Available PCR banks	SHA-1,SHA256	
SHA-1 PCR Bank	[Enabled]	
SHA256 PCR Bank	[Enabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	
Endorsement Hierarchy	[Enabled]	
TPM2.0 UEFI Spec	[TCG_2]	↔: Select Screen
Physical Presence Spec Version	[1.3]	↑↓: Select Item
TPM 20 InterfaceType	[TIS]	Enter: Select
Device Select	[Auto]	+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		▼ F4: Save & Exit
		ESC: Exit

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AB

Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or disables SHA256 PCR Bank.
Pending operation	None TPM Clear	Schedules an Operation for the Security Device.  <b>Note</b> Your computer will reboot during restart in order to change state of the device.
Platform Hierarchy	Enabled Disabled	Enables or disables Platform Hierarchy.
Storage Hierarchy	Enabled Disabled	Enables or disables Storage Hierarchy.
Endorsement Hierarchy	Enabled Disabled	Enables or disables Endorsement Hierarchy.
TPM2.0 UEFI Spec Version	TCG_1_2 TCG_2	Select the TCG2 Spec Version. <b>TCG_1_2:</b> Supports the Compatible mode for Win8/Win10 <b>TCG_2:</b> Supports new TCG2 protocol and event format for Win10 or later.
Physical Presence Spec Version	1.2 1.3	Select to tell OS to support PPI Spec Version 1.2 or 1.3.  <b>Note</b> Some HCK tests might not support 1.3.
TPM 20 InterfaceType	TIS	Select <b>TPM 20 Device</b> for the Communication Interface.
Device Select	TPM 1.2 TPM 2.0 Auto	<b>TPM 1.2</b> will restrict support to TPM 1.2 devices; while <b>TPM 2.0</b> will restrict support to TPM 2.0 devices; <b>Auto</b> will support both with the default set to TPM 2.0 devices. If not found, TPM 1.2 devices will be enumerated.

Trusted Computing (PTT Enable)

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Advanced

TPM20 Device Found Vendor: INTC Firmware Version: 4.0		▲ 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.
Security Device Support [Enable]		
Active PCR banks SHA-1,SHA256		
Available PCR banks SHA-1,SHA256		
SHA-1 PCR Bank [Enabled]		↔: Select Screen
SHA256 PCR Bank [Enabled]		↑↓: Select Item
Pending operation [None]		Enter: Select
Platform Hierarchy [Enabled]		+/-: Change Opt.
Storage Hierarchy [Enabled]		F1: General Help
Endorsement Hierarchy [Enabled]		F2: Previous Values
		F3: Optimized Defaults
		▼ F4: Save & Exit
		ESC: Exit

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Advanced

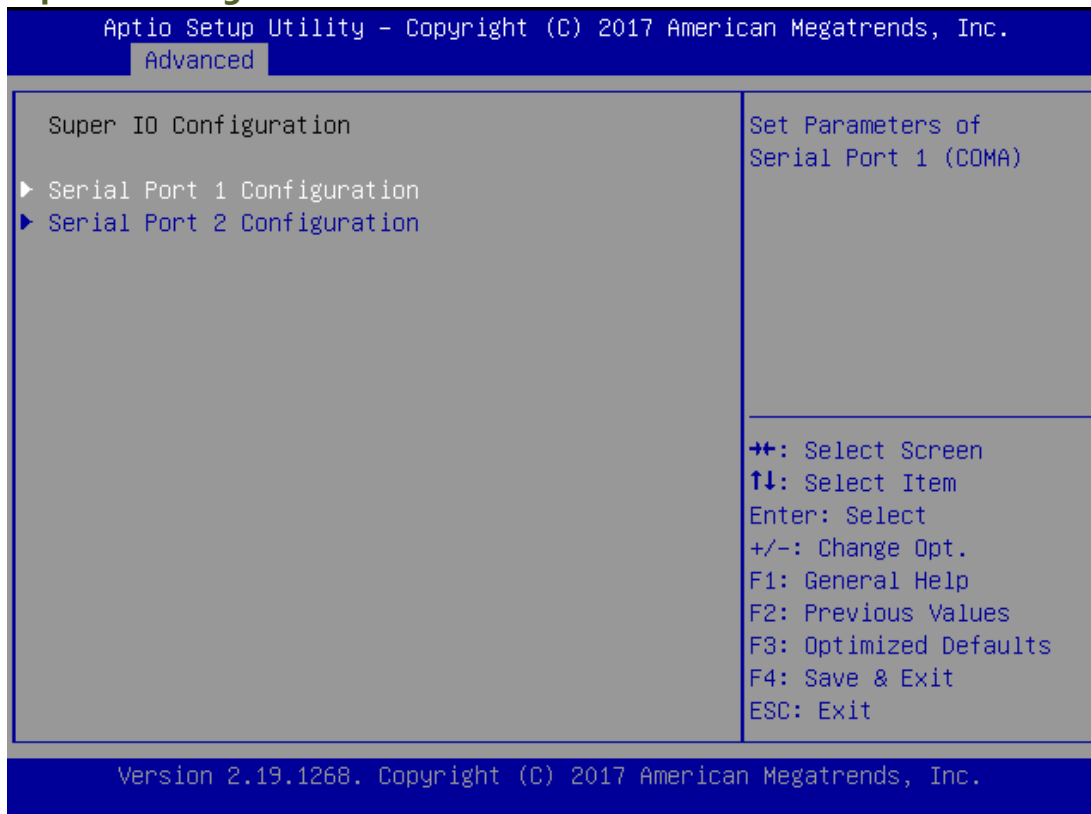
Active PCR banks SHA-1,SHA256		▲ TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found,
Available PCR banks SHA-1,SHA256		
SHA-1 PCR Bank [Enabled]		
SHA256 PCR Bank [Enabled]		
Pending operation [None]		
Platform Hierarchy [Enabled]		
Storage Hierarchy [Enabled]		
Endorsement Hierarchy [Enabled]		
TPM2.0 UEFI Spec [TCG_2]		↔: Select Screen
Version Physical Presence [1.3]		↑↓: Select Item
Spec Version TPM 20 [CRB]		Enter: Select
InterfaceType Device Select [Auto]		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		▼ F4: Save & Exit
		ESC: Exit

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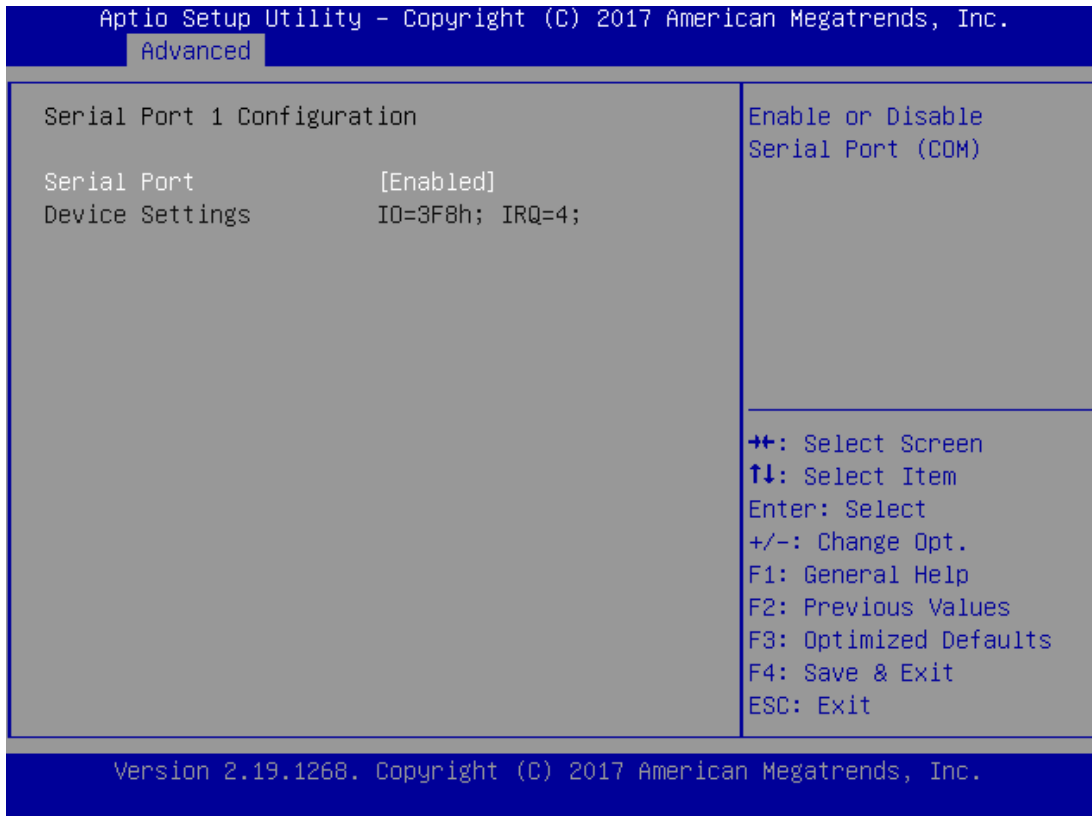
Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or disables SHA256 PCR Bank.
Pending operation	None TPM Clear	Schedules an Operation for the Security Device.   <b>Note</b> Your computer will reboot during restart in order to change state of the device.
Platform Hierarchy	Enabled Disabled	Enables or disables Platform Hierarchy.
Storage Hierarchy	Enabled Disabled	Enables or disables Storage Hierarchy.
Endorsement Hierarchy	Enabled Disabled	Enables or disables Endorsement Hierarchy.
TPM2.0 UEFI Spec Version	TCG_1_2 TCG_2	Select the TCG2 Spec Version. <b>TCG_1_2:</b> Supports the Compatible mode for Win8/Win10 <b>TCG_2:</b> Supports new TCG2 protocol and event format for Win10 or later.
Physical Presence Spec Version	1.2 1.3	Select to tell OS to support PPI Spec Version 1.2 or 1.3.   <b>Note</b> Some HCK tests might not support 1.3.
TPM 20 InterfaceType	CRB	Select the <b>CRB</b> (Communication Interface) for TPM 20 device.
Device Select	TPM 1.2 TPM 2.0 Auto	<b>TPM 1.2</b> will restrict support to TPM 1.2 devices; while <b>TPM 2.0</b> will restrict support to TPM 2.0 devices; <b>Auto</b> 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





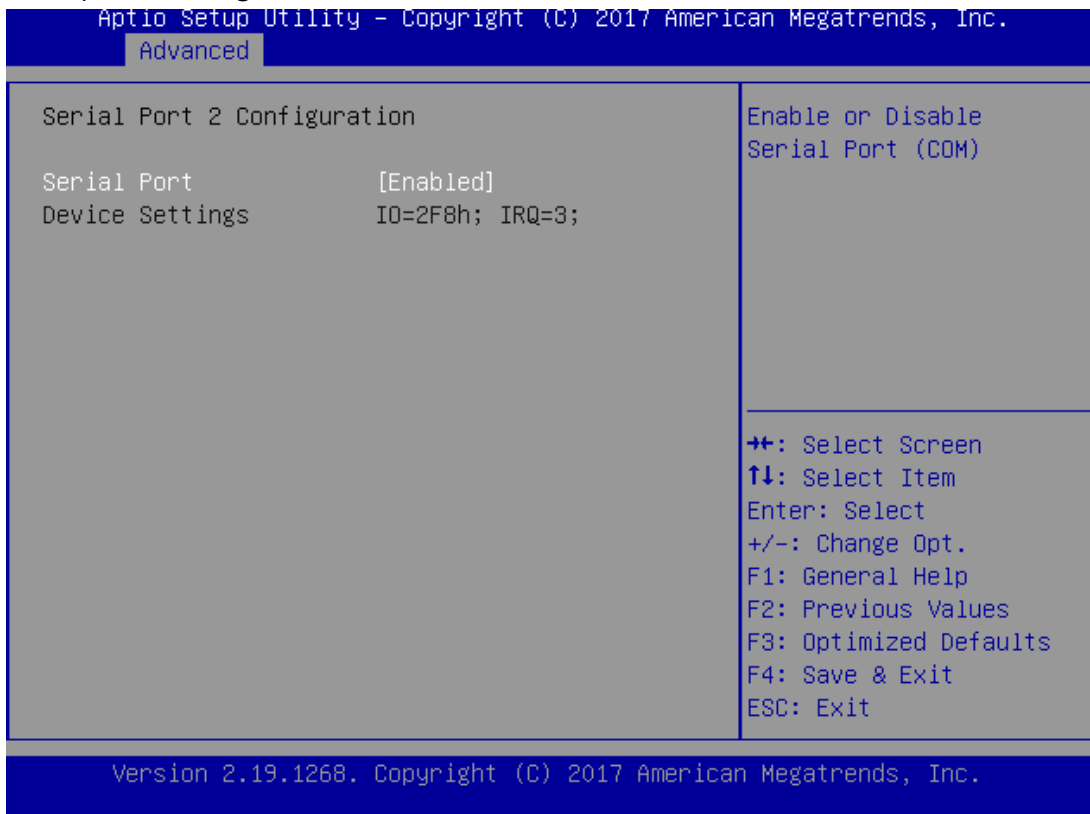
**Serial port 1 Configuration**



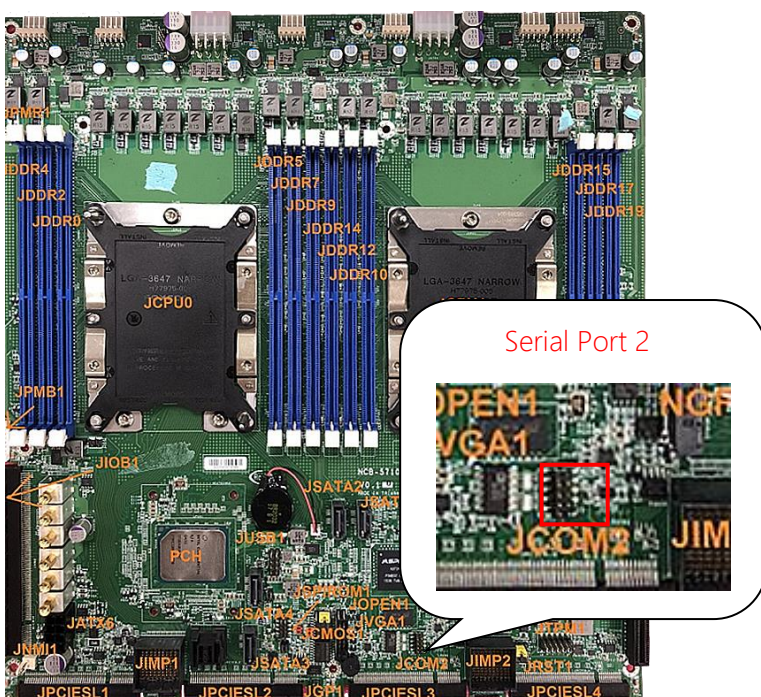
Feature	Options	Description
Serial Port	Enabled Disabled	Enables or disables Serial Port 1
Device Settings	NA	IO=3F8h; IRQ = 4



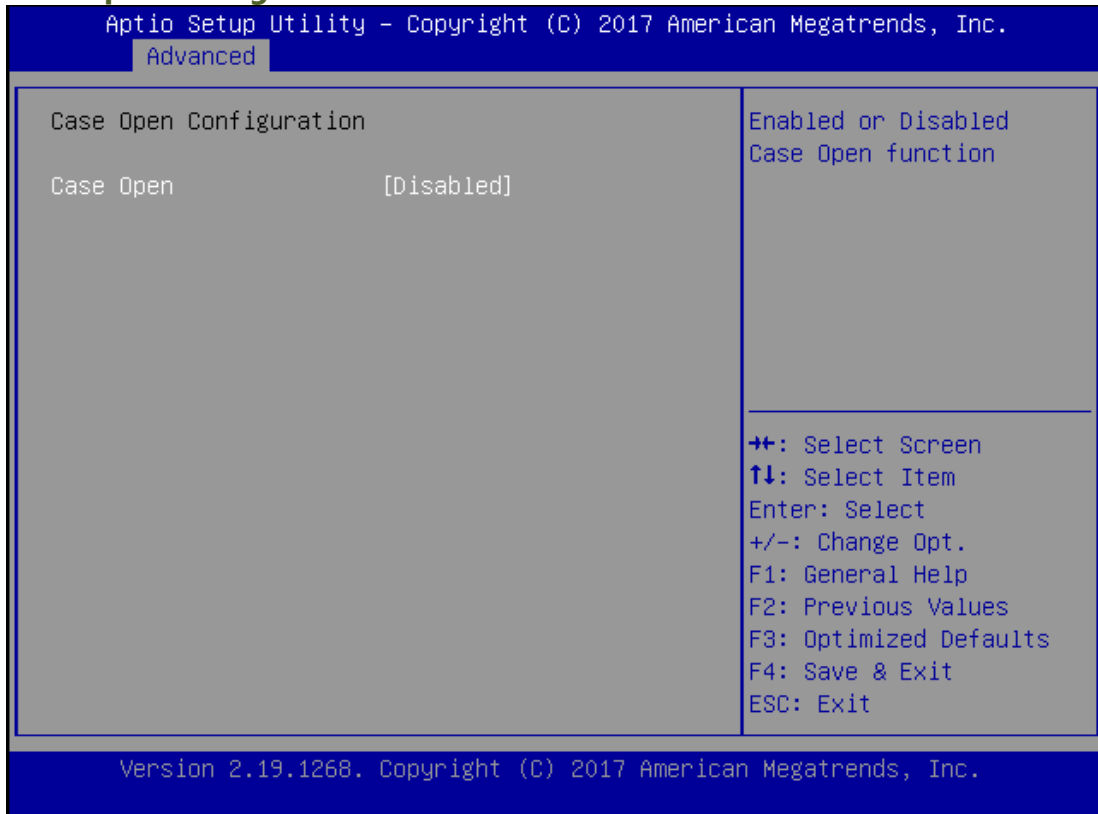
### Serial port 2 Configuration



Feature	Options	Description
Serial Port	Enabled Disabled	Enables or disables Serial Port 2
Device Settings	NA	IO=2F8h; IRQ = 3

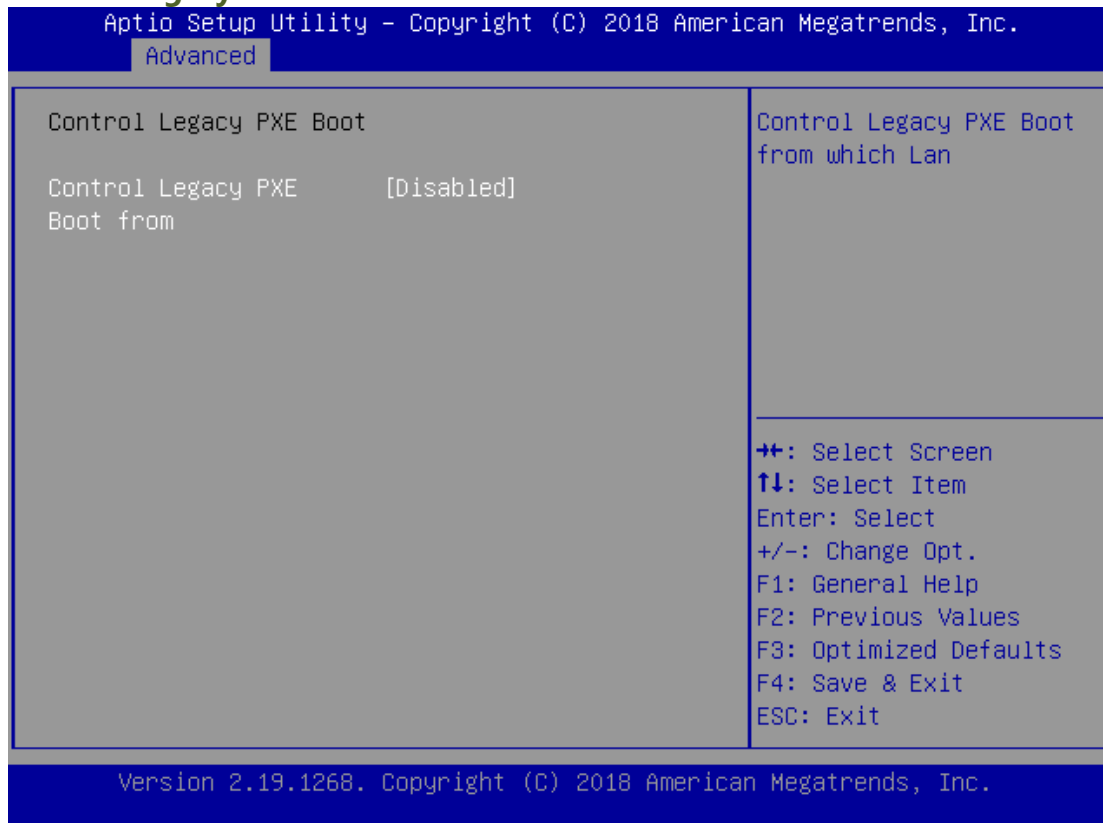


## Case Open Configuration



Feature	Options	Description
Case Open	Enabled Disabled	Enables or disables Case Open function

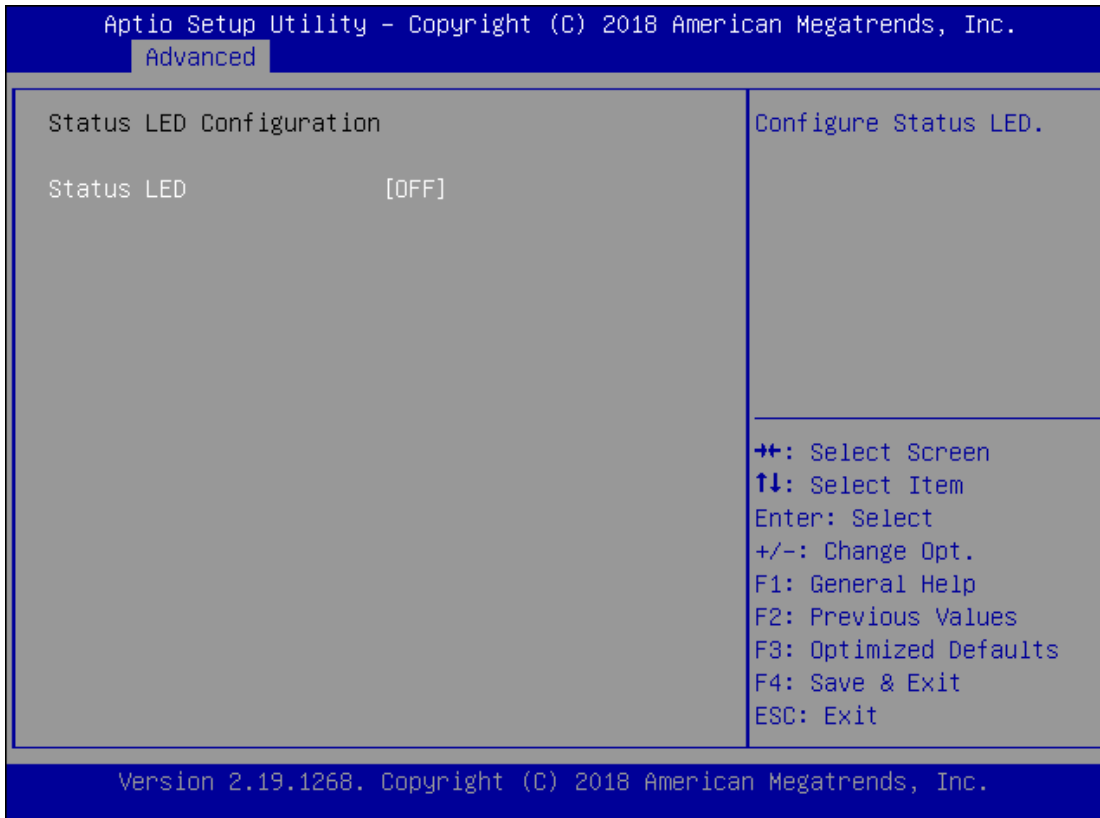
## Control Legacy PXE Boot



Feature	Options	Description
Control Legacy PXE Boot	<b>Disabled</b> MGT LAN1	Select On Board LAN# Boot

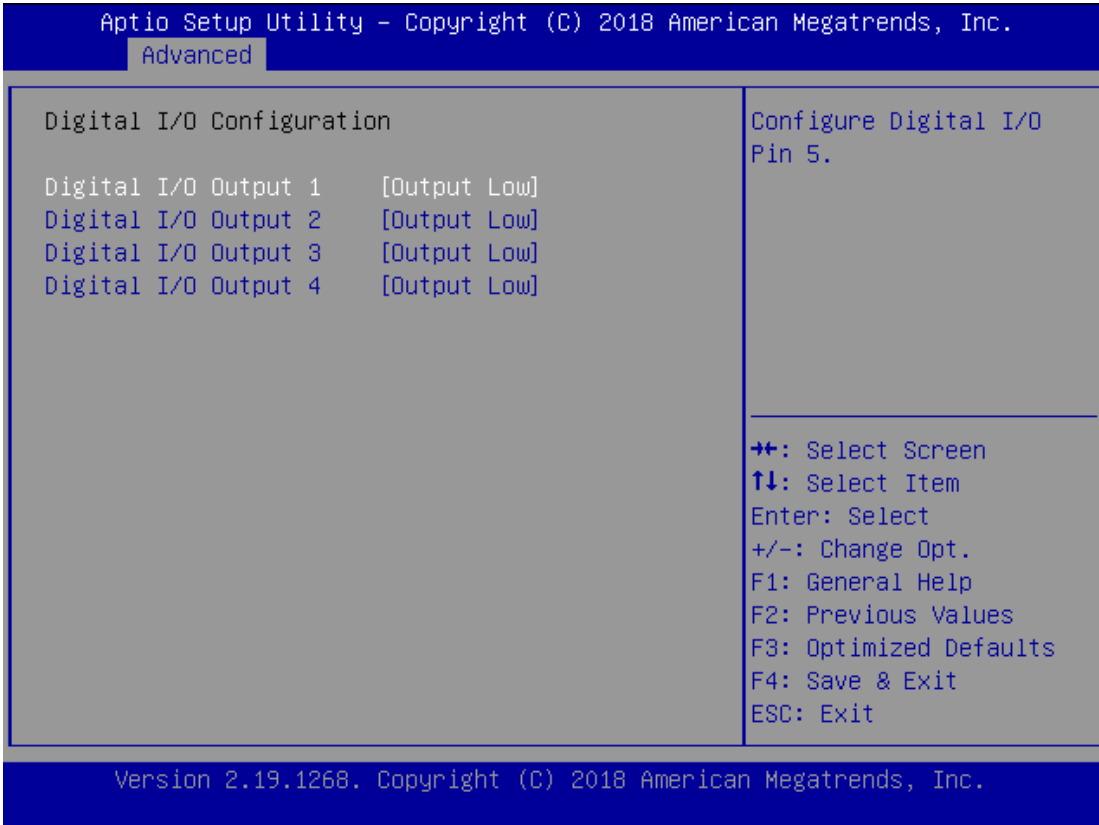


## Status LED Configuration



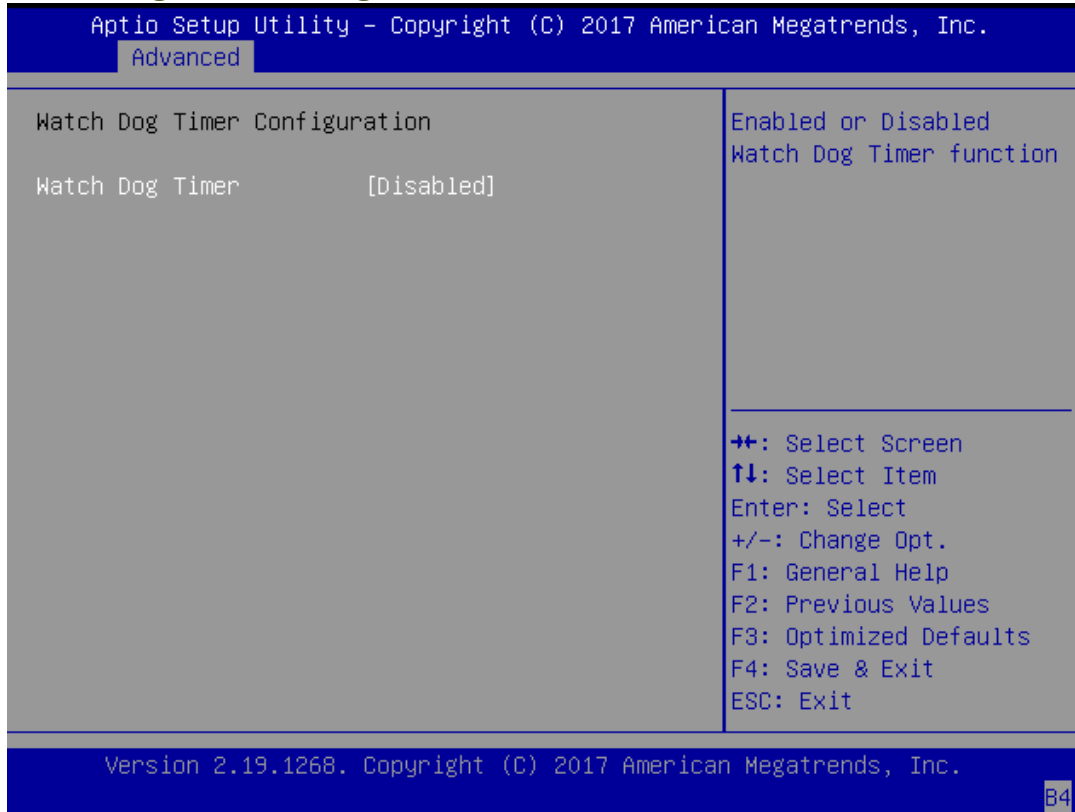
Feature	Options	Description
Status LED	OFF GREEN RED	Configures Status LED color

## Digital I/O Configuration



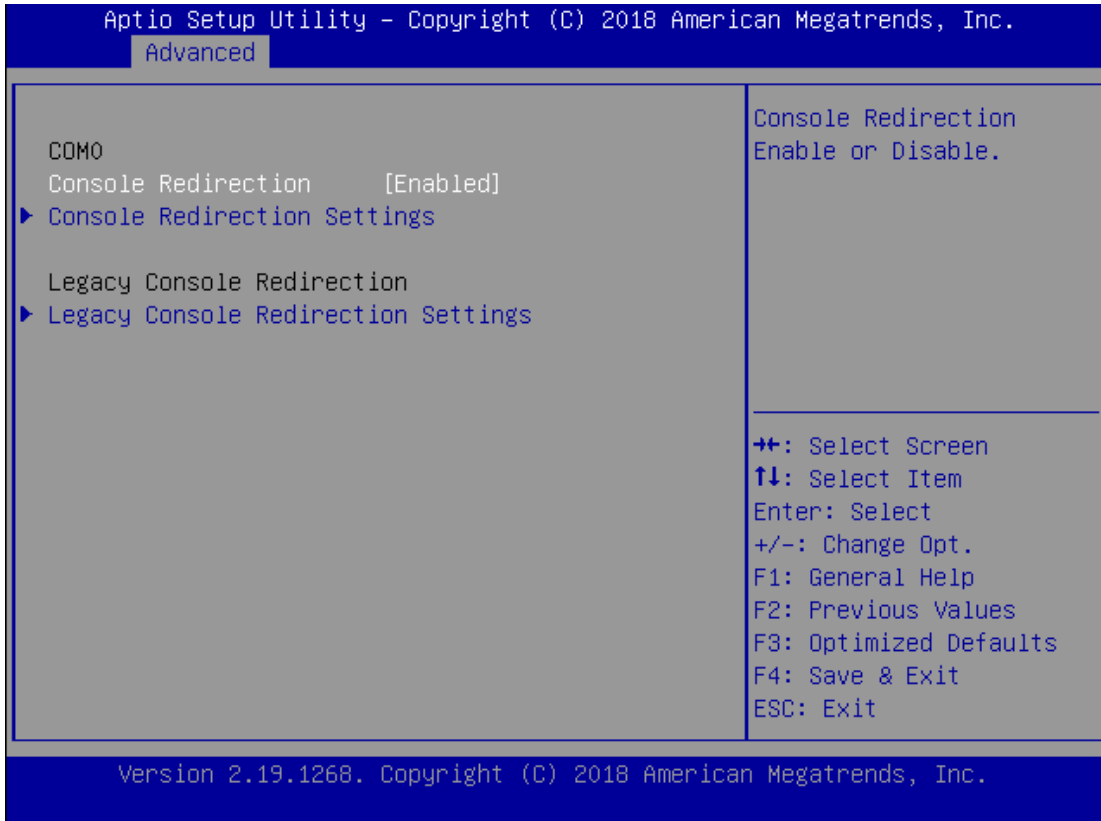
Feature	Options	Description
Digital I/O Output 1	Output High Output Low	Configure Digital I/O Pin5
Digital I/O Output 2	Output High Output Low	Configure Digital I/O Pin6
Digital I/O Output 3	Output High Output Low	Configure Digital I/O Pin7
Digital I/O Output 4	Output High Output Low	Configure Digital I/O Pin8

## Watch Dog Timer Configuration



Feature	Options	Description
Watch Dog Timer	Enabled Disabled	Enables or disables Watch Dog Timer function

## Serial Port Console Redirection



Feature	Options	Description
COM0 Console Redirection	Enabled Disabled	Enables or disables Console Redirection



## Console Redirection Settings

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Advanced

COM0  
Console Redirection Settings

Terminal Type [VT100+]  
Bits per second [115200]  
Data Bits [8]  
Parity [None]  
Stop Bits [1]  
Flow Control [None]  
VT-UTF8 Combo Key Support [Enabled]  
Recorder Mode [Disabled]  
Resolution 100x31 [Disabled]  
Legacy OS [80x24]  
Redirection Resolution  
Putty KeyPad [VT100]

Emulation: ANSI:  
Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc.  
VT-UTF8: Uses UTF8 encoding to map Unicode

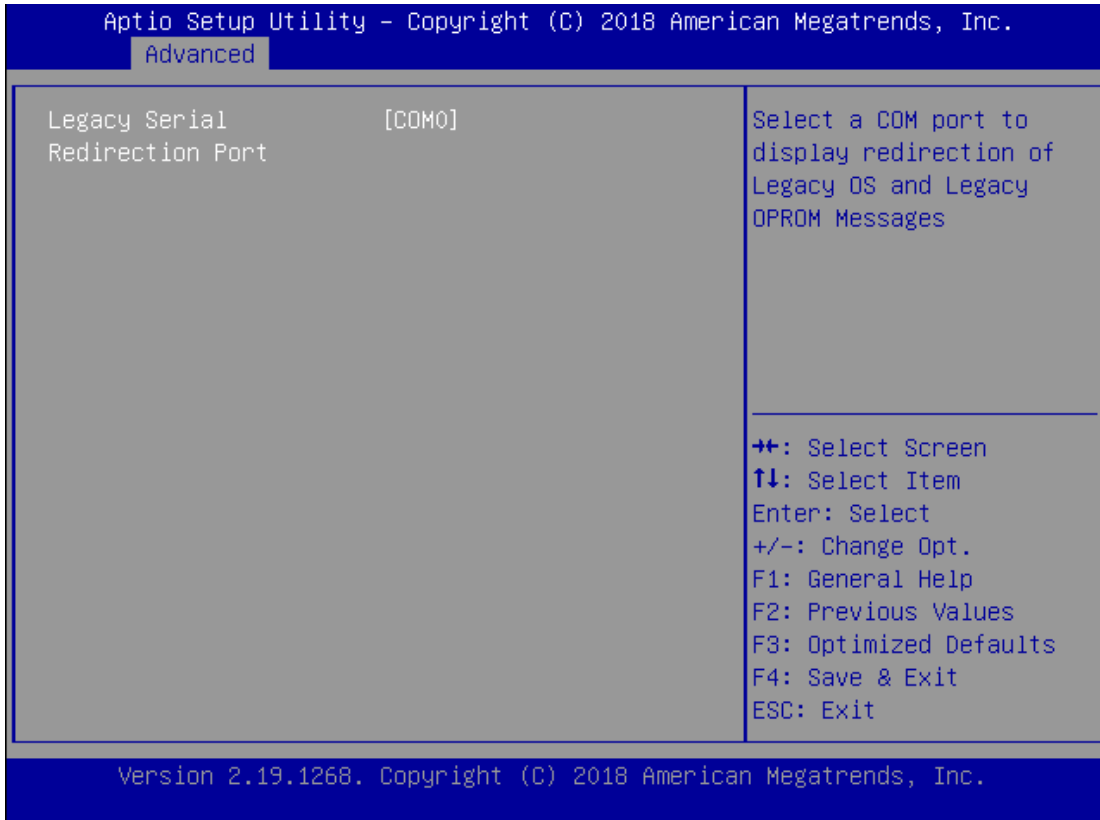
↕: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	<b>VT100:</b> ASCII char set <b>VT100+:</b> Extends VT100 to support color, function keys, etc. <b>VT-UTF8:</b> Uses UTF8 encoding to map Unicode chars onto 1 or more bytes <b>ANSI:</b> Extended ASCII char set
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.
Stop Bits	1 2	Indicates the end of a serial data packet.
Flow Control	None	Flow Control can prevent data loss from buffer

	Hardware RTS/CTS	overflow.
VT-UTF8 Combo Key Support	Disabled Enabled	Enables 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
Legacy OS Redirection Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects FunctionKey and KeyPad on Putty.
Redirection After BIOS POST	Always Enable BootLoader	When <b>Bootloader</b> is selected, Legacy Console Redirection is disabled before booting to legacy OS. When <b>Always Enable</b> is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to <b>Always Enable</b> .

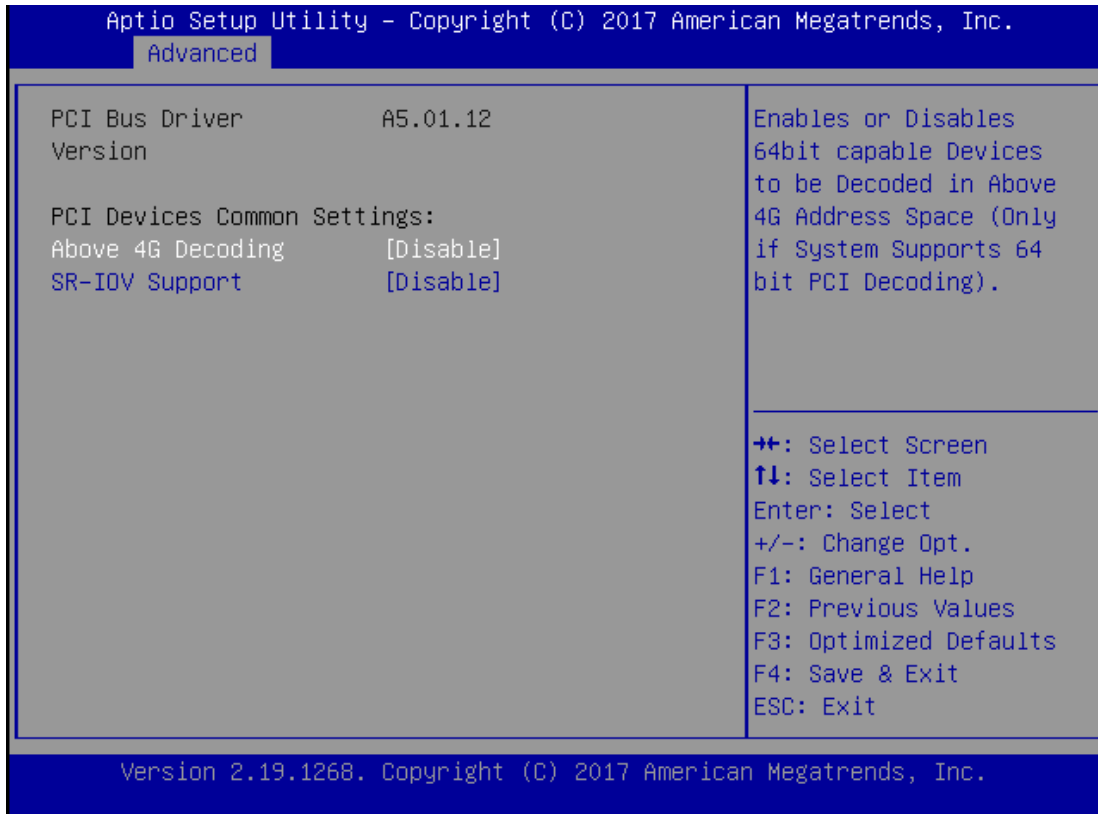
## Legacy Console Redirection Settings



Feature	Options	Description
Legacy Serial Redirection Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages

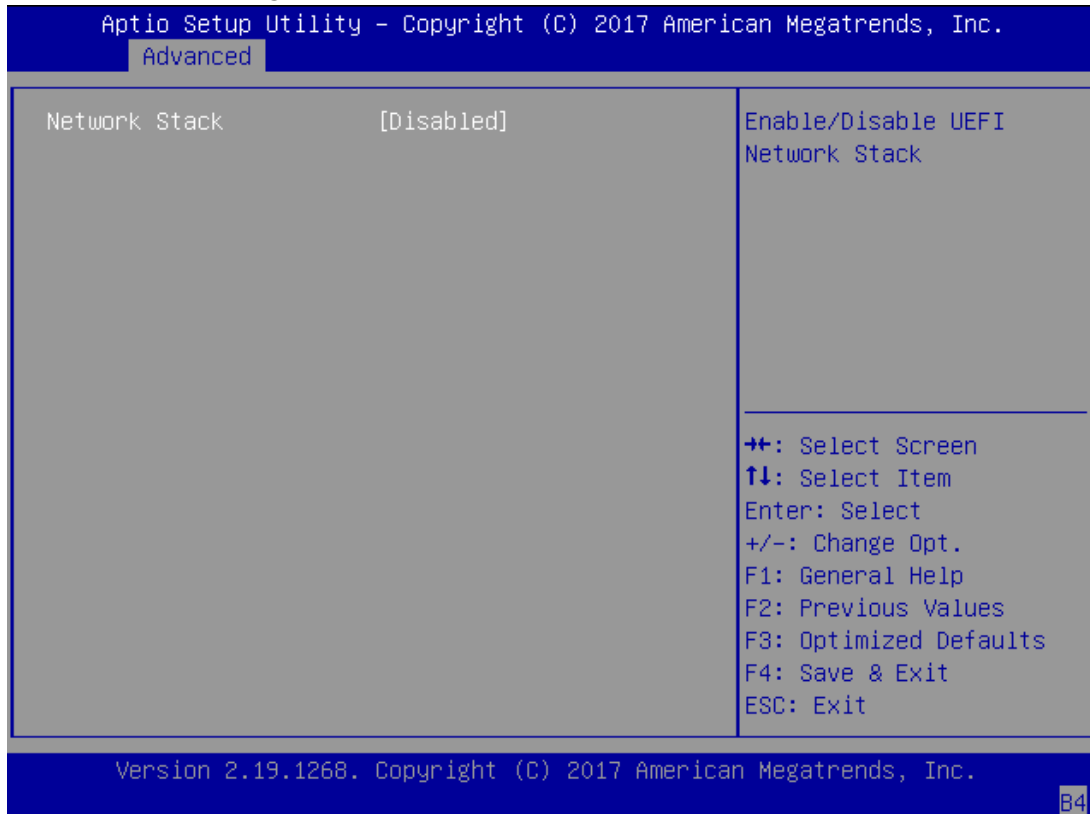


PCI Subsystem Settings



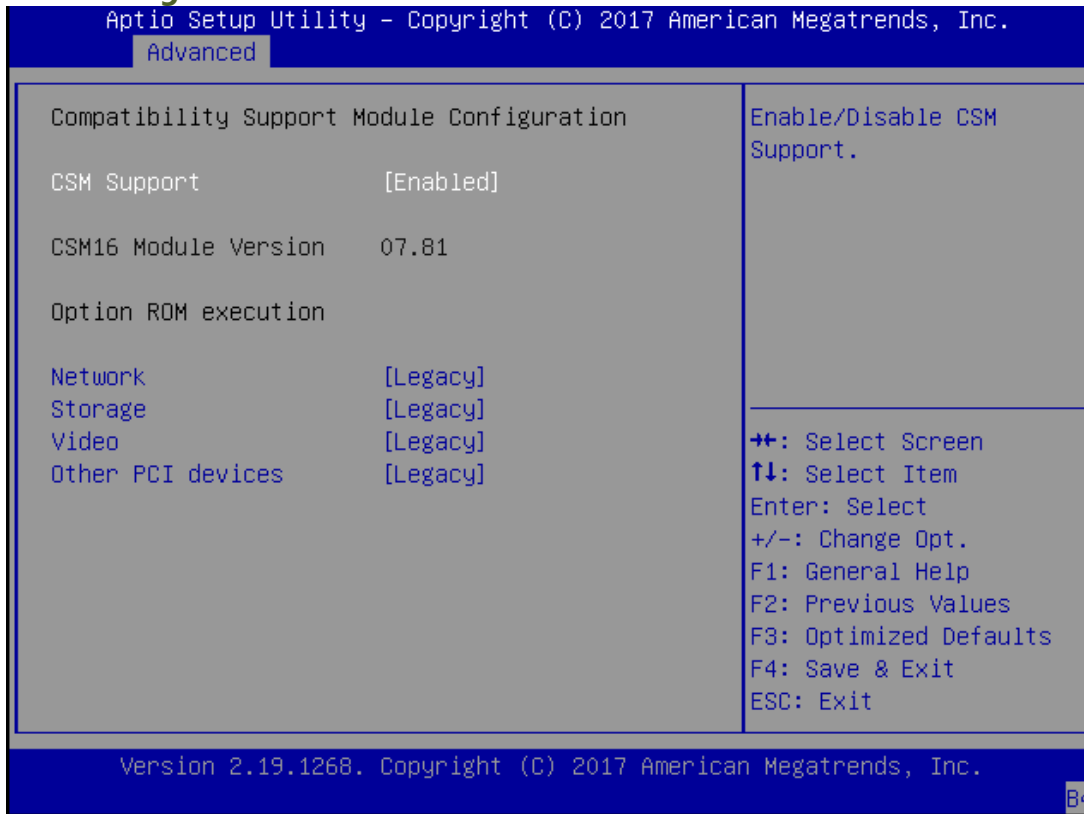
Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Enables or disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding)
SR-IOV Support	Disabled Enabled	If the system has SR-IOV capable PCIe Devices, this option enables or disables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

## Network Stack Configuration



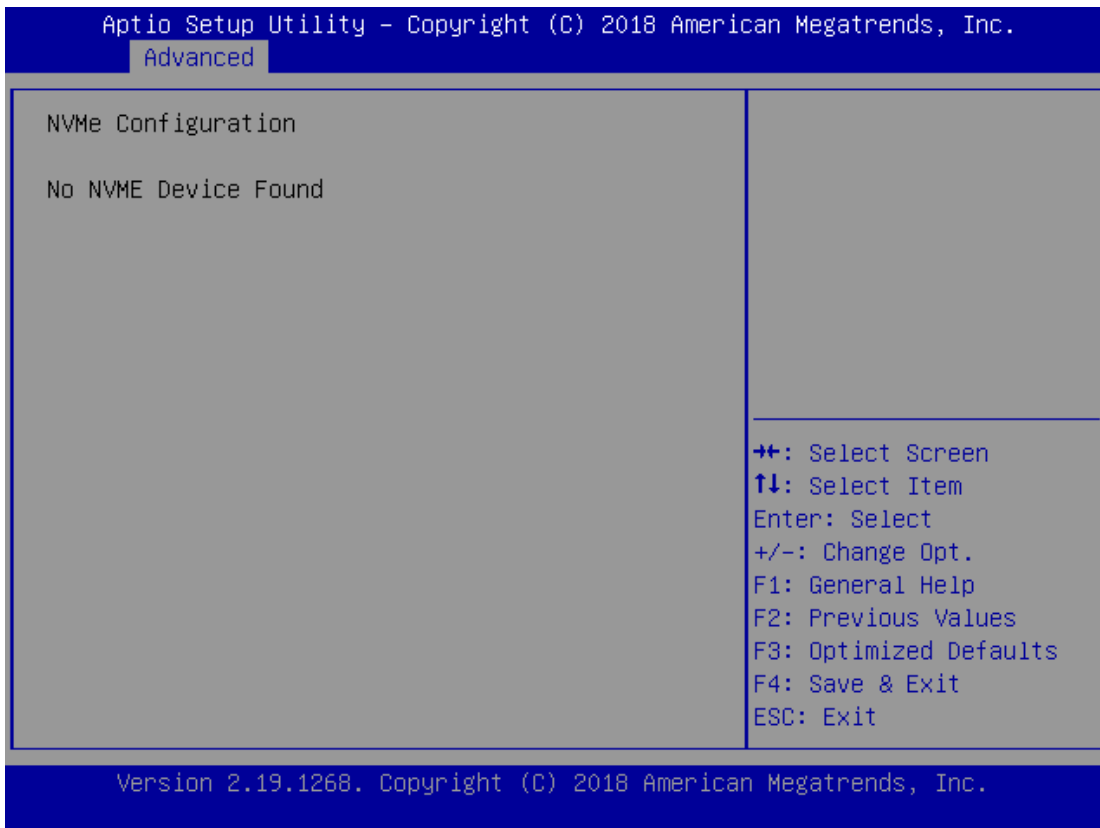
Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack
Ipv4 PXE Support	Disabled Enabled	Enables Ipv4 PXE Boot Support. If IPV4 is disabled, PXE boot option will not be created.
Ipv4 HTTP Support	Disabled Enabled	Enables Ipv4 HTTP Boot Support. If IPV4 is disabled, HTTP boot option will not be created.
Ipv6 PXE Support	Disabled Enabled	Enables Ipv6 PXE Boot Support. If IPV6 is disabled, PXE boot option will not be created.
Ipv6 HTTP Support	Disabled Enabled	Enables Ipv6 HTTP Boot Support. If IPV6 is disabled, HTTP boot option will not be created.
PXE boot wait time	0	Wait time to press <ESC> key to abort the PXE boot
Media detect count	1	Number of times the presence of media will be checked

## CSM Configuration

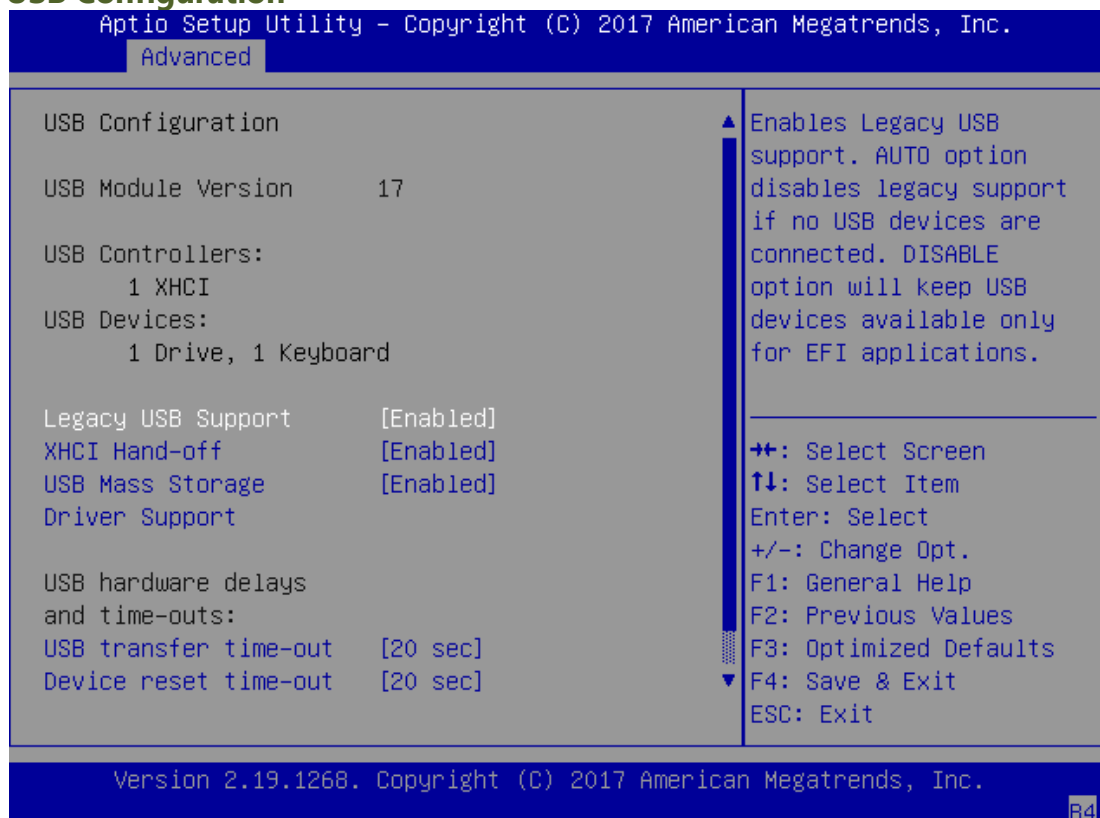


Feature	Options	Description
CSM Support	Disabled Enabled	Enables or disables CSM Support
Network	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Video OpROM
Other PCI device	Do Not Launch UEFI Legacy	Determines OpROM execution policy for devices other than Network, Storage, or Video

## NVMe Configuration



## USB Configuration

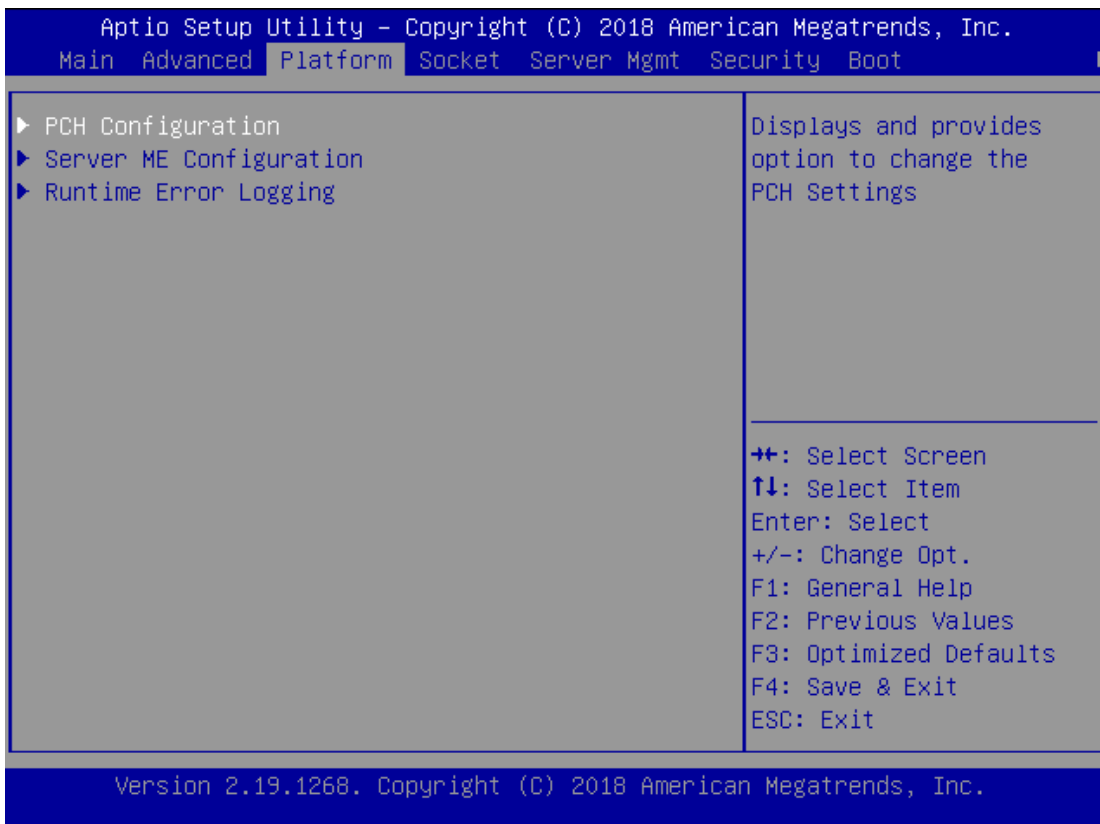


Feature	Options	Description
Legacy USB Support	<p><b>Enabled</b></p> <p>Disabled</p> <p>Auto</p>	<p>Enables Legacy USB support.</p> <p><b>Auto</b> option disables legacy support if no USB devices are connected;</p> <p><b>Disabled</b> option will keep USB devices available only for EFI applications.</p>
XHCI Hand-off	<p><b>Enabled</b></p> <p>Disabled</p>	<p>This is a workaround for Oses without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.</p>
USB Mass Storage Driver Support	<p><b>Enabled</b></p> <p>Disabled</p>	<p>Enables or disables USB Mass Storage Driver Support.</p>
USB transfer time-out	<p>1 sec</p> <p>5 sec</p> <p>10 sec</p> <p><b>20 sec</b></p>	<p>The time-out value for Control, Bulk, and Interrupt transfers</p>
Device reset time-out	<p>1 sec</p> <p>5 sec</p> <p>10 sec</p> <p><b>20 sec</b></p>	<p>USB mass storage device Start Unit command time-out</p>
Device power-up delay	<p><b>Auto</b></p> <p>Manual</p>	<p>Maximum time the device will take before it properly reports itself to the Host Controller. <b>Auto</b> uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.</p>



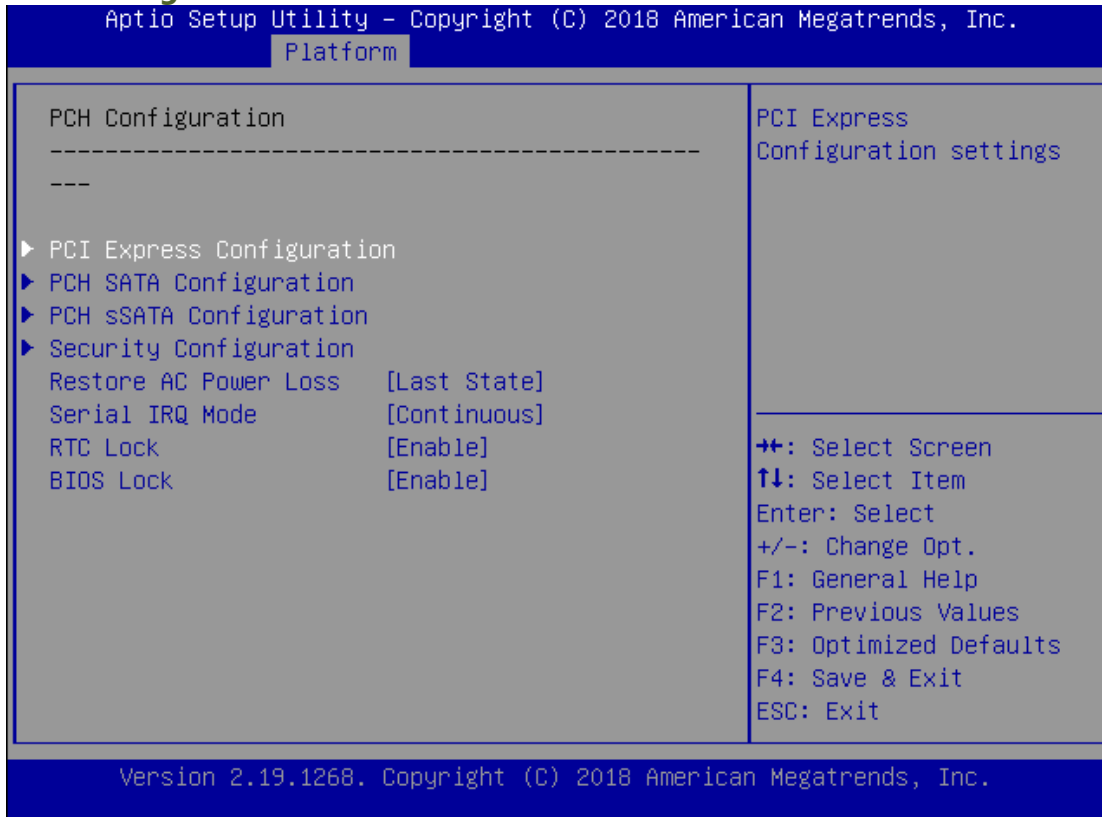
## Platform

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.



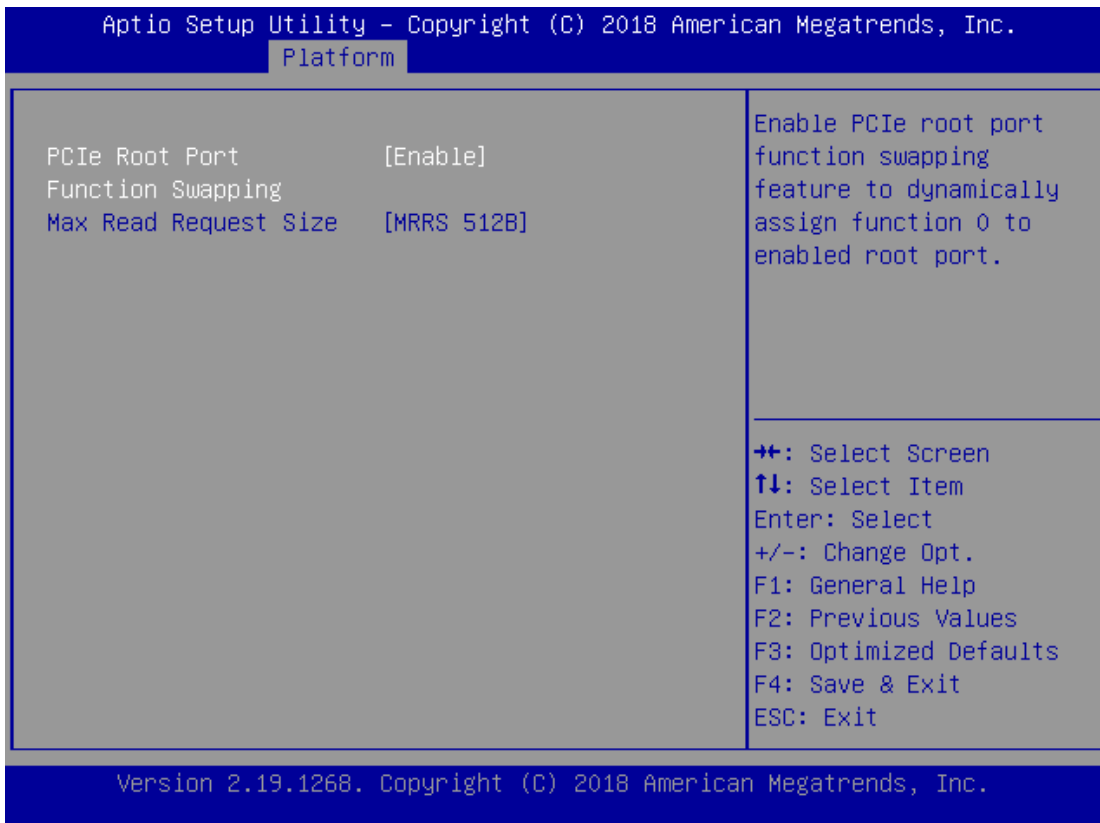
Feature	Options	Description
PCH Configuration	None	Displays and provides option to change the PCH Settings
Server ME Configuration	None	Configure Server ME Technology Parameters
Runtime Error Logging	None	Press <Enter> to view or change the runtime error log configuration.

## PCH Configuration



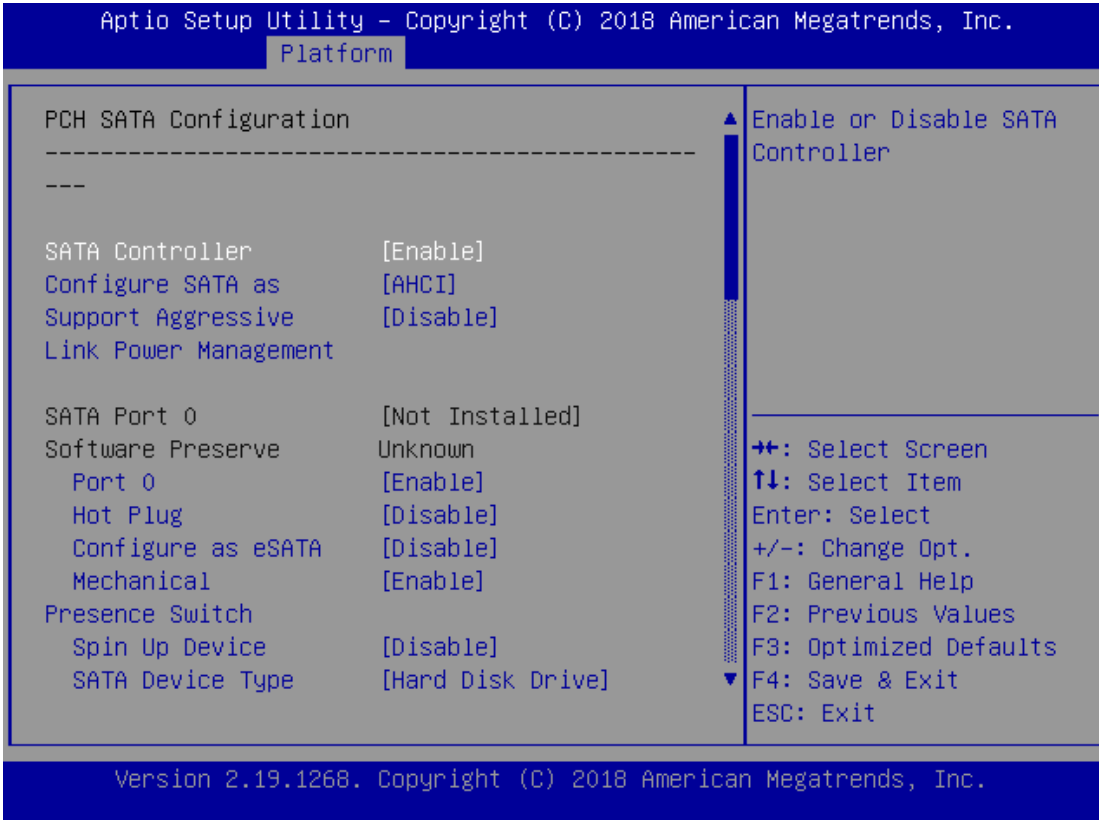
Feature	Options	Description
PCI Express Configuration	None	PCI Express Configuration settings
PCH SATA Configuration	None	SATA devices and settings
PCH sSATA Configuration	None	sSATA devices and settings
Security Configuration	None	Security Configuration settings
Restore AC Power Loss	Power ON Power Off Last State	Select S0/S5 for ACPI state after a G3
Serial IRQ Mode	Quiet Continuous	Configure Serial IRQ Mode.
RTC Lock	Disabled Enabled	Enabling this feature will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM
BIOS Lock	Disabled Enabled	Enables or disables the PCH BIOS Lock Enable feature.

## PCI Express Configuration



Feature	Options	Description
PCIe Root Port Function Swapping	Disabled <b>Enabled</b>	Enable PCIe root port function swapping feature to dynamically assign function 0 to enabled root port.
Max Read Request Size	MRRS 128B MRRS 256B <b>MRRS 512B</b> MRRS 1024B MRRS 2048B MRRS 4096B	PCIe Max Read Request Size Selection.

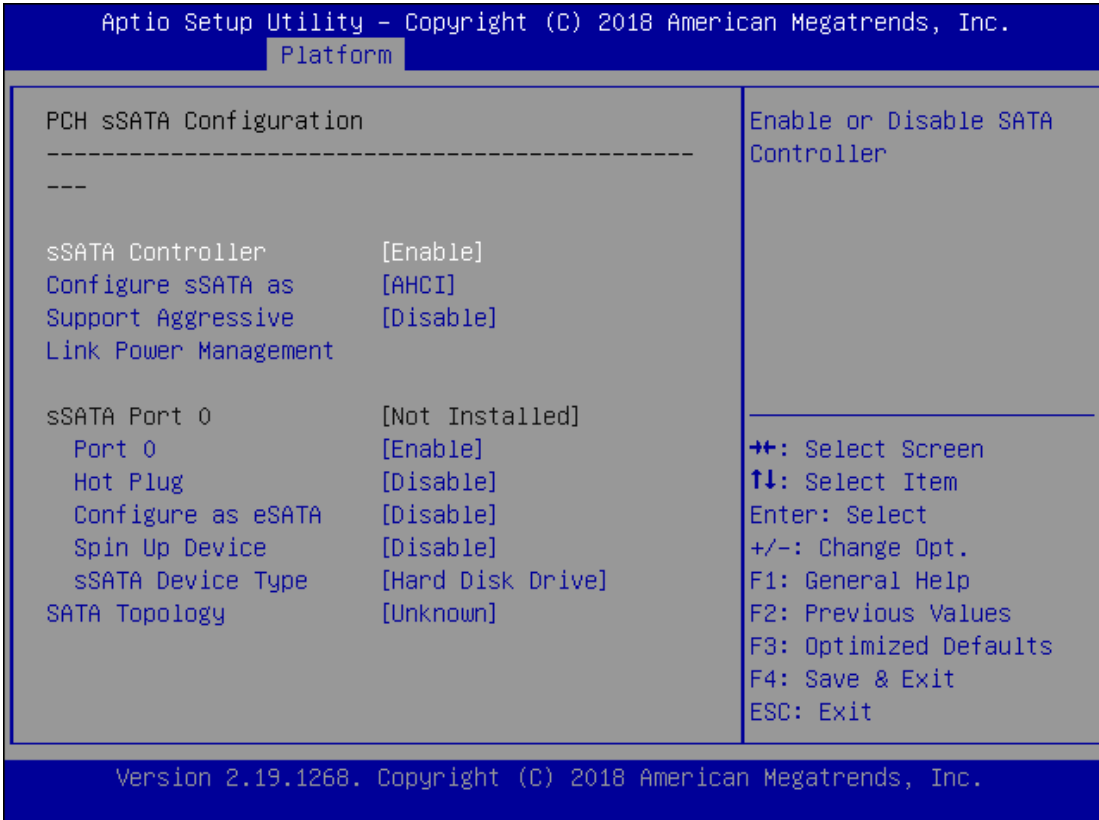
**PCH SATA Configuration**



Feature	Options	Description
SATA Controller	Disabled Enabled	Enables or disables SATA Controller
Configure SATA as	AHCI RAID	This will configure SATA as <b>RAID</b> or <b>AHCI</b> .
Support Aggressive Link Power Management	Disabled Enabled	Enables or disables SALP
Port 0/1/2/3/4	Disabled Enabled	Enable or Disable SATA Port
Hot Plug	Disabled Enabled	Designates this port as Hot Pluggable.
Configure as eSATA	Disabled Enabled	Configures port as External SATA (eSATA)
Mechanical Presence Switch	Disabled Enabled	Controls reporting if this port has a Mechanical Presence Switch; requires hardware support.
Spin Up Device	Disabled Enabled	If enabled for any of ports Staggered Spin Up will be performed and only the drives which

		have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Topology	Unknown ISATA Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2

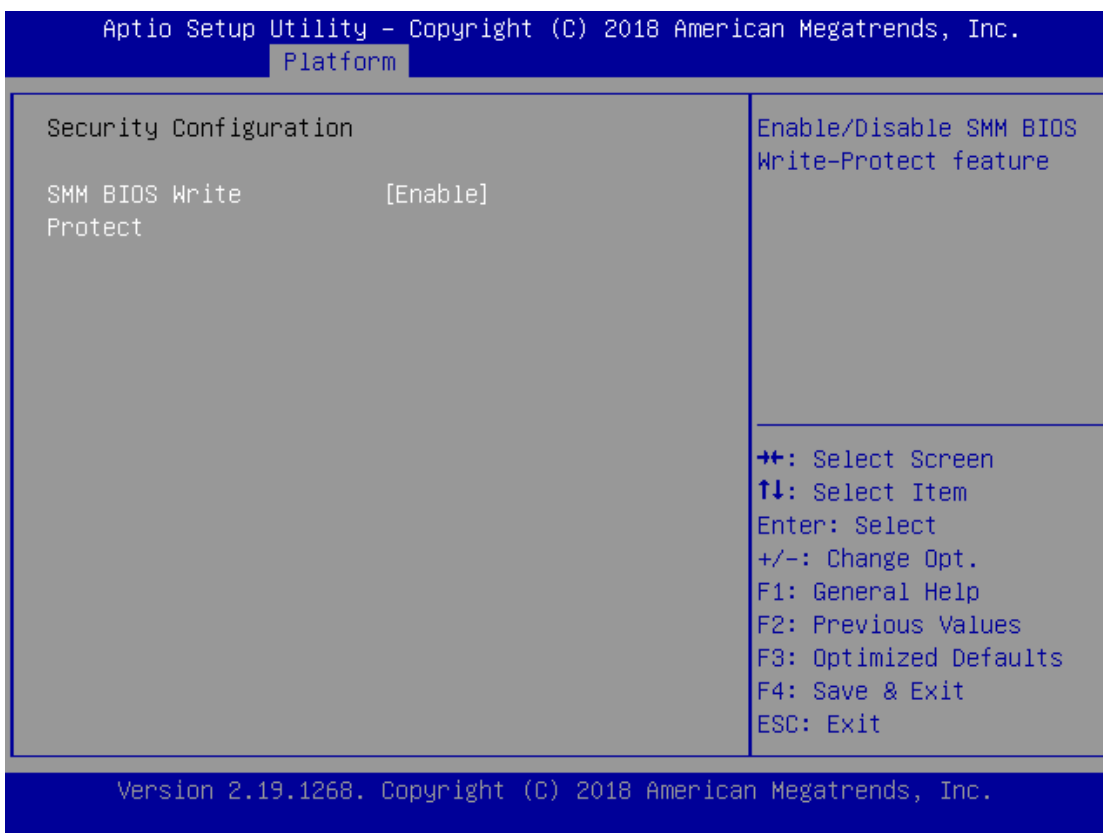
PCH SATA Configuration



Feature	Options	Description
sSATA Controller	Disabled Enabled	Enables or disables SATA Controller
Configure SATA as	AHCI RAID	This will configure SATA as <b>RAID</b> or <b>AHCI</b> .
Support Aggressive Link Power Management	Disabled Enabled	Enables or disables SALP
Port 0	Disabled Enabled	Enable or Disable SATA Port
Hot Plug	Disabled Enabled	Designates this port as Hot Pluggable.
Configure as eSATA	Disabled Enabled	Configures port as External SATA (eSATA)
Mechanical Presence Switch	Disabled Enabled	Controls reporting if this port has a Mechanical Presence Switch; requires hardware support.
Spin Up Device	Disabled Enabled	If enabled for any of ports Staggered Spin Up will be performed and only the drives

		which have this option enabled will spin up at boot. Otherwise, all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Topology	Unknown ISATA Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2

Security Configuration



Feature	Options	Description
SMM BIOS Write Protect	Disabled <b>Enabled</b>	Enable/Disable SMM BIOS Write-Protect feature

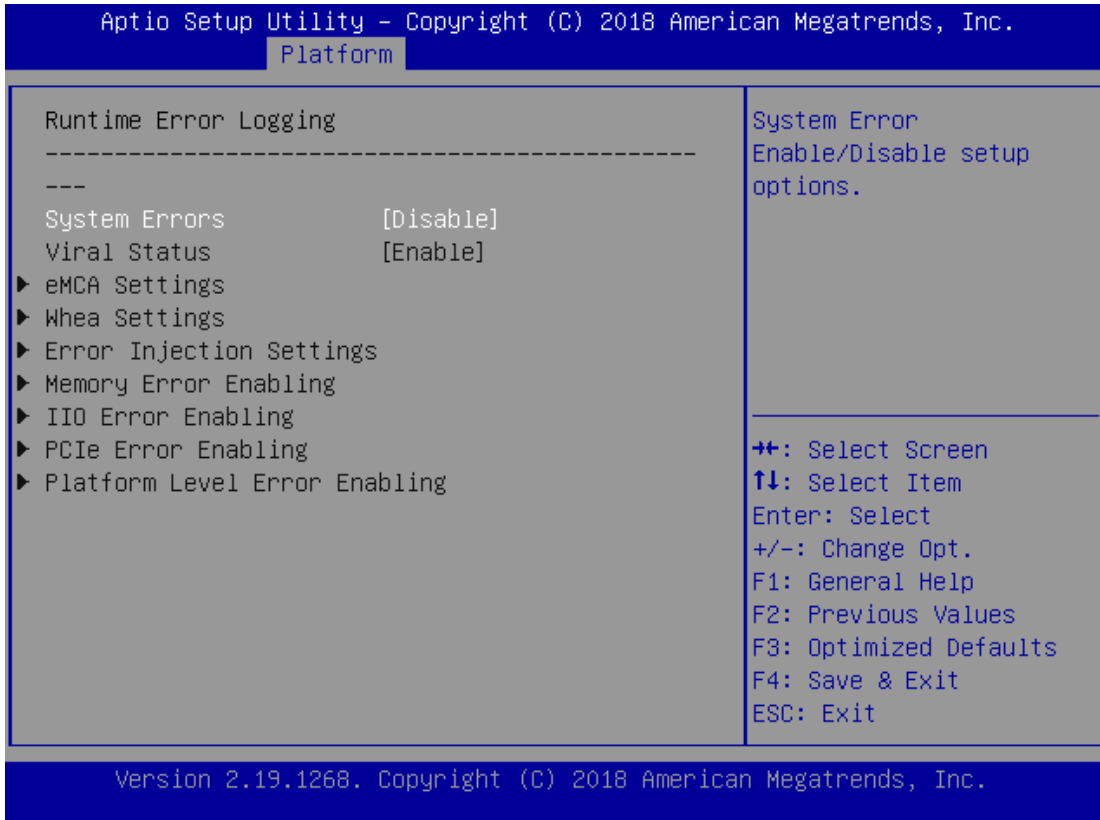
## Server ME Configuration

```

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Platform
-----
General ME Configuration
Oper. Firmware      0A:4.0.4.288
Version
Recovery Firmware  0A:4.0.4.288
Version
ME Firmware Status #1  0x000F0255
ME Firmware Status #2  0x88114826
  Current State      Operational
  Error Code         No Error
  Recovery Cause     N/A
-----
++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC:Exit
-----
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```



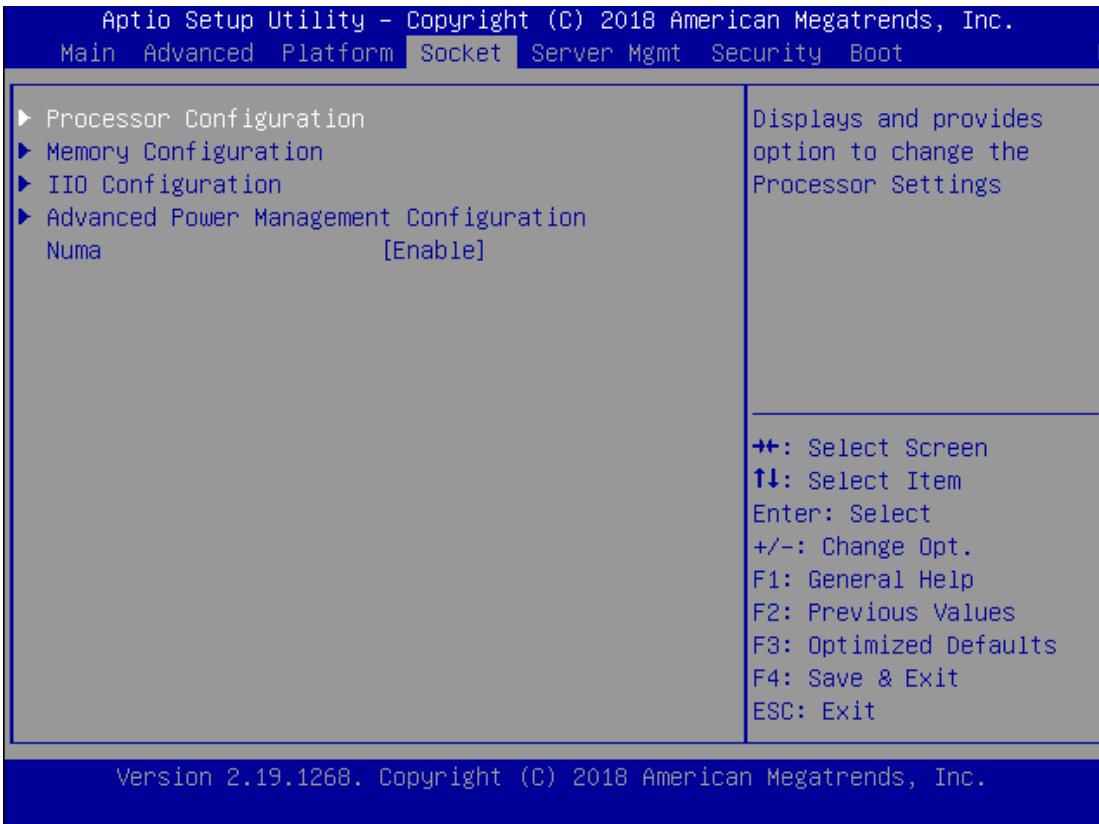
## Runtime Error Logging



Feature	Options	Description
System Errors	Disabled Enabled	System Error Enable/Disable setup options.

## Socket

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
Numa	Disabled Enabled	Displays and provides option to change the Power Management Settings

## Processor Configuration

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Socket

Processor Configuration		Change Per-Socket Settings	
-----			
---			
▶ Per-Socket Configuration			
Processor BSP	50654 - SKX M0		
Revision			
Processor Socket	Socket 0	Socket 1	
Processor ID	00050654*	00050654	
Processor Frequency	2.300GHz	2.300GHz	
Processor Max Ratio	17H	17H	
Processor Min Ratio	0AH	0AH	
Microcode Revision	0200004D		
L1 Cache RAM	64KB	64KB	
L2 Cache RAM	1024KB	1024KB	
L3 Cache RAM	16896KB	16896KB	
Processor 0 Version	Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz		
Processor 1 Version	Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz		

▲ Change Per-Socket Settings  
 ++: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

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Socket

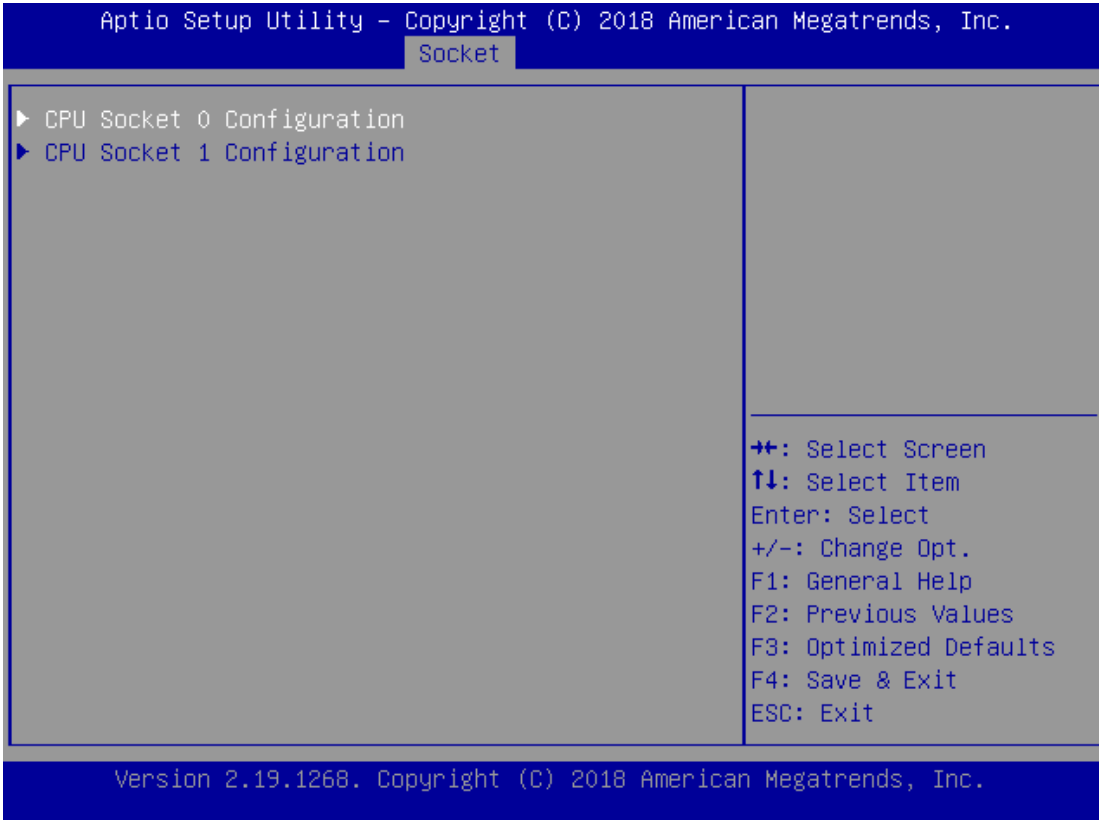
L2 Cache RAM	1024KB	1024KB	
L3 Cache RAM	16896KB	16896KB	
Processor 0 Version	Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz		
Processor 1 Version	Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz		
Hyper-Threading [ALL]	[Enable]		
Machine Check	[Enable]		
Execute Disable Bit	[Enable]		
Enable Intel(R) TXT	[Disable]		
VMX	[Enable]		
Enable SMX	[Disable]		
Hardware Prefetcher	[Enable]		
Adjacent Cache Prefetch	[Enable]		
Extended APIC	[Disable]		
AES-NI	[Enable]		

▲ Enable/disable AES-NI support  
 ++: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

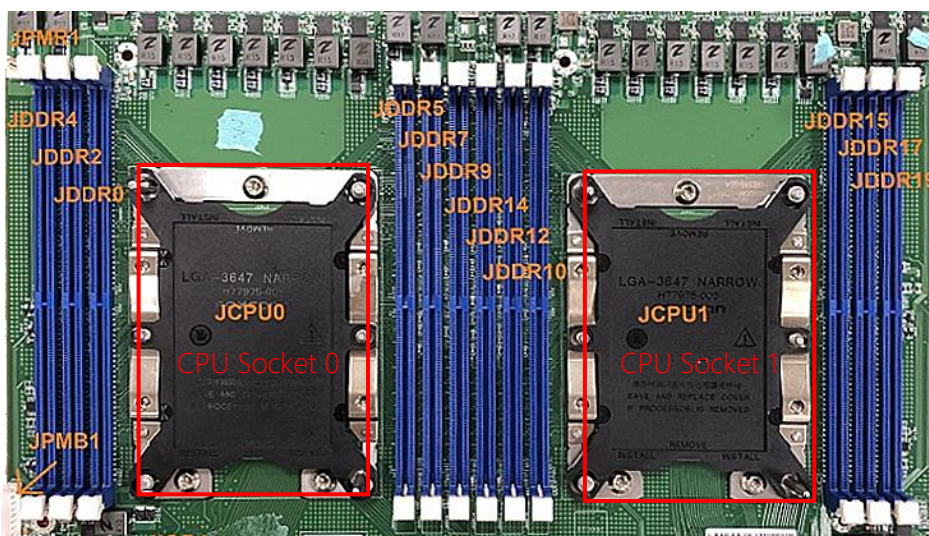
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Feature	Options	Description
Hyper-Threading [ALL]	Disabled <b>Enabled</b>	Enables Hyper-Threading (Software Method to Enable/Disable Logical Processor threads.
Machine Check	Disabled <b>Enabled</b>	Enable or Disable the Machine Check
Execute Disable Bit	Disabled <b>Enabled</b>	When disabled, it forces the XD feature flag to always return 0.
Enable Intel® TXT	<b>Disabled</b> Enabled	Enables Intel(R) TXT
VMX	Disabled <b>Enabled</b>	Enables the Vanderpool Technology, which takes effect after reboot.
Enable SMX	<b>Disabled</b> Enabled	Enables Safer Mode Extensions
Hardware Prefetcher	Disabled <b>Enabled</b>	= MLC Streamer Prefetcher (MSR 1A4h Bit[0])
Adjacent Cache Prefetcher	Disabled <b>Enabled</b>	= MLC Spatial Prefetcher (MSR 1A4h Bit[1])
Extended APIC	<b>Disabled</b> Enabled	Enables or disables extended APIC support
AES-NI	Disabled <b>Enabled</b>	Enables or disables AES-NI support

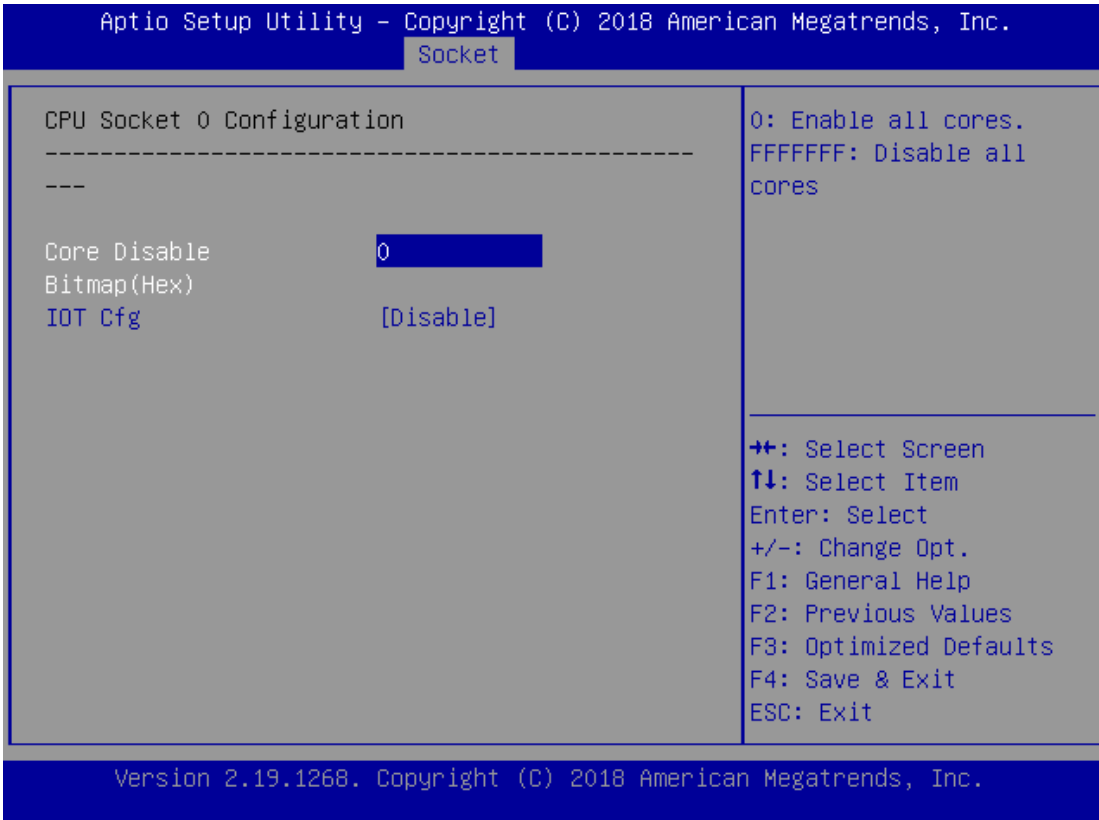
Per-Socket Configuration



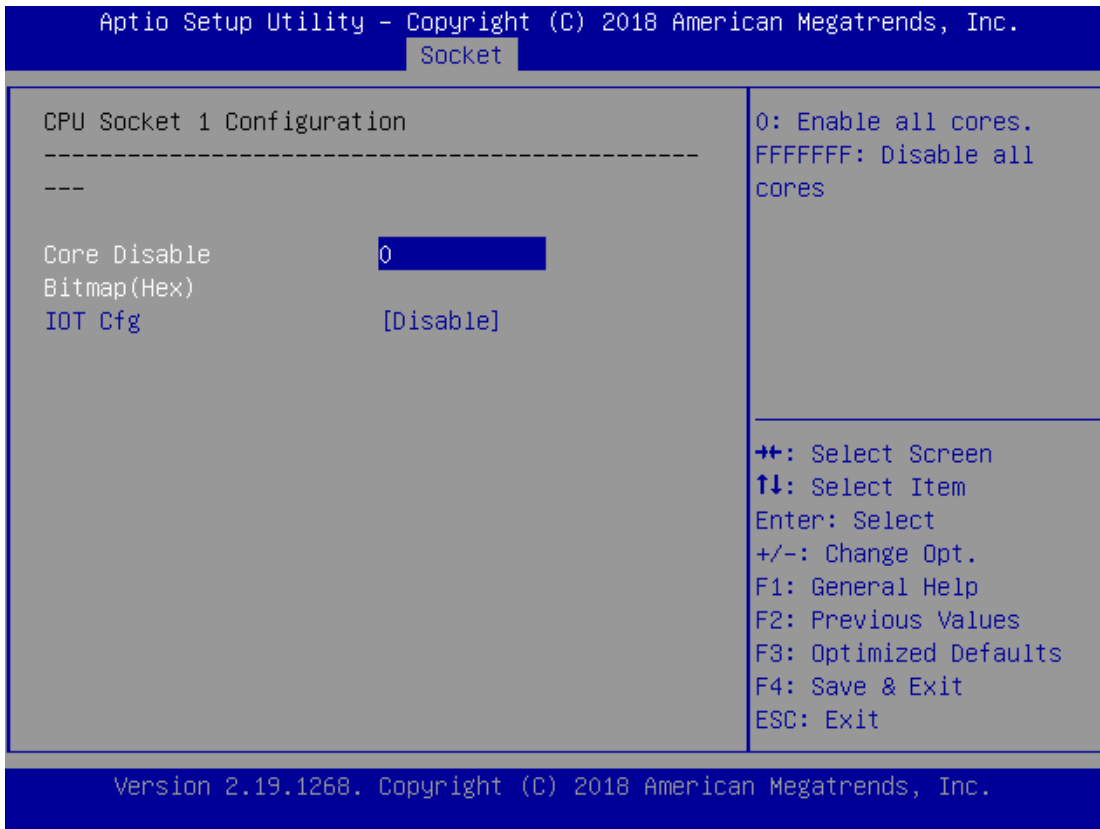
Feature	Options	Description
CPU Socket0 Configuration	None	None
CPU Socket1 Configuration	None	None



CPU Socket0 Configuration

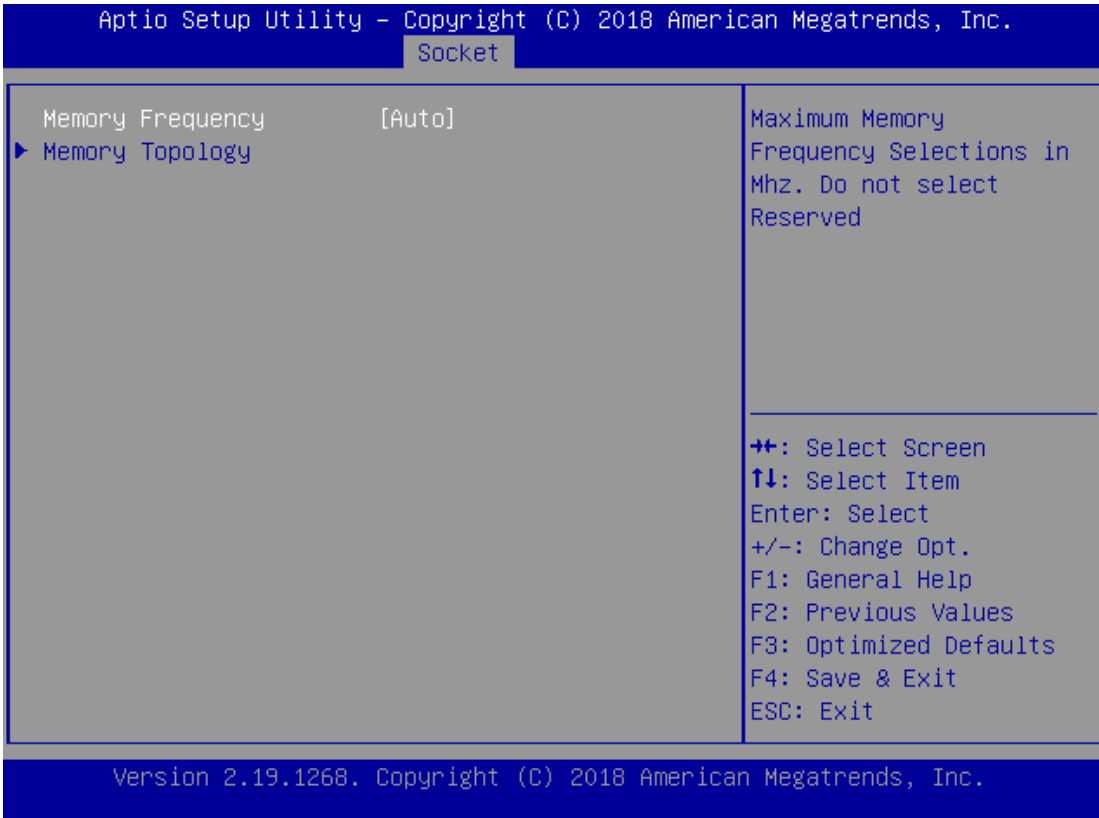


Feature	Options	Description
Core Disable Bitmap(Hex)	0	0: Enable all cores. 3fff: Disable all cores
IOT Cfg	Disabled Enabled	None

CPU Socket1 Configuration

Feature	Options	Description
Core Disable Bitmap(Hex)	0	<b>0</b> : Enable all cores. <b>3fff</b> : Disable all cores
IOT Cfg	Disabled Enabled	None

## Memory Configuration



Feature	Options	Description
Memory Frequency	Auto	Maximum Memory Frequency Selections in Mhz. Do not select Reserved
	800	
	1000	
	1066	
	1200	
	1333	
	1400	
	1600	
	1800	
	1866	
	2000	
	2133	
	2200	
	2400	
	2600	
	2666	
	2800-OvrClk	
2933-OvrClk		
3000-OvrClk		
3200-OvrClk		
3400-OvrClk		



	3600-OvrClk 3733-OvrClk 3800-OvrClk 4000-OvrClk 4200-OvrClk 4266-OvrClk 4400-OvrClk	
Memory Topology	None	Displays memory topology with DIMM population information

```

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Socket
-----
---
Socket0.ChA.Dimm0: DIMM is Present. DIMM
Status:Enabled DIMM Details: 2400MT/s UNKNOWN
SRx8 8GB RDIMM
Socket0.ChE.Dimm0: DIMM is Present. DIMM
Status:Enabled DIMM Details: 2400MT/s UNKNOWN
SRx8 8GB RDIMM

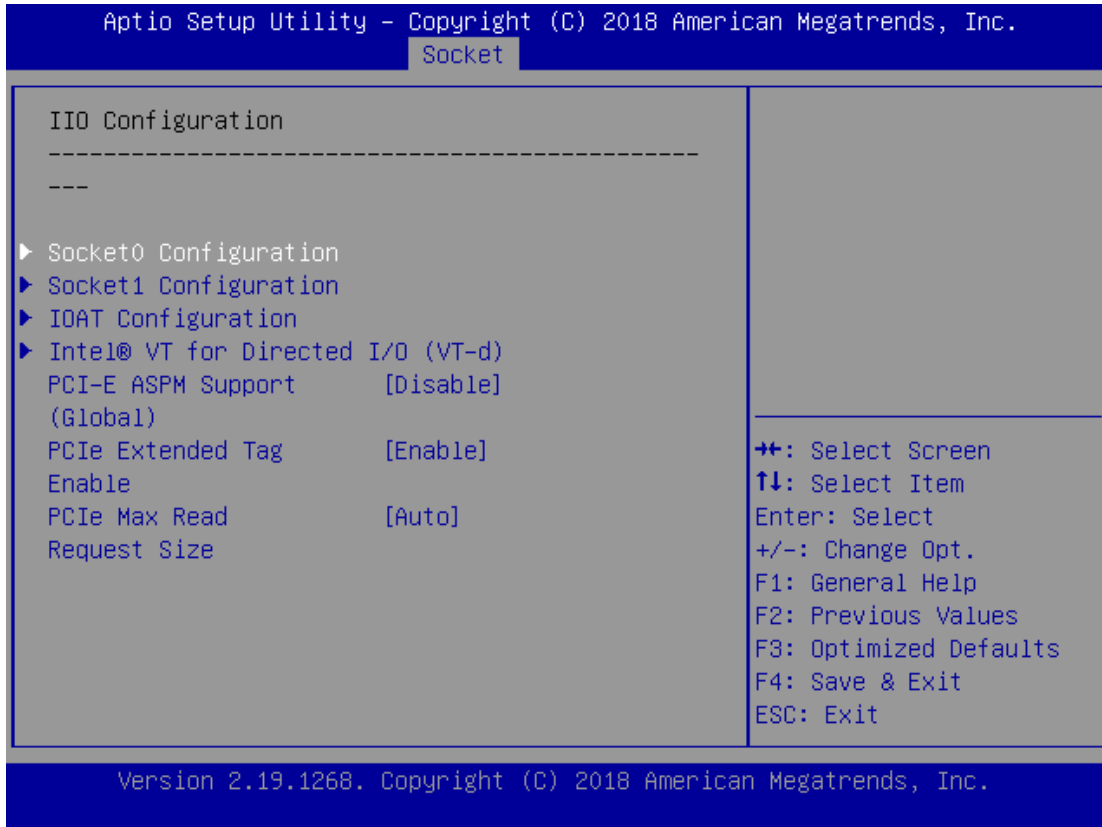
Empty
Empty
Empty
Empty
Empty
Empty
Empty
Empty
Empty

++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
▼ F4: Save & Exit
ESC: Exit

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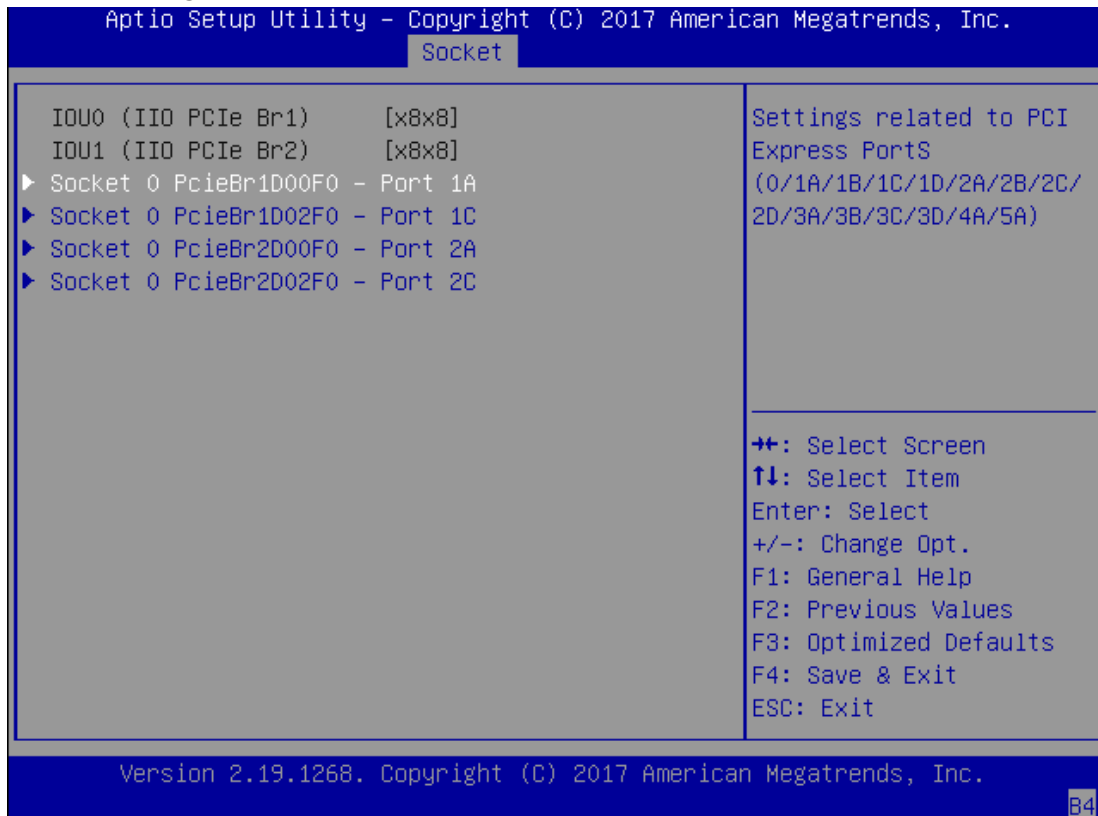
```

## I/O Configuration



Feature	Options	Description
Socket0 Configuration	None	None
Socket1 Configuration	None	None
IOAT Configuration	None	All IOAT configuration options
Intel® VT for Directed I/O (VT-d)	None	Press <b>&lt;Enter&gt;</b> to bring up the Intel® VT for Directed I/O (VT-d) Configuration menu.
PCI-E ASPM Support (Global)	<b>Disabled</b> Per-Port L1 Only	This option enables / disables the ASPM support for all downstream devices.
PCIe Extended Tag Enable	<b>Auto</b> Disabled Enabled	Auto/Enable - BIOS sets 8-bit Tag Field for PCIe Root Port/EndPoint. Disable - BIOS sets 5-bit Tag Field for PCIe Root Port/EndPoint
PCIe Max Read Request Size	<b>Auto</b> 128B 256B 512B 1024B 2048B 4096B	Set Max Read Request Size in EndPoints

## Socket0 Configuration



Feature	Options	Description
Socket 0 PcieBr1D00F0	None	Settings related to PCI Express Port 1A
Socket 0 PcieBr1D02F0	None	Settings related to PCI Express Port 1C
Socket 0 PcieBr2D00F0	None	Settings related to PCI Express Port 2A
Socket 0 PcieBr2D02F0	None	Settings related to PCI Express Port 2C



PCIe Slot 1  
(1A~1D)

PCIe Slot 2  
(2A~2D)

Socket0 PcieBr1D00F0 – Port 1A/1C/2A/2C

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Socket

Socket 0 PcieBr1D00F0 - Port 1A		▲ In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the
-----		
PCI-E Port	[Auto]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Hot Plug Capable	[Disable]	
Surprise Hot Plug Capable	[Disable]	
Link Speed	[Auto]	
PCI-E Port DeEmphasis	[-6.0 dB]	
PCI-E Port Link Status	Link Did Not Train	
PCI-E Port Link Max	Max Width x8	
PCI-E Port Link Speed	Link Did Not Train	
PCI-E Port Max Payload Size	[Auto]	
PCI-E ASPM Support	[Disable]	
Compliance Mode	[Disable]	

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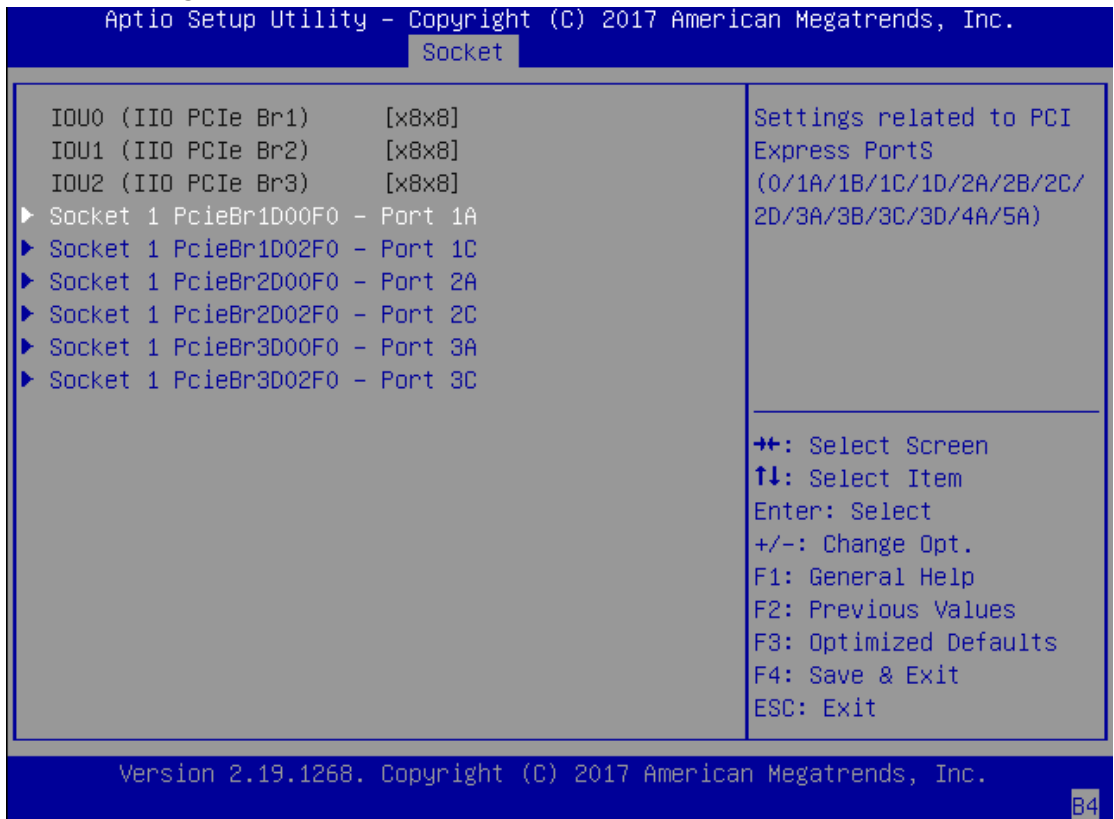
Socket

PCI-E ASPM Support	[Disable]	▲ Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.
Compliance Mode	[Disable]	
Extra Bus Reserved	0	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Reserved Memory	40	
Reserved Memory	1	
Alignment		
Reserved	40	
Prefetchable Memory		
Reserved	1	
Prefetchable Memory		
Alignment		
64 bit Reserved	40	
Prefetchable Memory		
64 bit Reserved	1	
Prefetchable Memory		
Alignment		
Reserved I/O	<b>4</b>	

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Feature	Options	Description
PCI-E Port	Auto Enable Disable	In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.
Hot Plug Capable	Enable Disable	This option specifies if the link is considered Hot Plug capable.
Surprise Hot Plug Capable	Enable Disable	This option specifies if the link is considered Surprise Hot Plug capable.
Link Speed	Auto Gen 1 (2.5 GT/s) Gen 2 (5 GT/s) Gen 3 (8 GT/s)	Choose Link Speed for this PCIe port
PCI-E Port DeEmphasis	-6.0 dB -3.5 dB	De-Emphasis control (LNKCON2[6]) for this PCIe port.
PCI-E Port Max Payload Size	Auto 128B 256B	Set Maxpayload size to 256B if possible
PCI-E ASPM Support	Auto L1 Only Disable	This option enables / disables the ASPM (L1) support for the downstream devices.
Compliance Mode	Enable Disable	Disable/Enable Compliance Mode for this PCIe port
Extra Bus Reserved	0	Extra Bus Reserved for bridges behind this Root Bridge.
Reserved Memory	40	Reserved Memory Range for this Root Bridge.
Reserved Memory Alignment	1	Reserved Memory Alignment (0 - 31 bits)
Reserved Prefetchable Memory	40	Reserved Prefetchable Memory Range for this Root Bridge.
Reserved Prefetchable Memory Alignment	1	Reserved Prefetchable Memory Alignment (0 - 31 bits)
64 bit Reserved Prefetchable Memory	40	64 bit Reserved Prefetchable Memory Range for this Root Bridge.
64 bit Reserved Prefetchable Memory Alignment	1	64 bit Reserved Prefetchable Memory Alignment (0 - 31 bits)
Reserved I/O	4	Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.

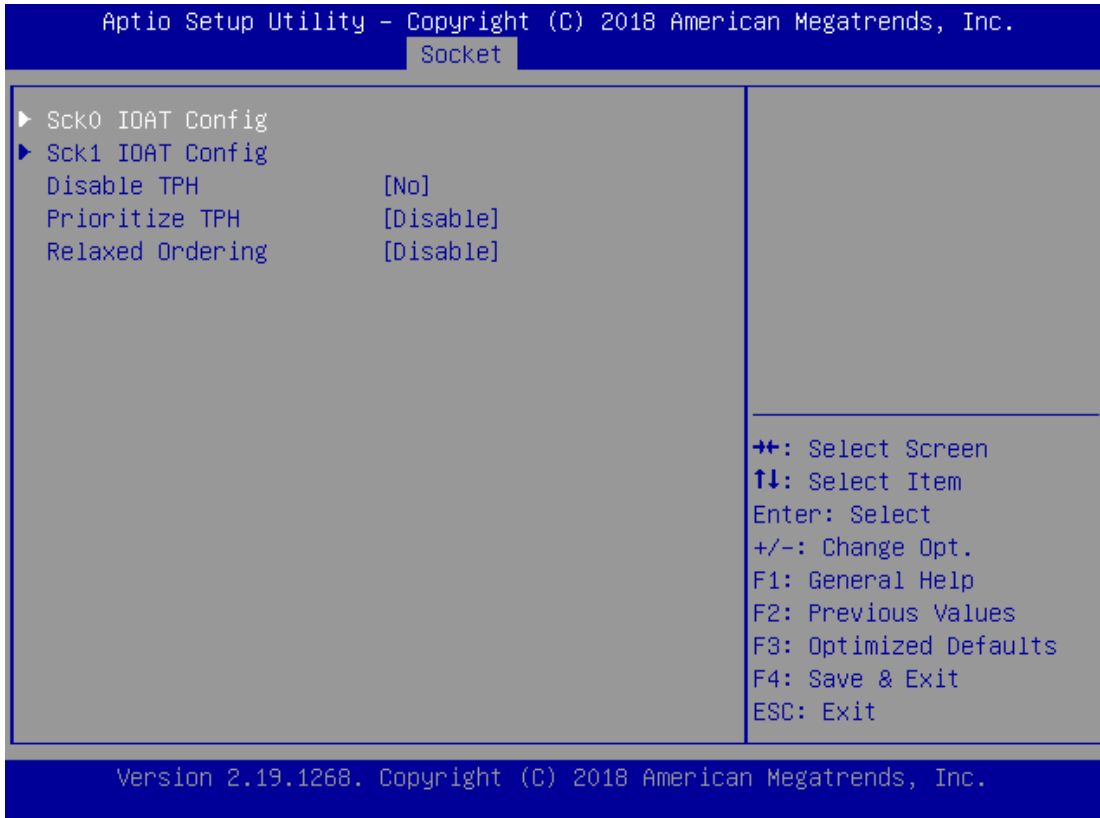
**Socket1 Configuration**



Feature	Options	Description
Socket 1 PcieBr1D00F0	None	Settings related to PCI Express Port 1A
Socket 1 PcieBr1D02F0	None	Settings related to PCI Express Port 1C
Socket 1 PcieBr2D00F0	None	Settings related to PCI Express Port 2A
Socket 1 PcieBr2D02F0	None	Settings related to PCI Express Port 2C
Socket 1 PcieBr3D00F0	None	Settings related to PCI Express Port 3A
Socket 1 PcieBr3D02F0	None	Settings related to PCI Express Port 3C



## IOAT Configuration



Feature	Options	Description
Sck0 IOAT Config	None	None
Sck1 IOAT Config	None	None
Disable TPH	No Yes	TLP Processing Hint disable
Prioritize TPH	Disabled Enabled	Prioritize TPH
Relaxed Ordering	Disabled Enabled	Relaxed Ordering Enable/Disable

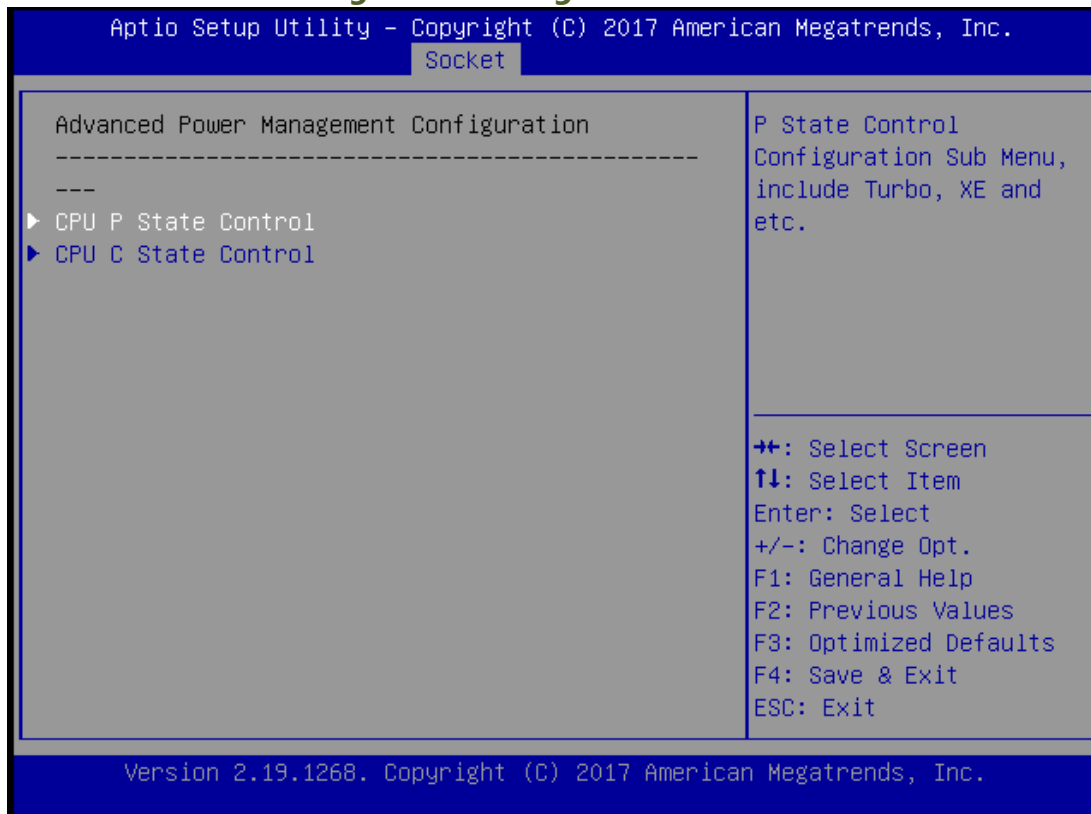
Intel® VT for Directed I/O (VT-d)



Feature	Options	Description
Intel® VT for Directed I/O (VT-d)	Disabled Enabled	Press <b>&lt;Enter&gt;</b> to bring up the Intel® VT for Directed I/O (VT-d) Configuration menu.



## Advanced Power Management Configuration



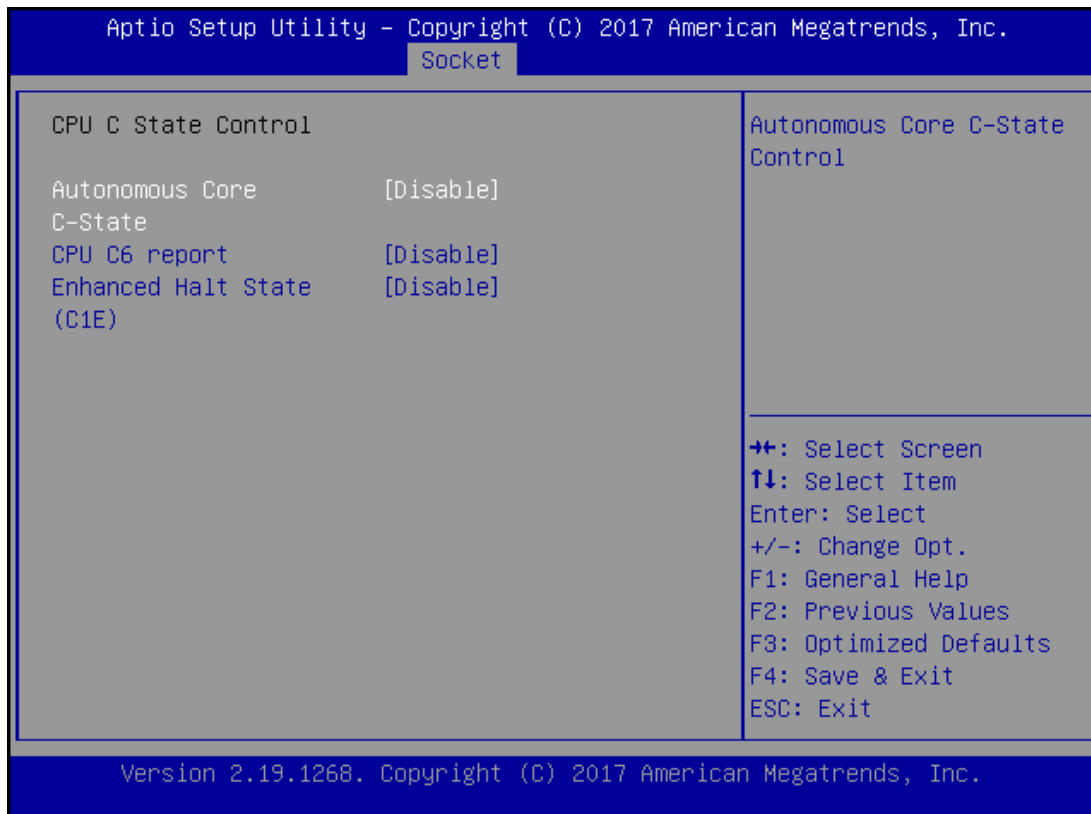
Feature	Options	Description
CPU P State Control	None	P State Control Configuration Sub Menu, include Turbo, XE and etc.
CPU C State Control	None	CPU C State setting

CPU P State Control



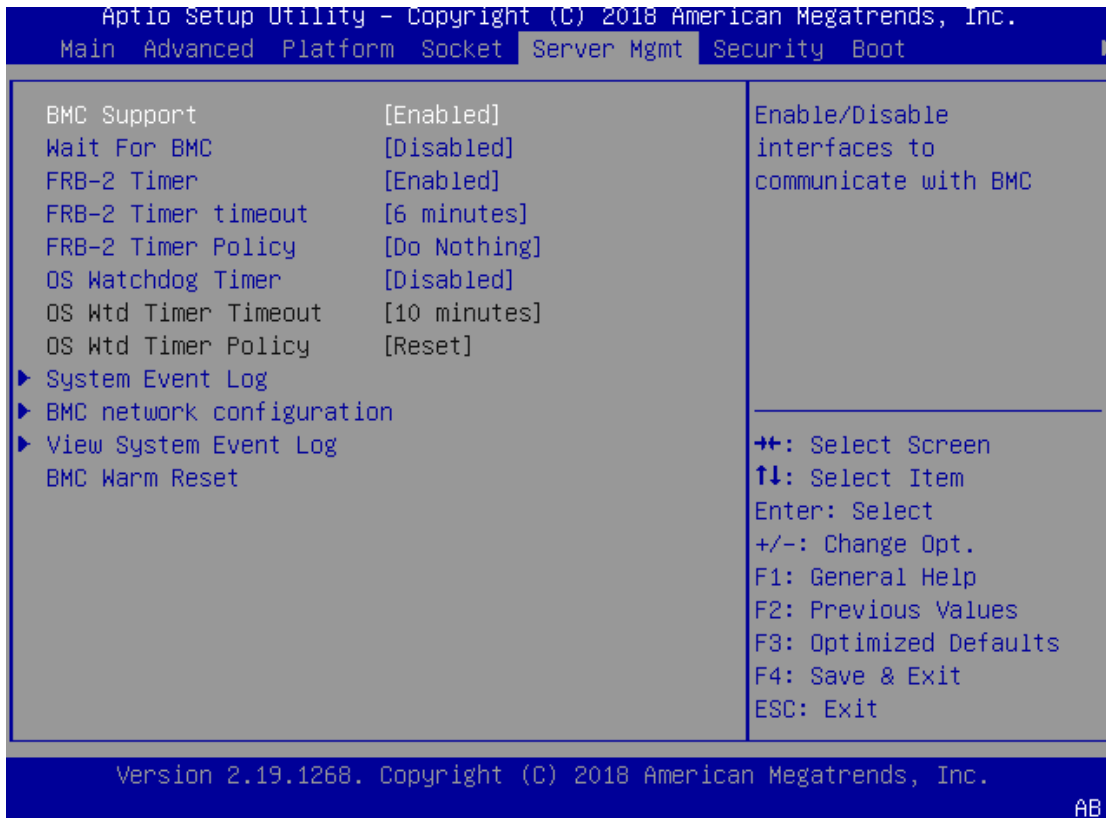
Feature	Options	Description
SpeedStep(Pstates)	Disabled Enabled	Enables or disables EIST (P-States)
Boot performance mode	Max Performance Max Efficient Set by Intel Node Manager	Select the performance state that the BIOS will set before OS hand off.
Energy Efficient Turbo	Disabled Enabled	Energy Efficient Turbo Disable, MSR 0x1FC [19]
CPU Flex Ratio Override	Disabled Enabled	Enable/Disable CPU Flex Ratio Programming
CPU Core Flex Ratio	23	Non-Turbo Mode Processor Core Ratio Multiplier

## CPU C State Control



Feature	Options	Description
Autonomous Core C-State	Disabled Enabled	Autonomous Core C-State Control
CPU C6 report	Disabled Enabled	Enables or disables CPU C6(ACPI C3) report to OS
Enhanced Halt State (C1E)	Disabled Enabled	Core C1E auto promotion Control. Takes effect after reboot.

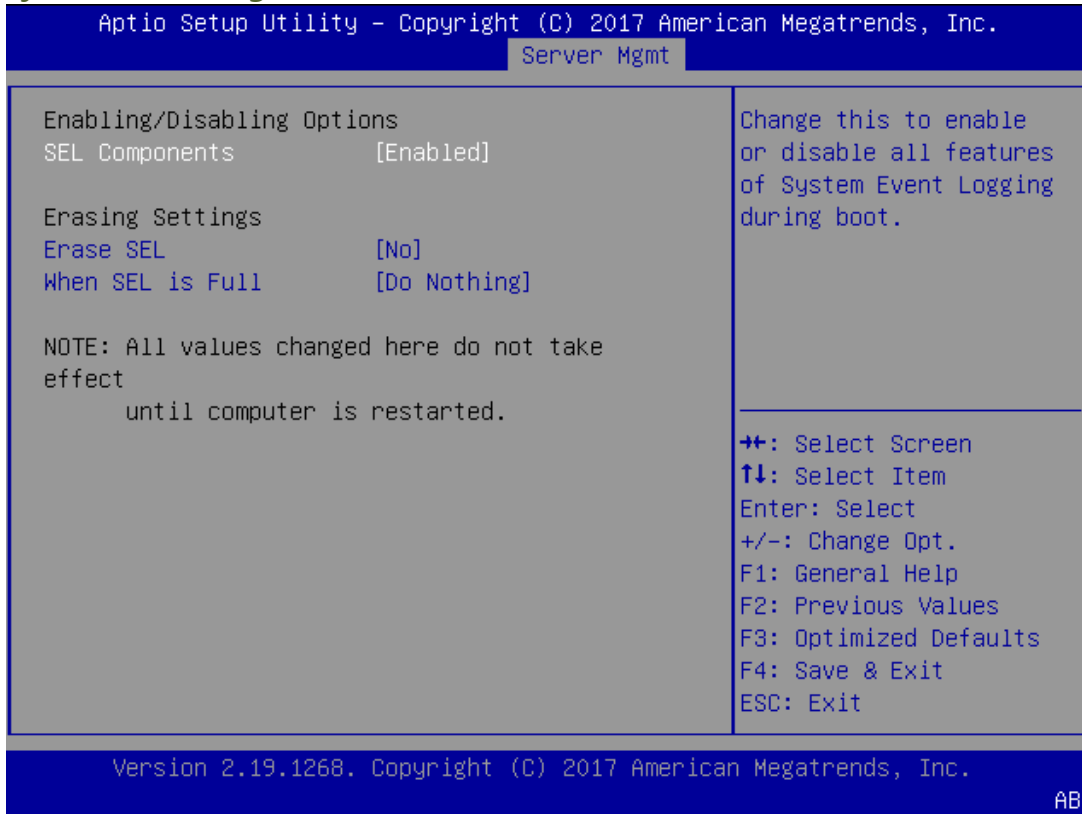
### Server Mgmt(SKU B and C Only)



Feature	Options	Description
BMC Support	Enabled Disabled	Enable or disables interfaces to communicate with BMC.
Wait For BMC	Enabled Disabled	Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.
FRB-2 Timer	Enabled Disabled	Enables or disables FRB-2 timer (POST timer).
FRB-2 Timer timeout	3 minutes 4 minutes 5 minutes 6 minutes	Enter value Between 3 to 6 min for FRB-2 Timer Expiration value.

FRB-2 Timer Policy	Do Nothing Reset Power Down Power Cycle	Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.
OS Watchdog Timer	Enabled Disabled	If enabled, it starts a BIOS timer which can only be shut off by Management Software after the OS loads. It also helps verify that the OS is successfully loaded or follows the OS Boot Watchdog Timer policy.
OS Wtd Timer Timeout	5 minutes 10 minutes 15 minutes 20 minutes	Configure the length of the OS Boot Watchdog Timer. Not available if OS Boot Watchdog Timer is disabled.
OS Wtd Timer Policy	Do Nothing Reset Power Down Power Cycle	Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot Watchdog Timer is disabled.
System Event Log	NA	Press <b>&lt;Enter&gt;</b> to change the SEL event log configuration.
BMC network configuration	NA	Configure BMC network parameters.
View System Event Log	NA	Press <b>&lt;Enter&gt;</b> to view the System Event Log Records.
BMC Warm Reset	NA	Press <b>&lt;Enter&gt;</b> to do Warm Reset BMC.

## System Event Log



Feature	Options	Description
SEL Components	Disabled <b>Enabled</b>	Enables or disables all features of System Event Logging during boot.
Erase SEL	<b>NO</b> Yes, On next reset Yes, On every reset	Choose options for erasing SEL.
When SEL is Full	<b>Do Nothing</b> Erase Immediately	Choose options for reactions to a full SEL.

## BMC network configuration

```

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Server Mgmt

--BMC network configuration--
*****
Configure IPV4 support
*****

Lan channel 1
Configuration          [Unspecified]
Address source
Current                StaticAddress
Configuration
Address source
Station IP address     192.168.0.100
Subnet mask            255.255.255.0
Station MAC address    02-0c-63-77-de-98
Router IP address      192.168.0.1
Router MAC address     00-00-00-00-00-00

Select to configure LAN
channel parameters
statically or
dynamically(by BIOS or
BMC). Unspecified
option will not modify
any BMC network
parameters during BIOS

+*: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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AR

```

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

## View System Event Log

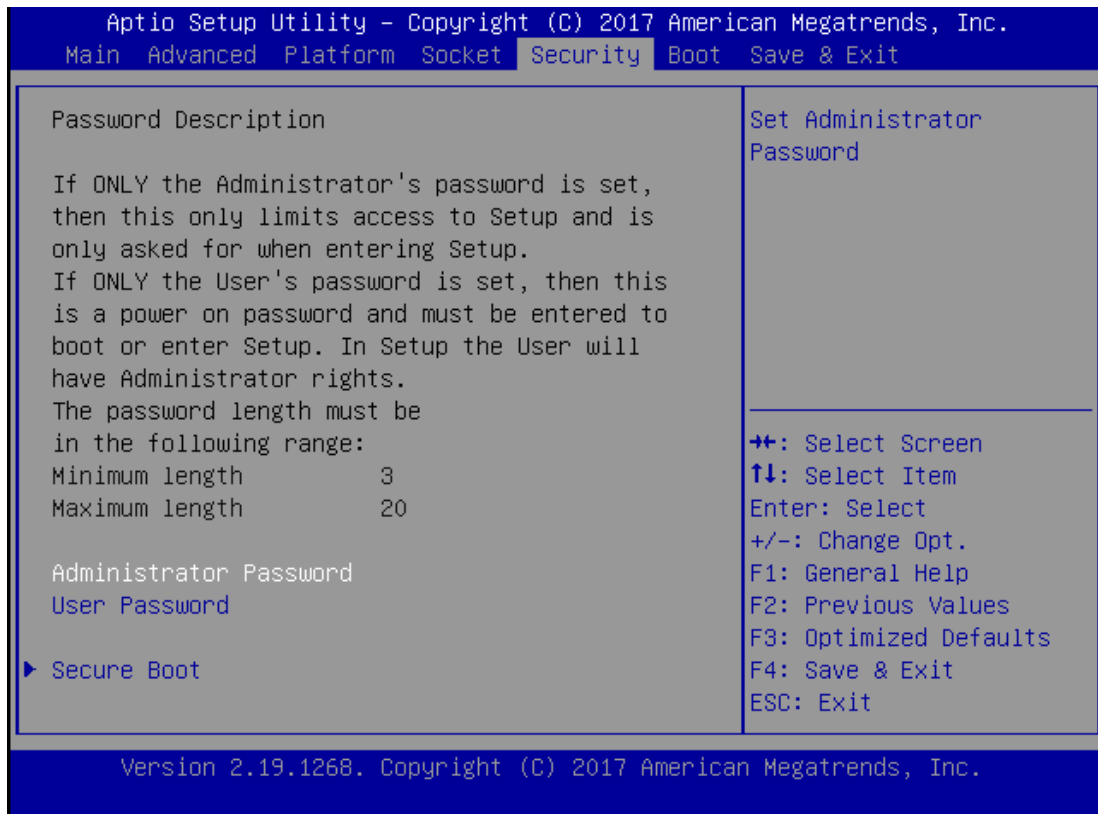
The screenshot shows the Aptio Setup Utility interface with the 'Security' tab selected. A dialog box titled 'View System Event Log' is displayed in the center, asking 'Retrieving all system events will take time. Do you want to continue?' with 'Yes' and 'No' options. The background menu includes options like 'System Event Log', 'View FRU information', 'BMC network configuration', and 'View System Event Log'. A list of system settings is visible on the left, and a legend of function keys (F1-F4, ESC) is on the right.

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.		
Main Advanced Platform Socket Server Mgmt Security Boot		
BMC Support	[Enabled]	Press <Enter> to view the System Event Log Records.
Wait For BMC	[Disabled]	
FRB-2 Timer	[Enabled]	
FRB-2 Timer timeout	[6 minutes]	
FRB-2 Timer Policy	[Do Nothing]	
OS Watchdog Ti	View System Event Log	
OS Wtd Timer T	Retrieving all system events will take time. Do you want to continue?	
OS Wtd Timer P	Yes No	
▶ System Event L	Screen	
▶ View FRU infor	Item	
▶ BMC network co	ect	
▶ View System Ev	e Opt.	
BMC Warm Reset	F1: General Help	
	F2: Previous Values	
	F3: Optimized Defaults	
	F4: Save & Exit	
	ESC: Exit	
Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.		
		AB



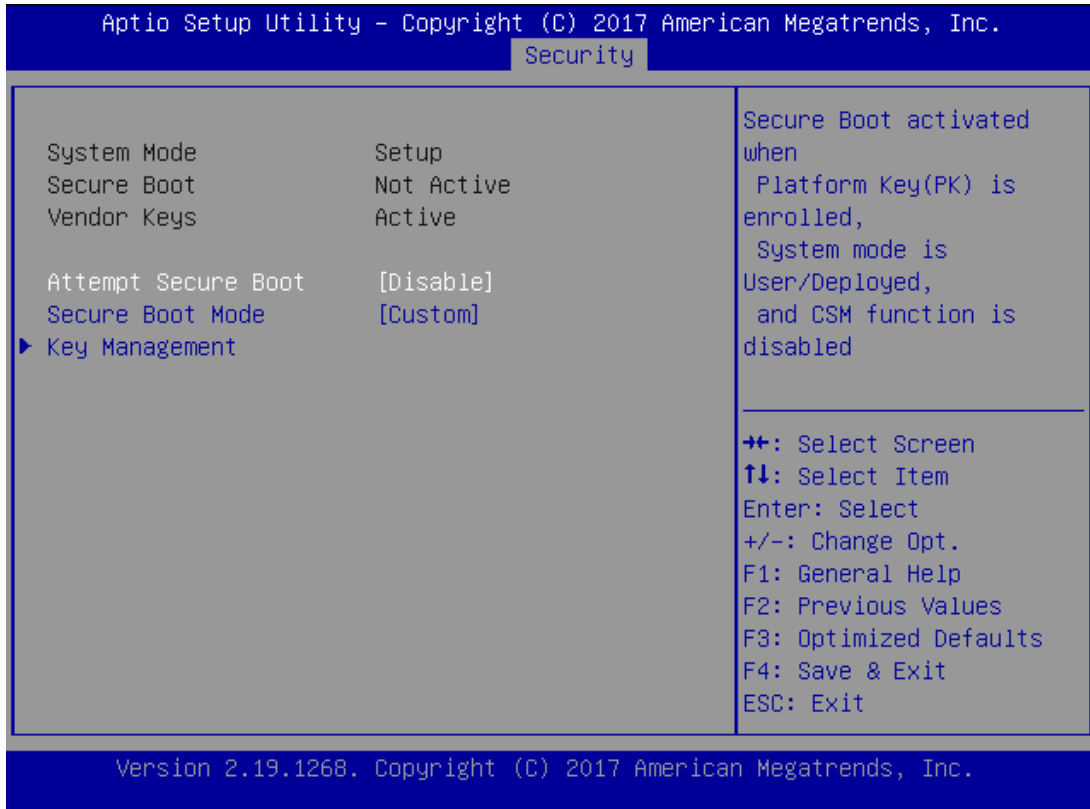
## Security

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.



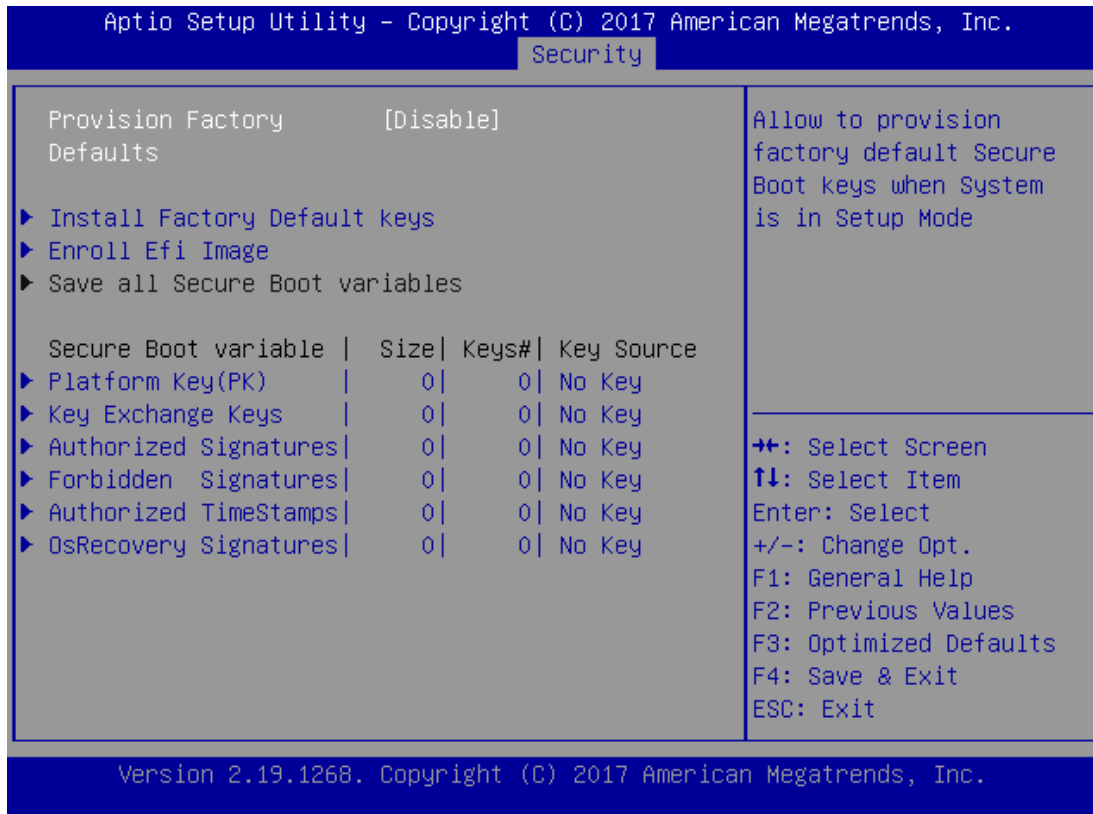
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the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

## Secure Boot



Feature	Options	Description
Attempt Secure Boot	Disabled Enabled	Secure Boot is activated when Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled.
Secure Boot Mode	Standard Custom	Secure Boot mode selector: In <b>Custom</b> mode, Secure Boot Variables can be configured without authentication

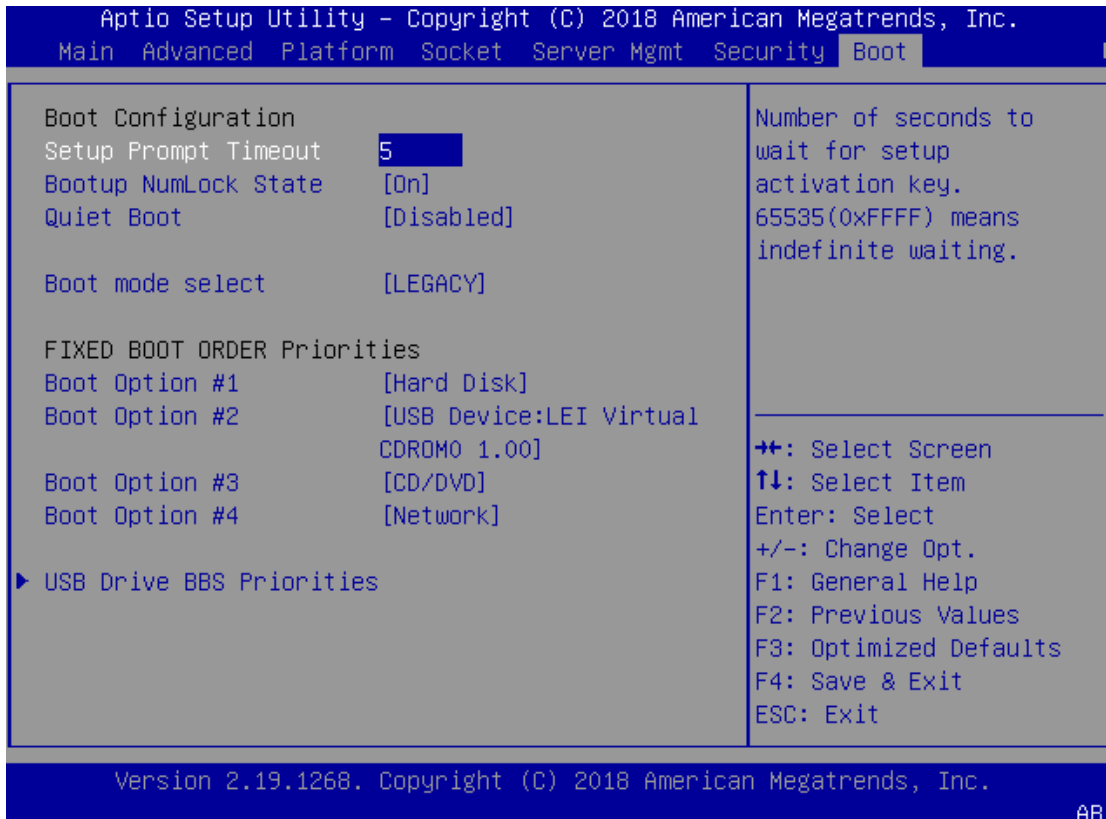
## Key Management



Feature	Options	Description
Provision Factory Defaults	<b>Disabled</b> Enabled	Allows User to provision factory default Secure Boot keys when System is in Setup Mode.
Install Factory Default keys	None	Forces System to User Mode - install all Factory Default keys
Enroll Efi Image	None	Allows the image to run in Secure Boot mode. Enroll SHA256 hash of the binary 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.

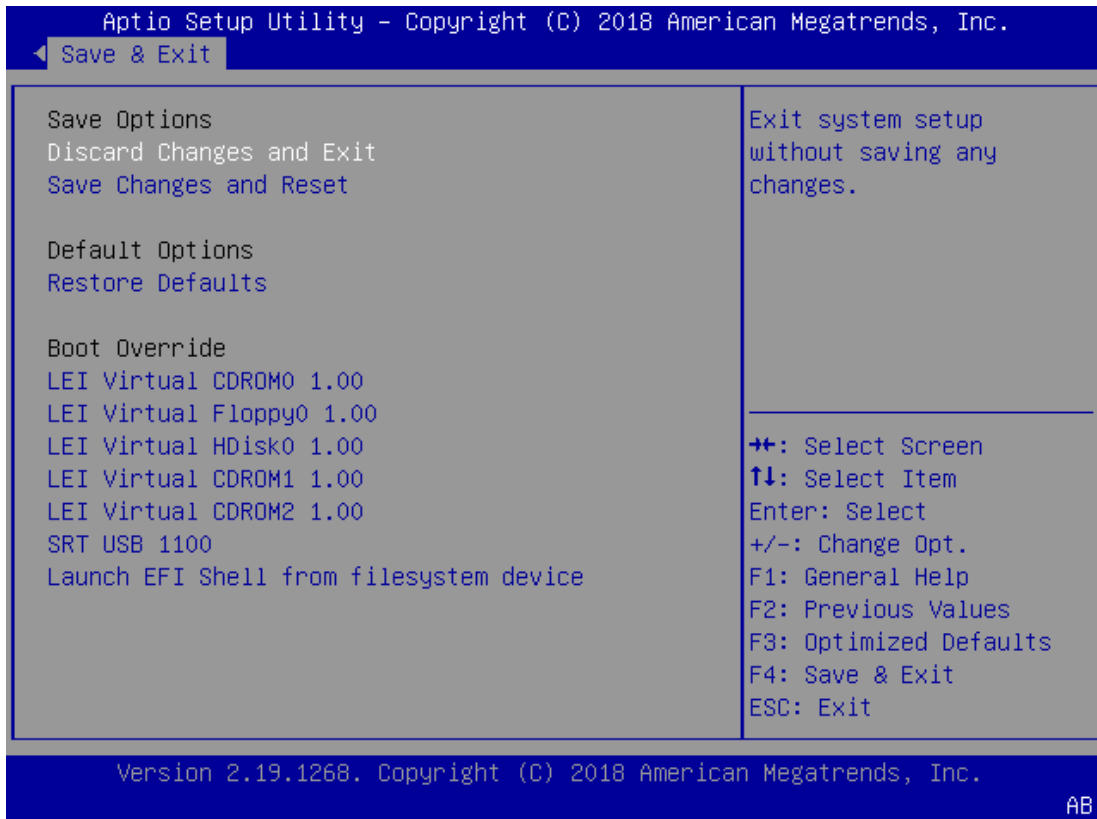


Feature	Options	Description
Setup Prompt Timeout	5	The Number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state.
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI DUAL	Select boot mode for LEGACY or UEFI.

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

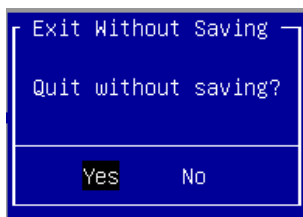
## Save and Exit Menu

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.



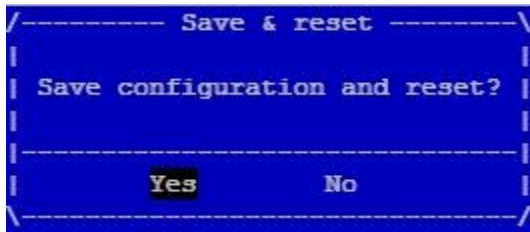
### Discard Changes and Exit

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.



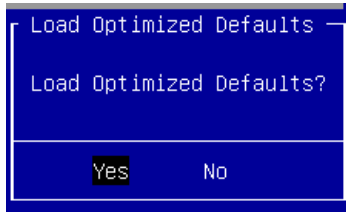
### Save Changes and Reset

When Users have completed the system configuration changes, select this option to save the changes and reset 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 Reset" option is selected. Select "Yes" to Save Changes and reset.



### Restore Defaults




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



Note: The items listed under Boot Override depend on devices connected to system.

# APPENDIX A: LED INDICATOR EXPLANATIONS

The status explanations of LED indicators on the Front Panel are as follows:

-  System Power
-  System Status
-  HDD Activity

► **System Power**

<i>Solid Green</i>	<i>The system is powered on</i>
<i>Off</i>	<i>The system is powered off</i>

► **System Status**

This LED indicator is programmable. You could program it to display the operating status of the behaviors described below:

<i>Solid Green</i>	<i>Defined by GPIO</i>
<i>Solid Red</i>	<i>Defined by GPIO</i>
<i>Off</i>	<i>Defined by GPIO</i>

► **HDD Activity**

If this LED blinks, it indicates data access activities; otherwise, it remains off.

<i>Blinking Amber</i>	<i>Data access activity</i>
<i>Off</i>	<i>No data access activity</i>

Link Activity  Speed  
**RJ45 Port**

► **Link Activity**

<i>Blinking Amber</i>	<i>Link has been established and there is activity on this port</i>
<i>Solid Amber</i>	<i>Link has been established and there is no activity on this port</i>
<i>Off</i>	<i>No link is established</i>

► **Speed**

<i>Solid Amber</i>	<i>Operating as a Gigabit connection (1000 Mbps)</i>
<i>Solid Green</i>	<i>Operating as a 100-Mbps connection</i>
<i>Off</i>	<i>Operating as a 10-Mbps connection</i>

Link Activity  Speed  
**SPF+ Port**

► **Link Activity**

<i>Blinking Green</i>	<i>Link has been established and there is activity on this port</i>
<i>Solid Green</i>	<i>Link has been established and there is no activity on this port</i>
<i>Off</i>	<i>No link is established</i>

► **Speed**

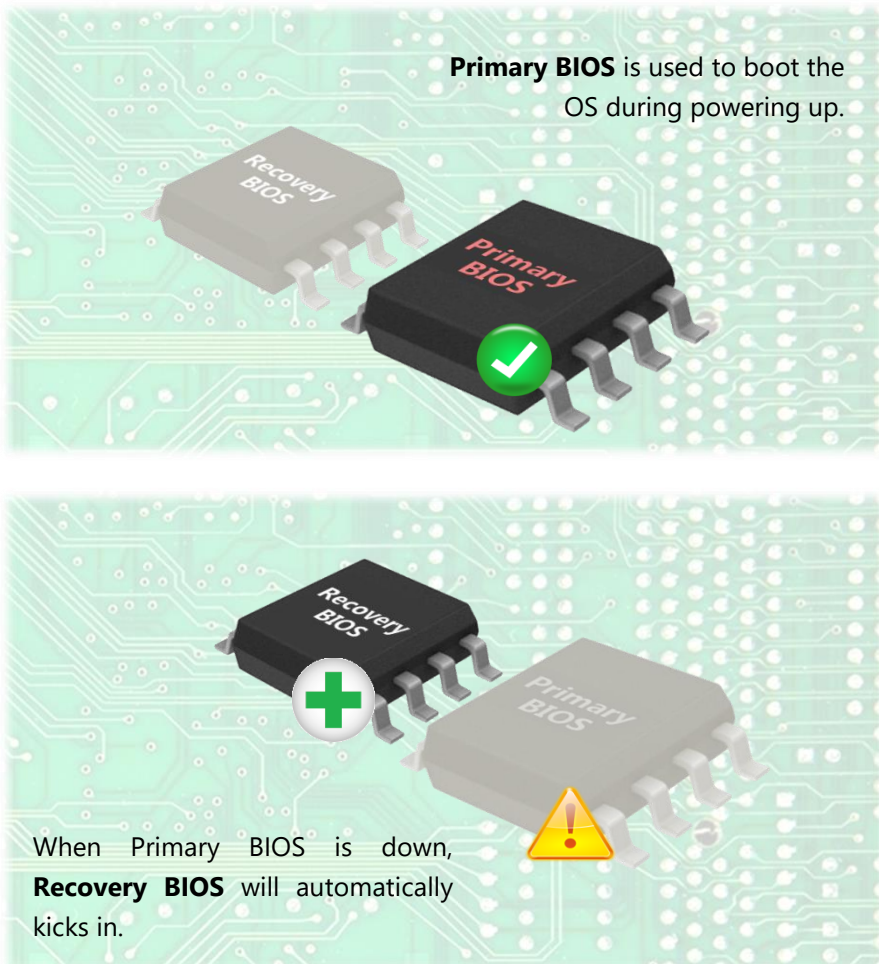
<i>Solid Green</i>	<i>Operating as 10 Gigabit connection</i>
<i>Solid Amber</i>	<i>Operating as a Gigabit connection</i>
<i>Off</i>	<i>Operating as a 100 Mbps connection</i>

## APPENDIX B: DUAL BIOS INTRODUCTION

### Why Dual BIOS?

Failure of booting up BIOS is not uncommon to most experienced users, yet it can be the worst nightmare. This occurs mostly during a power failure or a mishandled BIOS update, after a malware's attack that corrupted the data on the chip, or, at worst, due to physical damage that caused the BIOS not to function. When it happens, not merely will the recovering procedures consume considerable time and effort, but all your work might also be to no avail. Eventually, you are left with no choice but to ship the board back to the manufacturer.

Lanner understands this pain and has empowered our products with the Dual BIOS feature. Normally, the Primary BIOS is used to boot the OS during powering up; when Primary BIOS is down, the Recovery BIOS automatically jumps in to boot up the OS for the User to take further steps such as performing data backup and BIOS upgrade.



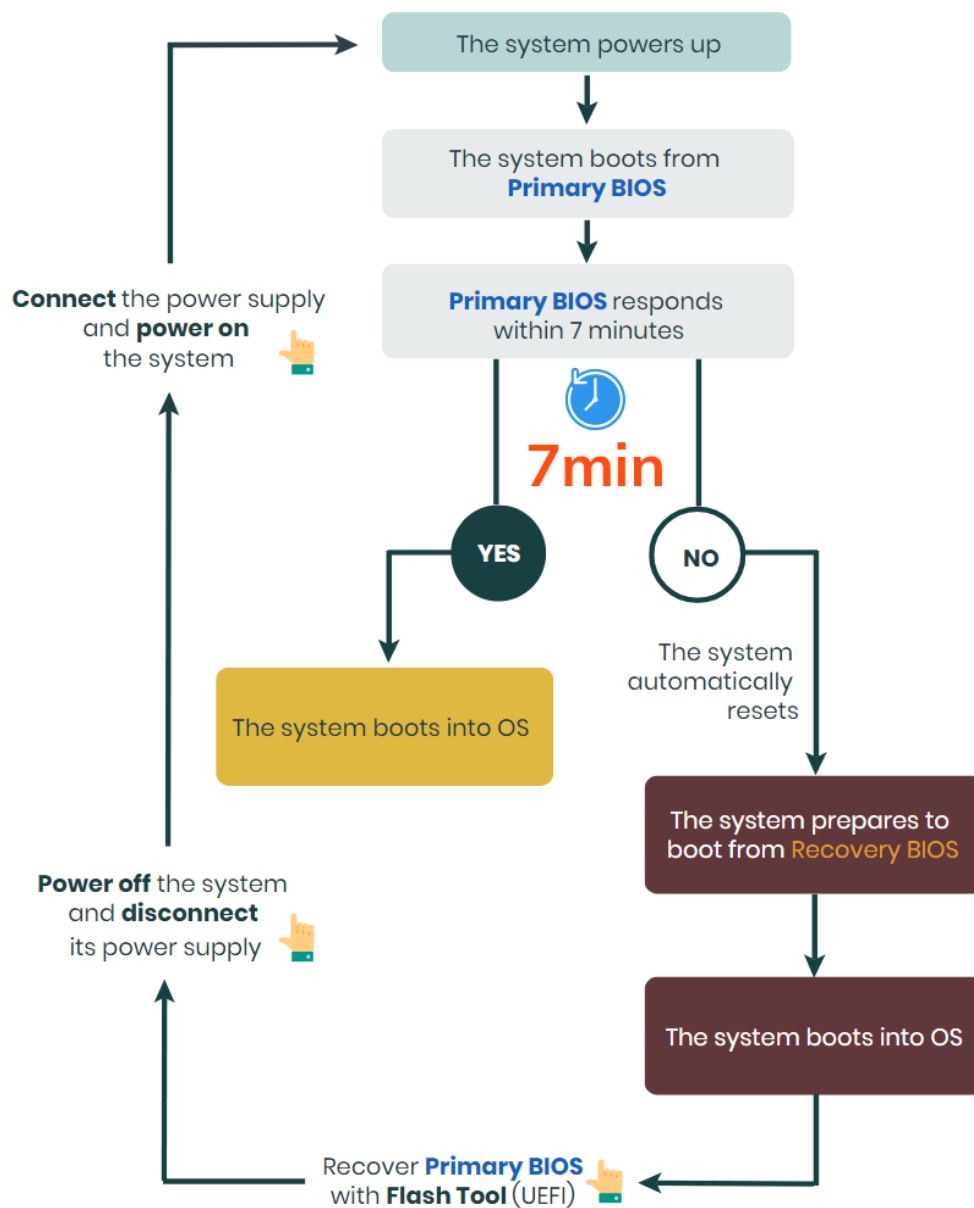


# Addressing BIOS Start-up Failure with Dual BIOS

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.

## How Dual BIOS Works

Dual BIOS features two physical BIOS ROMs soldered onto the motherboard, carrying two separate BIOS images. The Primary BIOS carries the image for system bootup, the parameters of which can be overwritten, while the Recovery BIOS carries the image locked to the factory default, which guarantees a safe and successful system bootup. If the Primary BIOS is not functioning correctly and fails to respond within 7 minutes, the system will invoke a bootup from the Recovery BIOS, automatically restart the system and launch the operating system.



## How do I know which BIOS the system is booting from?

On POST screen, the **Boot Bios** information will display the BIOS used for this bootup.



## I just found the system being booted from the Recovery BIOS, what's next?

With the Recovery BIOS at work, it can be asserted that the Primary BIOS is having such severe problem that it failed to function. Before you make certain the BIOS chip is completely corrupted, it is definitely sensible to try the last resort—updating BIOS.

## Get Ready for BIOS Update

Flashing a corrupted BIOS can never be taken lightly, for once done wrongly, it is almost certain to lead to an unusable system. To get ready for a BIOS update, acquire the following BIOS resources from Lanner technical support:

- Firmware and Flash Tool
- BIOS Engineering Spec
- Release Note

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

### 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.



### Warning

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

# APPENDIX C: PCIE HOT-SWAP

## Introduction

With the extensive use of PCIe technology, PCIe Hot-plug has now become a widely-required capability for server systems across various industries. This functionality allows a PCIe end-point device to be removed from or added to a running system without compromising the operational state of the other PCIe devices in the system or even the motherboard itself. Despite the fact that Hot-plug is already a native PCIe feature in its own design, it requires the full support from the operating system to “treat a PCIe end-point device as a Hot-pluggable one.” To achieve this functionality, Lanner has implemented a methodology that involves in both hardware (Hot-plug controller IC) and software implementation (both BIOS and kernel) support, not only successfully utilizing this functionality in NCA-5710’s architecture but allowing for combined operation of a hot-removal followed by a hot-insertion—**Lanner in-band Hot-Swap capability**. Benefiting from this feature, User can switch NIC modules (e.g., replacing a malfunctioned one or changing the Ethernet interface from RJ45 to SFP) without powering off the system in one go, safety-guaranteed and with ease.

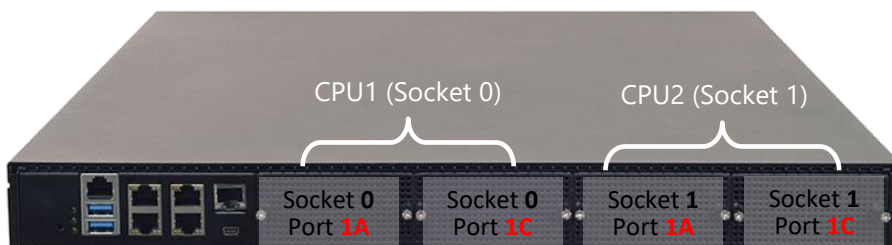
## Pre-requisites

Before you actually start performing a Hot-swap, make sure you have completed the following configurations on your system.

### BIOS Configuration

By default, the Hot-plug capability is disabled for this system to reserve as many resources as possible for critical applications, and hence it requires User’s manual enabling.

1. Locate the PCIe slot the hot-plug capability of which is to be enabled. As separately controlled by different CPUs (Sockets), the PCIe slots are recognized as **Socket 0 Port 1A**, **Socket 0 Port 1C**, **Socket 1 Port 1A** and **Socket 1 Port 1C** in BIOS interface.

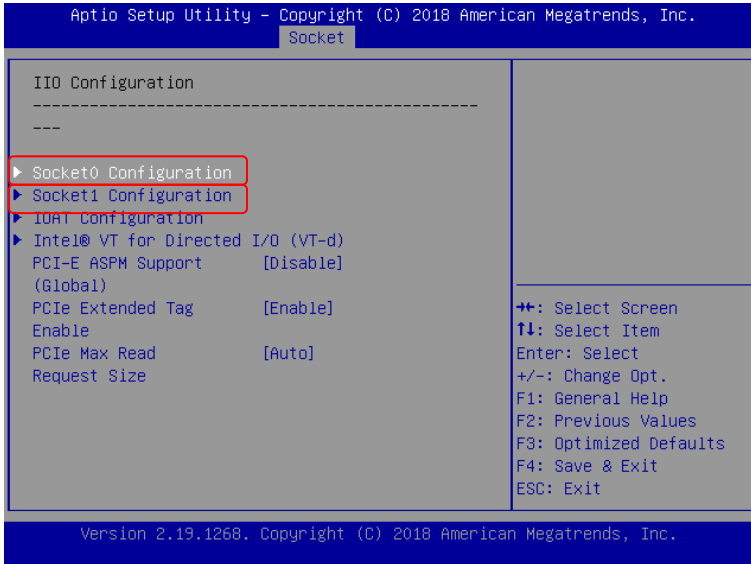




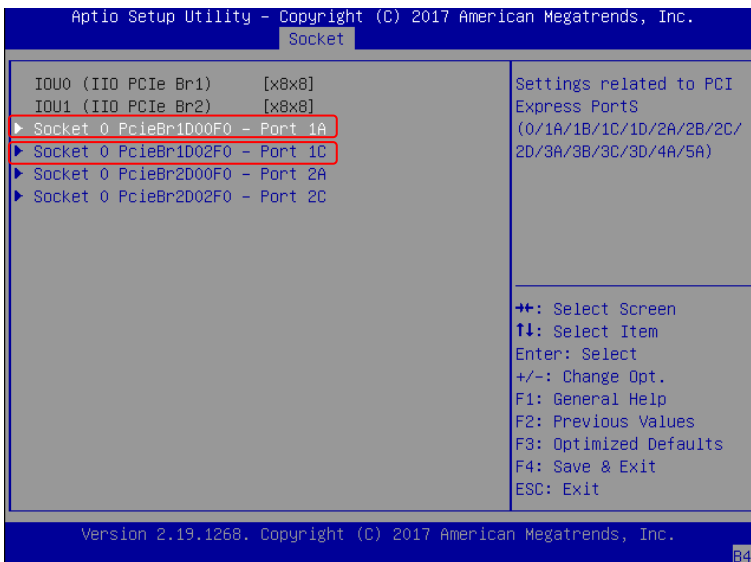
Note

It is suggested that the hot-plug capability of a PCIe port remain “Disabled” until you literally need to replace the module in it. This serves the same purpose of disabling this function by factory default—to reserve CPU resources to allocate for more critical tasks.

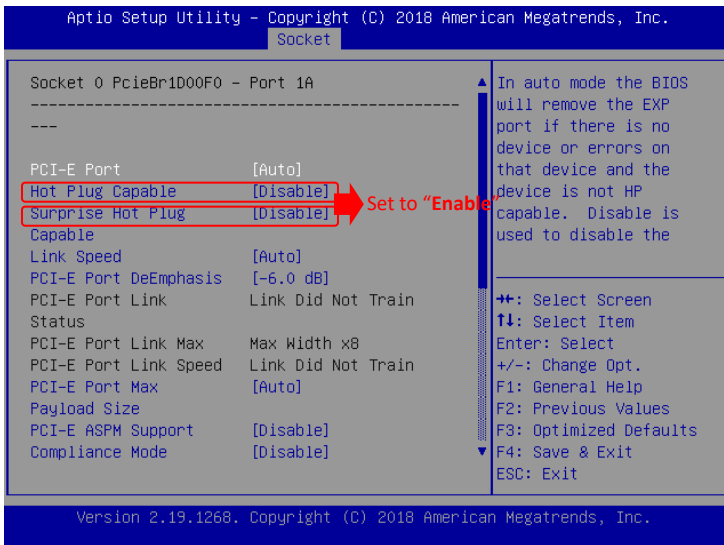
- Turn on the computer and immediately press the <Delete> or <Tab> repeatedly until a **BIOS Setup** screen opens. Access **Socket** page→**IIO Configuration** page and choose between “Socket0 Configuration” and “Socket1 Configuration”.



- Select the port (PCIe slot) the Hot-plug function of which is to be enabled.



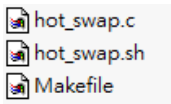
4. Enter the configuration page to enable these two capabilities: "Hot Plug Capable" and "Surprise Plug Capable."



### Hop-Swap Utility Installation

The **Hot-swap Utility** is a Linux application, acting as a handy tool for User to place command to directly "power-on" or "power-off" the PCIe slot.

1. On your system, download the compressed **Hot-swap Utility** installation package (zip file) from(?)
2. Unzip this package, which contains the following three files:



3. To execute this utility, type the following command in the command window:

```
hot_swap.sh
```

After the utility is initialized, it will display the available commands you could use to manage the PCIe slots:

```
[root@localhost hot_swap_201808201#
[root@localhost hot_swap_201808201# ls
hot_swap hot_swap.c hot_swap.sh Makefile
[root@localhost hot_swap_201808201# ./hot_swap.sh to launch Hot-swap Utility

hot_swap.sh 1 off ( Slot 1 Power disconnect )
hot_swap.sh 1 on  ( Slot 1 Power connect   )
hot_swap.sh 2 off ( Slot 2 Power disconnect )
hot_swap.sh 2 on  ( Slot 2 Power connect   )
hot_swap.sh 3 off ( Slot 3 Power disconnect )
hot_swap.sh 3 on  ( Slot 3 Power connect   )
hot_swap.sh 4 off ( Slot 4 Power disconnect )
```

Available Commands

## Procedures for Replacing a PCIe Module

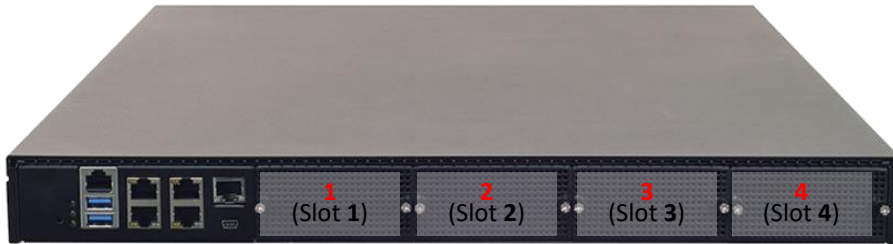
1. In the command window, execute this utility with the following command:

```
hot_swap.sh
```

2. Input the power-off command to disconnect the power supply of the target PCIe slot.

```
hot_swap.sh 1 off  
[Slot No.][Command]
```

The slot names map to the physical slots as shown below:



3. After the confirmation message of disconnection is returned, remove the target PCIe module from its slot.

```
[root@localhost hot_swap_20180820]# ./hot_swap.sh 1 off Power-off command  
NIC address=0x00000780  
<<<Slot 1 Power disconnect >>> Connection status: OFF  
[root@localhost hot_swap_20180820]# ./hot_swap.sh 1 on  
NIC address=0x00000780  
<<<Slot 1 Power connect >>>  
[root@localhost hot_swap_20180820]#
```

4. Insert the new PCIe module into the slot and secure the slot cover.
5. Input the power-on command to power-on f the target PCIe slot.

```
hot_swap.sh 1 on  
[Slot No.][Command]
```

6. After the confirmation message of connection is returned, the physical link is established and the new PCIe module should already be in service.

```
[root@localhost hot_swap_20180820]# ./hot_swap.sh 1 off  
NIC address=0x00000780  
<<<Slot 1 Power disconnect >>>  
[root@localhost hot_swap_20180820]# ./hot_swap.sh 1 on Power-on command  
NIC address=0x00000780  
<<<Slot 1 Power connect >>> Connection status: ON
```



Note

Only one module can be removed at a time.

## Replacement PCIe Module

In a typical PCIe-based system, the enumeration and resource allocation algorithms performed by the CPU during the very first initialization will fix the PCIe topology, meaning that the configuration of the PCIe modules first installed in the slot is locked down and not allowed for alternation. Considering this limitation, for hot-swapping, it is strongly advised that you always replace a PCIe module with one of the same link width. The table below shows other possible choices of link width of a replacement PCIe module.

The PCIe Module(s) First-installed in the slot	Replacement PCIe Module(s)		
	One x4 module	Two x4 modules	One x8 module
<b>No</b> modules installed	O	X	O
<b>One</b> x8 module installed	O	X	O
<b>One</b> x4 module installed	O	X	X
<b>Two</b> x4 modules installed	O	O	X



## APPENDIX D: SETTING UP CONSOLE REDIRECTIONS

Console redirection lets you monitor and configure a system from a remote terminal computer by re-directing keyboard input and text output through the serial port. The following steps illustrate how to use this feature. The BIOS of the system allows the redirection of the console I/O to a serial port. With this configured, you can remotely access the entire boot sequence through a console port.

1. Connect one end of the console cable to console port of the system and the other end to the serial port of the Remote Client System.
2. Configure the following settings in the BIOS Setup menu:  
**BIOS > Advanced > Serial Port Console Redirection > Console Redirection Settings**, select **115200** for the Baud Rate, **None** for Flow control, **8** for the Data Bit, **None** for Parity Check, and **1** for the Stop Bit.
3. Configure console redirection related settings on the client system. You can use a terminal emulation program that features communication with serial COM ports such as *TeraTerm* or *Putty*. Make sure the serial connection properties of the client conform to those for the server.

# APPENDIX E: 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 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.

<b>RMA No:</b>	Reasons to Return: <input type="checkbox"/> Repair(Please include failure details) <input type="checkbox"/> Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____	
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____	
<input type="checkbox"/> 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               |
| 03: CMOS Data Lost     | 09: Cache RMA Problem        | 15: PS2            | 21: Shut Down            |
| 04: FDC Fail           | 10: Memory Socket Bad        | 16: LAN            | 22: Panel Fail           |
| 05: HDC Fail           | 11: Hang Up Software         | 17: COM Port       | 23: CRT Fail             |
| 06: Bad Slot           | 12: Out Look Damage          | 18: Watchdog Timer | 24: Others (Pls specify) |

**Request Party**

**Confirmed By Supplier**

\_\_\_\_\_  
Authorized Signature / Date

\_\_\_\_\_  
Authorized Signature / Date