

# Lanner

## Network Computing

Innovative Platforms for Next Generation Network Infrastructure

## NCA-2510 User Manual

Version: 1.1

Date of Release: 2018-06-26

## Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:



**Note:** This mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.



**Warning:** This icon indicates that there is a caution or warning and it is something that could damage your property or product.

## Online Resources

The listed websites are links to the on-line product information and technical support.

Resources	URL
Lanner	<a href="http://www.lannerinc.com">http://www.lannerinc.com</a>
Product Resource	<a href="http://www.lannerinc.com/download-center">http://www.lannerinc.com/download-center</a>
RMA	<a href="http://eRMA.lannerinc.com">http://eRMA.lannerinc.com</a>

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# Compliances and Certification

## CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

## FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

## 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.

### **Lithium Battery Caution:**

- ▶ Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- ▶ Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.
- ▶ Do not carry the handle of power supplies when moving to another place.
- ▶ The machine can only be used in a fixed location such as labs or computer facilities.

### **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).

### **Mounting Installation Precaution**

#### **Environment:**

- ▶ Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- ▶ 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.
- ▶ Installation of the equipment (especially in a rack) should consider the ventilation of the system's intake (for taking chilled air) and exhaust (for emitting hot air) openings so that the amount of air flow required for safe operation of the equipment is not compromised.
- ▶ To avoid a hazardous load condition, be sure the mechanical loading is even when mounting.
- ▶ 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 over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- ▶ Reliable earthing should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

### **Installation & Operation:**

- ▶ 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.

## **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.

## **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.
- ▶ La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

## **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).

## 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.



**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.

## Battery Precautions

- ▶ Lithium Battery Caution: There is danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type. Dispose batteries according to manufacturer's instructions.
- ▶ 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 surrounding 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.

## Revision History

Version	Date	Descriptions
1.0	2017/11/16	1 <sup>st</sup> Official Release
1.1	2018/06/26	<ul style="list-style-type: none"><li>▶ Modified Specifications</li><li>▶ Modified Appendix C: Setting up Console Redirections</li><li>▶ Add Battery Precautions</li><li>▶ Modified Approvals and Compliance</li></ul>

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## CHAPTER 1: PRODUCT OVERVIEW

The NCA-2510 is a 1U 19" rackmount network appliance with virtualization optimized design and Intel® Atom™ C3958, C3758 or C3558 CPU (codenamed Denverton). It offers up to 16 cores of processing prowess, 10G interface for SFP+, SR-IOV support, Intel® AES-NI and Intel® QuickAssist Technology, running at 20G, making it the ideal solution for vCPE, uCPE, SD-WAN and SD-Security on Intel® architecture servers.

### Package Content

Your package contains the following items:

- ▶ 1x NCA-2510 Network Security Platform
- ▶ 1x Accessory Pack:
  - 1x Power Cable, 1x Console Cable, 1x Mounting Ear Bracket Kit and 1x SATA Cable



**Note:** If you should find any components missing or damaged, please contact your dealer immediately for assistance.



**Warning:** 1) The Harcuvar system can take up to 9 minutes from booting up to EFI shell in its first initial. In the 2nd boot, 2 minutes is all it takes for a fast boot, which is considered normal for a total of 32G DIMM. However, with higher capacity of DIMM used, the boot-up time gets longer.

2) After clearing CMOS or when PXE boot is enabled, the system boot-up time is doubled.

## Ordering Information

SKU No.	
NCA-2510 <b>A</b>	Intel C3958 16 Core with QAT + 5x GbE + 4x SFP+, 1x NIC (1x PCIe8/4x PCIe2)
NCA-2510 <b>B</b>	Intel C3758 8 Core with QAT + 5x GbE + 4x SFP+, 1x NIC (1x PCIe8/2x PCIe4)
NCA-2510 <b>C</b>	Intel C3758 8 Core with QAT + 5x GbE, 1x NIC (1x PCIe8/2x PCIe4)
NCA-2510 <b>D</b>	Intel C3558 4 Core with QAT + 5x GbE

## Optional Accessories


Model No.	Description
NCS2-IGM806A	8-port NIC with Intel i350 AM4 and 4pairs Gen3 Bypass
NCS2-ISM802A	8-port NIC with Intel i350-AM4 and No Bypass
NCS2-IXM407A	4-port 10GbE SFP with Intel Fortville XL710 Ethernet controller
NCS2-IXM409A	4-port 10GbE SFP with Intel Fortville XL710-BM1 Ethernet controller and Gen3 Bypass
IAC-AST2302	IPMI (Intelligent Platform Management Interface) Card with GbE management port
IAC-AST2302VGA	VGA card for network appliance to extend VGA display capability
IAC-TPM01C	TPM module supporting TPM2.0
RC-25103	Riser Card Kit for 1xPCIex8 HH/HL expansion (By SKU)
Console Cable (for Main board)	D-SUB (DB9) to 10pin flat cable, 2.0mm Pitch, 55cm
VGA Cable (for Main board)	VGA (DB15) to 12-pin flat cable, 2.54mm Pitch, 70cm
VGA Cable (for IPMI card)	VGA (DB15) to 10-pin flat cable, 2.0mm Pitch, 65cm
SATA Cable	7-pin SATA latching cable with straight (180°-180°) connectors, 40cm
RJ45 Cable	A standard Category 5E cable supporting UTP, gray, 180cm
1U Slide Rail Kit	A pair of rails and 1x screw pack

## System Specifications

<b>Form Factor</b>		1U 19" Rackmount
<b>Platform</b>	Processor Options	Intel® Atom™ C3000 4/8/16 Cores (Denverton)
	CPU Socket	Onboard
	Chipset	SoC
	Security Acceleration	Intel® QuickAssist Technology
<b>BIOS</b>		AMI SPI Flash BIOS
<b>System Memory</b>	Technology	DDR4 2400MHz, REG/ECC/UDIMM
	Max. Capacity	2/4/8/16/32GB
	Socket	4x 288pin DIMM
<b>Networking</b>	Ethernet Ports	1x GbE RJ45 Intel® i210
		4x GbE RJ45 Intel® i350-AM4
		4x SFP+ Intel® Denverton Integrated (By SKU)
	Bypass	2X pairs Gen3 (By SKU)
	NIC Module Slot	1
<b>LOM</b>	IO Interface	1x RJ45 (By SKU)
	OPMA slot	Yes
<b>I/O Interface</b>	Reset Button	1
	LED	Power/Status/Storage
	Power Button	1x ATX Power switch
	Console	1x RJ45
	USB	2x USB 2.0
	LCD Module	2x 20 character LCM, 4 x keypads
	Display	From OPMA slot (Optional)
<b>Storage</b>	Power input	AC power inlet on PSU
	HDD/SSD Support	2x 2.5" Bay
	Onboard Slots	1x mSATA
<b>Expansion</b>	PCIe	1x PCIe8 HH/HL (By SKU)
	mini-PCIe	N/A
<b>Miscellaneous</b>	Watchdog	Yes
	Internal RTC with Li Battery	Yes
	TPM	Yes (Optional)
<b>Cooling</b>	Processor	Passive CPU heatsink
	System	2x cooling fan with smart fan
<b>Environmental Parameters</b>	Temperature	0 to 40°C Operating -20 to 70°C Non-Operating
	Humidity (RH)	5 to 90% Operating
		5 to 95% Non-Operating
<b>System Dimensions</b>	(WxDxH)	438 x 321 x 44 mm
	Weight	4.4 kg
<b>Package Dimensions</b>	(WxDxH)	540 x 500 x 230 mm
	Weight	8 kg
<b>Power</b>	Type/Watts	150W ATX Single PSU
	Input	AC 90~264V @47~63Hz
<b>Approvals and Compliance</b>		RoHS, CE/FCC Class A, UL,CB

Front Panel



No.	Description	
F1	LCM	With a Keypad
F2	LED Indicators	 System Power System Status HDD Activity
F3	Reset Button	Software reset
F4	Console Port	1x Console port
F5	USB Port	2x USB 2.0 port
F6	MGMT Port	1x Management port
F7	IPMI Port	1x RJ45 for IPMI (IPMI card required)
F8	GbE & SFP+ Ports	GbE ports: 1-4, SFP+ ports: 5-8 (by SKU)
F9	LAN Module	1x STD NIC module (by SKU)

Rear Panel



No.	Description	
R1	Rear PCIe Expansion	1x PCIex8 Expansion slot (Riser card required)
R2	Console/VGA Port	2x reserved holes for Console/VGA cable
R3	Cooling Fans	2x swappable independent fan
R4	Power Button	1x ATX Power button
R5	Power Supply	1x 150W PSU

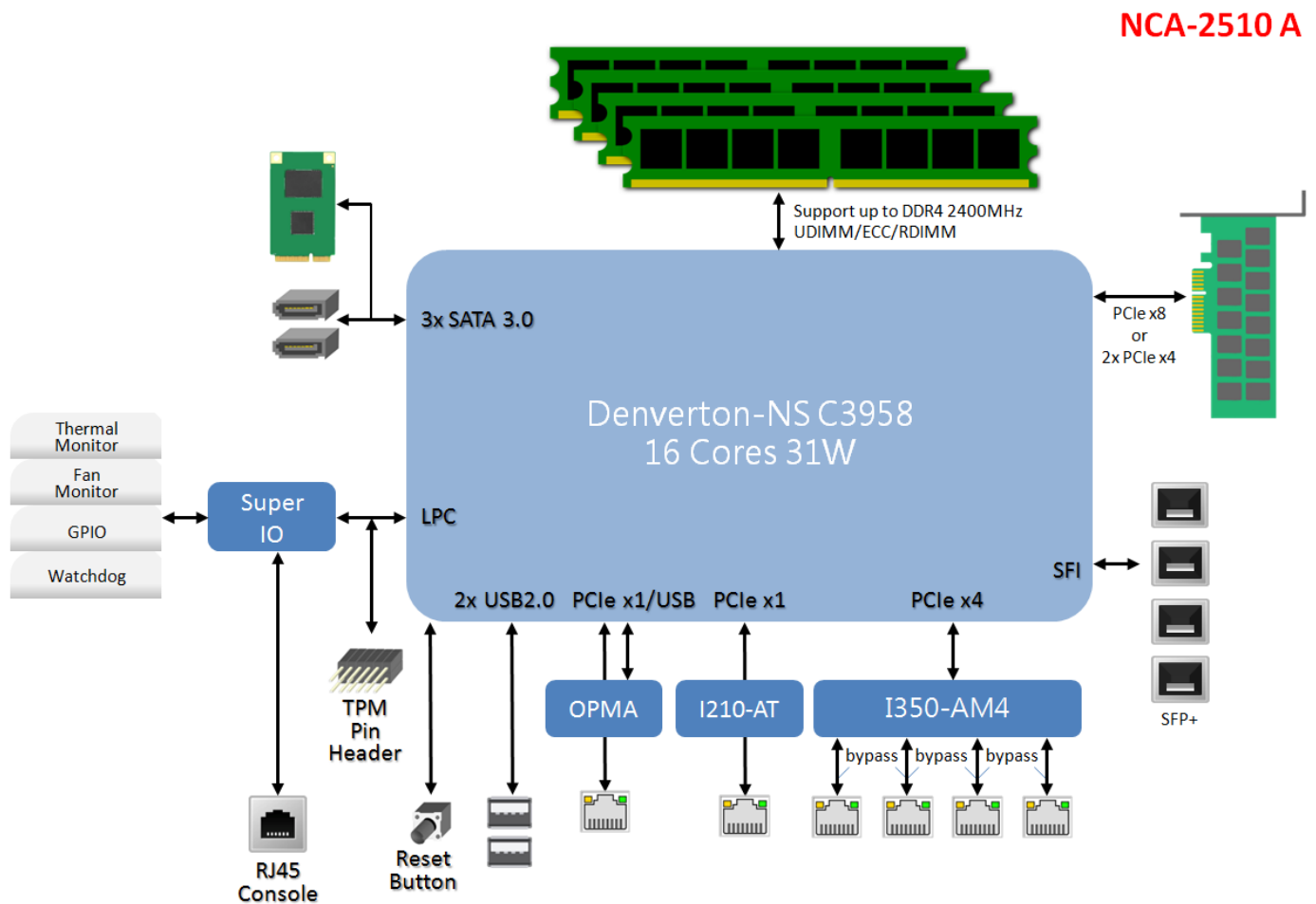


**Note:** Please refer to [Appendix A: LED Indicator Explanations](#) for description of the LED Indicators

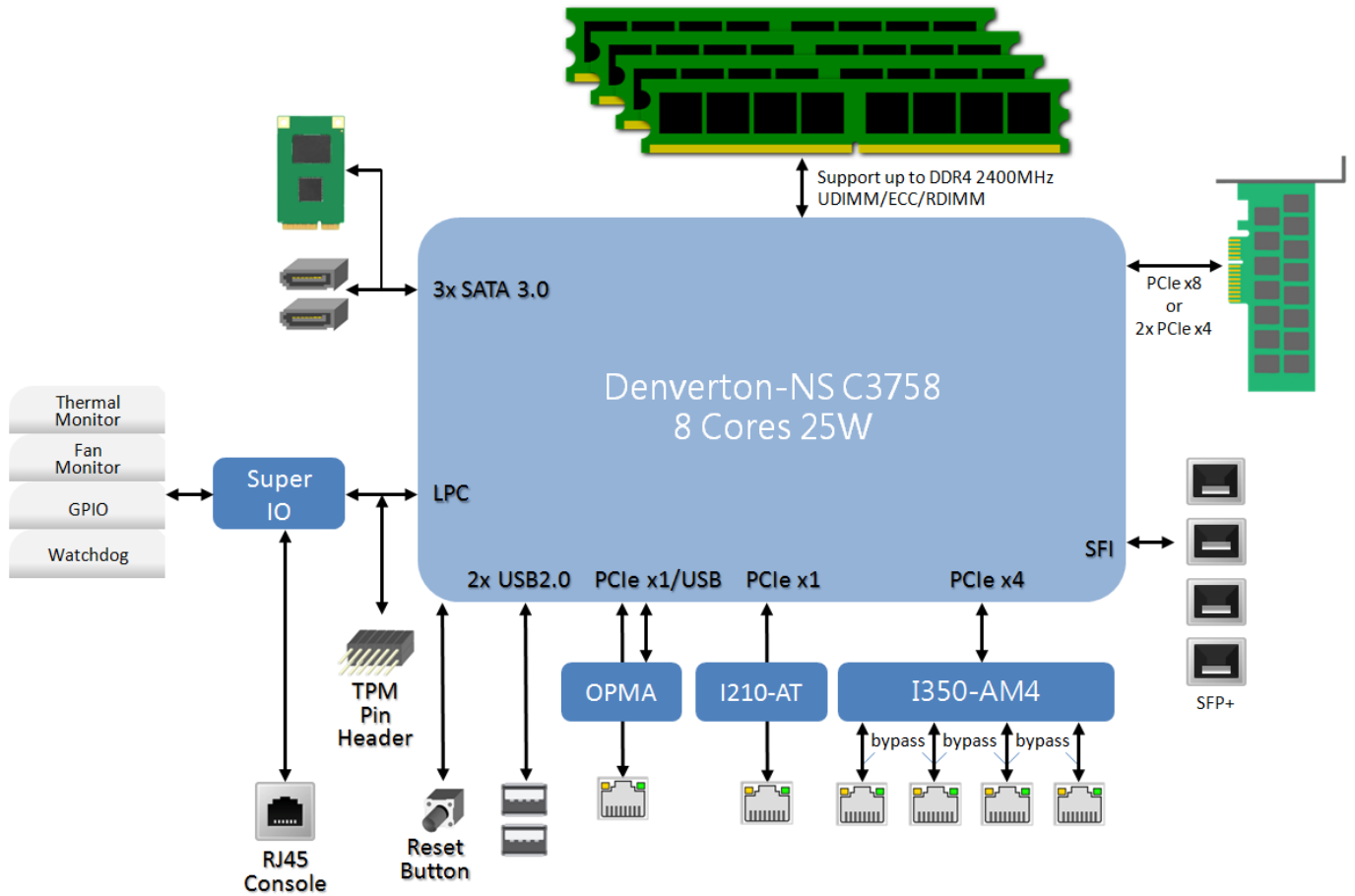
## CHAPTER 2: MOTHERBOARD INFORMATION

### Block Diagram

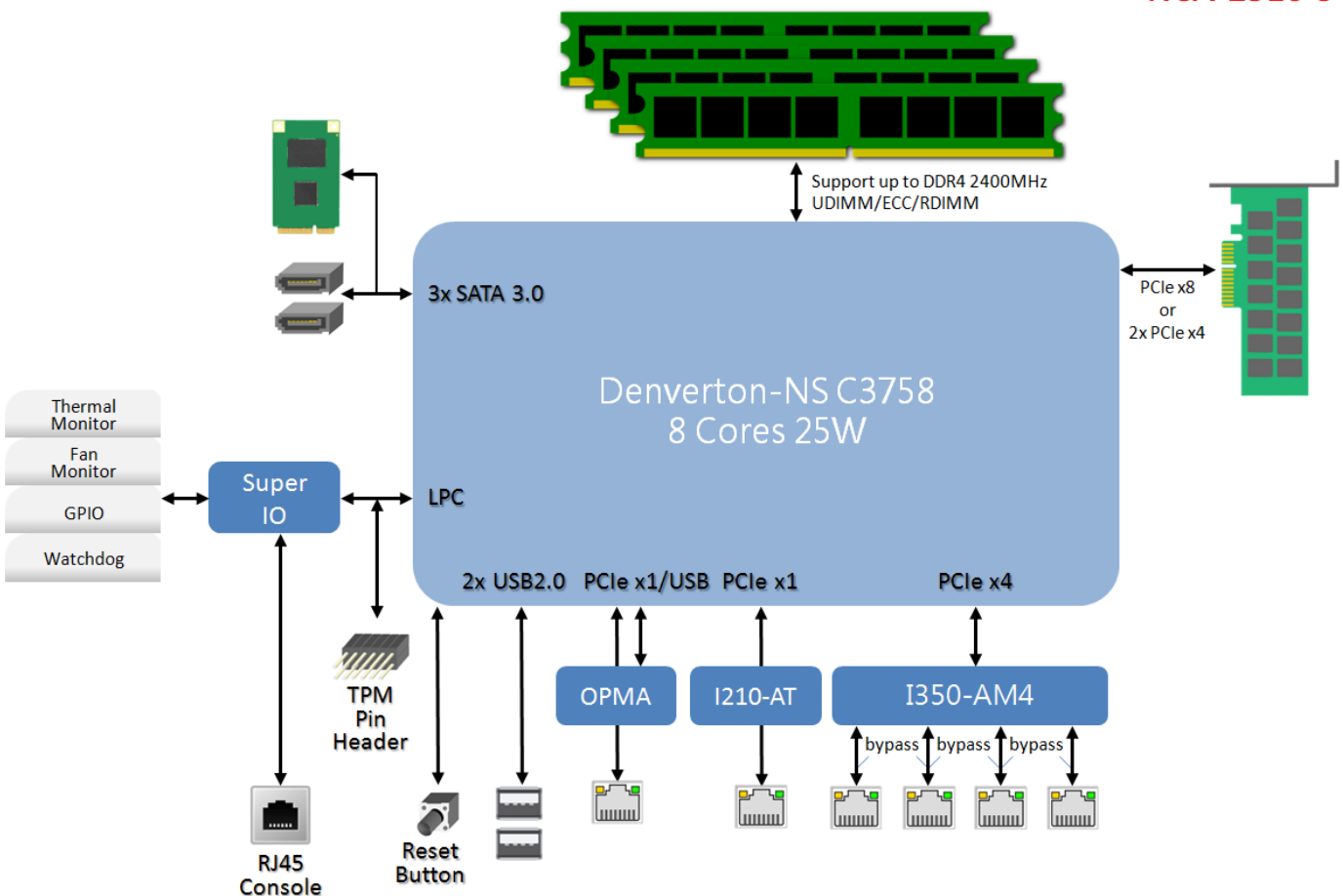
The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.



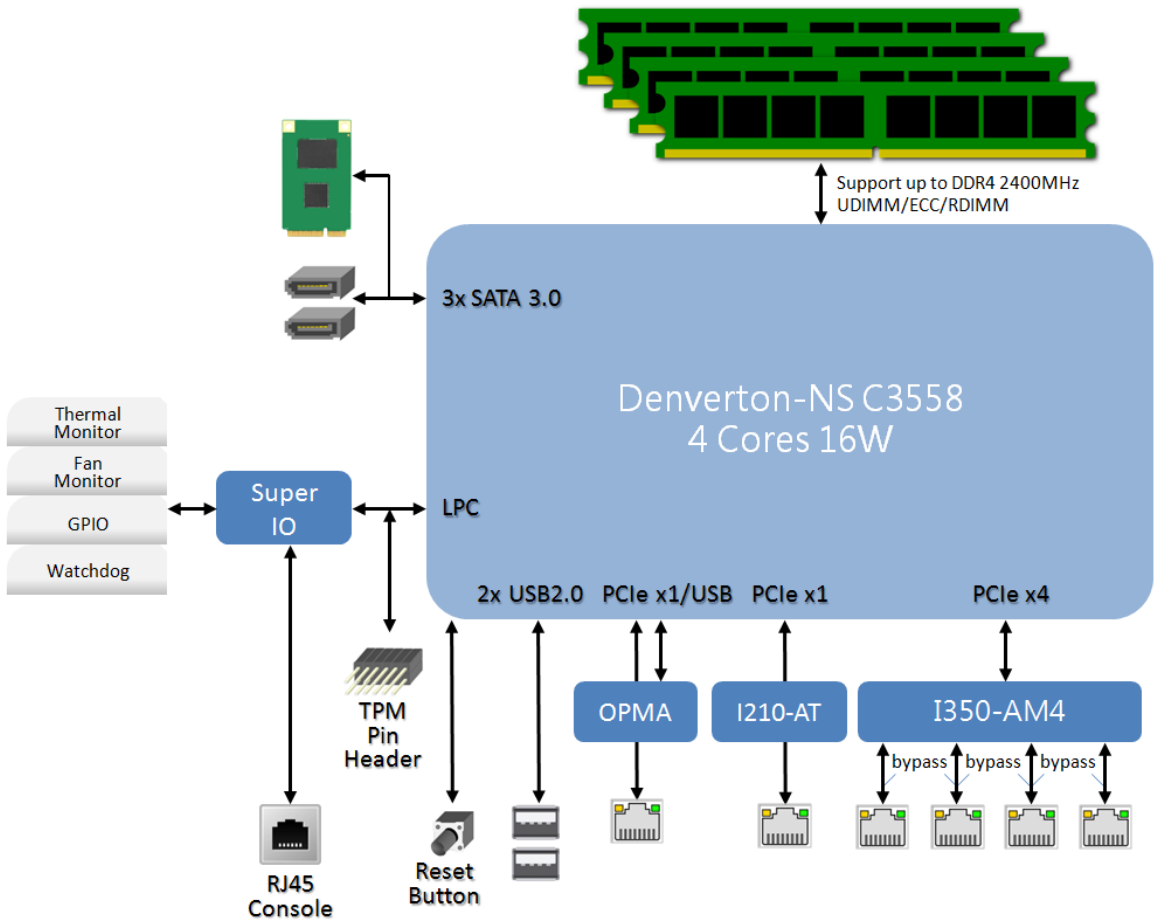
## NCA-2510 B



## NCA-2510 C

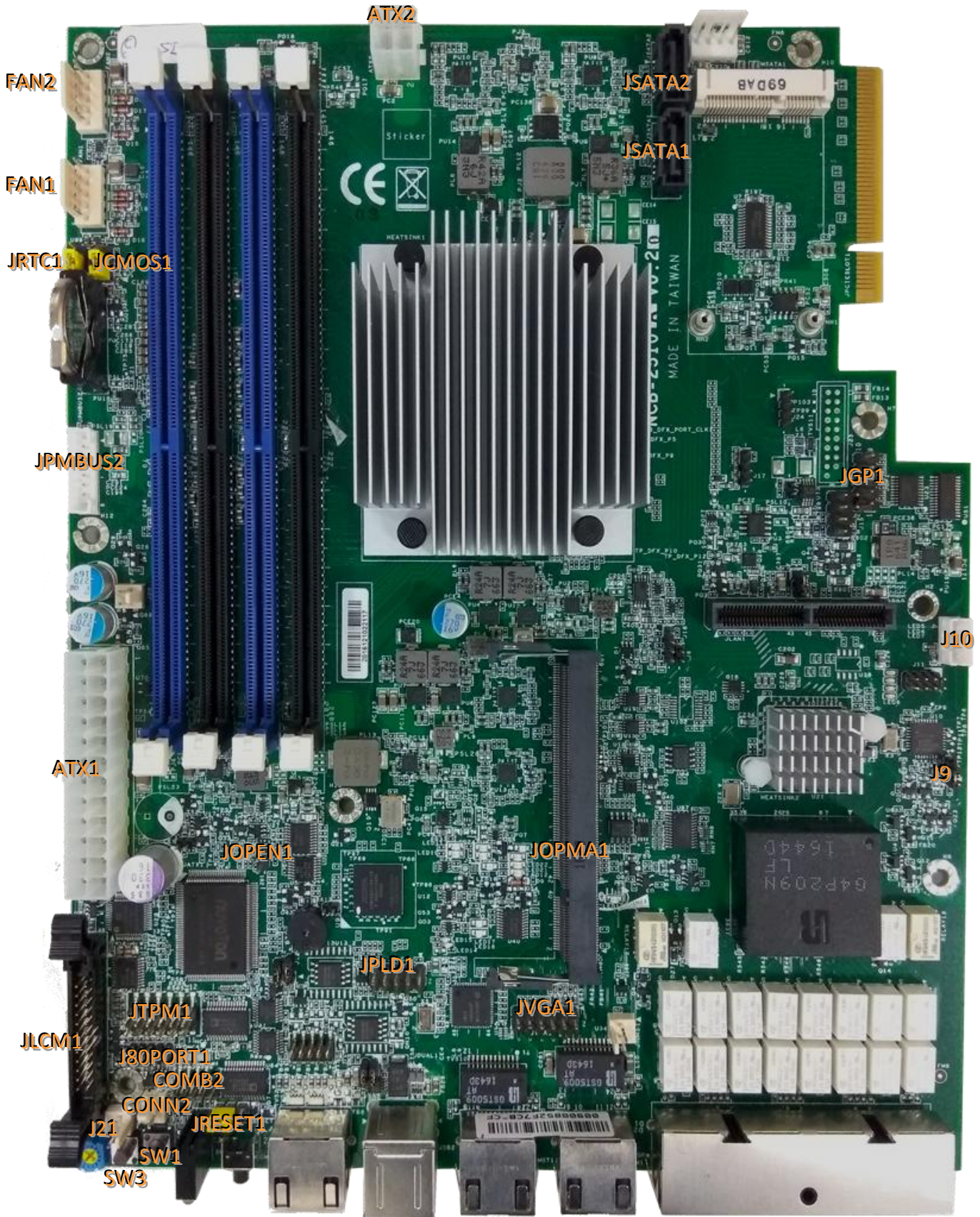






## Motherboard Layout

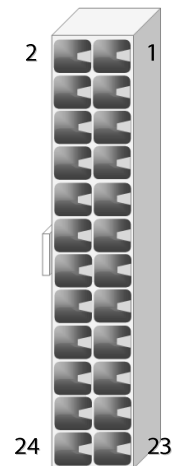
The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



## Internal Jumper & Connectors

### ATX1: 24-Pin ATX Power Connector

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	+3.3V	2	+3.3V	3	+3.3V	4	-12V
5	Ground	6	Ground	7	+5V	8	PSON-
9	Ground	10	Ground	11	+5V	12	Ground
13	Ground	14	Ground	15	Power Good	16	NC
17	Stand-By 5V	18	+5V	19	+12V	20	+5V
21	+12V	22	+5V	23	3.3V	24	Ground



### ATX2: 4-pin Power Connector

Pin	Description	Pin	Description
1	GND	2	+12V
3	GND	4	+12V

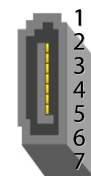


### JSATA2 & JSATA1: 180° SATA Connector (with SATA DOM)

Pin	Description	Pin	Description
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	SATA Power		



JSATA 2



JSATA 1

### FAN1-2: Fan Connector

Pin	Description	Pin	Description
1	GND	2	12V
3	RPM Sense	4	RPM Sense
5	PWM Status		



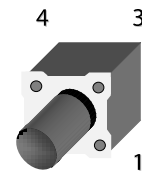
FAN2



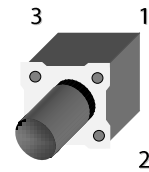
FAN1

**SW3:** Reset Switch (reserved for debugging)

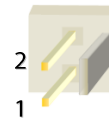
Pin	Description	Pin	Description
<b>1</b>	GND	<b>2</b>	GND
<b>3</b>	FP_RST_SEL	<b>4</b>	FP_RST_SEL

**SW1:** PSON power switch (reserved for debugging)

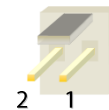
Pin	Description	Pin	Description
<b>1</b>	GND	<b>2</b>	GND
<b>3</b>	FP_SWIN_R	<b>4</b>	FP_SWIN_R



**J21:** Reset

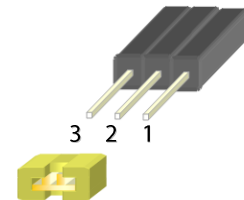
Pin	Description	Pin	Description
<b>1</b>	GND	<b>2</b>	FP_SWIN_R

**CONN2:** PSON power

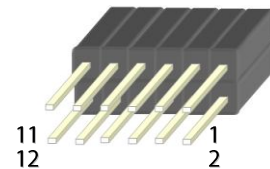
Pin	Description	Pin	Description
<b>1</b>	GND	<b>2</b>	FP_SWIN_R

**JRESET1:** 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)

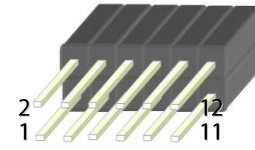
**VGA1:** VGA

Pin	Description	Pin	Description
<b>1</b>	R	<b>2</b>	Ground
<b>3</b>	G	<b>4</b>	Ground
<b>5</b>	B	<b>6</b>	Ground
<b>7</b>	H-SYNC	<b>8</b>	Ground
<b>9</b>	V-SYNC	<b>10</b>	Ground
<b>11</b>	Detect-display Data	<b>12</b>	Detect-display CLOCK



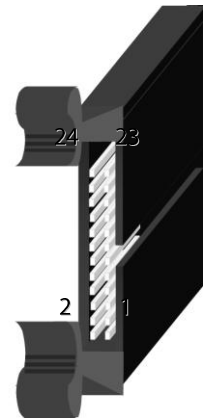
**JTPM1: TPM**

Pin	Description	Pin	Description
1	LPC_SERIRQ	2	SOC_LPC_FRAME_N
3	SOC_LPC_LAD0	4	CLK_LPC_OUT
5	SOC_LPC_LAD1	6	P3V3_STBY
7	SOC_LPC_LAD2	8	NC
9	SOC_LPC_LAD3	10	P3V3_A
11	CPLD_TPM_RESET_N	12	Ground



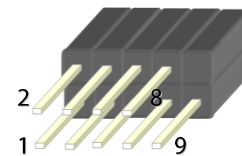
**JLCM1: LCM**

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	VCC	2	IOGND	3	LSTIN	4	VEE
5	LAFD	6	LINIT	7	LPD1	8	LPD0
9	LPD3	10	LPD2	11	LPD5	12	LPD4
13	LPD7	14	LPD6	15	LCD	16	VCC
17	K1	18	K2	19	K3	20	K4
21	GND	22	VCC3	23	GPIO	24	VCC3



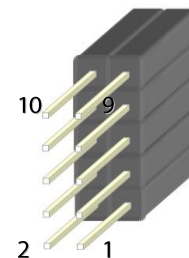
**COMB2: COM PORT**

Pin	Description	Pin	Description
1	NDCD	2	NDSR
3	NRXD	4	NRTS
5	NTXD	6	NCTS
7	NDTR	8	NRI
9	GND		

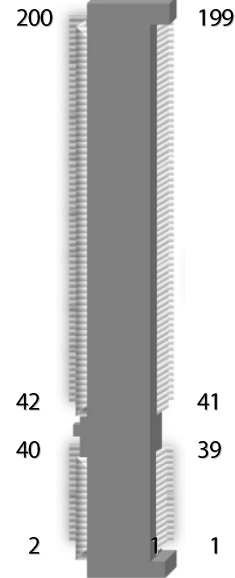
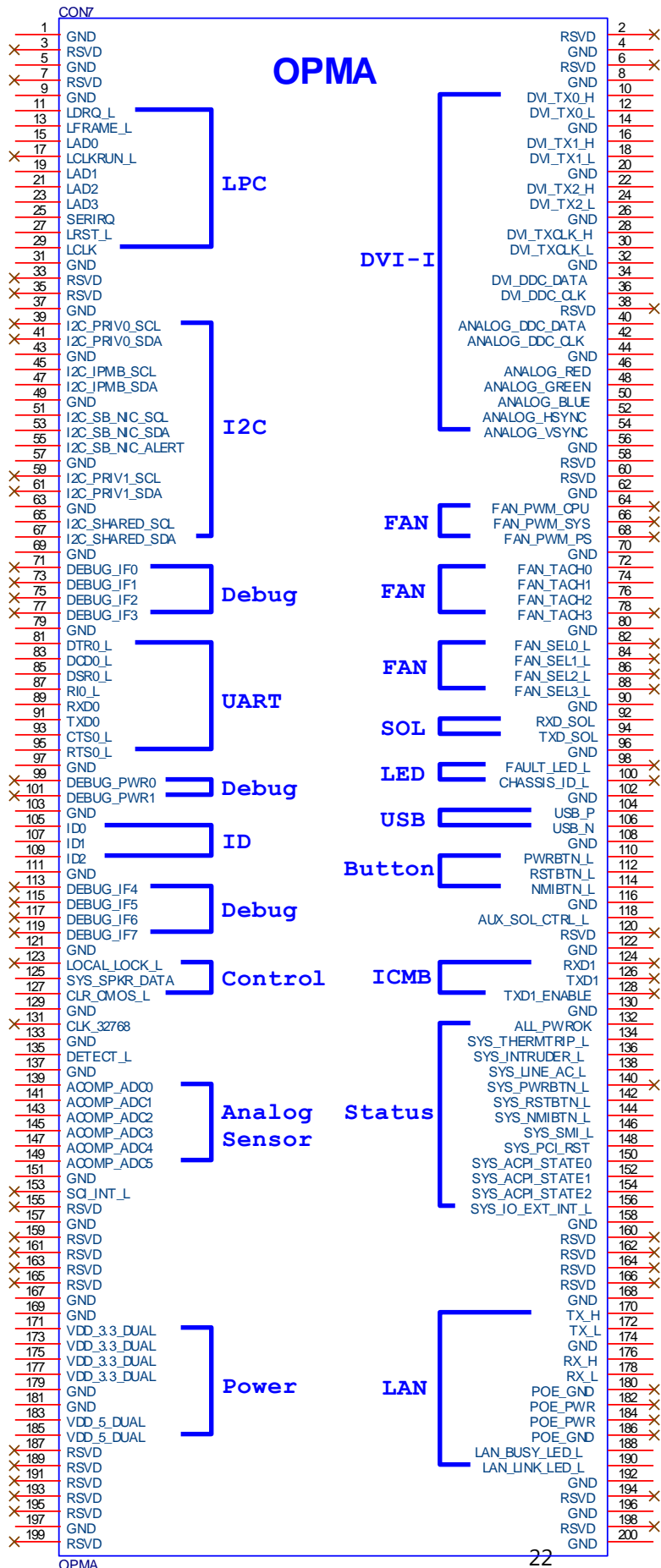


**JGP\_1: GPIO**

Pin	Description	Pin	Description
1	R	2	Ground
3	G	4	Ground
5	B	6	Ground
7	H-SYNC	8	Ground
9	V-SYNC	10	Ground

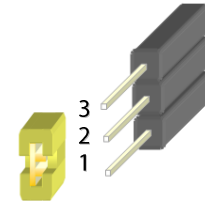




**JOPMA1: OPMA**

**JCMOS1:** Clear CMOS

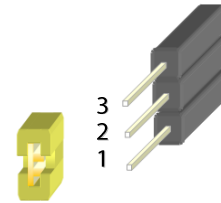
Pin	Description	Pin	Description
1.2	Normal (Default)	2.3	Clear CMOS
3 2 1		3 2 1	



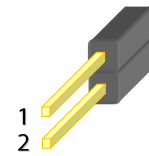
**Warning:** After clearing CMOS or when PXE boot is enabled, the system boot-up time is doubled.

**JRTC1:** RTC

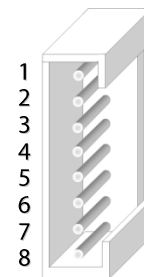
Pin	Description	Pin	Description
1.2	Normal (Default)	2.3	Clear RTC
3 2 1		3 2 1	

**JOPEN1:** Case open

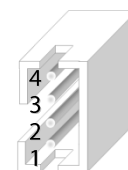
Pin	Description	Pin	Description
1	GND	2	CSOPEN_N

**JPMBUS2**



Pin	Description	Pin	Description
1	RDPW_TTL1	2	RDPW_TTL2
3	NC	4	GND
5		6	SMB_PS_CLK
7	SMB_PS_DATA	8	NC

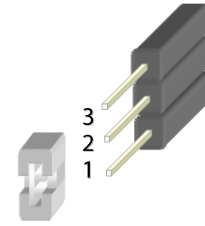
**J10:** Gen3 Bypass Firmware Update

Pin	Description	Pin	Description
1	GND	2	TX_P
3	TX_M	4	GND

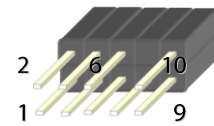


**J9: Gen3 Bypass Firmware Update**

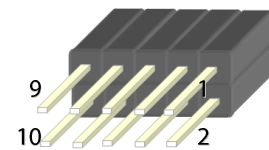
Pin	Description	Pin	Description
1.2	Normal (Default)	2.3	Firmware Update
3 2 1		3 2 1	
			

**J80PORT1: 80Port Debug**

Pin	Description	Pin	Description
1	CLK	2	LAD1
3	RST-	4	LAD0
5	LRAME-	6	POWER
7	LAD3	8	
9	LAD2	10	GND

**JPLD1: Altera CPLD**

Pin	Description	Pin	Description
1	JTAG_PLD_TCK	2	GND
3	JTAG_PLD_TDO	4	P3V3_STBY
5	JTAG_PLD_TMS	6	NC
7	NC	8	NC
9	JTAG_PLD_TDI	10	GND





## CHAPTER 3: HARDWARE SETUP

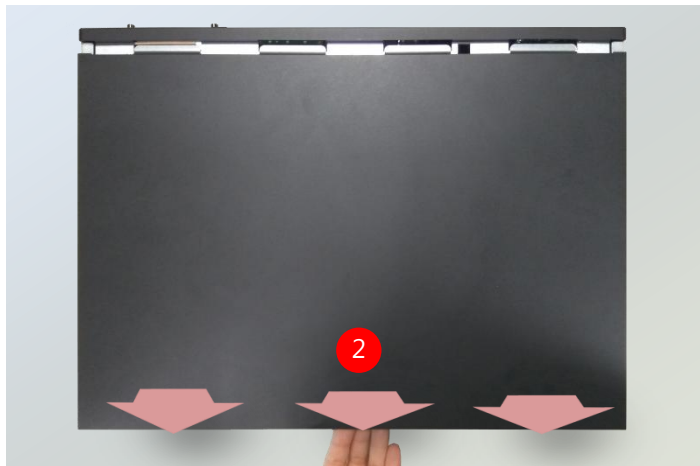
To reduce the risk of personal injury, electric shock, or damage to the system, please remove all power connections to completely shut down the device. Also, please wear ESD protection gloves when conducting the steps narrated in this chapter.

### Opening the Chassis

1. Loosen the two thumb screws from the rear panel of NCA-2510.



2. Gently pull the cover backward a bit.



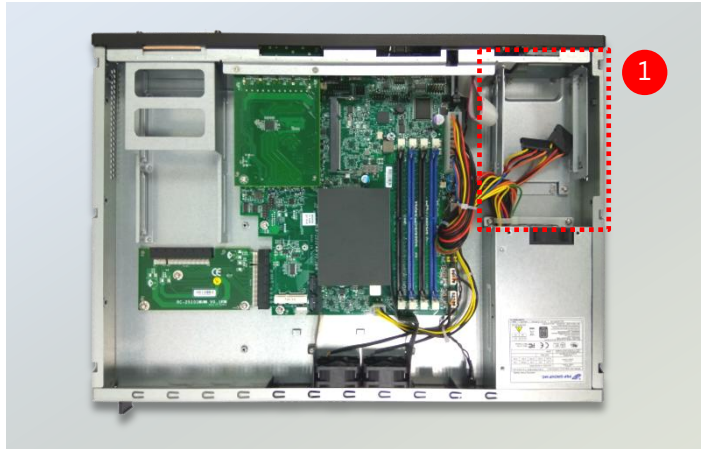
3. Lift the cover up to remove it.



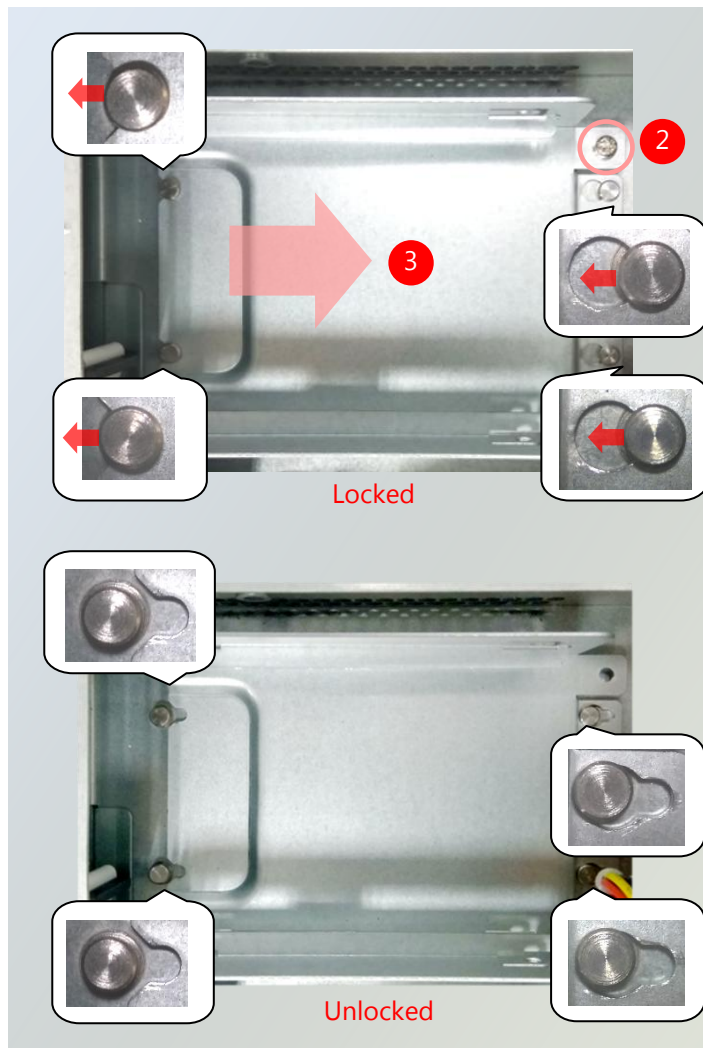
## Installing the Disk Drive(s)

NCA-2510 is built with two 2.5" HDD/SSD slot drive bays. The following will discuss disk drive installation procedures based on their HDD/SSD designs.

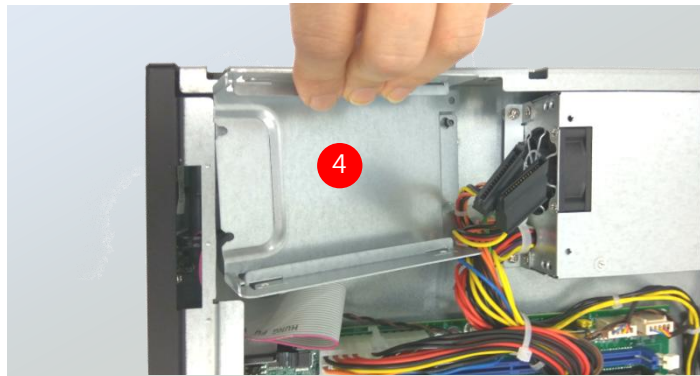
1. Locate the 2.5" disk bay area in the chassis.



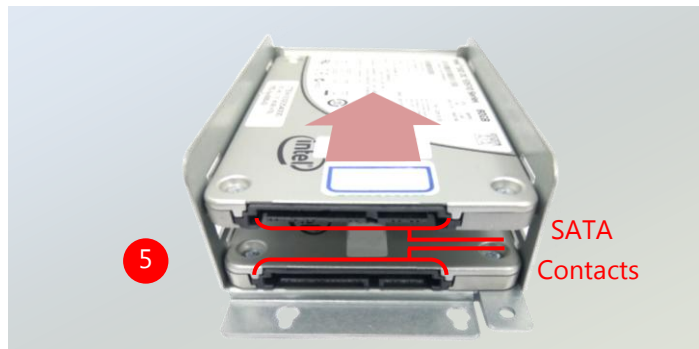
2. Loosen the only screw that secures the HDD tray.
3. Slide the tray towards the direction shown in the picture to entirely unlock it from the latching spots at four corners.



4. Take out the HDD tray.



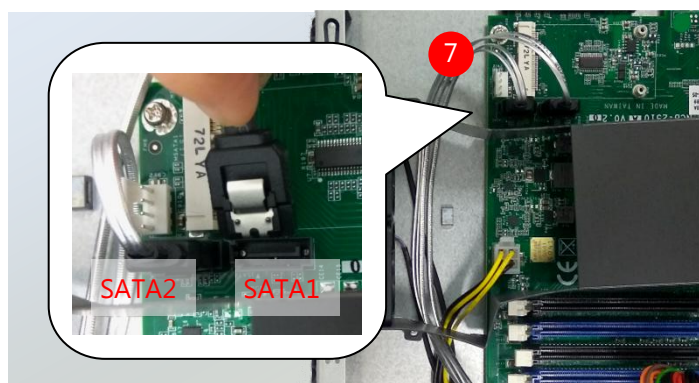
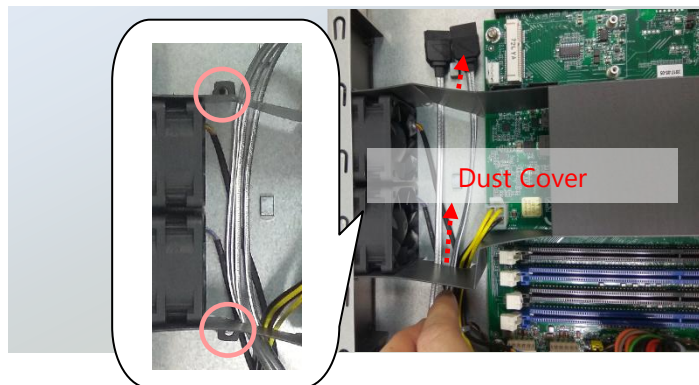
5. Slide the disks into the tray. Make sure the disk connector faces the direction as the picture shows.



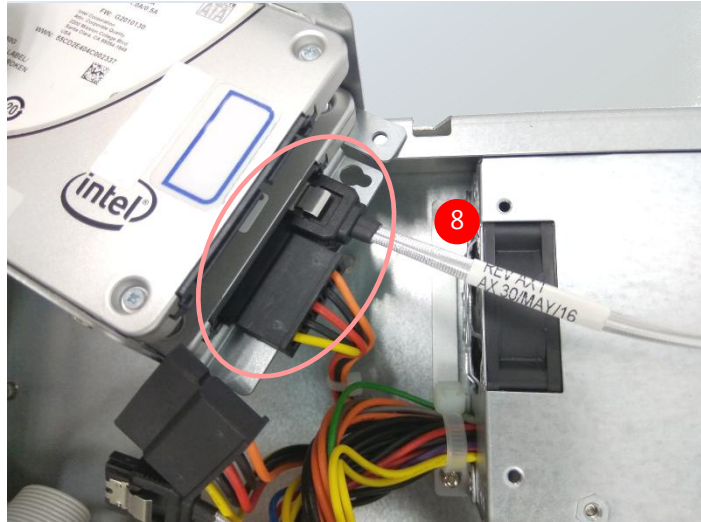
6. To mount the disks onto the empty tray, secure them on the tray with two disk screws locked on each side of the disk.



7. Have the cable ends go under and pass through the CPU dust cover and then insert one end of the SATA data cable into the SATA connector on the motherboard. You can temporarily unscrew the bolts that fix the dust cover for easier operation.



8. Insert the other end of the SATA cable into the disk and connect the end of SATA power cable with the disk. The SATA connection between a disk and the system is now built up. Repeat Step 7~8 to establish the SATA connection of the other disk.



9. Reverse the procedures narrated in Step 3 and then secure the tray to the chassis. Arrange the cables and route them neatly to avoid them from getting tangled.

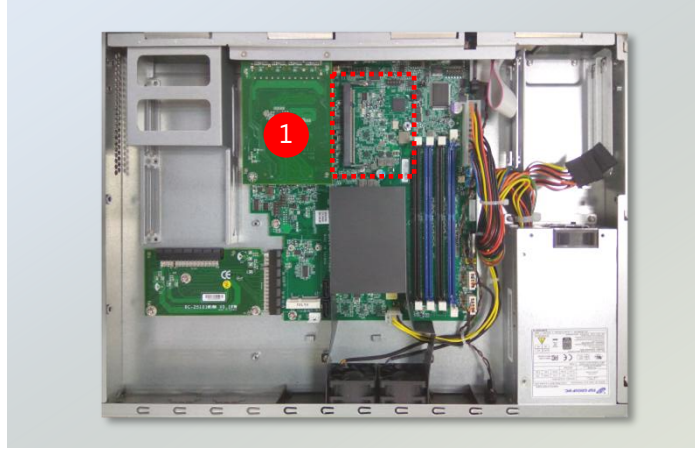




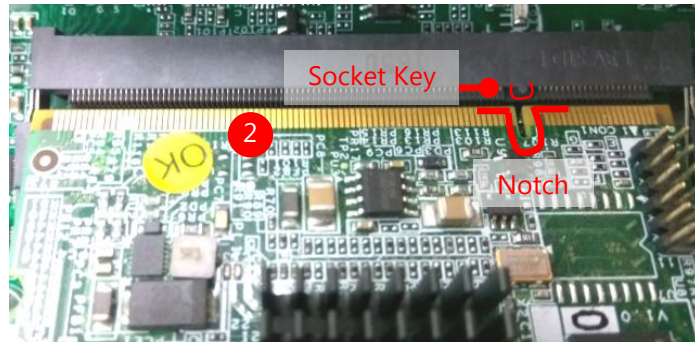
## Installing the IPMI Card

The NCA-2510 provides one OPMA slot for installing the IPMI card. Follow these procedures below for installing an IPMI card.

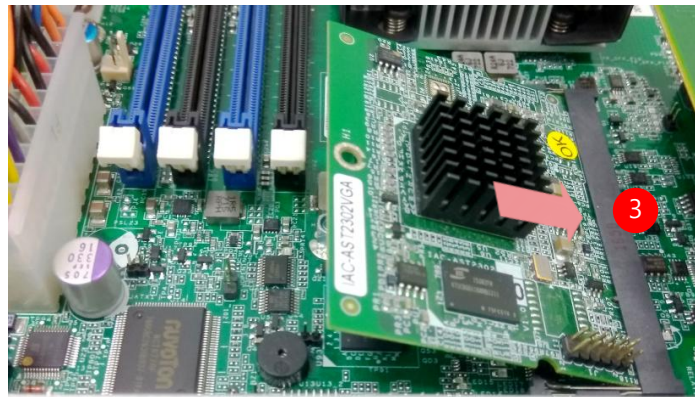
1. Locate the OPMA socket.



2. Align the notch of the card with the socket key in the slot.



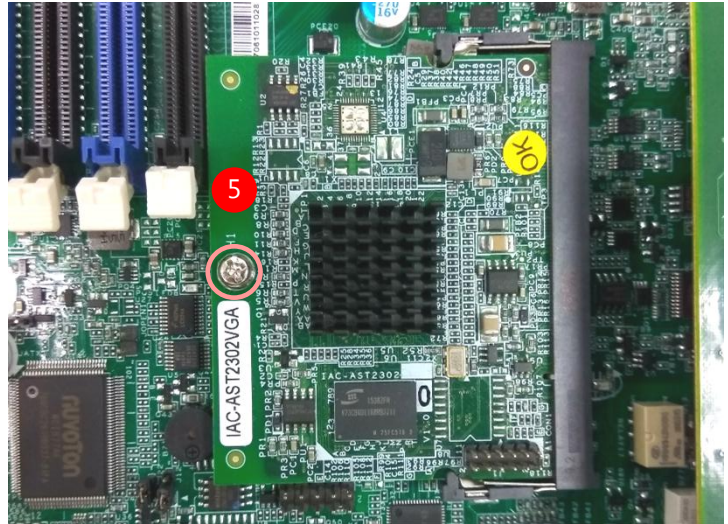
3. Insert the module at 30 degrees into the socket until it is fully seated in the connector.



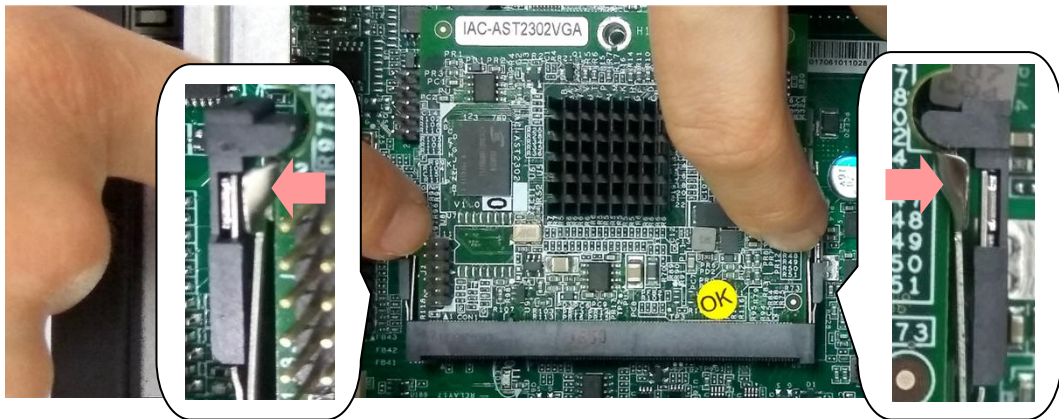
4. Press on two corners of the card to push it down vertically until it clicks into place.



5. Secure the card with a screw that comes with it.



To remove the card, loosen the screw that secures it to the motherboard, push aside the two metal leaves that hold the card to release it from the socket before you can pull it out.





## Installing the NIC Module

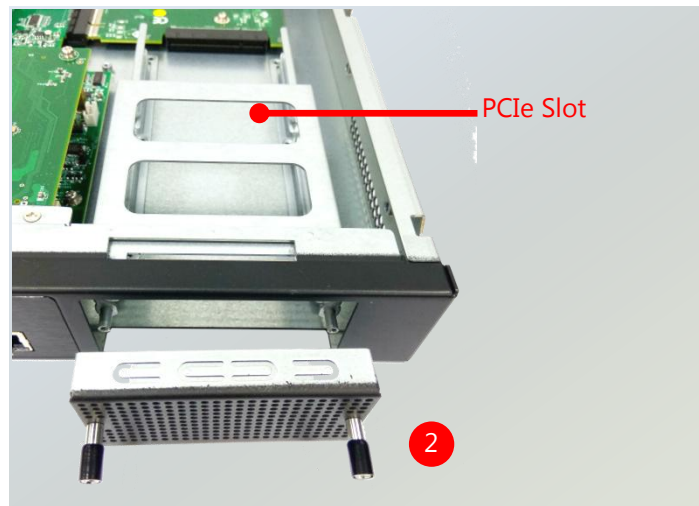
NCA-2510 comes with 1 NIC Ethernet module slot for network bandwidth expansion. Please follow the steps for installation.



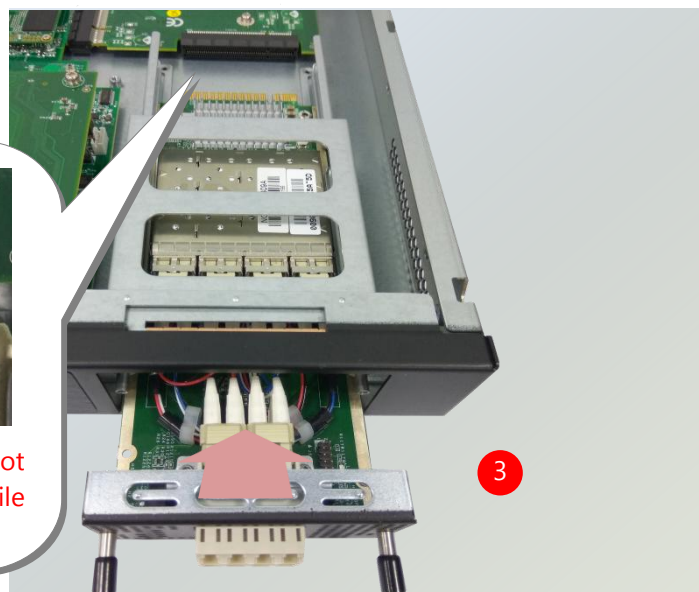
1. Rotate the two lock-screws counterclockwise and loosen them.



2. Remove the door and locate the PCIe slot for module insertion.



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



4. Once the module is firmly seated, rotate clockwise and tighten the two lock-screws.

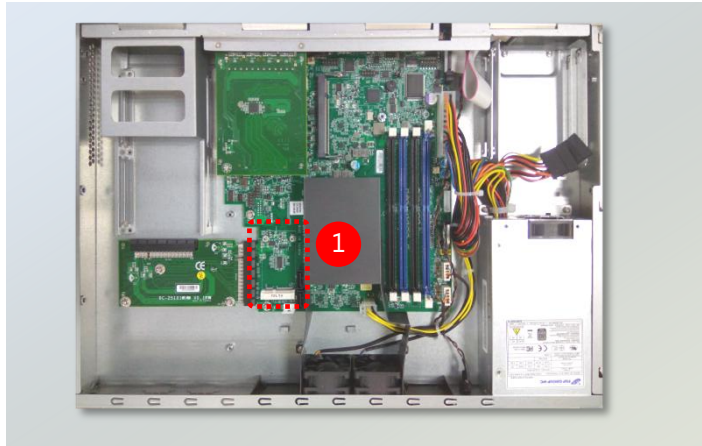




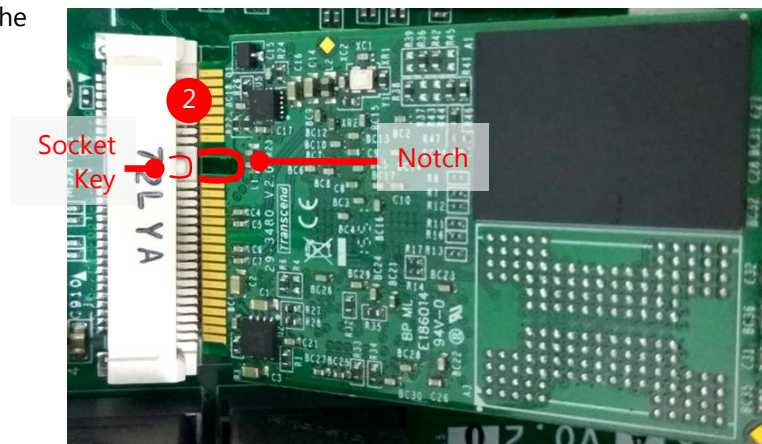
## Installing the mSATA

The motherboard provides one mSATA slot. Follow the procedures below for installing an mSATA card.

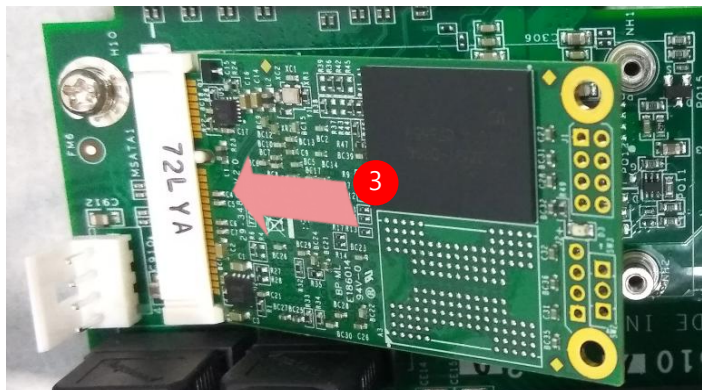
1. Locate the mSATA slot.



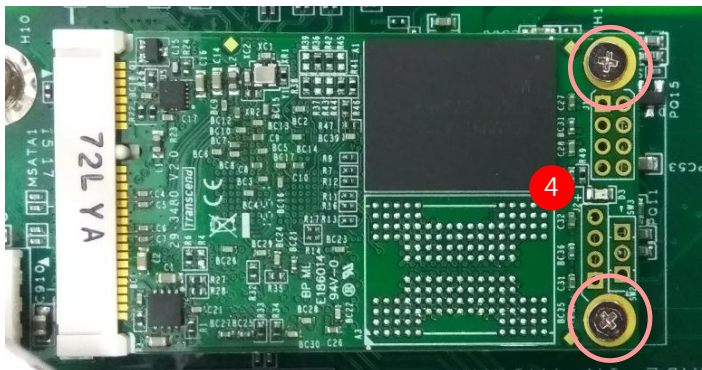
2. Align the notch of the module with the socket key in the slot.



3. Insert the module at 30 degrees into the socket until it is fully seated in the connector.



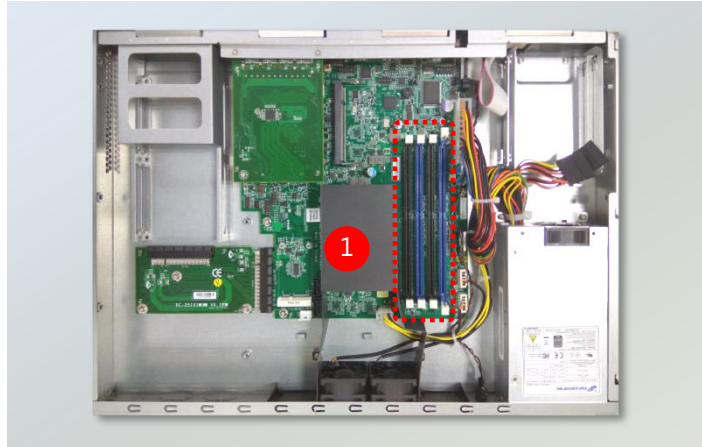
4. Press down on the module and secure it with screws that come with it.



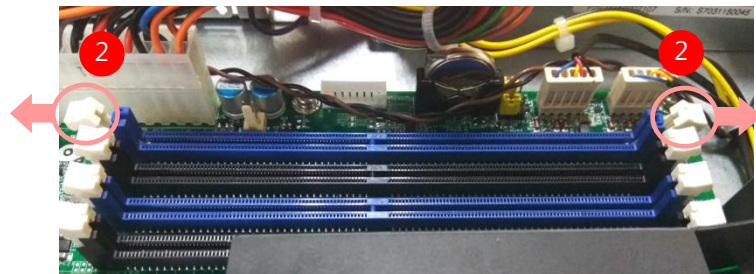
## Installing the System Memory

The motherboard supports DDR4 registered DIMM memory for heavy-duty operations. Please follow the steps below to install the DIMM memory modules.

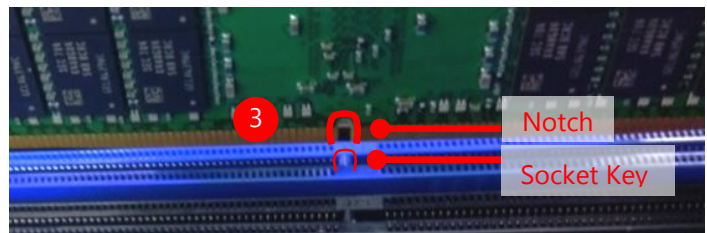
1. Locate the the DIMM slot.



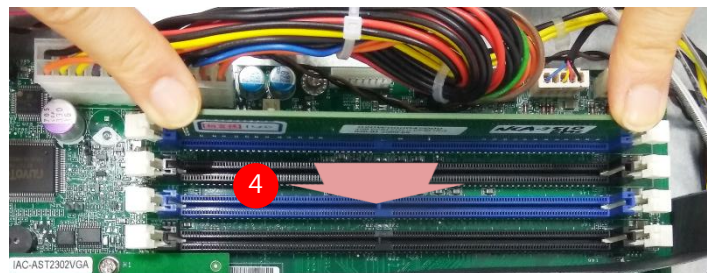
2. Pull open the DIMM slot latches.



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



4. Push the module on its both corners into the slot until it is firmly seated. The latches will automatically snap locked.



**Warning:** The Harcuvar system can take up to 9 minutes from booting up to EFI shell in its first initial. In the 2nd boot, 2 minutes is all it takes for a fast boot, which is considered normal for a total of 32G DIMM. However, with higher capacity of DIMM used, the boot-up time gets longer.

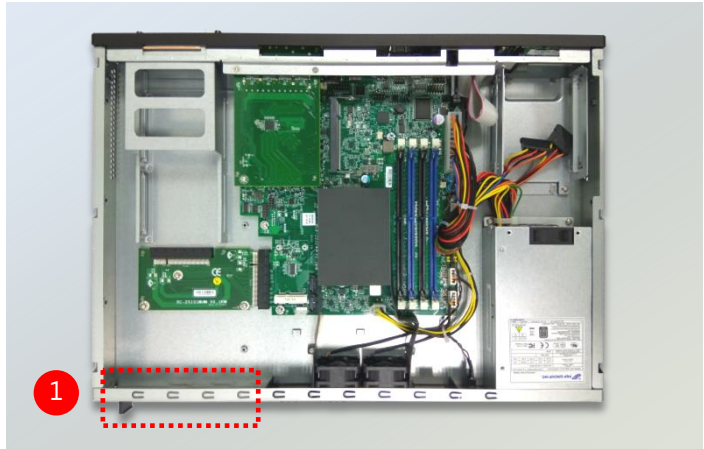




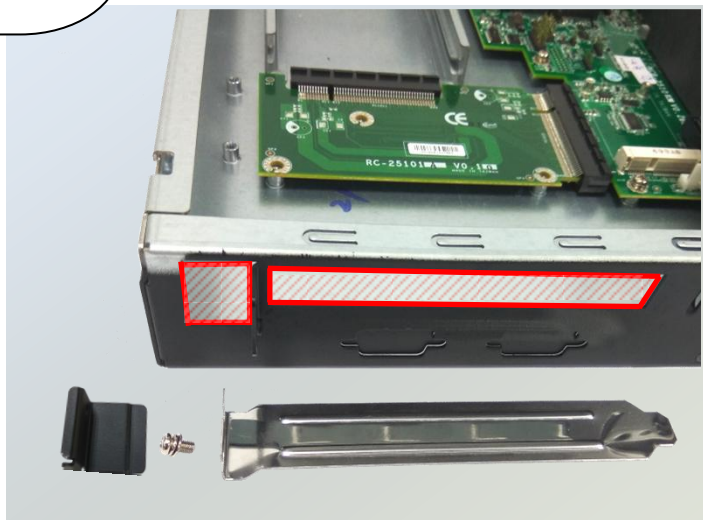
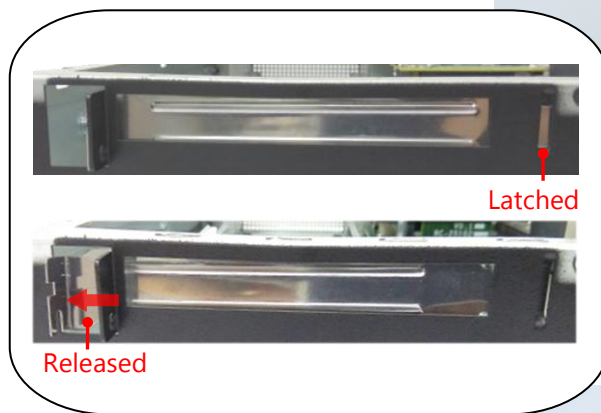
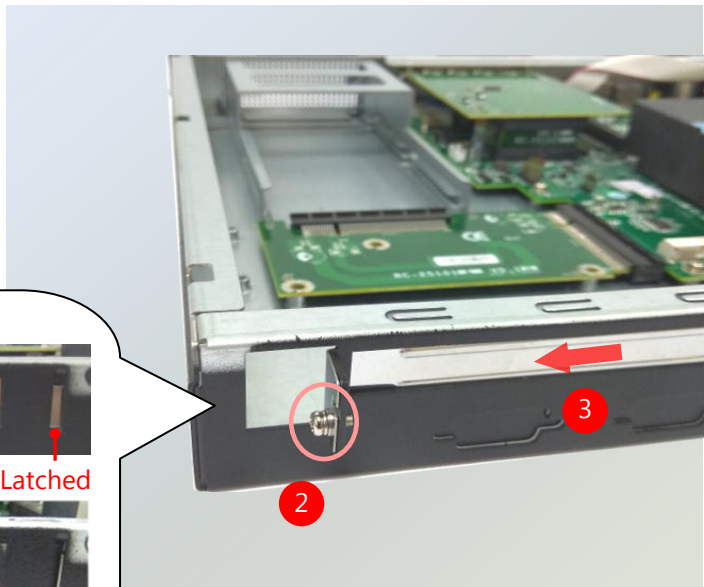
## Installing the Riser Card

To install a PCIe expansion card onto the motherboard with a Riser Card, please purchase the Riser Card kit from Lanner and have the PCIe expansion card you want to install ready.

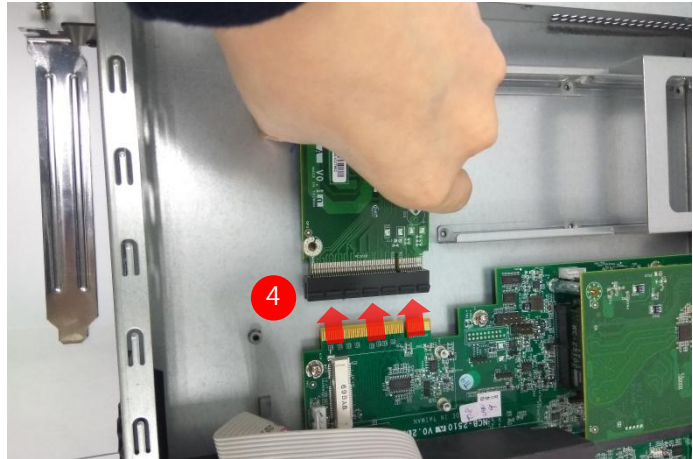
1. Power off this system and remove the system cover. Locate the PCIe Expansion Slot.



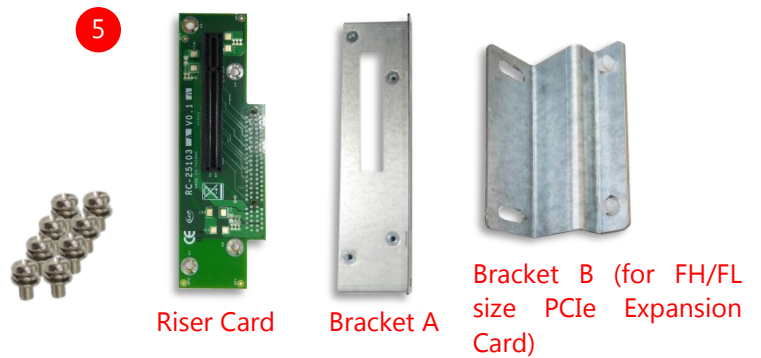
2. Loosen the only screw that secures the PCIe slot cover.
3. Slide the cover towards the direction shown in the picture to entirely release it from the latching spot.



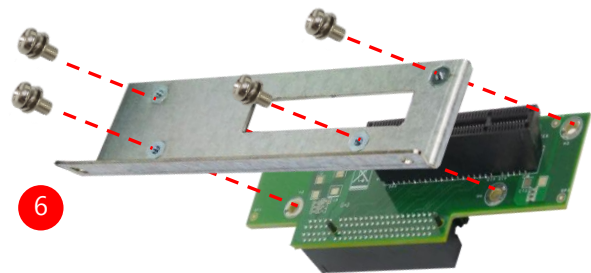
4. Remove the original Riser Card.



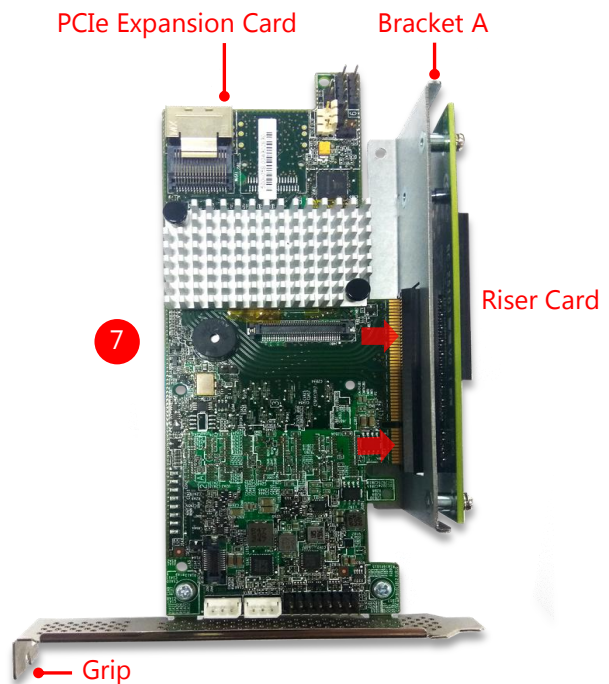
5. Unbox your Riser Card Kit which contains a Riser Card, two Brackets and screws.



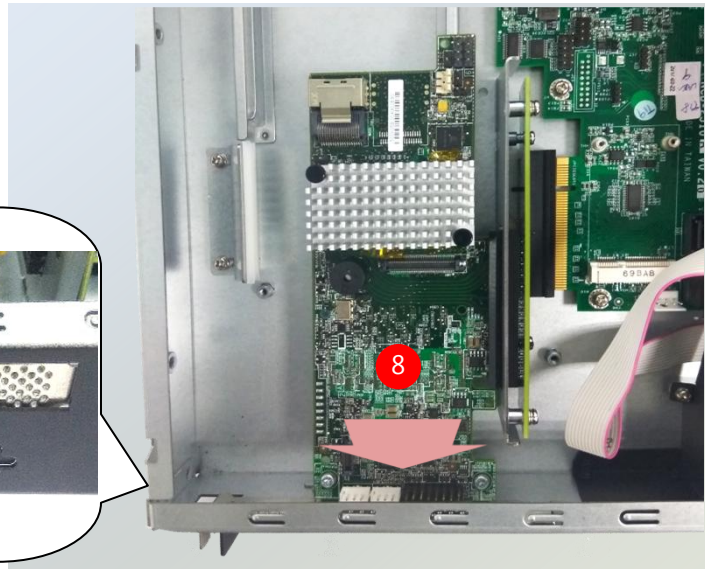
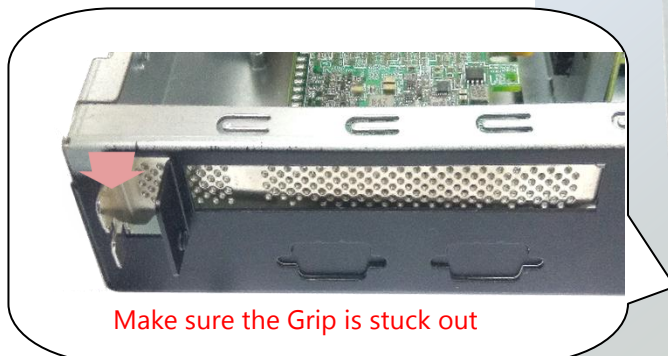
6. Assemble the Riser Card and Bracket A with four screws.



7. Install your PCIe Expansion Card into the Bracket assembly as shown in the picture by carefully inserting the connector into the Riser Card.



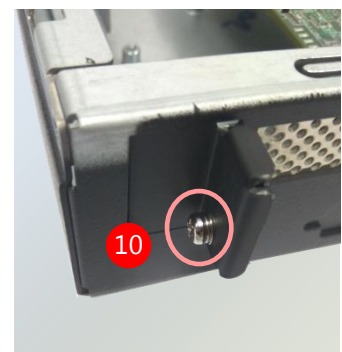
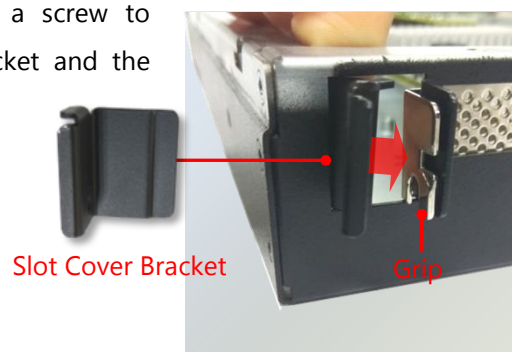
8. From the inner side, insert the side of the PCIe Expansion card with the meshed metal slot cover into the chassis, with the holder stuck out from inside.



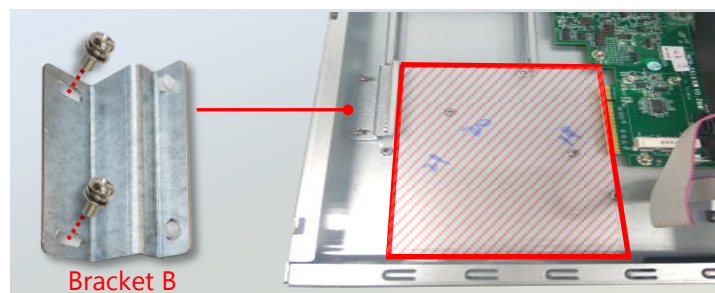
9. Install the Bracket assembly into the PCIe connector on the motherboard. Ensure that the golden connectors of the Bracket are firmly seated in place.



10. On the rear panel, use a screw to secure the slot Cover Bracket and the Grip onto the chassis.



11. To accommodate a FH/FL-sized PCIe Expansion card, please also fix Bracket B in the chassis using two screws in order to support the PCIe Expansion Card.



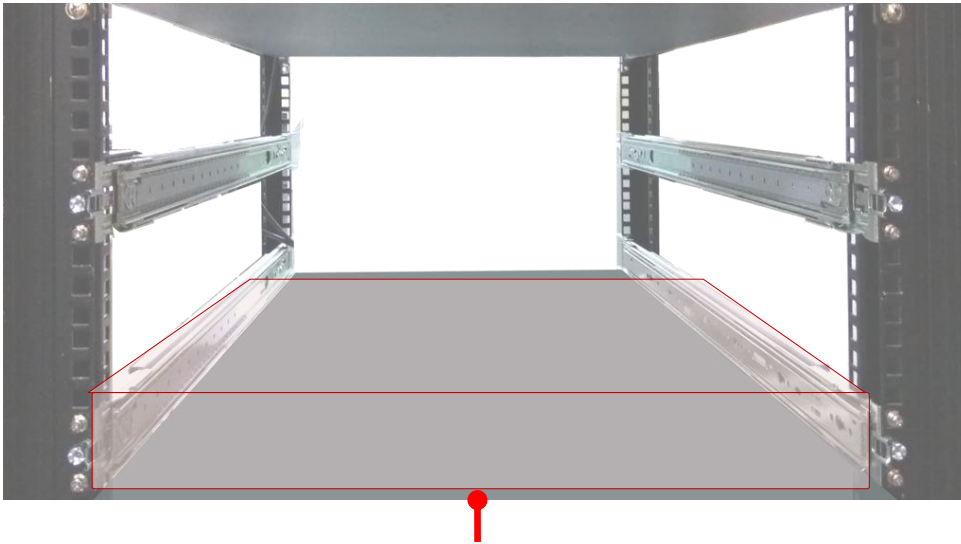


## Mounting the System

There are two methods for installing this system into a rack:

► With **Mounting Ear Brackets** only

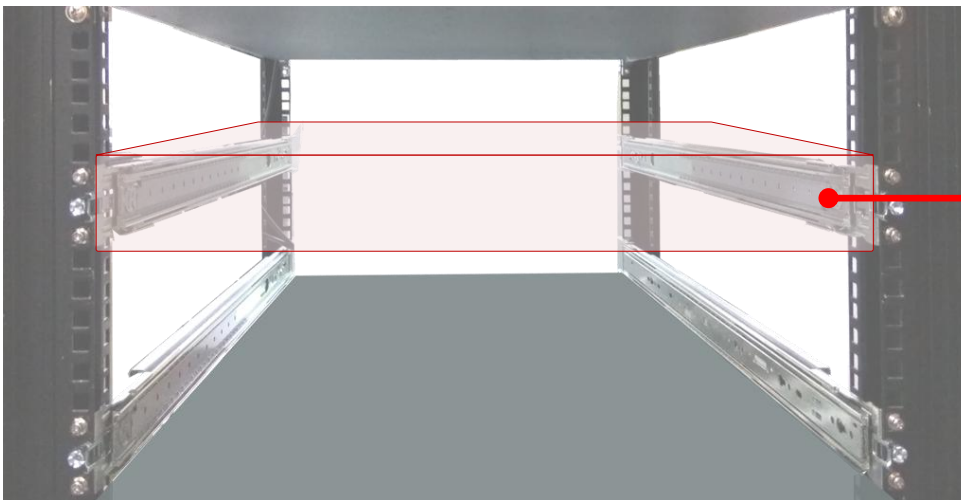
This method is quick and easy by fixing this system to the front posts of the rack, but it also makes servicing the system more difficult. Please note that the use of these brackets must go with a rack shelf or slide rails to prevent the chassis from falling over, for the bracket assembly alone cannot provide sufficient support to the chassis.



The system shall be installed on the rack along with a shelf or slide rails, for the "Mounting Ears" are meant to secure the system, not to support it.

► With **Slide Rail Kit + Mounting Ear Brackets**

This method is rather complicated, but the slidable rails allow you to access the system easily, while securing it in the rack solidly.



The Slide Rail Kit can secure the system while providing sufficient weight support for the device.

## Installing the System Using Mounting Ear Brackets Only

1. Check the accessory pack for the following items:

- ▶ 1x Screw Pack



- ▶ 2x Ear Brackets



2. Align the bracket to the side of the chassis and make sure the screw-holes are matched, and then secure the bracket onto the chassis with three provided screws.



3. Repeat Step 2 to attach the bracket to the other side of the chassis.



4. Install the chassis into the rack with the brackets fixed onto the posts using the provided screws. The actual approach you adopt and the needed parts for assembly will depend on the supporting accessory (shelf or rail kit) you use.



## Installing the System Using the Slide Rail Kit (with 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 Rail Brackets on the system)
- ▶ 1x pack of 7.1 Round Hole screws (for securing the system on the rail posts)
- ▶ 2x Slide Rails



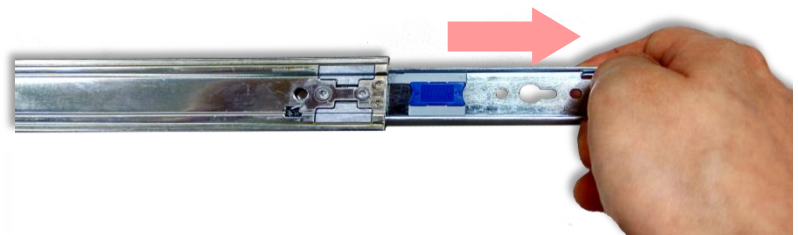
A rail consists of the following parts:



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

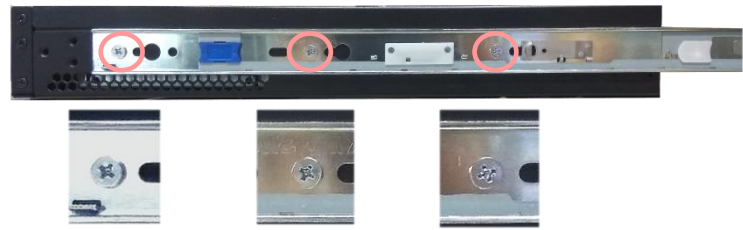


3. Stretch the bracket to the fullest.
4. Remove the bracket from the Inner Rail by pushing the Release Tab on the bracket outwards while sliding it out.





- Align the bracket to the side of the chassis and make sure the screw-holes are matched, and then secure the bracket onto the chassis with three provided M4X4L screws.



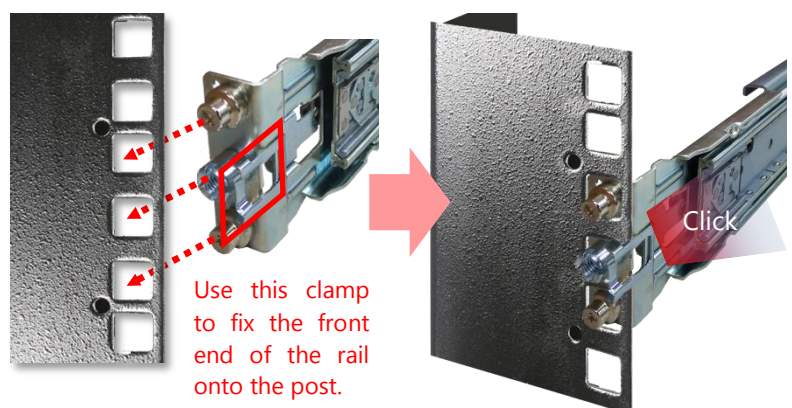
Align the screws with the holes indicated on the brackets and the screw holes on the side of the chassis.

6. Repeat Steps 2~5 to attach the bracket to the other side of the chassis.
7. Follow the instructions in Installing the System Using Mounting Ear Brackets Only to attach the Mounting Ear Brackets.

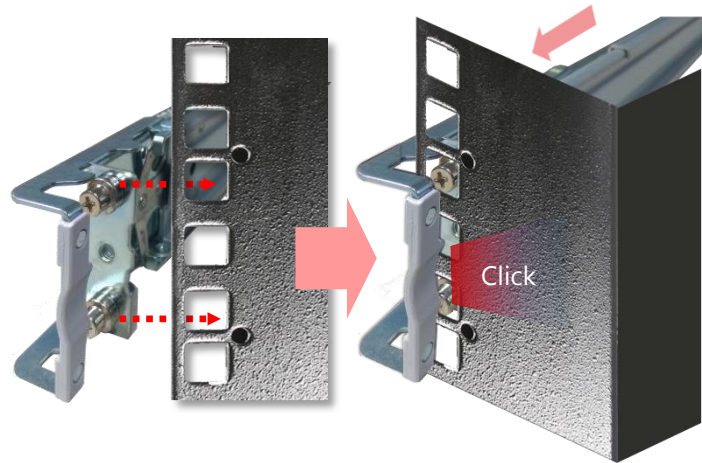


Now, you shall install the slide rail assemblies onto the rack.

- 8.** This slide-rail kit does NOT require screw-fixing. Simply aim at three 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.



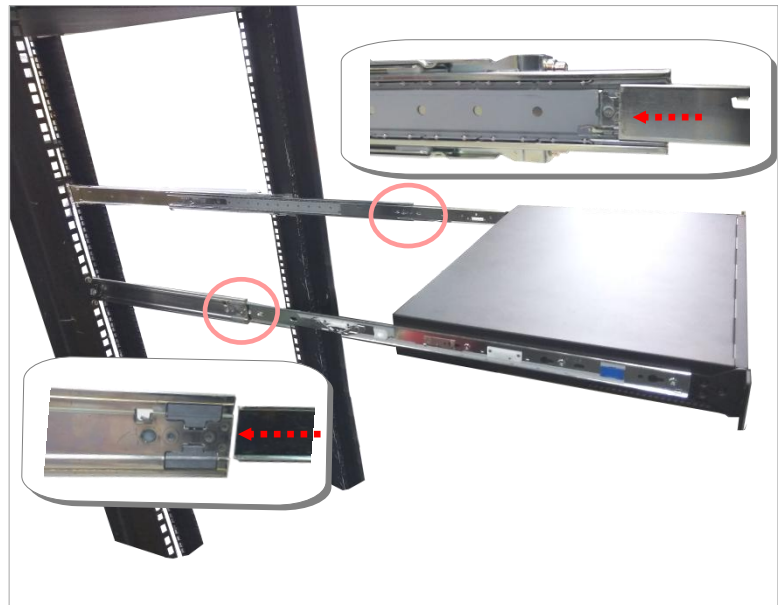
- 9.** For the rear rack installation, slide the rail to aim and engage the bolts on the rail's rear end with the two available holes on the post, and the rail assembly will click into place.



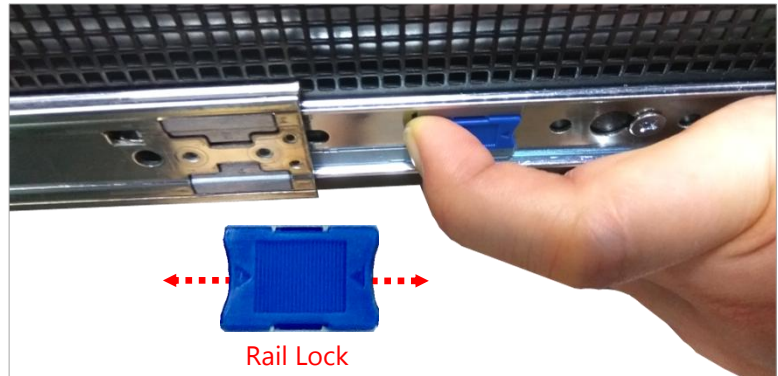
- 10.** Stretch both of the Inner Rails out to their fullest extent. You will hear a click sound when they are fully stretched and locked.



- 11.** Hold the system with its front facing you, lift the chassis and gently engage the brackets on the system while aligning them with the Inner Rails as shown in the image, and then push the system into the cabinet.



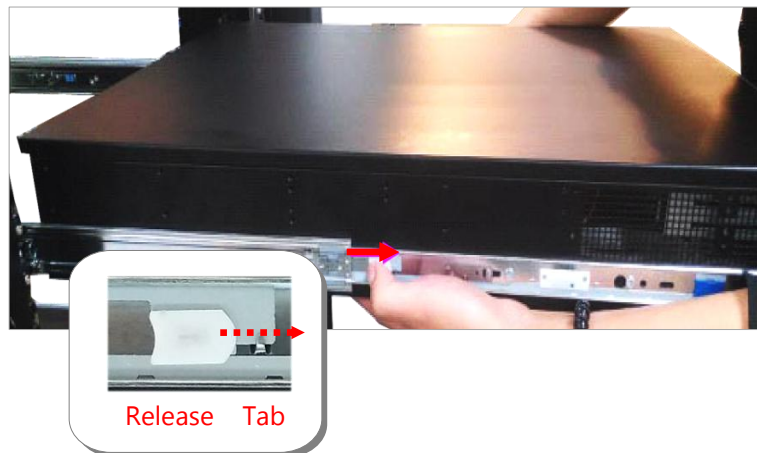
12. While pushing in the system, also push and hold the Rail Lock tab on both brackets.



Push the system all the way in until it stops.



To remove the system from the rack, gently pull it outwards towards you while pushing the Release Tab on both sides of the brackets.



## CHAPTER 4: BIOS SETUP

### Enter BIOS Setup

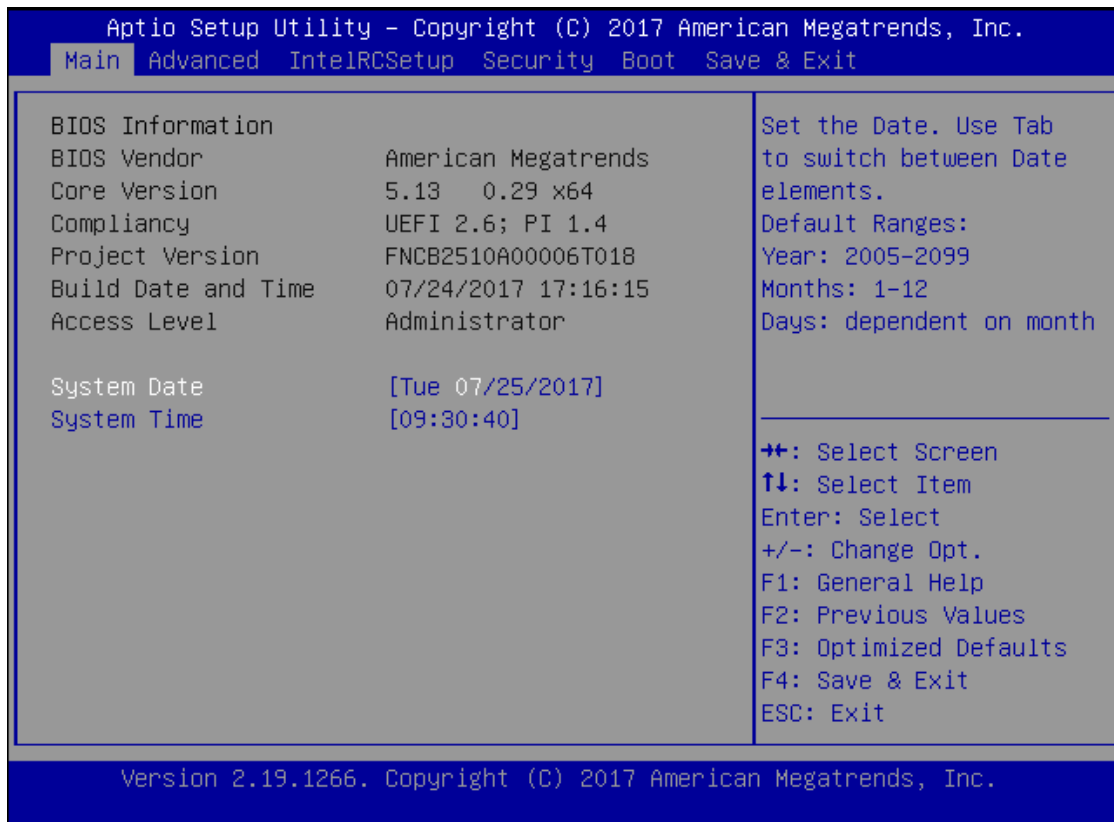
To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. Press **<Delete>** during the boot-up if you connect a keyboard to this unit. But if you connect a PC to this unit through console USB/Serial connection, then press **<Tab>**. Your system should be running POST (Power-On-Self-Test) upon booting up.
3. Then you will be directed to the BIOS main screen.
4. Instructions of BIOS navigations:

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

## Main Setup

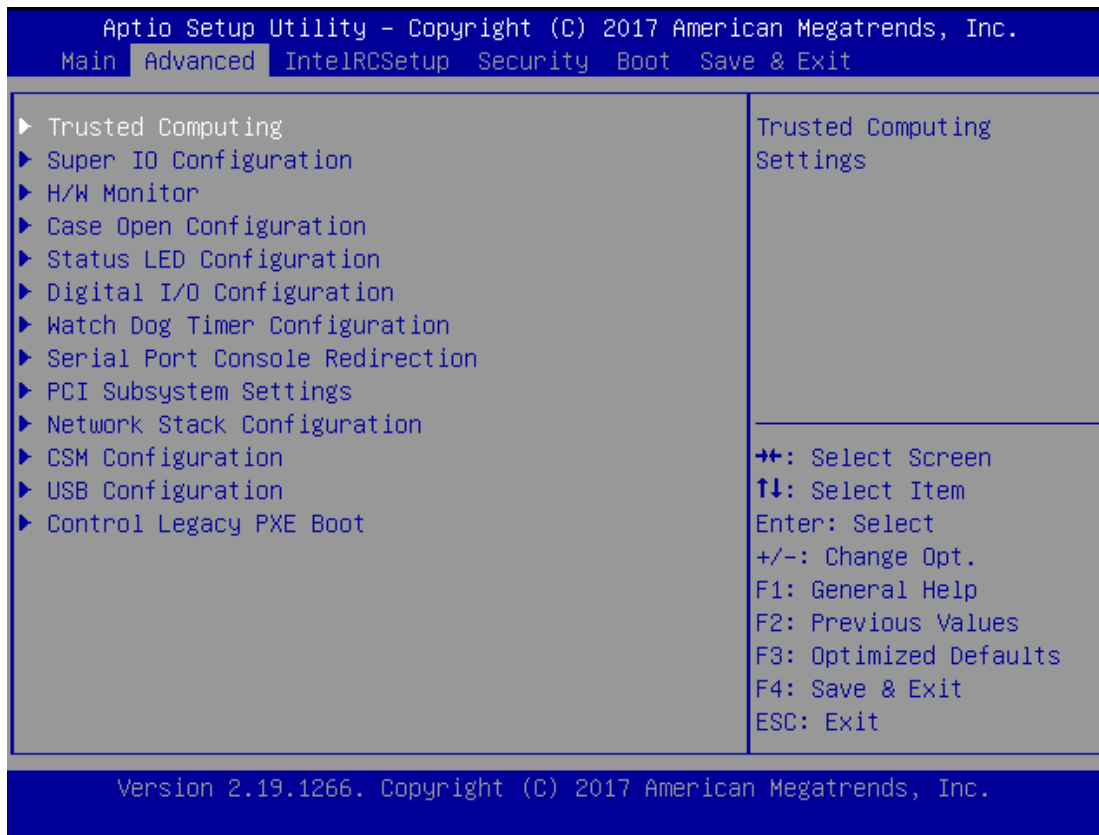
Setup main page displays a description of BIOS information and project version information. You can also setup the System Time and System Date here.



(The screenshots presented in section are for reference only)

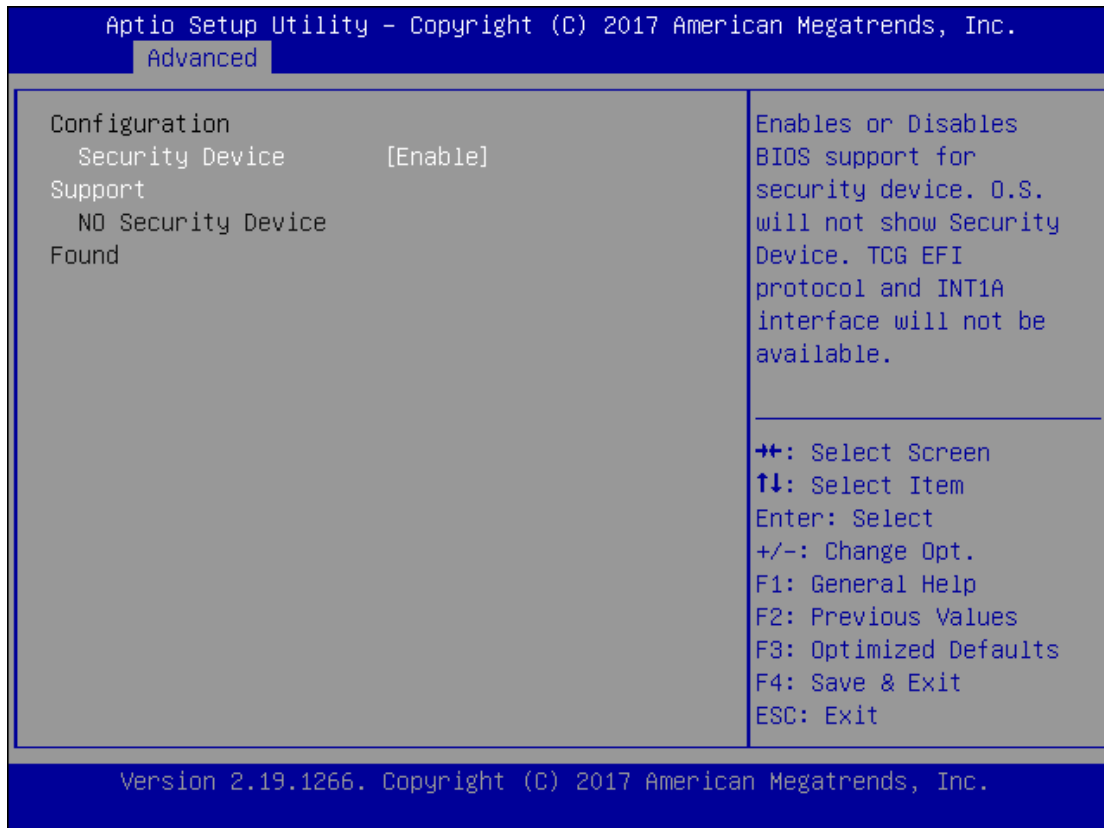
## Advanced Setup

Use [←] [→] to select [Advanced] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.



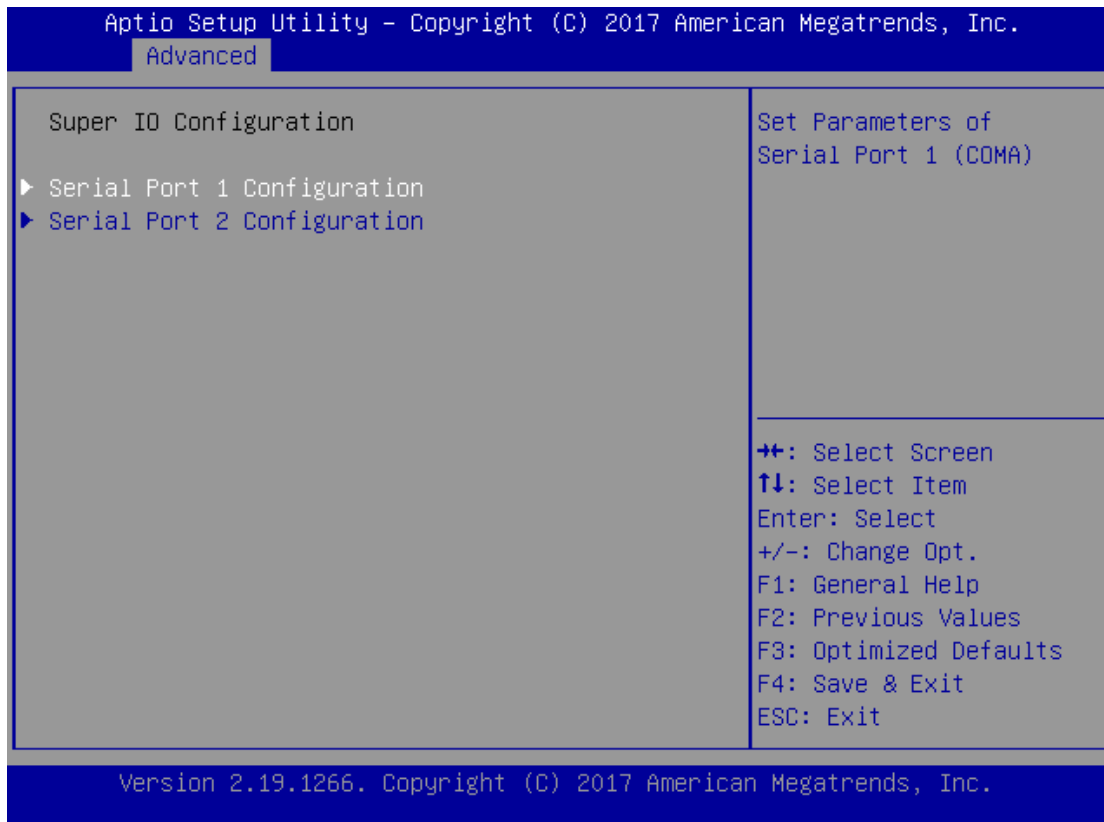
## Trusted Computing

This option allows you to configure parameters about BIOS support for the security device. Press **<Enter>** to access the submenu. The default is "Enabled".



## Super IO Configuration

This option allows you to configure parameters about Super IO Chip. Press **<Enter>** to access the submenu.



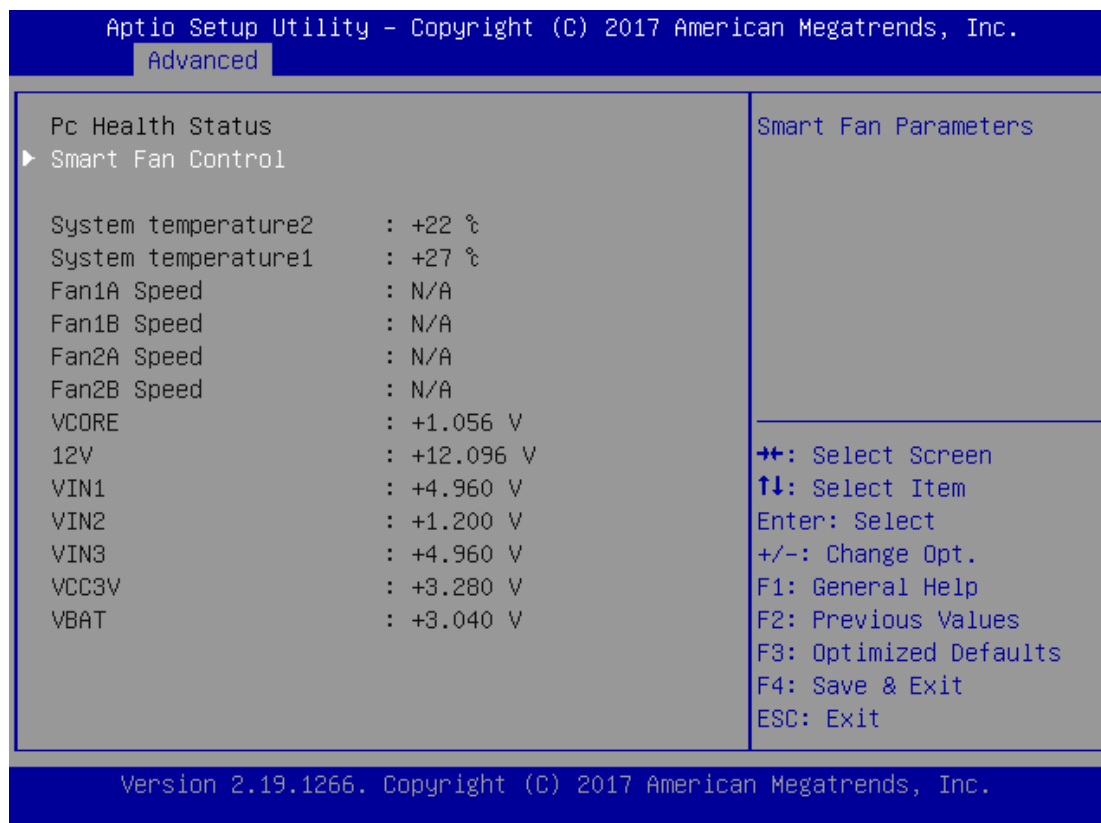
Select **Serial Port 1 Configuration** or **Serial Port 2 Configuration** to enter sub setting screen. The default is "Enabled".





## H/W Monitor

This option allows you to configure Smart Fan properties and monitor the fan status.

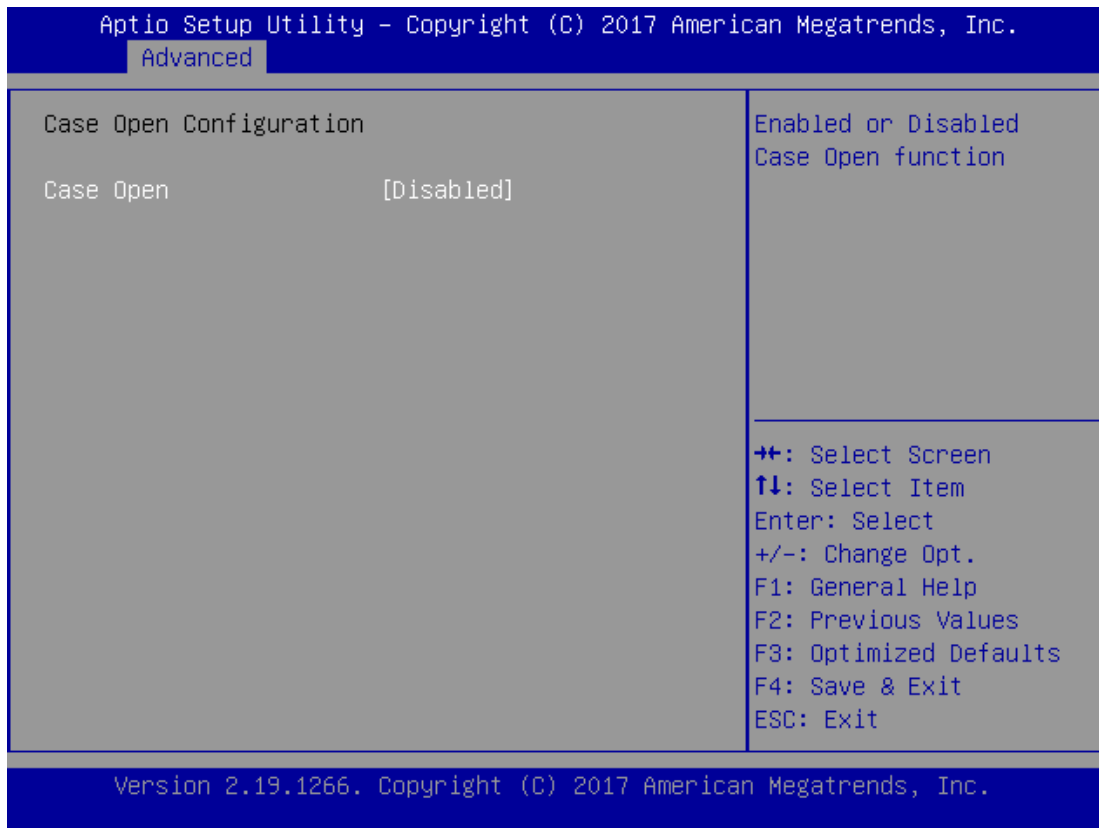


Enter "Smart Fan Control" to change fan mode. The default is "Smart Fan Mode".

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.	
Advanced	
Smart Fan Configuration	Smart Fan Mode select
Smart Fan Mode [Smart Fan Mode]	
Target Temperature T1 50	
Target Temperature T2 65	
Target Temperature T3 75	
Target Temperature T4 78	
Critical Temperature 80	
FanOut T1 Level 60	
FanOut T2 Level 80	
FanOut T3 Level 100	
FanOut T4 Level 200	
	⇐: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1266. Copyright (C) 2017 American Megatrends, Inc.	

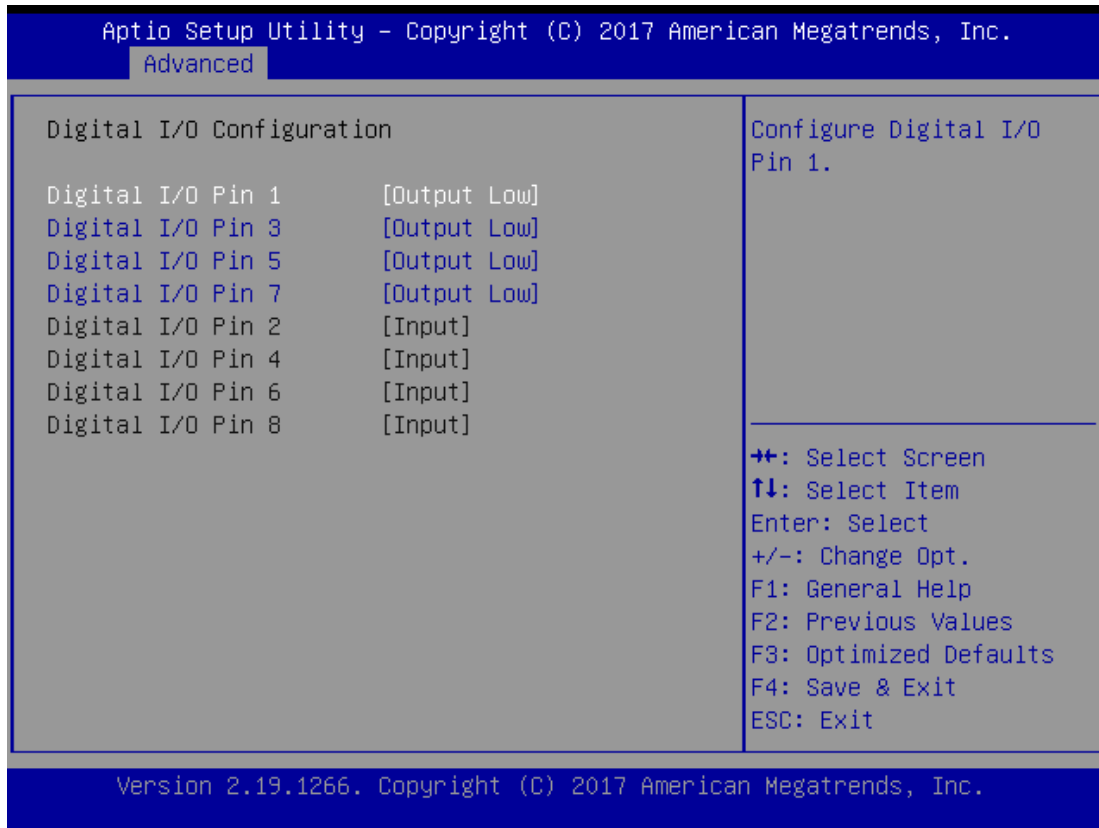
## Case Open Configuration

If with the case's support, enabling this option will have the unit sound when someone opens the case of this unit, which is considered against your organization's policy. The default is "Disabled".



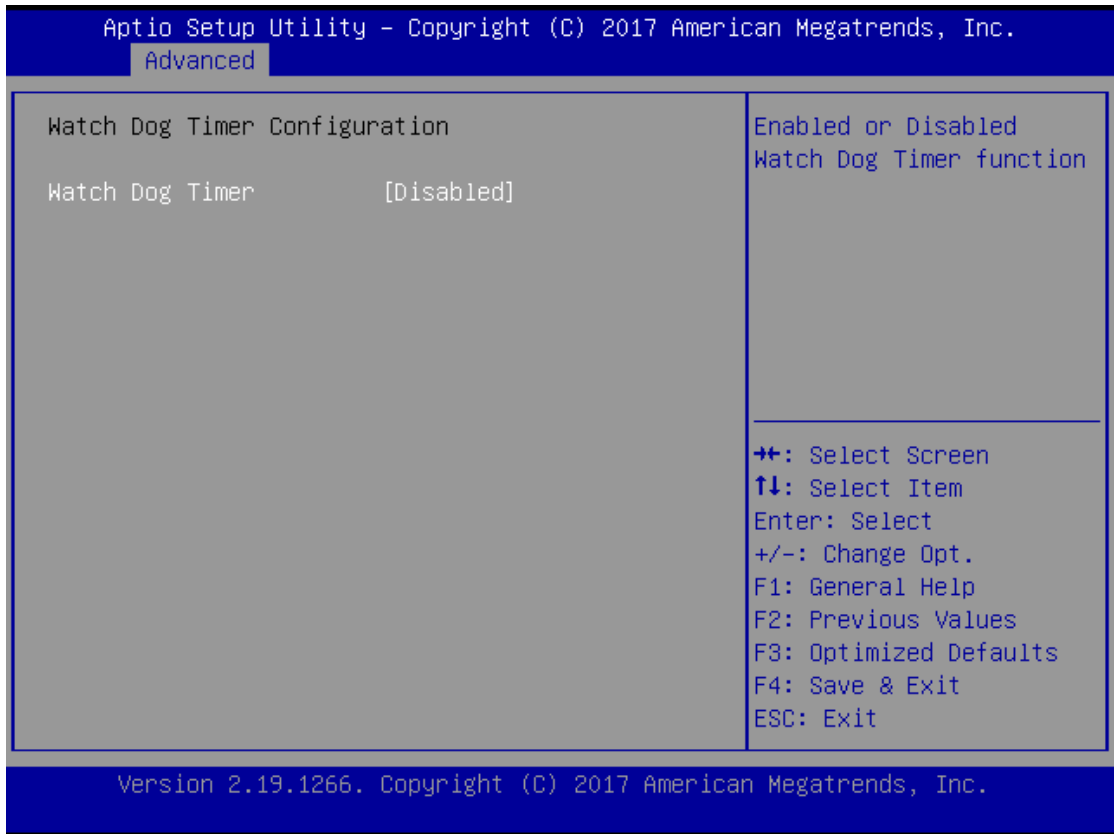
## Digital I/O Configuration

This option allows you to configure Digital I/O pin properties. Select the desired pin and press **<Enter>** to modify. The default is "Output Low".



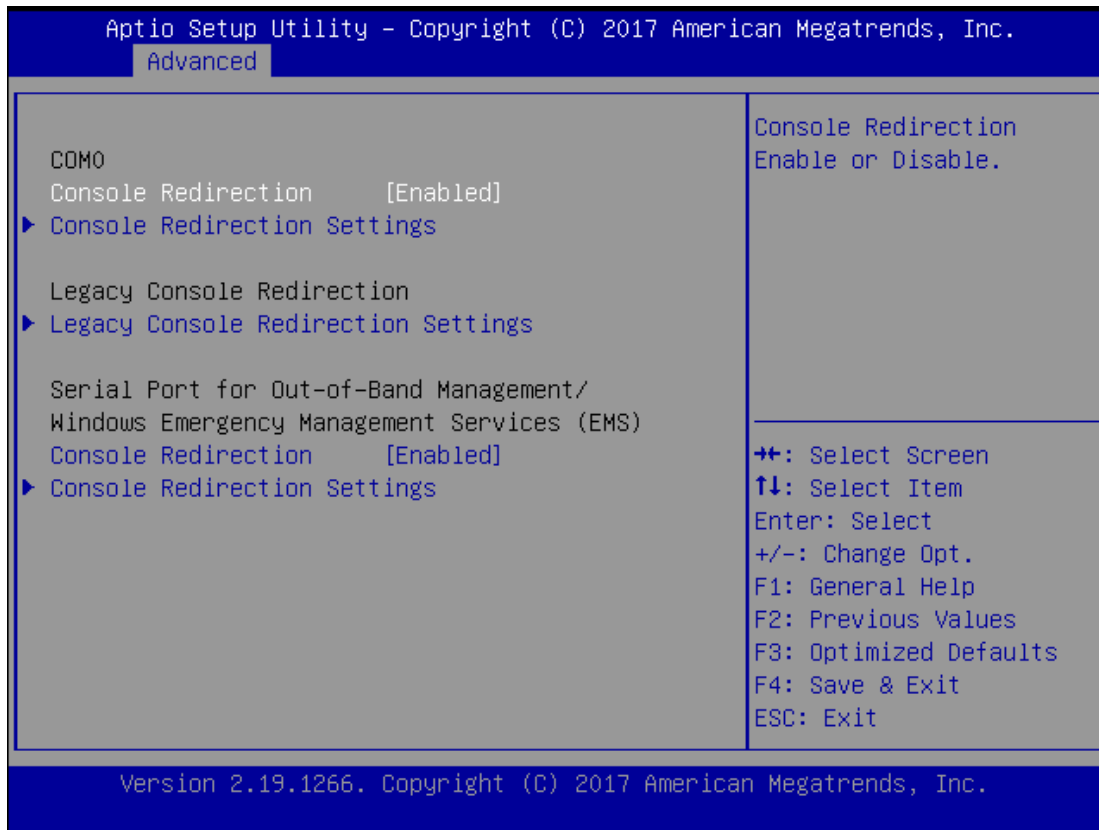
Watch Dog Timer Configuration

This option allows you to enable or disable Watchdog Timer function. The default is "Disabled".



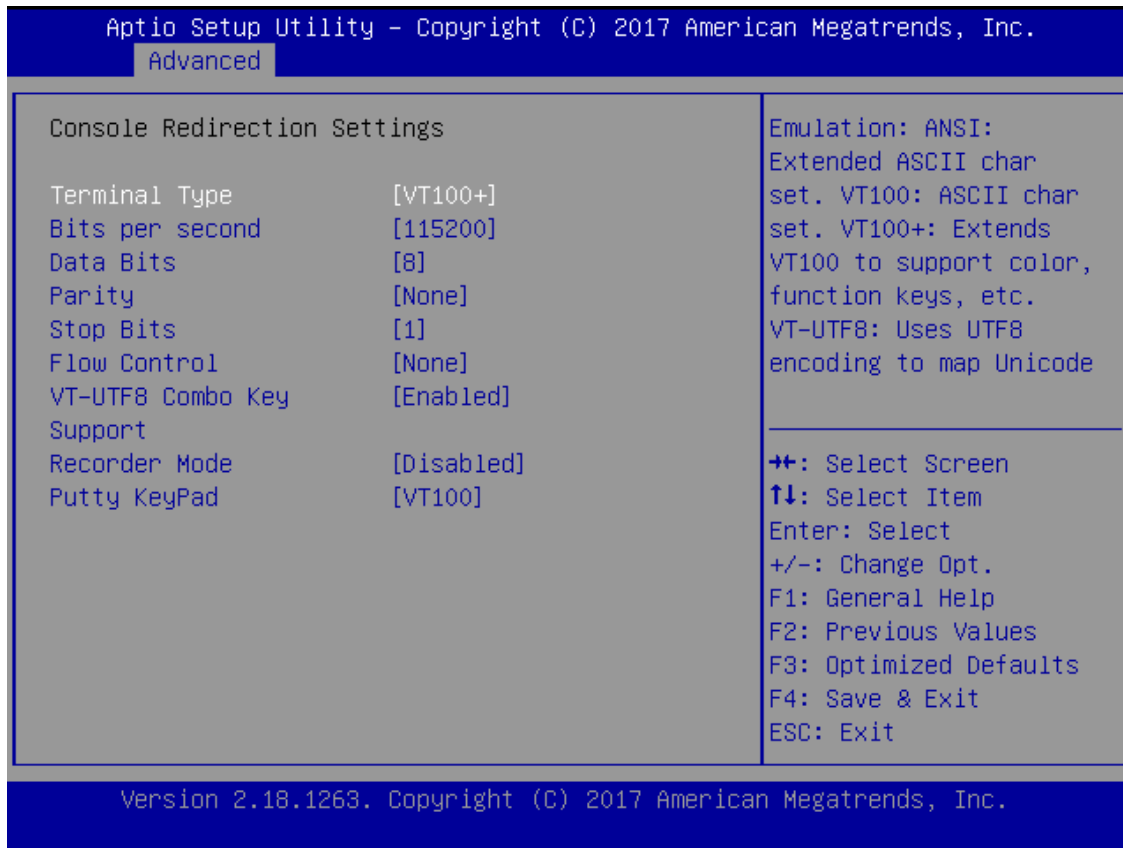
## Serial Port Console Redirection

This option allows you to configure parameters about serial port console redirection. Press **<Enter>** to access the submenu. The default is "Enabled".



**Console Redirection Settings**

Select this item to enter the setting sub-menu. These settings specify how the host computer and the remote computer will exchange data. Both computers should have the same or compatible settings.



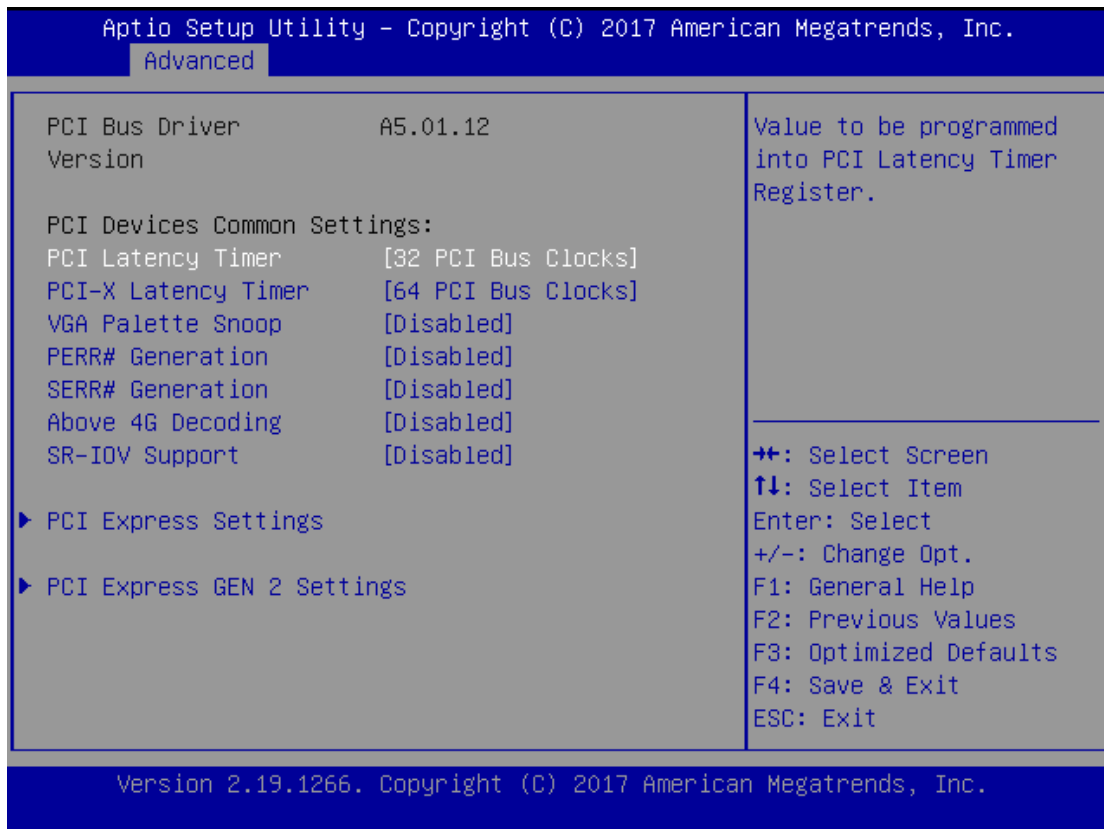
Item	Value	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	<b>VT100:</b> ASCII char set. <b>VT100+:</b> Extends VT100 to support color, function keys, etc. <b>VT-UTF8:</b> Uses UTF8 encoding to map Unicode chars onto 1 or more bytes. <b>ANSI:</b> Extended ASCII char set.
Bits per second	9600 19200 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	Stop bits indicate the end of a serial data packet.
Flow Control	None Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow.

VT-UTF8 Combo Key Support	Disabled Enabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Select FunctionKey and KeyPad on Putty.



## PCI Subsystem Setting

This option allows you to configure parameters to be programmed into PCI Latency Timer Register.



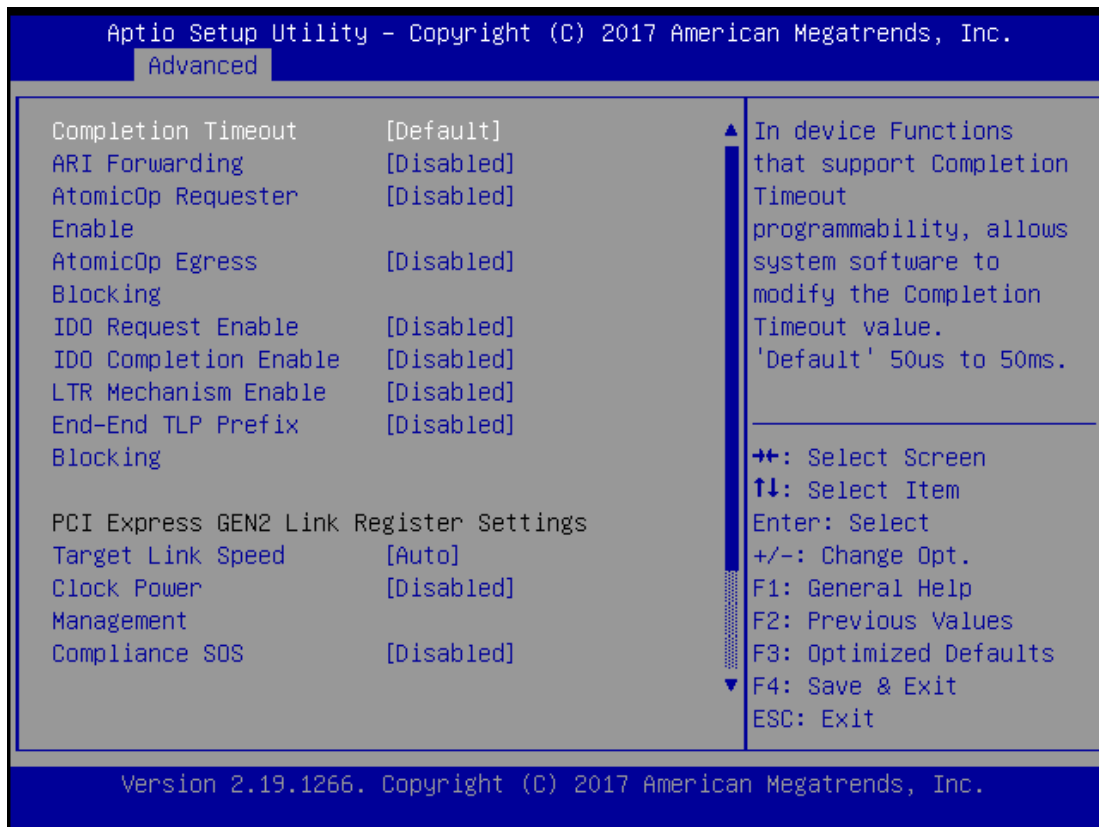
**PCI Express Settings**

This option allows you to enable or disable PCI Express Device Relaxed Ordering.

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.	
Advanced	
PCI Express Device Register Settings	Enables or Disables PCI Express Device Relaxed Ordering.
Relaxed Ordering [Enabled]	
Extended Tag [Disabled]	
No Snoop [Enabled]	
Maximum Payload [Auto]	
Maximum Read Request [Auto]	
<hr/>	
PCI Express Link Register Settings	
ASPM Support [Disabled]	
WARNING: Enabling ASPM may cause some PCI-E devices to fail	
Extended Synch [Disabled]	
Link Training Retry [5]	
Link Training Timeout (uS) 1000	
Unpopulated Links [Keep Link ON]	
	→+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1266. Copyright (C) 2017 American Megatrends, Inc.	

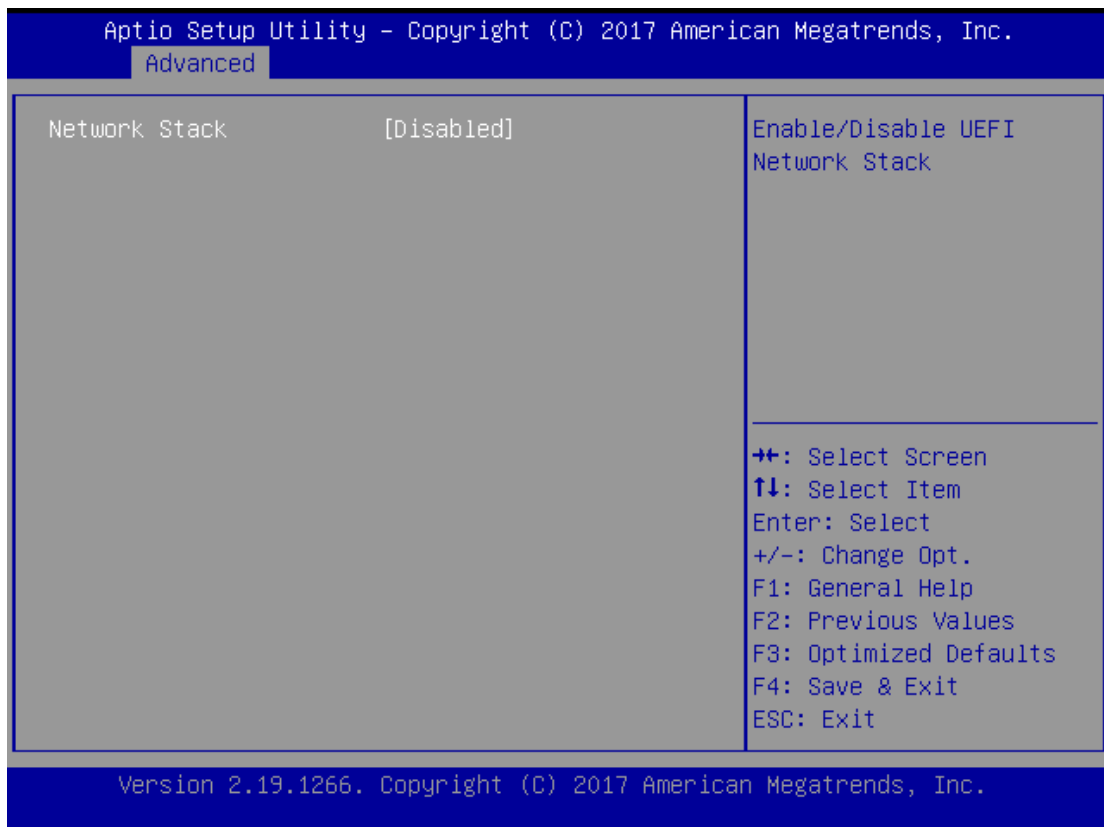
**PCI Express GEN 2 Settings**

This option allows you to enable or disable PCI ExpressGEN2 related setting.



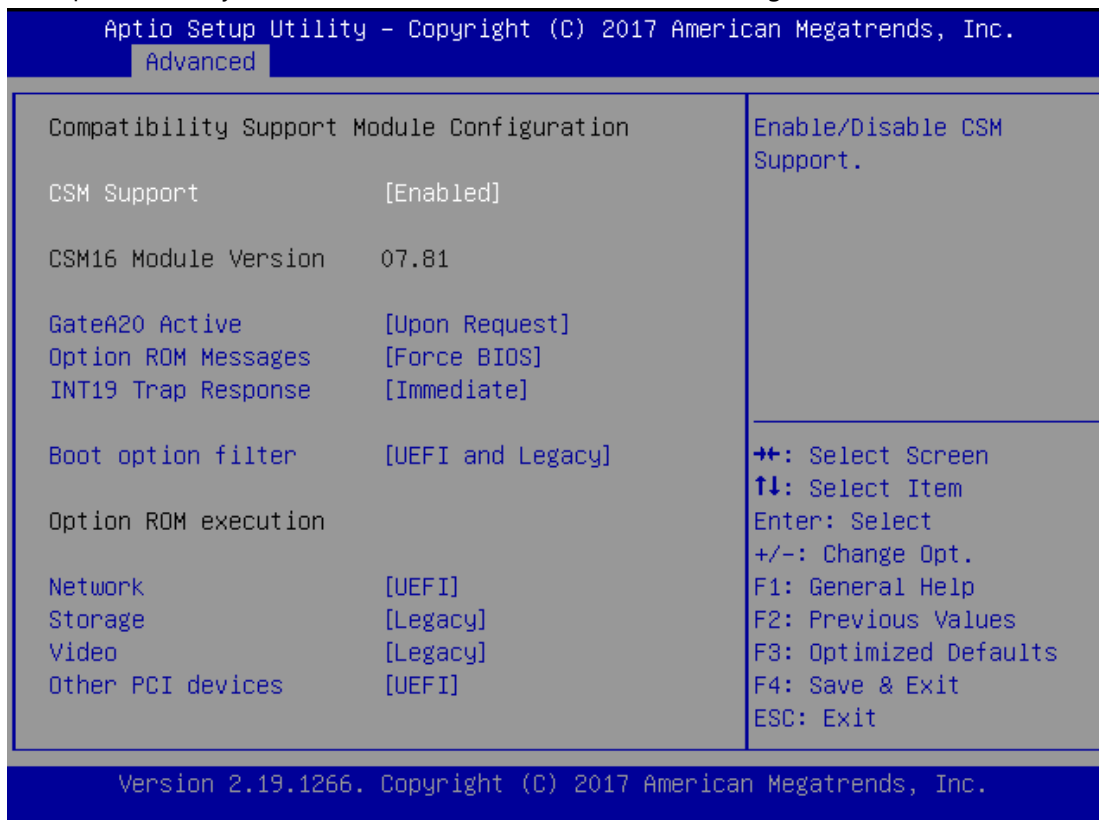
## Network Stack Configuration

This option allows you to enable or disable UEFI Network Stack. The default is "Disabled".



## CSM Configuration

This option allows you to enable or disable ROM execution settings.

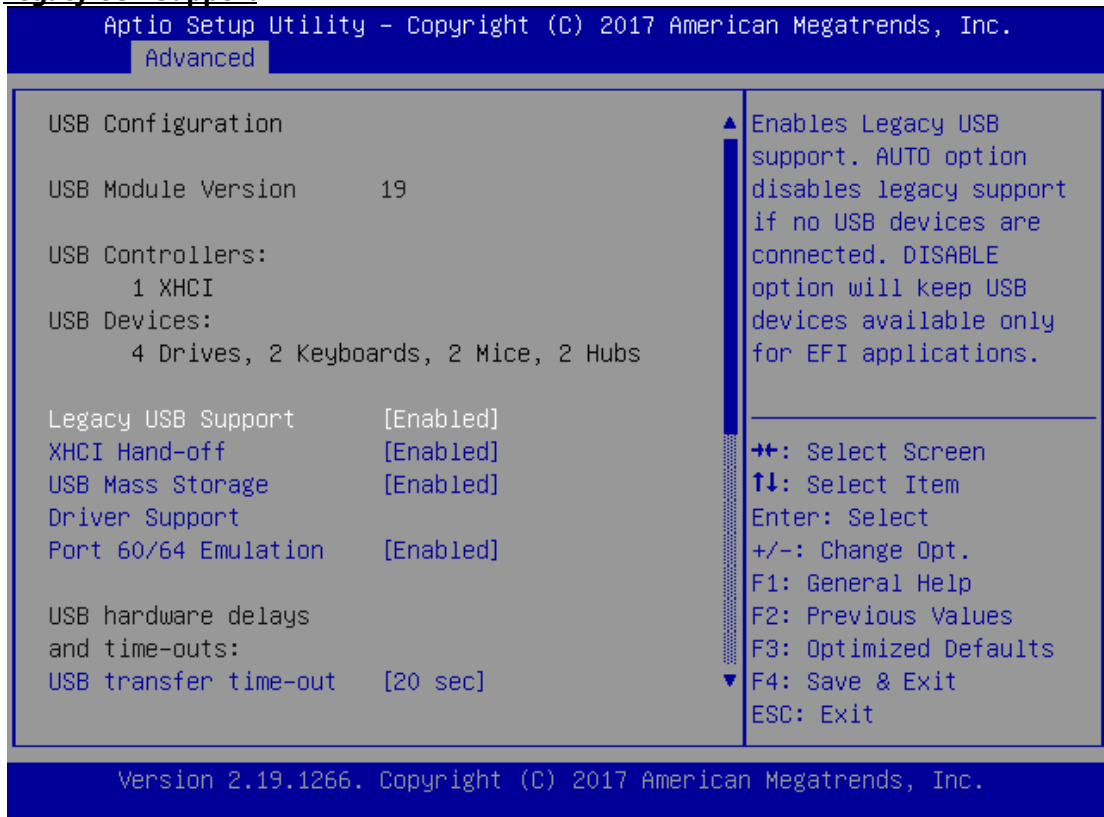


Item	Value	Description
CSM Support	Disabled <b>Enabled</b>	Enables or disables CSM Support
Network	Do Not Launch <b>UEFI</b> Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI <b>Legacy</b>	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch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

## USB Configuration

This option allows you to change USB configuration parameters.

### Legacy USB Support



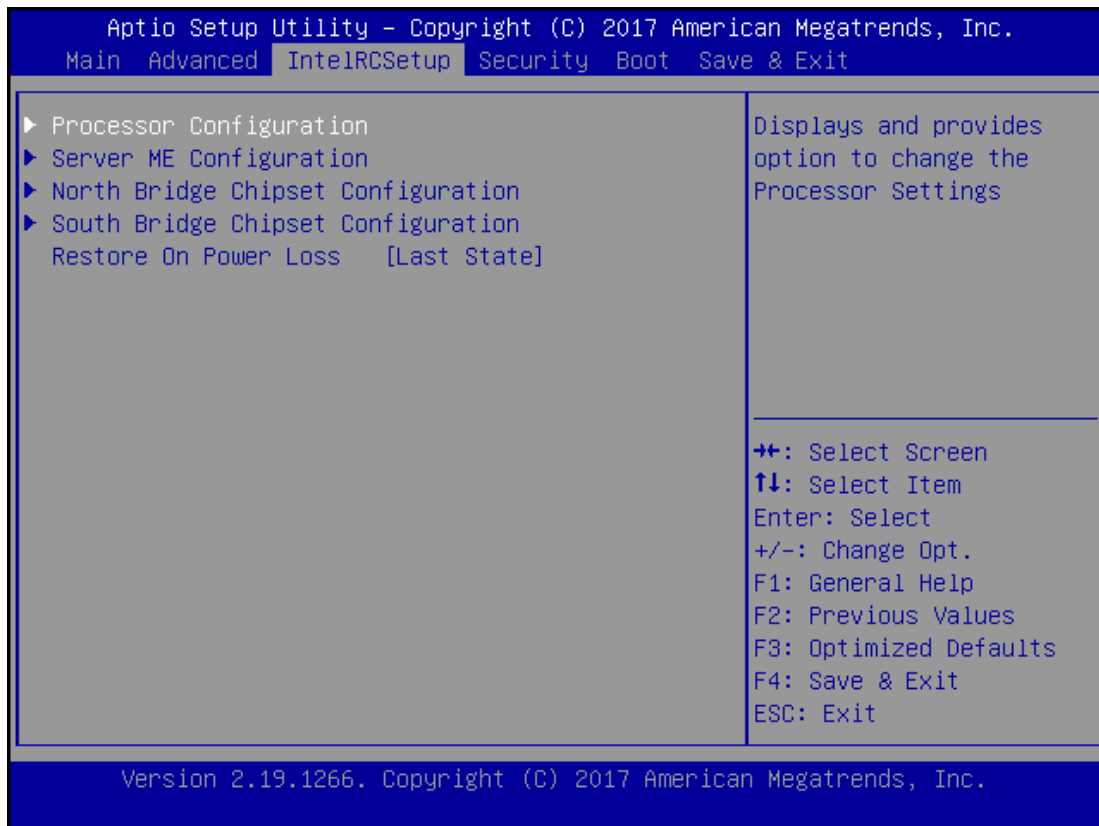
Item	Value	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. <b>"Auto"</b> disables legacy support if no USB devices are connected. <b>"Disabled"</b> will keep USB devices available only for EFI applications. The default is <b>"Enabled"</b> .
XHCI Hand-off:	Enabled Disabled	This is a workaround for QSeS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. The default is "Enabled".
USB Mass Storage Driver Support: "	Enabled Disabled	Enables or disables USB Mass Driver Support. Default is "Enabled".
Port 60/64 Emulation:	Enabled Disabled	This option enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware operating systems. The default is "Enabled".



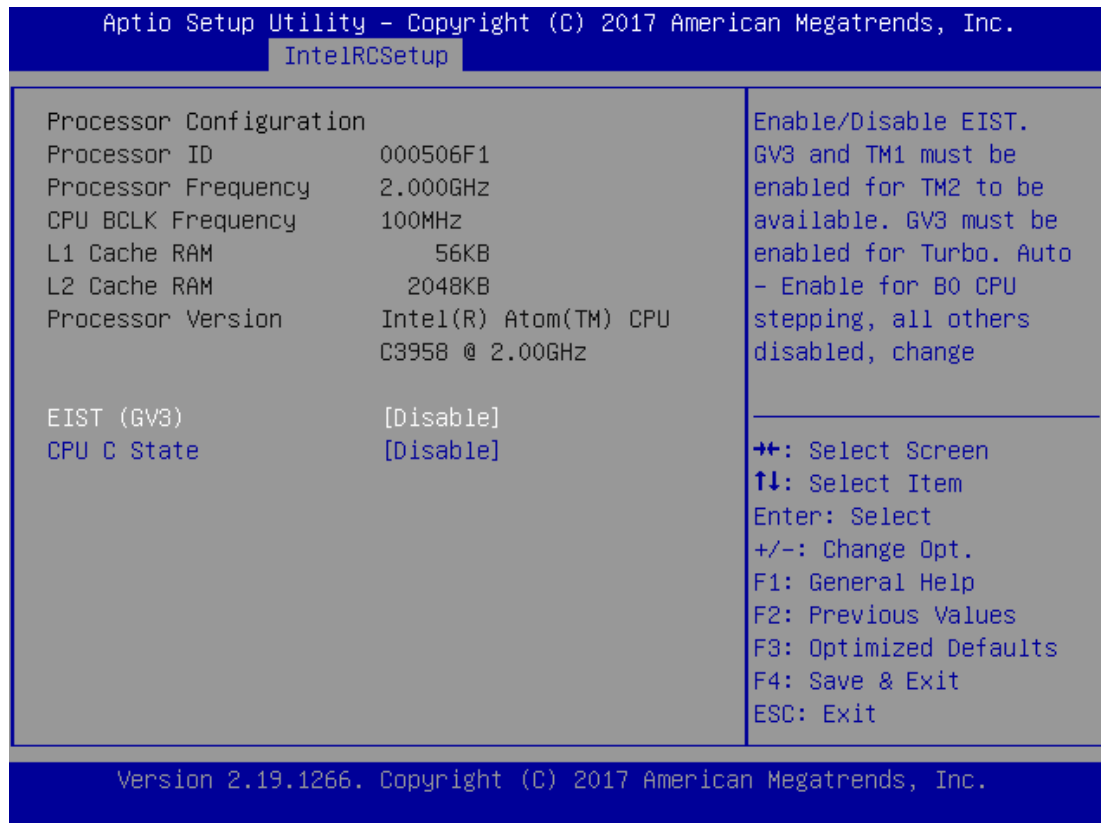
USB transfer time-out	1 sec 5 sec 10 sec <b>20 sec</b>	Set USB time-out value (1, 5, 10 or 20 seconds) for Control, Bulk and Interrupt transfers. The default is "20 sec".
Device reset time-out:	10 sec <b>20 sec</b> 30 sec 40 sec	Set USB mass storage device Start Unit command time-out (10, 20, 30 or 40 seconds). Default is "20 sec".
Device power-up delay	<b>Auto</b> Manual	Set the maximum time the device will take before it properly reports itself to the Host Controller. " <b>Auto</b> " uses default value. For example, it is 100ms as a root port.

## IntelRCSetup

Use [←] / [→] to select the Chipset menu item from the BIOS setup screen to enter the **IntelRCSetup** Setup screen. Users can select any of the items in the left frame of the screen.



## Processor Configuration



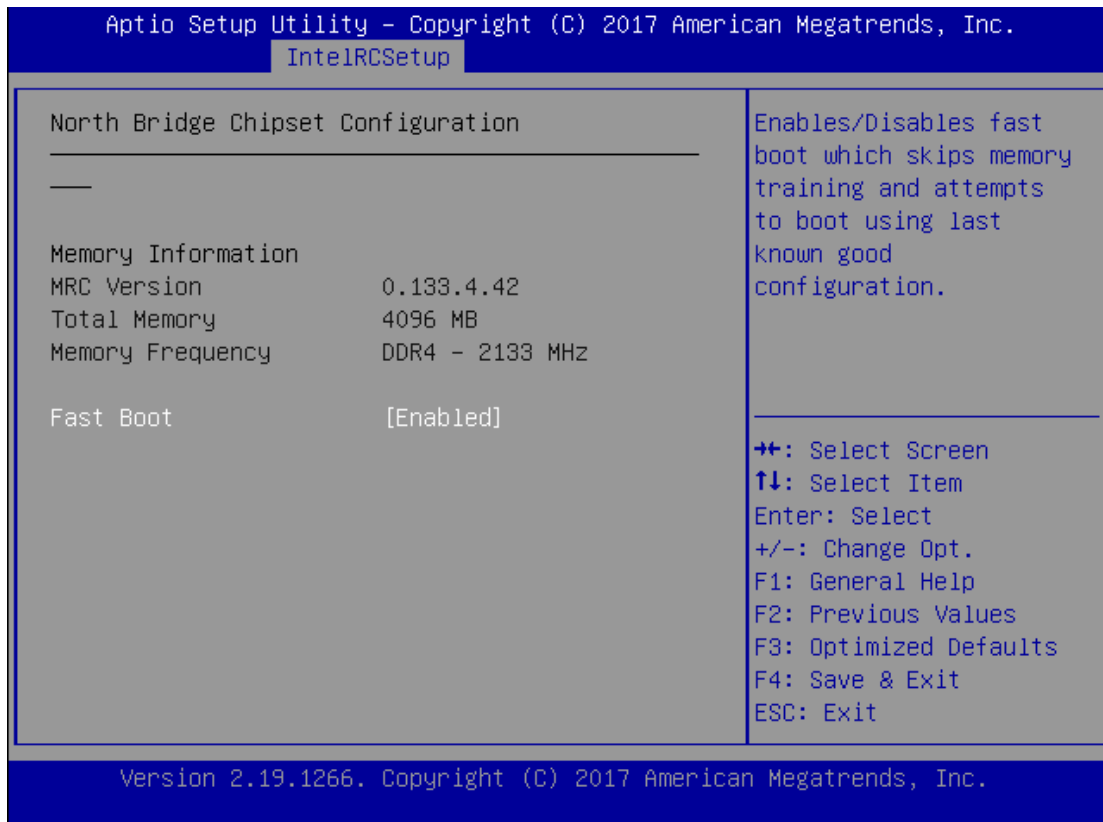
Item	Value	Description
EIST(GV3)	Disable Enabled	Enables or disables EIST. GV3 and TM1 must be enabled for TM2 to be available. GV3 must be enabled for <u>Turbo</u> . Auto - Enable for B0 CPU stepping, all others disabled, change setting to override.
CPU C State	Disabled Enabled	Enables the Enhanced Cx state of the CPU, takes effect after reboot. Auto - Enable for B0 CPU stepping, all others disabled, change setting to override.

## Server ME Configuration

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.	
IntelRCSetup	
General ME Configuration	
Operational Firmware Version	0B:4.0.3.65
ME Firmware Type	SPS
Backup Firmware Version	N/A
Recovery Firmware Version	0B:4.0.3.65
ME Firmware Status #1	0x000F0355
ME Firmware Status #2	0x88110800
Current State	Operational
Error Code	No Error
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.19.1266. Copyright (C) 2017 American Megatrends, Inc.	

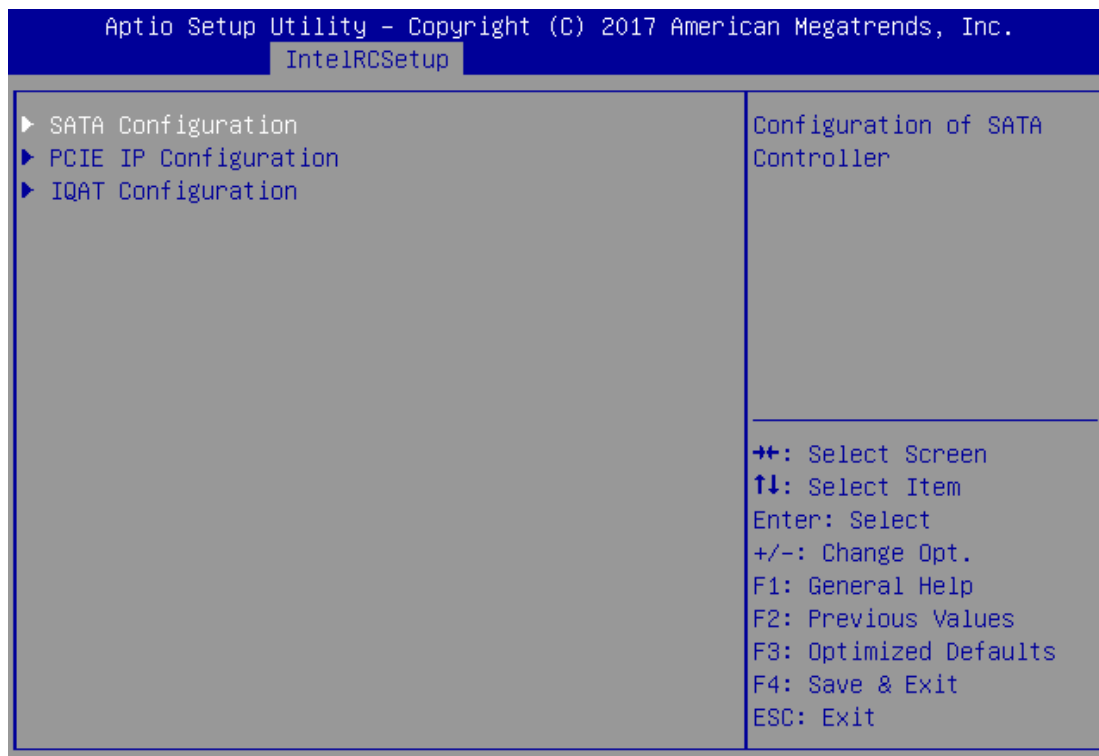
## North Bridge Chipset Configuration

This option enables or disables fast boot which skips memory training and attempts to boot using last known good configuration. The default is "Enabled".

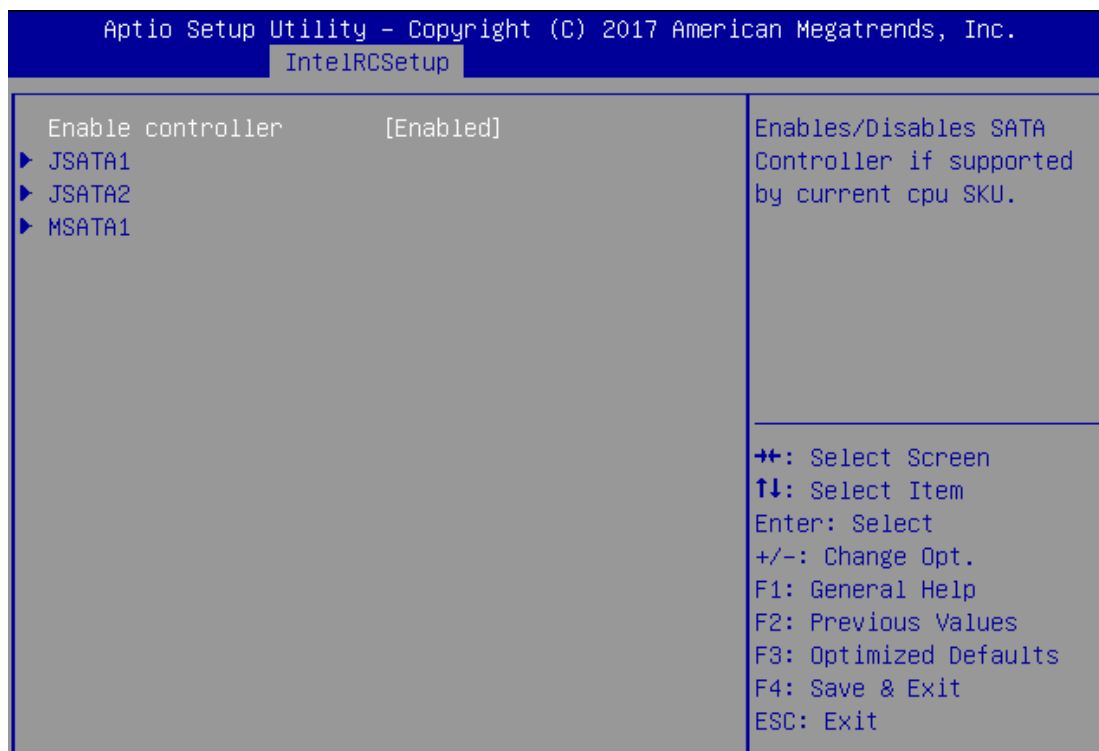


## South Bridge Chipset Configuration

This option allows you to configure SATA Controller properties.



**SATA Configuration** Enables/Disables SATA Controller if supported by current CPU SKU. The default is "Enabled". Enabling the SATA controller, you can respectively modify the JSATA1, JSATA1 and mSATA properties.

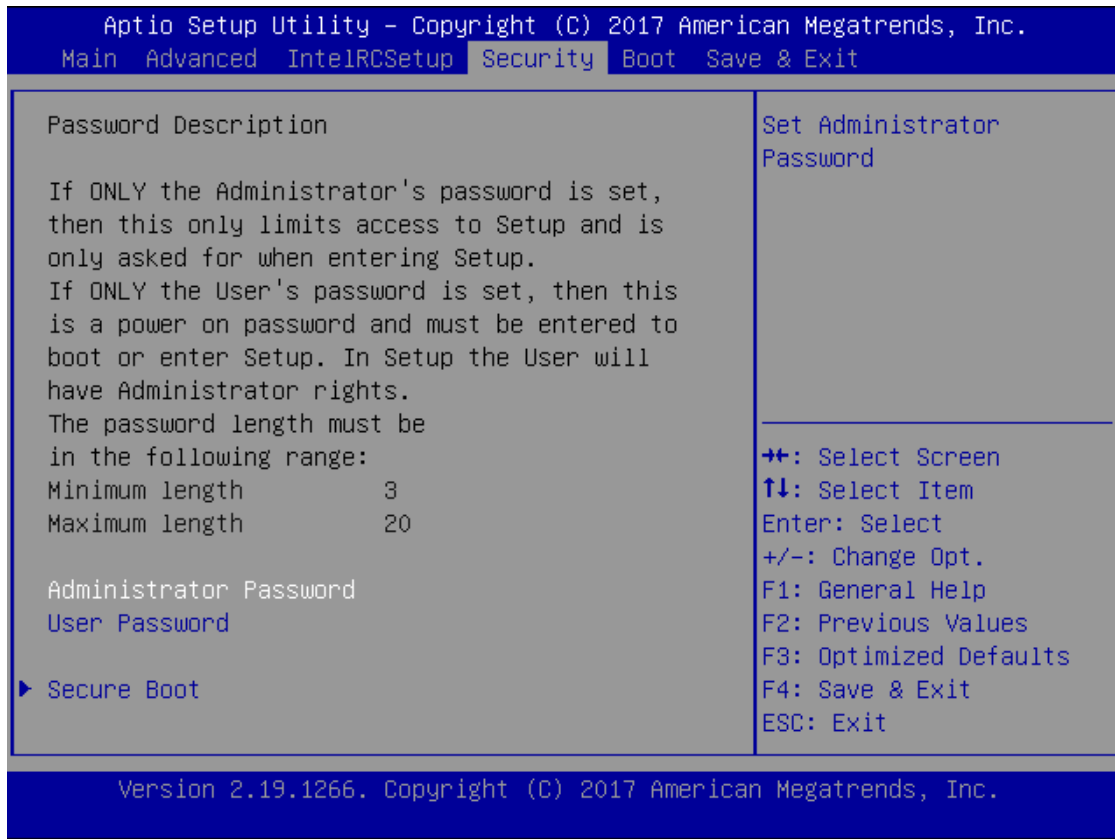




## Security

Use [←] [→] to select **Security** setup screen. Under this screen, you may use [↑] [↓] to select an item you would like to configure.

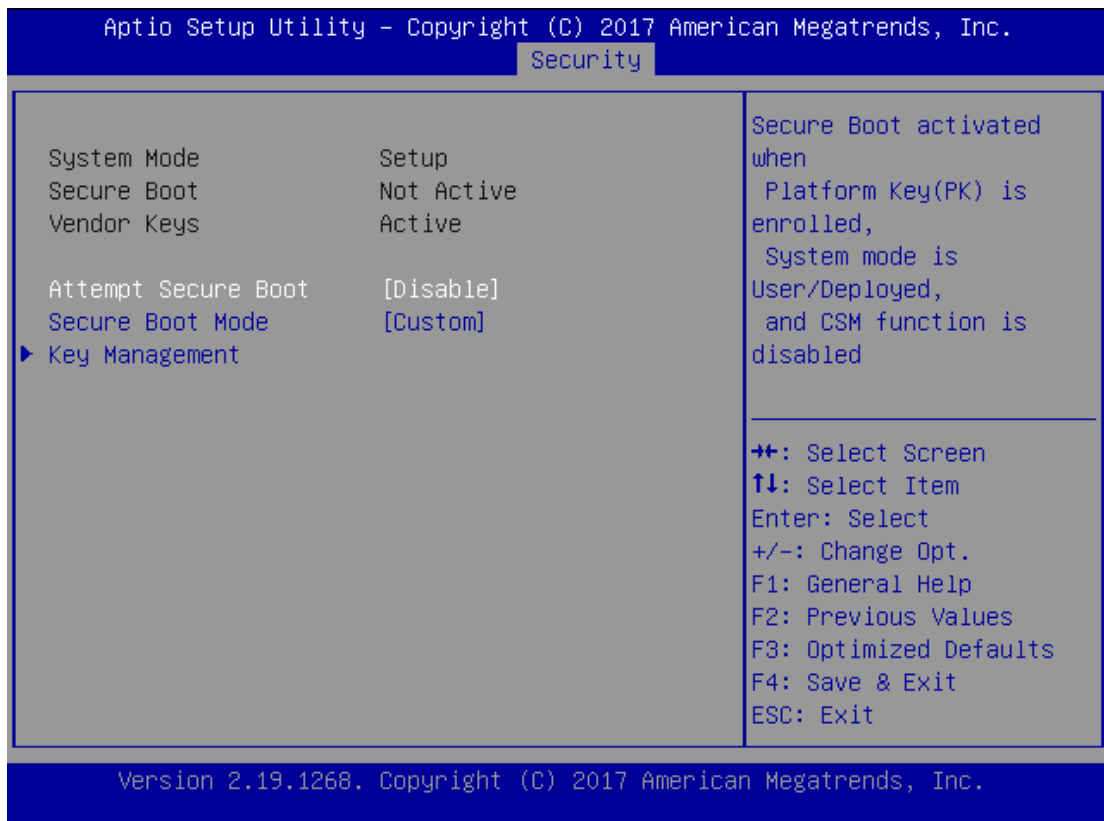
### Administrator Password & User Password



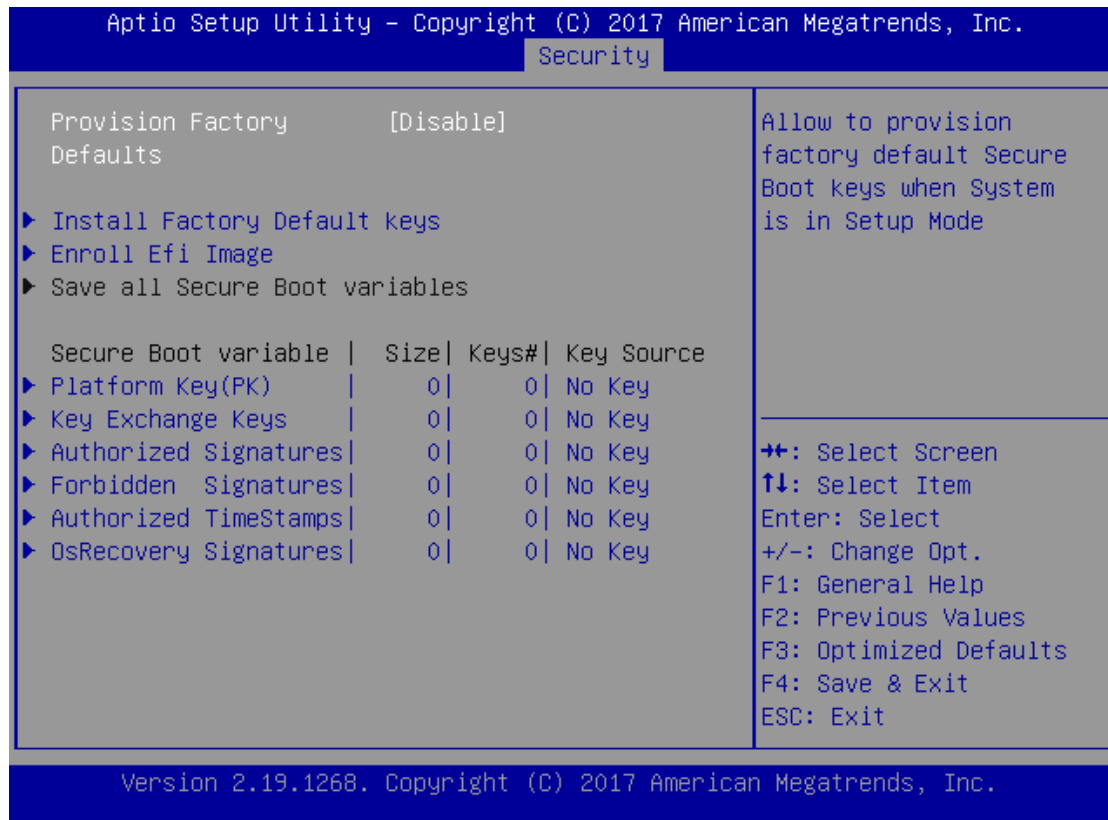
Item	Description
Administrator Password	If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, then this is a power-on password and must be entered to boot or enter Setup. In Setup,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

## Secure Boot

Enter **Secure Boot** page for more related settings.



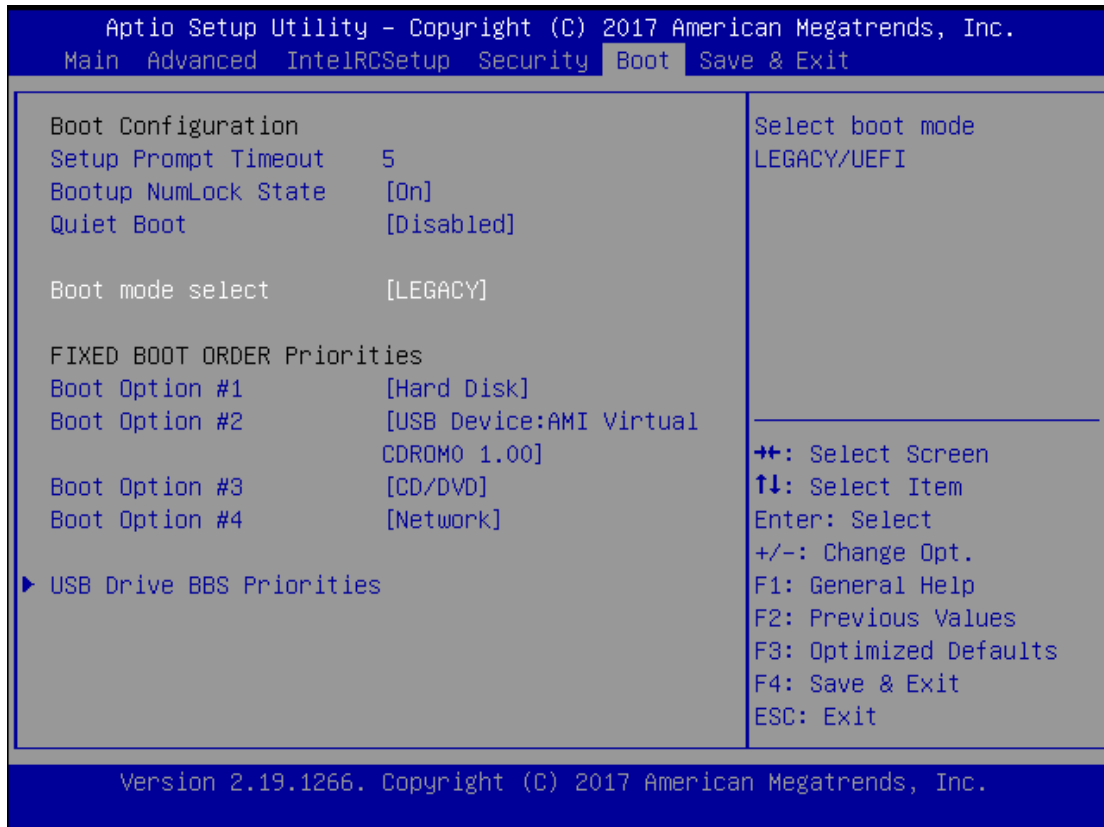
Item	Value	Description
Attempt Secure Boot	Disabled Enabled	Secure Boot is activated when Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled
Secure Boot Mode	Standard Custom	Secure Boot mode selector: In Custom mode, Secure Boot Variables can be configured without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

**Key Management**

Item	Value	Description
Provision Factory Defaults	Disabled Enabled	Allows you to provision factory default Secure Boot keys when System is in Setup Mode.
Install Factory Default keys	None	Forces System to enter 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

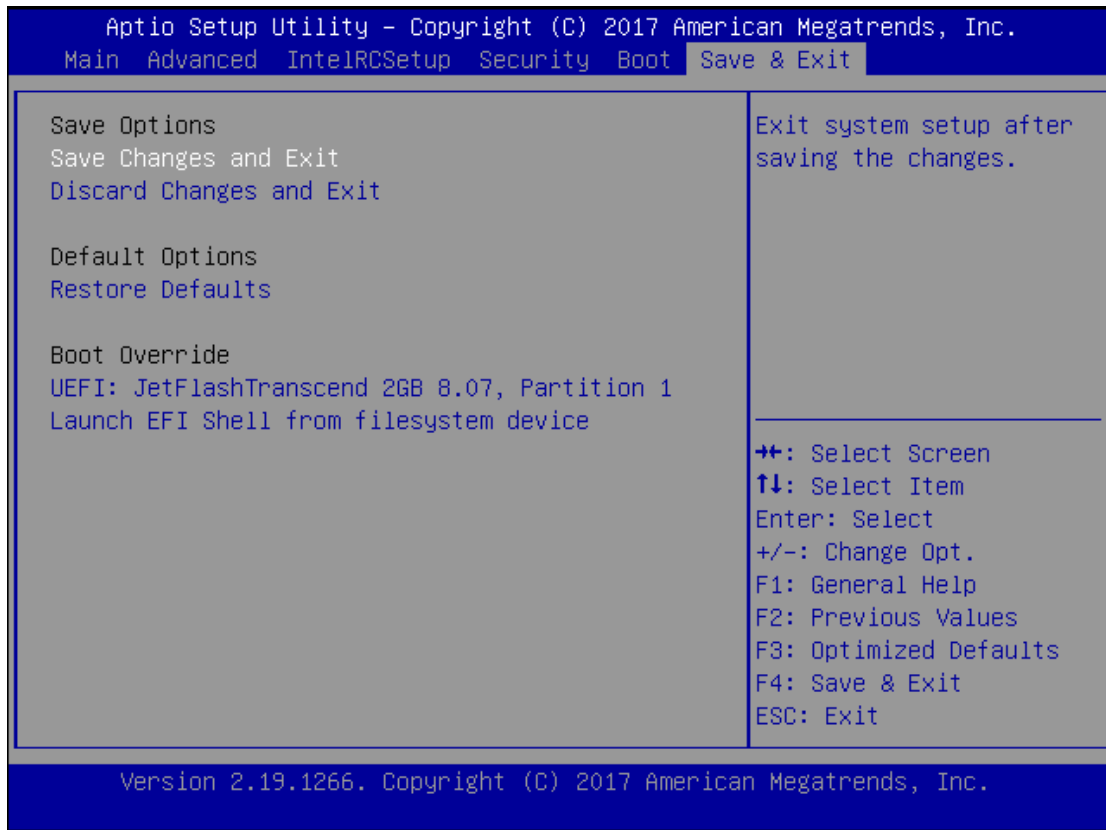
Select the **Boot** menu item from the BIOS setup screen to enter the **Boot** Setup screen.



Item	Value	Description
Quiet Boot	Disabled Enabled	Enables or disables <b>Quiet Boot</b> option.
Boot mode select	LEGACY UEFI Dual	Select boot mode.

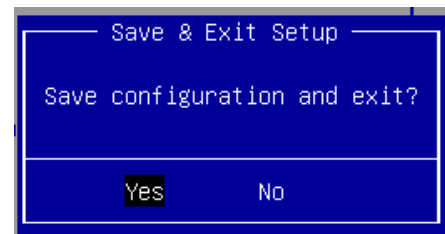
## Save and Exit Menu

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.



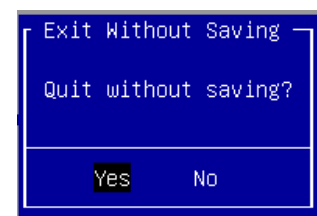
### Save Changes and Exit

When you have completed the system configuration, select this option to save the changes and Exit from BIOS Setup, so the new system configuration parameters can take effect. This window will appear after the **Save Changes and Exit** option is selected. Select **“Yes”** to save changes and exit Setup.



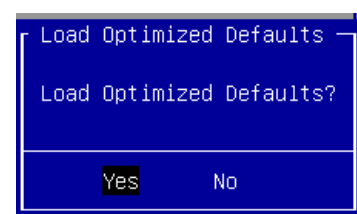
### Discard Changes and Exit

Select this option to quit Setup without saving any modifications to the system configuration. This window will appear after the **Discard Changes and Exit** option is selected. Select **“Yes”** to discard changes and exit Setup.



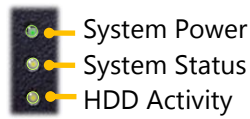
### Restore Defaults

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



## APPENDIX A: LED INDICATOR EXPLANATIONS

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



### ► System Power

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

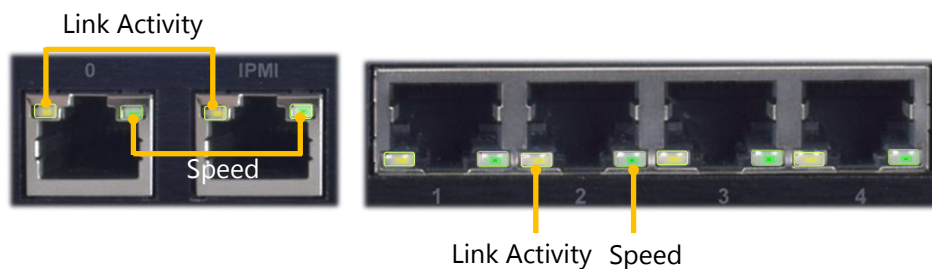
### ► System Status

This LED indicator is programmable. You could program it to display the operating status with 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

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



### ► 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 has been 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

► **Link Activity**

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

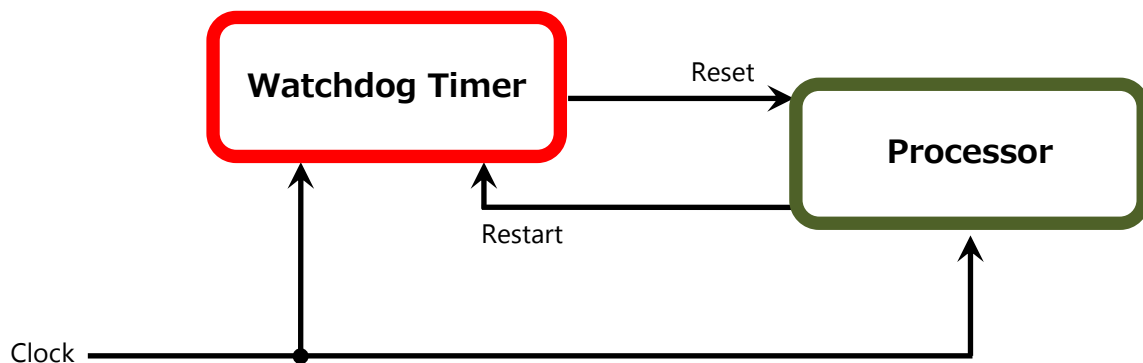
► **Speed**

<i>Solid Green</i>	<i>Operating as a 10-Gigabit connection</i>
<i>Off</i>	<i>No link has been established</i>



## APPENDIX B: PROGRAMMING WATCHDOG TIMER

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is resumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.

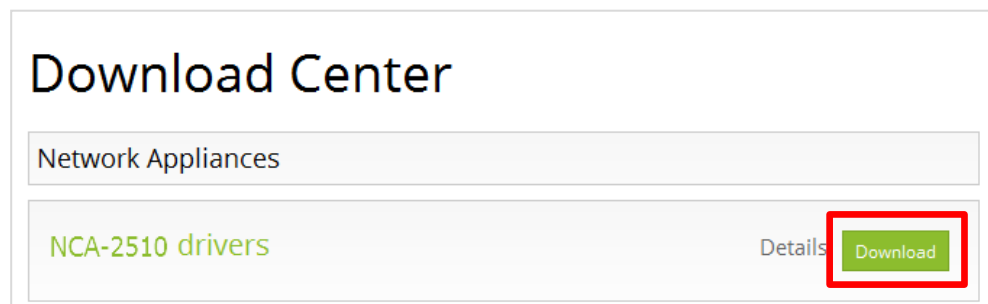


To execute the utility: enter the number of seconds to start the countdown before the system can be reset.

```
wd_tst -swt xxx (Set Watchdog Timer 1-255 seconds and start to count-down)
```

```
wd_tst -stop (Stop Watchdog Timer)
```

- For a reference utility that contains sample code for watchdog function programming, please visit <http://www.lannerinc.com/support/download-center/drivers>, enter the product category and download the utility package of NCA-2510.



## APPENDIX C: 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 D: PROGRAMMING GENERATION 3 LAN BYPASS

The bypass function is used to link two independent Ethernet ports when the system crashes or powers off. This means if your system is equipped with a LAN Bypass function, a condition in your system will not interrupt your network traffic. Different from the previous two generations (Gen1 and Gen2), the Lanner Bypass Gen 3 employs a programming method to control the bypass function by software. There are typically two types of communication status for the bypass function, one is "Normal" and another is "Bypass" status. Furthermore, the Lanner Bypass software is capable of controlling the bypass status in the following 3 instances.

- ▶ When the system powers off, it can be forced to enable the LAN Bypass function.
- ▶ When the system is in the just-on state which is a brief moment when it powers up.

The Lanner bypass possesses the following features:

1. Communication through SMBUS (I2C)
  2. Independent bypass status control for each pair up to a total of 4 pairs
  3. Lanner Bypass Modules can bypass systems Ethernet ports on a host system during three instances: Just-on (Just-on is the brief moment when the internal power supply turns on and booting process starts), system off, or upon software request (during run-time).
  4. Software programmable bypass or normal mode
  5. Software programmable timer interval:
    - **JUST-ON** watchdog timer, used during JUST-ON, has timer setting of 5 to 1275 seconds of timer interval.
    - **Run-Time** watchdog timer, used during run-time, with of 1 to 255 seconds of timer interval.
  6. Multiple Watchdog Timers:
    - **Two for run-time:** It is designed to give you a more variety of controls of the bypass on port basis. By using dedicated watchdogs for different pairs of bypass, you have the flexibility to manage the bypass status for them differently.
    - **One for just-on:** It is designed to give you the precise control of the bypass during this phase. You can use this timer to delay enabling the bypass in just-on state.
- ▶ For a reference utility that contains sample code for LAN Bypass function programming, please visit <http://www.lannerinc.com/support/download-center/drivers>, enter the product category and download the utility package of NCA-2510.
  - ▶ For thorough implementation information of Lanner Bypass and Watchdog functionalities, go to Lanner Support website at <http://www.lannerinc.com/category/1202-network-appliances> to download Lanner Bypass Watchdog Module-User Guide.
  - ▶ For a description of the physical LAN ports equipped with this function, refer to Front Panel in Chapter 1: Product Overview.

## APPENDIX E: INSTALLING INTEL® LAN CONTROLLER DRIVER FOR LINUX

To install the Intel® LAN controller base driver for the Red Hat® and Linux operating system, please visit <http://www.lannerinc.com/support/download-center/drivers>, enter the product category and download the utility package of NCA-2510.

For the latest driver update, please visit Intel® download center at <https://downloadcenter.intel.com/>, use the keyword search or the filter to access the driver's product page, and then download the latest controller driver as well as the ReadMe document.

Product Name	I210 or I350
Keyword	
Download Type	Drivers
Operating System	Linux*
Product page	<a href="#">Intel® Network Adapter Driver for 82575/6, 82580, I350, and I210/211-Based Gigabit Network Connections for Linux*</a>

## APPENDIX F: TERMS AND CONDITIONS

### Warranty Policy

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

### RMA Service

#### Requesting an RMA#

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



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

## RMA Service Request Form

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

<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: _____			
<b>Item</b>	<b>Model Name</b>	<b>Serial Number</b>	<b>Configuration</b>

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