Lanner

Network Computing

Innovative Platforms for Next Generation Network Infrastructure

NCA-2513
User Manual

Version: 1.0

Date of Release: 2020-08-04

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 check 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 exclamation point 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 online product information and technical support.

Resources	URL
Lanner	http://www.lannerinc.com
Product Resource	http://www.lannerinc.com/download-center
RMA	http://eRMA.lannerinc.com

Copyright and Trademarks

Acknowledgment

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.

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 (Tma) 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).

- Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the unit or use of inappropriate installation components.

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 mm2 ou 10 AWG.

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 the battery is incorrectly replaced. Replace only with the same or equivalent type. Dispose of batteries according to the 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.

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, such as labs or computer facilities with the proper authorization.
Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

Table of Contents

CHAPTER 1: PRODUCT OVERVIEW

The NCA-2513, a 1U 19" rackmount network appliance with high availability, virtualization-optimized design and Intel® Atom™ C3000 Series CPU (codenamed Denverton) with up to 8 cores of processing prowess. Featuring 6~8 LAN ports, 1x NIC module slot, optional LTE module and 150W PSUs, NCA-2513 is the ideal hardware platform for uCPE, SD-WAN and edge computing with mobile connectivity

Package Content

Your package contains the following items:

- 1x NCA-2513 Network Security Platform
- 1x Accessory Pack
  - 1x Power Cable
  - 1x Short Ear Rack Mount Kit with screws
  - 1x Console Cable
  - Nameplate
  - 1xSATA 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 DIMM of higher capacity 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-2513 **A**	Intel C3758 8 Core with QAT + 8x GbE + 1x NIC (1x PCIex8/2x PCIex4)
NCA-2513 **B**	Intel C3558R 4 Core with QAT + 8x GbE + 1x NIC (1x PCIex8/2x PCIex4)
NCA-2513 **C**	Intel C3558 4 Core with QAT + 6x GbE + 1x NIC (1x PCIex8/2x PCIex4)
NCA-2513 **D**	Intel C3338R 2 Core with QAT + 6x GbE + 1x NIC (1x PCIex4)

Optional Accessories

Model	Description
Riser KIT FOR NCA-2513	Riser Card KIT for the rear slot
PGN LTE KIT FOR NCA-2513	LTE KIT
WIFI KIT FOR NCA-2513	WIFI KIT
Slide rail	Slide rail KIT

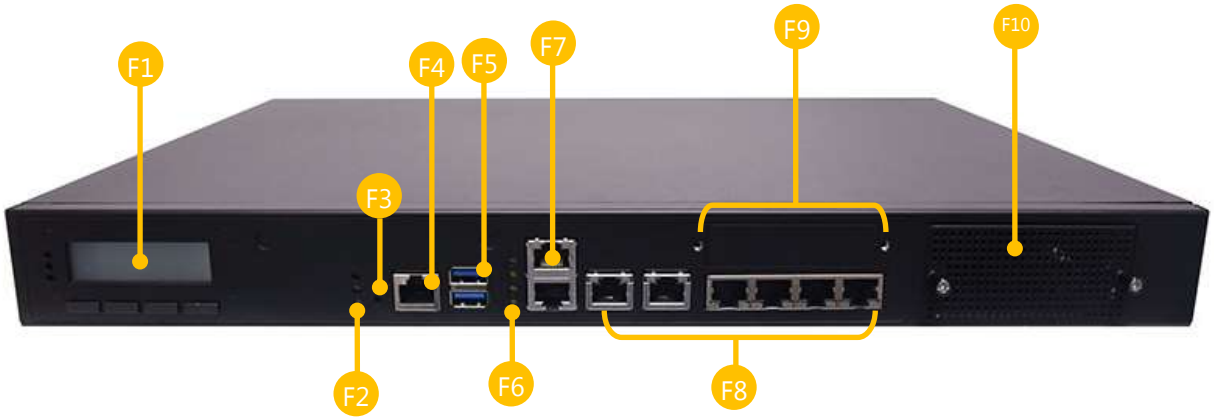
System Specifications

Form Factor		1U 19" Rackmount
Platform	Processor Options	Intel® Atom™ C3000 2 to 8 Cores (Denverton)
	CPU Socket	Onboard
	Chipset	SoC
	Security Acceleration	Intel® QuickAssist Technology
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR4 2400MHz, ECC or non-ECC UDIMM/RDIMM
	Max. Capacity	64 GB (32GBx 2 slots)
	Socket	2x 288pin DIMM
Networking	Ethernet Ports	2x GbE RJ45 Intel® i210 4x GbE RJ45 Intel® SoC Integrated MAC 2x GbE RJ45 Intel® i350-AM2 (SKU A/B)
	Bypass	2pairs Gen3 (SKU A/B)
	NIC Module Slot	1
LOM	IO Interface	N/A
	OPMA slot	N/A
I/O Interface	Reset Button	1 (Default software reset control by GPIO)
	LED	Power/Status/Storage
	Power Button	1x ATX Power switch
	Console	1x RJ45
	USB	2 x USB 3.0(SKU A,B) / 2.0 (SKU C,D)
	LCD Module	2x 20 character LCM, 4 x keypads
	Display	N/A
	Power input	AC power inlet on PSU
Storage	HDD/SSD Support	2x2.5"HDD/SSD Internal (by SKU)
	Onboard Slots	1 x M.2 (SATA) 2280 B key
Expansion	PCIe	1 x PCI-E*8 FH/HL (Optional)

		1 x Pigeon LTE module support (Optional)
	mini-PCIe / M.2	1 x mini-PCIe
Miscellaneous	Watchdog	Yes
	Internal RTC with Li-Battery	Yes
	TPM	Yes (Onboard)
Cooling	Processor	Passive CPU heatsink
	System	1x smart fans
Environmental Parameters	Temperature	0 to 40ºC Operating -20 to 70ºC Non-Operating
	Humidity (RH)	5 to 90% Operating 5 to 95% Non-Operating
System Dimensions	(WxDxH)	438 x 319 x 44 mm
	Weight	4.8 kg
Package Dimensions	(WxDxH)	540 x 500 x 230 mm
	Weight	8 kg
Power	Type/Watts	150W Single PSU
	Input	100-240V~, 5A-3A, 50-60Hz
Approvals and Compliance		RoHS, CE, FCC, UL

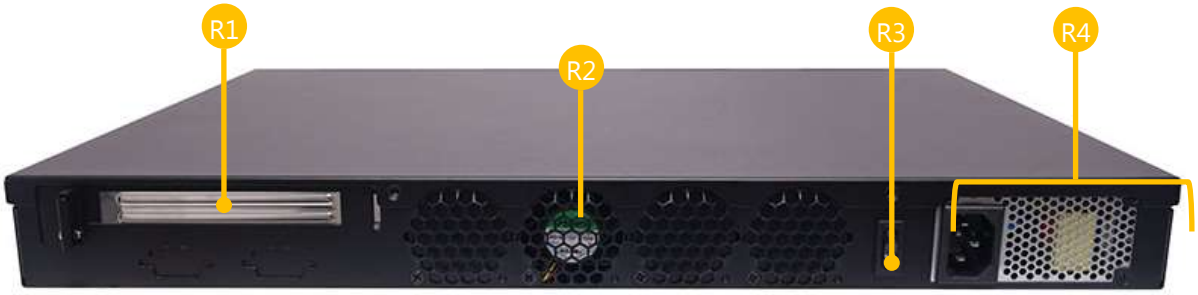
Front Panel

NCA-2513



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 3.0 port (By SKU)
F6	LAN LED Indicators	Speed Link/Active Speed Link/Active
F7	GbE Port (SKU A/B)	2x GbE RJ45 Intel® i350-AM2
F8	GbE Ports	2x GbE RJ45 Intel® i210-AT 4 x GbE RJ45 Intel® SoC Integrated MAC
F9	PGN Module Slot	Support 1x PGN LTE Module
F10	LAN Module Slot	Support 1x STD NIC module

Rear Panel

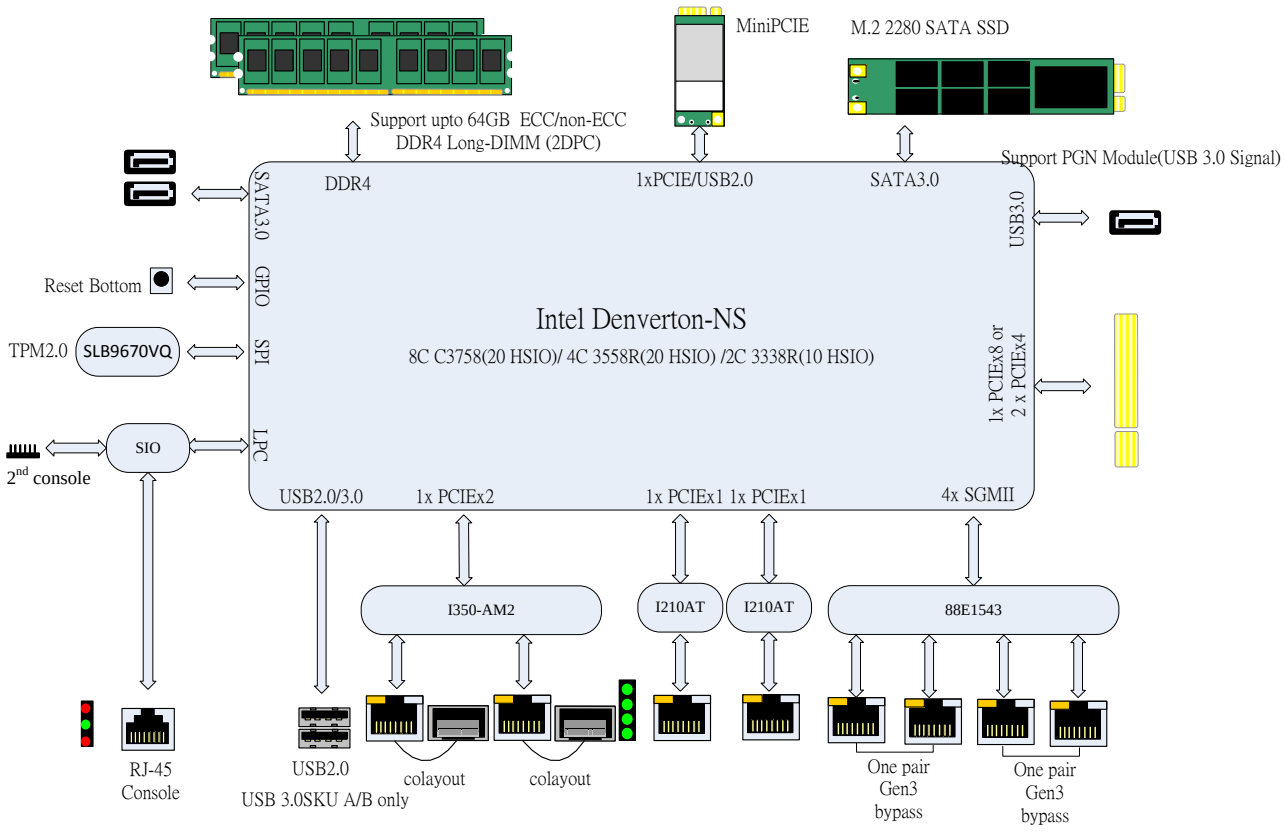


No.	Description	
R1	Rear PCIe Expansion	1x PCIex8 Expansion slot (Riser card required) (FH/HL) (By SKU)
R2	Cooling Fans	1x smart fan
R3	Power Button	1x ATX Power button
R4	Power Supply	1x 150W PSU

CHAPTER 2: MOTHERBOARD INFORMATION

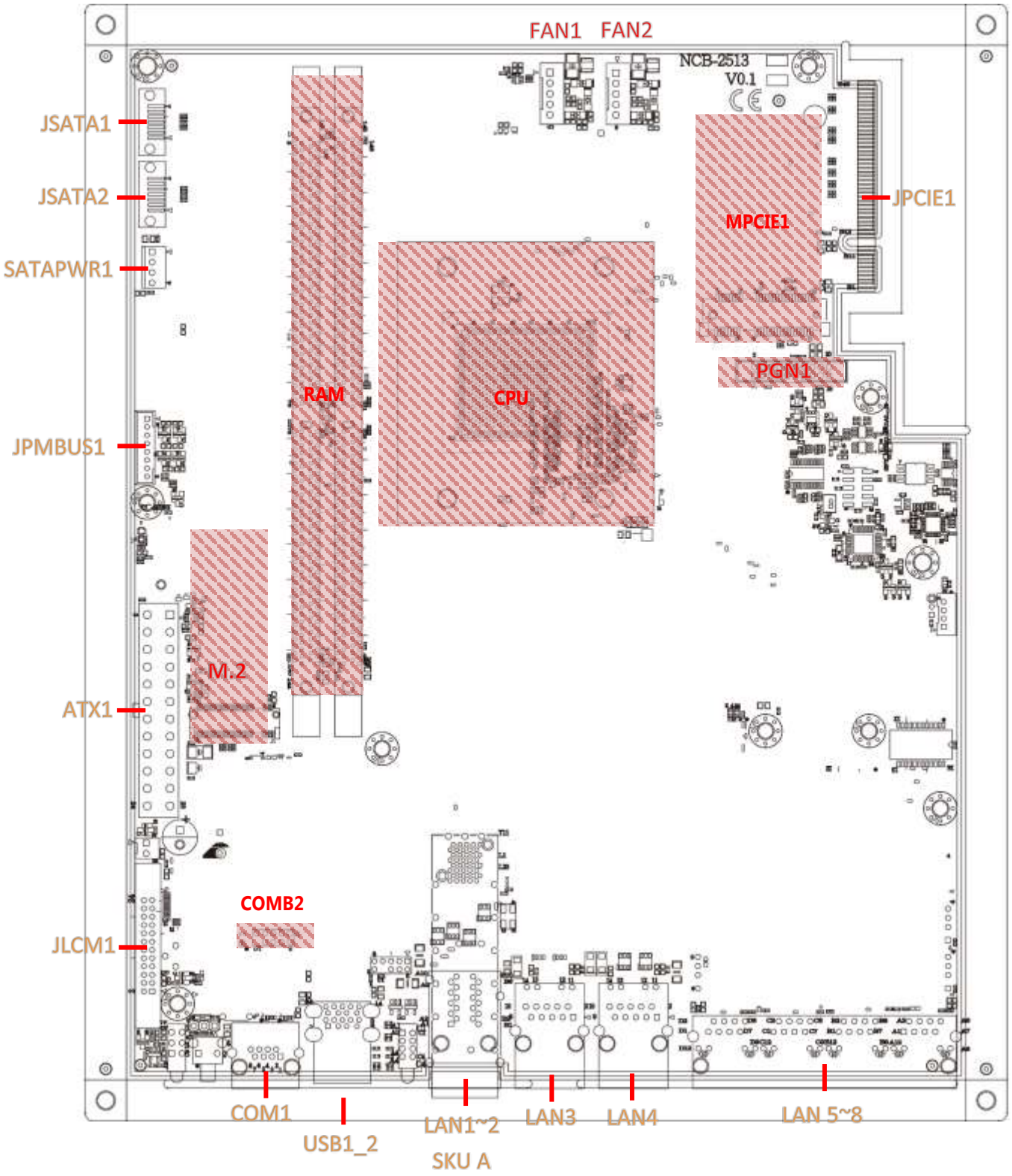
Block Diagram

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



Motherboard Layout

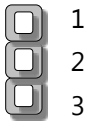
The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



Internal Jumper & Connectors

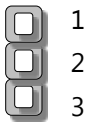
JRTC1：SRTC reset

Pin	Description
1-2 (Default)	Normal
2-3	Clear CMOS



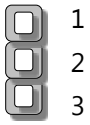
JRTC2：RTEST reset

Pin	Description
1-2 (Default)	Normal
2-3	Clear CMOS



JRESET1：RESET option

Pin	Description
1-2	Hardware Reset
2-3(Default)	Software Reset

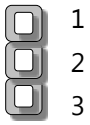


JATX1：AT/ATX Mode selection

Action	Description
w/o Jumper	ATX mode
w/ Jumper(default)	AT mode

J8：GEN3 LAY Bypass programming

Pin	Description
1-2 (Default)	Normal
2-3	Programming



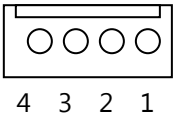
Pin Assignment of Power

ATX1: Power Supply Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	+3.3V
3	+3.3V	4	-12V
5	GND	6	GND
7	+5V	8	PSON
9	GND	10	GND
11	+5V	12	GND
13	GND	12	GND
15	ATXPWGD	16	-5V
17	5VSB	18	+5V
19	+12V	20	+5V
21	+12V	22	+5V
23	+3.3V	24	GND

SATAPWR1: SATA Power Connector 1x4 Pins 2.54mm

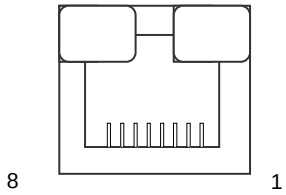
Pin number	Pin signal
1	12V
2	Ground
3	Ground
4	5V



Pin Assignment of External Port

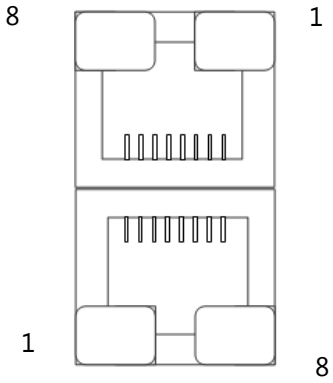
RJ3~RJ4: Single RJ45 w/ transformer

Pin number	Pin signal	In/Out
1	MD0+	
2	MD0-	
3	MD1+	
4	MD2+	
5	MD2-	
6	MD1-	
7	MD3+	
8	MD3-	



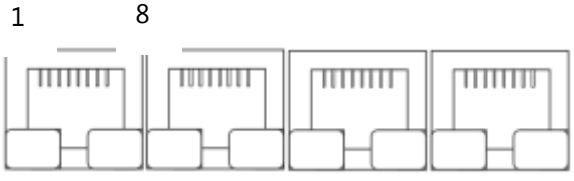
RJ1_2: Stack 1x2 RJ45 w/ transformer

Pin number	Pin signal	In/Out
1	MD0+	
2	MD0-	
3	MD1+	
4	MD2+	
5	MD2-	
6	MD1-	
7	MD3+	
8	MD3-	



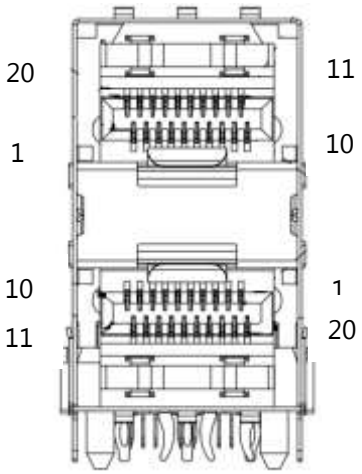
LAN5_8: 1x4 RJ45 w/o transformer

Pin number	Pin signal	In/Out
1	MD0+	
2	MD0-	
3	MD1+	
4	MD2+	
5	MD2-	
6	MD1-	
7	MD3+	
8	MD3-	



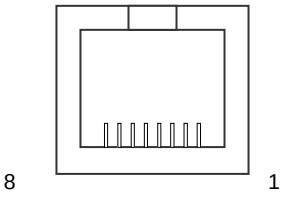
SFP1_2: Stack Fiber CONN

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	11	GND
2	TX Fault	12	RD-
3	TX Disable	13	RD+
4	MOD_DEF2/SDA (DATA)	14	GND
5	MOD_DEF1/SCL (CLK)	15	VCC_R (PWR2)
6	ABS_N	16	VCC_T (PWR1)
7	RS0	17	GND
8	RX_LOS	18	TD+
9	RS1	19	TD-
10	GND	20	GND



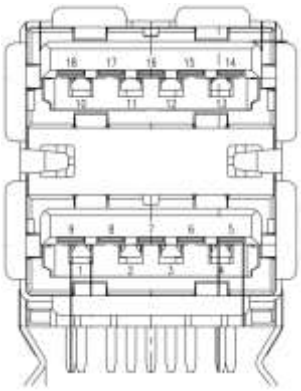
COM1 : RJ45 Console

Pin number	Pin signal	In/Out
1	Request To Send (RTS)	
2	Data Terminal Ready (DTR)	
3	Transmitted Data (TxD)	
4	Signal Ground	
5	Signal Ground	
6	Received Data (RxD)	
7	Data Set Ready (DSR)	
8	Clear To Send (CTS)	



USB1_2: USB3.0 Dual CONN

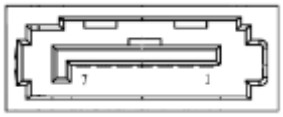
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USB5V	10	USB5V
2	D1-	11	D2-
3	D1+	12	D2+
4	GND	13	GND
5	SSRX1-	14	SSRX2-
6	SSRX1+	15	SSRX2+
7	GND	16	GND
8	SSTX1-	17	SSTX2-
9	SSTX1+	18	SSTX2+



Pin Assignment of Internal Header/Socket

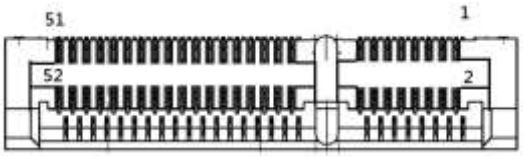
JSATA1~2:180° SATA CONNECTOR

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



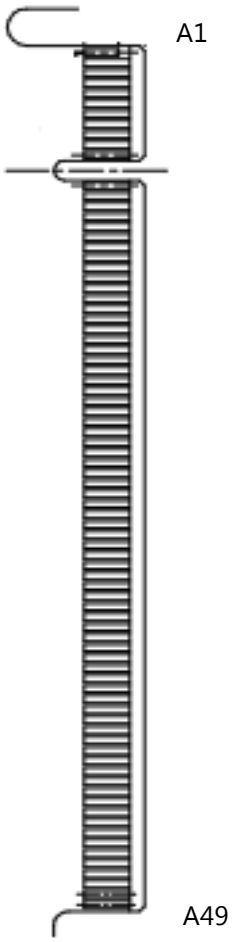
MPCIE1: MiniPCIE Socket

Pin	Description	Pin	Description
1	NC	27	GND
2	VCC3	28	VCC1P5
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	TXN
6	VCC1P5	32	SMB_DATA
7	CLKREQ	33	TXP
8	NC	34	GND
9	GND	35	GND
10	NC	36	USB_D-
11	REFCLK-	37	GND
12	NC	38	USB_D+
13	REFCLK+	39	VCC3
14	NC	40	GND
15	GND	41	VCC3
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	PH, VCC3	46	NC
21	GND	47	NC
22	RSEST	48	VCC1P5
23	RXN	49	NC
24	VCC3	50	GND
25	RXP	51	NC
26	GND	52	VCC3



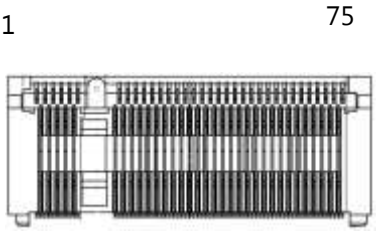
JPCIE1: PCIe x8 G/F

Pin		
	Side B	**Side A**
1	+12V	NC
2	+12V	+12V
3	+12V	+12V
4	GND	GND
5	SMB_CLK	NC
6	SMB_DAT	NC
7	GND	NC
8	P3V3	SOC_GPIO6
9	NC	P3V3
10	P3VSB	P3V3
11	WAKE#	PLTRST_PCIE_N
12	NC	GND
13	GND	CLK100_PCIE_SLOT1_1P
14	PCIE_CTX_C_SLOT1RX_N7	CLK100_PCIE_SLOT1_1N
15	PCIE_CTX_C_SLOT1RX_P7	GND
16	GND	PCIE_SLOT1TX_C_CRX_N7
17	NC	PCIE_SLOT1TX_C_CRX_P7
18	GND	GND
19	PCIE_CTX_C_SLOT1RX_N6	NC
20	PCIE_CTX_C_SLOT1RX_P6	GND
21	GND	PCIE_SLOT1TX_C_CRX_P6
22	GND	PCIE_SLOT1TX_C_CRX_N6
23	PCIE_CTX_C_SLOT1RX_N5	GND
24	PCIE_CTX_C_SLOT1RX_P5	GND
25	GND	PCIE_SLOT1TX_C_CRX_N5
26	GND	PCIE_SLOT1TX_C_CRX_P5
27	PCIE_CTX_C_SLOT1RX_N4	GND
28	PCIE_CTX_C_SLOT1RX_P4	GND
29	GND	PCIE_SLOT1TX_C_CRX_N4
30	CLK100_PCIE_SLOT1_2P	PCIE_SLOT1TX_C_CRX_P4
31	CLK100_PCIE_SLOT1_2N	GND
32	GND	NC
33	PCIE_CTX_C_SLOT1RX_N3	NC
34	PCIE_CTX_C_SLOT1RX_P3	GND
35	GND	PCIE_SLOT1TX_C_CRX_N3
36	GND	PCIE_SLOT1TX_C_CRX_P3
37	PCIE_CTX_C_SLOT1RX_N2	GND
38	PCIE_CTX_C_SLOT1RX_P2	GND
39	GND	PCIE_SLOT1TX_C_CRX_N2
40	GND	PCIE_SLOT1TX_C_CRX_P2
41	PCIE_CTX_C_SLOT1RX_N1	GND
42	PCIE_CTX_C_SLOT1RX_P1	GND
43	GND	PCIE_SLOT1TX_C_CRX_N1
44	GND	PCIE_SLOT1TX_C_CRX_P1
45	PCIE_CTX_C_SLOT1RX_N0	GND
46	PCIE_CTX_C_SLOT1RX_P0	GND
47	GND	PCIE_SLOT1TX_C_CRX_N0
48	NC	PCIE_SLOT1TX_C_CRX_P0
49	GND	GND



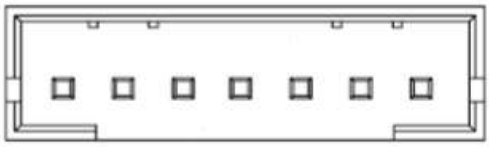
M2_STORAGE: M.2 B - key

Pin	Description	Pin	Description
1	GND	2	+P3V3
3	GND	4	+P3V3
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	GND	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	NC
39	GND	40	NC
41	mSATA_RX_DP2	42	NC
43	mSATA_RX_DN2	44	NC
45	GND	46	NC
47	mSATA_TX_DN2	48	NC
49	mSATA_TX_DP2	50	RESET#
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
67	NC	68	NC
69	GND	70	+P3V3
71	GND	72	+P3V3
73	GND	74	+P3V3
75	GND		



JPMBUS1 : PMBUS 1x8 2.0mm w/ wafer

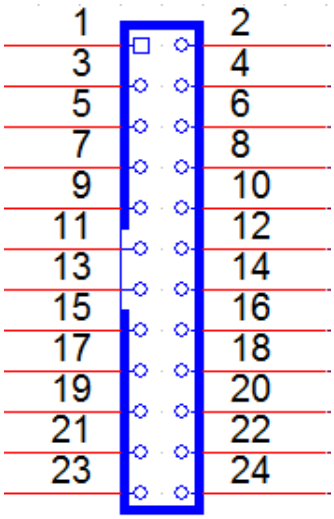
Pin number	Pin signal	In/Out
1	TTL1	
2	TTL2	
3	NC	
4	GND	
5	NC	
6	PMBUS_CLK	
7	PMBUS_DATA	
8	SMB_LEG_ALRT_N	



8 1

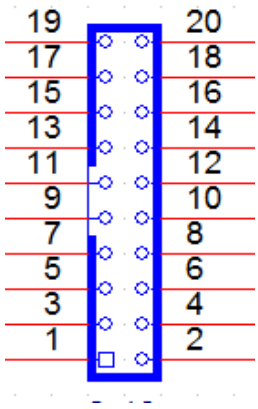
JLCM1: LCM module 2x12 2.0mm

Pin	Description	Pin	Description
1	5V	2	GND
3	SLIN	4	VEE
5	AFD	6	INIT
7	PD1	8	PD0
9	PD3	10	PD2
11	PD5	12	PD4
13	PD7	14	PD6
15	LCD_N	16	5V
17	KPA1	18	KPA2
19	KPA3	20	KPA4
21	RST	22	CRT_GRN
23	CTR_YLW	24	HD_LED



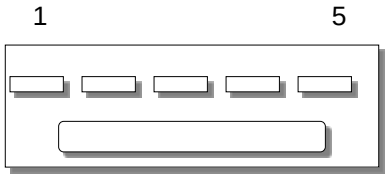
PGN1: 2x10 box header 2.0mm

Pin	Description	Pin	Description
1	V5USB	2	NC
3	USB3_RX1_N	4	P3V3
5	USB3_RX1_P	6	P3V3
7	GND	8	P3V3
9	USB3_TX1_N	10	GND
11	USB3_TX1_P	12	P3V3
13	GND	14	VSIM2_SEL
15	D1-	16	GND
17	D1+	18	RST#
119	NC	20	NC



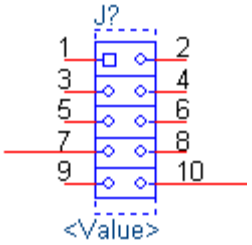
FAN1~2: 5Pin FAN connector

Pin No.	Description
1	GND
2	12V
3	FANIN1
4	FANIN2
5	FANOUT



COMB2:COM Port 2.0 mm Pin Header SMD 2x5, KEY10

PIN NO.	DESCRIPTION
1	Data Carrier Detect (DCDA #)
2	Data Set Ready (DSRA #)
3	Receive Data (RXDA)
4	Request To Send (RTSA #)
5	Transmit Data (TXDA)
6	Clear To Send (CTSA #)
7	Data Terminal Ready (DTRA #)
8	Ring Indicator (RIA #)
9	Ground (GND)
10	Key pin



CONN2：Power button cable

Pin	Description
1	GND
2	PWRON#

JOPEN1：Case open detect cable

Pin	Description
1	GND
2	CASEOPEN0_N

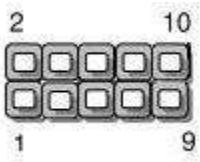
CONN3：Reset button cable

Pin	Description
1	GND
2	RESET_N

Pin Assignment of Debug/Sample development

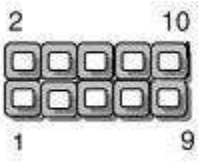
JSPIROM1: 2.0mm SMD Pin header SMD 2X5

Pin	Description	Pin	Description
1	SPI_HD1#	2	NC
3	SOC_SPI_CS0#_ROM	4	V_3P3_SPI
5	SOC_SPI_MISO_ROM	6	SOC_SPI_IO3_ROM
7	NC	8	SOC_SPI_CLK_ROM
9	GND	10	SOC_SPI_MOSI_ROM



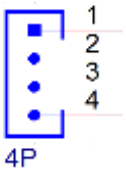
J80PORT1: 2.0mm Pin header 2x5

PIN	DESCRIPTION	PIN	DESCRIPTION
1	CLK	2	LAD1
3	RST-	4	LAD0
5	LRAME-	6	P3V3
7	LAD3	8	KEY
9	LAD2	10	GND



CON2: GEN3 Bypass programming pin header

Pin	Description
1	P3VSB
2	RXD
3	GND
4	TXD



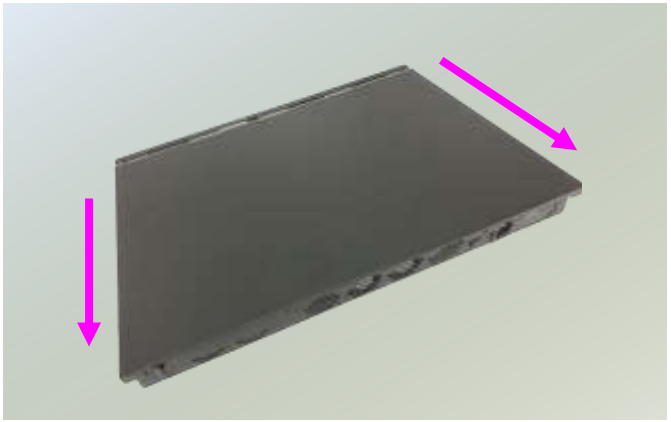
CHAPTER 3: HARDWARE SETUP

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.

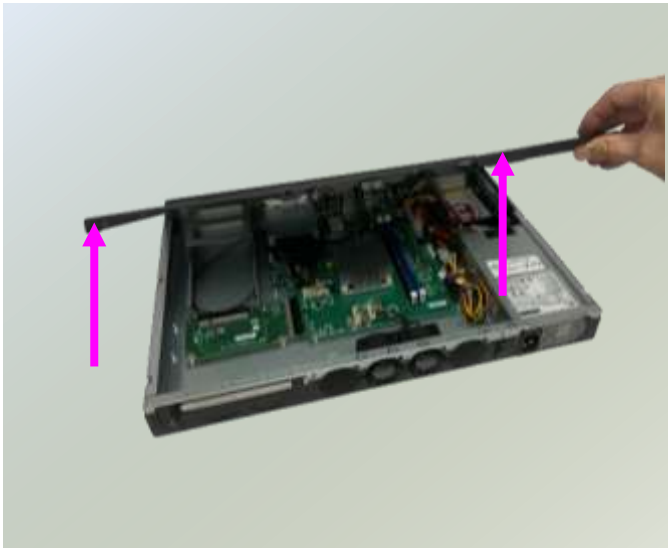
Opening the Chassis

1. Power off NCA-2513 completely.
2. Remove the two screws at the rear, as circled in the figures below.

3. Slide and pull the top compartment as the arrow of direction below.



4. Lift the top compartment.



Installing the System Memory

The motherboard supports 2 memory slots for DDR4 UDIMM with speeds up to 2666MHz. The CPU requires at least 2 memory modules to boot and run from.

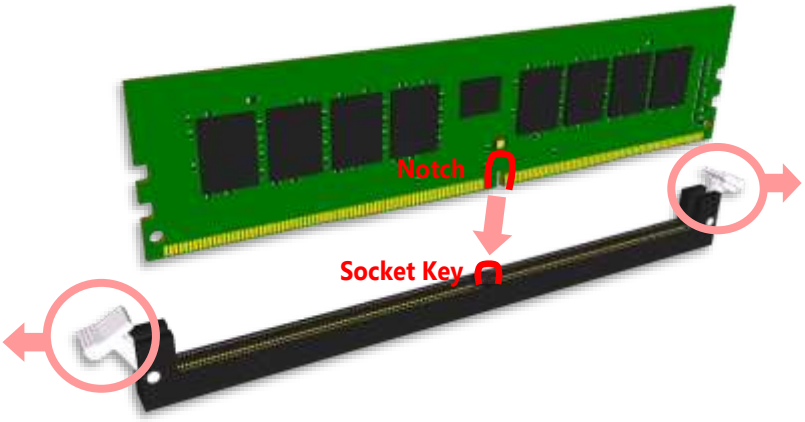
Supported System Memory Summary

Total Slots	2
Number of Channels	2 (2 DIMMs per channel)
Supported DIMM Capacity	4GB, 8GB, 16GB, 32GB
Memory Size	Maximum 64 GB (32GB*2)
Memory Type	DDR4 2400/2133 MHz REG, ECC or Non-ECC UDIMM/RDIMM
Minimum DIMM Installed	At least 1 memory modules to boot and run from

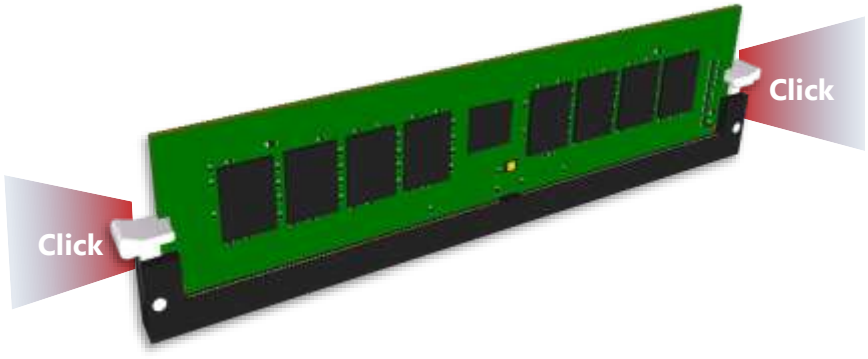
Memory Module Installation Instructions

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.



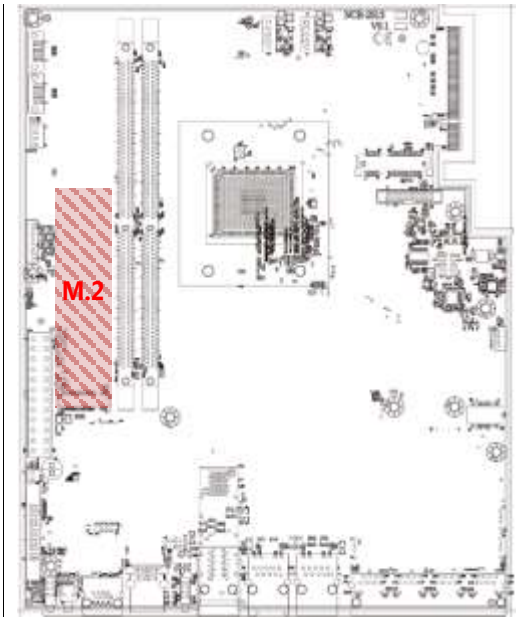
4. Push the module down into the slot until it is firmly seated. Press vertically on both corners of the card until it clicks into place.



Installing the M.2 Storage Card

This system supports the M.2 storage module (2242 B Key) through the **M2_1** slot.

1. Locate the **M2_1** slot.



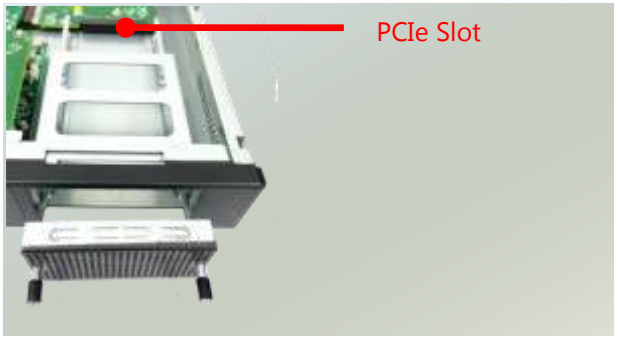
2. Insert the M.2 module into the slot at 15° angle, align the notch on the module with the corresponding socket key in the slot, and then secure it with a screw.

Installing the NIC Modules

This system can accommodate one **NIC** slim type modules at the front and another one at rear **FH/HL** PCIe expansion slot. Based on your application requirements, employ a combination of Riser Cards to fulfill your needs:

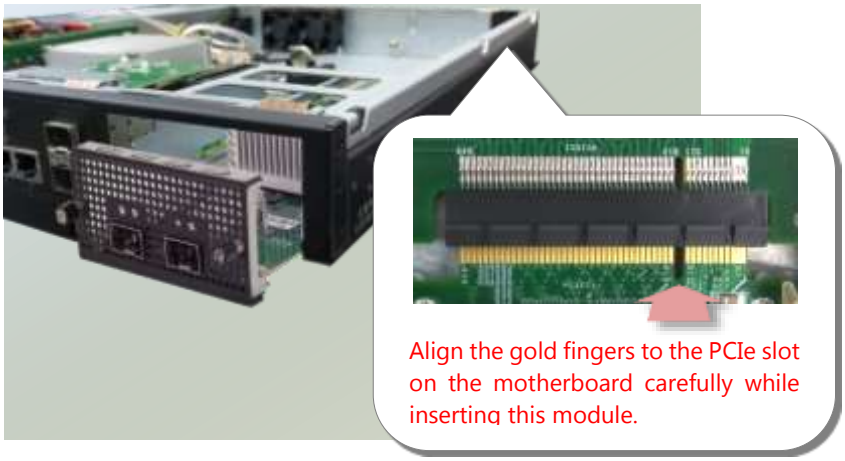
1. Rotate the two lock-screws counterclockwise and loosen them.

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



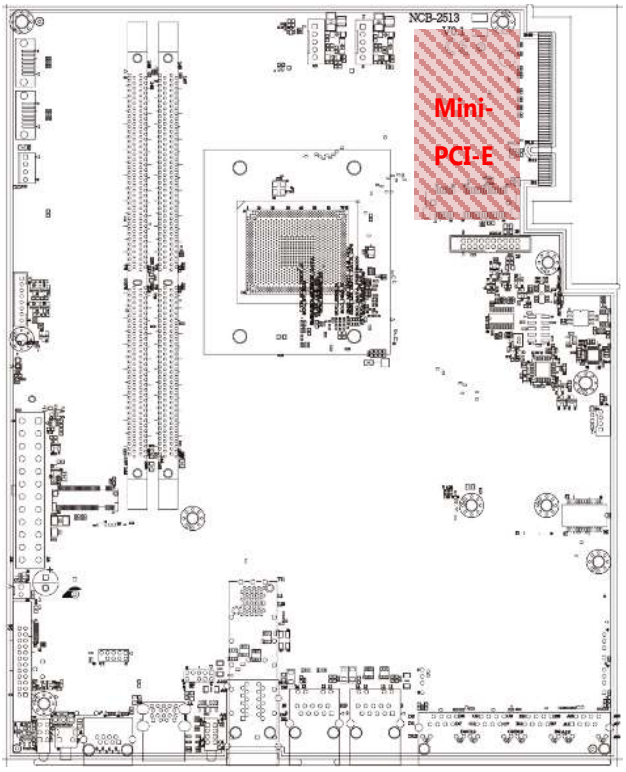
3. Insert your NIC Ethernet module. (The module shown in the image below is for reference only).

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



Installing Mini PCI-E Module

1. Locate the Mini PCI-E module slot on the motherboard.



2. Align the notch of the module with the socket key in the slot. Tilt the end of the golden fingers down while carefully inserting the card into the slot. Press vertically on the other end of the card until it clicks into place. Lock the module to the motherboard in the circle area.

Installing the Hard Disks

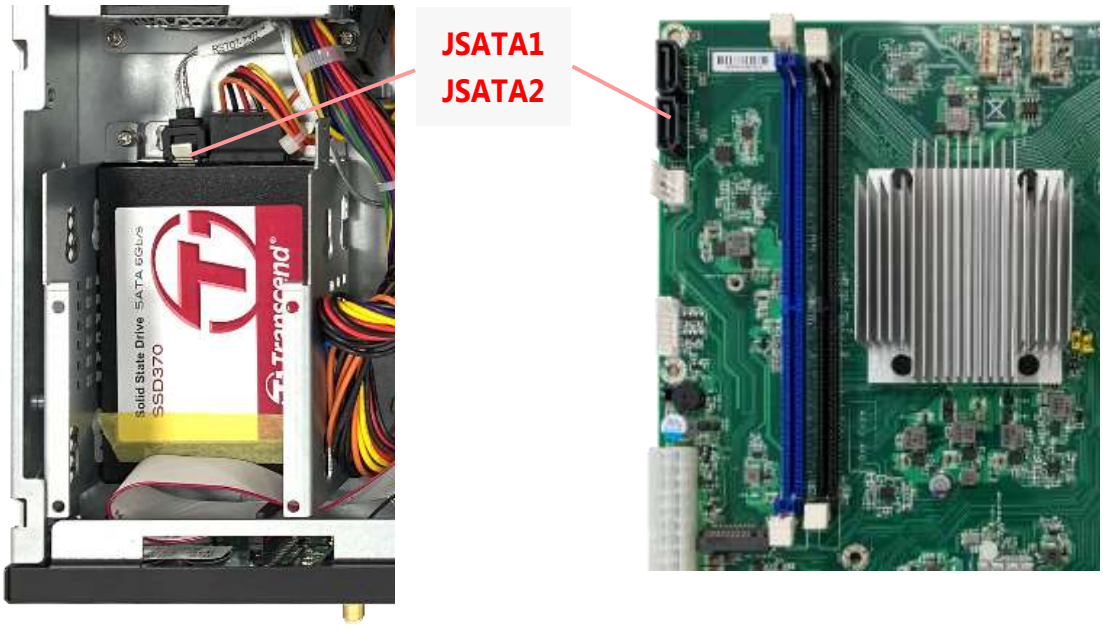
The system can accommodate two 2.5" SSD/HDD at its front disk bay. With the optional SSD swappable cage, you can add another two SSD disks for system storage. After you install the hard drives, make sure the SATA data cables and SATA power cables are connected to the designated connectors on the motherboard, as indicated in the picture below.

1. Locate the disk drive tray at the corner of the system. Loosen the screw indicated in the picture and slide the tray downwards to have it loosened from the four latching spots. Take the tray out and prepare to install SATA 2.5" disk drives.

2. Place the disk drive in the tray, as shown in the image below. Apply two disk screws with two rubber washers for each side of the disk drive. If you are going to install two disks, always start by installing the disk in the lower slot.

3. Place the tray with HDD/SSD installed back to its original spot inside the system. Remember to aim at the four latching holes. Then slide the tray upwards to get it locked and secure it with the original screw.

4. Attach the SATA cables to the disks, and insert the cable ends into the corresponding connectors on Motherboard.

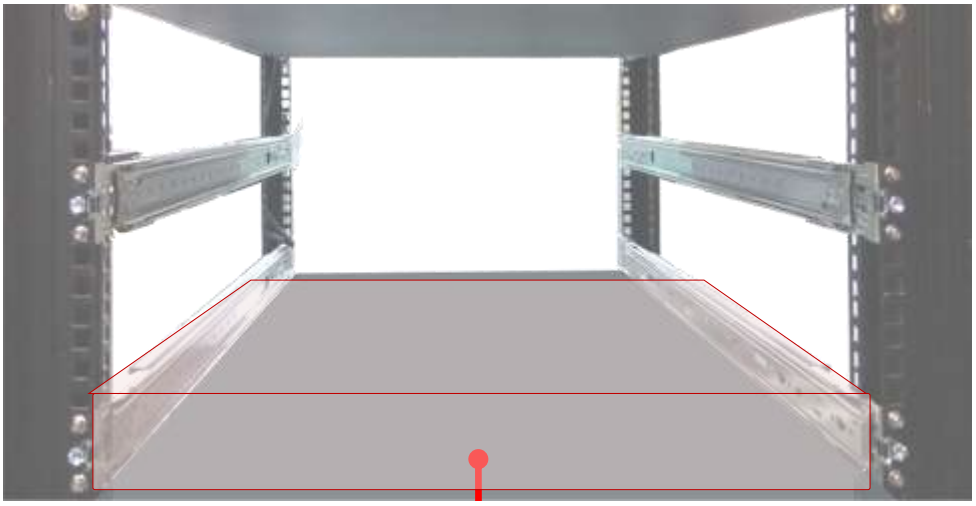


Mounting the System

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

- With **Mounting Ear Brackets** only

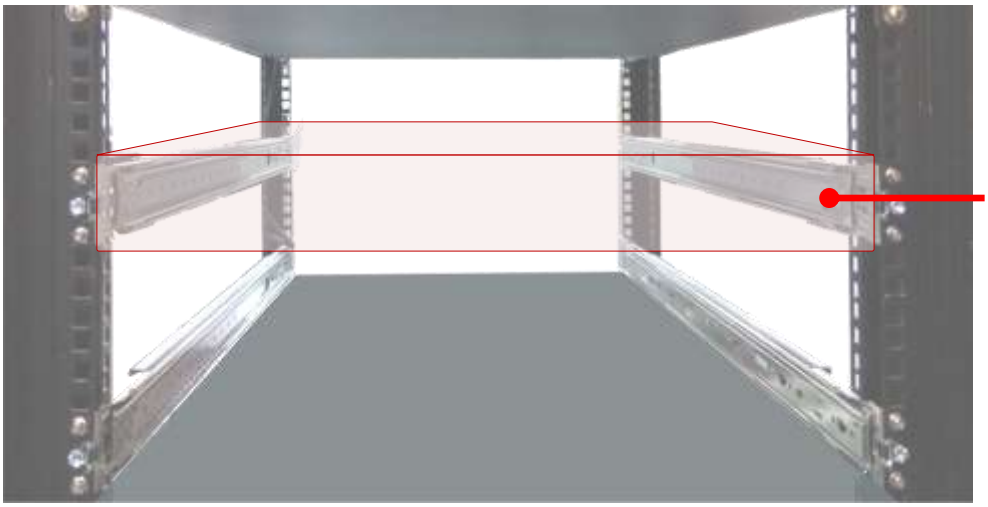
This method is quick and easy by fixing this system to the front posts of the rack, but it also makes servicing the system more difficult. Please note that the use of these brackets must go with a rack shelf or slide rails to prevent the chassis from falling over, for the bracket assembly alone cannot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

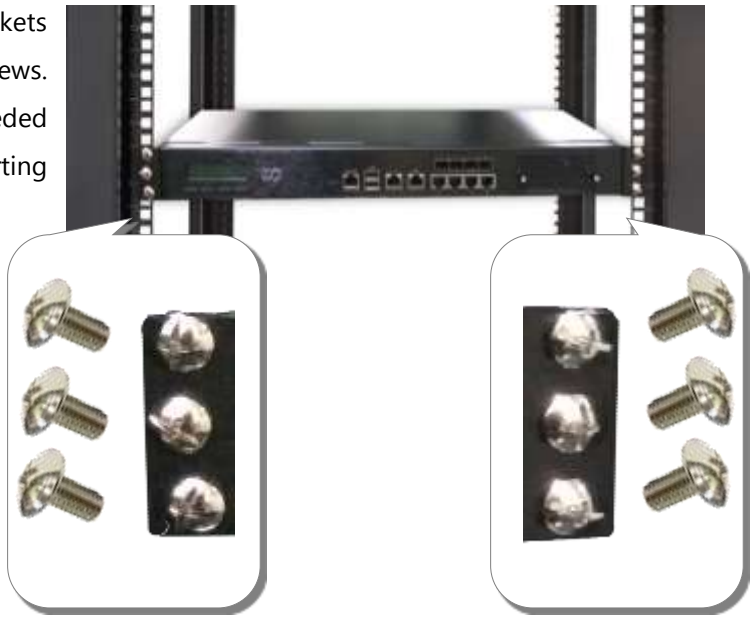
- 1x Screw Pack

- 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.



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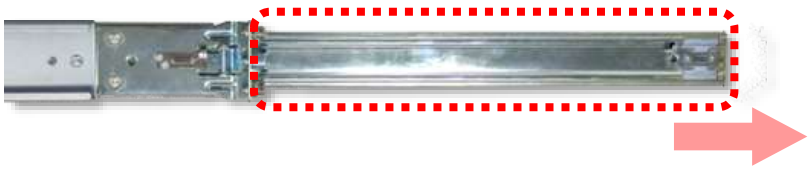
Installing the System Using the Slide Rail Kit (with Mounting Ear Brackets)

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.

5. 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.

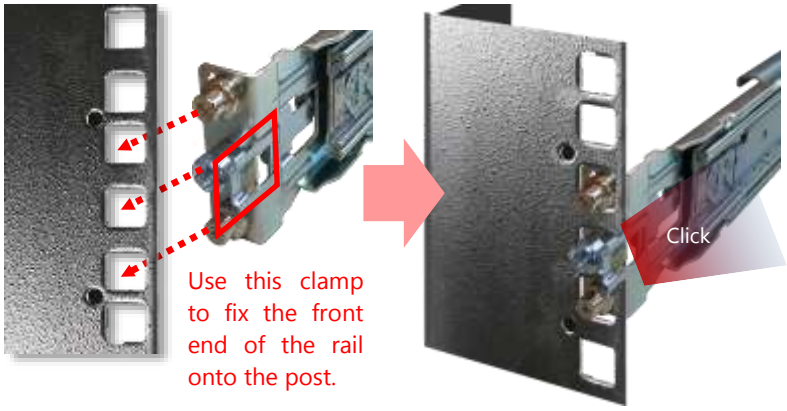
Align the screws with the holes indicated on the brackets and the screw holes on the side of the chassis.

6. Repeat Steps 2~5 to attach the bracket to the other side of the chassis.

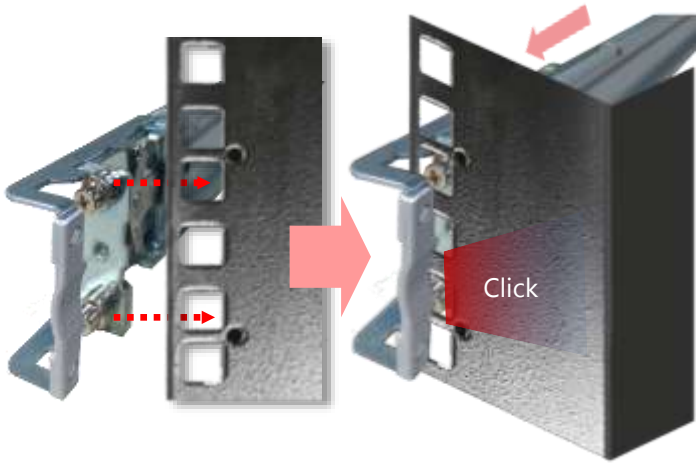
7. Follow the instructions in Installing the System Using Mounting Ear Brackets Only to attach the Mounting Ear Brackets.

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

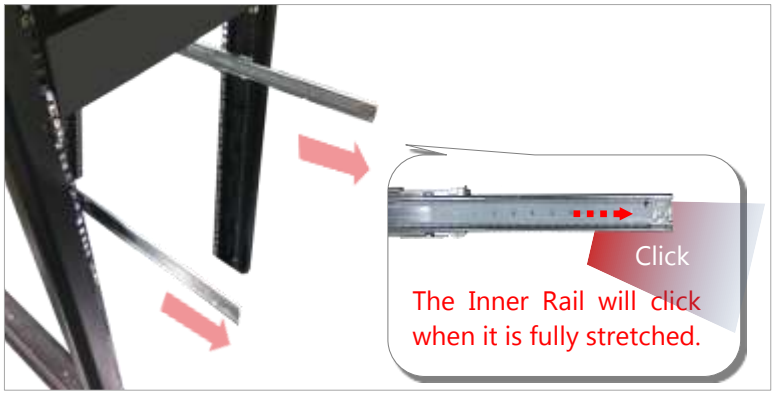
8. This slide-rail kit does NOT require screw-fixing. Simply aim at three available screw holes on the rack front and snap the rail front into the rack post as shown in the image. You should hear a "click" sound once it is firmly attached.



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.

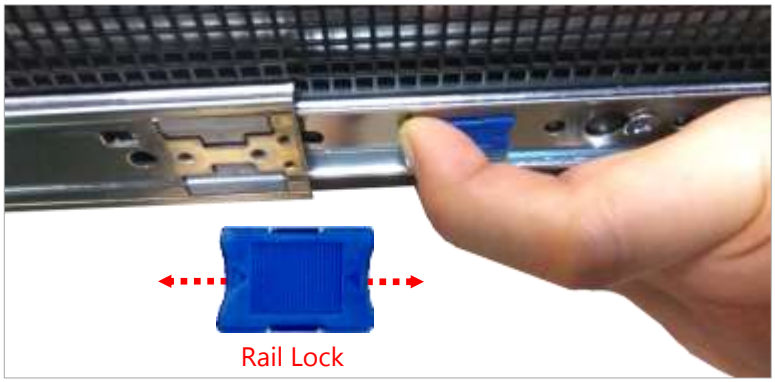


10. Stretch both of the Inner Rails out to their fullest extent. You will hear a click sound when they are fully stretched and locked.



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

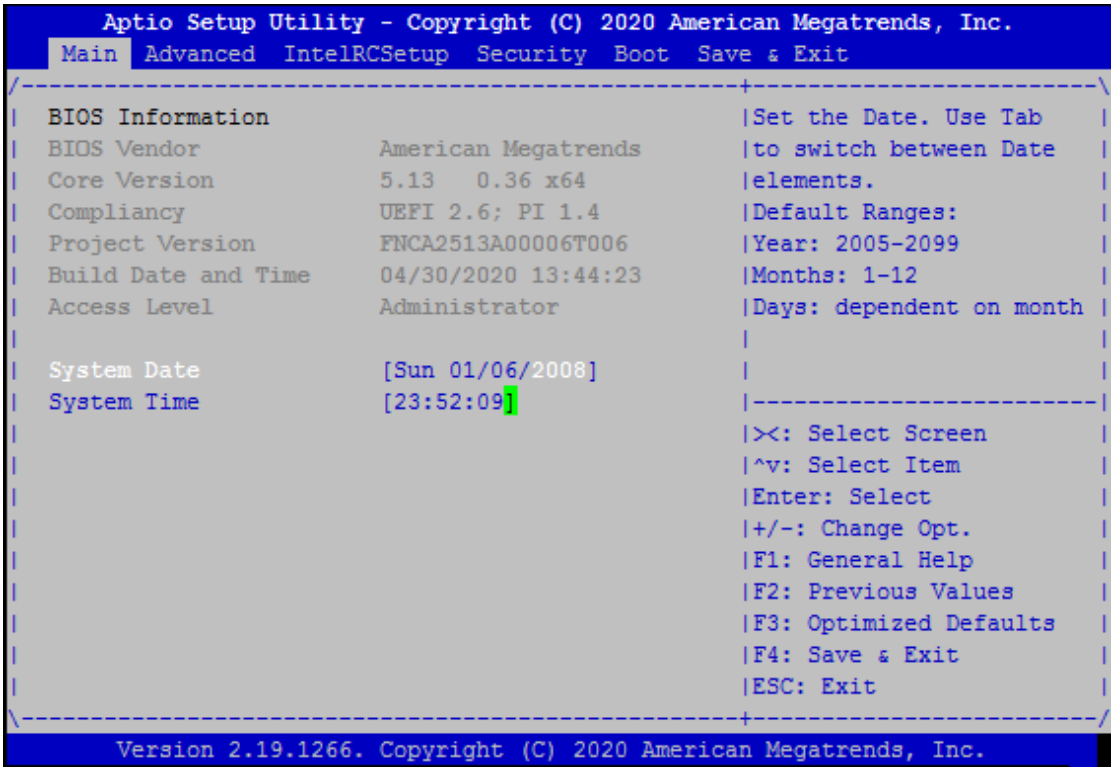
To enter the BIOS setup utility, simply follow the steps below:

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 Page

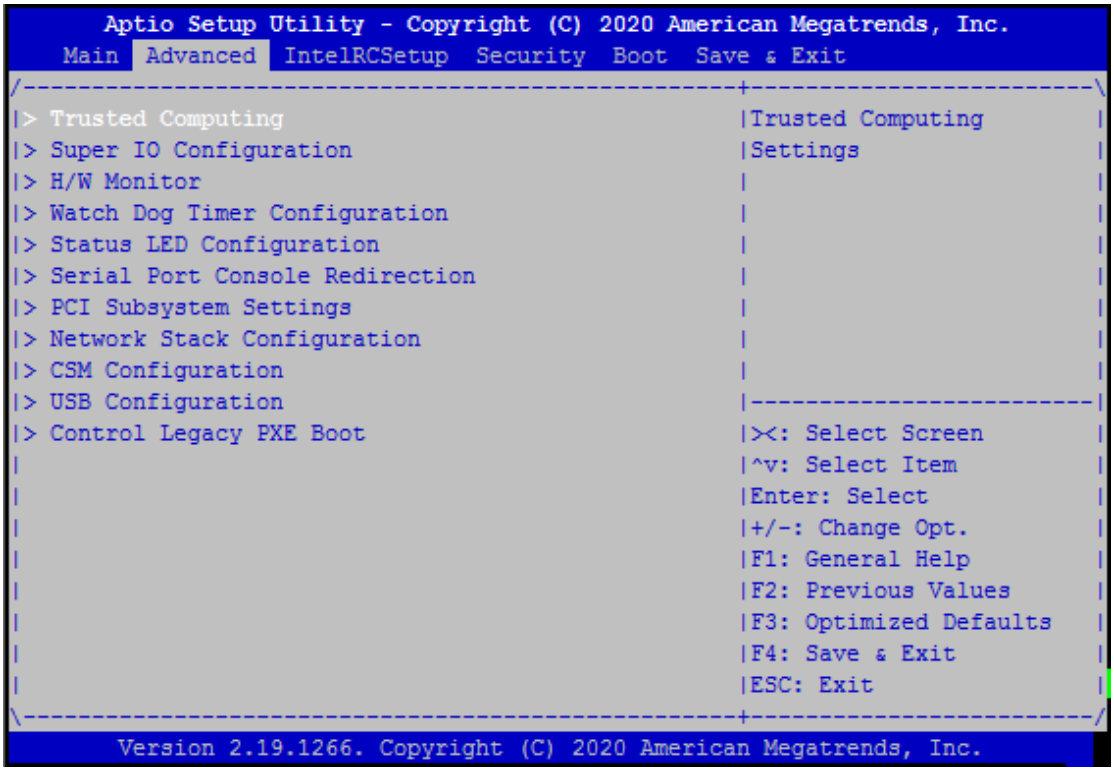
Setup main page contains BIOS information and project version information.



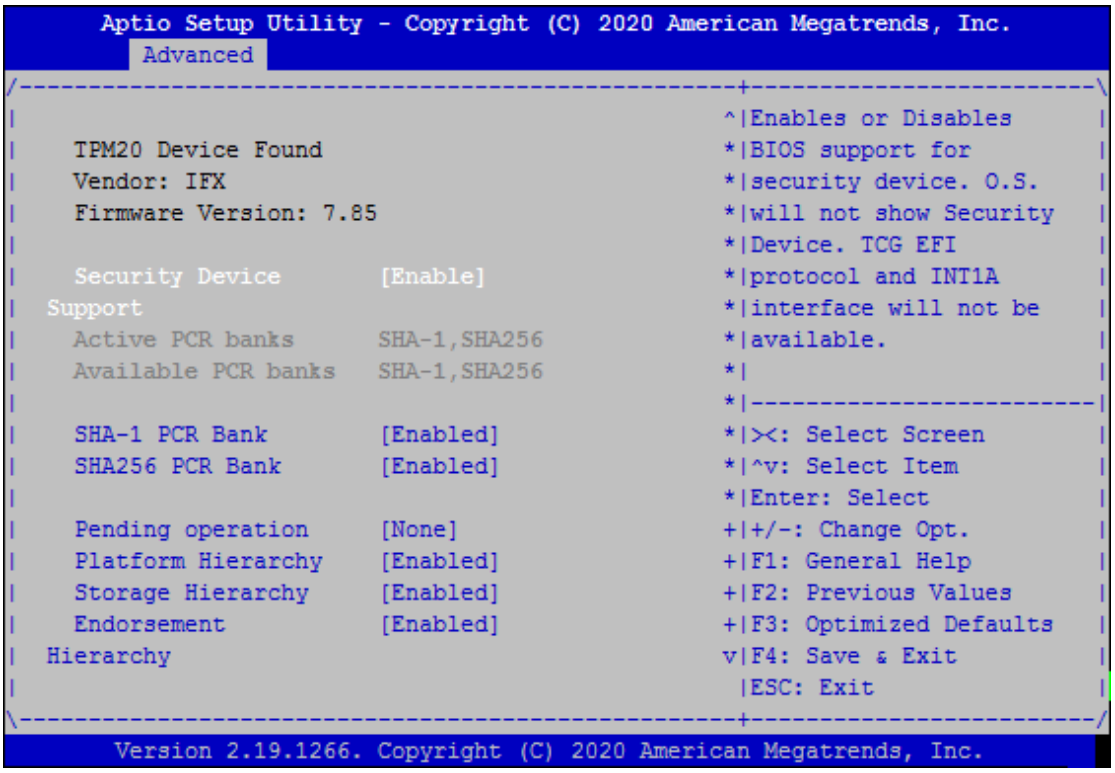
Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliancy: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use **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

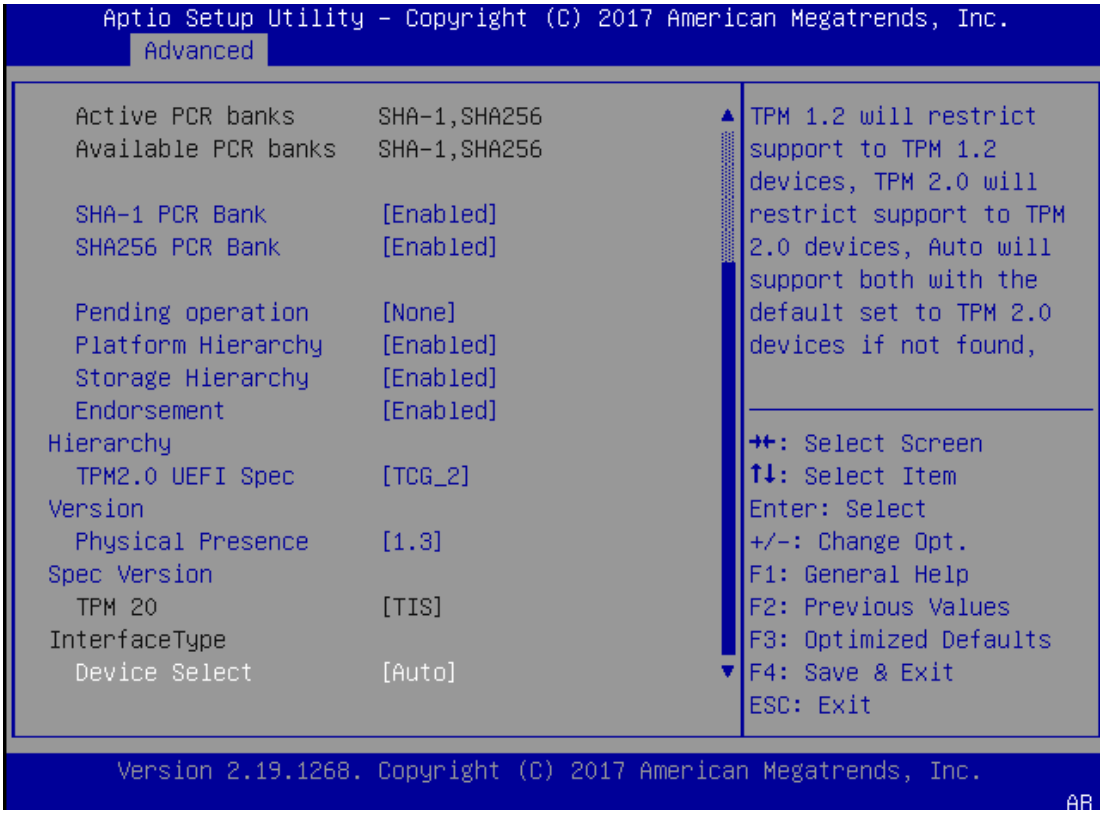
Advanced Page

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



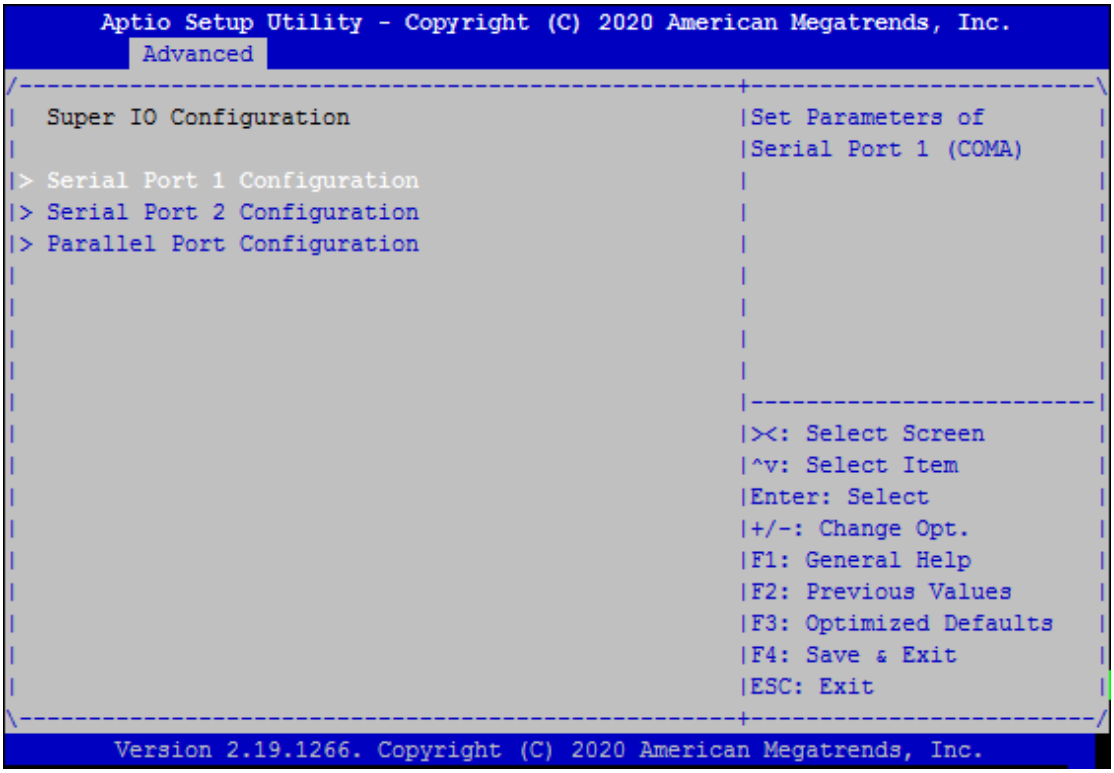
Trusted Computing



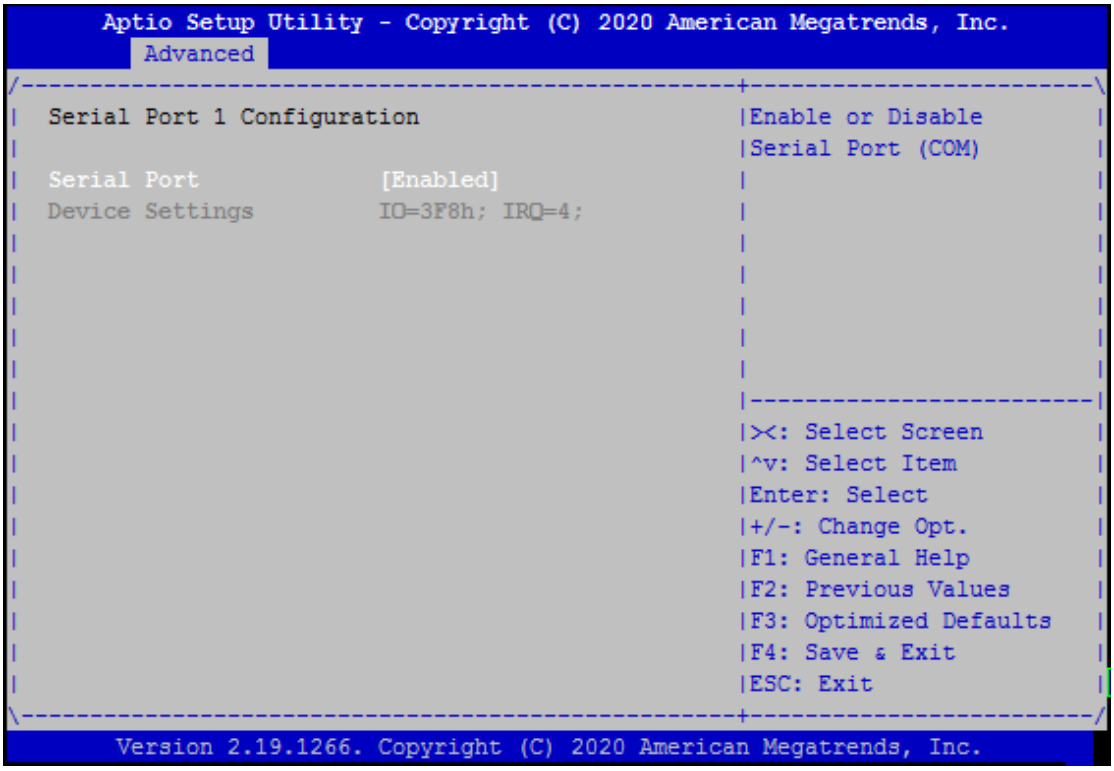


Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 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. NOTE: Your computer will reboot during restart in order to change State of Security 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, **TCG_1_2**: Supports the Compatible mode for Win8/Win10 **TCG_2**: 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. NOTE: Some HCK tests might not support 1.3.
TPM 20 InterfaceType	TIS	Select **TPM 20 Device** for the Communication Interface.
Device Select	TPM 1.2 TPM 2.0 Auto	**TPM 1.2** will restrict support to TPM 1.2 devices; while **TPM 2.0** will restrict support to TPM 2.0 devices; **Auto** will support both with the default set to TPM 2.0 devices. If not found, TPM 1.2 devices will be enumerated.

Super IO Configuration

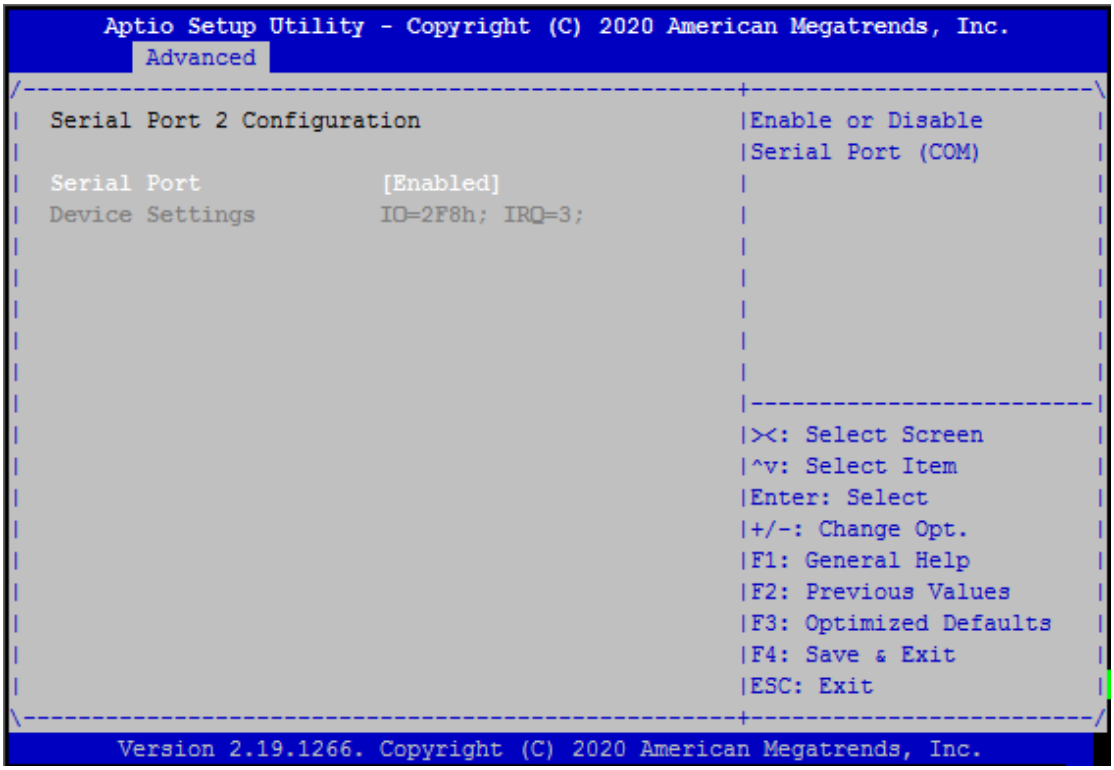


Serial port 1 Configuration



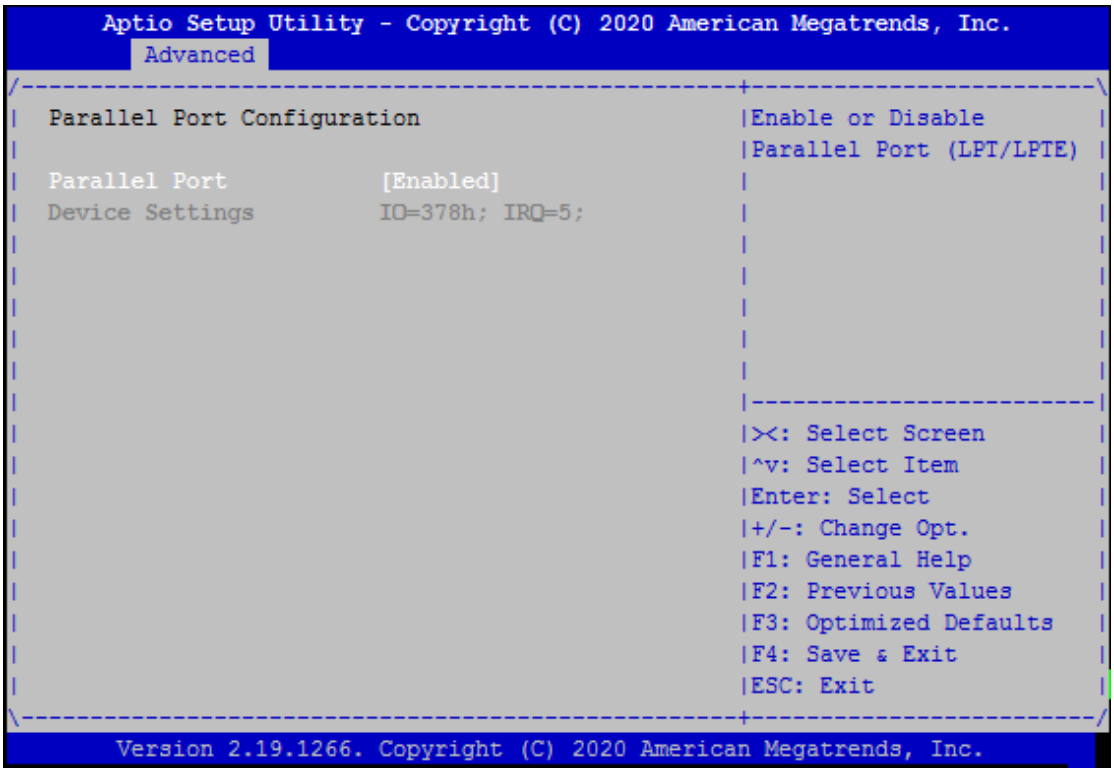
Feature	Options	Description
Serial Port	Enabled Disabled	Enables or disables Serial Port 1.
Device Settings	NA	IO=3F8h; IRQ = 4

Serial port 2 Configuration



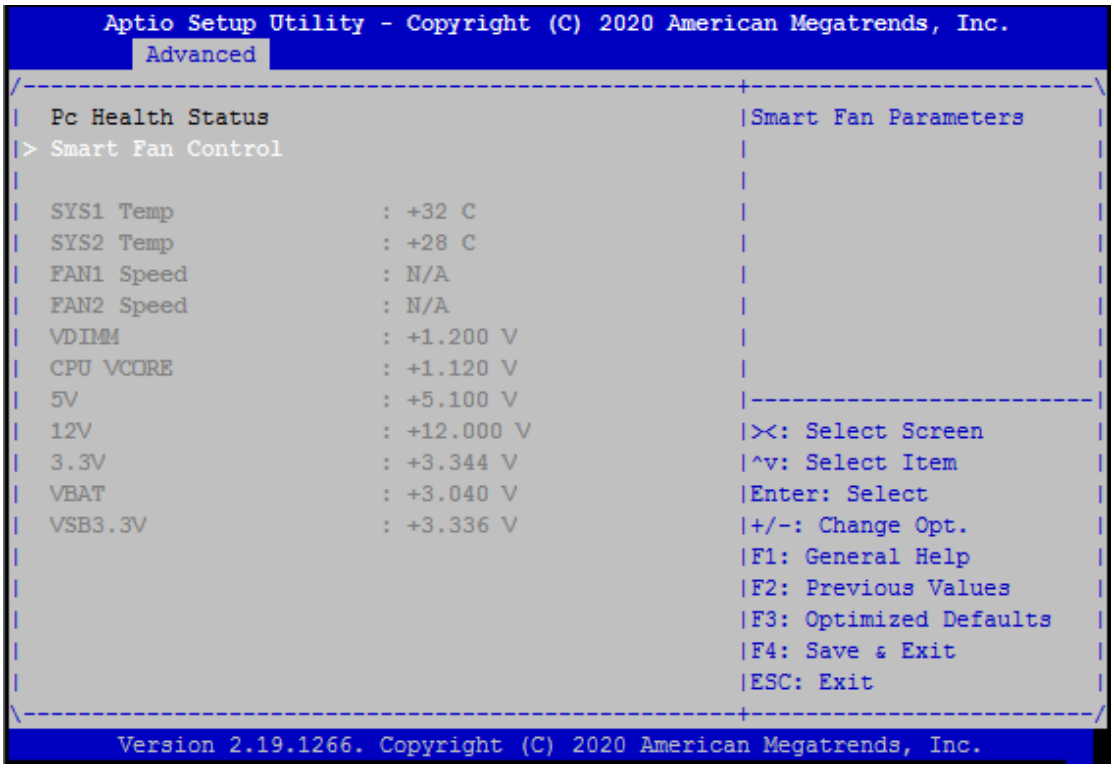
Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 2.
Device Settings	NA	IO=2F8h; IRQ = 3

Parallel Port Configuration

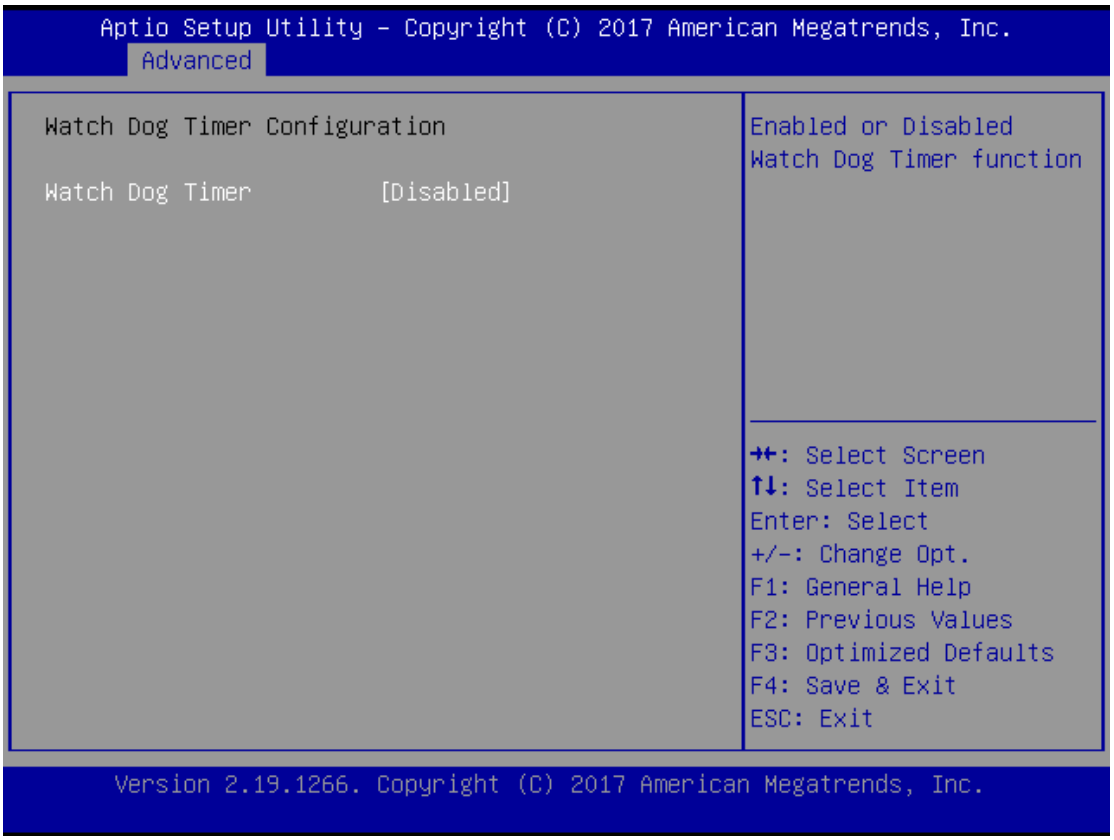


Feature	Options	Description
Parallel Port	Enabled Disabled	Enable or Disable Parallel Port.
Device Settings	NA	IO=378h; IRQ = 5

H/W Monitor

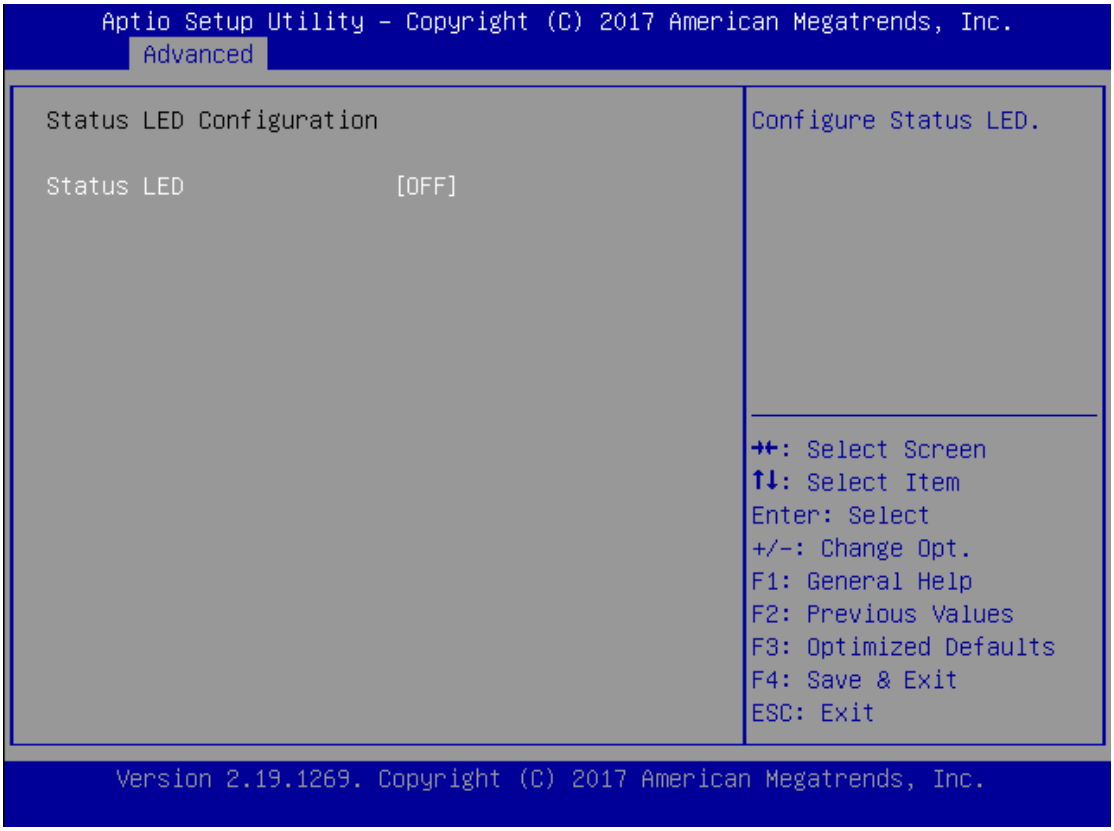

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
Advanced
Pc Health Status
> Smart Fan Control
SYS1 Temp : +32 C
SYS2 Temp : +28 C
FAN1 Speed : N/A
FAN2 Speed : N/A
VDIMM : +1.200 V
CPU VCORE : +1.120 V
5V : +5.100 V
12V : +12.000 V
3.3V : +3.344 V
VBAT : +3.040 V
VSB3.3V : +3.336 V
Smart Fan Parameters
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.

Watch Dog Timer Configuration



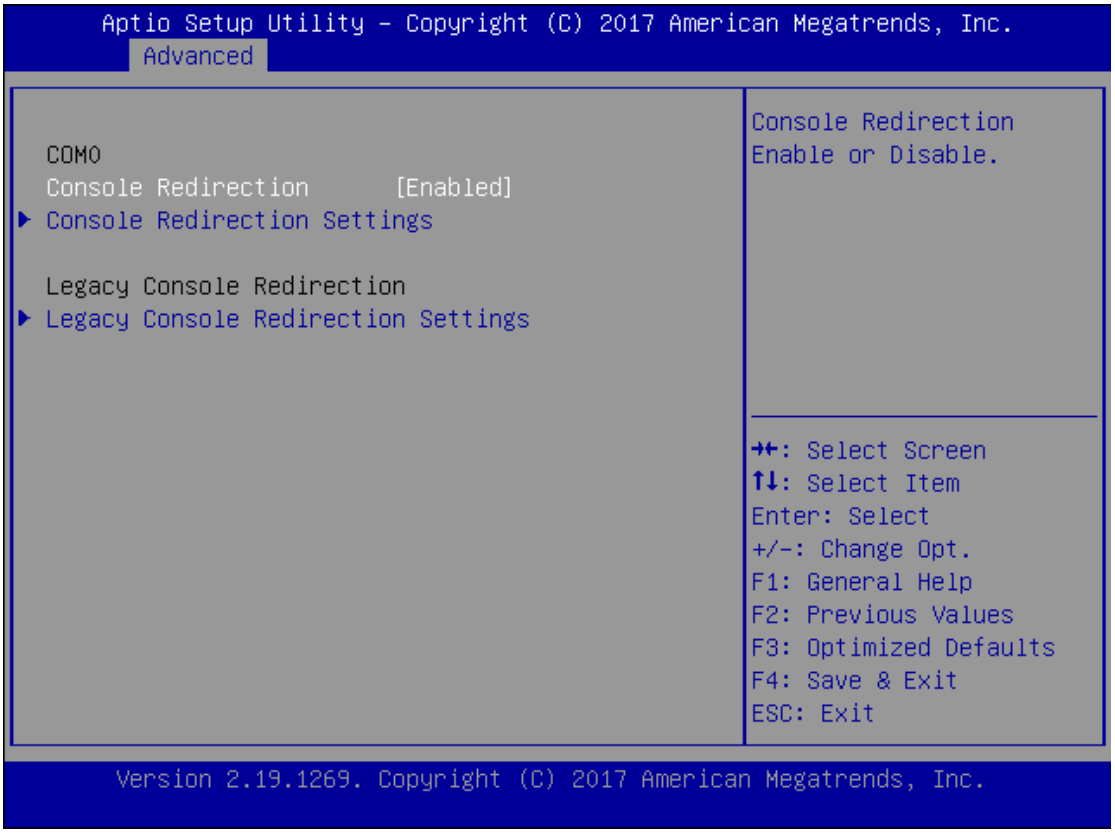
Feature	Options	Description
Watch Dog Timer	Enabled Disabled	Enables or disables Watch Dog Timer function

Status LED Configuration



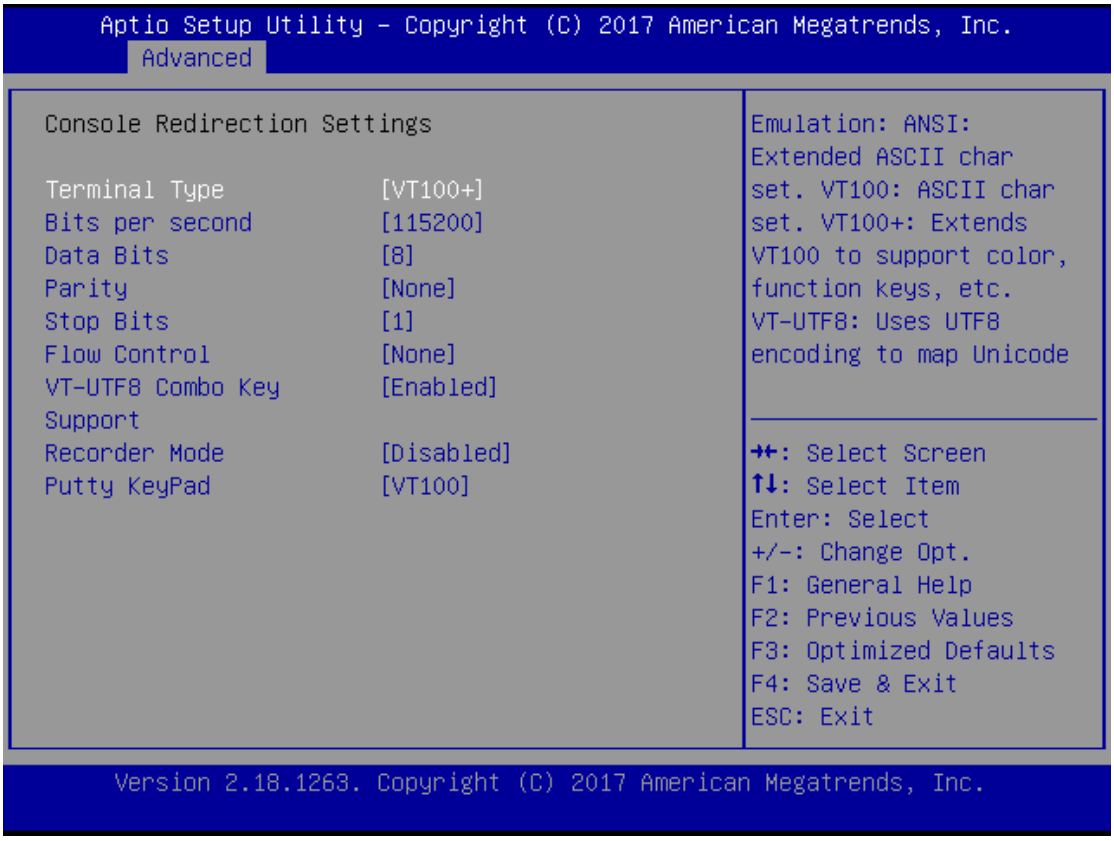
Feature	Options	Description
Status LED	OFF GREEN RED	Configures Status LED color

Serial Port Console Redirection



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

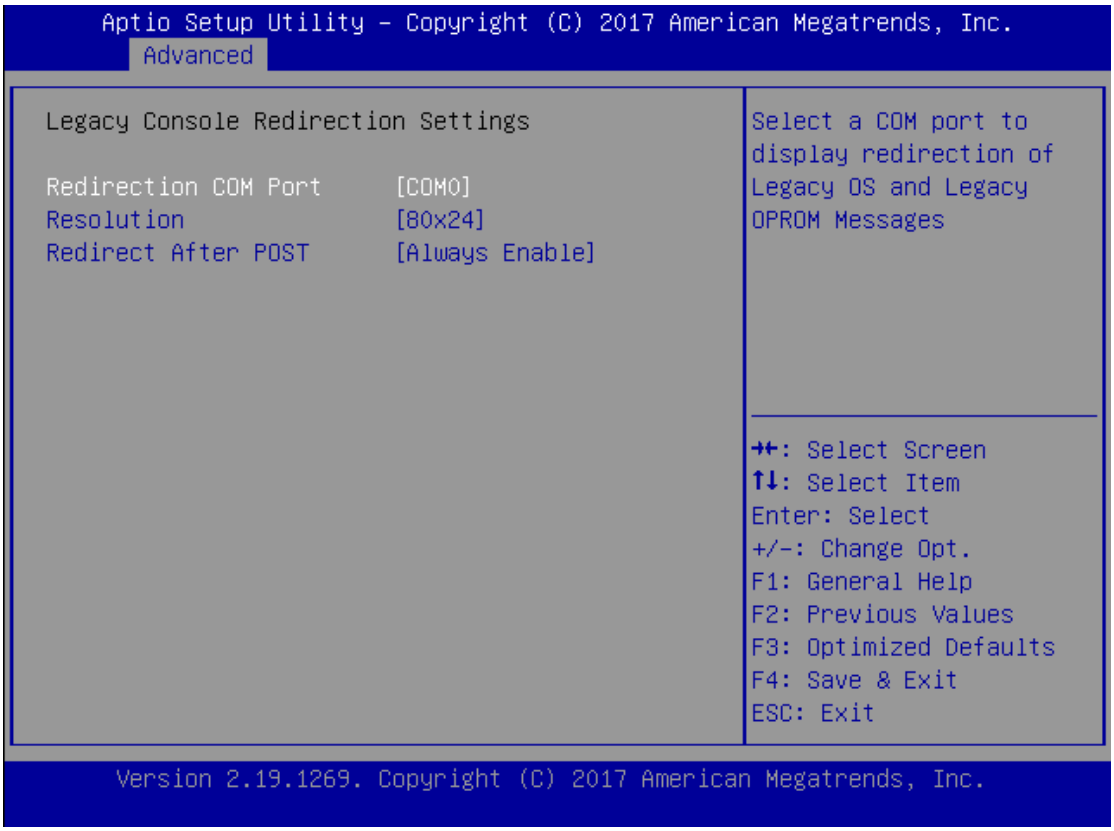
Console Redirection Settings



Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**VT100**: ASCII char set **VT100+**:Extends VT100 to support color, function keys, etc. **VT-UTF8**:Uses UTF8 encoding to map Unicode chars onto 1 or more bytes **ANSI**: 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.

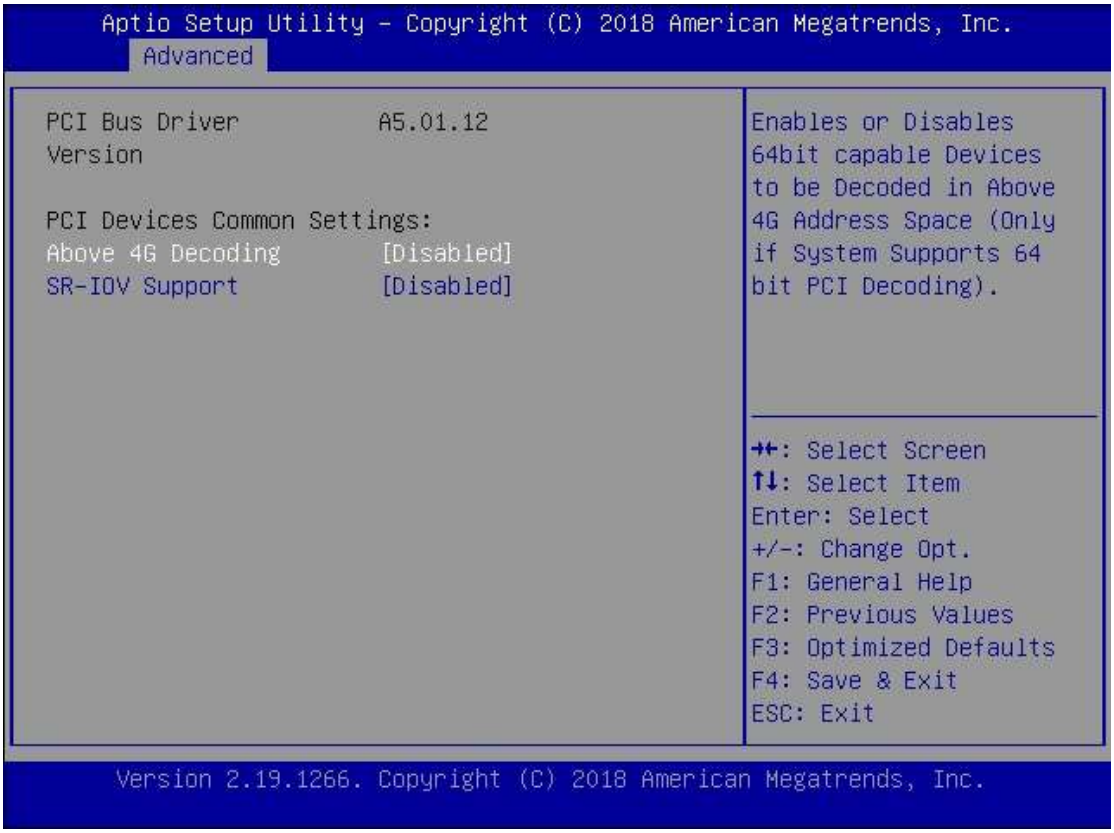
Stop Bits	1 2	Indicates the end of a serial data packet.
Flow Control	None Hardware RTS/CTS	Flow Control can prevent data loss from buffer overflow.
VT-UTF8 Combo Key Support	Disabled Enabled	Enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal data.
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects FunctionKey and KeyPad on Putty.

Console Redirection Settings



Feature	Options	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Redirection After BIOS POST	Always Enable BootLoader	When **Bootloader** is selected, Legacy Console Redirection is disabled before booting to legacy OS. When **Always Enable** is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to **Always Enable**.

PCI Subsystem Settings

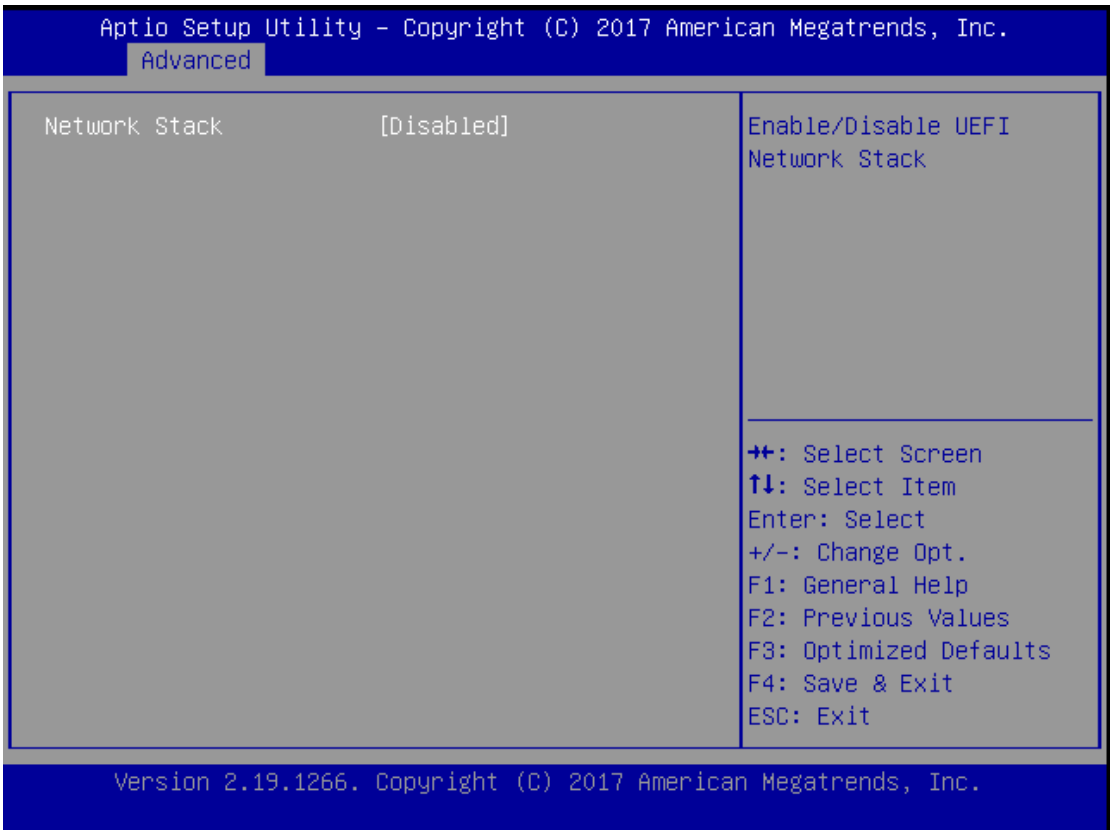


Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Enable or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

▶

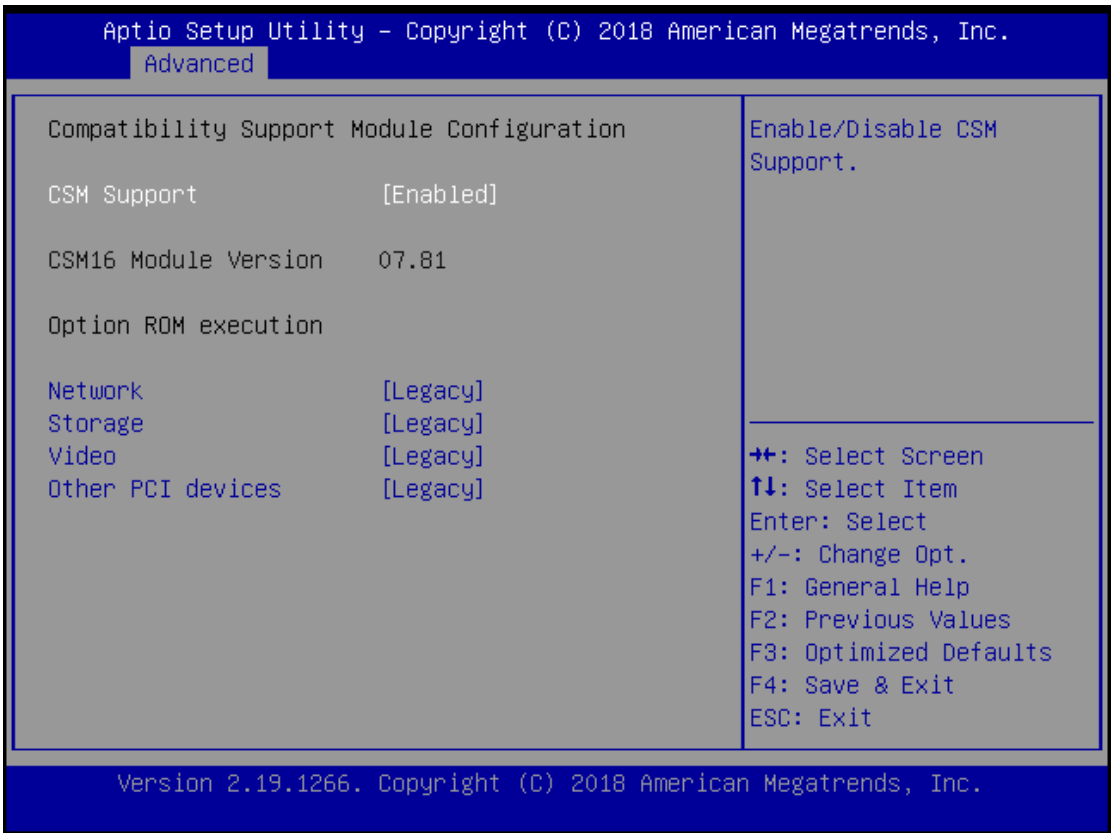
Feature	Options	Description
SR-IOV Support	Disabled Enabled	If the system has SR-IOV capable PCIe Devices, this option enables or disables Single Root IO Virtualization Support.

2.3.1 Network Stack Configuration



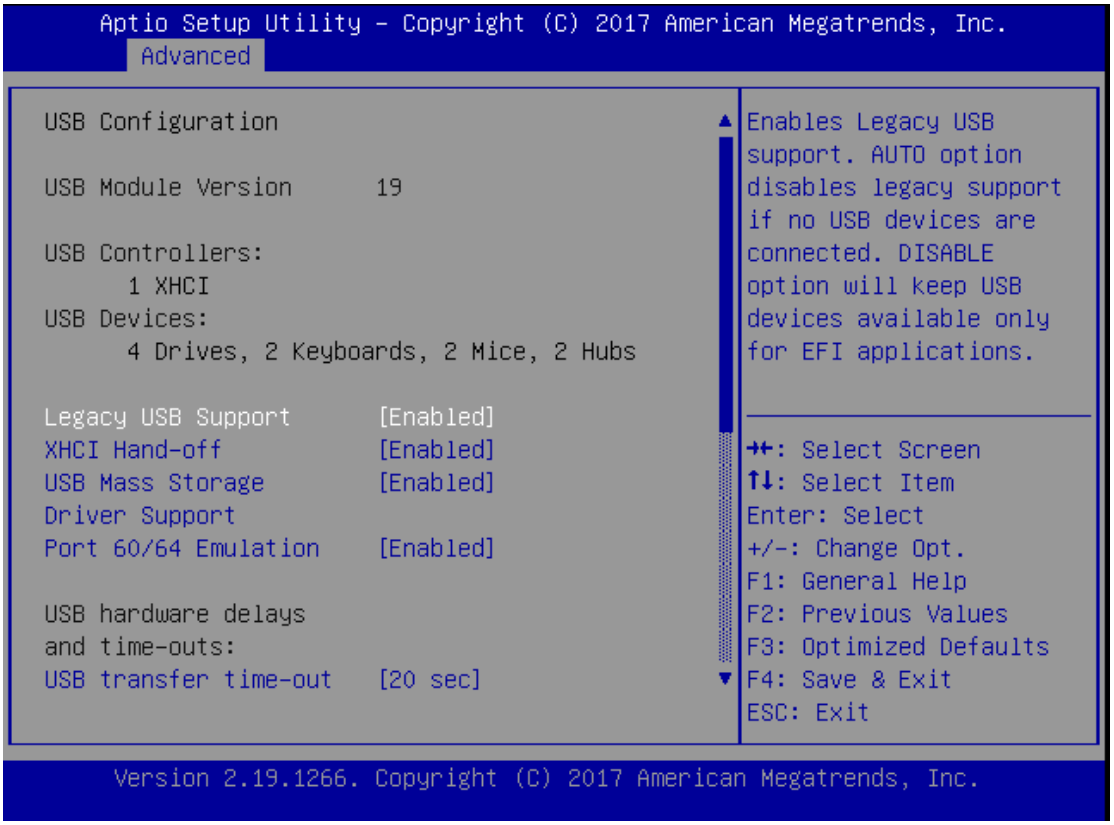
Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack
Ipv4 PXE Support	Disabled Enabled	Enables Ipv4 PXE Boot Support. If IPV4 is disabled, PXE boot option will not be created.
Ipv4 HTTP Support	Disabled Enabled	Enables Ipv4 HTTP Boot Support. If IPV4 is disabled, 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

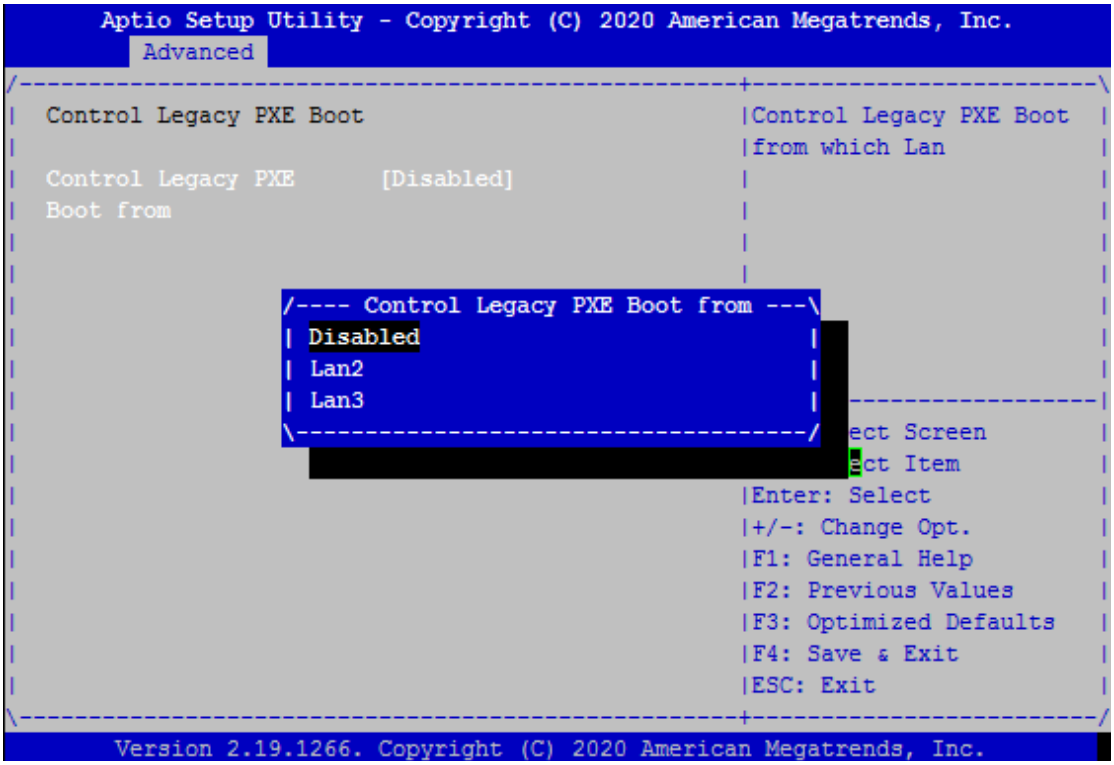
USB Configuration



Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected; **Disabled** option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enables or disables USB Mass Storage Driver Support.
USB transfer time-out	1 sec/5 sec 10 sec/20 sec	The time-out value for Control, Bulk, and Interrupt transfers
Device reset time-out	1 sec/5 sec 10 sec/20 sec	USB mass storage device Start Unit command time-out

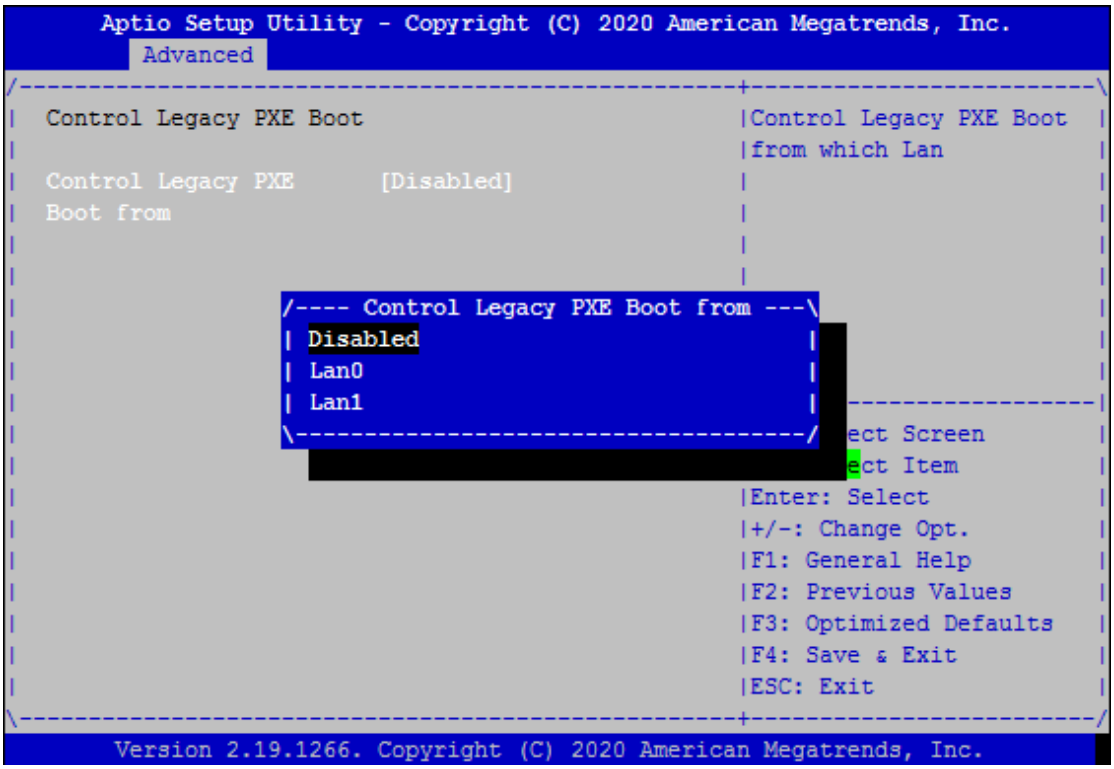
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Control Legacy PXE Boot (For : SKU-A)



Feature	Options	Description
Control Legacy PXE Boot From	Disabled Lan2 Lan3	Control Legacy PXE Boot from which Lan.

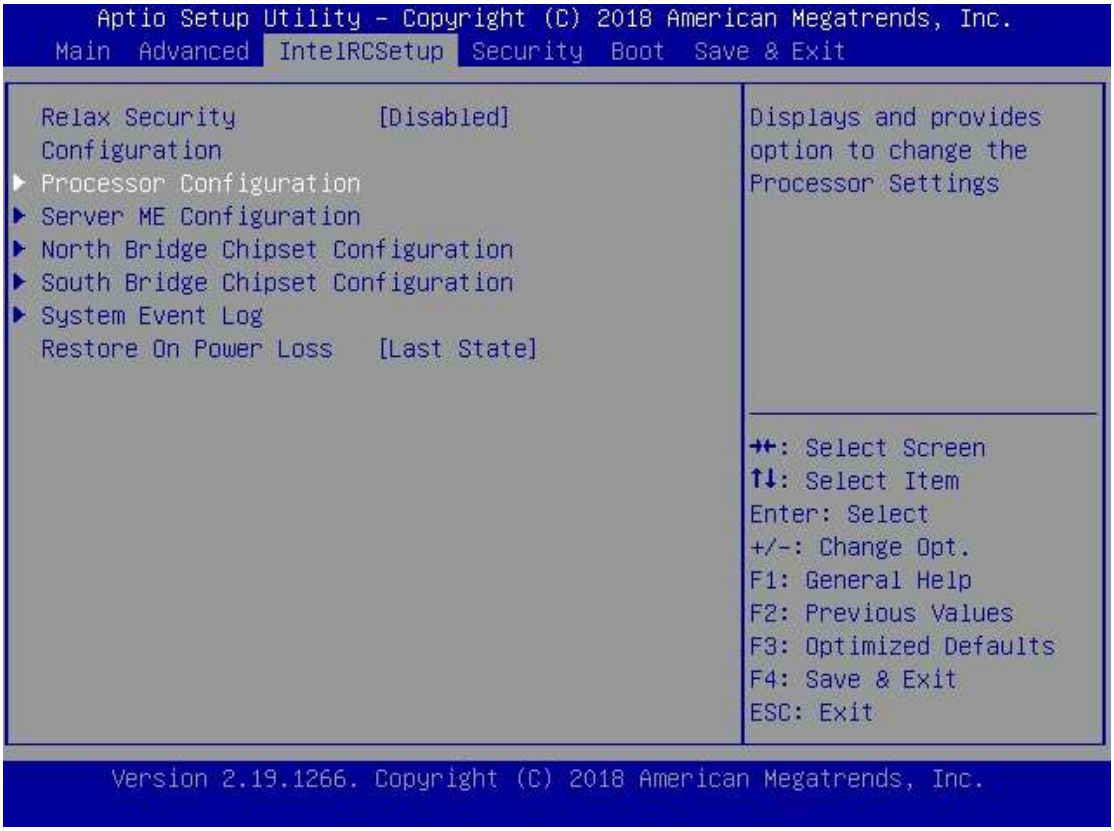
Control Legacy PXE Boot (For : SKU-C)



Feature	Options	Description
Control Legacy PXE Boot From	Disabled Lan0 Lan1	Control Legacy PXE Boot from which Lan.

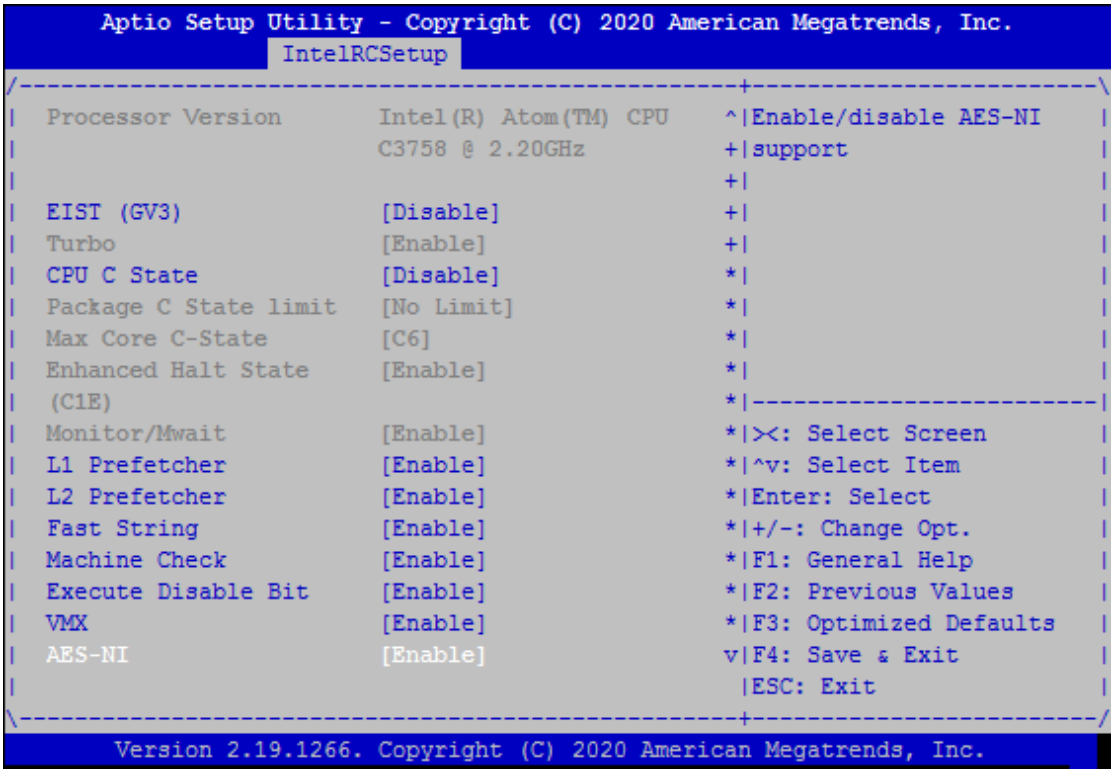
IntelRCSetup

Select the IntelRCSetup 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
Relax Security Configuration	Disable Enabled	Relaxes the security configuration to be able to use BIOS update tool.
Restore On Power Loss	Power On Power Off Last State	Specify what state to go to when power is re-applied after a power failure (G3 state).

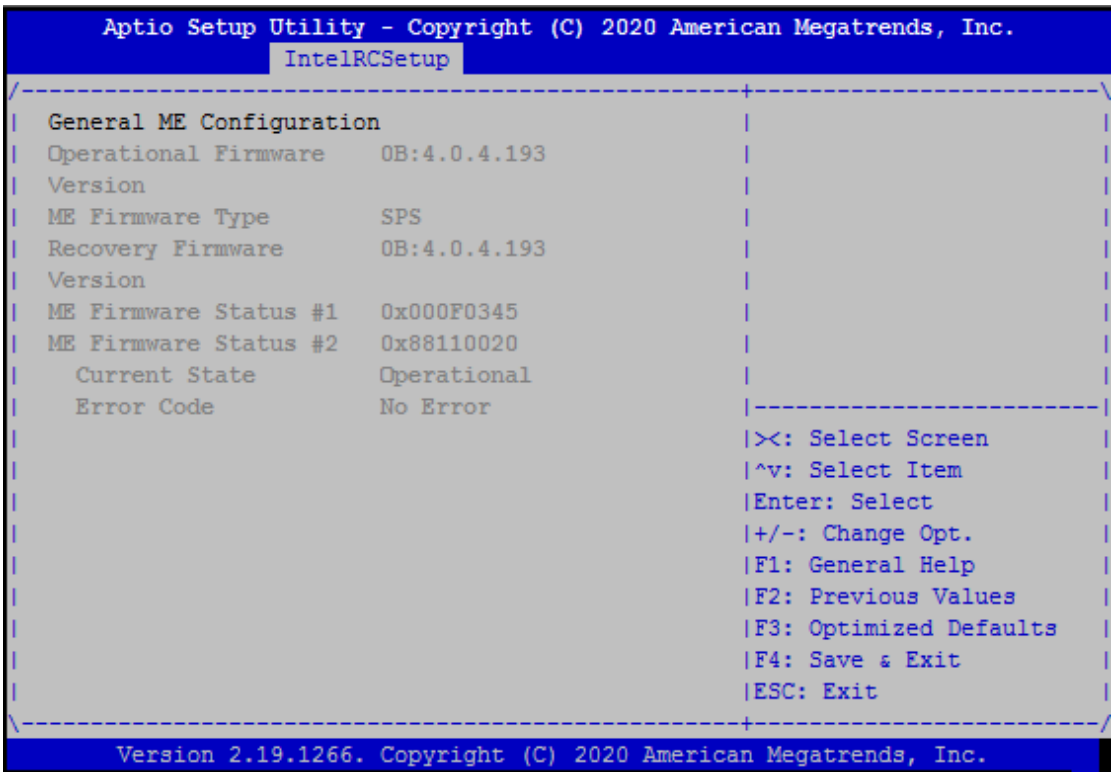
Processor Configuration



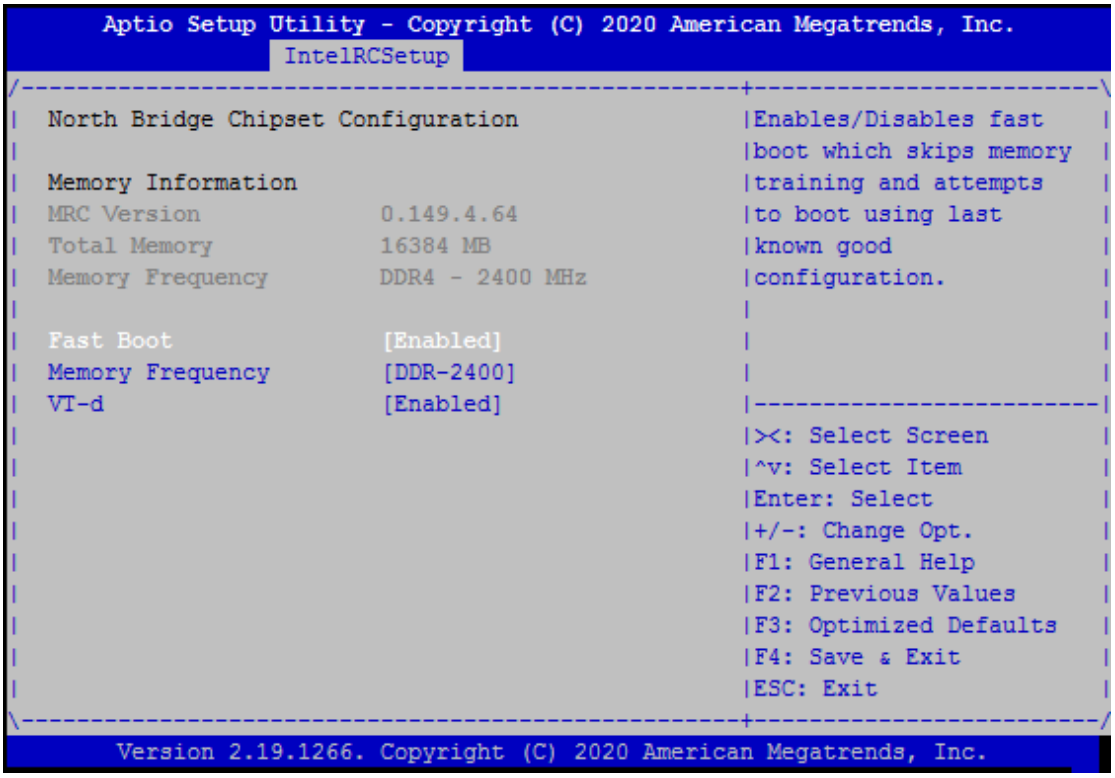
Feature	Options	Description
EIST (GV3)	Disable Enable	Enables/Disable EIST. GV3 must be enable for Turbo. .
Turbo	Enable Disable	Enable or Disable CPU Turbo capability. This option only applies to ES2 and above.
CPU C State	Disable Enable	Enable the Enhanced Cx state of the CPU, takes effect after reboot.
Package C state limit	No Pkg C-state No S0Ix No limit	Package C state limit.
Max core C-state	C1 C6	Options are:C1 and C6.
Enhanced Halt State(C1E)	Disable Enble	Enables the enhanced C1E state of the CPU, takes effects after reboot.
Monitor/Mwait	Enable Disable	Enable or Disable the Monitor/Mwait Instruction.

L1 Prefetcher	Enable Disable	Enable/Disable L1 Prefetch.
L2 Prefetcher	Enable Disable	Enable/Disable L2 Prefetch
Fast String	Disable Enable	When enables, enable fast strings for REP MOVS/STOS.
Machine Check	Disable Enable	Enable or Disable the Machine Check.
Execute Disable Bit	Disable Enable	When disabled, forces the XD feature flag to always return 0.
VMS	Disable Enable	Enables the Vanderpool Technology, takes effect after reboot.
AES-NI	Disable Enable	Enable/disable AES-NI support.

Server ME Configuration

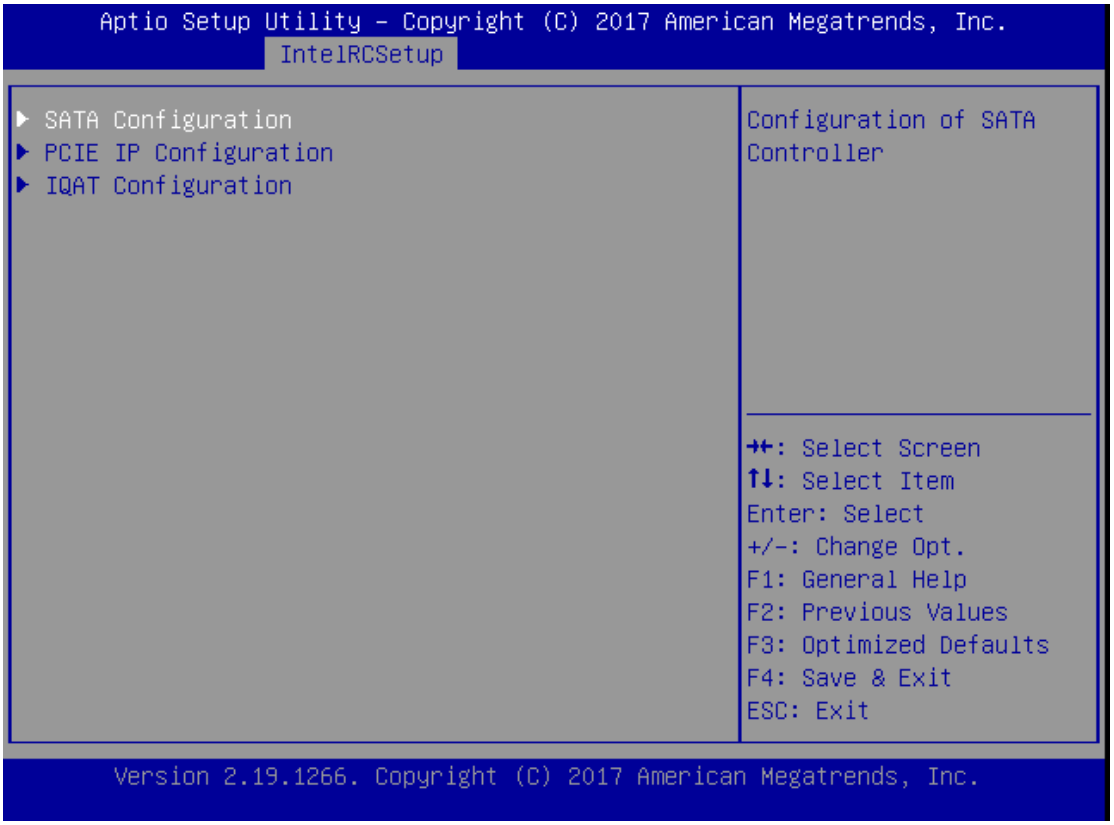


North Bridge Chipset Configuration

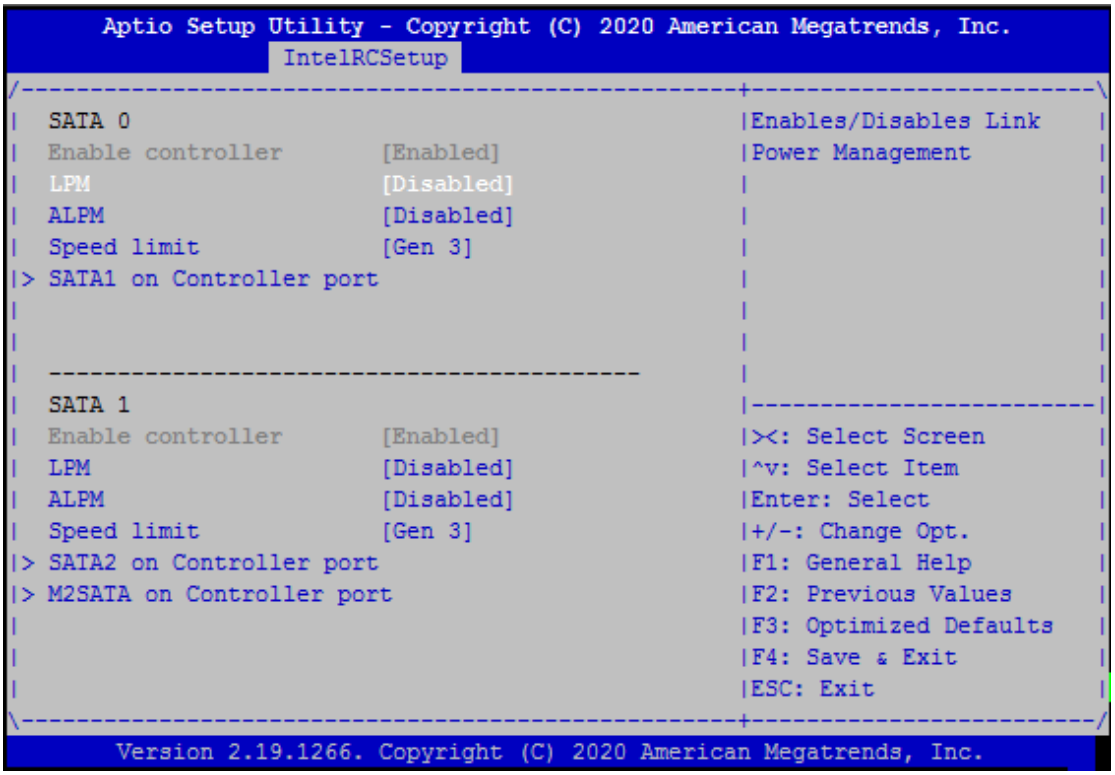


Feature	Options	Description
Fast Boot	Disabled Enabled	Enables/Disables fast boot which skips memory training and attempts to boot using fast known good configuration.
Memory Frequency	DDR-1600 DDR-1867 DDR-2133 DDR-2400	DDR memory frequency: DDR4 up to DDR-2666 DDR3 up to DDR-1867.
VT-d	Disable Enable	Option to enable /Disable VT-d.

South Bridge Chipset Configuration

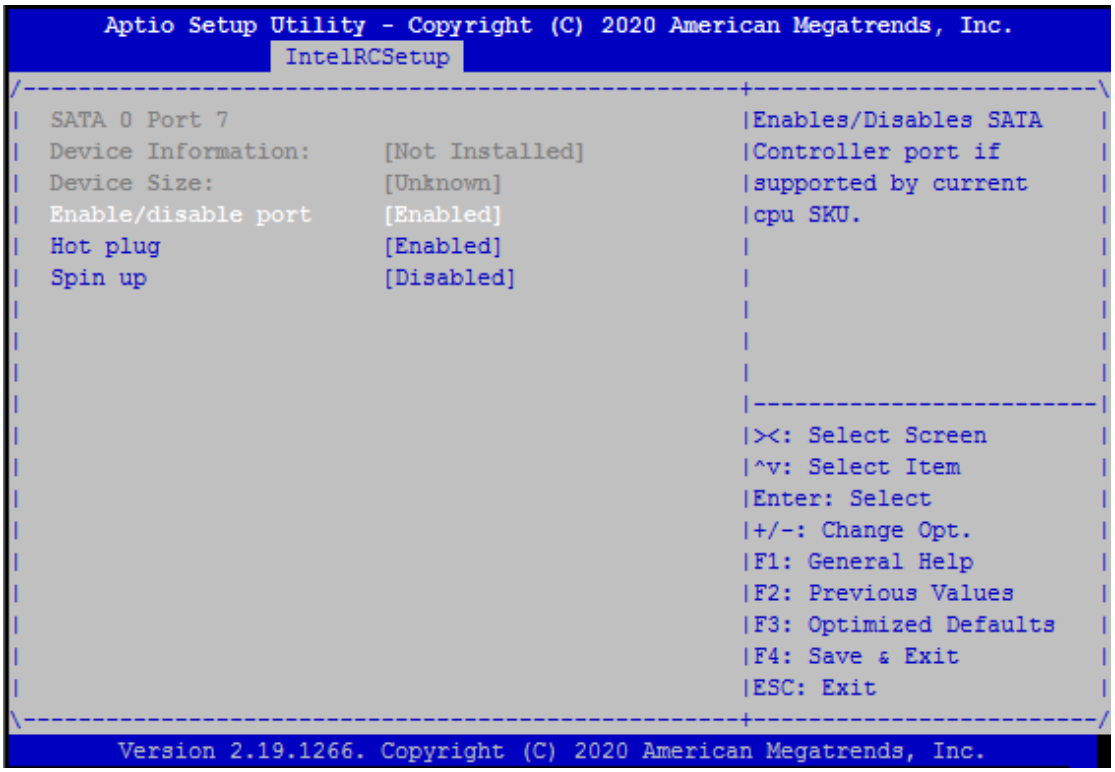


SATA Configuration



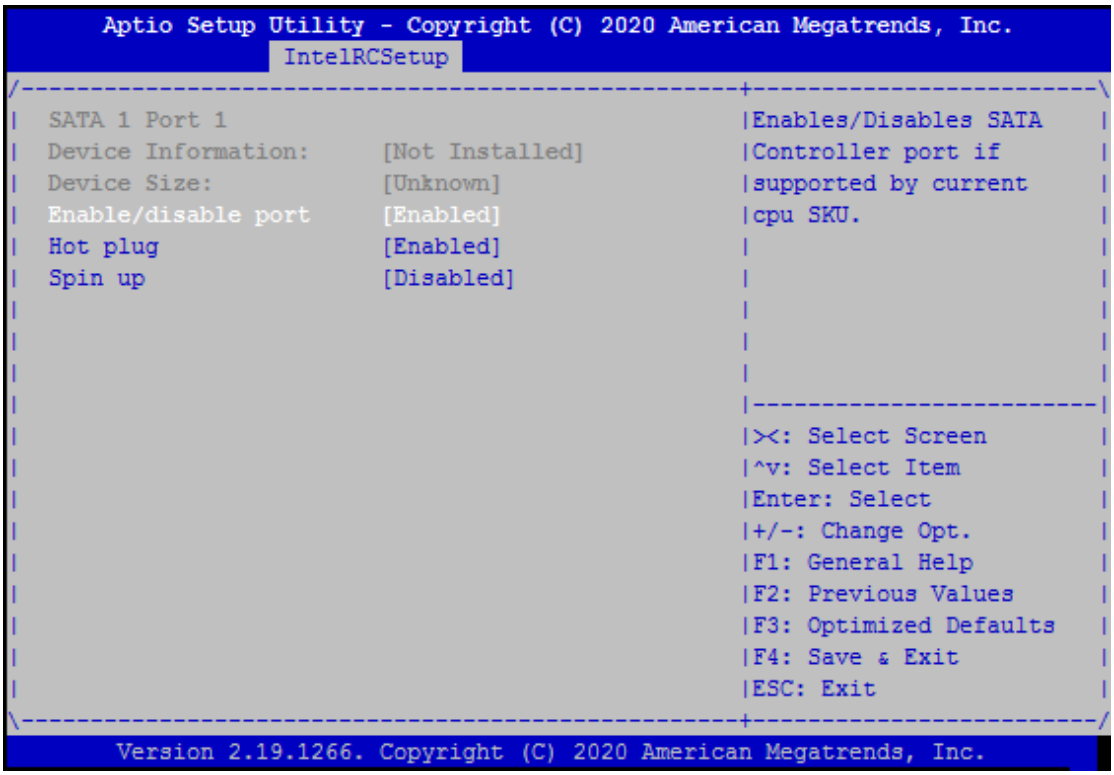
Feature	Options	Description
Enable controller	Enabled	Enables/Disables SATA Controller if supported by current CPU sku
LPM	Enabled Disabled	Enables/Disables Link Power Management
ALPM	Enabled Disabled	Enable/Disables Agresive Link Power Management
Speed Limit	Gen 1 Gen 2 Gen 3	Indicates the highest allowable speed of the interface

SATA1 on Controller port



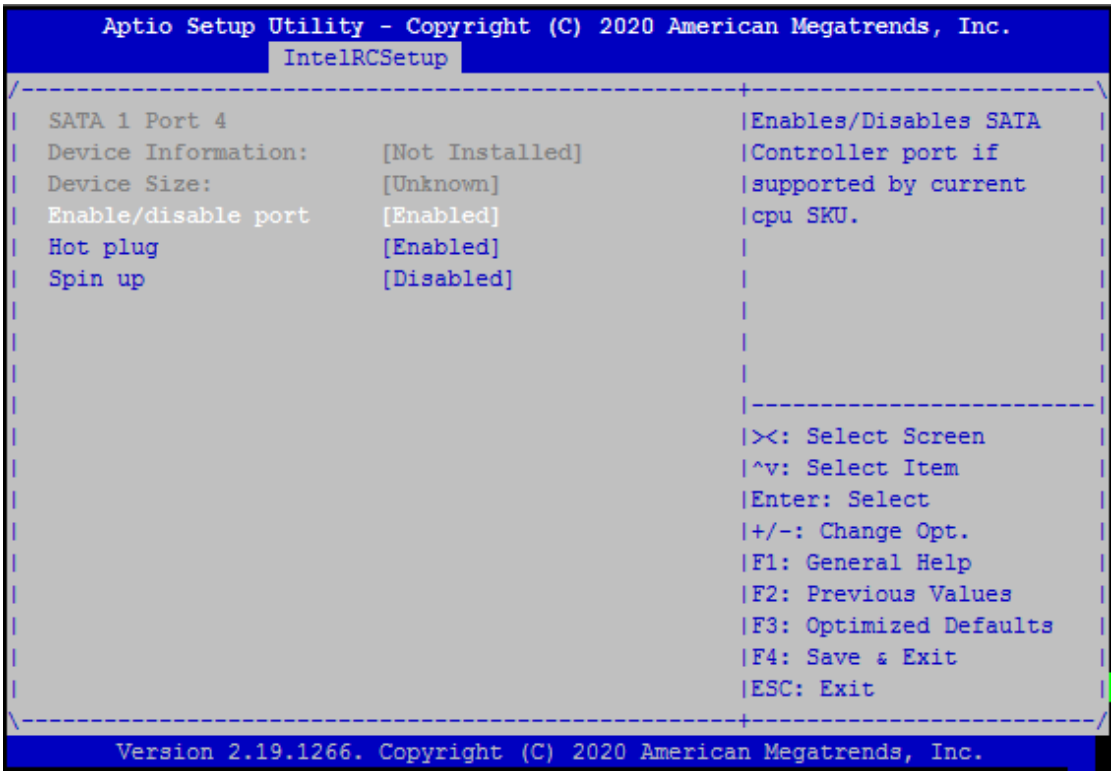
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current cpu SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

SATA2 on Controller port



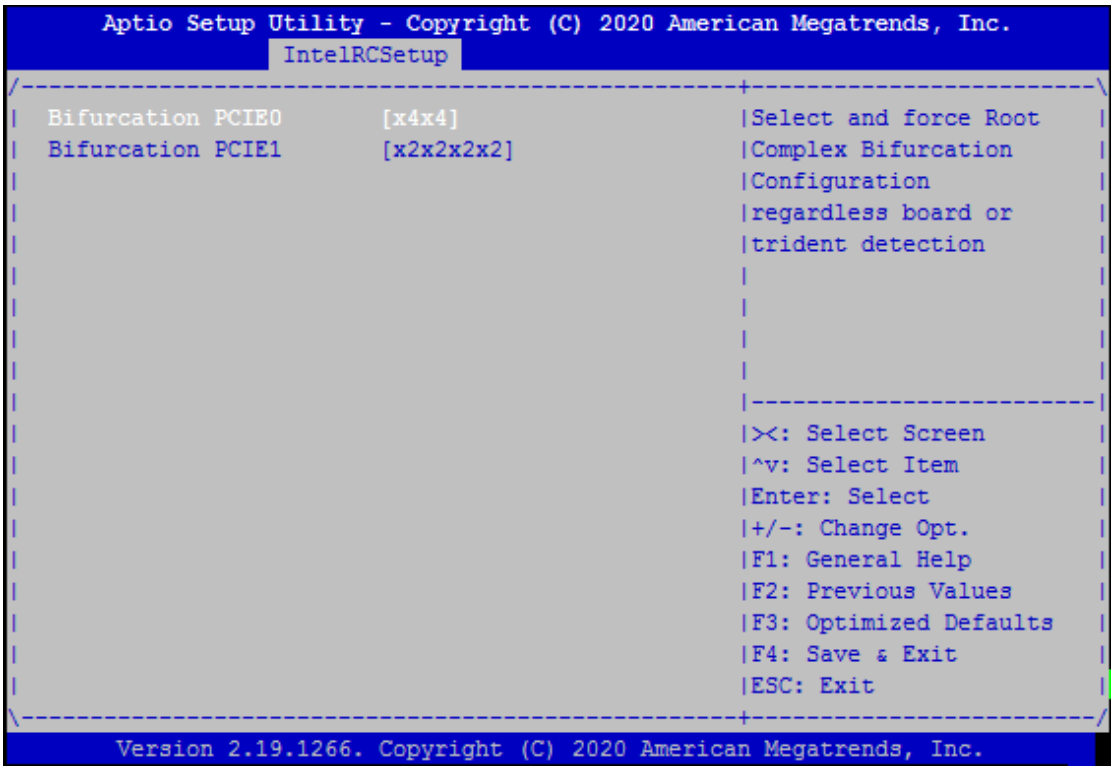
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current cpu SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

M2SATA on Controller port



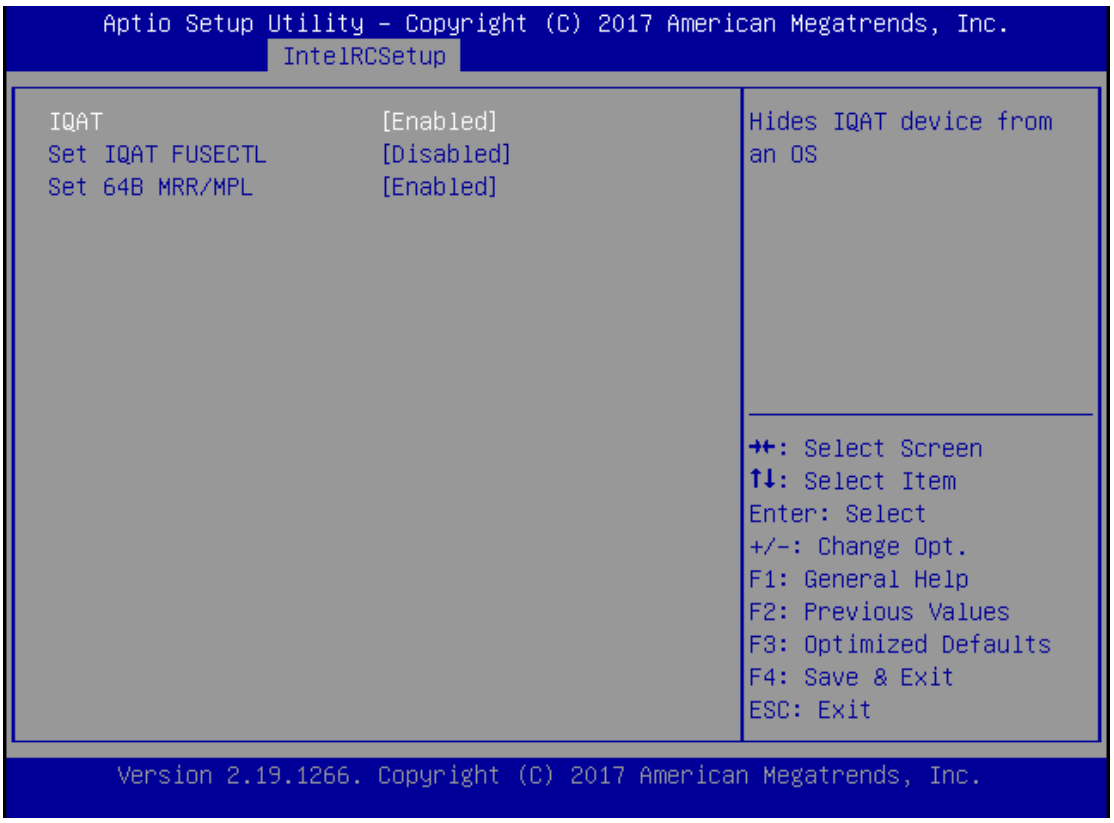
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current cpu SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

PCIE IP Configuration



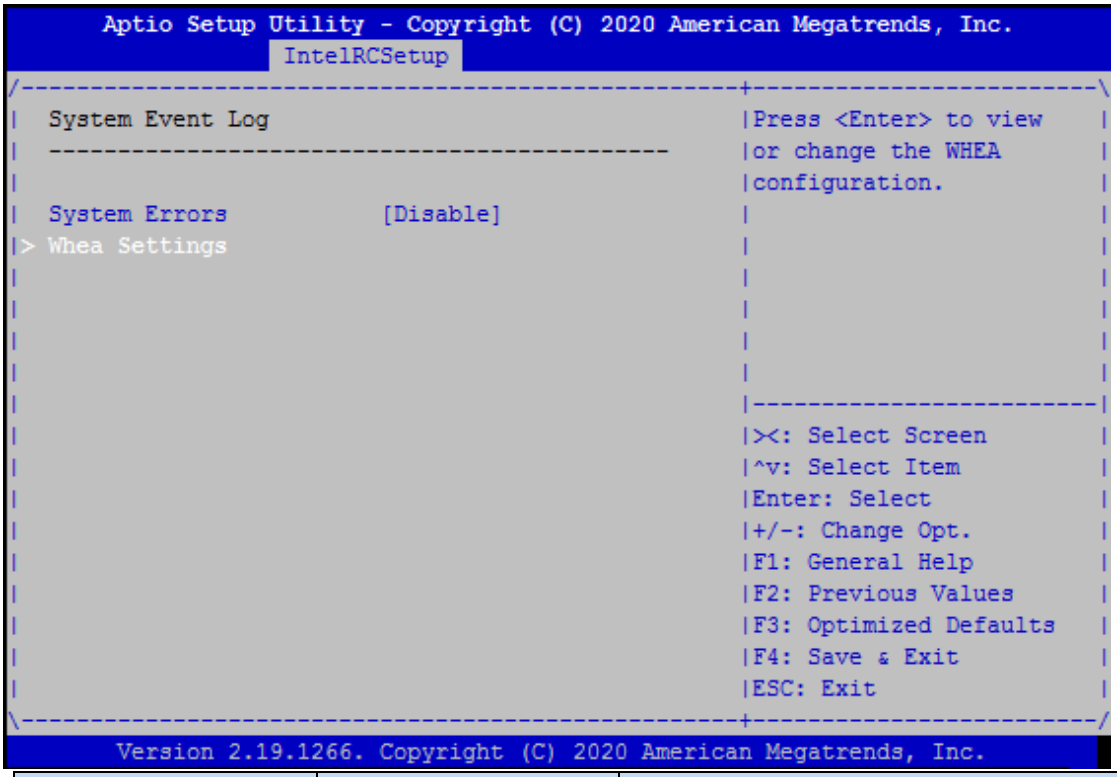
Feature	Options	Description
Bifurcation PCIE0	Auto X8 x4x4 x4x2x2 X2x2x4 X2x2x2x2	Select and force Root Complex Bifurcation Configuration regardless board or trident detection.
Bifurcation PCIE1	Auto X8 X4x4 X4x2x2 X2x2x4 X2x2x2x2	Select and force Root Complex Bifurcation Configuration regardless board or trident detection.

IQAT Configuration



Feature	Options	Description
IQAT	Enabled Disabled	Hides IQAT device from and OS..

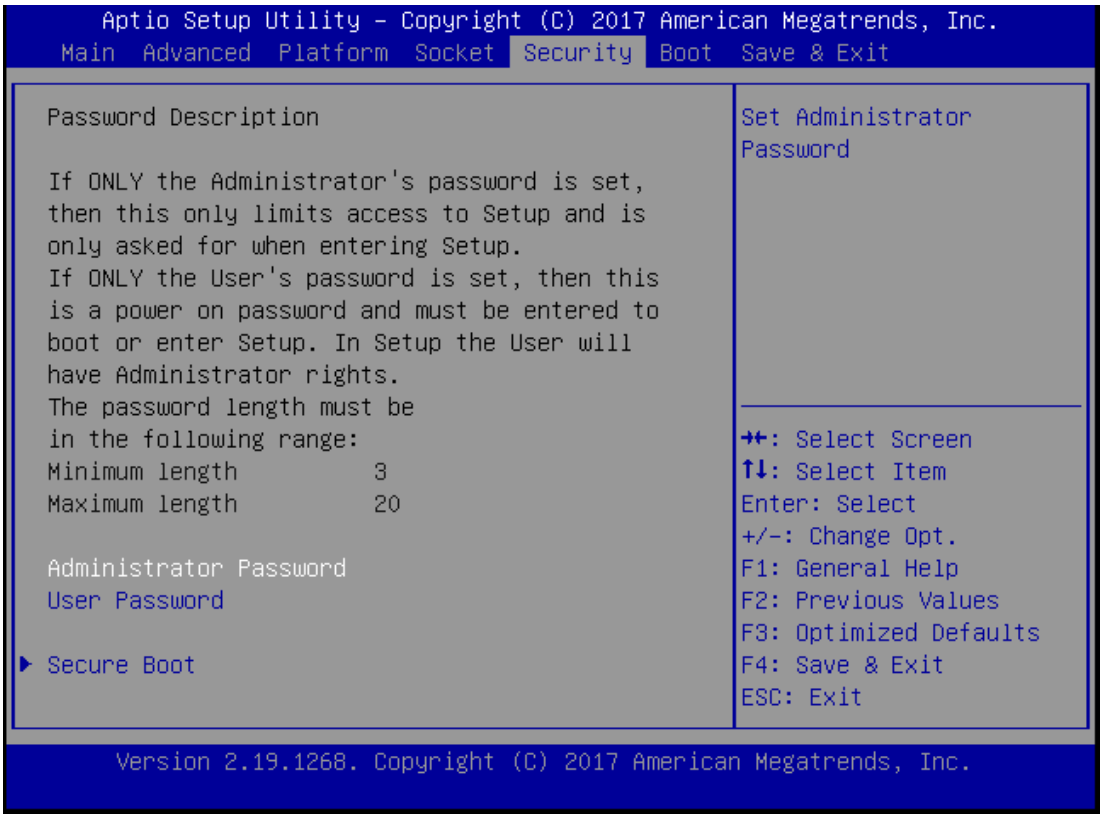
System Event Log



Feature	Options	Description
System Errors	Disable Enable Auto	System Error enabling and logging setup option.
WHEA Support	Disable Enable	Enable/Disable WHEA ACPI support.
WHEA Error Injection 5.0 Extension	Disable Enable	When EINJ ACPI 5.0 support for set error type with address and vendor extensions.
Whea Logging	Disable Enable	Enable/Disable Whea logging of errors.
WHEA PCIe Error Injection	Disable Enable	Enable/Disable WHEA PCIe Error Injection .

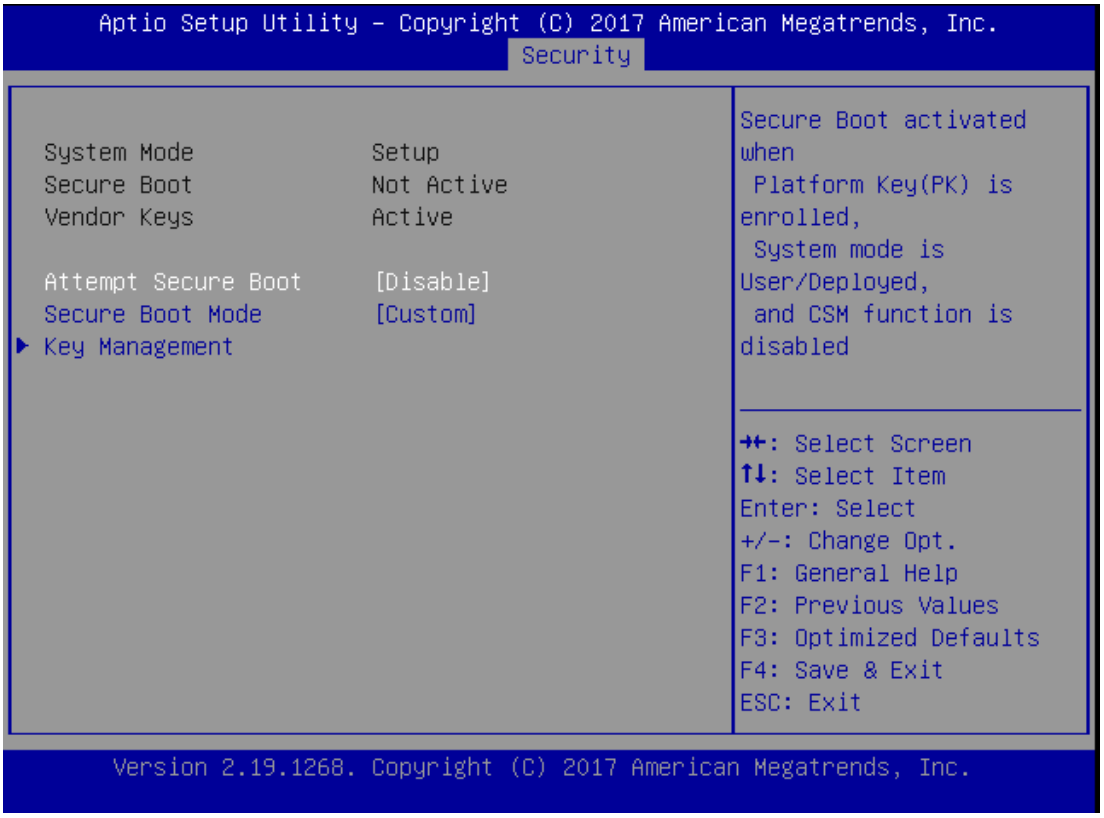
Security

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



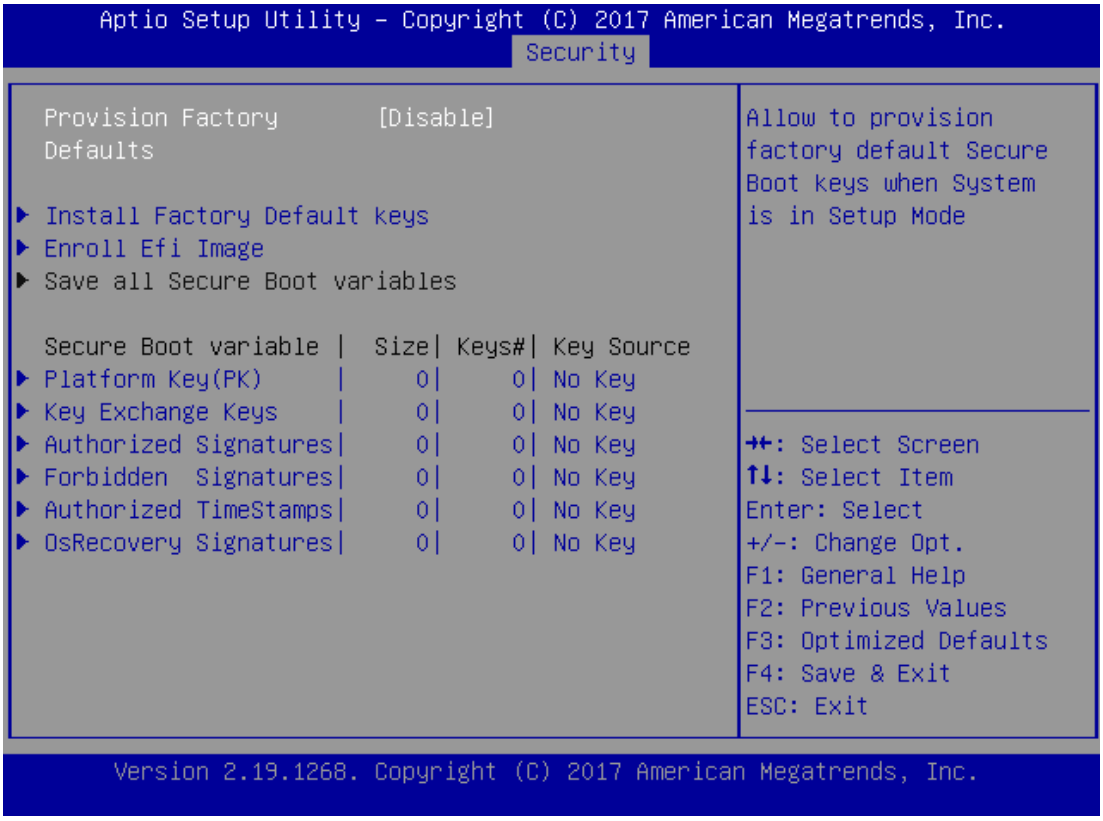
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the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

Secure Boot



Feature	Options	Description
Secure Boot Enable	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	Customizable Secure Boot mode: In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

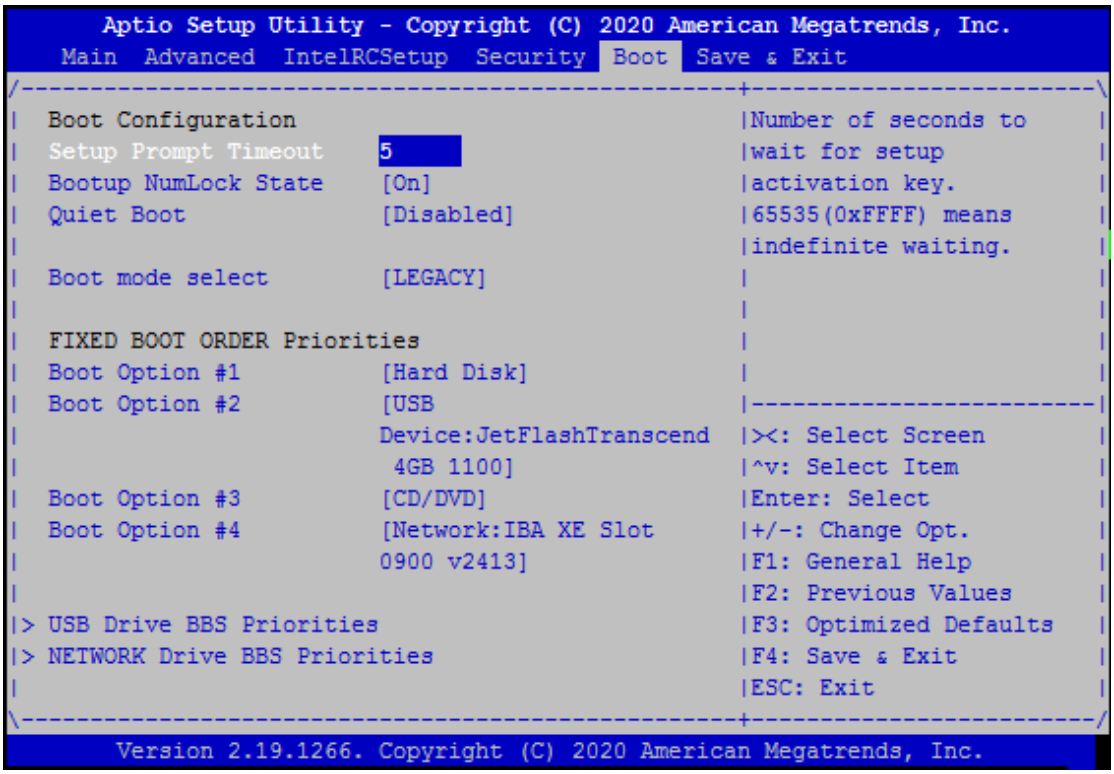
Key Management



Feature	Options	Description
Factory Key Provision	Disabled Enabled	Provision factory default keys on next re-boot only when System in Setup Mode.
Restore Factory keys	None	Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot 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.

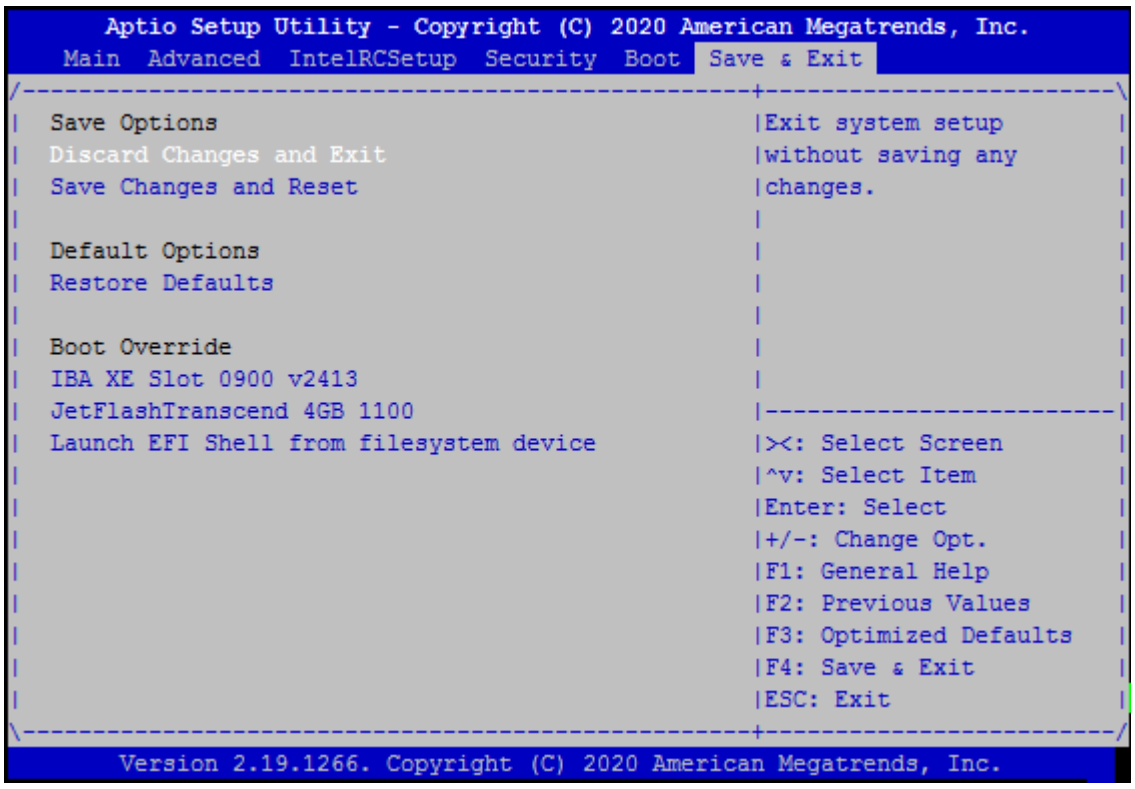


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI DUAL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

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

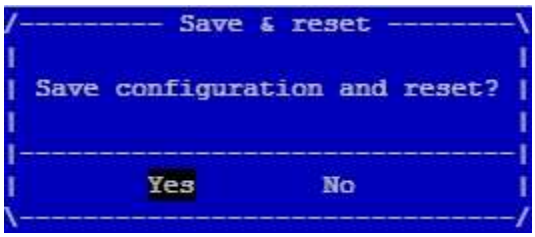
Save and Exit Menu

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.



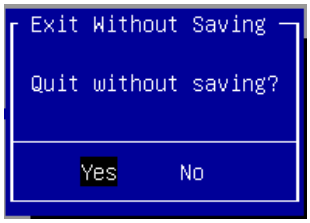
■ Save Changes and Reset

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



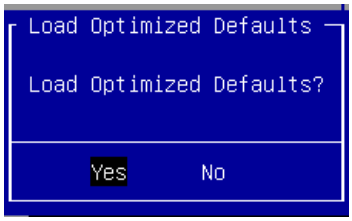
■ Discard Changes and Exit

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.



■ **Restore Defaults**

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



PS: The items under Boot Override were not same with image. It should depend on devices connect on system.

APPENDIX A: 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 set in Step 1 for server.

APPENDIX B: INSTALLING INTEL® LAN CONTROLLER DRIVER FOR LINUX

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 Keyword	I210 or I350
Product Category	Network I/O→Ethernet Products→Intel® Gigabit Server Adapters→ Intel® Ethernet Server Adapter I210 Series Intel® Ethernet Server Adapter I350 Series
Download Type	Drivers
Operating System	Linux*
Product page	Intel® Network Adapter Driver for 82575/6, 82580, I350, and I210/211-Based Gigabit Network Connections for Linux*

APPENDIX C: TERMS AND CONDITIONS

Warranty Policy

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

RMA Service

Requesting an RMA#

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

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

RMA Service Request Form

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

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

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

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

Request Party

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date