Lanner

Network Appliance Platform

Hardware Platforms for Network Computing

NCA-1513 User Manual

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About this Document

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

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

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

Conventions & Icons

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

Font Conventions

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

Icon Descriptions

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

Online Resources

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

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

Technical Support

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

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

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Federal Communication Commission Interference Statement

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

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

FCC Caution

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

Note

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

Important

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

Safety Guidelines

Follow these guidelines to ensure general safety:

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

Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

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

Lithium Battery Caution

- There is risk of explosion if the battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions.
- Installation should be conducted only by a trained electrician or only by an electrically trained person who knows all installation procedures and device specifications that are to be applied.
- Do not carry the handle of power supplies when moving to another place.
- Please conform to your local laws and regulations regarding safe disposal of lithium battery.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.

- Leaving a battery in an extremely high temperature environment can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

Avertissement concernant la pile au lithium

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

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Sécurité de fonctionnement

- L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.
- Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du

remplacement de composants.

- Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

Mounting Installation Precautions

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

- Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.
- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Grounding - Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

Electrical Safety Instructions

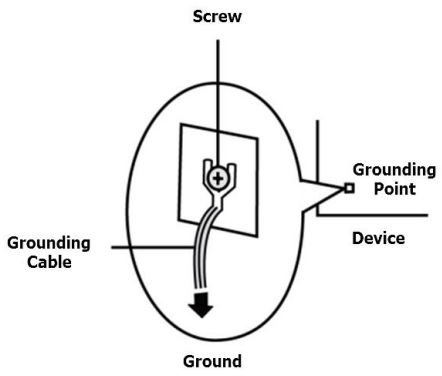
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect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

Consignes de sécurité électrique

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

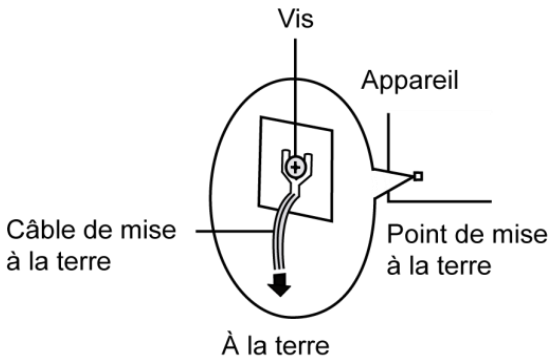
Grounding Procedure for DC Power Source

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



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

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



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

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

- The machine can only be used in a restricted access location and has installation instructions by a skilled person (for Fan side).
  Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

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 TOUS LES CORDONS D'ALIMENTATION POUR DÉCONNECTER L'UNITÉ DU SECTEUR.

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

Table of Contents

Chapter 1: Product Overview 12

Package Content 12

Optional Kits 12

Ordering Information 12

System Specifications 13

Front Panel 14

Rear Panel 15

Motherboard Information 16

Chapter 2: Hardware Installation 26

Installing Nano SIM Card 26

Mounting an SMA-Mount Antenna Cable Assembly 28

Rack-mounting the System 29

Chapter 3: Software Setup 31

BIOS Setup 31

Appendix A: Setting up Console Redirections 74

Appendix B: LED Indicator Explanations 75

Appendix C: Renaming Network Interface 76

Appendix D: Terms and Conditions 80

Warranty Policy 80

CHAPTER 1: PRODUCT OVERVIEW

NCA-1513 series is an Intel ATOM based system desktop platform, based on 4-Core CPU with max 6x GbE copper ports or 4x GbE plus 2x SFP ports (by SKU). The system is targeted at low-cost desktop with ECC or Non-ECC DDR4 memory support.

Package Content

Your package contains the following items:

- 1 x NCA-1513 series Network Security Platform
- 1 x Power cord (Default US Type)
- 1 x 40W power adaptor
- 1 Accessory Pack including 4 x Rubber foot + 1 x Plastic Spacer + 3 x Screw

Optional Kits

- Ear Bracket with adaptor Holder kit
- HDD Kit
- WIFI Kit
- LTE Kit

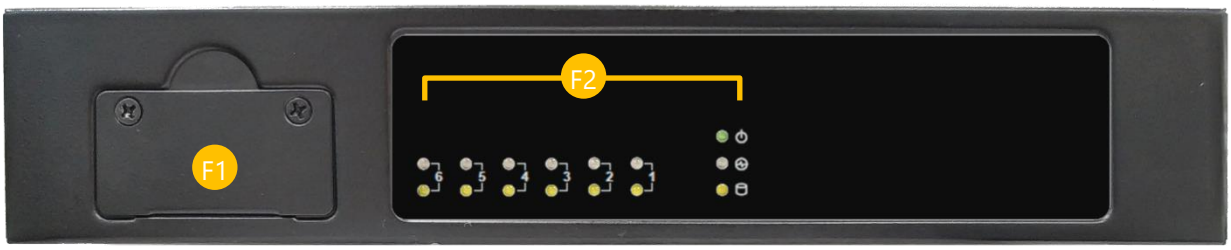
Ordering Information

SKU No.	Main Features
NCA-1513A	Atom 4C C3558 w/QAT, 6x GbE RJ45 with 2 pair bypass function
NCA-1513B	Atom 2C C3308 w/QAT, 6x GbE RJ45 with 2 pair bypass function
NCA-1513C	Atom 2C C3338, 4x GbE RJ45 without bypass function
NCA-1513D	Atom 4C C3558 w/QAT, 2x SFP, 4x GbE RJ45 with 2 pair bypass function
NCA-1513E	Atom 4C C3436L, 1x DDR4 ECC SODIMM, 6x GbE RJ45 w/o Bypass, 40W Adapter
NCA-1513F	Atom 2C C3338R, 1x DDR4 ECC SODIMM, 6x GbE RJ45 w/o Bypass, 40W Adapter

System Specifications

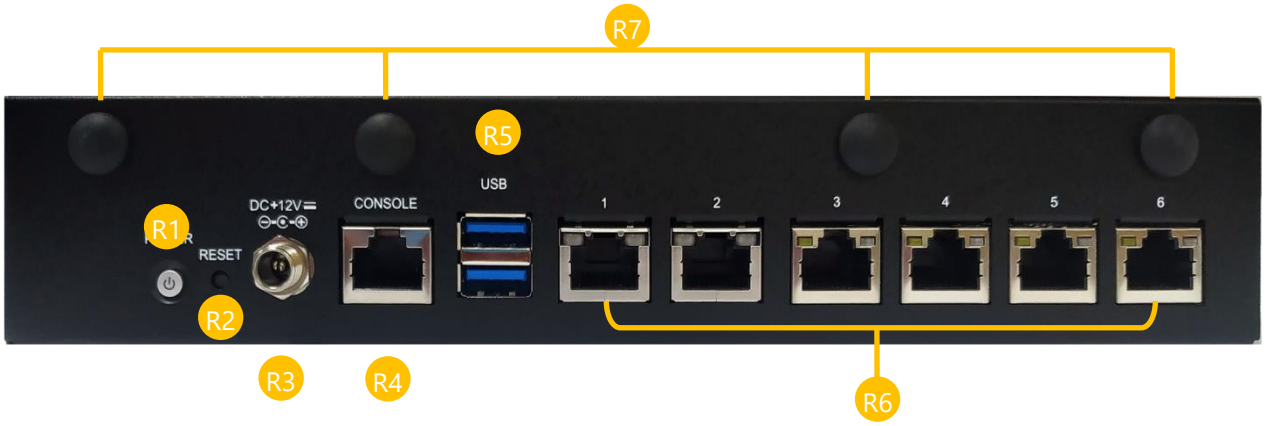
Form Factor		Desktop
Platform	Processor Options	SKU A/D: Intel Atom C3558, 2.2GHz SKU B: Intel Atom C3308, 1.6GHz SKU C: Intel Atom C3338, 1.5GHz SKU E: Intel Atom C3436L, 1.3GHz SKU F: Intel Atom C3338R, 1.8GHz
	CPU Socket	1x BGA
	Security Acceleration	Intel® QuickAssist Technology (SKU A/B/D)
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR4 2133MHz ECC / Non-ECC (1866MHz for C3308/C3338; 2133MHz for C3558)
	Max. Capacity	32GB
	Socket	1x 260-pin SO-DIMM (one channel one DIMM)
Networking	Ethernet Ports (By SKU)	SKU A / E / F : 6x GbE RJ45, (4 x GbE RJ45 Intel® SoC Integrated MAC + 2x Intel i210-AT) SKU B: 6x GbE RJ45. (4 x GbE RJ45 Intel® SoC Integrated MAC + 2x Intel i211-AT)
		SKU C: 4x GbE RJ45, (4 x GbE RJ45 Intel® SoC Integrated MAC) SKU D: 4x GbE RJ45 + 2x 1G SFP (4 x GbE RJ45 Intel® SoC Integrated MAC + 2x Intel i210-IS)
	Bypass	SKU A/B/D: 2 pair bypass
	NIC Module Slot	N/A
LOM	IO Interface	N/A
I/O Interface	Reset Button	1
	LED	Power/Status/HDD/LAN
	Power Button	1x Power Switch
	Console	1x RJ45
	USB	2x USB 3.0 or 2x USB 2.0 (by SKU)
	LCD Module	N/A
	Power input	12V DC power inlet
Storage	HDD/SSD Support	1x 2.5" HDD/SSD Internal Bays
	Onboard Slots	1x M.2 (w/ SATA support)
Expansion	M.2	1x M.2 2280/2242 B Key for storage 1x M.2 3042 (USB3.0) for LTE
	mini-PCIe	1x Mini-PCIe (PCIe/USB2.0)
	SIM card Slot	1x Nano SIM Slot
Miscellaneous	Watchdog	Yes
	Internal RTC with Li Battery	Yes
	TPM	Yes (Optional)
Cooling	System	1x system FAN with Smart FAN function
Environmental Parameters	Temperature	0~40°C Operating -20~70°C Non-Operating
	Humidity (RH)	5~90% Operating 5~ 95% Non-Operating
System Dimensions	(WxDxH)	231mm x 200mm x 44mm
	Weight	1.2kg
Package Dimensions	(WxDxH), Weight	358mm x 290mm x 135mm, 8.1kg
Power	Type/Watts	12V power connector x1
	Input	AC 100-240V~50-60Hz 1.7A
Approvals and Compliance		CE/FCC Class B, EU RoHS 2.0, China RoHS

Front Panel



No.	Description	
F1	SIM Card Slot	1x Nano SIM Slot
F2	LED Indicators	

Rear Panel

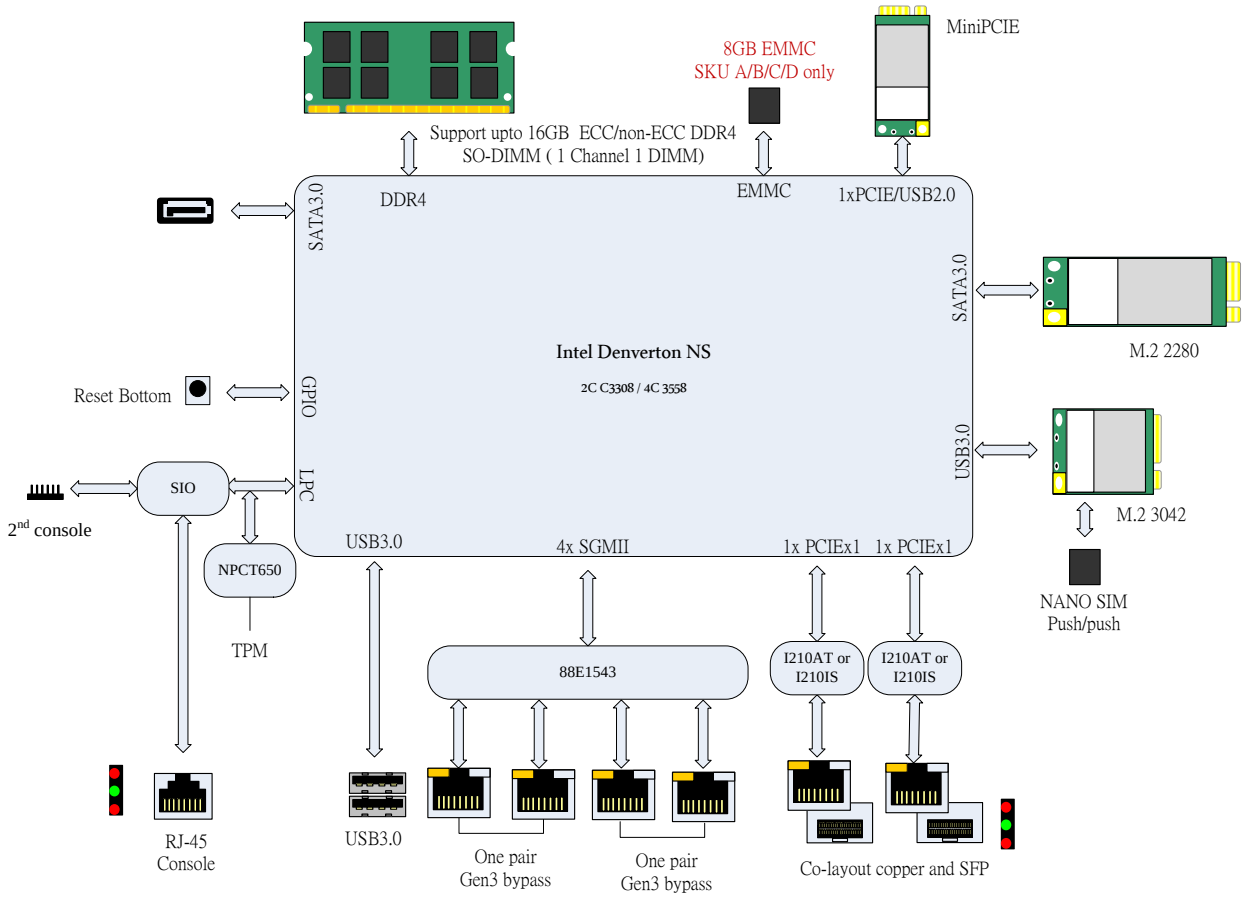


No.	Description	
R1	Power Switch	1x Power Button
R2	Reset Button	For hardware reset
R3	DC Jack	1x DC Power Jack
R4	Console Port	1x RJ45 console port
R5	USB Port	2x USB 3.0 Port or 2x USB 2.0 Port (by SKU)
R6	LAN Port	6x RJ45 Port or 2x SFP Port + 4x RJ45 Port (by SKU) Port Sequence (from left to right): 2→1→3→4→5→6 For instructions on modifying the port sequence, please refer to Appendix c: Renaming Network Interface
R7	Antenna Port	4x Reserved antenna port for Wi-Fi / LTE module

Motherboard Information

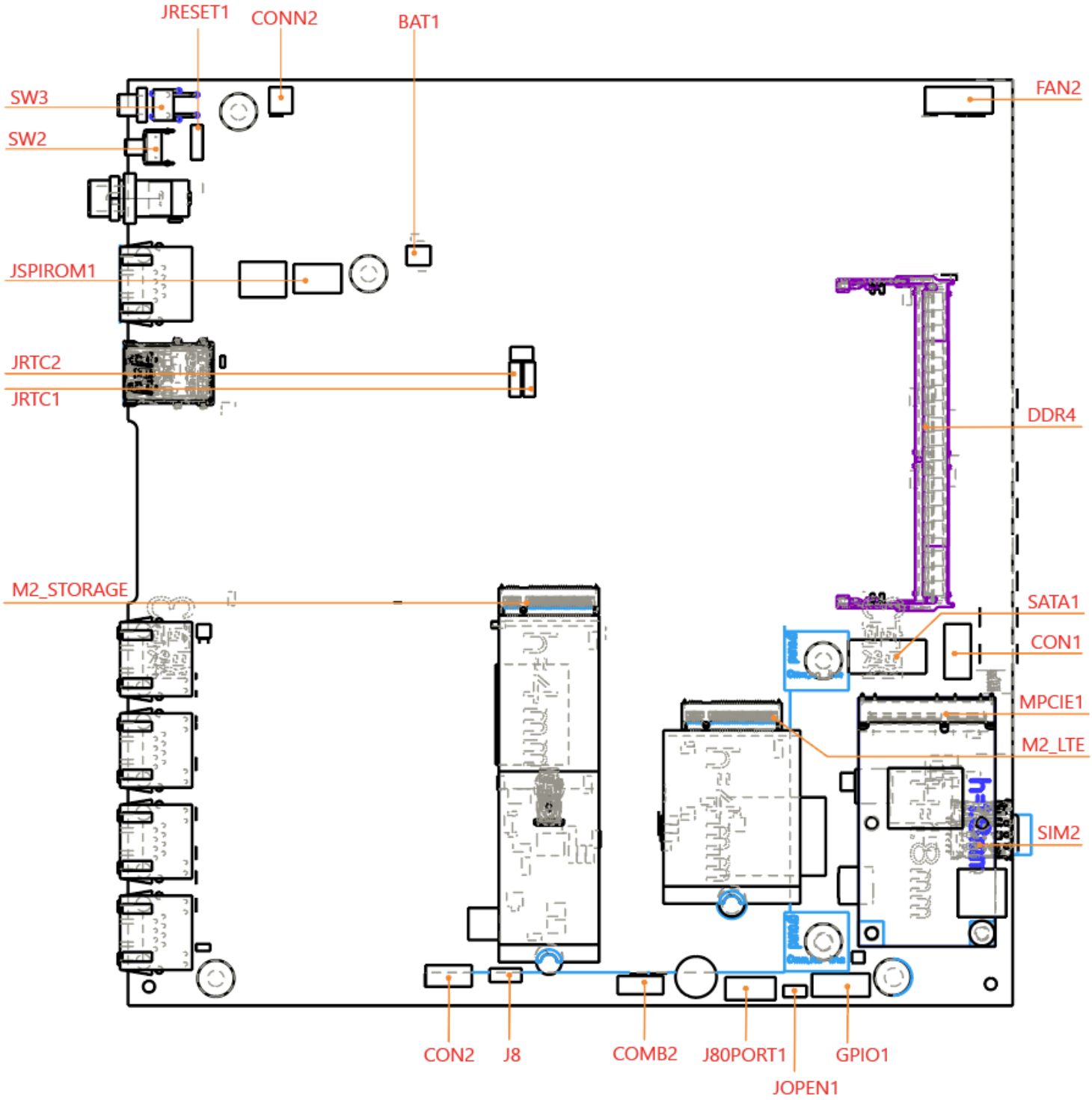
Block Diagram

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



Jumper Setting and Pin Assignment

The motherboard board layout shows the connectors on the board. Refer to the below picture as a reference of the pin assignments.



BAT1: RTC Battery connector

PIN	Description
1	V_BATTERY
2	GND

COM1: Console port

PIN	Description
1	COM1_RTS_N
2	COM1_DTR_N
3	COM1_TXD
4	LGND
5	LGND
6	COM1_RXD
7	COM1_DSR_N
8	COM1_CTS_N

COMB2: Internal COM port for debug

PIN	Description	PIN	Description
1	NDCD2-	2	NDSR2-
3	NRXD2	4	NRTS2-
5	NTXD2	6	NCTS2-
7	NDTR2-	8	NRI2-
9	IOGND2	10	NC

CON1: SATA power connector

PIN	Description
1	P12V_SB
2	GND
3	GND
4	P5V_AUX

CON2: Gen3 bypass flash connector

PIN	Description
1	P3V3_AUX
2	IO_RXD
3	GND
4	IO_TXD

CONN2: Power pin header

PIN	Description
1	GND
2	PWRON#

FAN2: CPU FAN

PIN	Description
5	CPUFANOUT
4	NC
3	CPUFANIN
2	P12V_S
1	GND

GPIO1: GPIO connector

PIN	Description	PIN	Description
1	GPO_B_1-	2	GPI_B_1
3	GPO_B_2	4	GPI_B_2
5	GPO_B_3	6	GPI_B_3
7	GPO_B_4-	8	GPI_B_4
9	GND	10	GND

J8: Gen3 bypass flash jumper for ARM Programming Selection

0(2-3): Enable

1(1-2): Disable (Default)

PIN	Description
1	P3V3_AUX
2	PIO0_1
3	GND

J80PORT1: PORT80 connector

PIN	Description	PIN	Description
1	CLK_LPC_OUT	2	SOC_LPC_LAD1
3	80PORT_RST#	4	SOC_LPC_LAD0
5	SOC_LPC_FRAME_N	6	P3V3_S
7	SOC_LPC_LAD3	8	NC
9	SOC_LPC_LAD2	10	GND

JOPEN1: Case open connector

PIN	Description
1	SIO_CASEOPEN0_N
2	GND

JRESET1: H/W & S/W Reset

1-2: Hardware Reset
2-3: Software Reset (Default)

PIN	Description
1	FP_RST_BTN_N
2	GND
3	SW_RST_GP_N

JRTC1: Clear CMOS

1-2: NORMAL
2-3: CLEAR RTC

PIN	Description
1	P3V3_RTC
2	SOC_SRTCRST_N
3	GND

JRTC2: Clear CMOS

1-2: NORMAL
2-3: CLEAR RTC

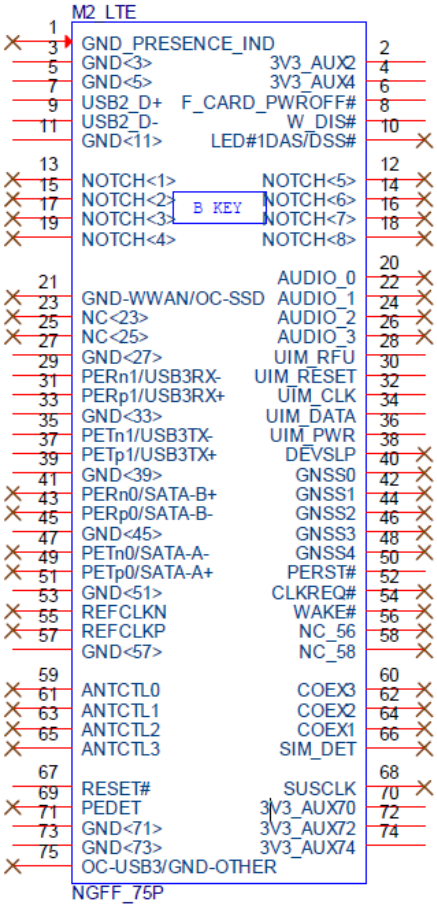
PIN	Description
1	P3V3_RTC
2	SOC_RTEST_N
3	GND

JSPIROM1: Flash BIOS connector

PIN	Description	PIN	Description
1	SPI_HD1#	2	NC
3	SOC_SPI_CS0_R	4	P3V3_SB_SPI
5	SPI_MISO_DUAL_R	6	SPI_HOLD0_L
7	NC	8	SPI_CLK_DUAL_R
9	GND	10	SPI_MOSI_DUAL_R

M2_LTE: M.2 con (Only LTE)

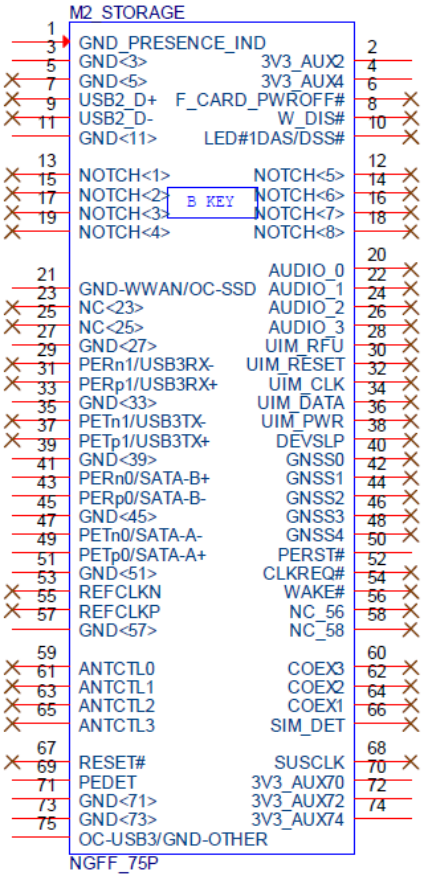
PIN	Description	PIN	Description
1	NC	2	P3V3_AUX
3	GND	4	P3V3_AUX
5	GND	6	PWROFF#
7	USB1_SB_L_DP	8	W_DIS#
9	USB1_SB_L_DN	10	NC
11	GND	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	UIM1_VPP1
29	USB3_HRX_L_DTX_N16	30	UIM1_RST1
31	USB3_HRX_L_DTX_P16	32	UIM1_CLK1
33	GND	34	UIM1_DAT1
35	USB3_HTX_L_DRX_N16	36	UIM1_PWR
37	USB3_HTX_L_DRX_P16	38	NC
39	GND	40	NC
41	NC	42	NC
43	NC	44	NC
45	GND	46	NC
47	NC	48	NC
49	NC	50	NGFF_LTE_RST#
51	GND	52	NC



53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	P1V8_A	68	NC
69	NC	70	P3V3_AUX
71	GND	72	P3V3_AUX
73	GND	74	P3V3_AUX
75	NC		

M2_STORAGE: M.2 storage connector (Only Storage)

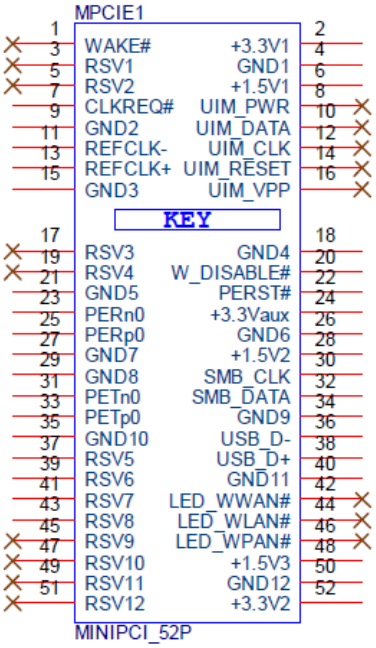
PIN	Description	PIN	Description
1	GND	2	P3V3_AUX
3	GND	4	P3V3_AUX
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	GND	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	NC



39	GND	40	NC
41	SATA_HRX_C_DTX_P4	42	NC
43	SATA_HRX_C_DTX_N4	44	NC
45	GND	46	NC
47	SATA_HTX_C_DRX_N4	48	NC
49	SATA_HTX_C_DRX_P4	50	NGFF_STORAGE_RST#
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	P3V3_AUX
71	GND	72	P3V3_AUX
73	GND	74	P3V3_AUX
75	GND		

MPCIE1: Mini PCIE 52PIN

PIN	Description	PIN	Description
1	NC	2	P3V3_AUX
3	NC	4	GND
5	NC	6	P1V5_A
7	CLKREQ_MPCIE_SLOT2	8	NC
9	GND	10	NC
11	CLK100_PCIE_SLOT1_4N	12	NC
13	CLK100_PCIE_SLOT1_4P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	P3V3_AUX
21	GND	22	MINI_PCI_RST#



23	PEX_RX5N	24	P3V3_AUX
25	PEX_RX5P	26	GND
27	GND	28	P1V5_A
29	GND	30	SMB_MPCIE_CLK
31	PEX_TX5N_C	32	SMB_MPCIE_DATA
33	PEX_TX5P_C	34	GND
35	GND	36	USB2_P0_DN_L
37	GND	38	USB2_P0_DP_L
39	P3V3_AUX	40	GND
41	P3V3_AUX	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	P1V5_A
49	NC	50	GND
51	NC	52	P3V3_AUX

PW1: DC power connector

PIN	Description
2	GND
3	GMD
1	P12V_SB

SATA1: SATA connector

PIN	Description
1	GND
2	SATA_TX_DP0_C
3	SATA_TX_DN0_C
4	GND
5	SATA_RX_DN0_C
6	SATA_RX_DP0_C
7	GND

SIM2: M2_LTE SIM card slot

PIN	Description	PIN	Description
C1	UIM1_PWR	C4	UIM1_DAT1
C2	UIM1_RST1	C5	UIM1_VPP1
C3	UIM1_CLK1	C6	GND

SW2: Reset Button

PIN	Description	PIN	Description
4	GND	3	GND
2	GND	1	SW_RST_GP_N

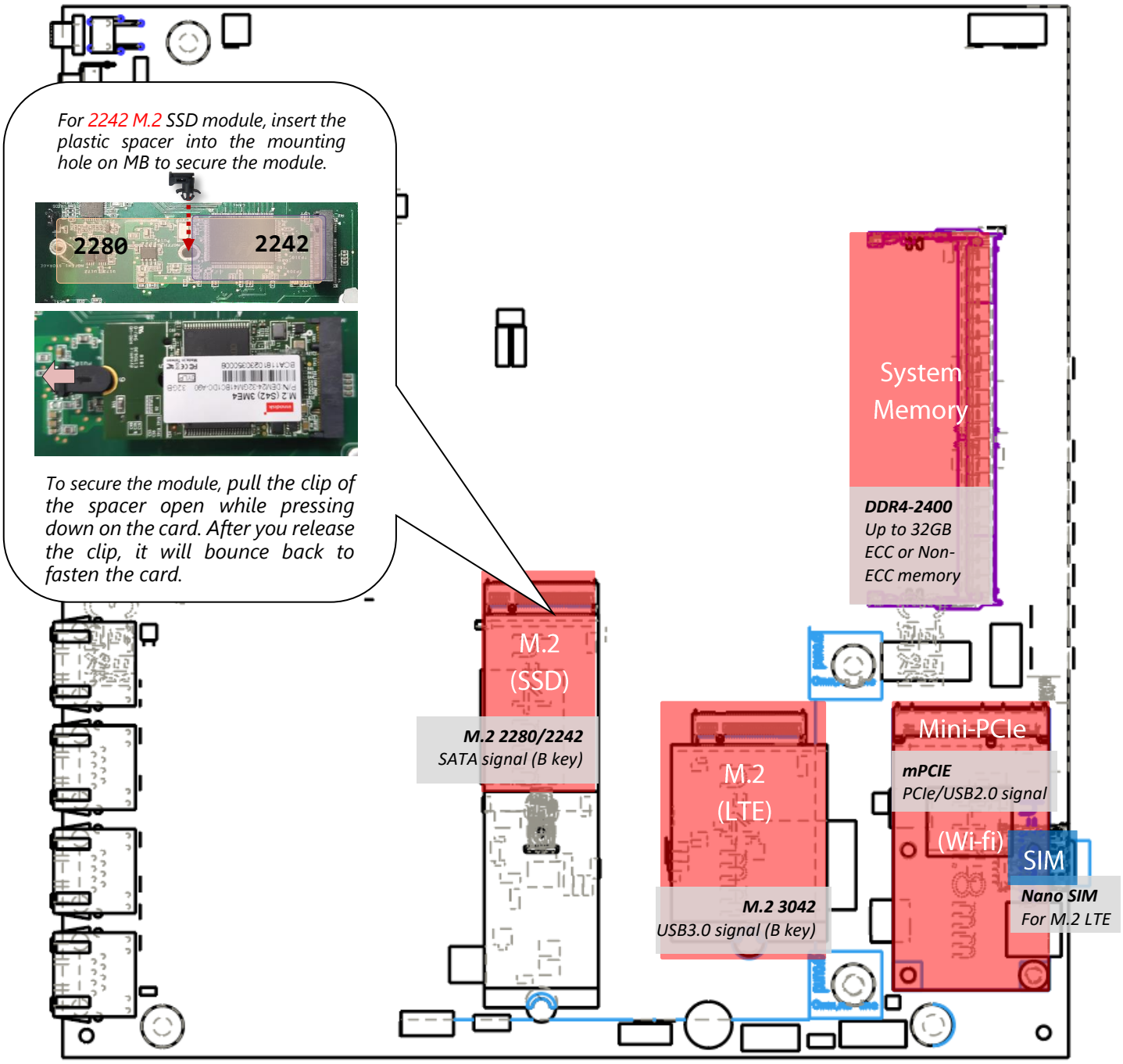
SW3: Power Button

PIN	Description	PIN	Description
4	PWRON#	2	GND
3	PWRON#	1	GND
L2	PRLED-	L1	SUSLED-

CHAPTER 2: HARDWARE INSTALLATION

To reduce the risk of personal injury, electric shock, or damage to the equipment, please remove all power connections to completely shut down the device. Also, please wear ESD protection gloves when conducting the steps described hereafter.

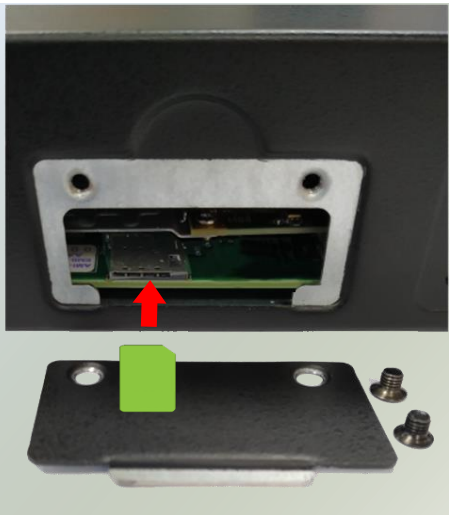
This system supports multiple wireless connectivity methods with two M.2 slots and an MPCIE slot. Based on your application and modules used, install modules in the corresponding slots.



Installing Nano SIM Card

The SIM slot on front panel supports an LTE module. The SIM socket supports the push-push mechanism, allowing inserting and ejecting the SIM card to be as easy as one push.

1. Loosen the two screws that secure the SIM slot cover and remove the slot cover. With the angled corner facing inward, push the SIM card all the way in until it clicks into place.

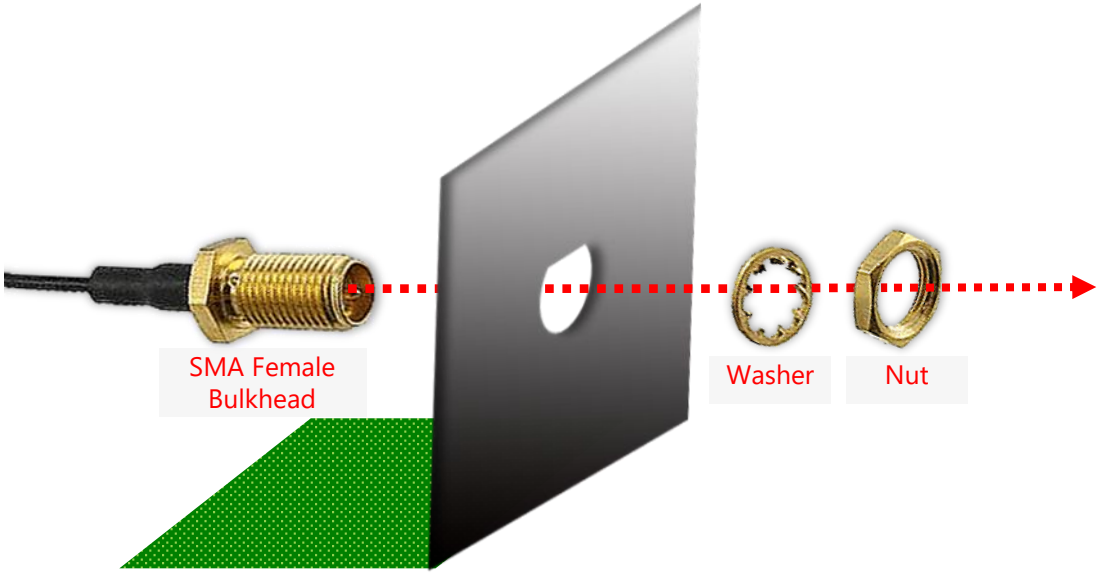


2. To remove the SIM card, use your fingertip to push it a little to have the card automatically ejected.

Mounting an SMA-Mount Antenna Cable Assembly

To mount the Wi-Fi/LTE antennas:

1. Take out the antenna pigtail cable from the Antenna Kit. From inside the chassis, insert the SMA Female Bulkhead through the antenna hole on the panel.



2. From outside the panel, attach the Washer and Nut, and tighten the Nut using an SMA Torque Wrench.

Warning: Do not use any tool other than an SMA Torque Wrench to fasten the Nut. For example, general pliers or tweezers without limited twisting force are very likely to cause the distortion of SMA connector.

Rack-mounting the System

With the rack mount kit, this system can be fixed onto rack posts. Please contact Lanner's sales representative for purchasing this kit.

What's in the Rack-mount Kit

Check the kit for the following items:

- 2x Ear Bracket
- 1x Adapter Bracket
- 1x Adapter Holder
- Screws for the fixture of the Brackets and the Holder (8x Screw A, 2x Screw B)

Ear Bracket

Adapter Bracket

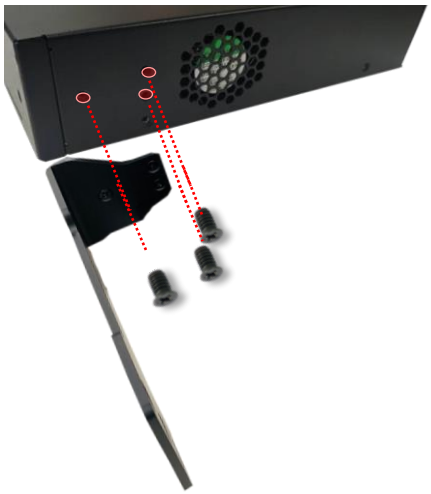
Adapter holder

Screw A

Screw B

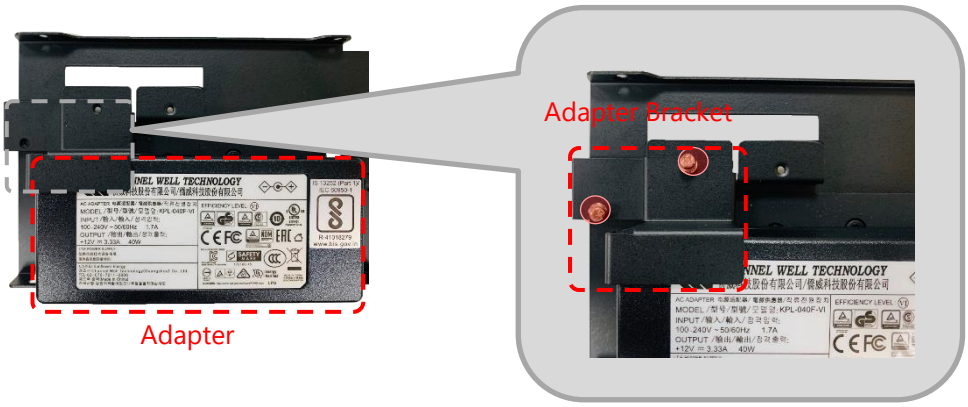
Attaching the Assembly to the Chassis

1. On one side of the system, align the ear bracket to the screw holes on the side panel and fix it using 3 screws (Screw A).

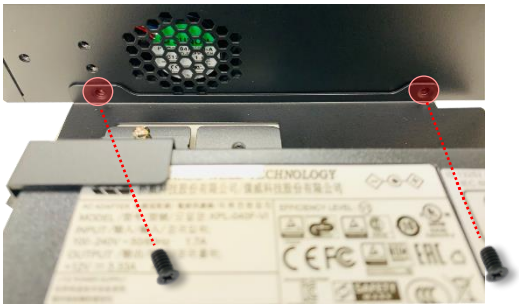


2. Secure the other ear bracket to the other side of the system.

3. The adapter holder assembly is designed to secure a 5V adapter or a 3V adapter. Secure the adapter onto the holder with the adapter bracket and 2 provided screws (Screw B). Make sure the way you place the bracket is as shown in the picture.



4. Attach the adapter holder to the left side of system and secure it with 2 screws (Screw A)



5. Secure the adapter's cable onto the adapter holder.

CHAPTER 3: SOFTWARE SETUP

BIOS Setup

BIOS is a firmware embedded on an exclusive chip on the system's motherboard. Lanner's BIOS firmware offering including market-proven technologies such as Secure Boot and Intel Boot Guard technology deliver solid commitments for the shield protection against malware, uncertified sequences and other named cyber threats. BIOS update for Lanner PCs are available for download at
http://www.lannerinc.com/products/firmware-and-software/securityenhanced-bios

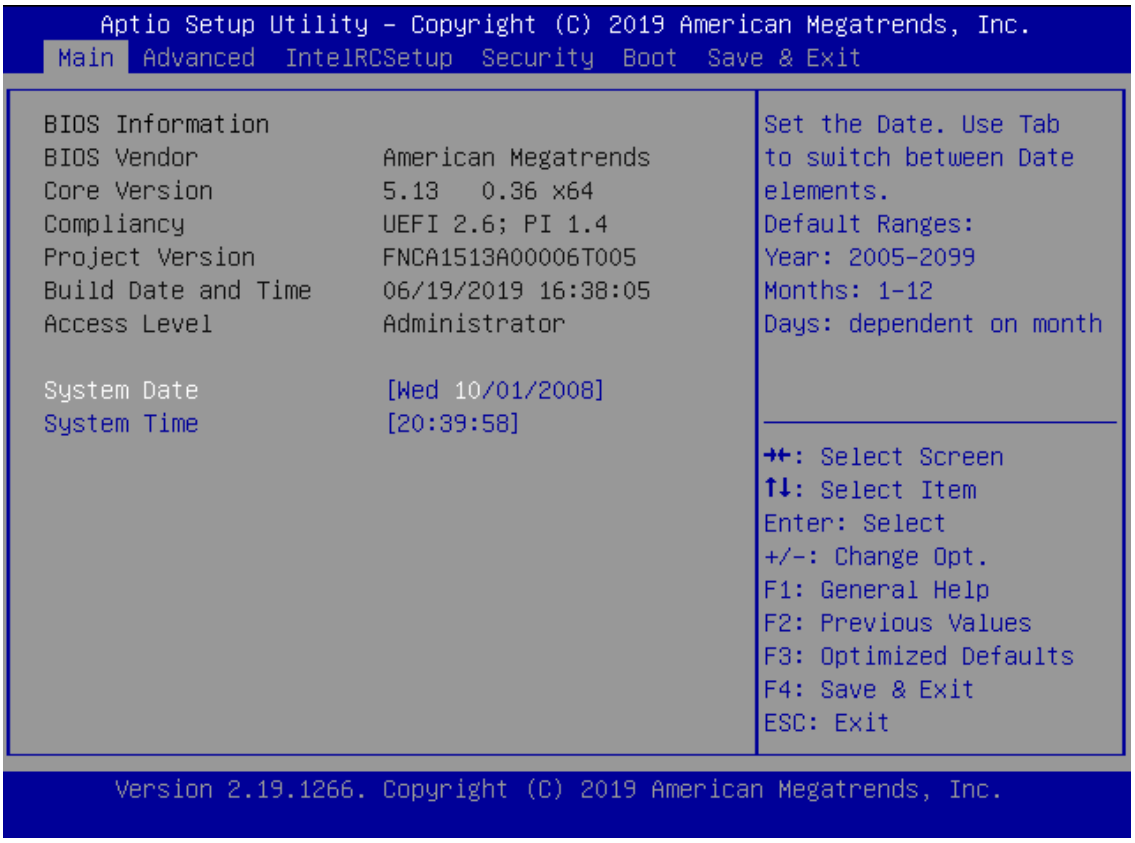
Main Setup

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

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

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

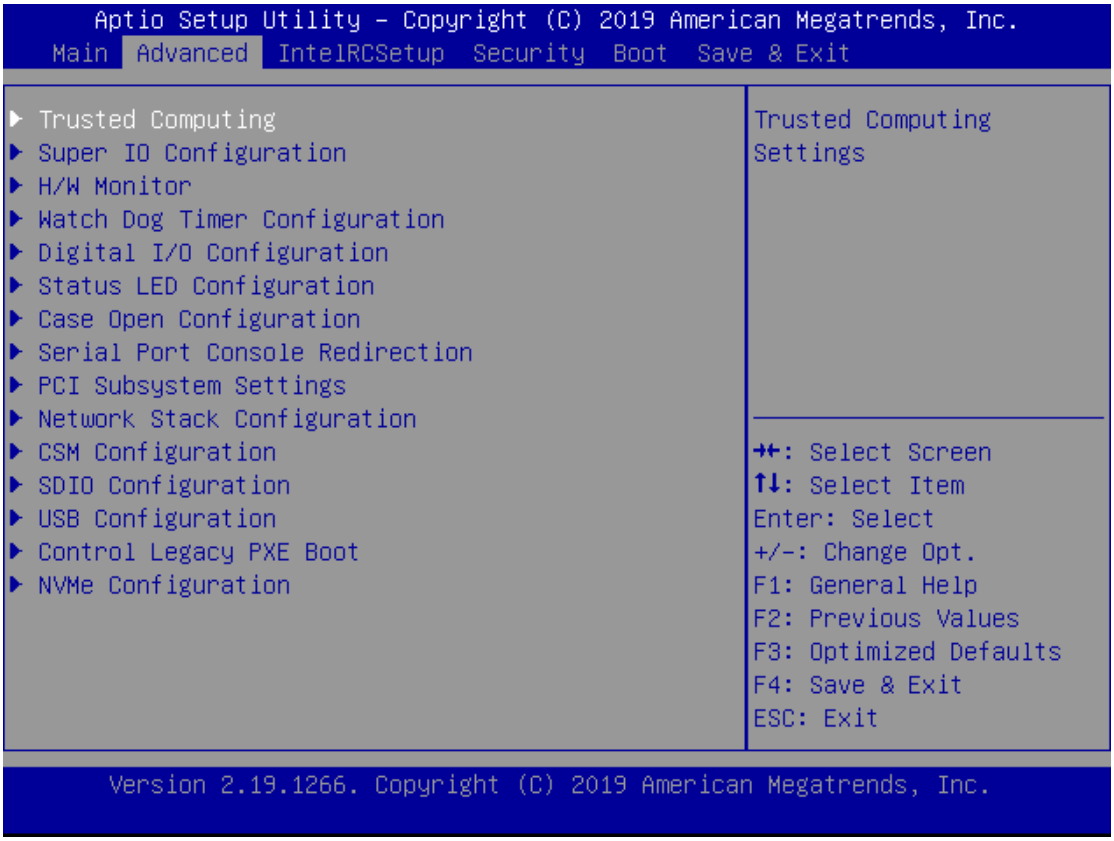
Setup main page contains BIOS information and project version information.



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

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Advanced

TPM20 Device Found                          Enables or Disables
Vendor: NTC                                 BIOS support for
Firmware Version: 1.3                       security device. O.S.
                                            will not show Security
Security Device        [Enable]             Device. TCG EFI
Support                                     protocol and INT1A
Active PCR banks       SHA-1,SHA256         interface will not be
Available PCR banks    SHA-1,SHA256         available.

SHA-1 PCR Bank         [Enabled]            ---------------------
SHA256 PCR Bank        [Enabled]            →←: Select Screen
                                            ↑↓: Select Item
Pending operation      [None]               Enter: Select
Platform Hierarchy     [Enabled]            +/-: Change Opt.
Storage Hierarchy      [Enabled]            F1: General Help
Endorsement            [Enabled]            F2: Previous Values
Hierarchy                                   F3: Optimized Defaults
                                            F4: Save & Exit
                                            ESC: Exit

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AB
```

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Advanced

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

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AB
```
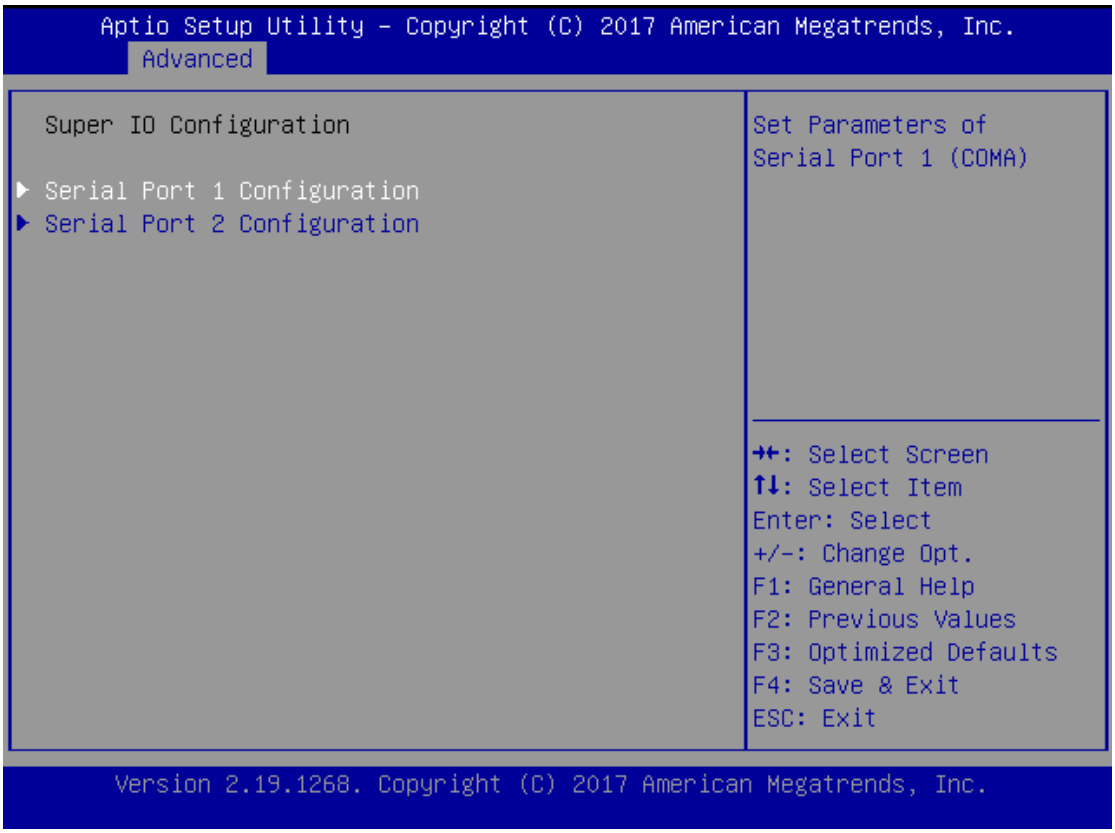
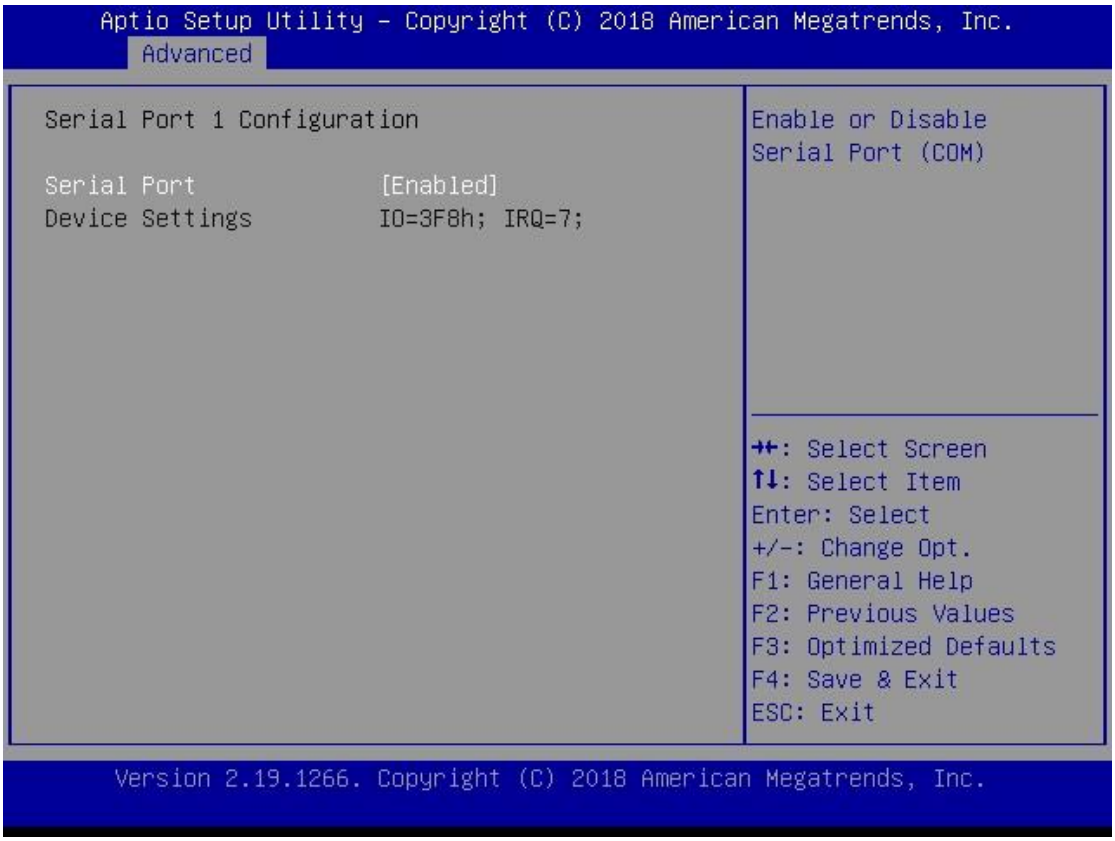

Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or disables SHA256 PCR Bank.
Pending operation	None TPM Clear	Schedules an Operation for the Security Device. 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

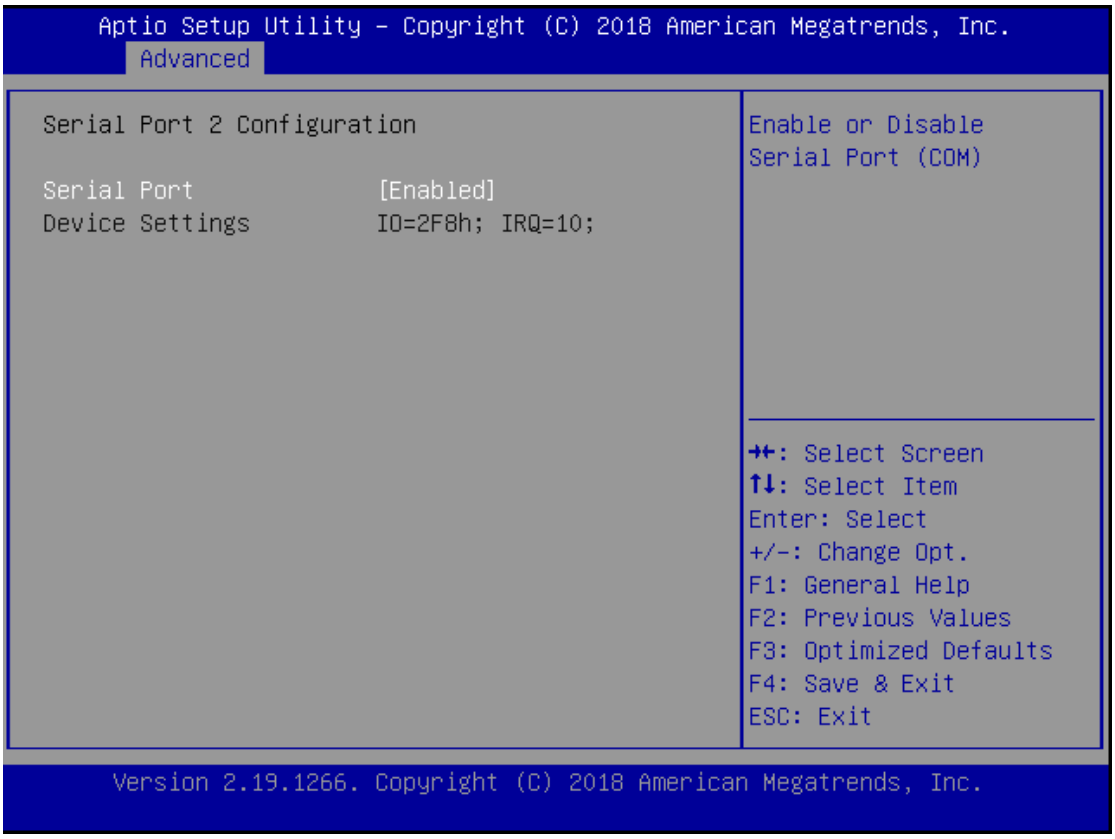


Serial port 1 Configuration



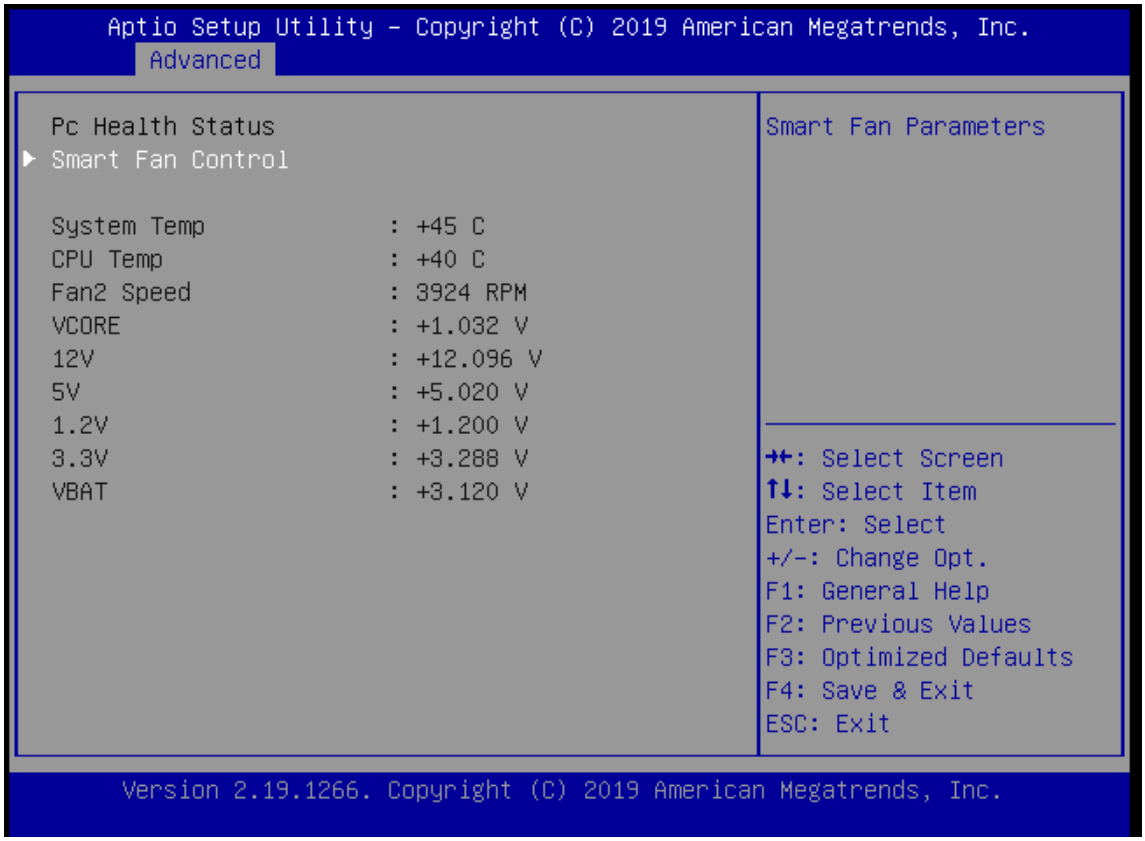
Feature	Options	Description
Serial Port	Enabled Disabled	Enables or disables Serial Port 1.
Device Settings	NA	IO=3F8h; IRQ = 7

Serial port 2 Configuration



Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 2.
Device Settings	NA	IO=2F8h; IRQ = 10

H/W Monitor


Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
Pc Health Status
Smart Fan Control
System Temp : +45 C
CPU Temp : +40 C
Fan2 Speed : 3924 RPM
VCORE : +1.032 V
12V : +12.096 V
5V : +5.020 V
1.2V : +1.200 V
3.3V : +3.288 V
VBAT : +3.120 V
Smart Fan Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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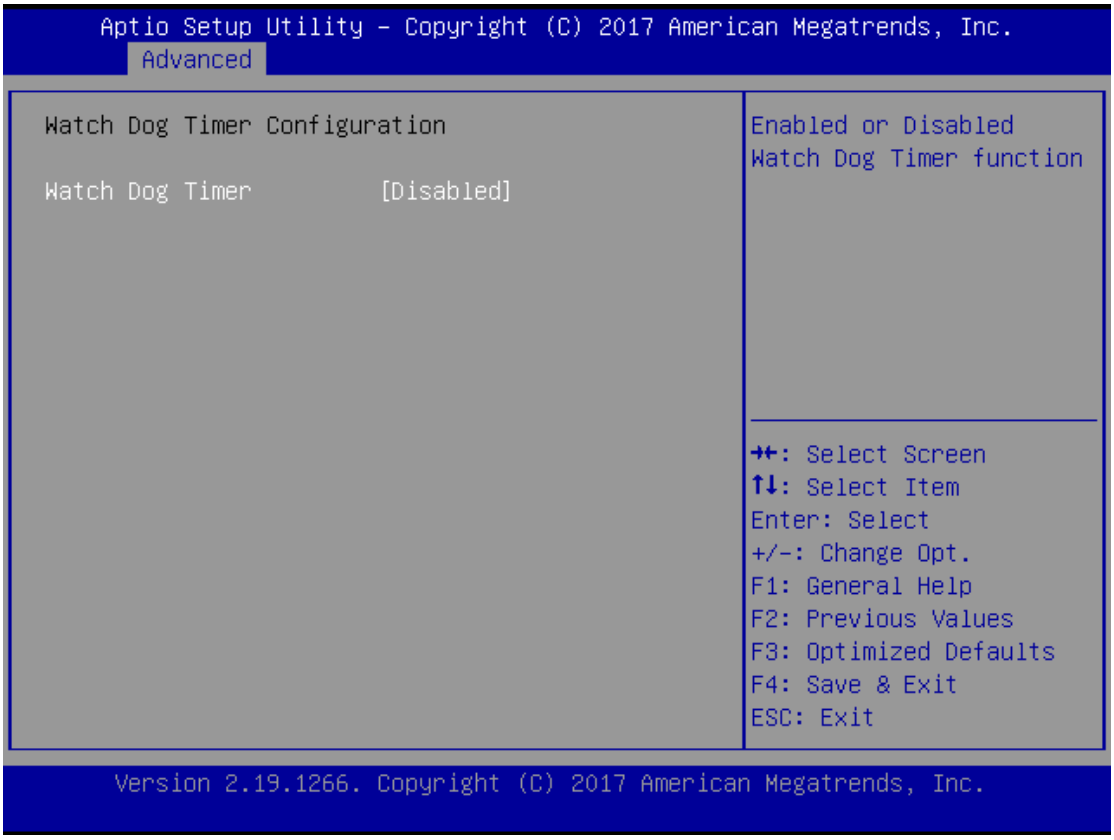
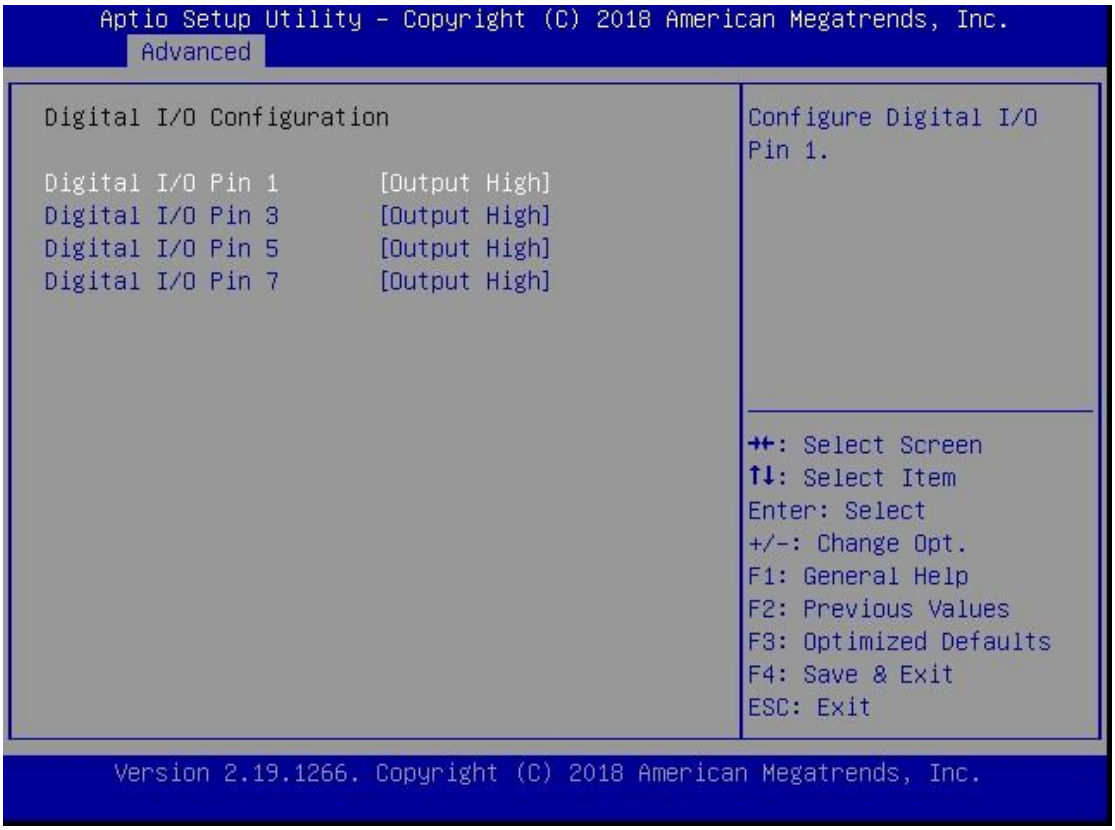
Watch Dog Timer Configuration



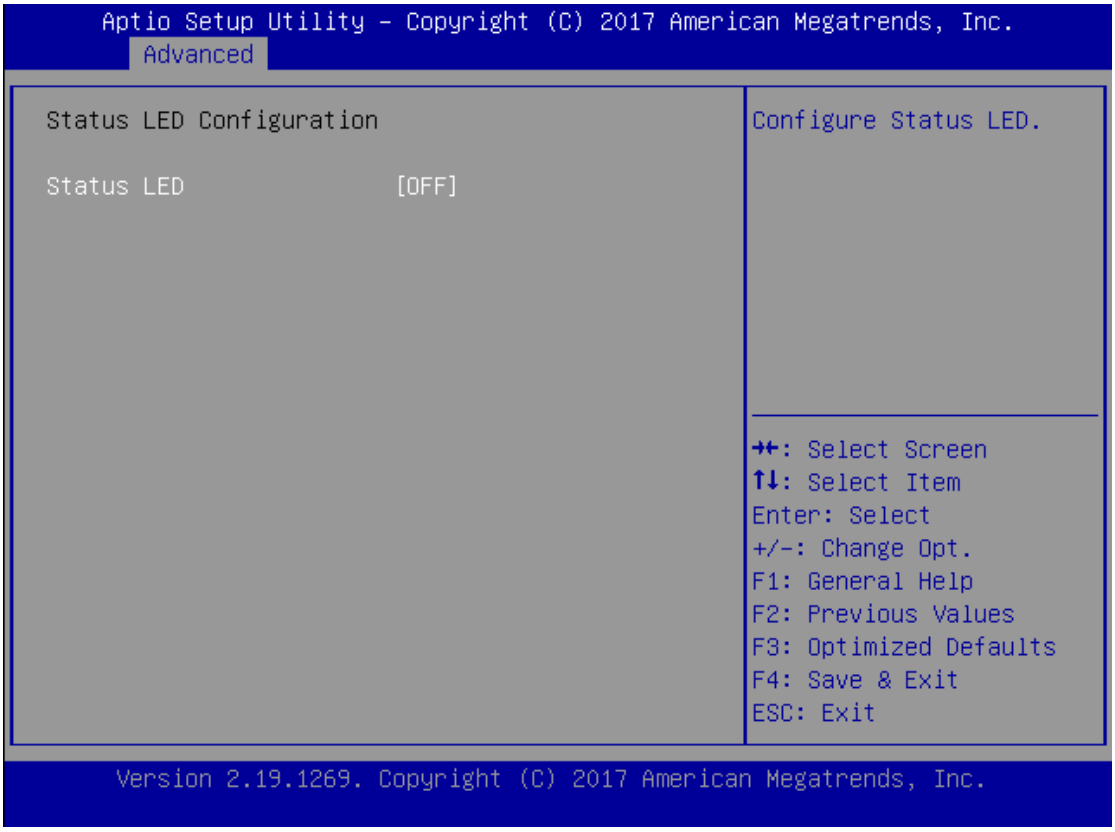
Feature	Options	Description
Watch Dog Timer	Enabled Disabled	Enables or disables Watch Dog Timer function

Digital I/O Configuration



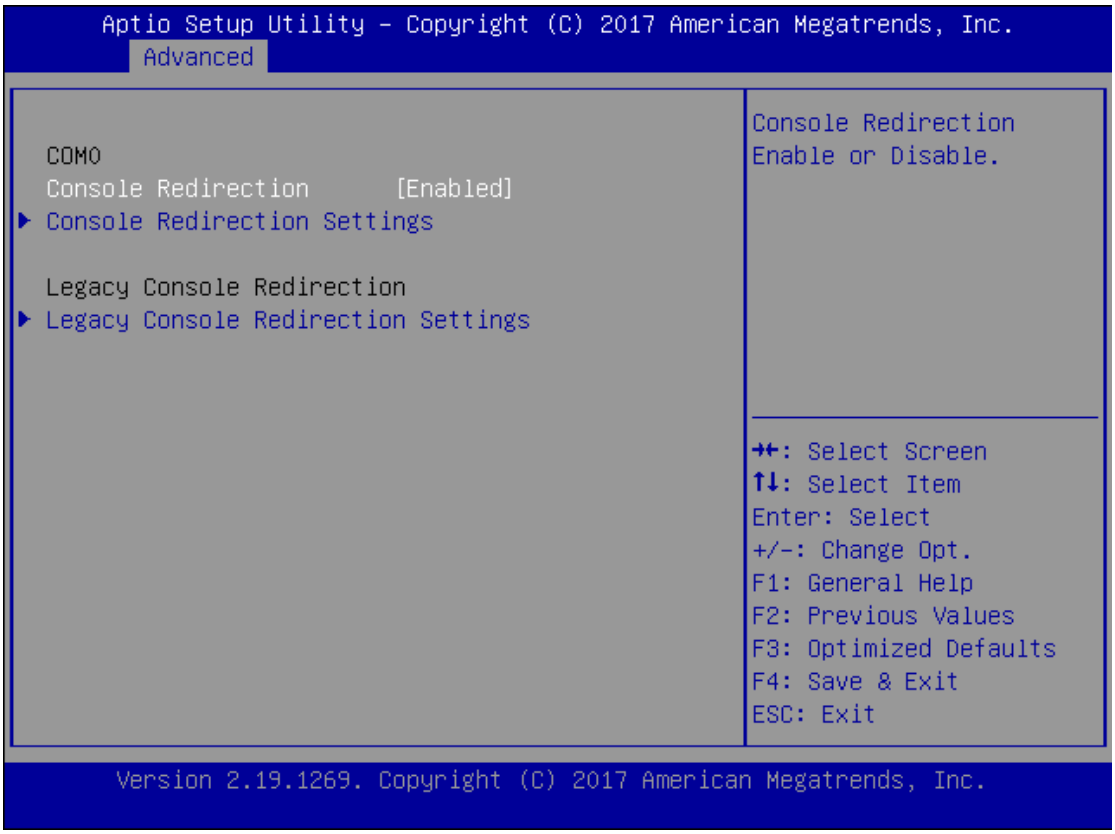
Feature	Options	Description
Digital I/O Output 1	Output Low Output High	Configure Digital I/O Pin1
Digital I/O Output 3	Output Low Output High	Configure Digital I/O Pin3
Digital I/O Output 5	Output Low Output High	Configure Digital I/O Pin5
Digital I/O Output 7	Output Low Output High	Configure Digital I/O Pin7

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

```
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Advanced

Console Redirection Settings

Terminal Type            [VT100+]
Bits per second          [115200]
Data Bits                [8]
Parity                   [None]
Stop Bits                [1]
Flow Control             [None]
VT-UTF8 Combo Key        [Enabled]
Support
Recorder Mode            [Disabled]
Putty KeyPad             [VT100]

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

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

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```
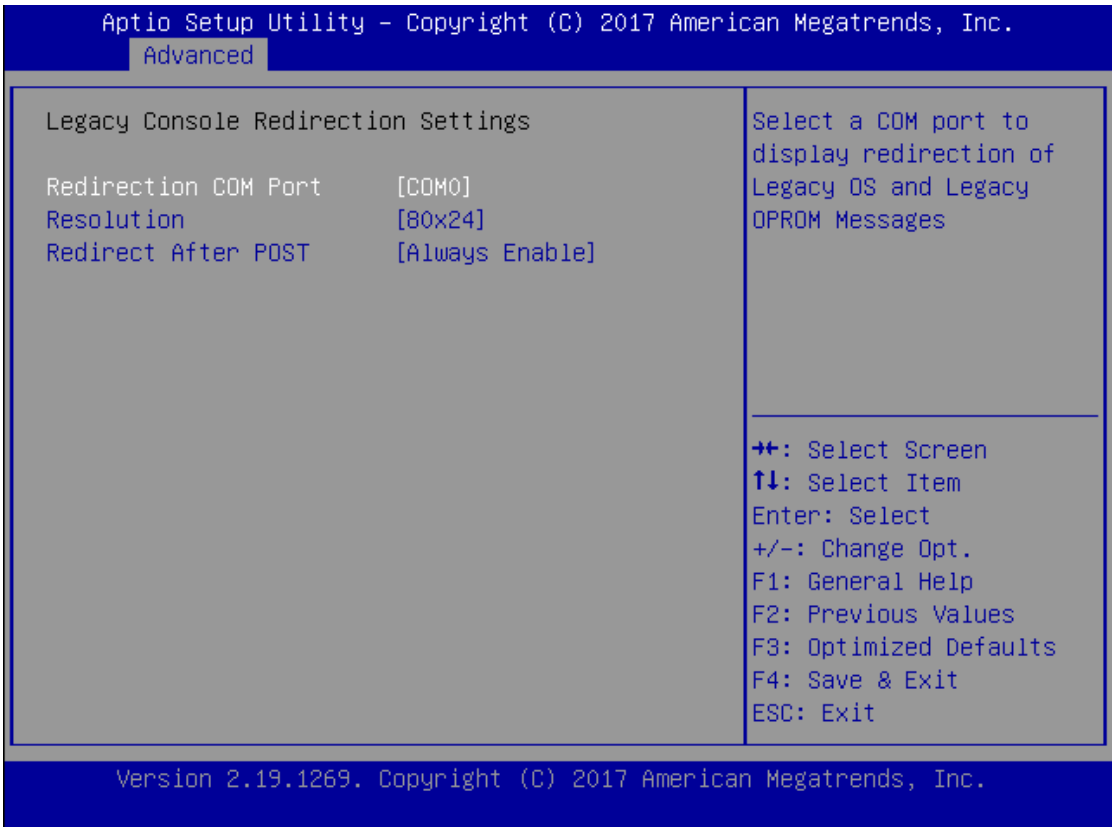

Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**VT100**: ASCII char set **VT100+**:Extends VT100 to support color, function keys, etc. **VT-UTF8**:Uses UTF8 encoding to map Unicode chars onto 1 or more bytes **ANSI**: Extended ASCII char set
Bits per second	9600 19200 38400 57600 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.

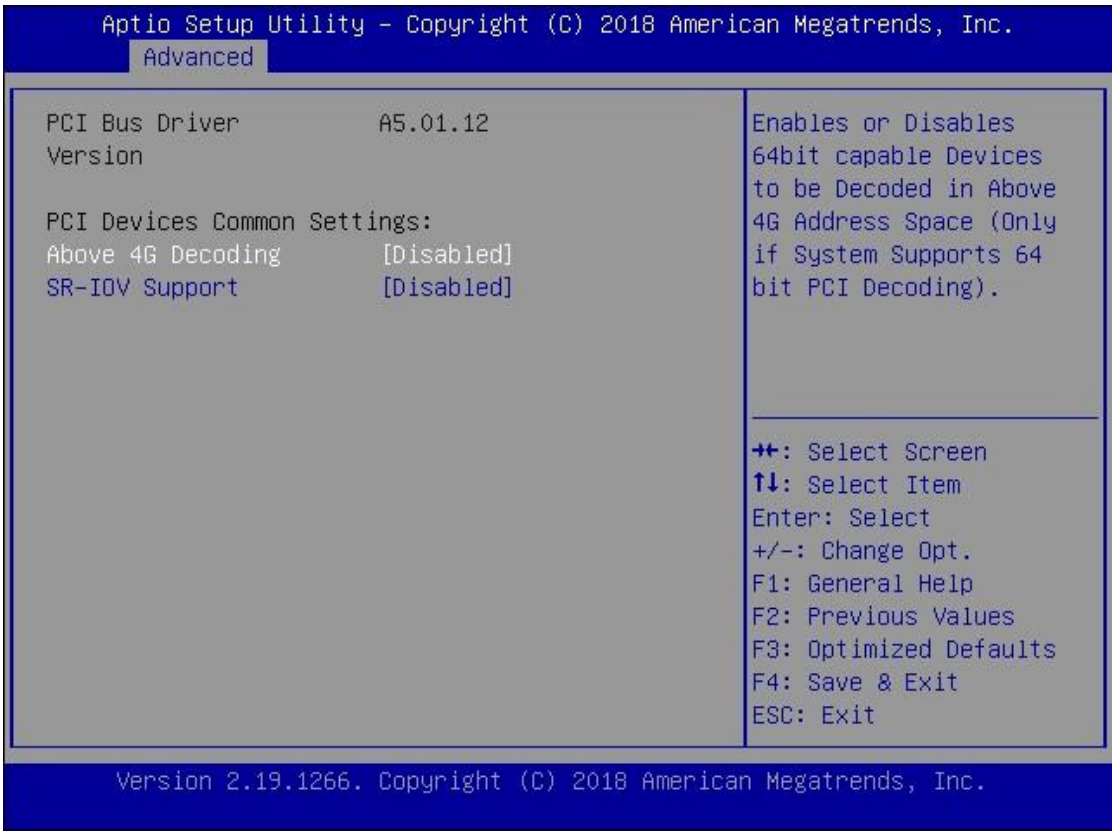
Flow Control	None Hardware RTS/CTS	Flow Control can prevent data loss from buffer overflow.
VT-UTF8 Combo Key Support	Disabled Enabled	Enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal 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**.

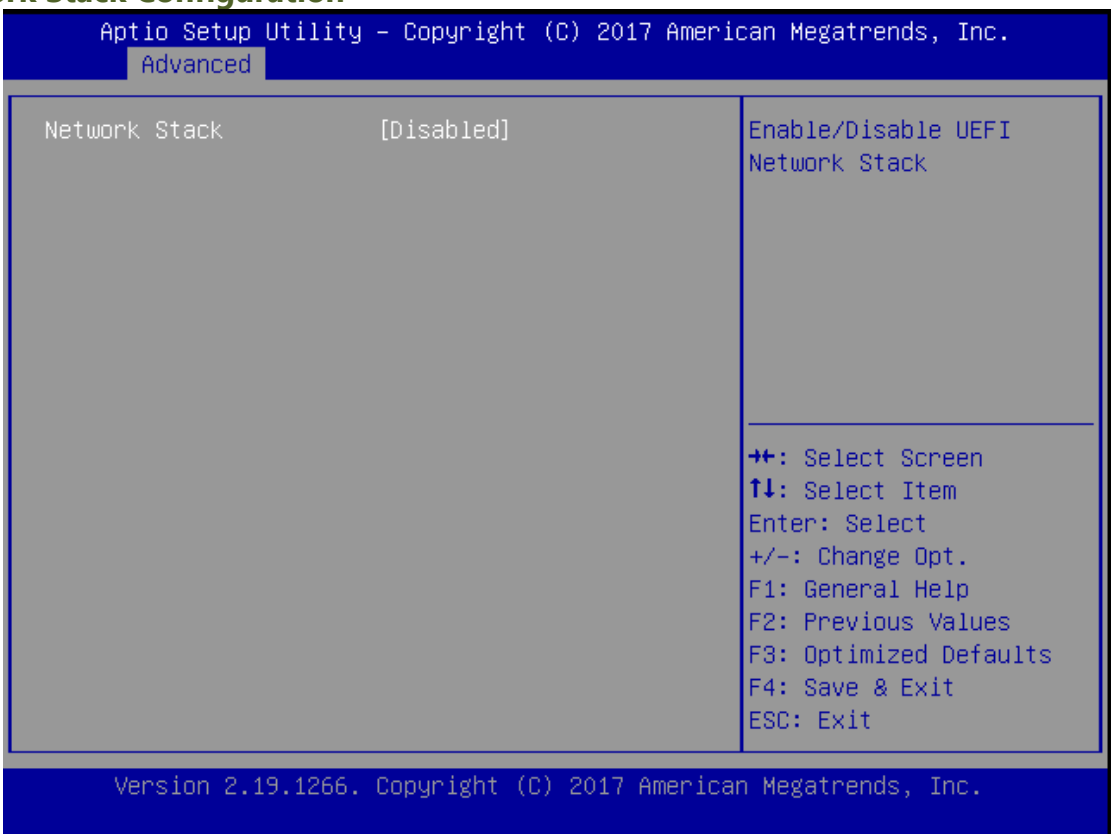
PCI Subsystem Settings



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).

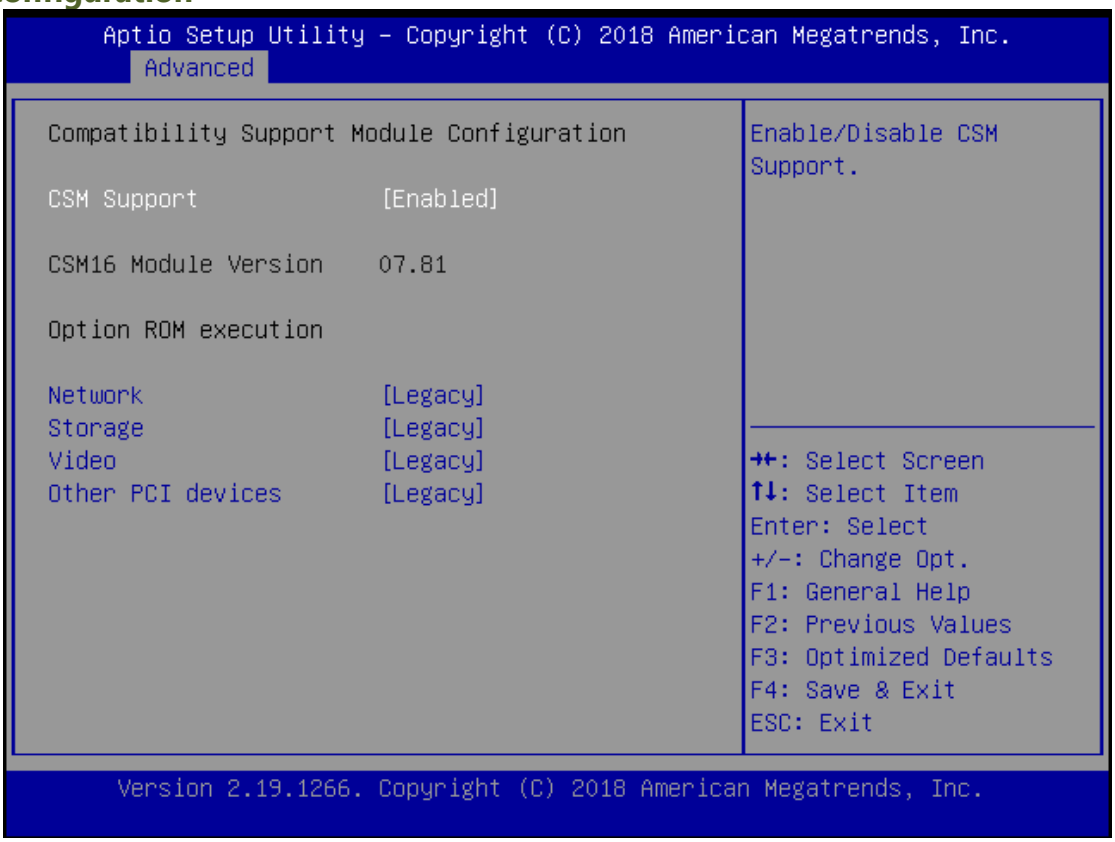
Feature	Options	Description
SR-IOV Support	Disabled Enabled	If the system has SR-IOV capable PCIe Devices, this option enables or disables Single Root IO Virtualization Support.

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

SDIO Configuration

Feature	Options	Description
SDIO Access Mode	Auto ADMA SDMA PIO	Auto Option: Access SD device in DMA mode if controller supports it,otherwise in PIO mode.DMA Option: Access SD device in DMA mode.PIO Option: Access SD device in PIO mode..

USB Configuration

```
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Advanced

USB Configuration                          Enables Legacy USB
                                           support. AUTO option
USB Module Version      19                 disables legacy support
                                           if no USB devices are
USB Controllers:                           connected. DISABLE
      1 XHCI                               option will keep USB
USB Devices:                               devices available only
      4 Drives, 2 Keyboards, 2 Mice, 2 Hubs for EFI applications.

Legacy USB Support      [Enabled]          ---------------------
XHCI Hand-off           [Enabled]          →←: Select Screen
USB Mass Storage        [Enabled]          ↑↓: Select Item
Driver Support                             Enter: Select
Port 60/64 Emulation    [Enabled]          +/-: Change Opt.
                                           F1: General Help
USB hardware delays                        F2: Previous Values
and time-outs:                             F3: Optimized Defaults
USB transfer time-out   [20 sec]           F4: Save & Exit
                                           ESC: Exit

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```
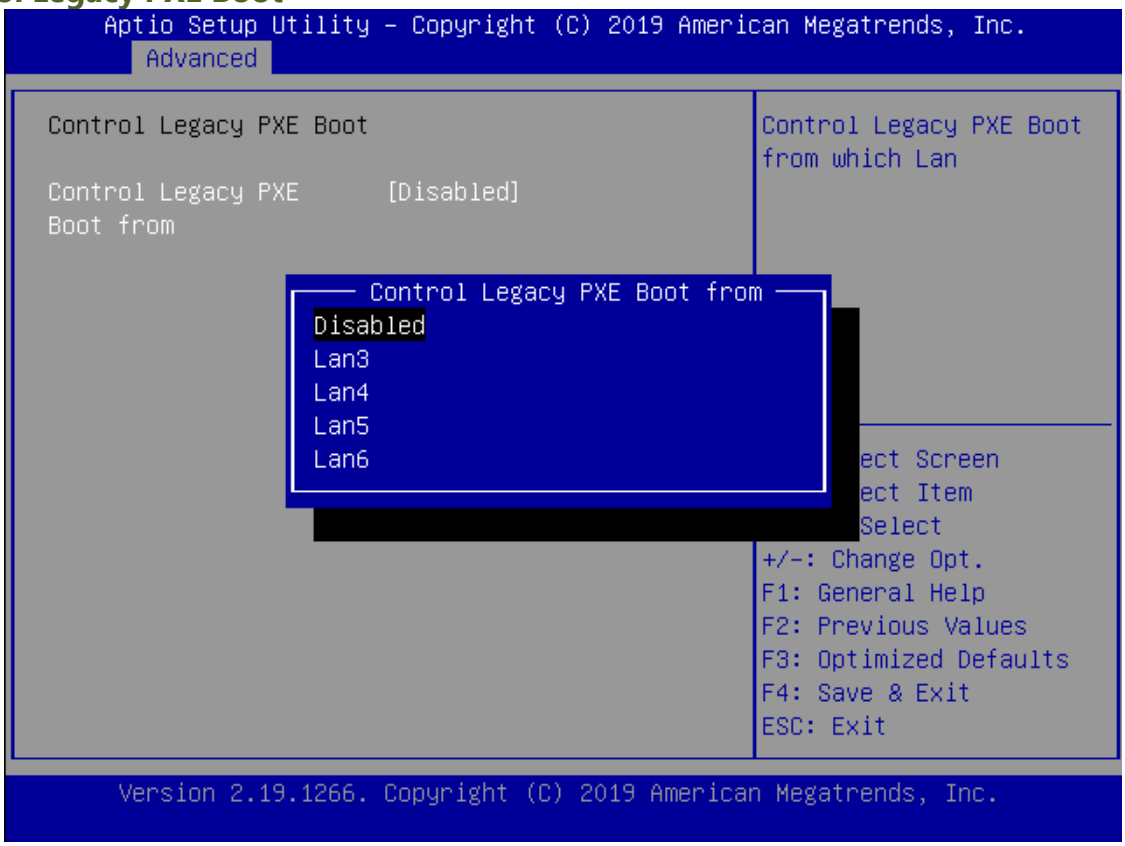

Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected; **Disabled** option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround 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

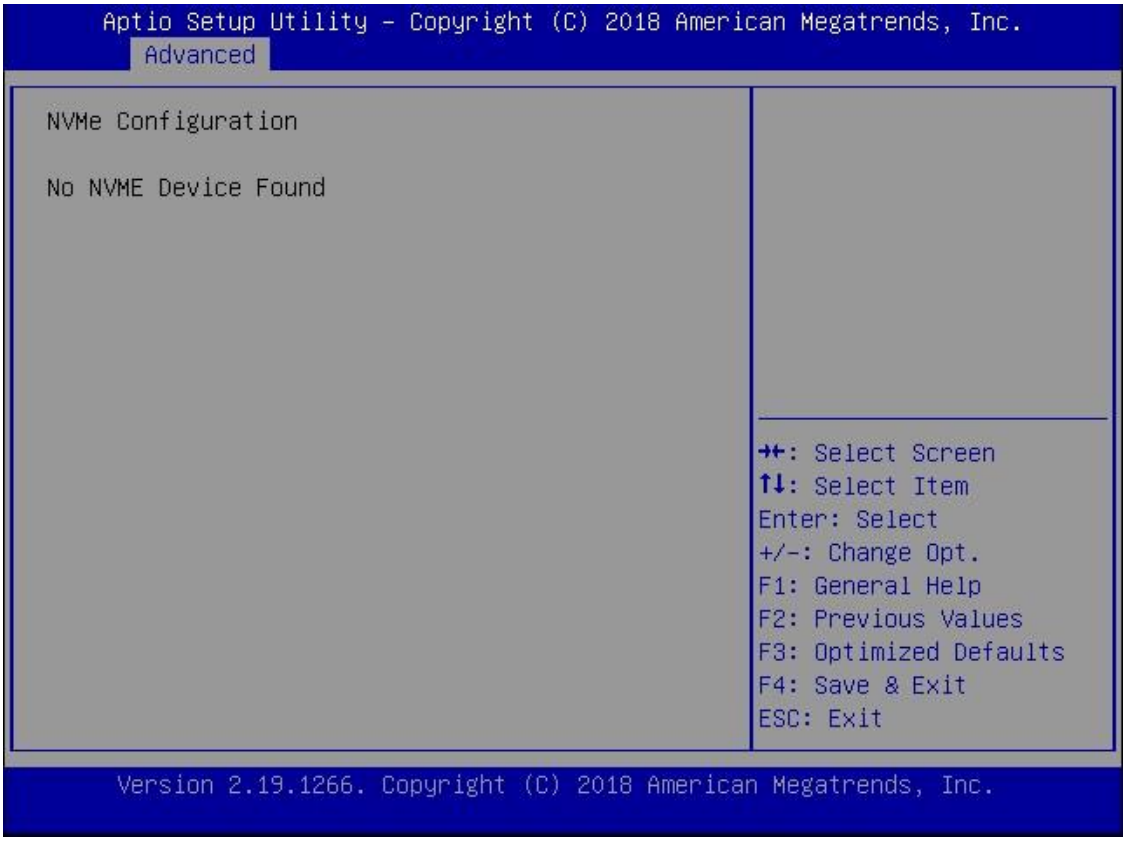
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Control Legacy PXE Boot



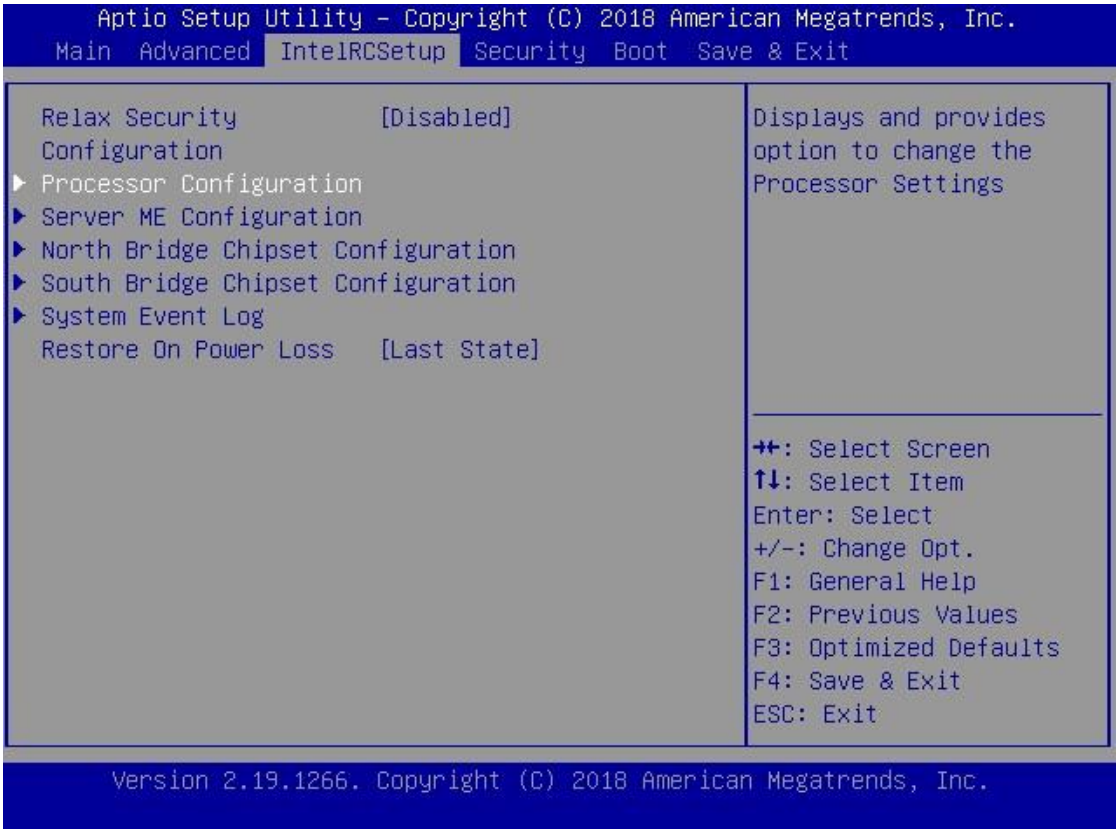
Feature	Options	Description
Control Legacy PXE Boot From	Disabled Lan3 Lan4 Lan5 Lan6	Control Legacy PXE Boot from which Lan.

NVME Configuration



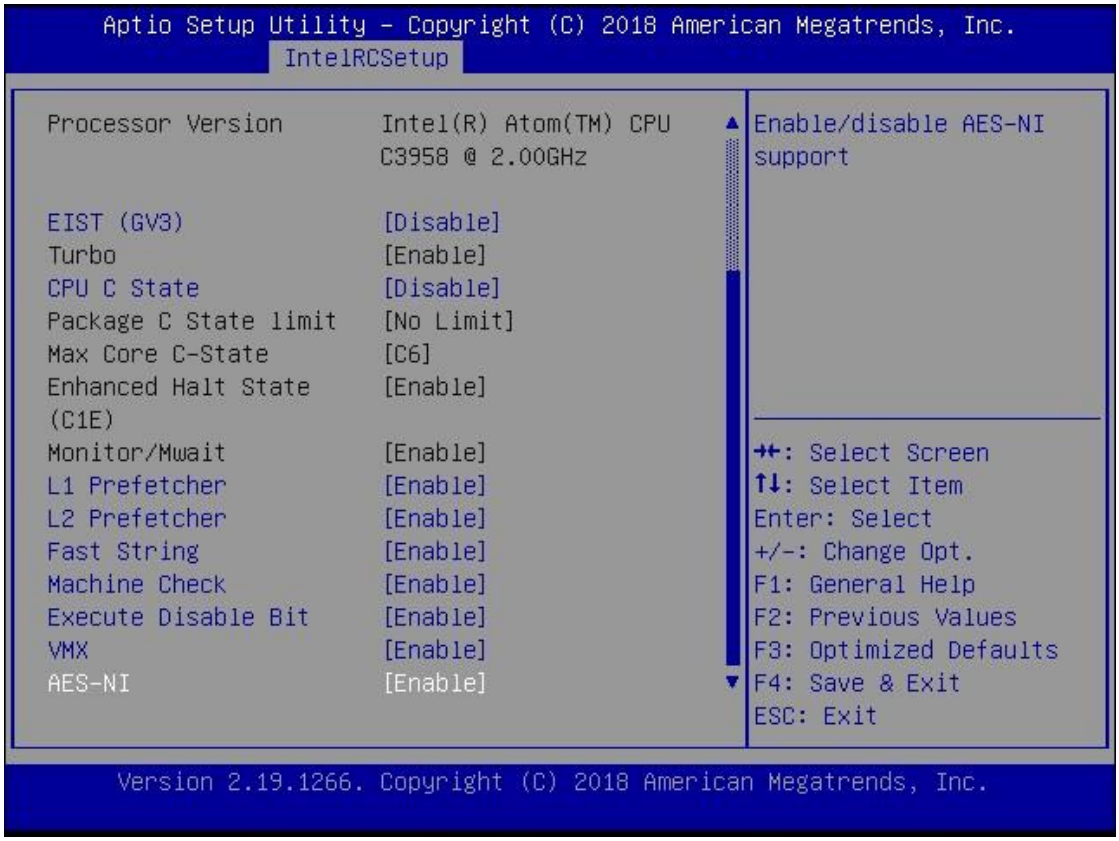
IntelRCSetup

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).

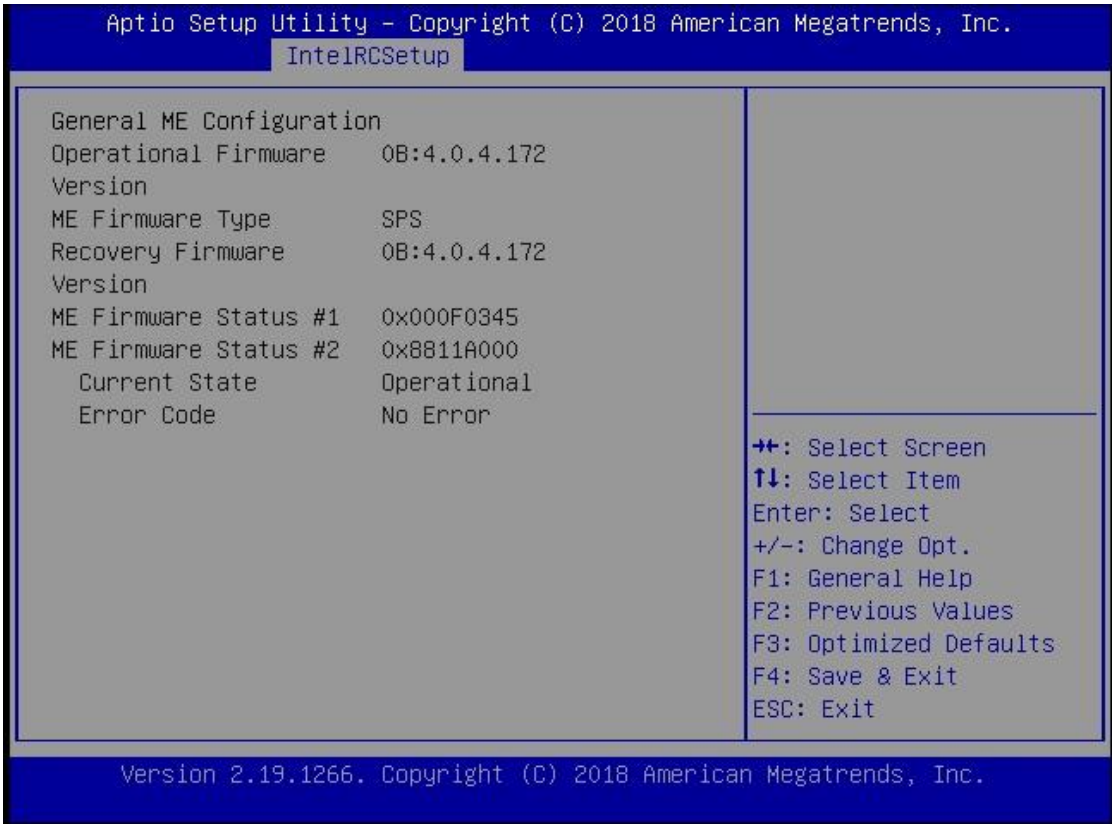
Processor Configuration



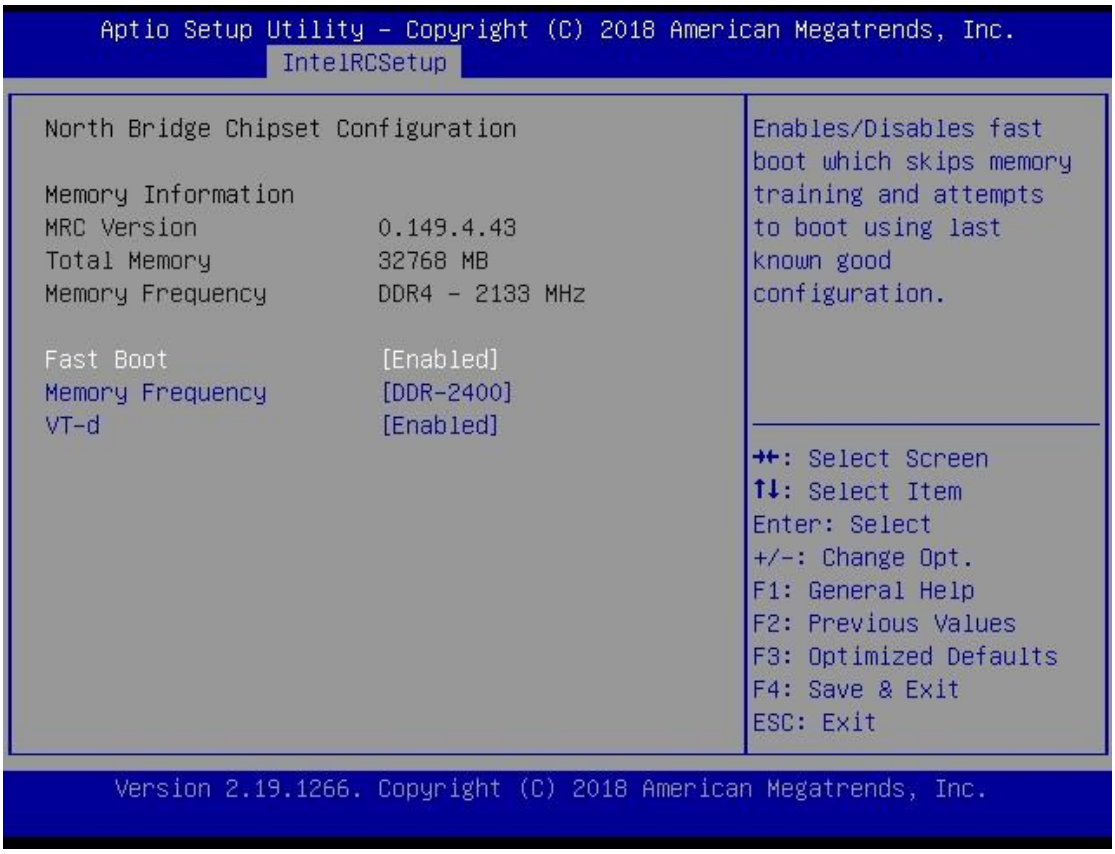
Feature	Options	Description
EIST (GV3)	Disable Enable	Enables/Disable EIST. GV3 must be enable for Turbo. .
Turbo	Enable Disable	Enable or Disable CPU Turbo capability. This option only applies to ES2 and above.
CPU C State	Disable Enable	Enable the Enhanced Cx state of the CPU, takes effect after reboot.
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 Enable	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	Enable/Disable L1 Prefetch.

	Disable	
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

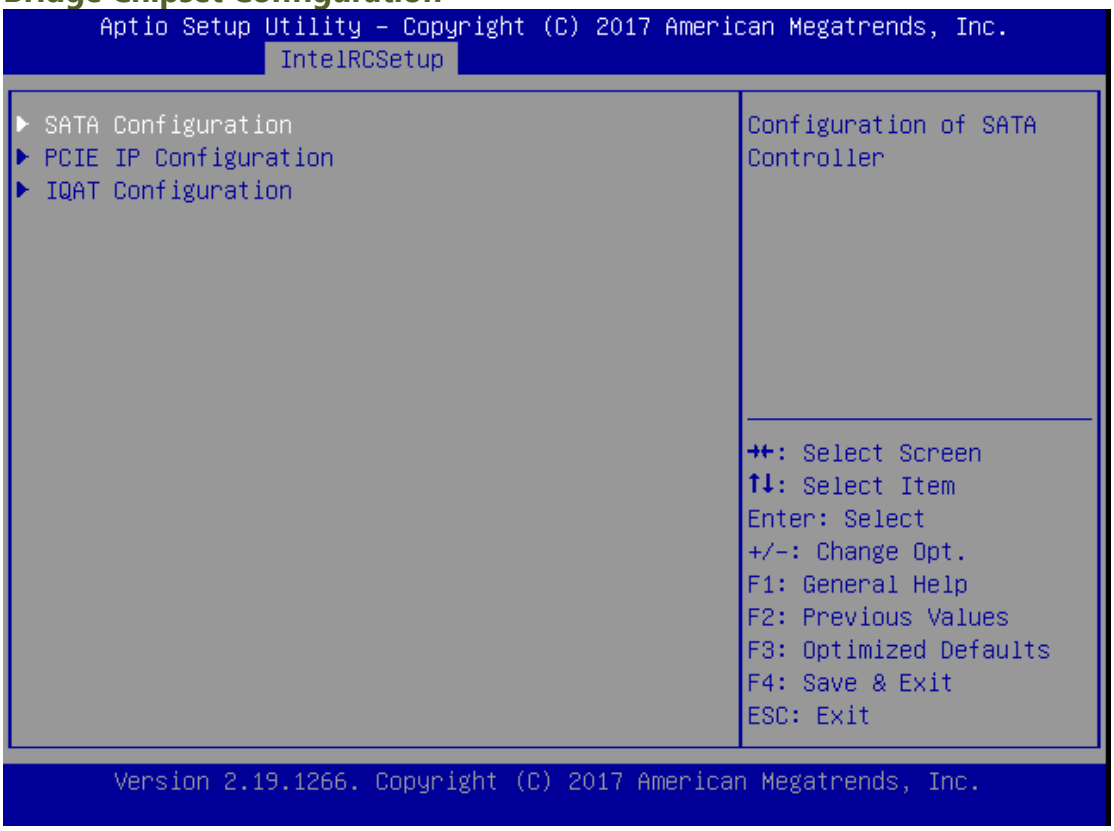


North Bridge Chipset Configuration

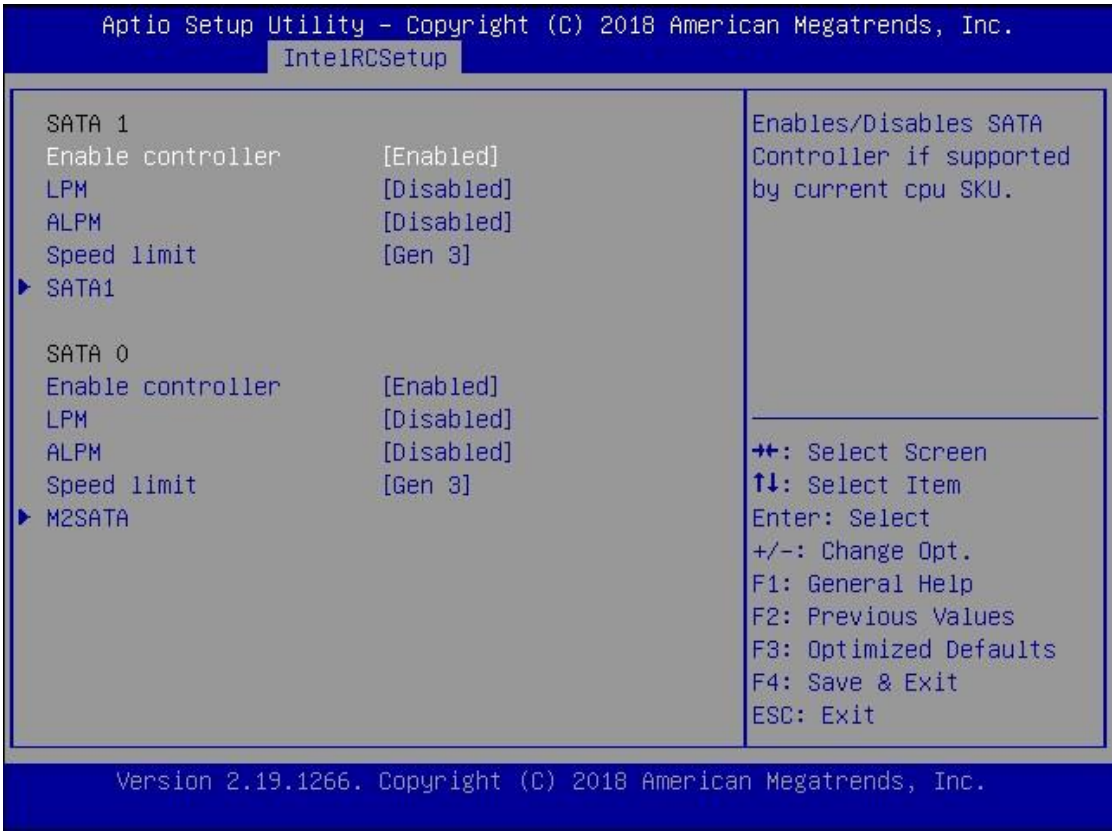


Feature	Options	Description
Fast Boot	Disabled Enabled	Enables/Disables fast boot, which skips memory training and attempts to boot using fast known good configuration.
Memory Frequency	DDR-1600 DDR-1867 DDR-2133 DDR-2400	DDR memory frequency: DDR4 up to DDR-2666 DDR3 up to DDR-1867.
VT-d	Disable Enable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

South Bridge Chipset Configuration

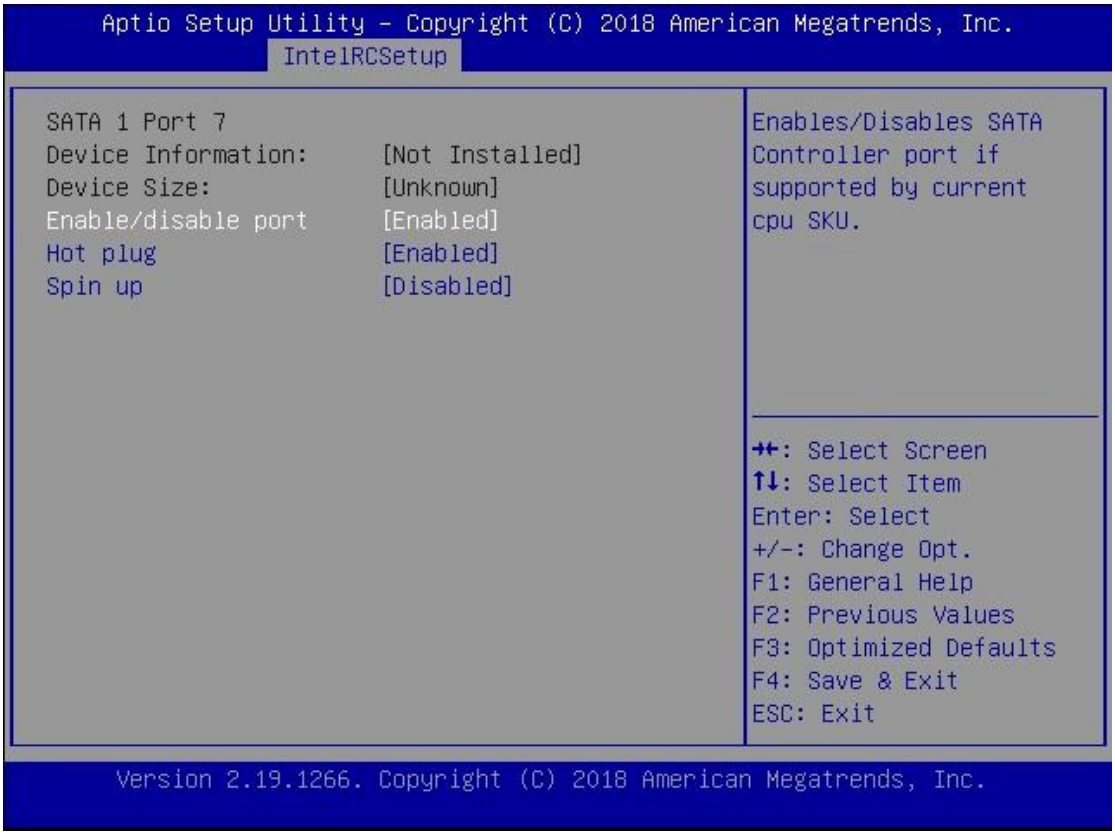


SATA Configuration



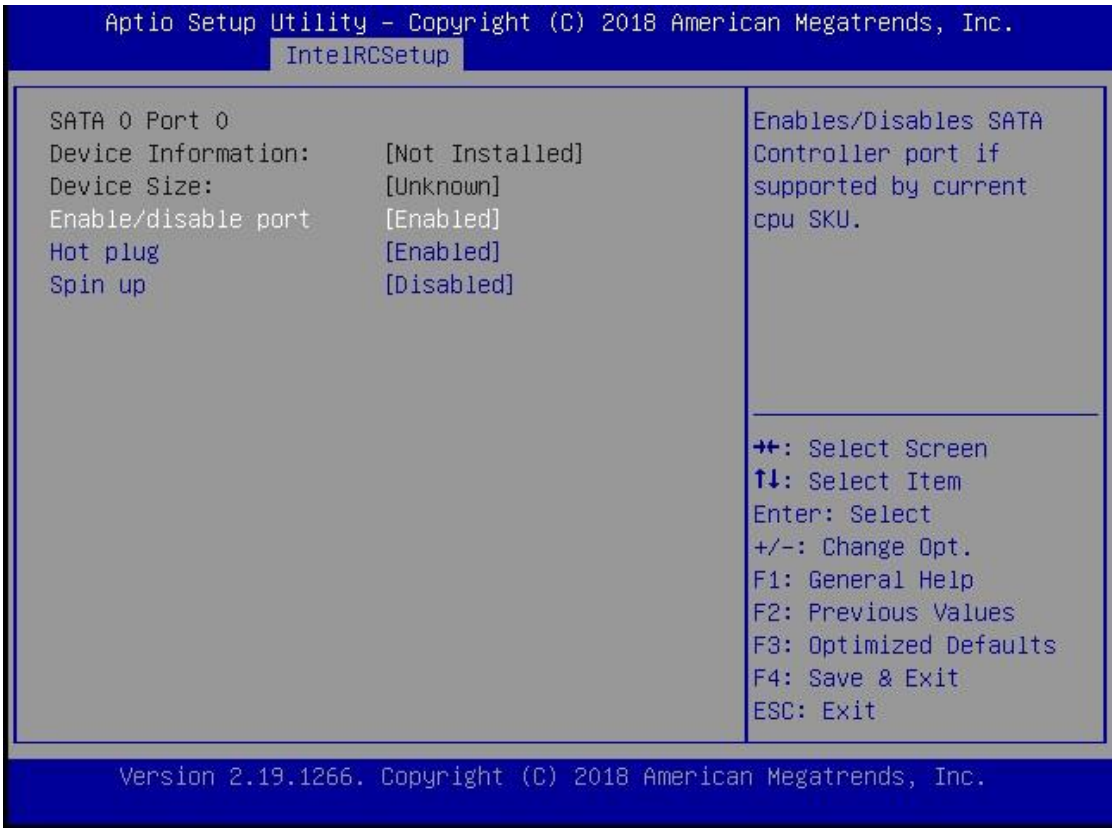
Feature	Options	Description
Enable controller	Enabled Disabled	Enables/Disables SATA Controller if supported by current CPU sku
LPM	Enabled Disabled	Enables/Disables Link Power Management
ALPM	Enabled Disabled	Enable/Disables Agresive Link Power Management
Speed Limit	Gen 1 Gen 2 Gen 3	Indicates the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

SATA1 Configuration



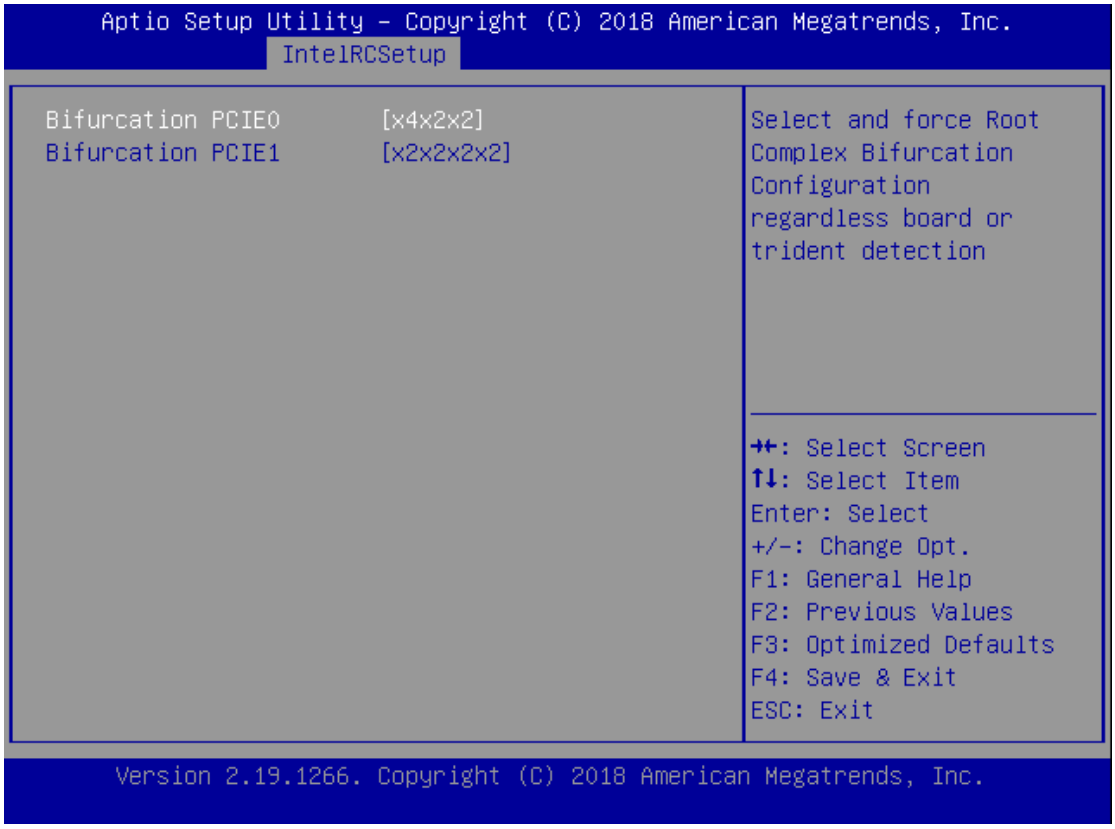
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current cpu SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

M2SATA1 Configuration



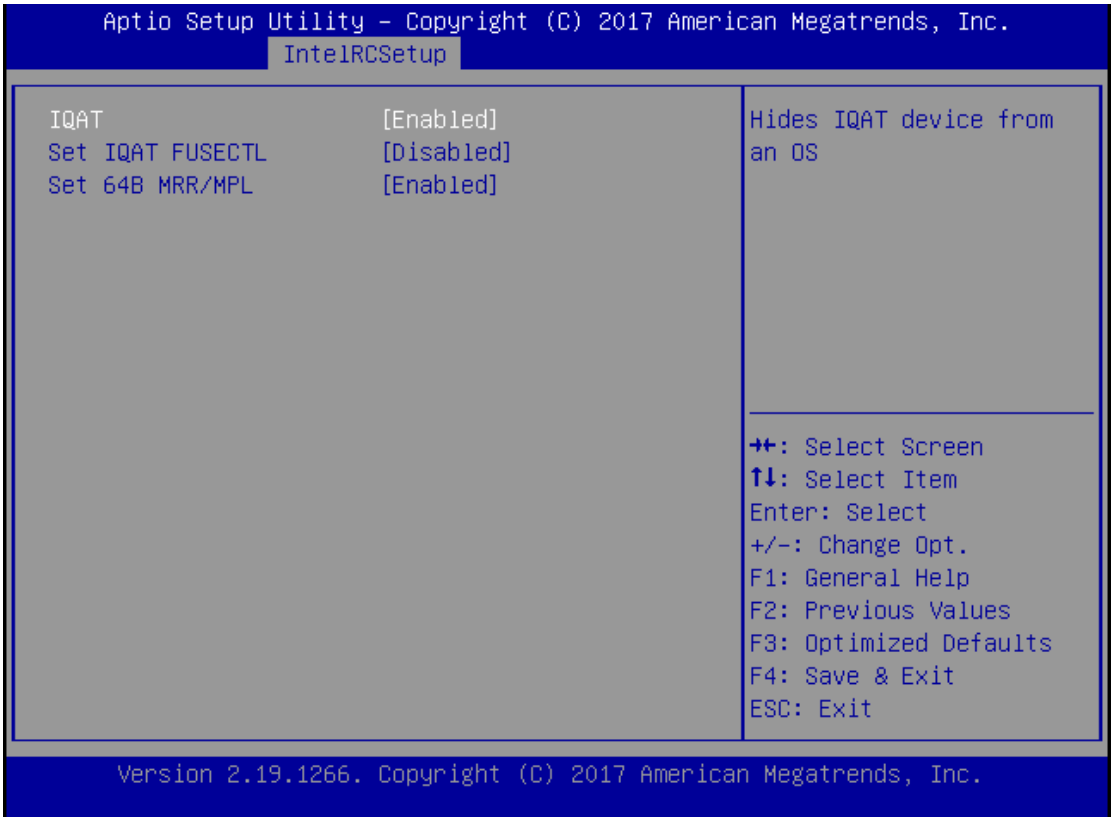
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current cpu SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

PCIE IP Configuration



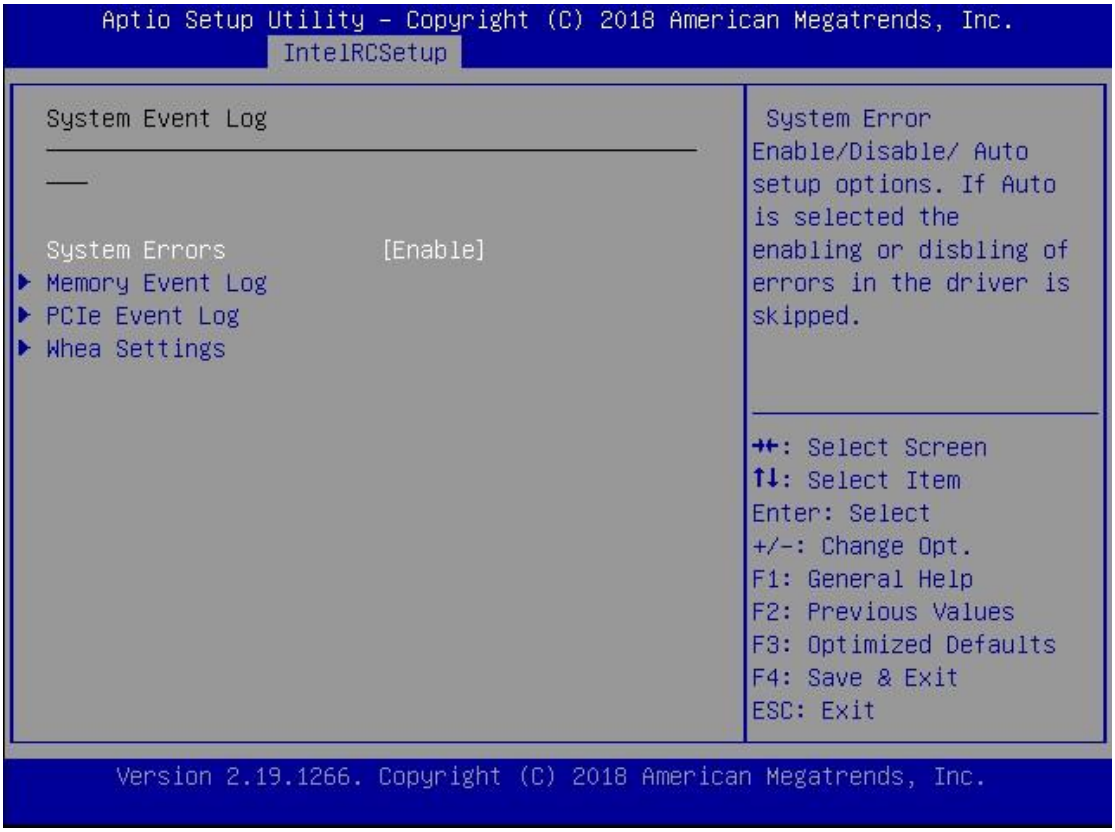
Feature	Options	Description
Bifurcation PCIE0	Auto X8 X4x4 X4x2x2 X2x2x4 X2x2x2x2	Select and force Root Complex Bifurcation Configuration regardless board or trident detection.
Bifurcation PCIE1	Auto X8 X4x4 X4x2x2 X2x2x4 X2x2x2x2	Select and force Root Complex Bifurcation Configuration regardless board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

IQAT Configuration



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

System Event Log

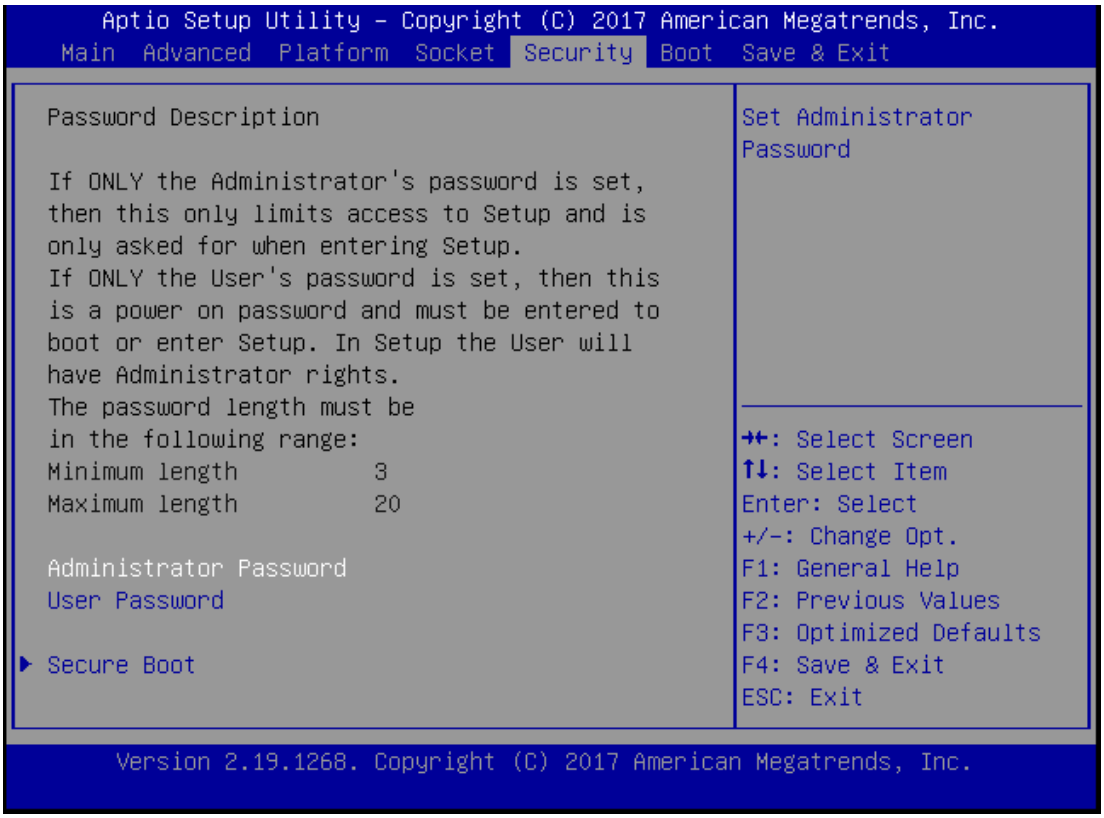


Feature	Options	Description
System Errors	Disable Enable Auto	System Error enabling and logging setup option.
Memory Elog Support	Disable Enable	Enable/Disable Memory Error logging support
Parity Check	Enable Disable	Enable/Disable Parity Check
Log Correctable	Enable Disable	Enable/Disable Correctable Memory Error logging support
Log Un-Correctable	Enable Disable	Enable/Disable Un-correctable Memory Error logging support
Enable/Disable Error Cloaking	Disable Enable	Error Cloaking Feature to hide CE Error to OS
PCIE Elog Support	Disable Enable	Enable/Disable PCIe Error logging support
Log Fatal Error	Disable Enable	Send system event Signal on Fatal error
Log Non-Fatal Error	Disable	Send system event Signal on Non-Fatal error.

	Enable	
Log Correctable Error	Disable Enable	Send system event Signal on Correctable error.
PCIe System Error	Disable Enable	Enable System Error reporting on all enumerated Root ports, bridges and devices.
PCIe Parity Error	Disable Enable	Enable Parity Error reporting on all enumerated Root ports, bridges and devices .
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 .

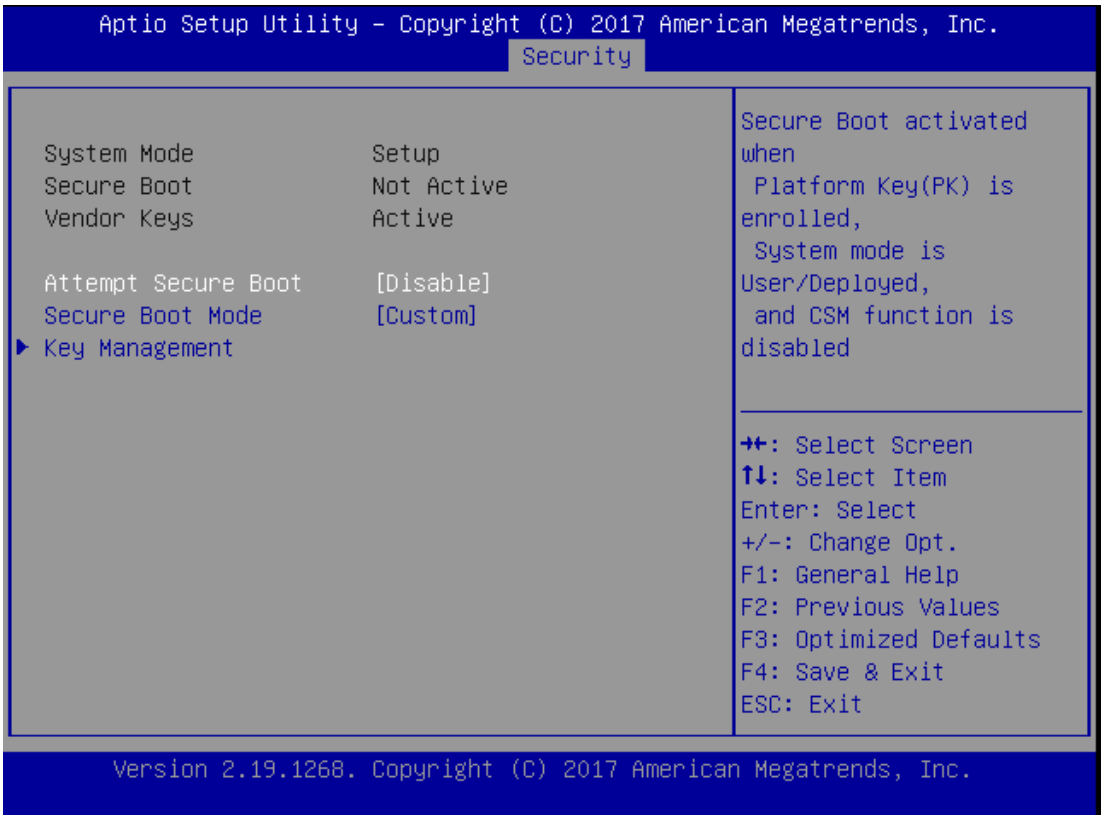
Security

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

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                                Security

  Provision Factory        [Disable]                  Allow to provision
  Defaults                                            factory default Secure
                                                      Boot keys when System
▶ Install Factory Default keys                        is in Setup Mode
▶ Enroll Efi Image
▶ Save all Secure Boot variables

  Secure Boot variable |  Size| Keys#| Key Source
▶ Platform Key(PK)     |     0|     0| No Key        ---------------------
▶ Key Exchange Keys    |     0|     0| No Key
▶ Authorized Signatures|     0|     0| No Key        →←: Select Screen
▶ Forbidden  Signatures|     0|     0| No Key        ↑↓: Select Item
▶ Authorized TimeStamps|     0|     0| No Key        Enter: Select
▶ OsRecovery Signatures|     0|     0| No Key        +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit

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```
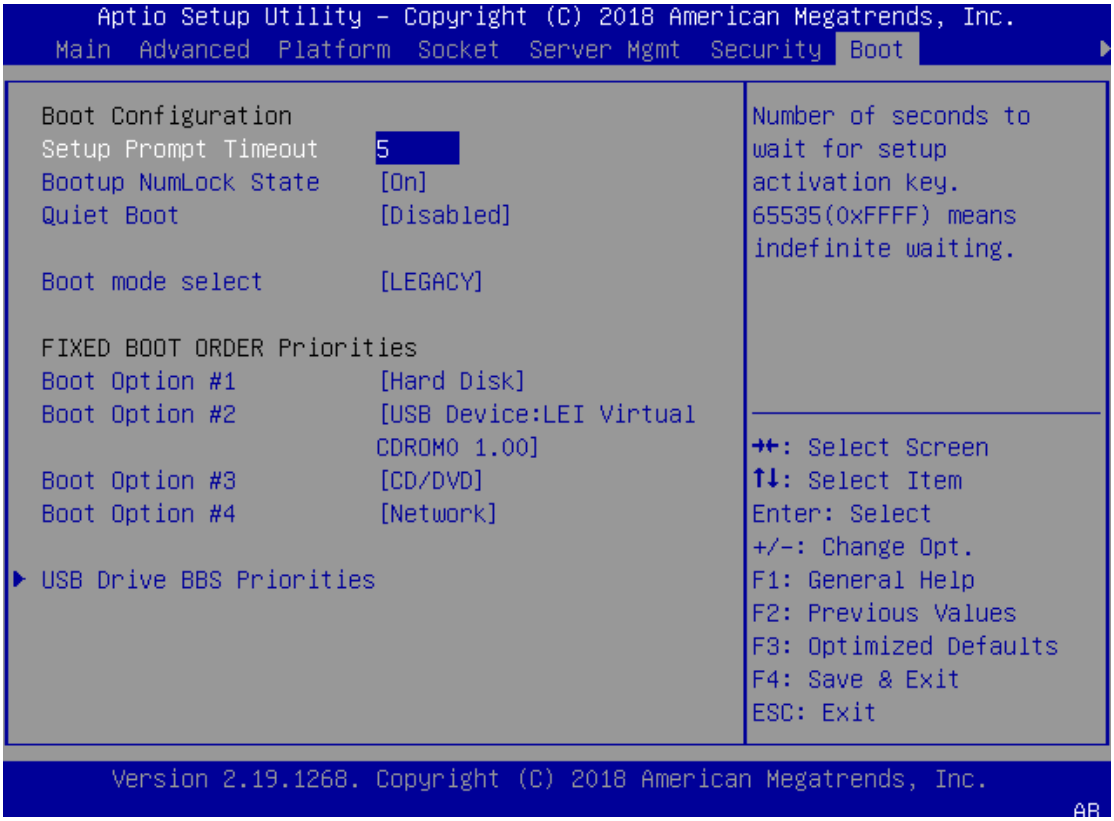

Feature	Options	Description
Factory Key Provision	Disabled Enabled	Provision factory default keys on next re-boot only when System in Setup Mode.
Restore Factory keys	None	Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot keys.
Enroll Efi Image	None	Allows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

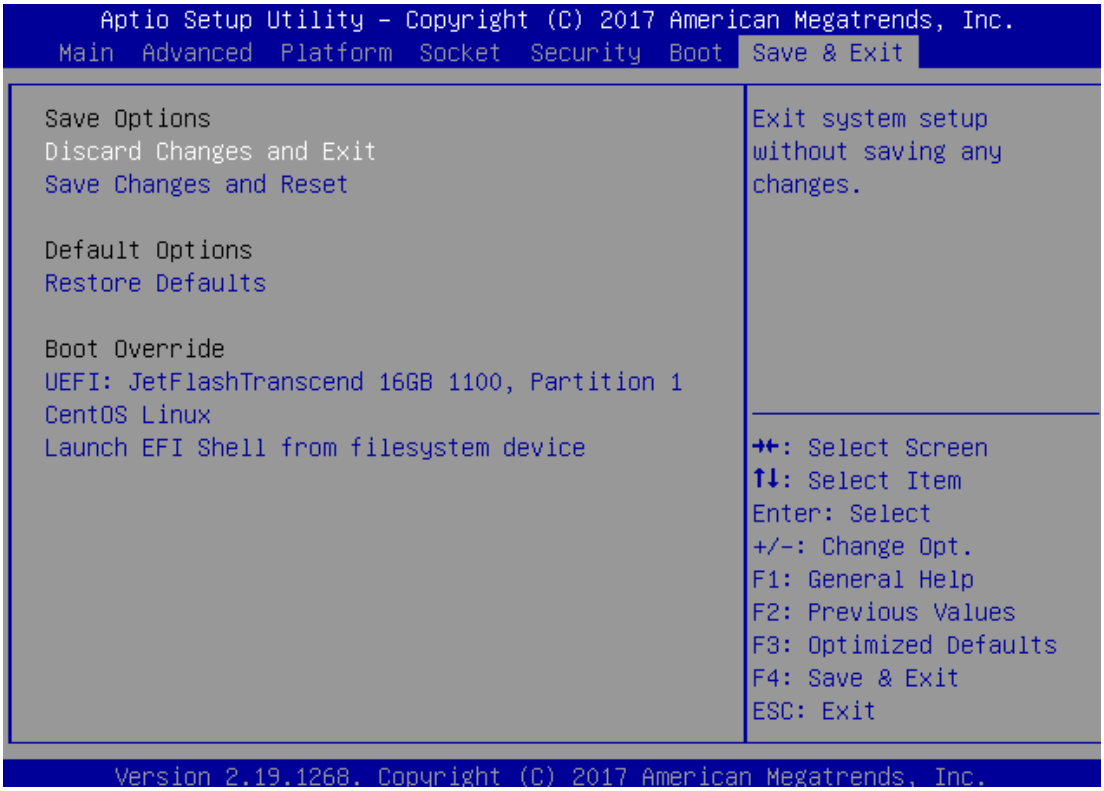


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI DUAL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

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

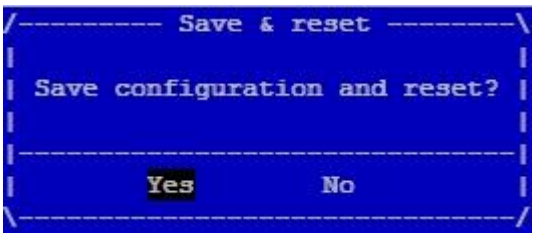
Save and Exit Menu

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.



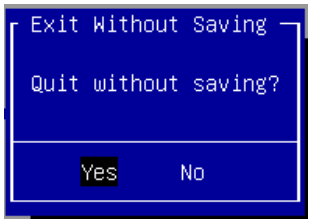
■ Save Changes and Reset

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. Select "**Yes**" to Save Changes and Exit Setup.



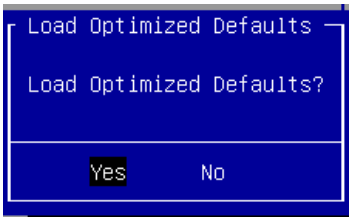
■ Discard Changes and Exit

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.



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

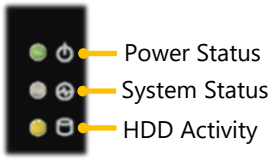
APPENDIX A: SETTING UP CONSOLE REDIRECTIONS

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: LED INDICATOR EXPLANATIONS

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



- **System Power**

Green	*The system is powered and running*
Off	*The system is powered off*

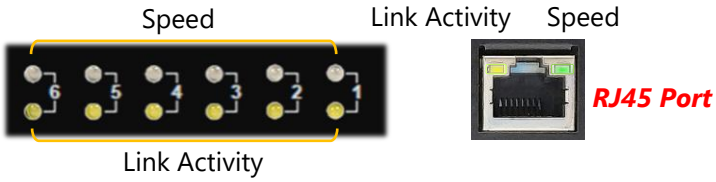
- **System Status**

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

Solid Green	*Defined by GPIO*
Solid Red	*Defined by GPIO*
Off	*Defined by GPIO*

- **HDD Activity**

Green	*A hard disk is detected*
Off	*No hard disk is detected*



- **Link Activity**

Blinking Amber	*Link has been established, and there is activity on this port*
Solid Amber	*Link has been established and there is no activity on this port*
Off	*No link is established*

- **Speed**

Solid Amber	*Operating as a Gigabit connection (1000 Mbps)*
Solid Green	*Operating as a 100-Mbps connection*
Off	*Operating as a 10-Mbps connection*

APPENDIX C: RENAMING NETWORK INTERFACE

Prerequisite

1. Login as "root."
2. Have all network interfaces disconnected.

Description

It requires five steps to rename system's network interface in Linux.

1. **Scan** all network-related interfaces in the system.
2. **Filter** the network interfaces. Please only preserve the interface that you want to rename.
3. **Check** interfaces' status.
4. **Rename**.
5. **Save** the new name to the configuration file.

Config (rnif.conf)

There are some parameters that can be modified in the config file. (E.g. *Character '#' in the config file means comment*).

- **Filter:** The network interface that user wants to rename.
- **UdevAddress:** The path of udev rule files.
- **UdevFilename:** Udev rule file name.
- **IfcfgAddress:** The path of ifcfg files.
- **SaveStep:** If set to 0, the program will skip the step of saving.
- **AutoNaming:** The program will auto rename the network interface if user sets AutoNaming in the config file. The format is "AutoNaming oldName:newName." For example, if set "AutoNaming eth0:lanner0", the program will rename eth0 to lanner0 automatically.

Config Example

```
Filter eth
UdevAddress /etc/udev/rules.d
UdevFilename 10-lanner_net.rule
IfcfgAddress /etc/sysconfig/network-scrips
AutoSave 0
AutoNaming eth0:lanner0
AutoNaming eth1:lanner1
AutoNaming eth2:eth10
```

Screenshots of Renaming Procedures

1. Scan and filter.

```
Terminal
File  Edit  View  Terminal  Tabs  Help
debian:~/lanner_rename_netif_v1_00# ./rename_netif

[Scan] All network interfaces in your system:
---------------------------------------------
Index   Name            HW Addr
1       lo              00:00:00:00:00:00
2       eth0            00:90:0b:1e:b1:41
3       eth3            00:90:0b:1f:e1:10
4       eth1            00:90:0b:1a:12:ba
5       eth2            00:90:0b:1a:12:bb
6       eth4            00:90:0b:1f:e1:11
7       eth5            00:90:0b:1f:e1:0e
8       eth6            00:90:0b:1f:e1:0f
9       eth7            00:90:0b:1f:e1:0c
10      eth8            00:90:0b:1f:e1:0d
11      eth9            00:90:0b:1f:e1:0a
12      eth10           00:90:0b:1f:e1:0b
13      eth11           00:90:0b:1c:37:8e
14      eth12           00:90:0b:1c:37:8f
15      eth13           00:90:0b:1c:37:8c
16      eth14           00:90:0b:1c:37:8d
17      sit0            00:00:00:00:00:00

[Filter] Only preserve the network interfaces you want to rename:
-----------------------------------------------------------------
Index   Name            HW Addr
2       eth0            00:90:0b:1e:b1:41
3       eth3            00:90:0b:1f:e1:10
4       eth1            00:90:0b:1a:12:ba
5       eth2            00:90:0b:1a:12:bb
6       eth4            00:90:0b:1f:e1:11
7       eth5            00:90:0b:1f:e1:0e
8       eth6            00:90:0b:1f:e1:0f
9       eth7            00:90:0b:1f:e1:0c
10      eth8            00:90:0b:1f:e1:0d
11      eth9            00:90:0b:1f:e1:0a
12      eth10           00:90:0b:1f:e1:0b
13      eth11           00:90:0b:1c:37:8e
14      eth12           00:90:0b:1c:37:8f
15      eth13           00:90:0b:1c:37:8c
16      eth14           00:90:0b:1c:37:8d
```

2. If any network interface is still running, the utility will exit.

```
Terminal
File  Edit  View  Terminal  Tabs  Help

[Check] Check the network interfaces' status:
---------------------------------------------
eth0 is UP
eth3 is UP
eth1 is UP
eth2 is UP
eth4 is UP
eth5 is UP
eth6 is UP
eth7 is UP
eth8 is UP
eth9 is UP
eth10 is UP
eth11 is UP
eth12 is UP
eth13 is UP
eth14 is UP

Error: There are some interfaces still active...
Please stop them and retry again...
debian:~/lanner_rename_netif_v1_00#
```

3. Renaming will start after the message shows "PASS: All interfaces are DOWN".

```
Terminal
File  Edit  View  Terminal  Tabs  Help

[Filter] Only preserve the network interfaces you want to rename:
----------------------------------------------------------------
Index   Name            HW Addr
2       eth0            00:90:0b:1e:b1:41
3       eth3            00:90:0b:1f:e1:10
4       eth1            00:90:0b:1a:12:ba
5       eth2            00:90:0b:1a:12:bb
6       eth4            00:90:0b:1f:e1:11
7       eth5            00:90:0b:1f:e1:0e
8       eth6            00:90:0b:1f:e1:0f
9       eth7            00:90:0b:1f:e1:0c
10      eth8            00:90:0b:1f:e1:0d
11      eth9            00:90:0b:1f:e1:0a
12      eth10           00:90:0b:1f:e1:0b
13      eth11           00:90:0b:1c:37:8e
14      eth12           00:90:0b:1c:37:8f
15      eth13           00:90:0b:1c:37:8c
16      eth14           00:90:0b:1c:37:8d

[Check] Check the network interfaces' status:
---------------------------------------------
PASS: All interfaces are DOWN

[Rename] Start to rename network interfaces:
--------------------------------------------
Rename eth0 to:
```

4. If renaming fails (using the same name), the utility will skip saving step and exit.

```
Terminal
File  Edit  View  Terminal  Tabs  Help

[Check] Check the network interfaces' status:
---------------------------------------------
PASS: All interfaces are DOWN

[Rename] Start to rename network interfaces:
--------------------------------------------
Rename eth0 to:         eth0
Rename eth3 to:         eth3
Rename eth1 to:         eth1
Rename eth2 to:         eth2
Rename eth4 to:         eth4
Rename eth5 to:         eth5
Rename eth6 to:         eth6
Rename eth7 to:         eth7
Rename eth8 to:         eth8
Rename eth9 to:         eth9
Rename eth10 to:        eth10
Rename eth11 to:        eth11
Rename eth12 to:        eth12
Rename eth13 to:        eth13
Rename eth14 to:        eth3

Start rename...
Error( 1): rename eth14 to eth3 failed...
FAIL: Skip [Save] step...
debian:~/lanner_rename_netif_v1_00#
```

5. If renaming is successful, choose a save method or just leave.

```
Terminal
File  Edit  View  Terminal  Tabs  Help

[Check] Check the network interfaces' status:
---------------------------------------------
PASS: All interfaces are DOWN

[Rename] Start to rename network interfaces:
---------------------------------------------
Rename eth0 to:         lanner0
Rename eth3 to:         lanner3
Rename eth1 to:         lanner1
Rename eth2 to:         lanner2
Rename eth4 to:         lanner4
Rename eth5 to:         lanner5
Rename eth6 to:         lanner6
Rename eth7 to:         lanner7
Rename eth8 to:         lanner8
Rename eth9 to:         lanner9
Rename eth10 to:        lanner10
Rename eth11 to:        lanner11
Rename eth12 to:        lanner12
Rename eth13 to:        lanner13
Rename eth14 to:        lanner14

Start rename...
PASS: Rename successfully...

[Save] Please select a method for save your configuration
---------------------------------------------------------
1) Save as udev rules.
2) Save as ifcfg.
3) Don't save. Just test.
Your choice:
```

6. Save successfully

```
Terminal
File  Edit  View  Terminal  Tabs  Help

Start rename...
PASS: Rename successfully...

[Save] Please select a method for save your configuration
---------------------------------------------------------
1) Save as udev rules.
2) Save as ifcfg.
3) Don't save. Just test.
Your choice: 1

Start to write udev rules...
Write udev rule done...
debian:~/lanner_rename_netif_v1_00# ls /etc/udev/rules.d/
020_permissions.rules  z20_persistent-input.rules          z55_hotplug.rules
025_libgphoto2.rules   z20_persistent.rules                z60_alsa-utils.rules
025_libsane.rules      z25_persistent-cd.rules             z60_hdparm.rules
10-lanner_net.rules    z25_persistent-net.rules            z60_xserver-xorg-input-wacom.rules
85-pcmcia.rules        z45_persistent-net-generator.rules  z75_cd-aliases-generator.rules
udev.rules             z50_run.rules                       z99_hal.rules
debian:~/lanner_rename_netif_v1_00#
```

7. You can skip saving and set AutoNaming.

```
Terminal
File  Edit  View  Terminal  Tabs  Help

[Check] Check the network interfaces' status:
---------------------------------------------
PASS: All interfaces are DOWN

[Rename] Start to rename network interfaces:
---------------------------------------------
Auto Naming: Rename eth0 to lanner0
Auto Naming: Rename eth1 to lanner1
Auto Naming: Rename eth2 to lanner2
Auto Naming: Rename eth3 to lanner3
Auto Naming: Rename eth4 to lanner4
Auto Naming: Rename eth5 to lanner5
Auto Naming: Rename eth6 to lanner6
Auto Naming: Rename eth7 to lanner7
Auto Naming: Rename eth8 to lanner8
Auto Naming: Rename eth9 to lanner9
Auto Naming: Rename eth10 to lanner10
Auto Naming: Rename eth11 to lanner11
Auto Naming: Rename eth12 to lanner12
Auto Naming: Rename eth13 to lanner13
Auto Naming: Rename eth14 to lanner14

Start rename...
PASS: Rename successfully...

User skip save step...
debian:~/lanner_rename_netif_v1_01#
```

APPENDIX D: 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
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

_____

Authorized Signature / Date

Confirmed By Supplier

_____

Authorized Signature / Date