Lanner

Network Appliance Platform

Hardware Platforms for Network Computing

NCA-1515
User Manual

Version: 1.8

Date of Release: 2022-10-19

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 mark indicates that there 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.

Copyright and Trademarks

Acknowledgment

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the 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 instructions, 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 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.

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

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in the US must be fixed to US operation channels only.

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).

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 batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instuctions.
- 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.

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).

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 a 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.

Cet équipement doit être mis à la terre. La fiche d'alimentation doit être connectée à un e prise de terre correctement câblée.

Table of Contents

CHAPTER 1: PRODUCT OVERVIEW

The NCA-1515, a desktop network appliance powered by Intel® Atom® C3000 (codenamed Denverton) CPU, featuring robust performance and Intel's QuickAssist Technology, offering cryptographic acceleration and commercial-grade LAN functions in a small 231mm x 200mm x 44mm (WxDxH) form factor.

The NCA-1515 offers a mPCIe expansion slot that supports Intel Movidius Myriad X Vision Processing Unit (VPU). The Intel Movidius VPU creates a reliable hardware platform for developers to deploy a robust Edge AI solution for intelligent surveillance, traffic management, access control, retail and beyond.

Package Content

Your package contains the following items:

- 1x NCA-1515 Network Appliance
- 1x Power Adapter
- 1x Power Cable (provided plug type will vary by region)
- 4x Rubber Pads

Note: (1) If any component is missing or damaged, please contact your dealer immediately for assistance.
(2) The supplied power adapter and power cable are dedicated to this product only; do not use them with devices other than this model.

Ordering Information

SKU No.	Specification
NCA-1515A	C3758, 2x DDR4 ECC SODIMM, 4x GbE RJ45 w/ 1 Pair of Gen3 Bypass, 2x GbE SFP w/ LED, 2x GbE RJ45 w/BMC, 60W Adapter
NCA-1515B	C3558, 2x DDR4 ECC SODIMM, 4x GbE RJ45 w/ 1 Pair of Gen3 Bypass, 2x GbE SFP w/ LED, 2x GbE RJ45 w/ BMC, 60W Adapter
NCA-1515C	C3308, 1x DDR4 ECC SODIMM, 4x GbE RJ45 w/o Bypass, 60W Adapter
NCA-1515D	C3558, 2x DDR4 ECC SODIMM, 4x GbE RJ45 w/ 1 Pair of Gen3 Bypass, 2x GbE SFP w/ LED, w/ BMC, 60W Adapter
NCA-1515E	C3858, 2x DDR4 ECC SODIMM, 4x Gbe RJ45, 2x GbE SFP w/ LED, 2x GbE RJ45 w/ BMC, 60W Adapter
NCA-1515F	C3958, 2x DDR4 ECC SODIMM, 4x GbE RJ45, 2x GbE SFP w/ LED, 2x GbE RJ45 w/ BMC, 60W Adapter

Note: Intel® Atom® C3000 processor supports only 2400Mhz RAM. (To use memory with lower frequencies, please check with your sales representative.)

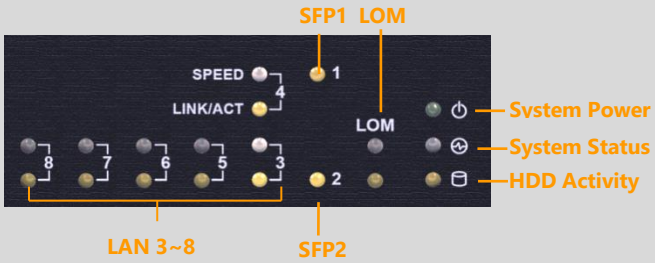
Optional Accessory

- HDD/SSD Kit
- 1U Rack-mount kit (Ear Bracket)
- Wall Mount Kit

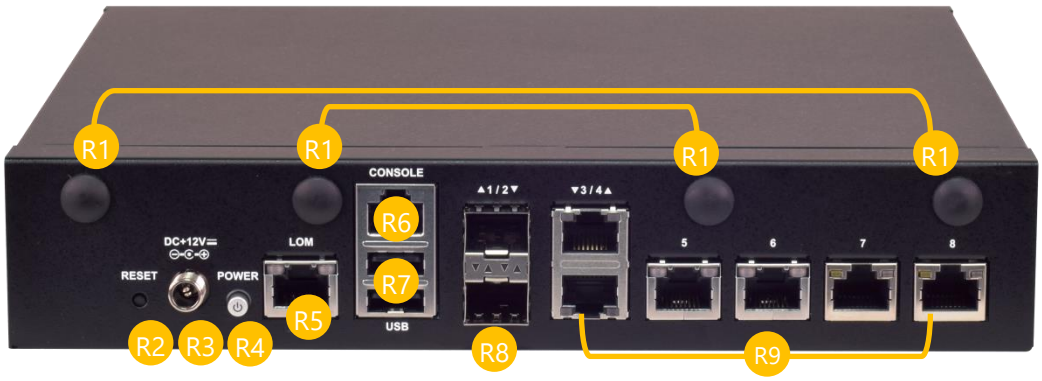
System Specifications

Form Factor		Desktop
Platform	Processor Options	Intel® Atom® C3000 (Denverton) (By SKU)
	CPU Socket	Onboard
	Chipset	SoC
	Security Acceleration	Intel® QuickAssist Technology
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR4 2400/2133MHz ECC DIMM
	Max. Capacity	64GB (By SKU)
	Socket	2x 260-pin SODIMM
Networking	Ethernet Ports	4x GbE RJ45 Intel® SoC Integrated MAC, 2x GbE RJ45 Intel® i350 (by SKU), 2x GbE SFP Intel® i350 (by SKU)
	Bypass	1 Pair of Gen3 (by SKU)
	NIC Module Slot	N/A
LOM	IO Interface	1x RJ45 (By SKU)
	OPMA slot	Yes
I/O Interface	Reset Button	1x Reset Button
	LED Indicator	Power/Status/Storage
	Power Button	1x ATX Power Switch
	Console Port	1x RJ45 Console Port
	USB Port	2x USB 2.0 Ports
	Power input	1x DC Power Adaptor
Storage	HDD/SSD Support	1x 2.5" Bay (Optional)
	Onboard Slots	1x EMMC 8GB, 1x M.2 2242 storage
Expansion	Mini-PCIe	2x Mini-PCIe (PCIe/USB2.0),
	M.2	1x M.2 3042 B Key (USB3.0)
	SIM Card Slot	2x Nano SIM Card Slots (dedicated to an optionally installed LTE module)
Miscellaneous	Watchdog	Yes
	Internal RTC with Li-Battery	Yes
	TPM	Yes, onboard TPM 2.0
Cooling	Processor	Passive CPU heatsink
	System	1x Cooling Fan w/ Smart Fan
Environmental Parameters	Temperature	0~40ºC Operating -20~70ºC Non-Operating
	Humidity (RH)	5% to 90% Operating 5% to 95% Non-Operating
System Dimensions	(WxDxH)	231 x 200 x 44 mm
	Weight	1.2 kg
Package Dimensions	(WxDxH)	358 x 135 x 290 mm
	Weight	2.75 kg
Power	Type/Watts	60W Power Adapter
	Input	AC 100~240V @50~60 Hz
Approvals and Compliance		RoHS, CE/FCC CLASS B, UL, VCCI, RCM, NBTC, EAC, BIS, CCC (SKU B), KC (SKU A), PTCRB, ODI

Front Panel

No.	Description	
F1	SIM Card Slot	SIM Card Slot Cover
F2	LED Indicators	
F3	Antenna Port	SMA connector for the Wi-Fi (Optional) 

Rear Panel

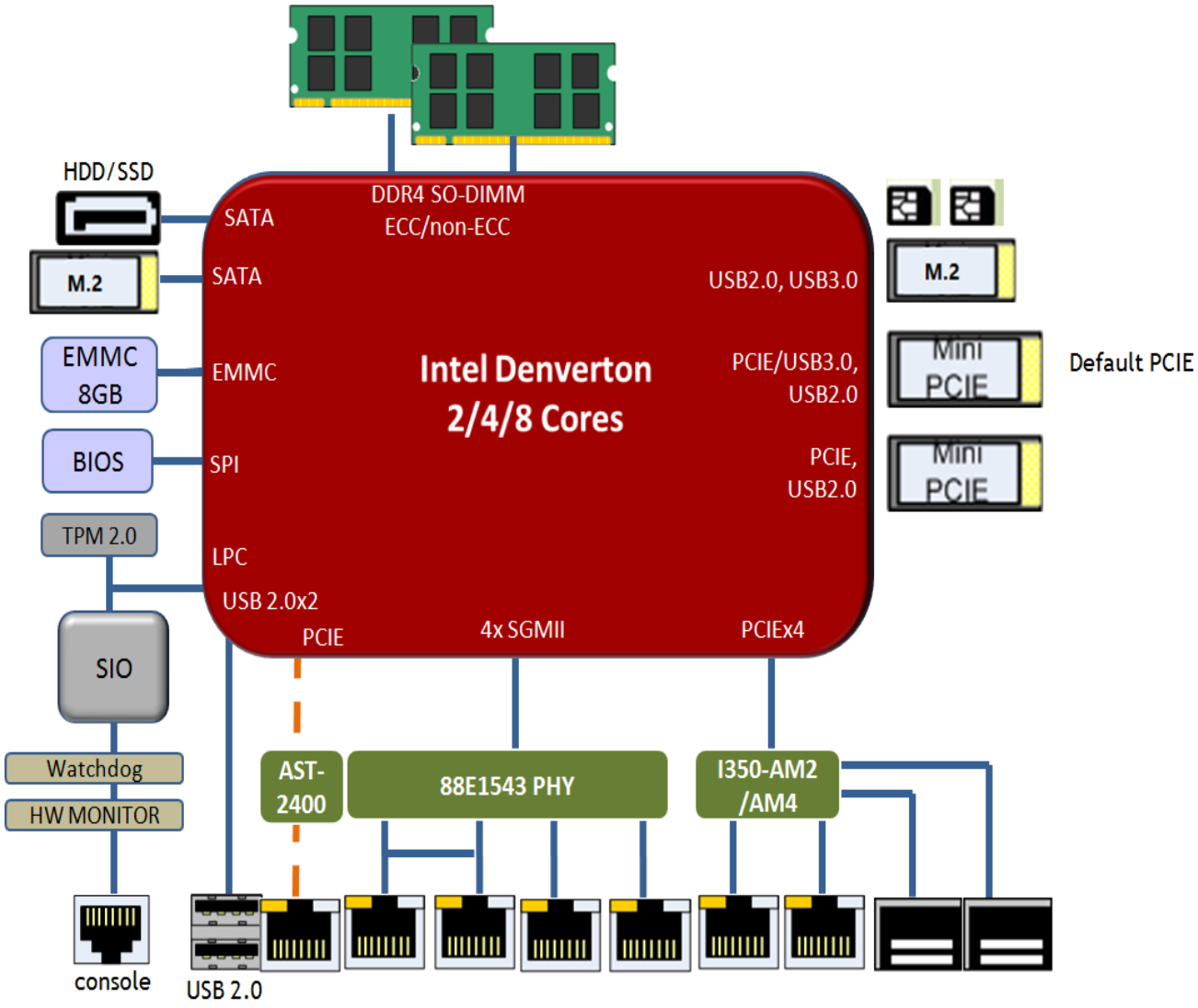


No.	Description	
R1	Antenna Port	SMA connector for the Wi-Fi and LTE module (Optional) 
R2	Reset Button	Press to perform a reset
R3	DC-Jack	Power Supply
R4	Power Button	Press to power on/off the system
R5	LOM Port	1x dedicated management channel for device maintenance Please refer to Remote Server Management for the introduction of IPMI interface remote management through this port.
R6	Console Port	1x GbE RJ45 Console Port
R7	USB Ports	2x Type A USB 2.0 Ports
R8	SFP Port	2x 1G SFP Ports
R9	GbE Ports	6x GbE RJ45 Ports

CHAPTER 2: MOTHERBOARD INFORMATION

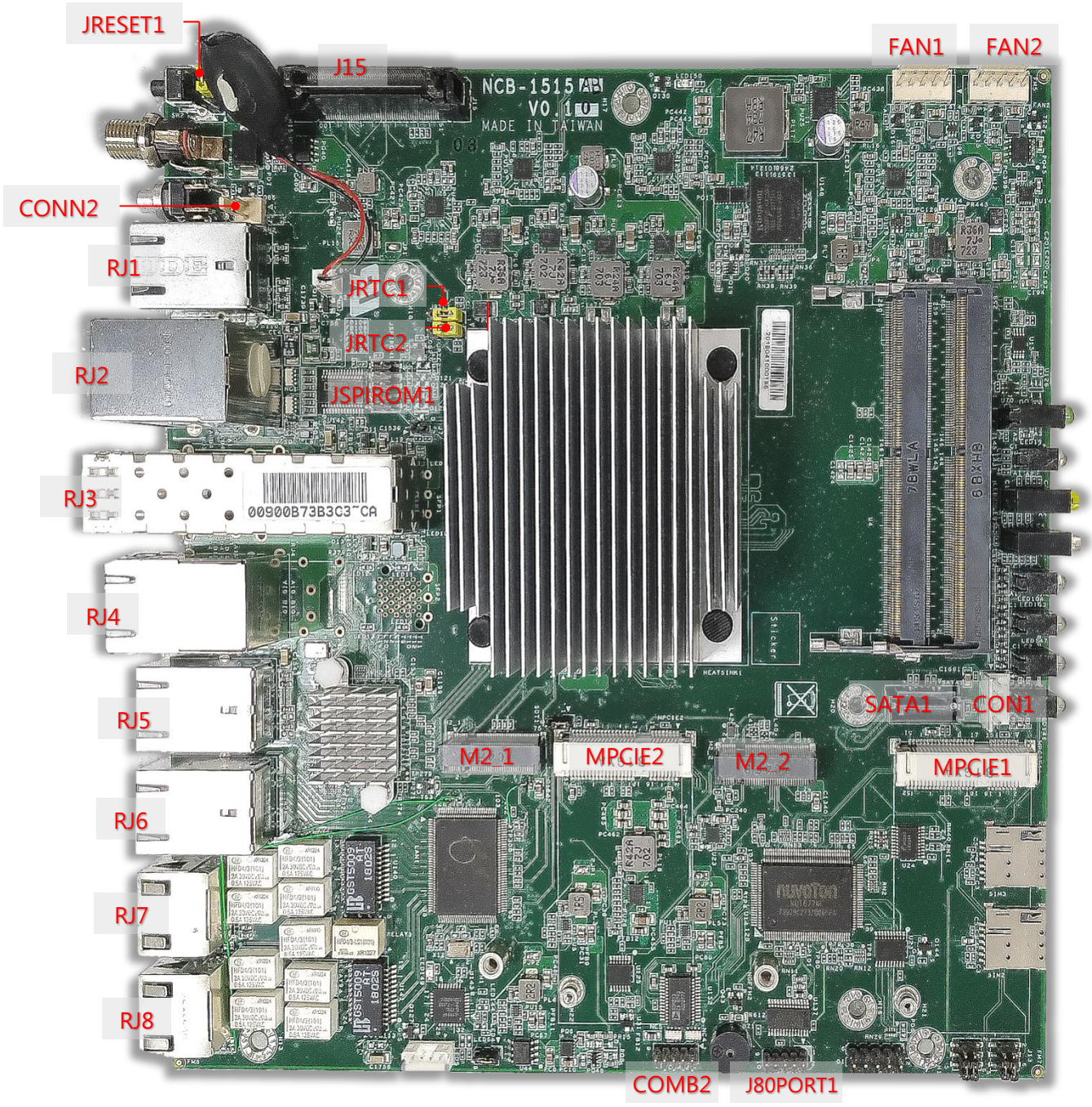
Block Diagram

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.



Jumper Setting and Pin Assignment

JRTC1 default (1-2)

PIN NO.	DESCRIPTION
1	Vrtc
2	SOC_SRTCRST_N
3	GND

JRTC2 default (1-2)

PIN NO.	DESCRIPTION
1	Vrtc
2	SOC_RTEST_N
3	GND

RJ2

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	5V	2	USB_DN
3	USB_DP	4	GND
5	5V	6	USB_DN
7	USB_DP	8	GND
9	RTS	10	DTR
11	TX	12	GND
13	GND	14	RXD
15	DSR	16	CTS

M2_1 (B Key)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	3.3V
3	GND	4	3.3V
5	N/A	6	N/A
7	N/A	8	N/A
9	N/A	10	N/A
11	GND	12	N/A
13	N/A	14	N/A
15	N/A	16	N/A
17	N/A	18	N/A
19	N/A	20	N/A
21	GND	22	N/A
23	N/A	24	N/A
25	N/A	26	N/A
27	GND	28	N/A
29	N/A	30	N/A
31	N/A	32	N/A
33	GND	34	N/A
35	N/A	36	N/A
37	N/A	38	N/A
39	GND	40	N/A
41	SATA_RX_P	42	N/A
43	SATA_RX_N	44	N/A
45	GND	46	N/A
47	SATA_TX_N	48	N/A

49	SATA_TX_P	50	N/A
51	GND	52	N/A
53	N/A	54	N/A
55	N/A	56	N/A
57	GND	58	N/A
59	N/A	60	N/A
61	N/A	62	N/A
63	N/A	64	N/A
65	N/A	66	N/A
67	N/A	68	N/A
69	GND	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		

M2_2 (B Key)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	N/A	2	3.3V
3	GND	4	3.3V
5	GND	6	N/A
7	USB P	8	N/A
9	USB N	10	N/A
11	GND	12	N/A
13	N/A	14	N/A
15	N/A	16	N/A
17	N/A	18	N/A
19	N/A	20	N/A
21	N/A	22	N/A
23	N/A	24	N/A
25	N/A	26	N/A
27	GND	28	SIM1 VPP
29	USB3 TX N	30	SIM1 RST
31	USB3 TX P	32	SIM1 CLK
33	GND	34	SIM1 DAT
35	USB3 RX N	36	SIM1 PWR
37	USB3 RX P	38	N/A
39	GND	40	N/A
41	N/A	42	SIM2 DAT
43	N/A	44	SIM2 CLK
45	GND	46	SIM2 RST
47	N/A	48	SIM2 PWR
49	N/A	50	RESET
51	GND	52	N/A
53	N/A	54	N/A
55	N/A	56	N/A
57	GND	58	N/A
59	N/A	60	N/A
61	N/A	62	N/A
63	N/A	64	N/A
65	N/A	66	N/A
67	N/A	68	N/A
69	N/A	70	3.3V

71	GND	72	3.3V
73	GND	74	3.3V
75	N/A		

MPCIE1

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	N/A	2	3.3V
3	N/A	4	GND
5	N/A	6	1.5V
7	CLKREQ	8	N/A
9	GND	10	N/A
11	CLK_N	12	N/A
13	CLK_P	14	N/A
15	GND	16	N/A
17	N/A	18	GND
19	N/A	20	3.3V
21	GND	22	RESET
23	PCIE RX N	24	3.3V
25	PCIE RX P	26	GND
27	GND	28	1.5V
29	GND	30	N/A
31	PCIE TX N	32	N/A
33	PCIE TX P	34	GND
35	GND	36	USB N
37	GND	38	USB P
39	3.3V	40	GND
41	3.3V	42	N/A
43	GND	44	N/A
45	N/A	46	N/A
47	N/A	48	1.5V
49	N/A	50	GND
51	N/A	52	3.3V

MPCIE2

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	N/A	2	3.3V
3	N/A	4	GND
5	N/A	6	1.5V
7	CLKREQ	8	SIM PWR
9	GND	10	SIM DAT
11	CLK_N	12	SIM CLK
13	CLK_P	14	SIM RST
15	GND	16	N/A
17	N/A	18	GND
19	N/A	20	3.3V
21	GND	22	RESET
23	PCIE RX N	24	3.3V
25	PCIE RX P	26	GND
27	GND	28	1.5V
29	GND	30	N/A
31	PCIE TX N	32	N/A
33	PCIE TX P	34	GND

35	GND	36	USB N
37	GND	38	USB P
39	3.3V	40	GND
41	3.3V	42	N/A
43	GND	44	N/A
45	N/A	46	N/A
47	N/A	48	1.5V
49	N/A	50	GND
51	N/A	52	3.3V

J15: LOM

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	IPMI DETECT	2	GND
3	N/A	4	N/A
5	GND	6	GND
7	LPC LAD0	8	LPC LAD1
9	LPC LAD2	10	LPC LAD3
11	LPC FRAME	12	LPC CLK
13	SERIRQ	14	N/A
15	GND	16	SMB CLK
17	SMB DAT	18	N/A
19	N/A	20	N/A
21	N/A	22	GND
23	COREPWROK	24	N/A
25	N/A	26	SLP S5
27	N/A	28	N/A
29	SMI	30	RSMRST
31	RESET	32	N/A
33	N/A	34	N/A
35	N/A	36	N/A
37	N/A	38	GND
39	UART RX	40	UART TX
41	N/A	42	LAN ACT#
43	GND	44	LAN MDI0 P
45	LAN MDI0 N	46	GND
47	LAN MDI2 P	48	LAN MDI2 N
49	GND	50	GND
51	GND	52	GND
53	USB P	54	USB N
55	GND	56	GND
57	PCIE TX P	58	PCIE TX N
59	GND	60	GND
61	PCIE RX P	62	PCIE RX N
63	GND	64	GND
65	CLK P	66	CLK N
67	GND	68	GND
69	N/A	70	N/A
71	GPIO 123	72	NMI
73	N/A	74	PWRBTN
75	RESET	76	SLP_S3
77	N/A	78	N/A
79	N/A	80	N/A

81	N/A	82	N/A
83	N/A	84	GND
85	UART_CTS	86	UART_DSR
87	UART_RX	88	UART_TX
89	UART_DTR	90	UART_RTS
91	LAN_100	92	LAN_1G
93	GND	94	LAN MDI1 P
95	LAN MDI1 N	96	GND
97	LAN MDI3 P	98	LAN MDI3 N
99	GND	100	GND
P1	GND	P2	GND
P3	3.3V	P4	5V
T1	GND	T2	GND
T3	GND	T4	GND

RJ1, RJ3-RJ8: RJ-45 with LED

Pin No.	Description	
	Fast E-Net	Giga Net
1	TX+	MD0+
2	TX-	MD0-
3	RX+	MD1+
4	T45	MD2+
5	T45	MD2-
6	RX-	MD1-
7	T78	MD3+
8	T78	MD3-
9	10-/100-/1000+	
10	10+/100+/1000-	
11	Link+/ACT-	
12	Link-/ACT+	

COMB2: UART 2

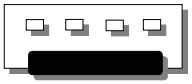
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND		

SATA1: SATA CONNECTOR

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

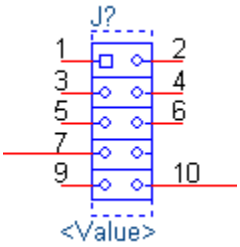
CON1: SATA HDD POWER CONNECTOR

PIN NO.	DESCRIPTION
1	+12V
2	GND
3	GND
4	+5V



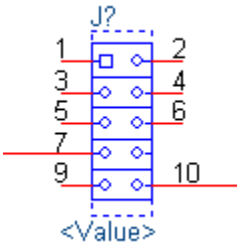
J80PORT1: 80PORT0

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



JSPIROM1: SPI ROM FLASH

PIN	DESCRIPTION	PIN	DESCRIPTION
1	KEY	2	KEY
3	CS0-	4	POWER
5	MIS0	6	HPLD-
7	KEY	8	CLK
9	GND	10	MOSI



GPIO1: DIO

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GPO	2	GPI
3	GPO	4	GPI
5	GPO	6	GPI
7	GPO	8	GPI
9	GND	10	GND

CONN2: Power Button

PIN	DESCRIPTION
1	GND
2	PSIN

JRESET1: Reset Setting

FUNCTION DESCRIPTION	SELECTED PIN
H/W Reset	1-2
software	2-3

FAN1~FAN2 PIN

PIN	DESCRIPTION
1	GND
2	P12V
3	FANIN
4	NC
5	FANOUT

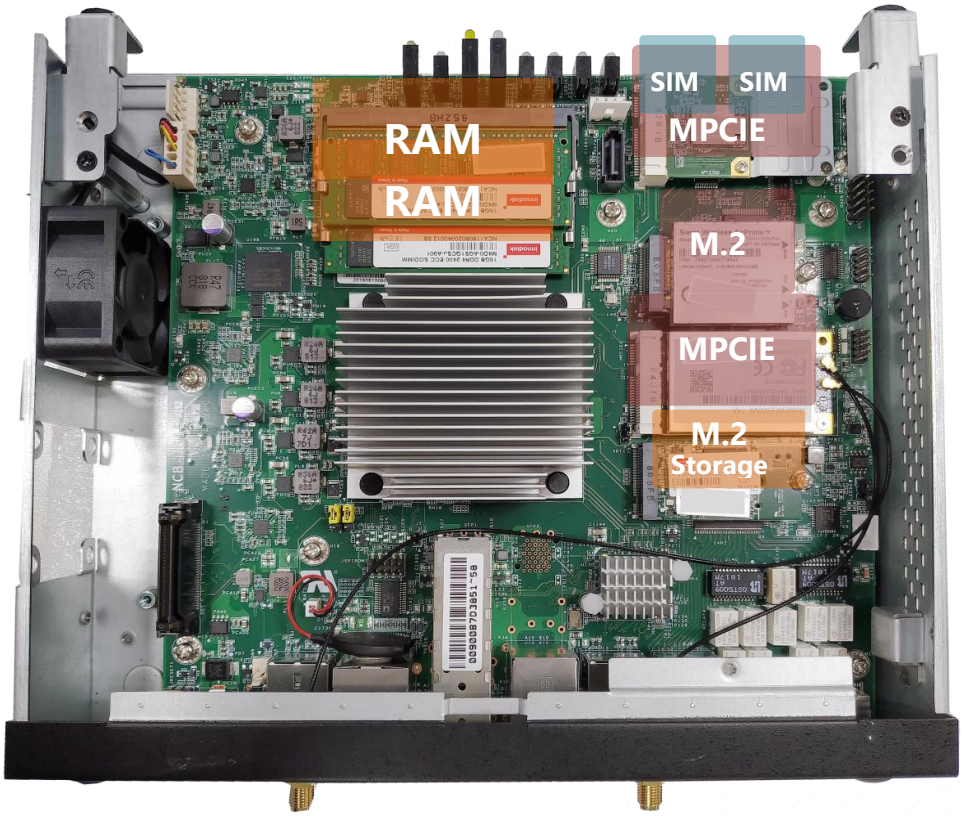
CHAPTER 3 HARDWARE INSTALLATION

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

Opening the Chassis

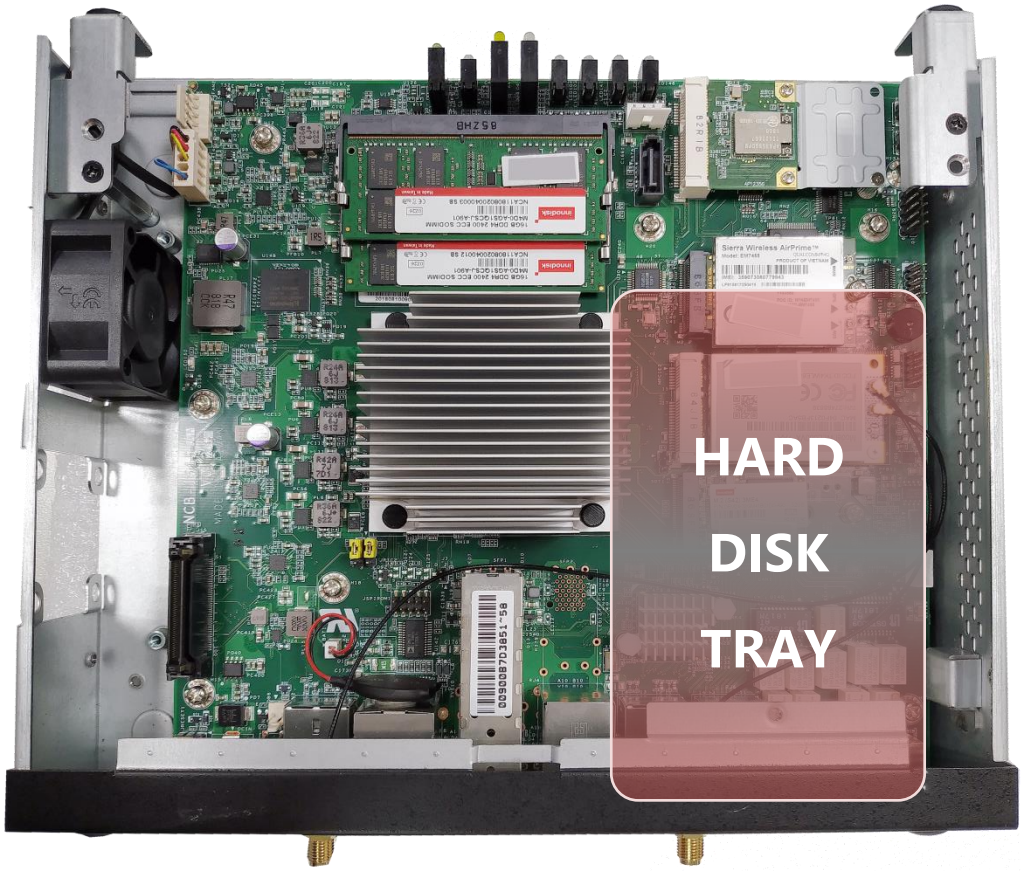
1. Unscrew the eight (8) screws which secure the chassis on the system's front, side panels and the bottom panel.

2. Flip over the system, pull open the chassis and lift it up to remove.

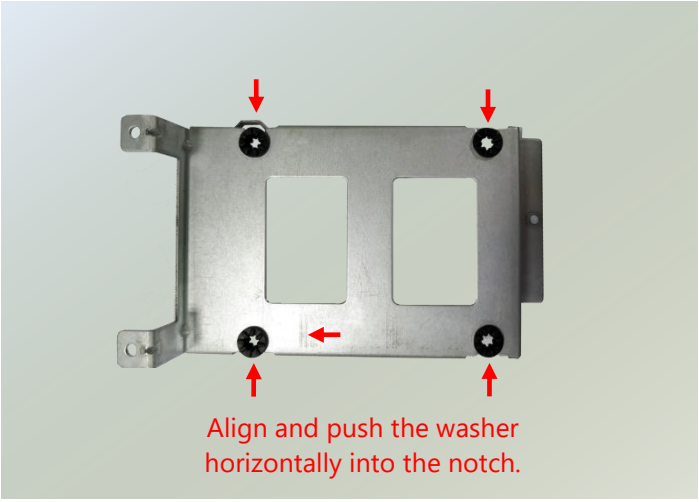


Installing Hard Disk

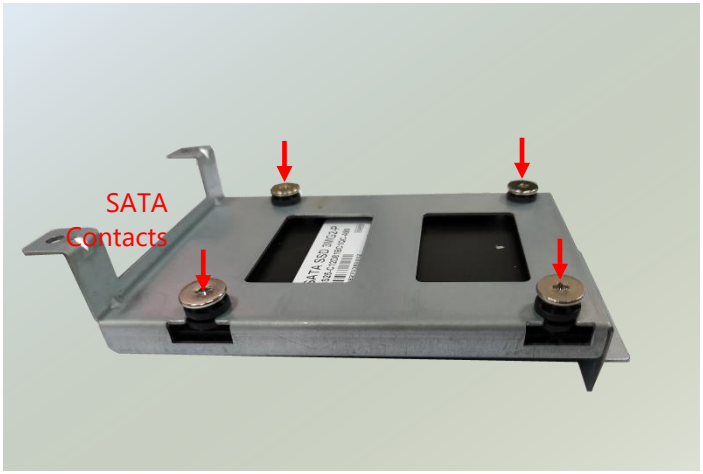
This system supports one 2.5" HDD/SSD with a disk tray. The following will discuss disk drive installation procedures based on their designs.



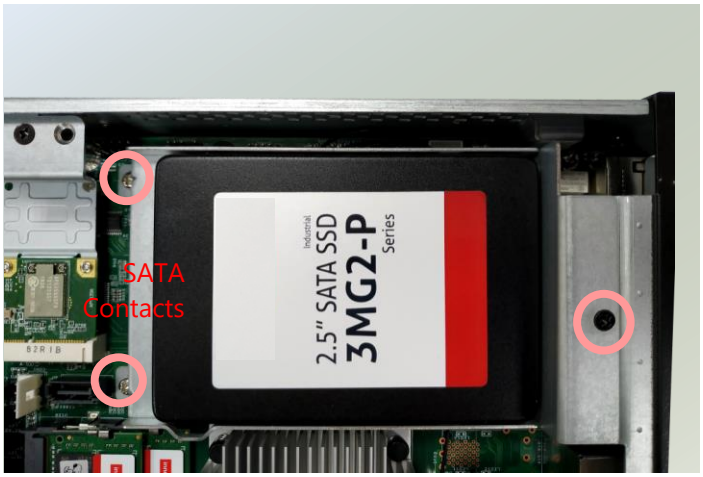
1. Insert the four rubber washers into the four notches of the tray.



2. Mount the disk onto the tray and secure it with the provided disk screws. Make sure the SATA connector faces outward as shown in the picture.



3. Secure the tray on the motherboard with three (3) provided screws.

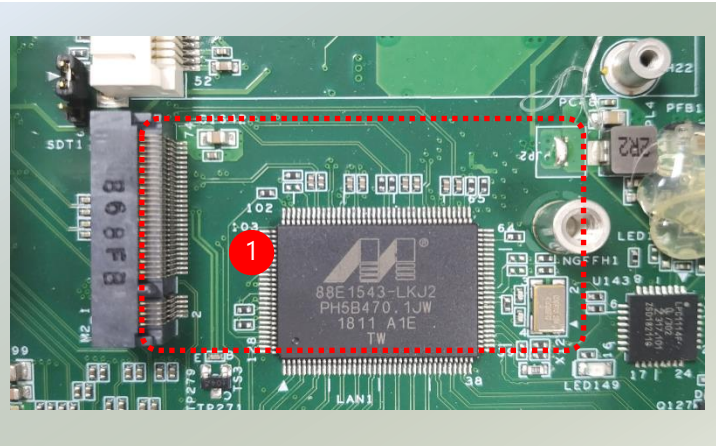


4. Insert one end of the SATA data cable to the SATA contacts on the disk. Do the same to the SATA power cable. Insert the other end of the SATA data cable to the SATA2 port on the motherboard, and the end of the SATA power cable to the SATA Power port. Arrange the cables and route them neatly to avoid them from getting tangled.

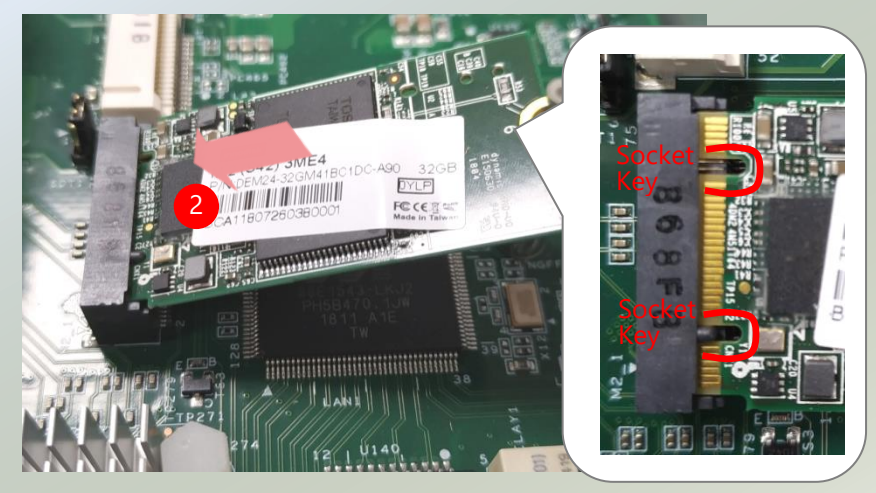
Installing M.2 Storage (Optional)

The motherboard supports one M.2 storage slot for memory storage expansion. Please follow the steps for installation.

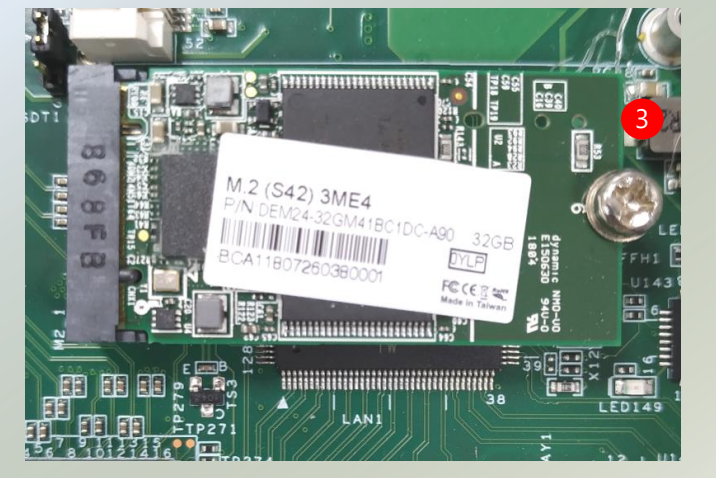
1. Locate the **M2_1** slot.



2. Align the notches of the module with the socket keys in the slot, and insert it at 30 degrees into the socket until it is fully seated in the connector.



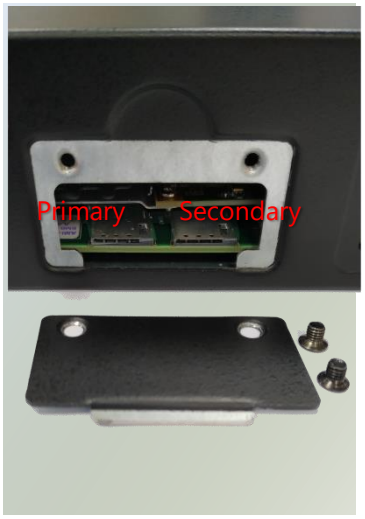
3. Push down the module and secure it with the screw that comes with it.



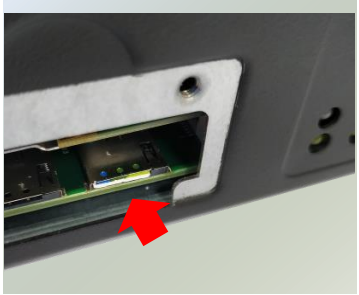
Installing Nano SIM Card (Optional)

The SIM slot on the front panel supports an LTE module (Optional), and SIM cards are not included. The primary SIM socket is on the left and the secondary SIM socket on the right. The SIM sockets support push-push mechanism, allowing inserting and ejecting the SIM card to be as easy as one push.

1. Locate the SIM card slot cover on the front panel. Loosen the two screws that secure the SIM slot cover and remove the slot cover. With the gold contacts on the SIM card facing downwards and the cut edge of the SIM card on the left side, push the SIM card all the way in until it clicks into place.



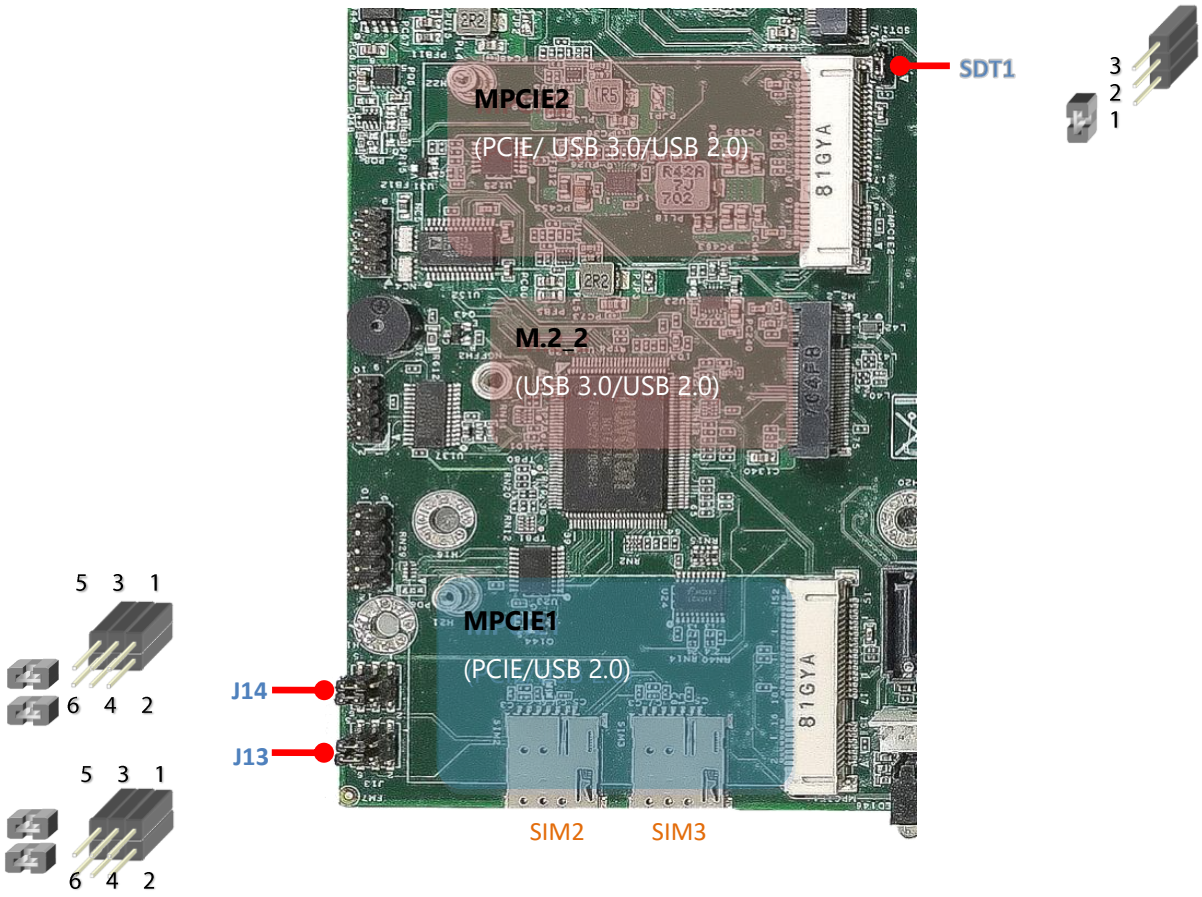
2. To remove the SIM card, use your fingertip to push it a little to have the card automatically ejected.



Wireless Connection Configuration (Optional)

This system supports multiple wireless connectivity methods with two MPCIE slots (Optional) and an M.2 slot (Optional).

Based on your application and modules used, install modules in the corresponding slots, and configure the jumpers indicated in the picture for the appropriate setting.



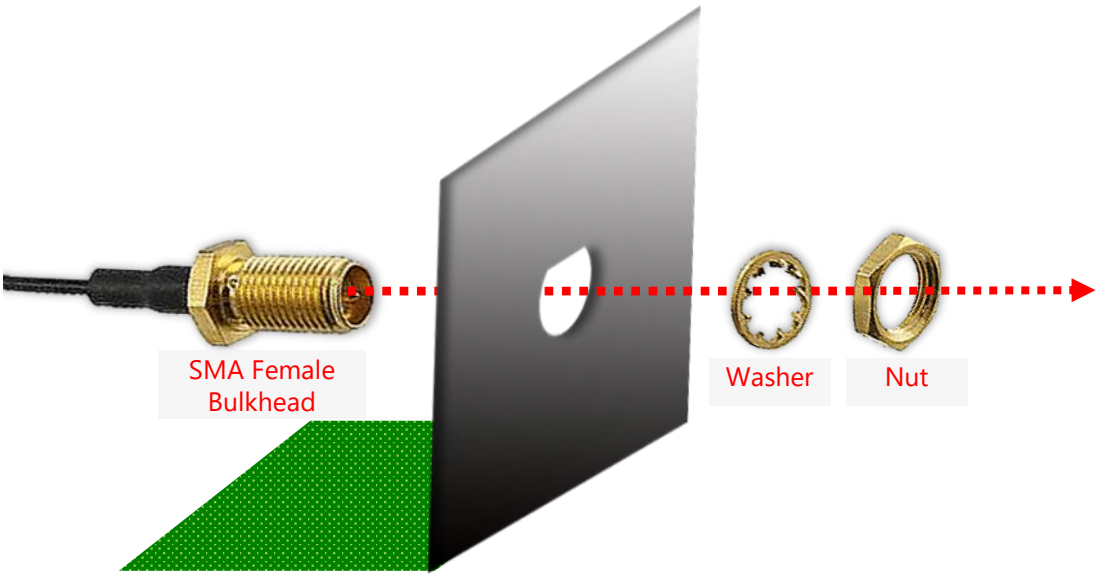
	Jumper Setting for LTE/ 4G Module		SIM Slot	
	J13	**J14**	**SIM2**	**SIM3**
Single SIM Mode	Pin3+Pin1 Pin4+Pin2	Pin3+Pin1 Pin4+Pin2	to LTE/ 4G Module on **M.2_2** Slot	to LTE/ 4G Module on **MPCIE2** Slot
Dual SIM Mode	Pin5+Pin3 Pin6+Pin4	Pin5+Pin3 Pin6+Pin4	to LTE/4G Module on **M.2_2** Slot	

	Jumper Setting for LTE/4G on **MPCIE2**
	SDT1
PCIE Interface	Pin1+Pin2
USB 3.0 Interface	Pin2+Pin3

Mounting an SMA-Mount Antenna Cable Assembly (Optional)

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 (Optional)

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 Bracket and the Holder fixture
- Rack-mounting Screws

Ear Bracket

Adapter Bracket

Adapter Holder

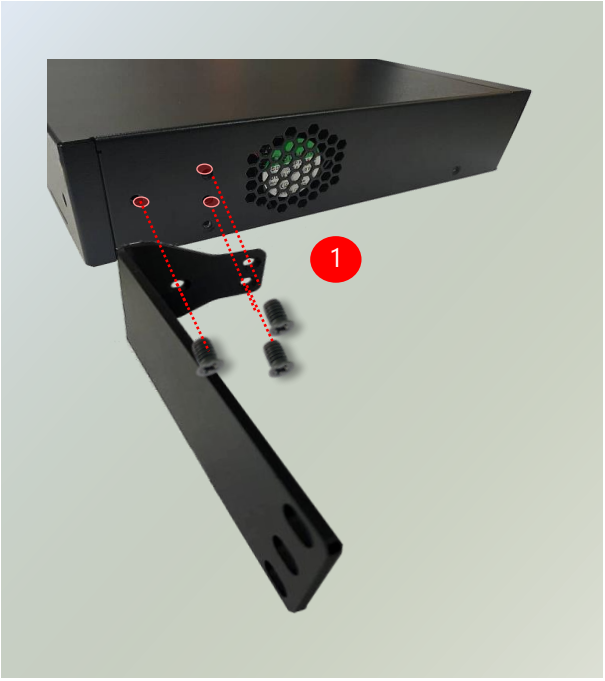
Screws

Screws
(for rack-mounting)

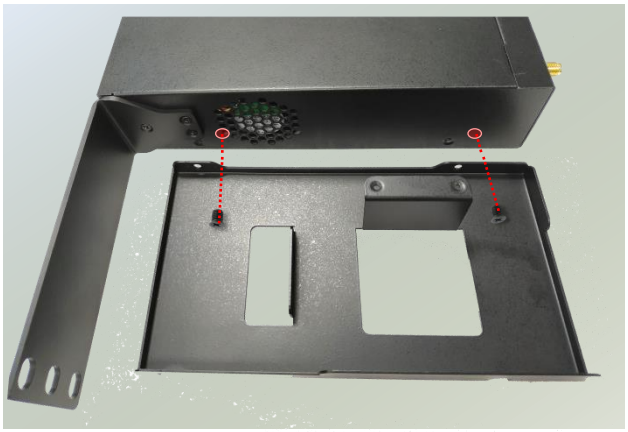
Attaching the Assembly to the Chassis

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

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



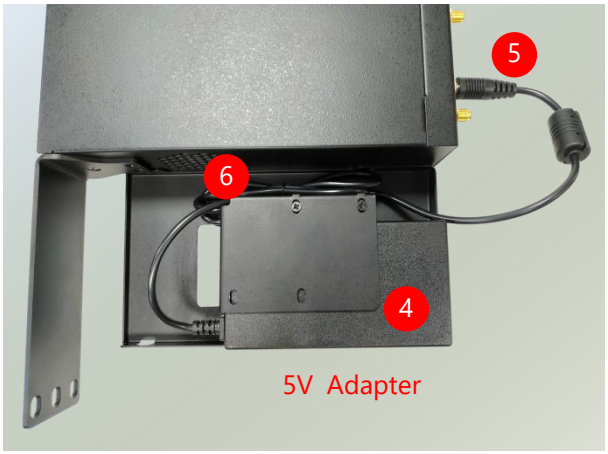
3. Fix the adapter holder to the left side panel using two (2) screws.



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

5. Attach the power adapter's connector to the power supply jack on the system's rear panel.

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



Installing the System to the Rack

1. In the rack, install a shelf to support the system (recommended). Hold the system with its front facing you, lift and carefully insert the system into the rack. Attach the brackets to the rail rack using rack-mounting screws and/or retainer nuts.

Wall-mounting the System (Optional)

With the Wall-mount Kit, this system can be fixed on the wall surface. Please contact Lanner's sales representative for purchasing this kit.

What's in the Wall-mount Kit?

Check the kit contents for the following items:

- 1x pair of Wall Brackets

Wall Brackets

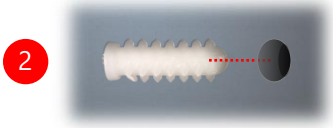
Screws

- 1x Screw Pack

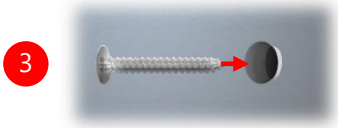
1. Flip over the system; fix both wall brackets onto the bottom with four screws as shown in the picture.

2. On the wall, measure the exact place where you want to hang the system and drill four holes.

3. Insert the wall plugs into the holes, and then insert the long screws into the wall screws.



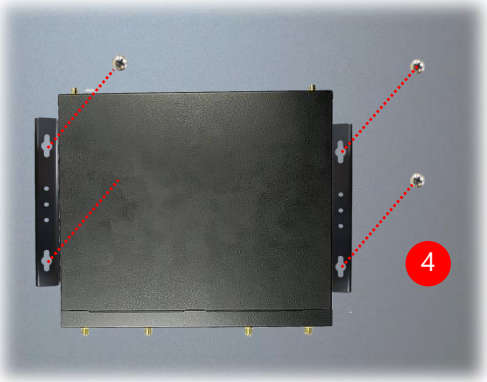
M4 x 2mm



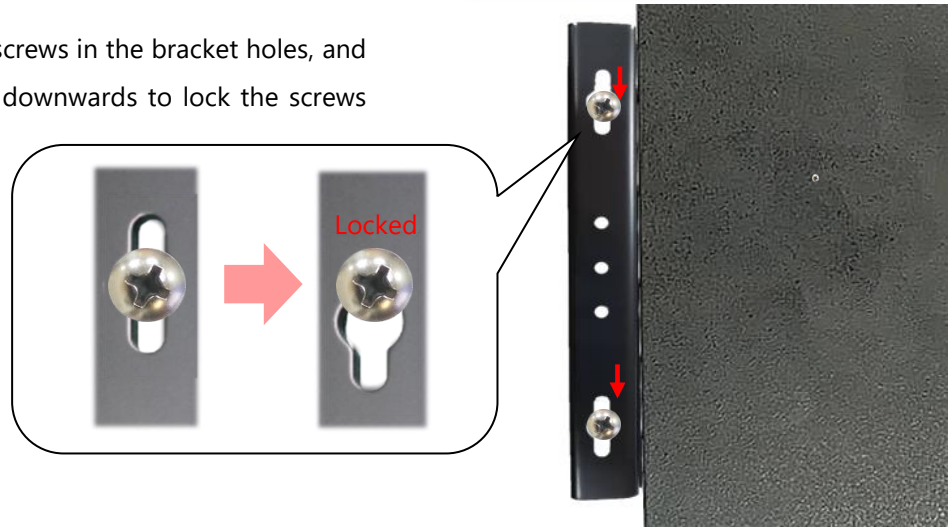
M3 x 19.5mm

(The demonstrated screw type can fit in general drywall or shelves. Please identify the wall type and select the suitable fixing approach to fix this system to the wall, and consult a qualified trained person if you are unsure.)

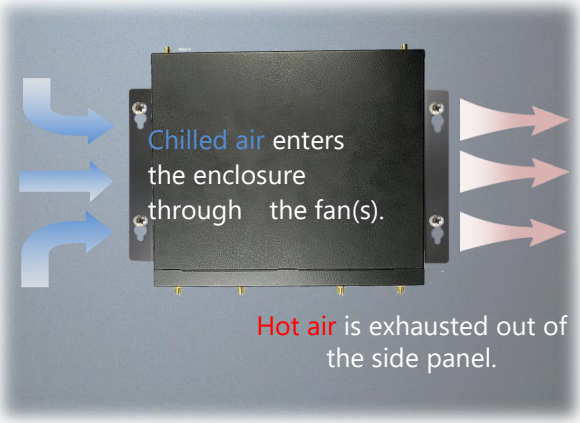
4. Align the four screw holes on the system's wall brackets with the four long screws you just installed on the wall.



Engage the four screws in the bracket holes, and push the system downwards to lock the screws into position.



Make sure you make enough room for airflow ventilation of the system's intake and exhaust openings by removing as many obstructions as possible or through proper cable management.



CHAPTER 4 SOFTWARE SETUP

Remote Server Management

Overview

This chapter will introduce the features of Lanner's BMC firmware and how to perform server remote management through it.

Lanner has implements IPMI 2.0 based on ASPEED service processor, performing all the BMC defined by IPMI 2.0. In addition, Lanner's BMC firmware runs an embedded web-server for full configuration using Web UI, which has a low learning curve.

BMC Main Features

Feature		Description
IPMI 2.0 Standard Features	System Interface support	• KCS (System Interface Support) • LAN (RMCP+)
	IPMI 2.0 based Management	• BMC stack with an IPMI 2.0 implementation
	System Management	• System power management • Watchdog timer
	Event Log	• System Event Log (SEL)
	Text Console Redirection: SOL	• Support in IPMI stack for SOL to remotely access BIOS and text console before OS booting
	User Management	• IPMI based user management • Multiple user permission level
Non-IPMI functions	Web User Interfaces	• BMC management via web user interface • Integrated KVM and Virtual Media
	User authorization	• RADIUS support • LDAP support
	Security	• SSL and HTTPS support
	Maintenance	• Auto-sync time with NTP server • Remote firmware update by Web UI or Linux tool

Firmware Functional Description

System Power Management

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

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

Watchdog Timer

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

System Event Log (SEL)

A non-volatile storage space is allocated to store system events for system status tracking.

Serial over LAN (SOL)

IPMI 2.0 SOL is implemented to redirect the system serial controller traffic over an IPMI session. System administrators are able to establish an SOL connection with a standard IPMI client, like IPMITOOL, to remotely interact with serial text-based interfaces such as OS command-line and serial redirected BIOS interfaces.

User Management

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

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

Keyboard, Video, Mouse (KVM) Redirection

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

Virtual Media Redirection

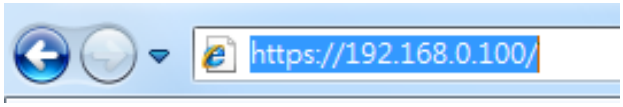
- The BMC provides remote virtual CD, HD and FD redirection. CD image could be mounted directly in the KVM window. HD, FD could be mounted by NFS and SAMBA.
- Efficient USB 2.0 based CD/DVD redirection with a typical speed of 20XCD.
- Completely secured transmission.

IPMI Commands Support List

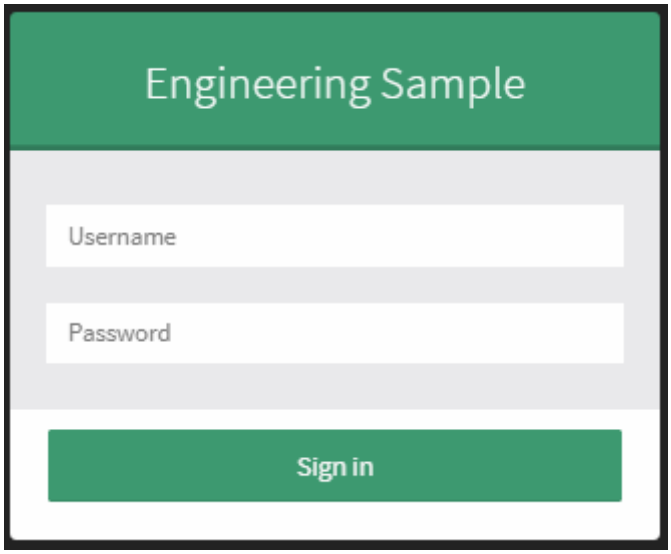
COMMANDS	NETFN	CMD
IPM Device "Global" Commands		
Get Device ID	APP (06h)	00h
Cold Reset	APP (06h)	02h
Warm Reset	APP (06h)	03h
Get Device GUID	APP (06h)	08h
BMC Watchdog Timer Commands		
Reset Watchdog Timer	APP (06h)	22h
Set Watchdog Timer	APP (06h)	24h
Get Watchdog Timer	APP (06h)	25h
BMC Device and Messaging Commands		
Get System GUID	APP (06h)	37h
Get Channel Info	APP (06h)	42h
Set User Access	APP (06h)	43h
Get User Access	APP (06h)	44h
Set User Name	APP (06h)	45h
Get User Name	APP (06h)	46h
Set User Password	APP (06h)	47h
Chassis Device Commands		
Get Chassis Capabilities	Chassis (00h)	00h
Get Chassis Status	Chassis (00h)	01h
Chassis Control	Chassis (00h)	02h
Chassis Reset	Chassis (00h)	03h
SEL Device Commands		
Get SEL Info	Storage (0Ah)	40h
Get SEL Allocation Info	Storage (0Ah)	41h
Get SEL Entry	Storage (0Ah)	43h
Delete SEL Entry	Storage (0Ah)	46h
Clear SEL	Storage (0Ah)	47h
Get SEL Time	Storage (0Ah)	48h
Set SEL Time	Storage (0Ah)	49h
Get SEL Time UTC Offset	Storage (0Ah)	5Ch
Set SEL Time UTC Offset	Storage (0Ah)	5Dh
LAN Device Commands		
Set LAN Configuration Parameters	Transport (0Ch)	01h
Get LAN Configuration Parameters	Transport (0Ch)	02h
Serial/Modem Device Commands		
Set User Callback Options	Transport (0Ch)	1Ah
Get User Callback Options	Transport (0Ch)	1Bh
SOL Activating	Transport (0Ch)	20h
Set SOL Configuration Parameters	Transport (0Ch)	21h
Get SOL Configuration Parameters	Transport (0Ch)	22h

Using BMC Web UI

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



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



Login Page

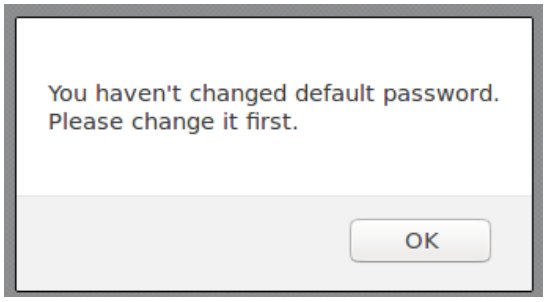
- **Username**: Enter your username in this field.
- **Password**: Enter your password in this field.
- **Sign me in**: After entering the required credentials, click the **Sign me in** to log in to Web UI.

Note: (1) If not specified, the default IP to access BMC is https://192.168.0.100.
(2) Please use **https** to access Web UI.

Default User Name and Password

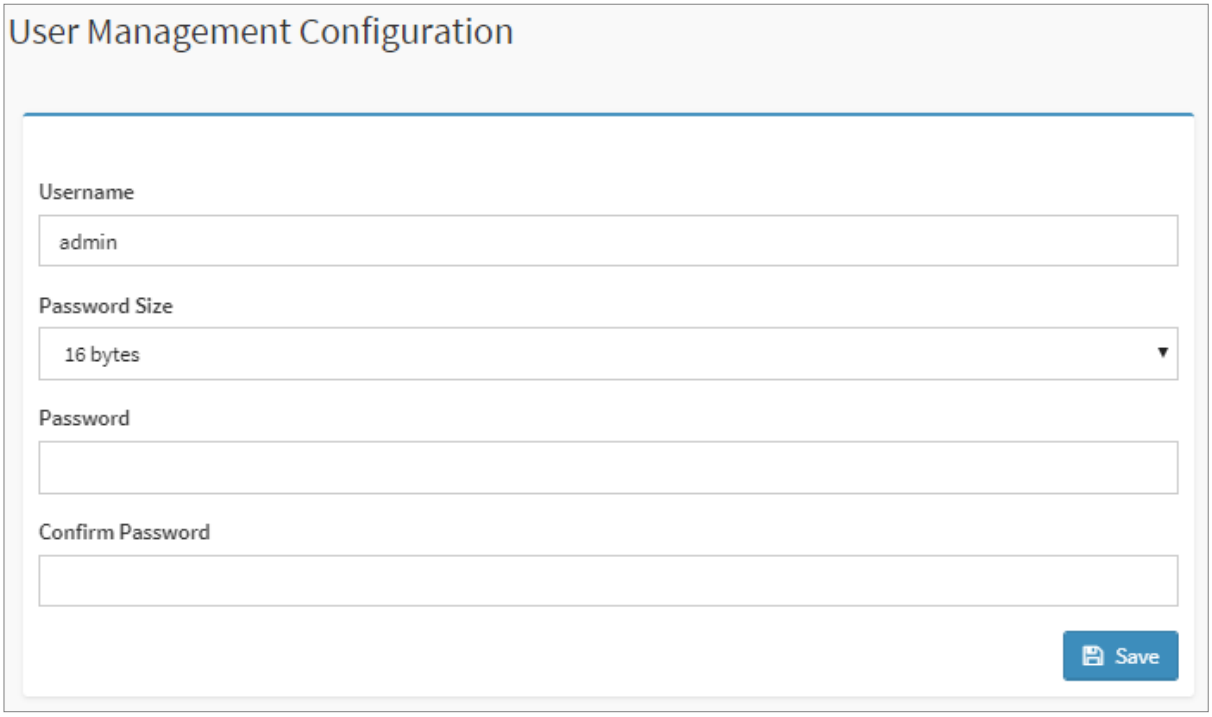
- **Username:** admin
- **Password**: admin

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



Change the default password - Dialog

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

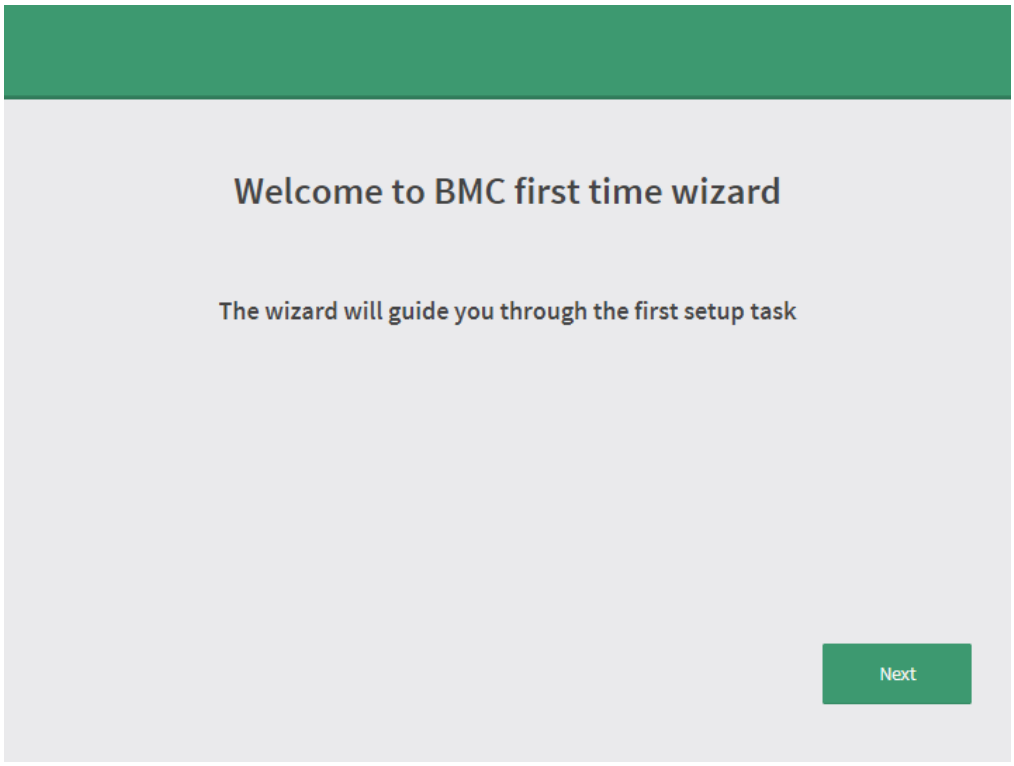


Change the default password – Set password

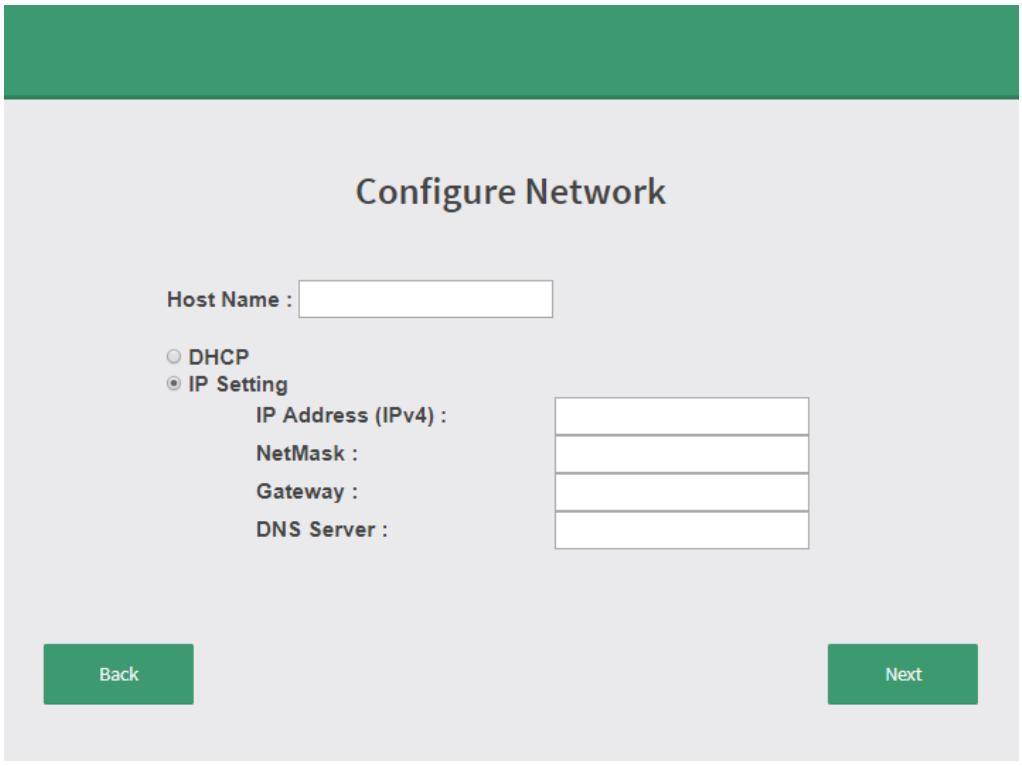
Note: Duplicate usernames shouldn't exist across various authentication methods like LDAP, RADIUS or IPMI since the privilege of one Authentication method is overwritten by another authentication method during logging in, and hence the correct privilege cannot be returned properly.

First Time Wizard

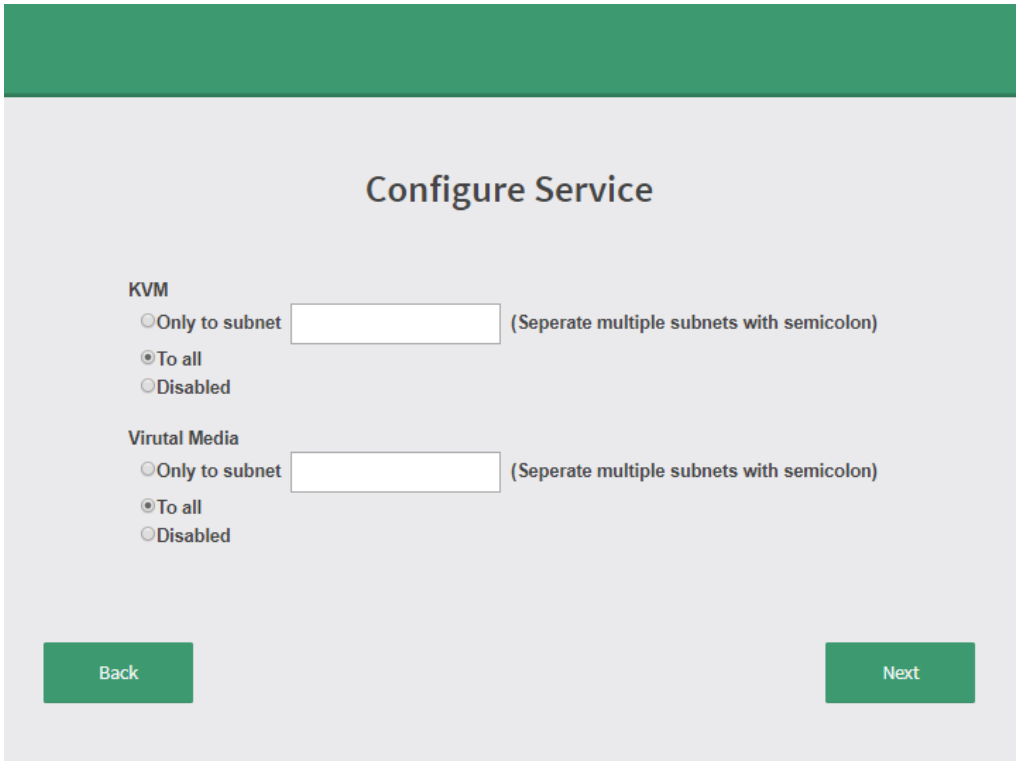
After the first time login, you will see first time wizard welcome page as the following picture. Please press the "Next" button and configure your BMC step by step.



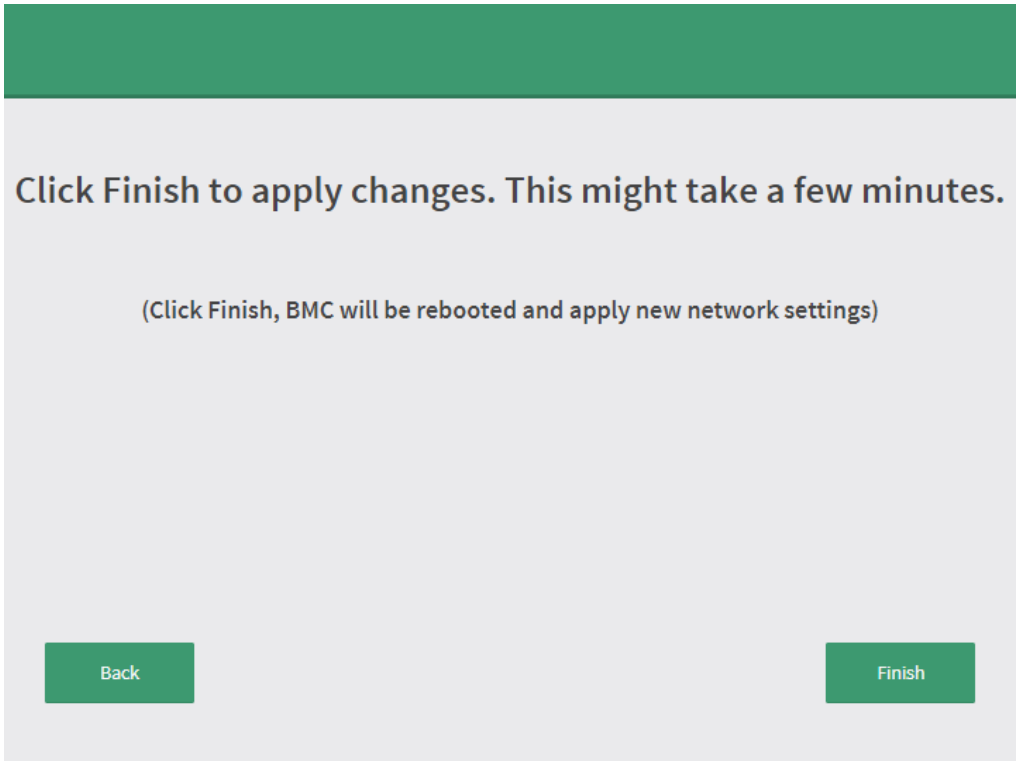
In the "Configure Network" page, you could specify the hostname and network settings of BMC.



In the "Configure Service" page, you could specify allowed IP region which could access KVM and Vmedia web pages.



In the final page, please press "Finish" button to complete the first time wizard. BMC will be rebooted and apply new settings. You could reconnect to the Web UI after a few minutes.



Web UI Layout

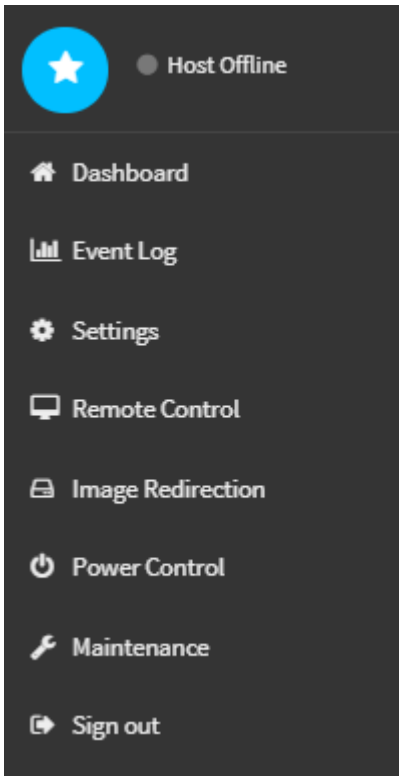
The BMC Web UI consists of various menu items:

Menu Bar

The menu bar displays the following:

- Dashboard
- Event Log
- Settings
- Remote Control
- Image Redirection
- Power Control
- Maintenance
- Sign out

A screenshot of the menu bar is shown below:



Menu Bar

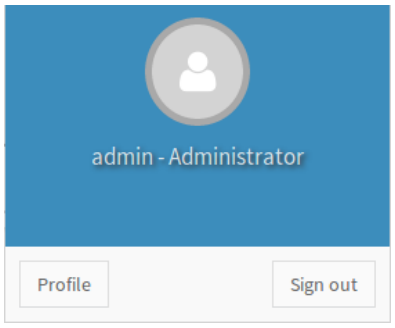
Quick Button and Logged-in User

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

User Information

Logged-in user information: Click the icon admin to view the logged-in user information.

A screenshot of the logged-in user information is shown below:



Logged-in User Information

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

- **Notification**: Click the icon to view the notification messages.
- **Refresh**: Click the icon Refresh to reload the current page.
- **Sign out**: Click the icon Sign out to log out of the Web UI.

Logged-in user and its privilege level

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

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

Help

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

BIOS Setup

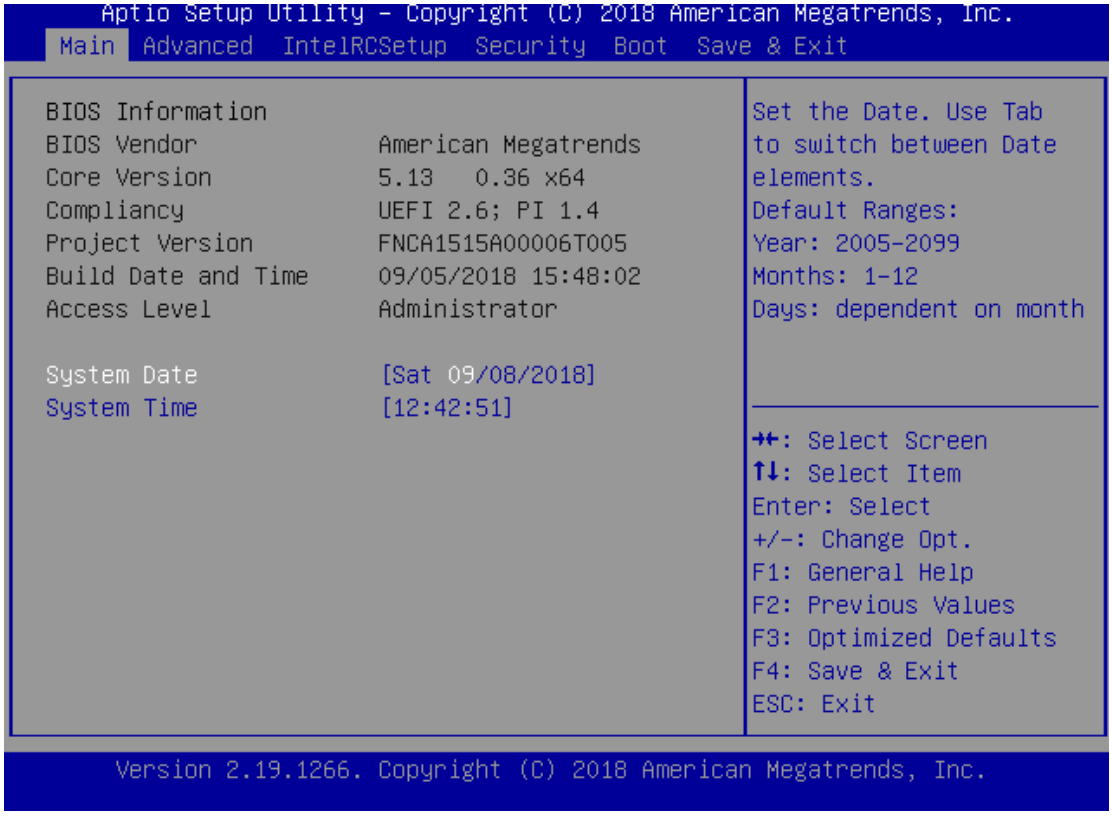
To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. The system has AMI BIOS built-in, with a SETUP utility that allows users to configure required settings or to activate certain system features. Pressing the **<Tab>** or **<Del>** key immediately allows you to enter the Setup utility.

Control Keys	Description
→←	select a setup screen, for instance, [Main], [Advanced],[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>	to exit the current screen

Main Menu

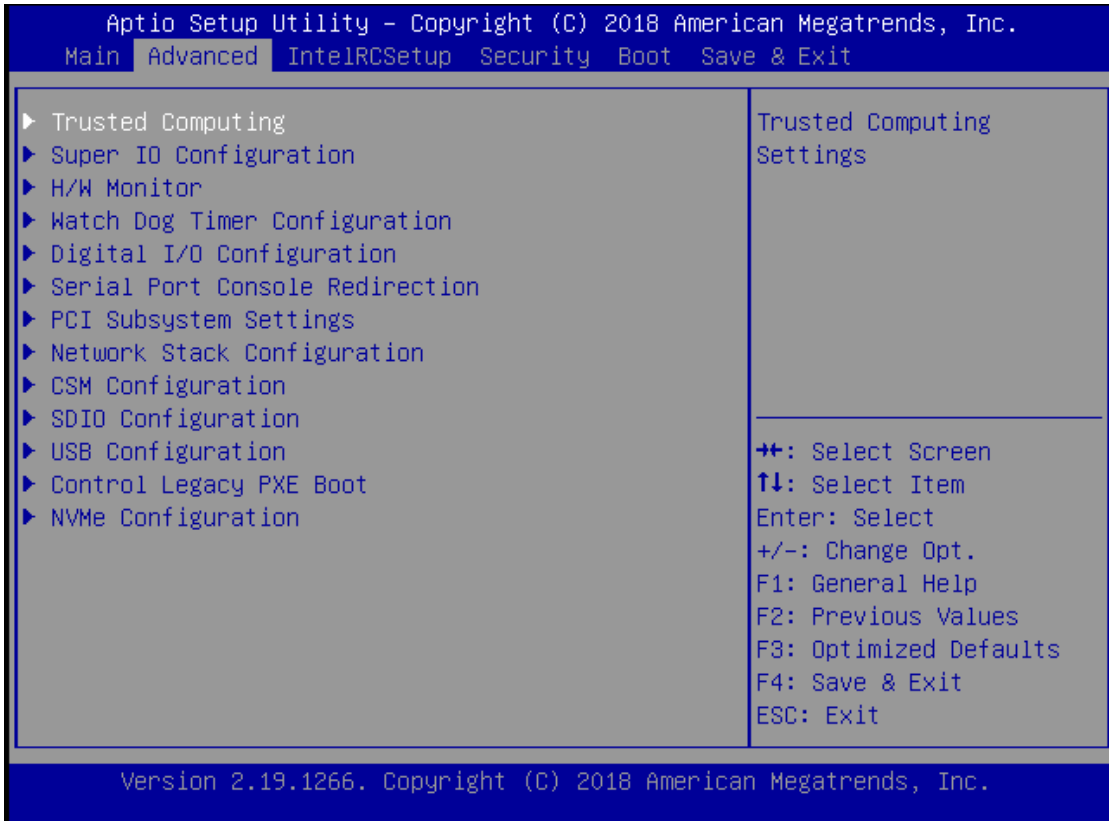
Setup main page contains BIOS information and project version information.



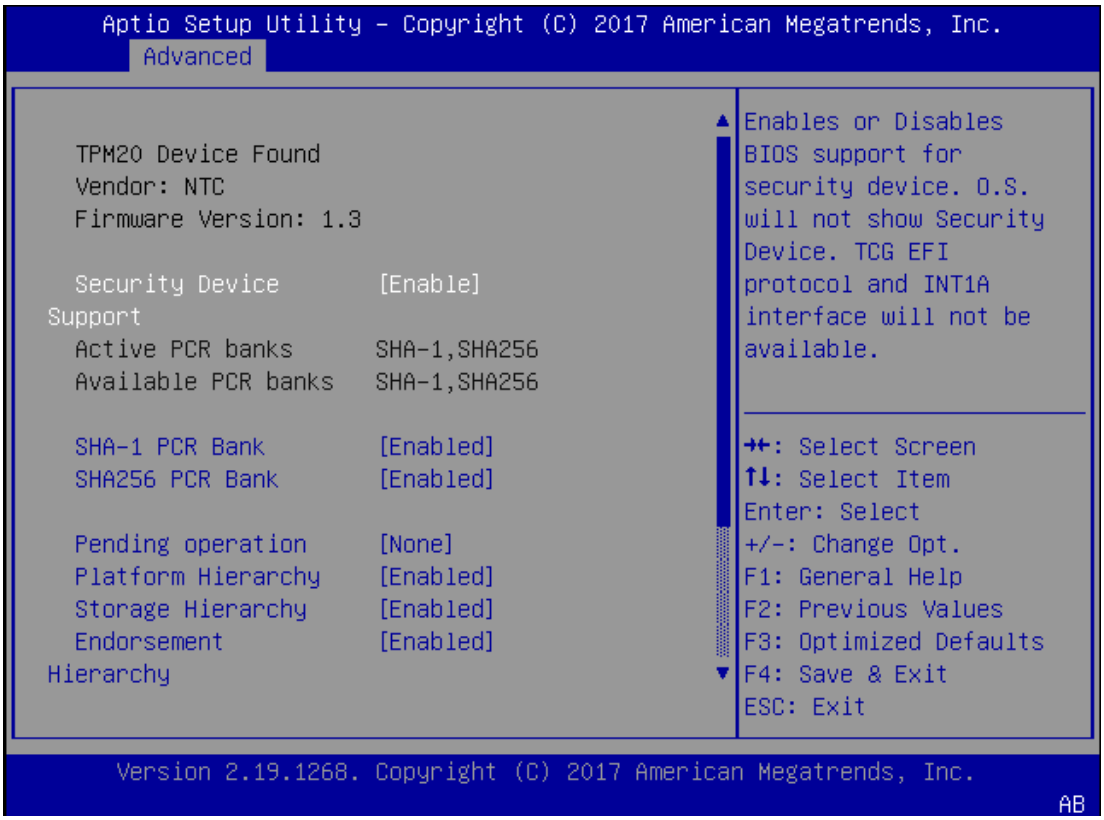
Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliancy: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use **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

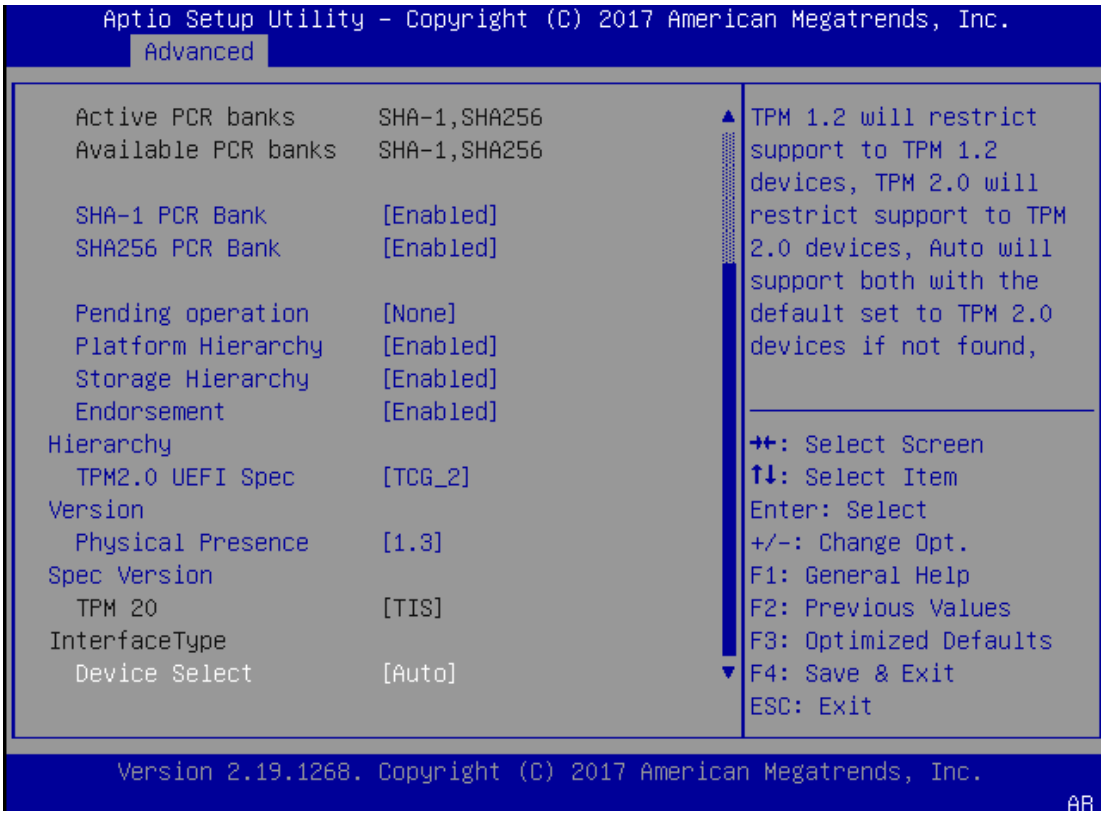
Advanced Menu

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.



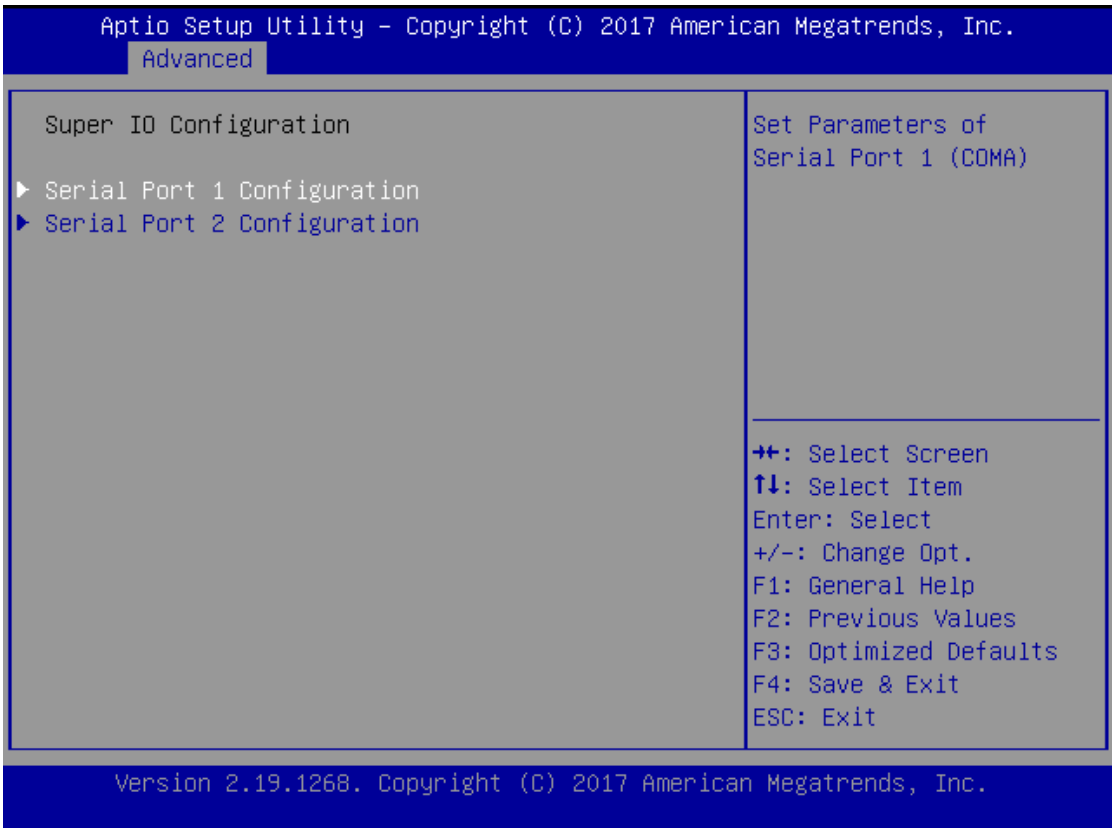
Trusted Computing



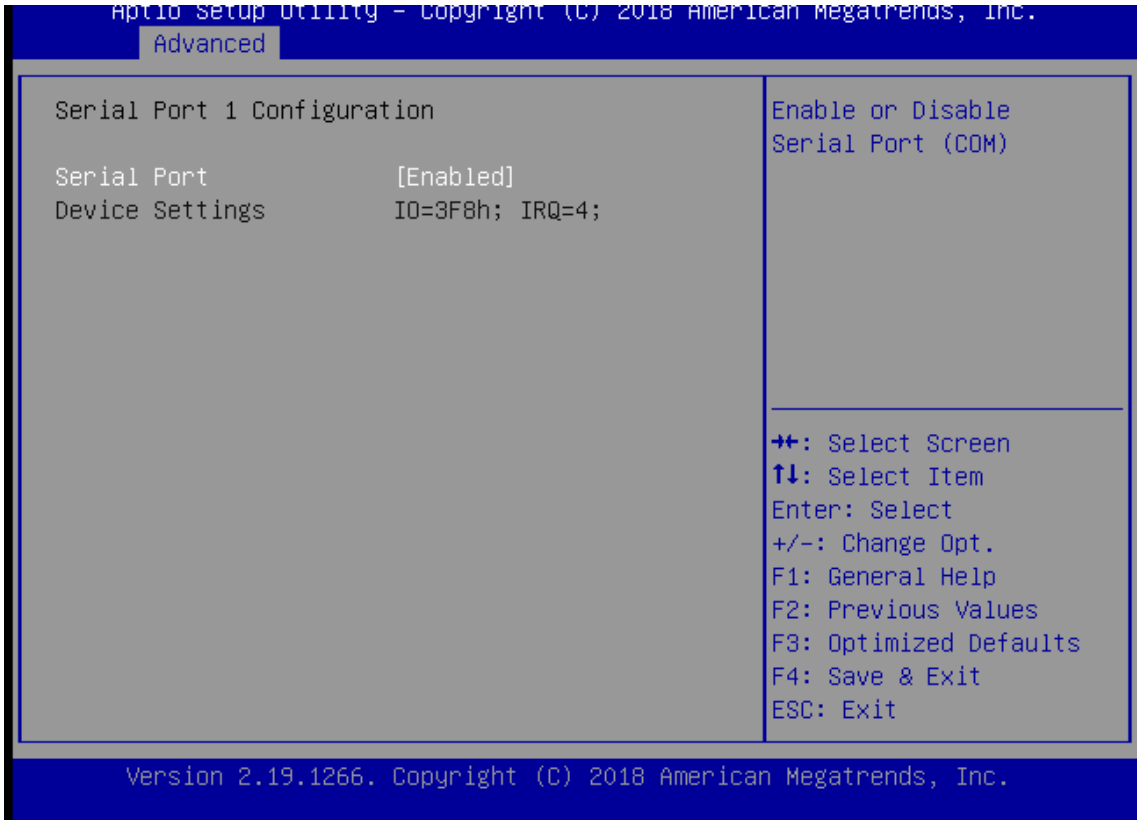


Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for a security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 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.

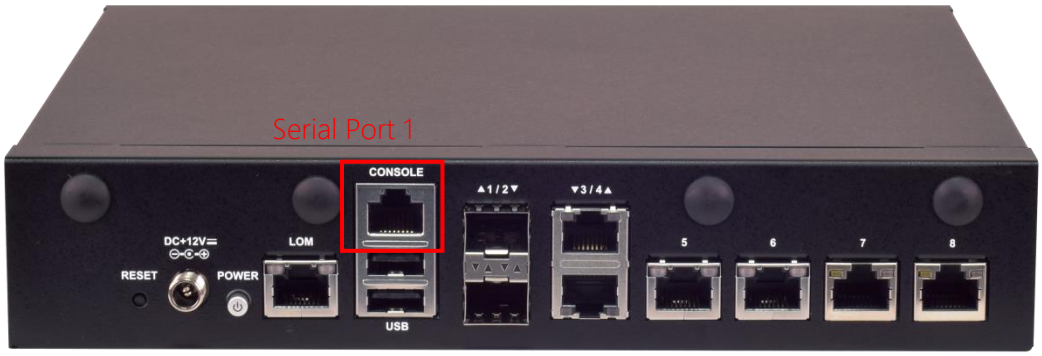
Super IO Configuration



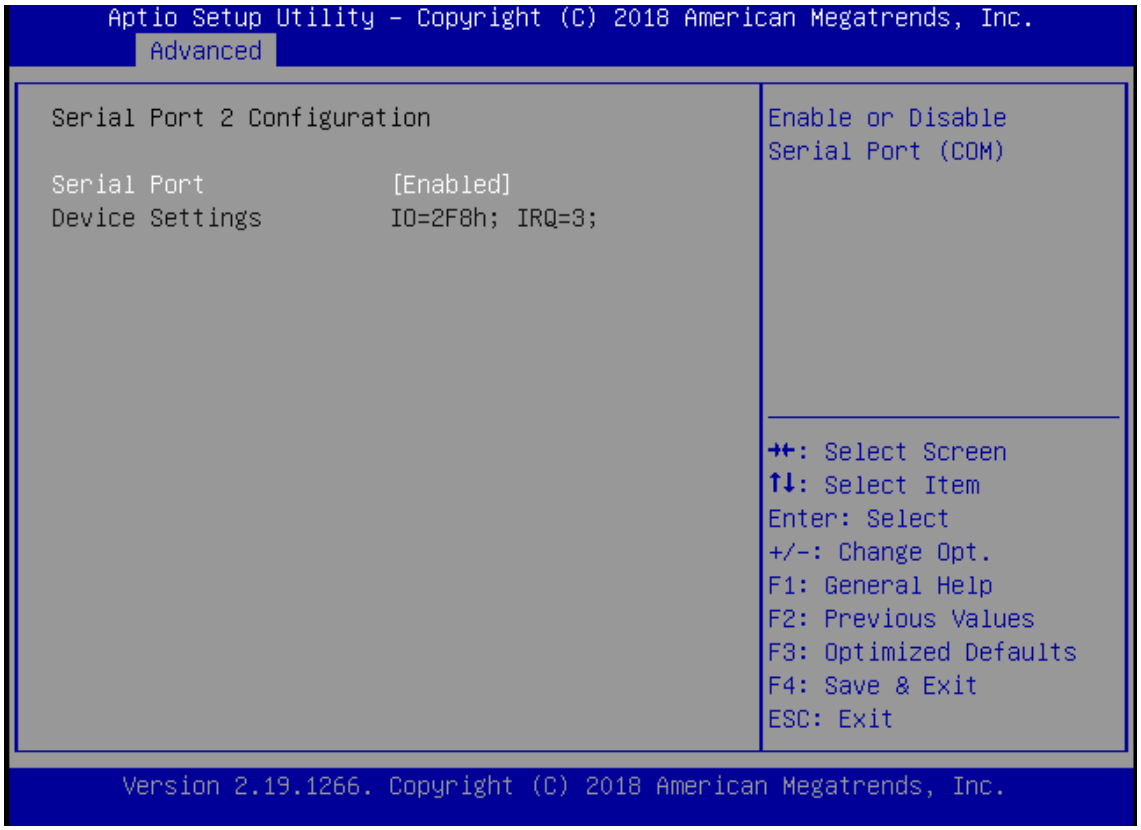
Serial port 1 Configuration



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

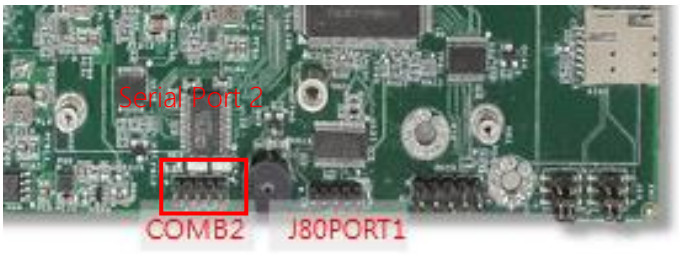


Serial port 2 Configuration

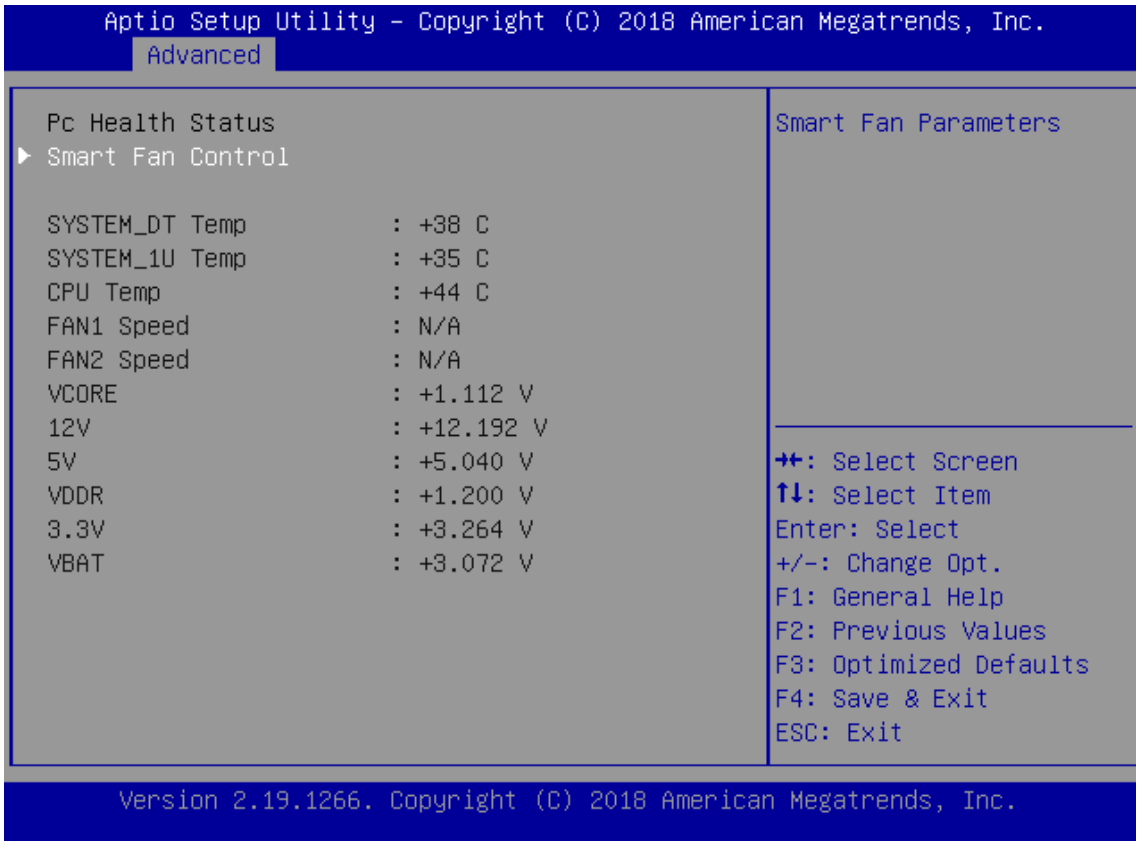


Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 2.
Device Settings	NA	IO=2F8h; IRQ = 3

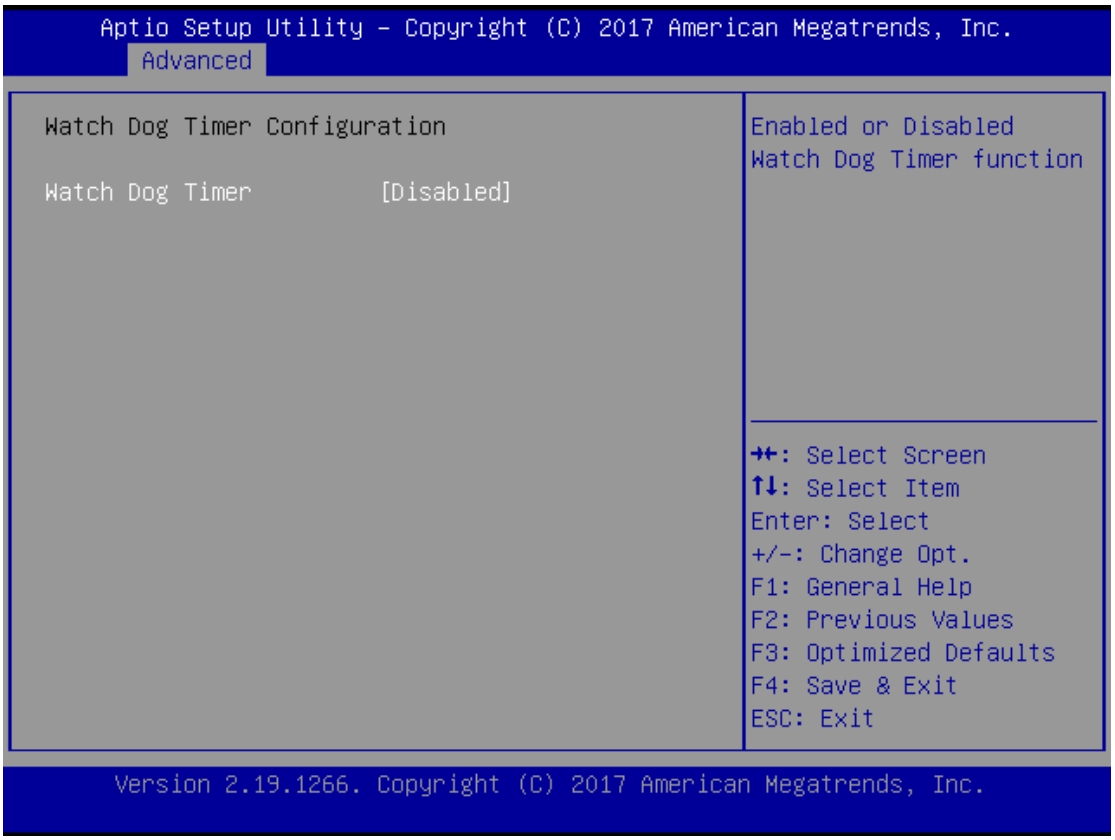
Please refer to Motherboard Layout for **Serial Port 2** (**COMB2**) location.



H/W Monitor

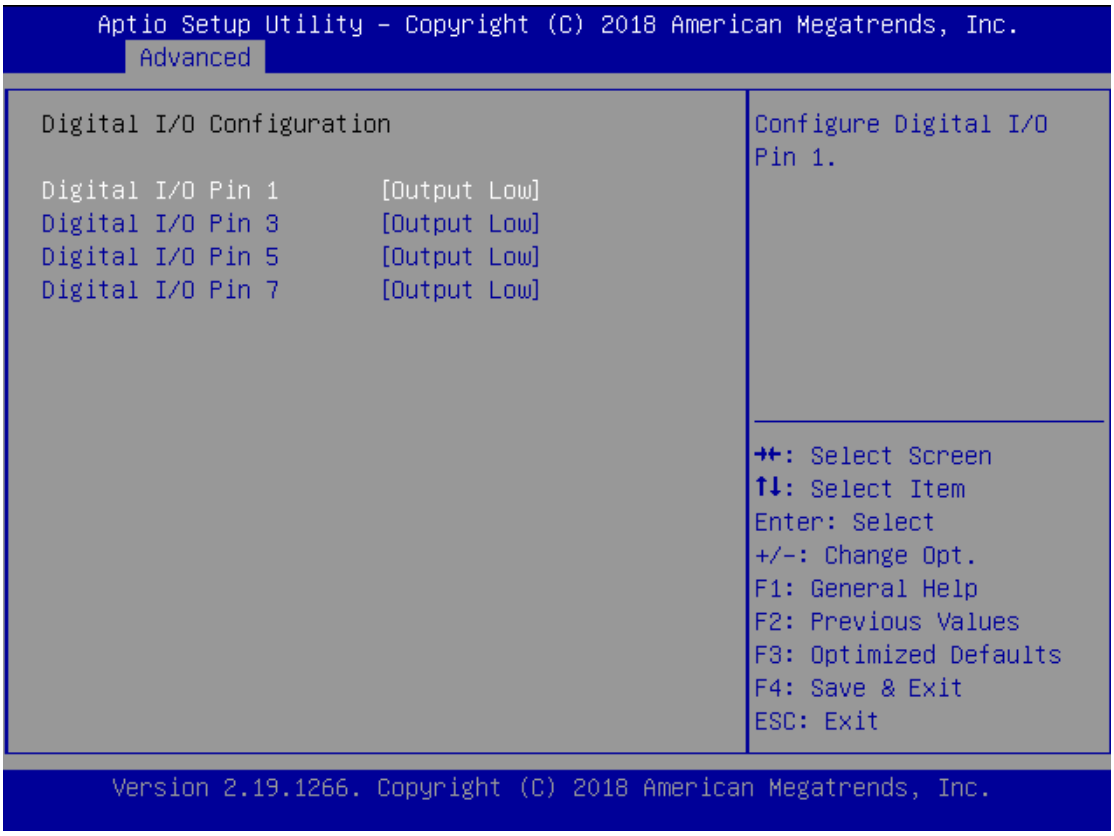

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
Advanced
Pc Health Status
Smart Fan Control
SYSTEM_DT Temp : +38 C
SYSTEM_1U Temp : +35 C
CPU Temp : +44 C
FAN1 Speed : N/A
FAN2 Speed : N/A
VCORE : +1.112 V
12V : +12.192 V
5V : +5.040 V
VDDR : +1.200 V
3.3V : +3.264 V
VBAT : +3.072 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
Version 2.19.1266. Copyright (C) 2018 American Megatrends, Inc.

Watch Dog Timer Configuration



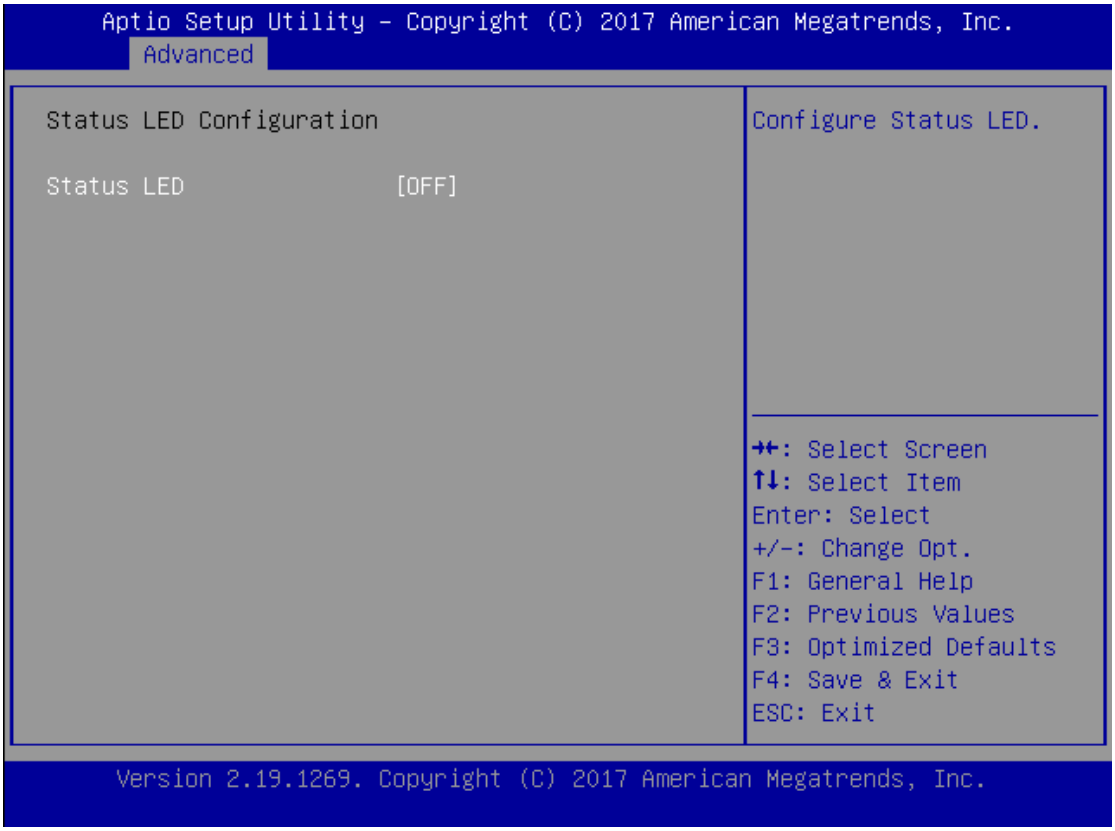
Feature	Options	Description
Watch Dog Timer	Enabled Disabled	Enables or disables Watch Dog Timer function

Digital I/O Configuration



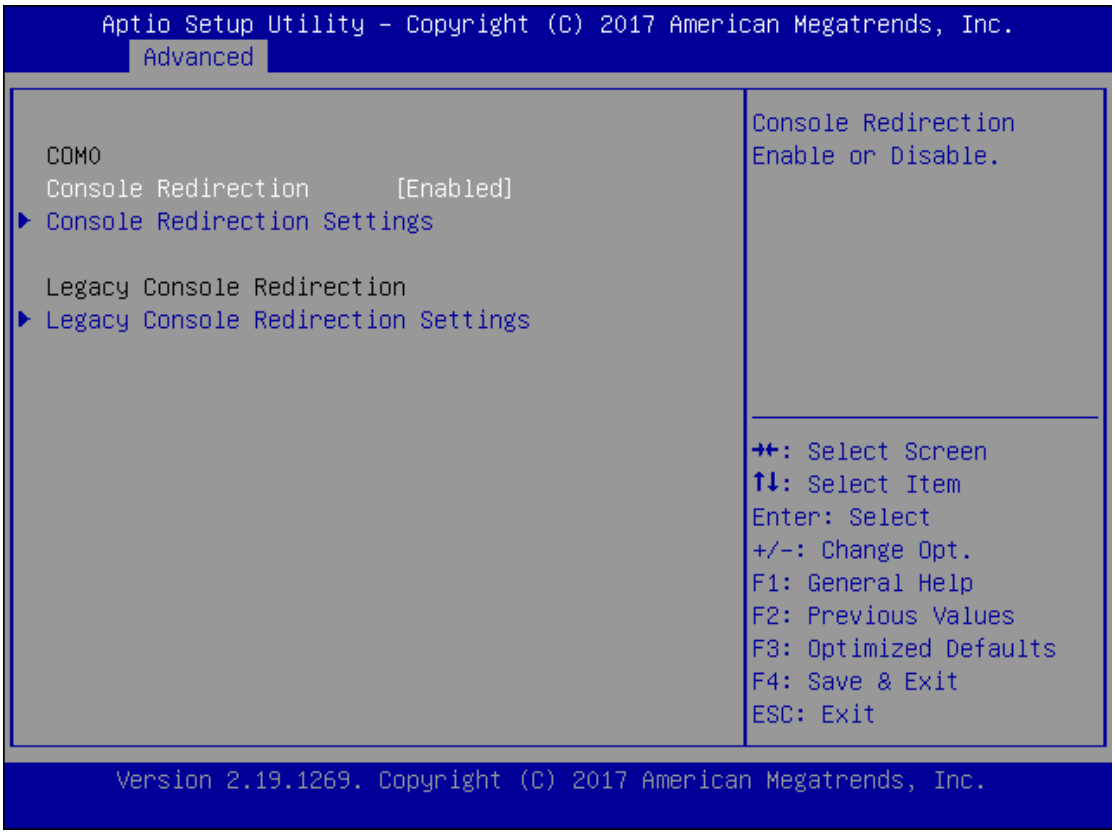
Feature	Options	Description
Digital I/O Output 1	Output Low Output High	Configure Digital I/O Pin1
Digital I/O Output 3	Output Low Output High	Configure Digital I/O Pin3
Digital I/O Output 5	Output Low Output High	Configure Digital I/O Pin5
Digital I/O Output 7	Output Low Output High	Configure Digital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

Status LED Configuration



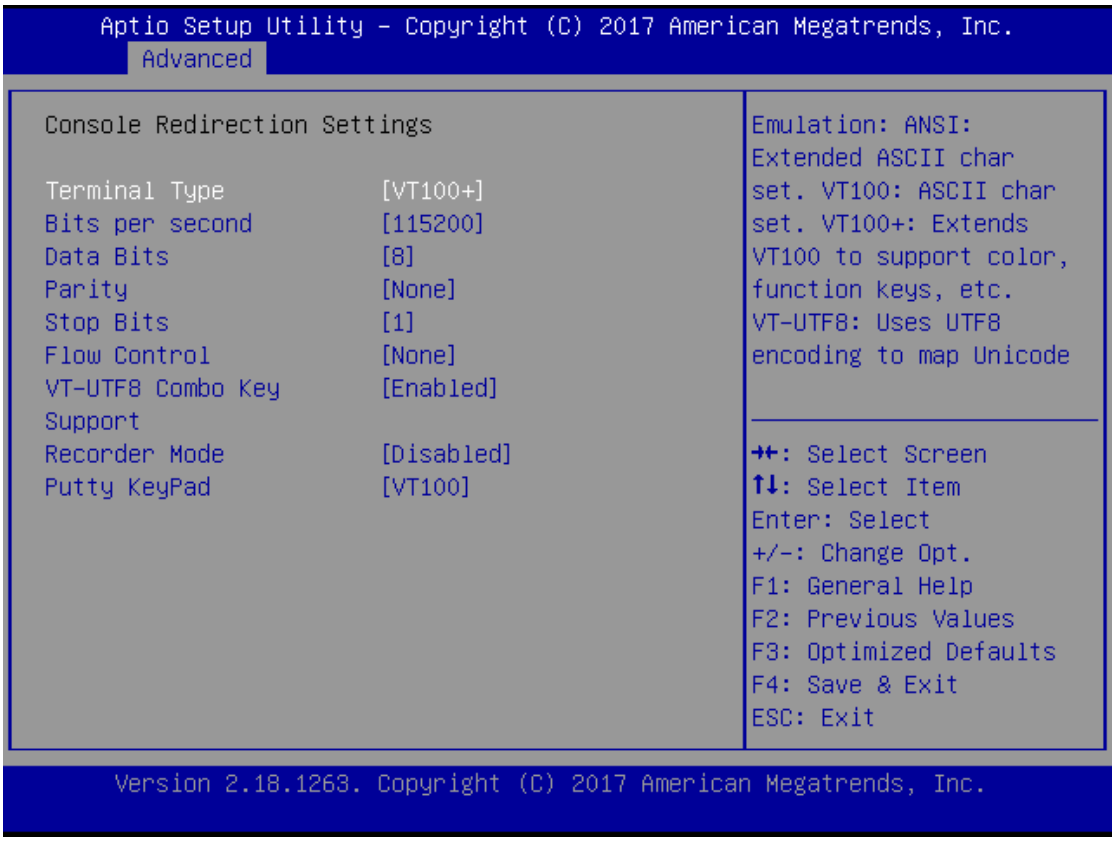
Feature	Options	Description
Status LED	OFF GREEN RED	Configures Status LED color

Serial Port Console Redirection



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

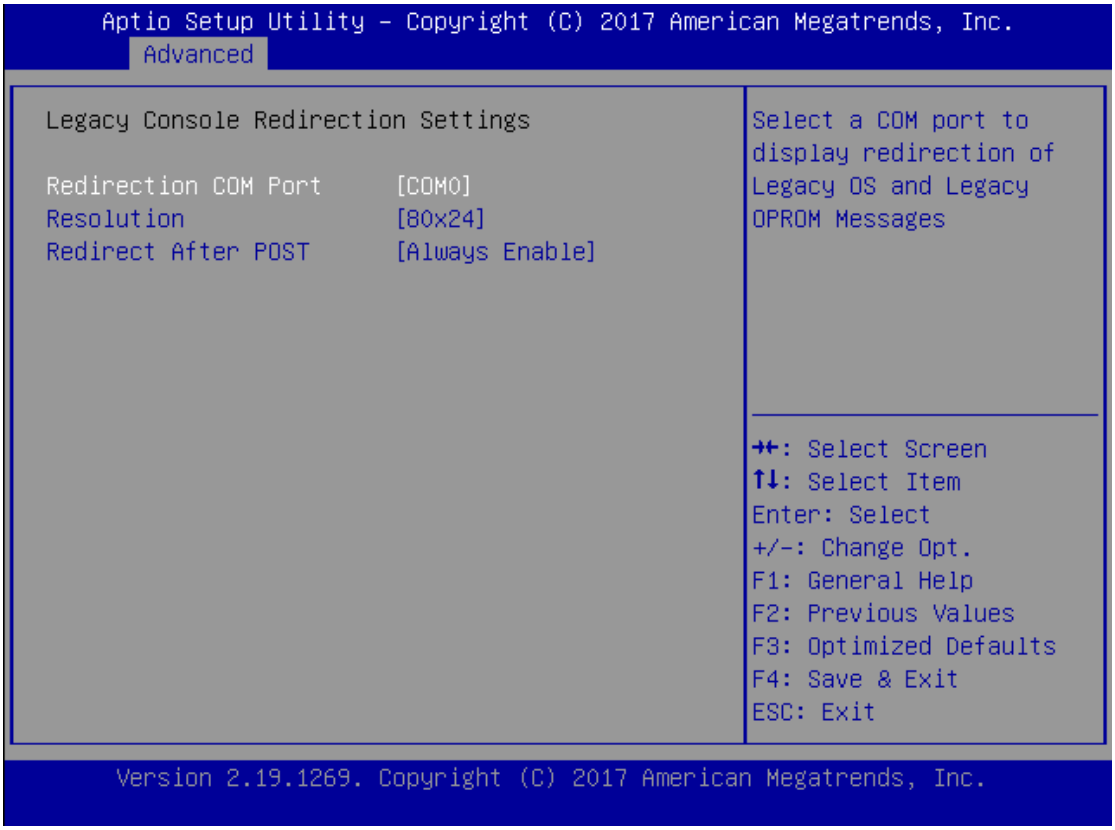
Console Redirection Settings



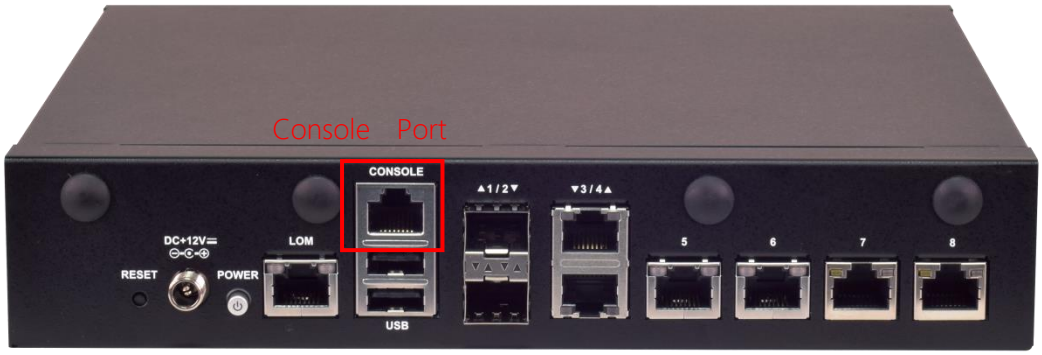
Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**VT100**: ASCII char set **VT100+**:Extends VT100 to support color, function keys, etc. **VT-UTF8**:Uses UTF8 encoding to map Unicode chars onto 1 or more bytes **ANSI**: Extended ASCII char set
Bits per second	9600 19200 38400 57600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

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

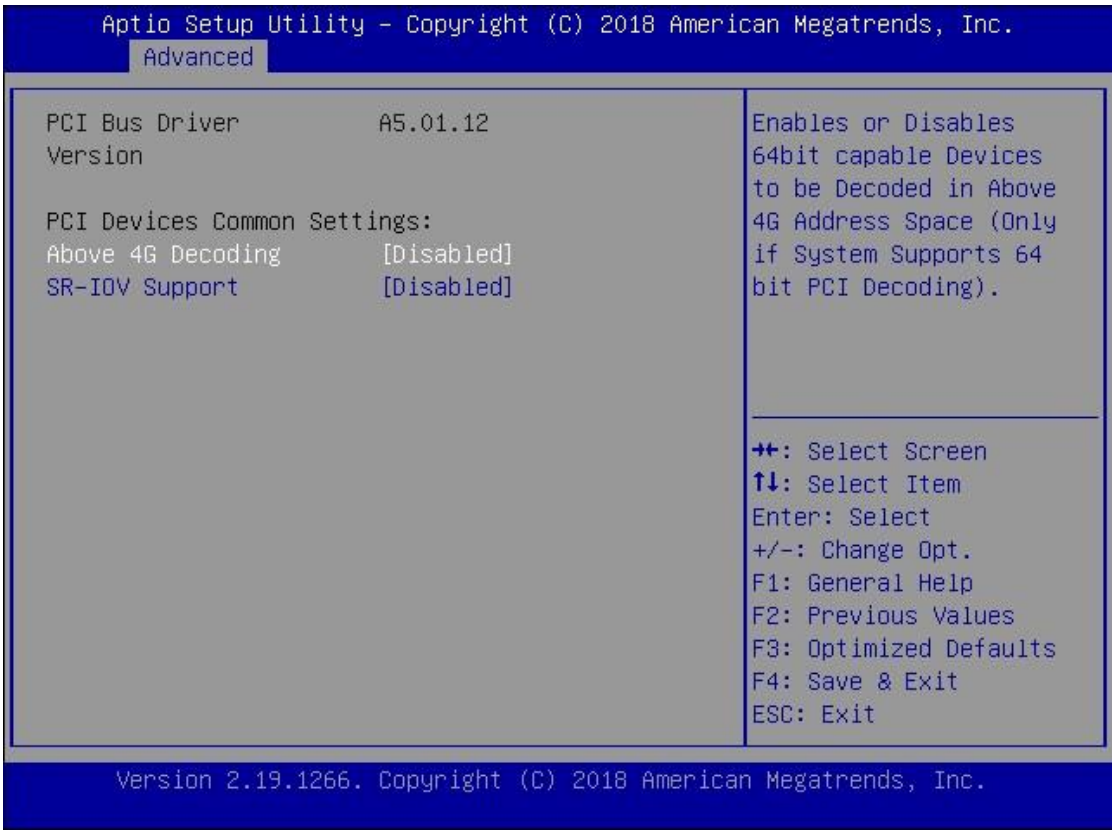
Console Redirection Settings



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**.

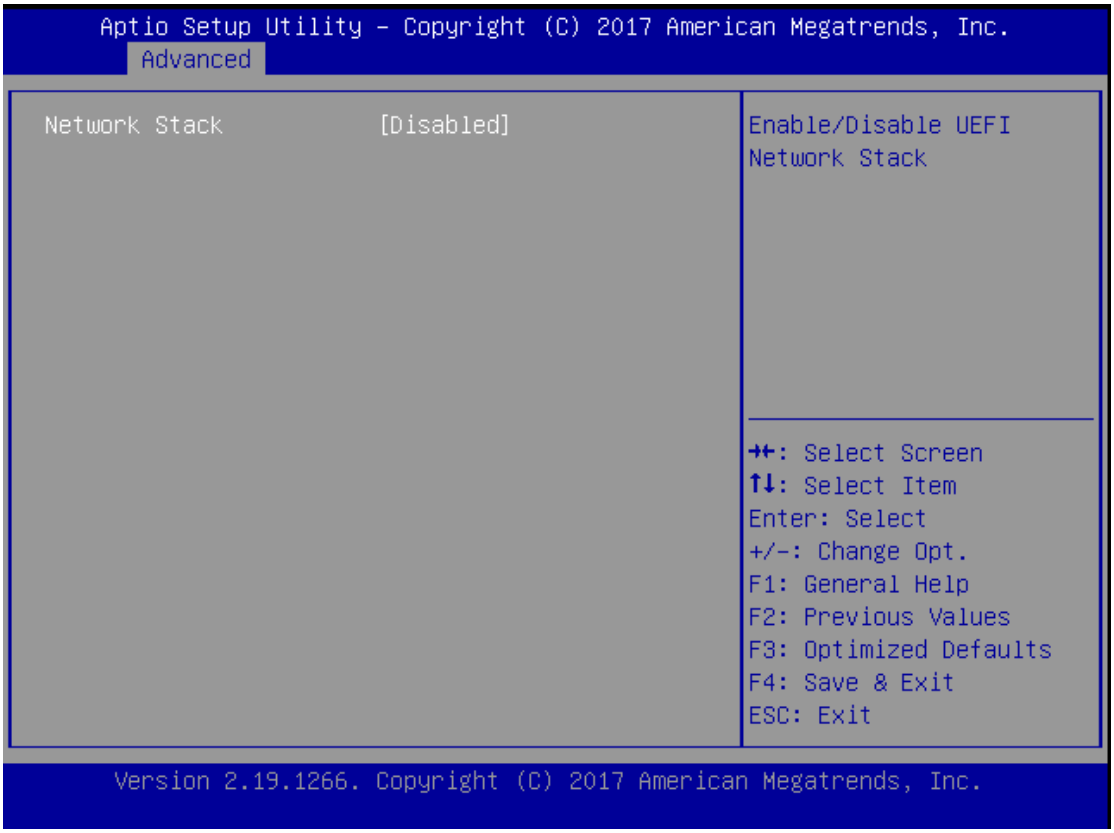


PCI Subsystem Settings



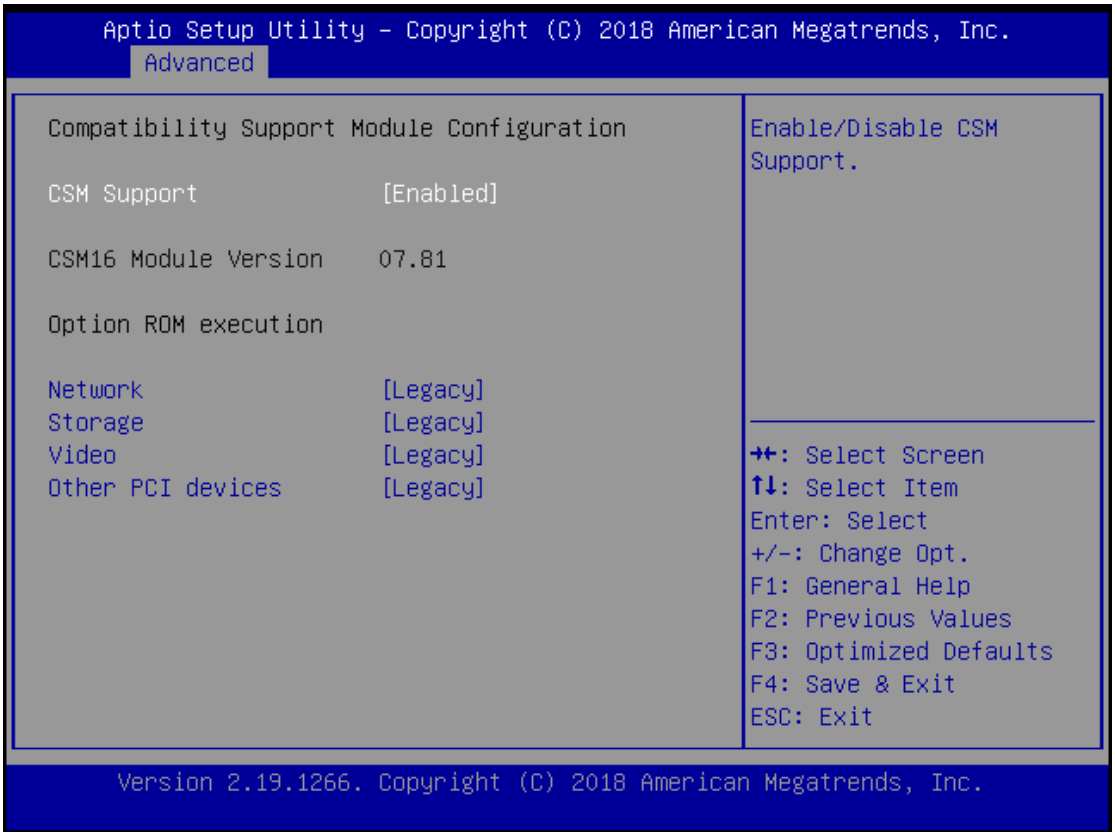
Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Enable or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).
SR-IOV Support	Disabled Enabled	If the system has SR-IOV capable PCIe Devices, this option enables or disables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

Network Stack Configuration



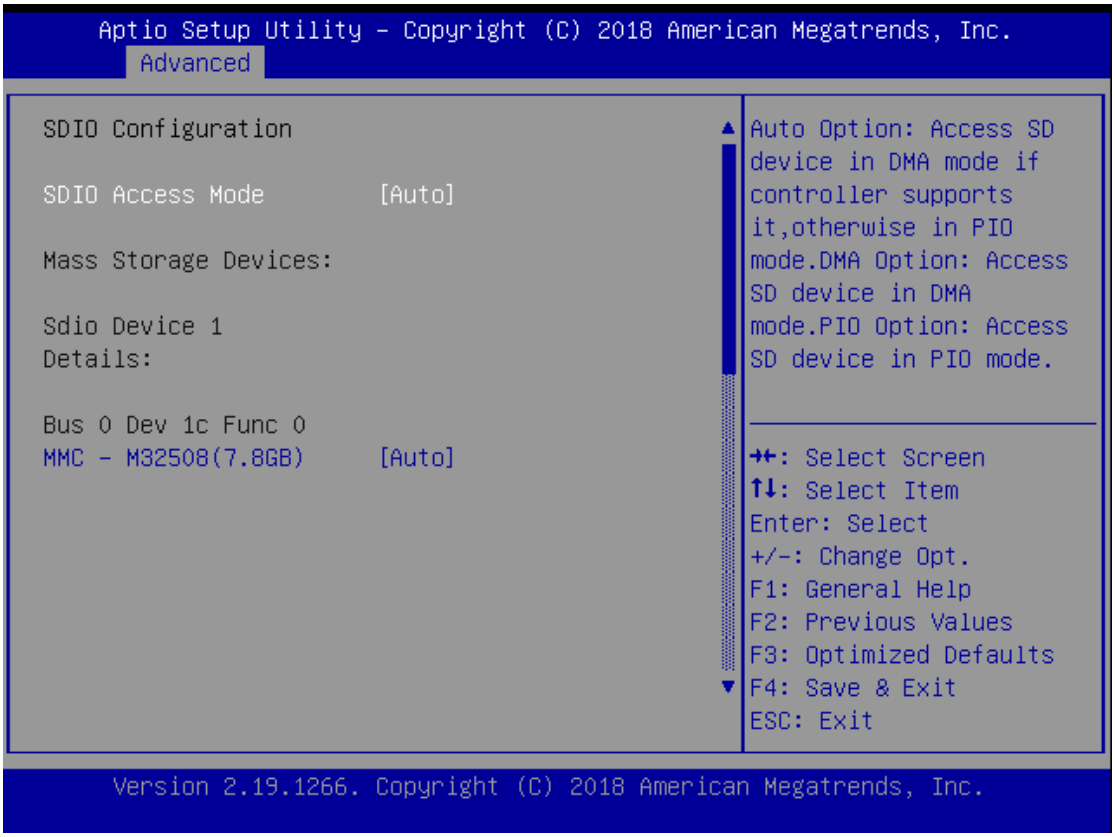
Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack
Ipv4 PXE Support	Disabled Enabled	Enables Ipv4 PXE Boot Support. If IPV4 is disabled, PXE boot option will not be created.
Ipv4 HTTP Support	Disabled Enabled	Enables Ipv4 HTTP Boot Support. If IPV4 is disabled,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



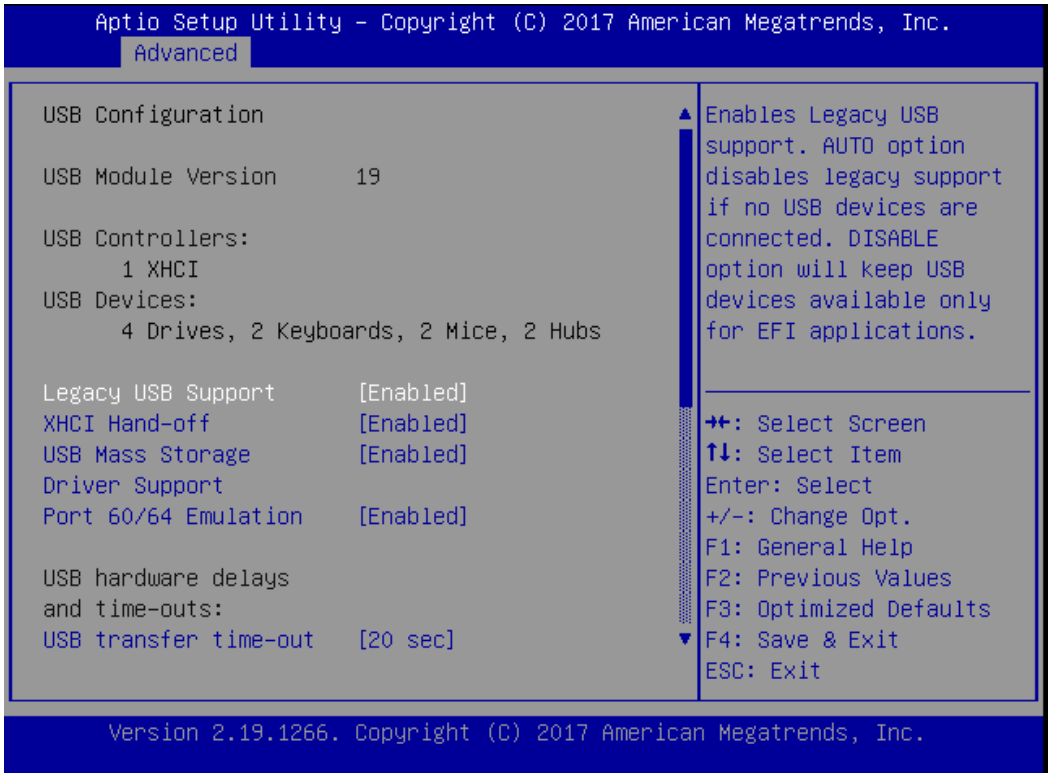
Feature	Options	Description
CSM Support	Disabled Enabled	Enables or disables CSM Support
Network	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch UEFI Legacy	Controls 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

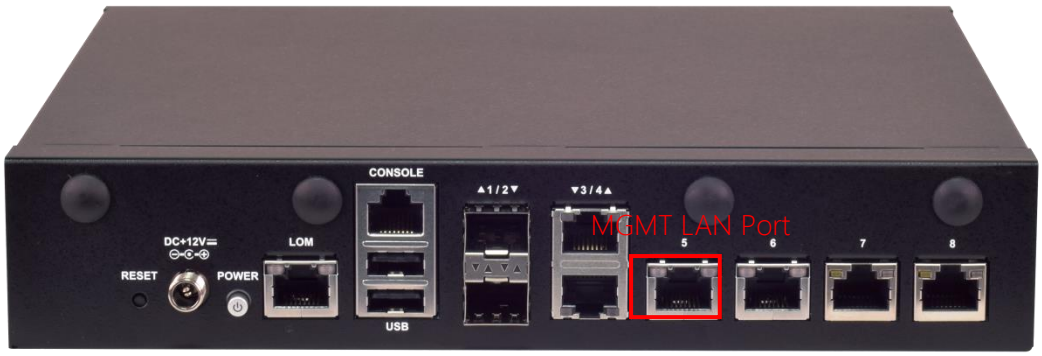


Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected; **Disabled** option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround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

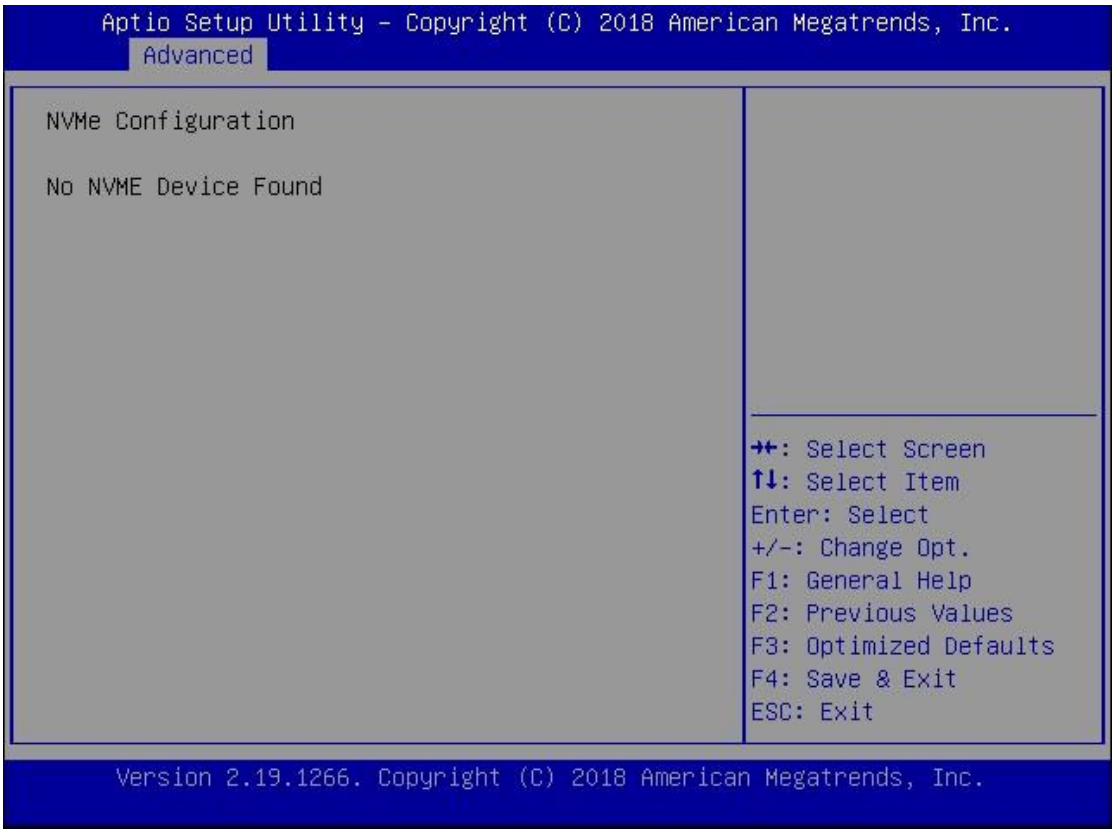
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Control Legacy PXE Boot

Feature	Options	Description
Control Legacy PXE Boot From	Disabled MGMT LAN	Control Legacy PXE Boot from which LAN.

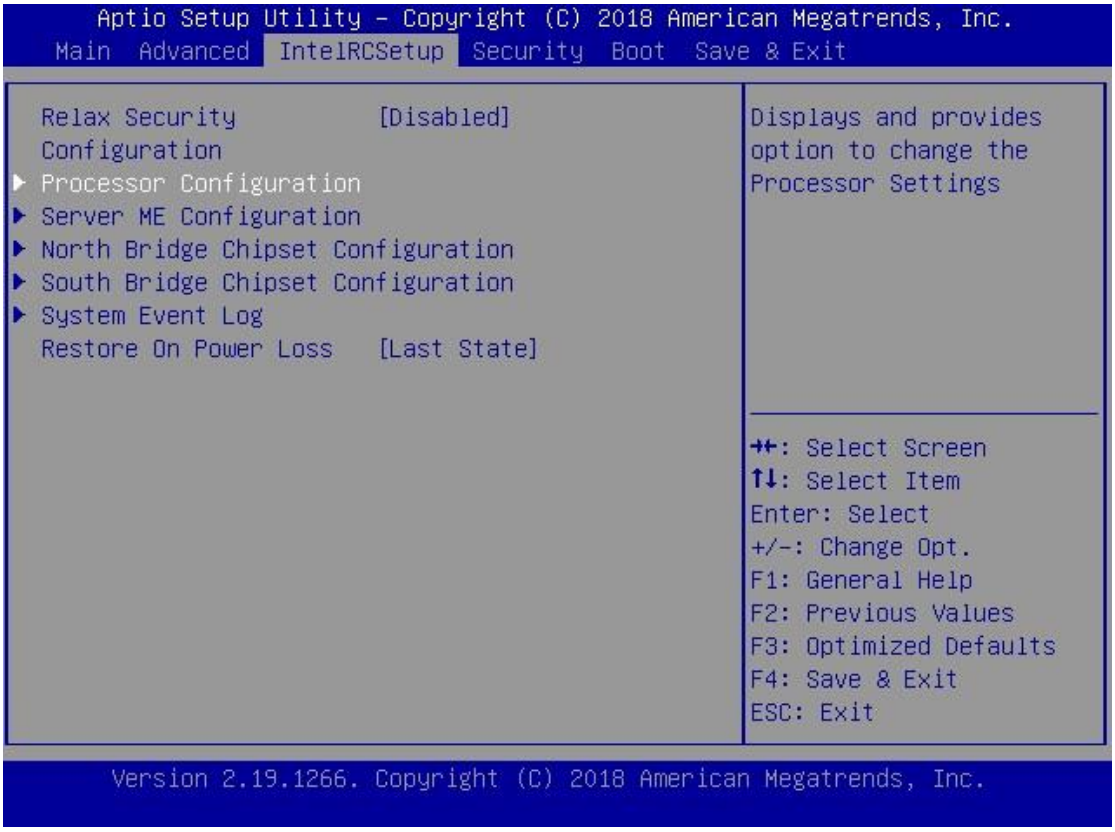


NVME Configuration



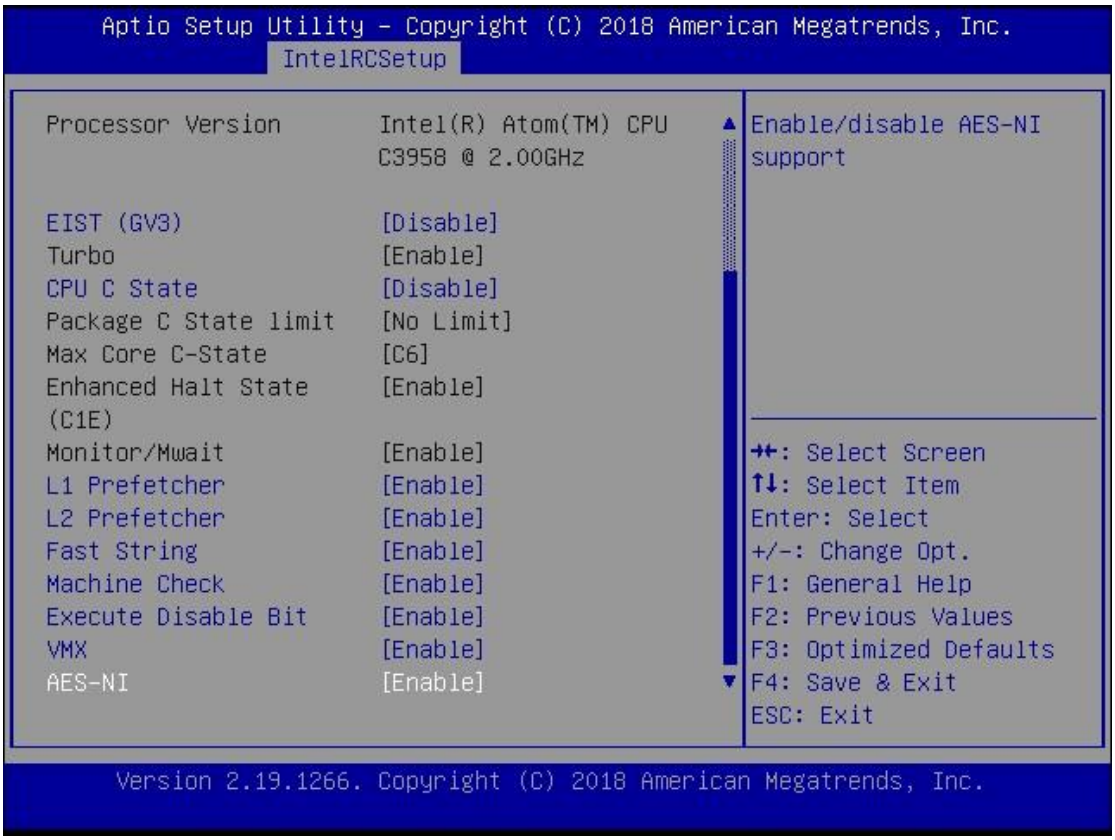
IntelRCSetup Menu

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).

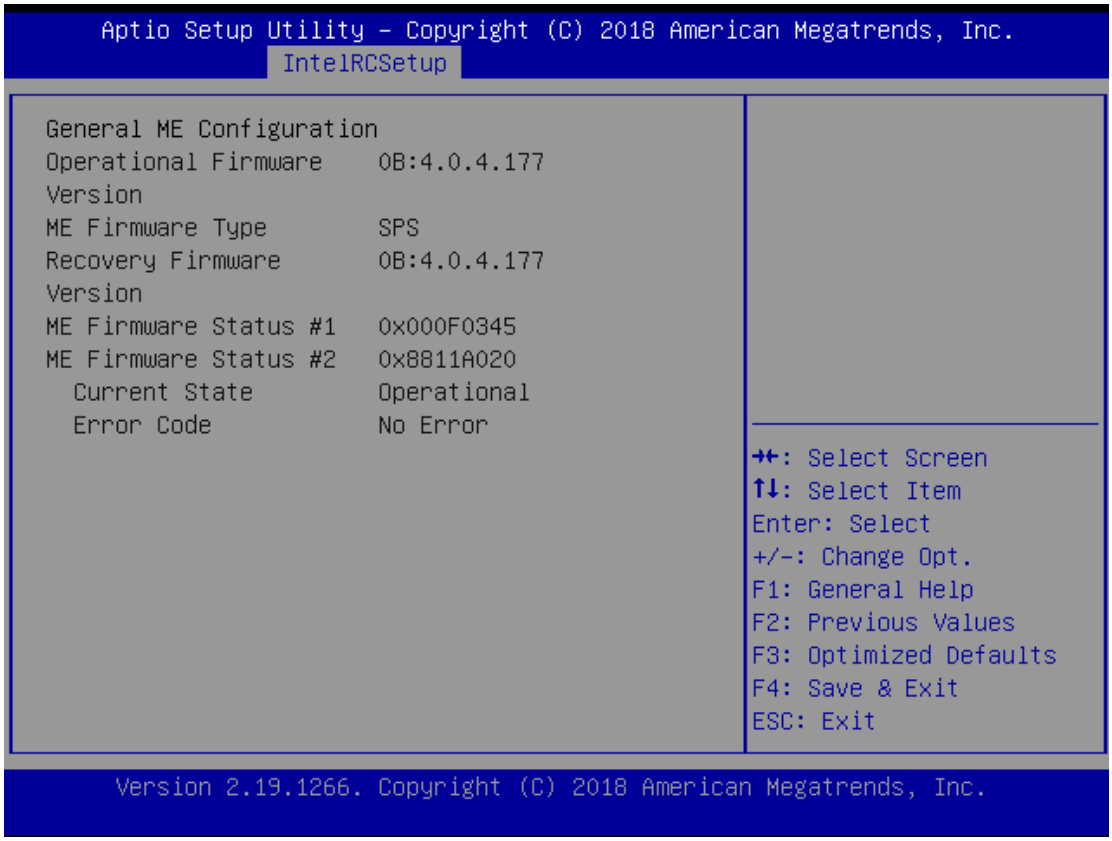
Processor Configuration



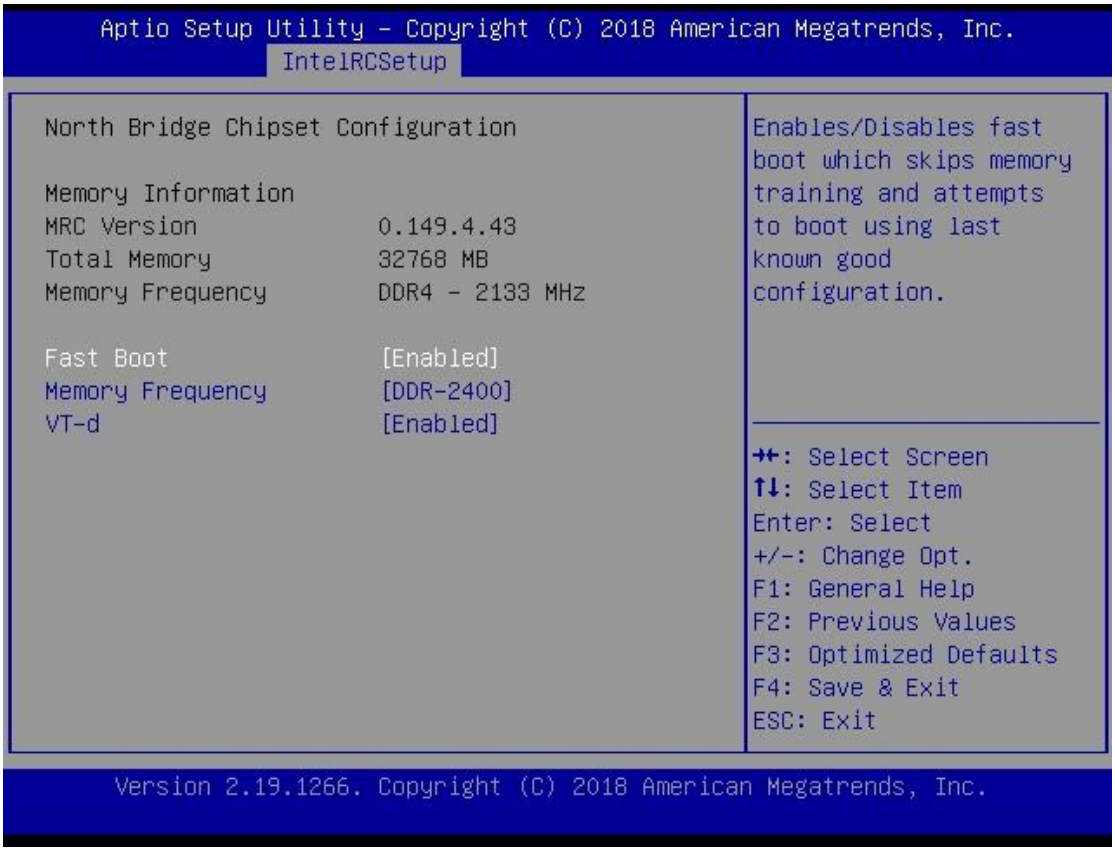
Feature	Options	Description
EIST (GV3)	Disable Enable	Enables/Disable EIST. GV3 must be enable for Turbo..
Turbo	Enable Disable	Enable or Disable CPU Turbo capability. This option only applies to ES2 and above.
CPU C State	Disable Enable	Enable the Enhanced Cx state of the CPU, takes effect after reboot.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

Server ME Configuration

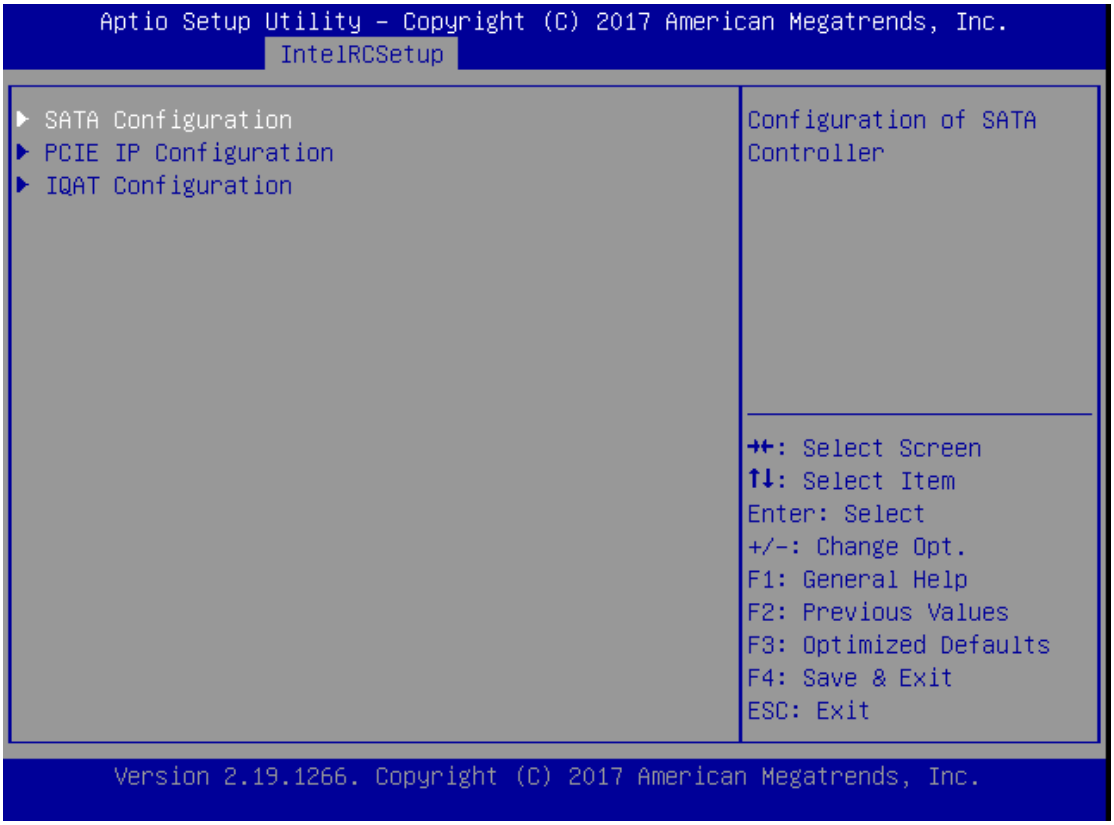


North Bridge Chipset Configuration

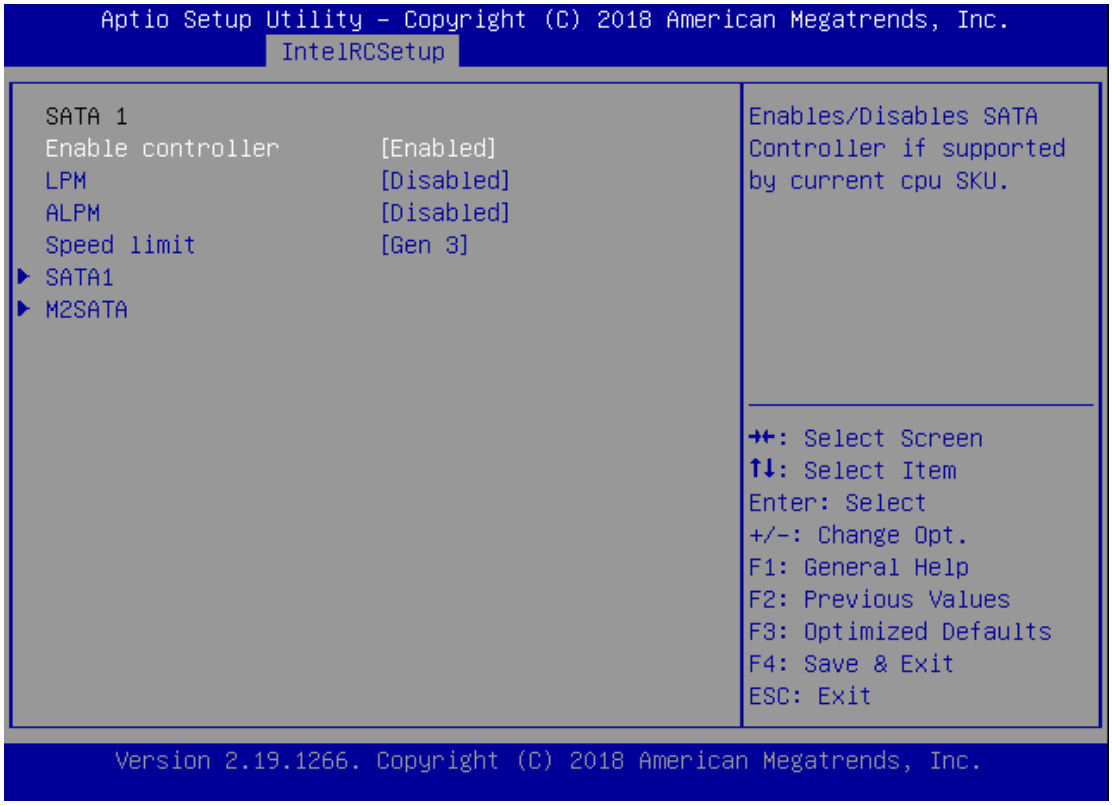


Feature	Options	Description
Fast Boot	Disabled Enabled	Enables/Disables fast boot which skips memory training and attempts to boot using fast known good configuration.
Memory Frequency	DDR-1600 DDR-1867 DDR-2133 DDR-2400	DDR memory frequency: DDR4 up to DDR-2666 DDR3 up to DDR-1867.
VT-d	Disable Enable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

South Bridge Chipset Configuration

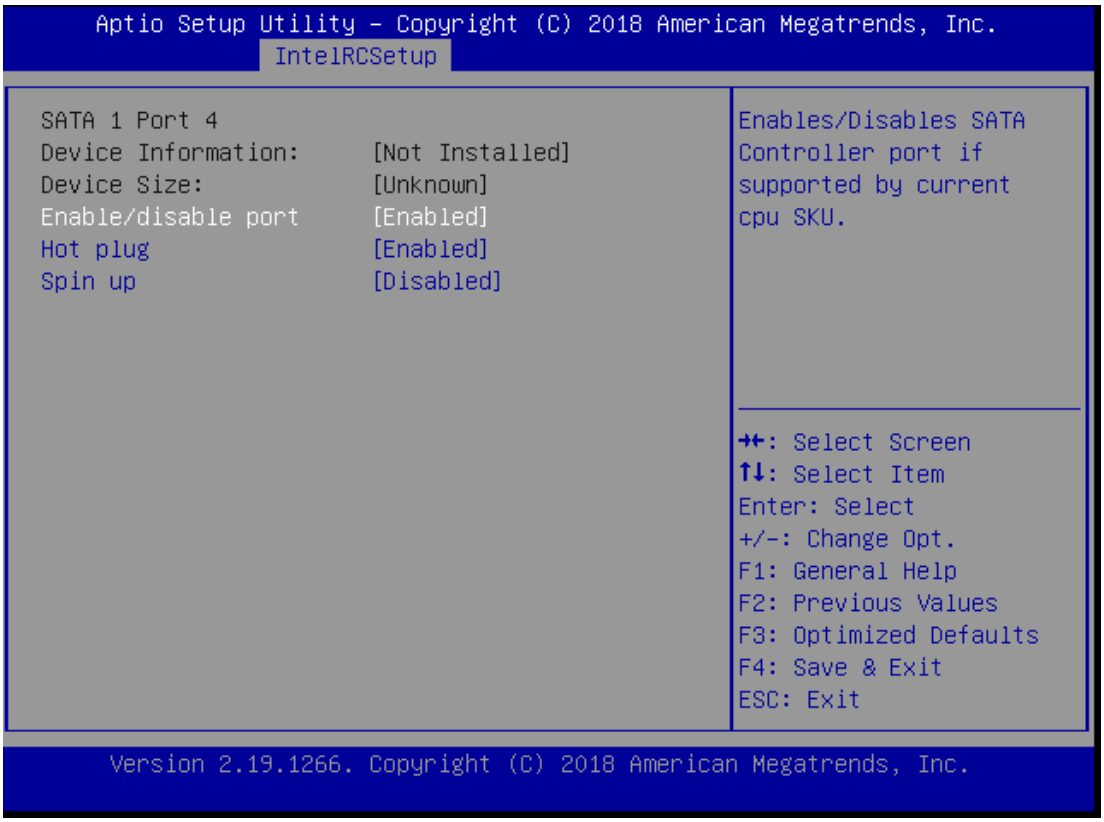


SATA Configuration



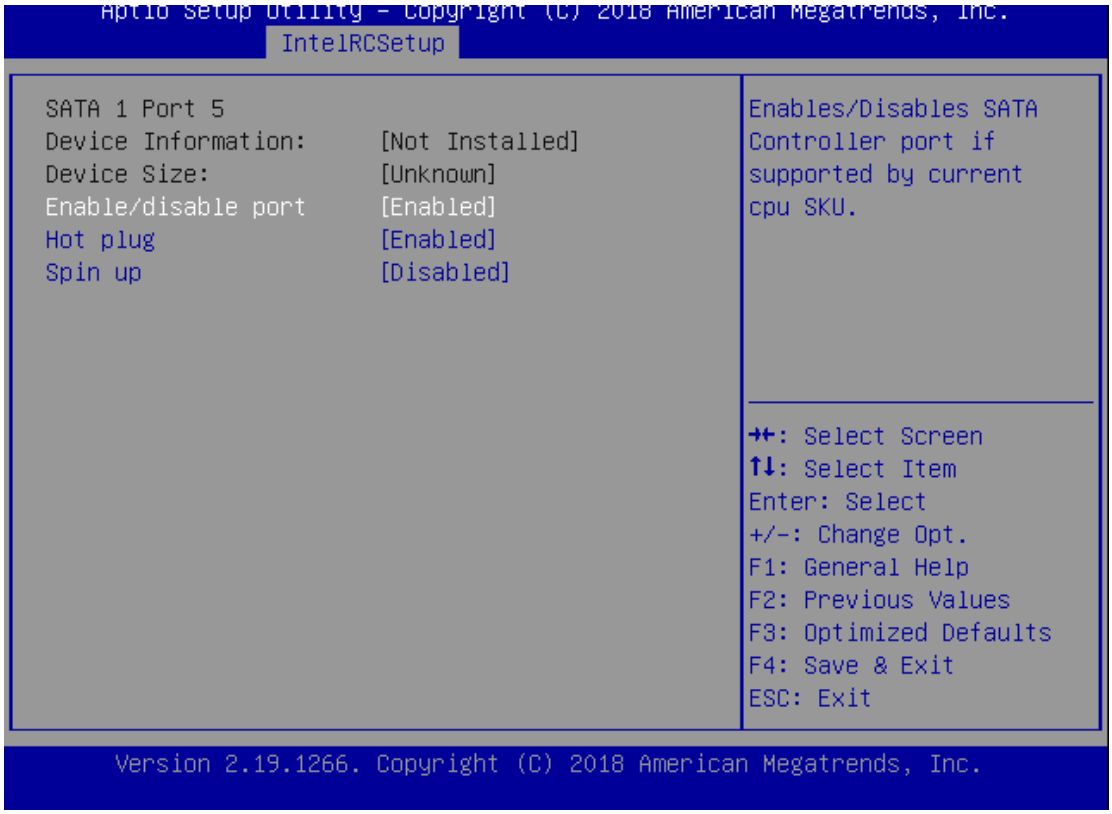
Feature	Options	Description
Enable controller	Enabled Disabled	Enables/Disables SATA Controller if supported by current CPU sku
LPM	Enabled Disabled	Enables/Disables Link Power Management
ALPM	Enabled Disabled	Enable/Disables Agresive Link Power Management
Speed Limit	Gen 1 Gen 2 Gen 3	Indicates the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

SATA1 Configuration



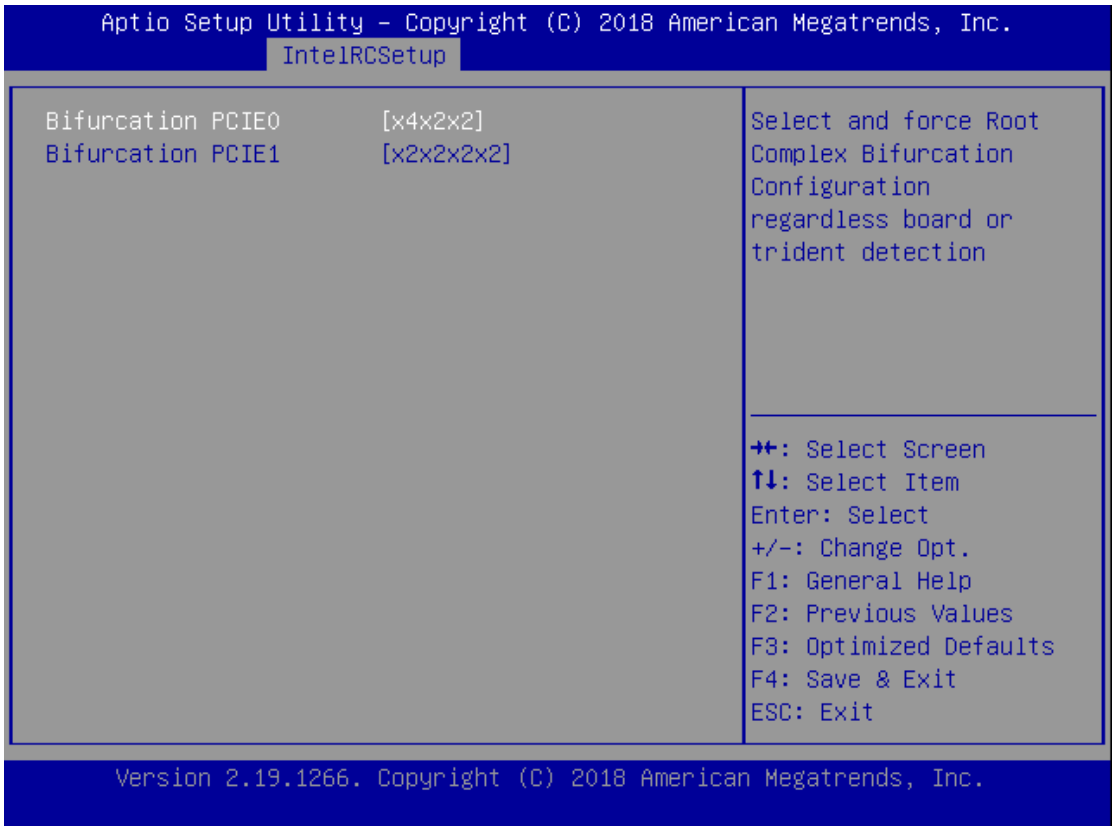
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current cpu SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

M2SATA1 Configuration



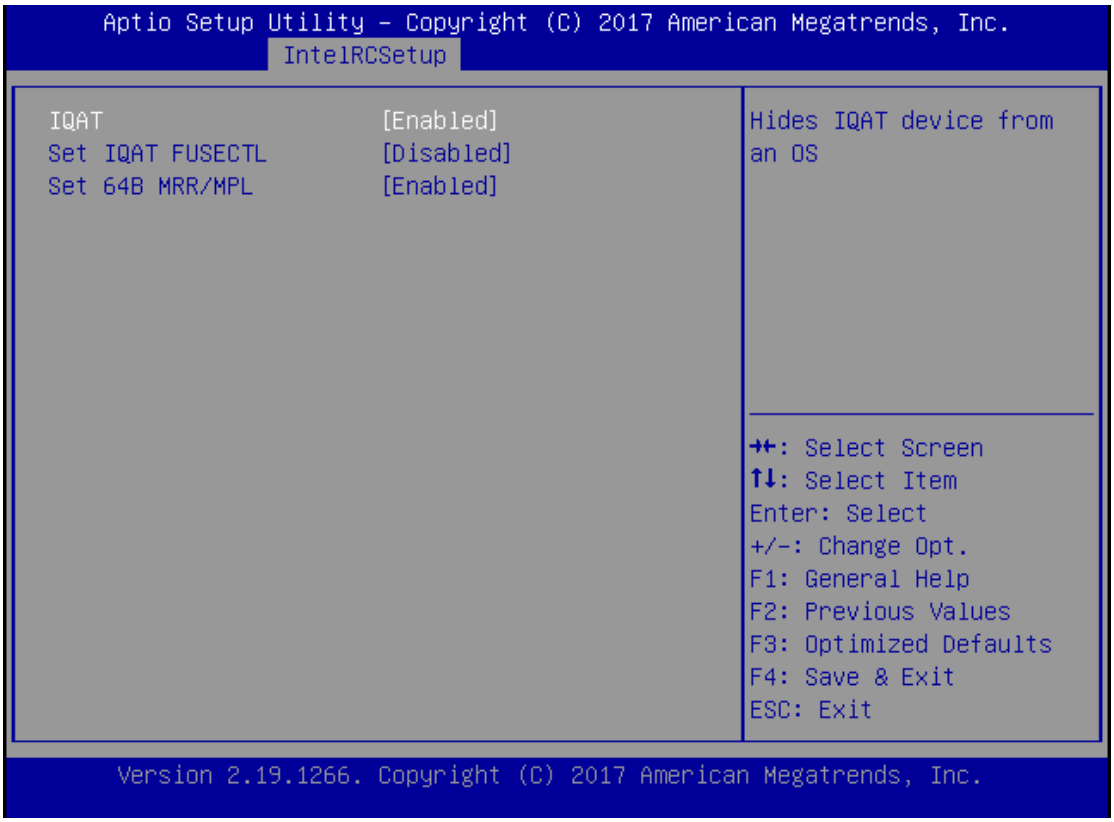
Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port if supported by current CPU SKU.
Hot plug	Enabled Disabled	Hot plug
Spin up	Enabled Disabled	Spin up

PCIE IP Configuration



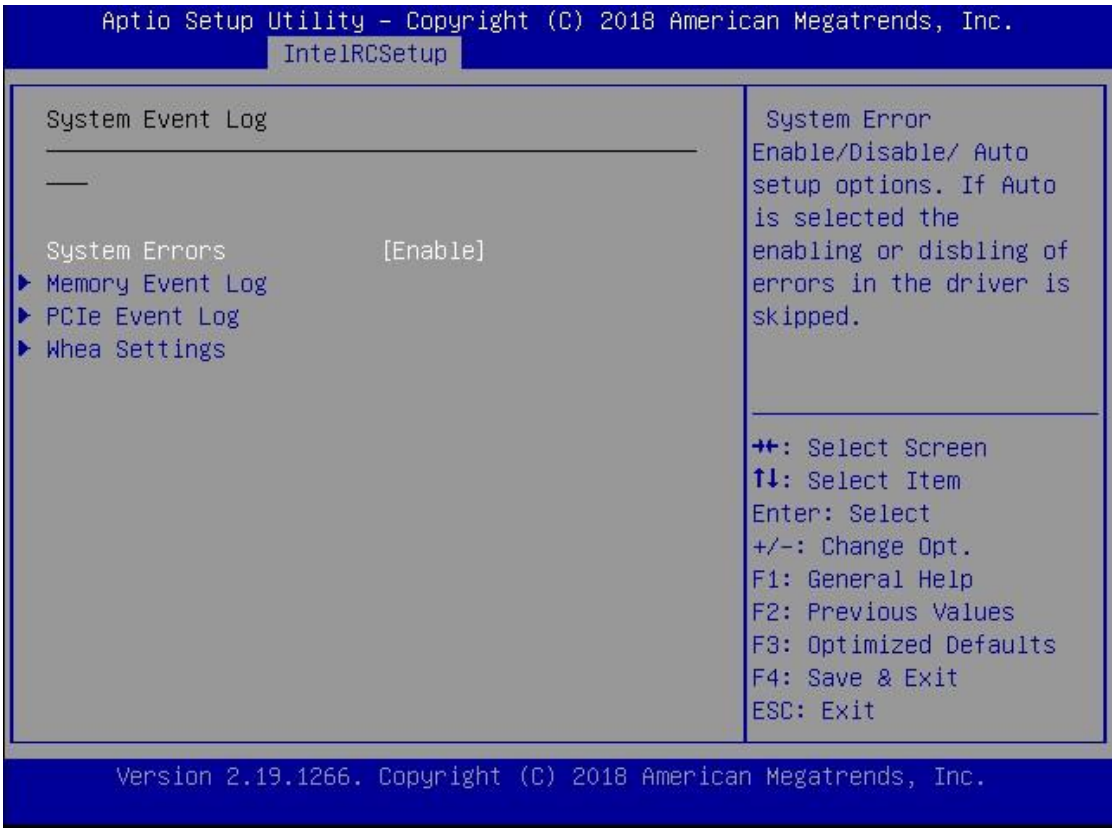
Feature	Options	Description
Bifurcation PCIE0	Auto X8 X4x4 X4x2x2 X2x2x4 X2x2x2x2	Select and force Root Complex Bifurcation Configuration regardless board or trident detection.
Bifurcation PCIE1	Auto X8 X4x4 X4x2x2 X2x2x4 X2x2x2x2	Select and force Root Complex Bifurcation Configuration regardless board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

IQAT Configuration



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

System Event Log

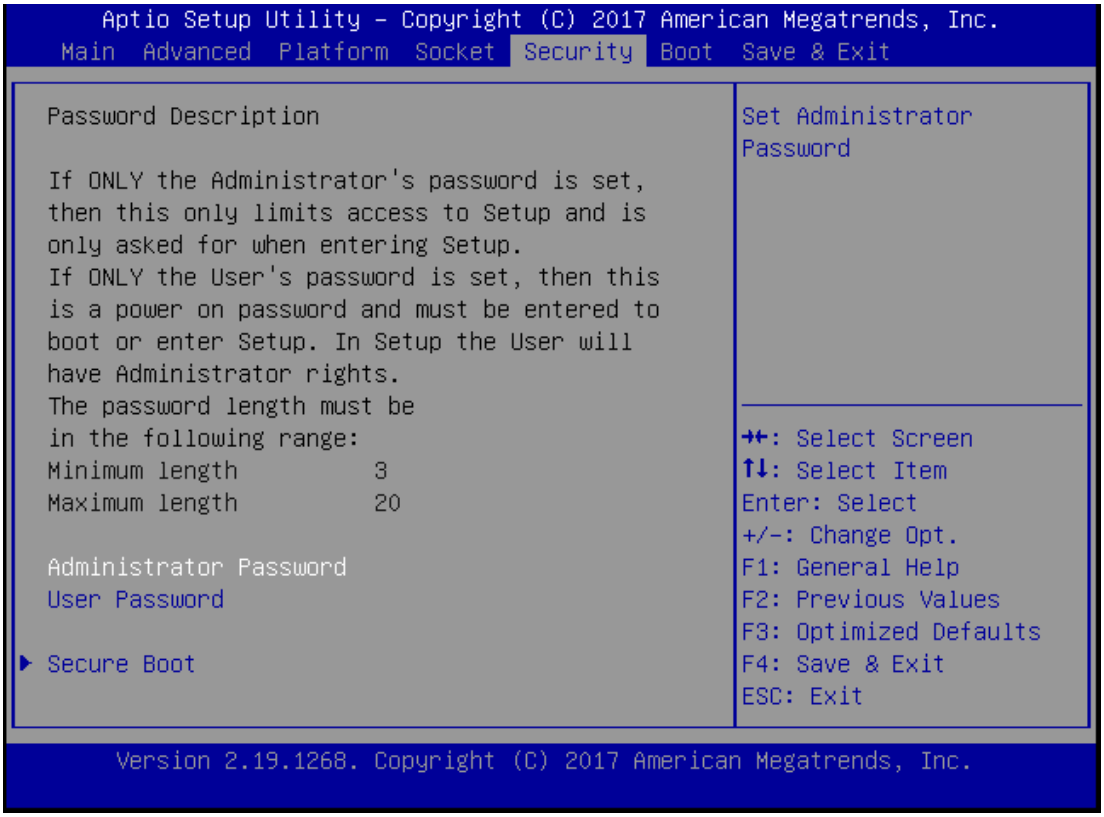


Feature	Options	Description
System Errors	Disable Enable Auto	System Error enabling and logging setup option.
Memory Elog Support	Disable Enable	Enable/Disable Memory Error logging support
Parity Check	Enable Disable	Enable/Disable Parity Check
Log Correctable	Enable Disable	Enable/Disable Correctable 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 Enable	Send system event Signal on Non-Fatal error.
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.

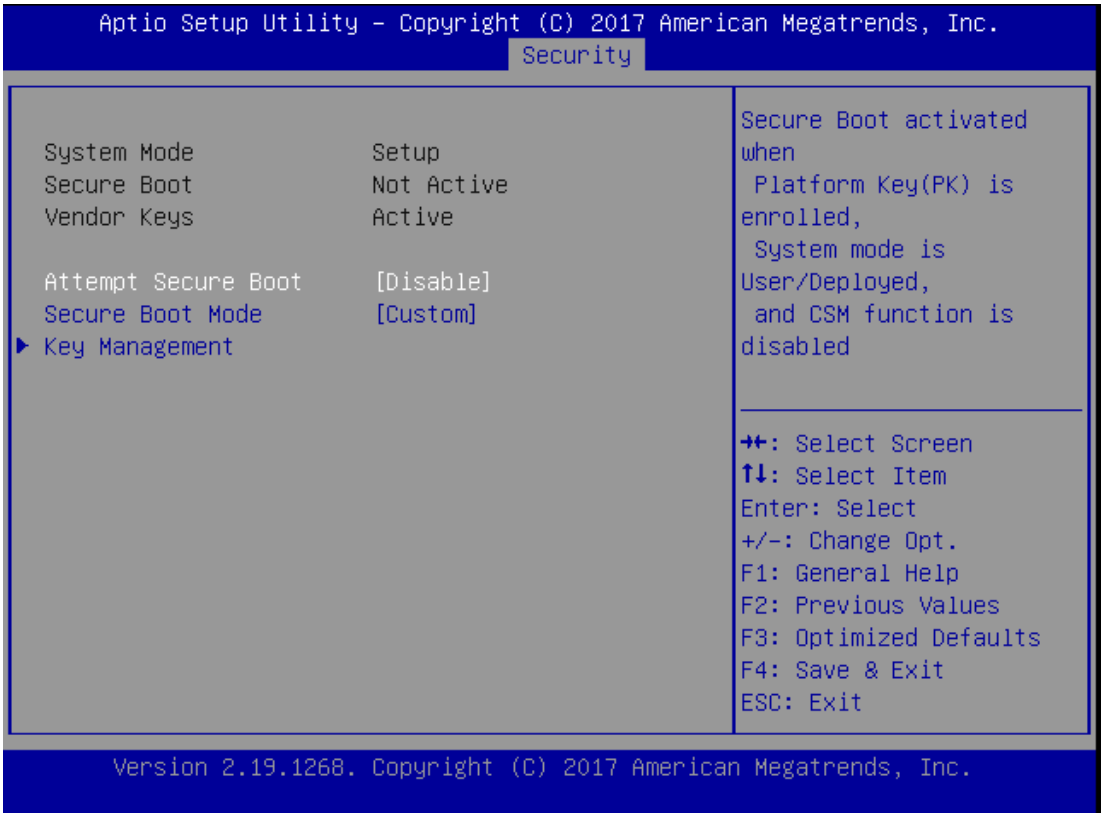
Security Menu

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.



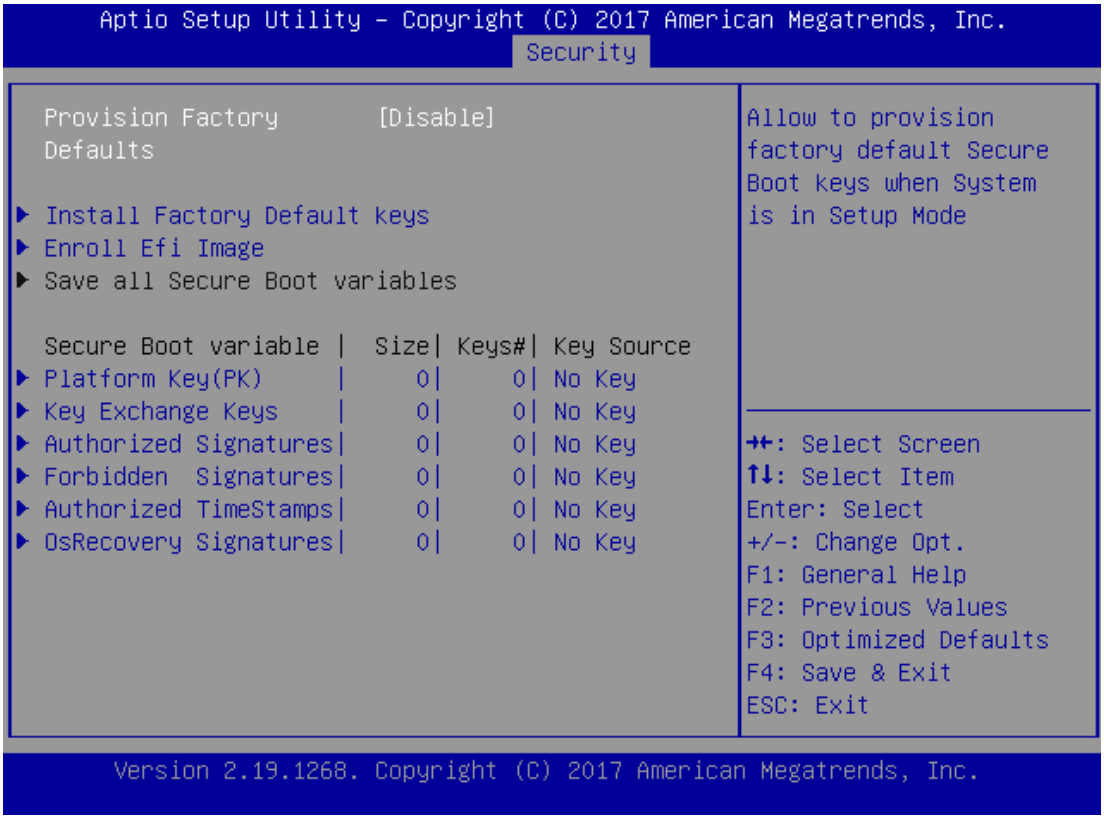
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the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

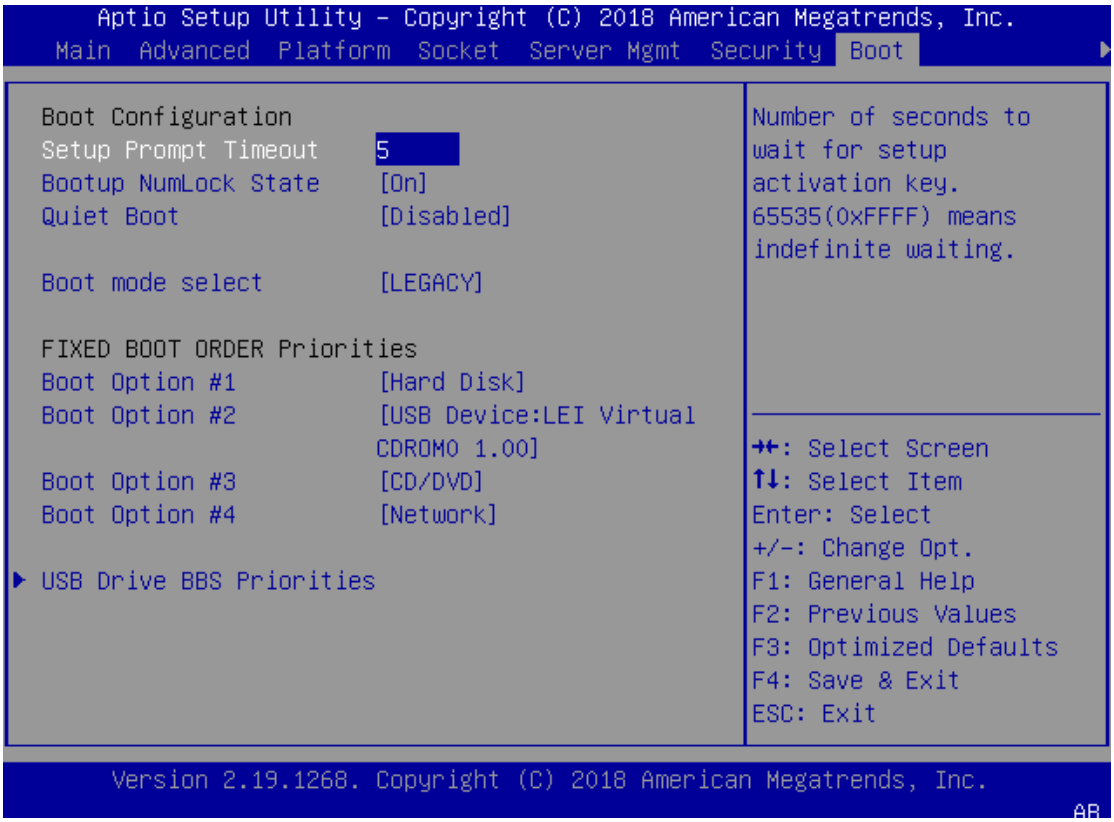
Key Management



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.

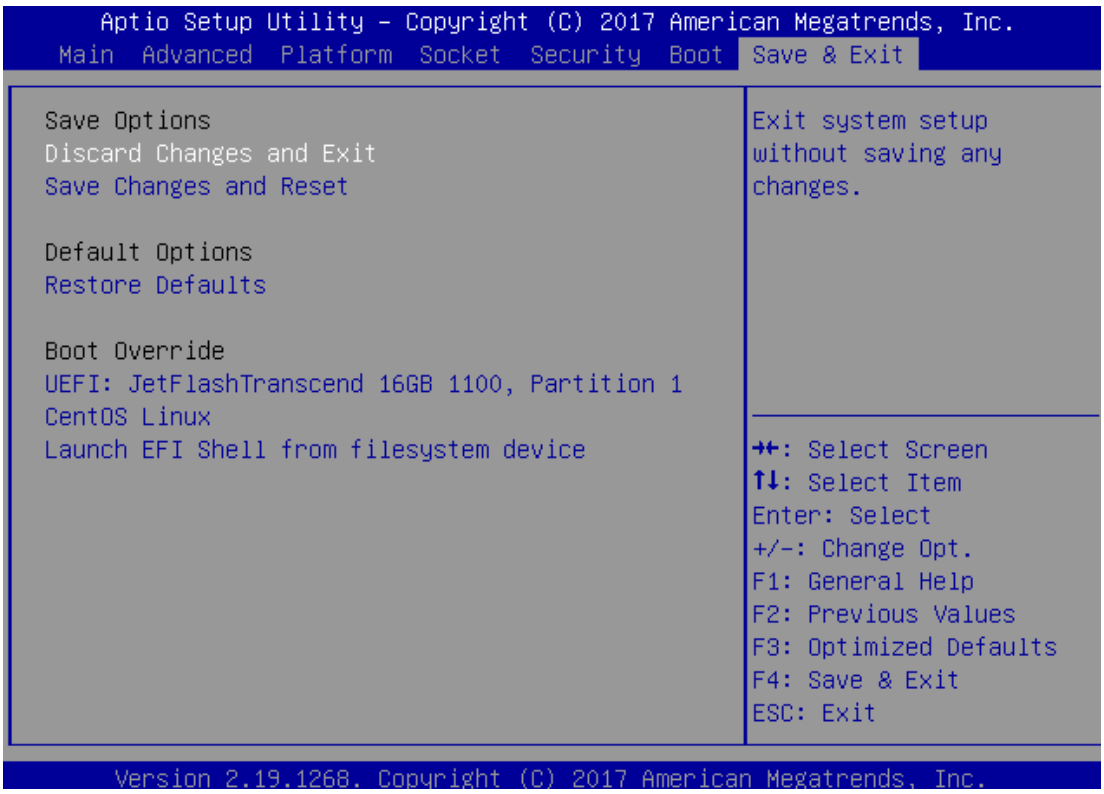


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI DUAL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

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

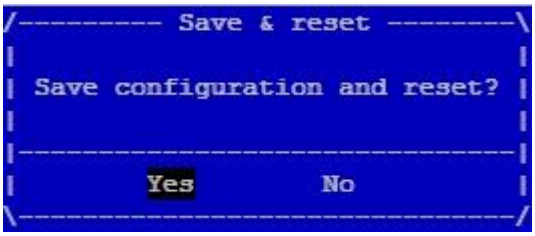
Save and Exit Menu

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.



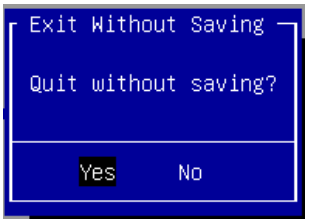
■ Save Changes and Reset

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.



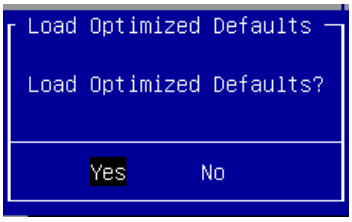
■ **Discard Changes and Exit**

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**

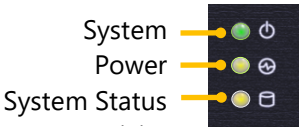
Restore default values for all setup options. Select "**Yes"** to load Optimized defaults.



PS: The items under Boot Override will depend on devices connected on the system.

APPENDIX A: LED INDICATOR EXPLANATIONS

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



- **System Power**

Solid Green	*The system is powered on*
Off	*The system is powered off*

- **System Status**

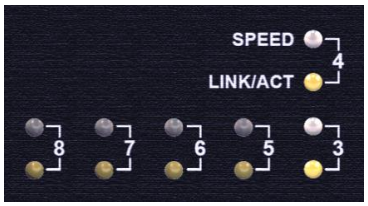
This LED indicator is programmable. You could program it to display the operating status of the behaviors described below:

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

- **HDD Activity Status**

Blinking Amber	*Data access activities*
Off	*No data access activities*

- **RJ45 LAN Status**



Upper LED (Speed)	*Solid Green*	*Operating as a 100 Mbps connection*
	Solid Amber	*Operating as a Gigabit connection (1000 Mbps)*
	Off	*No link has been established*
Lower LED (Link Status)	*Solid Amber*	*Link has been established and there is no activity on this port*
	Blinking Amber	*Link has been established and there is activity on this port*
	Off	*No link has been established*

- **SFP Port**

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

APPENDIX B: 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