

Network Computing Platforms

Lanner

NCA-4010

User Manual

Rev 1.5

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Revision History

Rev	Date	Descriptions
0.1	2016/01/08	Preliminary
0.2	2016/02/03	Added BIOS chapter
1.0	2016/04/14	Official release
1.1	2016/08/17	Modified memory specifications
1.2	2016/08/30	Added notes about IPMI support
1.3	2018/04/30	Add power cable related notice
1.4	2018/07/31	Modified Jumper Setting and Connector Pin-out
1.5	2018/09/11	Added VCCI Class A Statement

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Online Resources

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

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

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Compliances and Certification

CE Certification

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

FCC Class A Certification

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

EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if

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not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Safety Guidelines

- Follow these guidelines to ensure general safety:
- Keep the chassis area clear and dust-free before, 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/goggles 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 could occur if battery is replaced by an incorrect type. Please dispose of used batteries according to the recycling instructions of your country.

- Installation only by a trained electrician or only by an electrically trained person who knows all the applied or related installation and device specifications..
- Do not carry the handle of power supplies when moving to other place.
- The machine can only be used in a fixed location such as labs or computer facilities.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in

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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).

Rack Mounting Installation Environment Precaution

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. 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 over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. Reliable Earthing - Reliable earthing 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)."

Consignes de sécurité

Suivez ces consignes pour assurer la securite generale :

- Laissez la zone du chassis propre et sans poussiere pendant et apres l'installation.
- Ne portez pas de vetements amples ou de bijoux qui pourraient etre pris dans le chassis. Attachez votre cravate ou echarpe et remontez vos manches.
- Portez des lunettes de securite pour proteger vosmyeux.
- N'effectuez aucune action qui pourrait creer un dangermpour d'autres ou rendre l'equipement dangereux.
- Coupez completement l'alimentation en eteignant l'alimentation et en debranchant le cordon d'alimentation avant d'installer ou de retirer un chassis ou de travailler a proximite de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont presentes.

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- Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.
- La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

Sécurité de fonctionnement

- L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.
 - Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
 - Les décharges électrostatiques (ESD) peuvent endommager l'équipement et générer des circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis. Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

Consignes de sécurité électrique

- Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.

- Un câble de mise a la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm² ou 10 AWG.

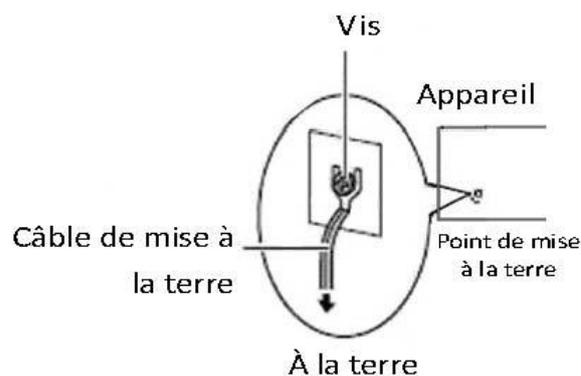
Procédure de mise à la terre pour source

d'alimentation CC Procédure de mise à la terre pour

source d'alimentation CC

- Desserrez la vis du terminal de mise a la terre.
- Branchez le câble de mise a la terre a la terre.
- L'appareil de protection pour la source d'alimentation

CC doit fournir 30 A de courant. Cet appareil de protection doit etre branche a la source d'alimentation avant l'alimentation CC.



This is a Class A product. If this device is used in a residential environment, radio interference may occur, in which case the user may be required to take corrective actions.

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI - A

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Chapter 1: Introduction

Thank you for choosing NCA-4010. The NCA-4010 series unit is a 1U Rack mount network security system utilizing the cutting edge capabilities of the Intel Broadwell-DE SoC. The system supports up to 8/16 x port RJ45 GBE, 2 port x 10G SFP+ (model A only), 1 x Lanner standard NIC modules, 1 x 3.5" / 2 x 2.5" SATA disk drive kit, 1 x OPMA socket for IPMI and 1 x mSATA socket. For network reliability, NCA-4010 supports 3 or 7 pairs of LAN bypass depending on the SKU selection.

Here is the summary of the key features:

- Intel® Xeon® processor D-1518/D-1548 with BGA package
- 8/16 GbE LAN ports and 2 x SFP+ 10G ports (vary depending on models)
- LAN bypass: 3 or 7 pairs of LAN bypass (vary depending on models)
- 1 x NIC module slots support 40G/10G/1G/Fiber/Copper/Bypass
- 2 x DDR4 REG/ECC/UDIMM memory sockets at 2400 MHz (up to 16GB each)
- 1 x 3.5" or 2 x 2.5" SATA HDD/SSD drive bays (disk drive is not included)
- 1 x mSATA socket
- 1 x OPMA socket for IPMI

Please refer to the following chart for a detailed description of the system's specifications.

System Specification

Processor Options	Intel® Xeon® processor D-1518 or D-1548 SoC series (Broadwell-DE) at 45W TDP
CPU Socket	BGA
Chipset	N/A due to SoC
BIOS	AMI SPI BIOS <ul style="list-style-type: none"> ● Support PXE function ● Support Console redirection ● Watchdog/ Watchdog control LAN Bypass function/ Power off LAN Bypass function
System Memory	<ul style="list-style-type: none"> ● 2 x 288-pin DIMM DDR4 up to 2,400MHz REG/ECC/U-DIMM (mixing of U-DIMM and R-DIMM is not supported) ● Support up to 32GB for 2 DIMMs
USB	2 x USB 2.0 Type-A ports
Storage	1 x 3.5" or 2 x 2.5" HDD/SSD tray (disk is not

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		included) 1 x mSATA socket via mini-PCIe interface
Networking	LAN	Model-A: 16 x RJ-45 GbE Ethernet ports and 2 x SFP 10G ports Model-B/C: 8 x RJ-45 GbE Ethernet ports
	Controller	Intel i210-AT for RJ-45 Cortina CS4227 PHY for SFP 10G
	Management	N/A
	NIC Module space	1 x Slim Type NIC module socket (PCIe Gen3 x 8 interface)
	Console	1 x RJ-45 console port
	IPMI*	OPMA socket to support IPMI (project-based)
	Bypass	3 or 7 pairs (7 in SKU-A; 3 for SKU-B/C/D)
Fan		2 x Cooling fans
Display	LCM	1x character type LCM
	LED	POWER/STATUS/HDD
	Keypad	4x Keypads
Expansion		2 x PCIe Gen3x4 expansions for upper layer expansion (Model A/C only) 1 x PCIe Gen3x8 expansion at rear (optional)
TPM		Optional
Thermal		1 x passive heat sink
Physical Characteristics	Form Factor	1U rackmount
	Housing	SPGC
	Dimensions	438mm x 320mm x 44mm (W x D x H)
	Mounting Options	Rackmount by sliderail (sliderail is optional)
Environment	Operating Temperature	0°C ~ 40°C
	Non-operating Temperature	-40°C ~ 70°C
	Ambient Humidity	5 to 90% (non-condensing)
Power	Input	AC 90 to 264V@47 to 63Hz
	Power supply	220W single PSU
Certifications		CE/FCC Class A, RoHS

*The remake about the IPMI support requires changes in BOM and it is based on custom projects. For requirements about IPMI support, please consult with Lanner representatives.

Ordering Information

NCA-4010A	1U x86 Rackmount Network Appliance based on Intel Xeon D-1548 Processor (codename Broadwell-DE) SoC, 16 GbE RJ45 with 2 SFP+ 10GbE ports, 1 NIC Module Slot and 7 pairs of LAN bypass
NCA-4010B	1U x86 Rackmount Network Appliance based on Intel Xeon D-1518 Processor (codename Broadwell-DE) SoC, 8 GbE RJ45 ports, 1 NIC Module Slot and 3 pairs of LAN bypass
NCA-4010C	1U x86 Rackmount Network Appliance based on Intel Xeon D-1548 Processor (codename Broadwell-DE) SoC, 8 GbE RJ45 ports, 1 NIC Module Slot and 3 pairs of LAN bypass
NCA-4010D	1U x86 Rackmount Network Appliance based on Intel Xeon D-1548 Processor (codename Broadwell-DE) SoC, 8 GbE RJ45 with 2 SFP+ 10GbE ports, 1 NIC Module Slot, and 3 pairs of LAN bypass

Package Contents

Please unpack your package carefully and inspect all the following items

- 1 - NCA-4010 Network Security Platform
- 2 - power cable
- 1 - Ear Rack mount kit with screws
- 1 - Console cable
- 1 - LAN Cable (Grey)

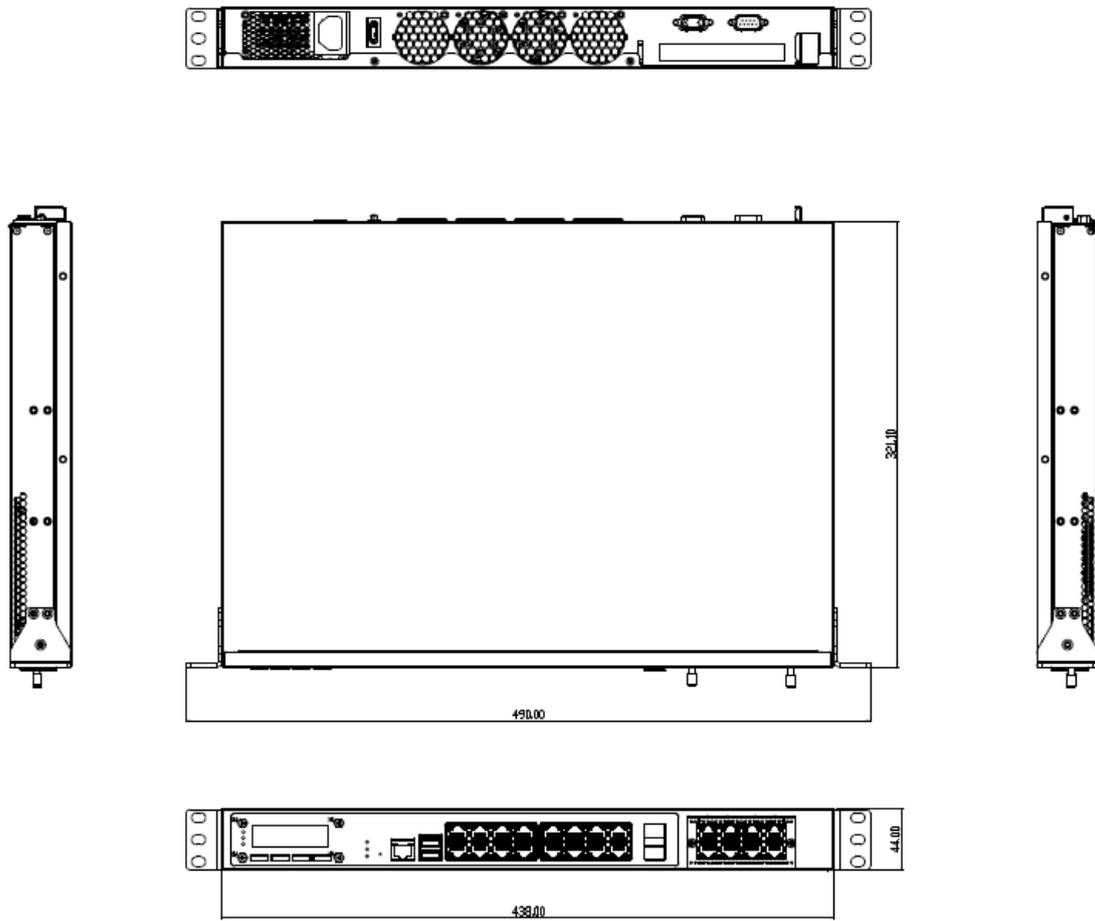
Note: The supplied power cable are dedicated to this product only; do not use them with devices other than this model.

Optional Accessories

NCS2-IGM806A	2x Intel i350 8 x RJ-45 ports with 4 pairs of bypass
NCS2-ISM802A	2x Intel i350 8 x RJ-45 ports without bypass
NCS2-IXM405A	2x Intel 82599 4 x SFP+ ports without bypass
NCS2-IQM201A	
NCS2-IXM407A	
AV-ICE02B	
IAC-AST2300	IPMI card
IAC-MVGA02Z	

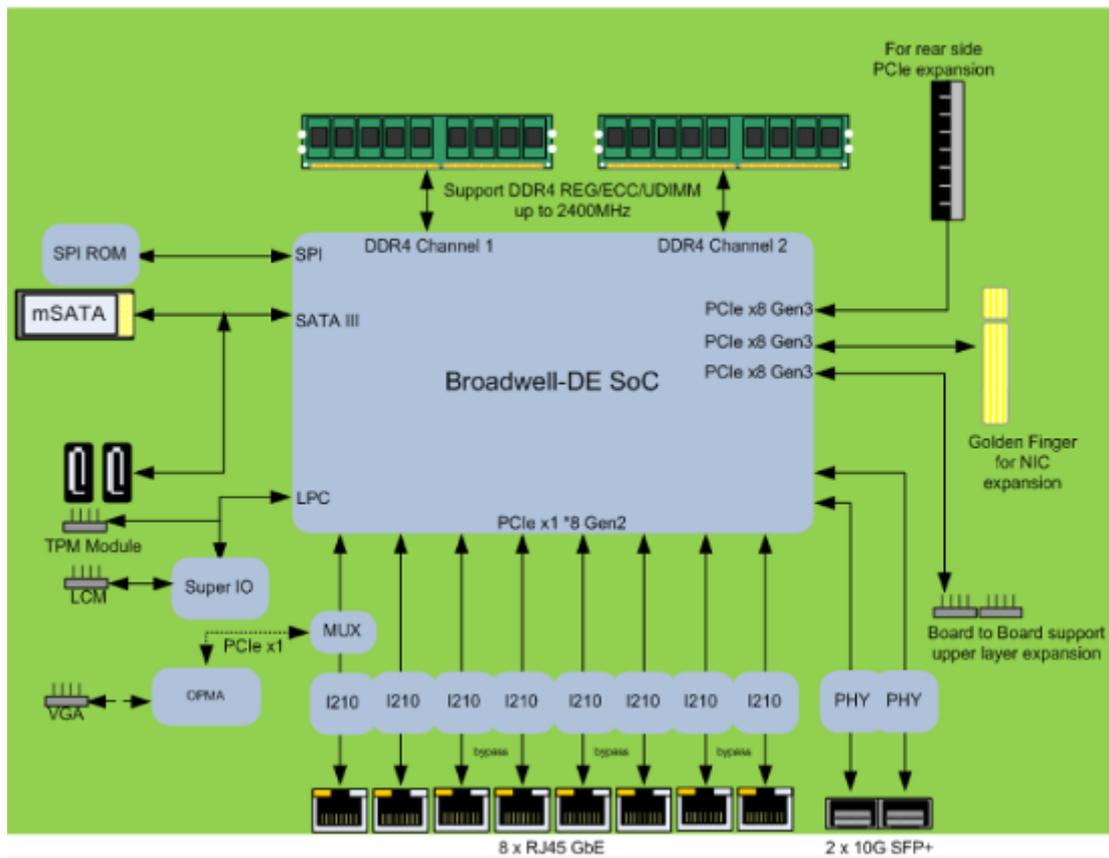
Chapter 2: System Overview

Mechanical Drawing



Unit: mm

Block Diagram



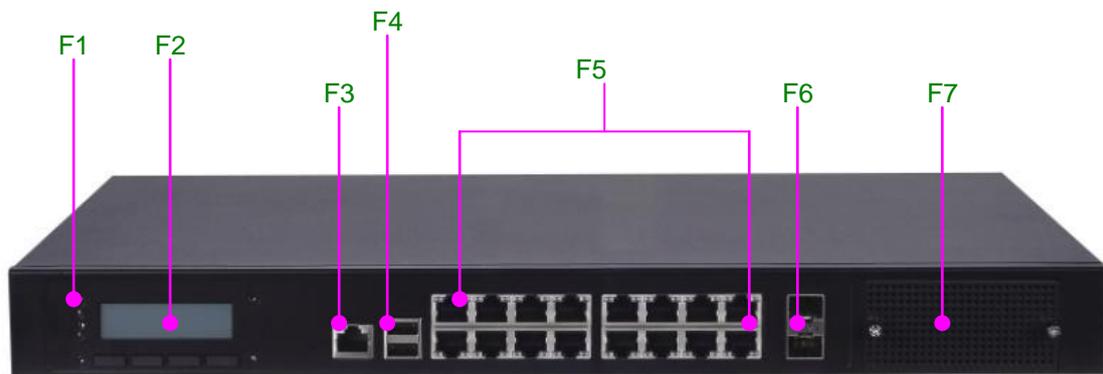
Note:

TPM is optional

The diagram is based on 8 x RJ-45 GbE design. The number of LAN ports is 16 for model-A.

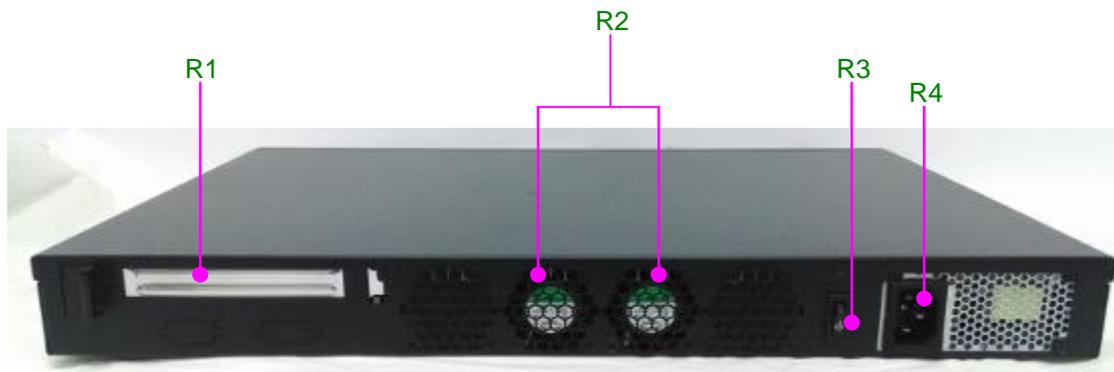
The 2 x 10G SFP+ ports are only available in model A.

Front I/Os



F1 LED Indicators	<p>POWER/STATUS/HDD</p> <p>Power: status about power supply</p> <p>Status: programmable status LED signals for system activities</p> <p>HDD: status about storage devices, such as HDD or SSD</p>
F2 LCM	LCM with 4 x keypads
F3 Console	1 x RJ-45 console port
F4 USB	2 x USB 2.0 Type-A ports in double stacked form
F5 LAN	8 or 16 x RJ-45 GbE ports depending on the model types
F6 SFP LAN	2 x SFP+ 10G LAN ports (available in model-A only)
F7 NIC	1 x NIC module space with PCIe interface

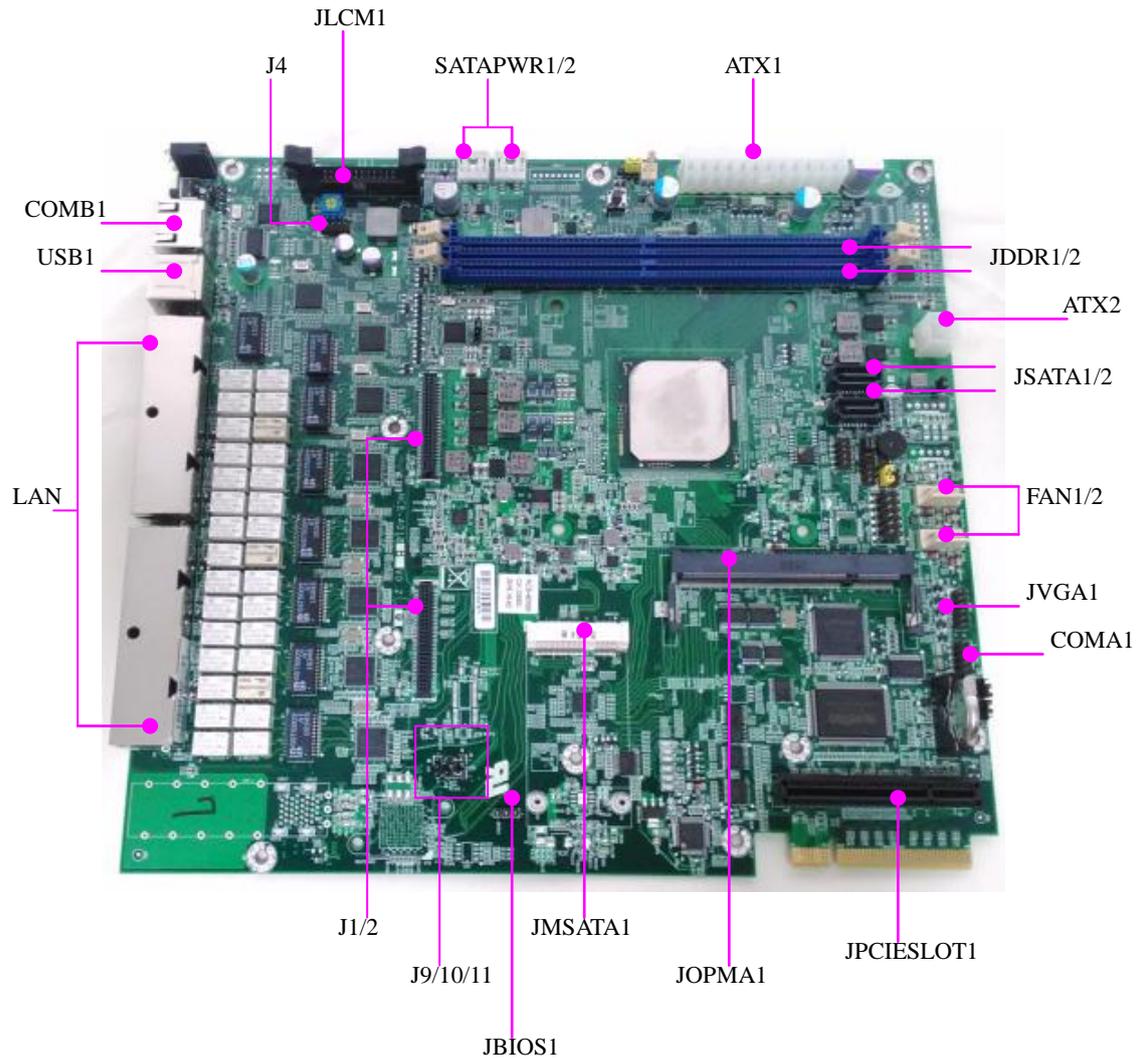
Rear I/Os



R1 PCIe Expansion	1 x PCIe expansion slot (optional)
R2 Fans	2 x cooling fans
R3 Power switch	1 x power on/off switch
R4 power jack	1 x power jack for connection with power adapter

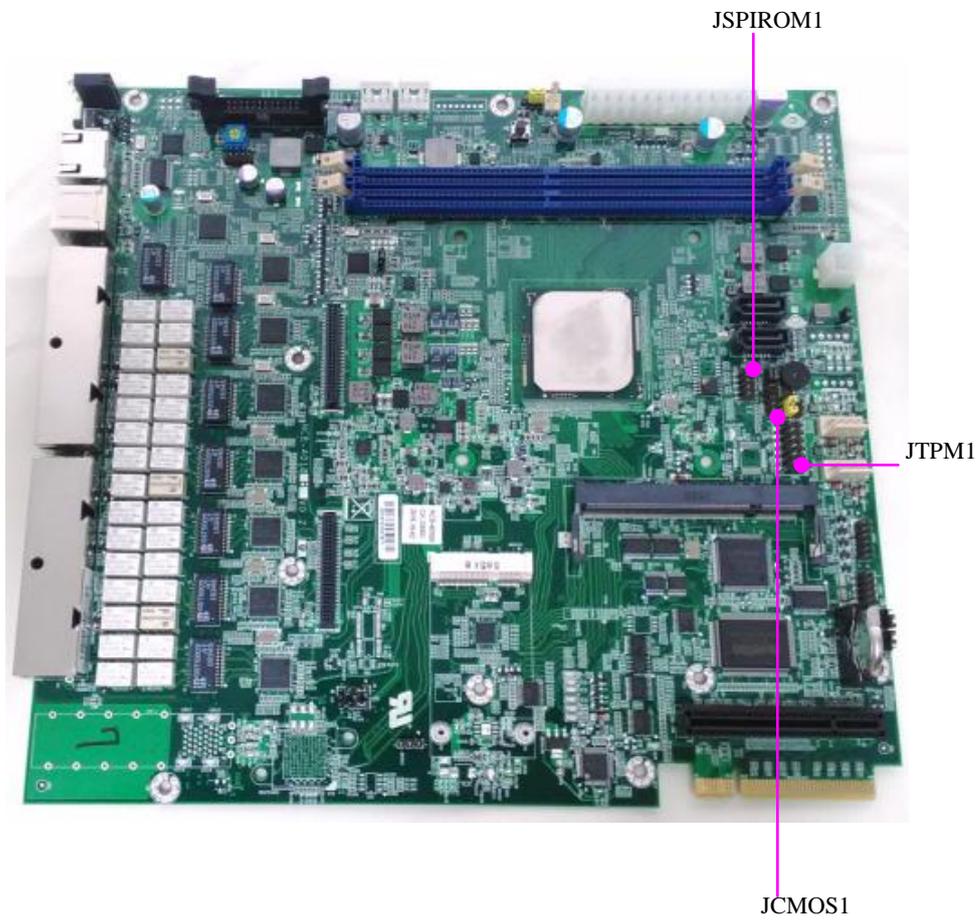
Chapter 3: Board Layout

Jumpers and Connectors on the Motherboard



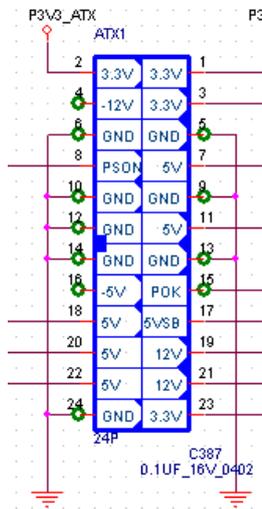
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Jumpers and Connectors on the Motherboard (cont'd)



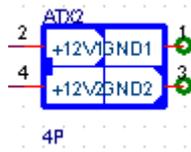
Jumper Setting and Connector Pin-out

ATX1: 24-pin ATX power connector



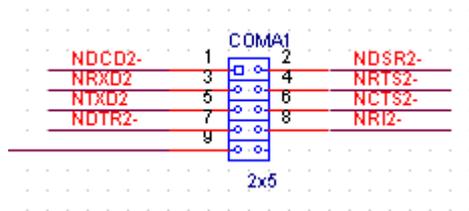
PIN	DESCRIPTION	PIN	DESCRIPTION
1	3.3V	2	3.3V
3	3.3V	4	-12V
5	GND	6	GND
7	5V	8	PSON#
9	GND	10	GND
11	5V	12	GND
13	GND	14	GND
15	ATXPWGD	16	-5V
17	5VSB	18	5V
19	12V	20	5V
21	12V	22	5V
23	3.3V	24	GND

ATX2: 4-pin ATX power connector



PIN	DESCRIPTION
1	GND
2	12V
3	GND
4	12V

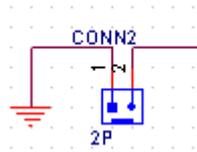
COMA1: internal serial COM pin header



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

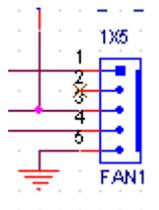
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CONN2: 2-pin power connector for the power button on the panel



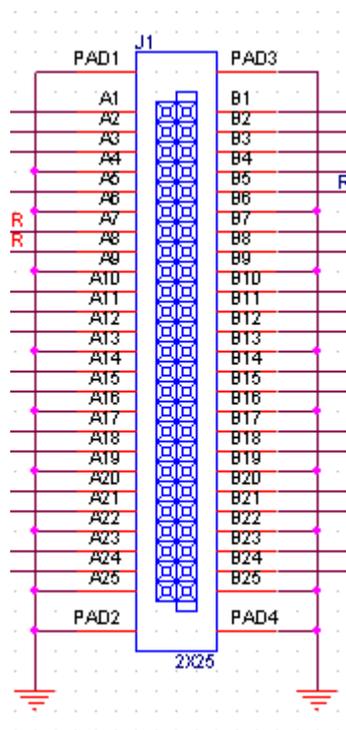
PIN	DESCRIPTION
1	POWER ON#
2	GND

FAN1/2: 2 x 5-pin cooling fan connectors



PIN	DESCRIPTION
1	CPUFANOUTPWM
2	NC
3	CPUFANIN
4	12V
5	GND

J1/2 : 2 x 50-pin I/O board connectors. NCA-4010 can be accompanied by I/O board NM-4010IG401.



J1:

PIN	DESCRIPTION	PIN	DESCRIPTION
A1	P3V3	B1	P12V
A2	P3V3	B2	P12V
A3	P3V3	B3	PCH_SLOT3_A8
A4	GND	B4	PCIESLOT3_I350A_RST#
A5	P3V3	B5	PHY_WAKE#
A6	GND	B6	GND
A7	SLT3A_SCLK2	B7	CLK100_PCIE_SOLT3_1P
A8	SLT3A_SDAT2	B8	CLK100_PCIE_SOLT3_1N
A9	GND	B9	GND
A10	IO_LAN12GND	B10	IO_LAN34GND
A11	IO_P0_S0_1	B11	IO_P1_S0_1

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A12	IO_P0_S0_2	B12	IO_P1_S0_2
A13	GND	B13	GND
A14	PCIE_CTX_C_SLOT3RX_P0	B14	PCIE_SLOT3TX_C_CRX_P0
A15	PCIE_CTX_C_SLOT3RX_N0	B15	PCIE_SLOT3TX_C_CRX_N0
A16	GND	B16	GND
A17	PCIE_CTX_C_SLOT3RX_P1	B17	PCIE_SLOT3TX_C_CRX_P1
A18	PCIE_CTX_C_SLOT3RX_N1	B18	PCIE_SLOT3TX_C_CRX_N1
A19	GND	B19	GND
A20	PCIE_CTX_C_SLOT3RX_P2	B20	PCIE_SLOT3TX_C_CRX_P2
A21	PCIE_CTX_C_SLOT3RX_N2	B21	PCIE_SLOT3TX_C_CRX_N2
A22	GND	B22	GND
A23	PCIE_CTX_C_SLOT3RX_P3	B23	PCIE_SLOT3TX_C_CRX_P3
A24	PCIE_CTX_C_SLOT3RX_N3	B24	PCIE_SLOT3TX_C_CRX_N3
A25	GND	B25	GND

J2 :

PIN	DESCRIPTION	PIN	DESCRIPTION
A1	P3V3	B1	P12V
A2	P3V3	B2	P12V
A3	P3V3	B3	PCH_SLOT3_A8
A4	GND	B4	PCIESLOT3_I350B_RST#
A5	P3V3	B5	PHY_WAKE#
A6	GND	B6	GND
A7	SLT3B_SCLK3	B7	CLK100_PCIE_SOLT3_2P
A8	SLT3B_SDAT3	B8	CLK100_PCIE_SOLT3_2N
A9	GND	B9	GND
A10	IO_LAN56GND	B10	IO_LAN78GND

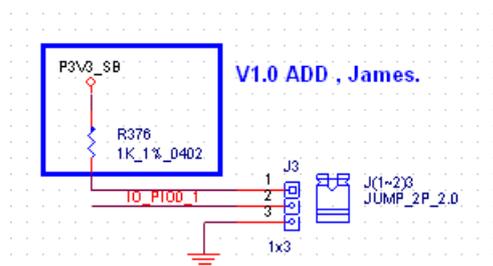
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A11	IO_P2_S0_1	B11	IO_P3_S0_1
A12	IO_P2_S0_2	B12	IO_P3_S0_2
A13	GND	B13	GND
A14	PCIE_CTX_C_SLOT3RX_P4	B14	PCIE_SLOT3TX_C_CRX_P4
A15	PCIE_CTX_C_SLOT3RX_N4	B15	PCIE_SLOT3TX_C_CRX_N4
A16	GND	B16	GND
A17	PCIE_CTX_C_SLOT3RX_P5	B17	PCIE_SLOT3TX_C_CRX_P5
A18	PCIE_CTX_C_SLOT3RX_N5	B18	PCIE_SLOT3TX_C_CRX_N5
A19	GND	B19	GND
A20	PCIE_CTX_C_SLOT3RX_P6	B20	PCIE_SLOT3TX_C_CRX_P6
A21	PCIE_CTX_C_SLOT3RX_N6	B21	PCIE_SLOT3TX_C_CRX_N6
A22	GND	B22	GND
A23	PCIE_CTX_C_SLOT3RX_P7	B23	PCIE_SLOT3TX_C_CRX_P7
A24	PCIE_CTX_C_SLOT3RX_N7	B24	PCIE_SLOT3TX_C_CRX_N7
A25	GND	B25	GND

J3 : I/O board (NM-4010IG401) ARM Programming Selection

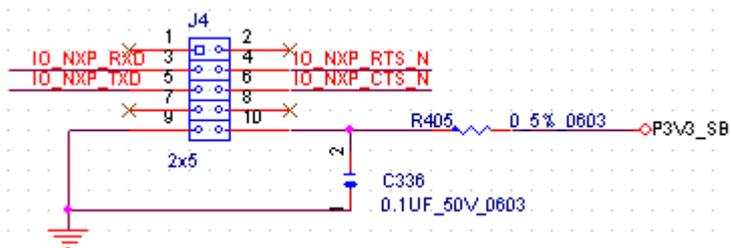
0(2-3) : Enable

1(1-2) : Disable (default)



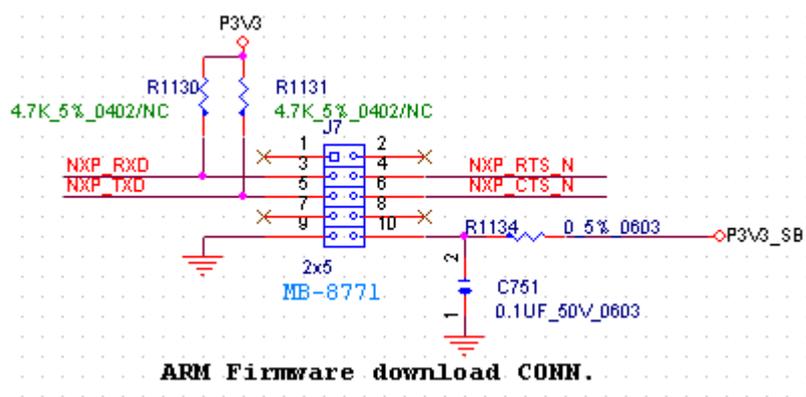
PIN	DESCRIPTION
1	P3V3
2	IO_P100_1
3	GND

J4: Fresh I/O board (NM-4010IG401) BYPASS



PIN	DESCRIPTION	PIN	DESCRIPTION
1	NC	2	NC
3	IO_NXP_RXD	4	IO_NXP_RTS_N
5	IO_NXP_TXD	6	IO_NXP_CTS_N
7	NC	8	NC
9	GND	10	GND

J7 : Fresh main board BYPASS

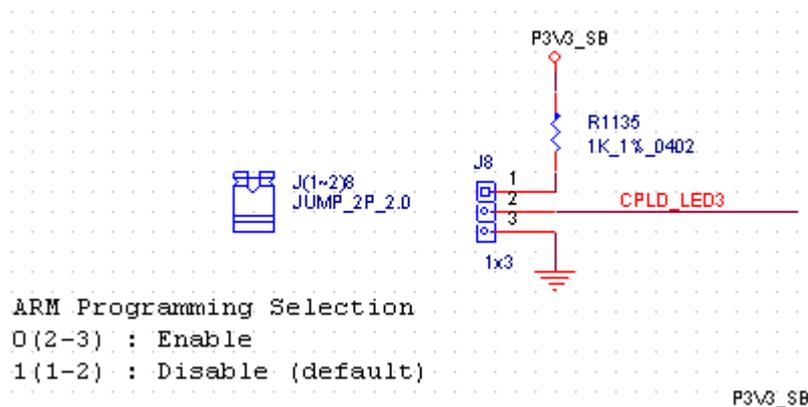


PIN	DESCRIPTION	PIN	DESCRIPTION
1	NC	2	NC
3	NXP_RXD	4	NXP_RTS_N
5	NXP_TXD	6	NXP_CTS_N
7	NC	8	NC
9	GND	10	GND

J8 : Main board ARM Programming Selection

0(2-3) : Enable

1(1-2) : Disable (default)

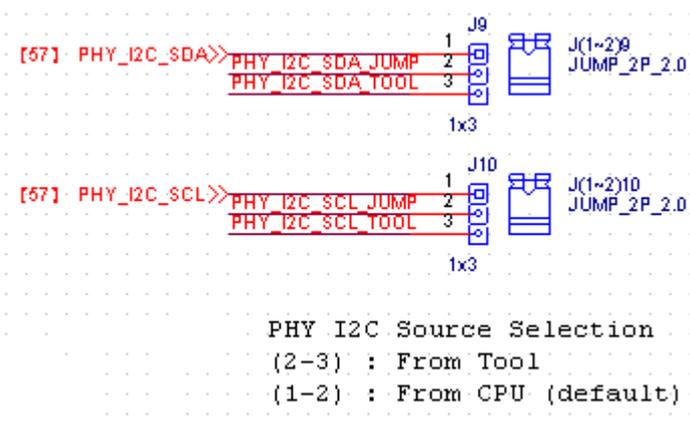


PIN	DESCRIPTION
1	P3V3
2	CPLD_LED3
3	GND

J9/J10: PHY I2C Source Selection

(2-3) : From Tool

(1-2) : From CPU (default)



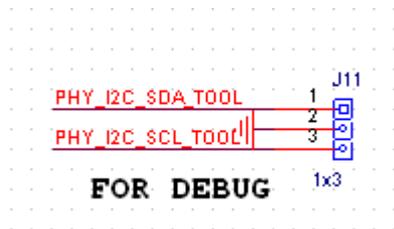
J9

PIN	DESCRIPTION
1	PHY_I2C_SDA
2	PHY_I2C_SDA_JUMP
3	PHY_I2C_SDA_TOOL

J10

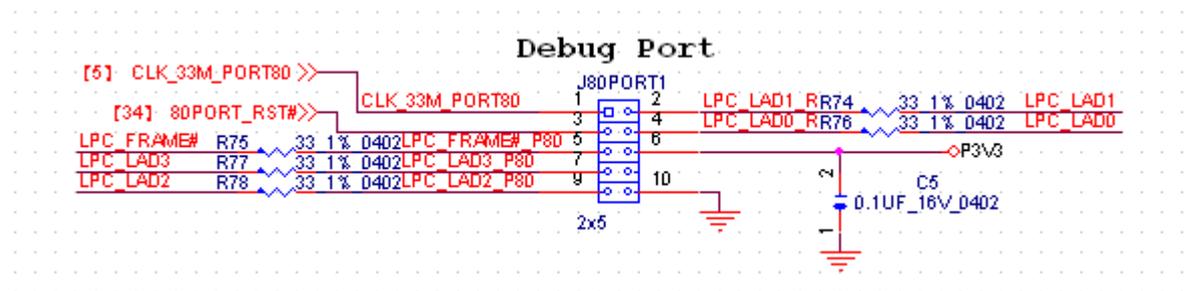
PIN	DESCRIPTION
1	PHY_I2C_SCL
2	PHY_I2C_SCL_JUMP
3	PHY_I2C_SCL_TOOL

J11: PHY I2C debug pin header



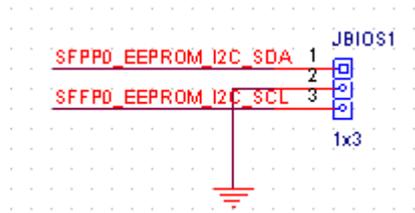
PIN	DESCRIPTION
1	PHY_I2C_SDA_TOOL
2	GND
3	PHY_I2C_SCL_TOOL

J80PORT1 : Debug Port



PIN	DESCRIPTION	PIN	DESCRIPTION
1	CLK_33M_PORT80	2	LPC_LAD1_R
3	80PORT_RST#	4	LPC_LAD0_R
5	LPC_FRAME#_P80	6	P3V3
7	LPC_LAD3_P80	8	NC
9	LPC_LAD2_P80	10	GND

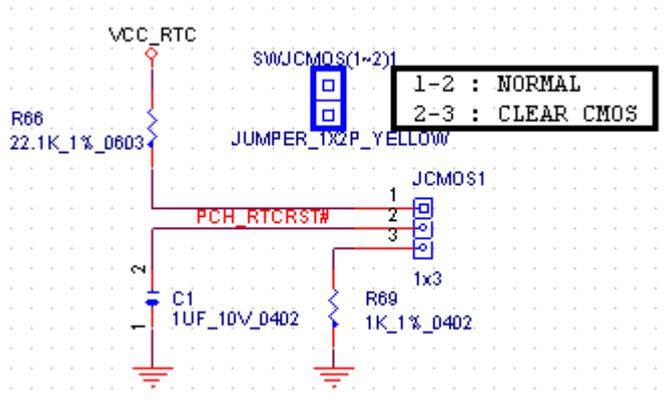
JBIOS1: PHY fresh BIOS



PIN	DESCRIPTION
1	SFFP0_EEPROM_I2C_SDA
2	GND
3	SFFP0_EEPROM_I2C_SCL

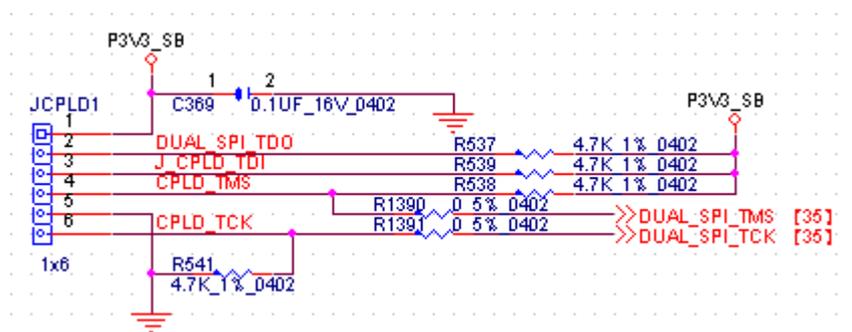
JCMOS1 : 1-2 : NORMAL 2-3 : CLEAR CMOS

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PIN	DESCRIPTION
1	VCC_RTC
2	PCH_RTCRST#
3	GND

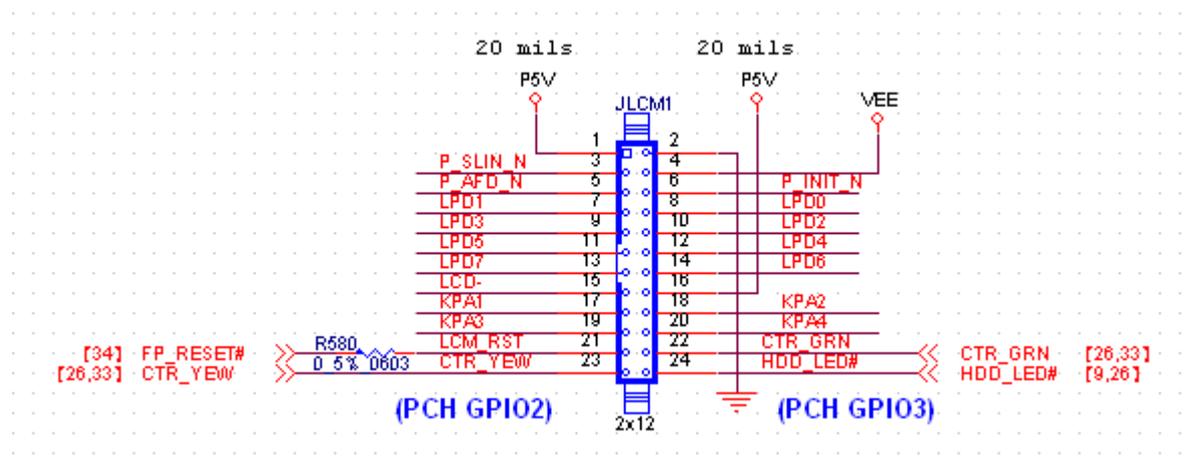
JCPLD1: Fresh CPLD (Complex Programmable Logic Device)



PIN	DESCRIPTION
1	P3V3_SB
2	DUAL_SPI_TDO
3	J_CPLD_TDI
4	CPLD_TMS
5	GND
6	CPLD_TCK

JLCM1: LCM module connector

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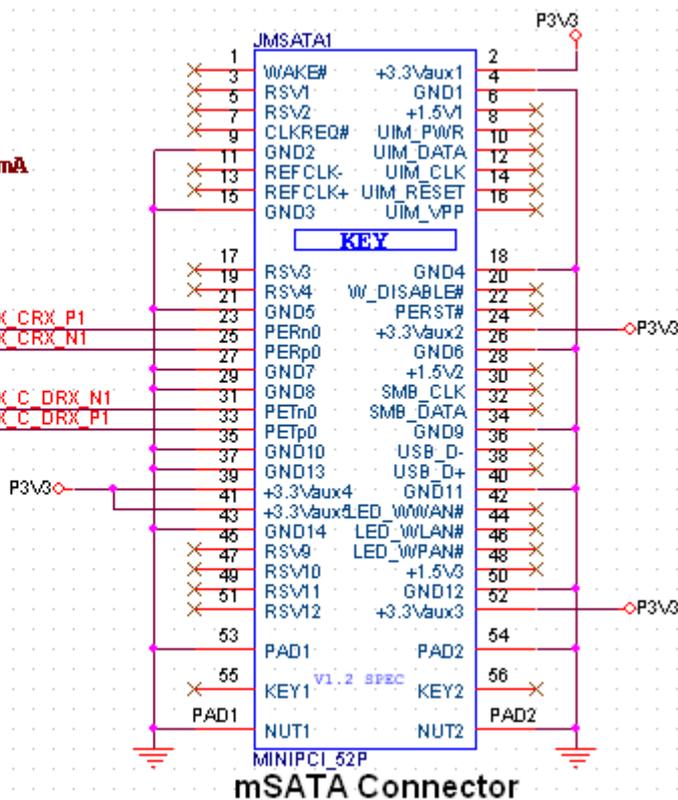
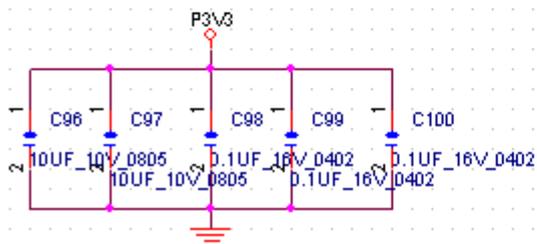
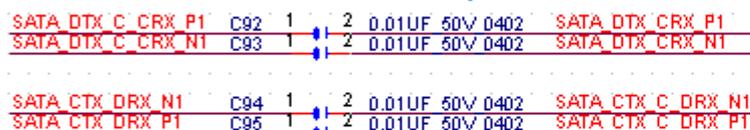
PIN	DESCRIPTION	PIN	DESCRIPTION
1	P5V	2	GND
3	P_SLIN_N	4	VEE
5	P_AFD_N	6	P_INIT_N
7	LPD1	8	LPD0
9	LPD3	10	LPD2
11	LPD5	12	LPD4
13	LPD7	14	LPD6
15	LCD-	16	P5V
17	KPA1	18	KPA2
19	KPA3	20	KPA4
21	LCM_RST	22	CTR_GRN
23	CTR_YEW	24	HDD_LED#

JMSATA1: mSATA module

mPCIe V1.2 SPEC

3.3V Peak(Max)=2750mA

mSATA con P/N error



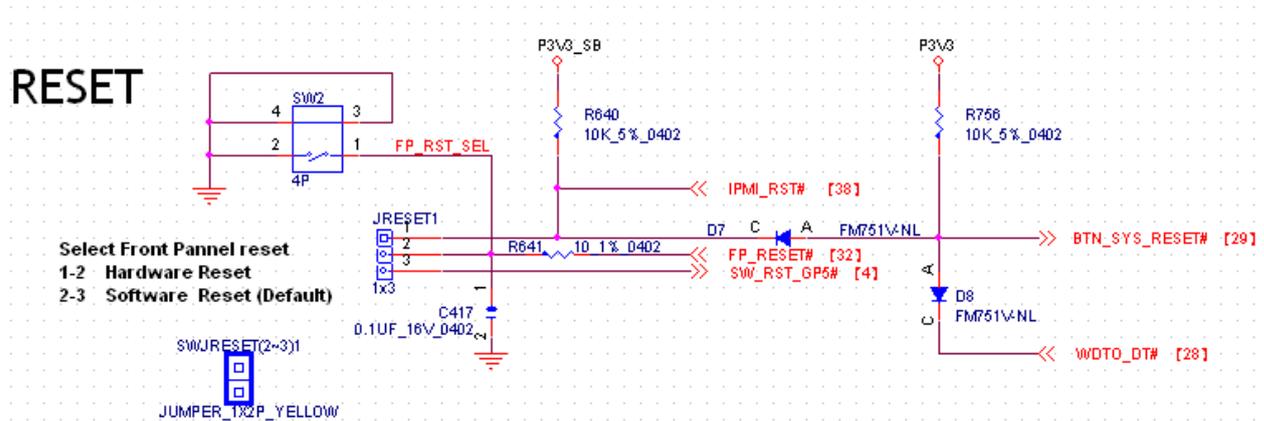
PIN	DESCRIPTION	PIN	DESCRIPTION
1	NC	2	P3V3
3	NC	4	GND
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	NC

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23	SATA_DTX_CRX_P1	24	P3V3
25	SATA_DTX_CRX_N1	26	GND
27	GND	28	NC
29	GND	30	NC
31	SATA_CTX_C_DRX_N1	32	NC
33	SATA_CTX_C_DRX_P1	34	GND
35	GND	36	NC
37	GND	38	NC
39	P3V3	40	GND
41	P3V3	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	GND
51	NC	52	P3V3
53	GND	54	GND
55	NC	56	NC

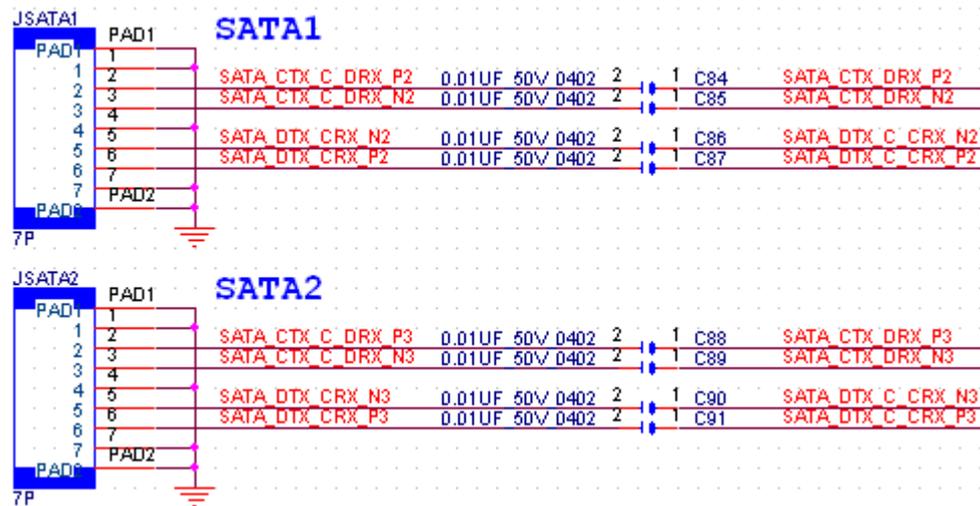
JRESET1 : Select front-panel reset option

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



PIN	DESCRIPTION
1	BTN_SYS_RESET#
2	FP_RESET#
3	SW_RST_GP5#

JSATA1/JSATA2 : SATA connectors for storage devices



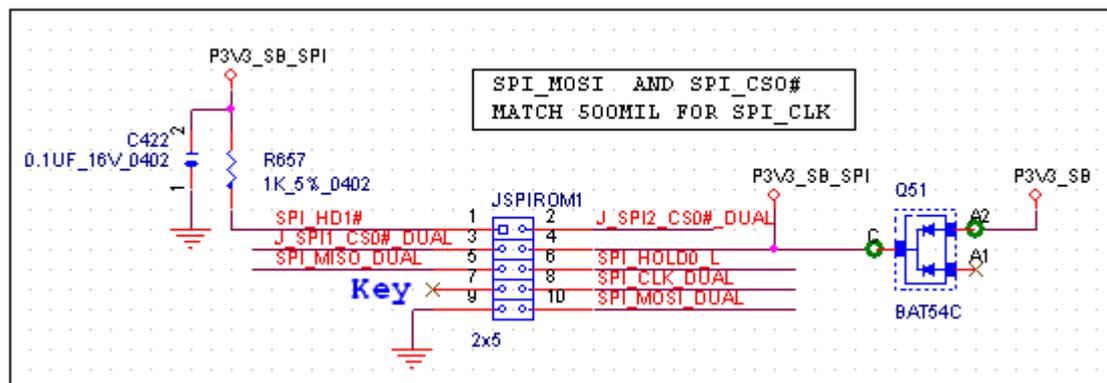
JSATA1

PIN	DESCRIPTION
1	GND
2	SATA_CTX_C_DRX_P2
3	SATA_CTX_C_DRX_N2
4	GND
5	SATA_DTX_CRX_N2
6	SATA_DTX_CRX_P2
7	GND

JSATA2

PIN	DESCRIPTION
1	GND
2	SATA_CTX_C_DRX_P3
3	SATA_CTX_C_DRX_N3
4	GND
5	SATA_DTX_CRX_N3
6	SATA_DTX_CRX_P3
7	GND

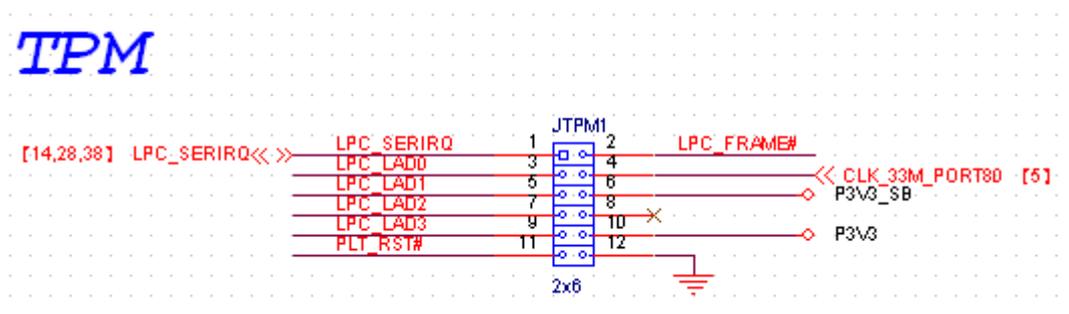
JSPIROM1: Fresh BIOS



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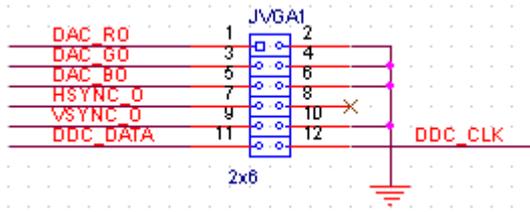
PIN	DESCRIPTION	PIN	DESCRIPTION
1	SPI_HD1#	2	J_SPI2_CS0#_DUAL
3	J_SPI1_CS0#_DUAL	4	P3V3_SB
5	SPI_MISO_DUAL	6	SPI_HOLD0_L
7	NC	8	SPI_CLK_DUAL
9	GND	10	SPI_MOSI_DUAL

JTPM1: TPM module pin header (optional)



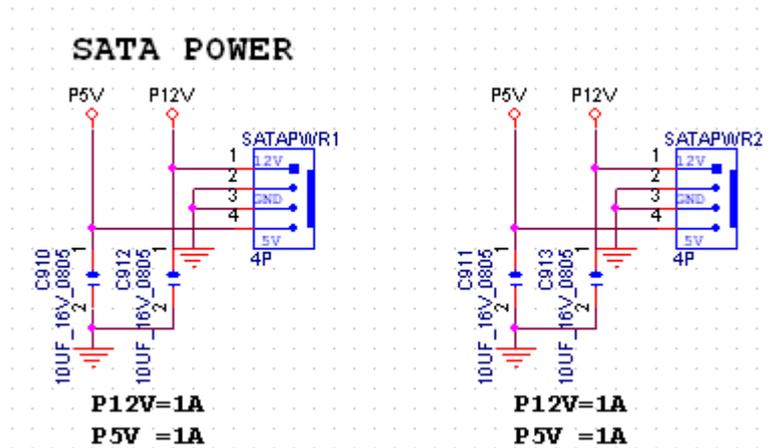
PIN	DESCRIPTION	PIN	DESCRIPTION
1	LPC_SERIRQ	2	LPC_FRAME#
3	LPC_LAD0	4	CLK_33M_PORT80
5	LPC_LAD1	6	P3V3_SB
7	LPC_LAD2	8	NC
9	LPC_LAD3	10	P3V3
11	PLT_RST#	12	GND

JVGA1: VGA internal connector



PIN	DESCRIPTION	PIN	DESCRIPTION
1	DAC_RO	2	GND
3	DAC_GO	4	GND
5	DAC_BO	6	GND
7	HSYNC_O	8	NC
9	VSYNC_O	10	GND
11	DDC_DATA	12	DDC_CLK

SATAPWR1/SATAPWR2: SATA 4-pin POWER connectors



PIN	DESCRIPTION
1	P12V
2	GND
3	GND
4	P5V

Chapter 4: Hardware Setup

Preparing the Hardware Installation

To access some components and perform certain service procedures, you must perform the following procedures first.

WARNING:

- To reduce the risk of personal injury, electric shock, or damage to the equipment, please remove all power sources.
- Please wear ESD protected gloves before conducting the following steps.

1. Power off NCA-4010 completely.
2. Remove the two screws at the rear, as circled in the figures below.



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



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4. Lift the top compartment.



About the CPU, Heatsink and Heat-radiation Bracket

Since the CPU is soldered onboard, the heatsink and the heat radiation brackets are pre-installed before shipment. In normal circumstances, no installation nor replacement is required. If there is any issue related to CPU overheating or damage, please contact the dealership or distributor where you purchase this appliance.



Heat radiation brackets

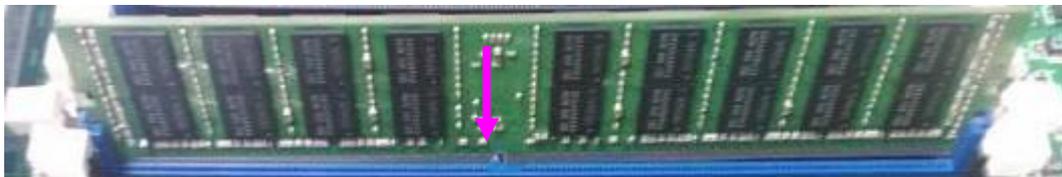
Installing the System Memory

The motherboard supports DDR4 RDIMM/ECC/UDIMM up to 2,400MHz memory at max. 16GB per socket. Please follow the steps below to install the DIMM memory modules.

1. Power off the system and locate the DDR DIMM slot.



2. Pull open the DIMM slot latches
3. Align the DIMM module and make sure the notches of the module aligned with the socket keys in the slot.



4. Insert the module into the slot until it's firmly seated and close the latches.

Installing Disk Drives

The system supports 1 x 3.5" or 2 x 2.5" SATA HDDs or SSDs as data storage. Please follow the steps below for installation. (Note: the following steps are based on 2 x 2.5" SATA disk drives installation).

1. Locate the disk drive tray at the corner of the system.



2. Slide the tray downwards. Then the tray will be loosened from the two latching spots.



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3. Take the tray out and prepare to install a SATA 2.5" disk drive.



4. Place the disk drive as shown in the image below. Apply 2 screws for each side of the disk drive.



5. Place the tray with HDD/SSD installed back to its original spot inside the system.

Remember to aim the two latching holes. Then slide the tray upwards to get it locked by the two latching spots.



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6. Establish SATA cable connection between the disk drive and the motherboard. Please apply 15+7 SATA cable to the drive while using SATA 7-pin connector and SATA 4-pin connector for the motherboard.



Installing a mSATA Module

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

1. Locate the mSATA socket.



2. Insert a mSATA module as shown in the image below card.



3. Press the module down and apply two screws to secure it.



Installing an IPMI Card (Project-based)

The motherboard provides one OPMA socket which is used to install an IPMI card. Please follow the steps below for instructions.

1. Locate the OPMA socket.

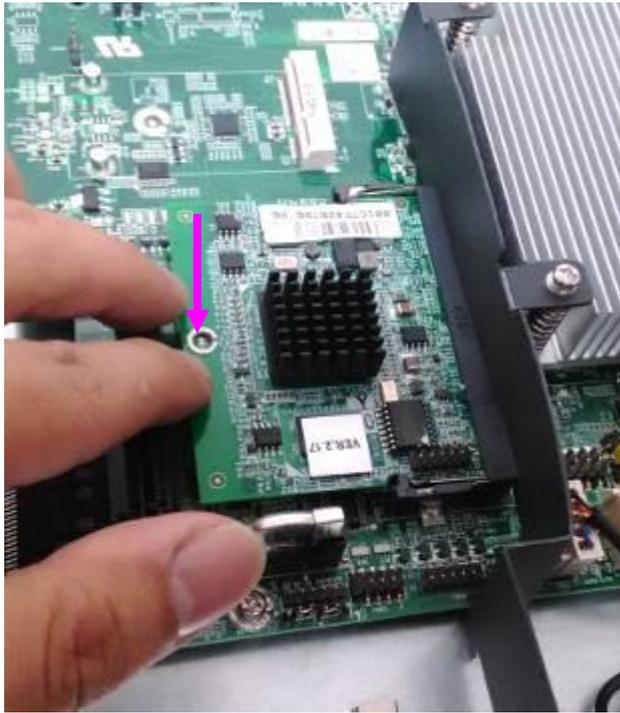


2. Insert an IPMI card into the socket and then press it down.



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3. Apply a screw to secure the IPMI card.

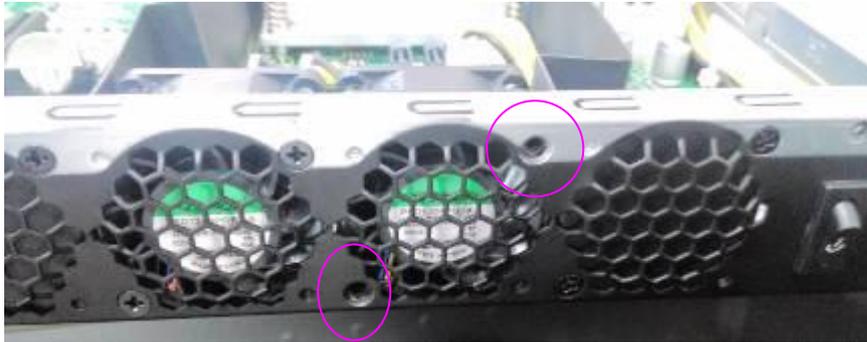


Notes: The remake about the IPMI support requires changes in BOM and it is based on custom projects. For requirements about IPMI support, please consult with Lanner representatives.

Replacing Cooling Fans

NCA-4010 supports 2 cooling fans. To replace a worn-down fan, please follow the steps below.

1. Remove the screws circled below.



2. Apply some force and pull the fan out of its original place, as shown in the image below.



3. To install a new one, just place the new fan to the original place and apply two screws.

Installing Ethernet NIC Modules

NCA-4010 supports one Ethernet NIC module space to expand its network throughput. Please follow the instructions below.

Notes: For information about compatible modules, please refer to the “Ordering Information” and “Optional Accessories” sections, or contact Lanner for more details.

1. Remove the two captive screws on the bezel of the module slot and open the bezel.



2. Position the gold finger of module as shown in the image below. When sliding the module into the slot, make sure the module stays in the guides of the expansion slot.



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3. Slide your Ethernet NIC module into the space, until it is firmly attached.



4. Secure the module with two captive screws on the bezel.



Rackmount Installation

Attach the Inner Rails

1. Check the package contents.

2 x 438mm Slide-Rails

1 x pack of screws



2. Turn a slide rail upside down and release the inner bracket.



4. Slide the inner bracket all the way up to end of the slide-rail assembly. You may hear a “click” sound.



5. Push the white slide-rail lock outwards as the arrow of direction below. Then pull the inner bracket out of the slide-rail assembly.



6.

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Release the inner bracket as shown below.



7. Align the inner bracket to the side of the chassis and make sure the screw-holes are matched. Then secure the bracket onto the chassis with provided screws.

8. Repeat Steps 2 to 7 for another slide-rail and attach its inner bracket onto another side of the chassis.



Installing Slide Rails

1. In the previous section, you have already detached the inner brackets and attached them onto the chassis of your purchased model. By now, you shall install the slide-rail assemblies onto the rack.

As the image below, this slide-rail kit does NOT require screw-fixing. Simply aim at 3 available screw holes on the rack-front and lock it by clipping the slide-rail assembly to the rack-front as shown in the image below. You should hear a “click” sound once it is firmly attached.

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2. For the rear rack installation, also aim at 3 available holes and click the slide-rail assembly onto the rear rack.



3. Repeat Step 1 and 2 for another slide-rail assembly in order to install in onto the rack.

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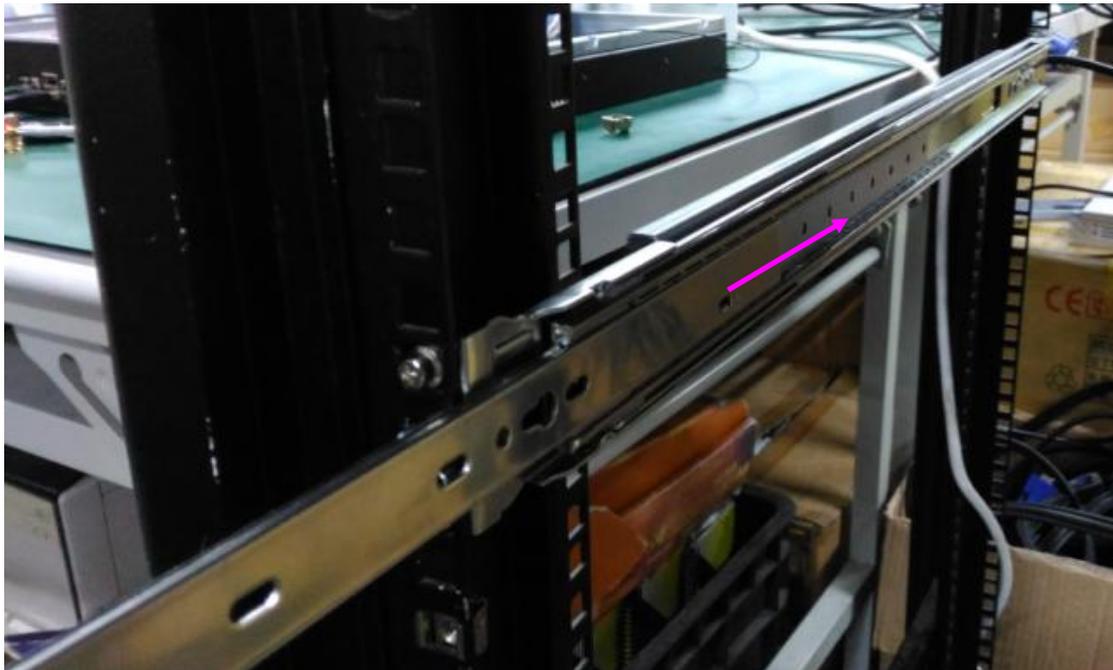
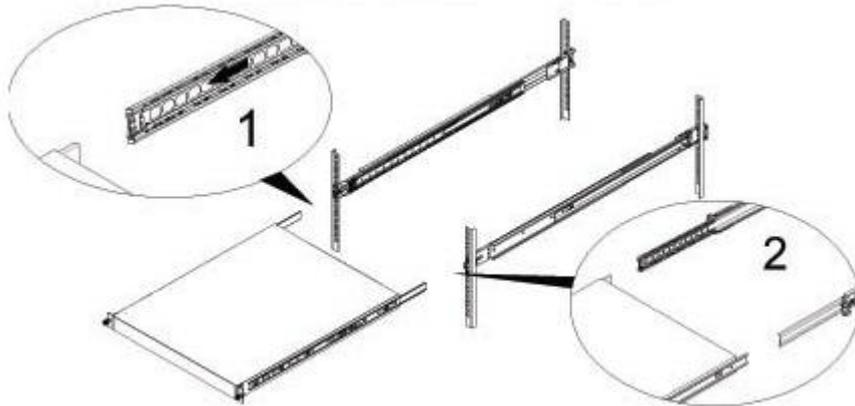


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Installing NCA-4010 onto the Rack

Reminder: it is strongly recommended to carry out this procedure with two or three persons.

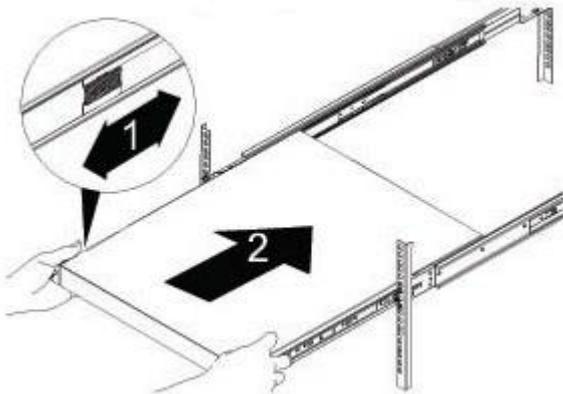
1. Hold the applicable model with its front facing you, lift the chassis and gently insert the model by aligning with the slide-rail assemblies, as shown in the image below. Then push the model as far as possible.



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2. Simultaneously push the release tabs on both sides in the arrow of direction below, while pushing the appliance into the end of the rack.



Caution: the appliance will be locked during the half way of sliding-in if the release tabs are not pushed.

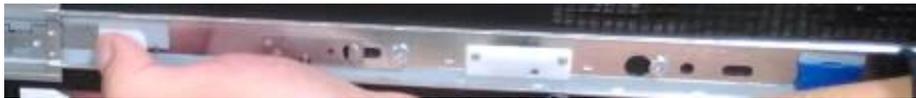


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3. Slide the appliance all the way into the assembly until it reaches its end.



4. To slide the appliance out, gently pull it outwards. Then, press the slide-rail locks on both side and slide the appliance out.



Chapter 5: BIOS Setup

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

1. Boot up the system.
2. Press <Delete> during the boot-up. Your system should be running POST (Power-On-Self-Test) upon booting up.
3. Then you will be directed to the BIOS main screen.
4. Instructions of BIOS navigations:

[<-] [->]: select a setup screen, for instance, [Main], [Advanced], [Chipset], [Boot], [Security], and [Save & Exit]

[↑] [↓]: select an item/option on a setup screen

Enter: select an item/option or enter a sub-menu

ESC: exit the current screen

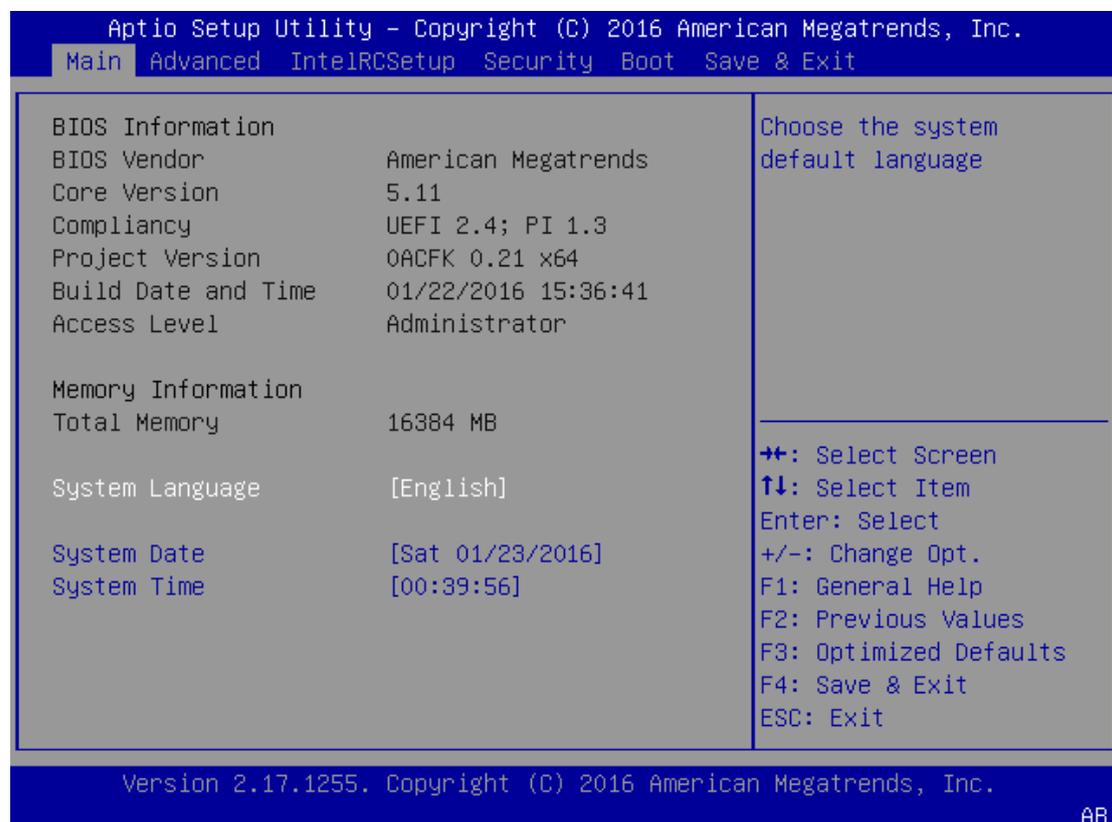
+/- = to adjust values for the selected setup item/option

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



Notes: the images in the following section are for reference only.

Main

The [Main] is the first setup screen when you enter BIOS. The [Main] displays general system and BIOS information

and you may configure the “System Language”, “System Date”, and “System Time”.

BIOS Information

BIOS Vendor: displays BIOS vendor information

Core Version: displays the BIOS core version

Compliancy: displays the BIOS compliancy

Project Version: displays BIOS project version

Build Date and Time: displays the date and time the BIOS was built.

Press “Enter” if you want to configure “System Language”, “System Date”, and “System Time”.

System Language: English

System Date: Day/Month/Year

System time: Hour/Minutes/Seconds

The screenshot shows the Aptio Setup Utility interface. At the top, a blue header bar contains the text "Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc." and a menu with options: "Main", "Advanced", "IntelRCSetup", "Security", "Boot", "Save & Exit". The "Main" option is highlighted. Below the header, the screen is divided into two columns. The left column displays system information:

BIOS Information	
BIOS Vendor	American Megatrends
Core Version	5.11
Compliancy	UEFI 2.4; PI 1.3
Project Version	OACFK 0.21 x64
Build Date and Time	01/22/2016 15:36:41
Access Level	Administrator
Memory Information	
Total Memory	16384 MB
System Language	[English]
System Date	[Sat 01/23/2016]
System Time	[00:39:56]

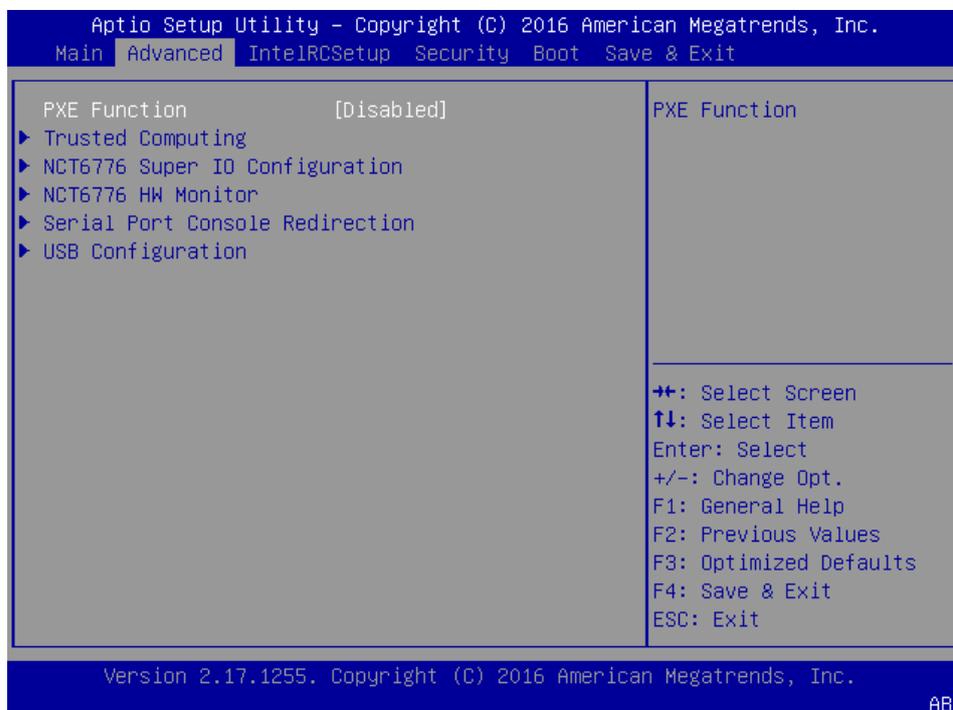
The right column contains the instruction "Choose the system default language" and a list of navigation keys:

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

At the bottom of the screen, a blue bar displays "Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc." and the code "AB" in the bottom right corner.

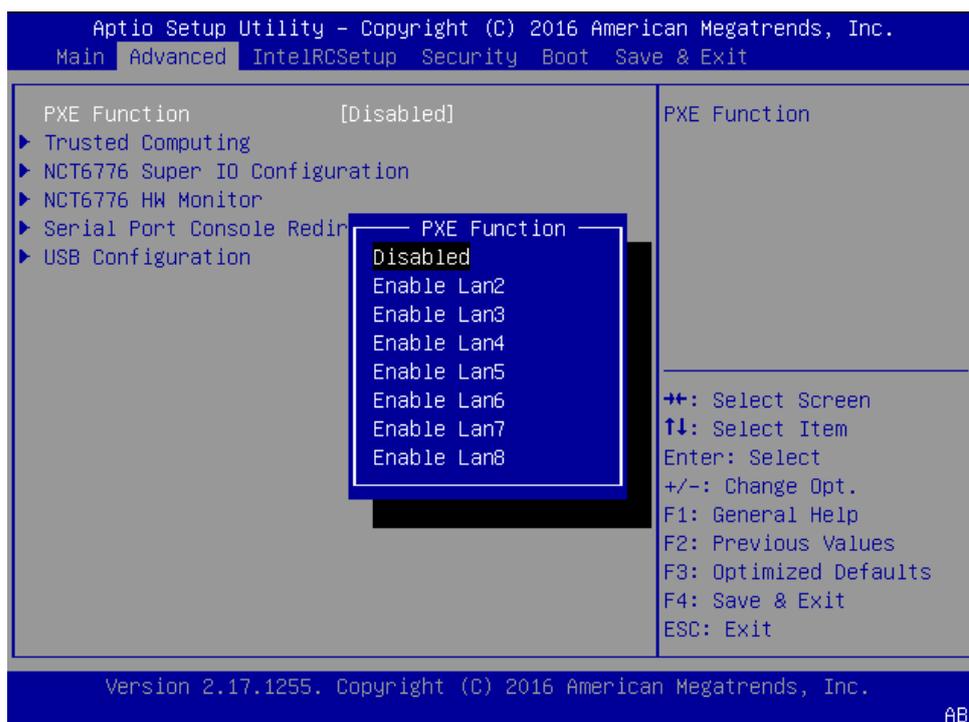
Advanced

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



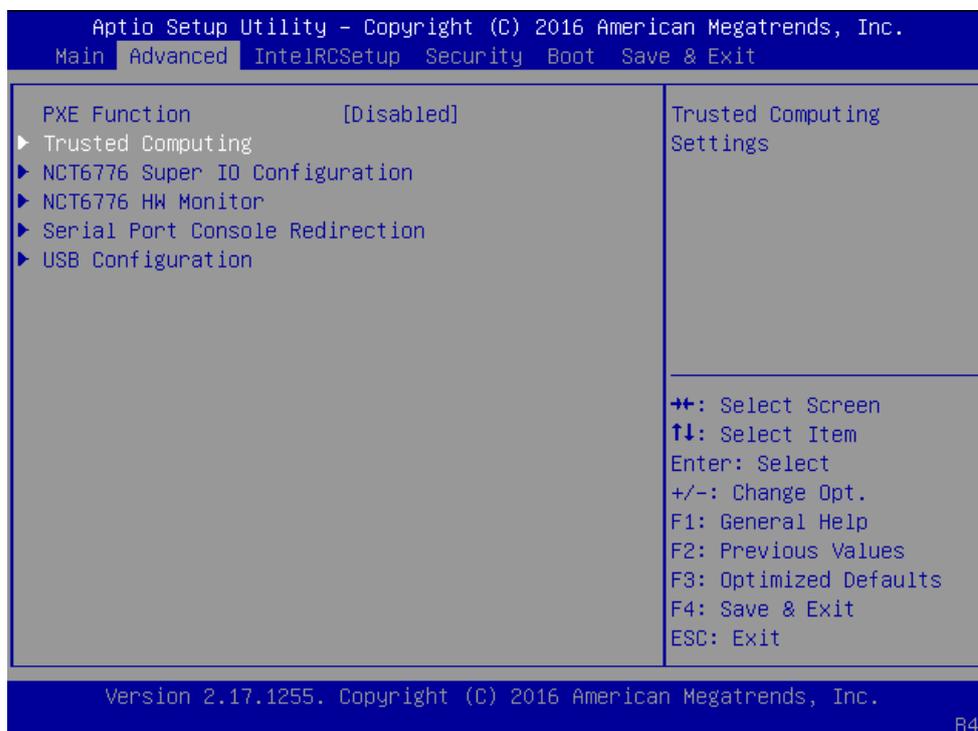
PXE Function

This option allows users to set PXE (Preboot Execution Environment) functions. Users may enable LAN2 to LANX depending on their applications.

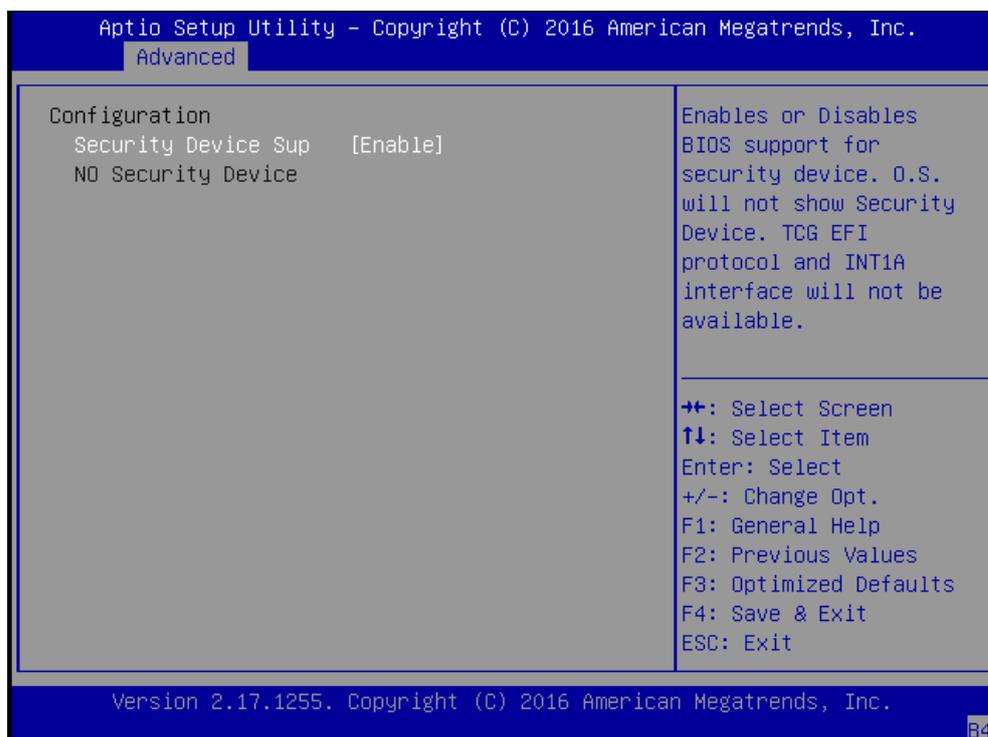


Trusted Computing

This option enables users to configure “Trusted Computing” settings. Please be noted that TPM module shall have been installed first in order to make any configuration.



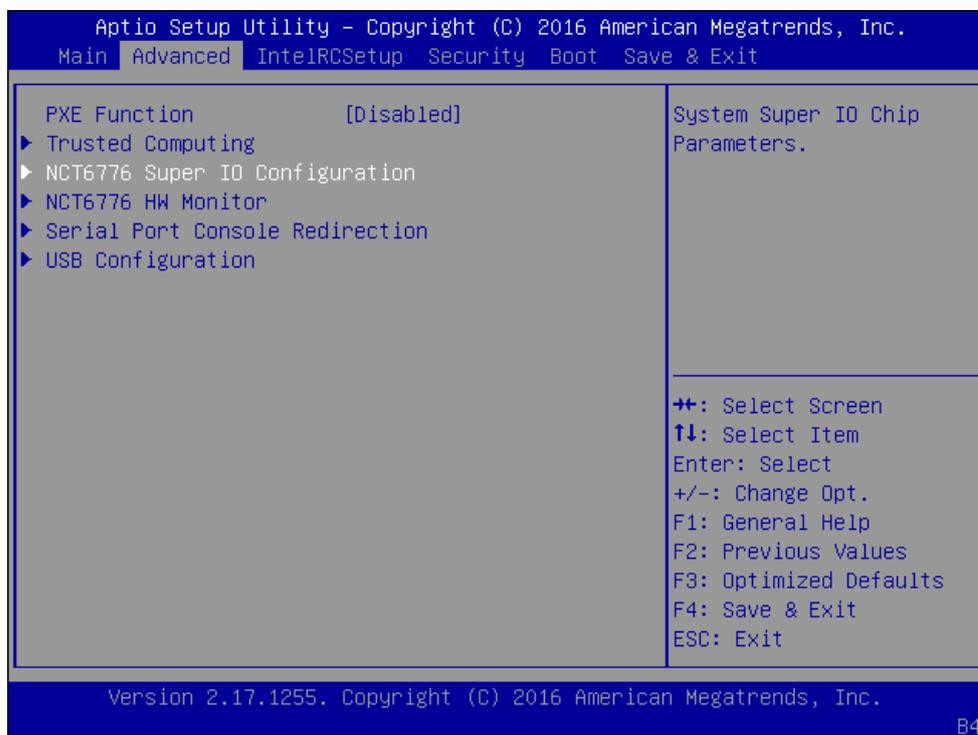
Security Device Support: this enables or disables BIOS support for security device. Please be noted that the operating system will not show Security Device. Also, TCG EFI protocol and INT1A interface will not be available.



NCT6776 Super IO Configuration

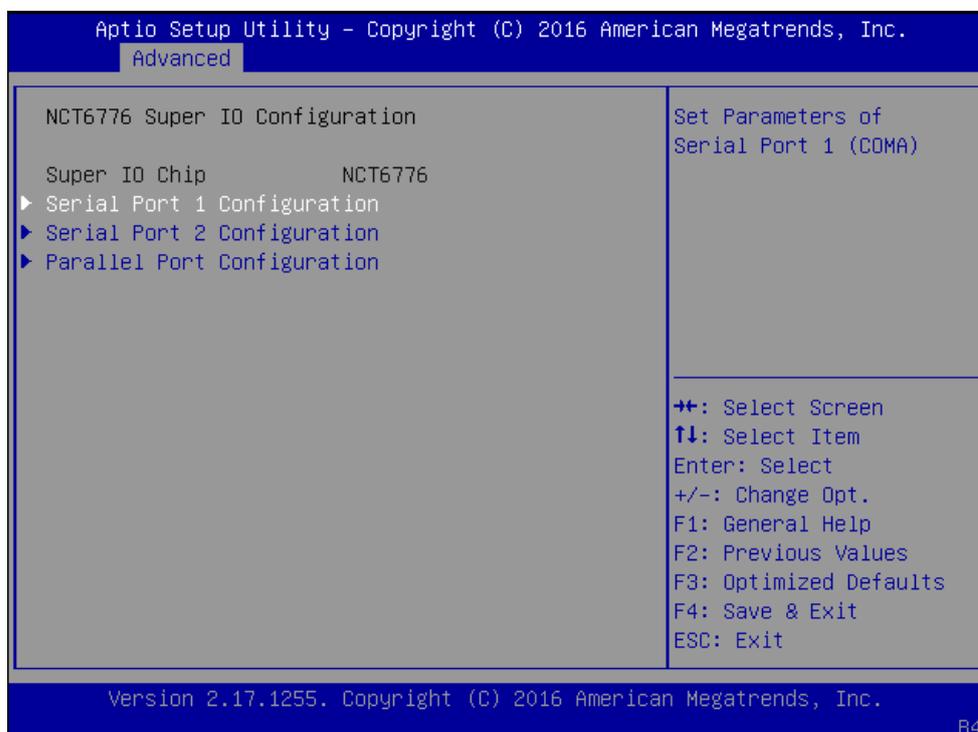
Press "Enter" to access configuration sub-menu for super IO chip (NCT6776) parameters.

You may access settings for Serial Port 1 or 2 or the Parallel port.



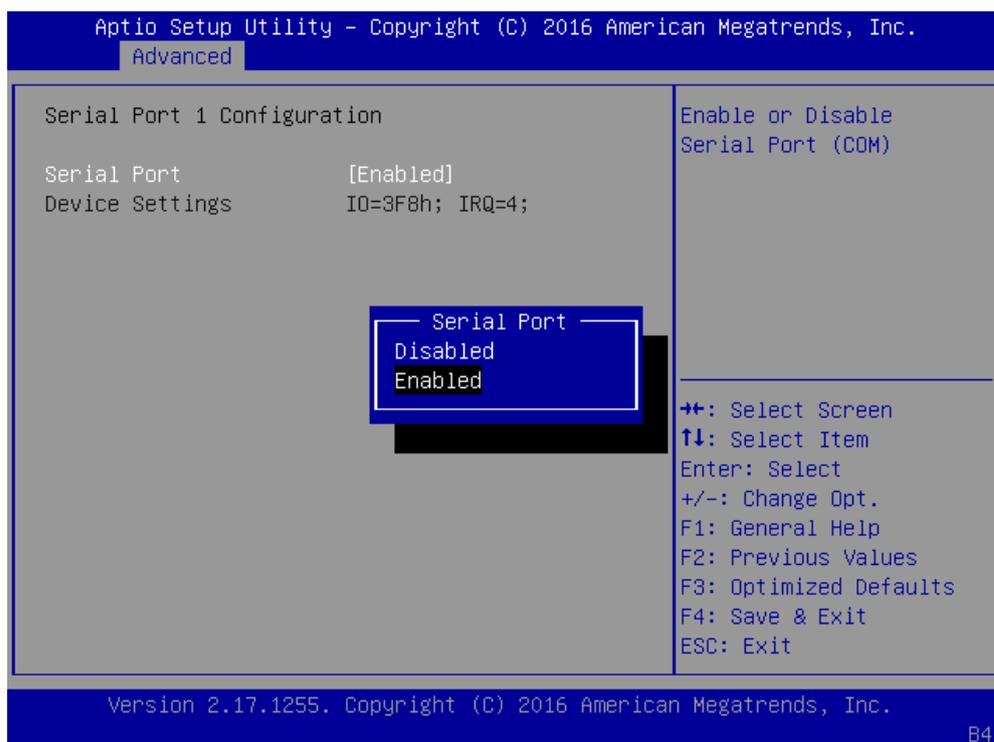
NCT6776 Super IO Configuration - Serial Port 1 Configuration

The super IO chip for this model is NCT6776. You may enable or disable Serial Port 1(COMA).



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Press "Enter" to enable or disable the Serial Port 1 (COMA). Device setting is fixed as default.

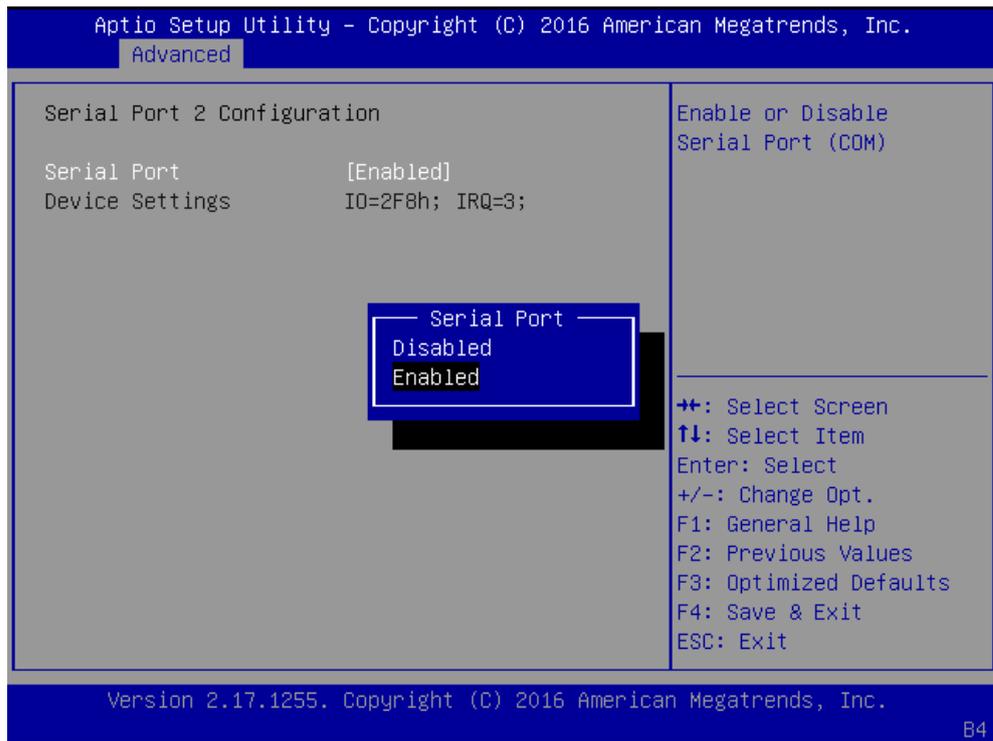


NCT6776 Super IO Configuration - Serial Port 2 Configuration

Once Serial Port 2 is accessed, you may press "Enter" to enable or disable the Serial Port 2 (COM). Device setting is fixed as default.

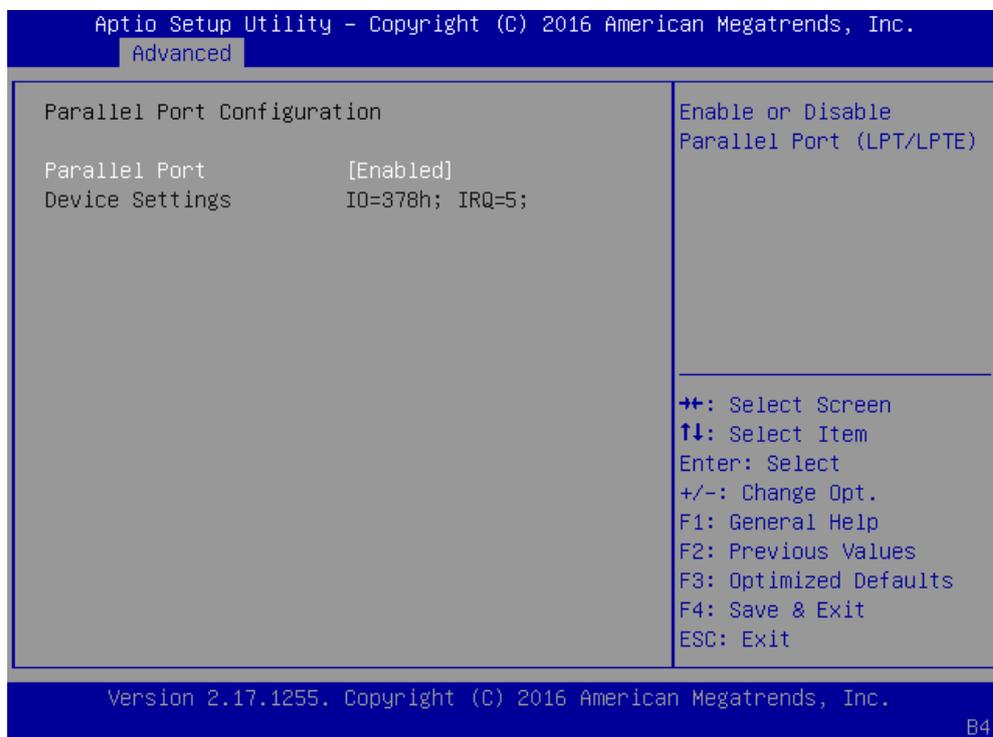


Network Computing Platforms



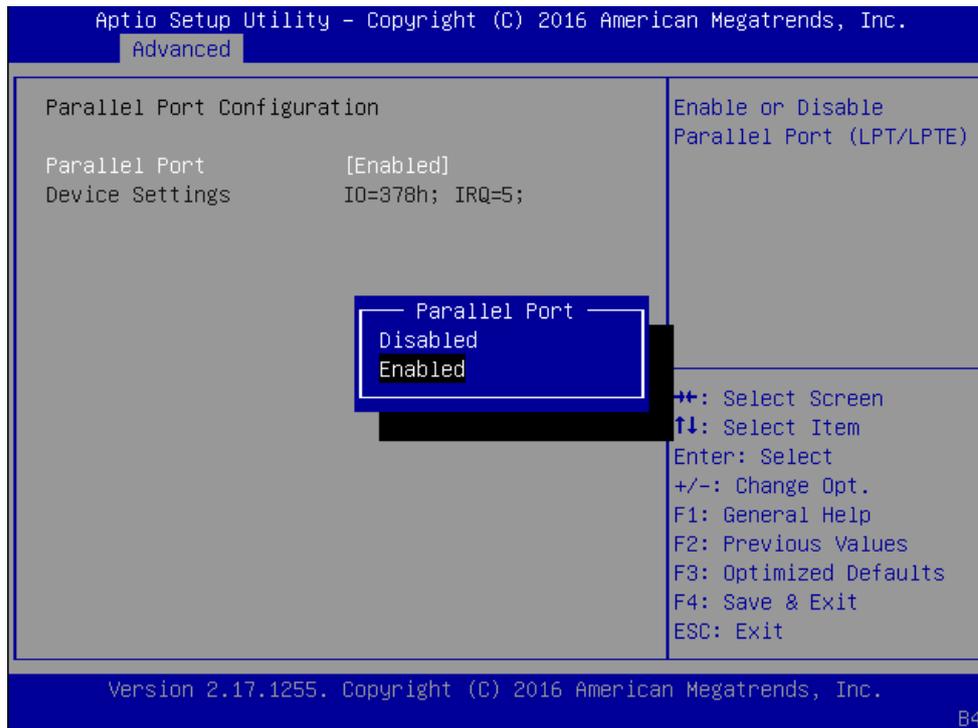
Parallel Port Configuration

This option allows you to set parameters for parallel port (LPT/LPTE).



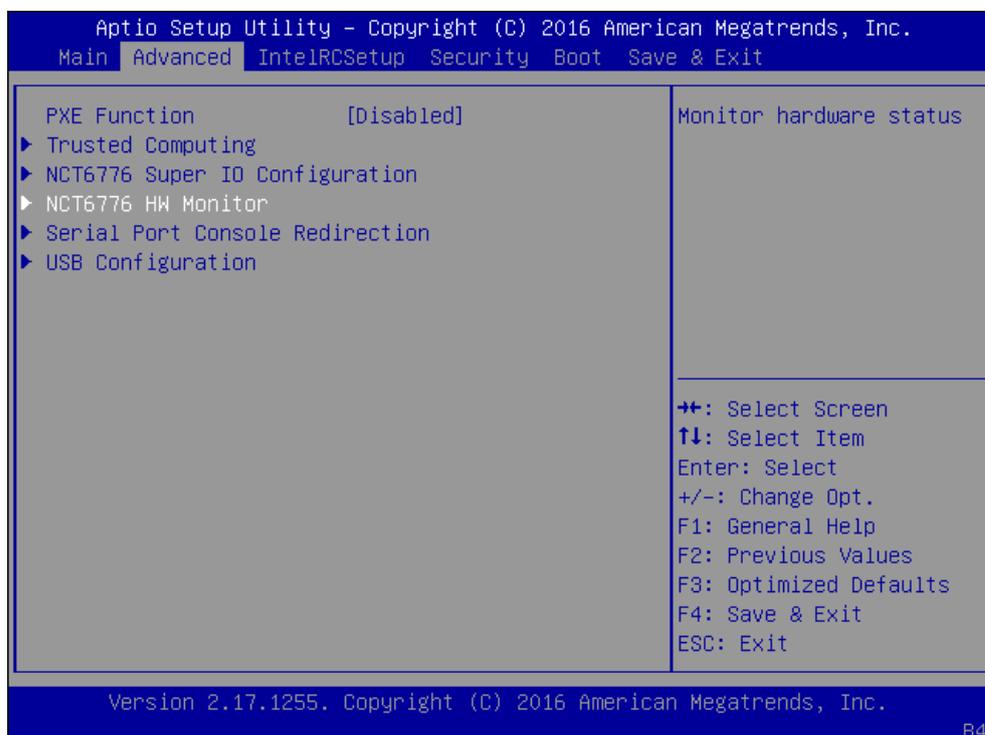
Network Computing Platforms

Once Parallel Port is accessed, you may press “Enter” to enable or disable the Parallel Port. Device setting is fixed as default.



NCT6776 HW Monitor

This option allows you to view hardware health status.



Network Computing Platforms

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced

Pc Health Status

Agent0 Temperature      : +35 %
System temperature1     : +27 %
System temperature2     : +29 %
Fan1 Speed              : 4720 RPM
Fan2 Speed              : N/A
VCCORE                  : +1.744 V
P5V_A                   : +4.776 V
P12V                    : +11.424 V
P1V2_VDDQ               : +1.144 V
VACC                    : +3.264 V
VCC3V                   : +3.264 V
VSB3V                   : +3.264 V
VBAT                    : +2.992 V

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

Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
B4
```

Serial Port Console Redirection

This option allows you to configure parameters about serial port console redirection. Press “Enter” to access the submenu.

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  IntelIRCSetup  Security  Boot  Save & Exit

PXE Function          [Disabled]
▶ Trusted Computing
▶ NCT6776 Super IO Configuration
▶ NCT6776 HW Monitor
▶ Serial Port Console Redirection
▶ USB Configuration

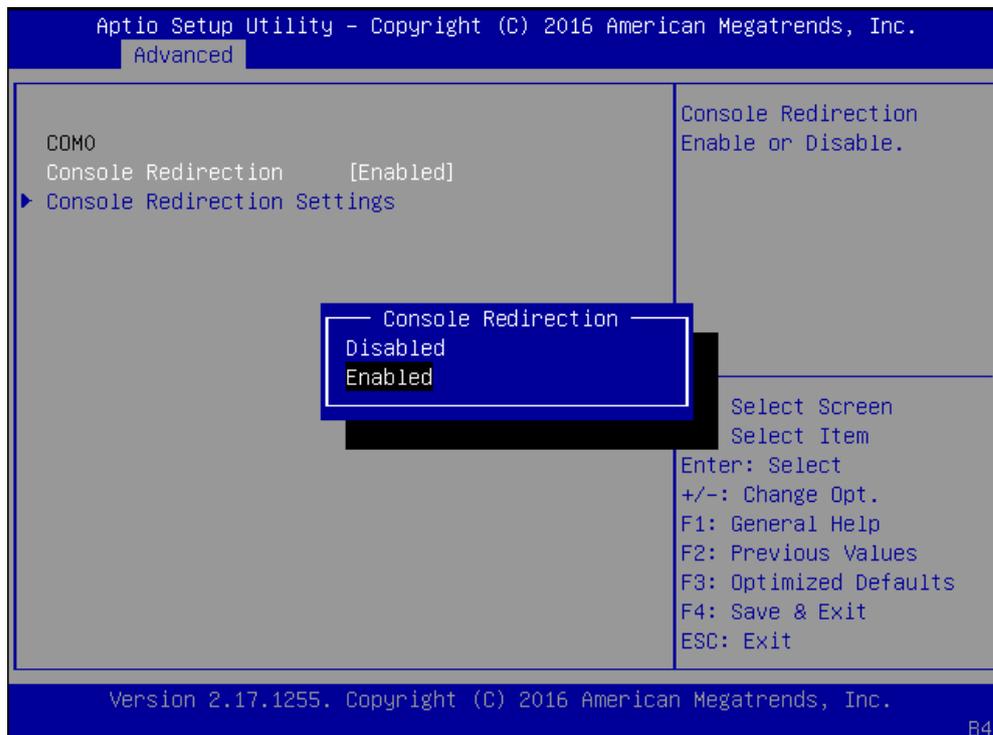
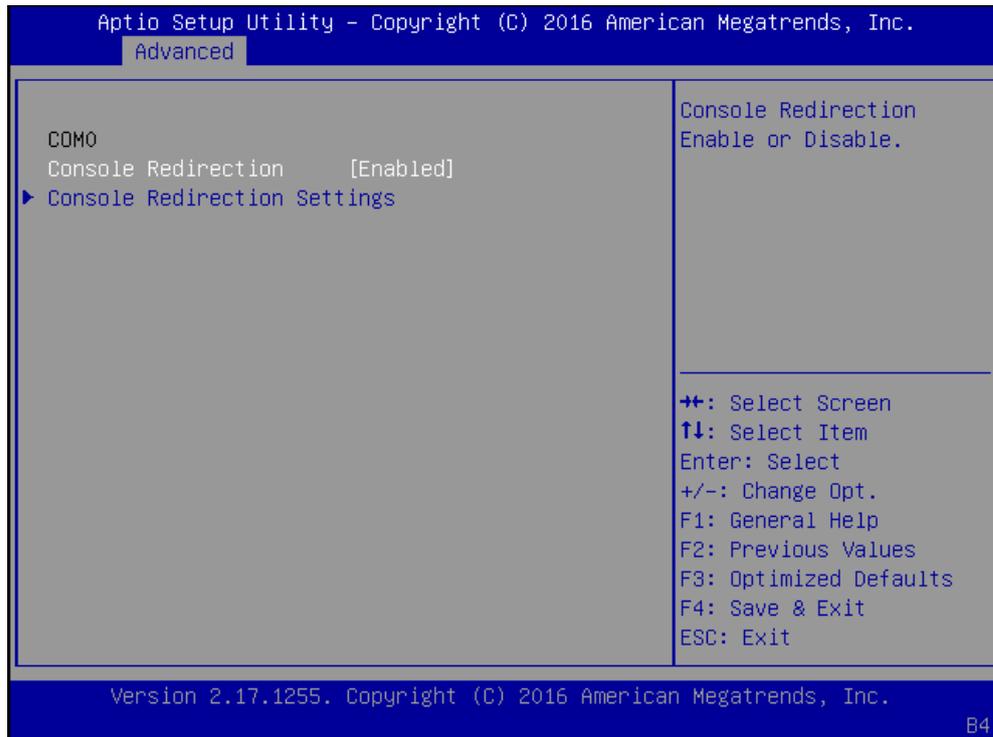
Serial Port Console
Redirection

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

Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
B4
```

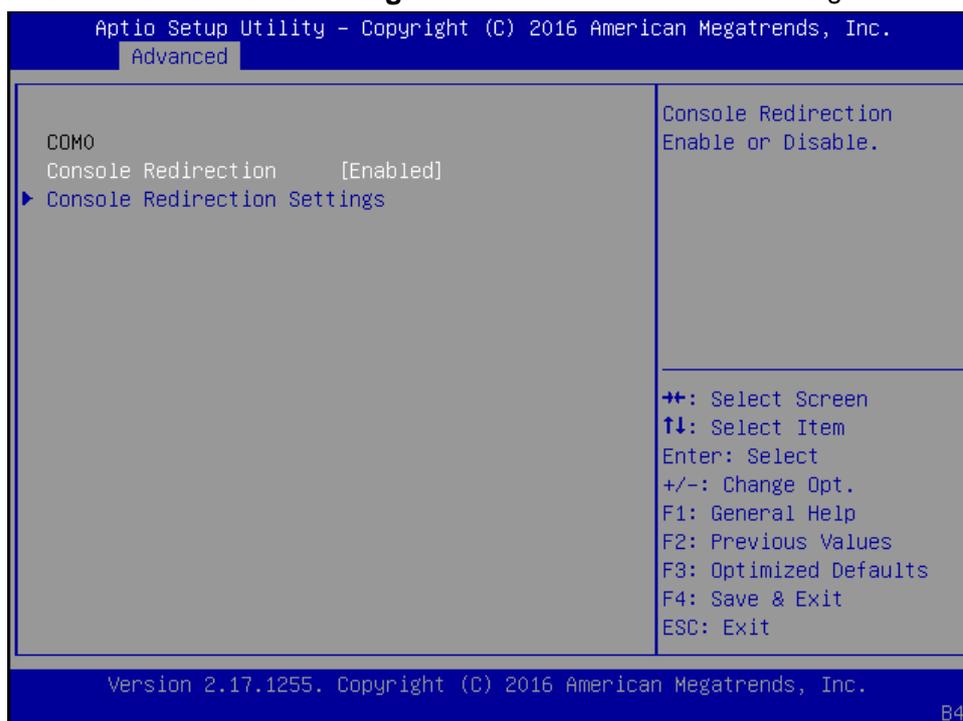
Network Computing Platforms

Console Redirection: select “Enabled” or “Disable” for COM port console redirection.
The default is “Enabled”.



Network Computing Platforms

Console Redirection Settings: select this item to enter the setting sub-menu.



COM Console Redirection Settings

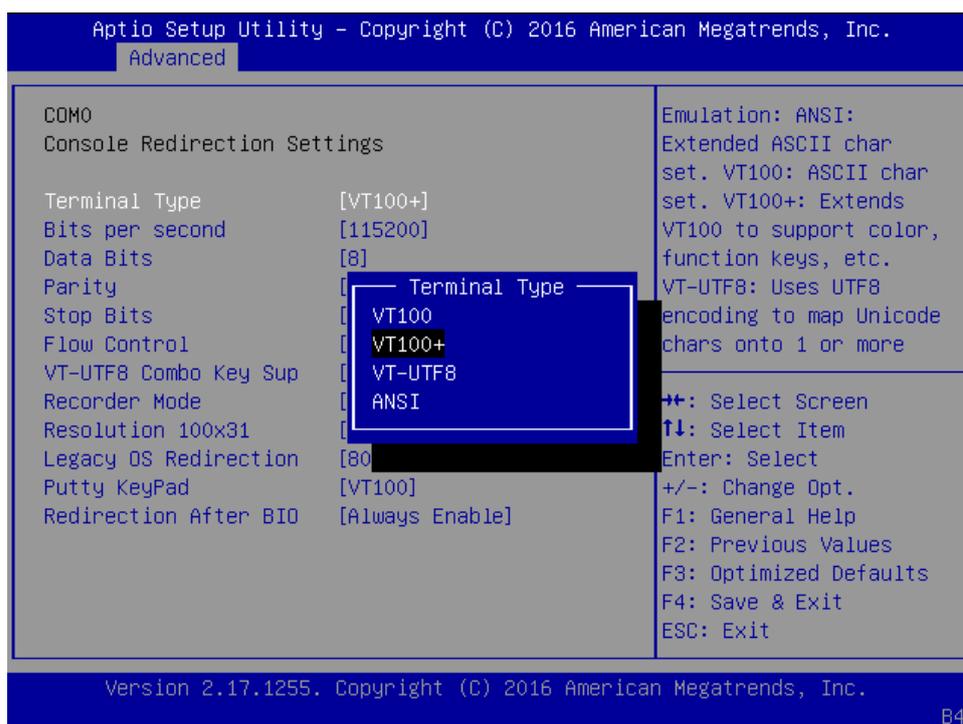
Terminal Type: the emulation configuration. Select “VT100”, “VT100+”, “VT-UTF8” or “ANSI”.

VT100: ASCII character set

VT100+: extends VT100 to support color function keys

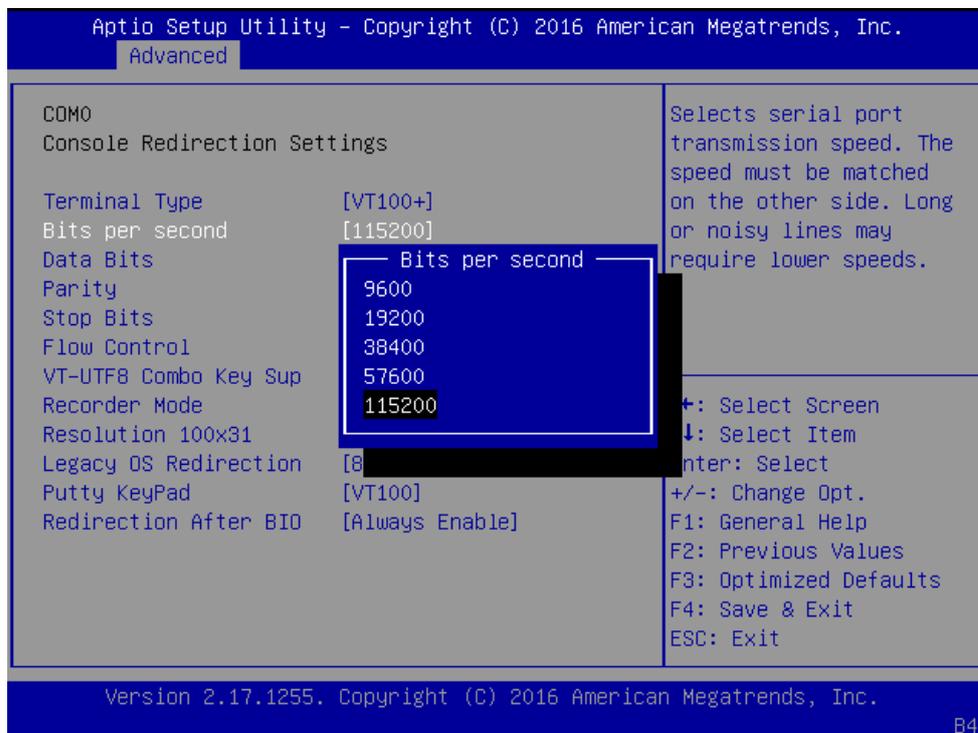
VT-UTF8: uses UTF8 encoding to map Unicode characters onto 1 or more

ANSI: Extended ASCII character set

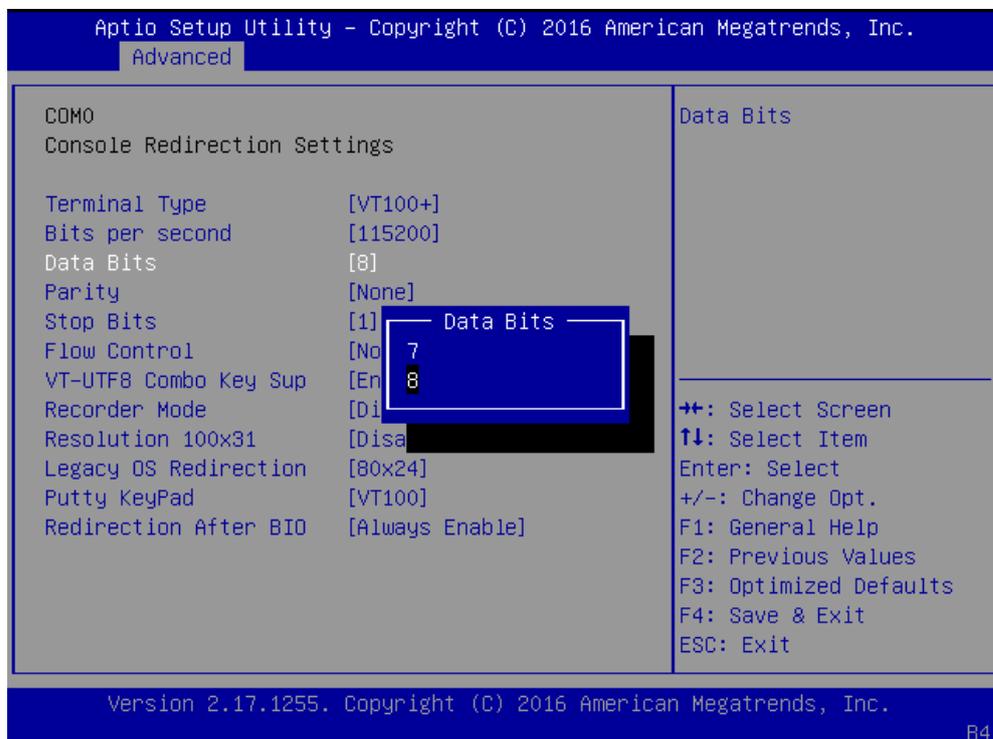


Network Computing Platforms

Bits per second: select “9600”, “19200”, “38400”, “57600”, or “115200” for bits per second. The Bps will determine serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds



Data Bits: select the value for data bits. In this case, “7” or “8”.



Network Computing Platforms

Parity Bits: a parity bit can be sent with the data bits to detect some transmission errors.

Select "None", "Even", "Odd", "Mark" or "Space".

The screenshot shows the Aptio Setup Utility interface. The title bar reads "Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc." and the sub-header is "Advanced". The main area is titled "COMO Console Redirection Settings". A list of settings is shown on the left, with "Parity" currently set to "[None]". A blue selection box is open over the "Parity" setting, displaying the options: "None", "Even", "Odd", "Mark", and "Space". To the right of the settings list, there is a descriptive text: "A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data". Below this text is a list of navigation keys: "++: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimize Defaults", "F4: Save & Exit", and "ESC: Exit". At the bottom of the screen, it says "Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc." and the page number "B4" is in the bottom right corner.

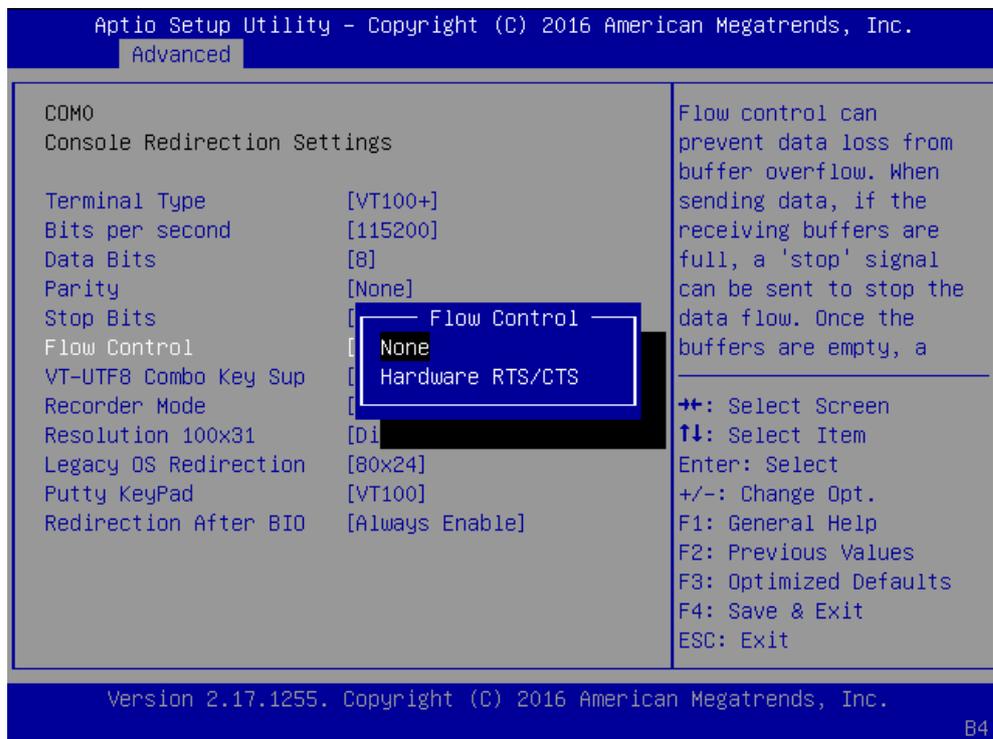
Stop Bits: stop bits indicate the end of a serial data packet. The standard is 1 stop bit.

Communication with slow devices may require more than 1.

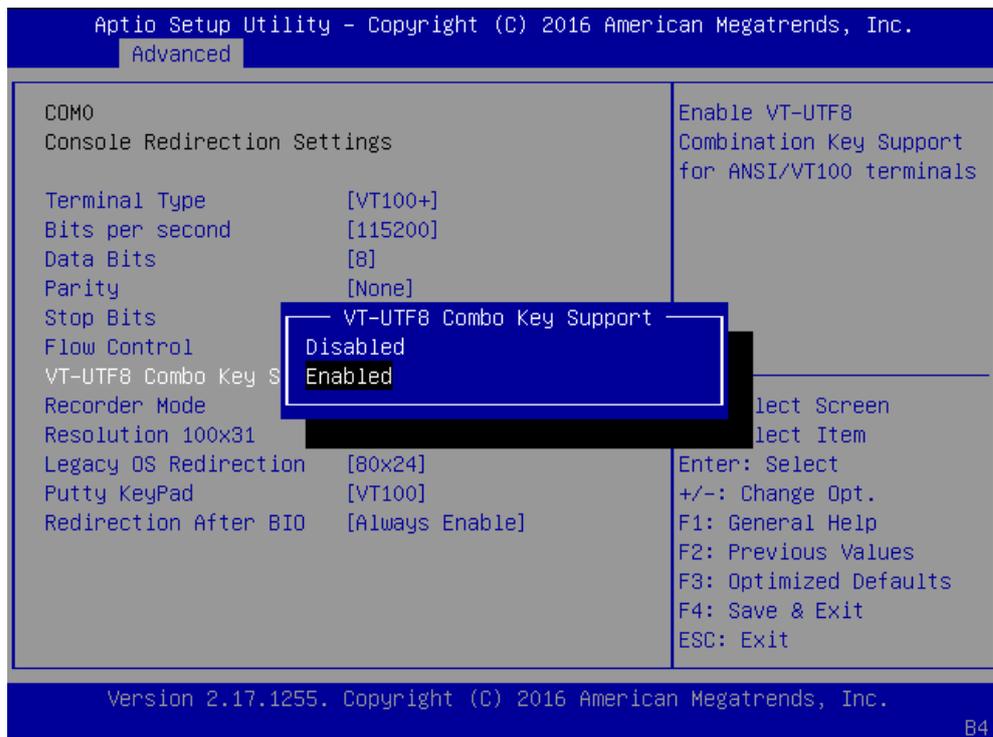
The screenshot shows the Aptio Setup Utility interface. The title bar reads "Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc." and the sub-header is "Advanced". The main area is titled "COMO Console Redirection Settings". A list of settings is shown on the left, with "Stop Bits" currently set to "[1]". A blue selection box is open over the "Stop Bits" setting, displaying the options: "1" and "2". To the right of the settings list, there is a descriptive text: "Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1". Below this text is a list of navigation keys: "++: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimize Defaults", "F4: Save & Exit", and "ESC: Exit". At the bottom of the screen, it says "Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc." and the page number "B4" is in the bottom right corner.

Network Computing Platforms

Flow Control: flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. You may select “None” or “Hardware RTS/CTS”, depending on the circumstances.

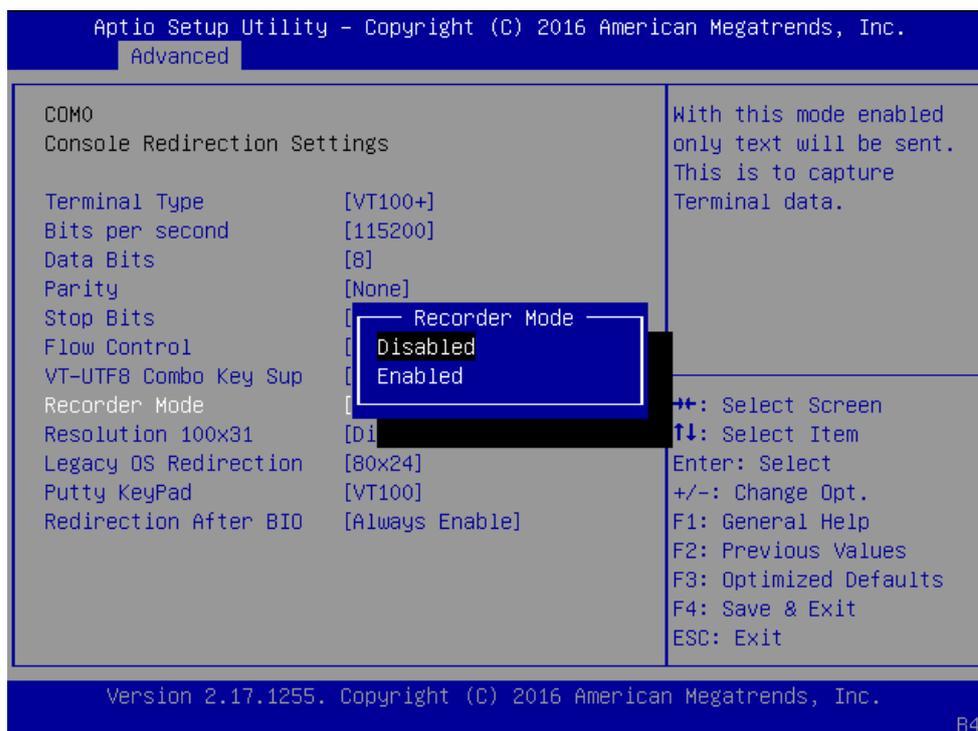


VT-UTF8 Combo Key Support: this option enables/disables VT-UTF8 combination key support for ANSI/VT100 terminals.

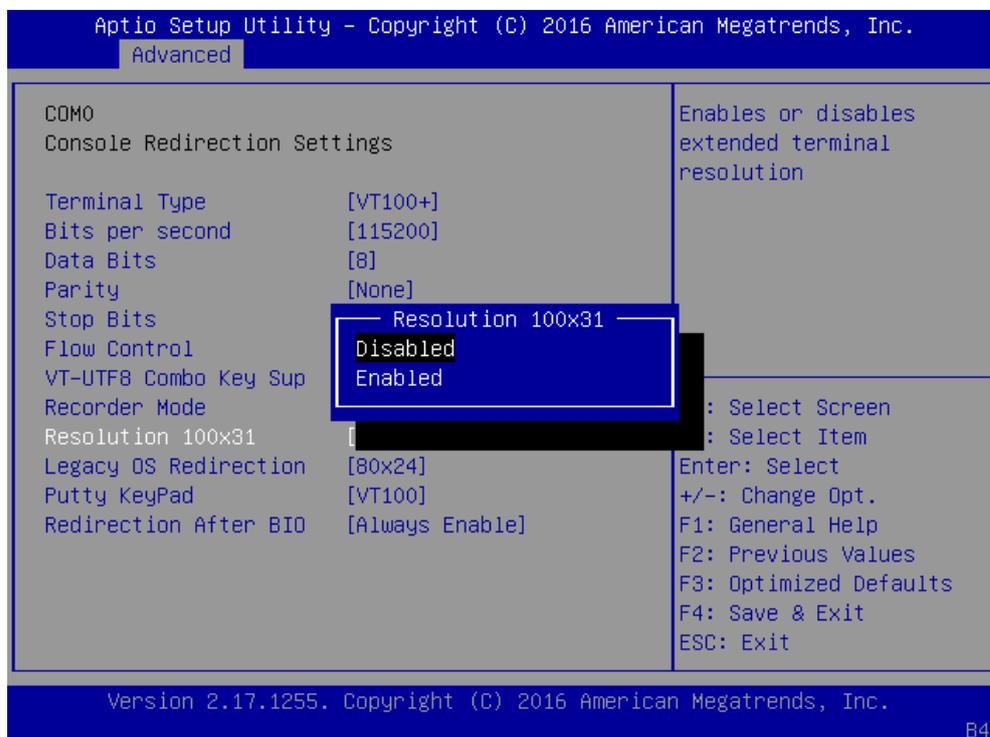


Network Computing Platforms

Recorder Mode: on this mode, when “Enabled”, only text will be sent. This is to capture terminal data.

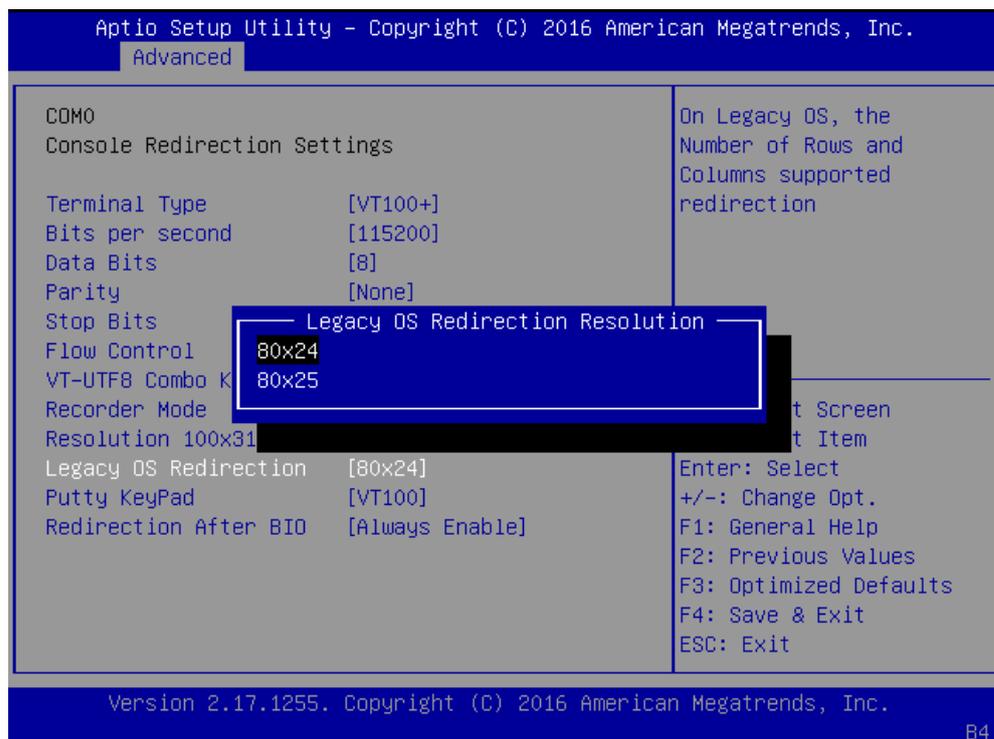


Resolution 100 x 31: select “Enable” or “Disable” for extended terminal resolution.

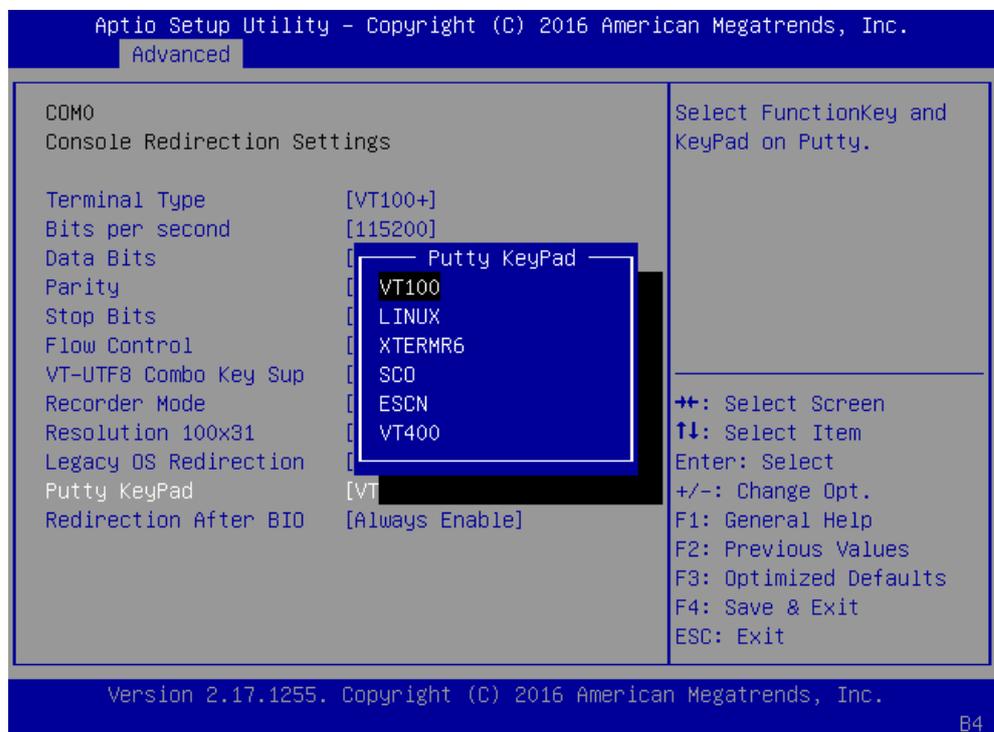


Network Computing Platforms

Legacy OS Redirection Resolution: select “80x24” or “80x25”. The default for this case is “80x24”.

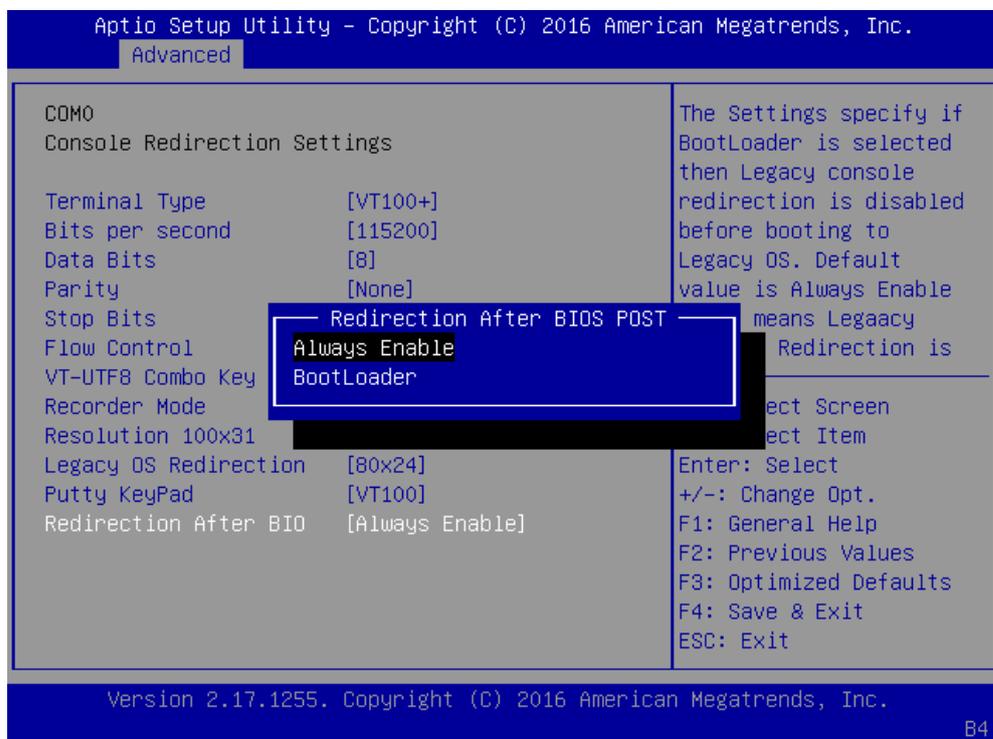


Putty KeyPad: select Function Key and Key Pad on Putty. You may select “VT100”, “LINUX”, “XTERMR6”, “SCO”, “ESCN”, or “VT400”.



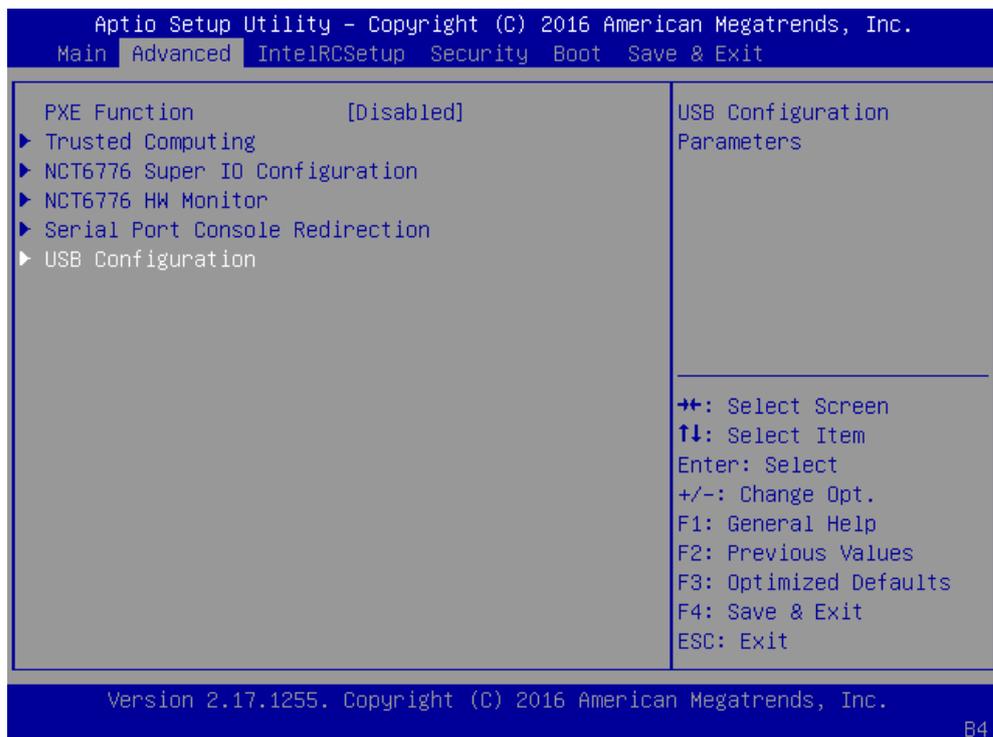
Network Computing Platforms

Redirection After BIOS POST: The settings specify if BootLoader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is “Always Enable” which means Legacy OS console redirection is always enabled after BIOS.



USB Configuration

This option allows you to configure USB device Settings.



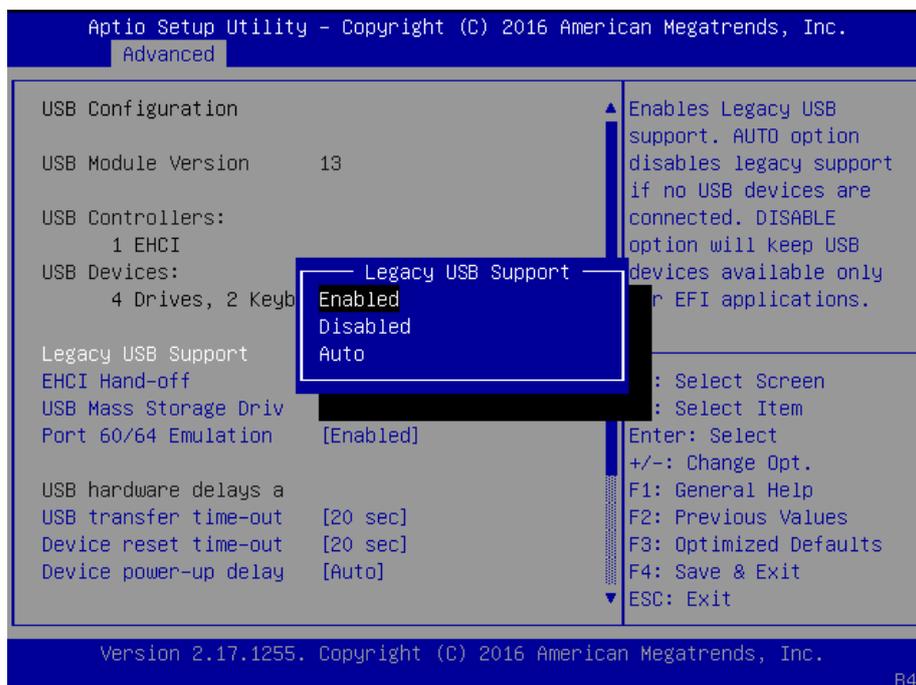
Network Computing Platforms

USB Module Version: displays USB module version

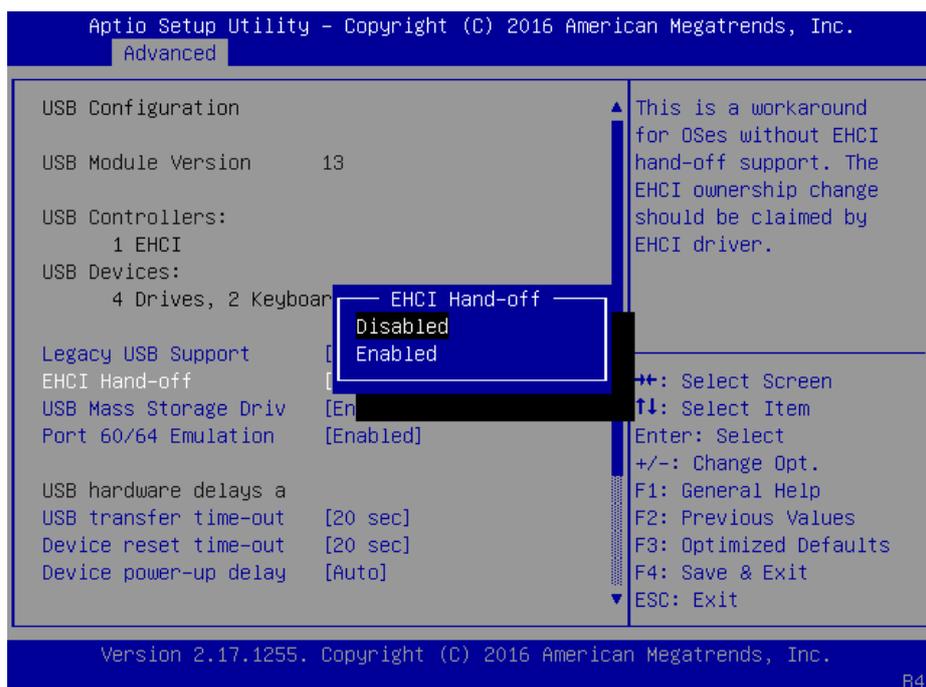
USB Devices: displays USB devices

USB Controllers: displays USB controller information

Legacy USB Support: this function enables or disables legacy USB support. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

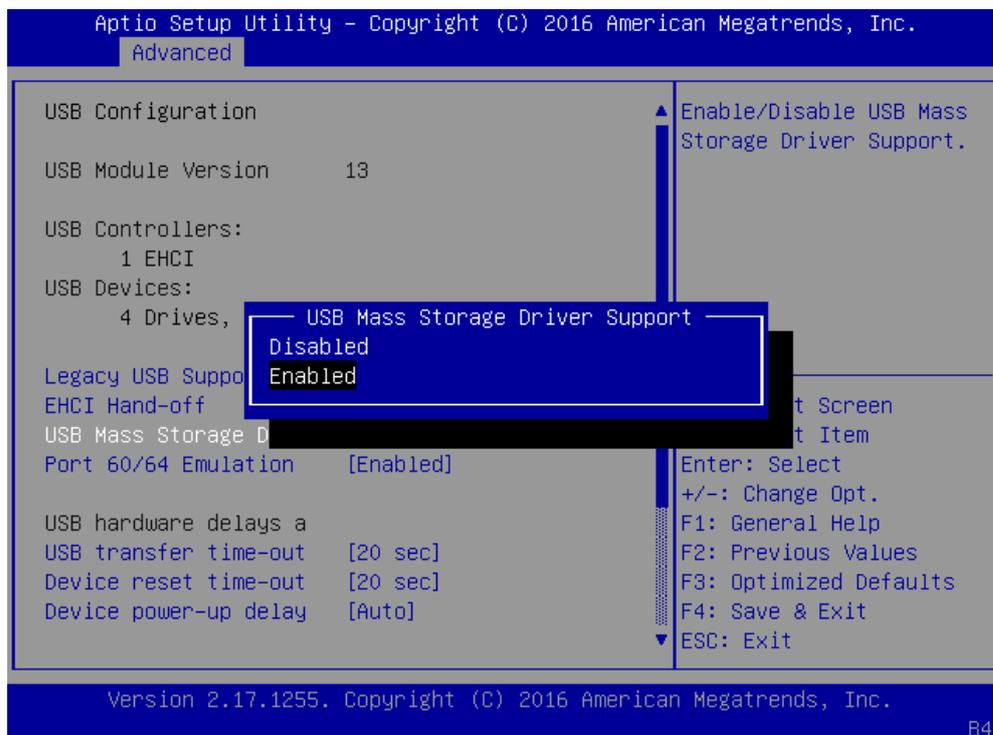


EHCI Hand-off: enables or disables EHCI Hand-off function. This is a workaround for operating systems without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

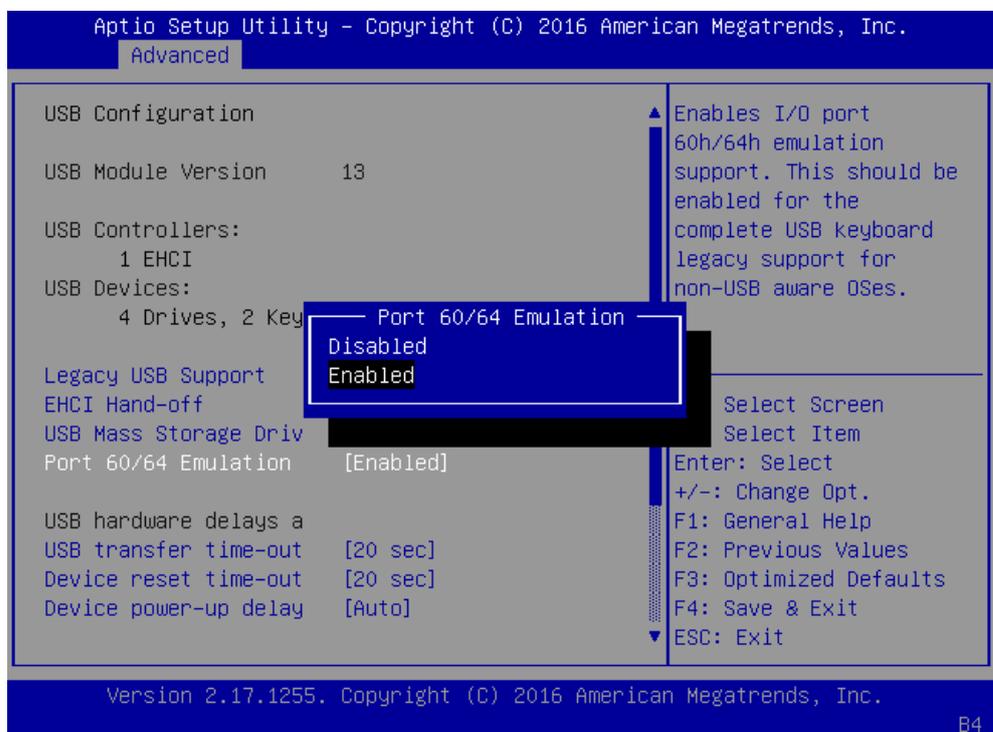


Network Computing Platforms

USB Mass Storage Driv: this option allows you to enable or disable USB mass storage driver. The default is “Enabled”.

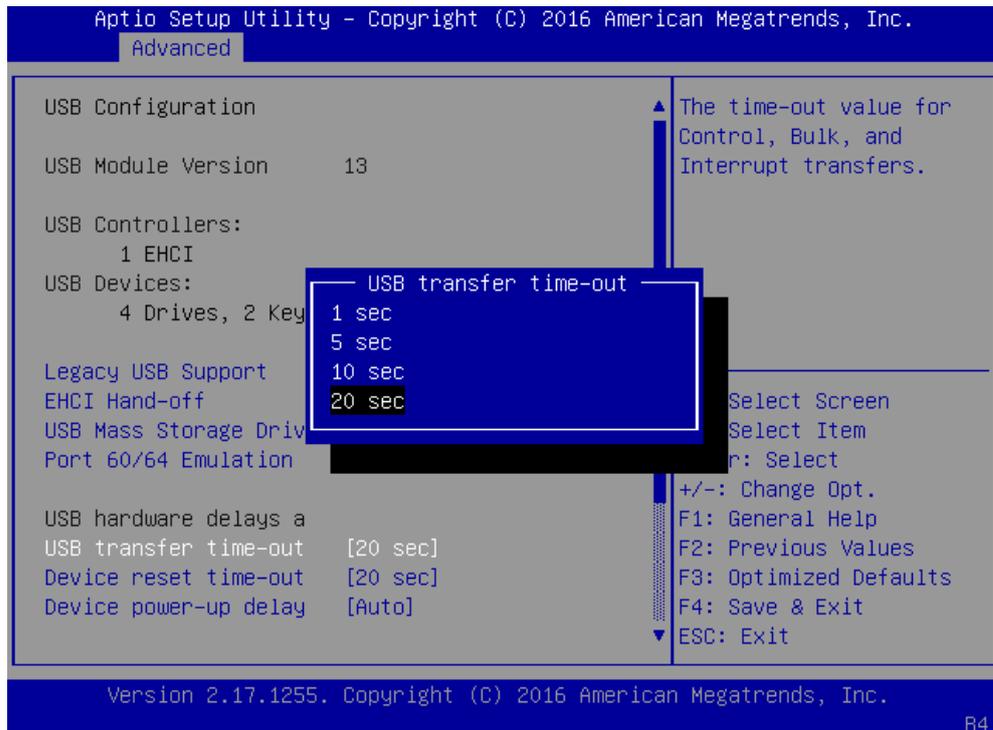


Port 60/64 Emulation: this option enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware operating systems.

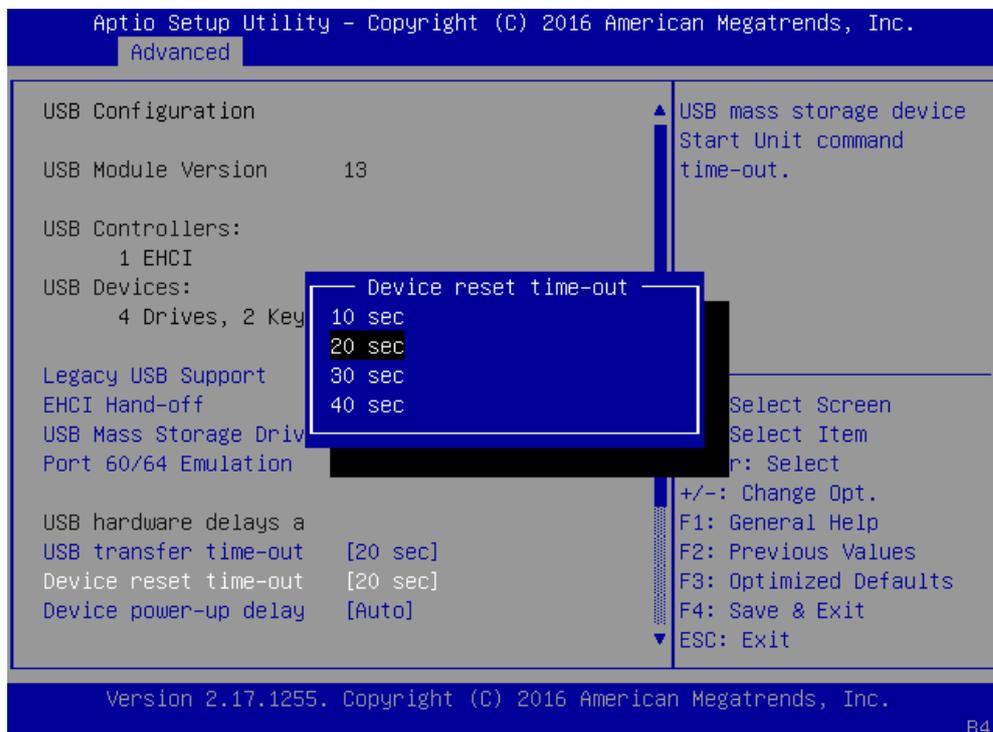


Network Computing Platforms

USB transfer time-out: set USB time-out value (1, 5, 10 or 20 seconds) for Control, Bulk and Interrupt transfers.

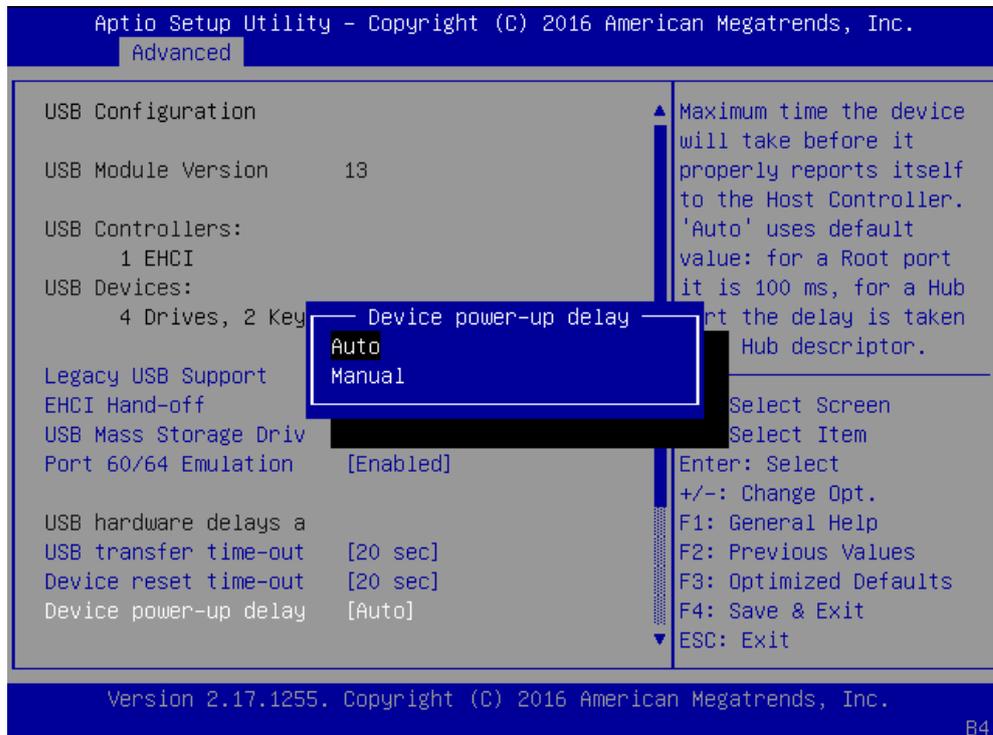


Device reset time-out: set USB mass storage device Start Unit command time-out (10, 20, 30 or 40 seconds).



Network Computing Platforms

Device power-up delay: set the maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value. For example, it is 100ms as a root port.

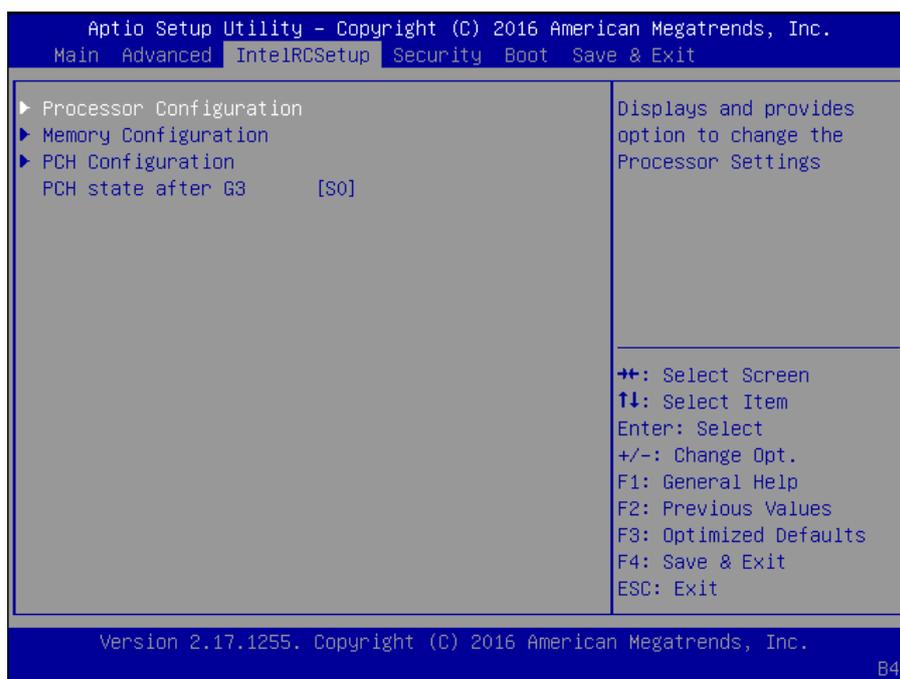


IntelRCSetup

Use [←] / [→] to select [IntelRCSetup] setup screen. Under this screen, you may use [↑] [↓] to select "Processor Configuration", "Memory Configuration", "PCH Configuration" or "PCH State after G3" to change the settings of CPU, memory and PCH functions.

Processor Configuration: displays and provides options to change processor settings.

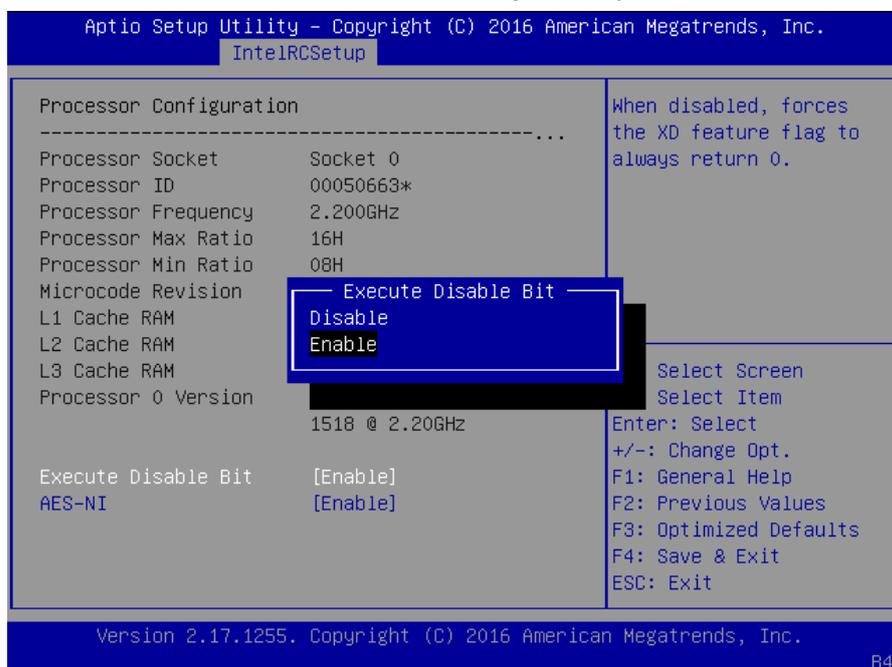
Press "Enter" to access its sub-menu.



Under Process Configuration, information about the CPU including socket, ID, frequency and cache information will be displayed.

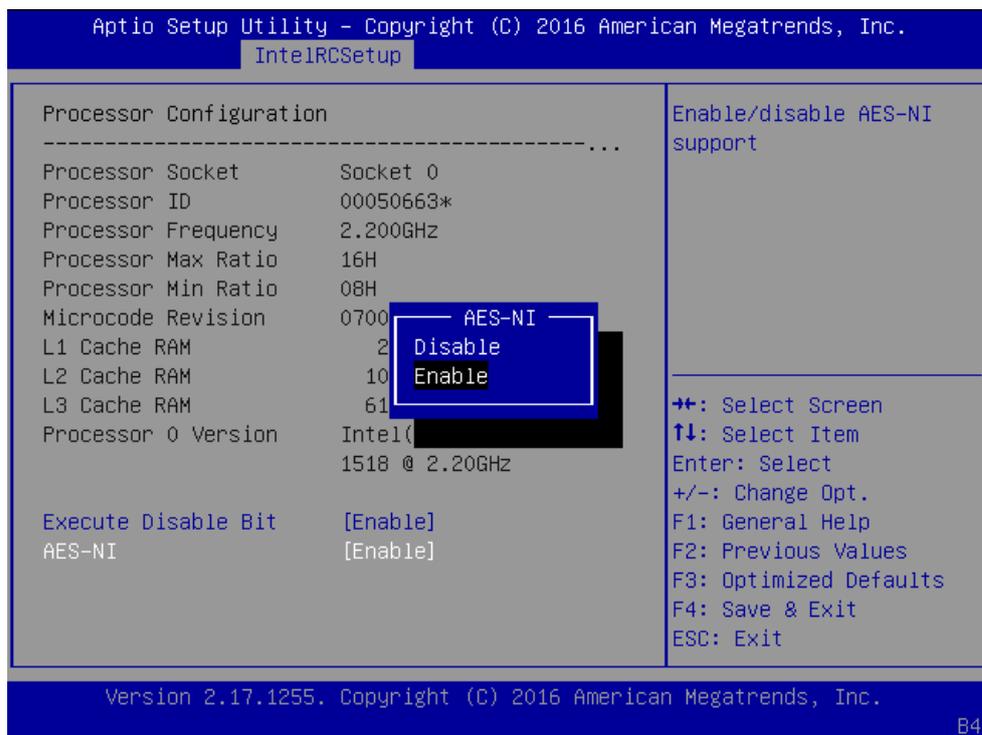
Execute Disable Bit: an Intel hardware-based protection against malicious code. It will detect the memory in which a code can be executed or not. When enabled, it will prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS.

When disabled, it forces the XD feature flag to always return 0.



Network Computing Platforms

AES-NI: enables or disables AES-NI (Advanced Encryption Standard - New Instruction) support.



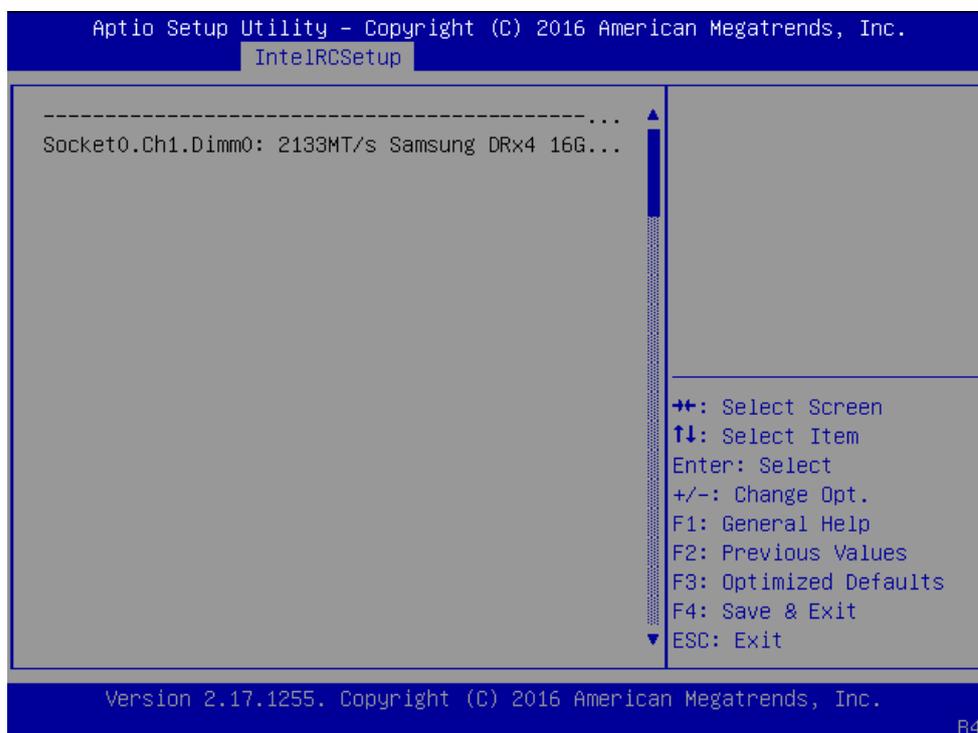
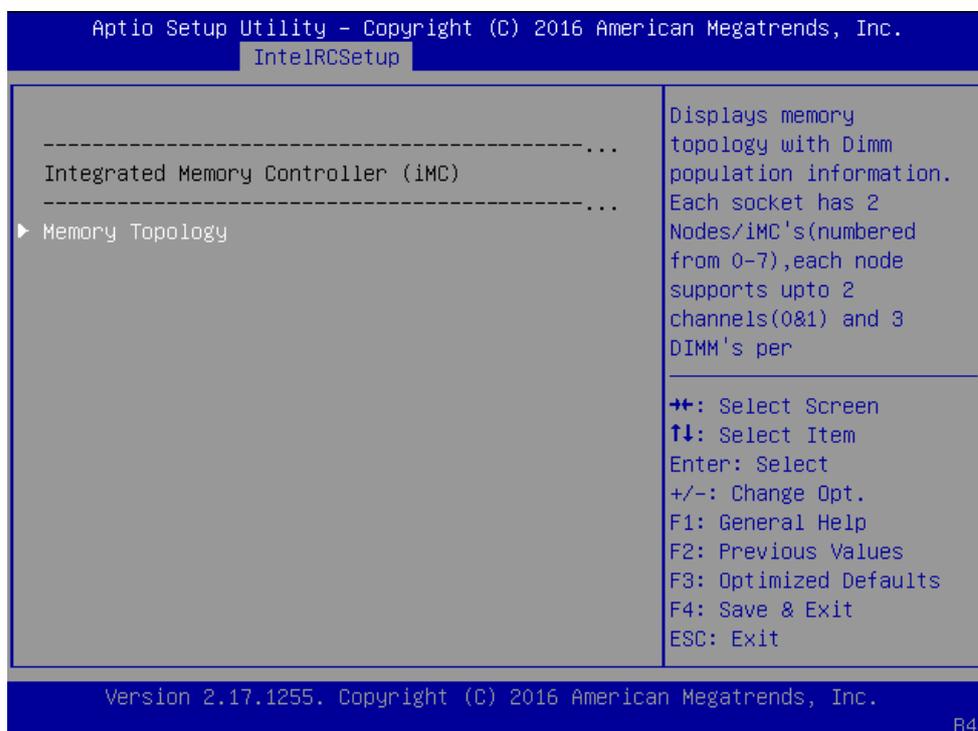
Memory Configuration

Memory Configuration displays and provides options to change the memory settings. You may press "Enter" to access the sub-menu.



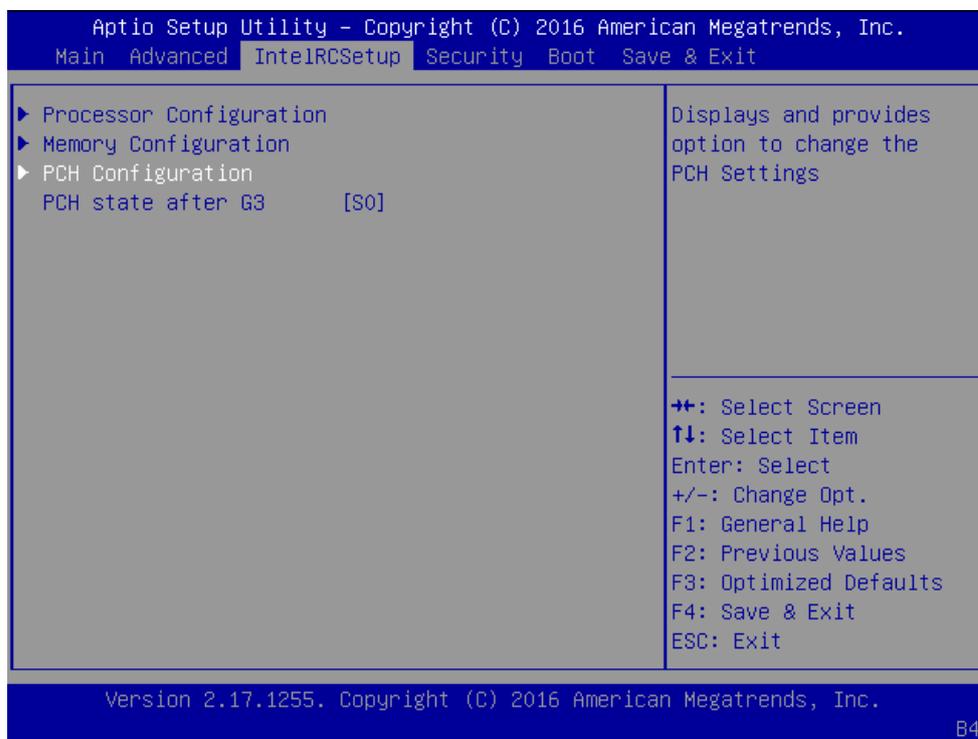
Network Computing Platforms

Memory Topology: this option displays memory topology with DIMM population information. Each socket has 2 nodes/iMC's (numbered from 0 to 7). Each node supports up to 2 channels (0 and 1). (0 and 1).



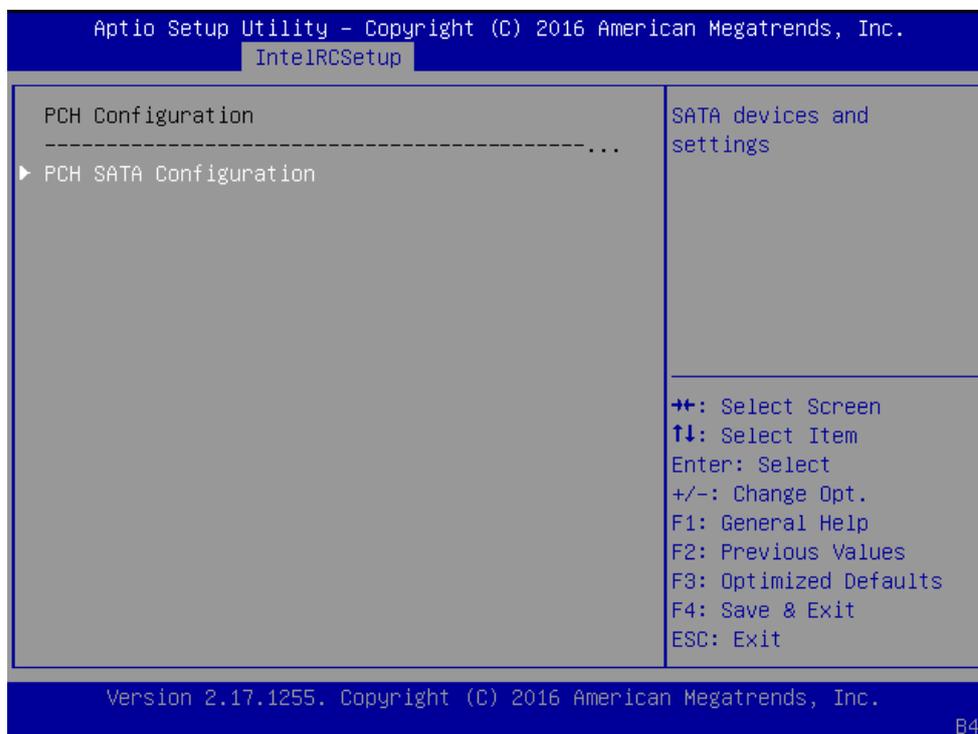
PCH Configuration

This function allows users to view and configure PCH settings. Press Enter to access the sub-menu.

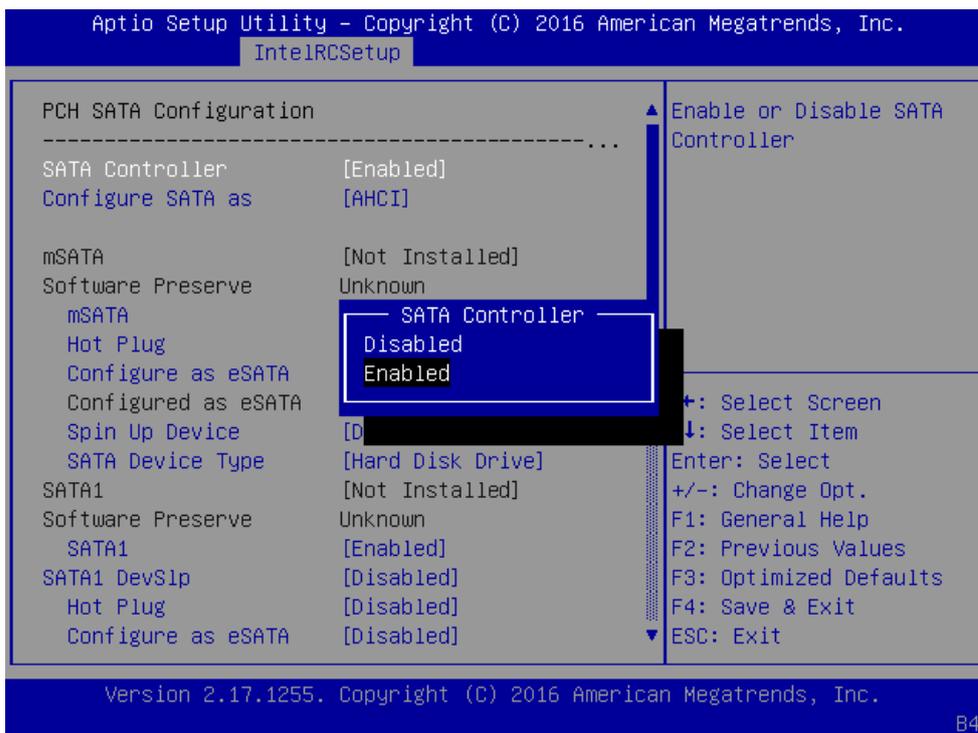


PCH SATA Configuration

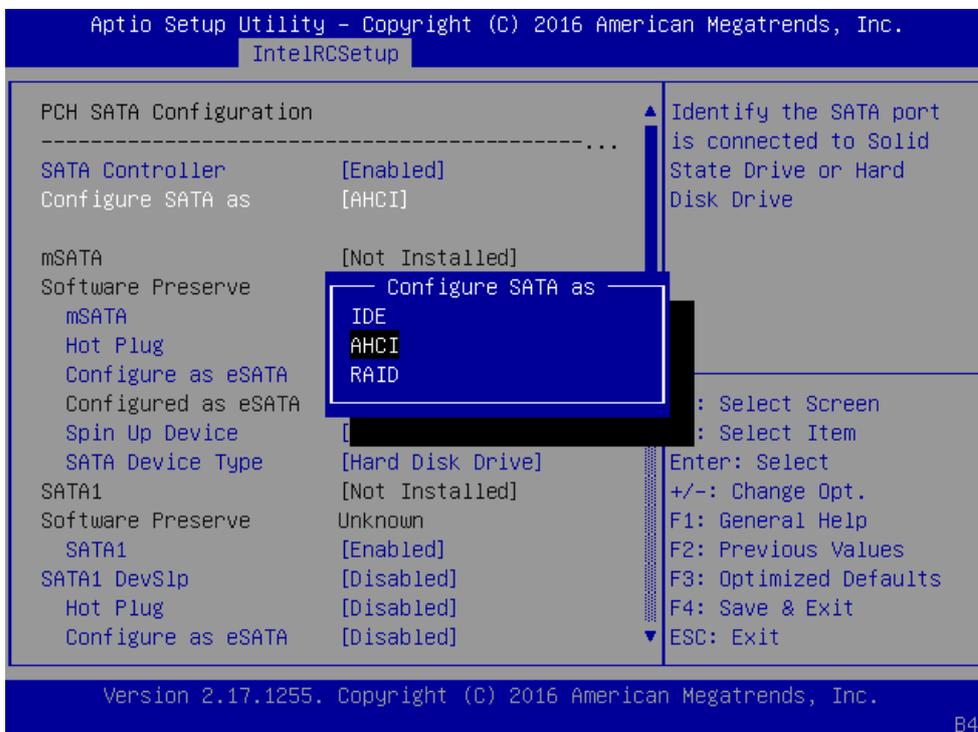
Press Enter to access items for SATA devices and settings.



SATA Controller: enables or disables SATA controller



Configure SATA as: this item identifies whether the SATA port is connected to a SSD and HDD. Select IDE, AHCI or RAID. The default is "AHCI".

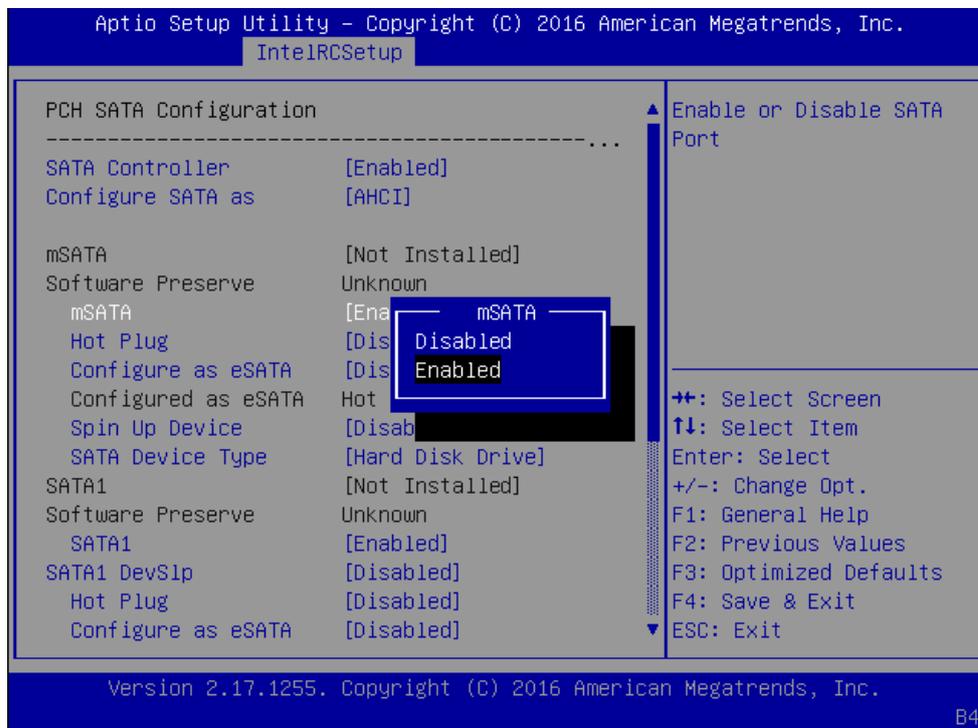


Network Computing Platforms

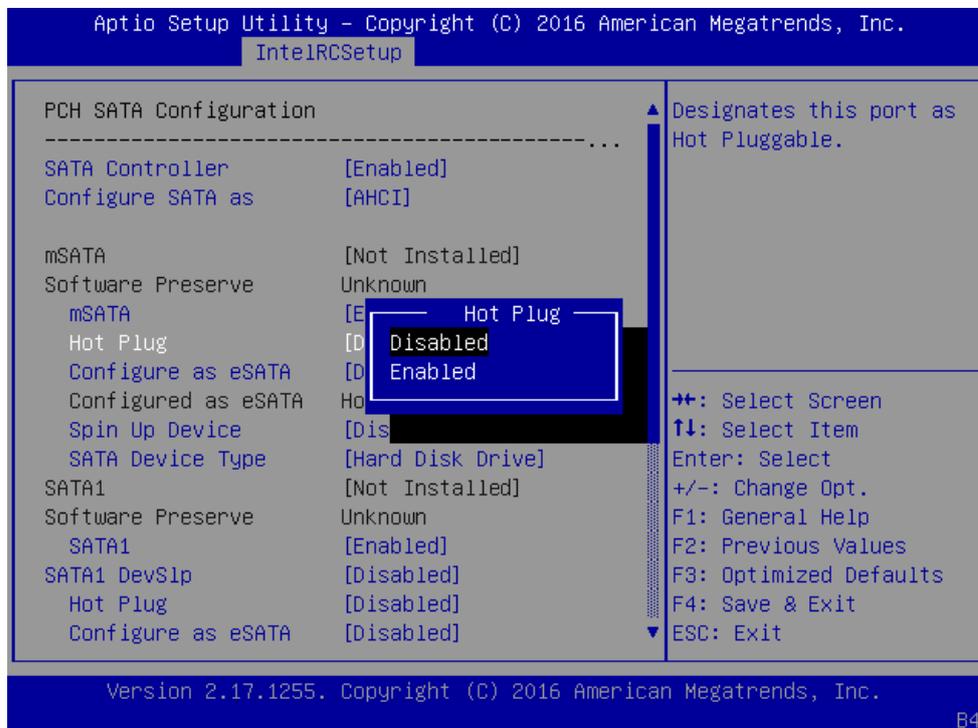
mSATA: displays status of mSATA storage device

Software Preserve: displays information of Software Preserve

mSATA: enable or disable mSATA socket

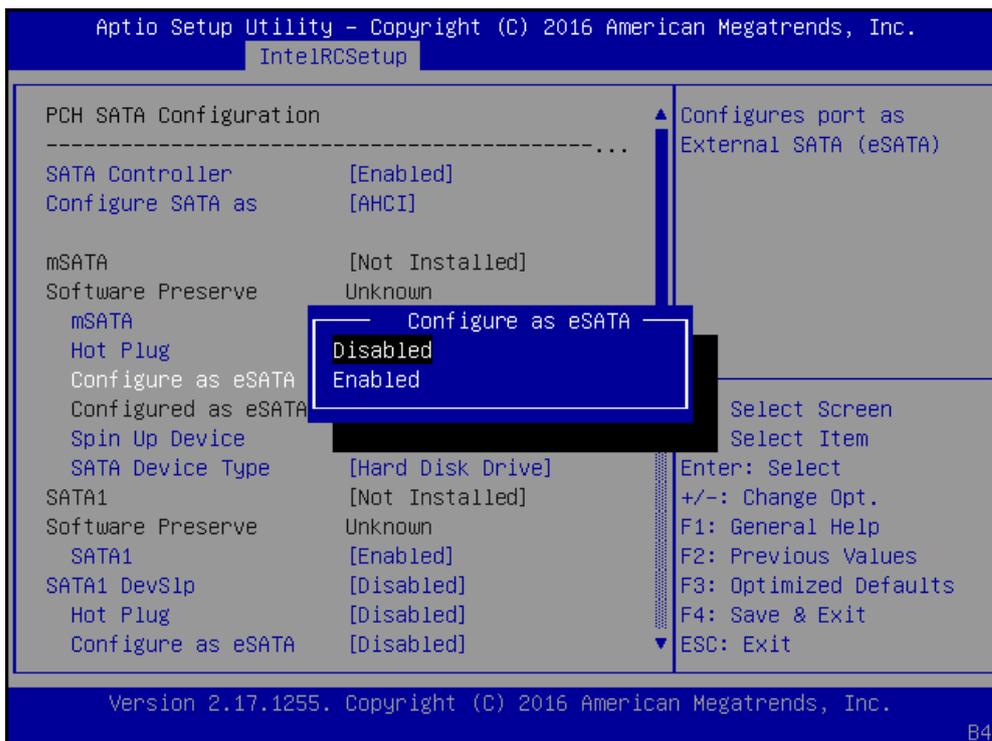


Hot Plug: designates this port as hot pluggable

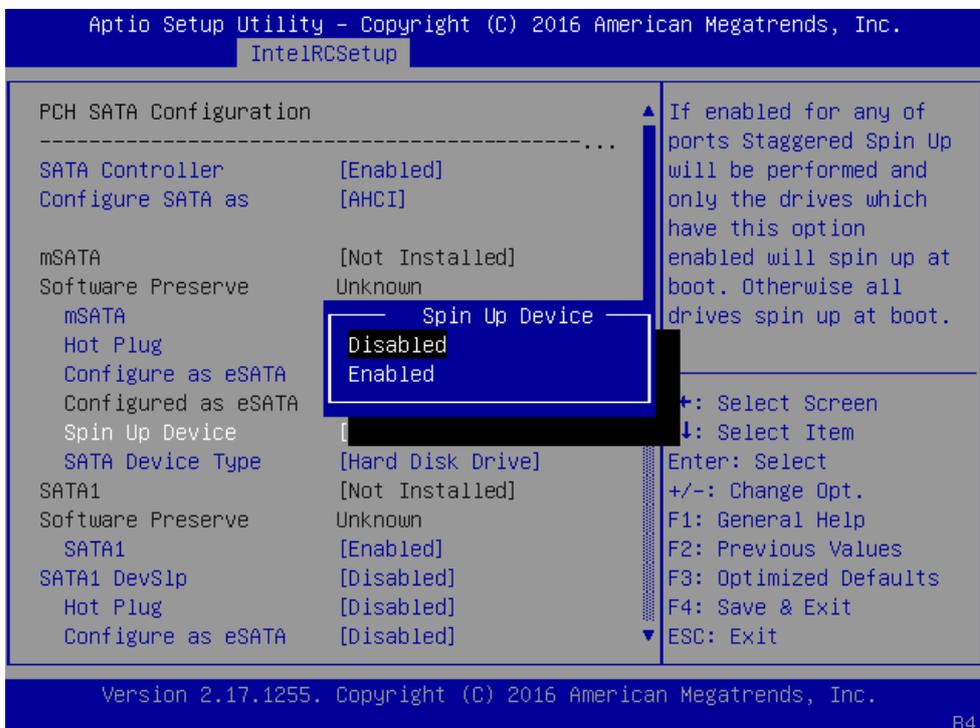


Network Computing Platforms

Configure as eSATA: configures the port as External SATA (eSATA)

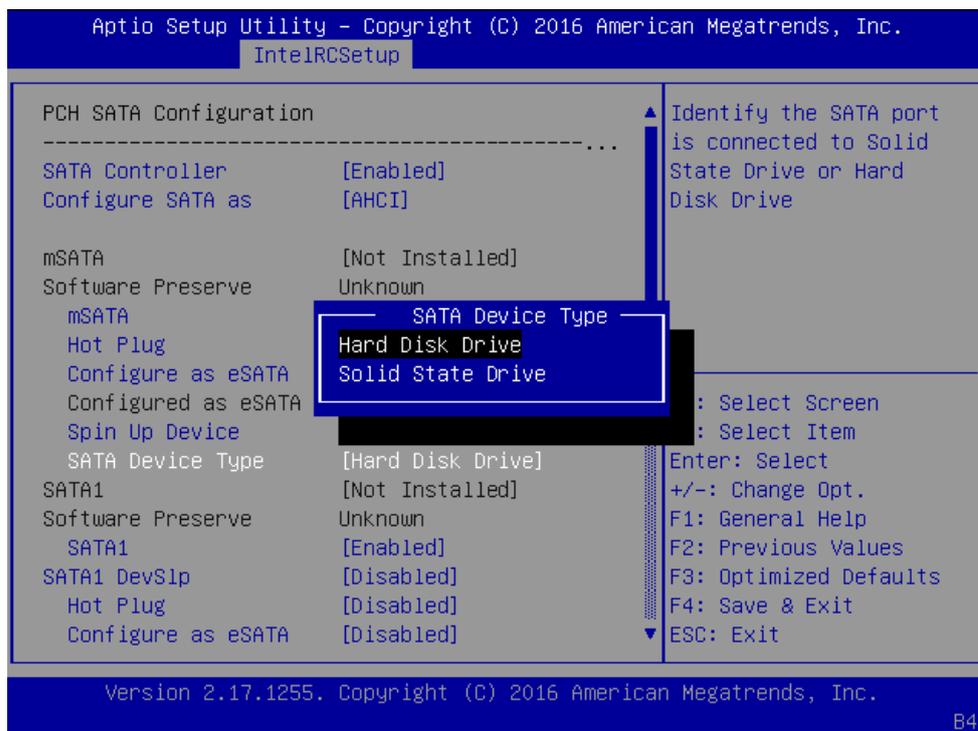


Spin Up Device: if enabled for any of ports, Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

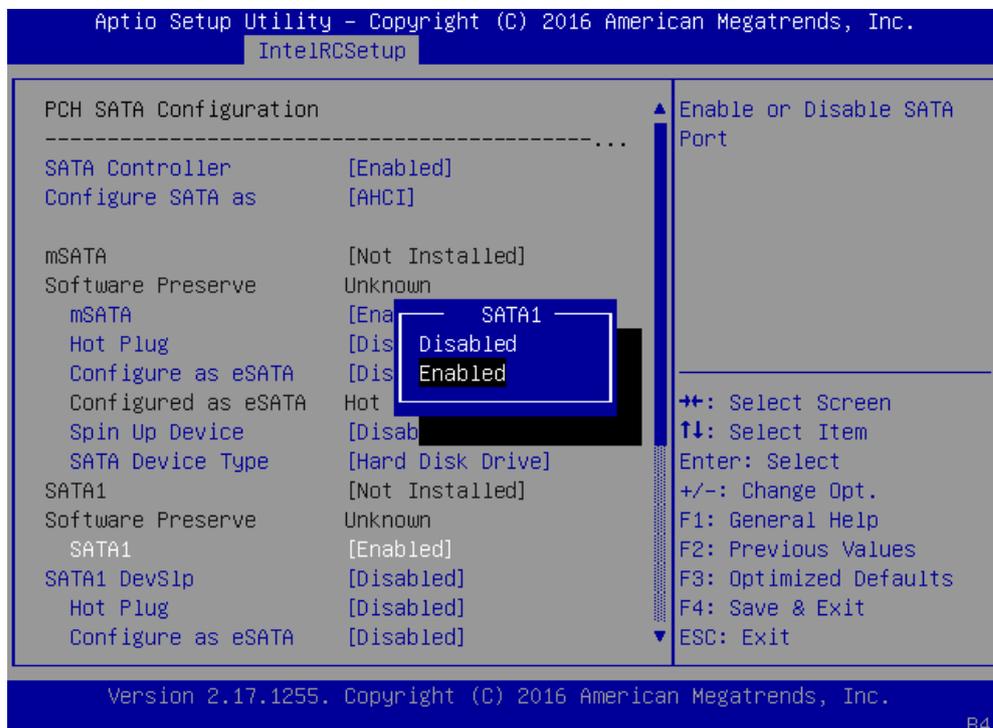


Network Computing Platforms

SATA Device Type: identifies the SATA port is connected to SSD (Solid State Drive) or HDD (Hard Disk Drive).

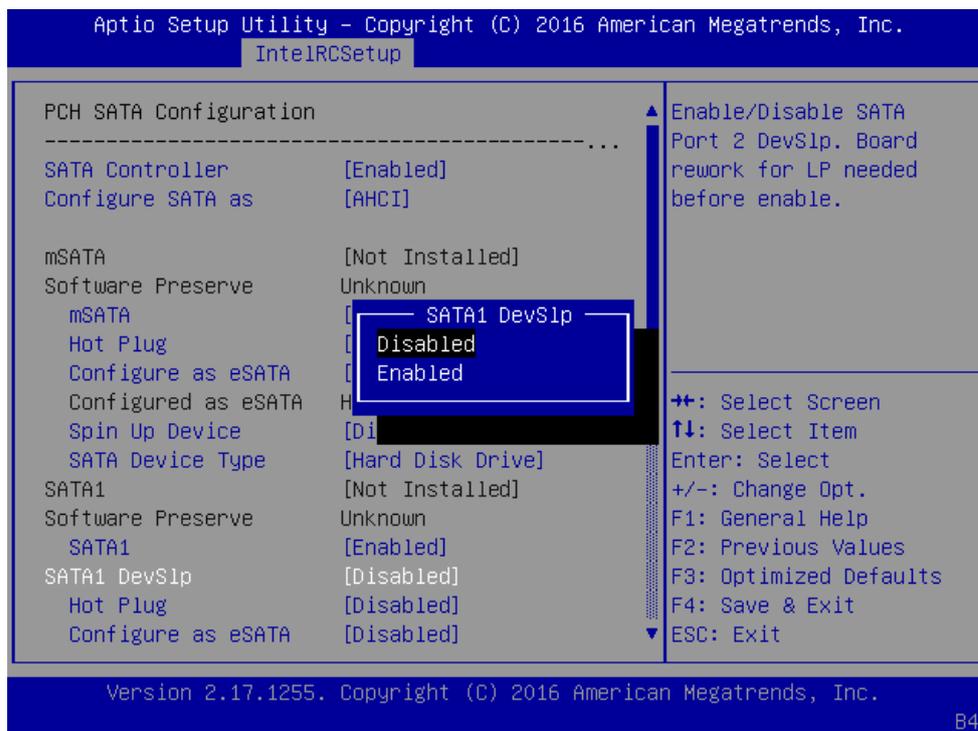


SATA1: enable or disable the SATA port

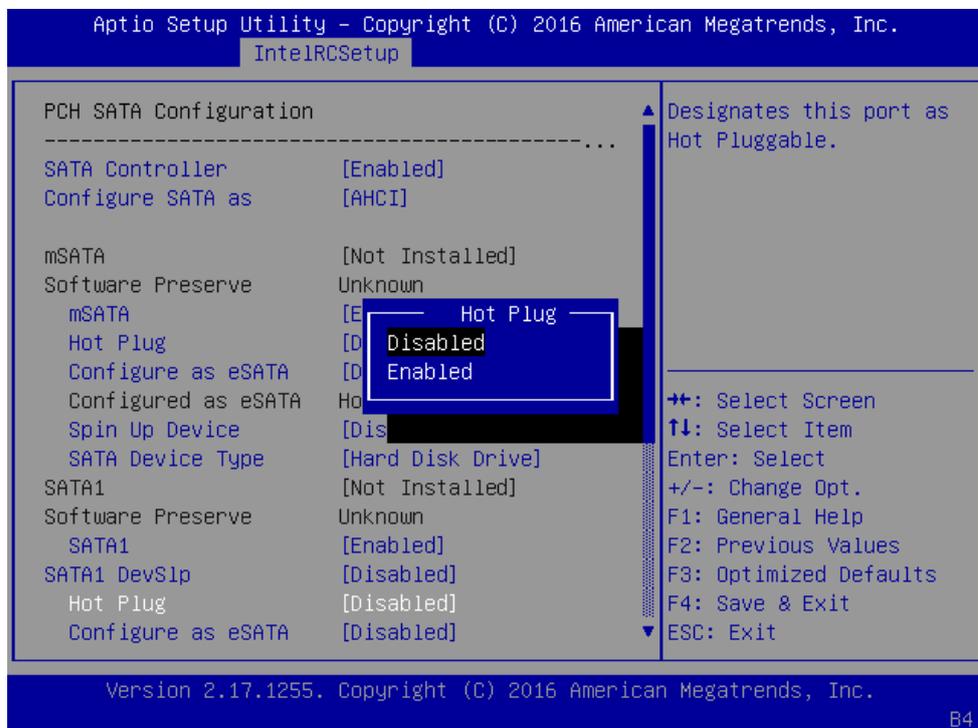


Network Computing Platforms

SATA1 DevSlp: enable or disable the SATA port Device Sleep. Board rework for LP is needed before enabling this power-saving function.

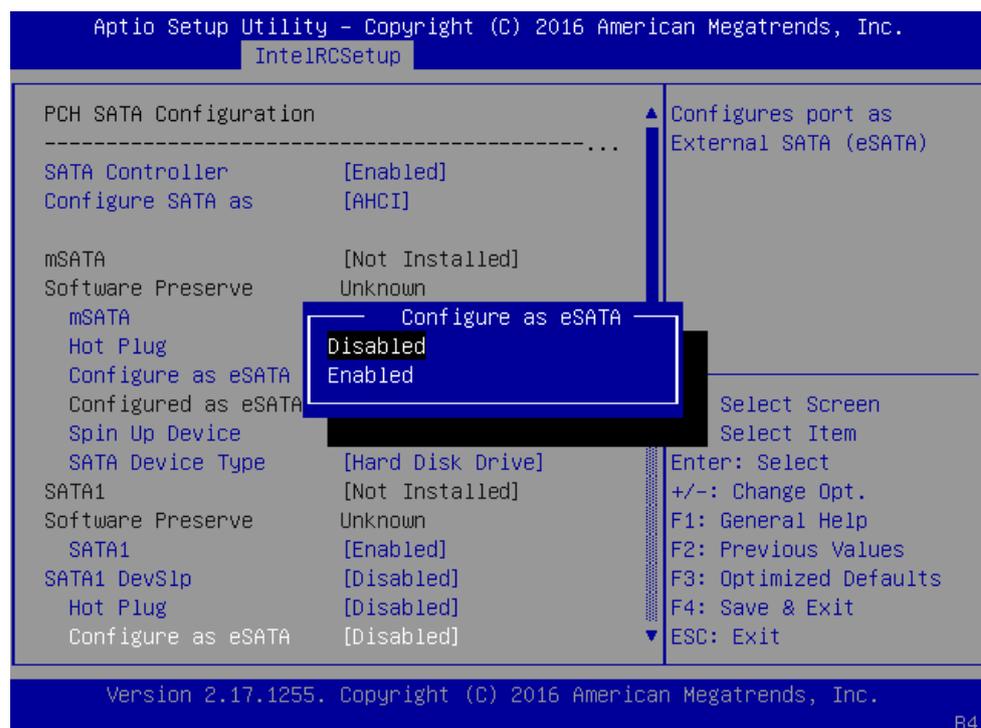


Hot Plug: designates this port as hot pluggable

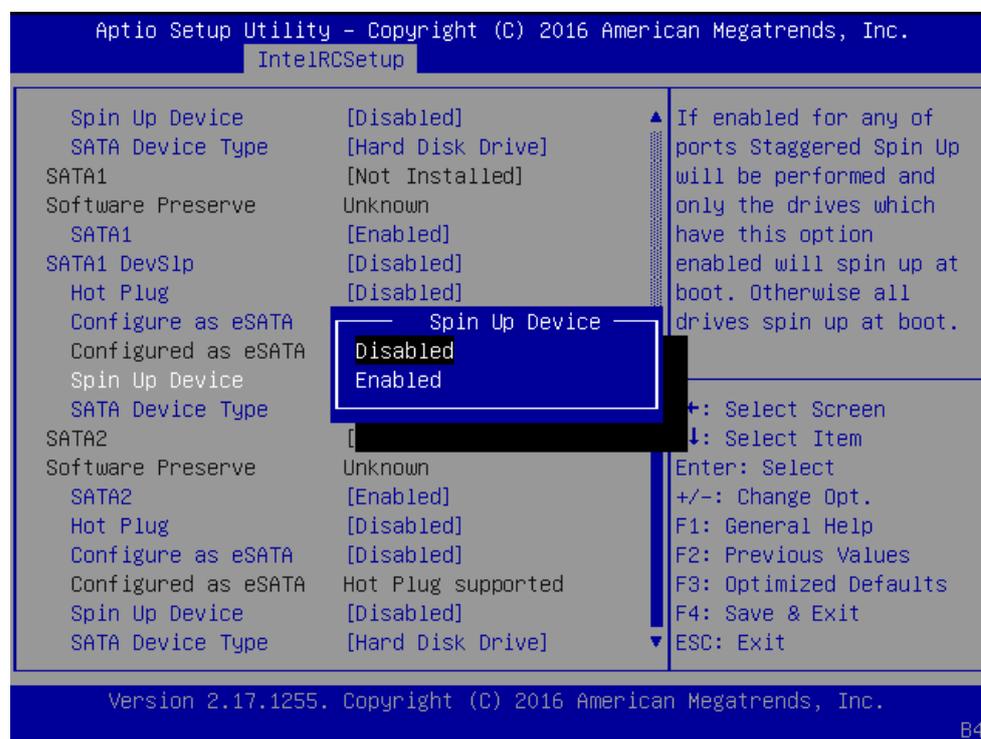


Network Computing Platforms

Configure as eSATA: configures the port as External SATA (eSATA)

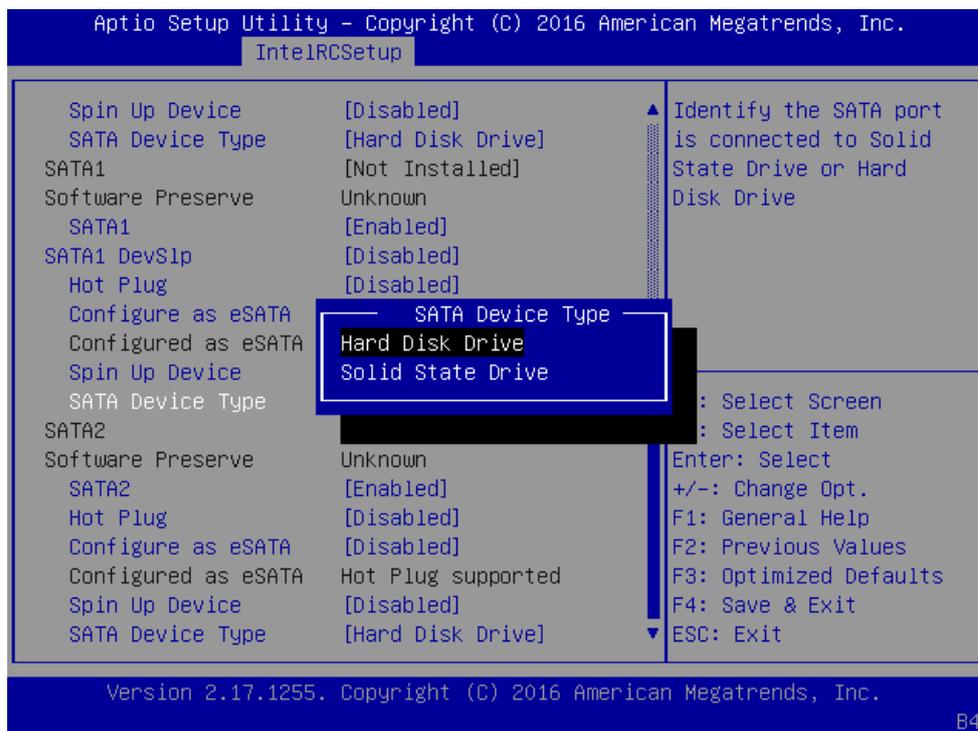


Spin Up Device: if enabled for any of ports, Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

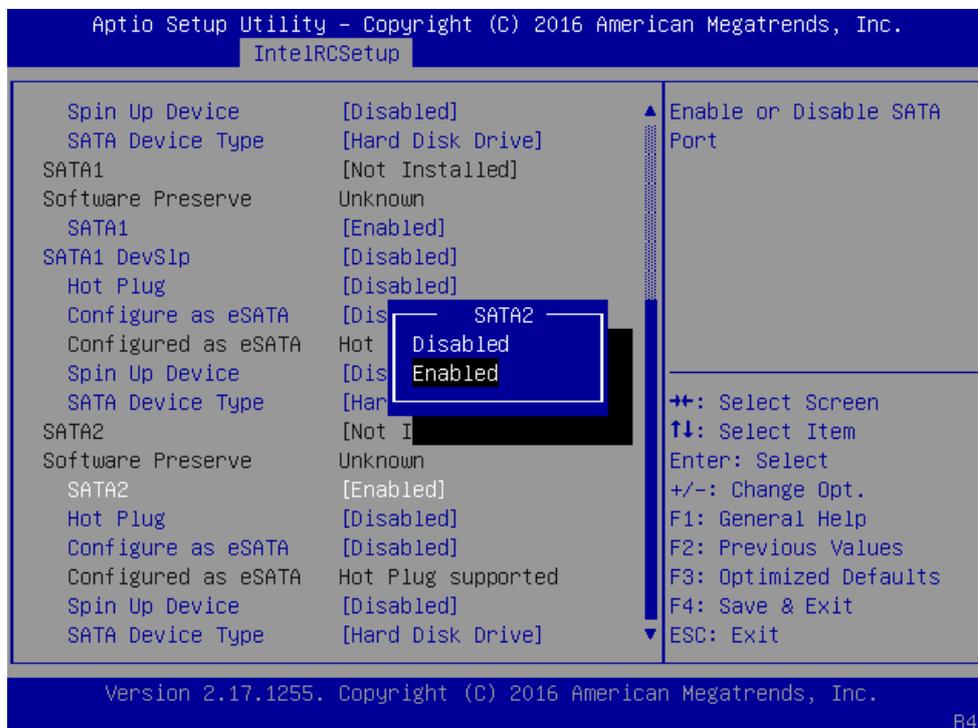


Network Computing Platforms

SATA Device Type: identifies the SATA port is connected to SSD (Solid State Drive) or HDD (Hard Disk Drive).

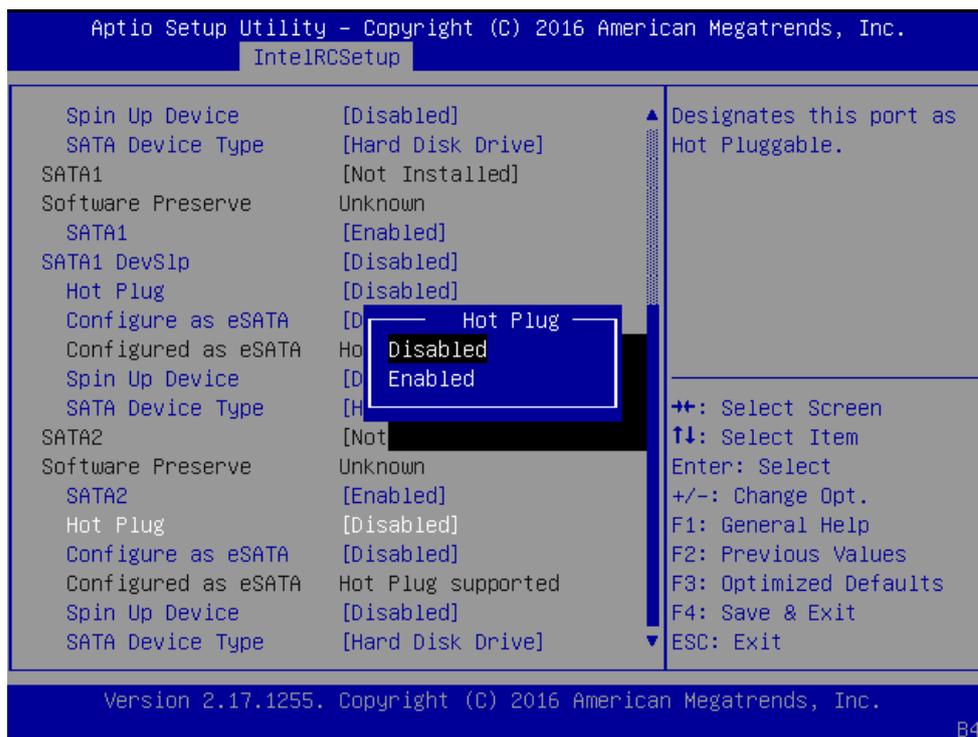


SATA2: enable or disable the SATA port

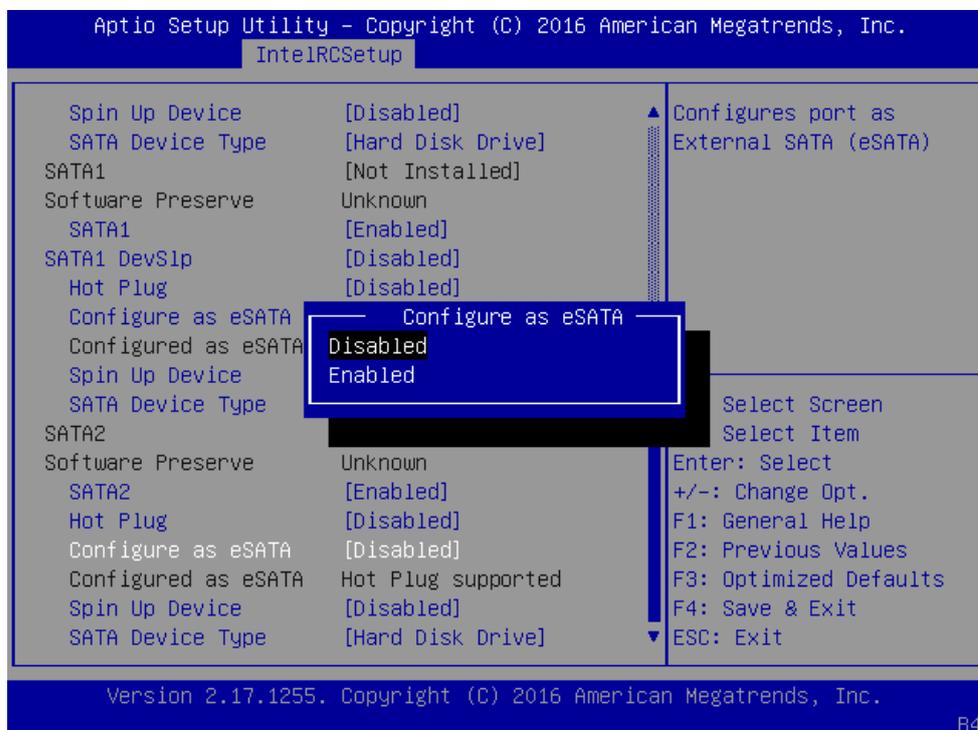


Network Computing Platforms

Hot Plug: designates this port as hot pluggable

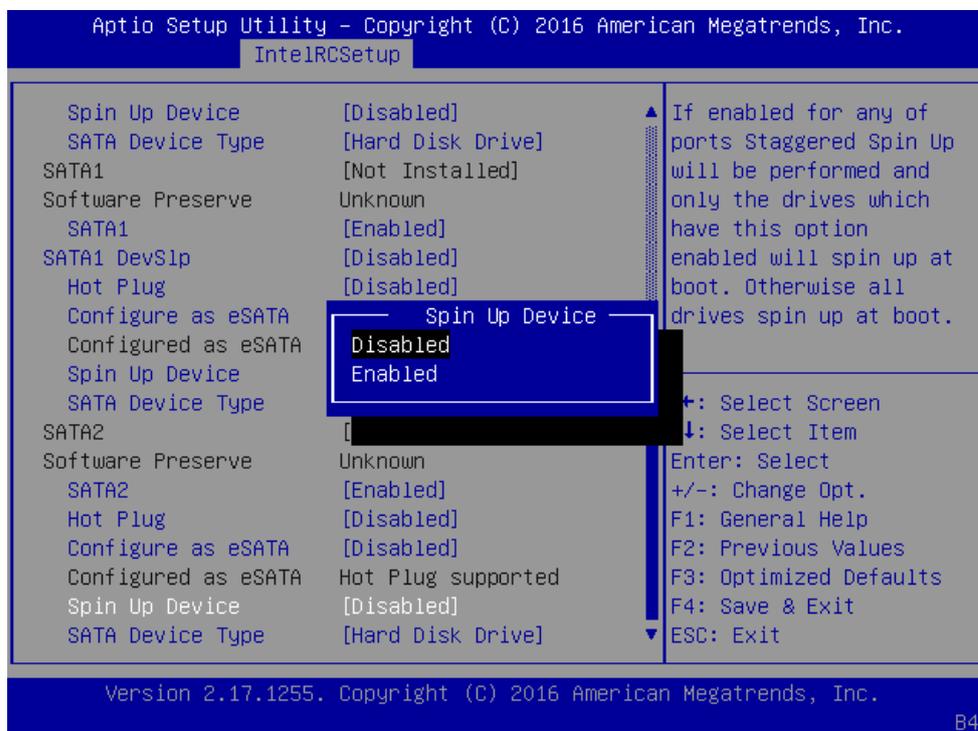


Configure as eSATA: configures the port as External SATA (eSATA)

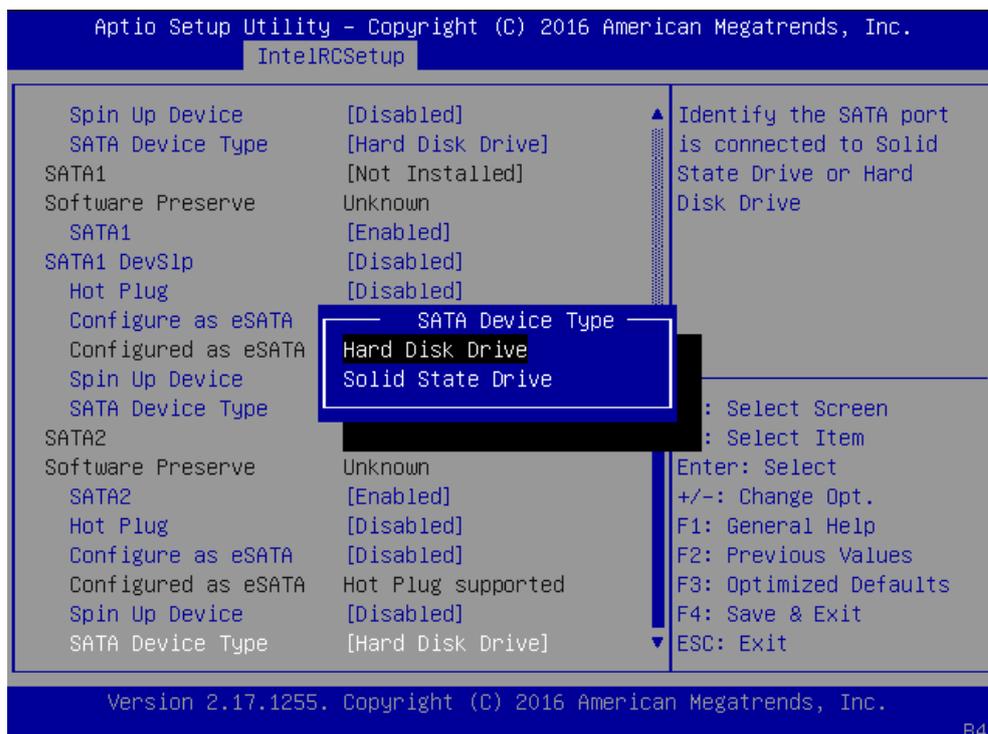


Network Computing Platforms

Spin Up Device: if enabled for any of ports, Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.



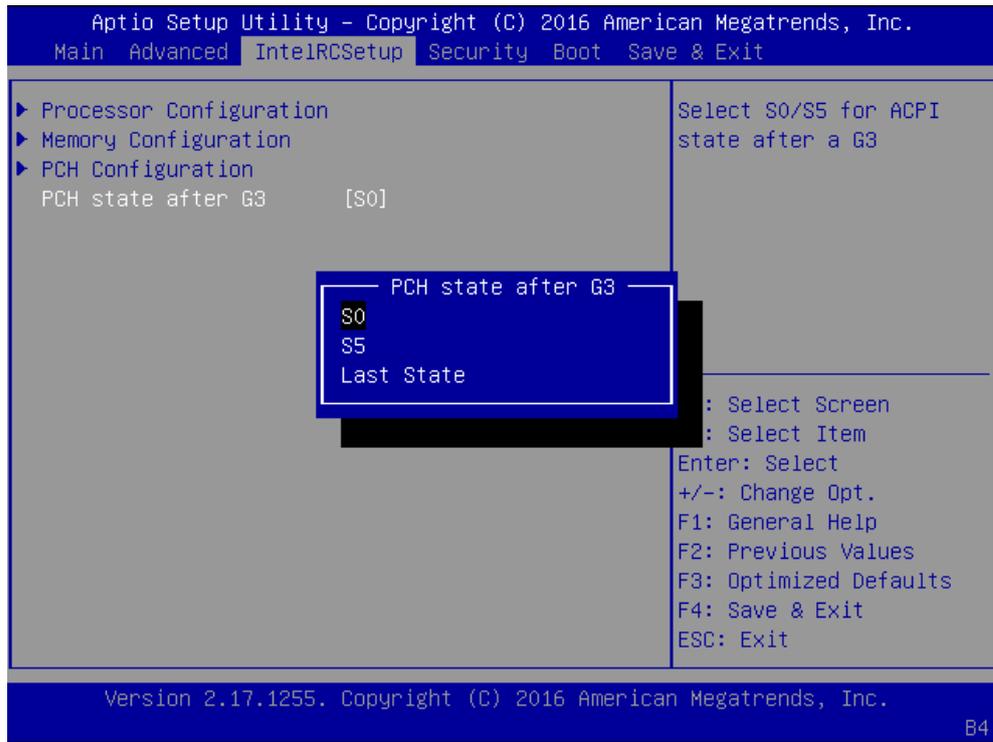
SATA Device Type: identifies the SATA port is connected to SSD (Solid State Drive) or HDD (Hard Disk Drive).



Network Computing Platforms

PCH State after G3:

Select S0/S5 for ACPI state after a G3. The choices are “S0”, “S5” or “Last State”.



Security

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

Administrator Password: set administrator password. Once set, then this only limits access to Setup and is only asked for when entering Setup.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  IntelIRCSSetup  Security  Boot  Save & Exit
-----
Password Description
-----
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length          3
Maximum length         20

Administrator Password
User Password

-----
Set Administrator Password
-----
++: 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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B4
    
```

User Password: set user password. Once set, then this is a power-on password and must be entered to boot or enter Setup. In Setup, the user will have Administrator rights.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  IntelIRCSSetup  Security  Boot  Save & Exit
-----
Password Description
-----
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length          3
Maximum length         20

Administrator Password
User Password

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

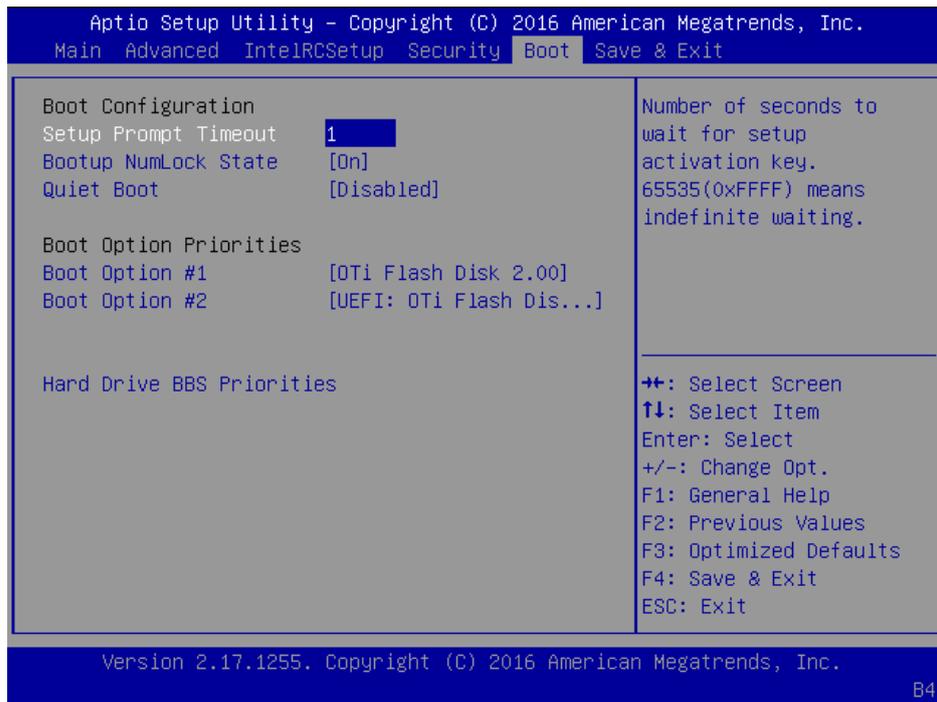
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
B4
    
```

Boot

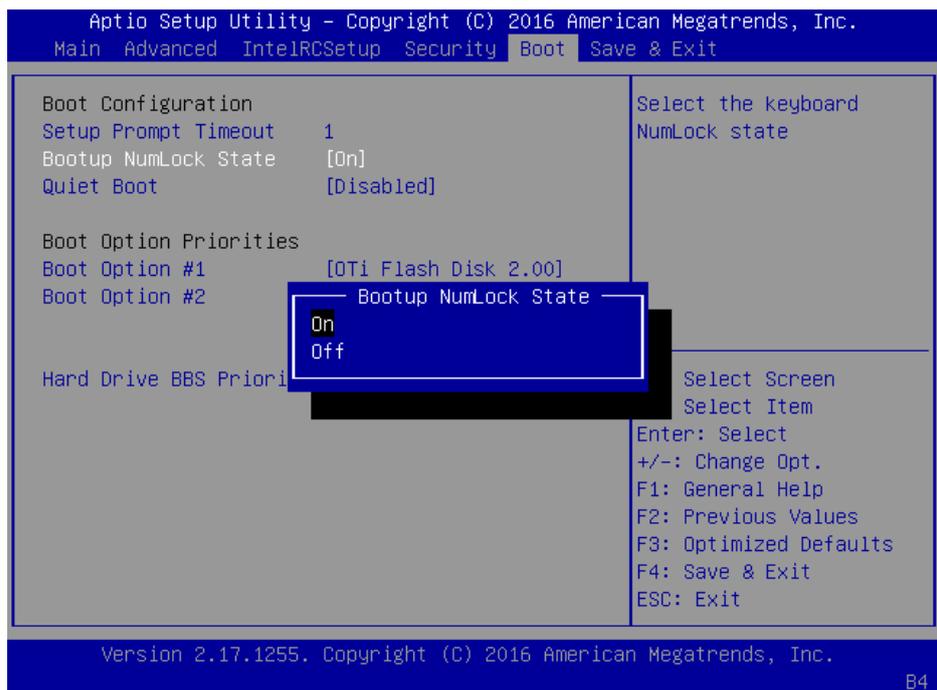
Use [←] / [→] to select [Boot] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

Boot Configuration

Setup Prompt Timeout: number of seconds to wait for setup activation key. “65535 (0xFFFF)” means indefinite waiting.

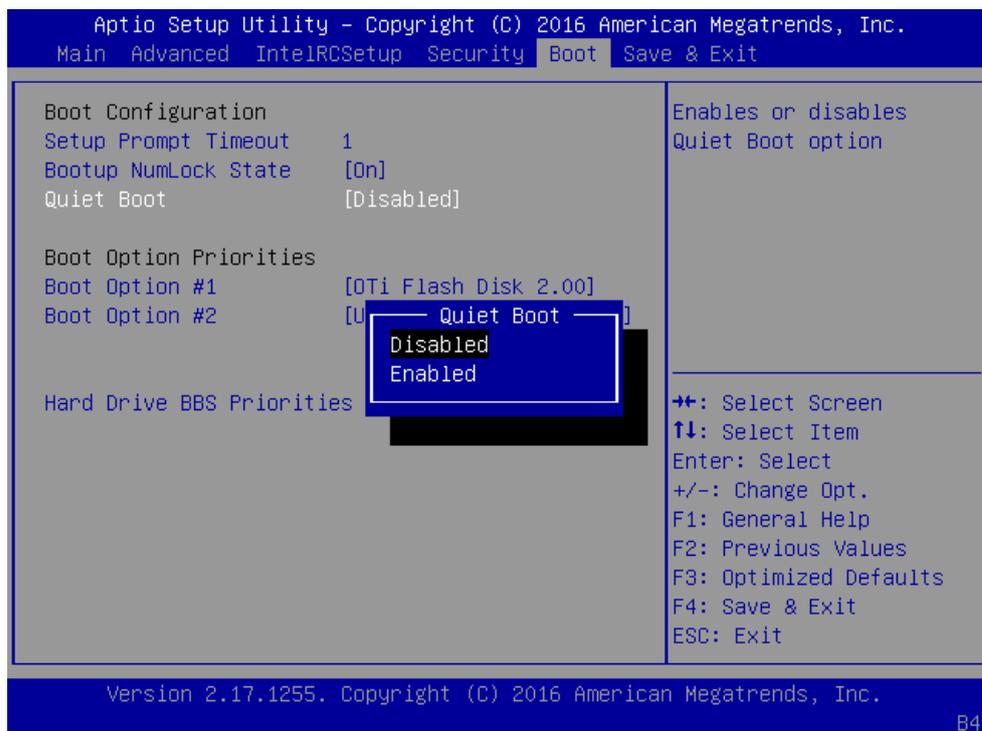


Bootup Numlock State: select the keyboard “Numlock” state



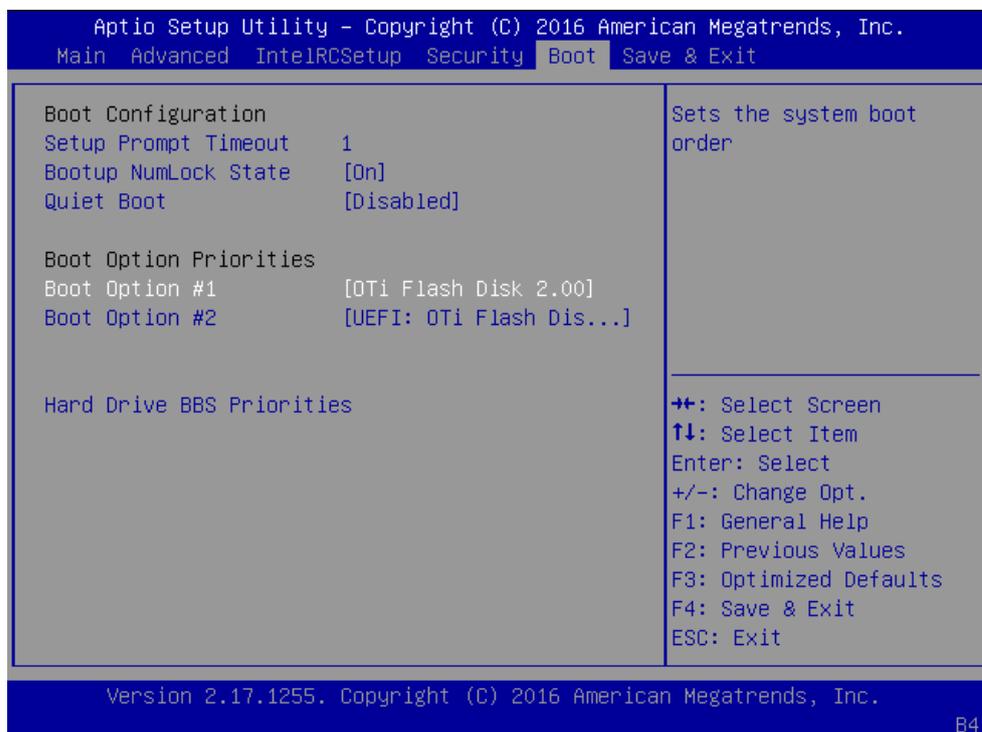
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Quiet Boot: this option allows you to enable or disable “Quiet Boot”. The default is “Disabled” based on Intel’s server environment setting.



Boot Option Priorities

Boot Option #1/2: set devices as boot option #1/2 for the system boot order



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USB Device BBS Priorities: set the order of the legacy devices in this group

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  IntelRCSetup  Security  Boot  Save & Exit

Boot Configuration
Setup Prompt Timeout      1
Bootup NumLock State      [On]
Quiet Boot                 [Disabled]

Boot Option Priorities
Boot Option #1             [0Ti Flash Disk 2.00]
Boot Option #2             [UEFI: 0Ti Flash Dis...]

Hard Drive BBS Priorities

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

Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
B4
```

Save & Exit

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

Save Changes and Exit: exit system setup after saving the configuration changes

Discard Changes and Exit: exit system setup without saving the configuration changes

Save Changes and Reset: reset the system after saving the configuration changes

Discard Changes and Reset: reset the system without saving the configuration changes

Save Options

Save Changes: save the configuration changes

Discard Changes: discard all the configuration changes

Restore Defaults: restore to factory default setting

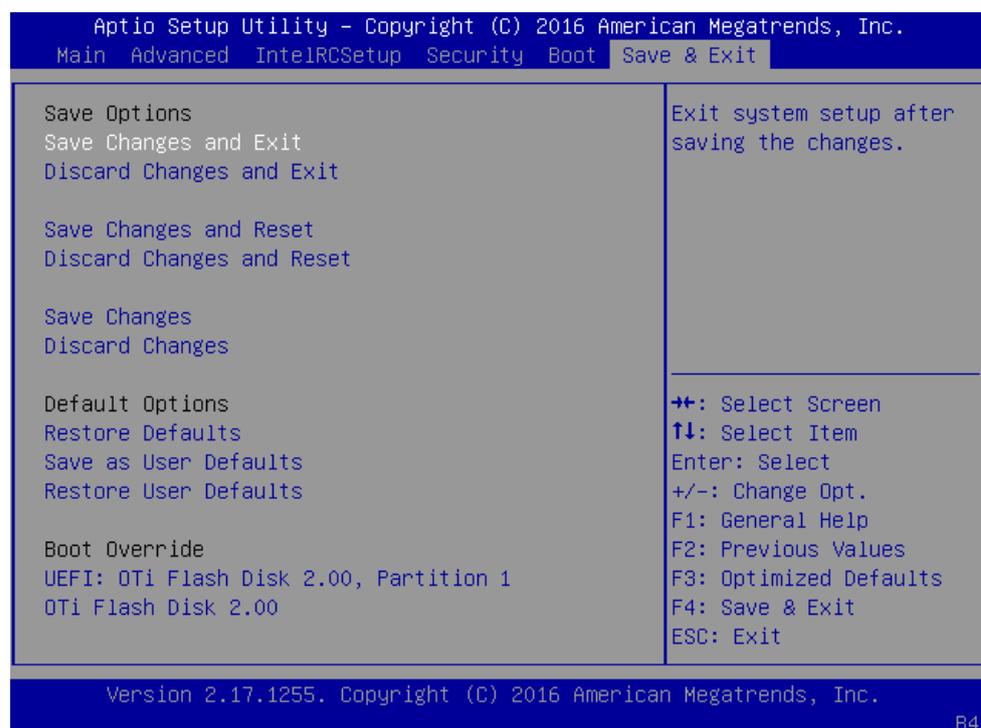
Save as User Defaults: save changes as the new user default

Restore User Defaults: restore the user default

Boot Override

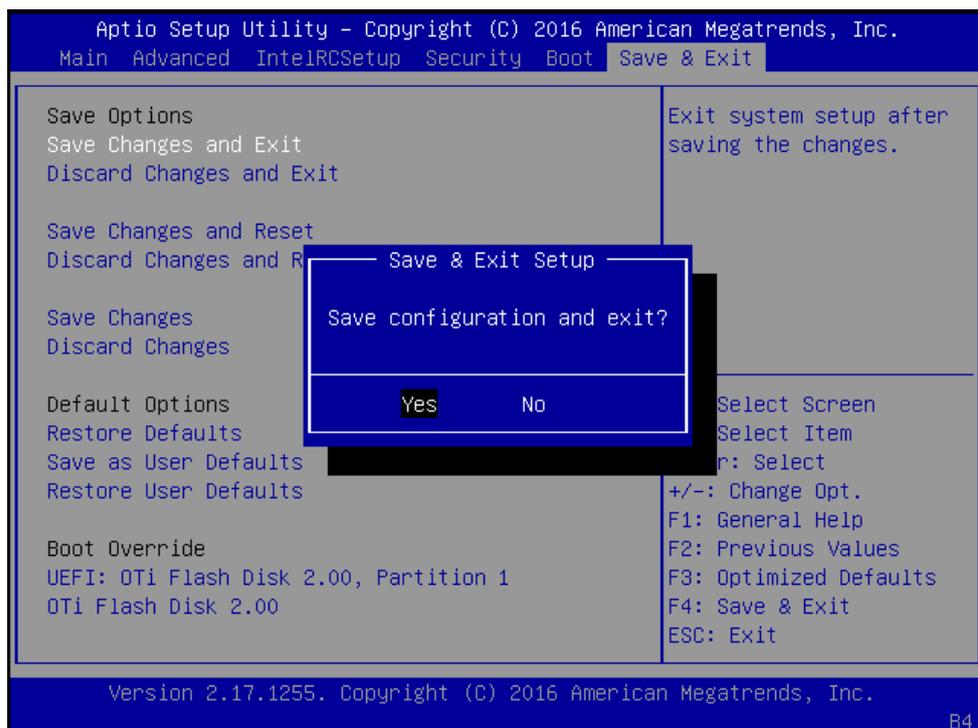
UEFI: OTi Flash Disk 2.00, Partition 1

OTi Flash Disk 2.00

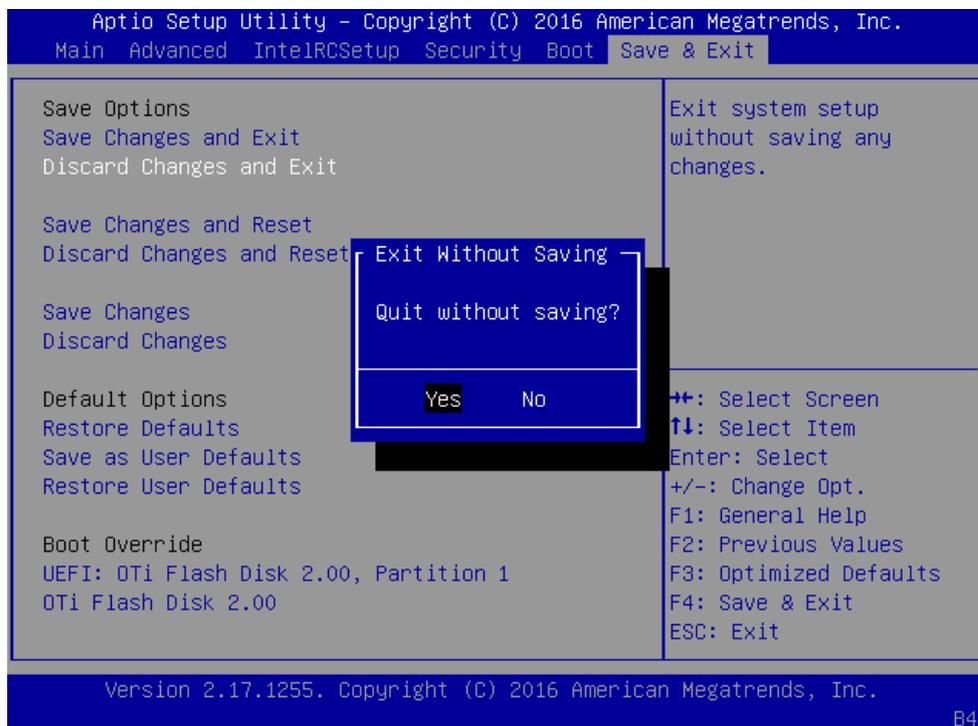


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Save Changes and Exit: exit system setup after saving the configuration changes

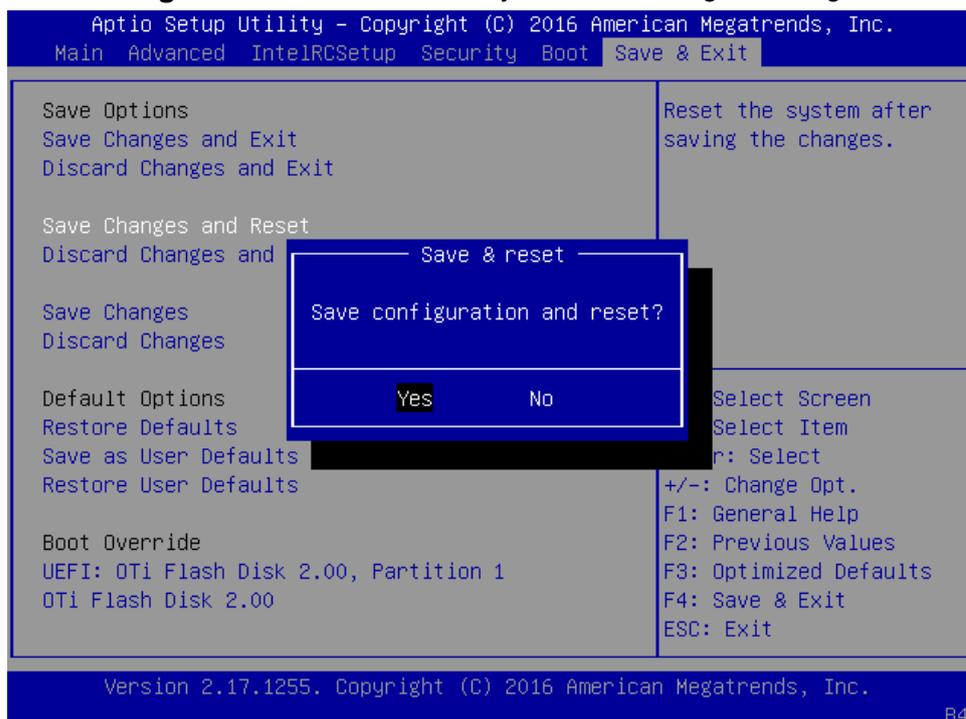


Discard Changes and Exit: exit system setup without saving the configuration changes

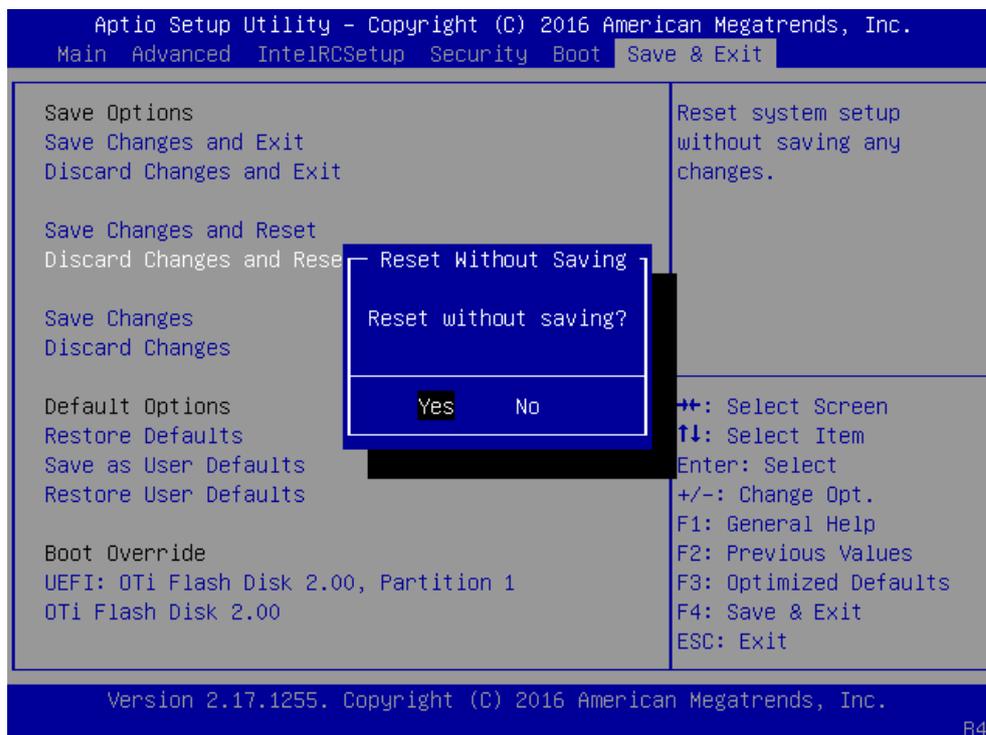


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Save Changes and Reset: reset the system after saving the configuration changes

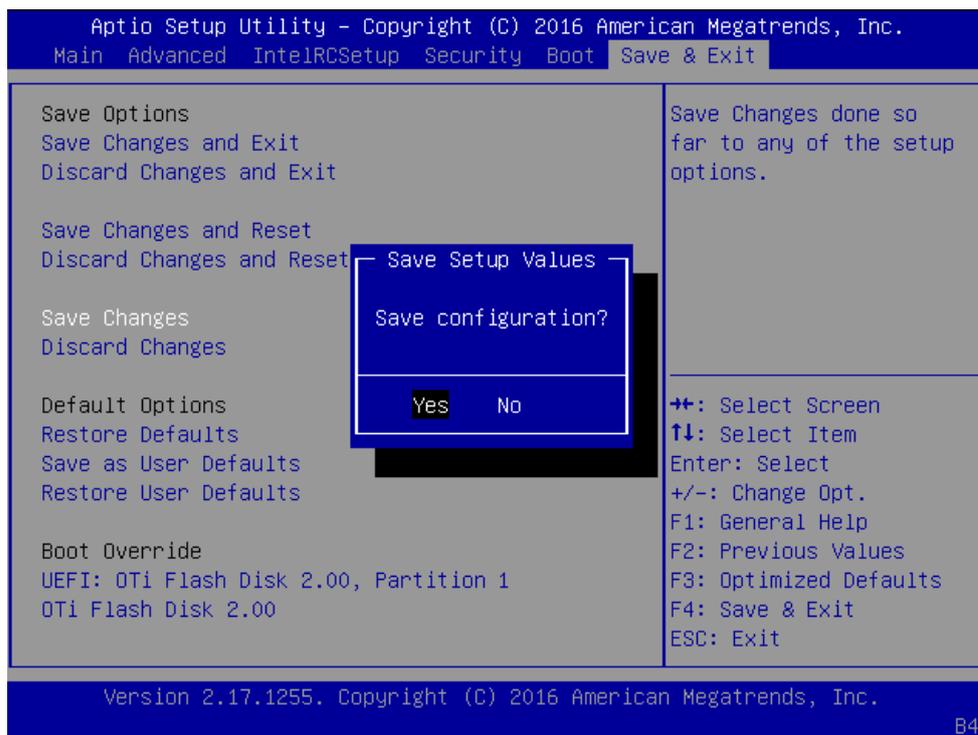


Discard Changes and Reset: reset the system without saving the configuration changes

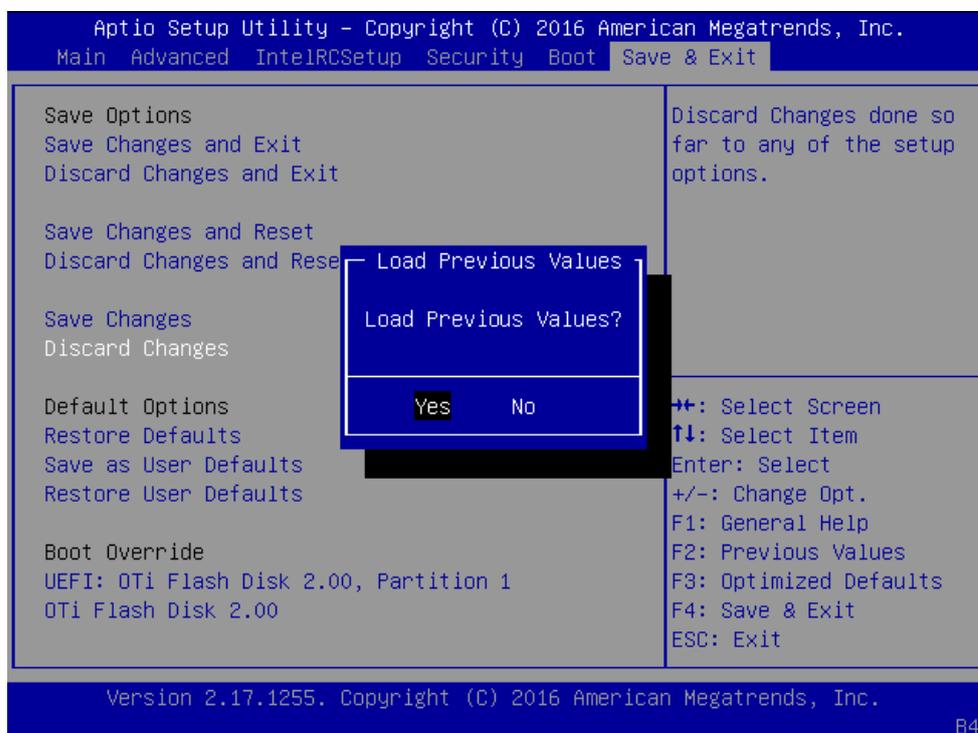


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Save Changes: save the configuration changes done so far

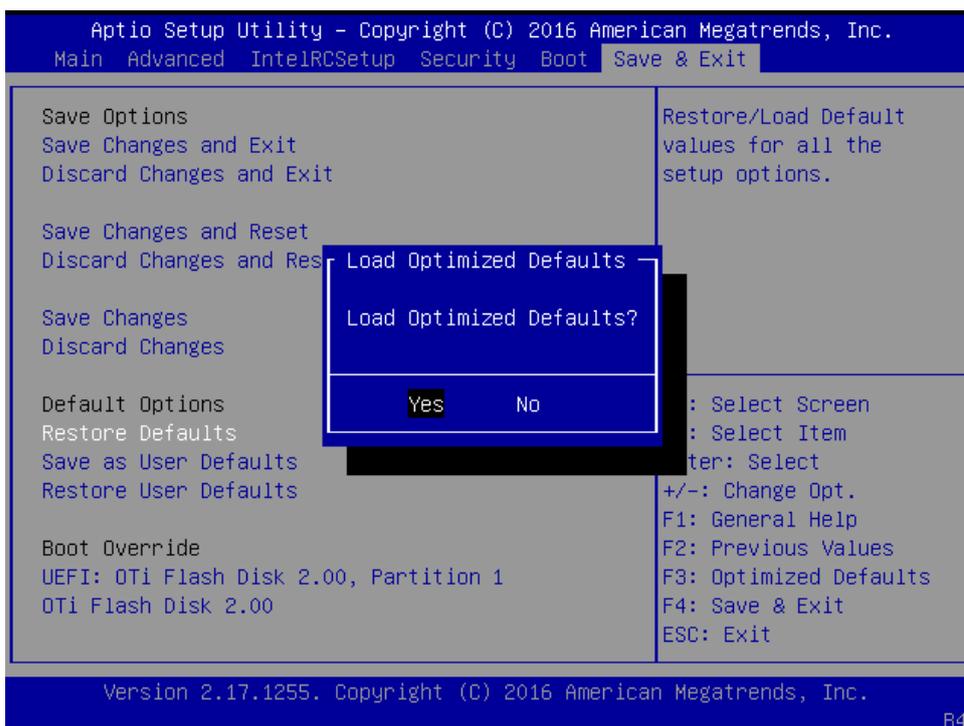


Discard Changes: discard all the configuration changes

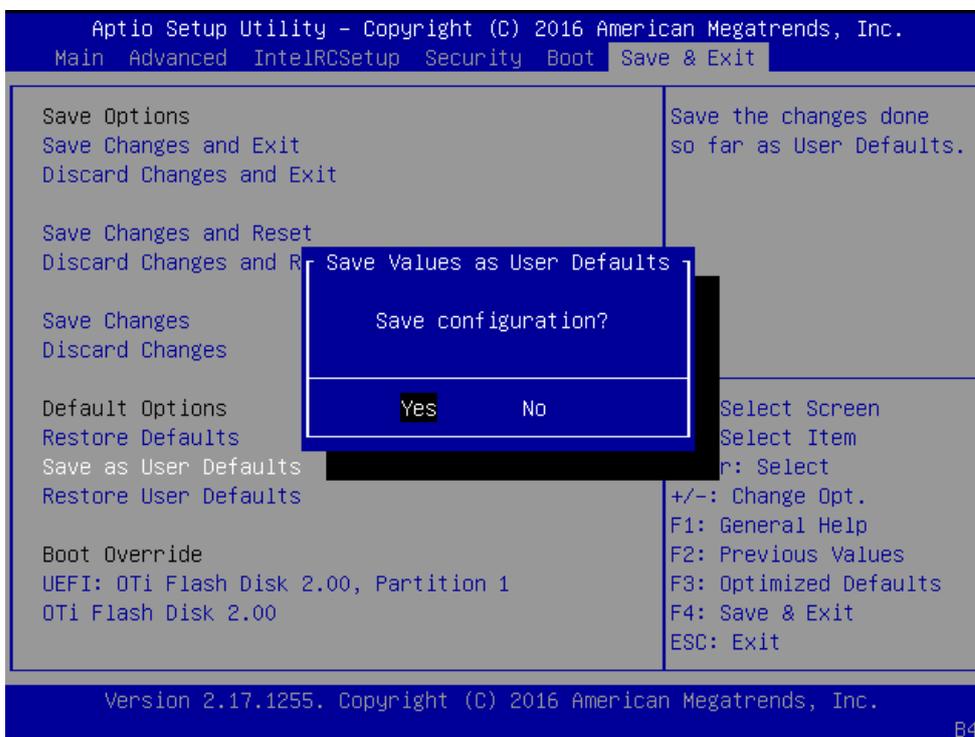


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Restore Defaults: restore/load factory default setting for all setup parameters.

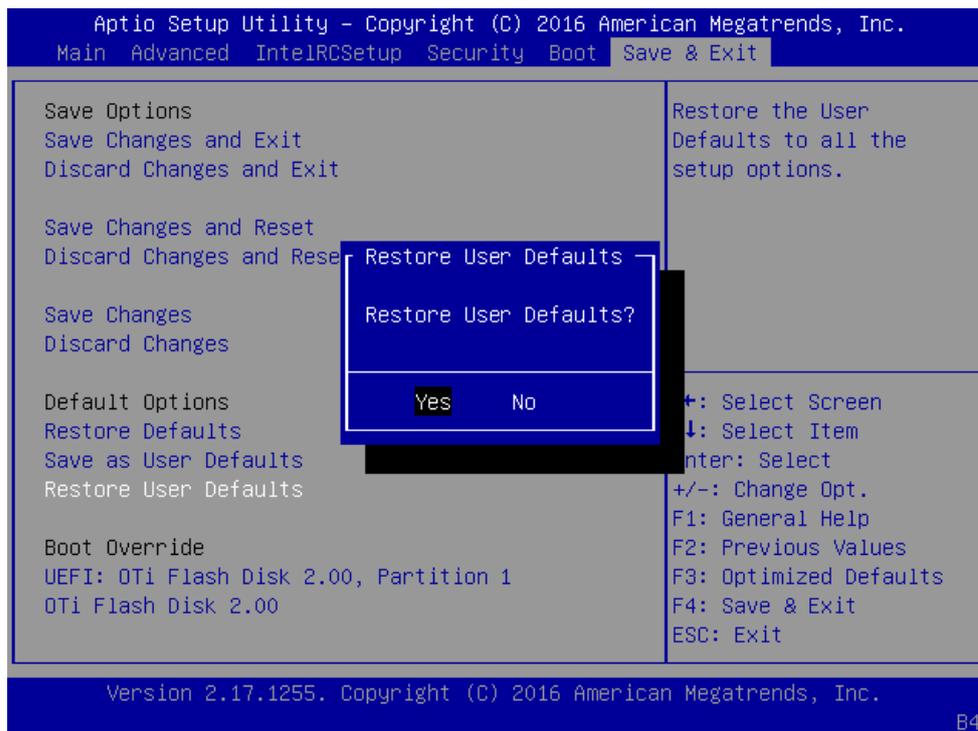


Save as User Defaults: save changes done so far as user default



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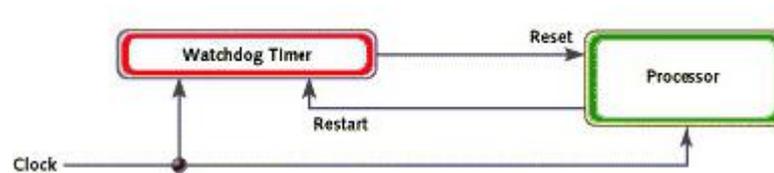
Restore User Defaults: restore the user default



Appendix A: Programming Watchdog Timer

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

For sample watchdog code, see *WD* folder under *Driver* and *Utility* on the *Driver and Manual CD*.



Appendix B: Setting up Console Redirection

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. These following steps illustrate how to use this feature. The BIOS of the system allows the redirection of 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 serial port of the Remote Client System.

2. Configure the following settings in the BIOS Setup menu:

BIOS > Advanced > Remote Access Configuration > Serial Port Mode > [115200, 8 , n ,1]

3. Configure Console Redirection on the client system. The following is an example on Windows platform:

- a. A. Click the start button, point to Programs > Accessories > Communications and select Hyper Terminal.

- b. B. Enter any name for the new connection and select any icon.

- c. Click OK.

- d. From the "Connect to". Pull-down menu, select the appropriate Com port on the client system and click OK.

- e. 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.

Appendix C: Programming Generation 3

LAN Bypass

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

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

Please refer to the LAN_Bypass_Watchdog folder on the Driver and Manual CD.

Lanner bypass possess the following features:

1. Communication through SMBUS (I2C)
2. Independent bypass status control for each pair up to a total of 4 pairs
3. Lanner Bypass Modules can bypass systems Ethernet ports on a host system during three instances: Just-on (Just-on is the brief moment when the internal power supply turns on and booting process starts), System off, or upon software request (during run-time).
4. Software programmable bypass or normal mode
5. Software programmable timer interval:
 - JUST-ON watchdog timer, used during JUST-ON, has timer setting of 5~1275 seconds of timer interval.
 - Run-Time watchdog timer, used during run-time, has setting of 1~255 seconds of timer interval.
6. Multiple Watchdog Timers:
 - Two for run-time: It is designed to give you a more variety of controls of the bypass on port basis. By using dedicated watchdogs for different pairs of bypass, you have the flexibility to manage the bypass status for them differently.
 - One for just-on: It is designed to give you the precise control of the bypass during this phase. You can use this timer to delay enabling the bypass in just-on state.

For sample LAN bypass code and the Bypass Manual, see the *LAN_Bypass* folder on the *Driver and Manual CD* or the *Lanner Support Website* at

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<http://www.lannerinc.com/download-center/> and browse the *download center* and look for *Lanner LAN Bypass Watchdog User Manual* under the *Accessories* folder.

For a description of the physical LAN ports equipped with this function, refer to *Front Panel Features* in *Chapter1 Introduction*.

Appendix D: Programming the LCM

The LCD panel module (LCM) is designed to provide real-time operating status and configuration information for the system. For sample LCM code, see *LCM* folder in the *Driver and Manual CD*. The driver and the program library can also be found in the folder.

The system supports the following 2 kinds of LCM:

- Parallel Text-based LCM: The LCM connects to the motherboard's parallel port. The LCD screen can display 2 lines, 16 (or 20) characters per line.
- USB and Serial Text or Graphic-based LCM: Our next generation LCM. Lanner engineers design a common source code to be deployed on these two differently interfaced LCM modules. Jumpers are used to select between text and graphic types. See next section.

For Parallel Text-based LCM

Build

To build program source code on Linux platform, please use the following steps as a guideline:

1. Extract the source file:

```
# tar -xzf plcm_drv_v0XX.tgz
```

(0XX is the version of the program.)

2. Change directory to the extracted folder:

```
# cd plcm_drv_v0XX
```

(0XX is the version of the program.)

Note: Apply our Parallel Text-based LCM to the environment of virtualization, please use the version 013 or above of the program.

3. Type "make" to build source code:

```
# make
```

After compiling, the executable programs (plcm_test, plcm_cursor_char, ppdev_test, Test) and the driver (plcm_drv.ko) will appear in the program's folder.

Note: The OS supported by Parallel Text-based LCM function includes platforms based on Linux Kernel series 2.4.x, Linux Kernel series 2.6.x and Linux Kernel series 3.0.x or above.

Install

Install the driver and create a node in the /dev directory by:

```
#insmod plcm_drv.ko
```

```
#mknod /dev/plcm_drv c 248 0
```

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Note:

If you cannot install the driver, check whether you have enabled the parallel port in the BIOS setting . Once the message of “insmod”: error inserting ‘plcm_drv.ko’: -1 Input/output error” appears, please check that whether the major number is repeated or not. The major number needed with the “mknod” command varies with different software versions; please look up the Readme file for this value.

Execute

This section contains sample executable programs that you could test on your platform. It demonstrates some useful functionality that the LCM provides. Note that the installation needs to be completed before proceeding with these executions.

To execute, run the command:

#!/plcm_test

Backlight Off/On turning off/on the backlight of the LCM display

Display Off turning off the LCM display

Cursor Off/On NOT showing/showing the cursor on the LCM display

Blinking off/On turning off/on the cursor blinking

Writing “Lanner@Taiwan” displaying the specific sentences

Reading “Lanner@Taiwan” reading the specific sentence

CGram Test displaying the user-stored characters

Keypad Testing Get the keypad input: the 1st button is read in as Left, the 2nd button is read in as Up, the 3rd button is read in as Right, and the 4th button is read in as Down)

Corresponding Commands for “plcm_test”

You can directly input the specific command to have its corresponding function worked on your LCM. This will be much more convenient once you would like to merely execute the keypad testing.

-On

— Turn on the backlight of the LCM display.

— To execute, please type:

#!/plcm_test -On

-Off

— Turn off the backlight of the LCM display.

— To execute, please type:

#!/plcm_test -Off

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-LCM1

— Writing “Lanner@Taiwan” in line1.

— To execute, please type:

#!/plcm_test -LCM1

-LCM2

— Writing “2013-11-05” in line 2.

— To execute, please type:

#!/plcm_test -LCM2

Keypad

— Get the keypad input: the 1st button is read in as Left, the 2nd button is read in as Up, the 3rd button is read in as Right, and the 4th button is read in as Down.

— To execute, please type:

#!/plcm_test -Keypad

Commands for plcm_cursor_char

This Run this command for cursor shift & single text update

./plcm_cursor_char

Please read the options below

Insert line select Item 1 to set the starting line as either line 1 or line 2

Move cursor right select Item 2 to move the cursor to the right

Move cursor left select Item 3 to move the cursor to the left

Add a char select Item 4 to display a character on the LCM screen

Clean display select Item 5 to clear up the LCM display

Leave select Item 6 to exit the program

Test

This program is a testing script and runs through the following procedures in sequence:

— **rmmod plcm_drv** (remove the kernel mode driver module)

— **insmod plcm_drv.ko** (install the kernel mode driver module)

— **./plcm_test** (execute the driver testing program)

— **./plcm_test -stop** (stop executing the driver testing program)

— **rmmod plcm_drv** (remove the kernel mode driver module)

To execute, please type:

#!/Test

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Virtualization Implemented by Parallel

Port Pass Through

By the utilization of the parallel port pass through, the Parallel Text-based LCM implements the following three kinds of virtualization in the Guest OS.

- QEMU/KVM
- Xen
- VMWare Player

Here, we take the Fedora 20 x86_64 operation system for instance to explain 3 virtualization respectively for parallel port pass through. Use the procedures listed below for step-by-step instructions separately based on your case.

In case of QEMU/KVM or Xen, please use the following steps as a guideline to implement the virtualization :

(1) Make sure that the Guest OS has been installed.

(2) Add the following 4 lines into the xml file (for example, add to /etc/libvirt/qemu/<yourvirtualmachine>.xml in linux KVM):

```
<parallel type='dev'>
<source path='/dev/parport0'>
<target port='0'>
</parallel>
```

(3) Open a terminal in the Guest OS and then issue the following commands to install Linux Kernel drivers.

```
# modprobe parport
# modprobe parport_pc
# modprobe ppdev
```

(4) Check that whether the /dev/parport0 exists or not. You may not find proper /dev/parport0 in the device list, please reconfirm the setup of xml file in the Guest OS.

(5) Reboot the Guest OS.

Note: It is necessary for you to install “insmod parport.ko”, “parport_pc.ko” and “ppdev.ko” Linux Kernel drivers in virtualization environment before executing the “ppdev_test” testing program.

In case of VMWare Player, please use the following steps as a guideline to implement the virtualization:

(1) Make sure that the Guest OS has been installed.

(2) To set up the parallel port pass through, please enter VMWare Player's --> Virtual Machine

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Setting --> VMWare Player's setting page to select /dev/parport0 as parallel port device.

(3) Open a terminal in the Guest OS and then issue the following commands to install Linux Kernel drivers.

```
# modprobe parport
```

```
# modprobe parport_pc
```

```
# modprobe ppdev
```

4) Check that whether the /dev/parport0 exists or not. You may not find proper "/dev/parport0" in the device list, please reconfirm the setup of VMWare Player's setting page described in Step 2.

(5) Reboot the Guest OS.

Note: It is still necessary for you to install "insmod parport.ko", "parport_pc.ko" and "ppdev.ko" Linux Kernel drivers in virtualization environment before executing the "ppdev_test" testing program.

Appendix E: Terms and Conditions

Warranty Policy

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

Requesting a RMA#

1. To obtain a 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. 4.

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.

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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: <input type="checkbox"/> Repair(Please include failure details)	
		<input type="checkbox"/> Testing Purpose	
Company:		Contact Person:	
Phone No.:		Purchased Date:	
Fax No.:		Applied Date:	
Return Shipping Address: _____			
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____			
<input type="checkbox"/> Others: _____			
Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

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

Request Party

Confirmed By Supplier

Authorized Signature / Date

Authorized Signature / Date