



User Manual

ASMB-935 Series

**Dual LGA3647-P0 Intel Xeon[®]
EATX Server Board with 24
DDR4, 5 x PCIe x16 + 1 PCIe x8, 10
SATA3, 6 x USB3.0, Dual
10GbE, IPMI**

ADVANTECH

Enabling an Intelligent Planet

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Initial Inspection

Before installing motherboard, please make sure that the following materials have been shipped:

- 1 x ASMB-935 EATX motherboard
- 1 x ASMB-935 Startup Manual
- 1 x Driver CD
- 2 x Serial ATA HDD data cables
- 1 x I/O port bracket
- 2 x CPU power cable (8P)
- 2 x SATA power cable
- 1 x Warranty card

If any of these items are missing or damaged, contact distributor or sales representative immediately. We have carefully inspected the ASMB-935 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-935, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

Order Information

Part Number	Chipset	HDD	Expansion Slot	IPMI	10GbE LAN	VGA Chip
ASMB-935-00A1	C621	10*SATA3 +1*M.2	5 PCIe x16 + 1 PCIe x8 (Gen 3.0)	No	No	AST2510
ASMB-935I-00A1	C621	10*SATA3 +1*M.2	5 PCIe x16 + 1 PCIe x8 (Gen 3.0)	Yes	No	AST2500
ASMB-935T2-00A1	C622	10*SATA3 +1*M.2	5 PCIe x16 + 1 PCIe x8 (Gen 3.0)	Yes	Yes	AST2500

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Chapter 1

Overview

1.1 Introduction

The ASMB-935 serverboard is the most advanced Intel Xeon Processor Scalable Family series board for server-grade IPC applications that require high-performance computing power & multi-expansion slots. This serverboard supports Intel Xeon Scalable series processor and DDR4 ECC-REG 2133/2400/2666 MHz memory up to 1.5 TB. ASMB-935 provides five PCIe x16 slots and one PCIe x8 slot in Gen3.0 high speed. In addition, the ASMB-935 full SKU has dual Gigabit and dual 10GbE Ethernet LAN ports that eliminate network bottlenecks.

Two RJ-45 LAN jacks (one GbE and the other 10GbE) can be shared with the IPMI function that allows remote control management. High reliability and outstanding performance makes ASMB-935 the ideal platform for industrial server/networking applications.

With 24 DIMM slots, ASMB-935 supports up to 1.5 TB of DDR4 memory, High memory capacity provides outstanding performance especially for virtualization applications.

By using the Intel C621/C622 chipset, the ASMB-935 offers a variety of features such as 6 x USB3.0 and 5 x USB 2.0, 10 x onboard SATA III, and 1 x M.2 2280 (SATA and PCIe) interface. It supports software RAID 0, 1, 10 and 5 (Windows only*), and with the latest Intel RSTe (Rapid Storage Technology Enterprise) it provides a compelling RAID solution for NVMe SSDs via Intel VROC (Virtual RAID on CPU) HW key.

These powerful I/O capabilities ensure even more reliable data storage and high-speed I/O peripheral connectivity.

Note!



1. *IPMI module will be included in ASMB-935I and ASMB-935T2 SKUs. Only ASMB-935T2 SKU can support 10GbE LAN ports.*
2. *Please refer to the Ordering Information at the front for chipset, IPMI, and LAN support on individual product SKUs.*
3. *Please refer to the release note of each Linux OS for Intel's C621/C622 chipset SATA RAID function support.*

1.2 Features

General

- **Intel Xeon Processor Scalable Family support:** ASMB-935 is equipped with two CPU sockets to support Intel Xeon Platinum/Gold/Silver/Bronze series up to 28-core processors.
- **High performance I/O capability:** 2 x 10GbE + 2 x GbE LAN, 5 x PCIe x16 slot (x16 link) + 1 x PCIe x8 slot (x8 link), 10 x SATA and 1 x M.2 connector, 6 x USB 3.0 and 5 x USB 2.0 (incl. 1 x Type-A) ports.
- **Standard EATX form factor with industrial features:** ASMB-935 provides industrial features like long product lifecycle, reliable operation under wide temperature range, watchdog timer, etc.
- **IPMI 2.0 support:** ASMB-935 (T2 and I SKUs) equipped with ASPEED 2500 BMC chip and supports IPMI 2.0 (Intelligent Platform Management Interface 2.0) via sharing LAN port.
- **KVM over IP:** KVM over IP function allows BIOS level remote control of ASMB-935 (T2 and I SKUs) through your own computer.

1.3 Specifications

Table 1.1: Specifications

Processor	
CPU	<ul style="list-style-type: none"> ■ Dual Intel LGA3647 Xeon processor sockets ■ Supports Intel Xeon processor scalable family, up to 28 cores ■ TDP of processor up to 150 W
System Memory	
Memory Capacity	<ul style="list-style-type: none"> ■ DDR4 memory bus ■ Total 24 memory slots ■ Up to 1.5 TB memory ■ Two DIMMs per channel
Memory Type	Supports DDR4 2133/2400/2666 MHz ECC-REG DIMM modules
DIMM Sizes	Each memory slot supports 4GB, 8GB, 16GB, 32GB, and 64GB memory modules
Memory Voltage	1.2 V
Error Detection	<ul style="list-style-type: none"> ■ Corrects single-bit errors ■ Detects double-bit errors (using ECC memory)
On-Board Devices	
Chipsets	Intel C621/C622 PCH
Network Controllers	<ul style="list-style-type: none"> ■ One Intel X557-AT2 supports dual 1Gbps/10 Gbps port ■ Two Intel I210 support dual 10Mbps/100Mbps/1Gbps port
VGA	ASPEED AST2500/2510 controller with 64 MB VGA memory provides basic 2D VGA function.
EC	ITE IT8528E chip provide motherboard keyboard mouse, RS-232, and hardware monitor functions
BMC 935I/935T2 SKUs	One of Intel I210 Gigabit Ethernet and one of Intel X557 10GbE connected to AST2500 for BMC remote management
Input / Output	
Storage	<ul style="list-style-type: none"> ■ Total 10 x SATA ports and 1 x M.2 2280 (SATA 6Gb/s or PCIe x4 8Gb/s) ■ RAID 0, 1, 5, 10 supported (Windows only)
LAN	<ul style="list-style-type: none"> ■ 4 x RJ-45 LAN ports (2 x 10GbE + 2 x 10/100/1000 Base-T LAN)
USB	<ul style="list-style-type: none"> ■ 4 x Rear USB 3.0 ports ■ 1 x Internal USB 3.0 header (2 ports) ■ 2 x Internal USB 2.0 headers (4 ports) ■ 1 x Internal Type-A USB 2.0 port
Graphics	<ul style="list-style-type: none"> ■ 1 x VGA port
Keyboard / Mouse	<ul style="list-style-type: none"> ■ PS/2 keyboard and mouse internal header
Serial Port / Header	<ul style="list-style-type: none"> ■ 1 x RS232 port at rear window, 1 x internal header (2 x 5P pitch: 2.50 mm)
Power Connector	
System Power	1 x 24-pin SSI EPS 12V power connector (Input 12V, 5V, 3.3V, 5Vsb)
CPU Power	2 x 8-pin SSI EPS 12V power connector for CPU & Memory power (12V)
PCIe slot power	1 x 8-pin 12V power connector for PCIe slot 12V input
Expansion Slots	

Table 1.1: Specifications

PCI-express	<ul style="list-style-type: none">■ 5 x PCIe x16 slot (Gen3 x16 link)<ul style="list-style-type: none">– PCIe16_slot1 (from CPU 1)– PCIe16_slot2 (from CPU 1)– PCIe16_slot3 (from CPU 0)– PCIe16_slot5 (from CPU 1)– PCIe16_slot6 (from CPU 0)■ 1 x PCIe x8 slot (Gen3 x8 link)<ul style="list-style-type: none">– PCIe8_slot4 (from CPU 0)
System BIOS	
BIOS Type	128 Mb SPI Flash EEPROM with AMI BIOS
PC Health Monitoring	
Voltage	Monitors for CPU Cores, +3.3V, +5V, +12V, +5VSB, VBAT
FAN	<ul style="list-style-type: none">■ Two 4-pin headers for CPU cooler and five 4-pin headers for system fans (front*4 + rear*1)■ All fans with tachometer status monitoring■ Thermal control for all fan connectors
Temperature	<ul style="list-style-type: none">■ Monitoring for CPU (PECI)■ Monitoring for system external thermal sensor
Other Features (Case Open)	<ul style="list-style-type: none">■ Chassis intrusion detection
Operating Environment / Compliance	
RoHS	RoHS 6/6 Pb Free Compliant
Environmental Spec.	<ul style="list-style-type: none">■ Operating Temperature: 0 to 40° C■ Non-operating Temperature: -40 to 85° C■ Operating Relative Humidity: 10% to 90% (non-condensing)■ Non-operating Relative Humidity: 10% to 95% (non-condensing)

1.4 Board Layout, Jumpers and Connectors

Connectors on the ASMB-935 are linked to external devices such as hard disk drives. In addition, ASMB-935 has a number of jumpers that are used to configure the system for specific applications.

The tables below list the functions of each jumper and connector. Later sections in this chapter give instructions for setting jumpers. Chapter 2 gives instructions for connecting external devices to ASMB-935.

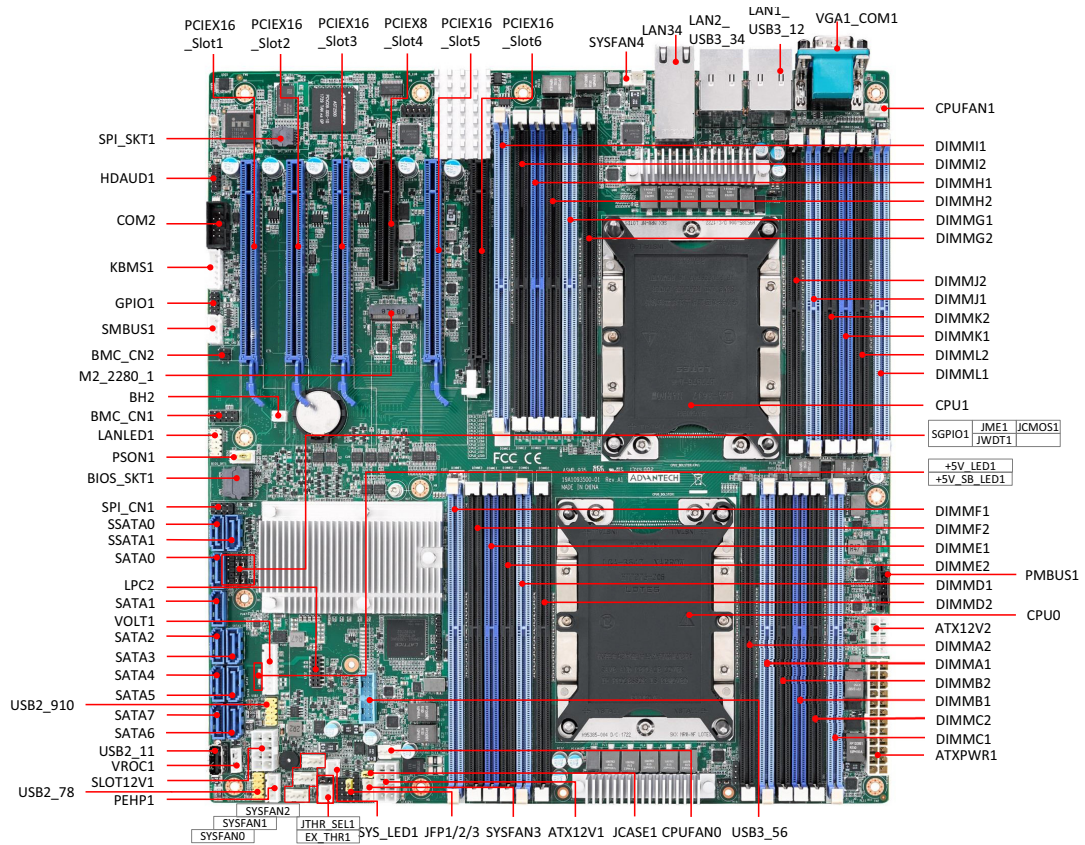


Figure 1.1 Board Layout

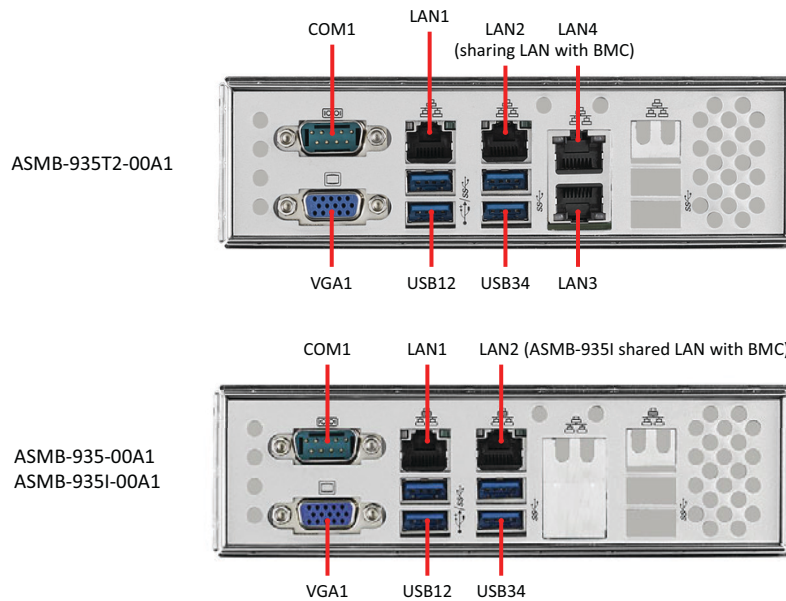
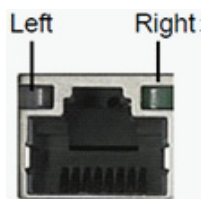


Figure 1.2 Rear I/O of three SKU

Table 1.2: Onboard LAN LED Color Definition

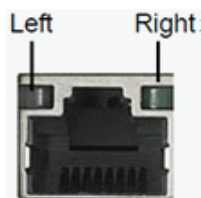
1 Gbps & 10 Gbps LAN Link/Activity LED Scheme



LAN3 & LAN4 (10G)

		Left LED	Right LED
1G Mbps	Link	Amber	Green
	Active	Amber	Blinking green
10G Mbps	Link	Green	Green
	Active	Green	Blinking green

10/100 Mbps and 1 Gbps LAN Link/Activity LED Scheme

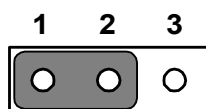


LAN1 & LAN2 (1G)

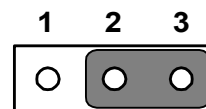
		Left LED	Right LED
10 Mbps	Link	Off	Green
	Active	Off	Blinking green
100 Mbps	Link	Amber	Green
	Active	Amber	Blinking green
1000 Mbps	Link	Green	Green
	Active	Green	Blinking green
No Link		Off	Off

Table 1.3: Jumpers

Label	Function	Default
JCMOS1	CMOS Clear	1-2
JME1	ME update	1-2
JWDT1	Watch Dog Reset	1-2
PSON1	AT(1-2) / ATX(2-3)	2-3
JCASE1	Chassis case open alarm	1-2
JTHR_SEL	On board(1-2)/external thermistor(2-3)	1-2



Keep CMOS data/
Disable ME update/



Clear CMOS data/
Enable ME update/

Table 1.4: Connectors

Label	Function
ATXPWR1	ATX 24 Pin main power connector
ATX12V1	Processor power connector (for CPU0)
ATX12V2	Processor power connector (for CPU1)
BH2	For optional battery kit
BIOS_SKT1	BIOS ROM
BMC_CN1, BMC_CN2	IPMI module header
CN1	CPLD code update header
COM2	Serial port RS-232
CPUFAN0, CPUFAN1	CPU FAN connector
DIMMA1, DIMMA2, DIMMB1, DIMMB2, DIMMC1, DIMMC2, DIMMD1, DIMMD2, DIMME1, DIMME2, DIMMF1, DIMMF2	DDR4 slot from CPU0
DIMMG1, DIMMG2, DIMMH1, DIMMH2, DIMMI1, DIMMI2, DIMMJ1, DIMMJ2, DIMMK1, DIMMK2, DIMML1, DIMML2	DDR4 slot from CPU1
DIMMC1, DIMMF1, DIMMI1, DIMML1	DDR4 slot supporting AEP memory
EX_THR1	Connector for external thermistor
GPIO1	GPIO connector
HDAUD1	Audio header
JFP1, JFP2, JFP3	Front panel header
KBMS1	External keyboard and mouse connector (6 pin)
LAN1_USB3_12	RJ-45 LAN port 1 + USB 3.0 port 1/2 connector
LAN2_USB3_34	RJ-45 LAN port 2 + USB 3.0 port 3/4 connector

Table 1.4: Connectors

LANLED1	LAN LED extension connector
LPC2	TPM connector
M2_2280_1	M.2 2280 (PCIe & SATA signal)
PCIEX16_SLOT1	PCIe x16 slot (CPU1)
PCIEX16_SLOT2	PCIe x16 slot (CPU1)
PCIEX16_SLOT3	PCIe x16 slot (CPU0)
PCIEX8_SLOT4	PCIe x8 slot (CPU0)
PCIEX16_SLOT5	PCIe x16 slot (CPU1)
PCIEX16_SLOT6	PCIe x16 slot (CPU0)
PCN1	CPU power code update header
PEHP1	CPU SMBUS header
PMBUS1	PMBUS connector to communicate with power supply
SATA0~SATA7	Serial ATA0~7
SGPIO1	sSATA SGPIO header
SLOT12V1	For PCIe slot 12V input only
SMBUS1	SMBus header
SPI_CN1	Connector for BIOS update tool
SPI_SKT1	EC EEPROM
sSATA0, sSATA1	sSATA port 0~1
SYS_LED1	System LED connector
SYSFAN0~SYSFAN4	System FAN connector
USB2_78, USB2_910	USB 2.0 port 7, 8, 9, 10 (9-pin header)
USB2_11	USB 2.0 port 11 (Type-A)
USB3_56	USB 3.0 port 5,6 (20-pin header)
VGA1_COM1	VGA and COM connector
VOLT1	Alarm board power connector
VROC1	Intel Virtual RAID (VROC) key

Table 1.5: Onboard LED

LED	Description	LED Definition	
+5V_LED1	Power on LED	Off: Power off	On (Green): System on
+5V_SB_LED1	Standby LED	Off: No input AC Power	On (Green): System on, in sleep mode, or in soft-off mode
BMC_HBLED1	BMC heartbeat LED (ASMB-935 T2 and I SKUs)	Blinking (Green): Controller is working normally	

1.5 Block Diagram

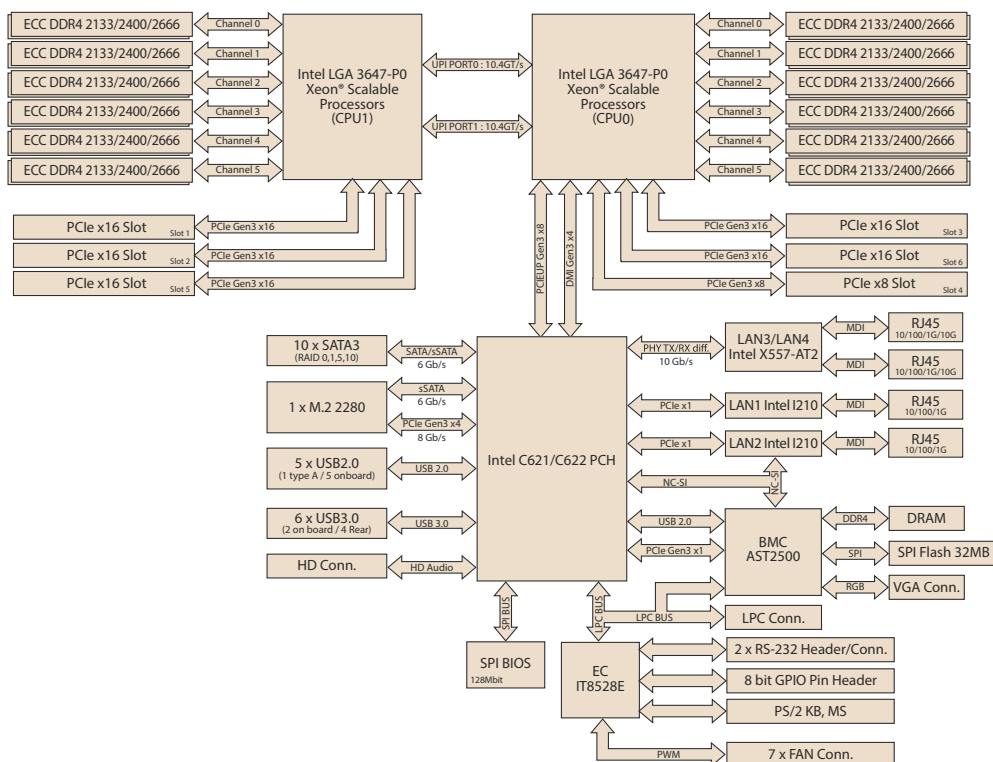


Figure 1.3 Block Diagram

1.6 System Memory

ASMB-935 has twenty four 288-pin memory slots for DDR4 2133/2400/2666 MHz memory modules with maximum capacity of 1.5 TB (Maximum 64 GB for each DIMM). ASMB-935 supports registered DIMM memory modules.

1.7 Memory Installation

Memory performance is affected by different DIMM configurations. To reach optimal memory interleaving, be sure to install identical DIMM types with the same size, speed, and number of ranks on those memory slots corresponding to the correct processor. The following table indicates recommended DIMM configurations with a single processor, based on the guideline, you may adjust your memory configuration according to your PCIe expansion card configuration.

Table 1.6: DIMM Configurations with Single CPU

Quantity of memory installed													
CPU0	1	2	3	4	5	6	7	8	9	10	11	12	CPU1
DIMMA1	v	v	v	v		v		v				v	DIMMG1
DIMMA2								v				v	DIMMG2
DIMMB1		v	v	v		v		v				v	DIMMH1
DIMMB2								v				v	DIMMH2
DIMMC1			v			v						v	DIMM I1
DIMMC2												v	DIMM I2
DIMMD1				v		v		v				v	DIMMJ1
DIMMD2								v				v	DIMMJ2
DIMME1				v		v		v				v	DIMMK1
DIMME2								v				v	DIMMK2
DIMMF1						v						v	DIMML1
DIMMF2												v	DIMML2

Note! 5, 7, 9, 10, 11 DIMMs are not recommended DIMM population.

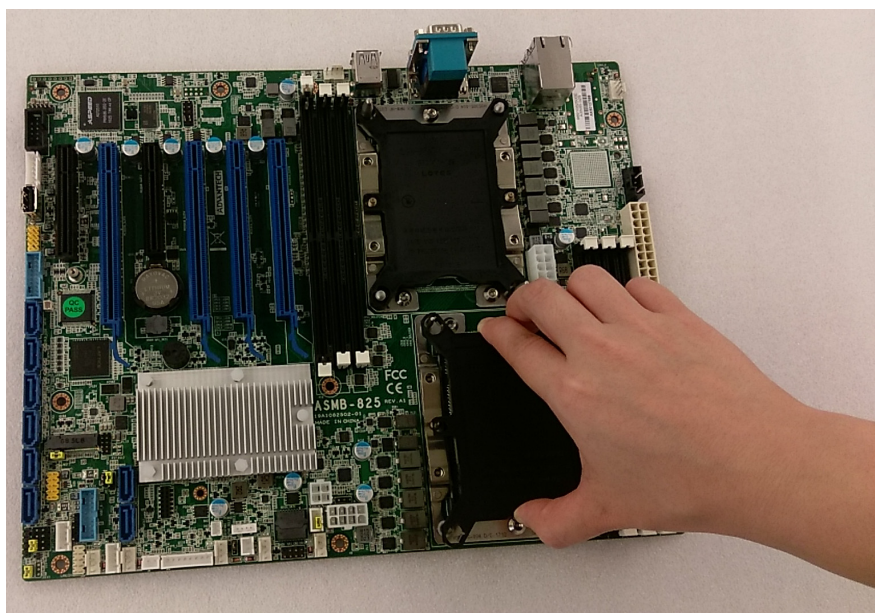


1.8 Processor Installation

The ASMB-935 is designed for the Intel Xeon processor scalable family.

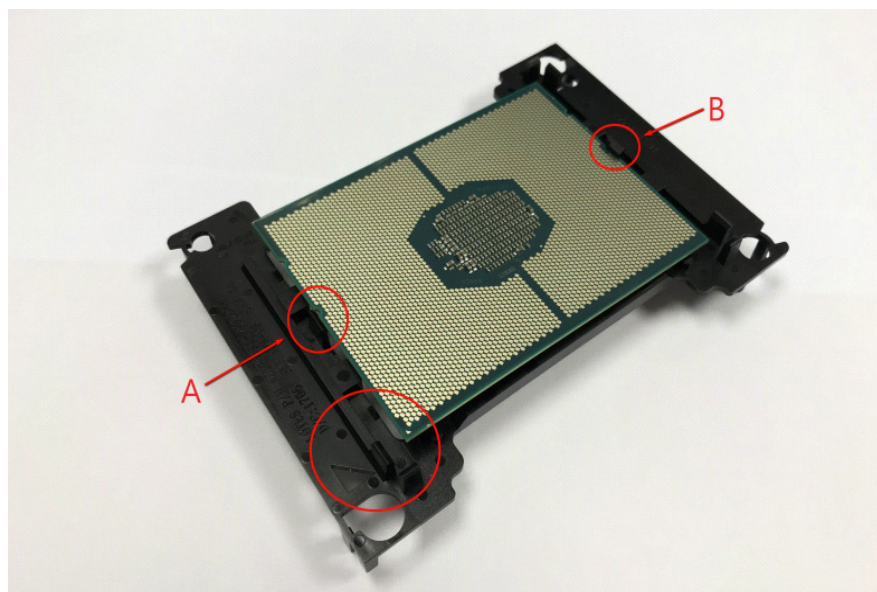
Step 1

Remove the dust cover on CPU0.

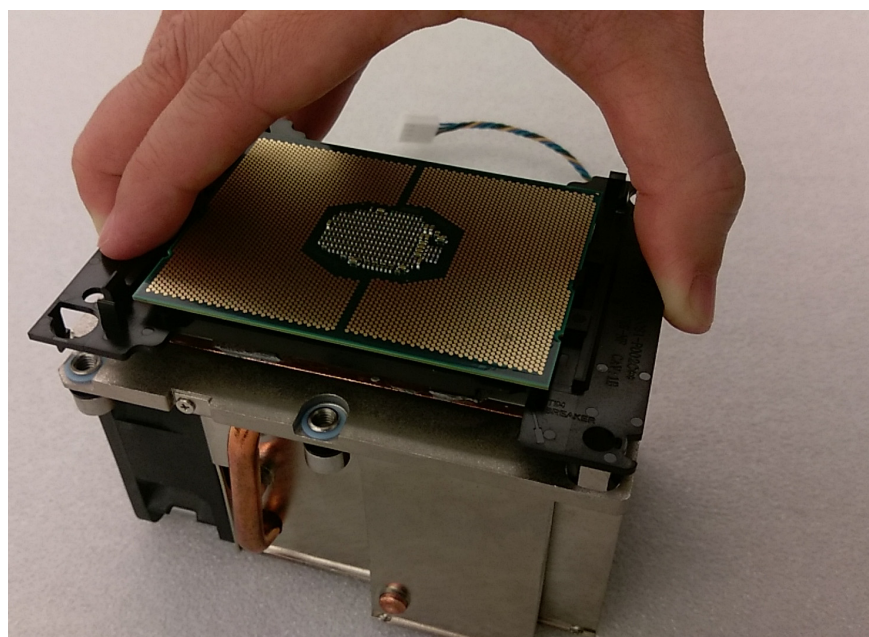


Step 2

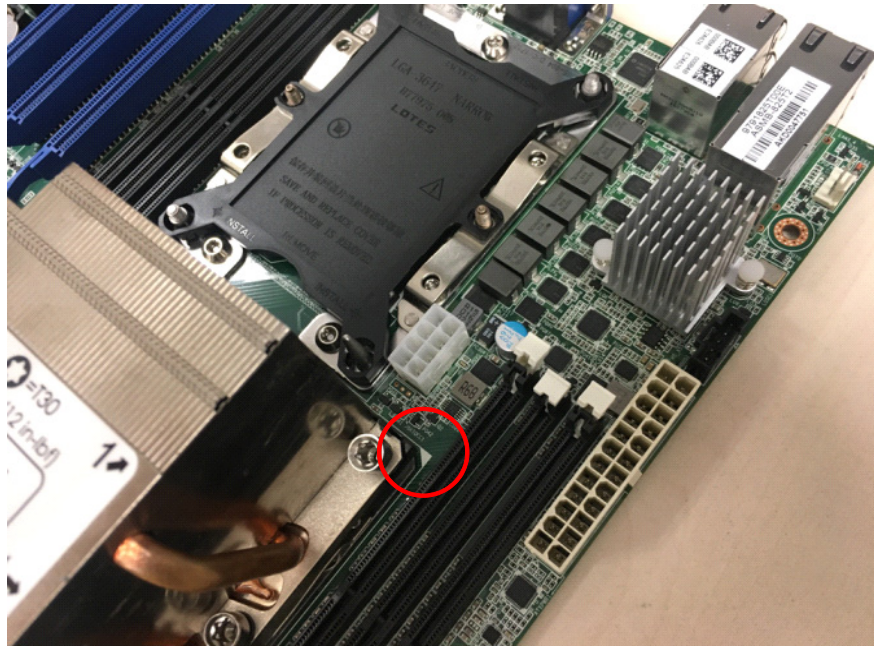
Insert CPU on CPU clip and align pin 1 mark, then latch both notch A and B on the CPU, and notch A and B on the CPU clip.

**Step 3**

Install the CPU clip assembly on the heatsink as a processor heatsink module.

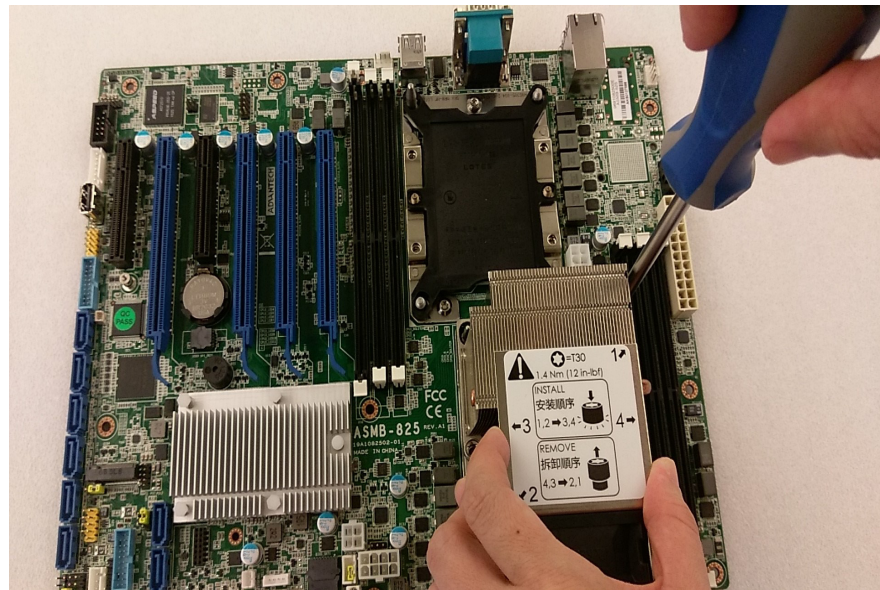
**Step 4**

Place the processor heatsink module on the CPU0 socket on the motherboard and align the triangle mark printed on the motherboard.



Step 5

Tighten the screws in sequence 1-2-3-4 by using a T30 Torx screwdriver.

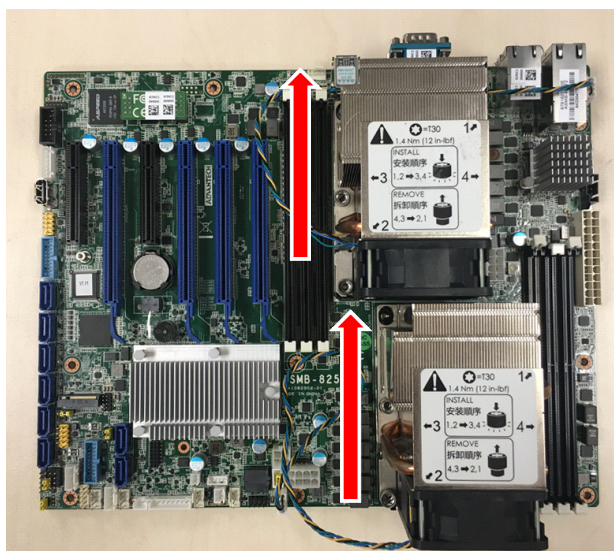


Step 6

If there is a second CPU to be installed, repeat steps 1 to 3. In step 3, the CPU clip should be placed in the opposite direction to CPU0.

Step 7

Place the processor heatsink module on the CPU1 socket on the motherboard and align the triangle mark printed on motherboard. Make sure air flow directions of each CPU are the same and toward the rear I/O. Wrong air flow direction will cause the system to work abnormally.

**Step 8**

Tighten the screws on second CPU heatsink module in sequence 1-2-3-4 using the T30 Torx screwdriver.

Chapter 2

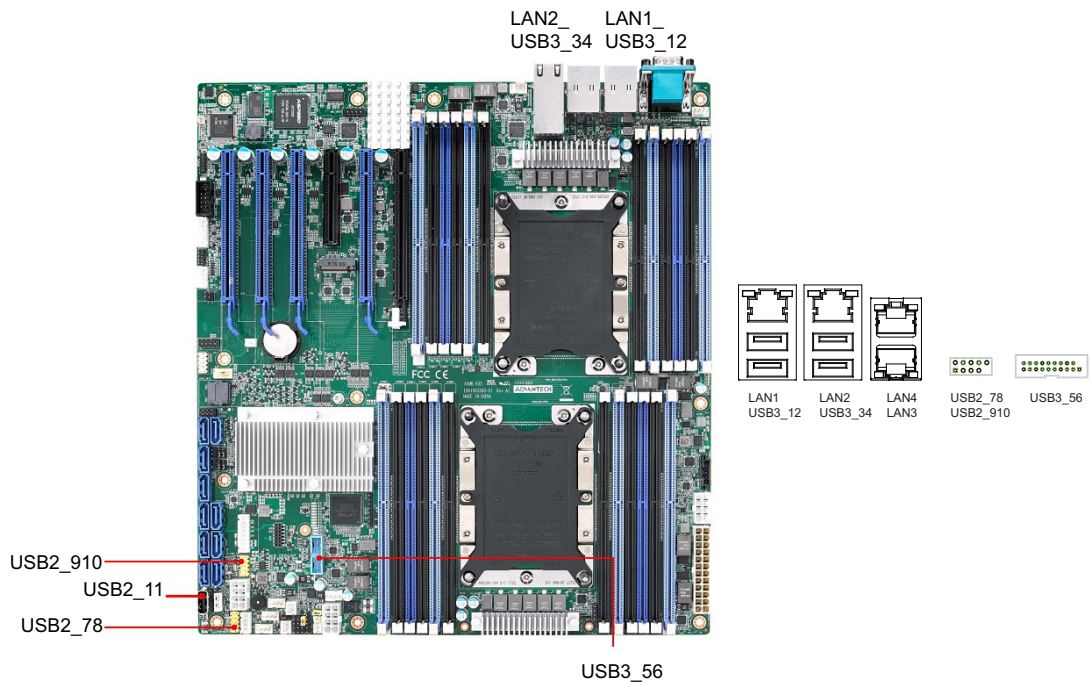
Connections

2.1 Introduction

You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed, you may need to partially remove a card to make all the connections.

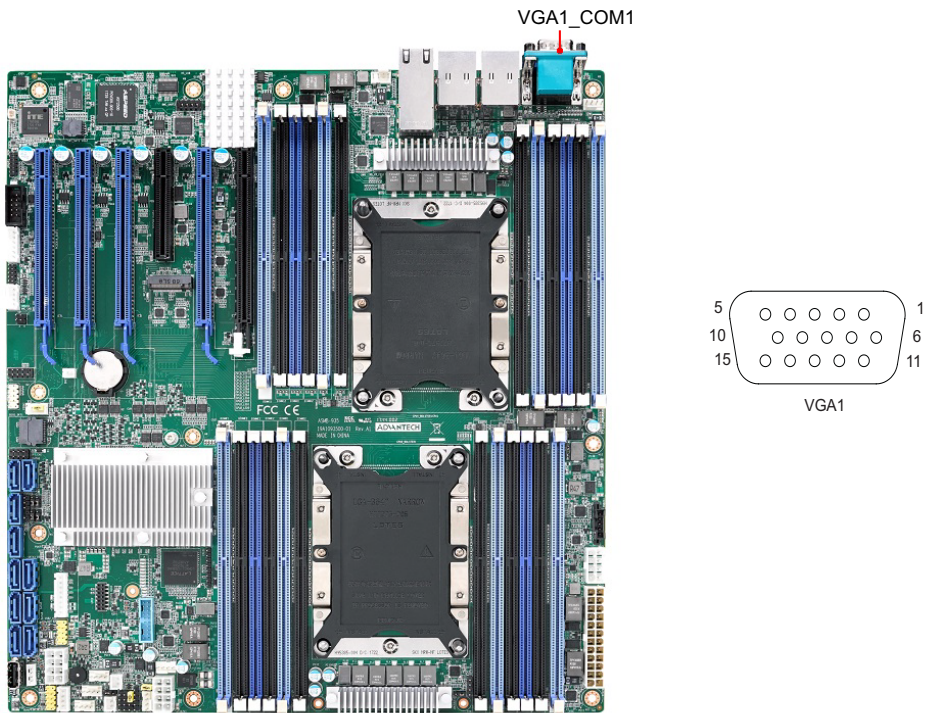
2.2 USB Ports and LAN Port (USB1~USB11,LAN1~LAN4)

The USB ports comply with USB 2.0 & 3.0. Transmission rates of up to 480 Mbps (USB 2.0) / 5Gbps (USB 3.0) and fuse protection are supported. The USB interface can be disabled in the system BIOS setup. ASMB-935 series is equipped with two high-performance 1000 Mbps Ethernet LANs. They are supported by all major network operating systems. The RJ-45 jacks on the rear plate provide convenient 1000Base-T operation. LAN2 port is shared with IPMI function (for ASMB-935I/ASMB-935T2 sku). ASMB-935T2 sku is also equipped with another two 10 Gigabit Ethernet LAN ports, supporting 10GBase-T. (LAN3 and LAN4)



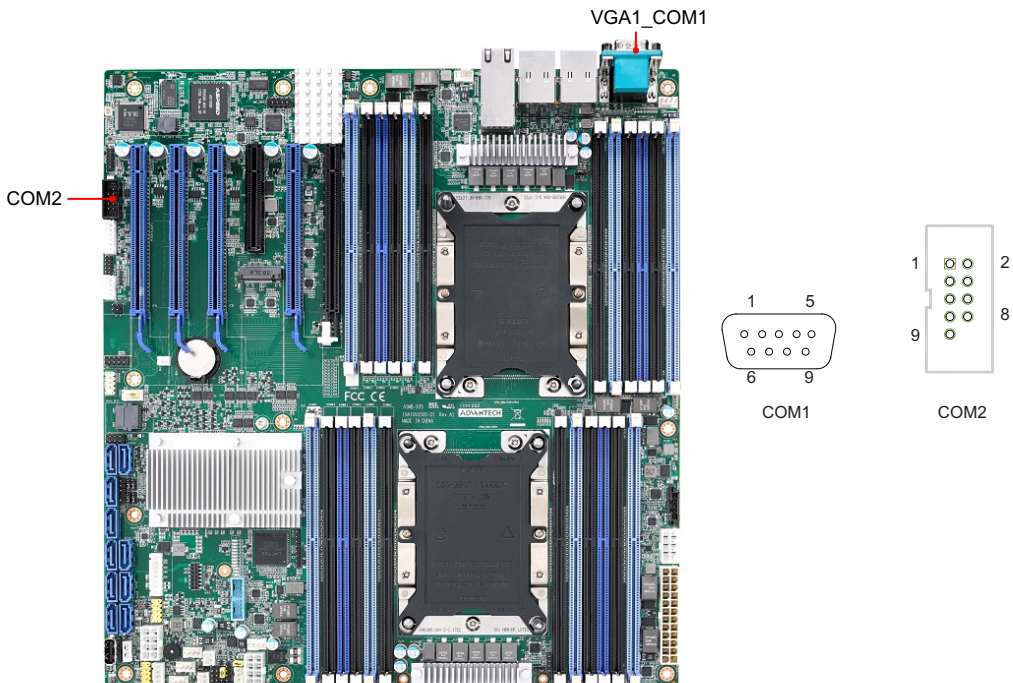
2.3 VGA Connector (VGA1)

The ASMB-935 includes a VGA interface that can drive conventional CRT and LCD displays.



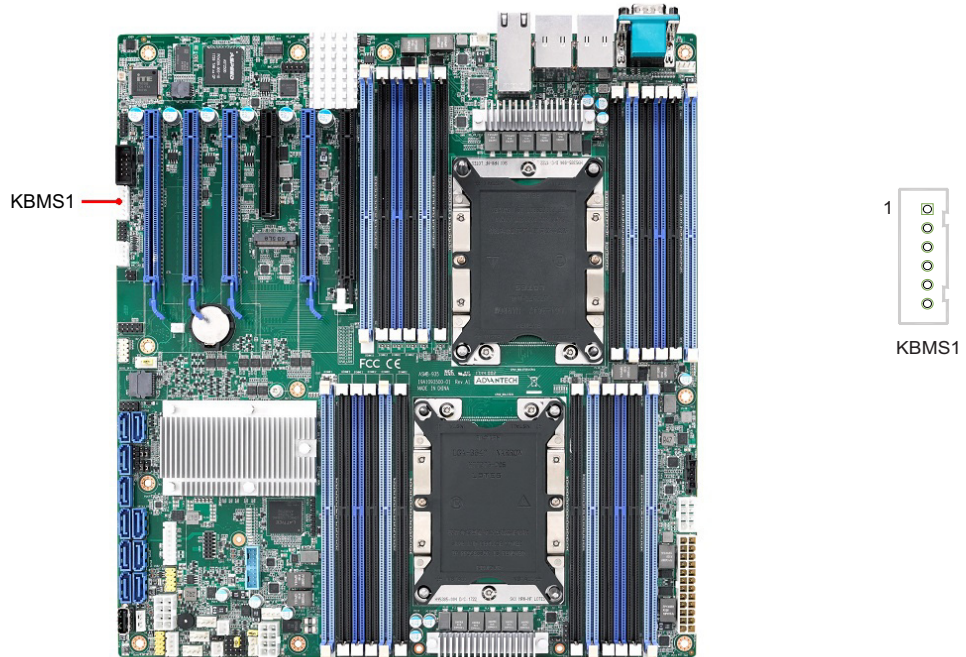
2.4 Serial Ports (COM1~2)

The ASMB-935 offers one serial port on the rear plate and one 2.50mm onboard with 2 x 5-pin pitch.



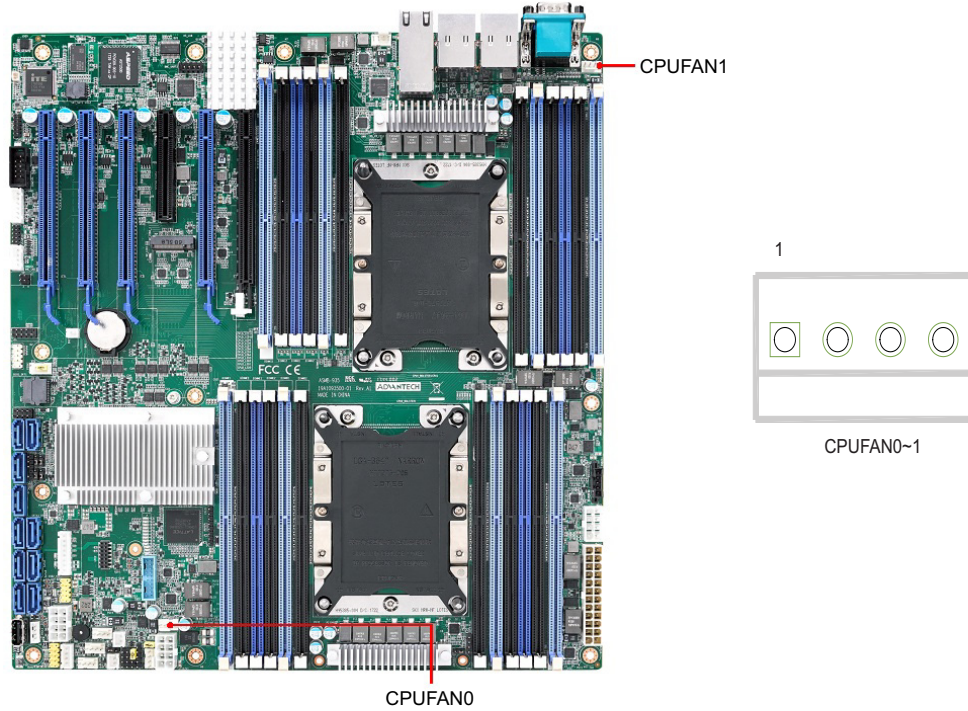
2.5 PS2 Keyboard and Mouse Connectors (KBMS1)

The 6-pin KBMS1 connector is for additional keyboard & mouse device usage.

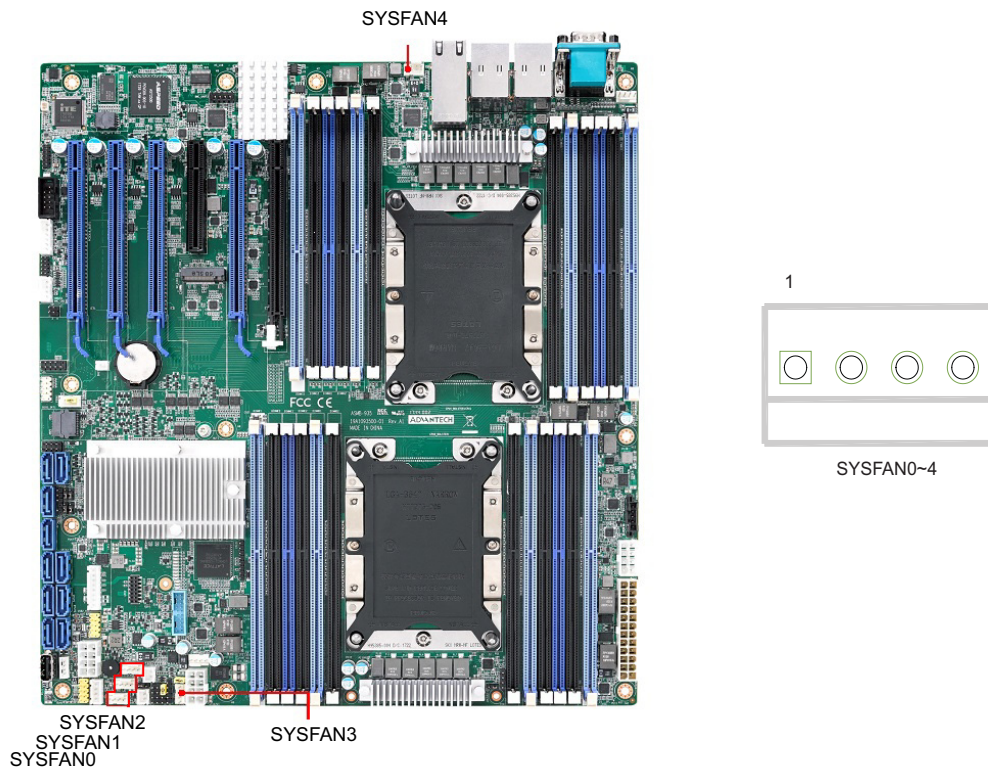


2.6 CPU Fan Connector (CPUFAN0~1)

If a fan is used, this connector supports cooling fans that draw up to 1.5A (18W).

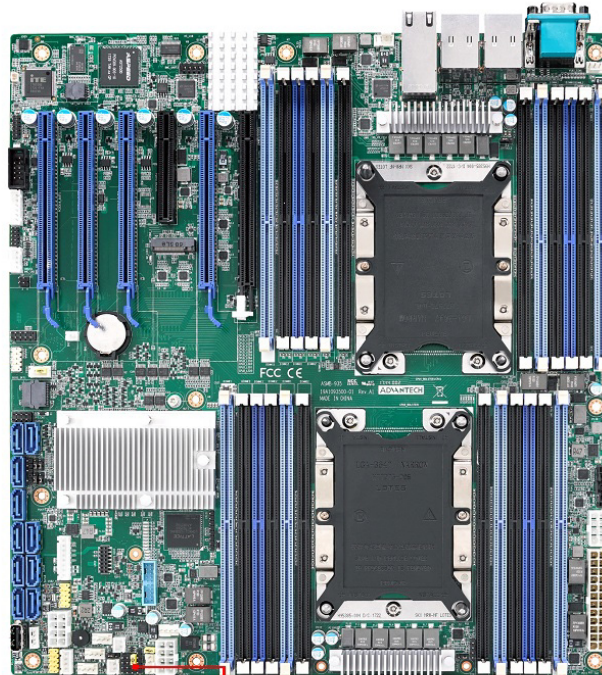


2.7 System Fan Connector (SYSFAN0~4)



2.8 Front Panel Connector (JFP1, JFP2, JFP3)

There are several external switches and LEDs to monitor and control ASMB-935.



JFP1/2/3

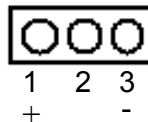
JFP1	3	6	9	12	PWRSW	RESET
&	2(+)	5(-)	8	11	HDDLED	
JFP2	1(+)	4	7	10(-)	SPEAKER	
JFP3	1(+)	2	3(-)	4	5	PWRLED KEYLOCK

2.8.1 Power LED (JFP3)

JFP3 pin 1 and pin 3 are for the power LED. Refer to Appendix B for detailed information on the pin assignments. If an ATX power supply is used, the system's power LED status will be as indicated.

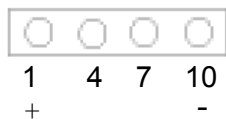
Table 2.1: ATX Power Supply LED Status

ACPI Power Mode	LED (ATX power)
System On (S0)	On
System Standby (S1)	Fast flashes
System Hibernation(S4)	Slow flashes
System Off (S5)	Off



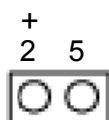
2.8.2 External Speaker (JFP2 pins 1, 4, 7, 10)

JFP2 pins 1, 4, 7, 10 connects to an external speaker. ASMB-935 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 closed.



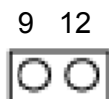
2.8.3 HDD LED Connector (JFP1 Pins 2 & 5)

You can connect an LED to JFP1 to indicate when the HDD is active.



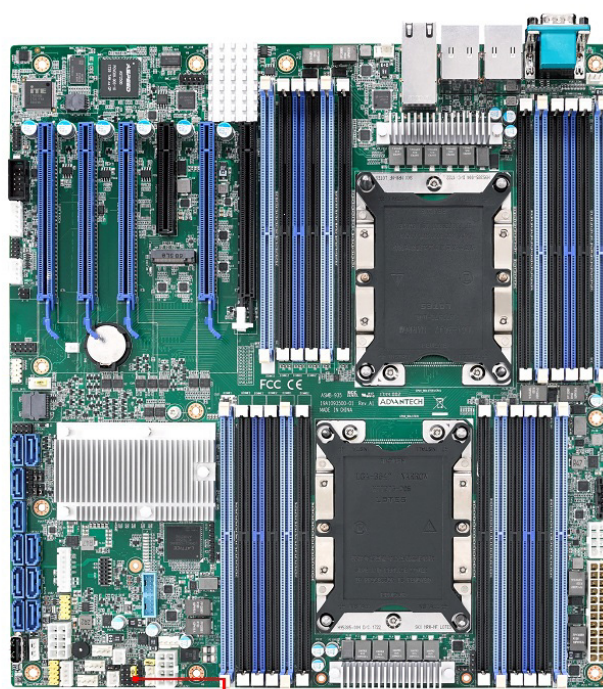
2.8.4 Reset Connector (JFP1 Pins 9 & 12)

Many computer cases offer the convenience of a reset button.

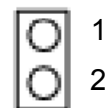


2.9 Case Open (JCASE1)

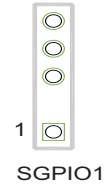
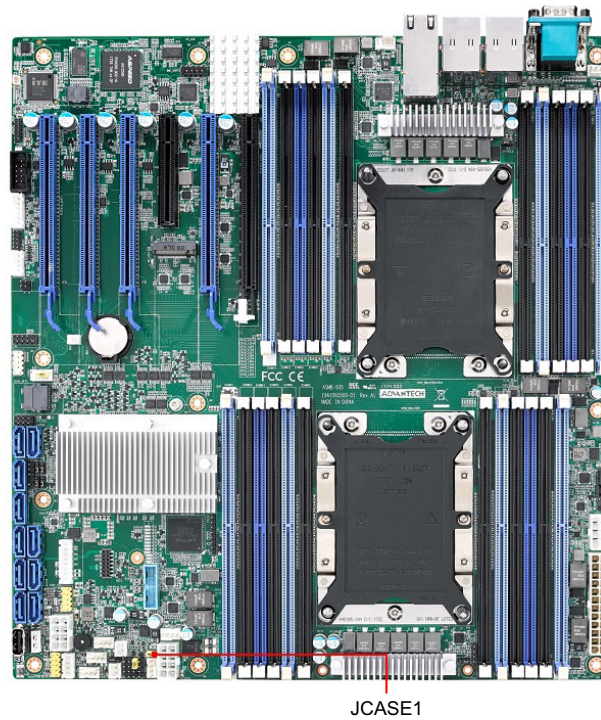
A Chassis Intrusion header is located at JCASE1 on the motherboard. Attach the appropriate cable from the chassis to be informed of a chassis intrusion when the chassis has been opened. The default function is disabled and Pin 1-2 is bridged by a jumper cap.



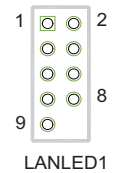
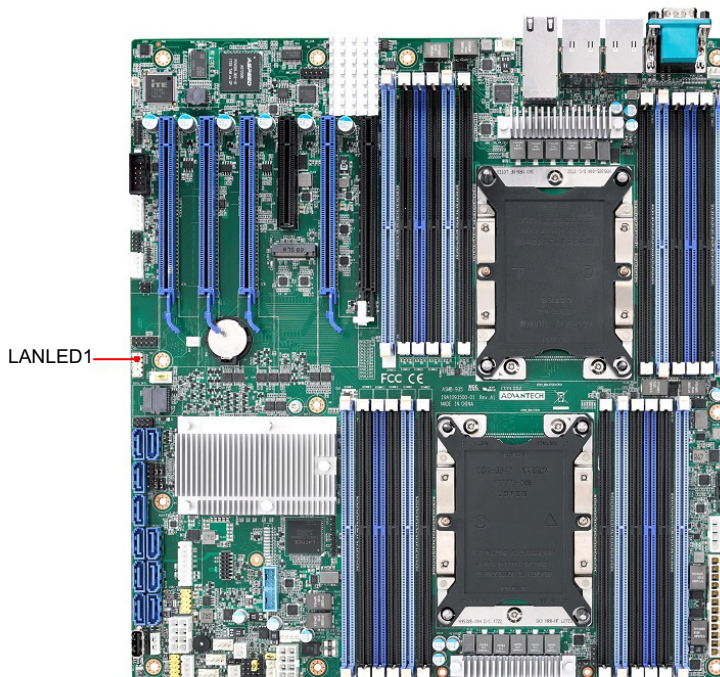
JFP1/2/3



2.10 SATA SGPIO (SGPIO1)

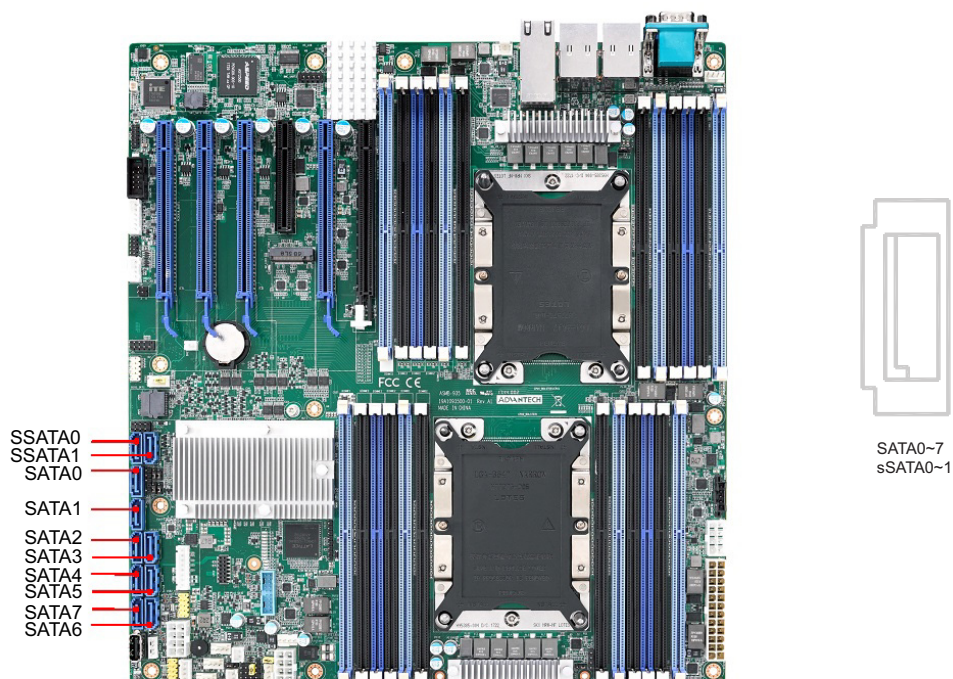


2.11 Front Panel LAN Indicator Connector (LANLED1)



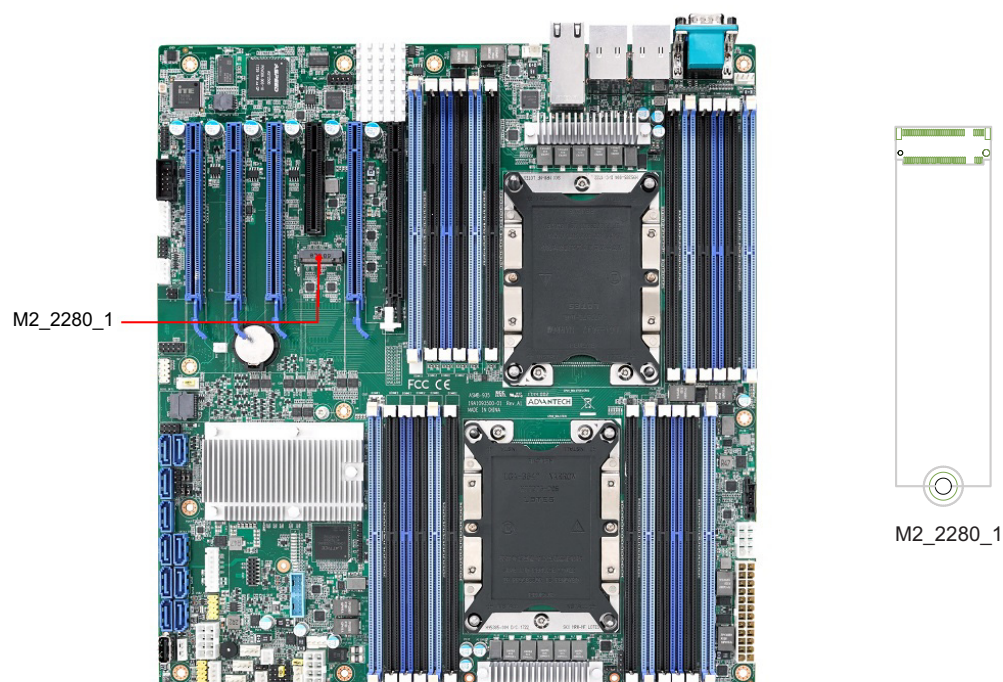
2.12 SATA and sSATA (SATA0~7, sSATA0~1)

ASMB-935 features ten serial ATA III interfaces (up to 600 MB/s) which eases cabling to hard drives with thin and long cables.



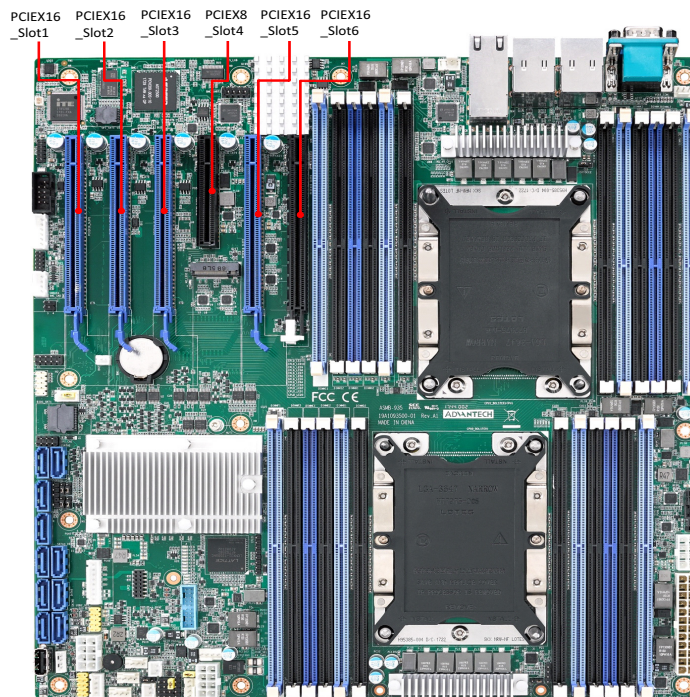
2.13 M.2 Connector (M2_2280_1)

The M.2 2280 connector supports both SATA and PCIe SSD devices for higher read/write speeds.



2.14 PCIe Expansion Slots

ASMB-935 provides six expansion slots that can support three double-deck cards. The riser card for 1U or 2U chassis can be used in slot-6 only.

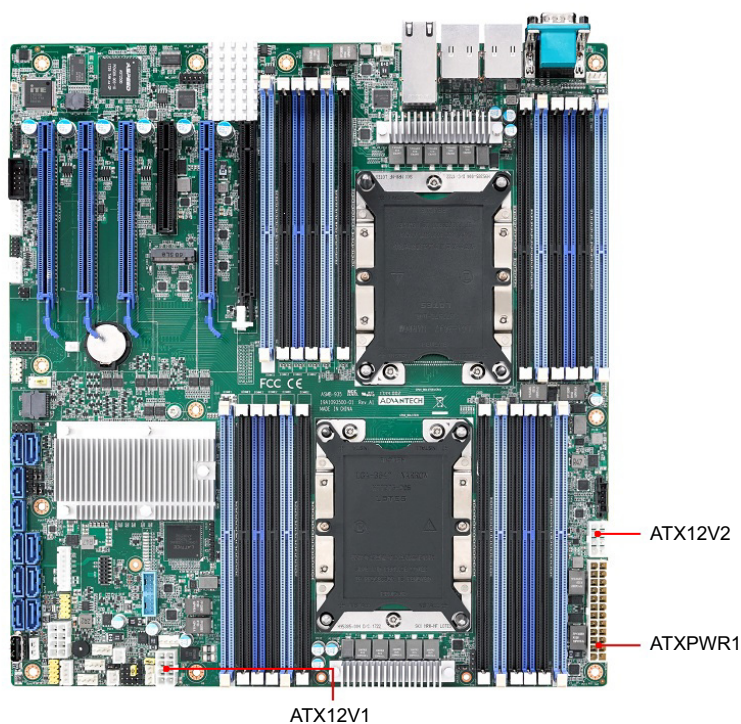



	Slot Length	Link	PCI-E Generation	PCIe link from
SLOT1	PCI-E x16	PCI-E x16	3	CPU1
SLOT2	PCI-E x16	PCI-E x16	3	CPU1
SLOT3	PCI-E x16	PCI-E x16	3	CPU0
SLOT4	PCI-E x8	PCI-E x8	3	CPU0
SLOT5	PCI-E x16	PCI-E x16	3	CPU1
SLOT6	PCI-E x16	PCI-E x16	3	CPU0

	Part Number	Description	Remarks
Riser Card	ASMB-RF388-21A1E	ASMB-RF388 (2U riser card)	2*PCI-E x8 or 1*PCI-E x8 + 2*PCI-E x4
	AIMB-RF10F-01A1E	AIMB-RF10F (1U riser card)	1*PCI-E x16

Note: Refer to page 72. BIOS setting [X8,X4,X4] is required for Slot 6 when using ASMB-RF388-21A1E.

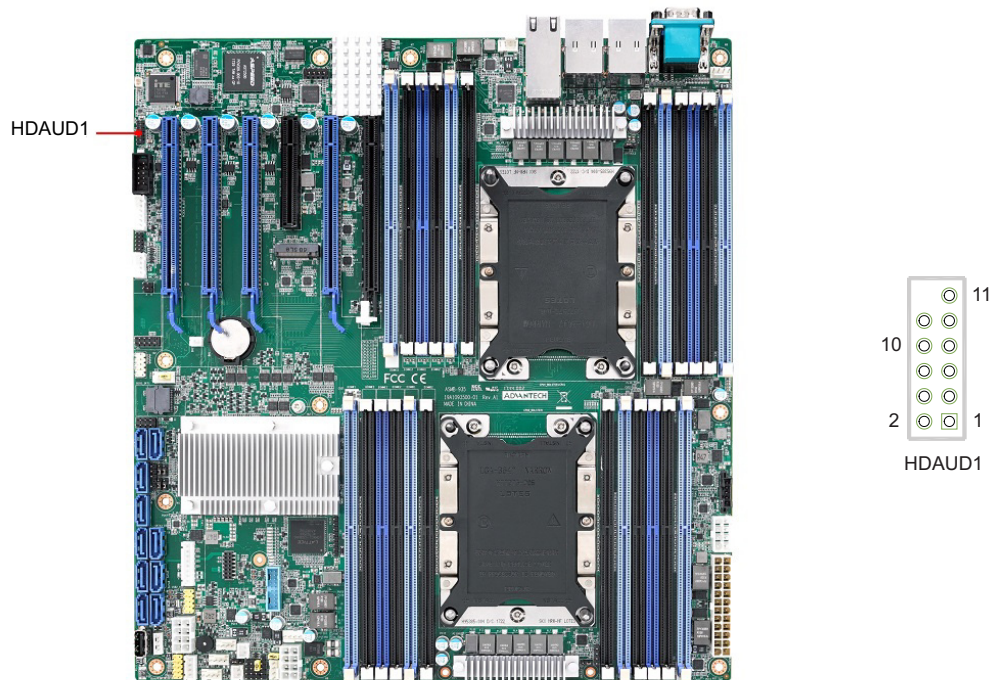
2.15 Auxiliary Power Connector (ATXPWR1/ ATX12V1/ATX12V2)



- Note!**
-  1. Please use a power supply of SSI type; minimum output should be at least 500 W.
2. ATXPWR1 & ATX12V1 & ATX12V2 sockets should be all connected with power supply, otherwise ASMB-935 will not boot up normally.

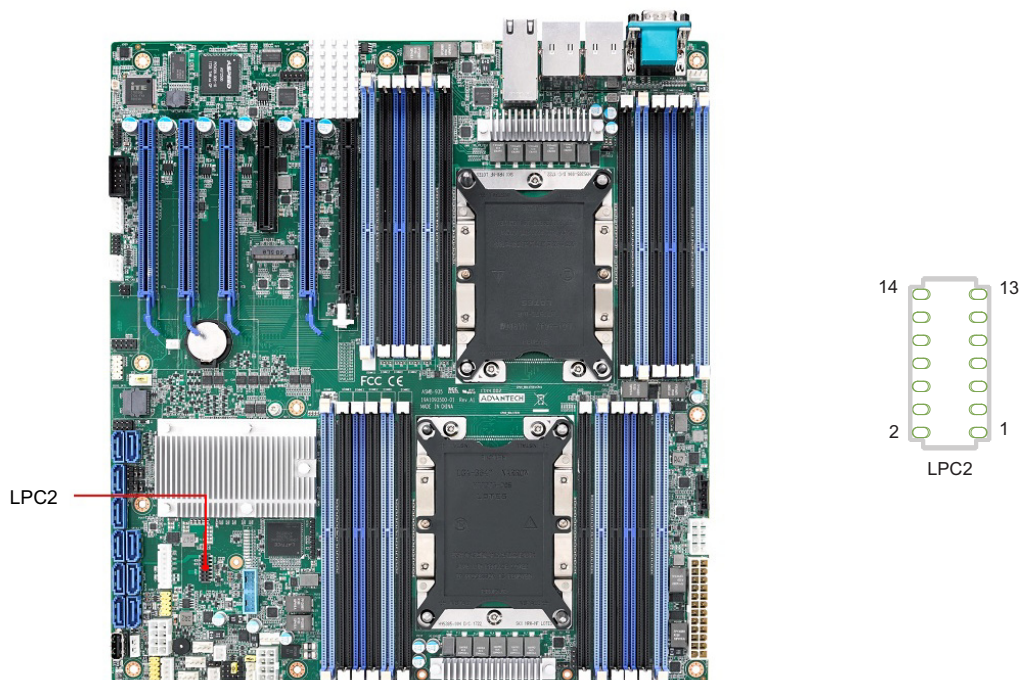
2.16 HD Audio Interface Connector (HDAUD1)

ASMB-935 has one audio connector for Advantech's audio board (P/N: PCA-AUDIO-HDB1E) installation.



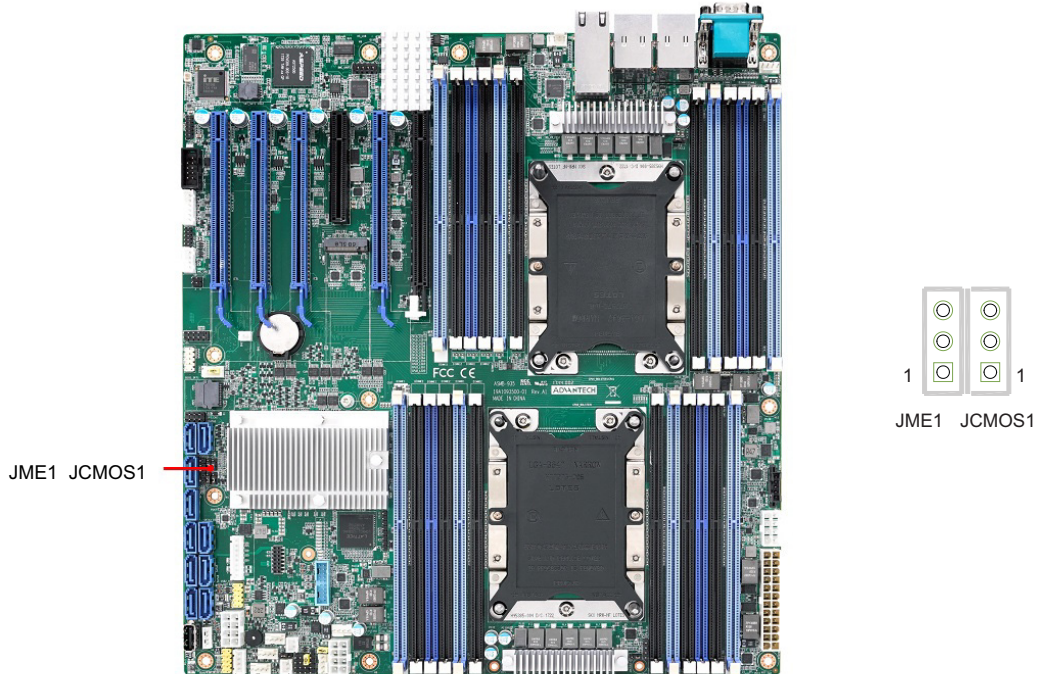
2.17 LPC Connector (LPC2)

ASMB-935 has one LPC connector that can be used to install Advantech's TPM Module (P/N: PCA-TPM-00A1E, PCA-TPM-00B1E) for security management.

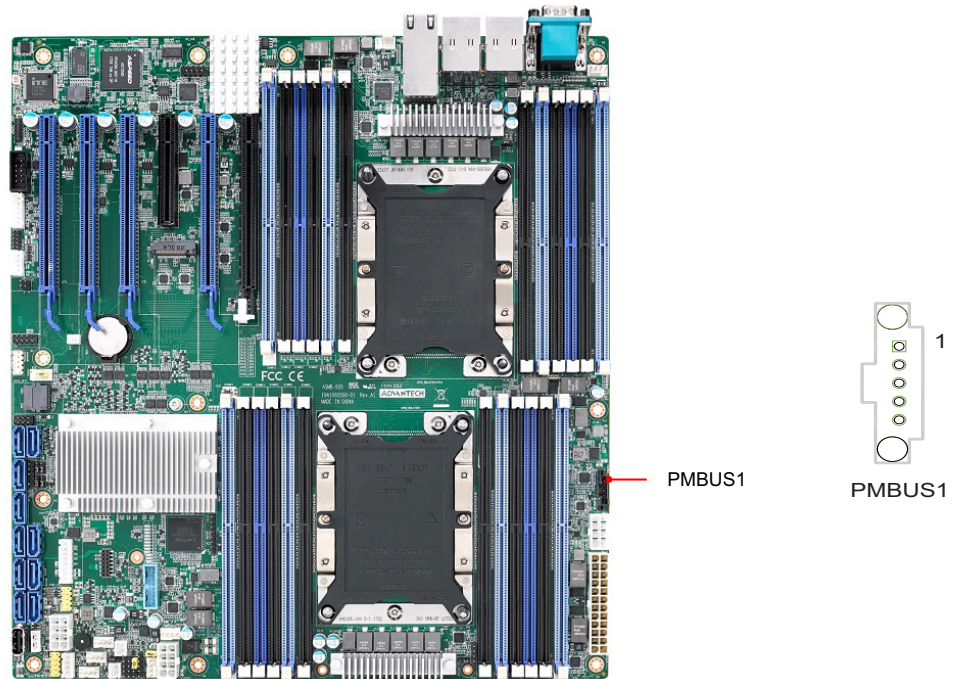


2.18 Clear CMOS and Update ME Connector(JCMOS1, JME1)

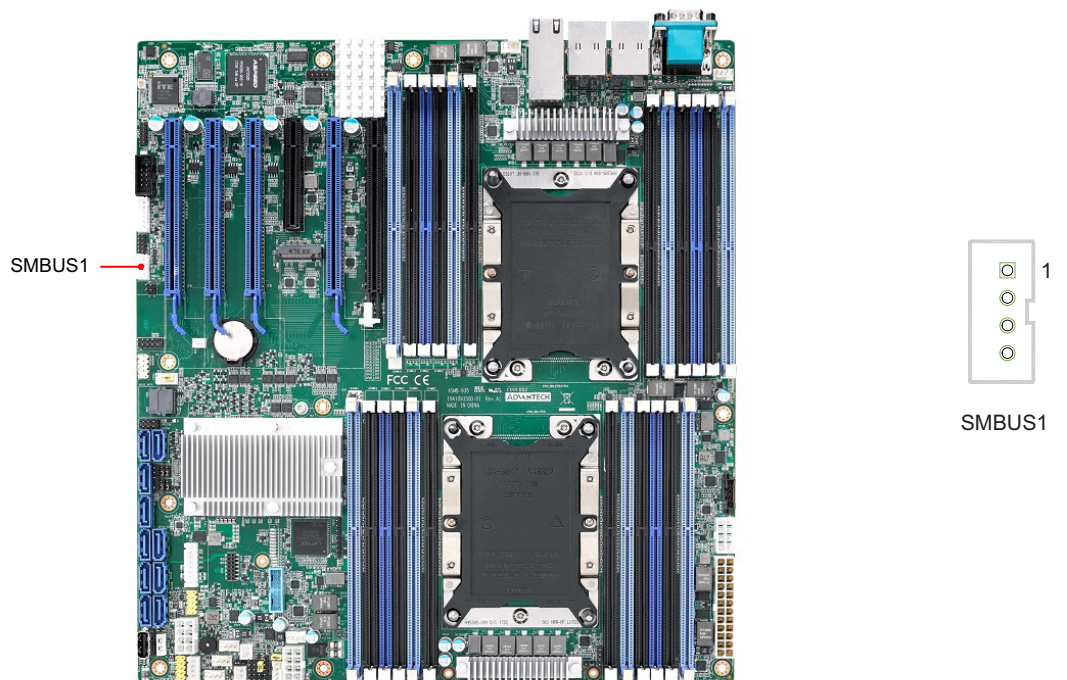
Setting jumper from pin 1-2 to pin 2-3, then back to pin 1-2 to reset CMOS data and enable ME update.



2.19 PMBUS Connector (PMBUS1)

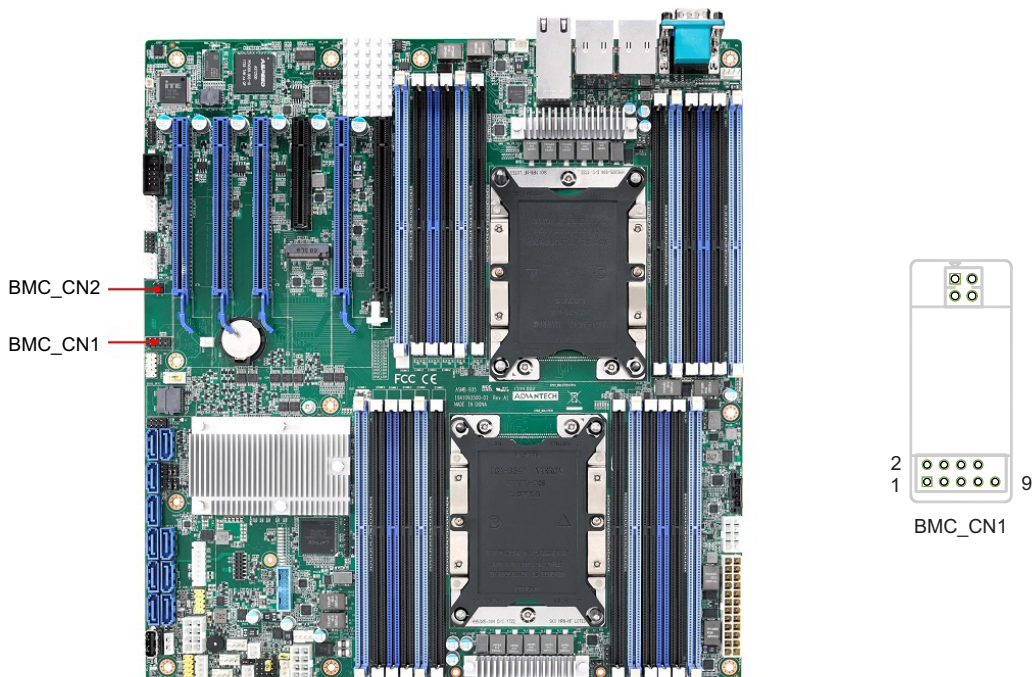


2.20 Front Panel SMBUS Connector (SMBUS1)



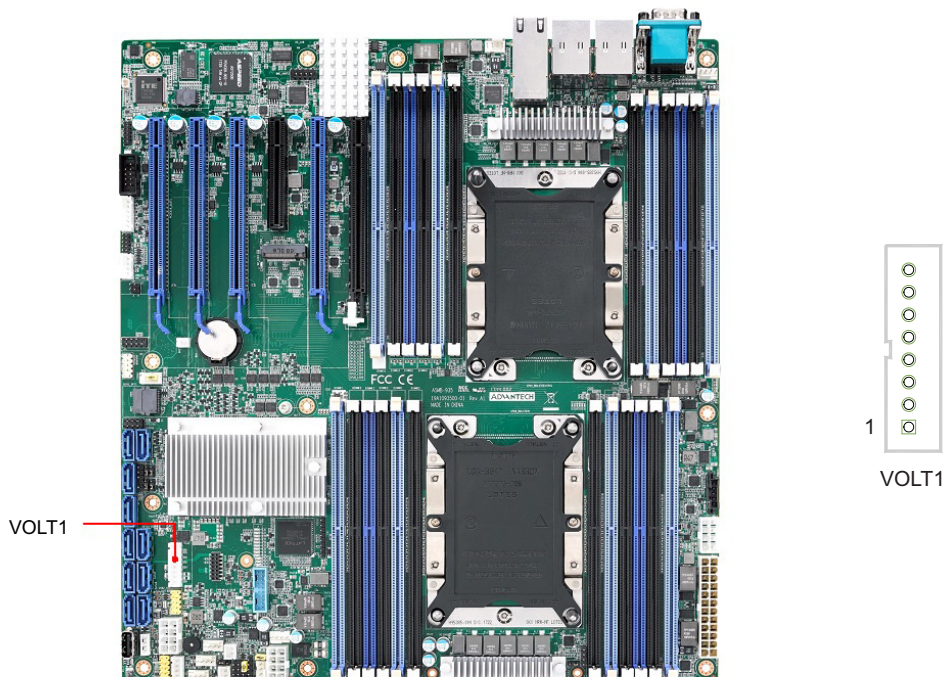
2.21 IPMI Module Connector (BMC_CN1)

This connector only fits Advantech's BMC Module that will exist in ASMB-935 I & T2 SKUs for enabling IPMI function.

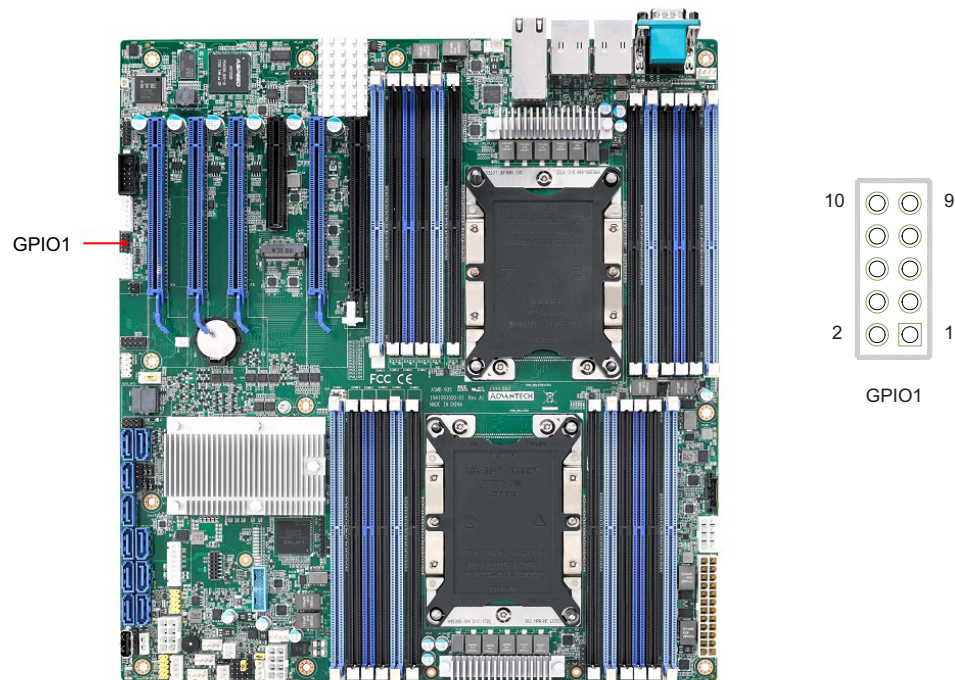


2.22 VOLT1 Connector (VOLT1)

VOLT1 connects to the alarm board on the Advantech chassis. These alarm boards give warnings if a power supply or fan fails, if the chassis overheats, or if the back-plane malfunctions.

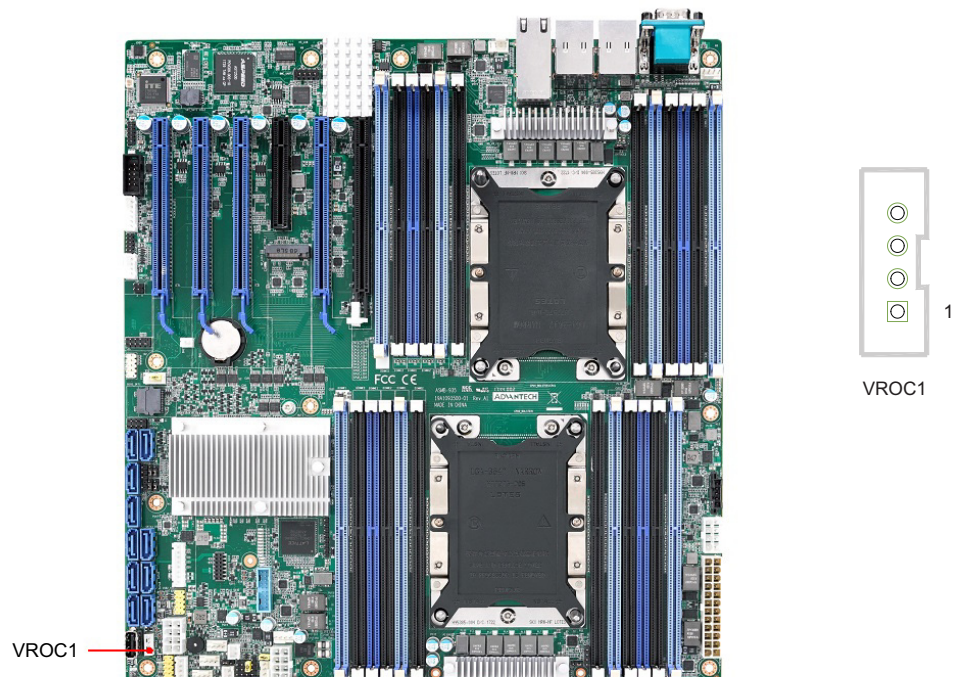


2.23 GPIO Connector (GPIO1)



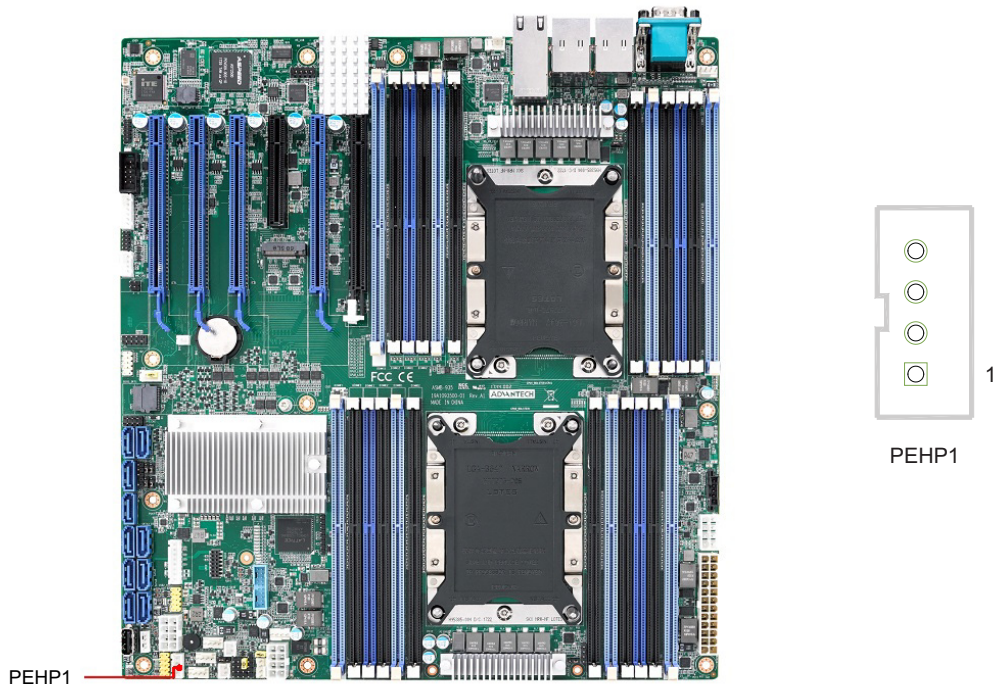
2.24 Intel Virtual RAID (VROC1)

Intel VROC license key of VMD allows NVMe SSDs to connect via PCIe and directly manages the CPU for better RAID performance. ASMB-935 has a VROC connector to enable NVMe SSD RAID, hot-plug and LED management features on Advantech's storage system.



2.25 NVMe RAID LED Control (PEHP1)

ASMB-935 has a PEHP1 connector for storage chassis to enable NVMe RAID LED control feature.

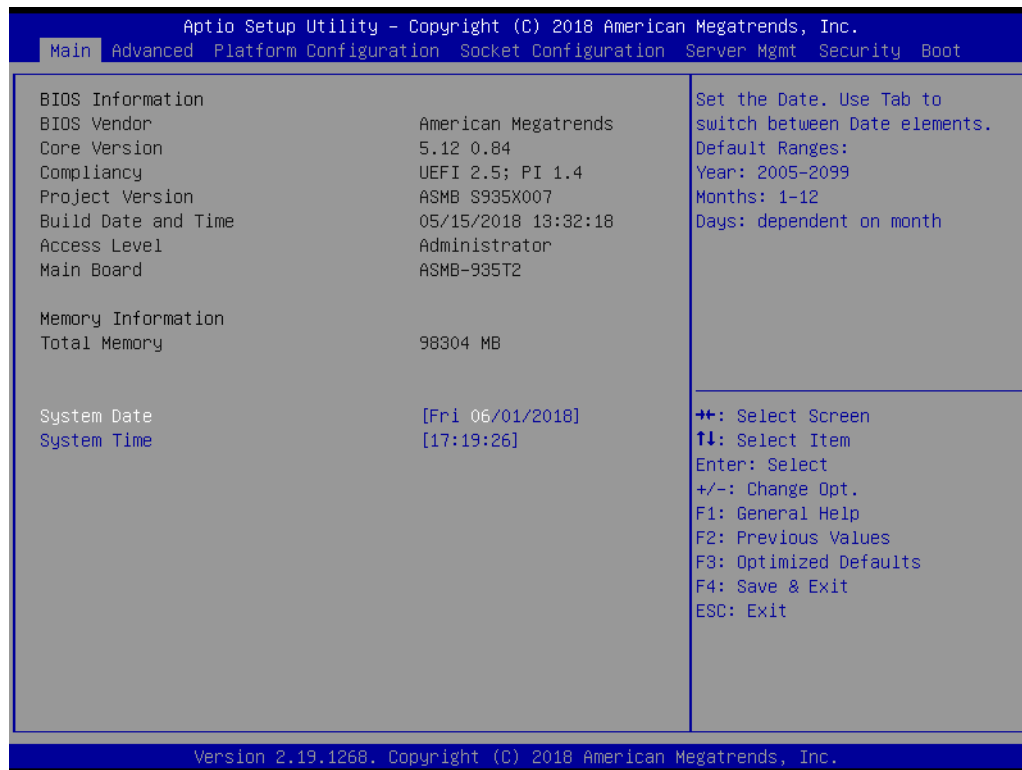


Chapter 3

AMI BIOS

3.1 Introduction

With the AMI BIOS Setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning the special features on or off. This chapter describes the basic navigation of the ASMB-935 setup screens.



AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed up CMOS so it retains the Setup information when the power is turned off.

Note! *The BIOS setup screens shown in this chapter are for reference only, they may not exactly match what you see on your display.*



3.2 BIOS Setup

3.2.1 Main Menu

Press during bootup to enter AMI BIOS CMOS Setup Utility; the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



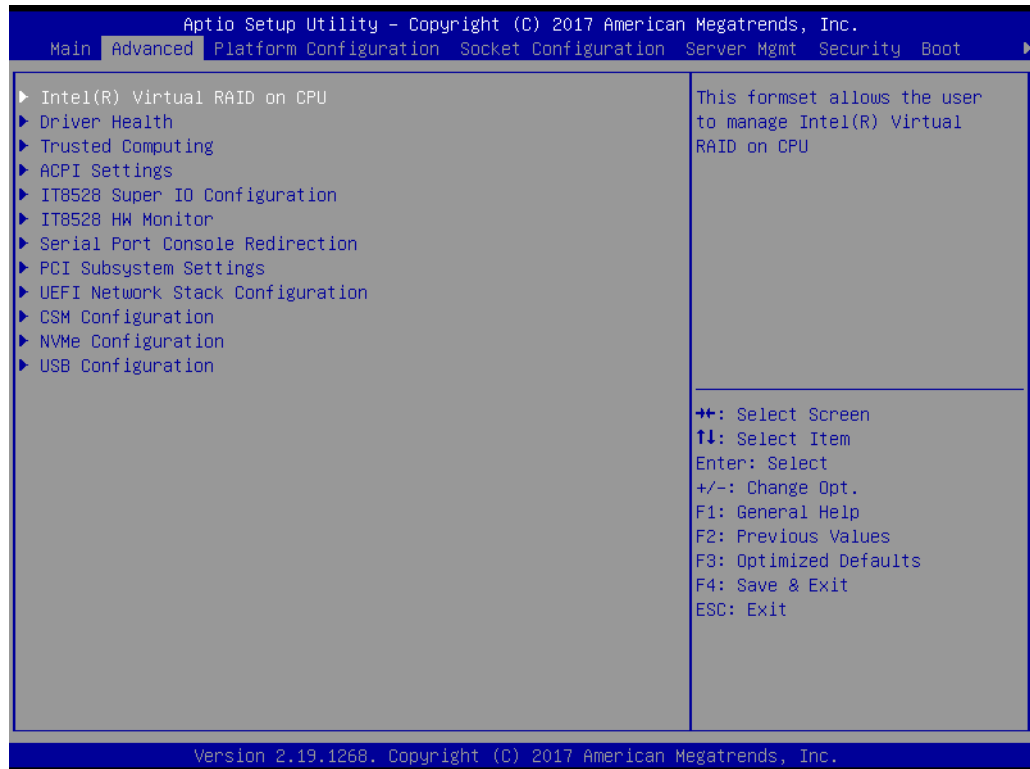
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can be. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

■ System Date / System Time

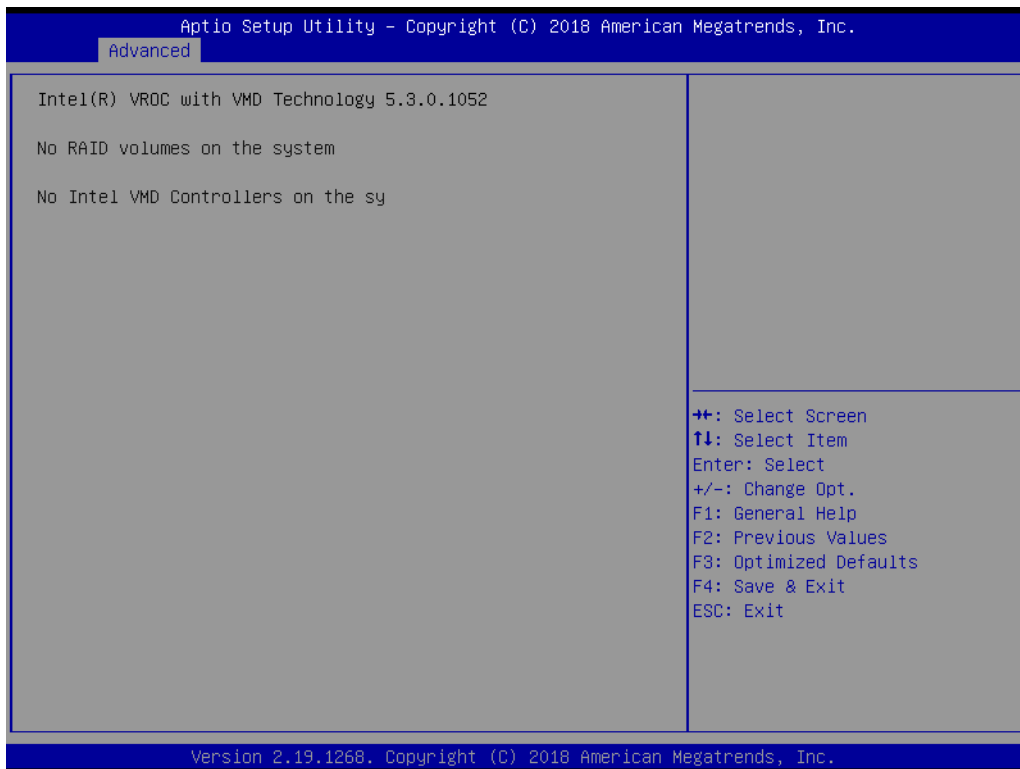
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features Setup

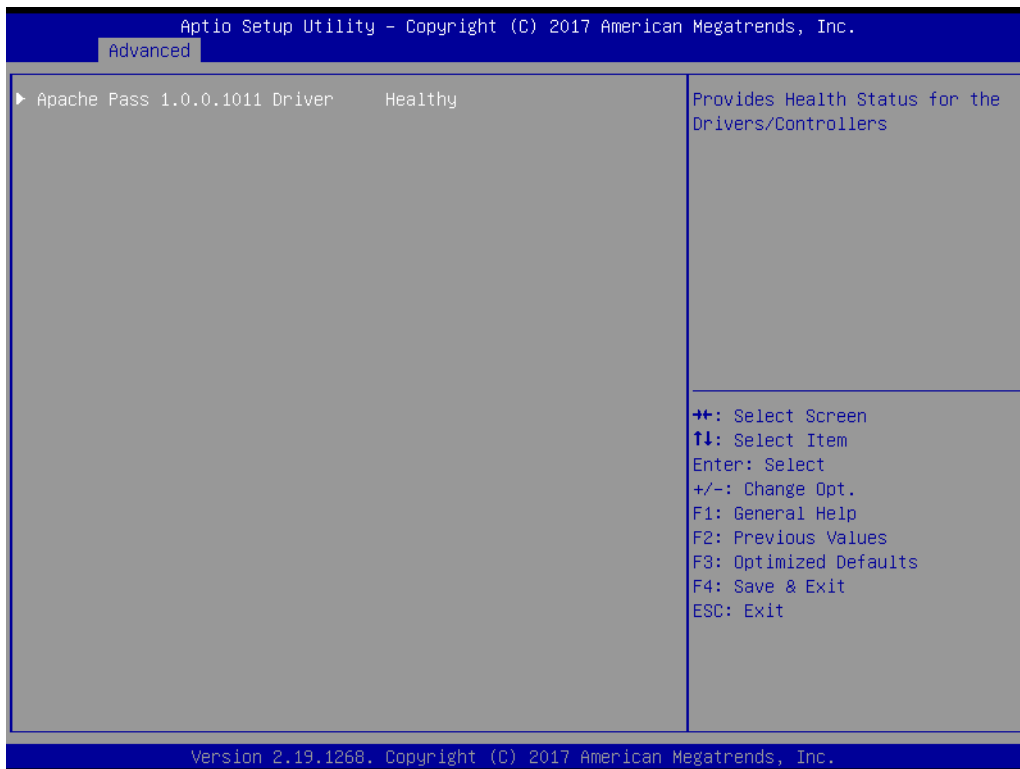
Select the Advanced tab from the ASMB-935 setup screen to enter the Advanced BIOS setup screen. You can select any of the items in the left frame of the screen, such as CPU configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.



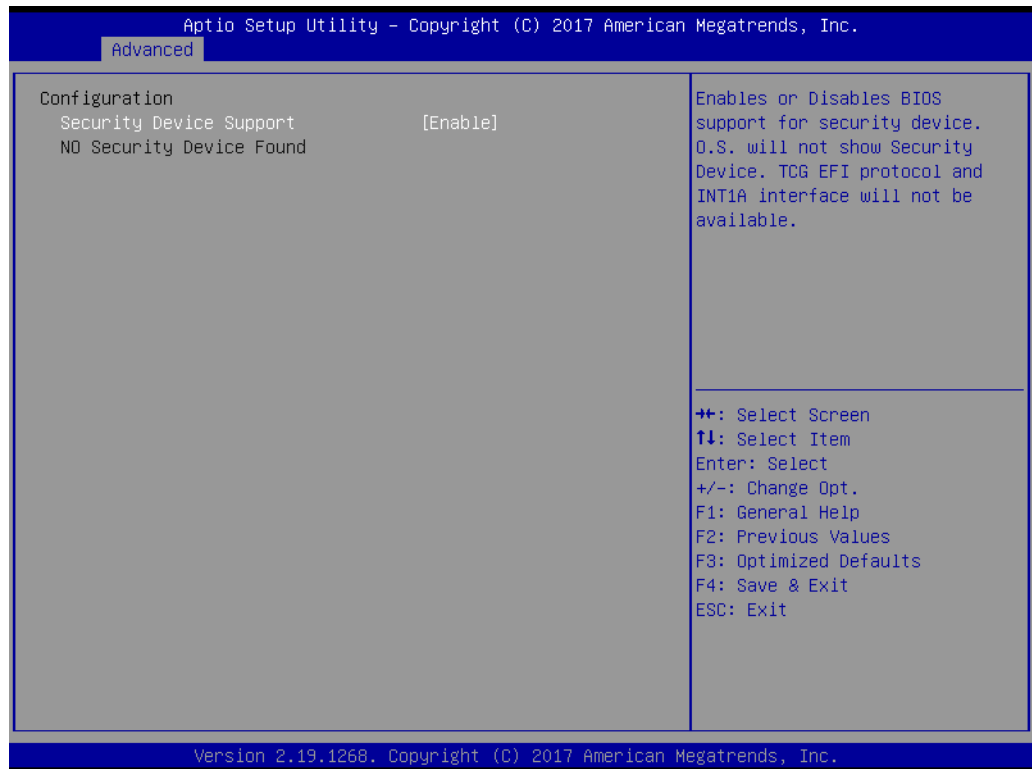
3.2.2.1 Intel Virtual RAID on CPU



3.2.2.2 Driver Health



3.2.2.3 Trusted Computing



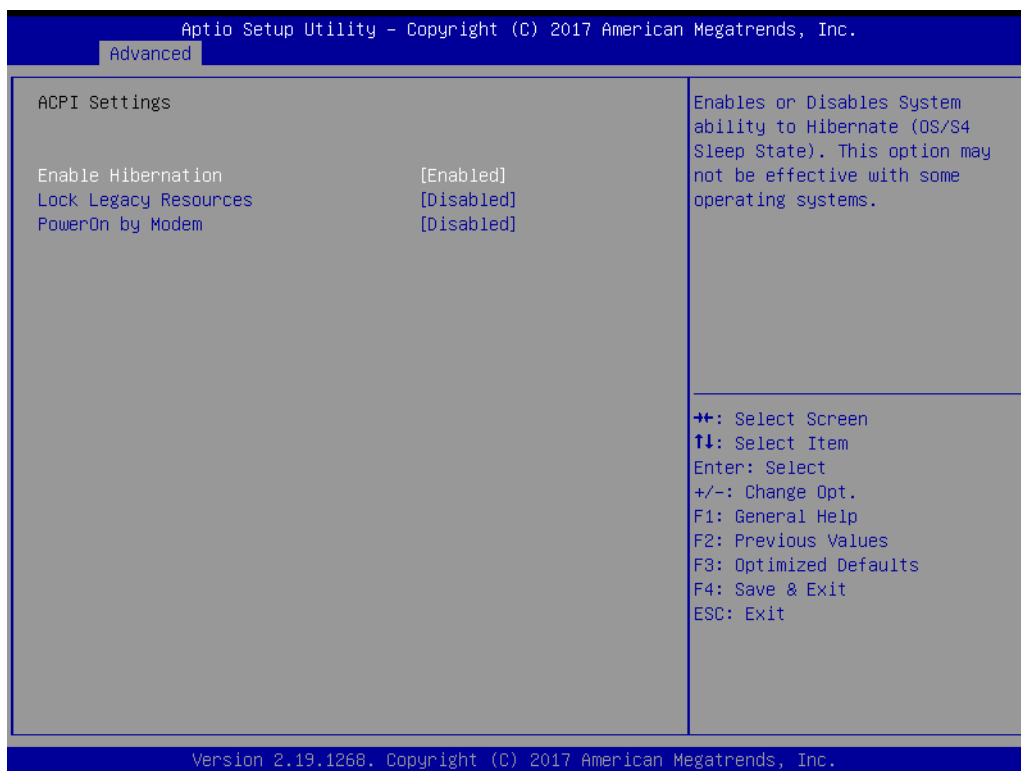
■ Security Device Support

Enables or disables BIOS support for security devices.

Note! Purchase Advantech's LPC TPM module to enable TPM function. P/N: PCA-TPM-00A1E or PCA-TPM-00B1E.

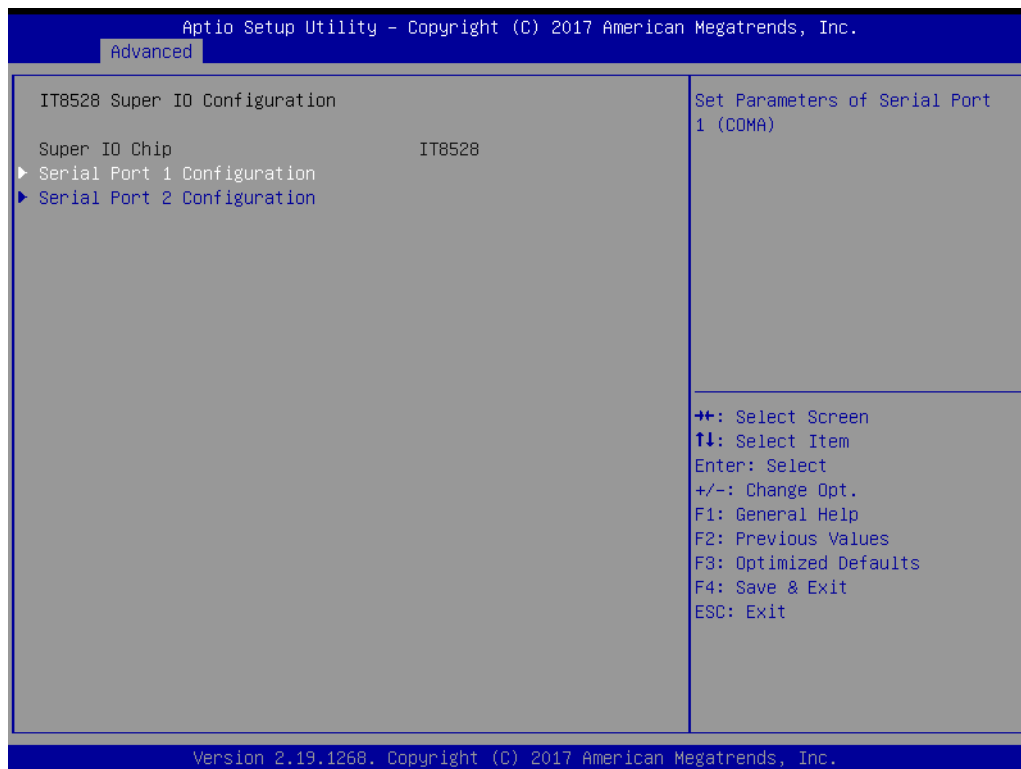


3.2.2.4 ACPI Settings

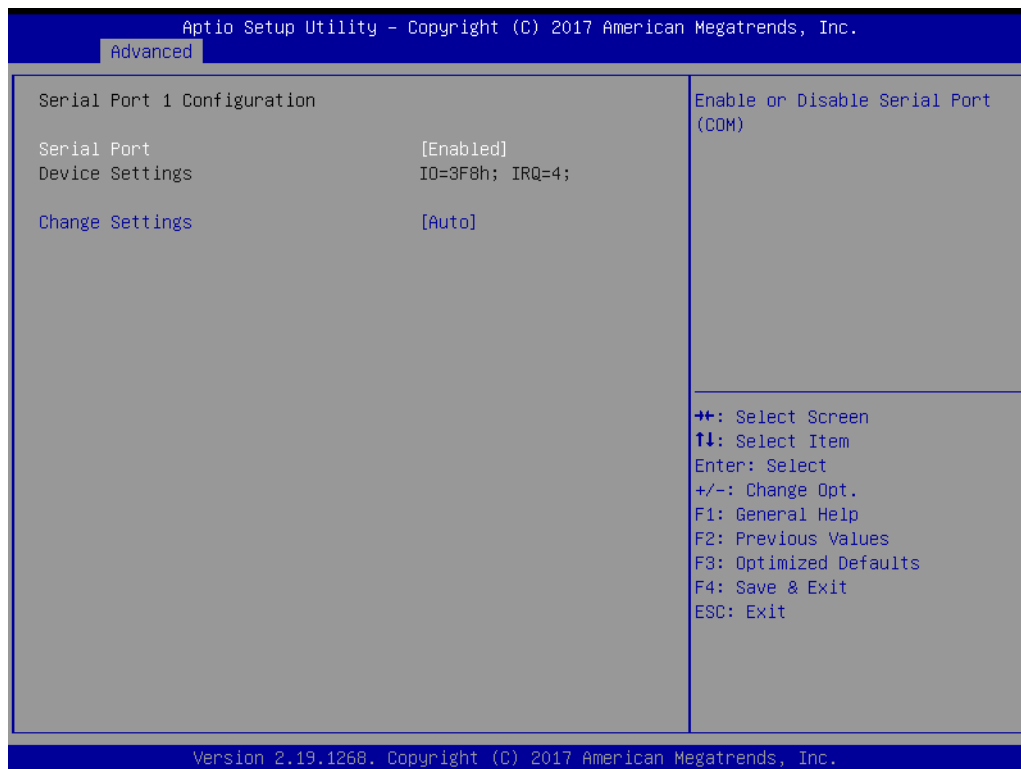


- **Enable Hibernation**
Enable or disable hibernation feature.
- **Lock Legacy Resources**
Enable or disable lock legacy resources feature.
- **PowerOn By Modem**
Enable or disable power on by modem feature.

3.2.2.5 IT8528 EC Super IO Configuration

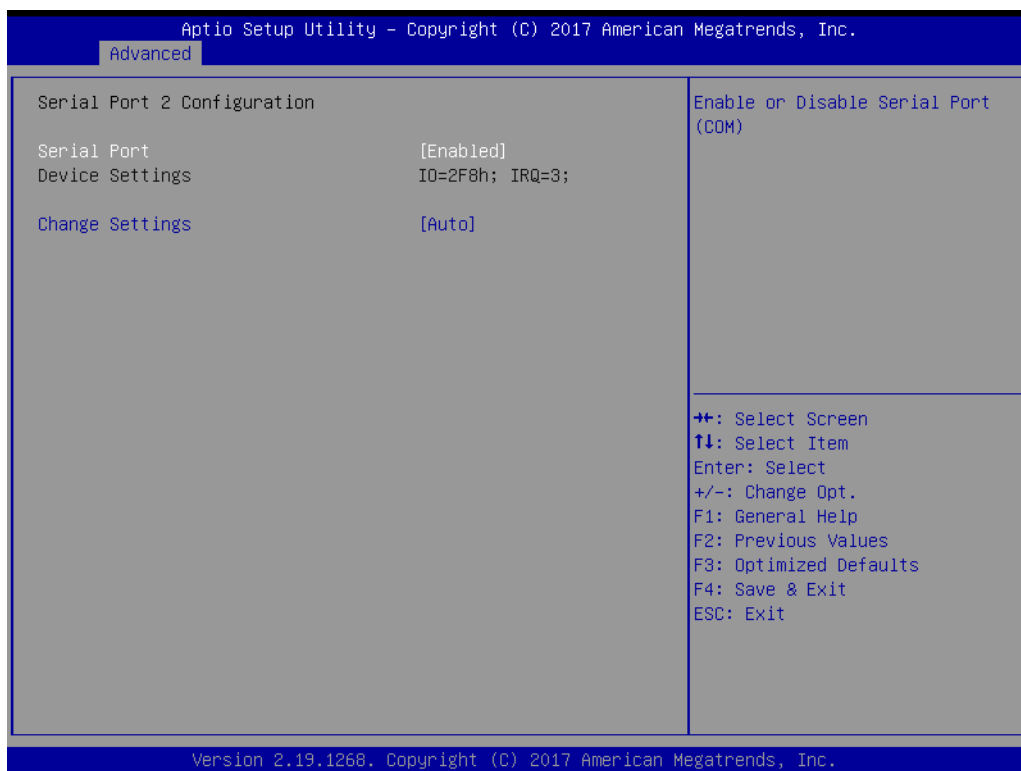


■ Serial Port 1 Configuration



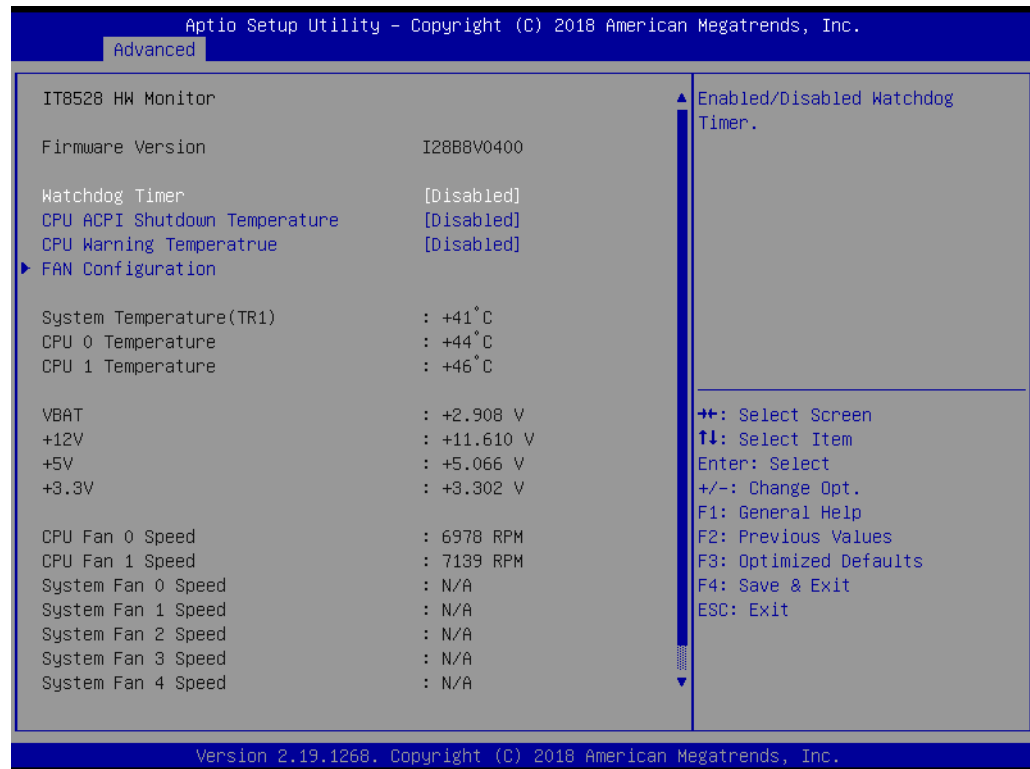
- **Serial Port**
Enable or disable serial port 1.
- **Change Settings**
To select an optimal setting for serial port 1.

■ Serial Port 2 Configuration

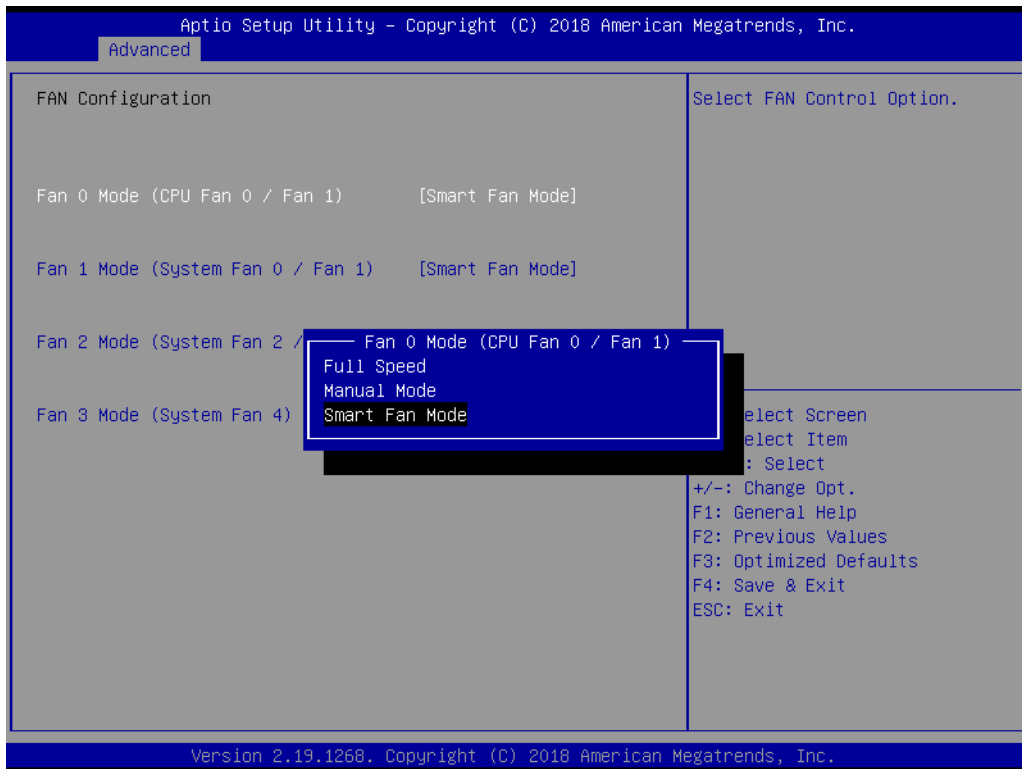


- **Serial Port**
Enable or disable serial Port 2.
- **Change Settings**
To select an optimal setting for serial port 2.

3.2.2.6 IT8528 HW Monitor



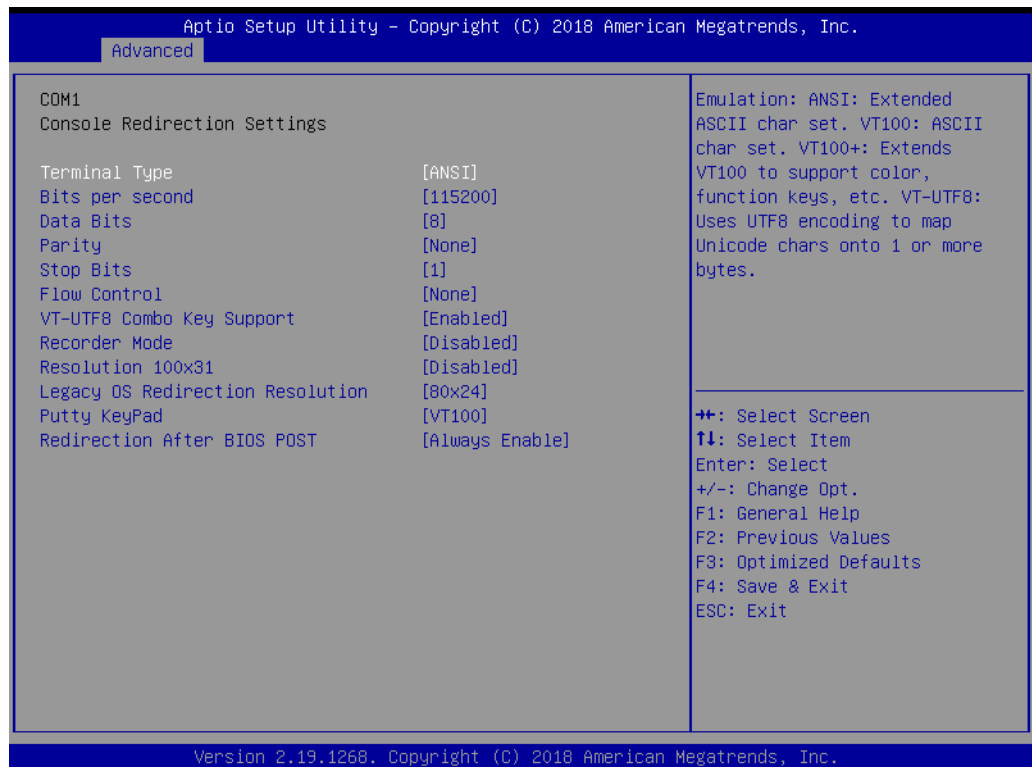
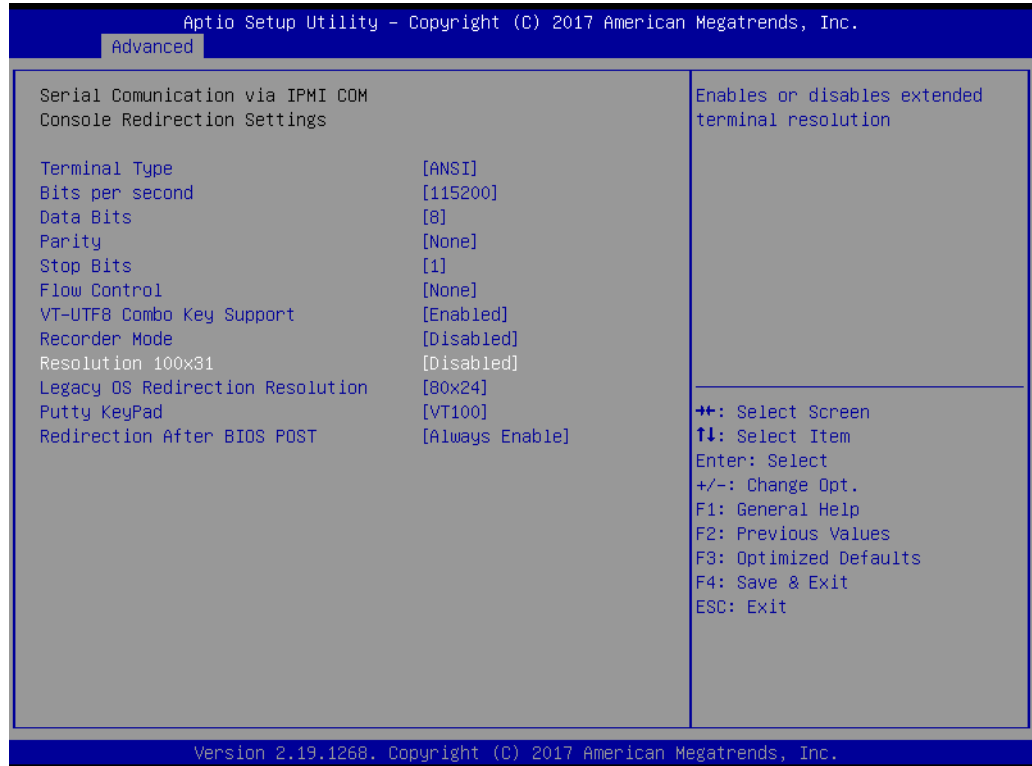
- **Watchdog Timer**
Enable or disable the watchdog timer function.
- **CPU ACPI Shutdown Temperature**
Enable or disable the ACPI shutdown temperature threshold. When the system reaches the shutdown temperature, it will be automatically shut down by ACPI OS to protect the system from overheat damage.
- **CPU Warning Temperature**
Enable or disable the CPU warning temperature threshold. When the system reaches the warning temperature, the speaker will beep.
- **Fan Configuration**
Fan 0 mode controls CPUFAN0 and CPUFAN1, Fan 1 mode controls SYSFAN0 and SYSFAN1, FAN 2 mode controls SYSFAN2 and SYSFAN3; and FAN 3 mode controls SYSFAN4.
The default of CPU/System FAN is Smart FAN mode and the BIOS will automatically control the FAN speed by CPU temperature.
When set to manual mode, fan duty setting can be changed; the range is from 30%~100%, default setting is 50%.



3.2.2.7 Serial Port Console Redirection



■ COM1 Console Redirection Settings



- **Terminal Type**
Select a terminal type to be used for console redirection.
Options available: VT100/VT100+/ANSI /VT-UTF8.
- **Bits Per Second**
Select the baud rate for console redirection.

Options available: 9600/19200/57600/115200.

– **Data Bits**

– **Parity**

A parity bit can be sent with the data bits to detect some transmission errors.

Even: parity bit is 0 if the number of 1's in the data bits is even.

Odd: parity bit is 0 if number of 1's the data bits is odd.

Mark: parity bit is always 1. Space: Parity bit is always 0.

Mark and Space Parity do not allow for error detection.

Options available: None/Even/Odd/Mark/Space.

– **Stop Bits**

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 stop bit.

Options available: 1/2.

– **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. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Options available: None/Hardware RTS/CTS.

– **VT-UTF8 Combo Key Support**

Enable VT-UTF8 combination key support for ANSI/VT100 terminals

– **Recorder Mode**

When this mode enabled, only text will be sent; this is to capture terminal data.

Options available: Enabled/Disabled.

– **Resolution 100x31**

Enables or disables extended terminal resolution.

– **Legacy OS Redirection Resolution**

On Legacy OS, the number of Rows and Columns supported redirection.

Options available: 80x24/80X25.

– **Putty Keypad**

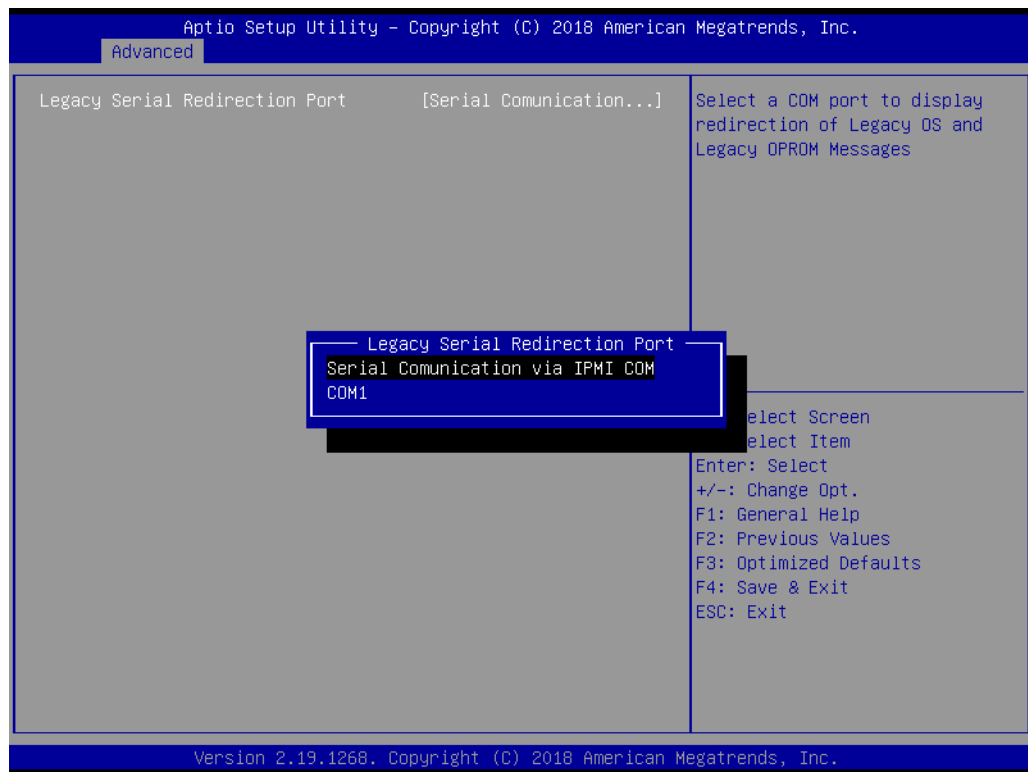
Select function key and keypad on putty.

– **Redirection After BIOS Post**

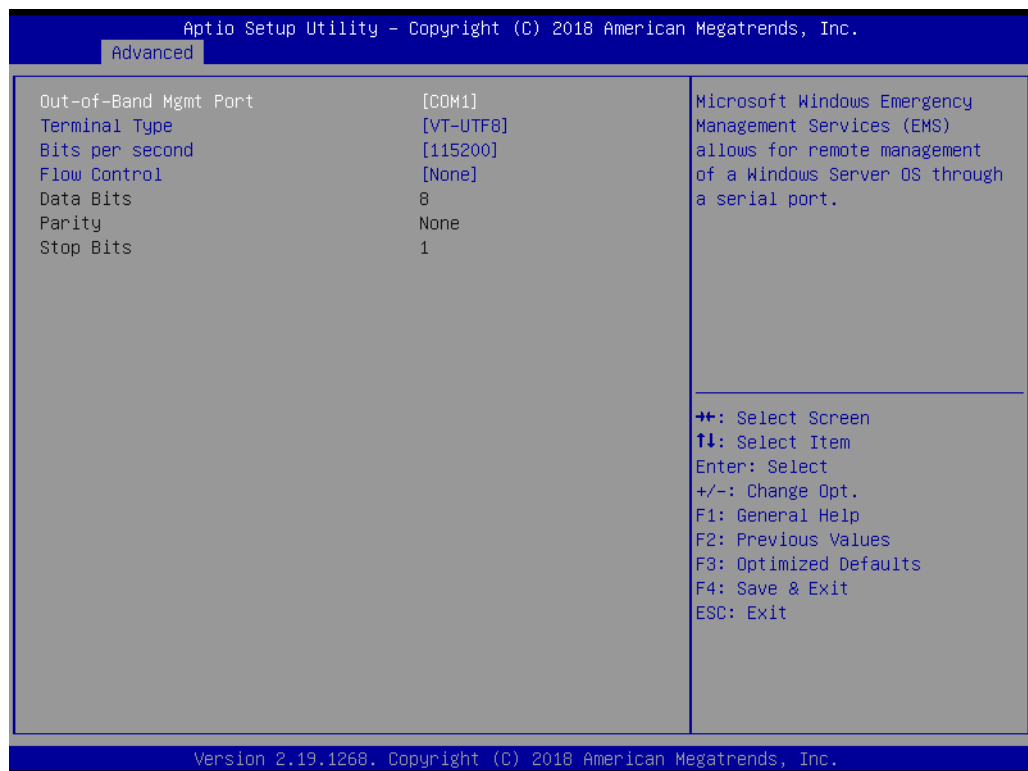
When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

- **Legacy Console Redirection Settings**

Select a COM port to display redirection of Legacy OS and Legacy OPRM Messages.



- **Console Redirection Settings**



– **Out-of-Band Mgmt Port**

To select the com port user would like to set for having console redirection feature.

- **Terminal Type**

Set as "VT100", "VT100+", "VT-UTF8", or "ANSI". "VT-UTF8" is the default setting.

- **Bits Per Second**

To select serial port transmission. Speed must be matched on the other side. It can be set as "9600", "19200", "57600", or "115200". "115200" is the default setting.

- **Flow Control**

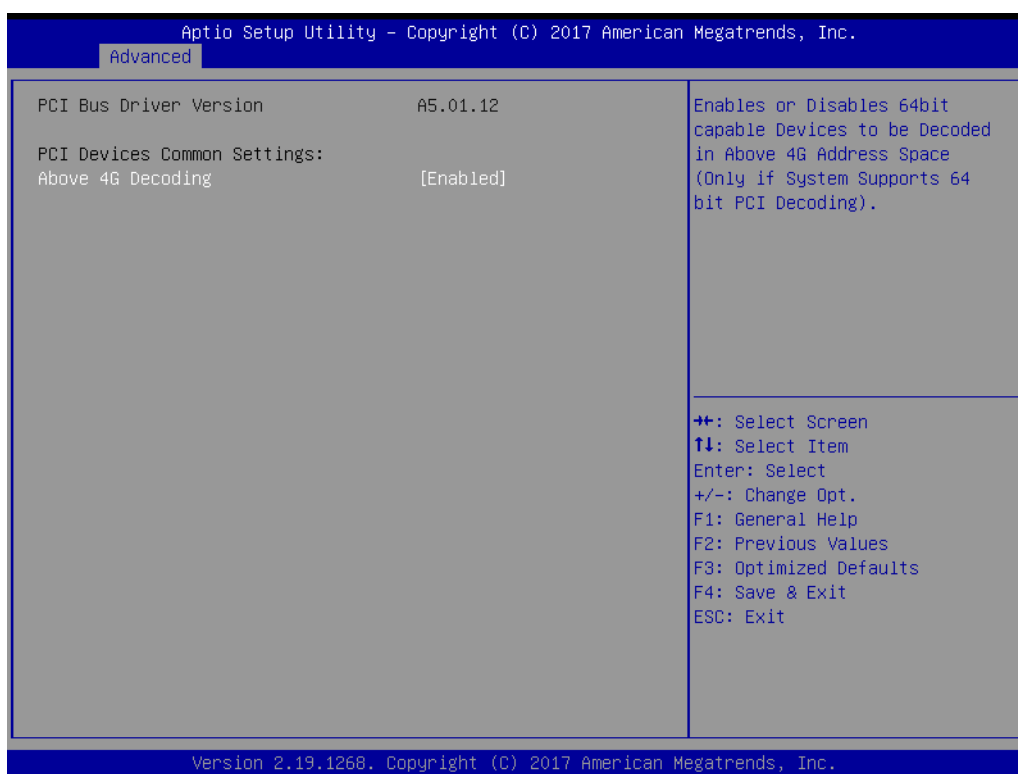
Flow control can prevent data loss from buffer overflow. It can be set as "None", "Hardware RTS/CTS", or "Software Xon/Xoff". "None" is the default setting.

- **Data Bits**

- **Parity**

- **Stop Bits**

3.2.2.8 PCI Subsystem Settings



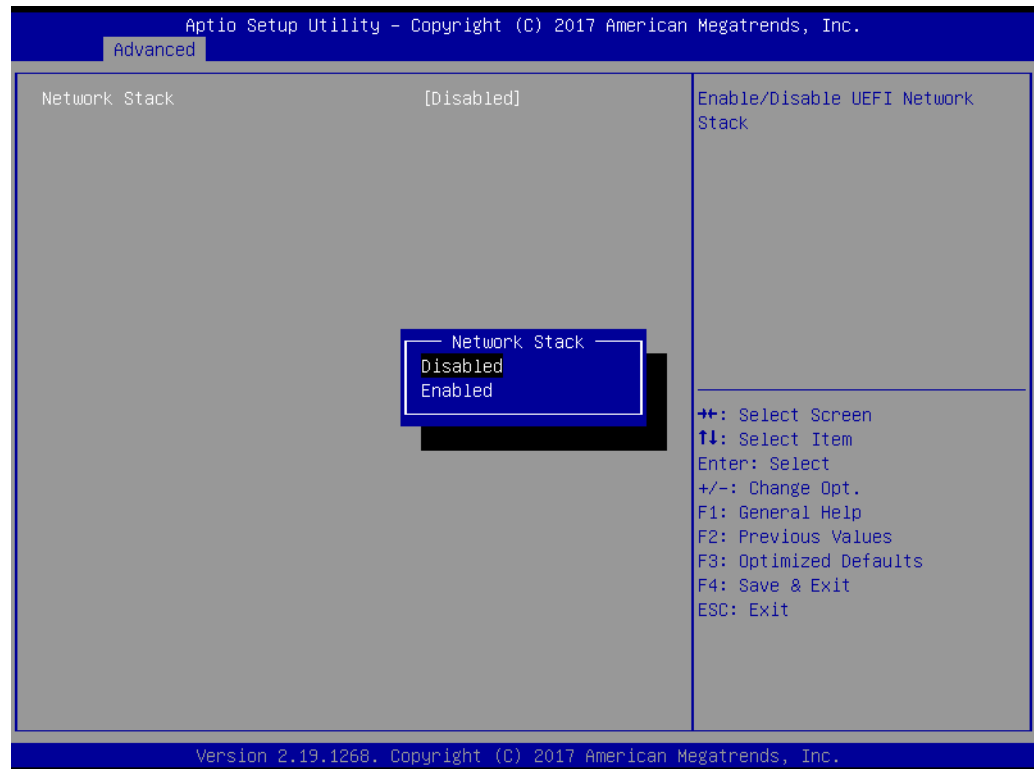
- **Above 4G Decoding**

Enable or Disable 64-bit capable devices to be decoded in above 4G address space (Only if system supports 64-bit PCI decoding).

Note! Some graphics or GPU cards need to enable 4G decoding.

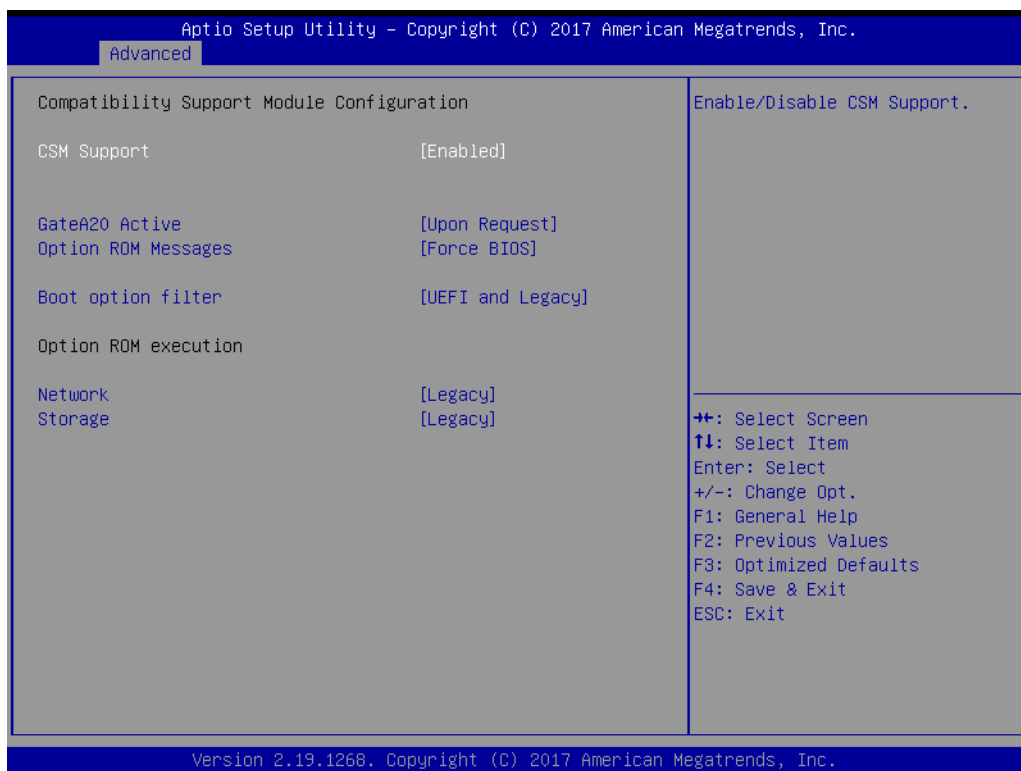


3.2.2.9 UEFI Network Stack Configuration

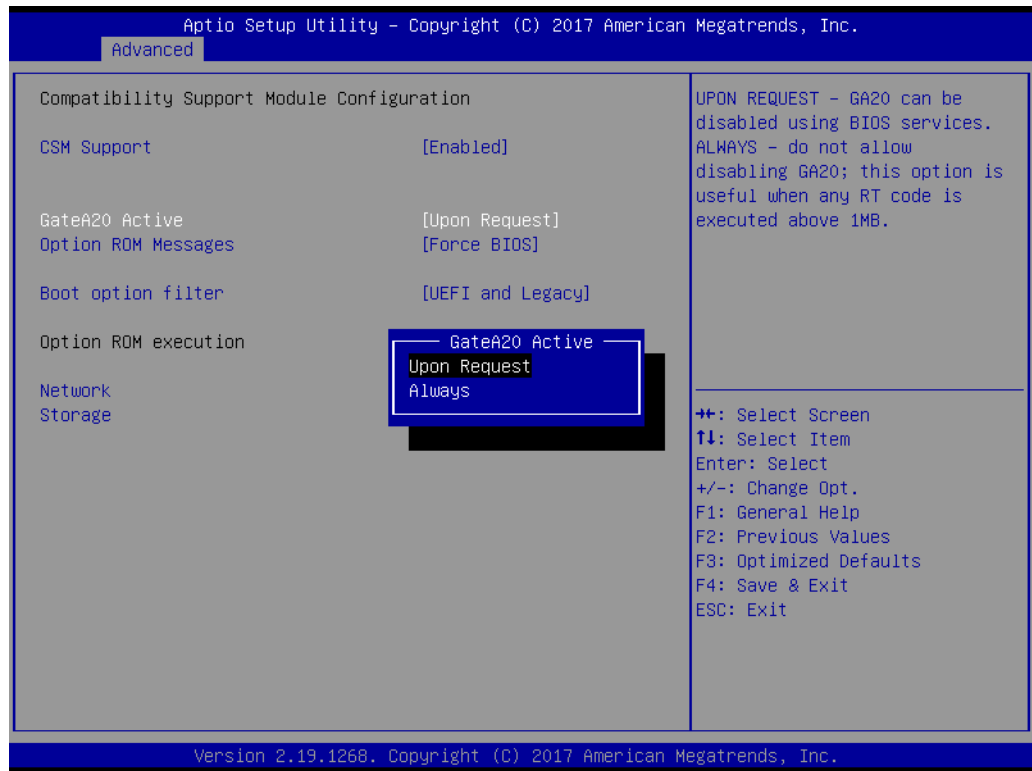


Enable or disable UEFI network stack function.

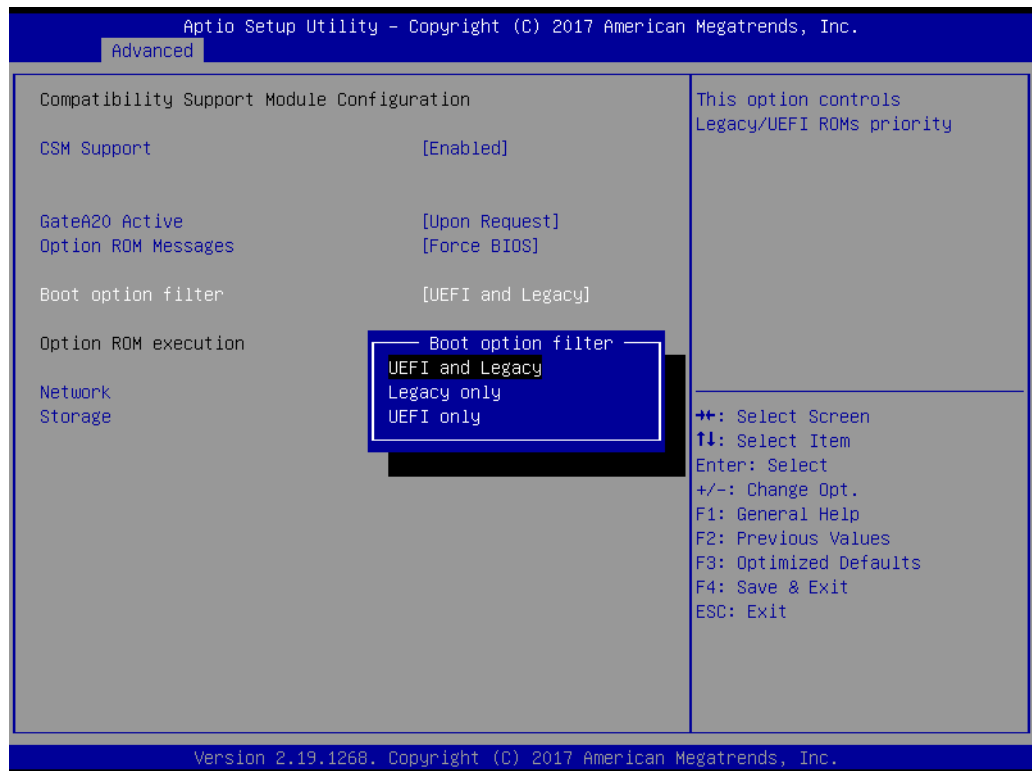
3.2.2.10 CSM Configuration



- **CSM Support**
Enable or disable UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.
- **GateA20 Active**
This items is useful when RT code is executed above 1MB. When it's set as "Upon Request", GA20 can be disabled using BIOS services. When it's set as "Always", it does not allow disabling GA20.

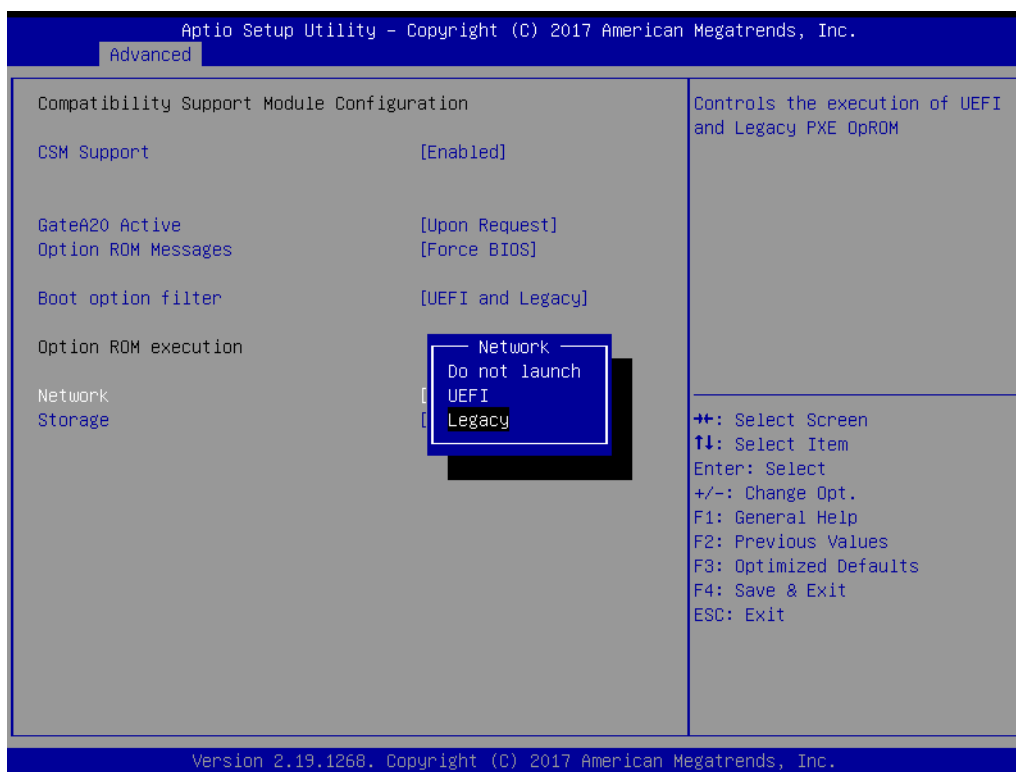


- **Option ROM Messages**
To "Force BIOS or keep current" to set the display mode for Option ROM.
- **Boot option filter**
Change UEFI/legacy ROM priority for boot option.



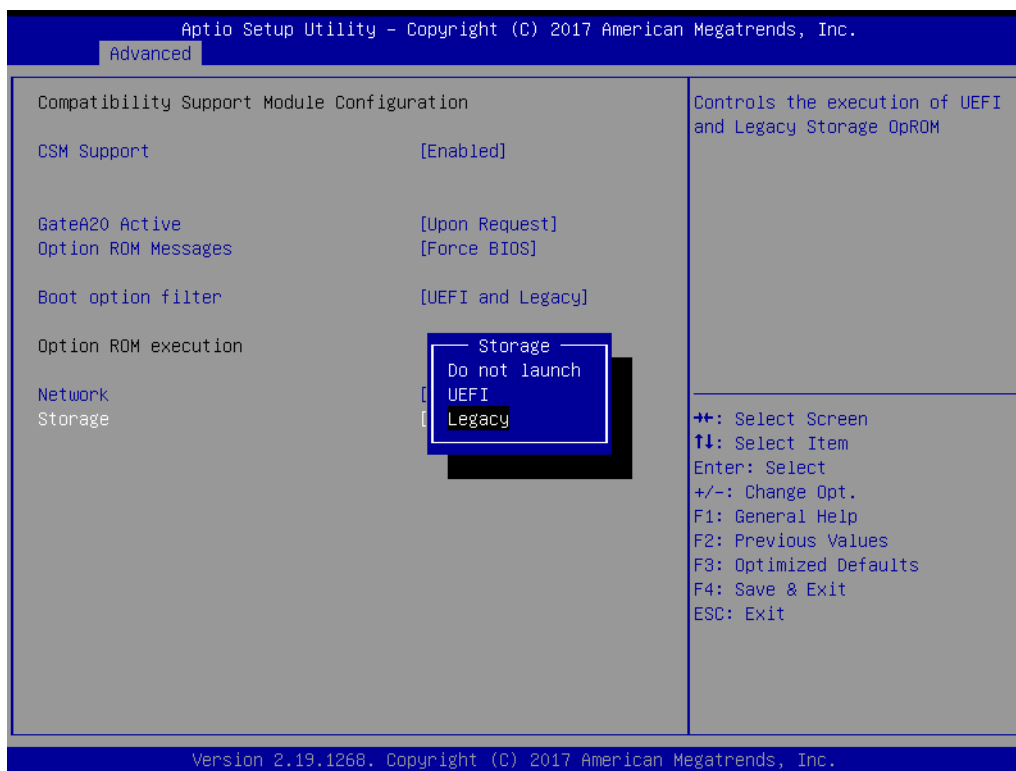
■ Network

Control the execution of UEFI and legacy PXE OpROM.



■ Storage

Control the execution of UEFI and legacy storage OpROM.

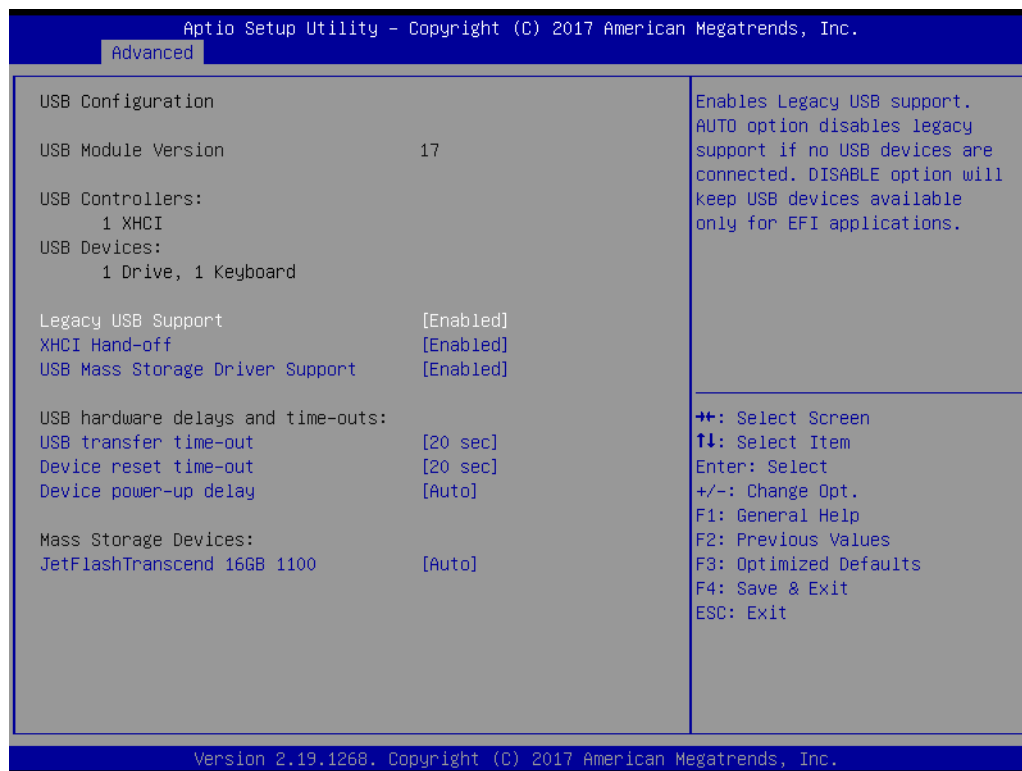


3.2.2.11 NVMe Configuration

Set NVMe device options.



3.2.2.12 USB Configuration



- **Legacy USB Support**

This is for supporting USB device under a legacy OS such as DOS. When choosing "Auto", the system will automatically detect if any USB device is plugged into the computer and enable USB legacy mode when a USB device is plugged, or disable USB legacy mode when no USB device is attached.

- **XHCI Hand-off**

This is a workaround for OS without XHCI hand-off support.

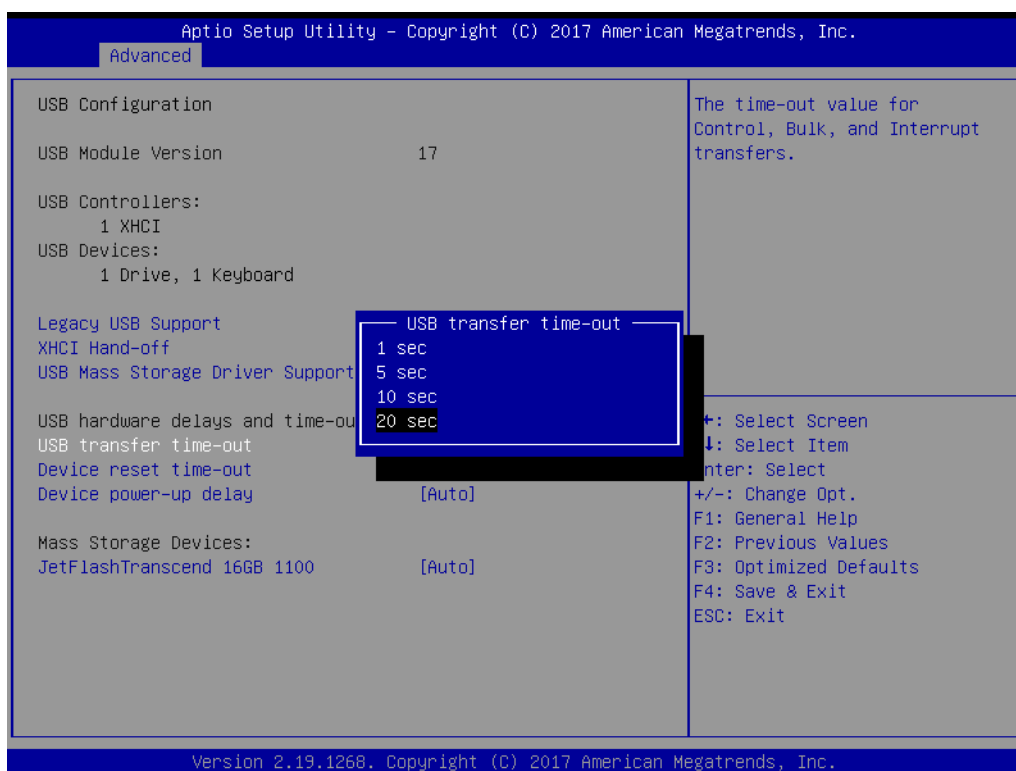
The XHCI ownership change should be claimed by XHCI driver.

- **USB Mass Storage Driver Support**

Enable or disable USB mass storage driver support.

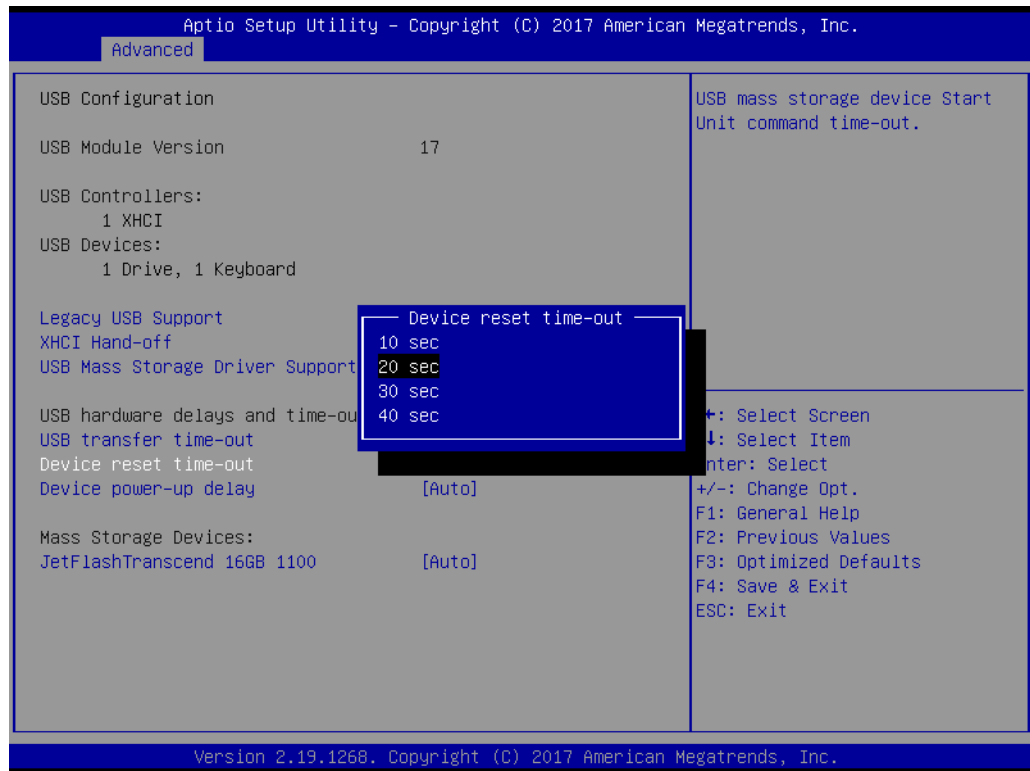
- **USB Transfer Time-out**

Selects the USB transfer time-out value. [1,5,10,20sec]



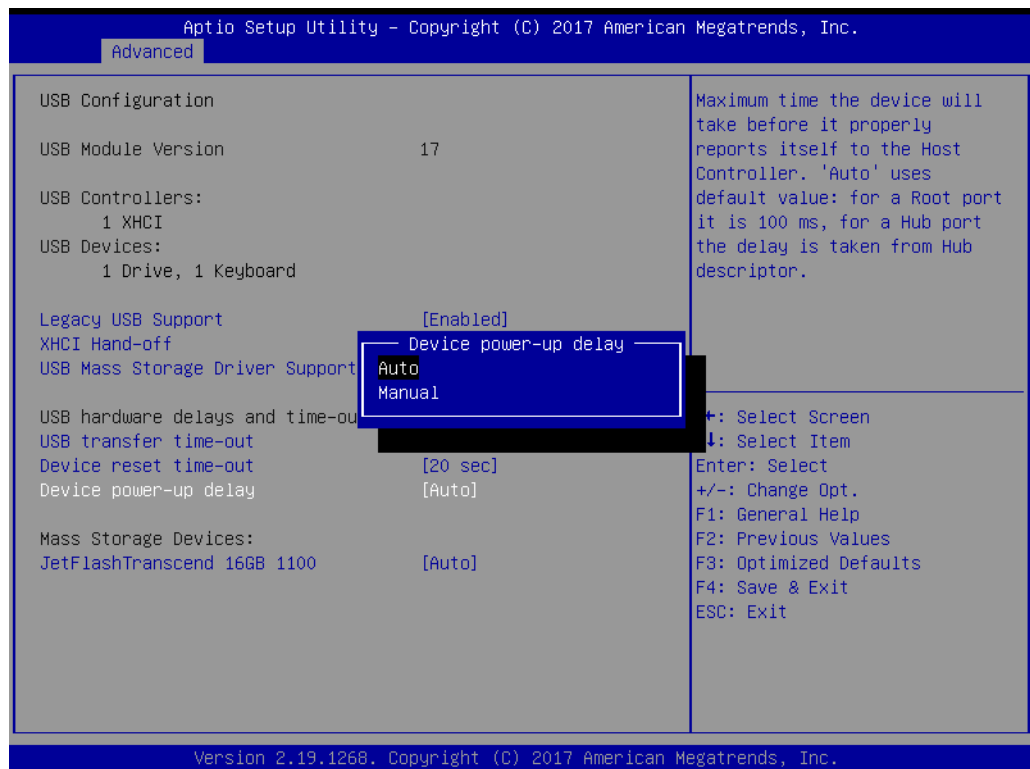
■ **Device Reset Time-out**

Selects the USB device reset time-out value. [10,20,30,40 sec]



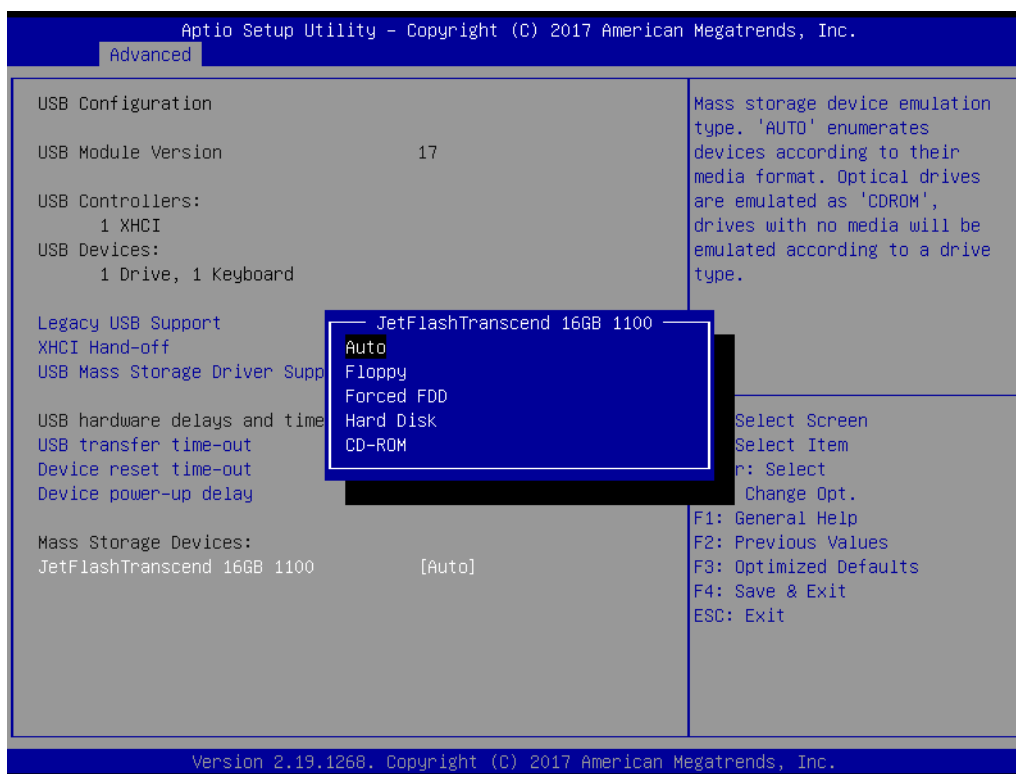
■ **Device Power-up Delay**

This item appears only when Device power-up delay item is set to [manual].

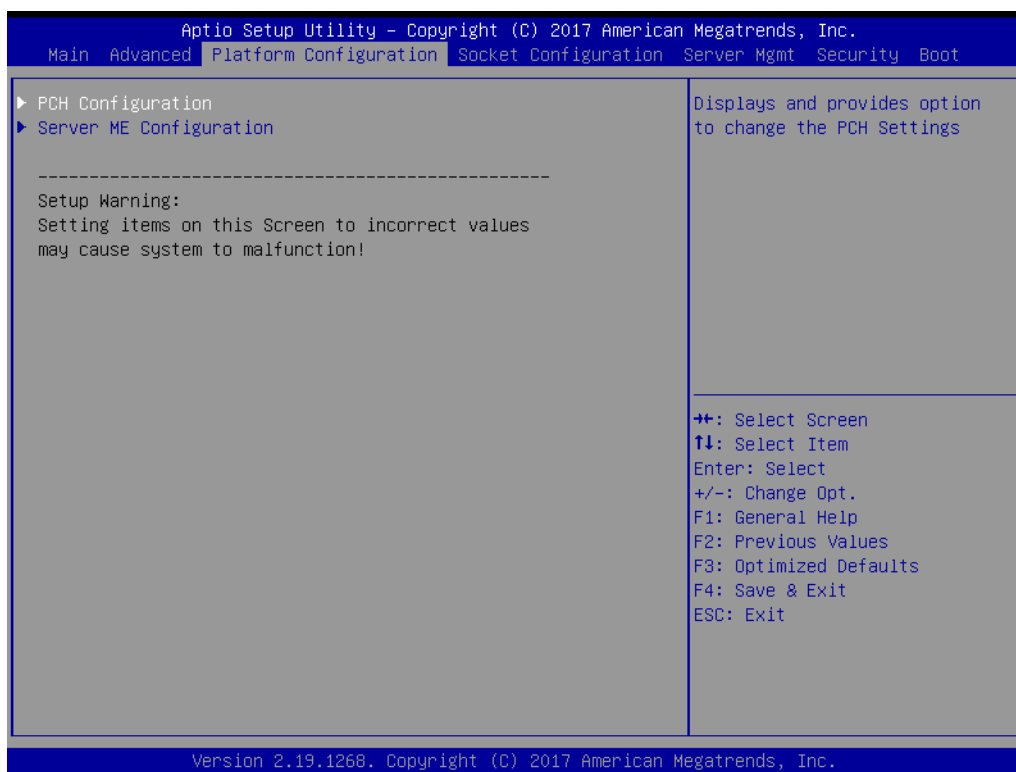


■ Mass Storage Devices

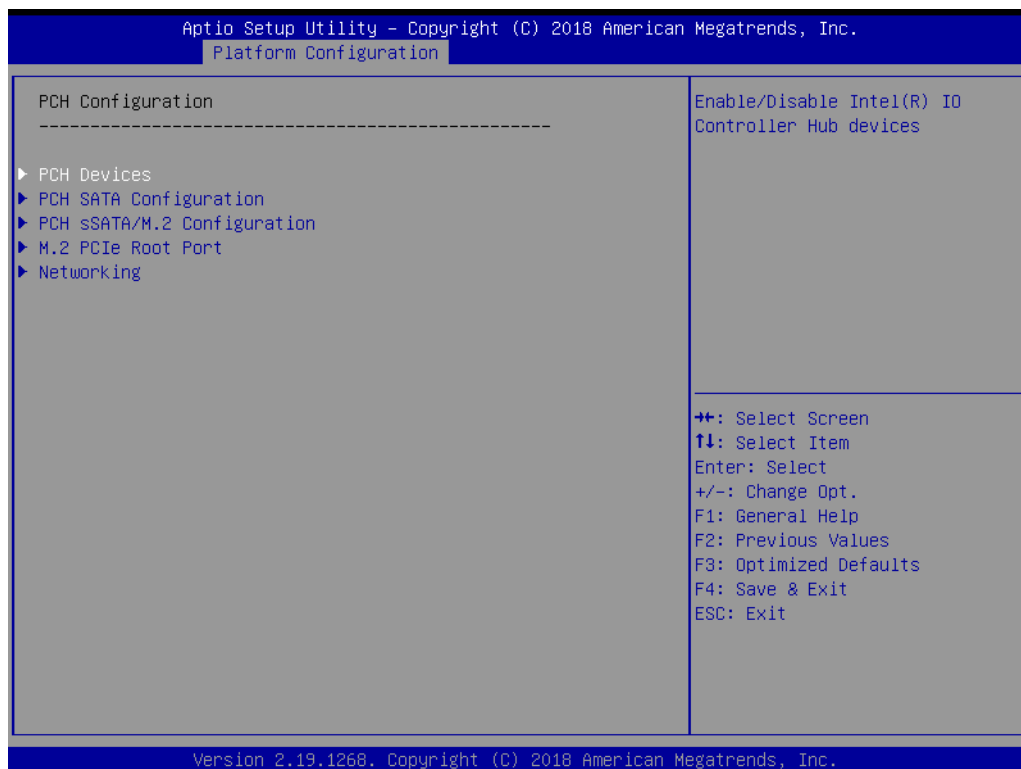
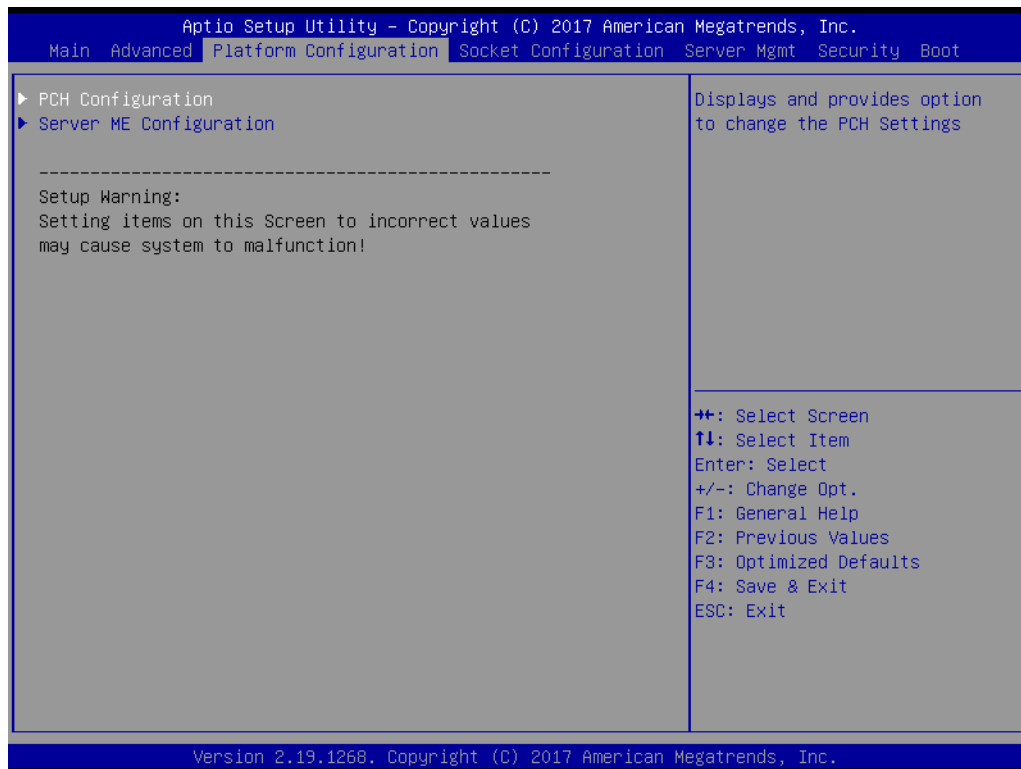
Default is "Auto" to enumerate mass storage devices according to media format.



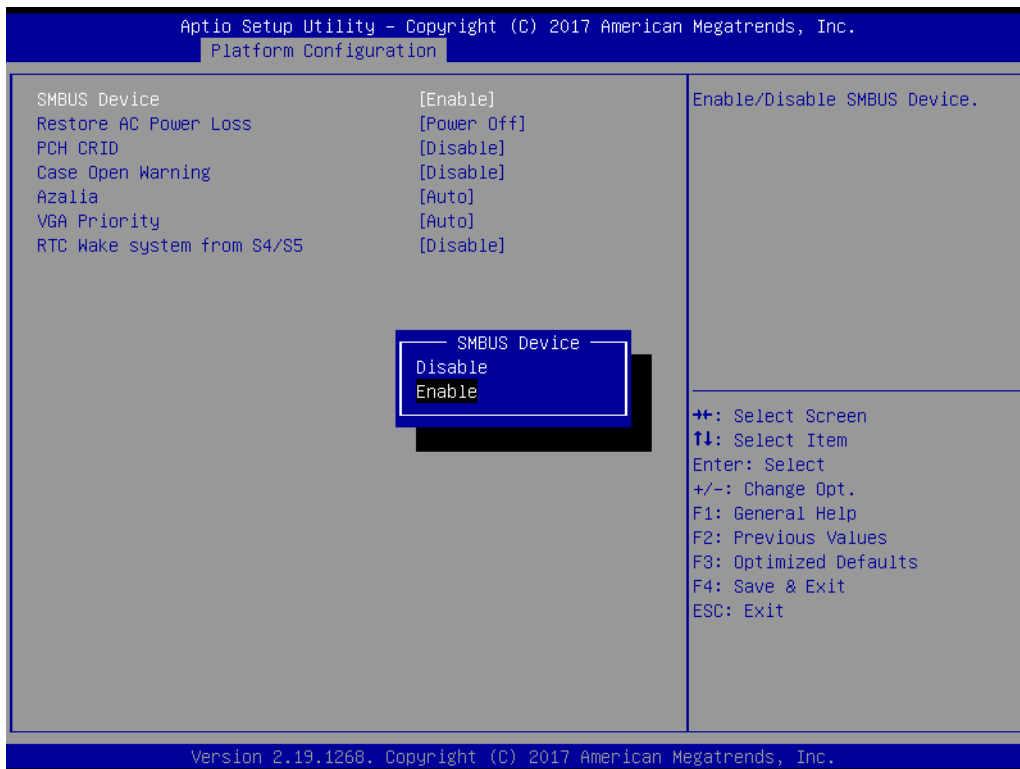
3.2.3 Platform Configuration



3.2.3.1 PCH Configuration

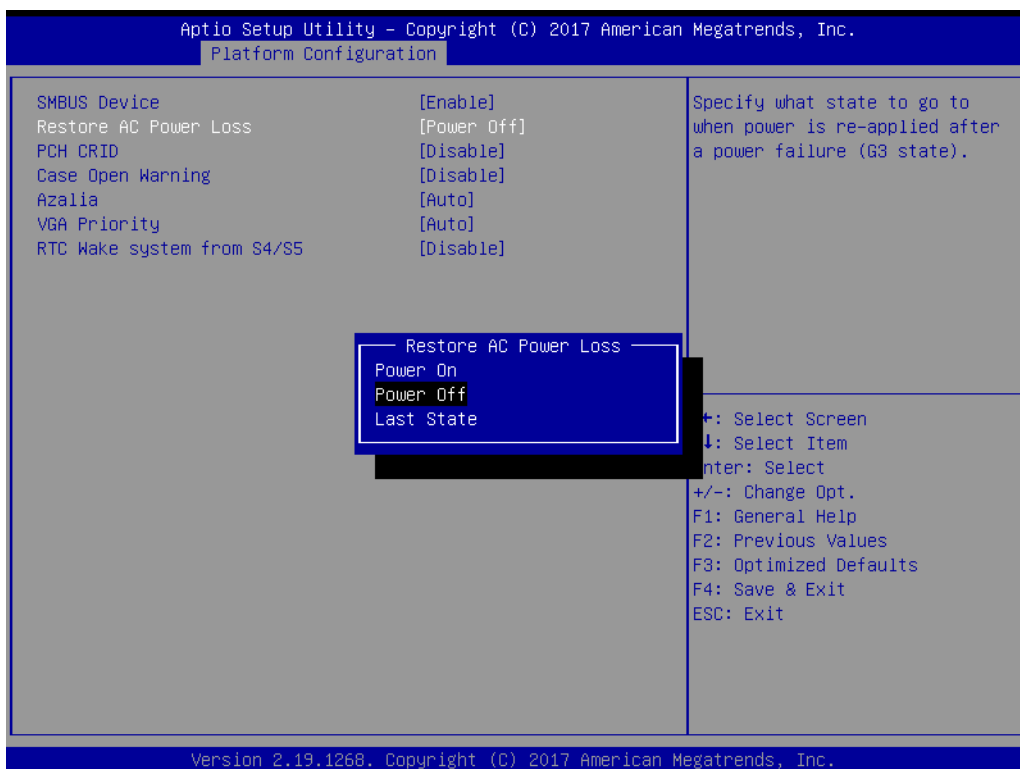


- **PCH Devices**
 This item is to set up IO controller hub devices.
 - **SMBus Controller**
 Enable or disable SMBus controller.



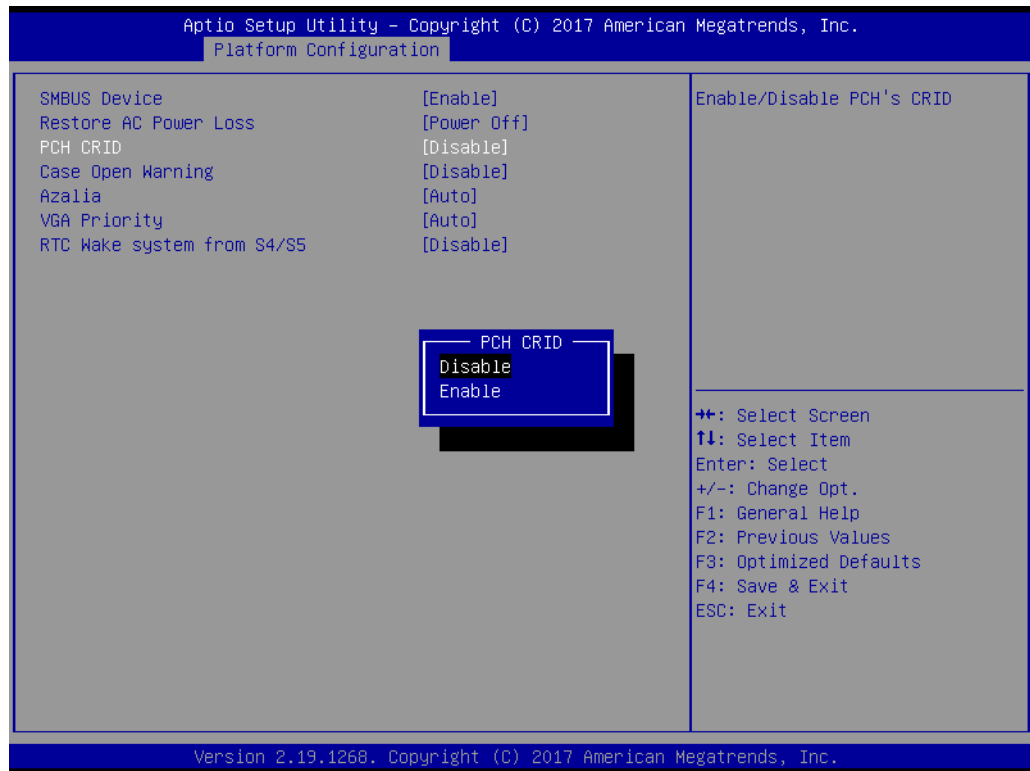
– Restore AC Power Loss

Specify what state to go to when power is re-applied after a power failure (G3 state).



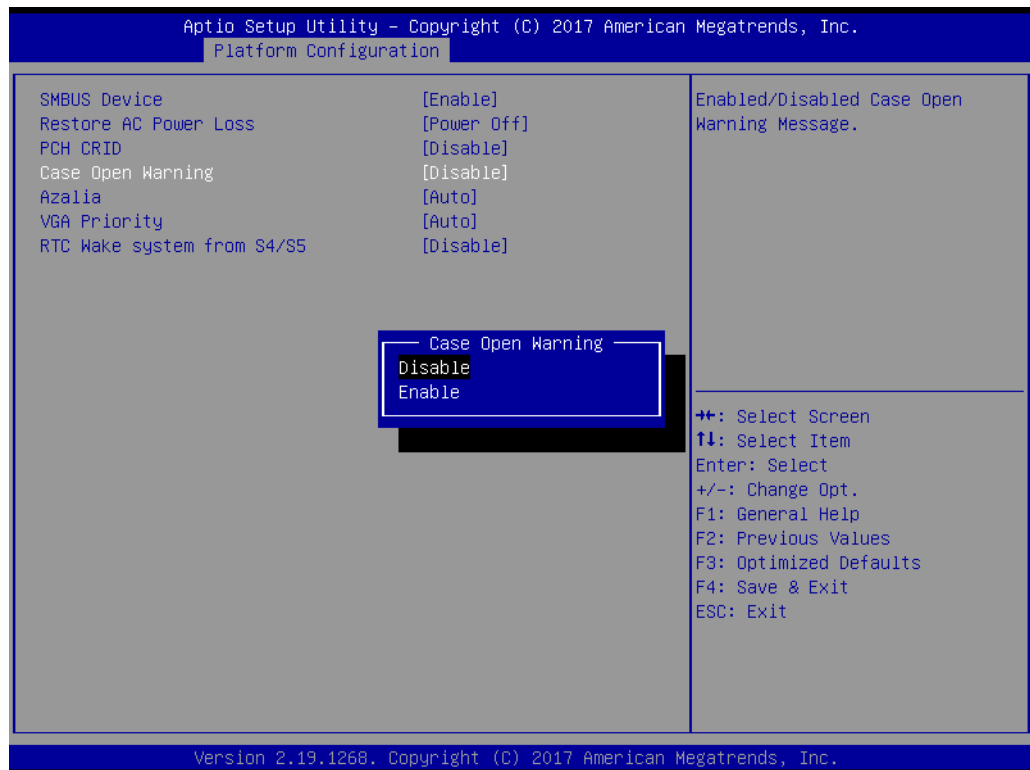
– **PCH CRID**

Enable or disable PCH compatibility revision ID (CRID) functionality.



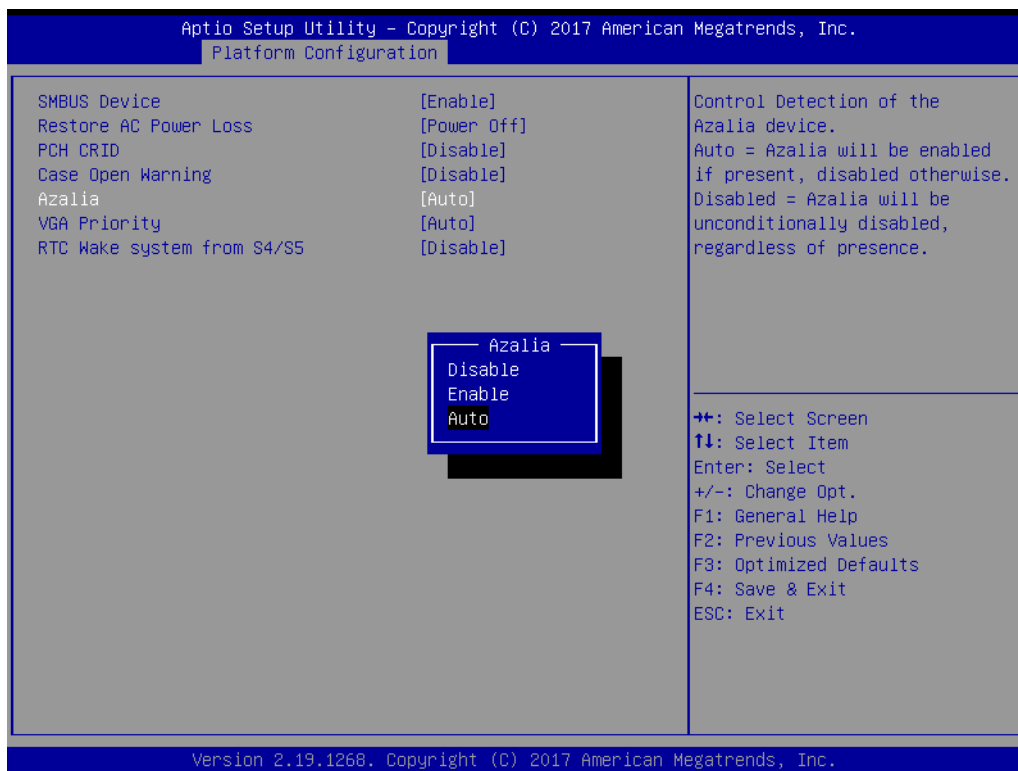
– **Case Open Warning**

Enable or disable the chassis intrusion monitoring function. When enabled and the case is opened, the warning message will show in POST screen.



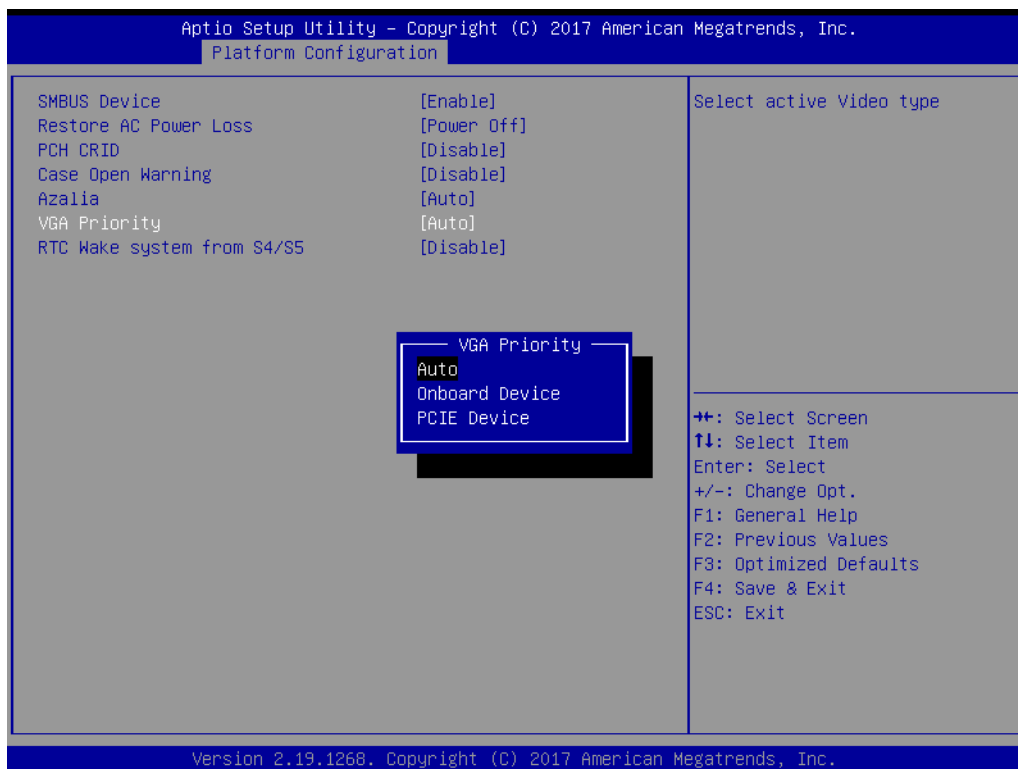
– **Azalia**

Enable or disable Azalia device.



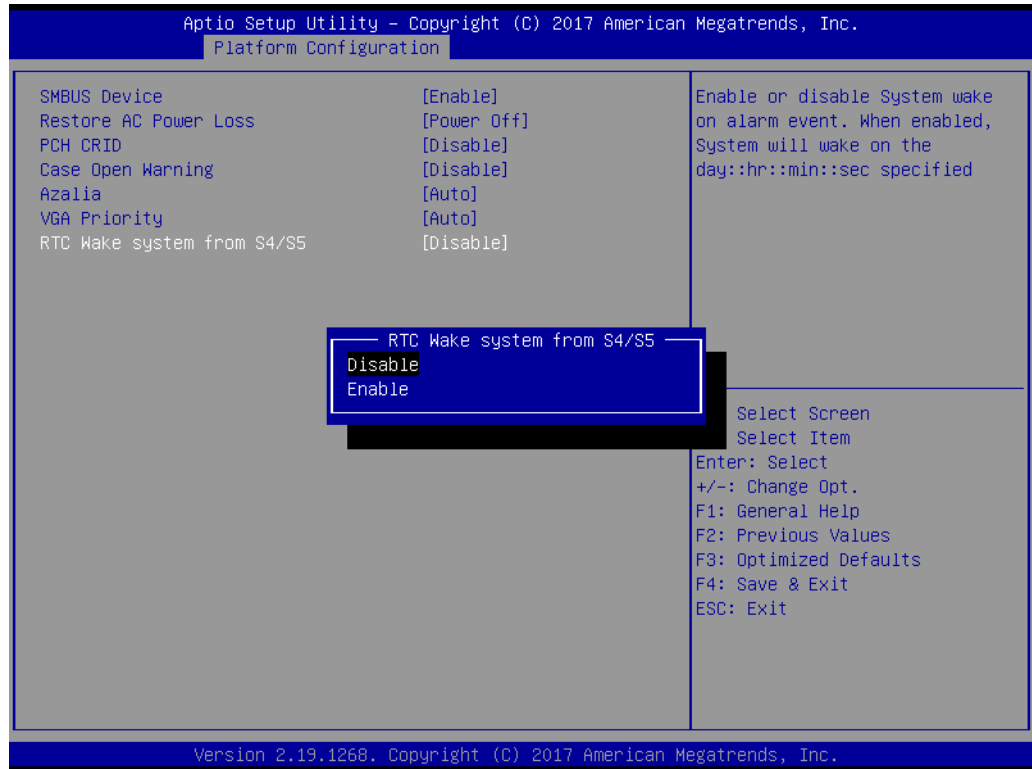
– VGA Priority

Determines priority between onboard and 1st off-board video device found.

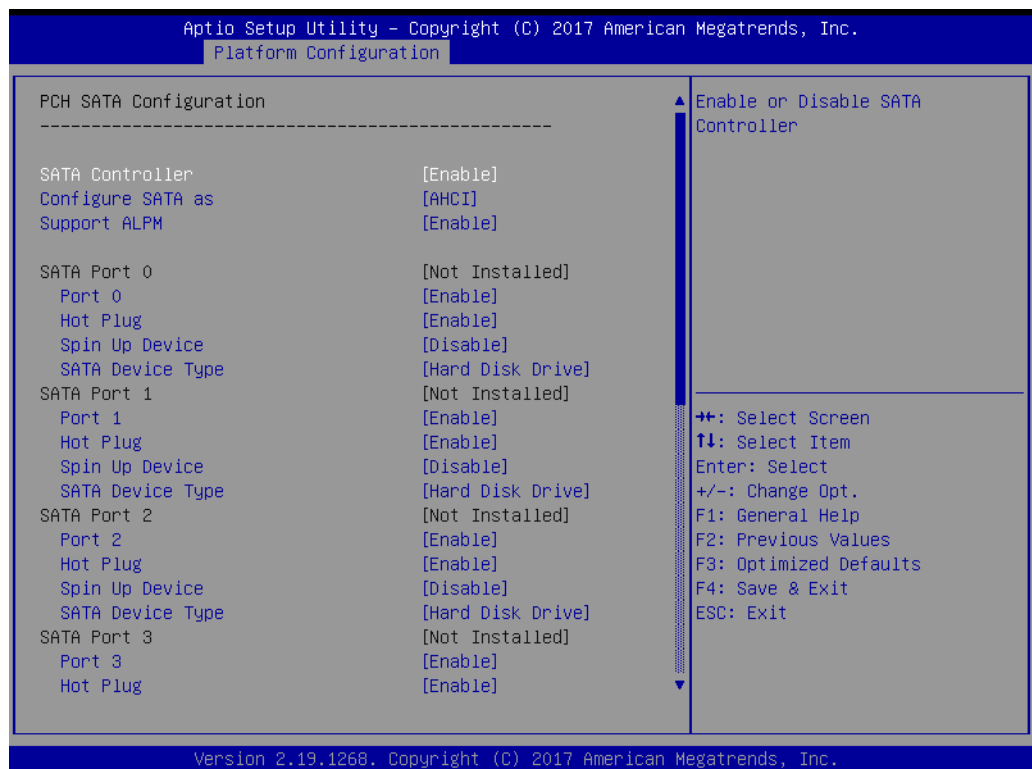


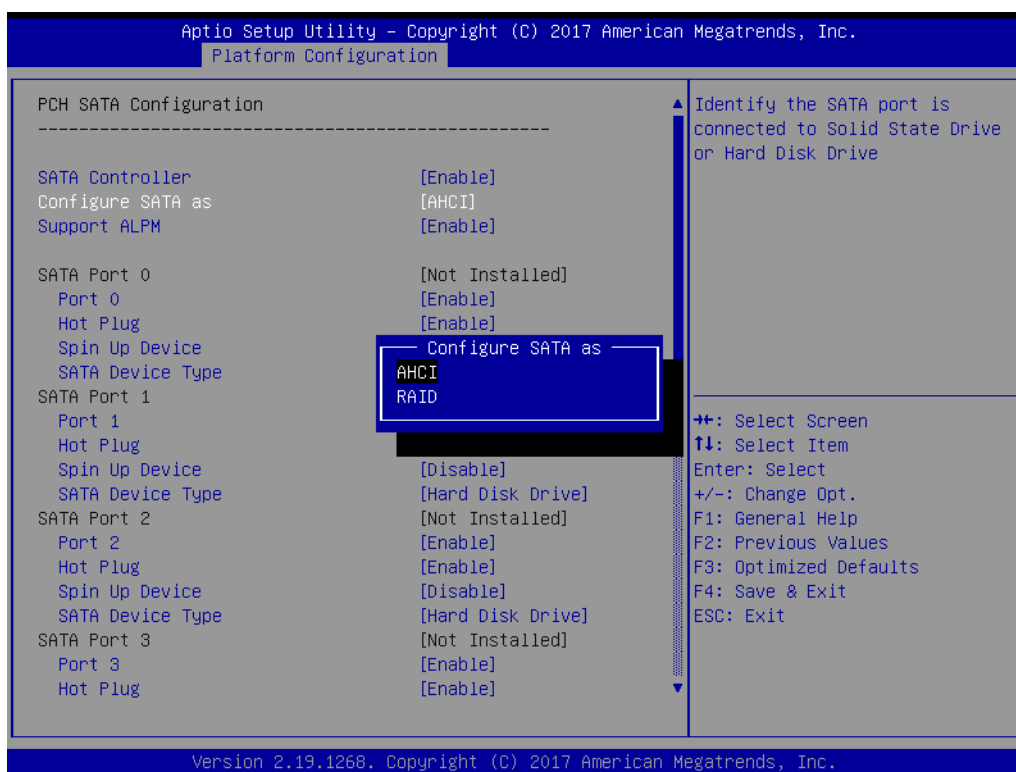
– RTC Wake system from S4/S5

Enable or disable system wake on alarm event.



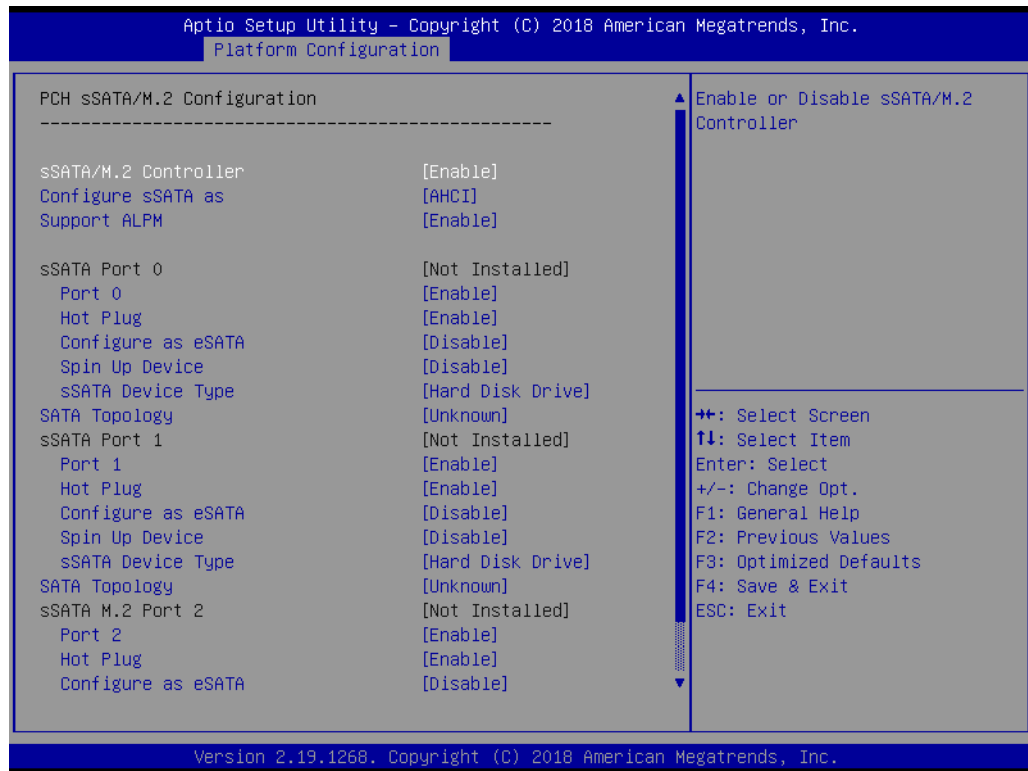
■ PCH SATA Configuration





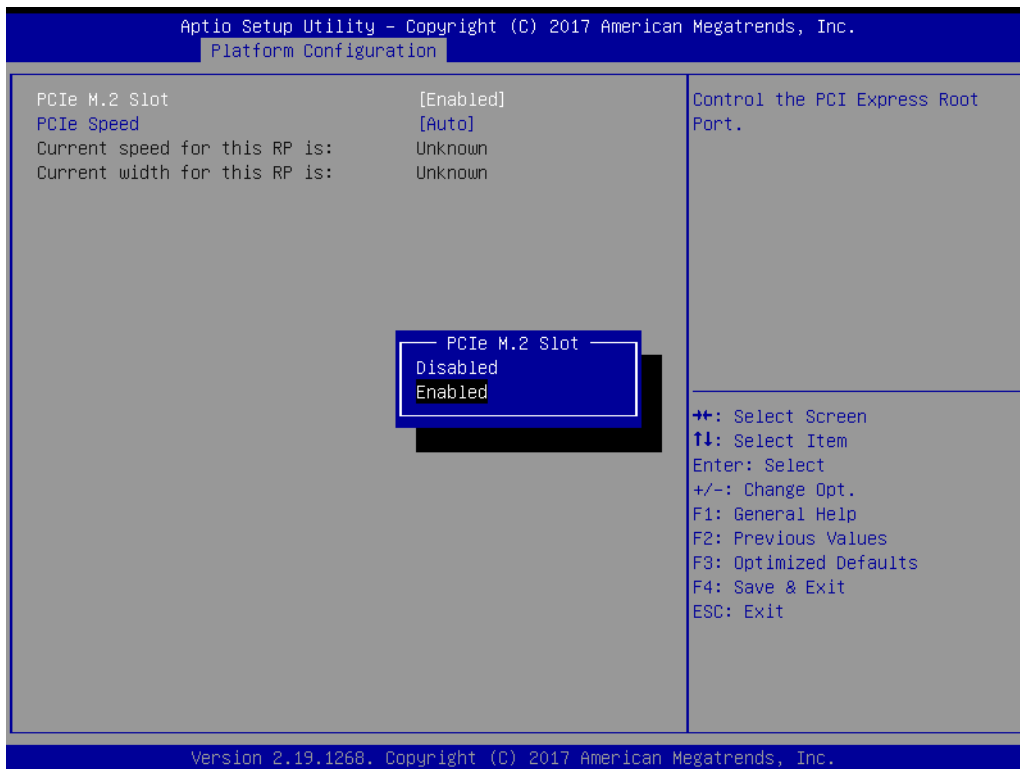
- **SATA Controller**
Enable or disable SATA devices.
- **Configure SATA as**
Set as AHCI or RAID when SATA Controllers are enabled.
- **Support ALPM**
Enable or disable Aggressive Link Power Management (ALPM) protocol for Advanced Host Controller Interface-compliant (AHCI) Serial ATA (SATA) devices.
- **SATA Port 0~7**
Enable or disable SATA port 0~7.
- **Hot Plug Port 0~7**
Designates SATA port 0~7 as hot pluggable.
- **SATA Port 0~7 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 Port 0~7 Device Type**
To identify the SATA is connected to Solid State Drive or Hard Disk Drive.

■ PCH sSATA/M.2 Configuration



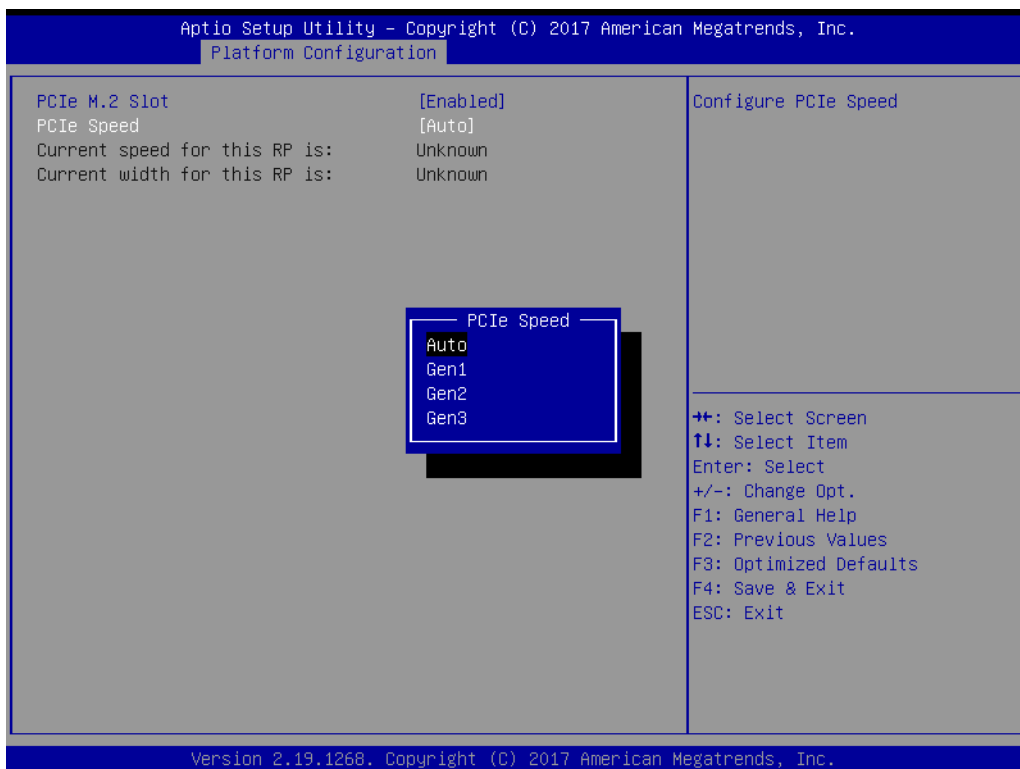
- **sSATA/M.2 Controller**
Enable or disable sSATA/M.2 devices.
 - **Configure sSATA as**
Set as AHCI or RAID when SATA Controllers are enabled.
 - **Support ALPM**
Enable or disable Aggressive Link Power Management (ALPM) protocol for Advanced Host Controller Interface-compliant (AHCI) Serial ATA (SATA) devices.
 - **sSATA Port 0~1**
Enable or disable sSATA port 0~1.
 - **Hot Plug Port 0~1**
Designates sSATA port 0~1 as hot pluggable.
 - **Configure as eSATA**
Configures sSATA port 0~1 as external SATA.
 - **sSATA Port 0~1 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.
 - **sSATA Port 0~1 Device Type**
To identify the SATA is connected to Solid State Drive or Hard Disk Drive.
 - **sSATA M.2 Port**
Enable or disable sSATA/M.2.
- ## ■ PCIe M.2 Slot Configuration
- **PCIe M.2 Slot**

Enable or disable the PCI Express root port.

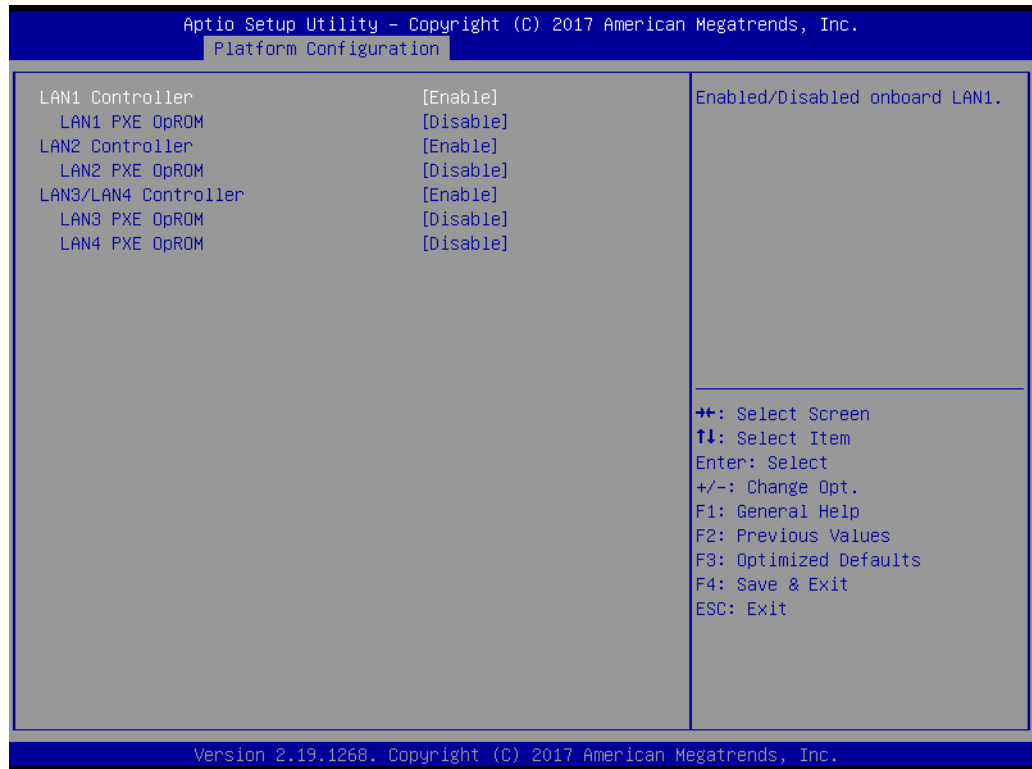


– PCIe Speed

Configure PCI Express speed.



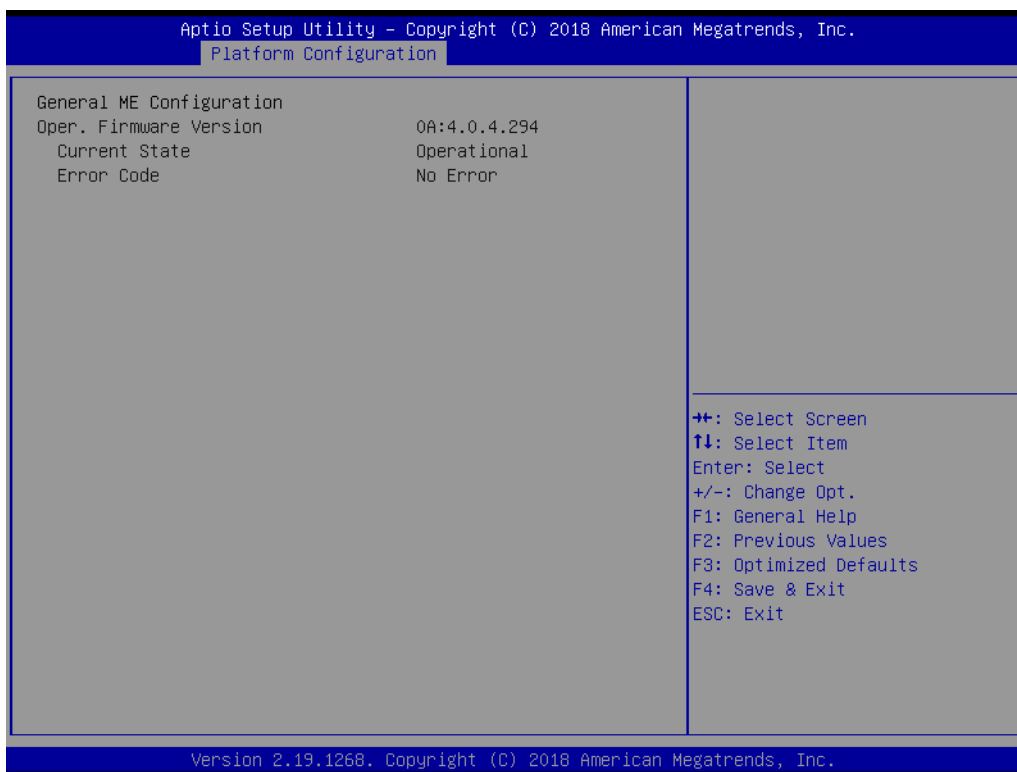
■ Networking



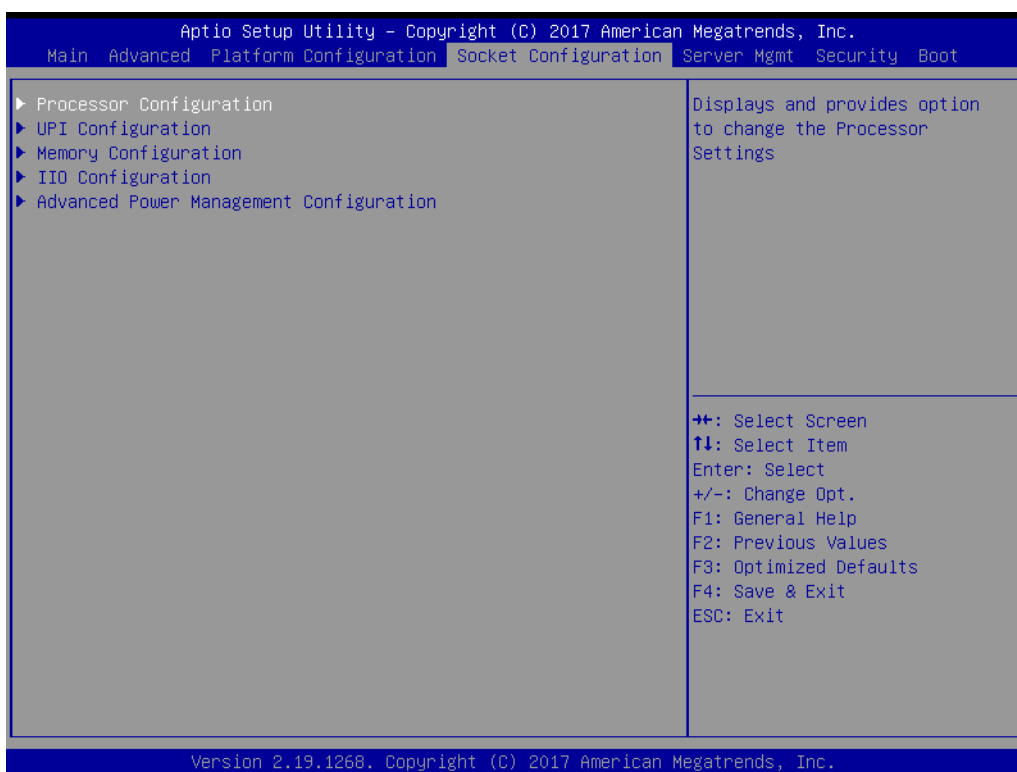
- **LAN1 Controller**
Enable or disable Intel I210 controller support.
- **LAN1 PXE OpROM**
Enable or disable Boot option for Intel I210 controller.
- **LAN2 Controller**
Enable or disable Intel I210 controller support.
- **LAN2 PXE OpROM**
Enable or disable Boot option for Intel I210 controller.
- **LAN3/LAN4 Controller**
Enable or disable Intel X557 controller support.
- **LAN3 PXE OpROM**
Enable or disable boot option for Intel X557 controller.
- **LAN4 PXE OpROM**
Enable or disable boot option for Intel X557 controller.

3.2.3.2 Server ME Configuration

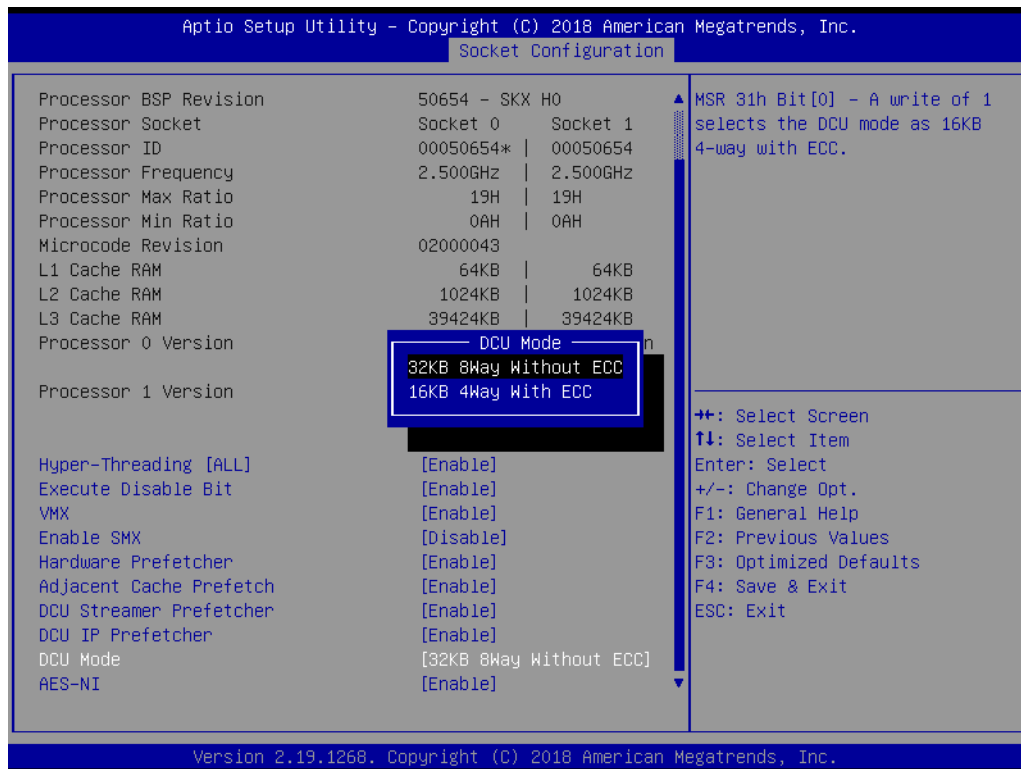
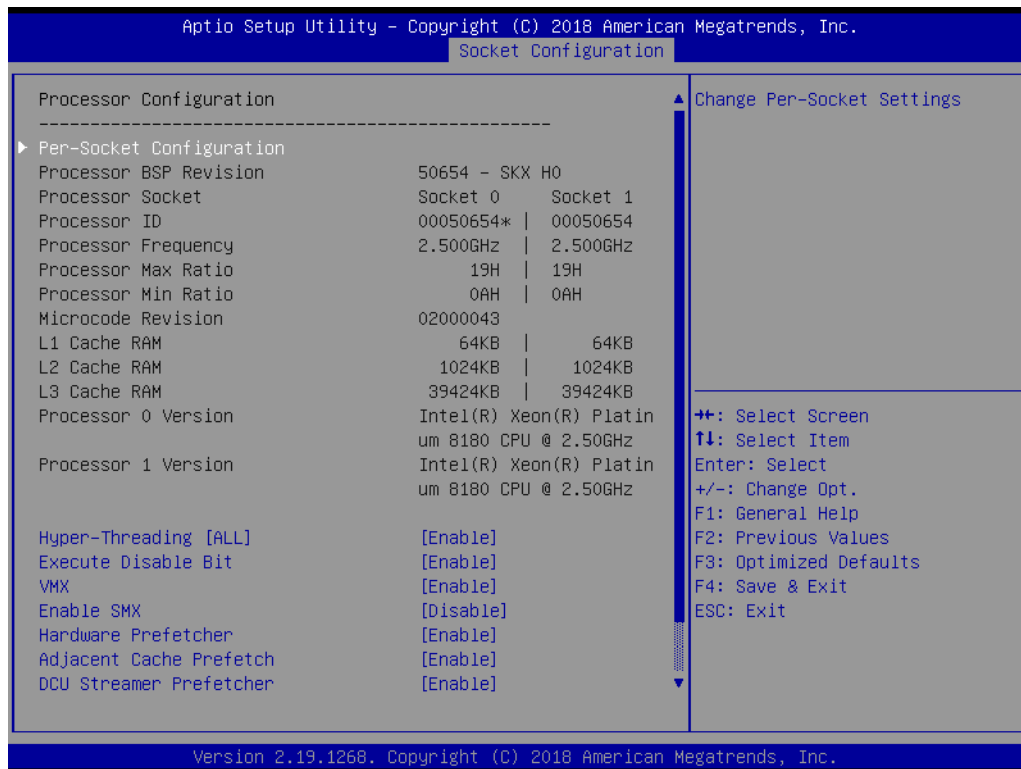
This page shows the Server ME configuration information.



3.2.4 Socket Configuration



3.2.4.1 Processor Configuration



- **Per-Socket Configuration**
Use this to select how many processor cores you want to activate when you are using a dual or quad core processor.
- **Hyper-threading [All]**
Enable or disable Intel Hyper Threading technology.

- **Execute Disable Bit**

Enable or disable the Execute Disable Bit feature. The Optimal and Fail-Safe default setting is Enabled. If Disabled is selected, the BIOS forces the XD feature flag to always return to 0.
- **VMX**

Enable or disable Intel Virtual Machine Extensions (VMX) for IA-32 processors that support Intel® Vanderpool Technology
- **Enable SMX**

Enable or disable Safer Mode Extensions. Safer Mode Extensions (SMX) provide a means for system software to launch an MLE and establish a measured environment within the platform to support trust decisions by end users.
- **Hardware Prefetcher**

Hardware Prefetcher is a technique that fetches instructions and/or data from memory into the CPU cache memory well before the CPU needs it, so that it can improve the load-to-use latency.
- **Adjacent Cache Prefetch**

The Adjacent Cache-Line Prefetch mechanism, like automatic hardware prefetch, operates without programmer intervention. When enabled through the BIOS, two 64-byte cache lines are fetched into a 128-byte sector, regardless of whether the additional cache line has been requested or not.
- **DCU Streamer Prefetcher**

Enable prefetch of next L1 data line based upon multiple loads in same cache line.
- **DCU IP Prefetcher**

Enable prefetch of next L1 line based upon sequential load history.
- **DCU Mode**

Change the data cache unit mode.
- **AES-NI**

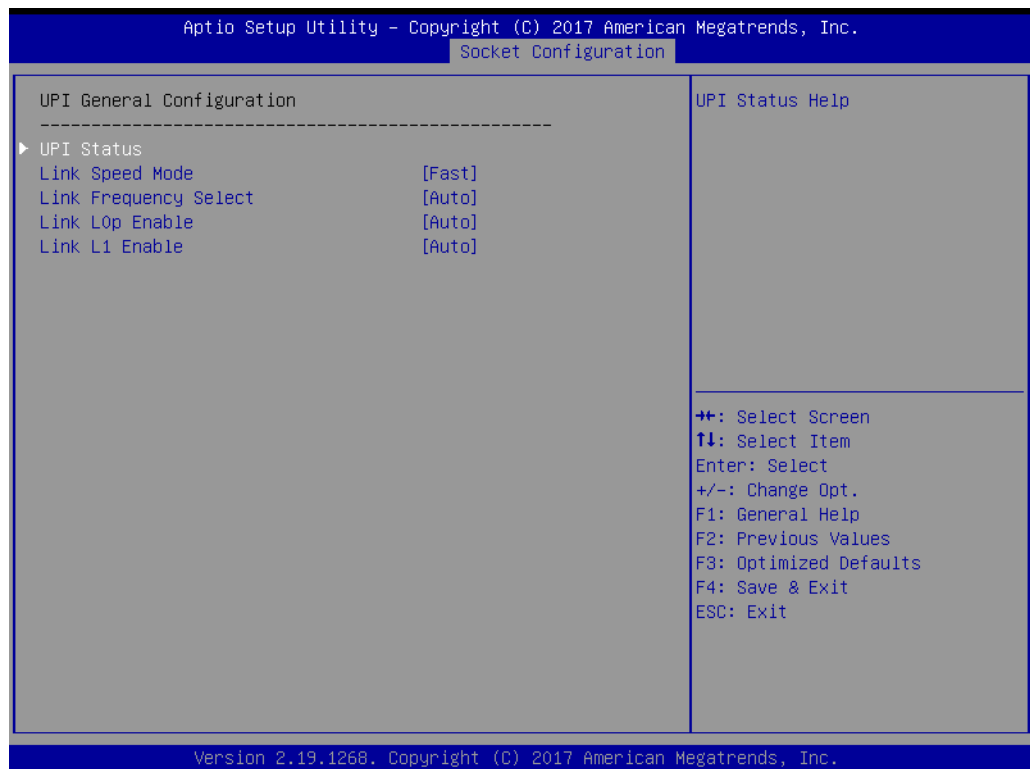
This item is enables or disables CPU advanced encryption standard instructions.

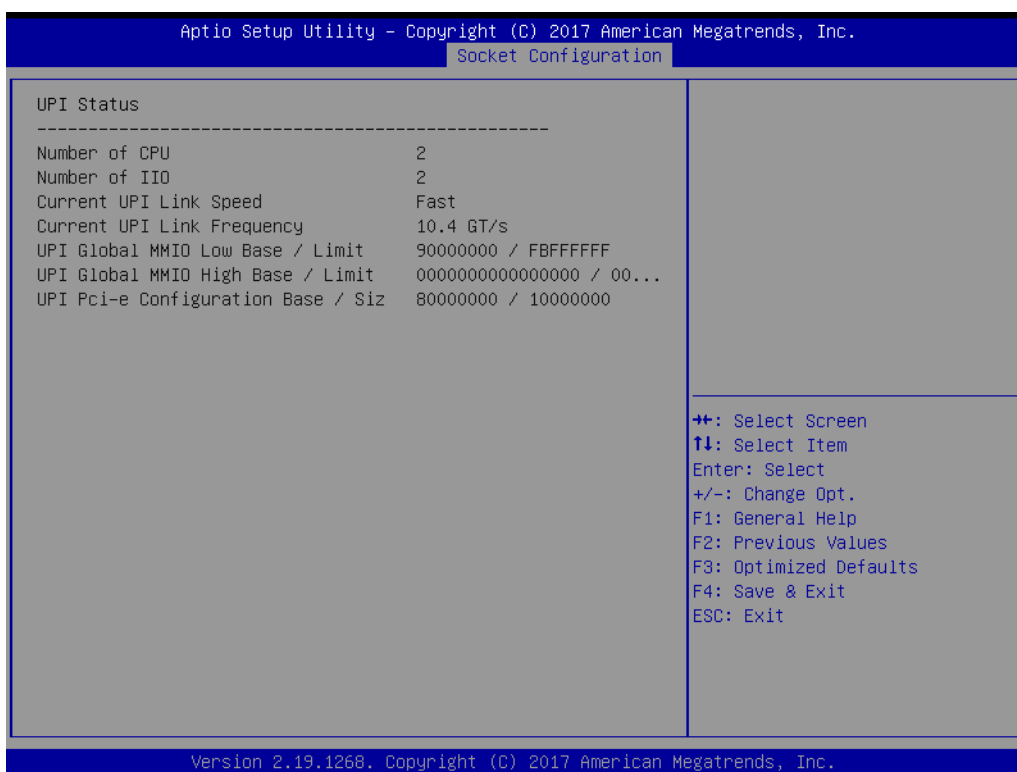
3.2.4.2 UPI Configuration



■ UPI Status

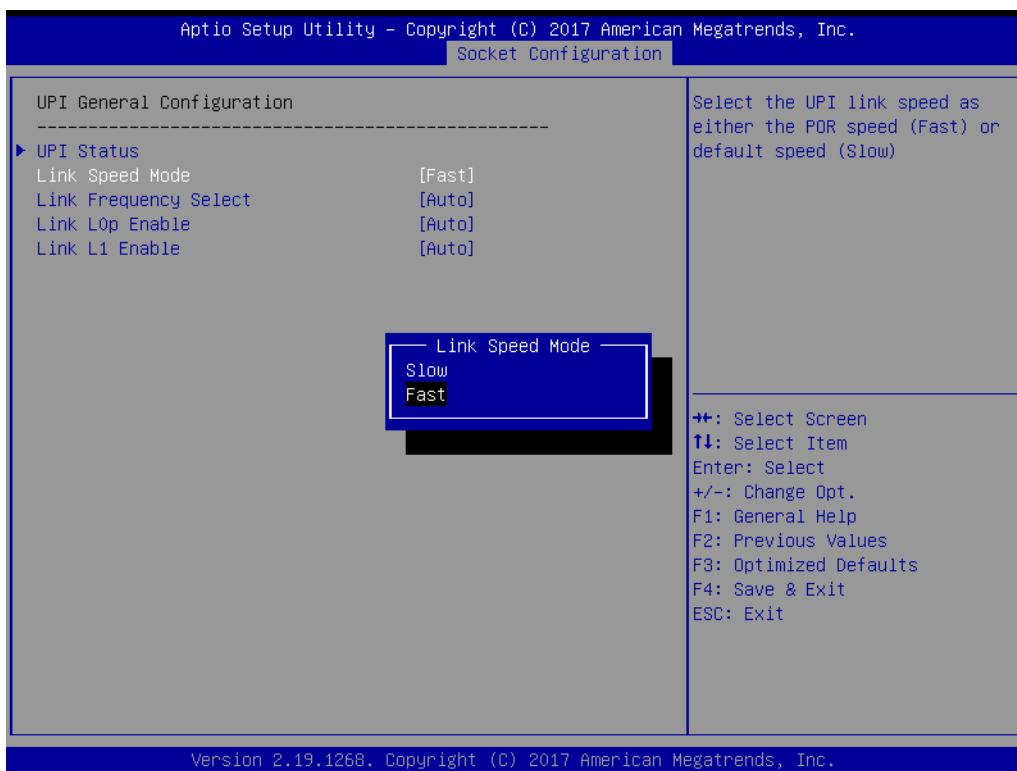
Display information of Intel UltraPath Interconnect (UPI).





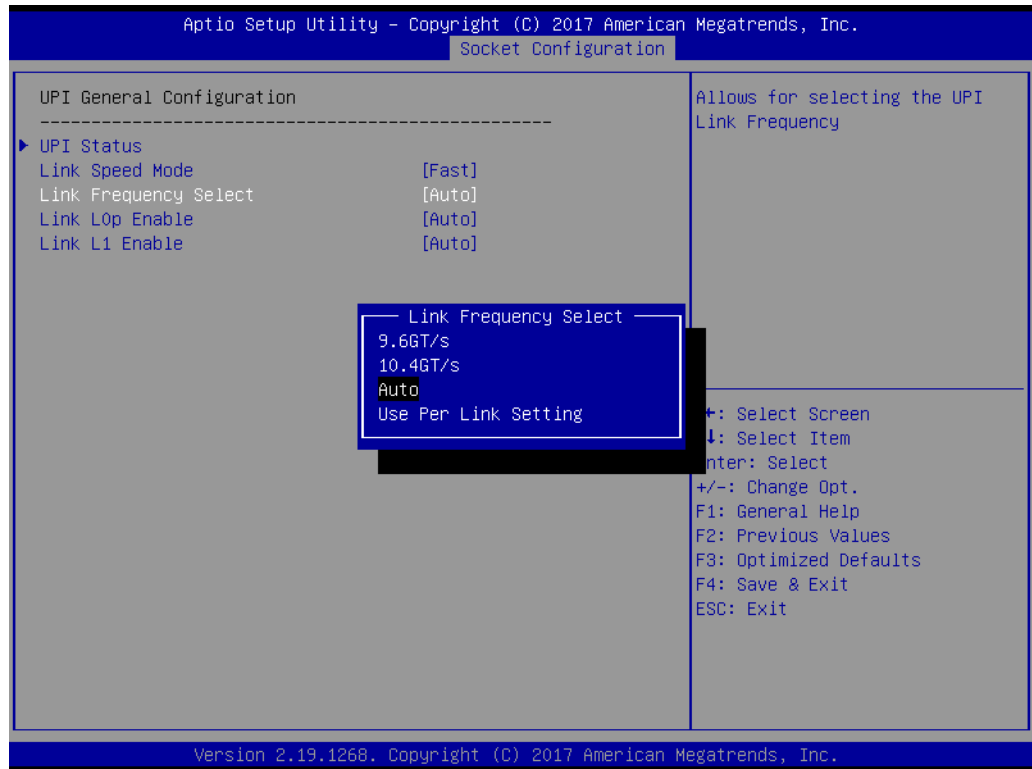
■ Link Speed Mode

Select the QPI link speed as either the Fast mode or Slow mode.

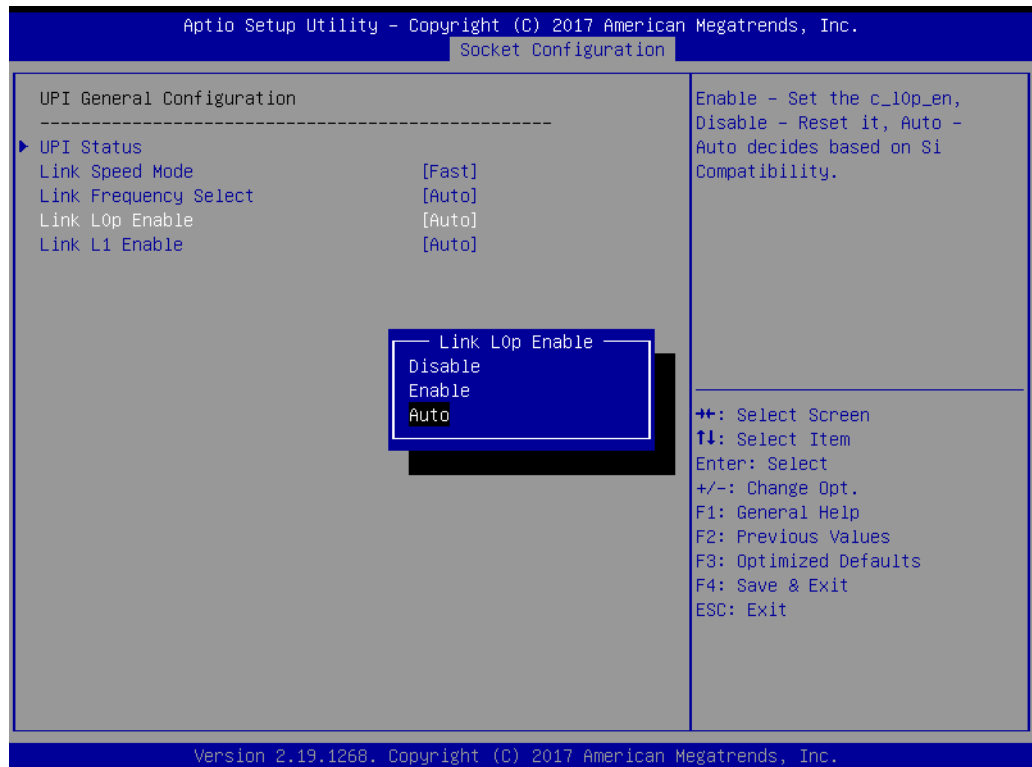


■ Link Frequency Select

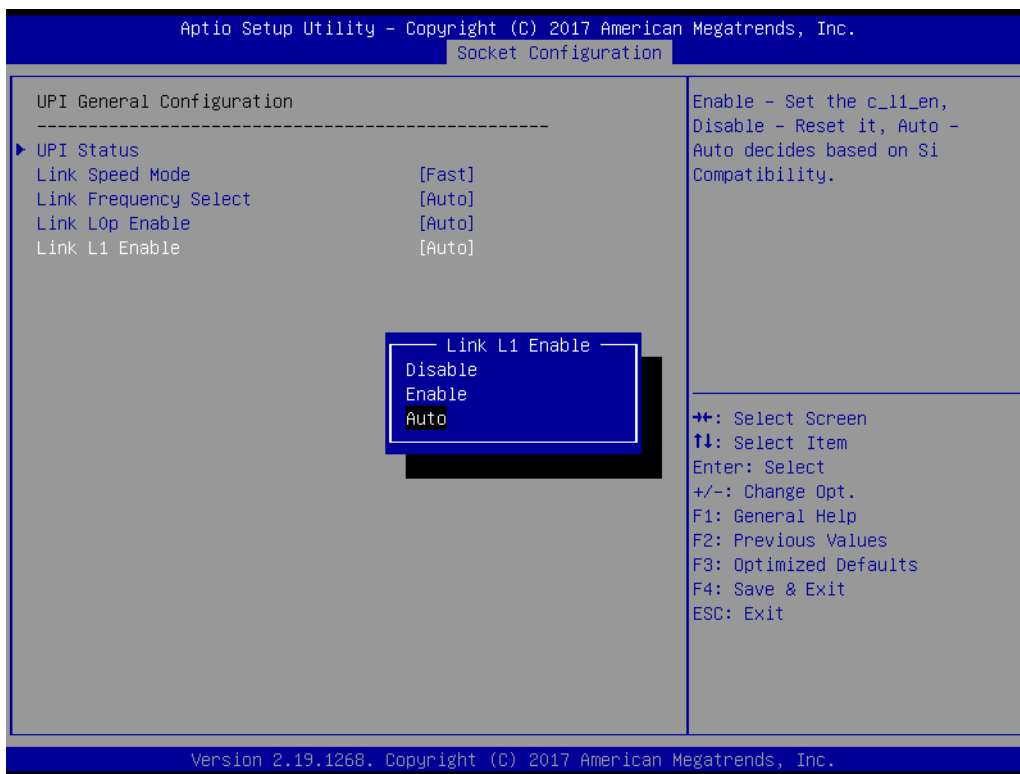
Allows for selecting the QPI Link frequency.



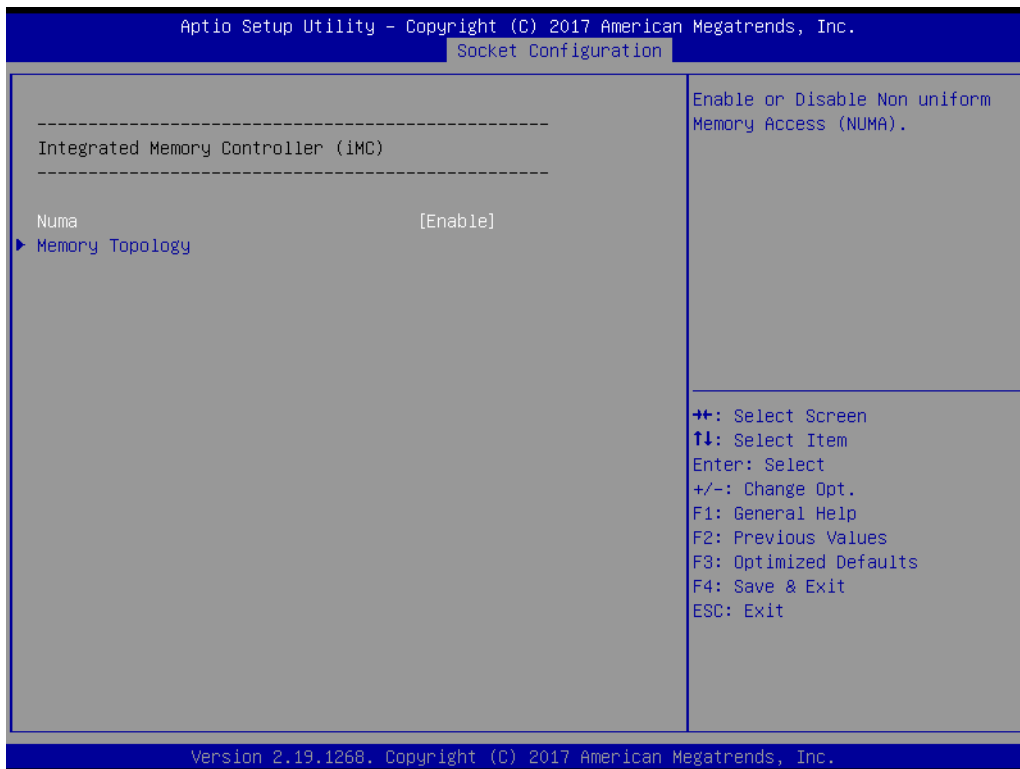
- **Link L0p Enable**
 Enable or disable QPI Link0p.



- **Link L1 Enable**
Enable or disable QPI Link1.

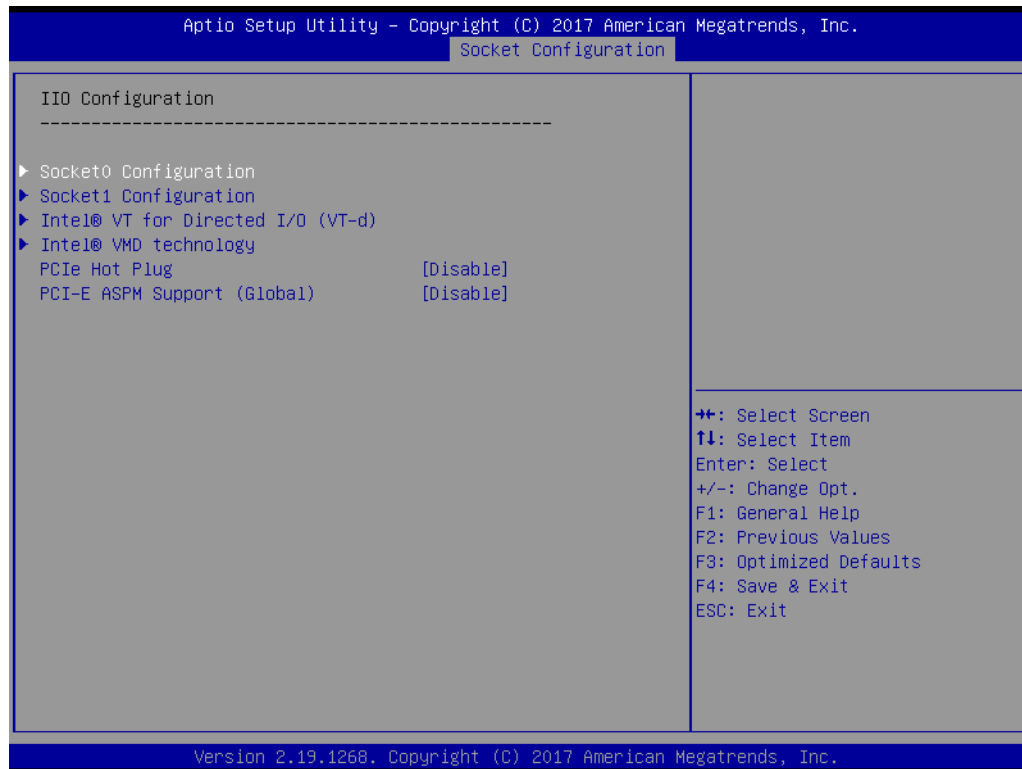


3.2.4.3 Memory Configuration

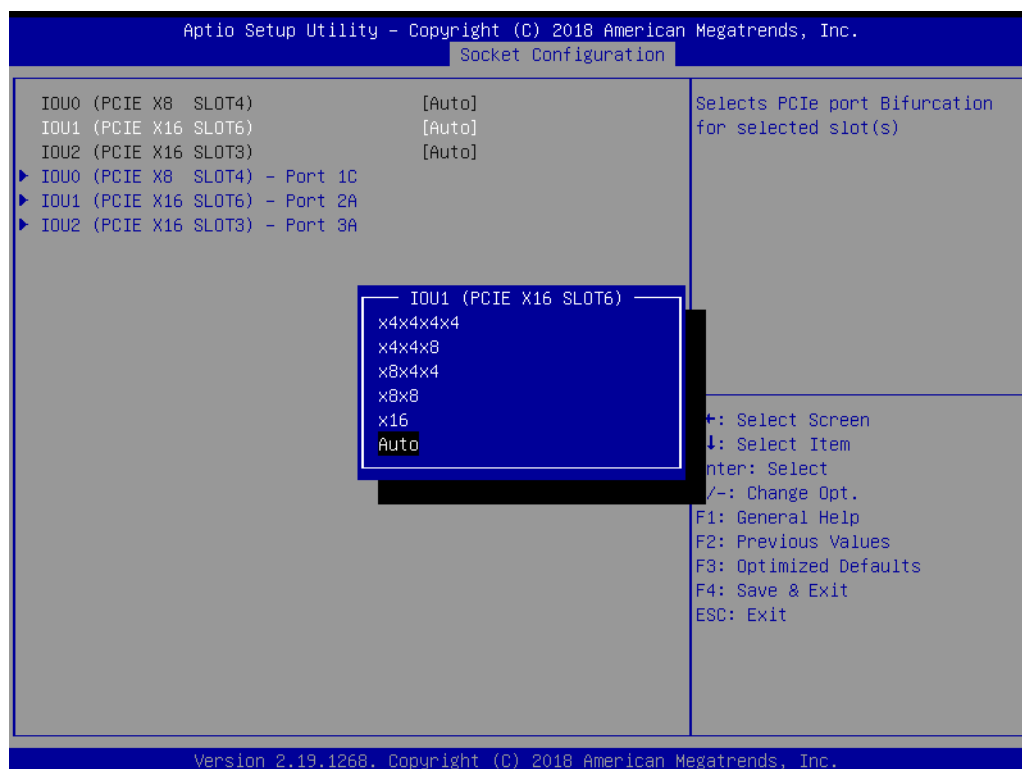


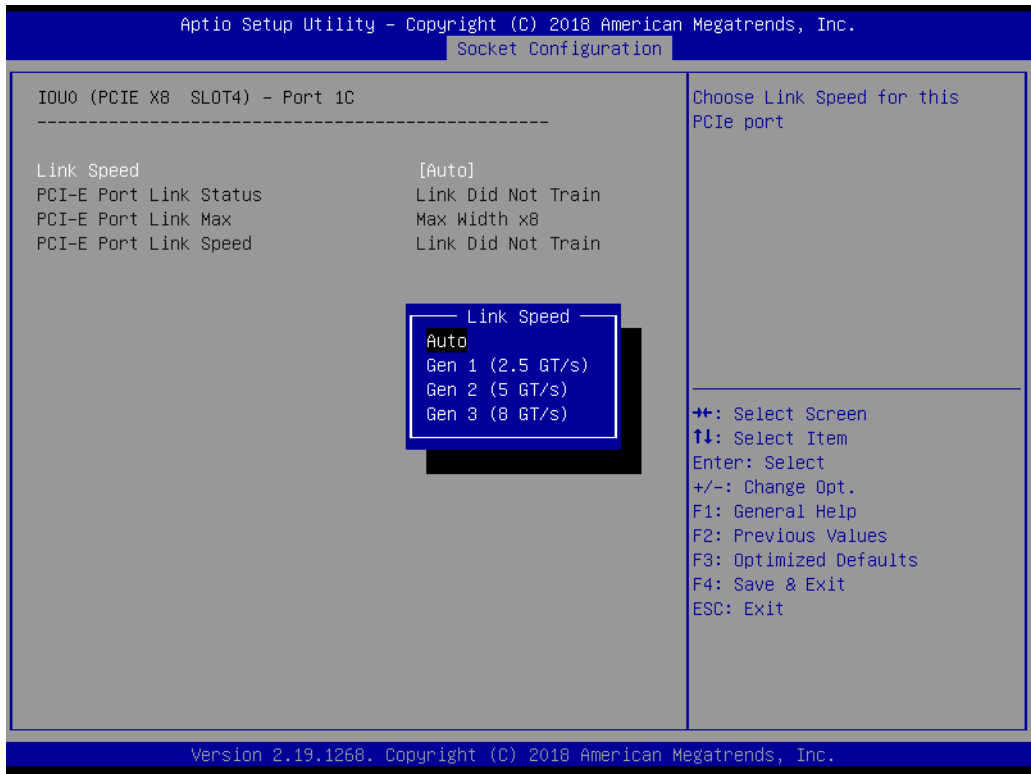
- **Numa**
Enable or disable non uniform memory access (NUMA).
- **Memory Technology**
Display memory topology with DIMM population information.

3.2.4.4 IIO Configuration



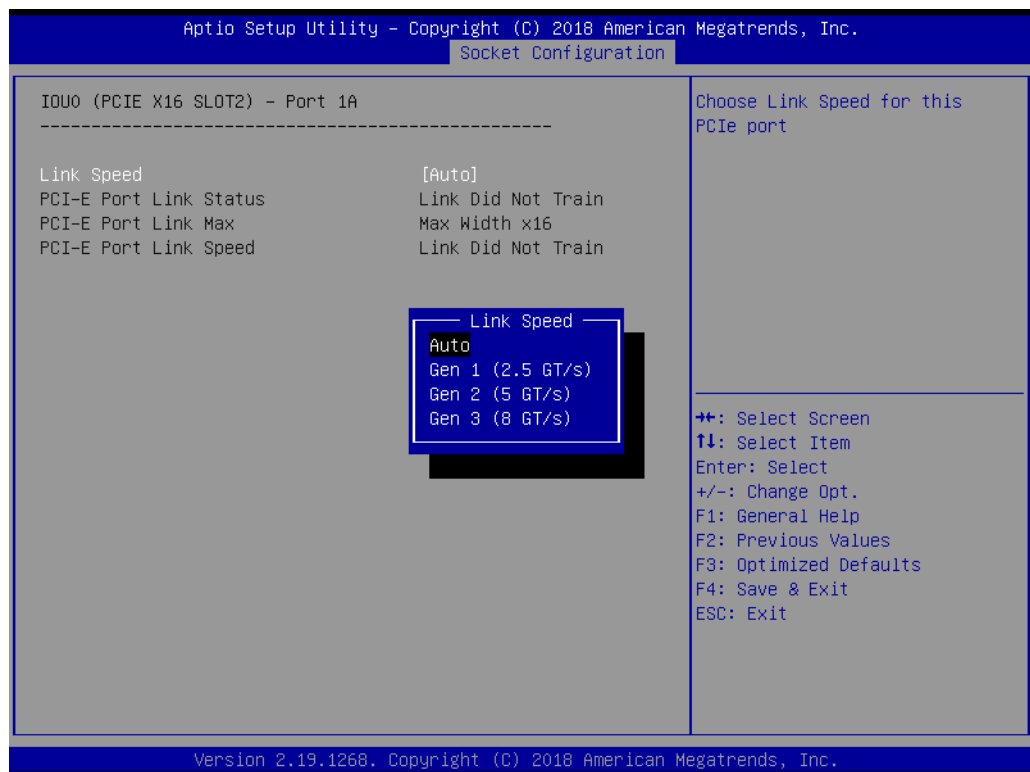
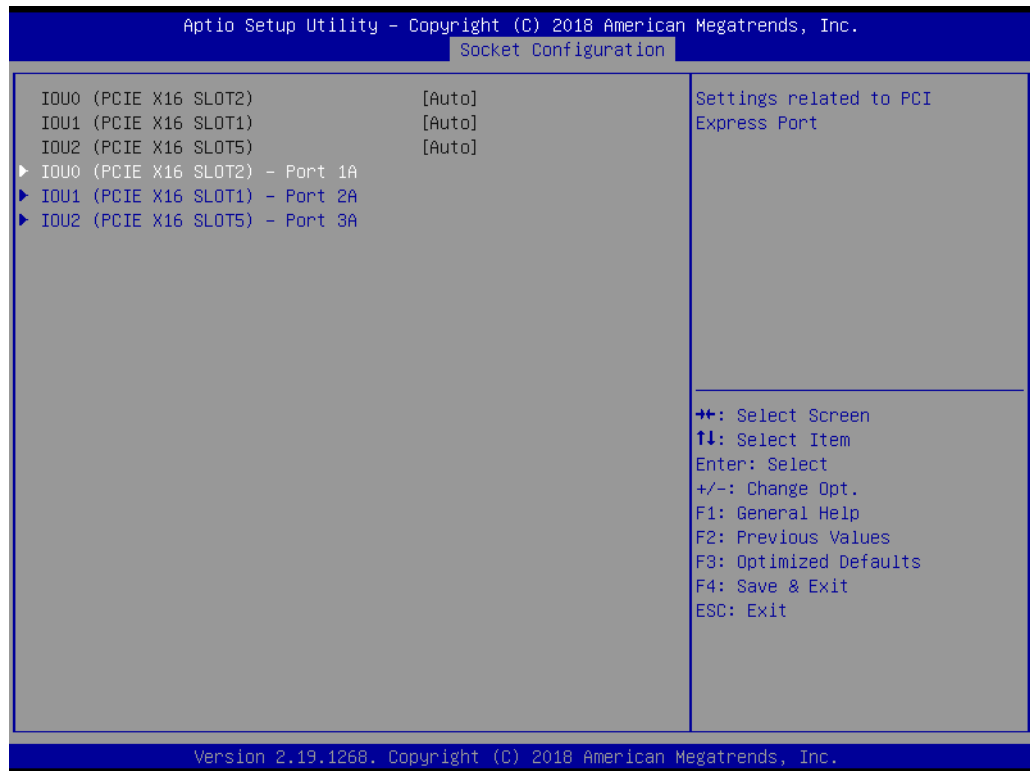
- **Socket0 PCIe Configuration**
PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3.





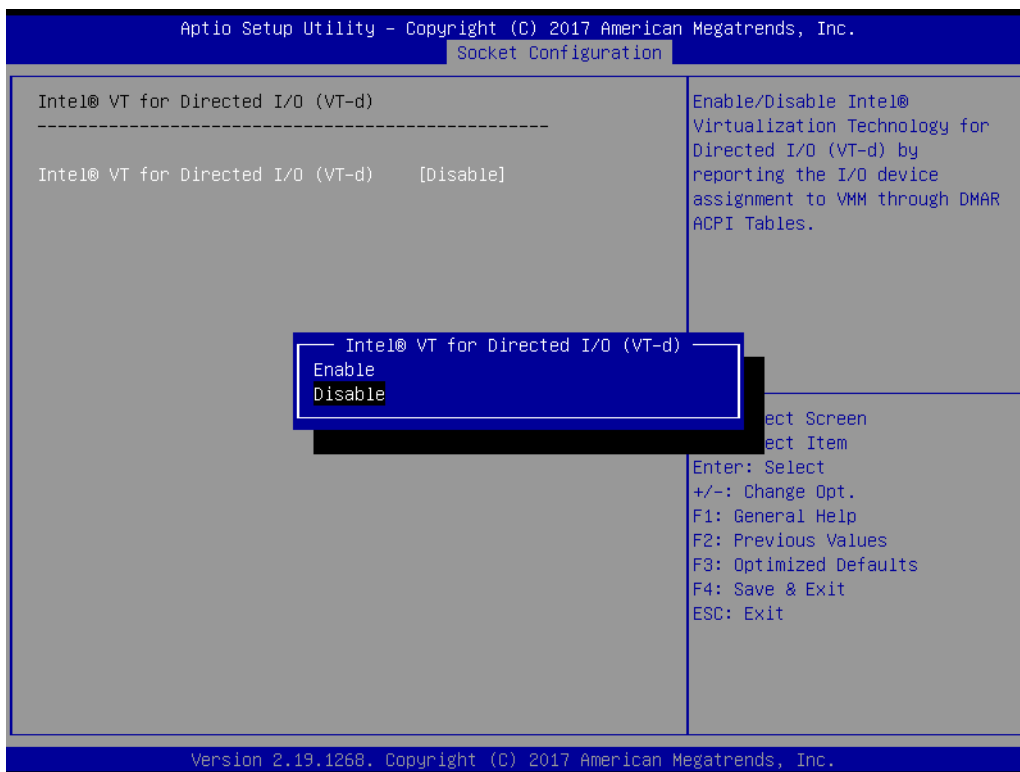
■ **Socket1 PCIe Configuration**

PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3.



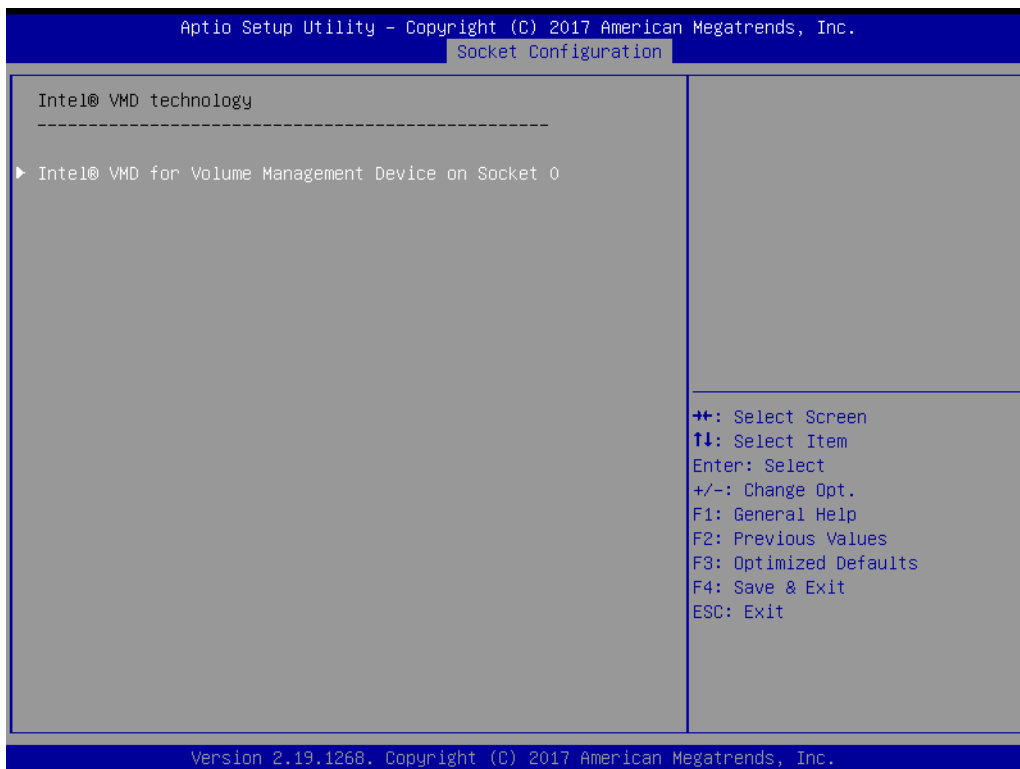
■ Intel VT for Directed I/O (VT-d)

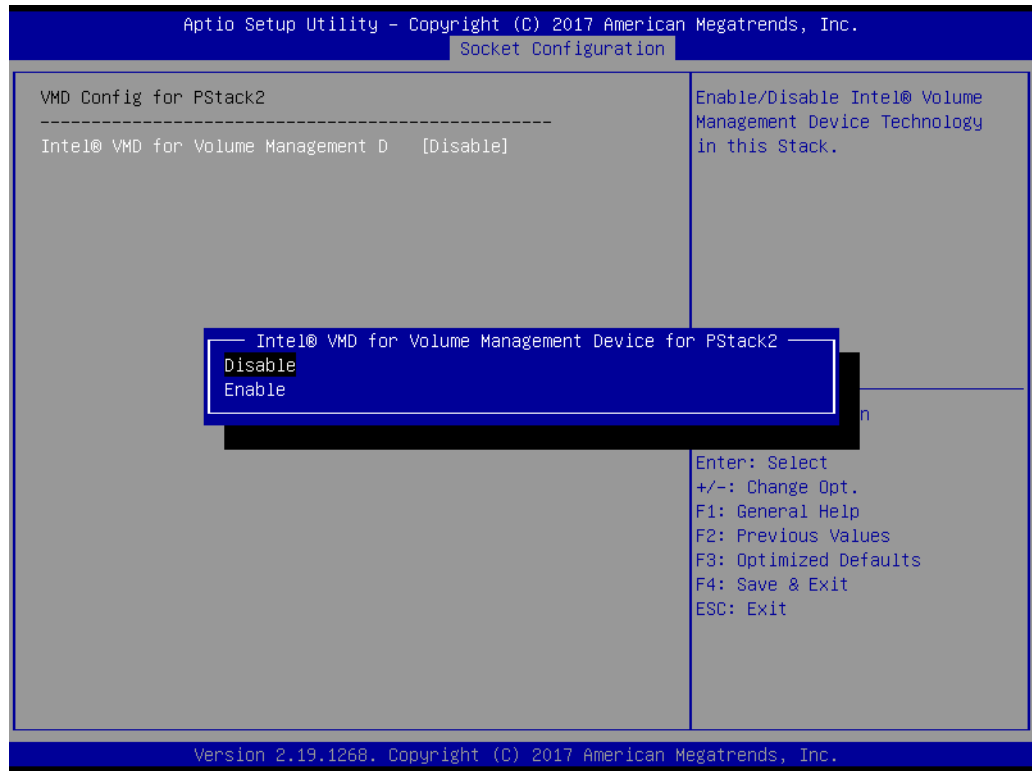
Enable or disable Intel Virtualization Technology for Directed I/O.



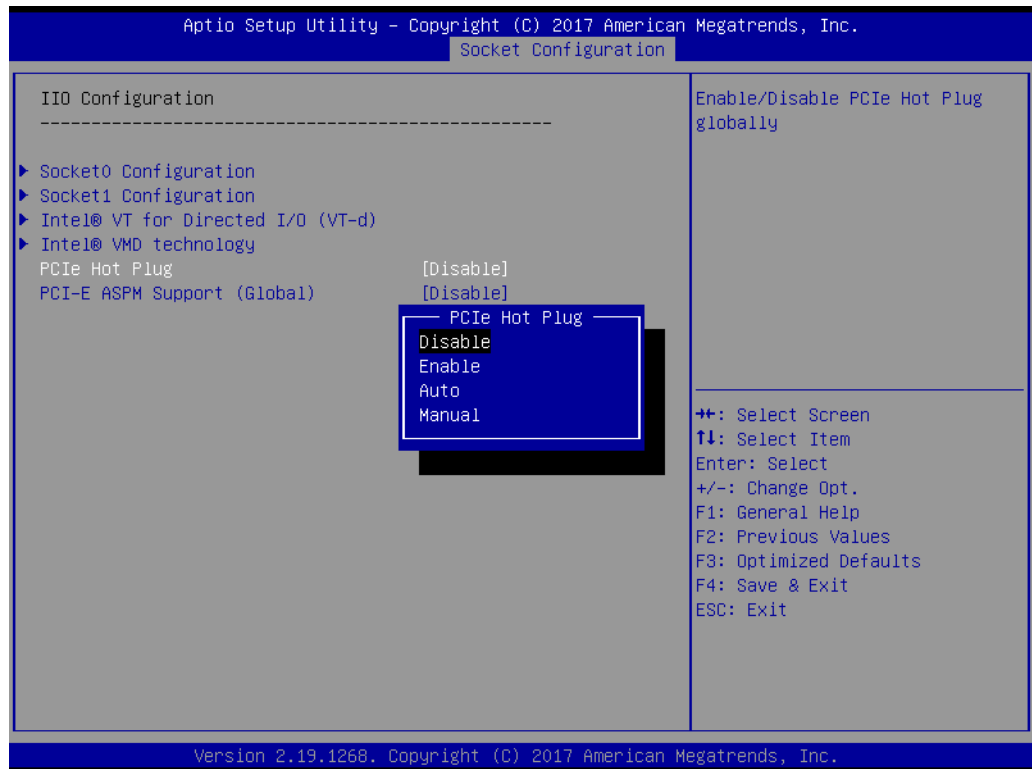
■ Intel VMD technology

Enable or disable Intel Volume Management Device Technology.



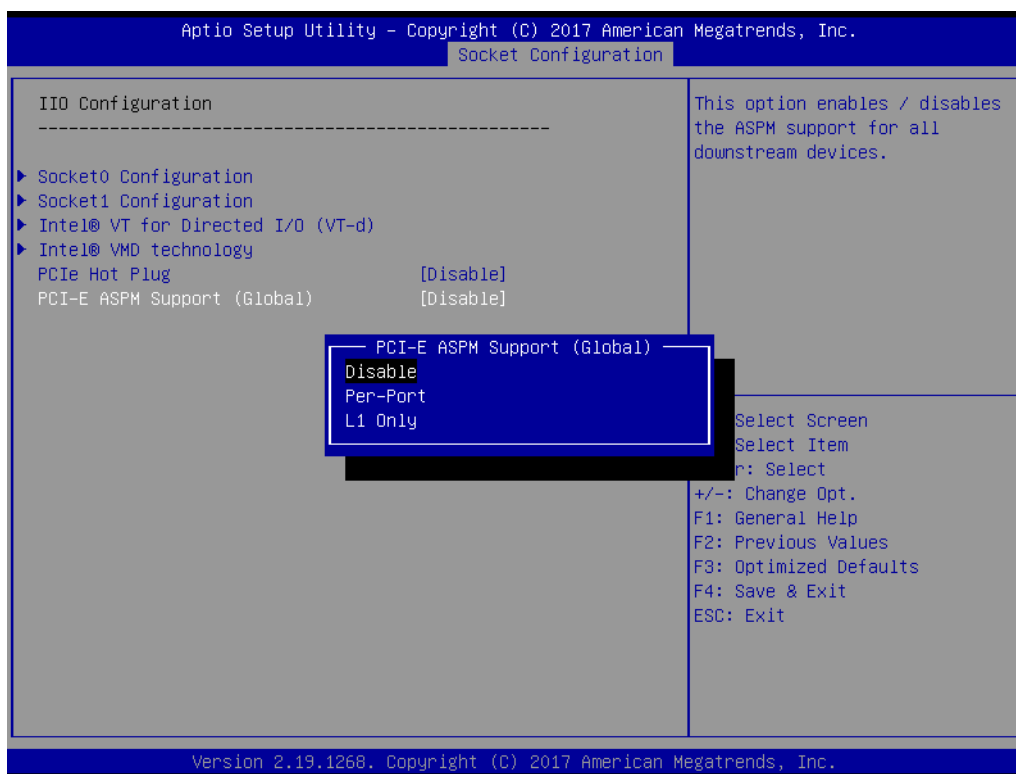


- **PCIe Hot Plug**
Enable or disable PCIe hot plug globally.

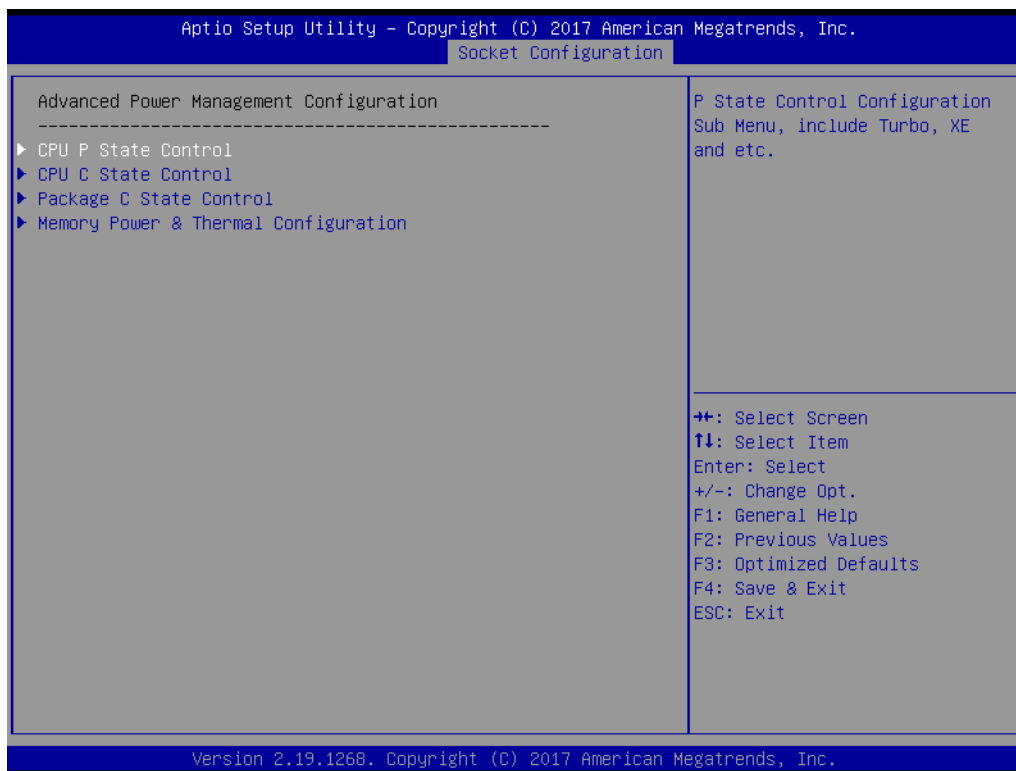


■ PCI-E ASPM Support (Global)

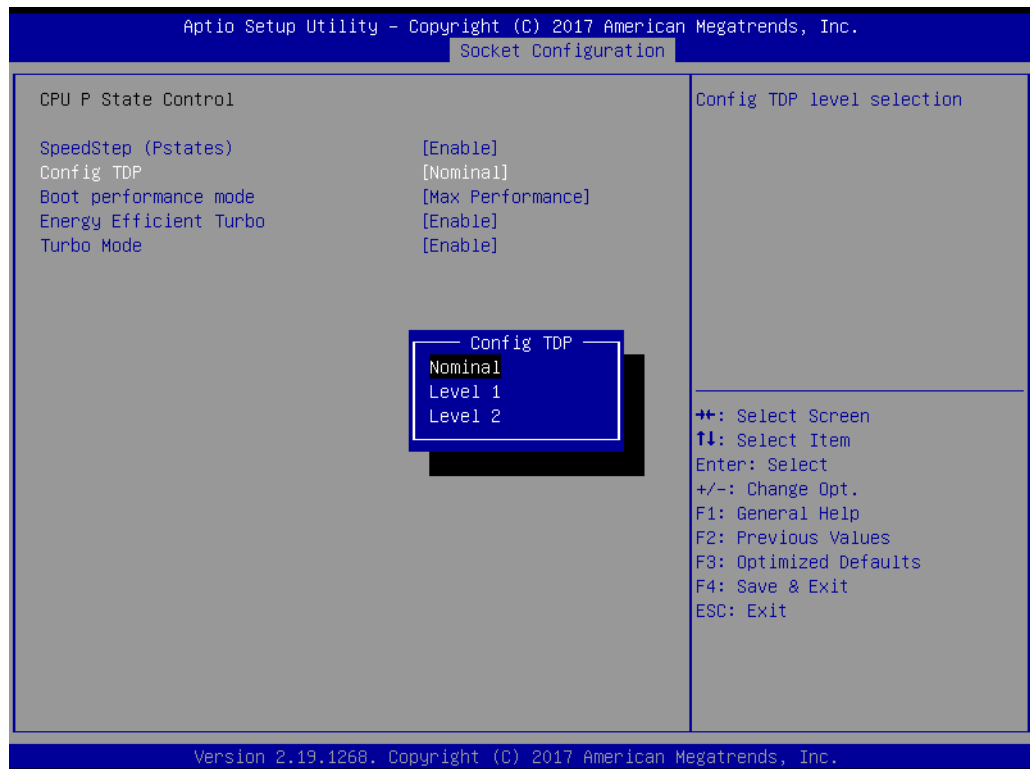
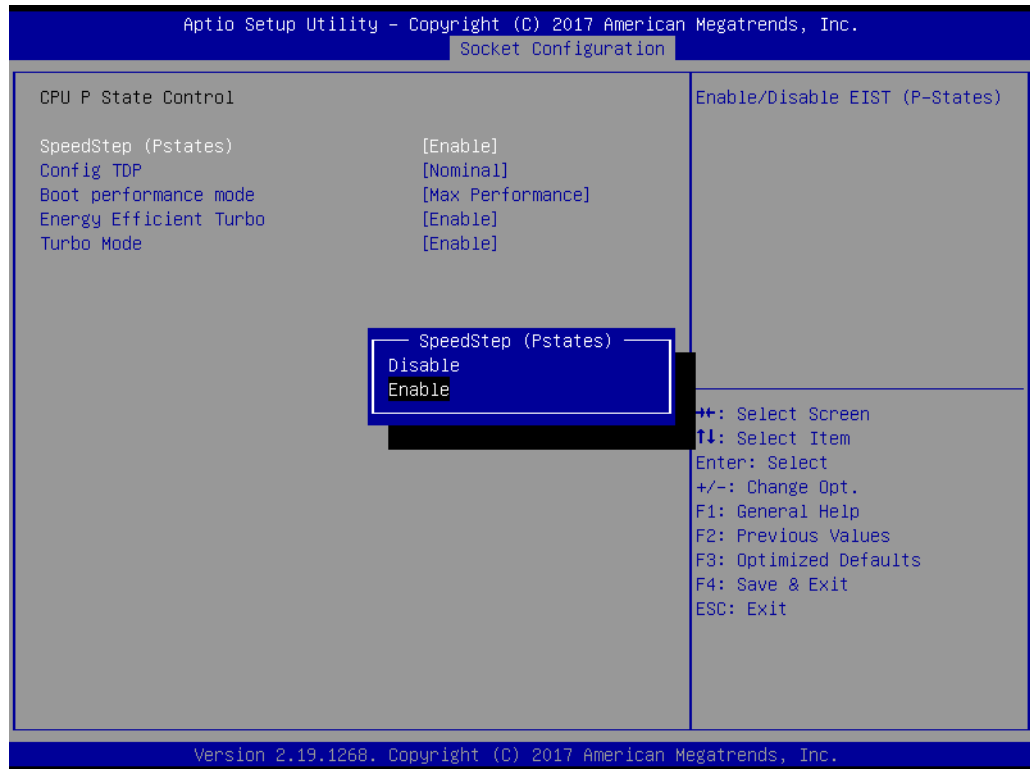
Sets the ASPM level to disable, per port or L1 state only.

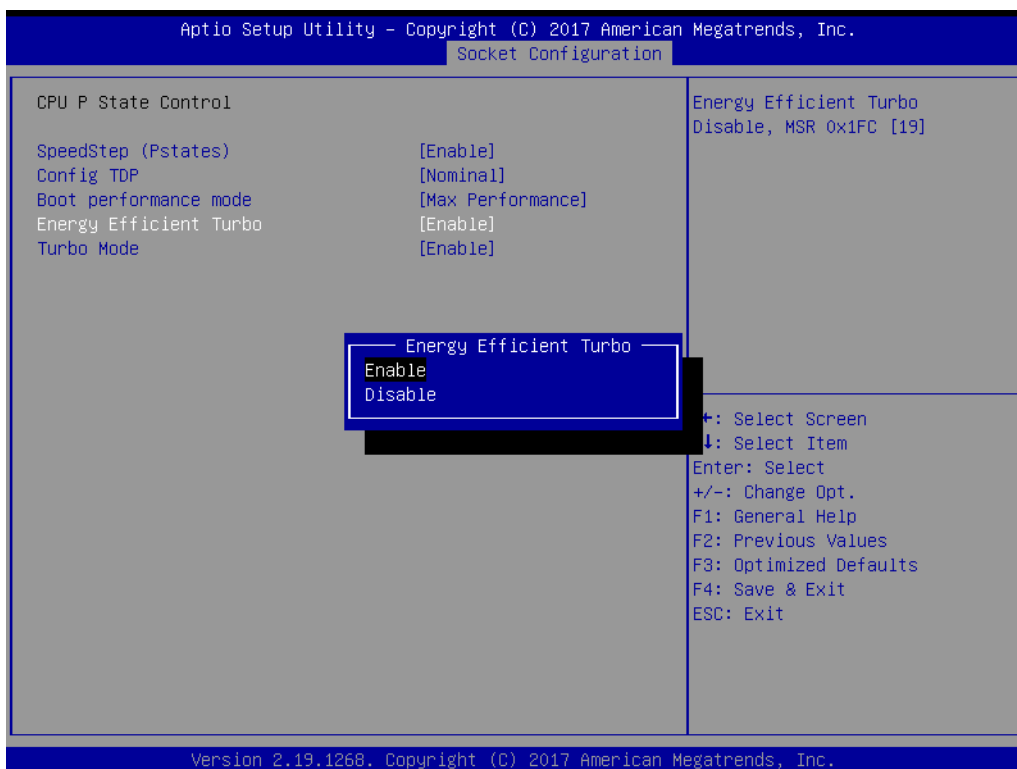
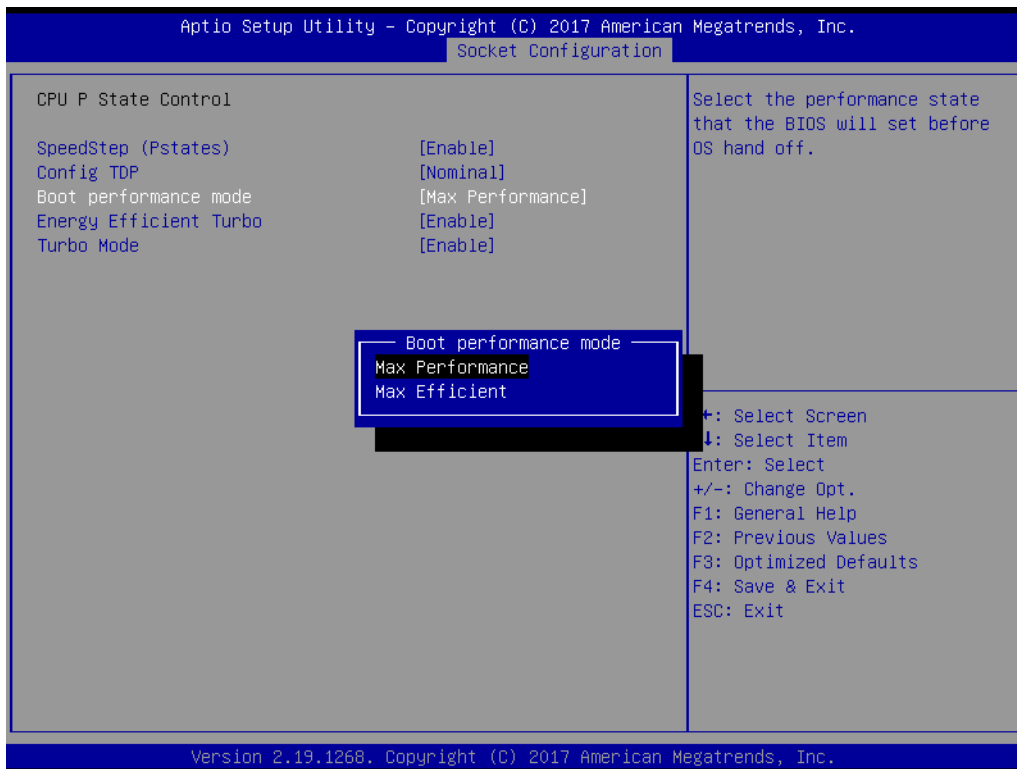


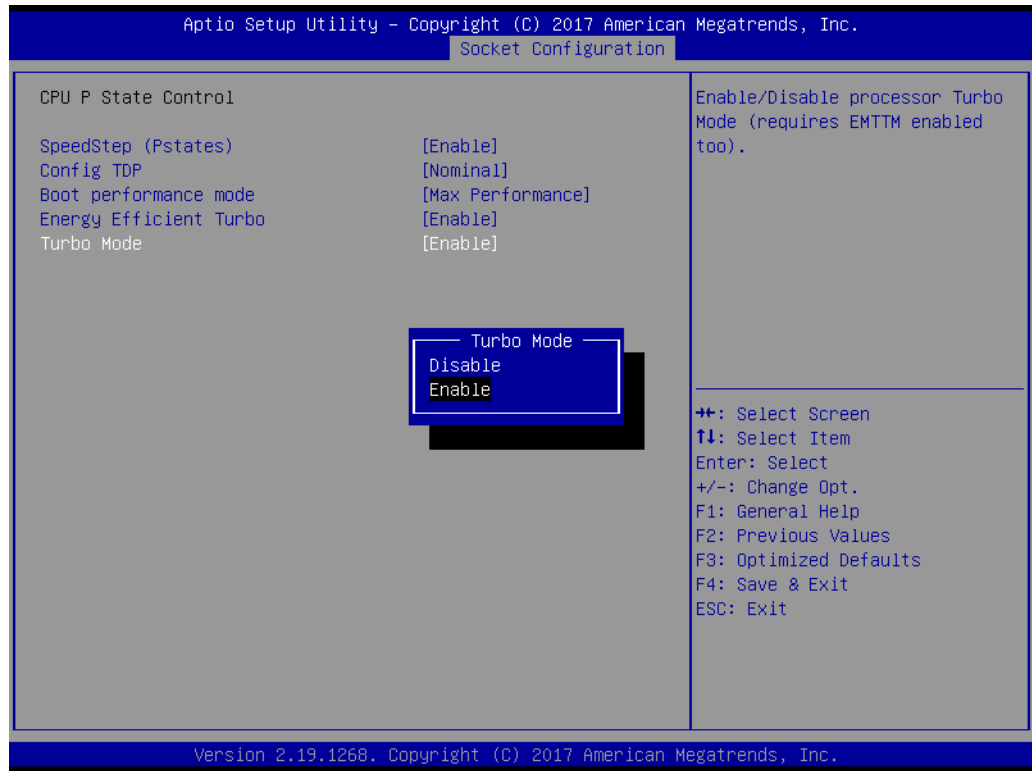
3.2.4.5 Advanced Power Management Configuration



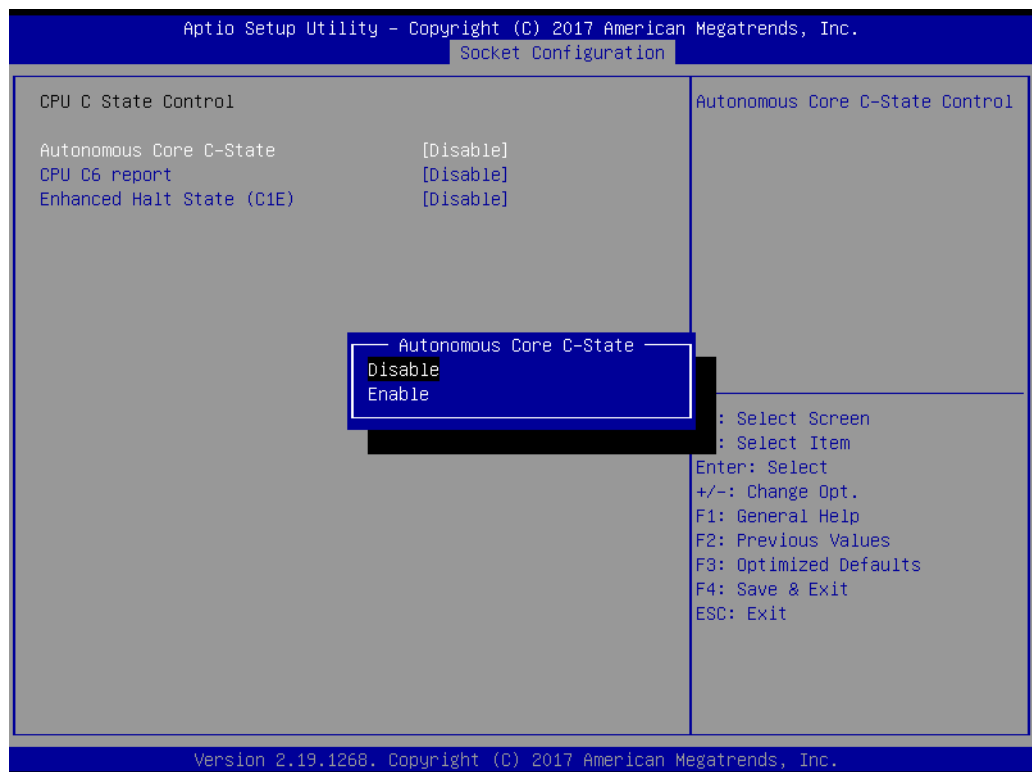
■ CPU P State Control

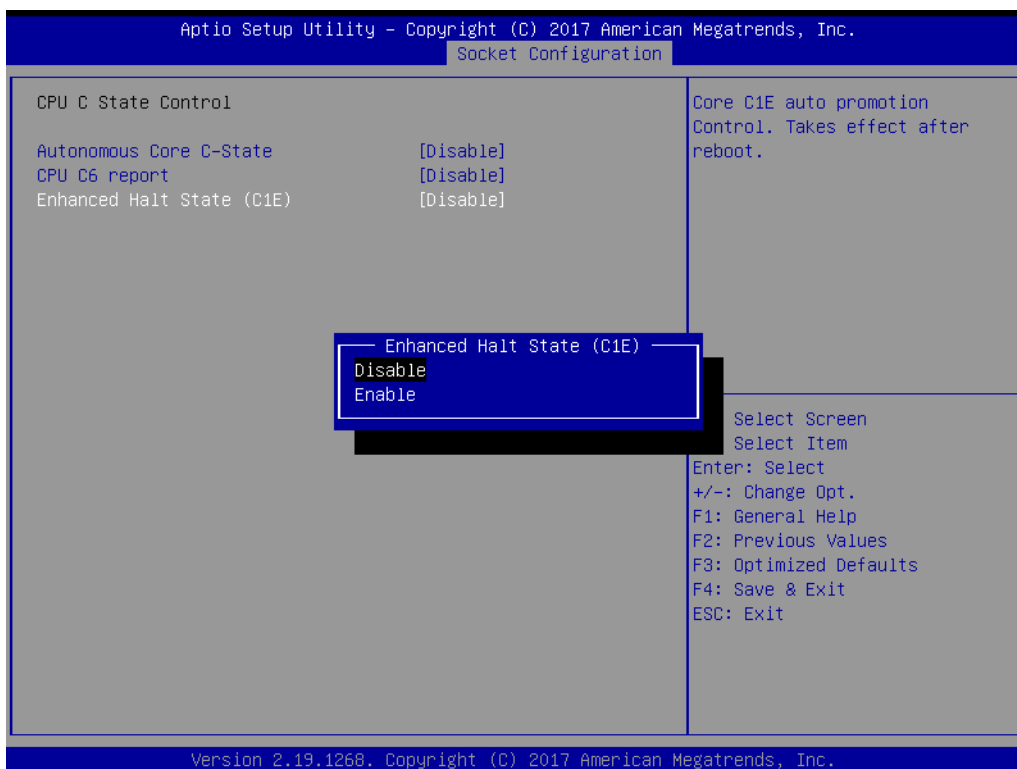
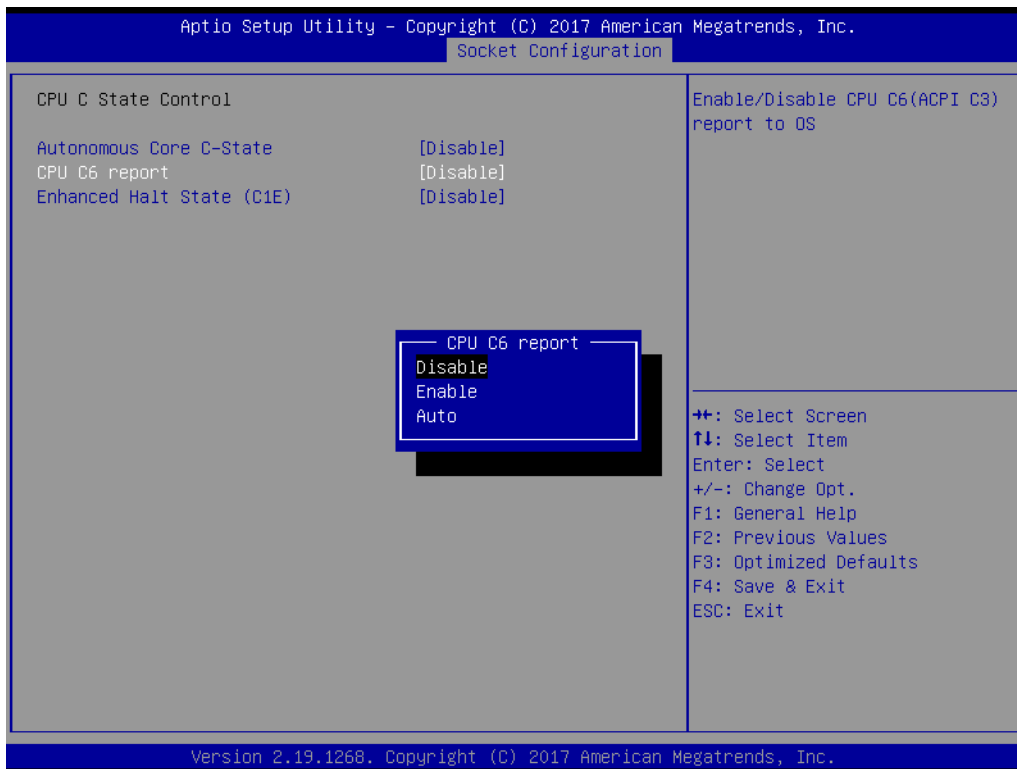






■ CPU C State Control

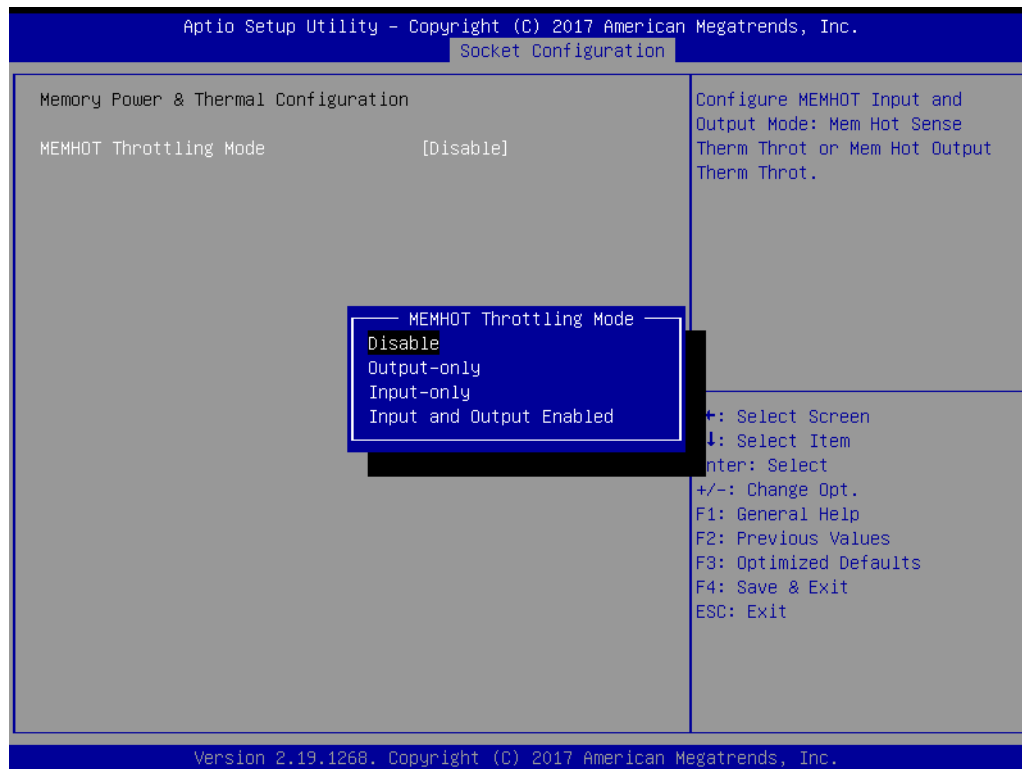




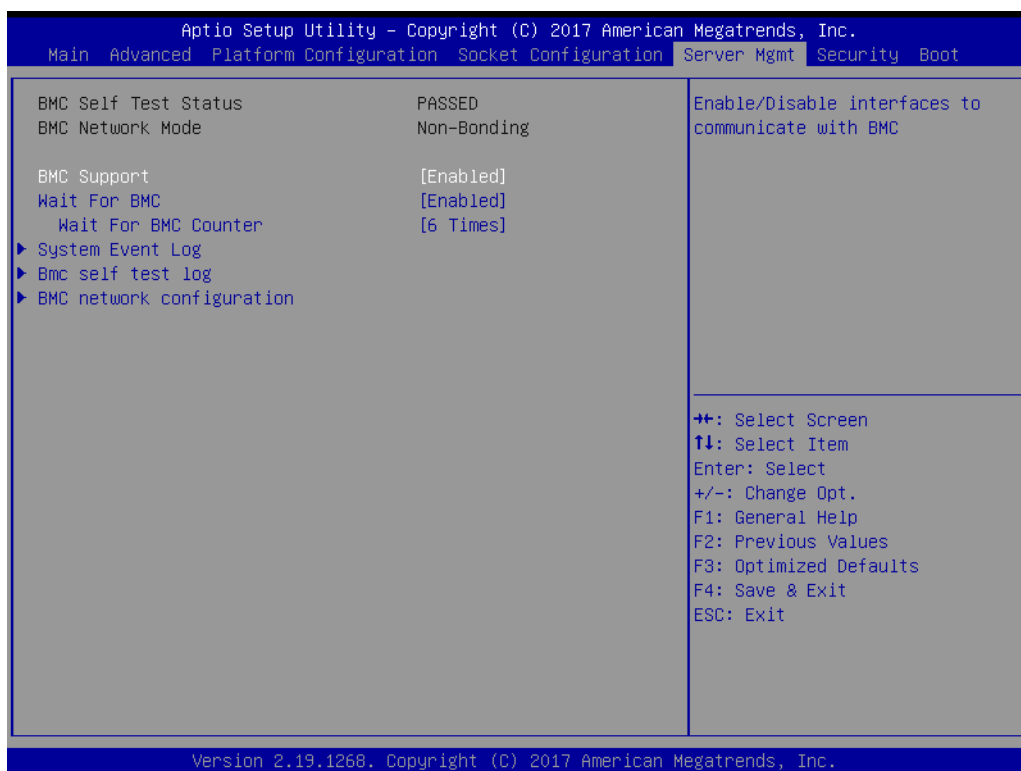
■ Package C State Control



■ Memory Power & Thermal Configuration

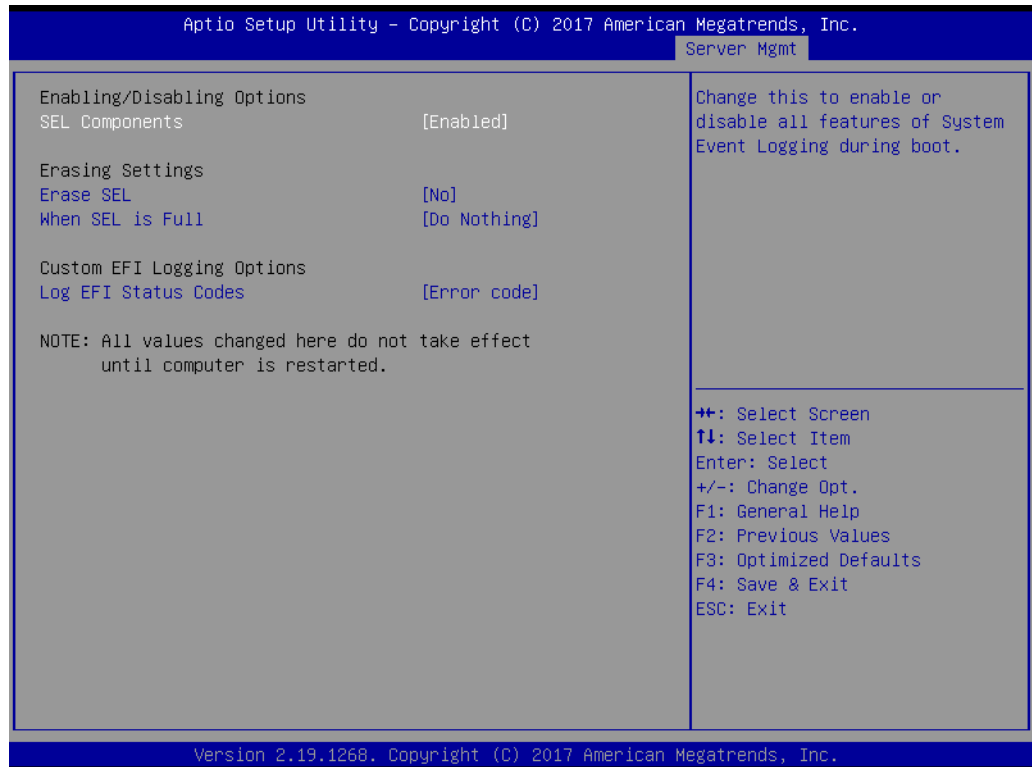


3.2.5 Server Management



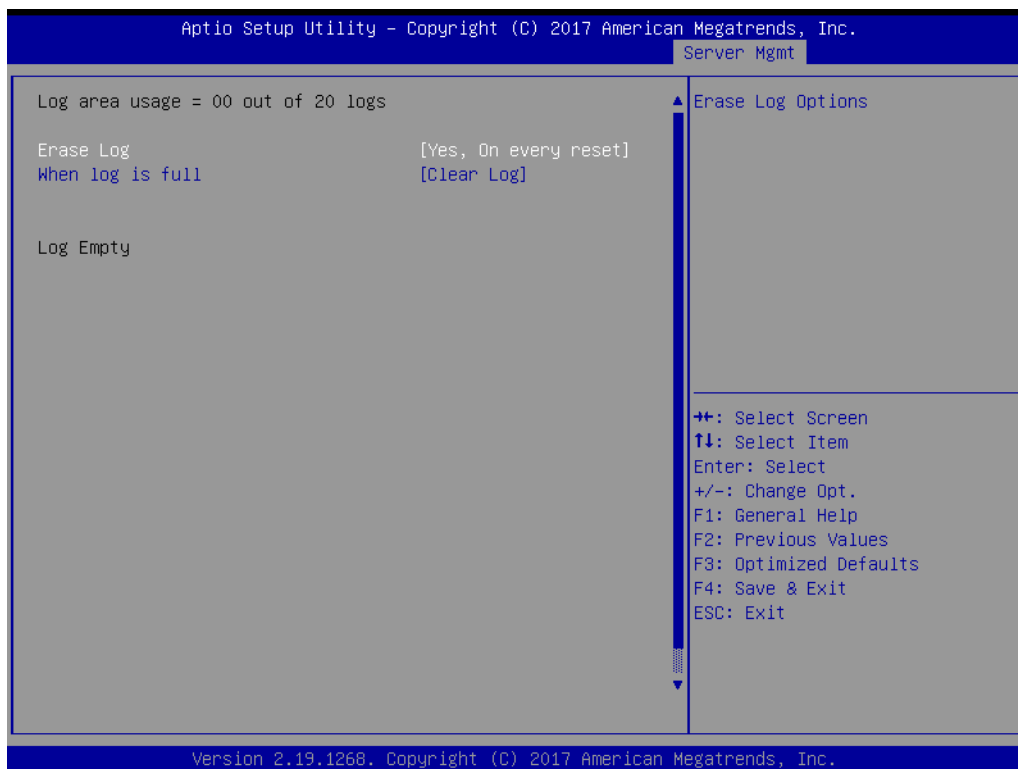
- **BMC Support**
Enable or disable interfaces to communicate with BMC.
- **Wait for BMC**
If enabled, motherboard will wait 30 ~ 60 seconds until BMC module boots up completely. After that, the normal BIOS post screen will be displayed.
If disabled, motherboard will not wait for BMC module's response.
- **Wait for BMC counter**
Initialize host to BMC interfaces.
The MB beeps per 5 seconds to check it.

3.2.5.1 System Event Log



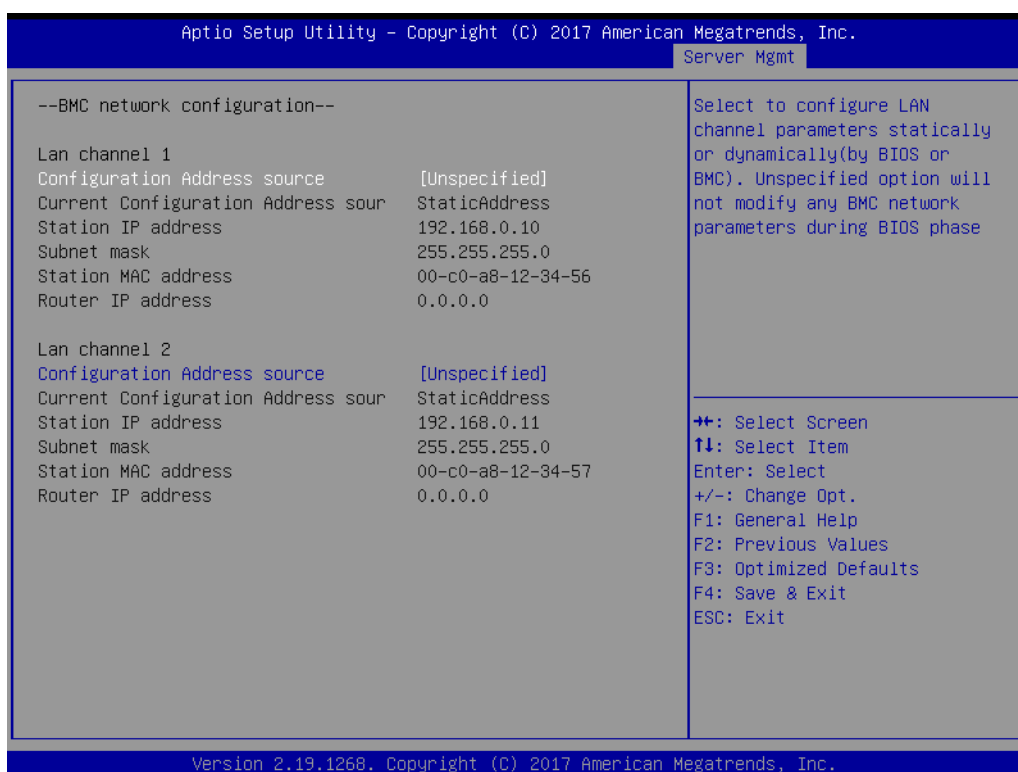
- **SEL Components**
Enable or disable all features of system event logging during boot.
- **Erase SEL**
Choose options for erasing SEL.
- **When SEL is Full**
Choose options for reactions to a full SEL.
- **Log EFI Status Codes**
Disable the logging of EFI status codes or log only error code or only progress code or both.

3.2.5.2 BMC Self Test Log



- **Erase Log**
Erase log options.
- **When Log is Full**
Select the action to be taken when log is full.

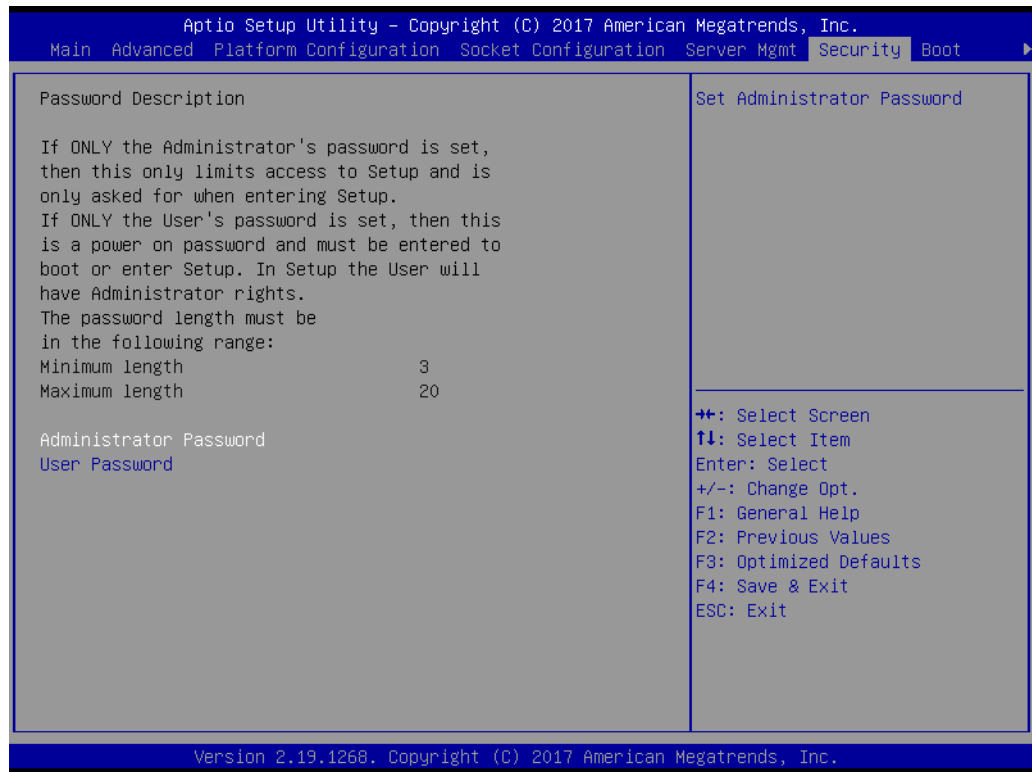
3.2.5.3 BMC Network Configuration



- **Configuration Address Source**

Select to configure LAN channel parameters statically or dynamically (by BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

3.2.6 Security





Note! **With AC power & Battery. Short CMOS1 Jumper:**



Date/Time & Password: Keep

Setting: reset to default

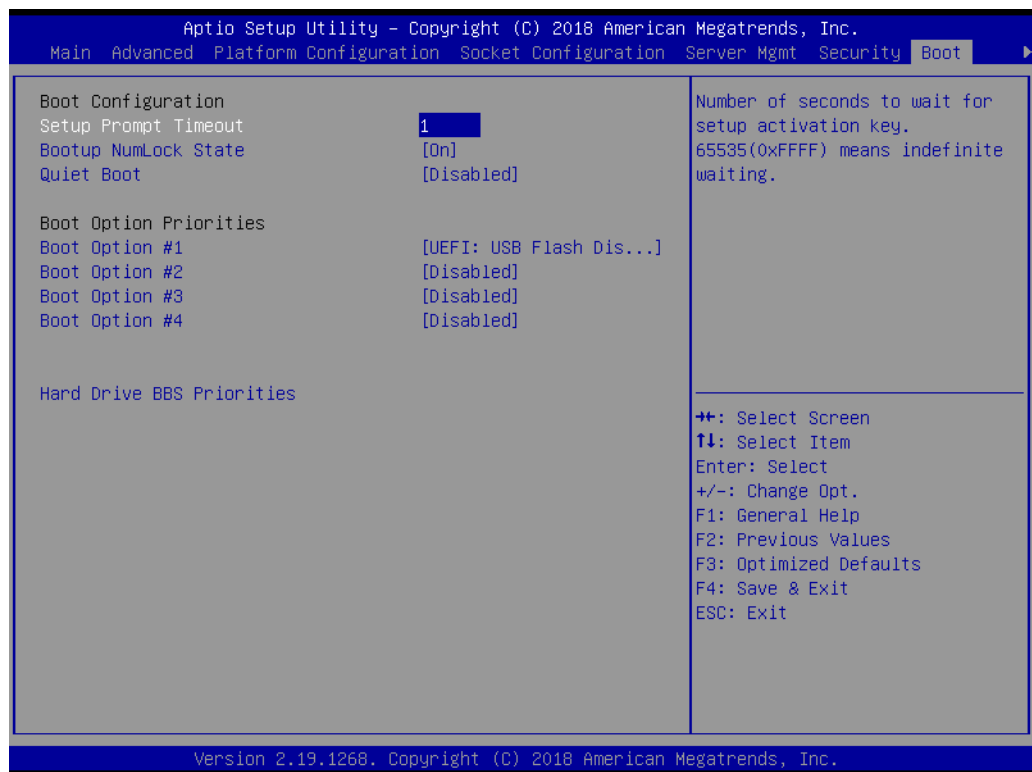
AC power and CMOS battery are removed. Short CMOS1 Jumper:

Date/Time: reset to default

Password: Keep

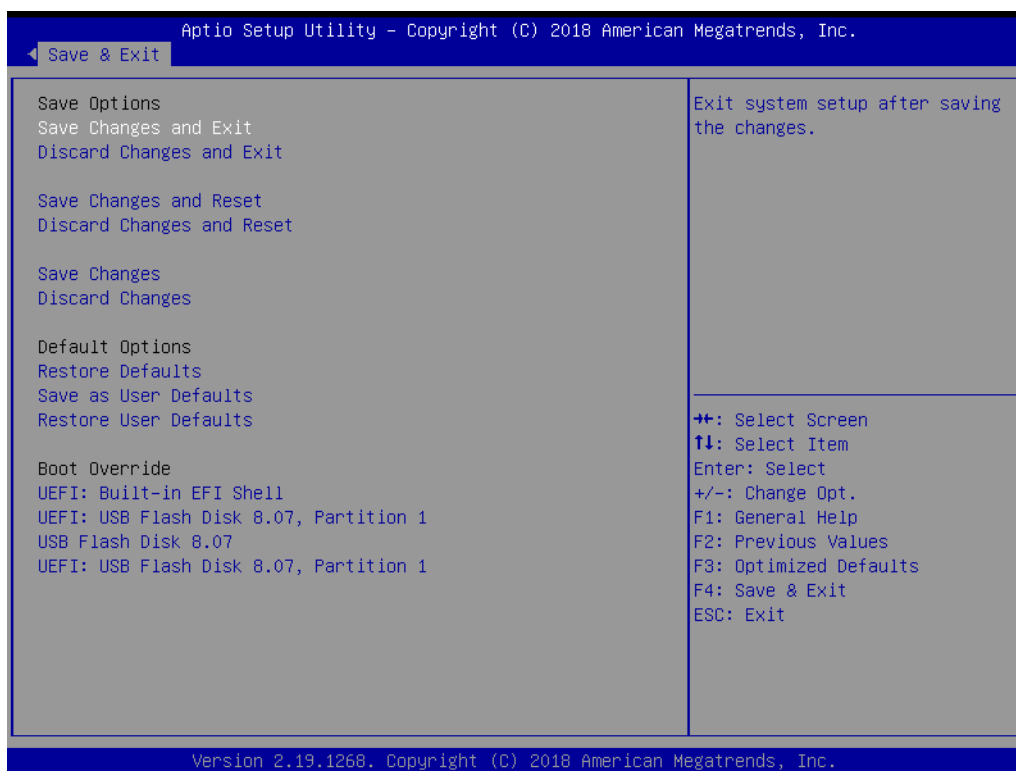
Setting: reset to default

3.2.7 Boot



- **Setup Prompt Timeout**
Number of seconds to wait for setup activation key.
- **Bootup NumLock State**
Select the keyboard NumLock state as "On" or "Off".
- **Quiet Boot**
Enable or disable quiet boot option.
- **Boot Option Priorities**
Sets the system boot priorities.
- **Hard Drive BBS Priorities**
Display this item when external legacy devices are plugged in to set boot priorities.

3.2.8 Save & Exit



- **Save Changes and Exit**
Exit system setup after saving the changes.
- **Discard Changes and Exit**
Exit system setup without saving any changes.
- **Save Changes and Reset**
Reset the system after saving changes.
- **Discard Changes and Reset**
Reset system setup without saving any changes.
- **Save Changes**
Save changes done so far to any of the setup options.
- **Discard Changes**
Discard changes done so far to any of the setup options.
- **Restore Defaults**
Restore/Load default values for all the setup options.
- **Save as User Defaults**
Save the changes done so far as user defaults.
- **Restore User Defaults**
Restore the user defaults to all the setup options.

Chapter 4

Chipset Software
Installation Utility

4.1 Before Beginning


To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the ASMB-935 are located on the software installation CD.


Before beginning, it is important to note that most display drivers need to have the relevant software application already installed on the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.2 Introduction


The Intel Chipset Software Installation (CSI) utility installs the Windows INF files that outline the operating system on how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI PnP services
- Serial ATA interface support
- USB 1.1/2.0/3.0 support
- Identification of Intel chipset components in the Device Manager

Note!  *The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

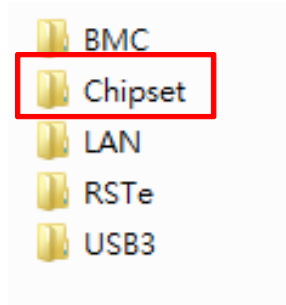
Note!  *The chipset driver is used for the following versions of Windows, and it has to be installed before installing all the other drivers:*

<i>Windows Server 2016 Standard</i>	<i>x64</i>
<i>Windows Server 2012 R2 Standard</i>	<i>x64</i>
<i>Windows 10 Ultimate</i>	<i>x64</i>

Note!  *It is necessary to update all the latest Microsoft hot fix files when using this OS.*

4.3 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. When the folder is displayed, click "Chipset". Find the executable file in this folder, click to install the driver.



Chapter 5

Graphic Setup

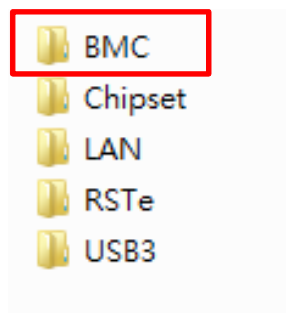
5.1 Introduction

Install the ASPEED VGA driver to enable this function, which includes the following features:

- 32-bit 2D graphics engine on board for normal use.
- 64 MB RAM for this chip, the highest resolution is 1920x1200.

5.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. When the folder is displayed, navigate to the "BMC" folder and click the executable file to complete the installation of the drivers for OS that you need.



Note!



1. *If ASMB-935 carries an additional graphics card for VGA output, please set this additional graphic card as "major output" under the "Display properties" of OS.*
2. *The WDDM driver can support for the following OS versions:*
 - *Windows Server 2012 version (WHQL)*
 - *Windows Server 2012R2 version (WHQL)*
 - *Windows 10 x86/x64 version*
 - *Windows Server 2016 version (WHQL)*
3. *ASPEED Graphics WDDM Driver Limitation on Microsoft Windows OS.*
 - *It is a non-WHQL certified driver because ASPEED VGA is a 2D VGA, it cannot meet the WHQL requirement of WDDM drivers which require 3D VGA functions.*
 - *Because it is a non-WHQL certified driver, it may have some compatibility issues with some specific applications*
 - *Does not support modes with different display frequencies.*

Chapter 6

LAN, USB 3.0 and
RSTe RAID

6.1 LAN Configuration

6.1.1 Introduction

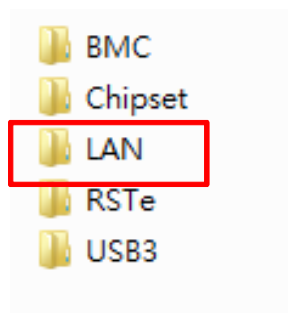
The ASMB-935 has two Gigabit Ethernet LAN connections via dedicated PCI Express x1 lanes: GbE LAN1 - Intel I210 and GbE LAN2 - I210; two 10G Base-T LAN connectors LAN3 and LAN4 - Intel X557 PHY. They eliminate the bottleneck of network data flow and incorporating Gigabit Ethernet at 10Gbps.

- 10/100/1000 & 10G Base-T Ethernet controller
- 10/100/1000 & 10G Base-T triple-speed MAC
- Full duplex at 10/100/1000 Mbps or 10 Gbps and half duplex at 10/100/1000 Mbps
- Wake-on-LAN (WOL) support
- PCIe x1 host and PHY interface

The integrated Intel gigabit Ethernet controller supports all major network operating systems. However, the installation procedure varies with different operating systems.

6.1.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "LAN" then click the proper LAN driver for the OS.



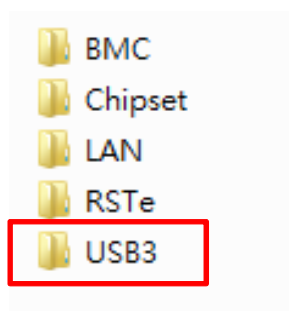
6.2 USB 3.0

6.2.1 Introduction

ASMB-935 offers six USB 3.0 ports, four in rear side and two via onboard header. The USB 3.0 could provide the bandwidth up to 5Gbps to shorten the time for data transmission.

6.2.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "USB" then click the Setup.exe file for the installation.



6.3 SATA & PCIe SSD RAID

6.3.1 Introduction

Intel C621/C622 PCH chip offers SATA & PCIe SSD RAID under Windows operating system.

Note!

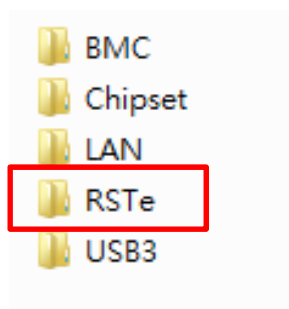


1. Please visit the Intel download center for "Intel Rapid Storage Technology enterprise for Microsoft Windows Operating System Software User's Guide" file download,

2. For the hotfix file download, please visit Microsoft website.

6.3.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "RSTe" then click to install the proper driver for the OS.



Appendix **A**

Programming the
Watchdog Timer

The ASMB-935's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1 Watchdog Timer Overview

The watchdog timer is built in to the EC controller IT8528E. It provides the following functions for user programming:

- Can be enabled and disabled by user's program
- Timer can be set from 1 to 255 seconds
- Generates an interrupt or reset signal if the software fails to reset the timer before time-out

A.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is as below:

Address	Description	
0x57	Event - Warm Reset: 0x04	
0x5E	Warm Reset Timer (High BYTE)	Based 100ms
0x5F	Warm Reset Timer (Low BYTE)	

Here is an example to step by step program the Watchdog Timer.

Step	Action	Description
00	Read 0x299 port	Clear I/O port
	Wait IBF clear	0x29A, BIT1, = 0
01	Write 0x89 to 0x29A	
	Wait IBF clear	0x29A, BIT1, = 0
02	Write 0x5E to 0x299 port	
	Wait IBF clear	0x29A, BIT1, = 0
03	Write 0x00 to 0x299 port	Set 10 sec (high byte)
	Wait IBF clear	0x29A, BIT1, = 0
04	Write 0x89 to 0x29A	
	Wait IBF clear	0x29A, BIT1, = 0
05	Write 0x5F to 0x299 port	
	Wait IBF clear	0x29A, BIT1, = 0
06	Write 0x64 to 0x299 port	Set 10 sec (low byte)
	Wait IBF clear	0x29A, BIT1, = 0
07	Write 0x89 to 0x29A	
	Wait IBF clear	0x29A, BIT1, = 0

08	Write 0x57 to 0x299 port	Watchdog Event
	Wait IBF clear	0x29A, BIT1, = 0
09	Write 0x04 to 0x299 port	(Warm) Reset event
	Wait IBF clear	0x29A, BIT1, = 0
10	Write 0x28 to 0x29A	Start watchdog
	Wait	1 ~ 9 sec
	Wait IBF clear	0x29A, BIT1, = 0
11	Write 0x29 to 0x29A	Stop watchdog
	Wait IBF clear	0x29A, BIT1, = 0
12	Go to Step 07	

Appendix **B**

I/O Pin Assignments

B.1 USB2.0 Header (USB2_78, USB2_910)

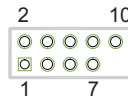


Table B.1: USB Header (USB2_78, USB2_910)

Pin	Signal	Pin	Signal
1	USB_VCC5	2	USB_VCC5
3	USB_D-	4	USB_D-
5	USB_D+	6	USB_D+
7	GND	8	GND
9	Key	10	GND

B.2 USB3.0 Header (USB3_56)

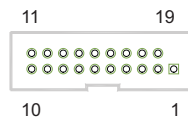


Table B.2: USB Header (USB5_6, USB7_8)

Pin	Signal	Pin	Signal
1	+5 V	2	STDA_SSRX-
3	STDA_SSRX+	4	GND
5	STDA_SSRX-TX-	6	STDA_SSRX+TX+
7	GND	8	D-
9	D+	10	OC#
11	D+	12	D-
13	GND	14	STDA_SSRX+TX+
15	STDA_SSRX-TX-	16	GND
17	STDA_SSRX+	18	STDA_SSRX-
19	+5 V	20	

B.3 VGA Connector (VGA1)

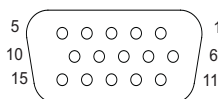


Table B.3: VGA Connector (VGA1)

Pin	Signal	Pin	Signal
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCK
8	GND		

B.4 RS-232 Interface (COM1)

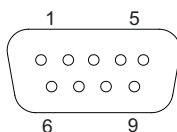


Table B.4: RS-232 Connector (COM1)

Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

B.5 RS-232 Interface (COM2)

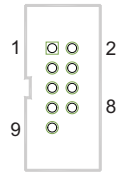


Table B.5: RS-232 Connector (COM2)

Pin	Signal
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND

B.6 External Keyboard Connector (KBMS2)



Table B.6: External Keyboard Connector (KBMS2)

Pin	Signal
1	KB CLK
2	KB DATA
3	MS DATA
4	GND
5	VCC
6	MS CLK

B.7 System & CPU Fan Power Connector (SYSFAN0~4, CPUFAN0~1)

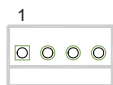


Table B.7: CPU FAN Connector (CPUFAN0~1)

	CPUFAN0	CPUFAN1
1	GND	GND
2	+12V	+12V
3	CPU_TACH	CPU_TACH
4	CPU0_PWM	CPU1_PWM

Table B.8: SYS FAN Connector (SYSFAN0~4)

	SYS FAN0	SYS FAN1	SYS FAN2	SYSFAN3	SYSFAN4
1	GND	GND	GND	GND	GND
2	+12V	+12V	+12V	+12V	+12V
3	FAN0_TACH	FAN1_TACH	FAN2_TACH	FAN3_TACH	FAN4_TACH
4	FAN0_PWM	FAN1_PWM	FAN2_PWM	FAN3_PWM	FAN4_PWM

B.8 Power LED (JFP3)

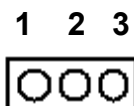


Table B.9: Power LED Connector (JFP1)

Pin	Function
1	LED power (3.3 V)
2	NC
3	Ground

B.9 External Speaker Connector (JFP2)

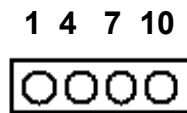


Table B.10: External Speaker Connector (JFP2)

Pin	Function
1	SPK+
4	NC
7	BZ-
10	SPK-

B.10 Reset Connector (JFP1)

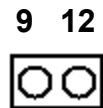


Table B.11: Reset Connector (JFP1)

Pin	Signal
9	RESET
12	GND

B.11 HDD LED Connector (JFP1)

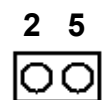


Table B.12: HDD LED Connector (JFP1)

Pin	Signal
2	HDD_LED+
5	HDD_LED-

B.12 ATX Soft Power Switch (JFP1)



Table B.13: ATX Soft Power Switch (JFP1)

Pin	Signal
3	PWR-BTN
6	GND

B.13 SMBus Connector (SMBUS1)

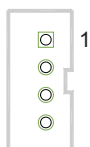


Table B.14: Front panel SMBus Connector (SMBUS1)

Pin	Signal
1	+3.3V_AUX
2	SMB_SCL_FRU
3	SMB_SDA_FRU
4	GND

B.14 USB & LAN Ports (LAN1_USB3_12, LAN2_USB3_34)

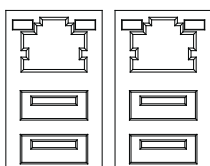


Table B.15: USB Port

Pin	Signal	Pin	Signal
1	VCC_DUAL	3	Data0+
2	Data0-	4	GND

Table B.16: Giga LAN 10/100/1000 Base-T RJ-45 Port

Pin	Signal	Pin	Signal
1	MID0+	4	MID2+
2	MID0-	5	MID2-
3	MID1+	7	MID3+
6	MID1-	8	MID3-

B.15 Audio Connector (HDAUD1)

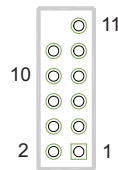


Table B.17: Front Panel Audio Connector (HDAUD1)

Pin	Signal	Pin	Signal
1	+V5_AUDIO	2	GND
3	ACZ_SYNC	4	ACZ_BITCLK
5	ACZ_SDOOUT	6	ACZ_SDIN0
7	ACZ_SDIN1	8	ACZ_RST#
9	ACZ_12V	10	GND
11	GND	12	N/C

B.16 Alarm Board Connector (VOLT1)

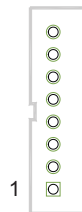


Table B.18: Alarm Board Connector (VOLT1)

Pin	Signal	Pin	Signal
1	5VSB	5	+5V
2	GND	6	+3.3V
3	GND	7	-12V
4	-5V	8	+12V

B.17 Case Open Connector (JCASE1)

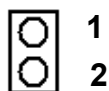


Table B.19: Case Open Connector (JFP1)

Pin	Signal
1	CASEOP
2	GND

B.18 Front Panel LAN LED Connector (LANLED1)

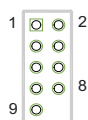


Table B.20: LAN LED Connector (LANLED1)

Pin	Signal	Pin	Signal
1	LAN1_ACT#	2	LAN2_ACT#
3	+3V3_LAN1LED	4	+3V3_LEN2LED
5	LAN3_ACT#	6	LAN4_ACT#
7	+3V3_LAN3LED	8	+3V3_LEN4LED
9	NC	10	NC

B.19 SATA SGPIO Connector (SGPIO1)



Table B.21: SATA SGPIO Connector (SGPIO1)

Pin	Signal
1	SCLOCK_PCH
2	NC
3	SLOAD_PCH
4	SDATAOUT0_PCH
5	SDATAOUT1_PCH

B.20 LPC Connector (LPC2)

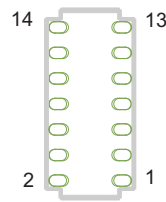


Table B.22: LPC Connector (LPC2)

Pin	Signal	Pin	Signal
1	CLK_33M_TPM	2	LPC_AD1
3	PLTRST_LPC	4	LPC_AD0
5	LPC_FRAME	6	+3.3V
7	LPC_AD3	8	GND
9	LPC_AD2	10	SMB_SCL_LPC
11	SERIRQ_PCH	12	SMB_SDA_LPC
13	+5V_AUX	14	+5V

B.21 Clear CMOS Connector (JCMOS1, JME1)



Table B.23: Clear CMOS Connector (JCMOS1, JME1)

Pin	Signal	Signal
	JCMOS1	JME1
1	NC	NC
2	RTC_RST_PCH	HDA_SDOOUT_PCH
3	GND	+3.3V

B.22 PMBUS Connector (PMBUS1)

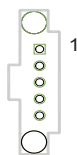


Table B.24: PMBUS Connector (PMBUS1)

Pin	Signal
1	SMB_SCL_PM
2	SMB_SDA_PM
3	SMB_ALT_PM
4	GND
5	+3.3V

B.23 GPIO Connector (GPIO1)

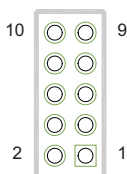


Table B.25: GPIO Connector (GPIO1)

Pin	Signal	Pin	Signal
1	SIO_GPIO0	2	SIO_GPIO4
3	SIO_GPIO1	4	SIO_GPIO5
5	SIO_GPIO2	6	SIO_GPIO6
7	SIO_GPIO3	8	SIO_GPIO7
9	VCC_GPIO0	10	GND

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