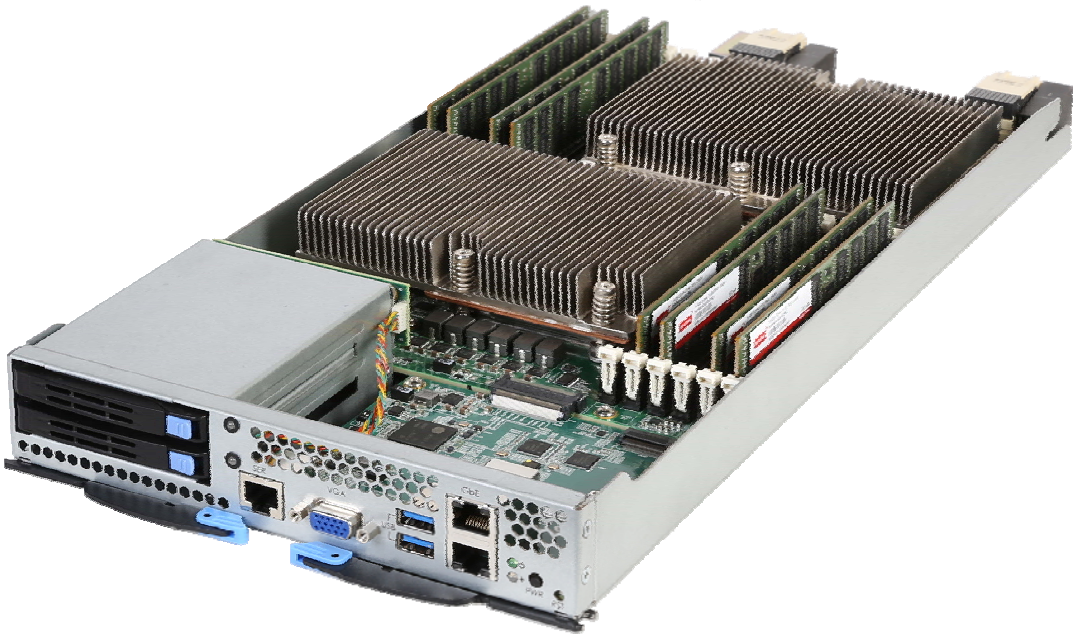
# MCN-2600T

## Intel® Xeon® Processor E5-2600 v3/v4 CPU Sled

# User's Manual




Manual Revision: 1.0
Revision Date: November 2, 2018
Part No.: 50-1Z268-1000



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Leading **EDGE COMPUTING**

# Preface

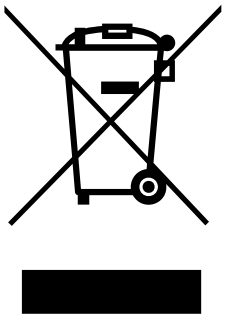
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## Revision History

| Revision | Release Date | Description of Change(s) |
|---|---|---|
| 1.0 | 2018-11-02 | Initial release |



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# 1 Overview

## 1.1 Introduction

The ADLINK MCN-2600T is a high-performance CPU sled featuring dual Intel® Xeon® E5 processors, interconnected by dual redundant switch modules when installed in the CSA-7400 Network Appliance. It is ideally suited for building next generation high-performance firewalls and virtualized telecom elements.

The main features of the MCN-2600T are summarized as follows:

- Maximum of four MCN-2600T CPU sleds are supported in the CSA-7400
- Dual redundant switch modules provide up to 2x 50G data plane links to each MCN-2600T in the CSA-7400
- Independent 1G control plane links that connect four MCN-2600T, two switch management CPUs (implemented by COMe module) and two Chassis Management Modules (CMM).
- Supports IPMI 2.0 specification, provides web-based intelligent system management via CMM on switch sleds, and supports SOL on compute nodes
- Optionally integrates Wind River® Titanium Server or OPNFV software to provide carrier grade NFV service



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# 1.2 CPU Sled Overview

## 1.2.1 CPU Sled Specifications

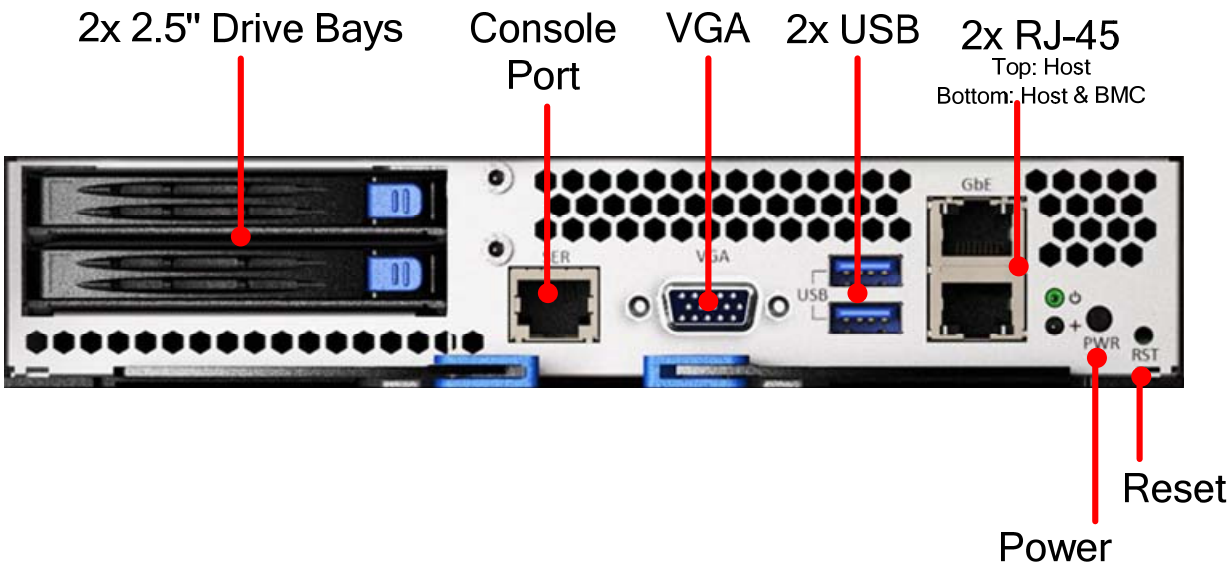
| | |
|---|---|
| **Core System** | |
| **CPU** | Intel® Xeon® processor E5-2620 v3 (6C/12T)<br>Intel® Xeon® processor E5-2630 v3 (8C/16T)<br>Intel® Xeon® processor E5-2628L v3 (10C/20T)<br>Intel® Xeon® processor E5-2658 v3 (12C/24T)<br>Intel® Xeon® processor E5-2680 v3 (12C/24T)<br>Intel® Xeon® processor E5-2699 v3 (18C/36T)<br>Intel® Xeon® processor E5-2628L v4 (12C/24T)<br>Intel® Xeon® processor E5-2680 v4 (14C/28T) |
| **L2 Cache** | 15MB/20MB/25MB/30MB/35MB/45MB dependent on CPU |
| **Chipset** | Intel® C610 Chipset |
| **Memory** | 12x DDR4-1600/1866/2133 DIMM socket, ECC, up to 192GB |
| **BIOS** | AMI BIOS on SPI flash memory |
| **Operating Systems** | Window 7 64bit, Linux Kernel 2.6 or above |
| **I/O Interfaces** | |
| **Ethernet** | 2x RJ-45 10/100/1000BASE-T Ethernet ports on front panel<br>2x 1G Ethernet ports to two switch boards via mid-plane |
| **Console** | 1x RJ-45 serial port |
| **USB** | 2x USB 3.0 |
| **Graphics** | 1x VGA socket onboard |
| **Storage** | 2x 2.5'' hot-swappable SATA drive bays & 2x M.2 SSD |
| **Backplane** | 2x PCIe G3 x 8 to Switch nodes |
| **Control Buttons and LEDs** | |
| **Power** | 1x Power Button (front) |
| **Reset** | 1x Reset Button (front) |
| **LEDs** | Power, Status, Drive |



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| Mechanical | |
|---|---|
| **Form Factor** | 213.9mmx 40.44mm x 432.1mm (W x H x D) |
| **Operating Temp.** | 0˚C to +40˚C |
| **Storage Temp.** | -40˚C to +70˚C |
| **Humidity** | 10% to 80%, non-condensed |
| **RoHS** | RoHS Compliant |

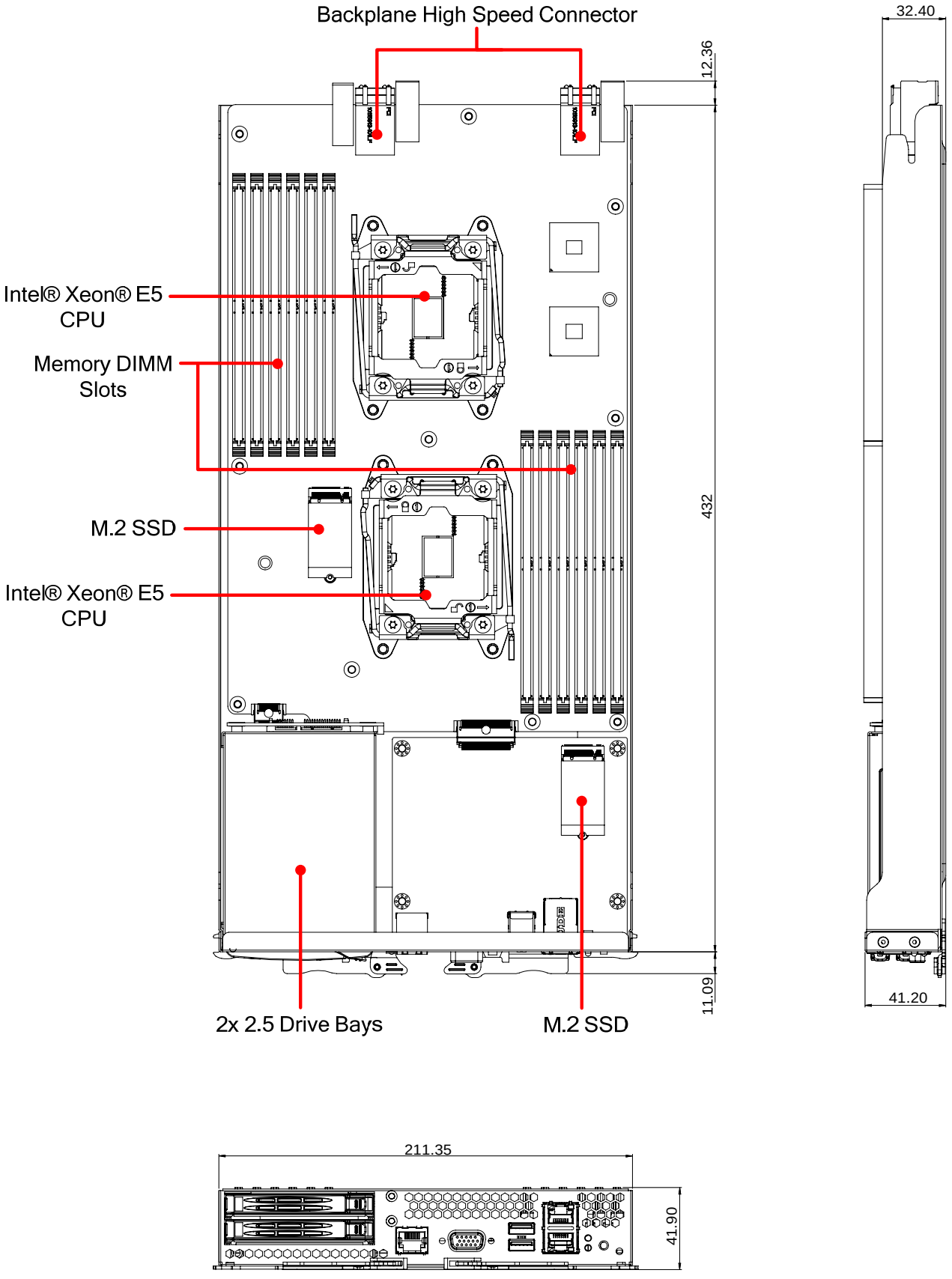
### 1.2.2 CPU Sled Front Panel






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### 1.2.3 CPU Sled Layout






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### 1.2.4 DPDK Support

DPDK is a set of libraries and drivers for fast packet processing, and it can improve packet processing performance by up to ten times. The MCN-2600T CPU sled is fully validated with DPDK and can provide a high throughput for data plane packet processing.



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# 2 Getting Started

## 2.1 Preparing the CPU Sled

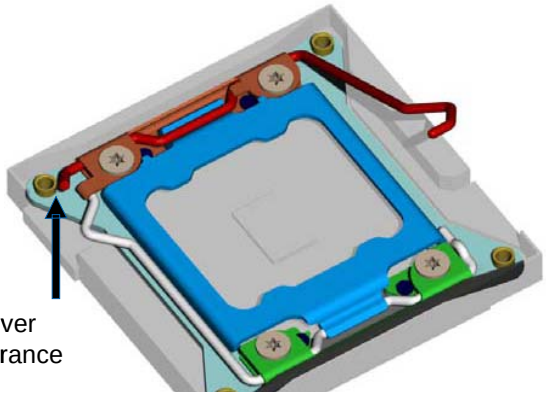
The MCN-2600T is a single-system dual Intel® Xeon® E5 compute node.

**Note:** See 4.4.1 Updating MCN-2600T BIOS for instructions on how to power down the CPU sled.

### 2.1.1 Installing the CPUs

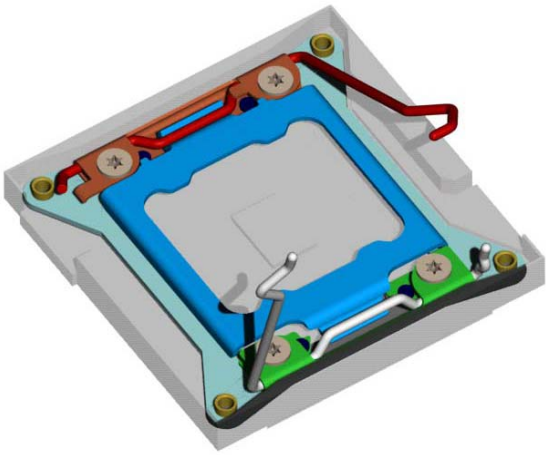
**Opening Sequence**

Step-1



By opening red lever 1st it creates clearance to open the gray lever.

Step-2

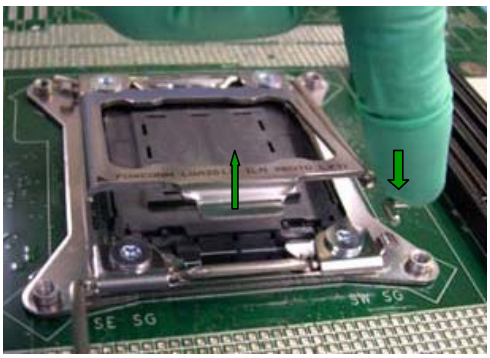


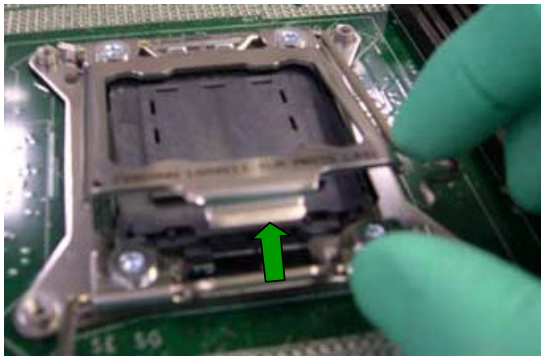


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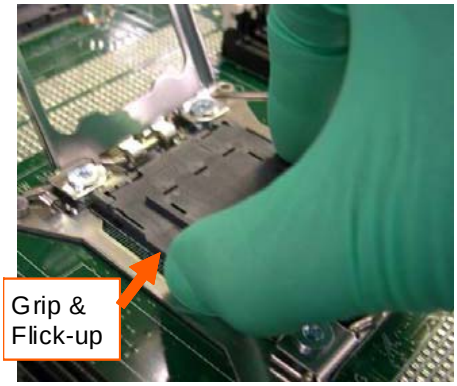
## Opening Sequence for Independent Load Mechanism (ILM) and Load Plate

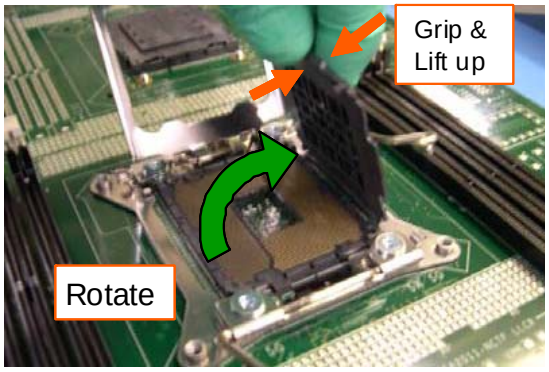
Push down on the hinge lever → Grasp and open the load plate



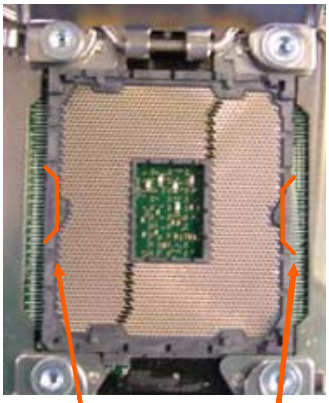


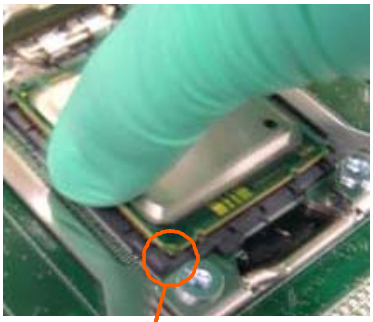
## Removing the Pick and Place (PnP) Cap

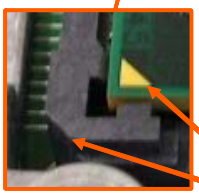


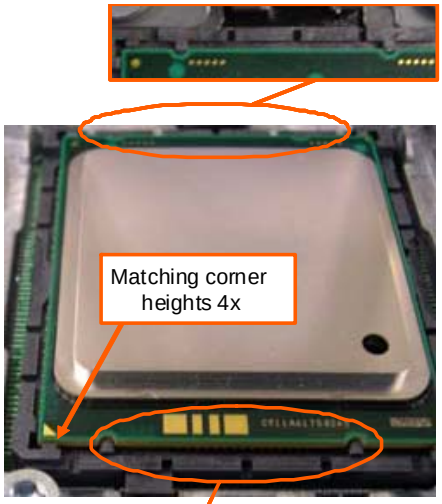




## Package Insertion










Finger Cutouts for Package insertion & removal

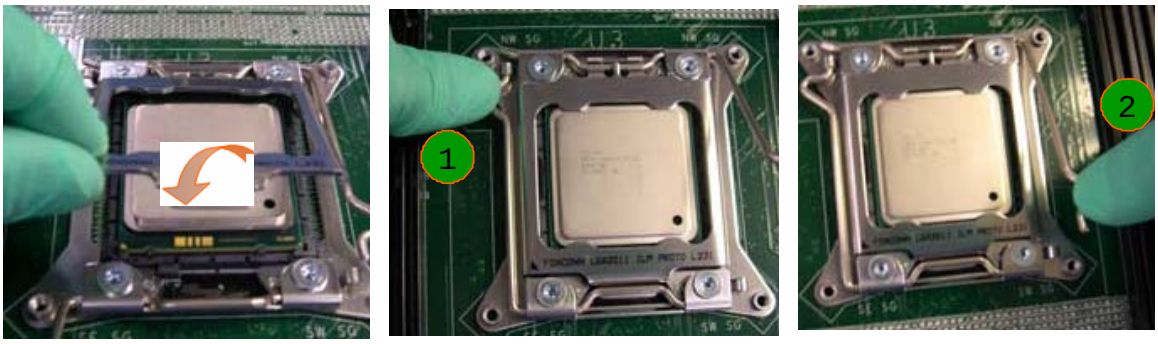
Pin 1 indicators

Package Keying features 4x



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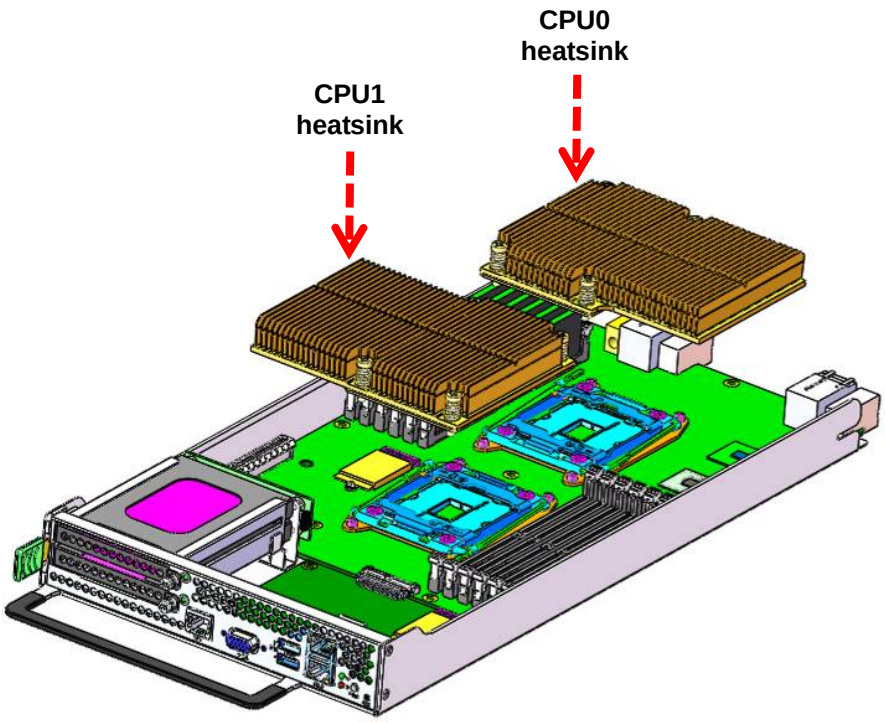
**Closing the ILM and Load Plate**




## 2.1.2 Installing the Heatsinks

**Heat sink installation**

Place the heat sink on top of each CPU and secure it by screwing in the captive screws.



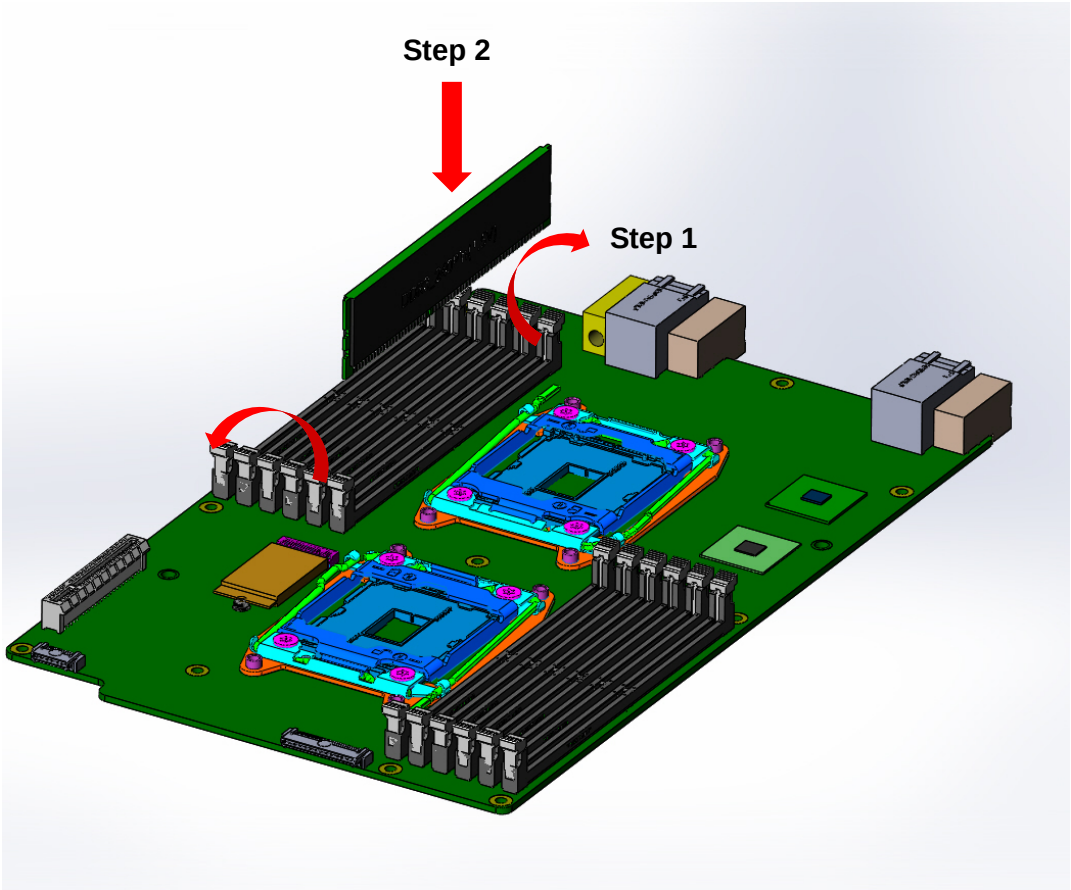



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### 2.1.3 Installing Memory

1. Open the locking levers on both sides of each socket.

2. Align the memory module with the keys in the socket and press down firmly until both locking levers click into place.

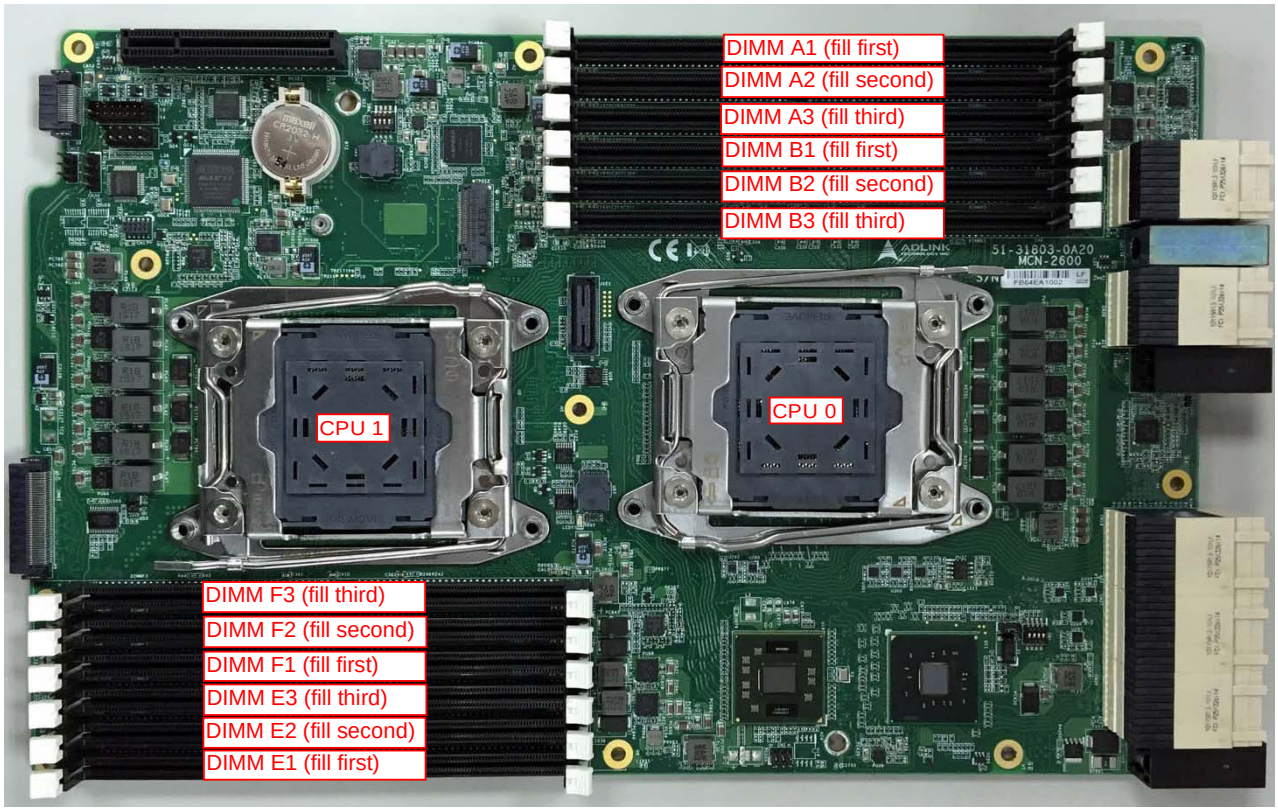





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## Memory Population

MCN-2600T is equipped with twelve (12) DDR4 (Double-Data-Rate Fourth Generation Synchronous Dynamic Random Access Memory) slots. Each CPU supports two independent channels (CPU0: Channel A/B; CPU1: Channel E/F) with three DIMM slots per channel. The DIMM slots of each channel must be populated starting with the slot farthest from the CPU, as shown in the diagram below. Note: the slots of the two channels do not have to be populated with the same number of DIMMs.

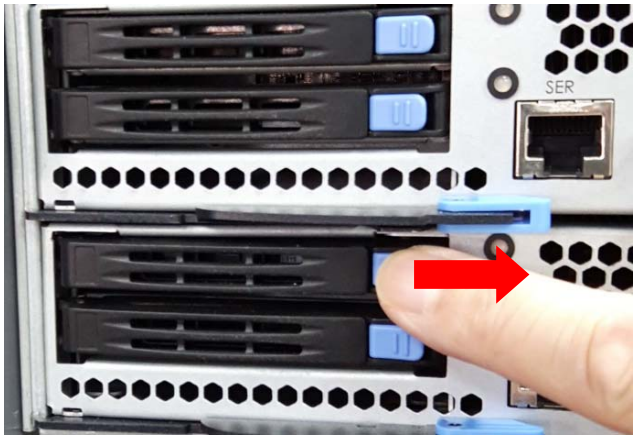




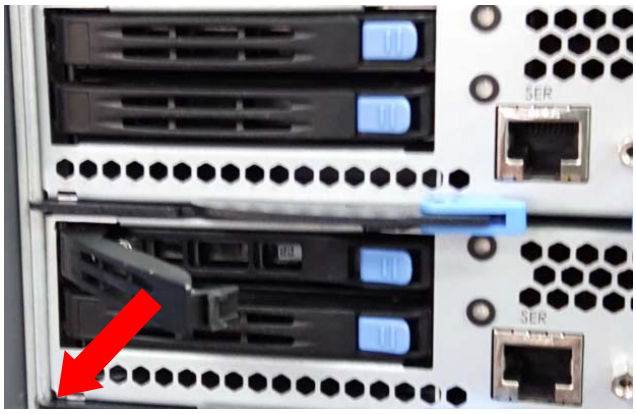

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### 2.1.4 Installing a SATA Drive

1. Unlock the ejector handle of the SATA drive tray by pressing the blue unlocking tab towards the right. The ejector handle will swing outwards.




2. Pull outwards on the ejector handle to remove the SATA drive tray.







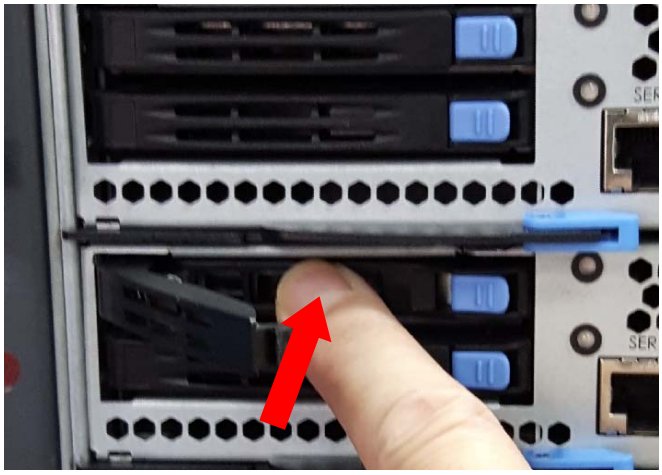


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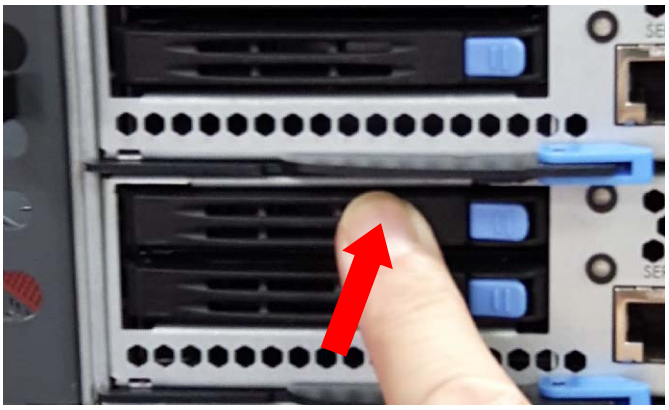
3. Secure the 2.5” SATA drive to the drive tray with 4 screws as shown.



4. Insert the drive tray into the drive bay and press inwards until it is firmly seated.



5. Close the ejector handle and press inwards until it locks in place with a “click”.

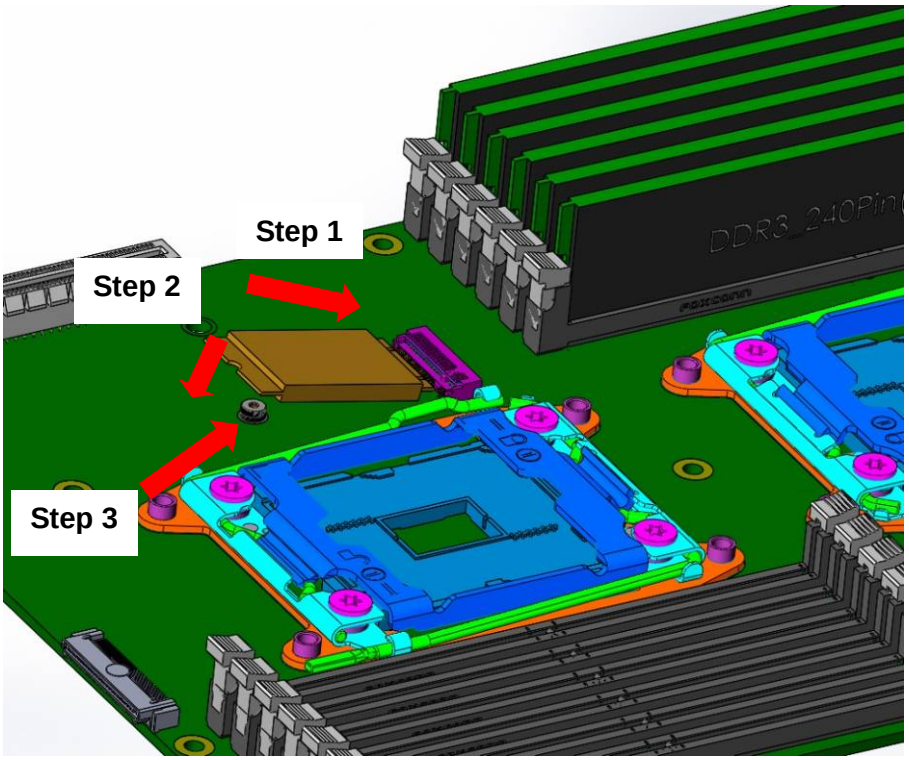




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### 2.1.5 Installing an M.2 SSD Module

1. Insert the M.2 SSD module into the slot at a 15 degree angle to the board.
2. Gently press down on the module.
3. Use an M2.5 screw to secure the module to the board.

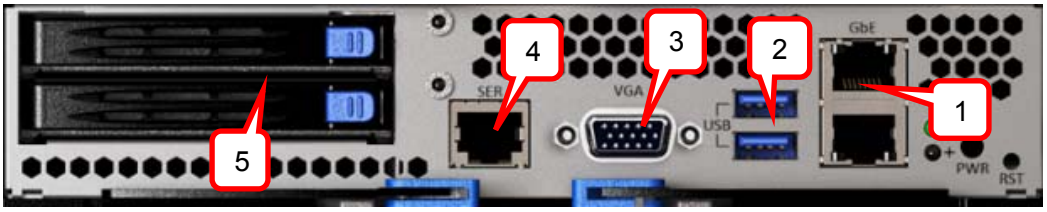





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## 2.2 Front Panel Layout

The MCN-2600T provides I/O connections from the front panel. There are two 1GbE RJ-45 LAN ports, two USB 3.0 port, one VGA port, one console port and two 2.5 drive bays, as shown below.




| I/O port | Description |
|---|---|
| 1 | Two 10/100/1000BASE-T Ethernet ports |
| 2 | Two USB 3.0 port |
| 3 | VGA connector |
| 4 | RJ-45 console port |
| 5 | Two 2.5'' drive bays |

## 2.3 Inserting and Removing the CPU Sled

Refer to the chapter "Assembling and Powering Up the CSA-7400" in the "CSA-7400 User's Manual" for instructions on inserting and removing the MCN-2600T CPU Sled.



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# 3 Powering Up the CPU Sled

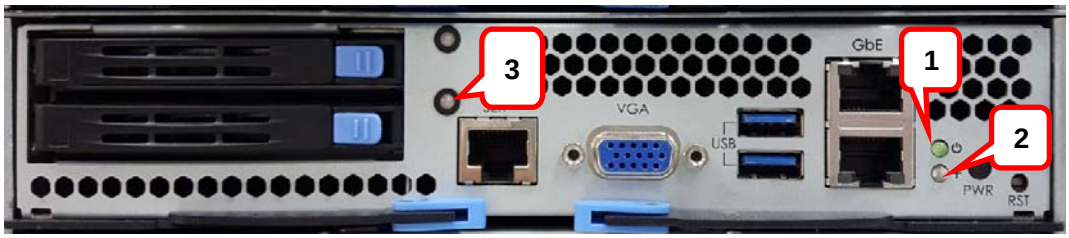
## 3.1 Power-Up Behavior

When power is supplied to the CSA-7400, all components will power up automatically. The behavior of the system when powered up is described below.

1. Cooling fans start speeding up as soon as power is applied to the system.
2. Power LEDs of both CPU and switch nodes turn ON (green).
3. CPU nodes start booting up: The status LED turns ON (red), indicating BIOS POST status. After BIOS POST is completed, the status LED changes from red to green, Indicating system status
   **Note:** The BMC Watchdog timeout will turn off the status LED. If the BMC watchdog is not enabled, the green status LED will stay on.
4. After a few seconds, the switch node A/S LED turns ON (steady or blinking) indicating CM Active/Standby status.

## 3.2 Health/Status Indicators

This section covers all of the LEDs on the MCN-2600T CPU sled.




| | LED # | Description | |
|---|---|---|---|
| MCN-2600T | 1 | Power LED (power on: Green) | |
| | 2 | Status LED (BIOS POST: Red; POST completed: Green) | |
| | 3 | SATA Drive LEDs | |
| | | **Drive Status** | **LED (Green)** |
| | | Read/Write | Blinking |
| | | Idle | On |
| | | Not Present | Off |



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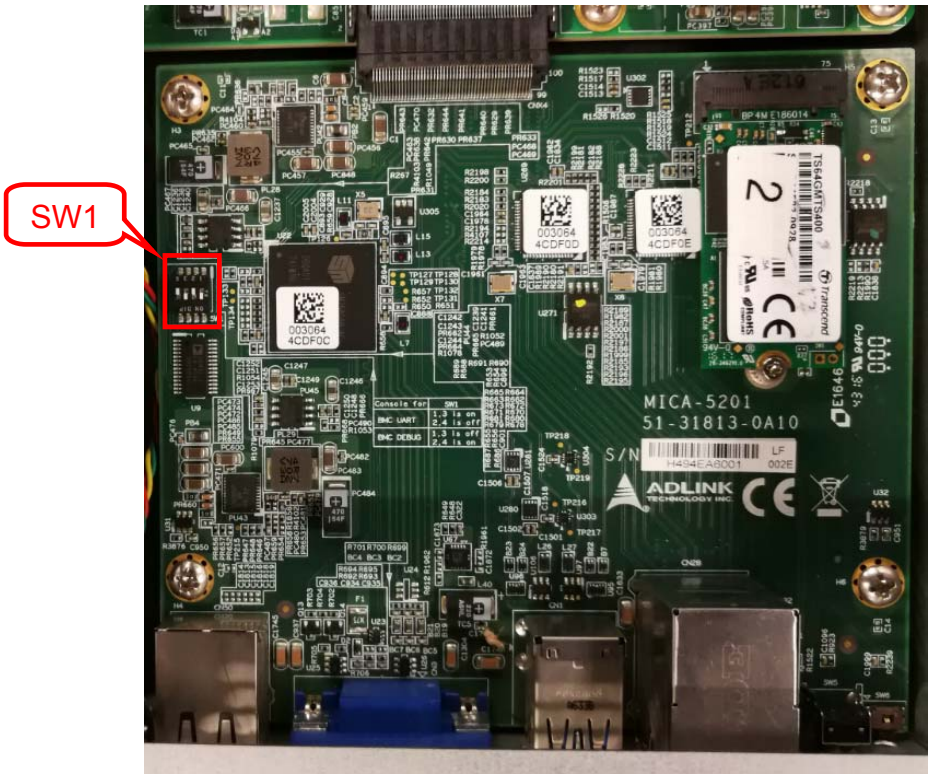
# 4 Using the CPU Sled

## 4.1 Hot-Swapping the CPU Sled

Before hot-swapping the CPU Sled, the user must first shutdown the OS by executing a command from the OS or holding down the power button more than 4 seconds.

## 4.2 Using Serial Console

The MCN-2600T sled supports one serial console port, which is shared between the host and the BMC. Selection pins are available on DIP switch SW1 to control serial console usage.



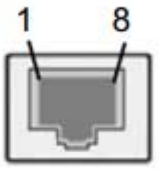

| Pins | Setting | Usage |
|---|---|---|
| 1, 2, 3, 4 | On, Off, On, Off | System console |
| 1, 2, 3, 4 | Off, On, Off, On | BMC console |



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The serial console port is RJ45 form factor, and has a standard pin definition for the console port as below.

| LED # | Description |
|---|---|
| 1 | RTS |
| 2 | DTR |
| 3 | TXD |
| 4 | SG |
| 5 | SG |
| 6 | RXD |
| 7 | DSR |
| 8 | CTS |




The serial port is set with the following parameters

| | |
|---|---|
| Type | RS232 (COM) |
| Baud Rate | 115200 bps |
| Data Bits | 8 |
| Parity | None |
| Stop Bits | 1 |
| Flow Control | None |



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## 4.3 Serial Over LAN via BMC

The CPU board BMC provides a text-based Serial Over LAN (SOL) console. With SOL redirection system administrators can remotely view the text-based host console from anywhere and perform any task that doesn't require a GUI.

### 4.3.1 Configuring the BMC IP Address

The default BMC IP address is 192.168.2.101. User can change the IP address by using ipmitool within host OS.

#### Configure BMC IP Address via Host

```
Setting LAN IP Address
# ipmitool lan set 1 ipaddr xxx.xxx.xxx.xxx

Setting LAN Subnet Mask
# ipmitool lan set 1 netmask 255.255.255.0

Setting LAN Default Gateway IP
# ipmitool lan set 1 defgw ipaddr xxx.xxx.xxx.xxx
```

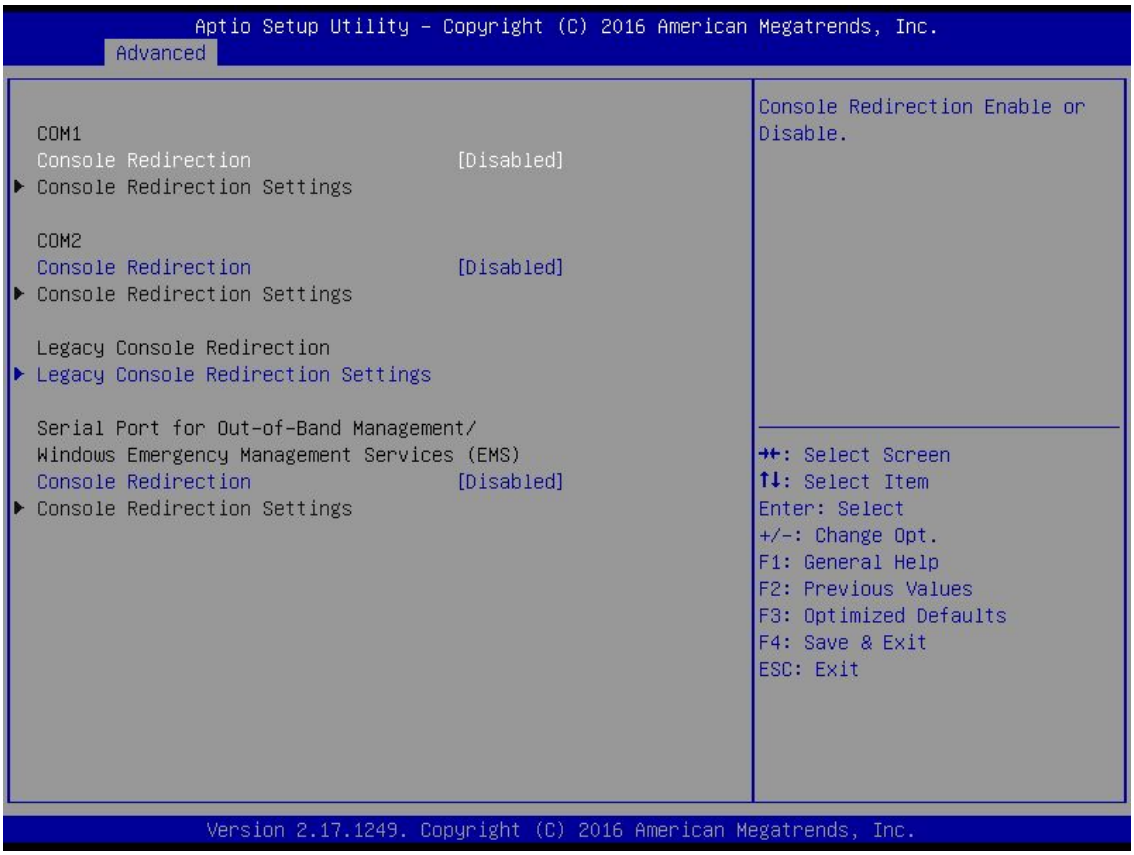


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### 4.3.2 Configuring BIOS for SOL

#### Serial Port Console Redirection

You can use this screen to select options for the serial port console redirection settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The *Serial Port Console Redirection* screen is shown below.




#### COM2: console redirection enabled

This port is mapped toBMC vUART.

### 4.3.3 Configuring OS for SOL

#### vUART SOL with RHEL 5.6 32-bit

```
# vim /etc/securetty -> Add "ttyS2"
# strace /sbin/agetty ttyS2 115200 vt100 {Enter}
```

### 4.3.4 Establishing SOL

#### Activate SOL from client IPMItool

```
# ipmitool -H <BMC IP Address> -I lanplus -U root -P superuser sol activate
```



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# 4.4 Firmware Upgrade

## 4.4.1 Updating MCN-2600T BIOS

Users can update the CSA-7400 system BIOS over various interfaces (Gigabit LAN, KCS, console port).

### Updating the BIOS via Network with BMC Tool

1. Login to the OS with root user permission.
2. Update the BIOS over network with the command below:

Example:

```
$./Yafuflash -nw -ip 192.168.2.101 -u root -p superuser -bios BIOS.BIN
-------------------------------------------------
YAFUFlash - Firmware Upgrade Utility (Version 1.3)
            Customized for BMC
-------------------------------------------------
(C)Copyright 2013, American Megatrends Inc.
[100%  ]  | | Block 256 of 256 | Success
```

### Updating the BIOS via Host with BMC Tool

1. Login to the OS with root user permission
2. Update the BIOS over host with the command below:

Example:

```
$ sudo ./Yafuflash -mbox -bios BIOS.BIN
-------------------------------------------------
YAFUFlash - Firmware Upgrade Utility (Version 1.3)
            Customized for BMC
-------------------------------------------------
(C)Copyright 2013, American Megatrends Inc.
[100%  ]  | | Block 256 of 256 | Success
```

### Updating BIOS via Host with BIOS Tool

1. Boot/Login to DOS/OS with root user permission
2. Update the BIOS over host with the command below:

Example:

```
AFUDOS.exe BIOS.ROM /x /n /b /p (If only updating BIOS part without ME)
AFUDOS.exe BIOS.BIN /x /n /b /p /me (Updating whole BIOS)
```



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### 4.4.2 Updating BMC

Use Yafuflash tool to update BMC firmware

- To upgrade bootloader, add -force-boot (recommended)
- To preserve config (/conf), add -preserve-config

## Updating BMC via Network

```
$ ./Yafuflash -force-boot -nw -ip 192.168.2.101 -u root -p superuser bmc.ima
-------------------------------------------------
YAFUFlash - Firmware Upgrade Utility (Version 1.3)
          Customized for MiniBMC
-------------------------------------------------
(C)Copyright 2013, American Megatrends Inc.

*******************************************************************************
WARNING!
       FIRMWARE UPGRADE MUST NOT BE INTERRUPTED ONCE IT IS STARTED.
       PLEASE DO NOT USE THIS FLASH TOOL FROM THE REDIRECTION CONSOLE.
*******************************************************************************
[100% ] | Upgrading  boot       | Block   4 of   4 | Success
[100% ] | Upgrading  conf       | Block   8 of   8 | Success
[100% ] | Upgrading  root       | Block  14 of  14 | Success
[100% ] | Upgrading  osimage    | Block  30 of  30 | Success
[100% ] | Upgrading  ast1010e   | Block   1 of   1 | Success
Resetting the firmware.........
```

## Updating BMC via Host

**Note:** Must be a root user

```
$ sudo ./Yafuflash -force-boot -mbox bmc.ima
-------------------------------------------------
YAFUFlash - Firmware Upgrade Utility (Version 1.3)
          Customized for MiniBMC
-------------------------------------------------
(C)Copyright 2013, American Megatrends Inc.

*******************************************************************************
WARNING!
       FIRMWARE UPGRADE MUST NOT BE INTERRUPTED ONCE IT IS STARTED.
       PLEASE DO NOT USE THIS FLASH TOOL FROM THE REDIRECTION CONSOLE.
*******************************************************************************
[100% ] | Upgrading  boot       | Block   4 of   4 | Success
[100% ] | Upgrading  conf       | Block   8 of   8 | Success
[100% ] | Upgrading  root       | Block  14 of  14 | Success
[100% ] | Upgrading  osimage    | Block  30 of  30 | Success
[100% ] | Upgrading  ast1010e   | Block   1 of   1 | Success
Resetting the firmware.........
```



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# 5 BIOS Setup

## 5.1 Entering BIOS Setup

To enter the setup screen, follow these steps:

1. Power on the motherboard
2. Press the < Delete > key on your keyboard when you see the following text prompt: < Press DEL to enter Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.

NOTE: In most cases, the < Delete > key is used to invoke the setup screen. However, there are several cases that use other keys, such as < F1 >, < F2 >, and so on.

## 5.2 Setup Menu

The Main BIOS setup menu is the first screen that you can navigate to. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. “Grayed” options cannot be configured, and “Blue” options 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.

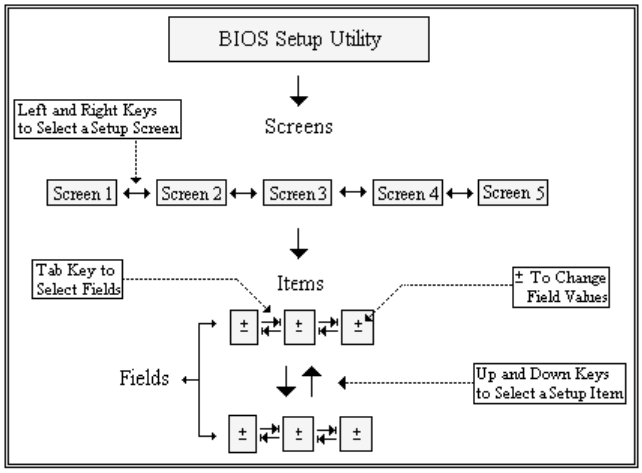





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## 5.3 Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include < F1 >, < F10 >, < Enter >, < ESC >, < Arrow > keys, and so on.




NOTE: There is a hot key legend located in the right frame on most setup screens.

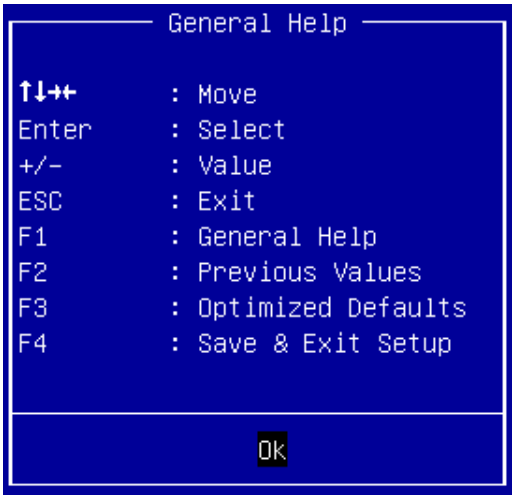
| | |
|---|---|
| →← | Left/Right. The *Left and Right* < Arrow > keys allow you to select a setup screen.<br>For example: Main screen, Advanced screen, Chipset screen, and so on. |
| ↑↓ | Up/Down The *Up and Down* < Arrow > keys allow you to select a setup item or sub-screen. |
| +- | Plus/Minus The *Plus and Minus* < Arrow > keys allow you to change the field value of a particular setup item.<br>For example: Date and Time. |
| Tab | The < Tab > key allows you to select setup fields. |

| Hot Key | Description |
|---|---|
| Enter | The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens. |

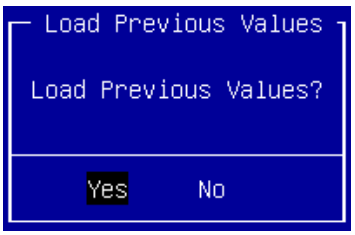


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F1 The < F1 > key allows you to display the General Help screen. Press the < F1 > key to open the General Help screen.




F2 The < F2 > key on your keyboard is the previous values key. It is not displayed on the key legend by default. To set the previous values settings of the BIOS, press the < F2 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The previous value settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

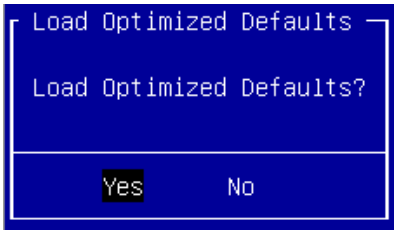



Press the < Enter > key to load previous values. You can also use the < Arrow > key to select *Cancel* and then press the < Enter > key to abort this function and return to the previous screen.



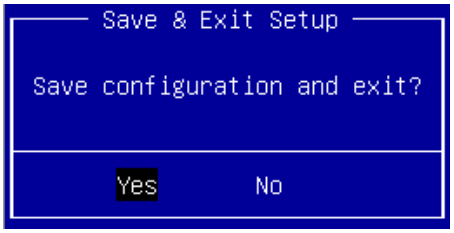
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F3 The < F3 > key on your keyboard is the optimized defaults key. To set the optimized defaults settings of the BIOS, press the < F3 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The optimized defaults settings allow the motherboard to boot up with the optimized defaults of options set. This can lessen the probability of conflicting settings.



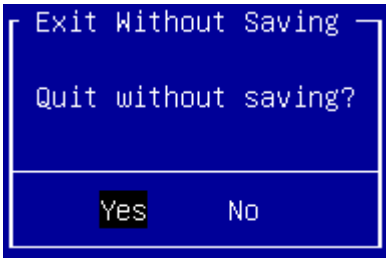

Press the < Enter > key to load optimized defaults. You can also use the < Arrow > key to select *Cancel* and then press the < Enter > key to abort this function and return to the previous screen.

F4 The < F4 > key allows you to save any changes you have made and exit Setup. Press the < F4 > key to save your changes. The following screen will appear:




Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select *Cancel* and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:



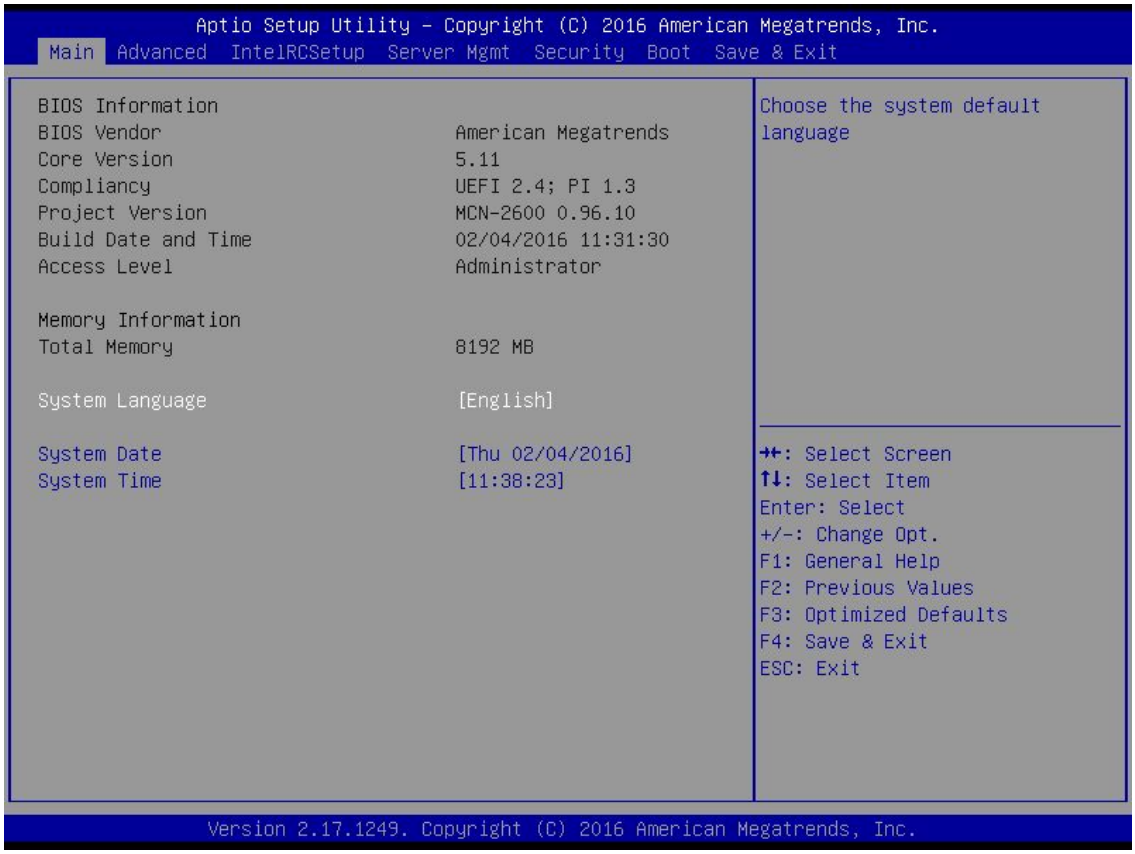

Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select *Cancel* and then press the < Enter > key to abort this function and return to the previous screen.



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## 5.4 Main Setup

When you first enter the Setup Utility, you will find the Main setup screen. You can always return to the Main setup screen by selecting the *Main* tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.




### 5.4.1 System & Board Info

The Main BIOS setup screen reports processor, memory and board information.

**BIOS Vendor**
Displays the BIOS vendor.

**Core Version**
Displays the BIOS core version.

**Compliancy Version**
Displays the current UEFI Specification version.

**Project Version**
Displays the current BIOS version.

**Build Data and Time**
Displays the BIOS build data and time.

**System Language**
Displays default system language.



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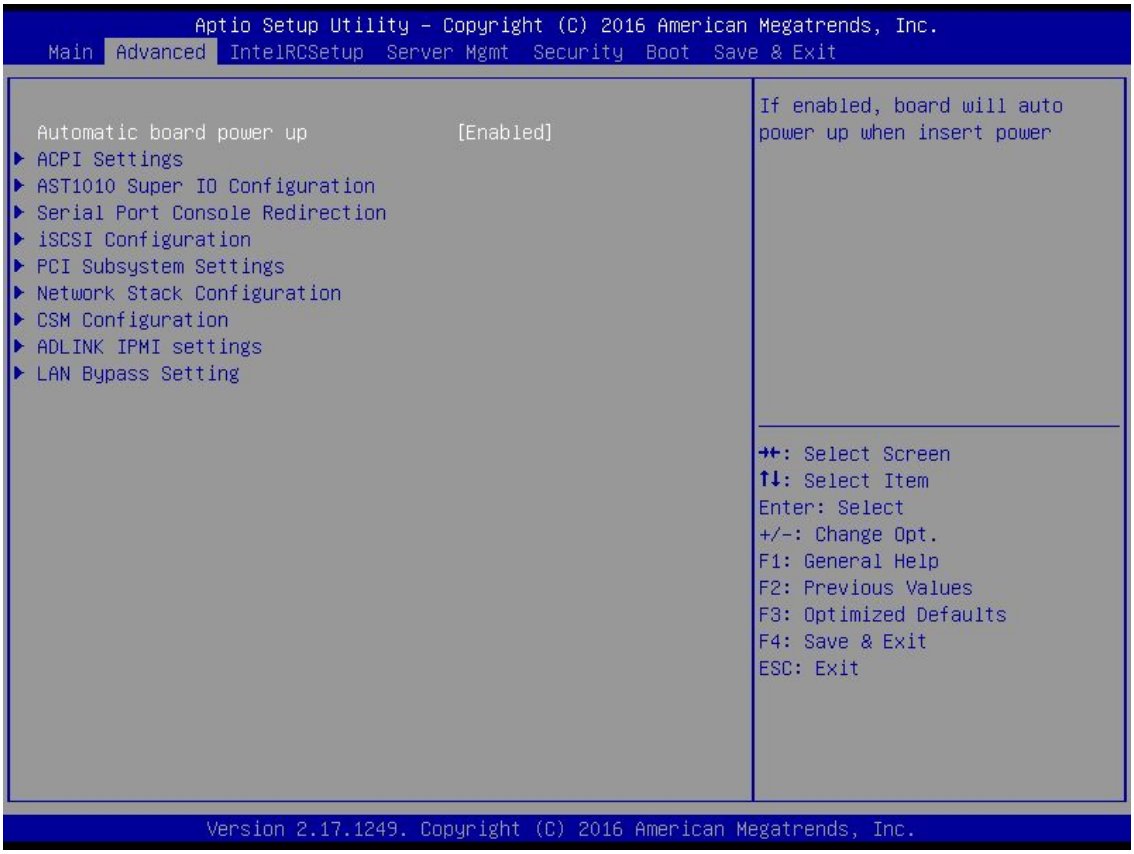
### 5.4.2 System Date/System Time

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the < Arrow > keys. Enter new values using 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 is entered in HH:MM:SS format.

NOTE: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

## 5.5 Advanced BIOS Setup

Select the *Advanced* tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, (ex: Super IO 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. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.

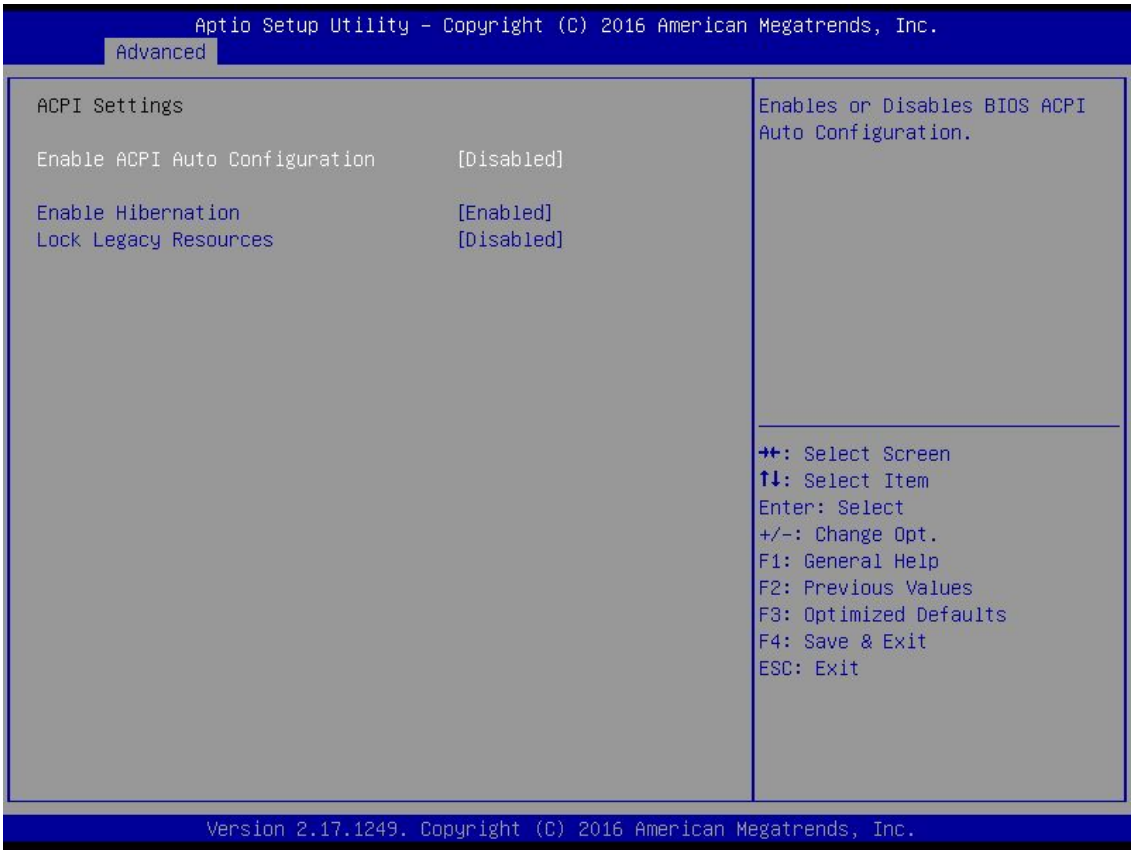





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### 5.5.1 ACPI Settings

You can use this screen to select options for the ACPI Advanced Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on this page. The screen is shown below.




**Enable ACPI Auto Configuration**

Enables or Disables BIOS ACPI Auto Configuration. Set this value to **Enabled / Disabled.**

**Enable Hibernation**

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS. Set this value to **Enabled / Disabled.**

**Lock Legacy Resources**

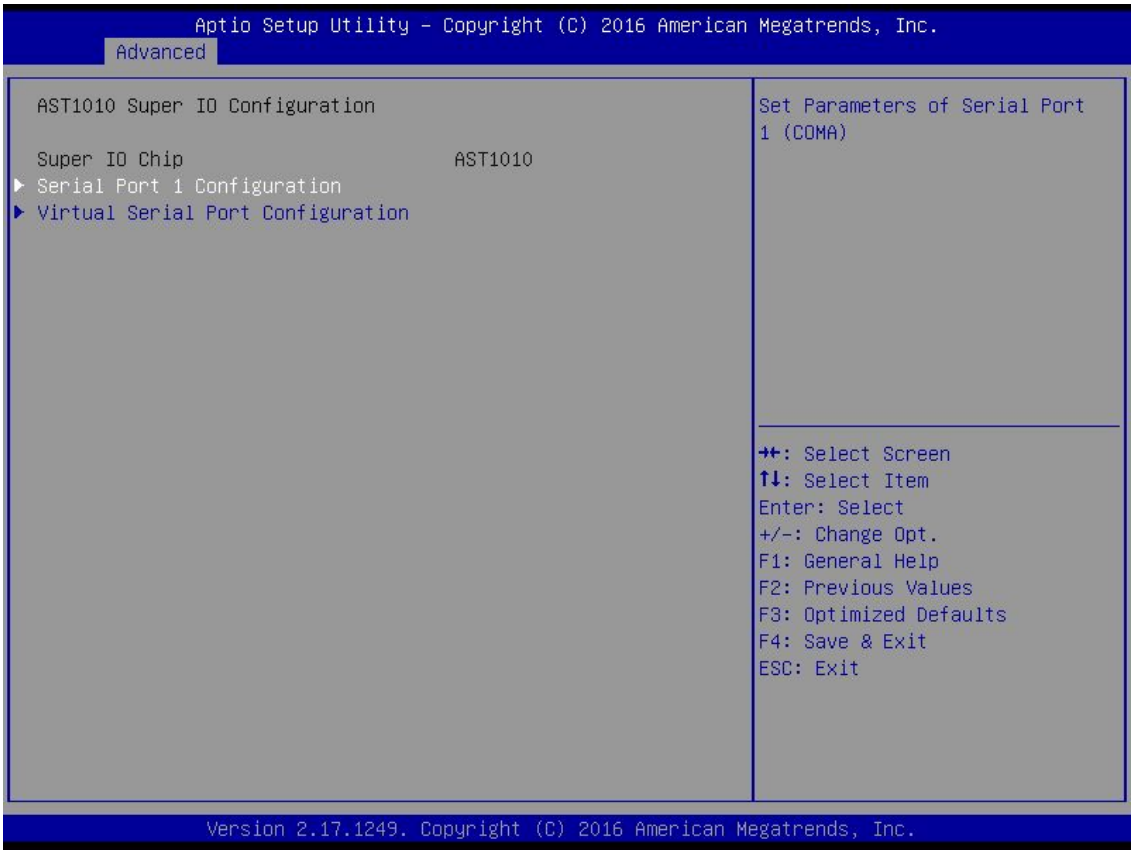
Enables or Disables Lock of Legacy Resources. Set this value to **Enabled / Disabled.**



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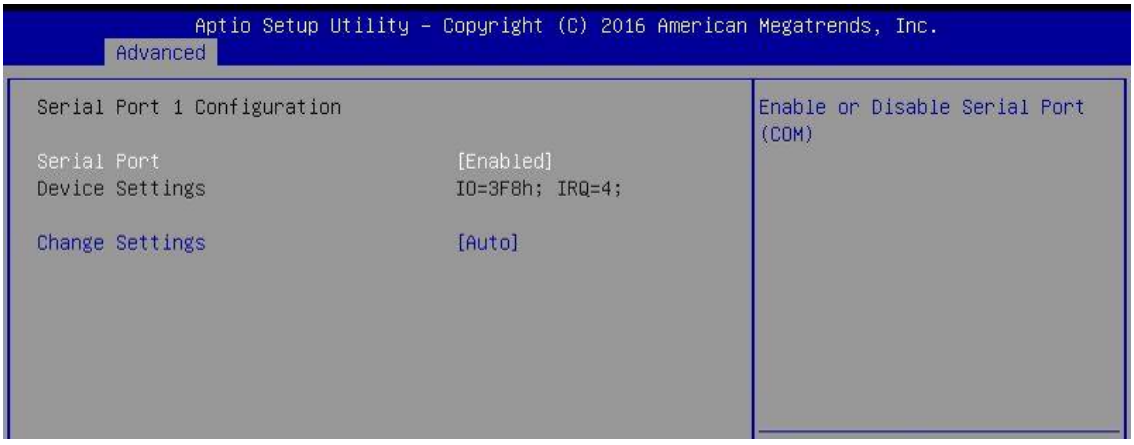
### 5.5.2 AST1010 Super IO Configuration

You can use this screen to select options for the AST1010 Super IO Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *AST1010 Super IO Configuration* screen is shown below.




#### Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COMA). The screen is shown below






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### Serial Port

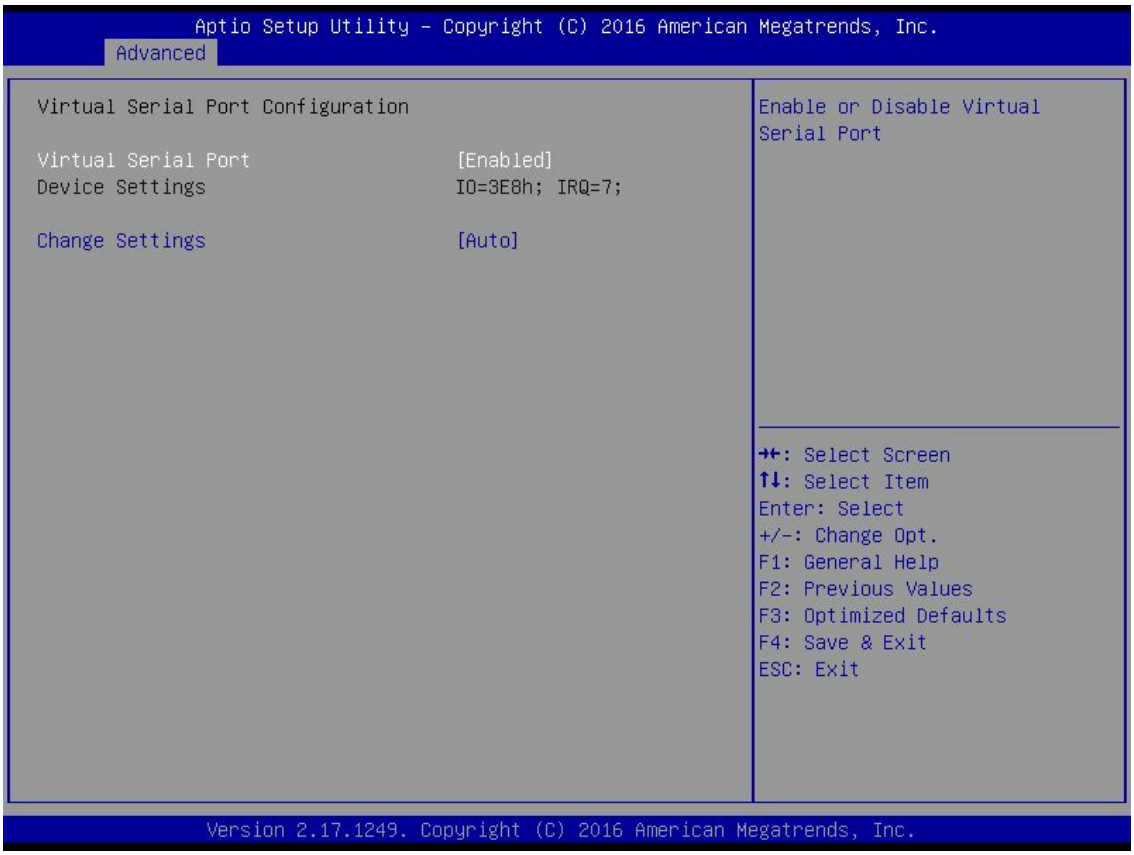
Enable or Disable Serial Port (COM). Set this value to **Enabled / Disabled**

### Change Settings

Set Parameters Serial Port

### Virtual Serial Port Configuration

Set Parameters of Serial Port 2 (Virtual COM). The screen is shown below




### Virtual Serial Port

Enable or Disable Serial Port (COM). Set this value to **Enabled / Disabled**

### Change Settings

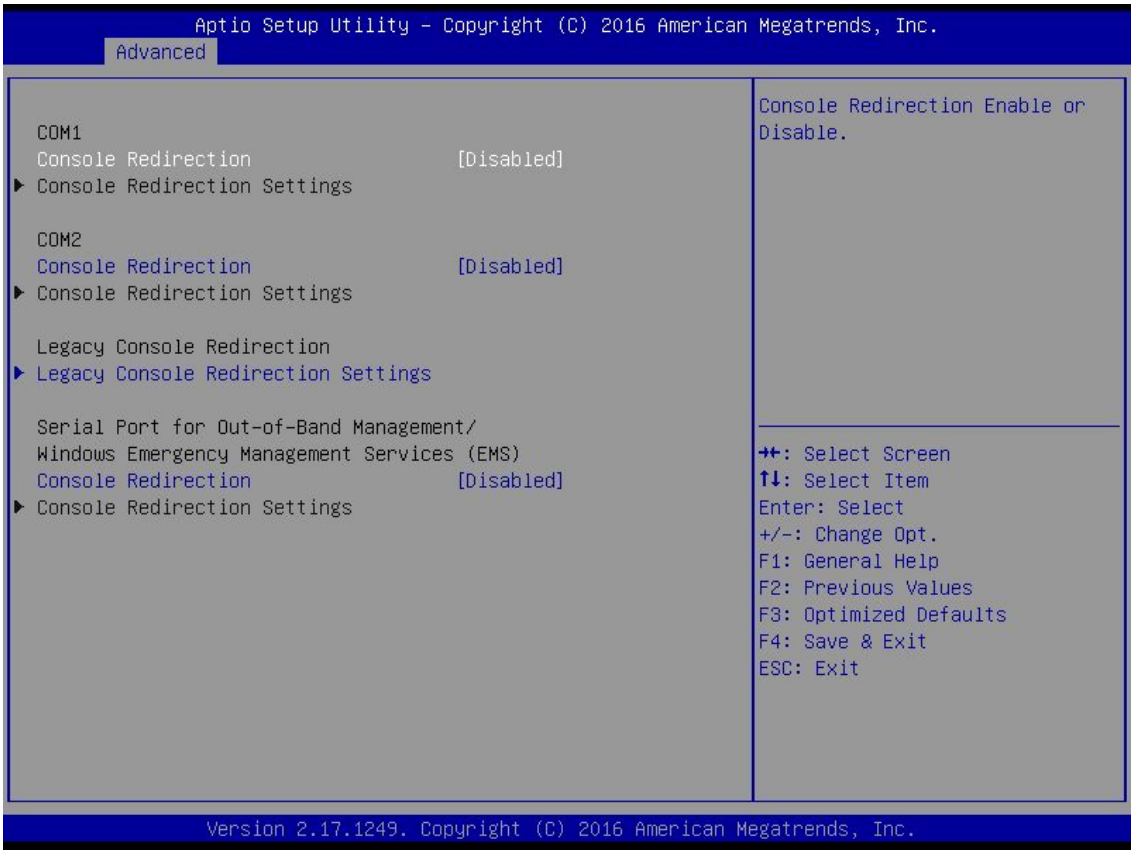
Set Parameters Virtual Serial Port



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### 5.5.3 Serial Port Console Redirection

You can use this screen to select options for the serial port console redirection settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described in the following pages. An example of the *Serial Port Console Redirection* screen is shown below.




#### Console Redirection

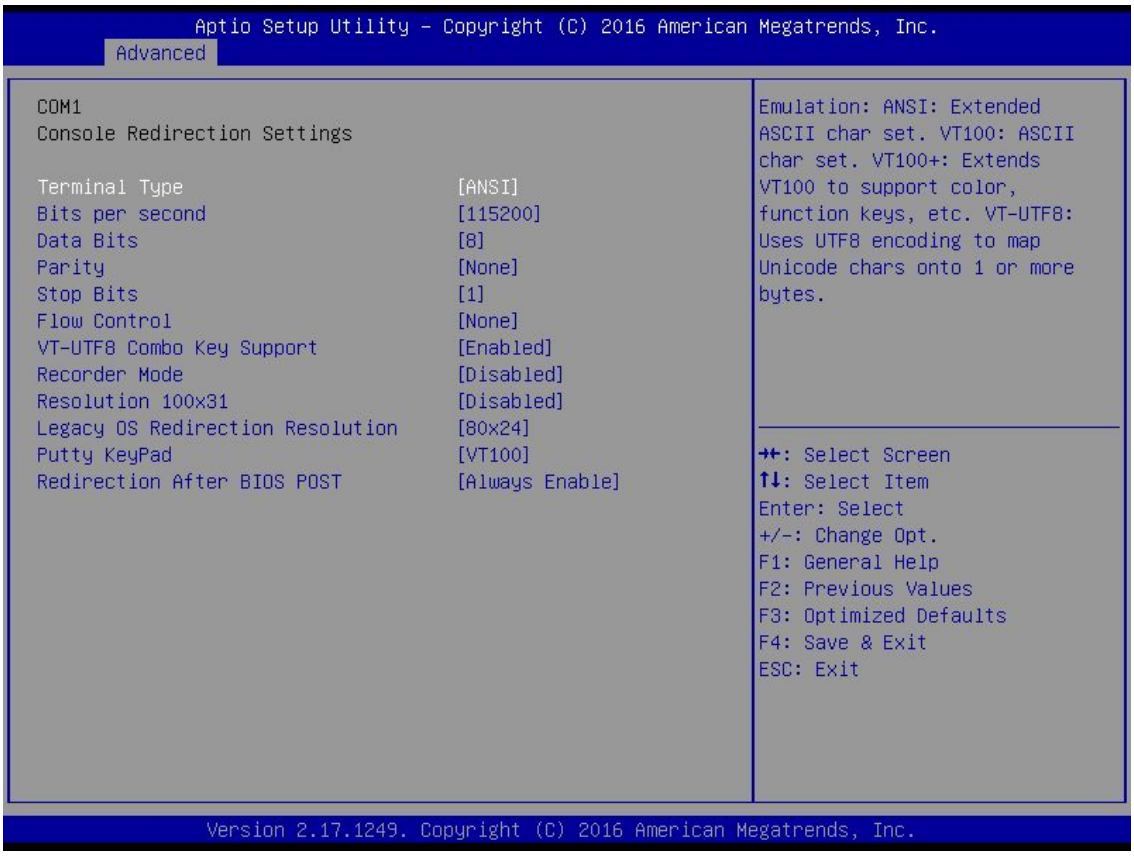
The BIOS Console Redirection feature is here. Set this value to **Enabled/Disabled.**

#### Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings. The screen is shown below.



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### Terminal Type

VT100+ is the preferred terminal type for out-of-band management. Configuration options are**: VT100, VT100+, VT-UTF8, ANSI.**

### Bits per second

Select the bits per second you want the serial port to use for console redirection. The options are **115200, 57600, 38400, 19200**, **and 9600**.

### Data Bits

Select the data bits you want the serial port to use for console redirection. Set this value to **7, 8**.

### Parity

Set this option to select Parity for console redirection. The settings for this value are **None, Even, Odd, Mark, and 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. Set this value to **1** and **2**.

### Flow Control

Set this option to select Flow Control for console redirection.



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The settings for this value are **None and Hardware RTS/CTS**.

**VT-UTF8 Combo Key Support**

Enable VT-UTF8 Combination Key support for ANSI/VT100 terminals.
The settings for this value are **Enabled and Disabled.**

**Recorder Mode**

When this mode is enabled, only text will be sent. This is to capture terminal data.
Set this value to **Enabled/Disabled.**

**Resolution 100x31**

Set this option to extended terminal resolution. Set this value to **Enabled/Disabled.**

**Legacy OS Redirection**

On Legacy OS, the number of rows and columns support redirection. Set this value to **80x24, 80x25**.

**Putty KeyPad**

Select function key and keypad on putty. Set this value to **VT100, LINUX, XTERMR6, SCO, ESCN, VT400**.

**Redirection After BIOS POST**

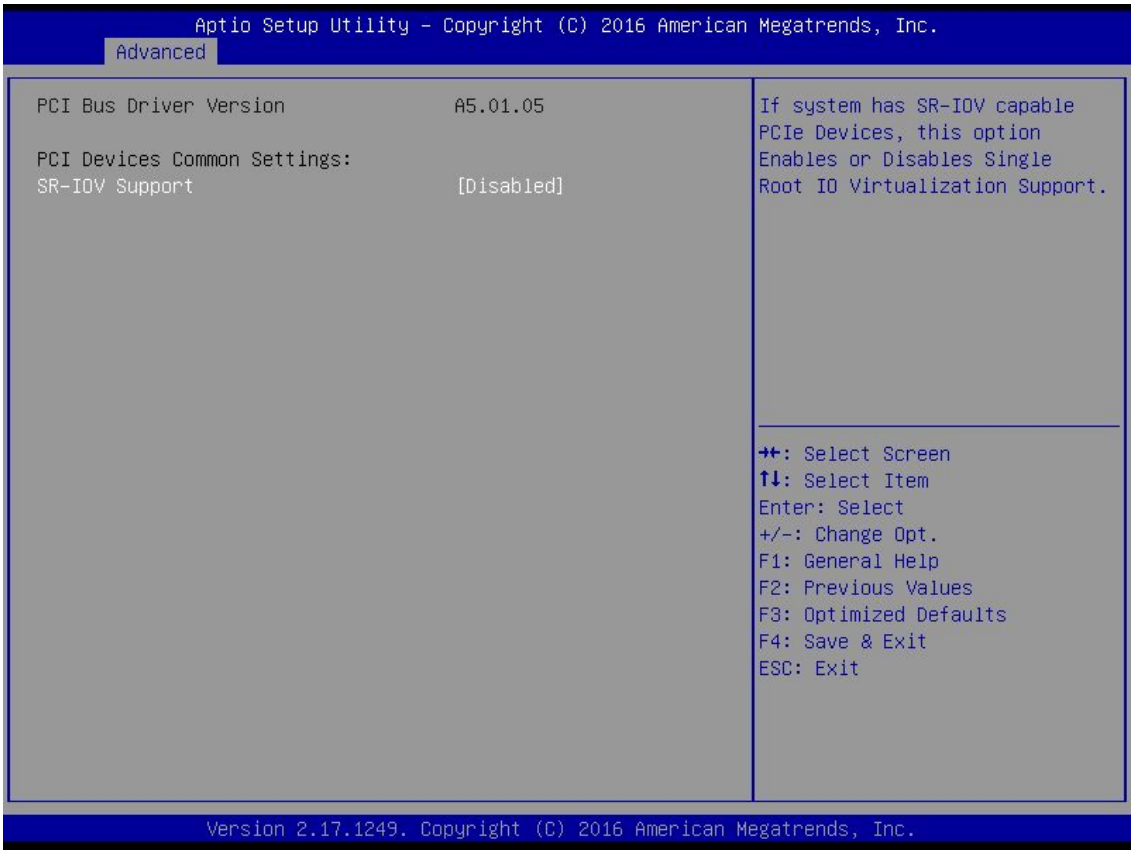
The settings specify if BootLoader is selected then legacy console redirection is disabled before booting to legacy OS. Default value is Always Enable which means legacy console redirection is enabled for legacy OS. Set this value to **Always Enable, BootLoader**.



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### 5.5.4 PCI Subsystem Settings

You can use this screen to select options for the PCI Subsystem Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *PCI Subsystem Settings* screen is shown below.




**SR-IOV Support**

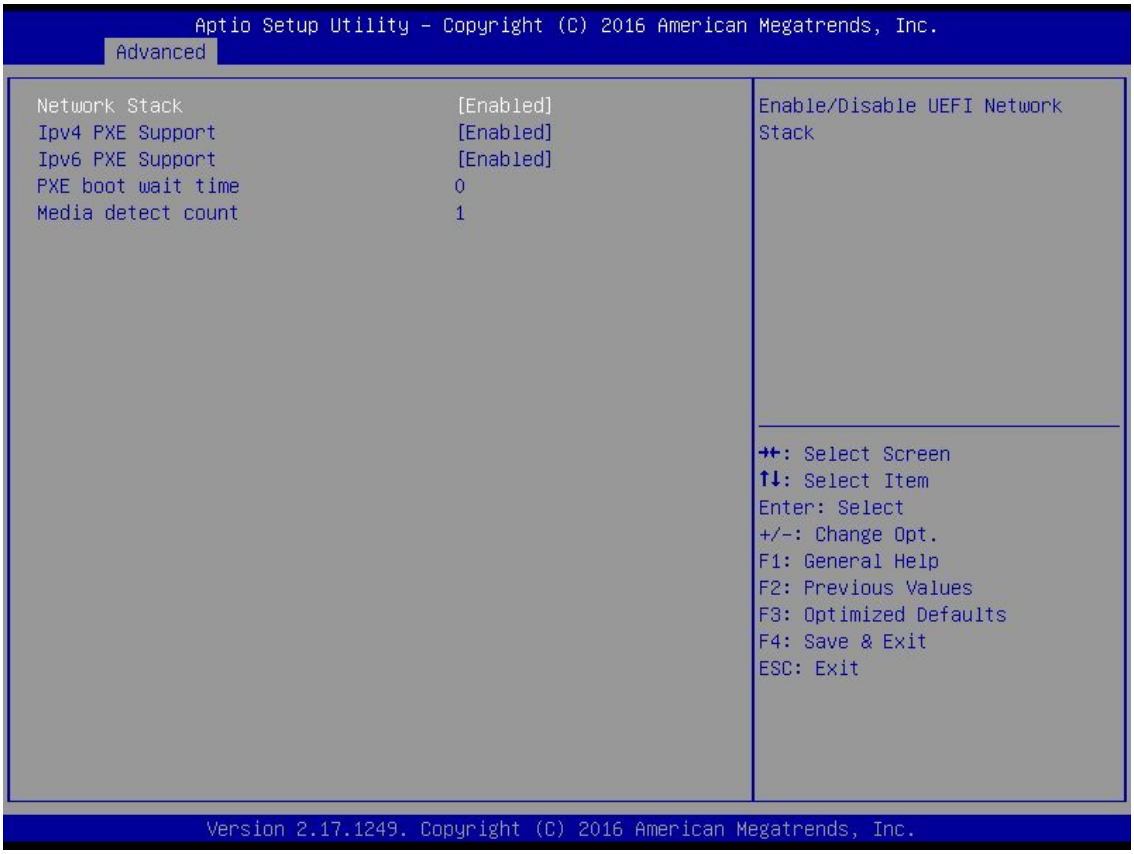
If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support. Set this value to **Enabled/Disabled.**



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### 5.5.5 Network Stack Configuration

You can use this screen to select options for the Network Stack Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *Network Stack Configuration* screen is shown below.




**Network Stack**

Enable/Disable UEFI Network Stack. Set this value to **Enabled/Disabled.**

**Ipv4 PXE Support**

Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created. Set this value to **Enabled/Disabled.**

**Ipv6 PXE Support**

Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created. Set this value to **Enabled/Disabled.**

**PXE boot wait time**

Wait time to press ESC key to abort the PXE boot. Set this value to desired time.

**Media detect count**

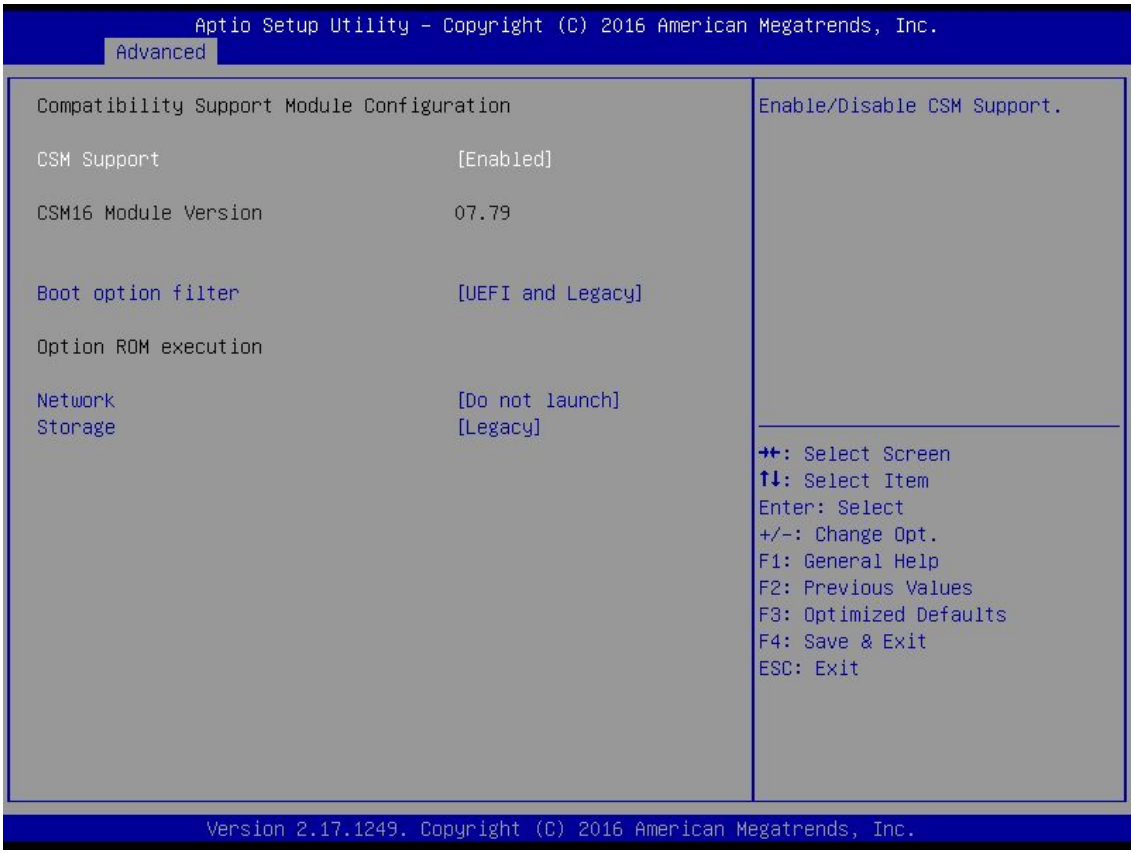
Number of times presence of media will be checked.



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### 5.5.6 CSM Configuration

You can use this screen to select options for the CSM Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *CSM Configuration* screen is shown below.




**CSM Support**

Enable/Disable Compatibility Support Module. Set this value to **Enabled/Disabled.**

**Boot option filter**

This option controls whether Legacy/UEFI boot options will be enabled. Set this value to **UEFI and Legacy/Legacy only/UEFI only.**

**Network**

This option Controls the execution of UEFI and Legacy PXE OpROM. Set this value to **Do not launch/UEFI/Legacy.**

**Storage**

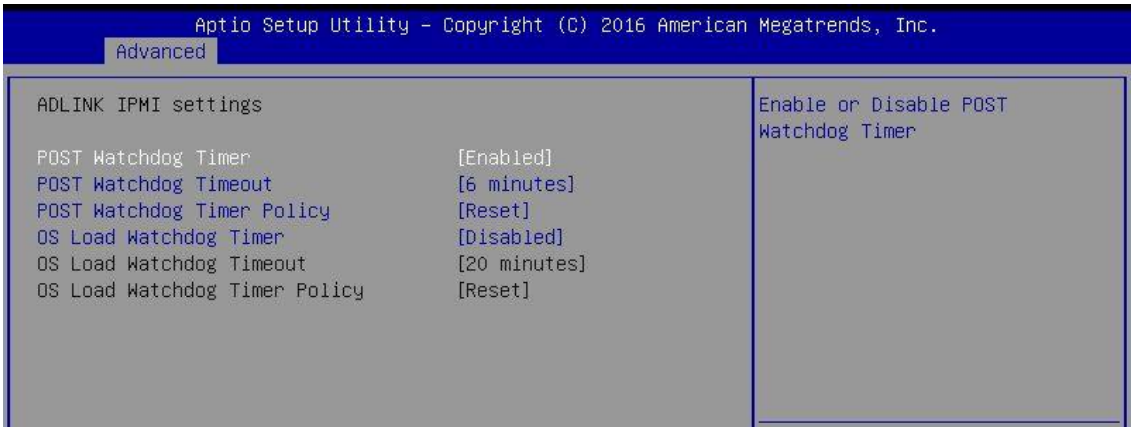
This option Controls the execution of UEFI and Legacy Video OpROM. Set this value to **Do not launch/UEFI/Legacy.**



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### 5.5.7 ADLINK IPMI Settings

You can use this screen to select options for the ADLINK IPMI Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *ADLINK IPMI Settings* screen is shown below.




**POST Watchdog Timer**

Enable or Disable POST Watchdog Timer. Set this value to **Enabled/Disabled.**

**POST Watchdog Timeout**

Select the time value for POST Watchdog Timer Expiration value. Set this value to **3 minutes/4 minutes/5 minutes/6 minutes.**

**POST Watchdog Timer Policy**

Configure how the system should respond if the POST Watchdog Timer expires. Not available if POST Watchdog Timer is disabled. Set this value to **Reset/Power Down/ Do Nothing.**

**OS Load Watchdog Timer**

Enable or Disable OS Watchdog Timer. Set this value to **Enabled/Disabled.**

**OS Load Watchdog Timeout**

Select the time value for OS Watchdog Timer Expiration value. Set this value to **5 minutes/10 minutes/15 minutes/20 minutes.**

**OS Load Watchdog Timer Policy**

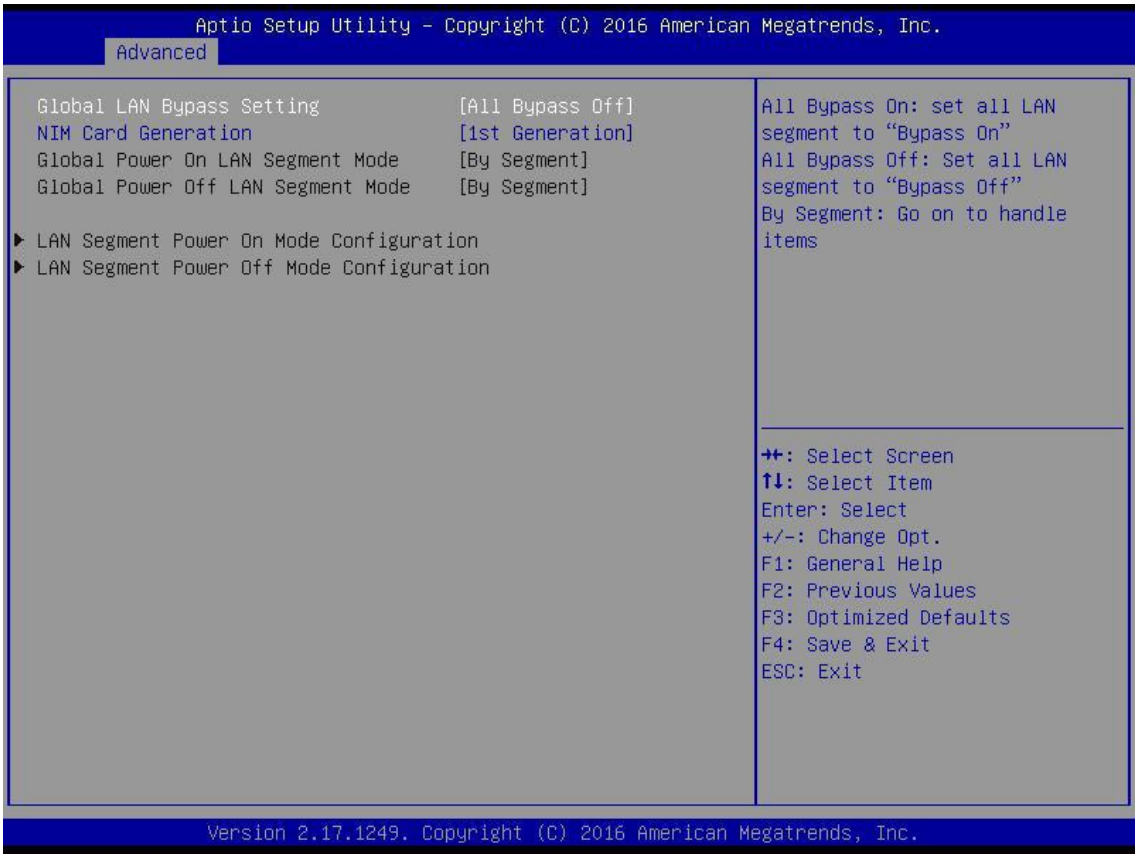
Configure how the system should respond if the OS Watchdog Timer expires. Not available if OS Watchdog Timer is disabled. Set this value to **Reset/Power Down/ Do Nothing.**



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## 5.5.8 LAN Bypass Settings

You can use this screen to select options for the LAN Bypass Setting. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *LAN Bypass Setting* screen is shown below.




### Global LAN Bypass Setting

This option controls all LAN Bypass settings. **All Bypass On:** set all LAN segment to "Bypass On"; **All Bypass Off:** Set all LAN segment to "Bypass Off"; **By Segment:** Set LAN Bypass for each LAN segment

### NIM Card Generation

Select NIM Card Generation. Set this value to **1st Generation/2nd Generation**.

### Global Power On LAN Segment Mode

This option controls Power On Mode LAN Bypass settings for all LAN segments globally. Set this value to **All Bypass On/All Bypass Off/By Segment.**

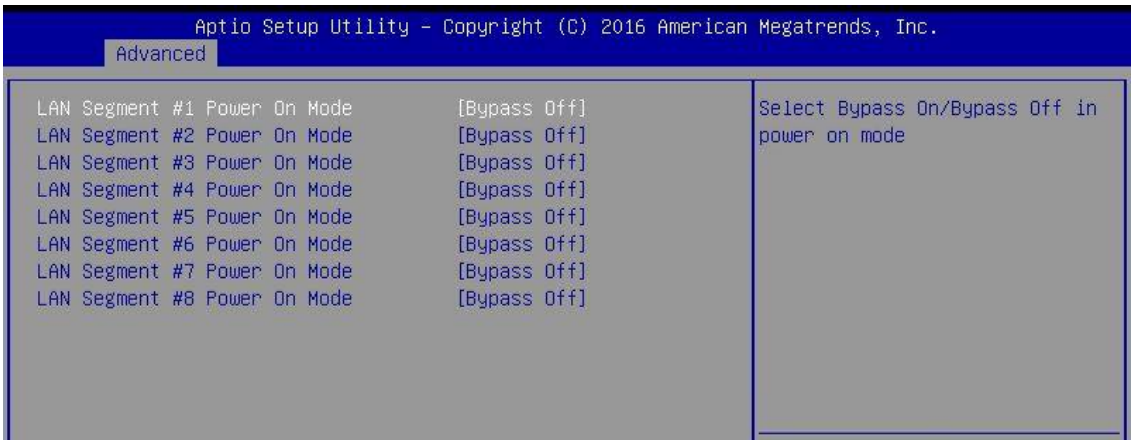
### Global Power Off LAN Segment Mode

This option controls Power Off Mode LAN Bypass settings for all LAN segments globally Set this value to **All Bypass On/All Bypass Off/By Segment.**



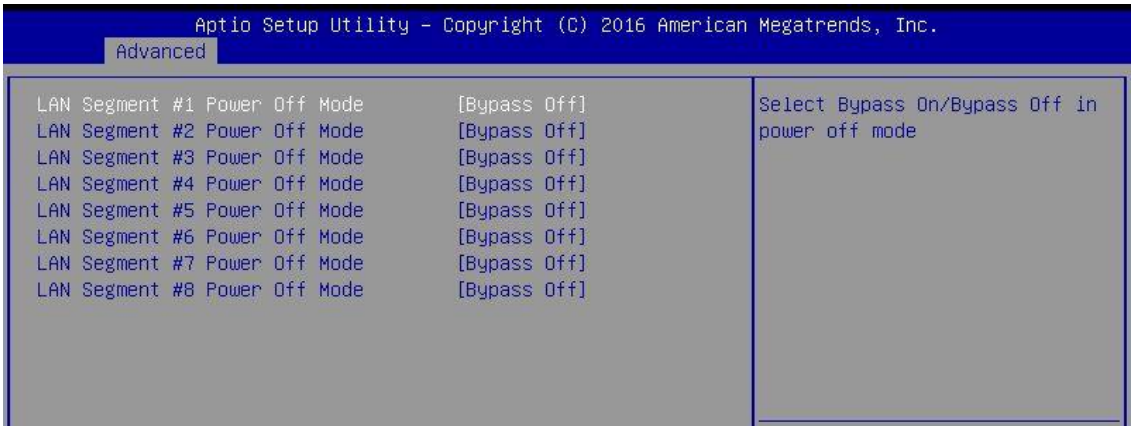
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## LAN Segment Power On Mode Configuration




**LAN Segment #1-8 Power On Mode**
This option controls the LAN Bypass setting in Power On Mode for each segment. Set this value to **Bypass On/Bypass Off**.

## LAN Segment Power Off Mode Configuration



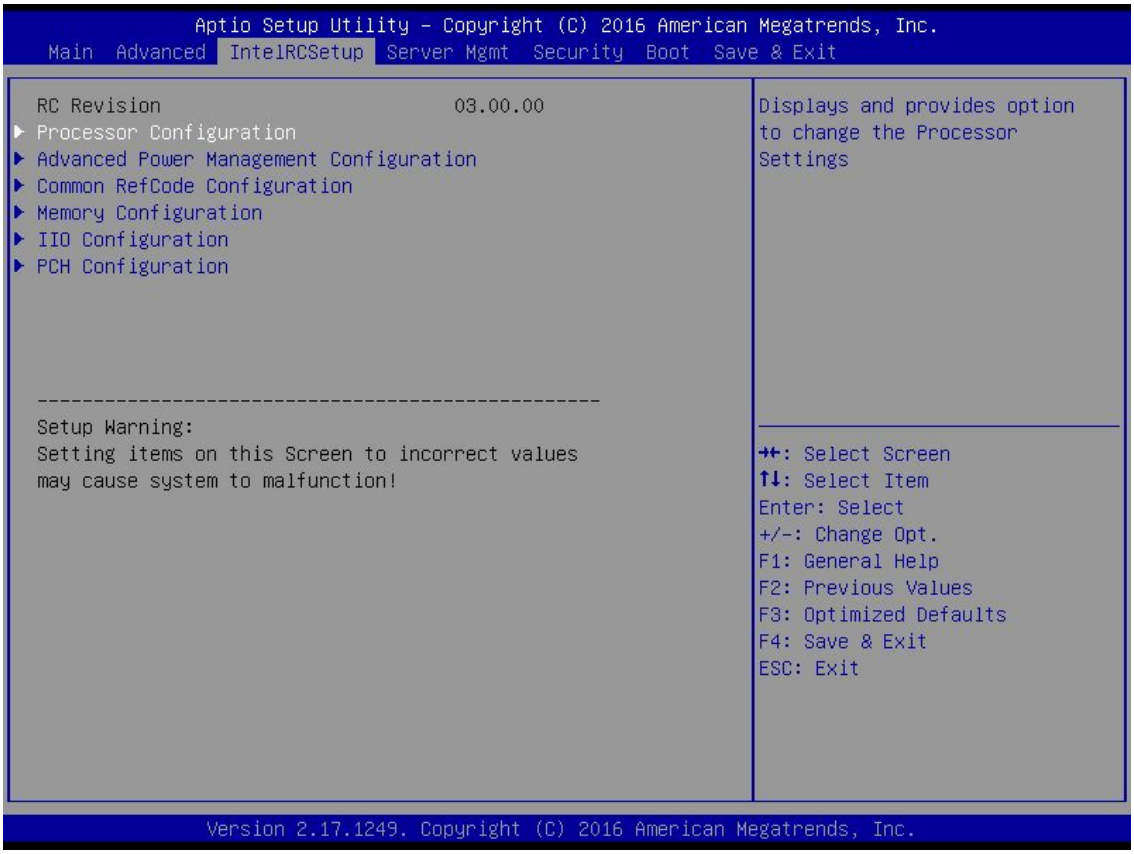

**LAN Segment #1-8 Power Off Mode**
This option controls the LAN Bypass setting in Power Off Mode for each segment. Set this value to **Bypass On/Bypass Off**.



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## 5.6 IntelRCSetup

Select the IntelRCSetup tab from the setup screen to enter the IntelRCSetup BIOS Setup screen. You can select any of IntelRCSetup BIOS Setup options by highlighting an option using the < Arrow > keys. The IntelRCSetup BIOS Setup screen is shown below.

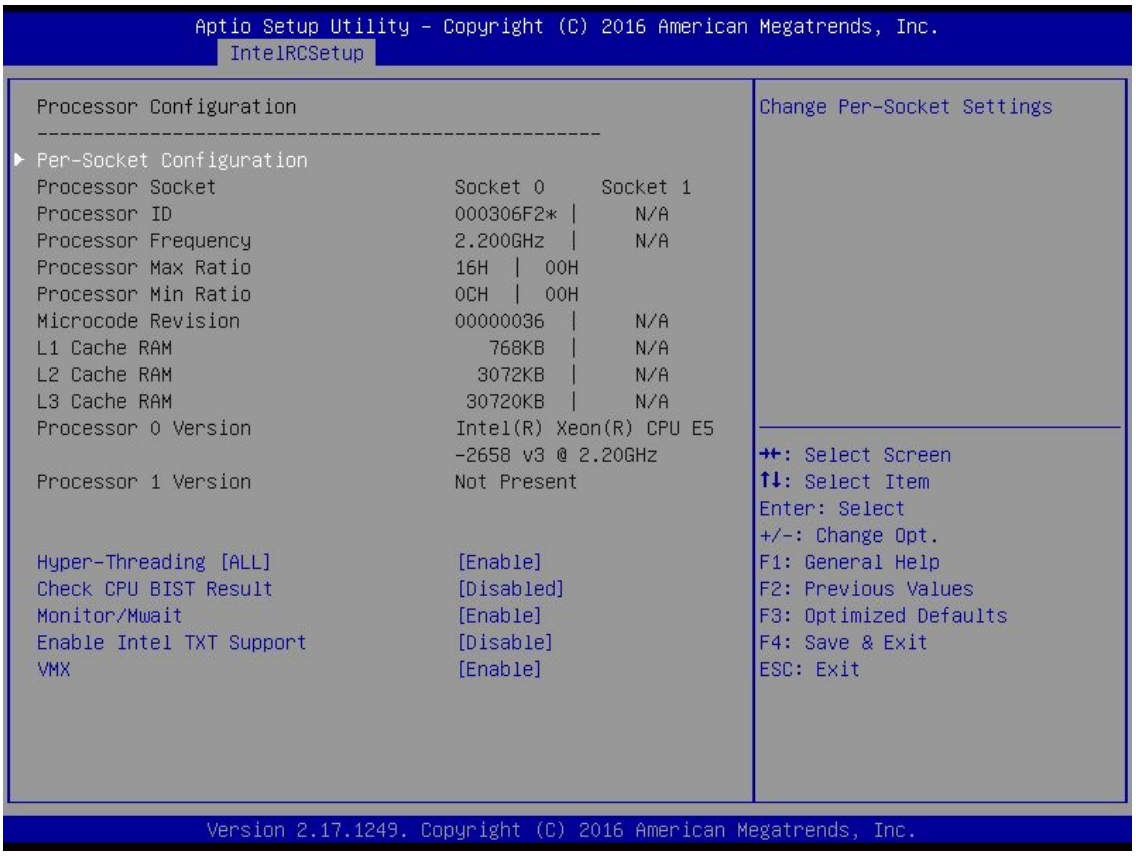



### 5.6.1 Processor Configuration

You can use this screen to select options for the Processor Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *Processor Configuration* screen is shown below.



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### Hyper-threading

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).

| Options | |
|---|---|
| **Enabled** | For Windows XP and Linux (OS optimized for Hyper-Threading Technology). |
| **Disabled** | For other OS (OS not optimized for Hyper-Threading Technology). |

### Check CPU BIST Result

Disable failed BIST core when enable, otherwise, ignore BIST result. Set this value to Set this value to **Enabled/Disabled.**

### Monitor/Mwait

Enable or Disable the Monitor/Mwait instruction. Set this value to **Enabled/Disabled.**

### Enable Intel TXT Support

Enables Intel Trusted Execution Technology Configuration. Please disable "EV DFX Features" when TXT is enabled. Set this value to **Enabled/Disabled.**

### VMX

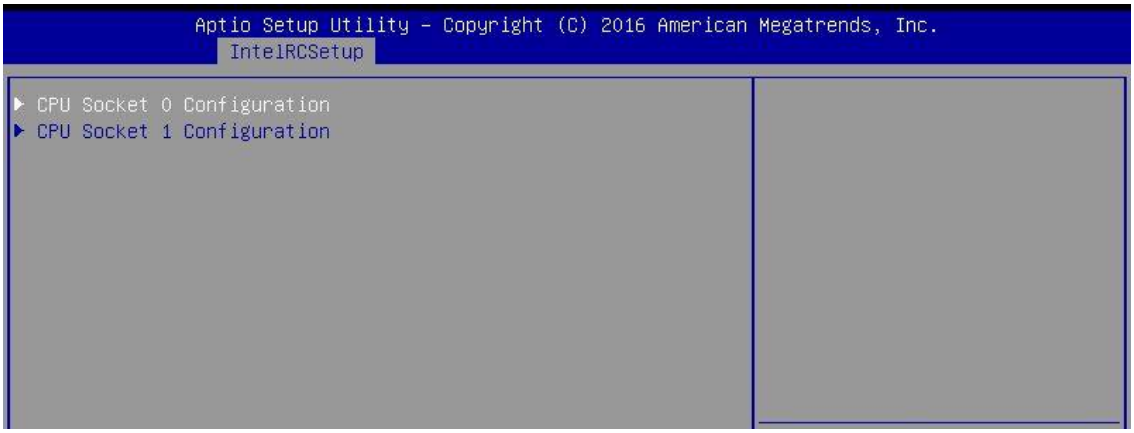


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Enables the Vanderpool Technology, takes effect after reboot. Set this value to **Enabled/Disabled.**

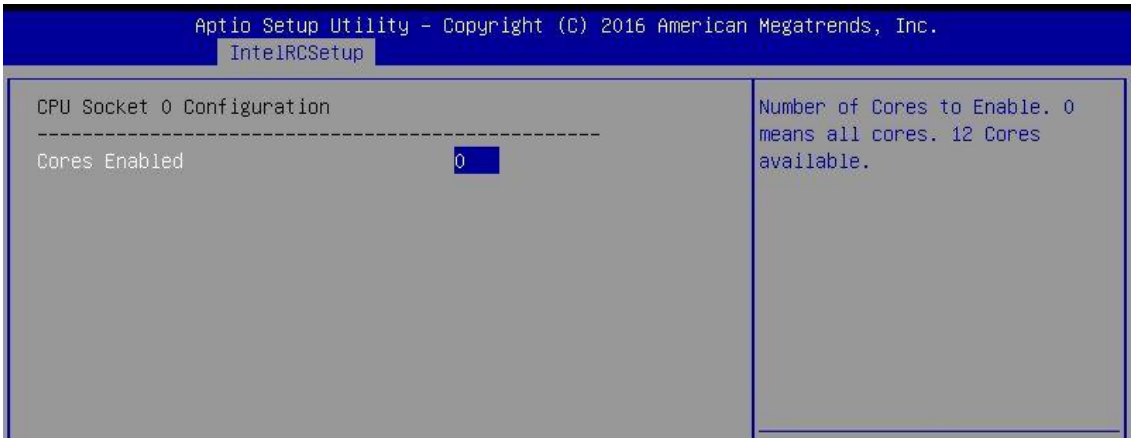
### Per-Socket Configuration

You can use this screen to select options for Per-Socket Configuration. The screen is shown below.




### CPU Socket 0/1 Configuration

You can use this screen to select options for CPU Socket 0/1 Configuration. The screen is shown below.




### Cores Enabled

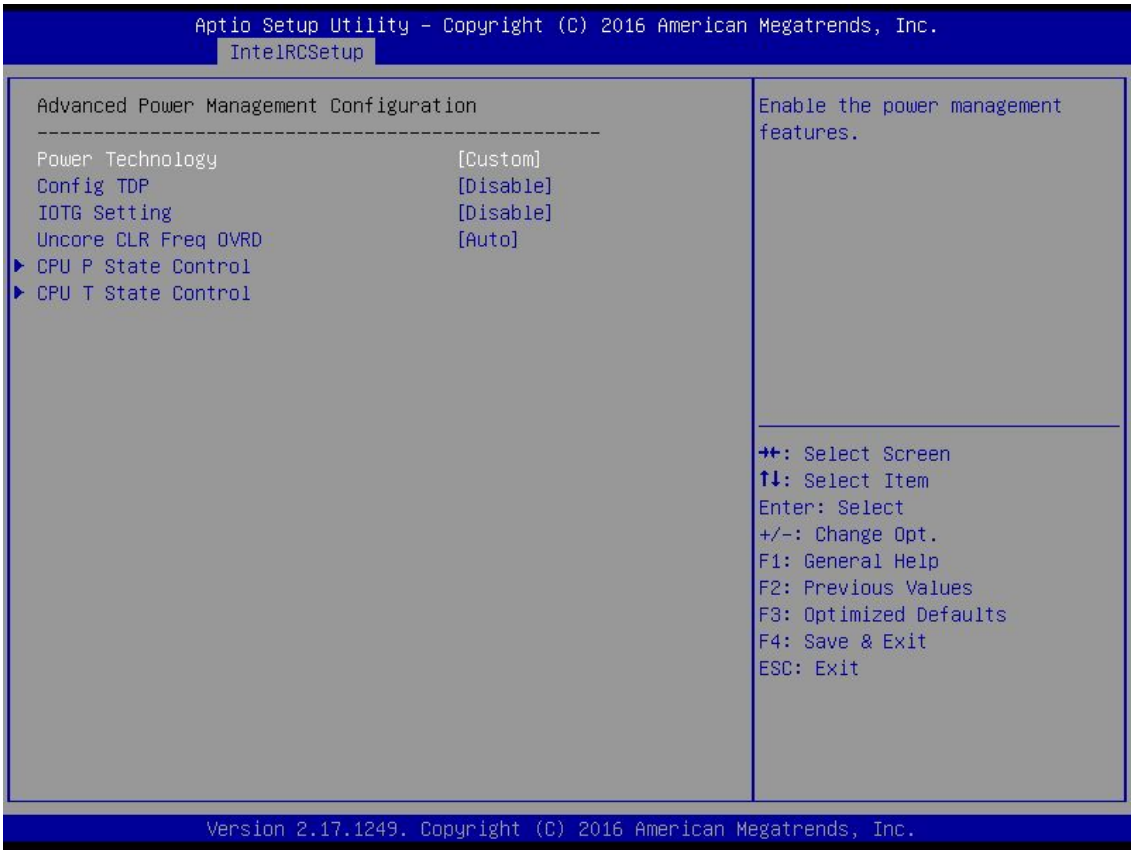
Number of Cores to Enable. 0 means all cores. Set this value to **Desired number.**



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### 5.6.2 Advanced Power Management Configuration

You can use this screen to select options for the Advanced Power Management Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *Advanced Power Management Configuration* screen is shown below.




**Power Technology**

This option controls the power management features. Set this value to **Disable/ Energy Efficient/Custom.**

**Config TDP**

This option can disable/enable Config TDP. Set this value to **Disable/Enable.**

**Config TDP Level**

This option can select Config TDP level. Set this value to **Nominal/Level 1/Level 2.** Note:This option will not be shown if “**Config TDP**” is not “**Enable**”

**IOTG Setting**

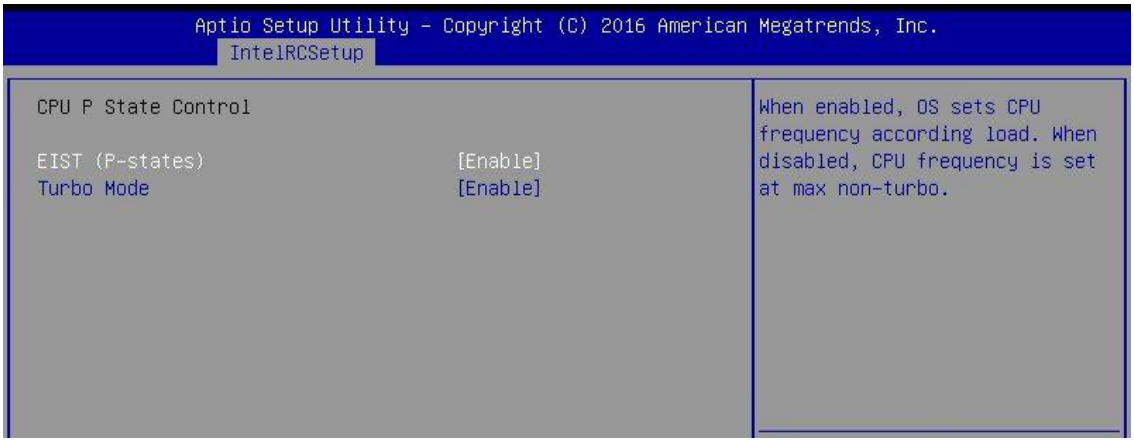
This option controls IOTG Setting via sticky scratch pad register. Set this value to **Disable/Enable.**



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### CPU P State Control

You can use this screen to select options for CPU P State Control. The screen is shown below.




### EIST (P-states)

When enabled, OS sets CPU frequency according load. When disabled, CPU frequency is set at max non-turbo. Set this value to **Disable/Enable.**

### Turbo Mode

This option enable or disable CPU Turbo mode. Set this value to **Disable/Enable.**

### CPU T State Control

You can use this screen to select options for CPU T State Control. The screen is shown below.




### ACPI T-States

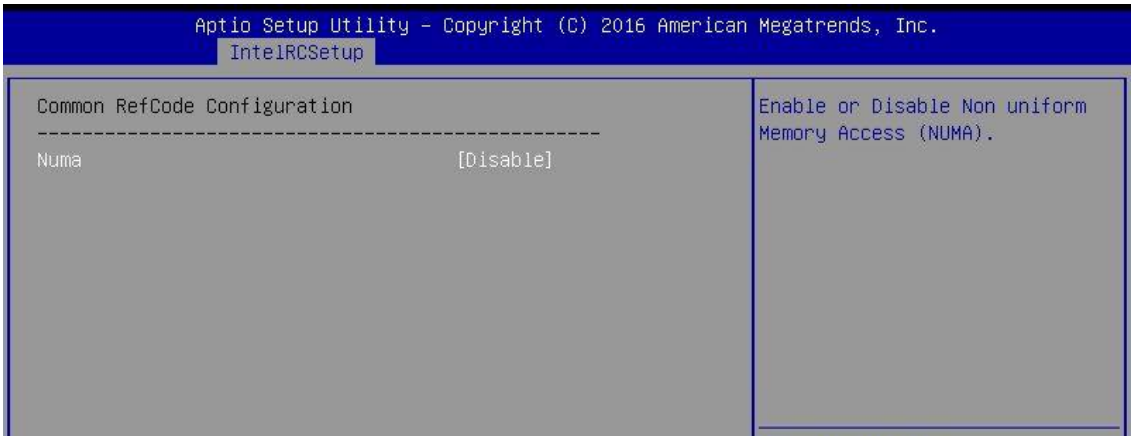
This option enable/disable CPU throttling by OS. Throttling reduces power consumption. Set this value to **Disable/Enable.**



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### 5.6.3 Common RefCode Configuration

You can use this screen to select options for the Common RefCode Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the Common RefCode Configuration  screen is shown below.

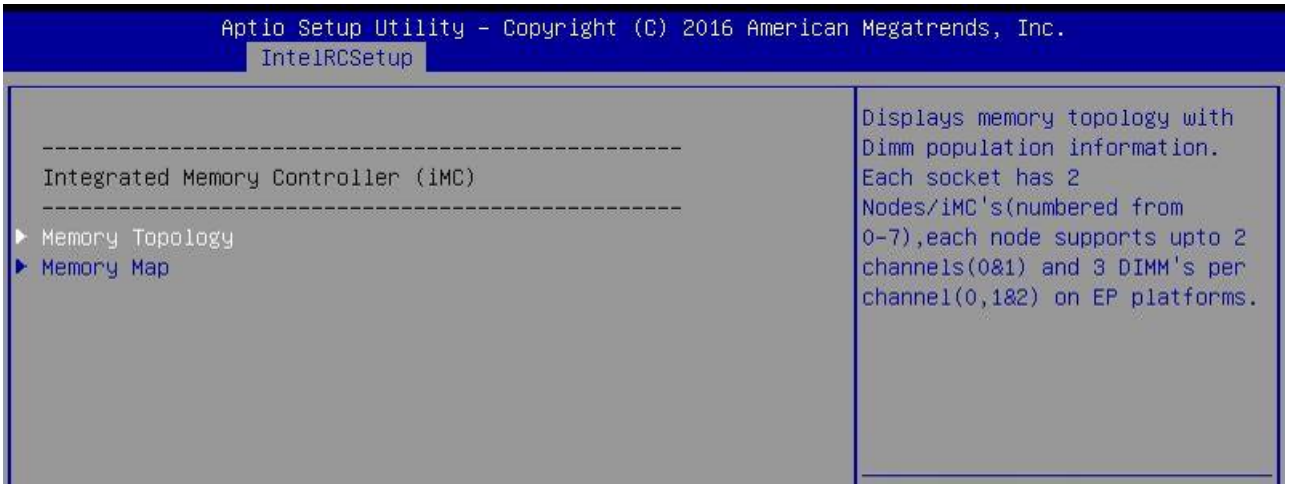



**Numa**

This option enable or disable Non uniform Memory Access (NUMA).Set this value to **Disable/Enable.**

### 5.6.4 Memory Configuration

You can use this screen to select options for the Memory Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the Memory Configuration screen is shown below.

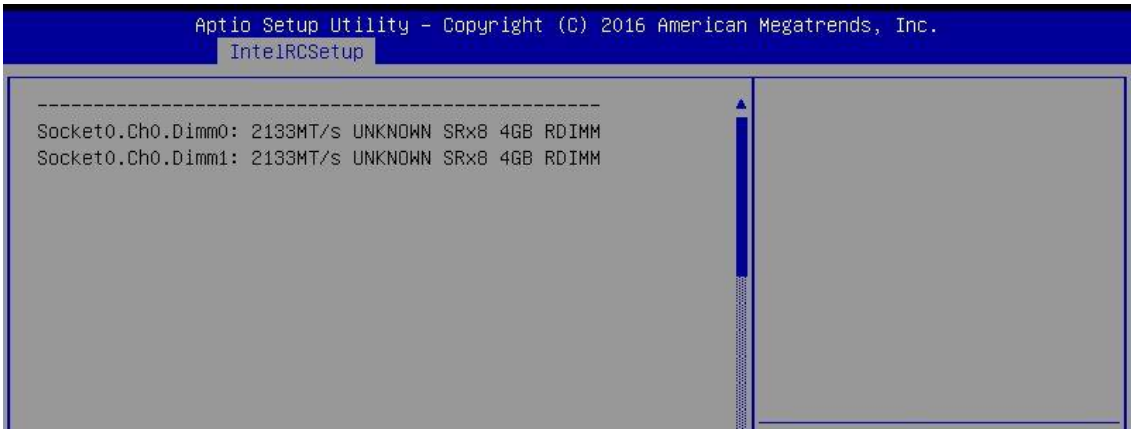





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### Memory Topology

You can use this screen to select options for Memory Topology. The screen is shown below.




### Memory Map

You can use this screen to select options for Memory Map. The screen is shown below.




### Socket Interleave Below 4GB

Splits the 0-4GB address space between two sockets, so that both sockets get a chunk of local memory below 4GB.Set this value to **Disable/Enable.**

### Channel Interleaving

Select Channel Interleaving setting.Set this value to **AUTO/1-way Interleave/2-way Interleave/3-way Interleave/4-way Interleave.**

### Rank Interleaving

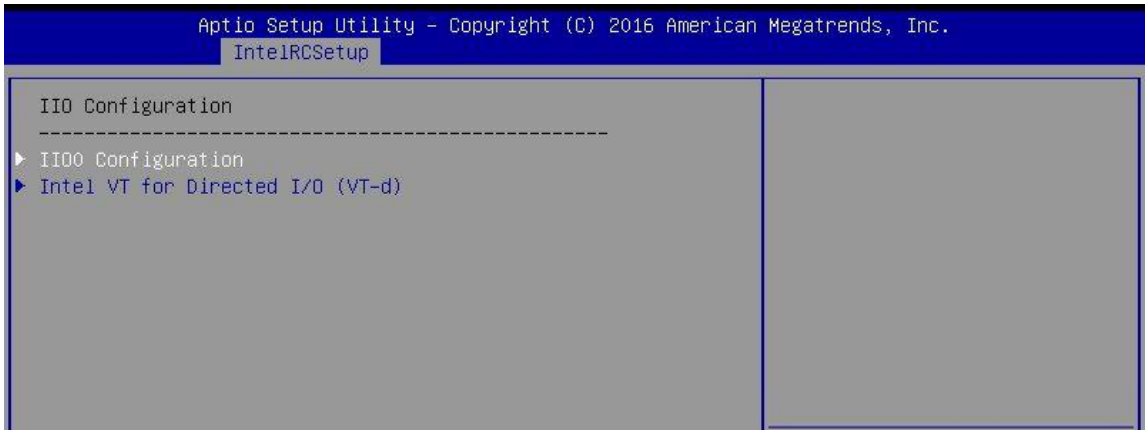
Select Rank Interleaving setting.Set this value to **AUTO/1-way Interleave/2-way Interleave/4-way Interleave/8-way Interleave.**



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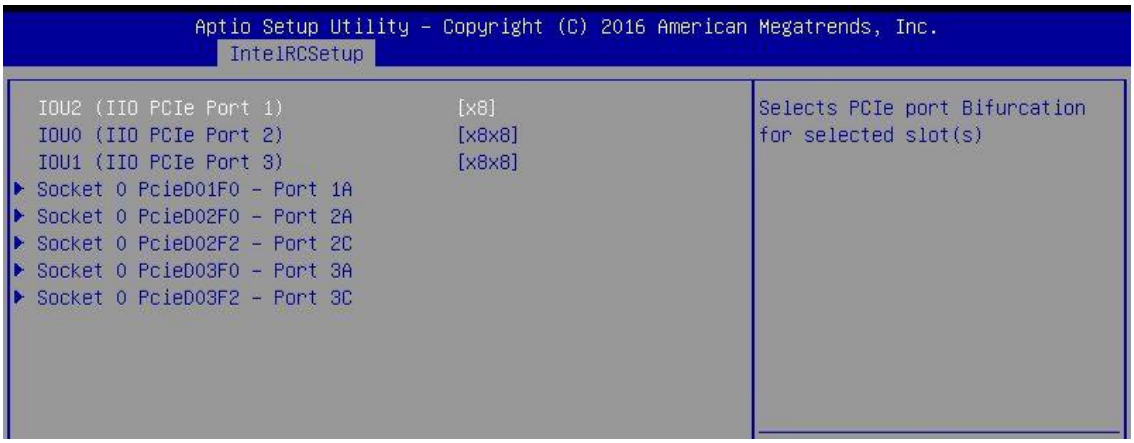
### 5.6.5 IIO Configuration

You can use this screen to select options for the IIO Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the IIO Configuration screen is shown below.




#### IIO0/1 Configuration

You can use this screen to select options for IIO0/1 Configuration. The screen is shown below.




#### IOU2 (IIO PCIe Port 1)

Selects PCIe port Bifurcation for selected slot(s).Set this value to **AUTO/x8/x4x4.**

#### IOU0 (IIO PCIe Port 2)

Selects PCIe port Bifurcation for selected slot(s).Set this value to **AUTO/x16/x8x8/x8x4x4/x4x4x8/x4x4x4x4.**

#### IOU1 (IIO PCIe Port 3)

Selects PCIe port Bifurcation for selected slot(s).Set this value to **AUTO/x16/x8x8/x8x4x4/x4x4x8/x4x4x4x4.**



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### Socket 0 PcieD01F0 - Port 1A

You can use this screen to select options for Socket 0 PcieD01F0 - Port 1A Configuration. The screen is shown below.
**Note: Other Port screen are similar to this screen**

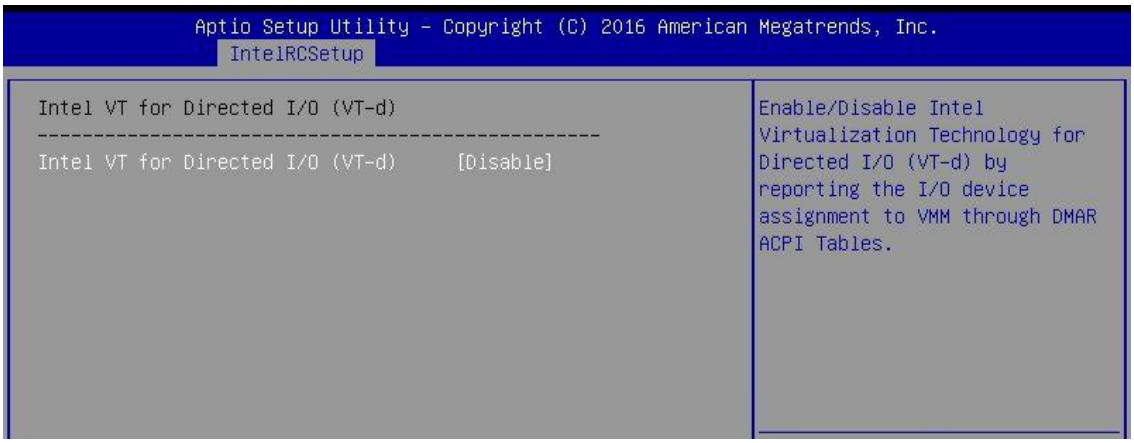



### Link Speed

Selects PCIe link speed.Set this value to **AUTO/Gen 1 (2.5 GT/s)/ Gen 2 (5 GT/s)/ Gen 3 (8 GT/s).**
**Note: Socket 0/1 PcieD01F0 - Port 1A doesn't have Gen3 option**

### Intel VT for Directed I/O (VT-d)

You can use this screen to select options for Intel VT for Directed I/O (VT-d) Configuration. The screen is shown below.




### Intel VT for Directed I/O (VT-d)

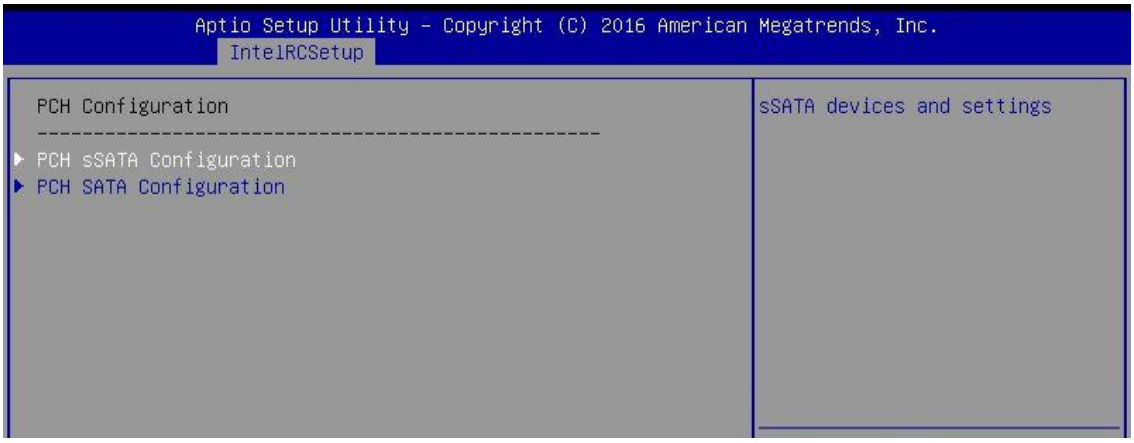
Enable/Disable Intel Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI Tables.Set this value to **Disable/Enable.**



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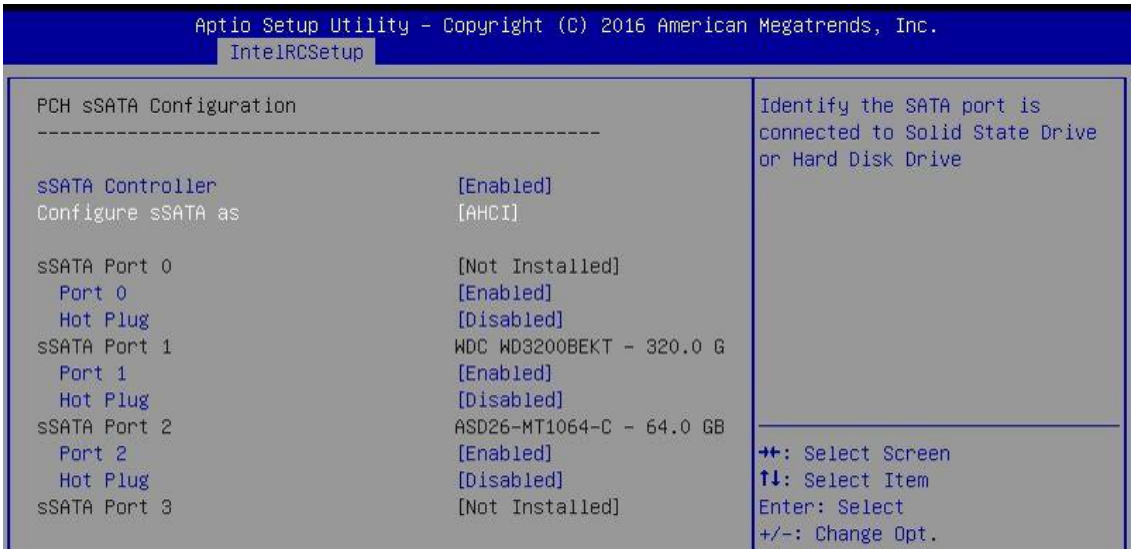
## 5.6.6 PCH Configuration

You can use this screen to select options for the PCH Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the PCH Configuration screen is shown below.




### PCH sSATA Configuration

You can use this screen to select options for PCH sSATA Configuration. The screen is shown below.




### sSATA Controller

Enable or disable sSATA Controller.Set this value to **Disable/Enable.**

### Configure sSATA as

This will configure sSATA as IDE ,RAID or AHCI.Set this value to **IDE/AHCI/RAID.**

### Port 0/1/2/3

Enable or disable the sSATA port.Set this value to **Disable/Enable.**



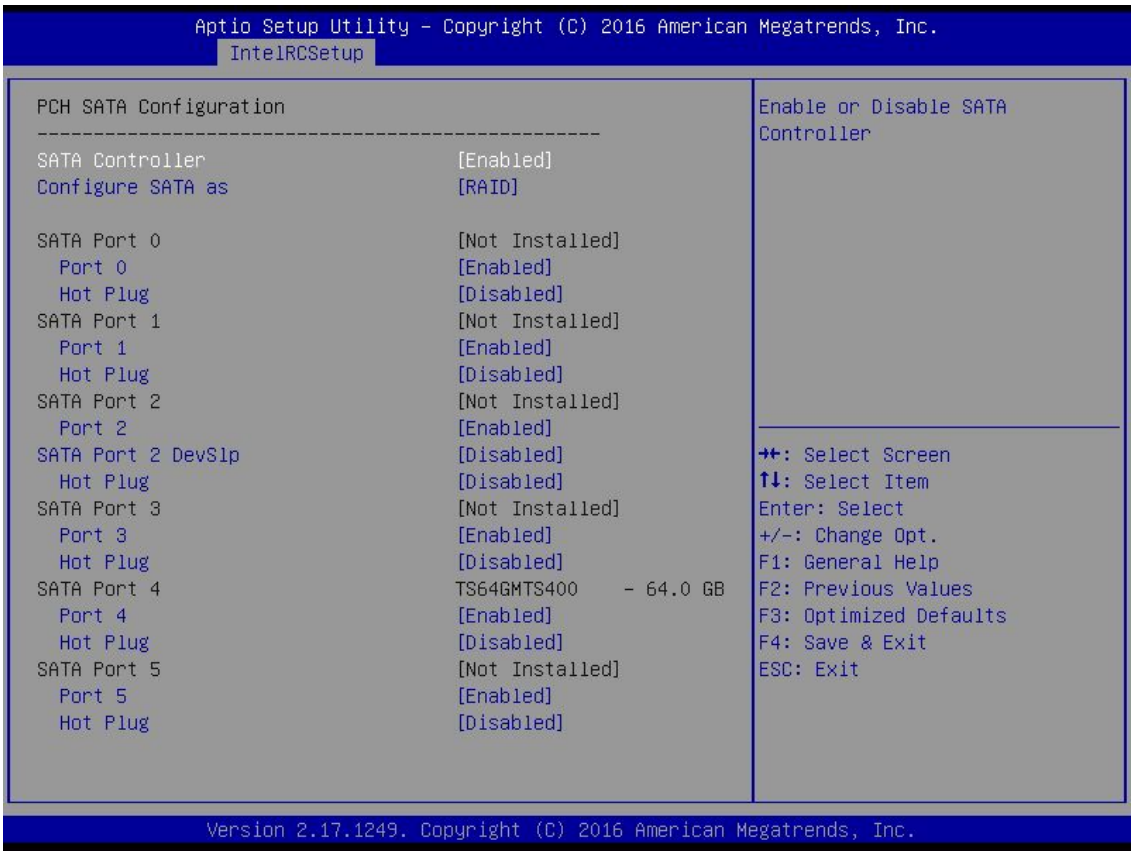
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### Hot Plug

Designates this port as Hot Pluggable.Set this value to **Disable/Enable.**

### PCH SATA Configuration

You can use this screen to select options for PCH SATA Configuration. The screen is shown below.




### SATA Controller

Enable or disable SATA Controller.Set this value to **Disable/Enable.**

### Configure SATA as

This will configure SATA as IDE ,RAID or AHCI.Set this value to **IDE/AHCI/RAID.**

### Port 0/1/2/3/4/5

Enable or disable the SATA port.Set this value to **Disable/Enable.**

### Hot Plug

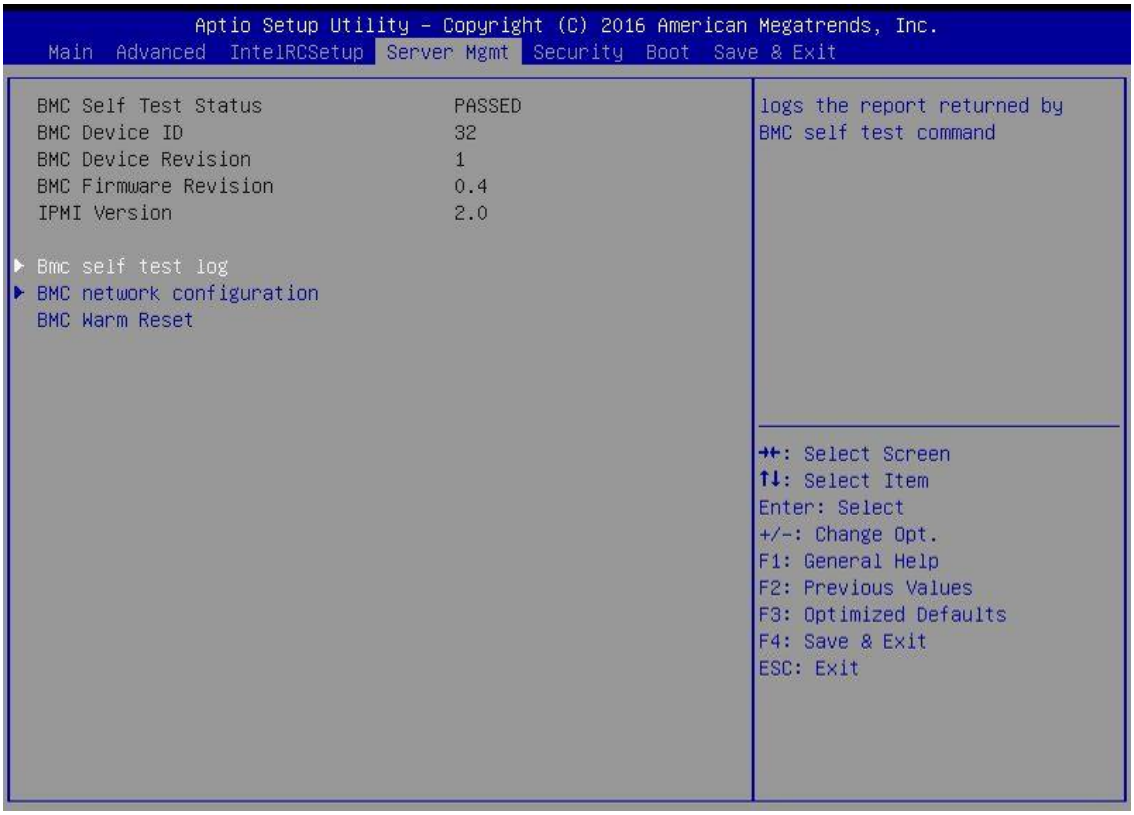
Designates this port as Hot Pluggable.Set this value to **Disable/Enable.**



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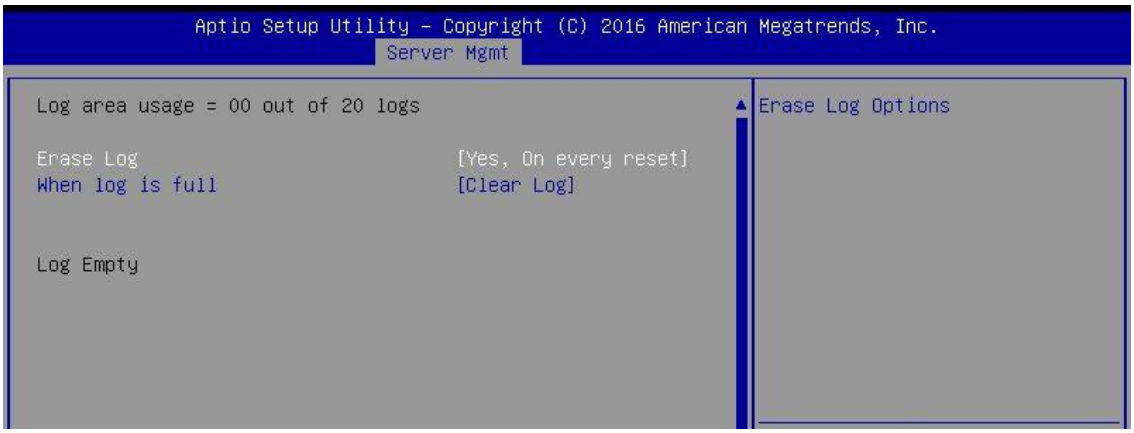
# 5.7 Server Mgmt

Select the Server Mgmt tab from the setup screen to enter the Server Mgmt BIOS Setup screen. You can select any of the items in the left frame of the screen.The Server Mgmt Settings screen is shown below:




### Bmc self test log

You can use this screen to select options for Bmc self test log. The screen is shown below.




### Erase Log

Erase Log Options.Set this value to **No/Yes, On every reset.**

### When log is full

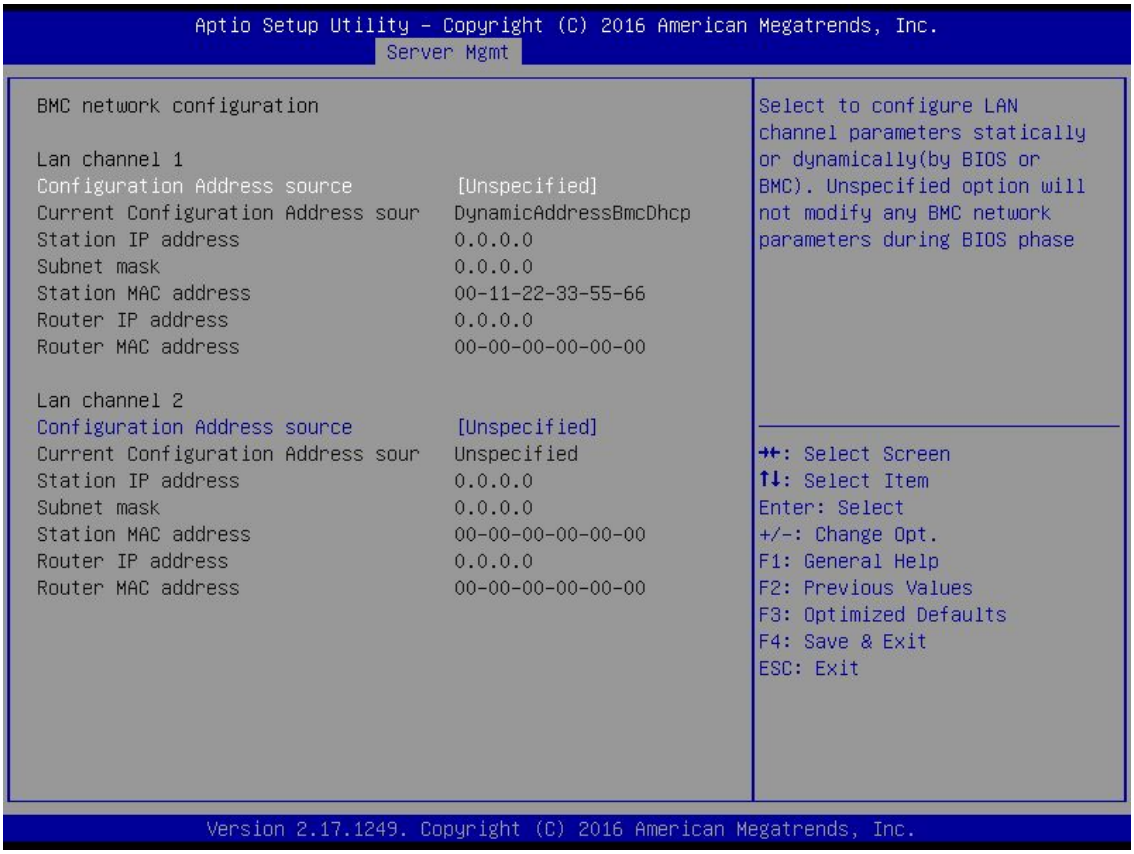


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Select the action to be taken when log is full.Set this value to **Clear Log/ Do not log any more.**

### BMC network configuration

You can use this screen to select options for BMC network configuration. The screen is shown below.



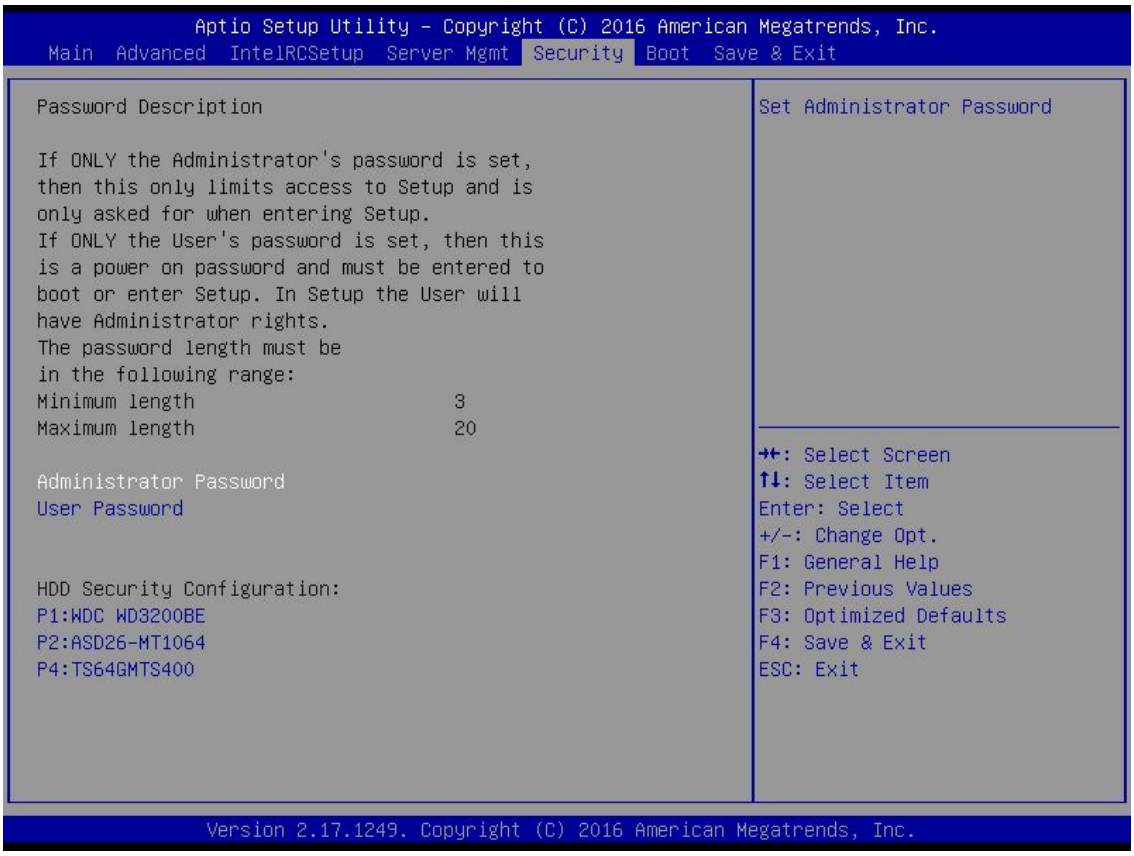

### Configuration Address source

Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.Set this value to **Unspecified/Static/DynamicBmcDhcp/ DynamicBmcNonDhcp.**



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# 5.8 Security Setup




### Administrator / User Password

If only the administrator's password is set, then this limits access to setup and is only asked for when entering setup.

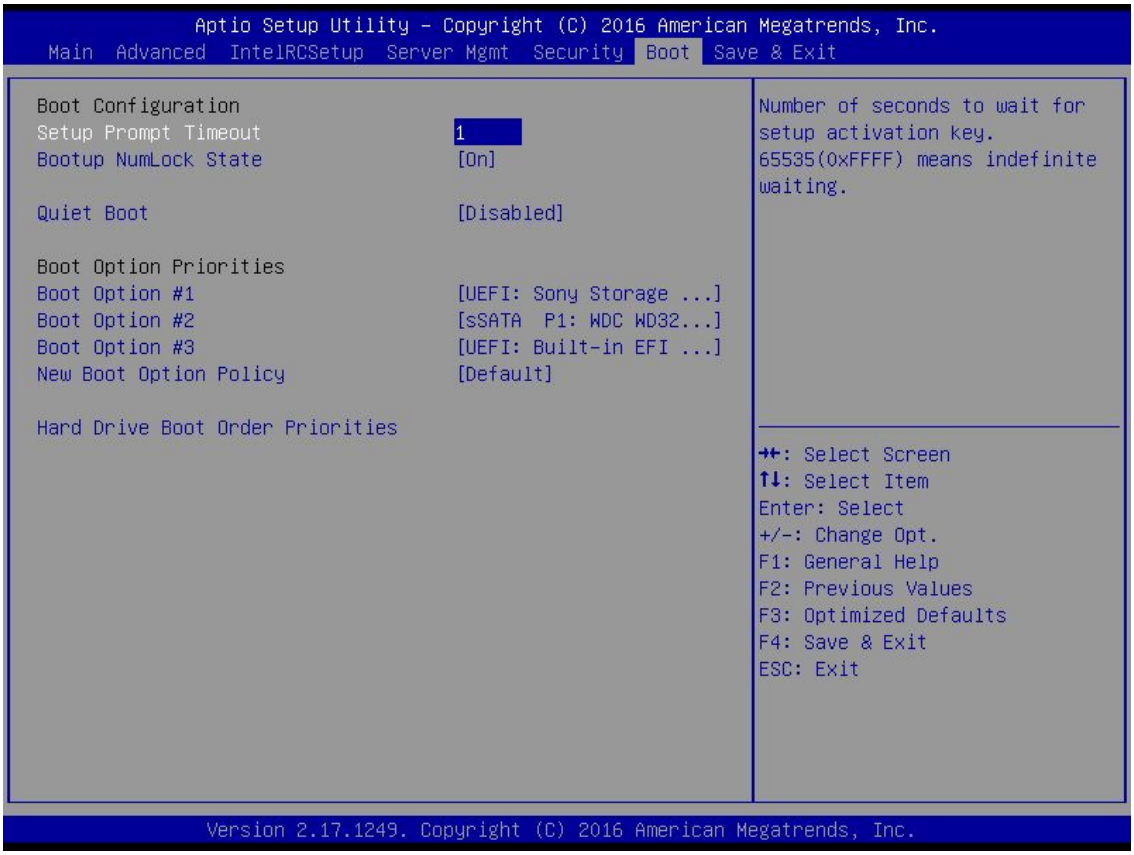
If only the user's password is set, then this is a power on password and must be entered to boot or enter setup. In setup the user will have administrator rights.



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## 5.9 Boot Setup

Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS Setup option by highlighting it using the < Arrow > keys. The Boot Settings screen is shown below:




### Setup Prompt Timeout

Set the number of seconds that the system will wait for the setup activation key. The number of 65535(0xFFFF) means indefinite waiting.

### Bootup NumLOck State

Select the keyboard NumLock state. Set this value to **On, Off.**

### Quiet Boot

**Disabled** - Set this value to allow the computer system to display the POST messages.

**Enabled** - Set this value to allow the computer system to display the OEM logo.

### Fast Boot

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options. Set this value to **Enable / Disable.**

### Boot Option Priorities

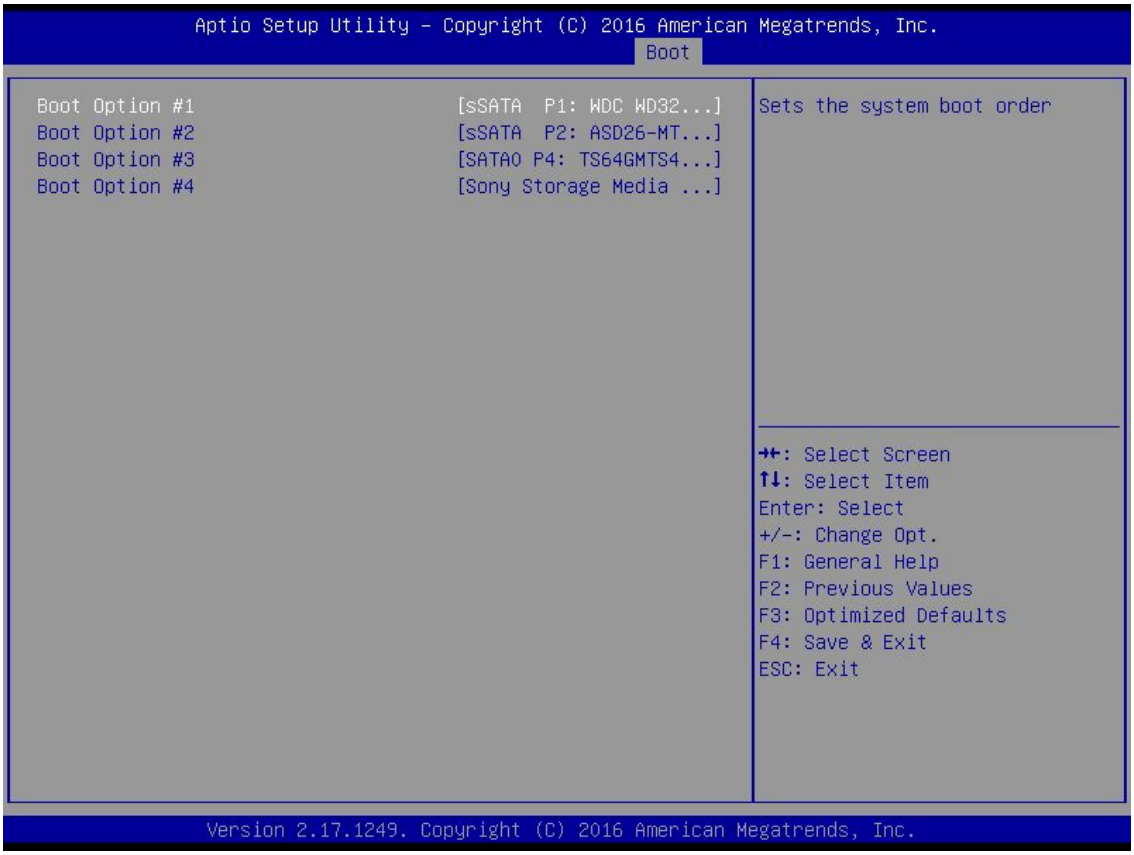


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Set Boot Option #1 -2 boot priority.

### Hard Drive BBS Priorities

Specifies the boot device priority sequence from available hard drives.

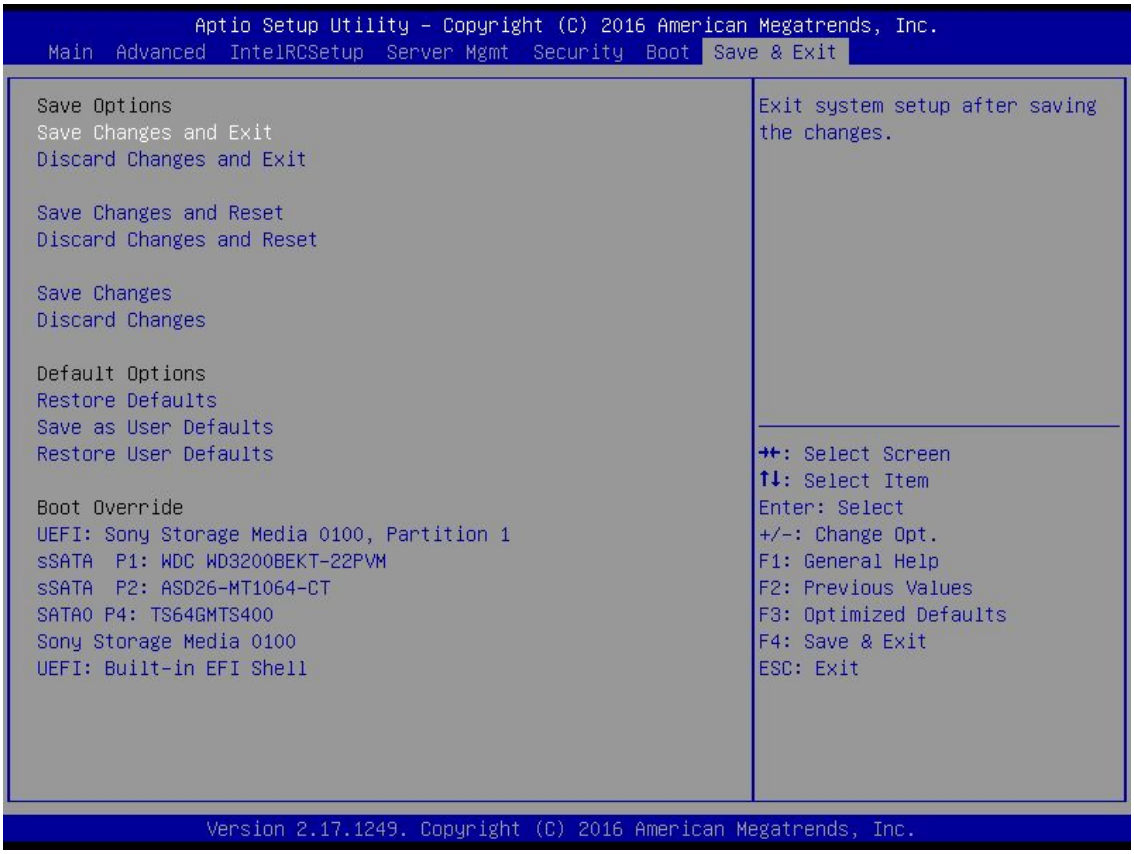





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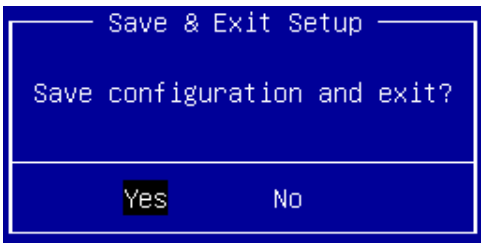
# 5.10 Save & Exit Menu

Select the *Exit* tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the < Arrow > keys. The Exit BIOS Setup screen is shown below.




### Save Changes and Exit

Exit system setup after saving the changes.

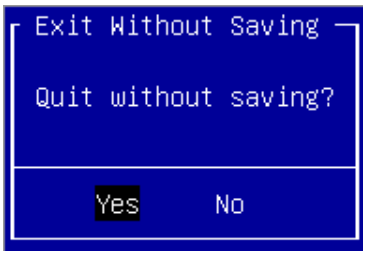





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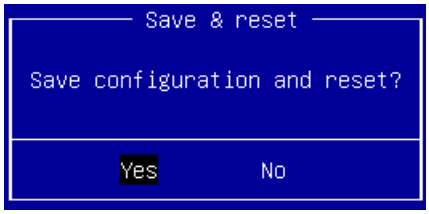
### Discard Changes and Exit

Exit system setup without saving any changes.



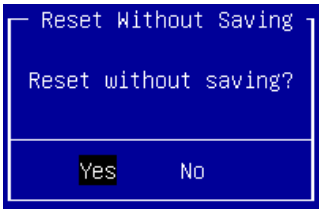

### Save Changes and Reset

Reset the system after saving the changes.



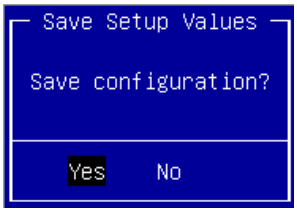

### Discard Changes and Reset

Reset system setup without saving any changes.



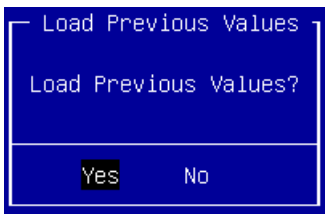

### Save Changes

Save changes done so far to any of the setup options.




### Discard Changes

Discard Changes done so far to any of the setup options.

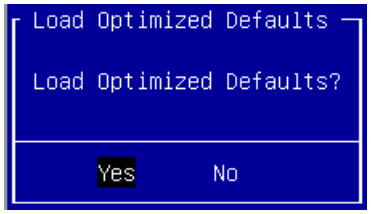





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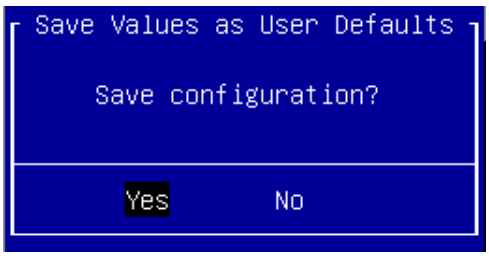
### Restore Defaults

Restore/Load Defaults values for all the setup options.



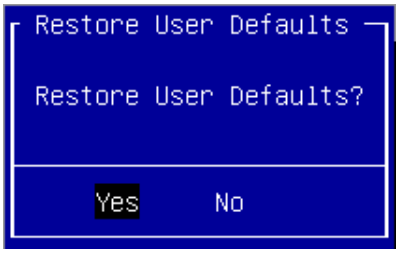

### Save as User Defaults

Save the changes done so far as user defaults.




### Restore User Defaults

Restore the user defaults to all the setup options.






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# Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

1. Read these safety instructions carefully.
2. Keep this user's manual for future reference.
3. Read the specifications section of this manual for detailed information on the operating environment of this equipment.
4. The equipment can be operated at an ambient temperature of 40°C.
5. When installing/mounting or uninstalling/removing equipment; or when removal of the chassis lid required for user servicing (Section 3.1-3.5):
   - Turn off power and unplug any power cords/cables, and
   - Reinstall the chassis lid before restoring power.
6. To avoid electrical shock and/or damage to equipment:
   - Keep equipment away from water or liquid sources;
   - Keep equipment away from high heat or high humidity;
   - Keep equipment properly ventilated (do not block or cover ventilation openings);
   - Make sure to use recommended voltage and power source settings;
   - Always install and operate equipment near an easily accessible electrical socket-outlet;
   - Secure the power cord (do not place any object on/over the power cord);
   - Only install/attach and operate equipment on stable surfaces and/or recommended mountings;
   - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
7. Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
8. A Lithium-type battery may be provided for uninterrupted, backup or emergency power.
   **CAUTION! Risk of explosion if battery is replaced with one of an incorrect type. Please dispose of used batteries appropriately.**
9. Equipment must be serviced by authorized technicians when:
   - The power cord or plug is damaged;
   - Liquid has penetrated the equipment;
   - It has been exposed to high humidity/moisture;
   - It is not functioning or does not function according to the user's manual;
   - It has been dropped and/or damaged; and/or,
   - It has an obvious sign of breakage.
10. Please pay strict attention to all warnings and advisories appearing on the device, to avoid injury or damage.
11. The equipment may have more than one power supply input. To reduce the risk of electrical shock, trained personnel should disconnect all power supply inputs before servicing.
    **CAUTION! Disconnect all power supply inputs before servicing.**
12. It is recommended that equipment be installed only in a server room or computer room where access is:



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- Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required;
- Only afforded by the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.



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# Consignes de Sécurité Importantes

Pour assurer la sécurité de l'utilisateur, veuillez lire et suivre toutes les **directives**, ainsi que les **AVERTISSEMENTS**, **MISES EN GARDE** et **REMARQUES** de ce manuel et indiqués sur l'équipement associé avant de manipuler ou utiliser l'équipement.

1. Veuillez lire attentivement ces instructions de sécurité avec soin.
2. Veuillez conserver ce manuel pour référence future.
3. Veuillez lire la section des spécifications de ce manuel pour avoir des informations détaillées sur l'environnement d'exploitation de cet équipement.
4. L'équipement peut être utilisé à une température ambiante de 40 °C.
5. Lors de l'installation ou du montage et de la désinstallation ou de la dépose de l'équipement; ou lors de la dépose du couvercle du châssis pour procéder à l'entretien par l'utilisateur (Sections 3.1-3.5):
   - Coupez l'alimentation et débranchez les cordons et les câbles d'alimentation, et
   - Reposez le couvercle du châssis avant de remettre l'alimentation.
6. Pour éviter un risque d'électrocution et pour éviter d'endommager l'équipement :
   - Éloignez l'équipement de l'eau et de toute source liquide;
   - Éloignez l'équipement de toute source de chaleur ou d'humidité élevée;
   - Gardez l'équipement correctement ventilé (ne pas bloquer ou couvrir les ouvertures de ventilation);
   - Veillez à utiliser la tension recommandée et les réglages adéquats pour la source d'alimentation;
   - Veuillez toujours installer et exploiter l'équipement à proximité d'une prise de courant facilement accessible;
   - Assurez-vous que le cordon d'alimentation est acheminé de manière sécuritaire (ne déposez aucun objet dessus);
   - Installez, fixez et utilisez l'équipement sur des surfaces stables ou sur les fixations recommandées uniquement;
   - Si l'équipement n'est pas utilisé pendant une longue période, éteignez-le et débranchez-le de sa source d'alimentation.
7. N'essayez jamais de réparer l'équipement. L'équipement ne doit être réparé que par du personnel qualifié.
8. Une pile au lithium peut être installée pour assurer l'alimentation de secours ou d'urgence en continu.
   **ATTENTION! Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.**
9. L'équipement doit être entretenu par des techniciens agréés lorsque :
   - le cordon d'alimentation est endommagé ou lorsque la fiche électrique est endommagée;
   - du liquide a pénétré à l'intérieur de l'équipement;
   - l'équipement a été exposé à un taux d'humidité élevé;
   - l'équipement ne fonctionne pas ou ne fonctionne pas conformément au manuel de l'utilisateur;
   - l'équipement est tombé ou lorsqu'il a été endommagé;
   - l'équipement présente un signe évident de défaillance.
10. Veuillez porter une attention rigoureuse à tous les avertissements et à tous les avis figurant sur l'appareil, pour éviter des blessures ou des dommages.
11. **ATTENTION!** L'équipement peut avoir plus d'une entrée d'alimentation. Pour réduire le



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risque d’électrocution, le personnel qualifié devrait déconnecter toutes les entrées d’alimentation avant de procéder à l’entretien.

12. Il est recommandé que l'équipement soit installé que dans une salle de serveur ou de la salle informatique où:
    - L'accès est limité au personnel de maintenance qualifié ou utilisateurs familiers avec les restrictions appliquées à l'emplacement, motifs, et tout les précautions nécessaires, et;
    - L'accès est uniquement assurée par l'utilisation d'un outil ou clé, ou d'autres moyens de sécurité, et est contrôlé par l'autorité responsable de l'emplacement.



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# Getting Service

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