MCS-2080

2U Rackmount Media Cloud Server with 8x Dual Intel® Xeon® Processor E3-1585 v5 Family & Dual Redundant Broadcom® Switch MXN-0410

User's Manual

Manual Revision: 1.1
Revision Date: November 24, 2017
Part No.: 50-1Z234-1010

powerBridge Computer

Ehlbeek 15a
30938 Burgwedel
fon 05139-9980-0
fax 05139-9980-49
www.powerbridge.de
info@powerbridge.de

Leading **EDGE COMPUTING**

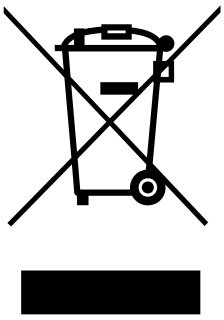
Preface

Copyright 2017 ADLINK Technology, Inc.

Disclaimer

The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer.
In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Environmental Responsibility



ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Revision History

Revision	Release Date	Description of Change(s)
1.0	2017-10-12	Initial release
1.1	2017-11-24	Remove power cord from packing list

Table of Contents

1 Overview

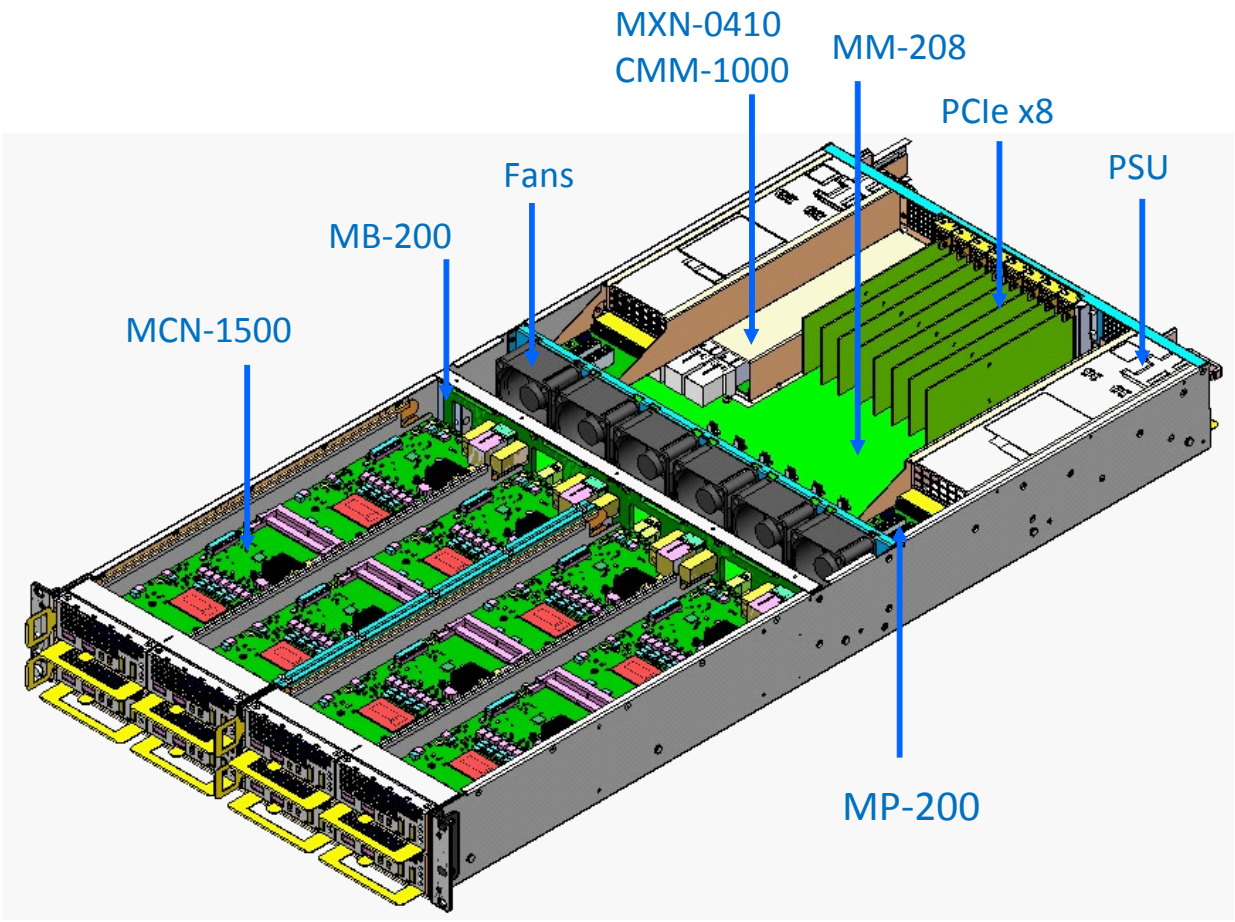
1.1 Introduction

The ADLINK MCS-2080 is a so-called "*3m*" platform with the *m*'s standing for ***m****odular* architecture, designed for ***m****edia* and ***m****ass* data processing. The MCS-2080 leverages ADLINK's Open Compute Carrier-grade to Edge Reference Architecture (OCCERA) design for compute nodes, supporting the installation of either eight 1/4-width dual-system dual-processor nodes (Intel® Xeon® E3). The Xeon® E3 systems have built-in hardware acceleration units for video processing and are suitable for handling video transcoding and analytics tasks. The Xeon® E3 systems provide high performance computing especially suited to big data tasks.

The main features of the MCS-2080 are summarized as follows:

- 16 systems (MCN-1500 compute node)
- Intel® Quick Sync Video technology with hardware assisted H265/VP9 transcoding
- Built-in dual redundant switches, each providing 16x 1G internal links to compute nodes and 4x 10G uplinks
- Eight PCIe x8 slots to meet expansion requirements
- Supports IPMI 2.0 specification to provide web-based intelligent system management and support SOL on compute nodes
- Adaptive fan speeds to reduce the fan noise and power usage while ensuring system health
- Dual redundant power supply units with power health monitoring and abnormal situation alert via IPMI interface

1.2 System Architecture



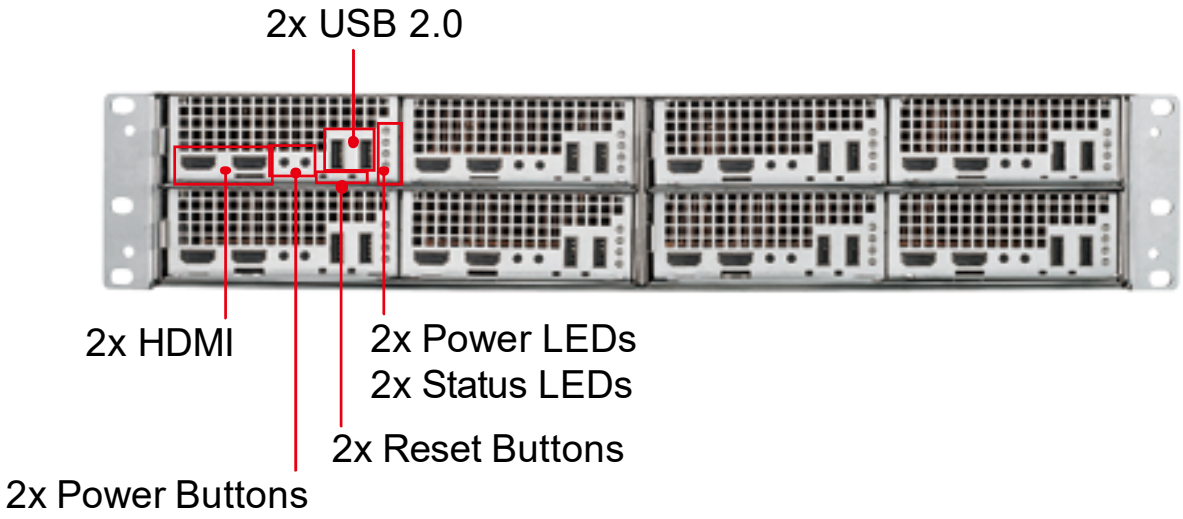
As shown in the above figure, there are a total of eight MCN-1500 compute nodes, each node having two independent CPU systems. There are a total of eight PCIe x8 Gen3 slots connected to the rear CPU system on each MCN-1500 CPU board.

There are also two switch nodes (MXN-0410) connected to the 16 CPU systems via 1G Ethernet. Each MCN-1500 CPU system has two 1G Ethernet links connected to each of the switch nodes, respectively. The MXN-0410 switch node has 4x 10G Ethernet uplinks for communication with the outside world.

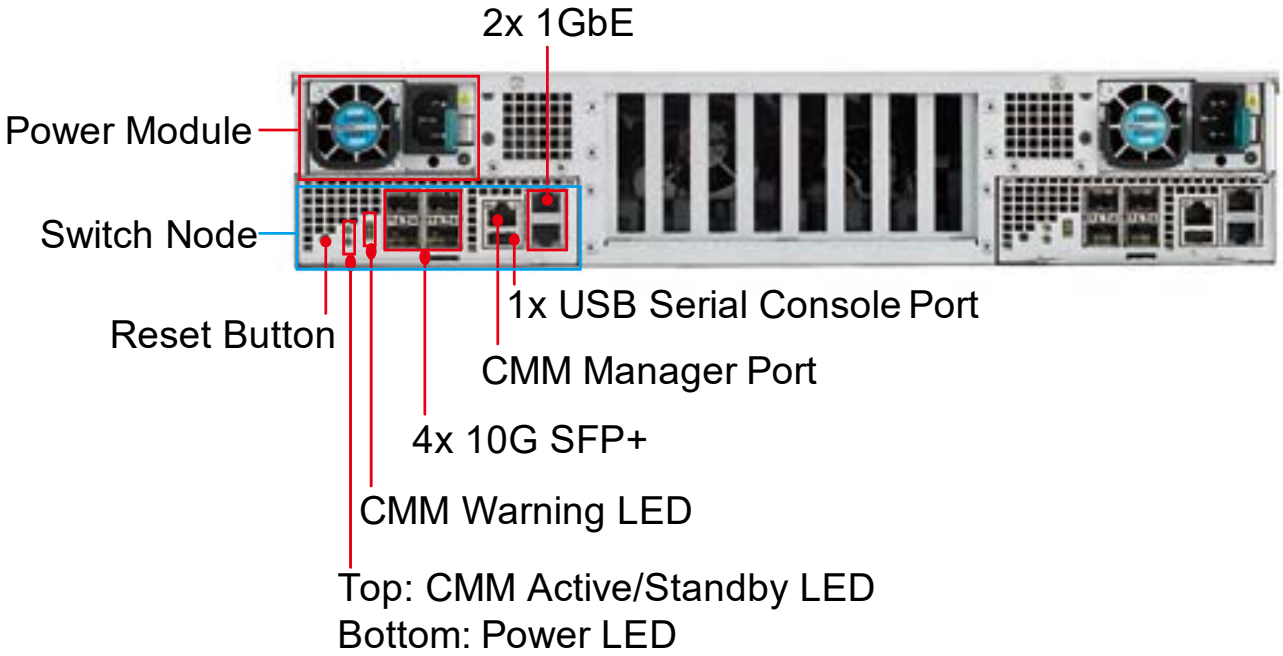
A Chassis Management Module (CMM) module is mounted on each switch node. The CMM is connected via two IPMB buses to all board management controllers (BMCs) on the compute nodes. The CMM collects thermal data from the BMCs and controls the fan speed intelligently to meet system cooling requirements.

1.3 Mechanical Overview

1.3.1 Front View (MCN-1500 CPU Sleds)

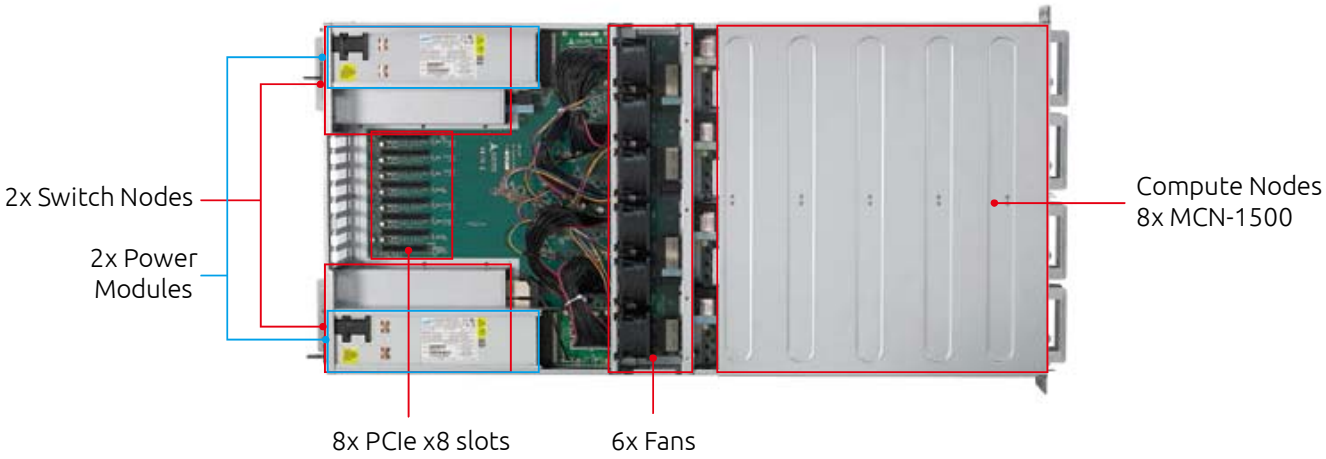


1.3.2 Rear View

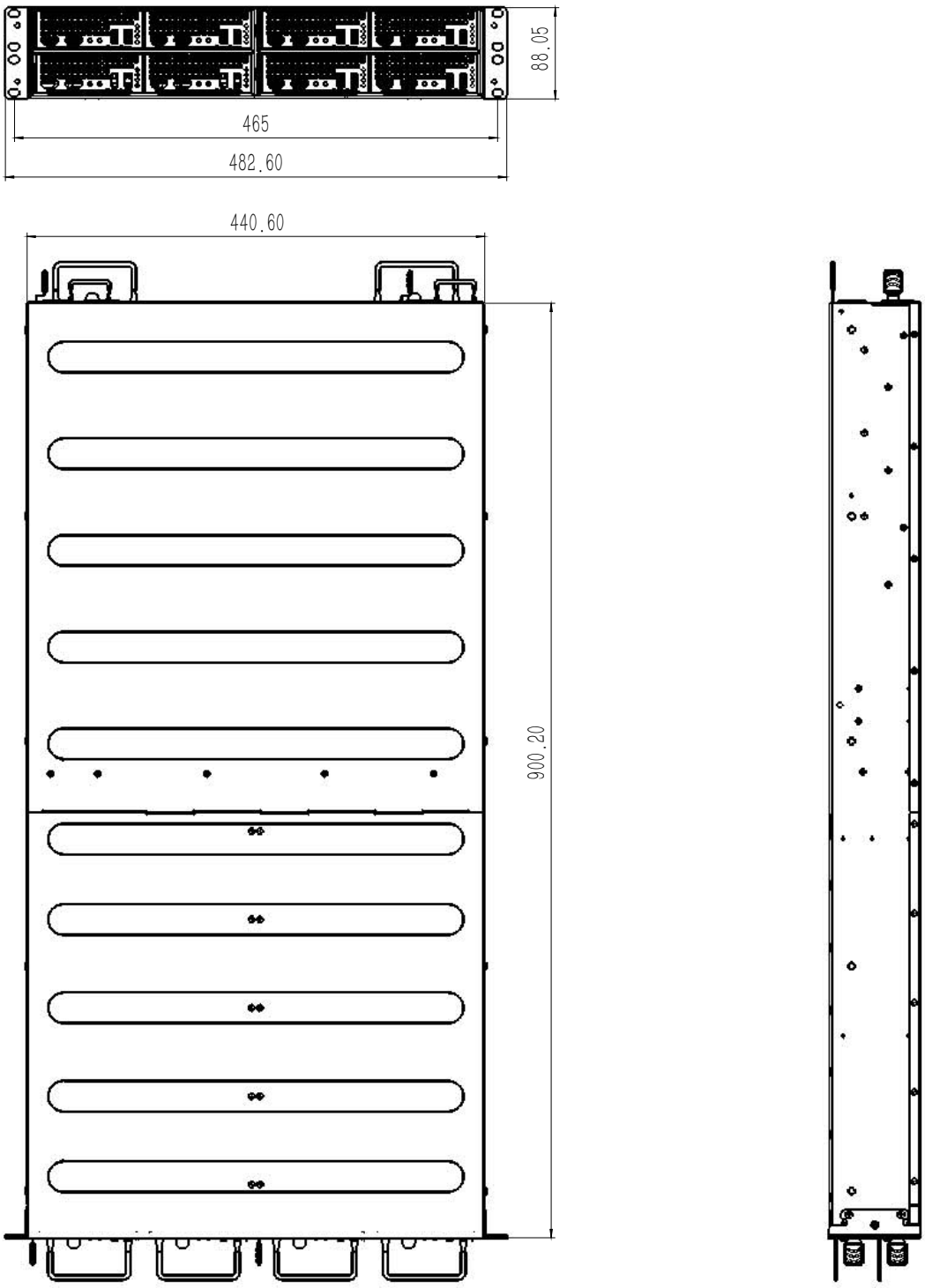


Note: An unpainted chassis is shown above for clarity.

1.3.3 Top View


2x Switch Nodes
2x Power Modules
Compute Nodes
8x MCN-1500
8x PCIe x8 slots
6x Fans

1.4 Mechanical Dimensions



Dimensions in mm

1.5 Package Contents

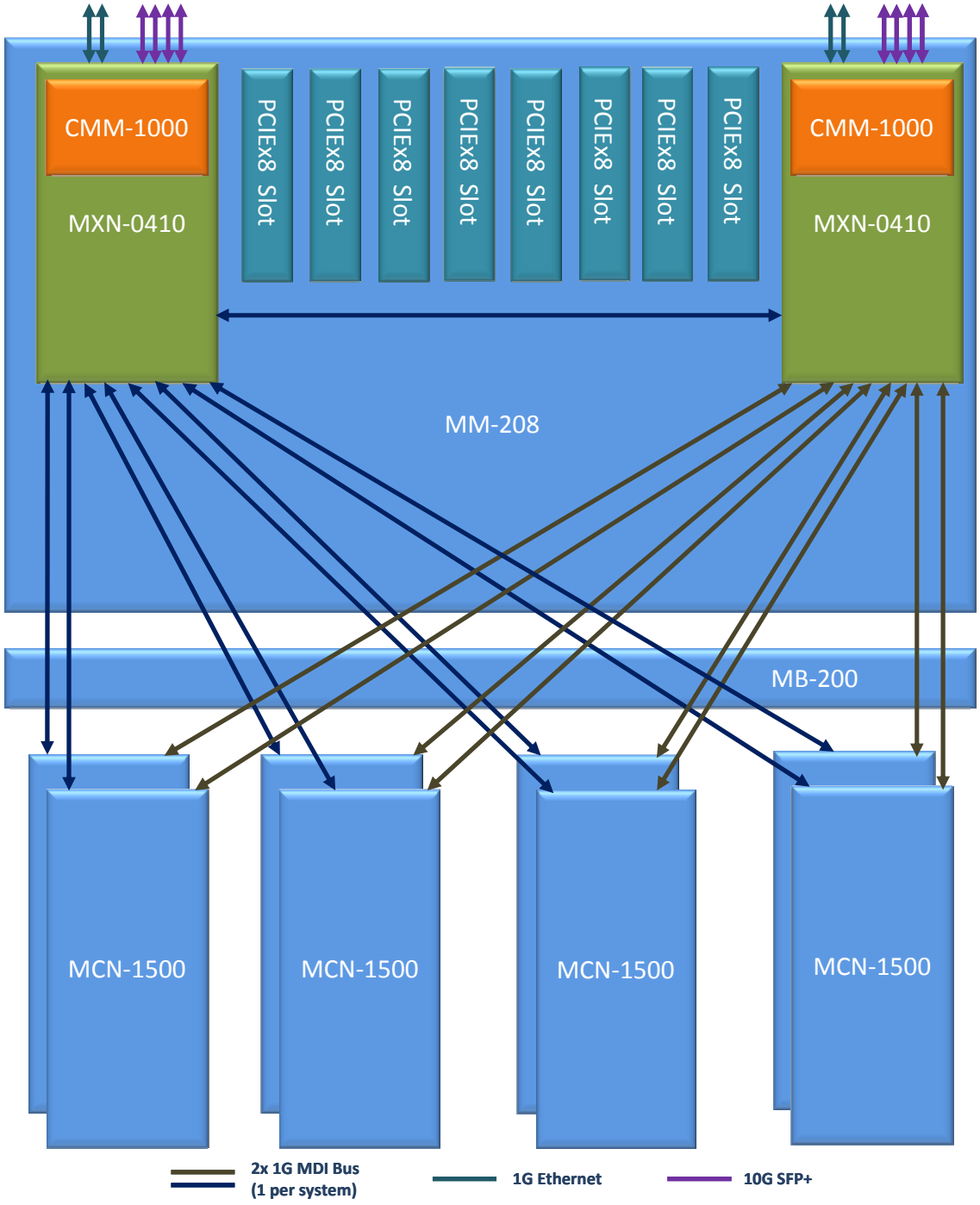
Before opening, please check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the dealer for a replacement. Retain the shipping carton and packing material for inspection by the dealer. Obtain authorization before returning any product to ADLINK.

Check that the following items are included in the package. If there are any missing items, contact your dealer:

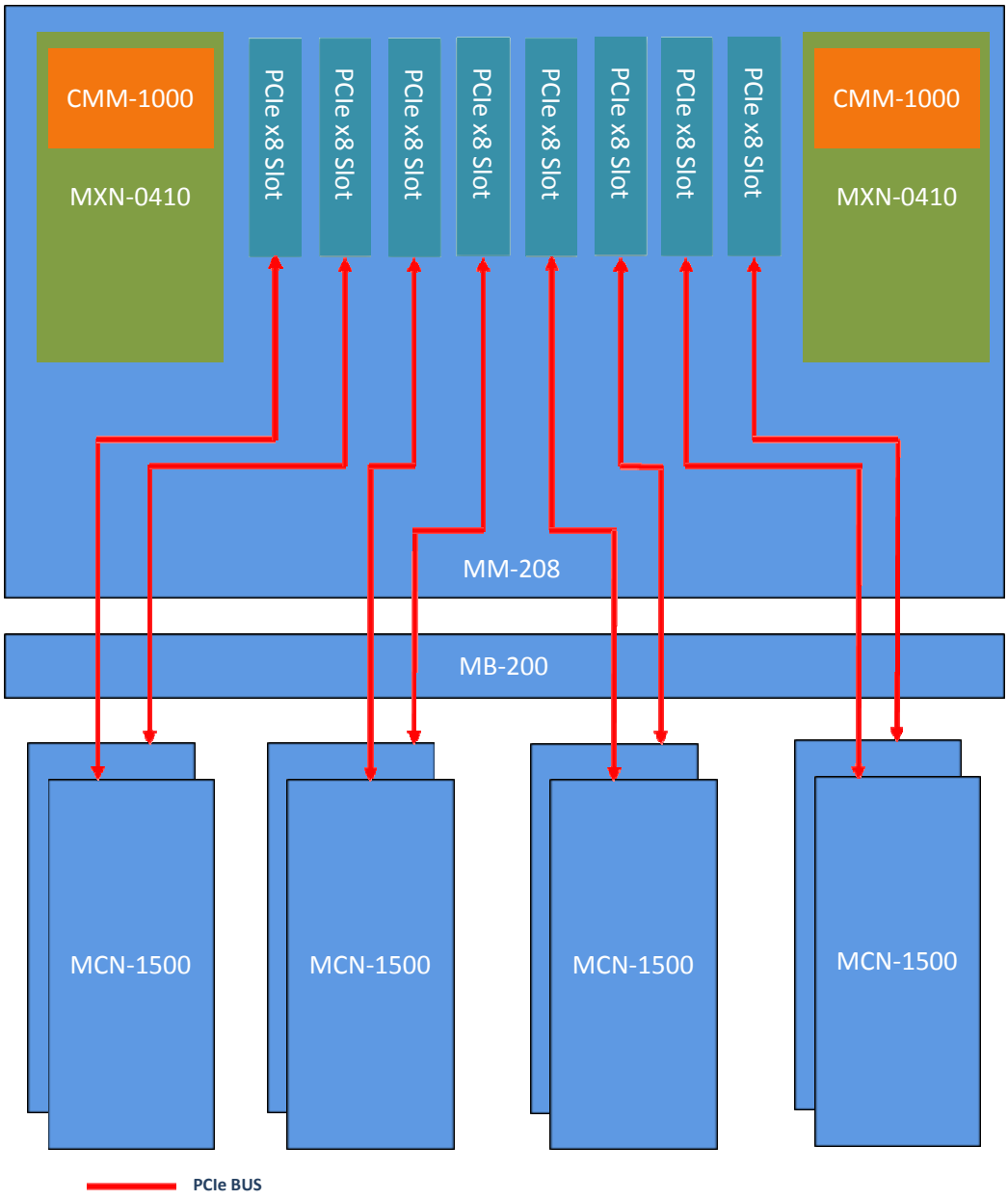
- MCS-2080 Rackmount Network Appliance
- Packing checklist
- USB console cable

1.6 System Topology

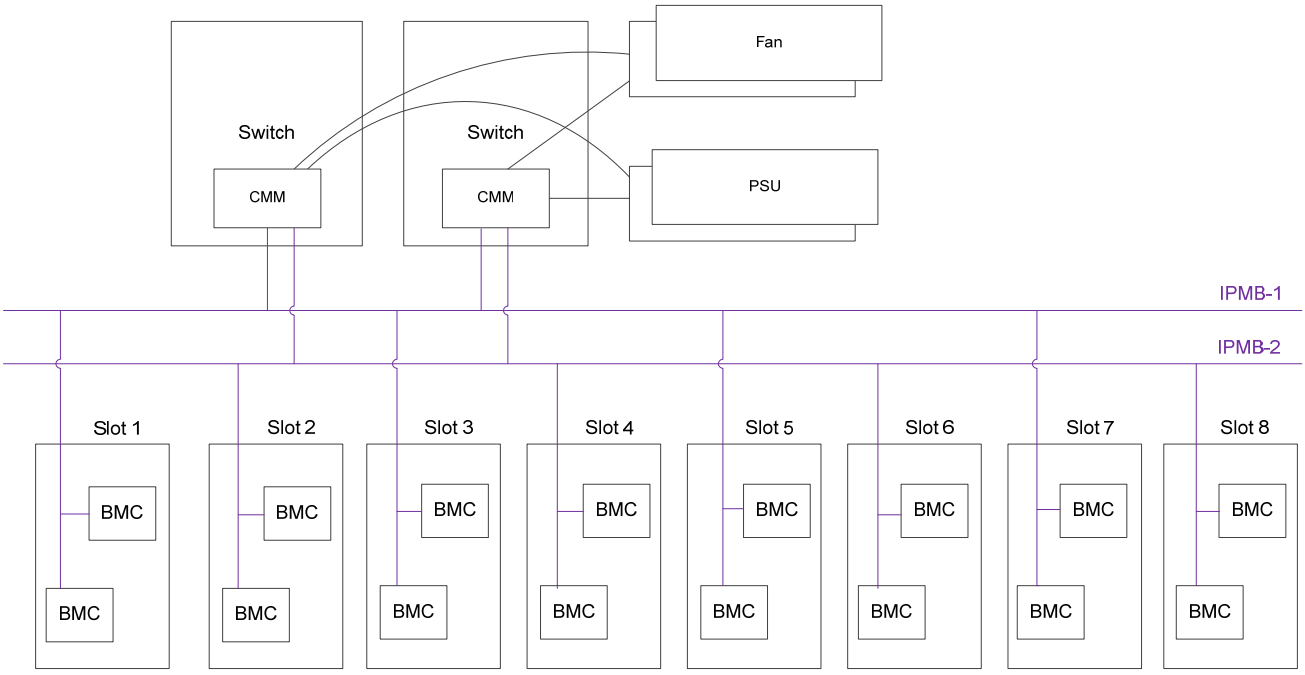
1.6.1 System Network Topology (MCS-2080 with MCN-1500)



1.6.2 PCIe Topology (MCS-2080 with MCN-1500)



1.6.3 IPMI Topology (MCS-2080 with MCN-1500)



2 Specifications

2.1 Chassis Module List

The MCS-2080 chassis include the following field replaceable units.

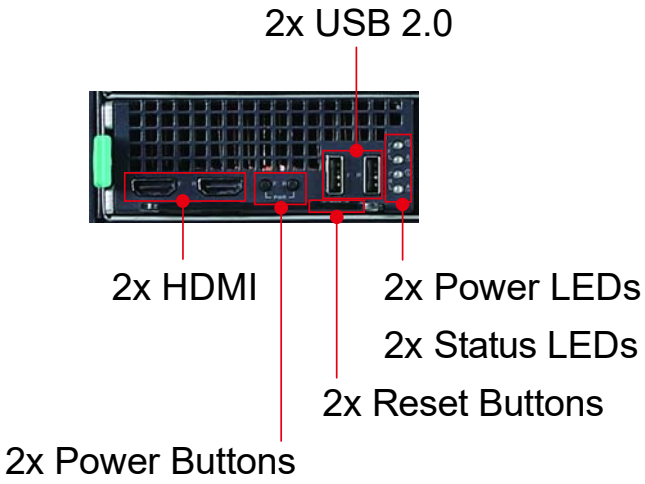
- 8x CPU Nodes (MCN-1500T)
- 2x Switch Nodes (MXN-0410)
- 2x Power Supply Units

2.2 MCN-1500 CPU Node

2.2.1 MCN-1500 Specifications

CPU / Chipset /Memory (per node)	
CPU	Dual Intel® Xeon® E3-1585 V5 Processors (BGA)
Chipset	Intel® C236
Memory	4x DDR4-2133 SODIMM, up to 64 GB
Graphics	Intel® GT4e integrated GPU
BIOS	
Chip	AMI BIOS on SPI flash memory
Features	Intel® PXE pre-boot
	Remote Console
	ACPI support 1.0/2.0
	UEFI
I/O Interfaces (per node)	
Ethernet	4x 10/100/1000BASE-T Base Interface Channels Support remote power on/off/reboot system
Storage	Onboard: 2x mSATA slots, support SSD modules up to 512GB
USB	2x USB 2.0 ports on front panel
HDMI	2x HDMI ports on front panel
Expansion	1x PCIe x8 expansion slot to rear of chassis
LEDs	2x Power LEDs, 2x Status LEDs (1 each per system)

2.2.2 MCN-1500 Front Panel

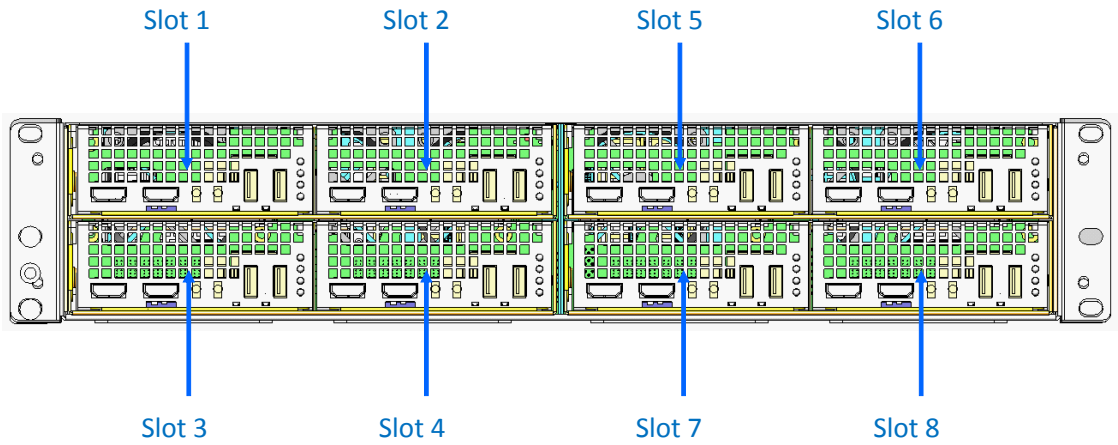


Note: Connectors, buttons and LEDs are labeled “F” and “R” to indicate front and rear systems respectively.

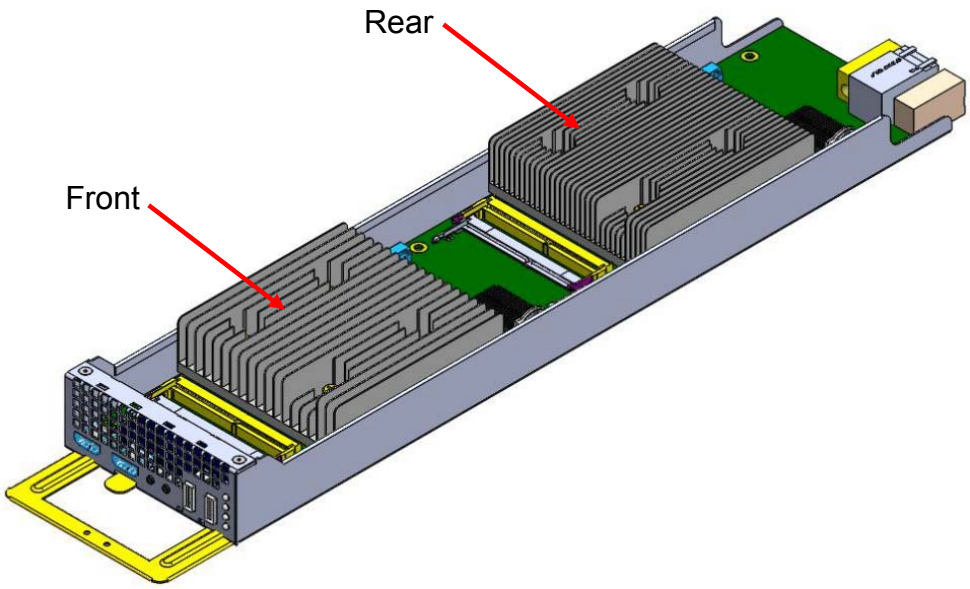
2.2.3 MCN-1500 LEDs

LED	Color	Status
Power	Green	**On/Off** indicates the power status of the respective system
Status	Red/Green	Indicates BIOS POST status • **Off > Red:** The BMC detects that payload power is enabled. • **Red> Green:** The BMC receives OEM message indicating BIOS POST has completed without error.
		A Green status LED Indicates the system is healthy. • If the BMC Watchdog Timer is **not** enabled, the BMC keeps the green LED on • If the BMC Watchdog Timer **is** enabled, the BMC turns the green LED off after detecting BMC WDT timeout

2.2.4 Slot Layout with MCN-1500



2.2.5 MCN-1500 Sled Layout

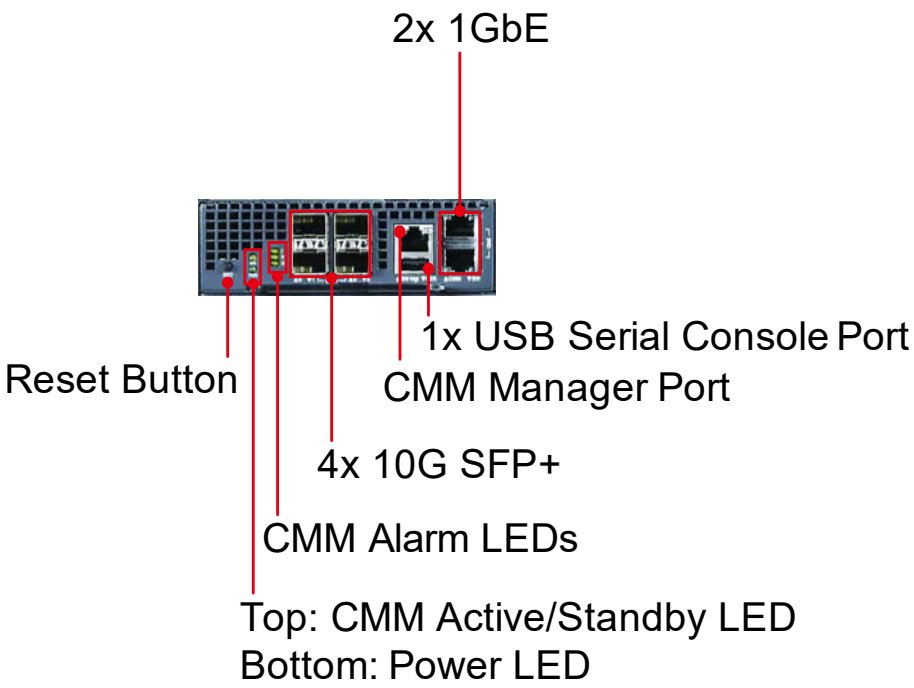


2.3 MXN-0410 Switch Node

2.3.1 MXN-0410 Specification

CPU / Chipset /Memory	
Processor	Broadcom 56150 SoC switch
CMM	CMM daughter card
I/O Interfaces	
Ethernet	4x 10G SFP+ to front panel 2x 1GbE to front panel 16x 1G to backplane 1x 1G between 2 switch nodes
Management	1x CMM Management Port 1x USB Serial Console port
LEDs	2x Power LED, 1x CMM Active/Standby LED, 3x CMM Warning LEDs

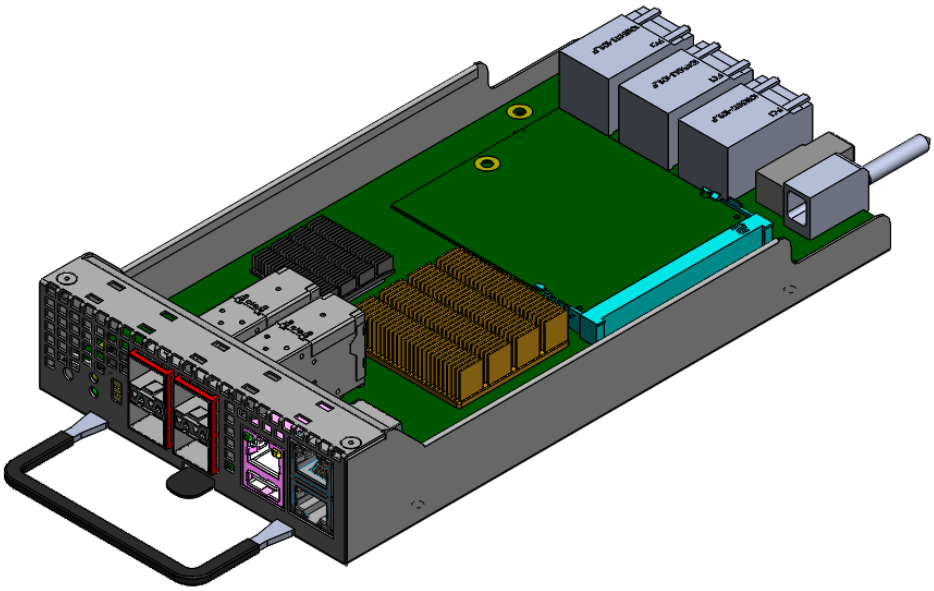
2.3.2 MXN-0410 Front Panel



2.3.3 MCN-1500 LEDs

CMM LED	Description
Active/Standby	The yellow Active/Standby LED indicates the chassis manager software status: • **Long Blink:** indicates the chassis manager software is moving from backup role to active role • **Short Blink:** indicates the chassis manager is in standby mode. • **Steady On:** indicates the chassis manager is in active mode. Note: The Long Blink is a cycle of 100 ms of off followed by 900 ms of illumination. The Short Blink is a cycle of 100 ms of illumination followed by 900 ms of off.
Alarm	There are three CMM alarm LEDs to indicate the aggregated node health status (temperature, voltage, fan). • **I:** Minor • **II:** Major • **III:** Critical

2.3.4 MXN-0410 Sled Layout



2.4 Fan Module

There are six fans in MCN-2080. Fan speed is controlled intelligently by the chassis management module based on the real-time thermal conditions.

2.5 PSU Module

The MCS-2080 features 1+1 redundant mode and supports two kinds of power supply modules.

- 2130W/1600W, 100-240V AC @0-60Hz

2.6 Environmental

Operating Temp.	0˚C to +40˚C
Storage Temp.	-40˚C to +70˚C
Humidity	10% to 80%, non-condensing
Power Supply	2130W/1600W high-efficiency redundant power supply
RoHS	RoHS Compliant

2.7 Software Support

2.7.1 PacketManager

ADLINK PacketManager runs on MXN-0410, it includes the most commonly used Layer2/3 stacks and switch management features, including Port Manager, VLAN, LACP, IGMP, RSTP, and ACL.

For easy deployment and management, ADLINK PacketManager not only provides a friendly command line interface (CLI), but also includes remote procedure call (RPC) based APIs to allow further customization and integration with the customers' management systems.

To learn more about the ADLINK PacketManager, please request the latest ADLINK PacketManager documents from your ADLINK representative.

2.7.2 MediaManager

ADLINK MediaManager enhances Intel® Media Server Studio (Intel® MSS) and runs on the MCN-1500. MediaManager provides common video application components (mux/demux, RTP handling, Video composition), video application samples for video streaming/video analytics/video conferencing, and can be used to accelerate the development of video-related server end applications.

3 Getting Started

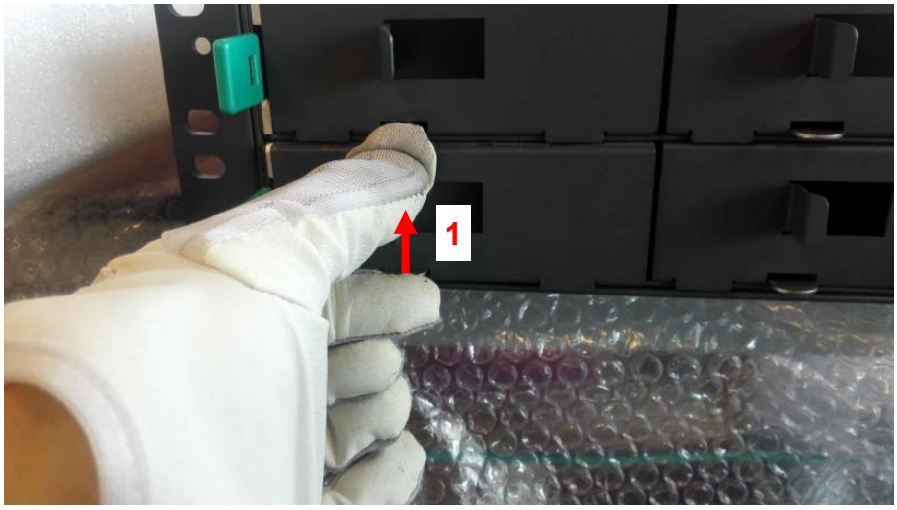
3.1 Assembling the MCS-2080

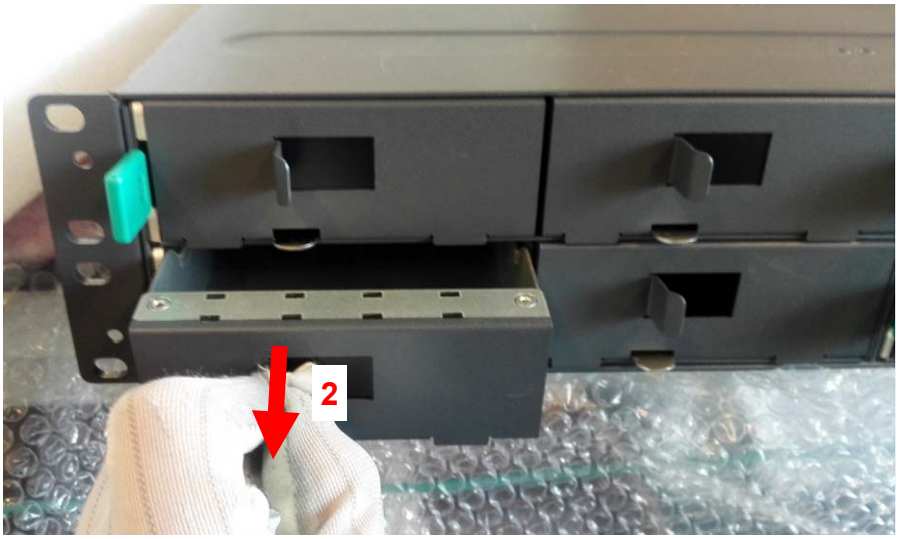
3.1.1 Hot-plugging MCN-1500 sled

Before hot-swapping the MCN-1500, the user must first shutdown the OS by either executing a command from within the OS or holding down the power button for > 4 seconds.

3.1.2 Installing and Removing an MCN-1500 Compute Node

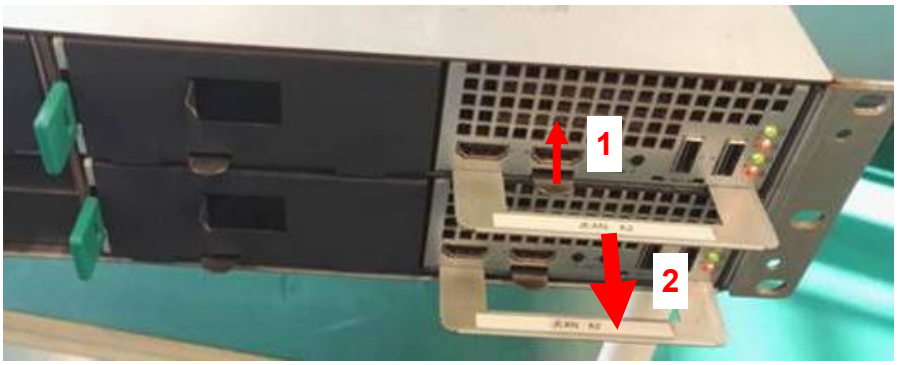
1. To remove the dummy tray, lift the tab upward (1) and then pull out the tray (2).





2. Insert MCN-1500 into the empty slot until the locking tab clicks into place.

3. To remove an MCN-1500, lift the tab upward (1) and then pull out the sled (2).



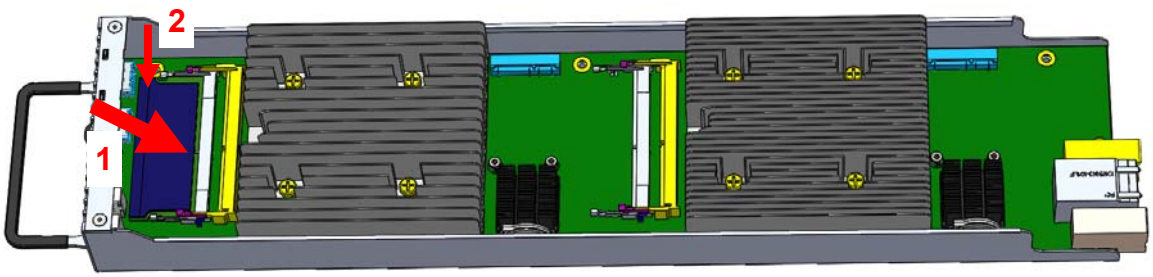
3.1.3 Powering on MCS-2080

After assembly MCS-2080 whole system, please plug in AC power cable. The system will run automatically.

3.2 Using the MCN-1500

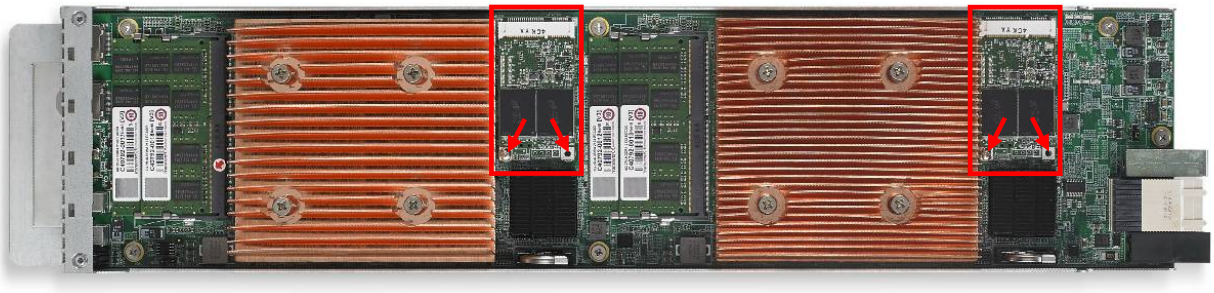
3.2.1 Installing Memory

1. Insert the memory module at about 30 degrees from horizontal into the socket until it is completely seated.
2. Carefully press the module into place so that the clips latch on both edges. The SODIMM must be horizontal when properly installed.



3.2.2 3.2.3 Installing mSATA Drives

1. Insert the mSATA drive into the socket.
2. Secure it in place with two screws.



3.3 Using the MXN-0410 Switch Node

3.3.1 Hot-Swapping the MXN-0410 Switch

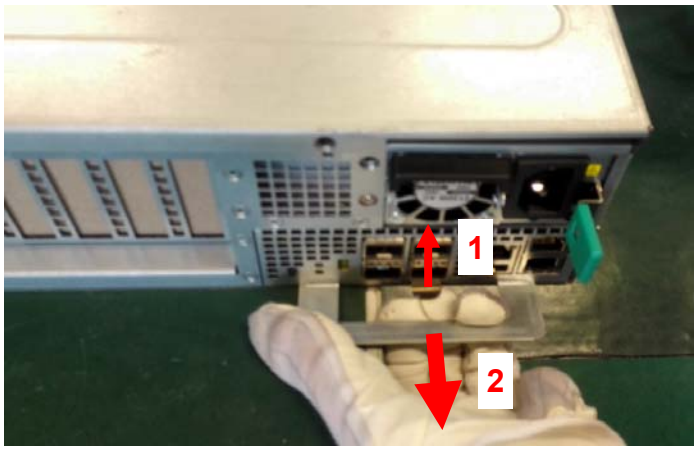
The MXN-0410 can be hotswapped at any time.

3.3.2 Installing a MXN-0410 Switch

1. If necessary remove the dummy tray as described in 3.1.2 Installing and Removing an MCN-1500 Compute Node above.

2. Insert MXN-0410 into the empty slot until the locking tab clicks into place.

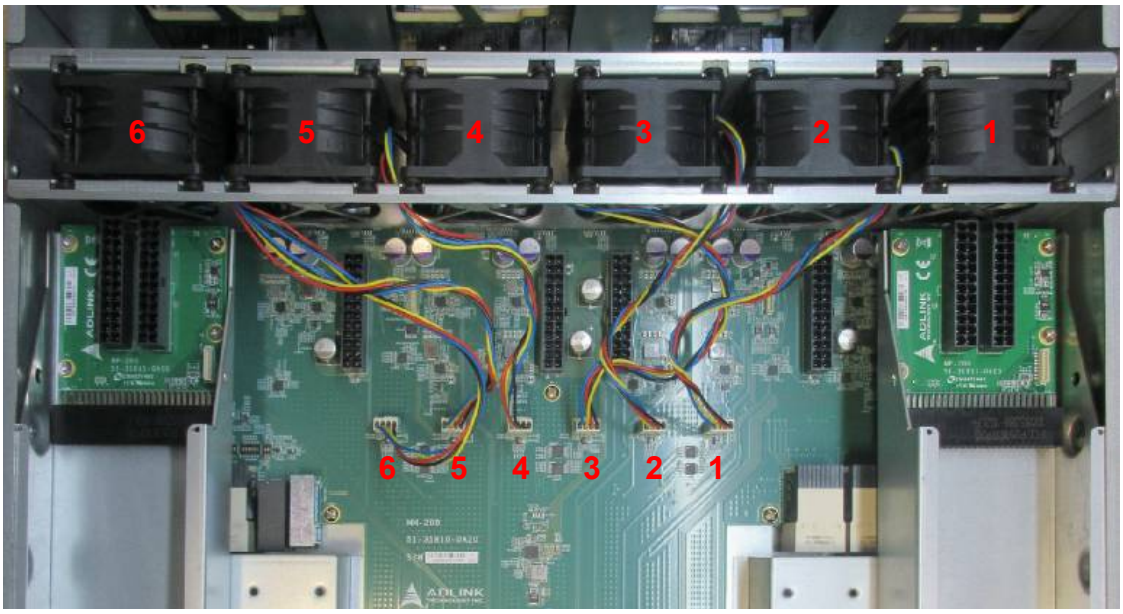
3. To remove an MCN-1500, lift the tab upward (1) and then pull out the sled (2).



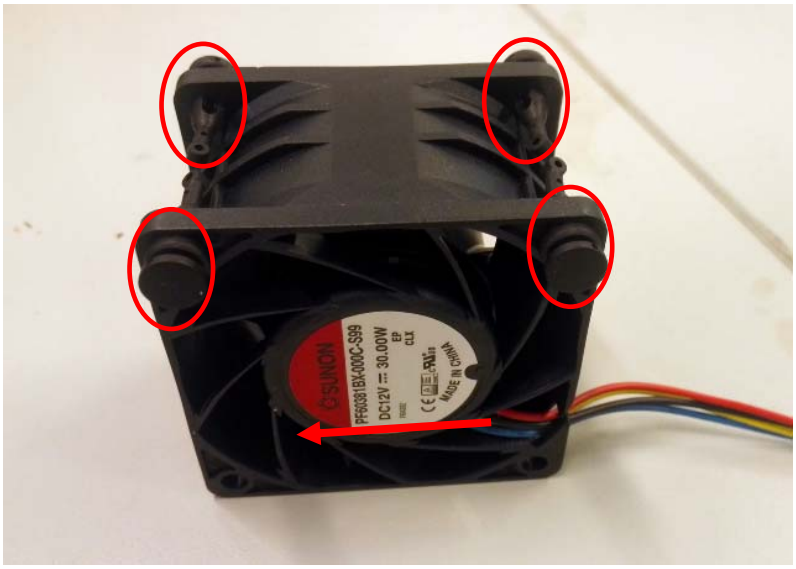
3.4 Fan Maintenance

Attention: Make sure that power is disconnected from the system before performing the procedure below. Wear ESD gloves while touching any of the internal components of the system.

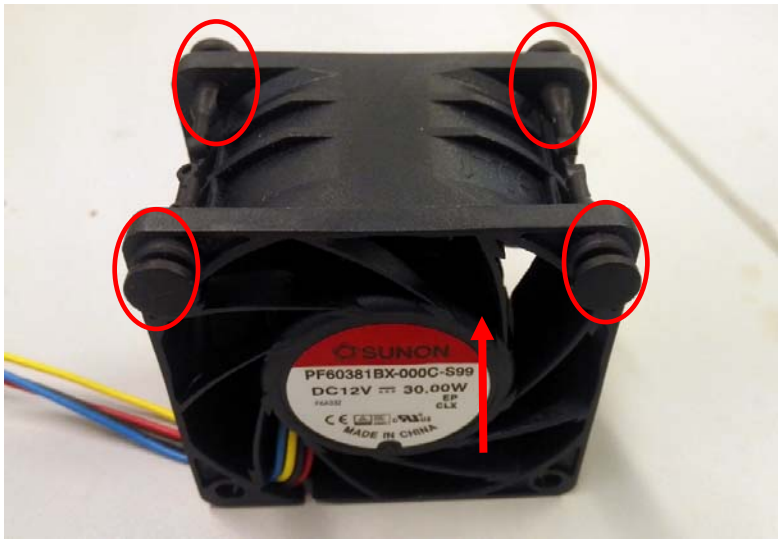
1) Remove the chassis lid by unscrewing 5 screws each on the left, right, and top sides, and 2 screws on the rear side (total of 17 screws). Lift the lid off of the chassis.
2) Locate the fan to be replaced and unplug the corresponding connector. The fans are secured by rubber grommets. Pull the fan out of the fan mounting bracket.



3) For Fan #6, remove the four rubber grommets from the defective fan and insert them into the holes in the replacement fan as shown below. Note the orientation of the fan.



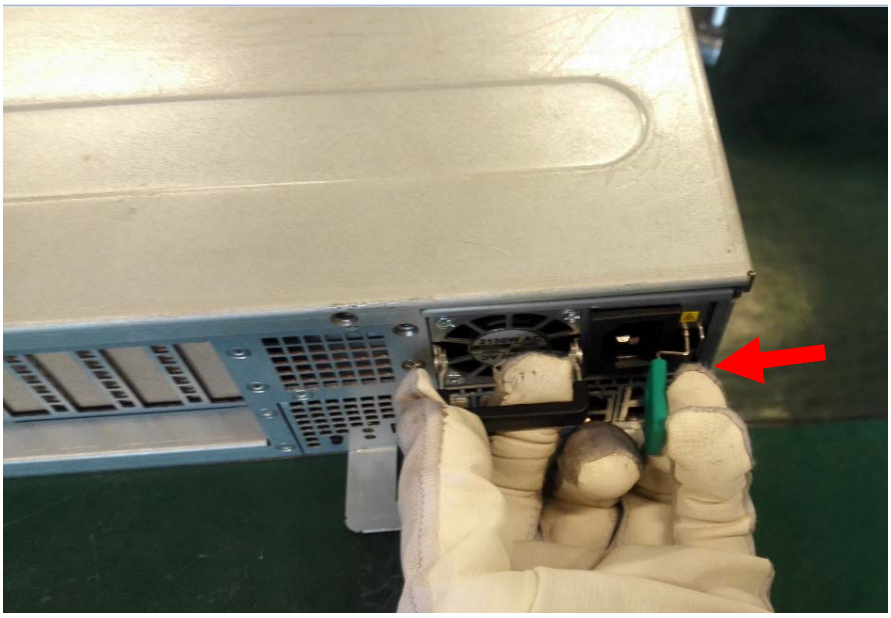
4) For Fans #1-5, remove the rubber grommets from the defective fan and insert them into the holes in the replacement fan as shown below. Note the orientation of the fan.



5) Insert the replacement fan into the fan mounting bracket.
6) Plug the fan connector into the socket.

3.5 Replacing a PSU

1) Push the latch to the left and pull the PSU out of the chassis.



2) Insert into the new PSU into the chassis and make sure the.latch is locked.

4 Operation and Maintenance

4.1 MXN-0410 Software Upgrade

4.1.1 Upgrading the Software

Setup a TFTP Server
This installation requires a TFTP server for image downloading. A PC running Linux is recommended. If using Windows, “tftpd32” is recommended.

1) Setup IP address:
   Set your TFTP server ip as “192.168.7.100”
2) Copy three image files to the TFTP server directory:
   - u-boot_nand.bin
   - uImage_nand.img
   - rootfs.ubi

Trigger Installation

1) Install the MXN-0410 into the MCS-2080.
2) Connect management Ethernet port to your TFTP server using an Ethernet cable.
3) Connect the MXN-0410 USB port to your Windows console PC using a USB-to-USB cable (the driver “CDM v2.12.06 WHQL Certified” should be pre-installed).
4) Power up the MCS-2080.
5) Wait while the system boots.
6) Hit any key when prompted by: “Hit any key to stop autoboot: x”.
7) After you see the u-boot prompt “mxn-0410 >” on the serial console, type the following command:
   mxn-0410 > **run install**
8) Wait for about 10 minutes. When you see the following prompt, the software upgrade has successfully been completed:
   Welcome to MXN-0410 Switch Board (default root password: root)
   mxn-0410 login:

4.1.2 Frequently Asked Questions

What if I want to upgrade more than one node simultaneously?
Before step 7) above, set different IP addresses for each MXN-0410.
mxn-0410 > ***setenv ipaddr 192.168.7.xxx***
mxn-0410 > ***save***

My TFTP server IP cannot be changed. How can I set the MXN-0410 to use my IP?
Change the u-boot environment variable:
mxn-0410 > ***setenv serverip <YOUR SERVER IP>***
mxn-0410 > ***save***

How do I login to Linux?
Input the user name “root”, password “root”.
*MXN-0410 login:**root***
*Password:**root***

How do I enter Broadcom shell?
Login to Linux, and run:
telnet localhost 9895

I don’t have a serial cable, how can I login to linux through the managment Ethernet port?
After power up the system, wait until all LEDs are flashing.
Connect the management port and PC with an Ethernet cable.
On the PC, use SSH client to connect to the IP address “**192.168.7.101**”(MXN-0410 default ip). You need a PC with IP 192.168.7.xxx.

How do I change the MXN-0410 address?
Login to Linux and modify the file “/etc/network/interfaces” as follows

```
# Configure Loopback

auto eth0
iface eth0 inet static
    address 192.168.7.101
    netmask 255.255.255.0
    broadcast 192.168.7.255

auto lo
iface lo inet loopback
```

Run “***reboot***” or “***/etc/init.d/S40network restart***”

What is the SSH client on the MXN-0410?
ssh
eg. *ssh root@192.168.7.102*

How can I find out the switch port MAC addresses?
cat /media/ram/bcm-hw-addr
The format will be:
HWaddr_S@# <FIRST_MAC_ADDR> HWaddr_E@# <LAST_MAC_ADDR> HWport@# <MAC_ADDR_NUM>

How do I transfer files?

a. Download files from another server
tftp -g -r <FILE_NAME> <SERVER_IP>
eg.
tftp -g -r testfile.txt 192.168.7.100
or
scp <REMOTE_USER>@<SERVER_IP>:<FILE_NAME> <LOCAL_DIRECTORY>
eg.
scp root@192.168.7.102:/root/testfile.txt /root/

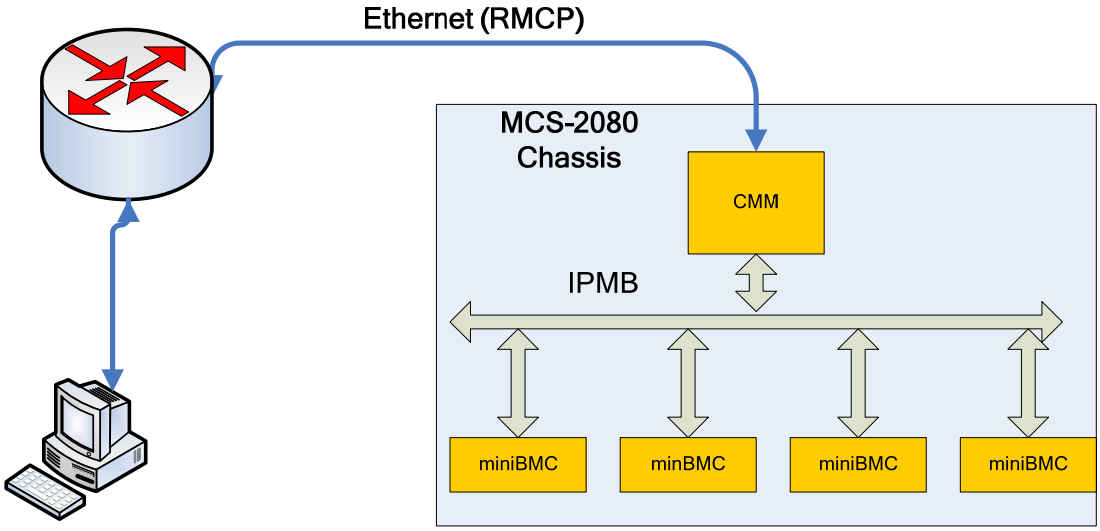
b. Upload files to another server
tftp -p -l <FILE_NAME> <SERVER_IP>
eg.
tftp -p -l testfile.txt 192.168.7.100
or
scp <FILE_NAME> <REMOTE_USER>@<SERVER_IP>:<REMOTE_DIRECTORY>
eg.
scp testfile.txt root@192.168.7.102:/root/

I have some specific bcm shell commands that need to be executed at every MXN-0410 boot up. Where should I put them?
You can add commands to "/usr/local/bcm/customer_config.soc". These lines will be executed every time bcm shell starts or restarts.
It is recommended to use command
/etc/init.d/S70bcm start | stop | restart

How can I upgrade software on another NAND flash in a Linux environment?
Connect the management port to a remote Linux computer on a L3 network (so they can "ping" each other). Power on MCS-2080 and wait for the OS to finish booting.
On the remote Linux computer, run:
scp ulmage_nand.img u-boot_nand.bin rootfs.ubi root@<mxn-0410_IP>:/tmp/
ssh root@<mxn-0410_IP> /usr/local/upgrade.sh <TARGET>
Where <mxn-0410_IP> is the IP address of the MXN-0410 management port; and <TARGET> is the element you want to upgrade, such as "all", "uboot", "kernel" or "rootfs".

4.2 Remote Managment via CMM

The Chassis Management Module (CMM) provides a remote management interface (via network) for the MCS-2080.

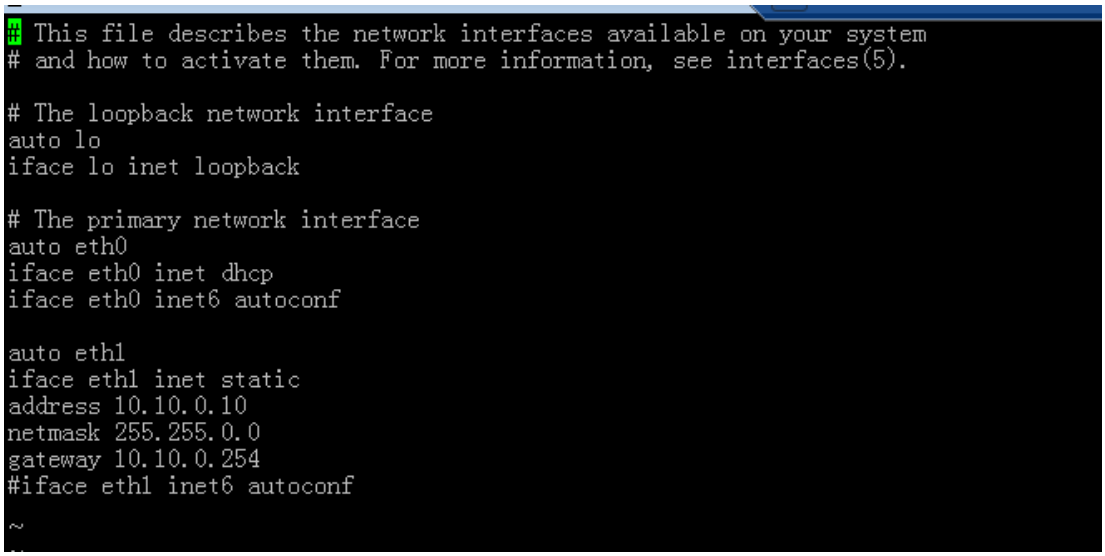


4.2.1 IPMI Topology

For a top-level view of the Chassis Management hardware topology for the MCS-2080 with MCN-1500 CPU nodes, see 1.6.3 IPMI Topology (MCS-2080 with MCN-1500).

4.2.2 Configuring the CMM IP Address

The CMM has two 1G Ethernet ports, one to the local switch and one to the front panel.



An example of Network Configuration is as follows:

To set eth0 to dhcp mode:

```
auto eth0
iface eth0 inet dhcp
iface eth0 inet6 autoconf
```

To set eth1 to static IP mode:

```
auto eth1
iface eth1 inet static
address 10.10.0.10
netmask 255.255.0.0
gateway 10.10.0.254
```

After editing, save the changes and restart the CMM. The settings will be applied.

4.2.3 Using IPMItool

The CMM provides an IPMI RMCP interface for users to manage the chassis remotely through the network. The following commands are fully compliant with IPMI v2.0.

Examples of IPMI commands

To get the CMM device ID:

```
root@jean:# ipmitool -I lan -H 172.20.5.150 -U admin -P admin raw 0x06 0x01
RAW RSP (15 bytes)
 20 01 02 07 02 bf 13 5f 00 10 36 dd 0b 01 00
```

To get the node's device ID (with IPMB Address 0x80):

```
root@jean:# ipmitool -I lan -H 172.20.5.150 -U admin -P admin -t 0x80 raw 0x06 0x01
RAW RSP (15 bytes)
 20 01 01 06 02 bf 13 5f 00 00 15 a2 00 00 00
```

To read the CMM sensor:

```
root@jean:# ipmitool -I lan -H 172.20.5.150 -U admin -P admin sensor get P1V
Locating sensor record...
Sensor ID              : P1V (0x30)
Entity ID              : 7.0
Sensor Type (Threshold): Voltage
Sensor Reading         : 0.990 (+/- 0) Volts
Status                 : ok
Lower Non-Recoverable  : 0.850
Lower Critical         : 0.900
Lower Non-Critical     : 0.950
Upper Non-Critical     : 1.050
Upper Critical         : 1.100
Upper Non-Recoverable  : 1.150
Positive Hysteresis    : 0.010
Negative Hysteresis    : 0.010
Assertion Events       :
Assertions Enabled     : lnc- lcr- lnr- unc+ ucr+ unr+
Deassertions Enabled   : lnc- lcr- lnr- unc+ ucr+ unr+
```

To read the node sensor:

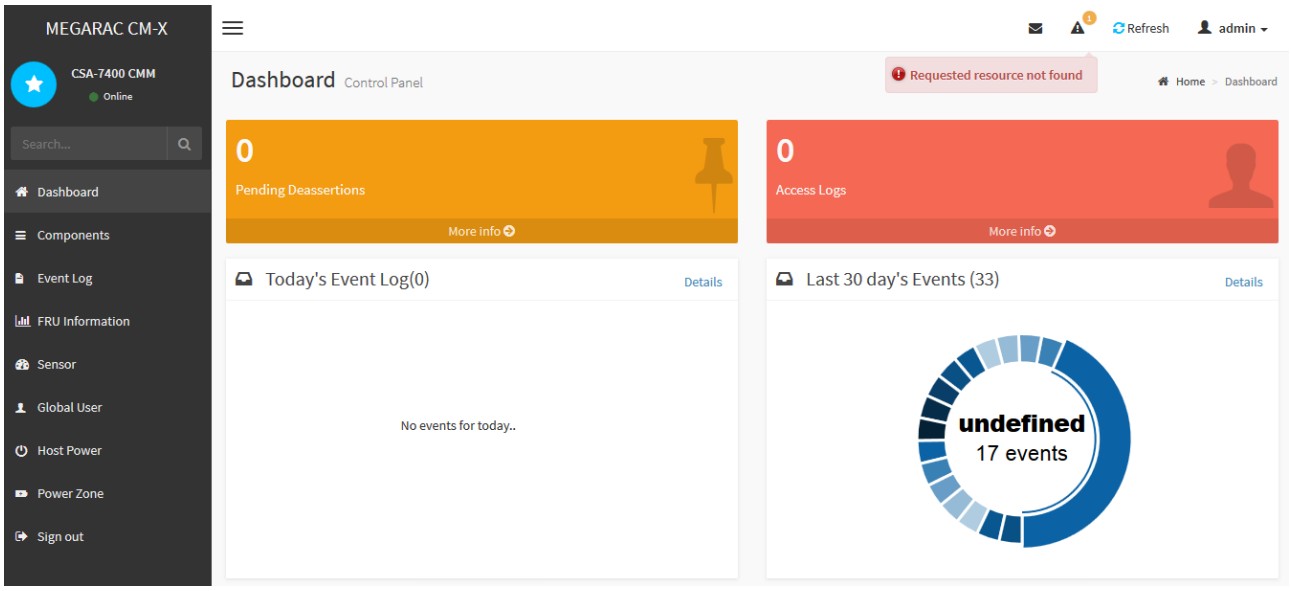
```
root@jean:# ipmitool -I lan -H 172.20.5.150 -U admin -P admin -t 0x80 sensor get LANA_3V3
Locating sensor record...
Sensor ID              : LANA_3V3 (0x6)
 Entity ID             : 7.0
 Sensor Type (Threshold)  : Voltage
 Sensor Reading        : 3.290 (+/- 0) Volts
 Status                : ok
 Lower Non-Recoverable : 2.790
 Lower Critical        : 2.890
 Lower Non-Critical    : 2.990
 Upper Non-Critical    : 3.590
 Upper Critical        : 3.690
 Upper Non-Recoverable : 3.790
 Positive Hysteresis   : Unspecified
 Negative Hysteresis   : Unspecified
 Assertion Events      :
 Assertions Enabled    : lnc- lcr- lnr- unc+ ucr+ unr+
 Deassertions Enabled  : lnc- lcr- lnr- unc+ ucr+ unr+
```

4.2.4 Using the Web UI

Managing the Chassis

To use the Megarac CM-X chassis management web UI,

The screenshot below shows the layout of the Megarac CM-X chassis management web UI:

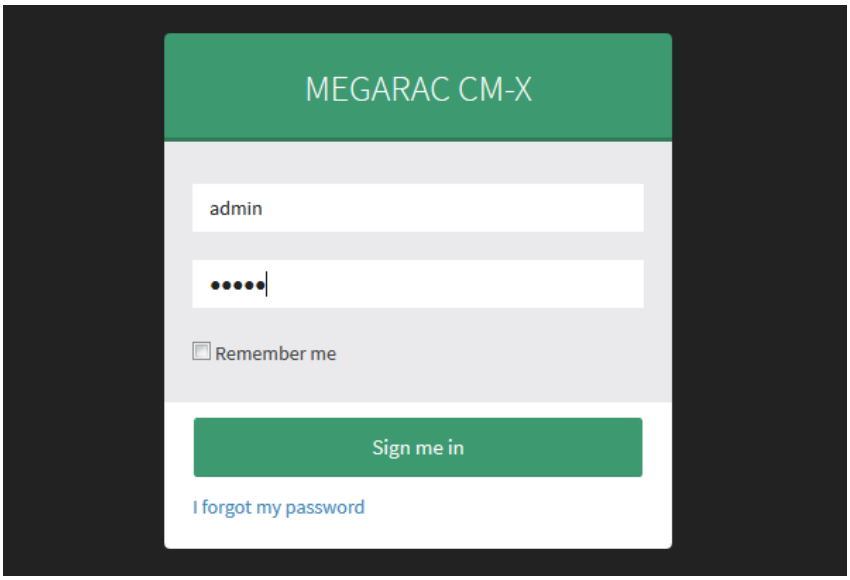


Login

To login to the CM-X application, follow the steps below:

1. Open a web brower (AMI recommends Firefox) and go to the IP address of the CMM
2. Enter the default user name and password.

   Username: admin
   Password: admin

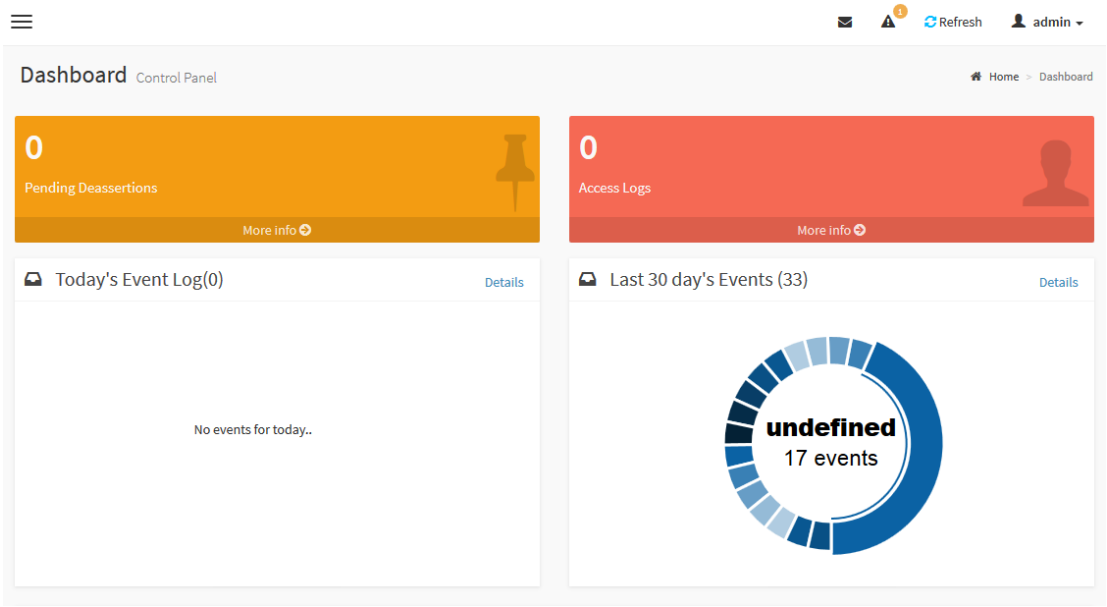


Logout

To logout of the CM-X UI:
Click “admin”->”Sign out” at the top right corner of the screen, or click “Sign out” in the bottom left corner.

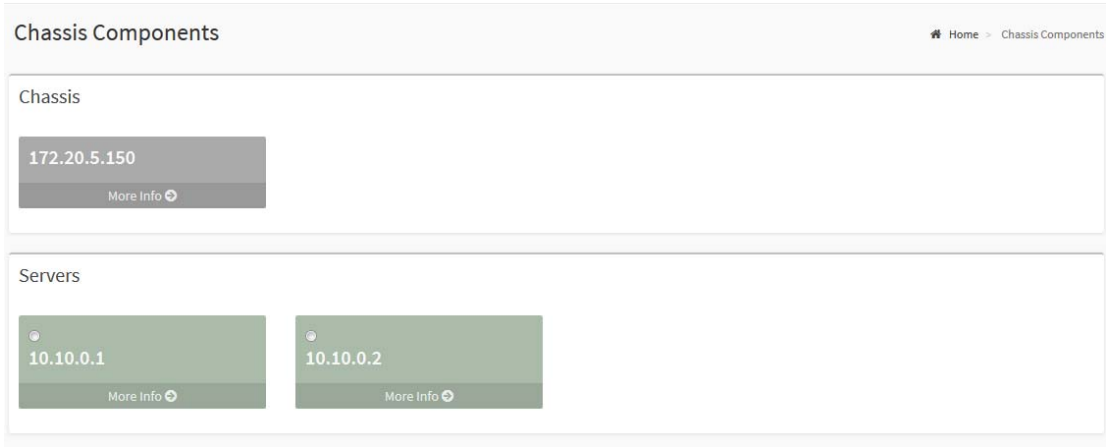
Dashboard

The Dashboard displays the overall status of the chassis as shown in the screenshot below.



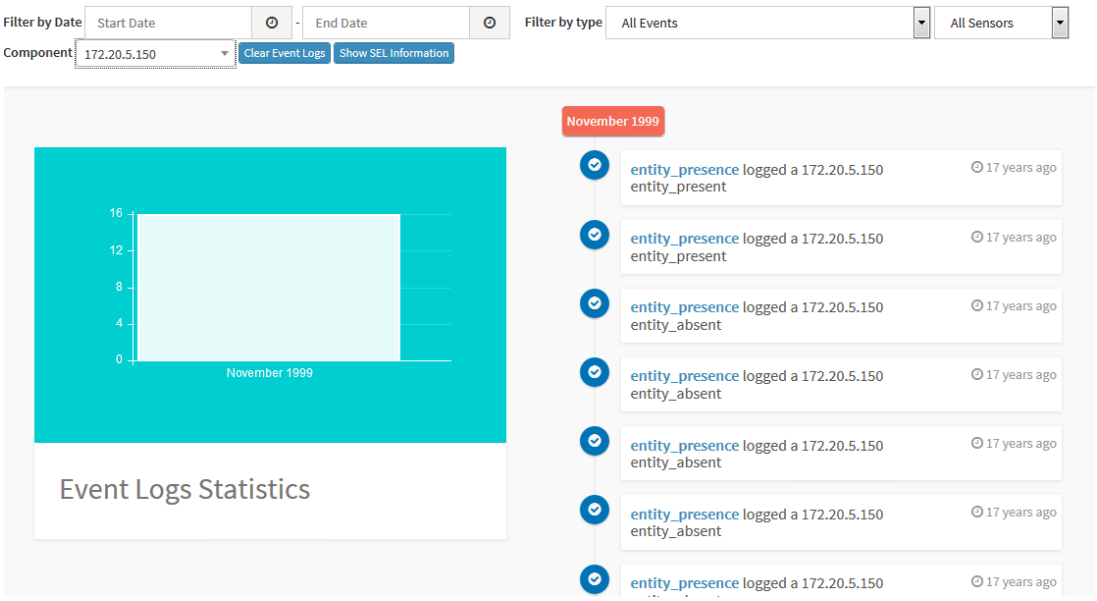
Chassis Components

Chassis Components shows the IPMC nodes summary information. The chassis node is the CMM itself. Server nodes are the BMC nodes on the modules.



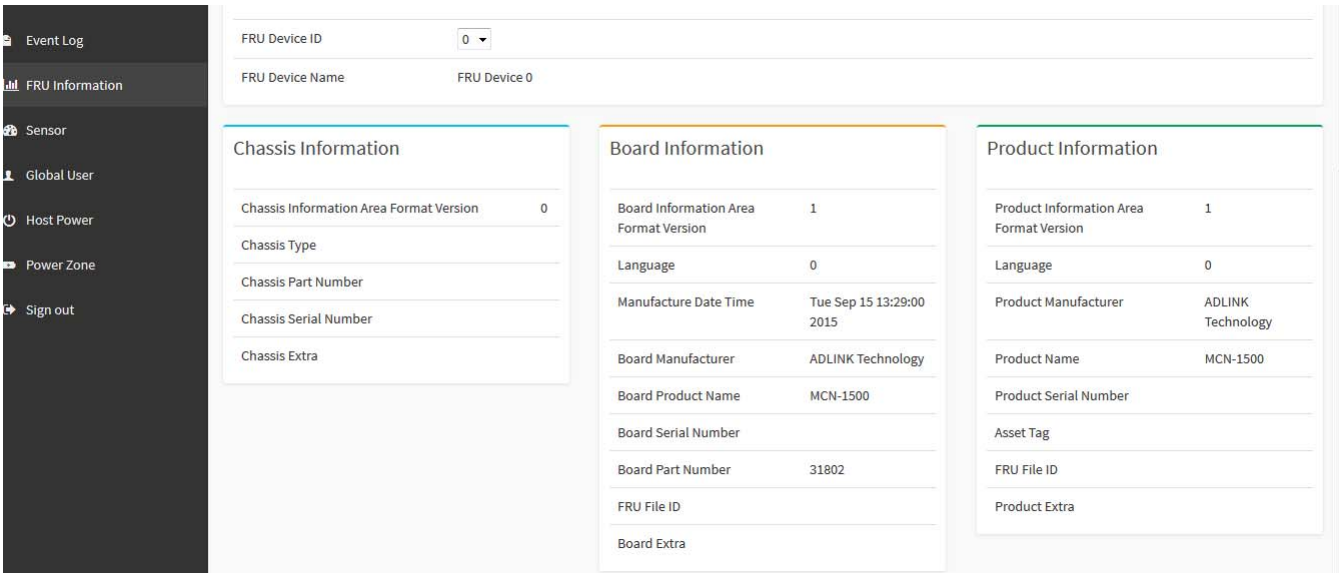
Event Log

An event is any significant occurrence in the system or in a program that requires the users to be notified or an entry to be added to a log. The event log service records application security and system events. From the events on the Event Log page, the user can obtain information about system hardware and components and can monitor security events on a local or remote computer. The event logs help the user to identify the source of current system problems and predict potential system problems.



FRU Information

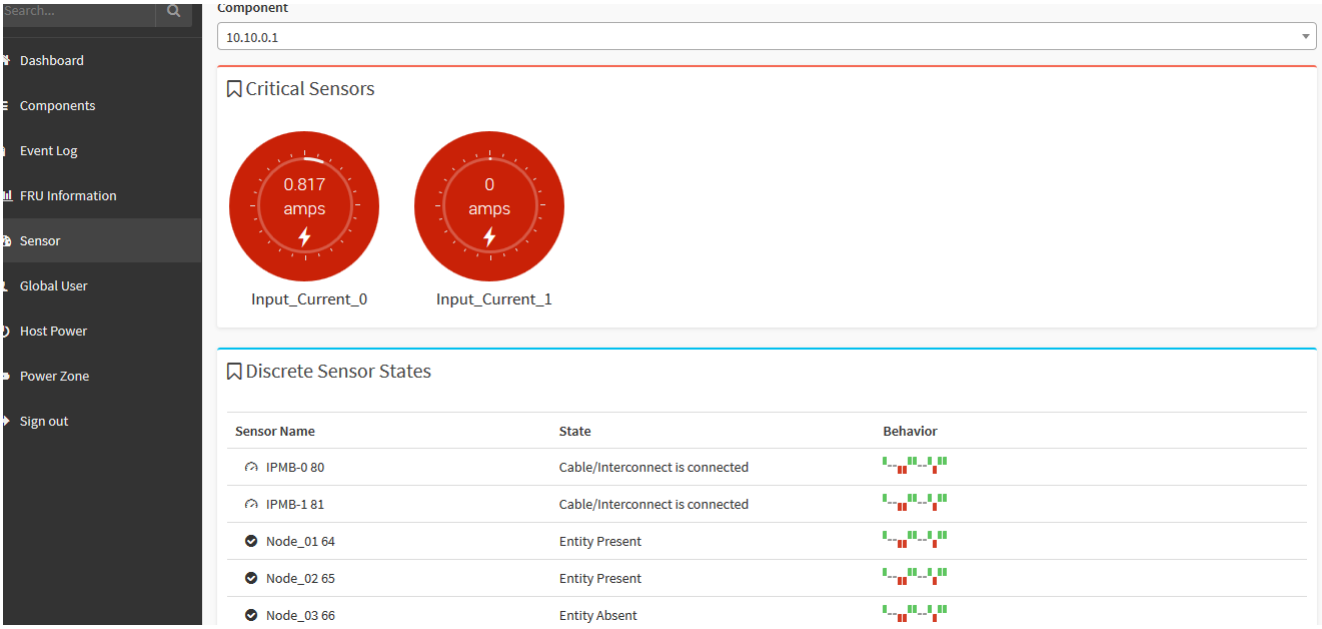
The FRU (Field Replacement Unit) Information page displays chassis FRU information. The information displayed on this page is internal, chassis, board, and product information of the selected device. To view FRU information, click FRU Information in the left pane and select the FRU device ID of the component to be checked.



Sensor

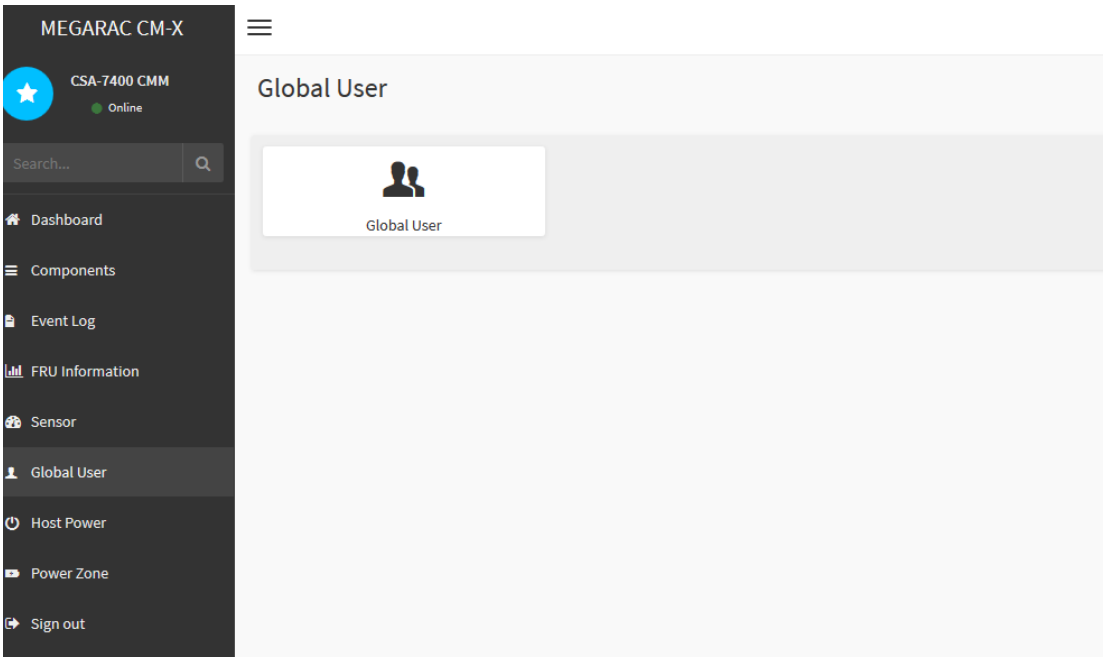
Sensor related information of the chassis is displayed on the Sensor page. Details such as type of sensors, sensor readings, and sensor status are shown on this page. To view the sensor readings, click Sensor in the left panel.

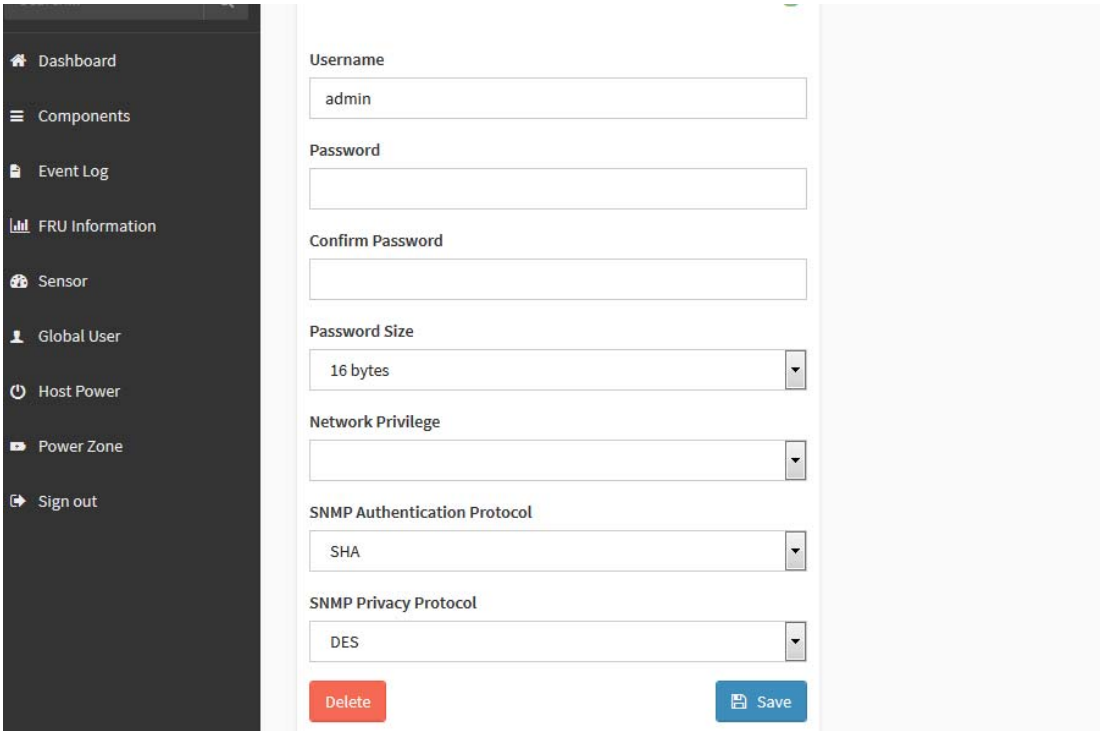
.



Global User

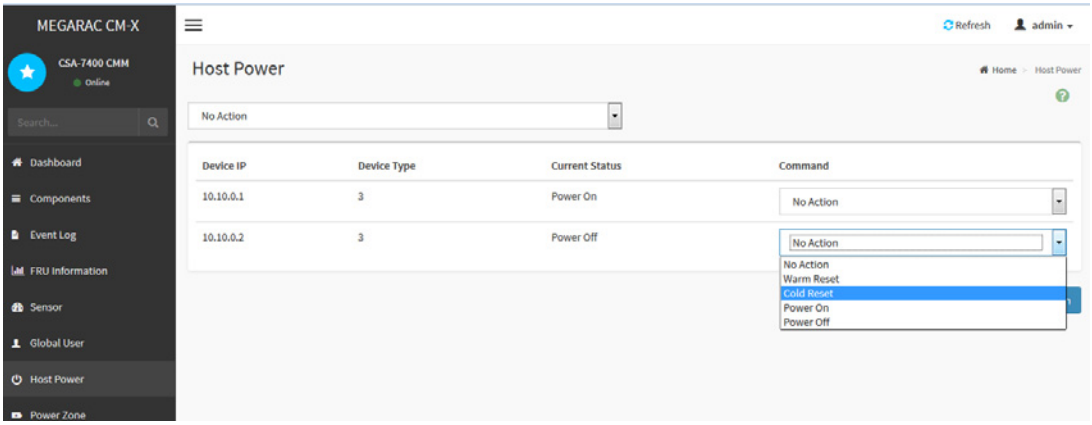
This page is used to set the web UI user properties, such as username/password.





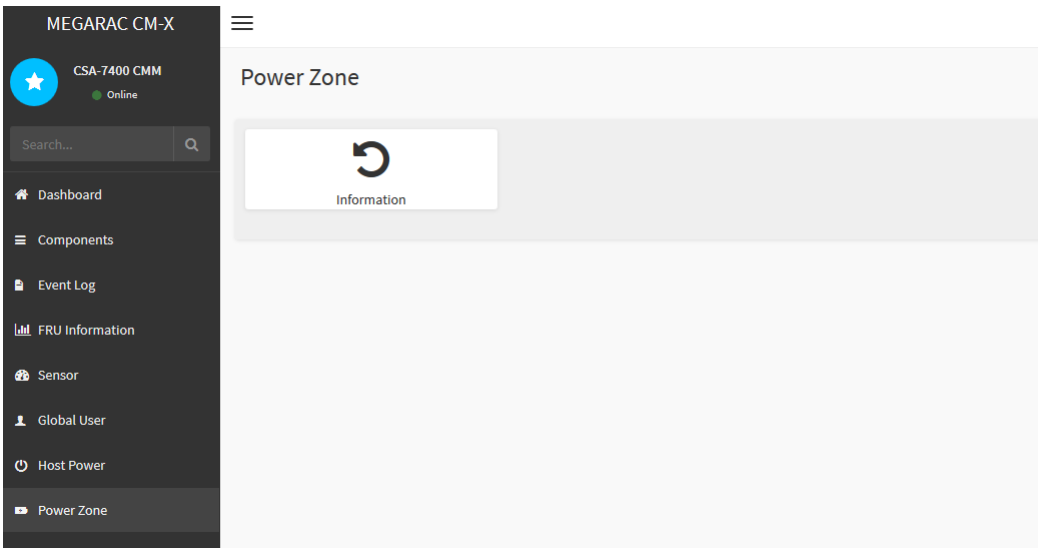
Host Power

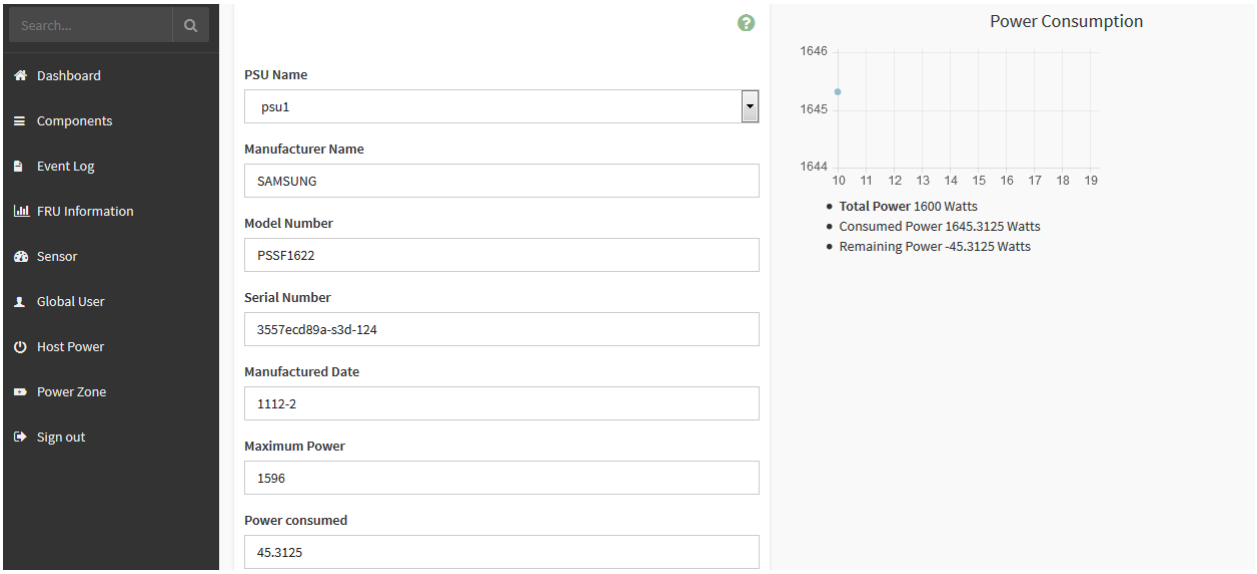
This page implement the chassis control functions. Users can execute chassis power control commands on the selected module.



Power Zone

This page shows chassis PSU information such power rating, power consumed, and fault state of PSU.





4.3 Serial over LAN via BMC

The 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

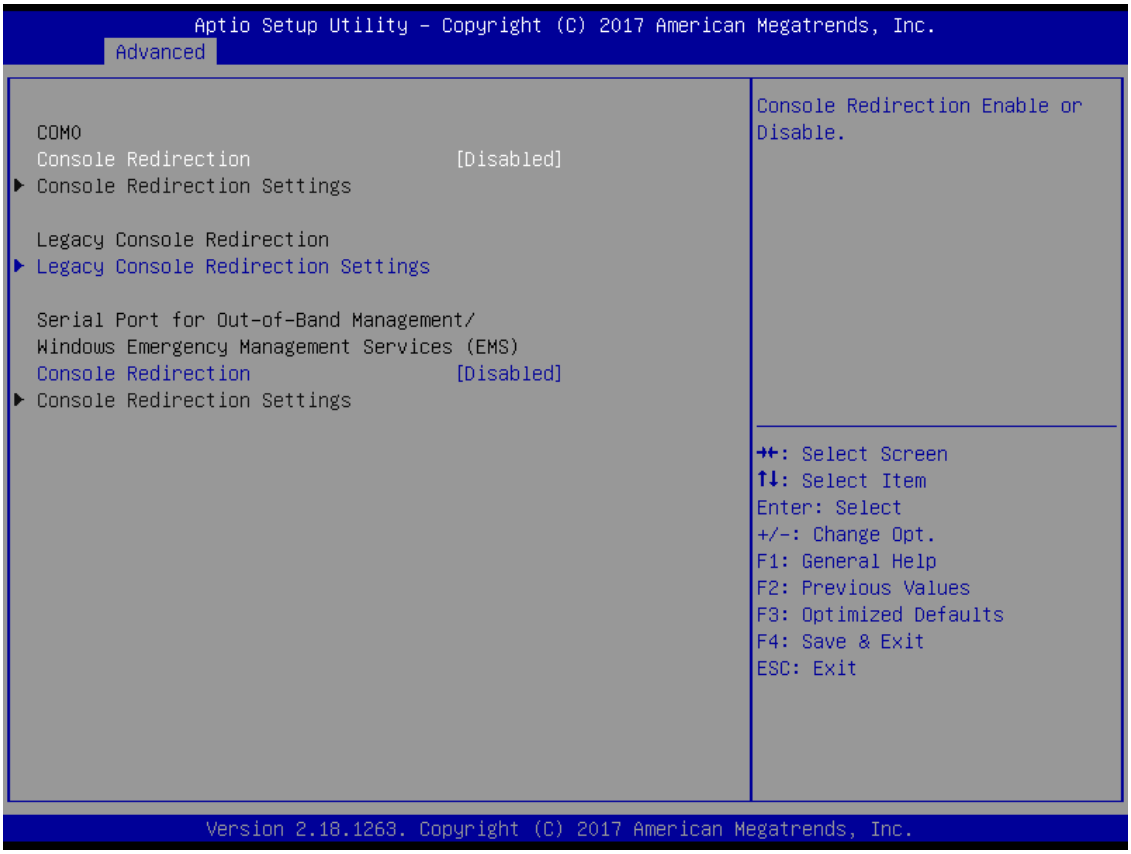
Configure BMC IP Address via Host

```
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
```

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.



4.3.3 Configuring OS for SOL

RHEL 5.6

Modify setting for redirection login parameter ttySn

```
# vim /etc/securetty -> Add "ttySx"
# strace /sbin/agetty ttySx 19200 vt100 {Enter}
```

4.3.4 Establishing SOL Session

```
# ipmitool-H xxx.xxx.xxx.xx –U USERNAME –P PASSWORD –I lanplus sol activate
```

4.4 Firmware Upgrade

4.4.1 Updating MCN-1500 BIOS

Use DOS Flash tool: Run PSPI to flash whole SPI BIN File
or Run PBIOS to flash only BIOS ROM

4.4.2 Updating BMC

In Windows

Yafuflash [OPTIONS] [MEDIUM] [FW_IMAGE_FILE]

In Linux

/ Yafuflash [OPTIONS] [MEDIUM] [FW_IMAGE_FILE]

For example: ,/Yafuflash –mbox bmc.ima

[OPTIONS]	
-info	Displays information about existing FW and new FW
-img-section-info	Displays information about current FW Sections.
-img-info	Displays information about current FW Versions.
-quiet	Use the option to show minimum flash progress details
-bios	Flash BIOS firmware
-cpld	Flash CPLD firmware
-force-boot	Option to FORCE BootLoader upgrade during full upgrade.
-preserve-config	Option to preserve Config Module during full upgrade.
-flash-XXX	Use this option to flash specfic section where XXX denotes name of the section.

[MEDIUM]	
-mbox	Option to use Mailbox Medium
-nw,-ip,-u,-p,-host	Option to use Network Medium
'-ip'	Option to enter IP, when using Network Medium

[MEDIUM]	
'-host'	Option to enter host name, When using Network Medium
'-u'	Option to enter UserName, When using Network Medium
'-p'	Option to enter Password, When using Network Medium

[FW_IMAGE_FILE]	
Firmware image file name	[rom.ima]

4.4.3 Updating the CMM Firmware

The CMM module provides two upgrade methods for the user to choose from.

- Option 1: Upgrade FW in uboot mode;
- Option 2: Upgrade FW with over network via AMI "Yafuflash" tool;

HW Environment and Preparation

Environment

1. PC
2. USB cable
3. Ethernet cable (UTP T568 RJ45)
4. 100M switch

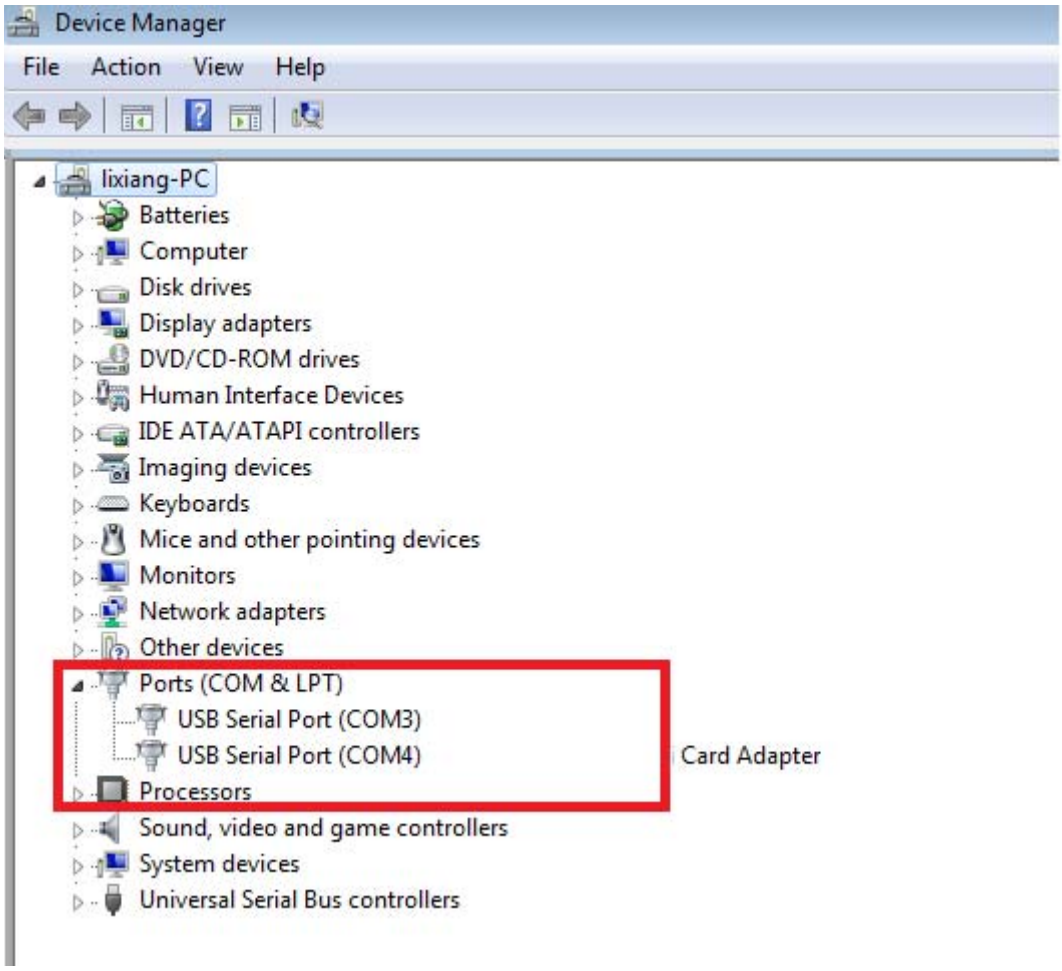
Preparation

1. Connect the PC to the MXN-0410 USB serial port with the USB cable.
2. Connect the PC to the MXN-0410 through a 100M Ethernet switch and power on the MCS-2080.

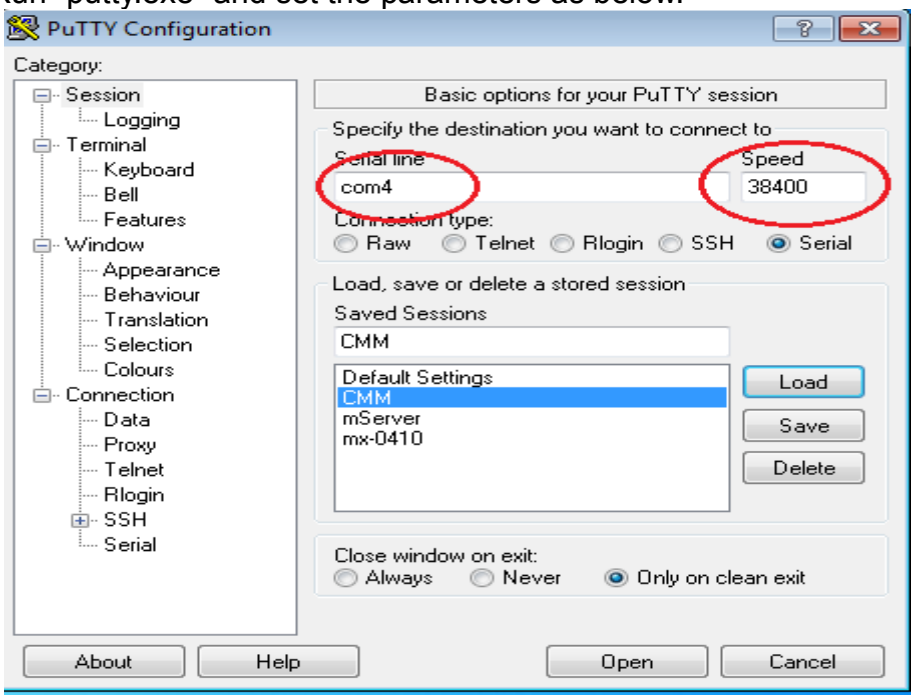
Option 1: Upgrade FW in uboot Mode

SW Environment and Preparation

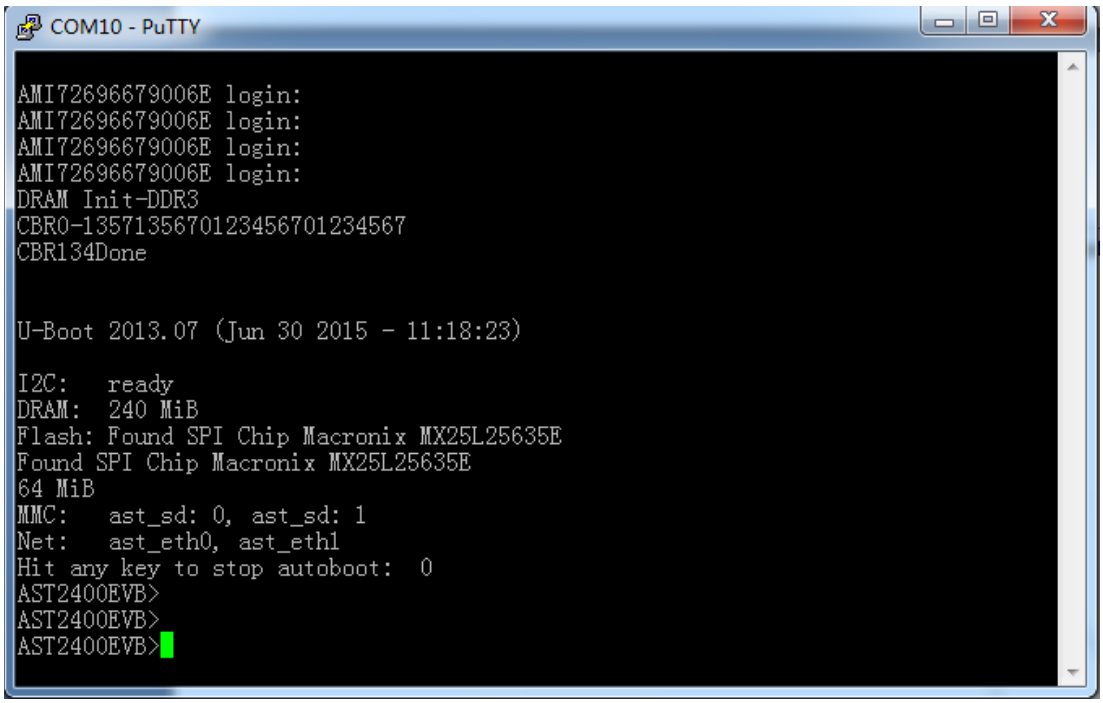
1. Install Windows 7 on the PC.
2. Install a TFTP server, such as “tftpd32.450”.
3. Copy the CMM FW image “rom.ima” to the TFTP server’s folder.
4. Launch the TFTP server.
5. Install PuTTY on the PC.
6. Check the USB Serial Port number in Windows Device Manager, and choose the highest number as the CMM console port number.



7. Run “putty.exe” and set the parameters as below.



8. Lauch PuTTY and reset the CMM board (push the reset button) to enter uboot shell.



Upgrade steps via uboot

1. Disable the uboot watchdog to avoid a reboot in case of timeout.

```
mw 1e78500c 0 1
```

2. Lauch PuTTY, and reset the CMM board(push the reset button) to uboot shell, and set the correct uboot parameters.

```
set baudrate 38400
set bootdelay 2
set bootfile "all.bin"
set eth1addr 00:30:64:43:EB:EB
set ethaddr  00:30:64:43:EB:EA
set fileaddr 42000000
set filesize 39274

set gatewayip 172.20.5.254
set serverip  172.20.5.69
set ipaddr    172.20.5.225
set netmask   255.255.255.0
set eeprom y
```

Note: Pay close attention to the highlighted lines above so that each board's MAC address is unique. Do not set the same MAC address for different boards.

3. Load the CMM FW image from TFTP server.

```
tftp 0x42000000 rom.ima
```

4. Program the CMM FW image to the onboard flash.

```
protect off all
erase all”
cp.b 0x42000000 0x20000000 0x2000000”;
cp.b 0x42000000 0x22000000 0x2000000”;
save”
reset
```

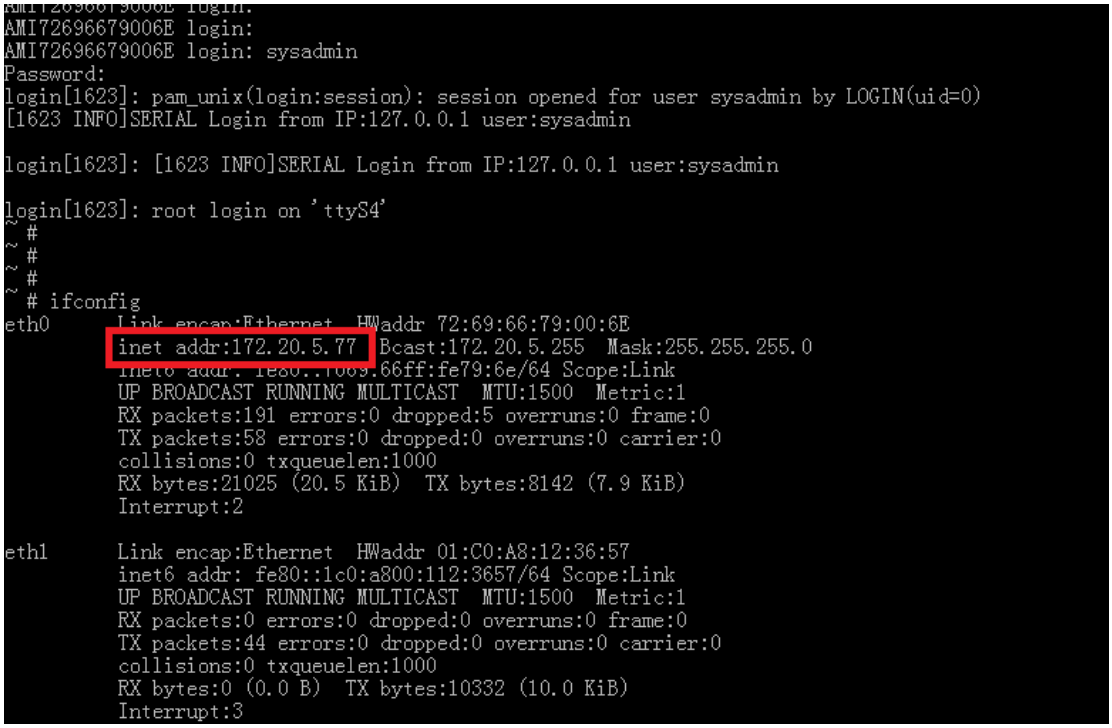
Option 2: Upgrade FW over network via AMI “Yafuflash” tool

SW Environment Preparation

1. Install Linux distribution onto the PC, such as Ubuntu 12
2. Copy the CMM FW image “rom.ima” to the PC
3. Copy the CMM upgrade tool “Yafuflash” to the PC

Upgrade steps via AMI “Yafuflash” tool

1. Power on the CMM board, and boot into Linux (username: sysadmin; password: superuser), and type “ifconfig” to check its IP address.



2. On the Linux PC , type the following command in xterm shell.

```
./Yafuflash -force-boot -nw -ip 172.20.5.77 -u admin -p admin rom.ima
```

5 MCN-1500 BIOS Setup

The following chapter describes basic navigation for the MCN-1500 BIOS setup utility.

5.1 Entering BIOS Setup

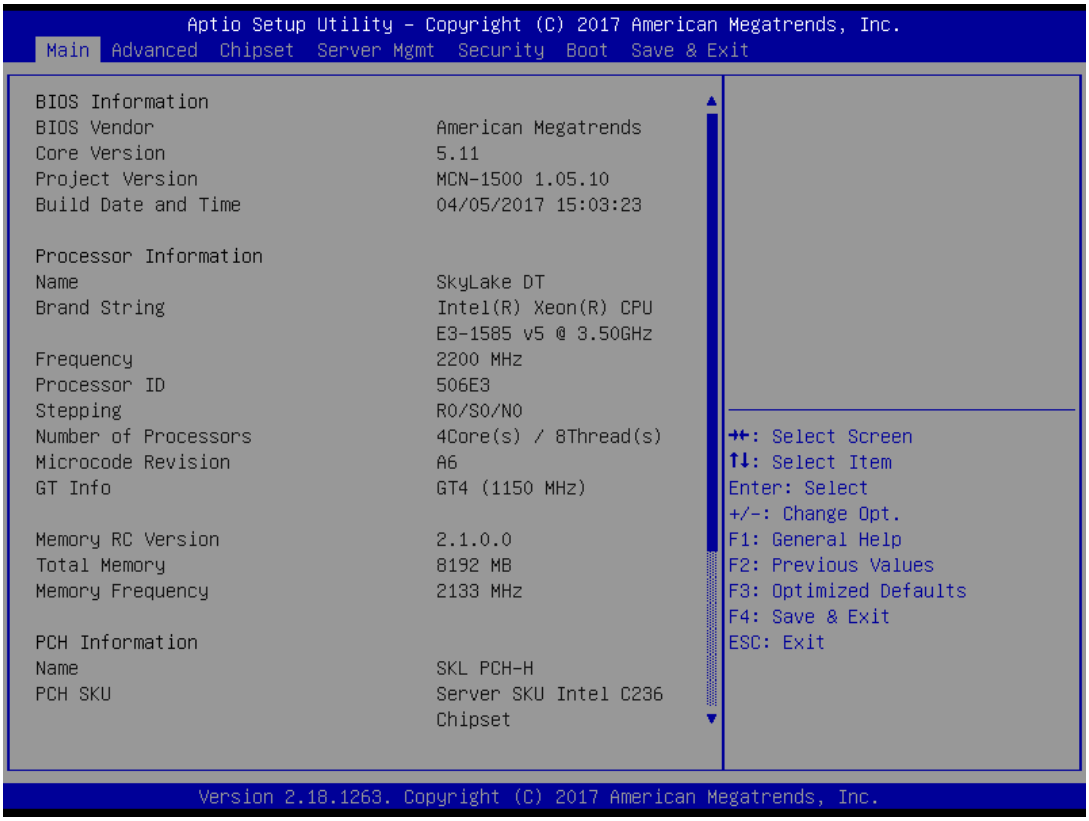
To enter the setup screen, follow these steps:

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.

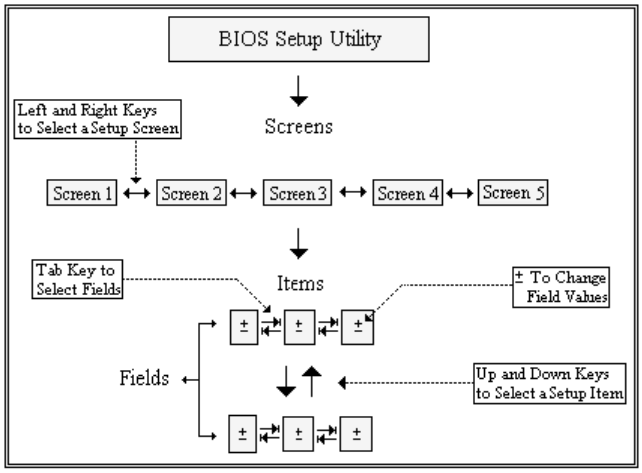
5.2 Setup Menu

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.



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.

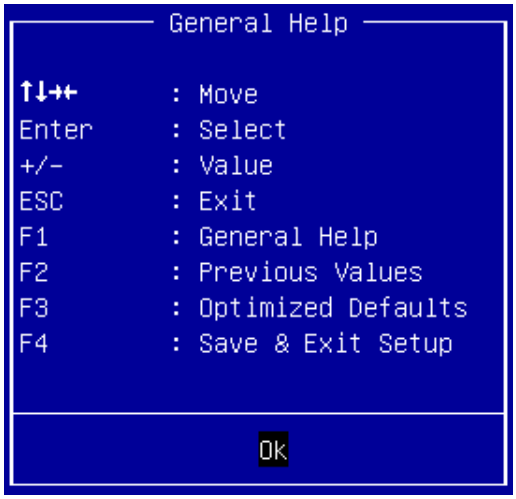


NOTE: There is a hot key legend located in the right frame on most setup screens.

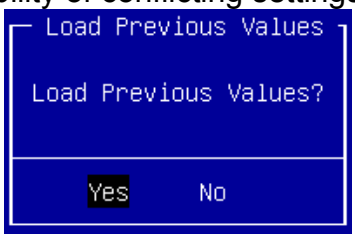
→←	Left/Right. The *Left and Right* < Arrow > keys allow you to select a setup screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
↑↓	Up/Down The *Up and Down* < Arrow > keys allow you to select a setup item or sub-screen.
+-	Plus/Minus The *Plus and Minus* < Arrow > keys allow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

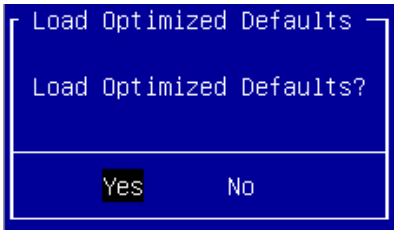
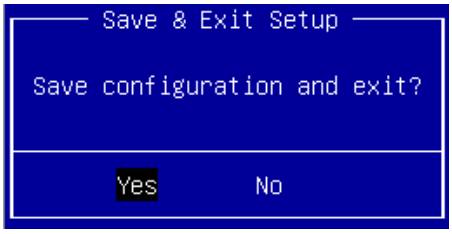
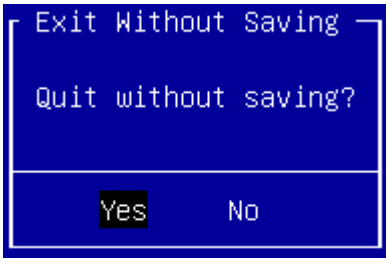
F1 The < F1 > key allows you to display the General Help screen. Press the < F1 > key to open the General Help screen.



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.

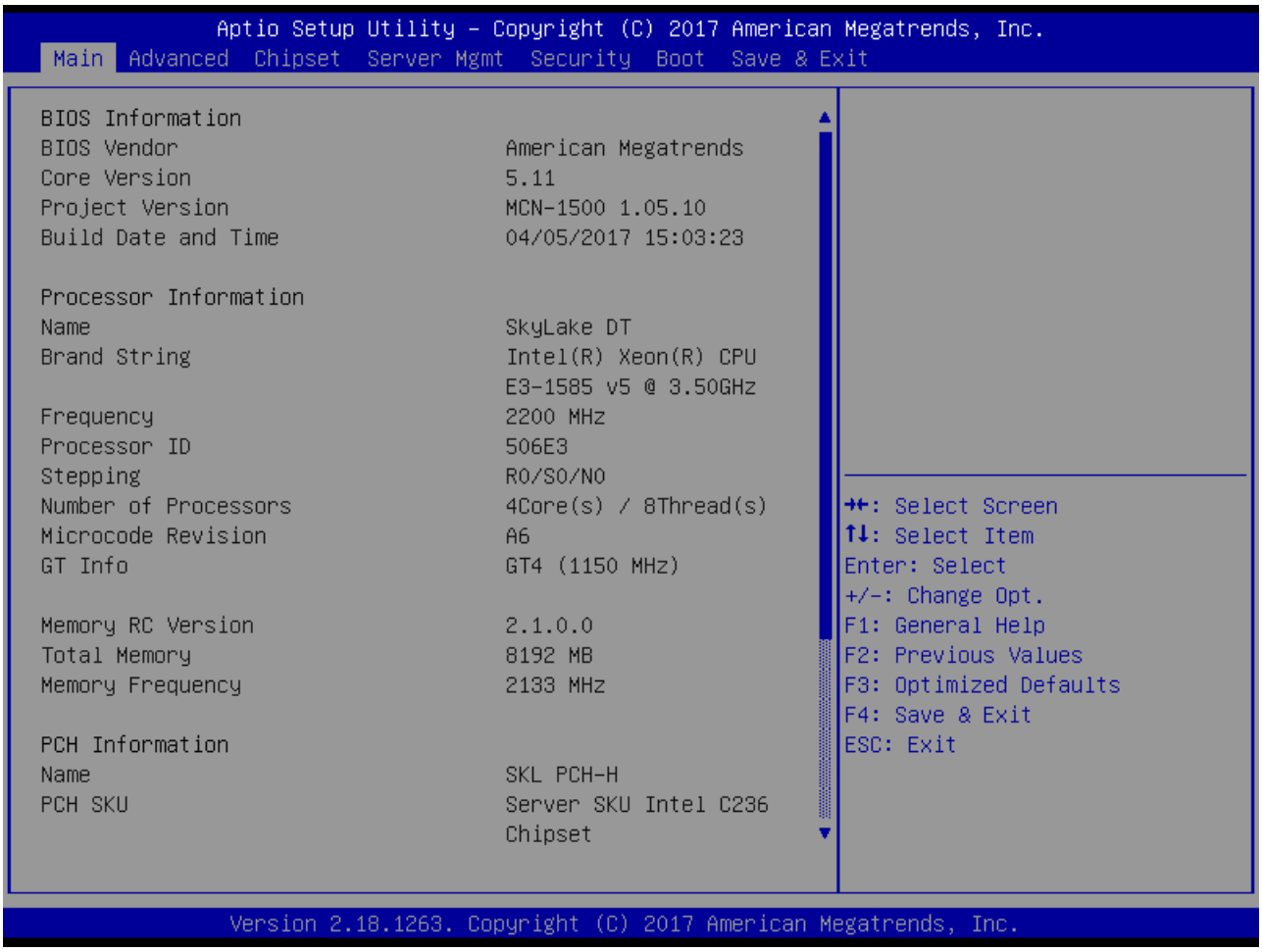


Press the < Enter > key to load previous values. You can also use the < Arrow > key to select *Cancel* and then press the < Enter > key to abort this function and return to the previous screen.

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.

5.3.1 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.



5.3.2 System & Board Info

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

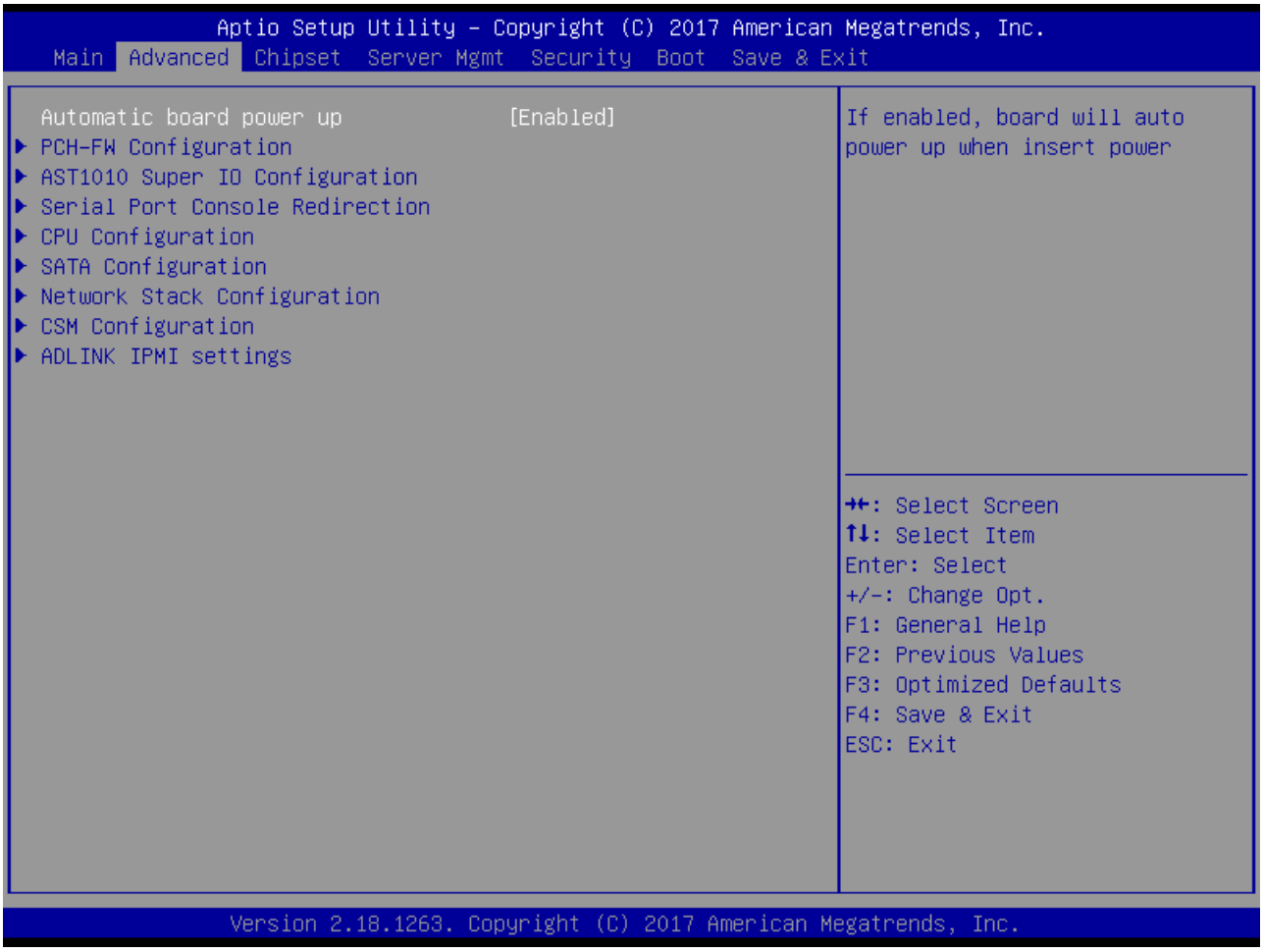
BIOS Vendor
Displays the BIOS vendor.
Core Version
Displays the BIOS core version.
Project Version
Displays the current BIOS version.
Project Version
Displays the current BIOS version.
Build Data and Time
Displays the BIOS build data and time.
System Language
Displays default system language.

5.3.3 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.

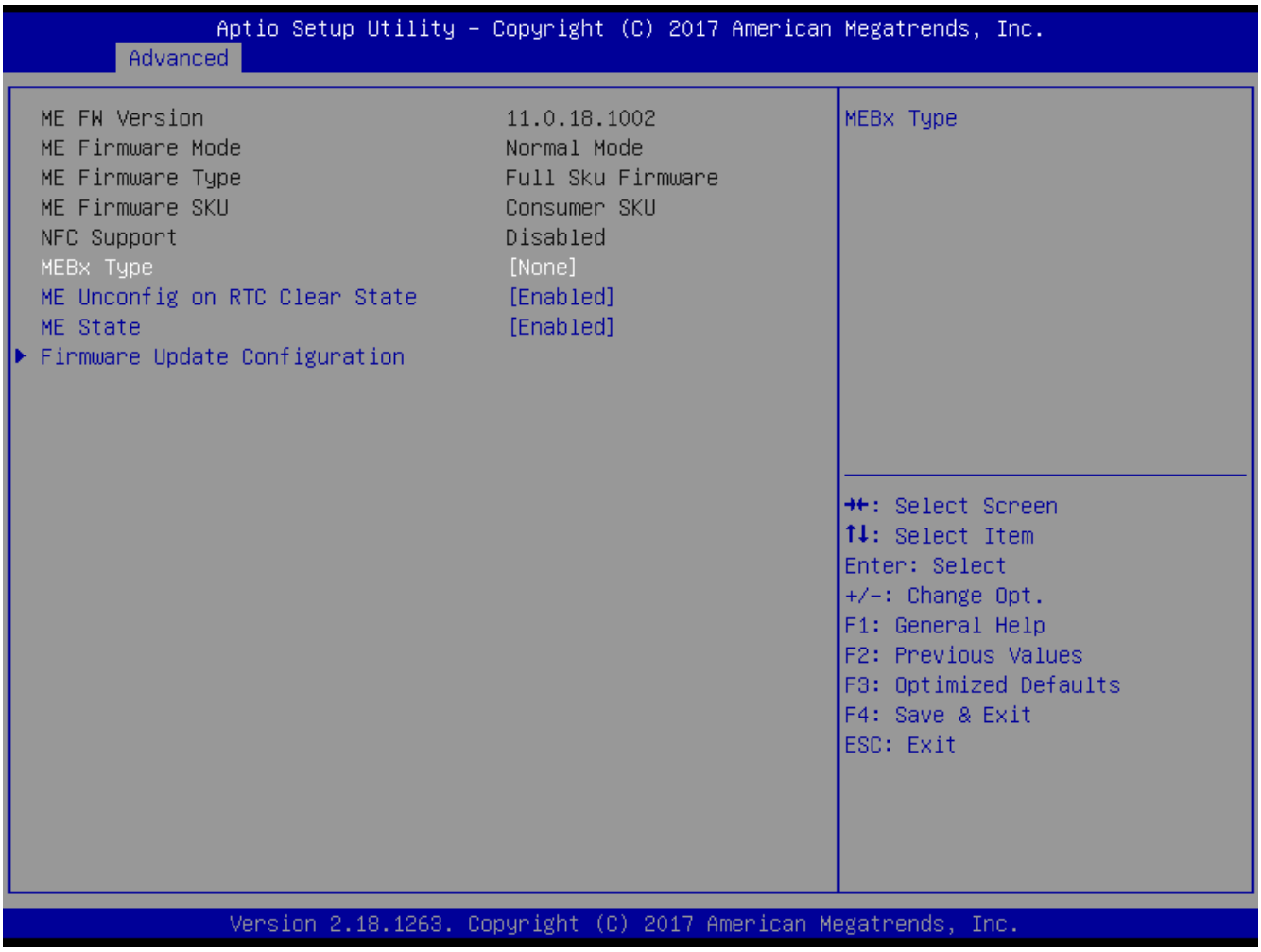
NOTE: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

5.4 Advanced BIOS Setup



5.4.1 PCH-FW Configuration

You can use this screen to view ME related information. For example, ME FW Version, ME Firmware Mode, ME Firmware Type, ME Firmware SKU..etc. An example of the ME screen is shown below.



MEBX Type

Choose MEBX Type.

ME Unconfig on RTC Clear State

Disabling this option will cause ME not to unconfigure on RTC clear.

ME State

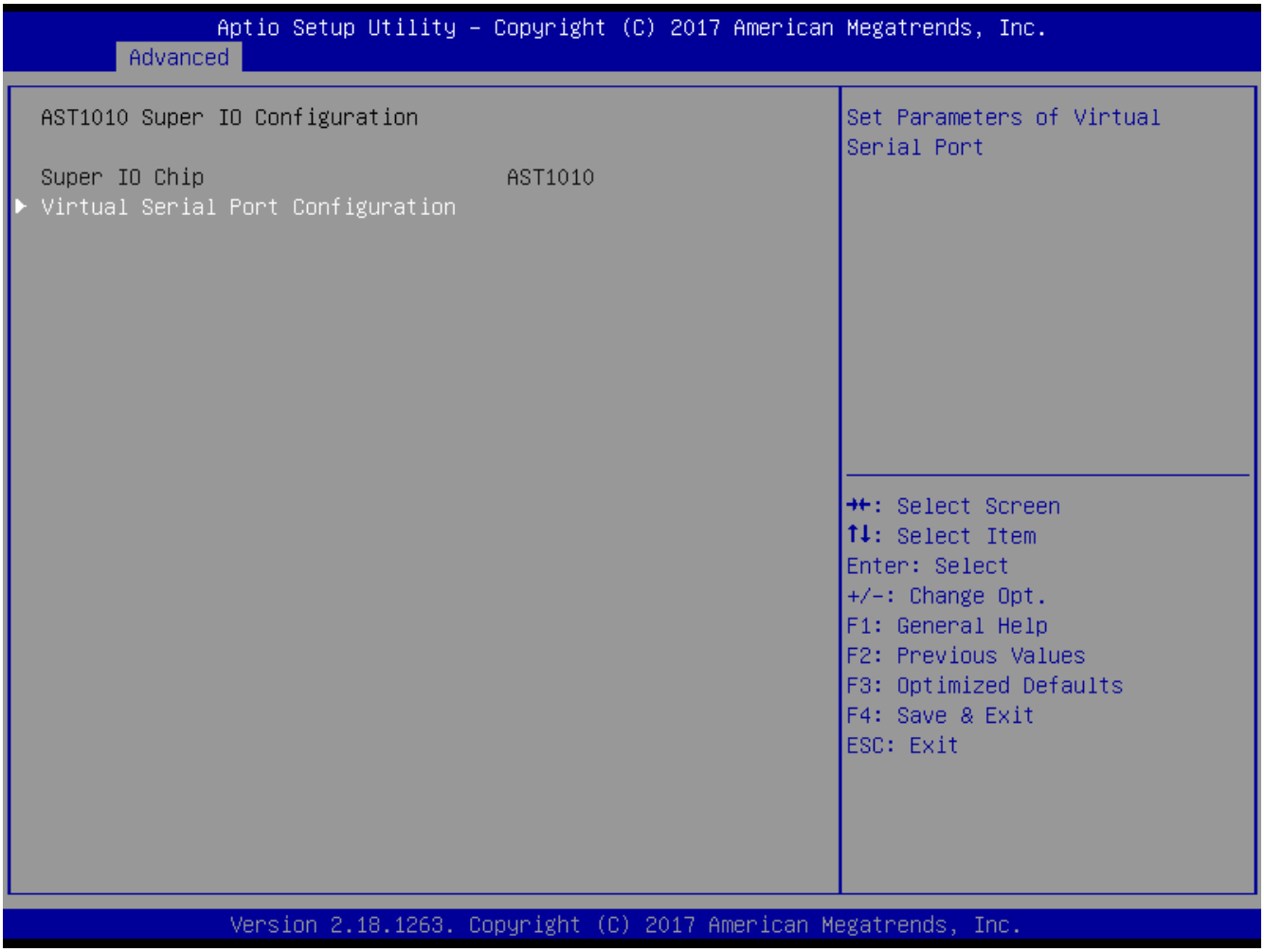
Set ME to Soft Temporary Disabled.

Firmware Update Configuration

Configure Management Engine Technology Parameters.

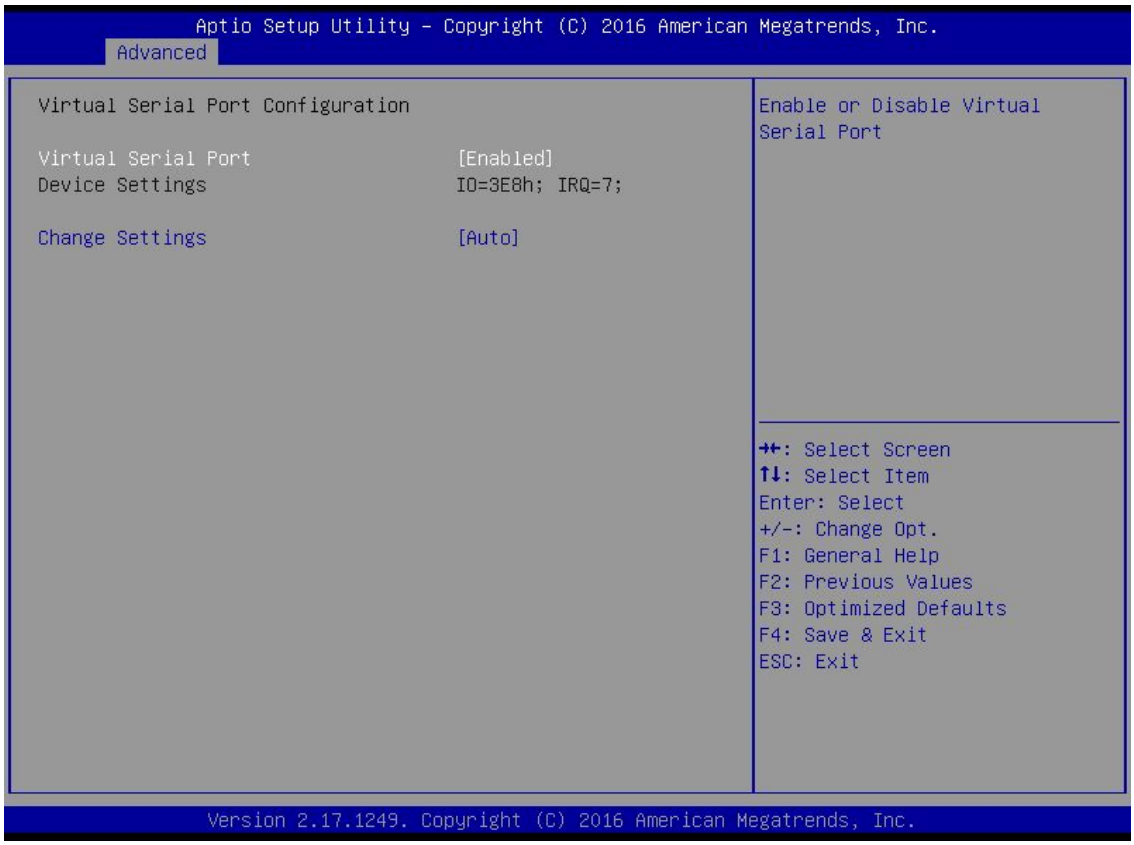
5.4.2 AST1010 Super IO Configuration

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.



Virtual Serial Port Configuration

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



Virtual Serial Port

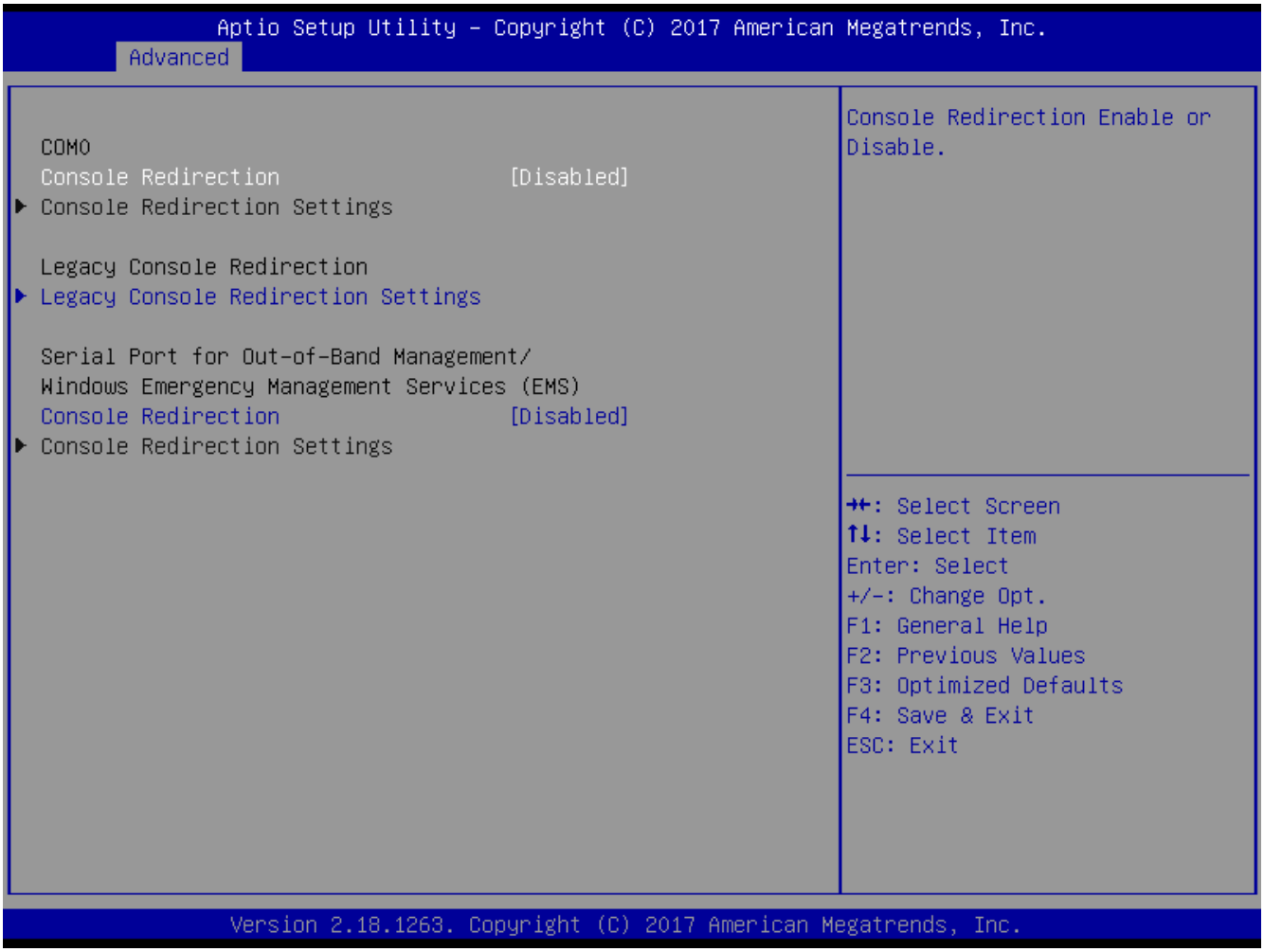
Enable or Disable Serial Port (COM). Set this value to **Enabled / Disabled**.

Change Settings

Set Parameters Virtual Serial Port.

5.4.3 Serial Port Console Redireciton

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.

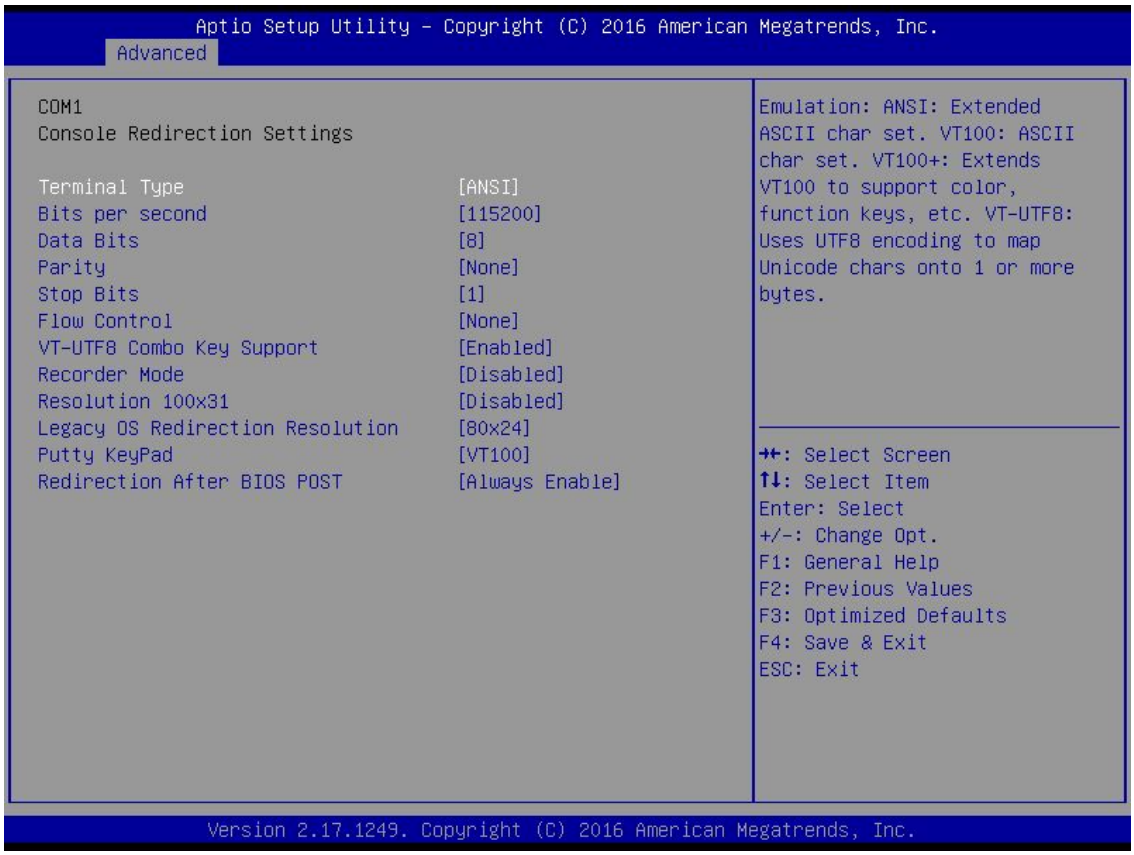


Console Redirection

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.



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.
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**.

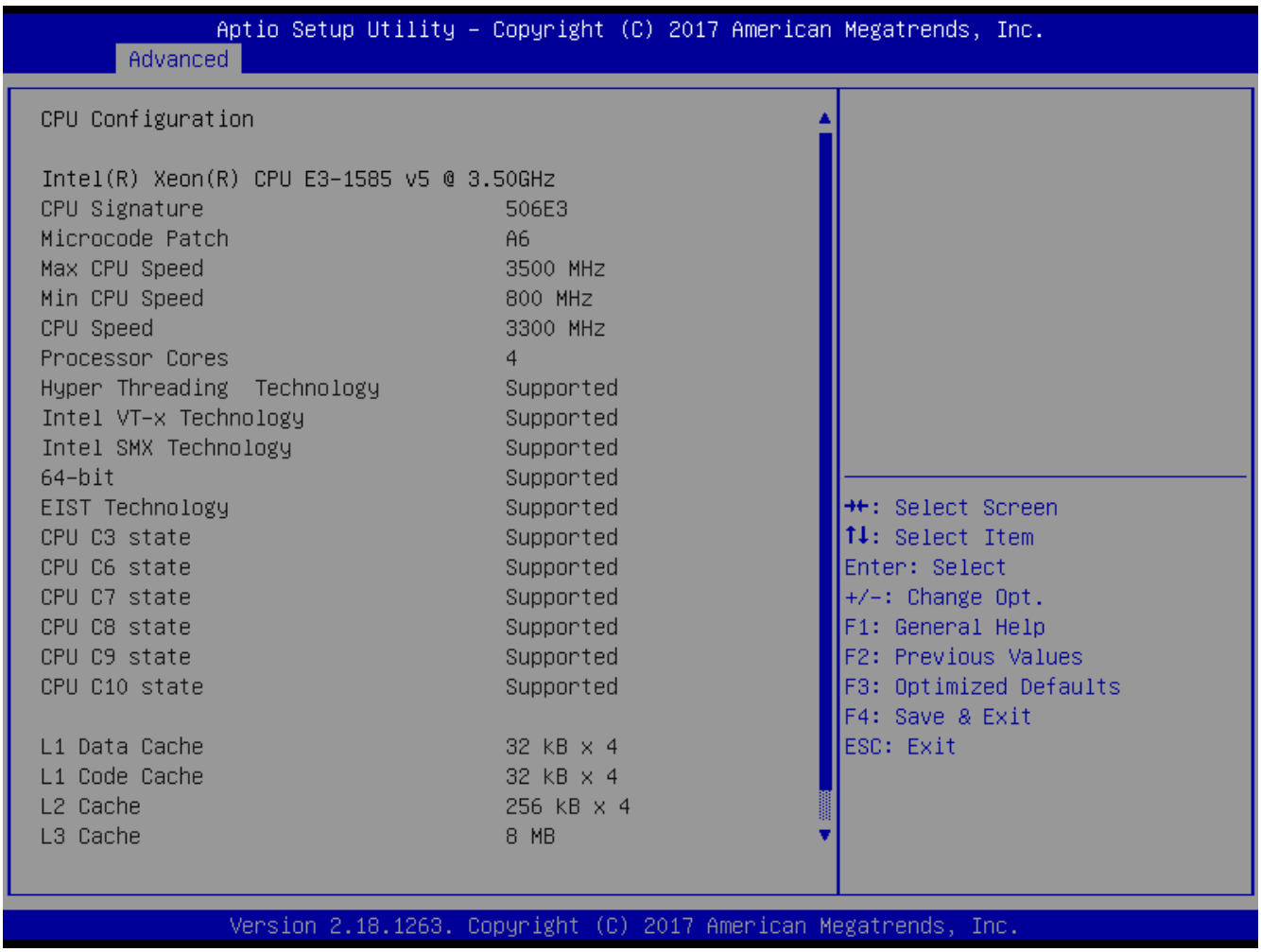
Putty KeyPad

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

Redirection After BIOS POST

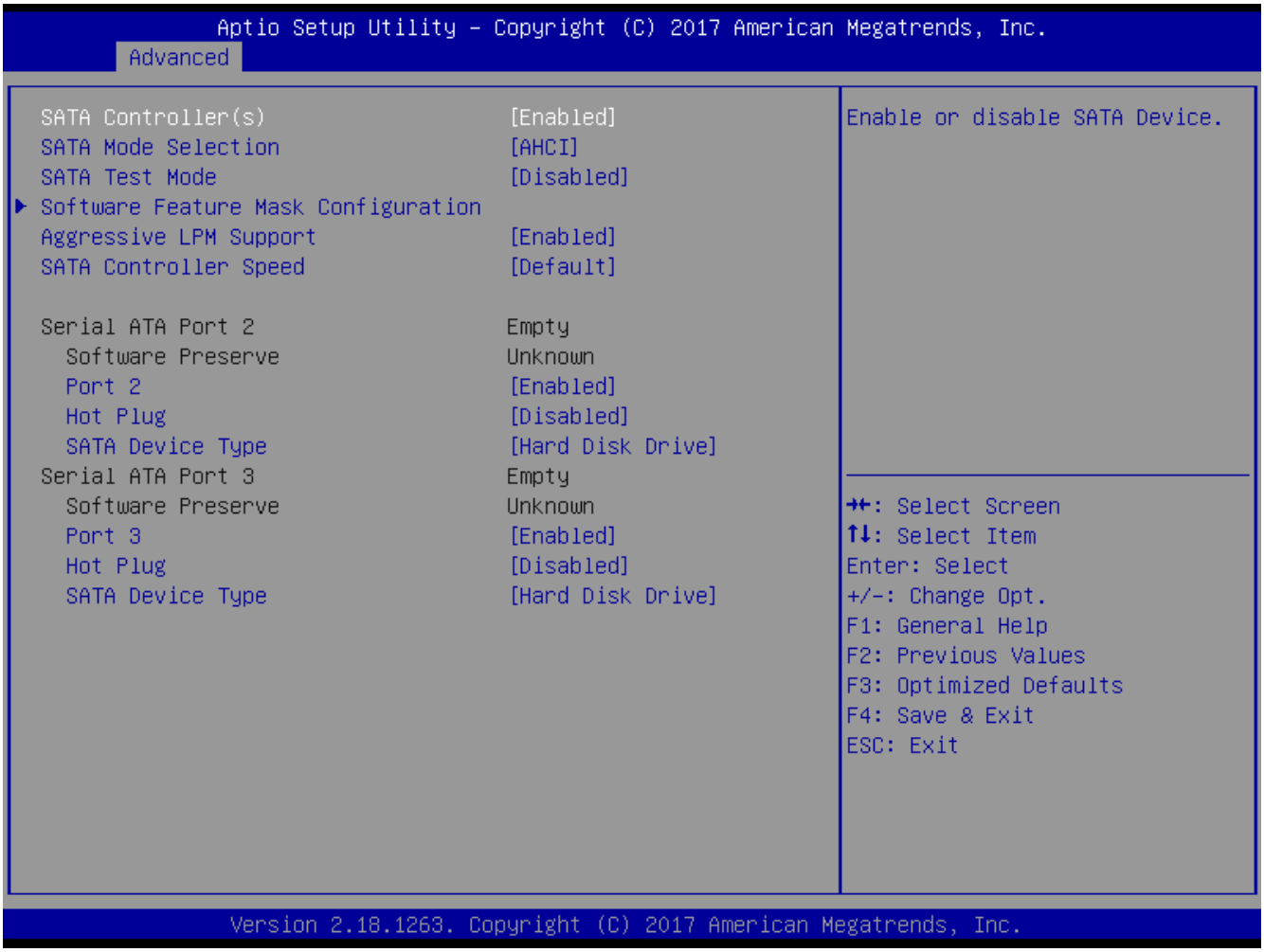
The settings specify if BootLoader is selected then legacy console redirection is disabled before booting to legacy OS. Default value is Always Enable which means legacy console redirection is enabled for legacy OS. Set this value to **Always Enable, BootLoader**.

5.4.4 CPU Configuration



5.4.5 SATA Configuration

You can use this screen to select options for the SATA Configuration Settings. An example of the SATA Configuration screen is shown below.



SATA Controller(s)

Enable or disable SATA device.

SATA Mode Selection

The SATA can be configured as **RAID** and **AHCI** mode.

SATA Port 0~4

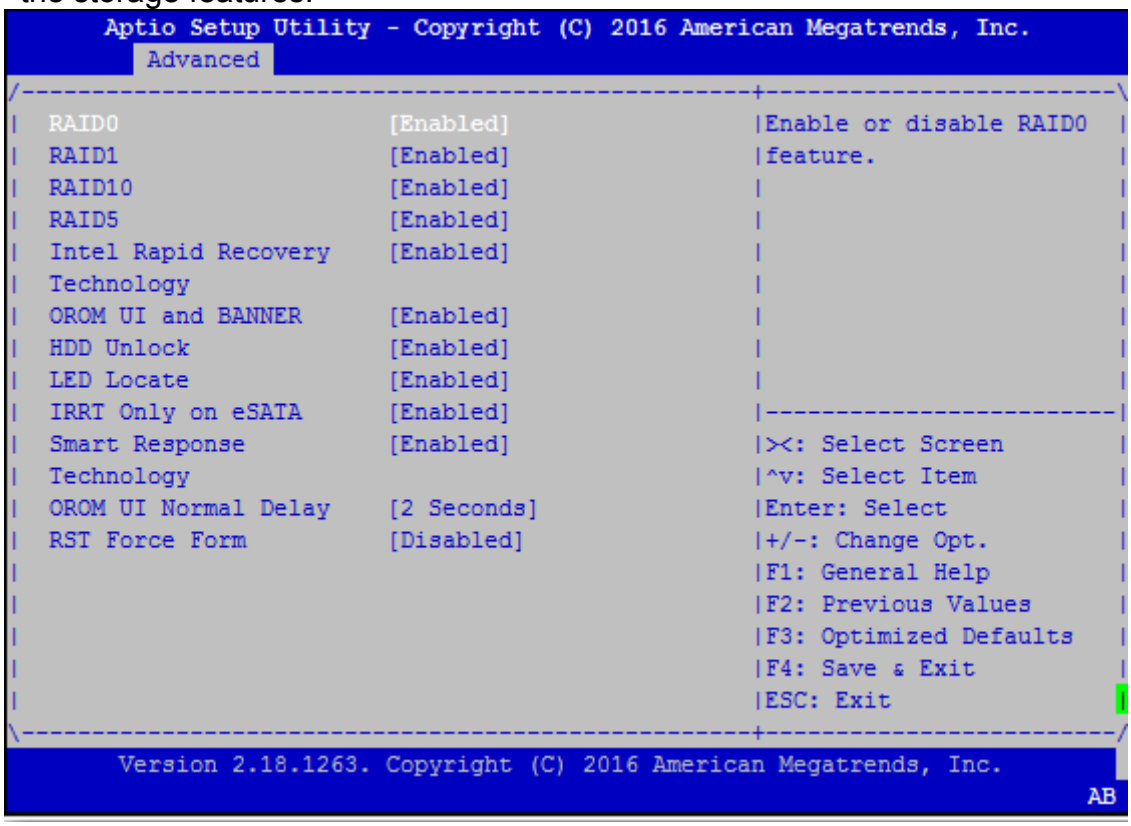
Display SATA device name string. Set this value to **Enable/Disable.**

Hot Plug

Appear when SATA mode as AHCI. SATA Ports Hot Plug support. Set this value to Enabled/Disabled**.**

Software Feature Mask Configuration

RAID OROM/RST driver will refer to the SWFM configuration to enable or disable the storage features.



RAID0

Enable or disable RAID0 feature.

RAID1

Enable or disable RAID1 feature.

RAID10

Enable or disable RAID10 feature.

RAID5

Enable or disable RAID5 feature.

Intel Rapid Recovery Technology

Enable or disable Intel Rapid Recovery Technology.

OROM UI and BANNER

If enabled, the OROM UI is shown. Otherwise, no OROM banner or information will be displayed if all disks and RAID volumes are Normal.

HDD Unlock

If enabled, the HDD password unlock in the OS is enabled.

LED Locate

If enabled, the LED/SGPIO hardware is attached and ping to locate feature is enabled on the OS.

IRRT Only on eSATA

If enabled, then only IRRT volumes can span internal and eSATA drives. If disabled, then any RAID volume can span internal and eSATA drives.

Smart Response Technology

Enable or disable Smart Response Technology.

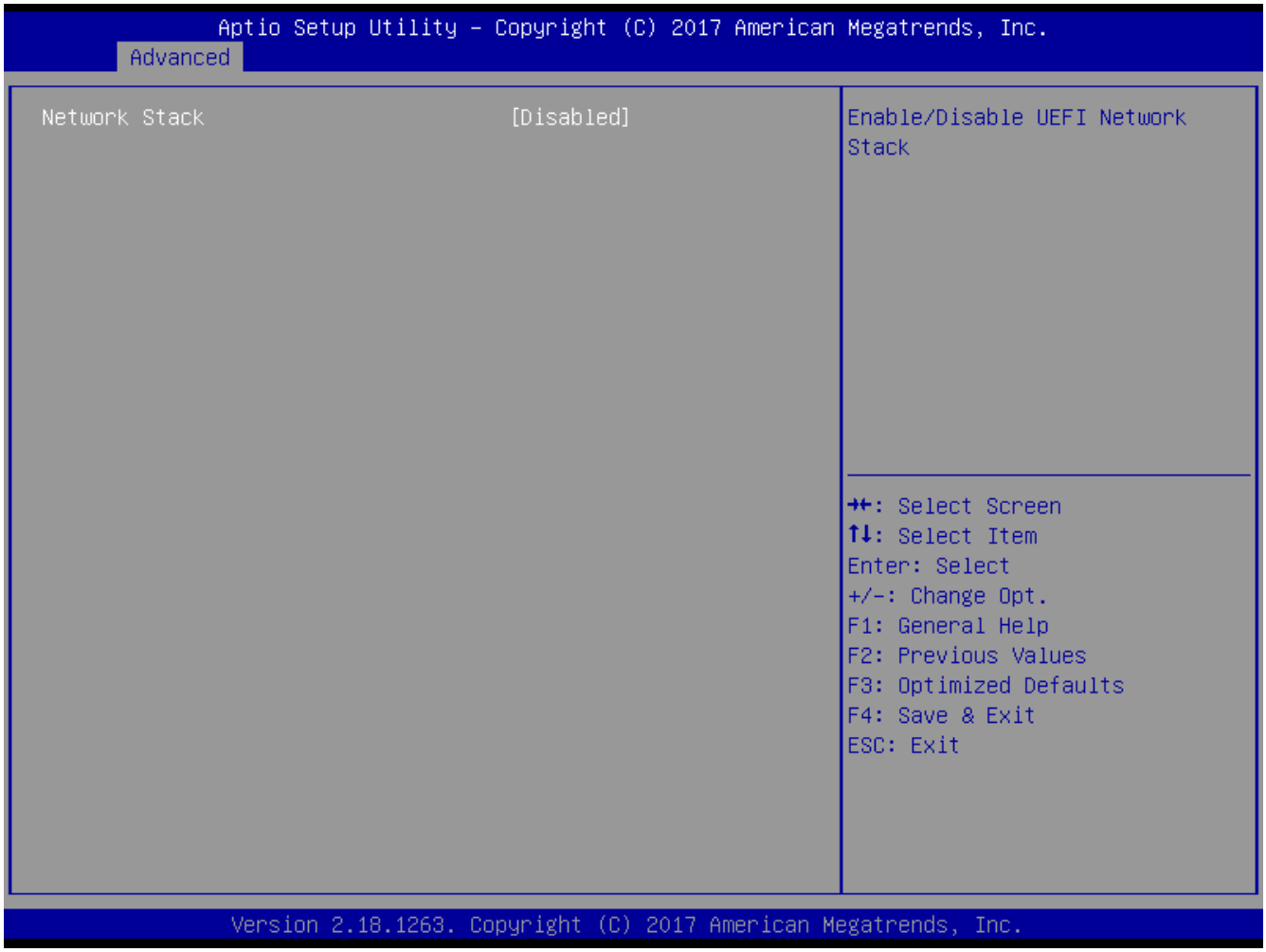
OROM UI Normal Delay

If enabled, indicates the delay of the OROM UI Splash Screen under normal status.

RST Force Form

Enable/Disable Form for Intel Rapid Storage Technology.

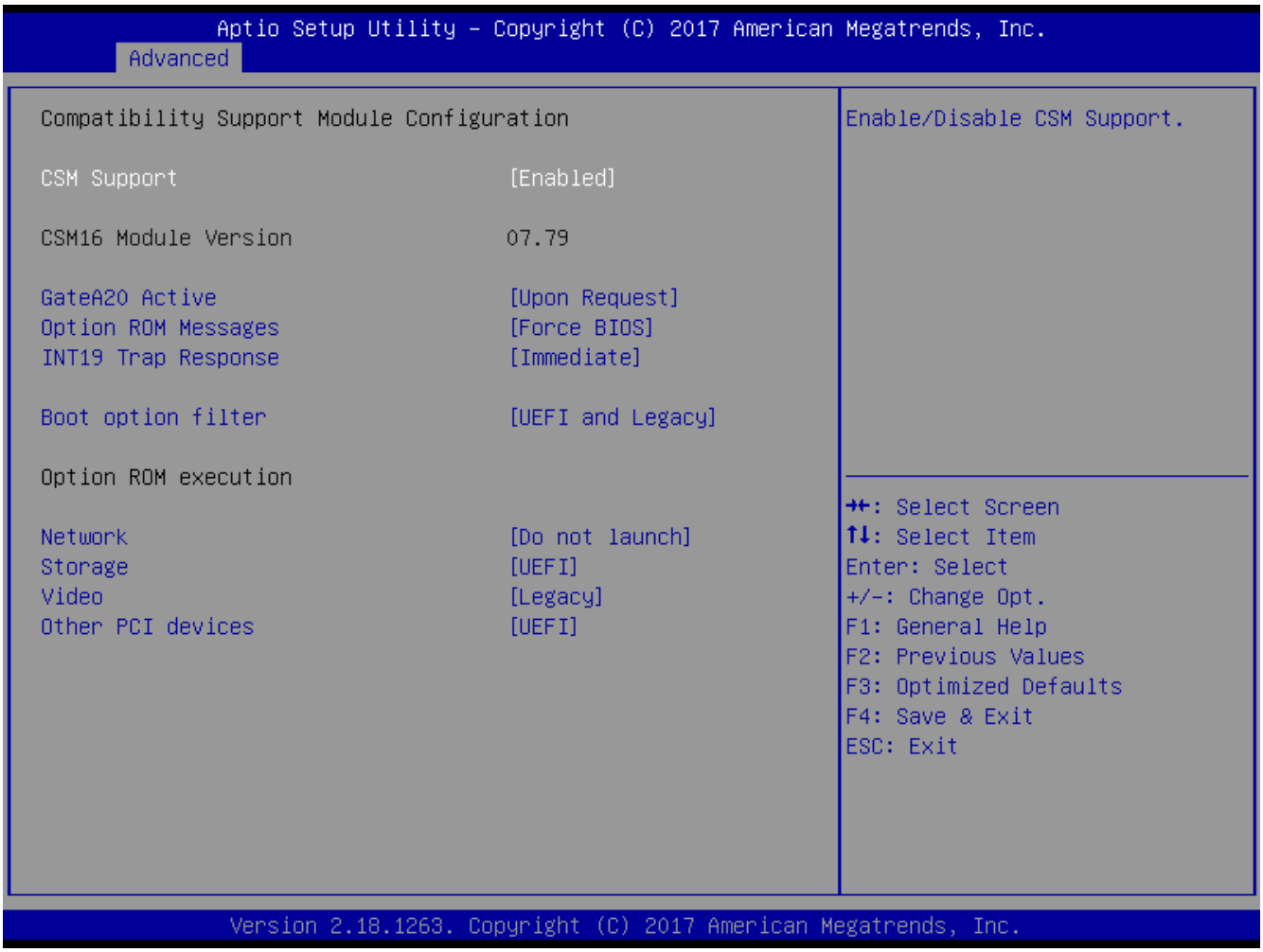
5.4.6 Network Stack Configuration



Network Stack

Enable/Disable UEFI Network Stack.

5.4.7 CSM Configuration



CSM Support

Enable/Disable CSM Support.

GateA20 Active

Upon Request: GA20 can be disabled using BIOS services. Always: do not allow disabling of GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

Set the display mode for Option ROM.

INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE - execute the trap right away; POSTPONED - execute the trap during legacy boot.

Boot Option Filter

This option controls Legacy/UEFI ROM priority. Set this value to UEFI and Legacy, Legacy only, UEFI only.

Option ROM Execution

Network

Controls the execution of UEFI and Legacy PXE OpROM. Set this value to Do not launch, Legacy, UEFI.

Storage

Controls the execution of UEFI and Legacy PXE OpROM. Set this value to Do not launch, Legacy, UEFI.

Video

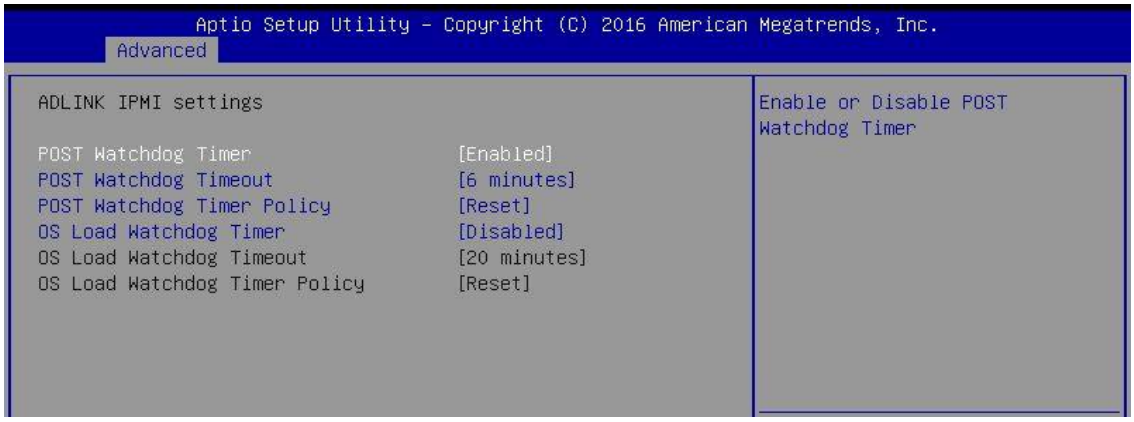
Controls the execution of UEFI and Legacy PXE OpROM. Set this value to Do not launch, Legacy, UEFI.

Other PCI devices

Determines OpROM execution policy for devices other than Network, Storage, or Video. Set this value to Disable, Legacy, UEFI.

5.4.8 ADLINK IPMI Setting

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

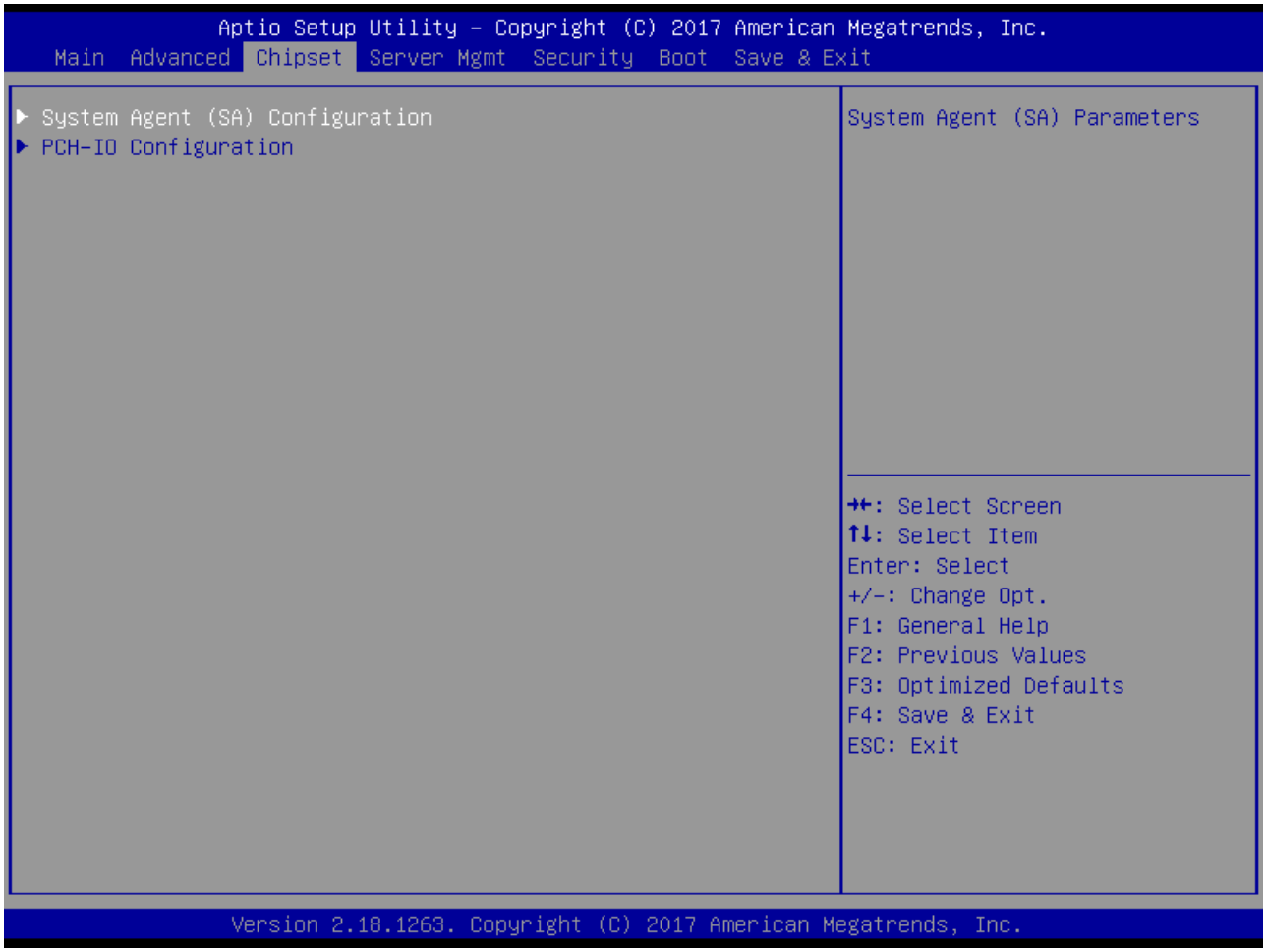
Select the time value for OS Watchdog Timer Expiration value. Set this value to **5 minutes/10 minutes/15 minutes/20 minutes.**

OS Load Watchdog Timer Policy

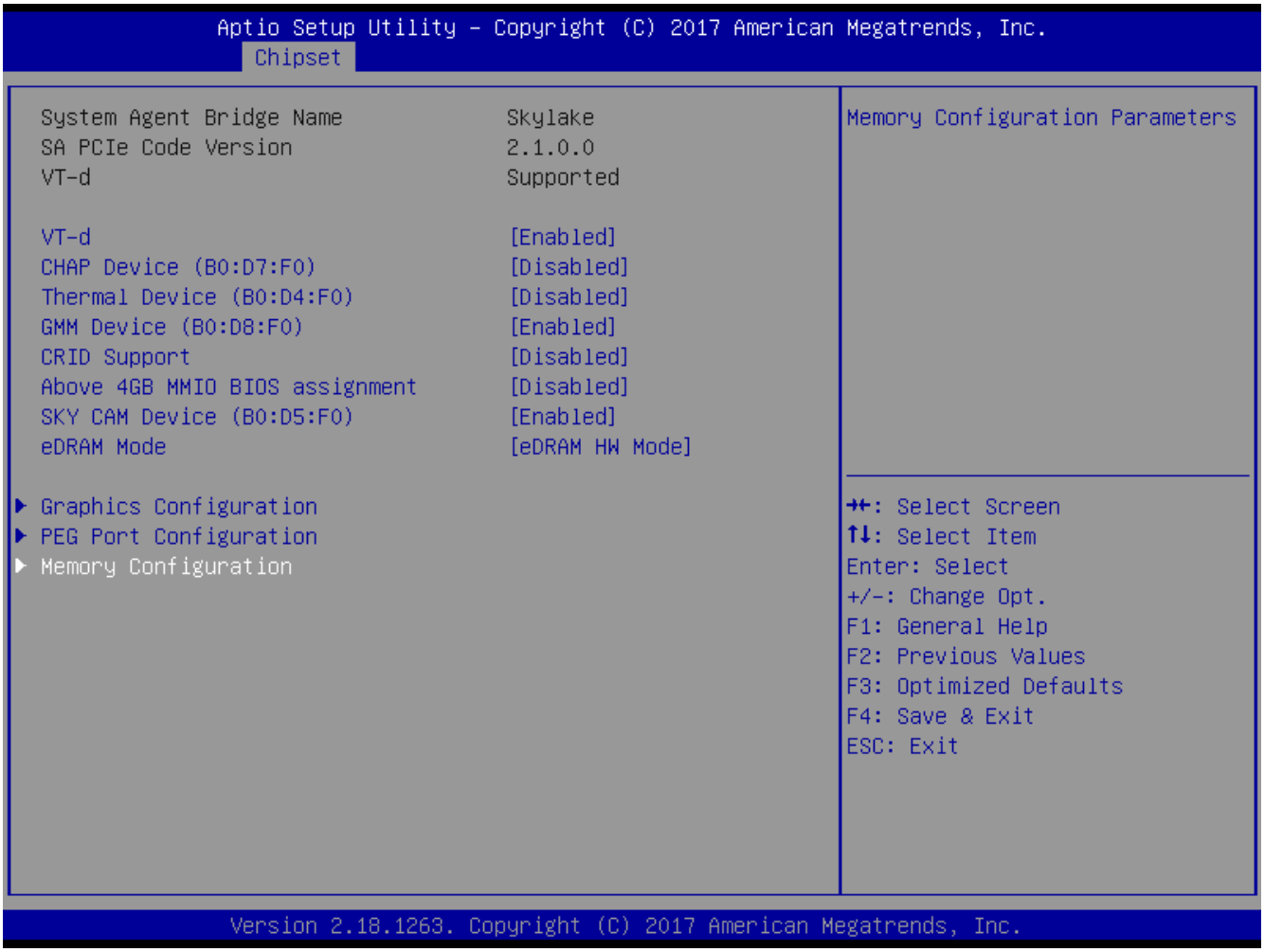
Configure how the system should respond if the OS Watchdog Timer expires. Not available if OS Watchdog Timer is disabled. Set this value to **Reset/Power Down/ Do Nothing.**

5.5 Chipset

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



5.5.1 System Agent (SA) Configuration



VT-d

Intel Virtualization Technology for Directed I/O. Set this value to Enabled/Disabled.

CHAP Device (B0:D7:F0)

Enable/Disable SA CHAP Device.

Thermal Device (B0:D4:F0)

Enable/Disable SA Thermal Device.

GMM Device (B0:D8:F0)

Enable/Disable SA GMM Device.

CRID Support

Enable/Disable CRID control for Intel SIPP

Above 4GB MMIO BIOS assignment

Enable/Disable above 4GB Memory Mapped IO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB."

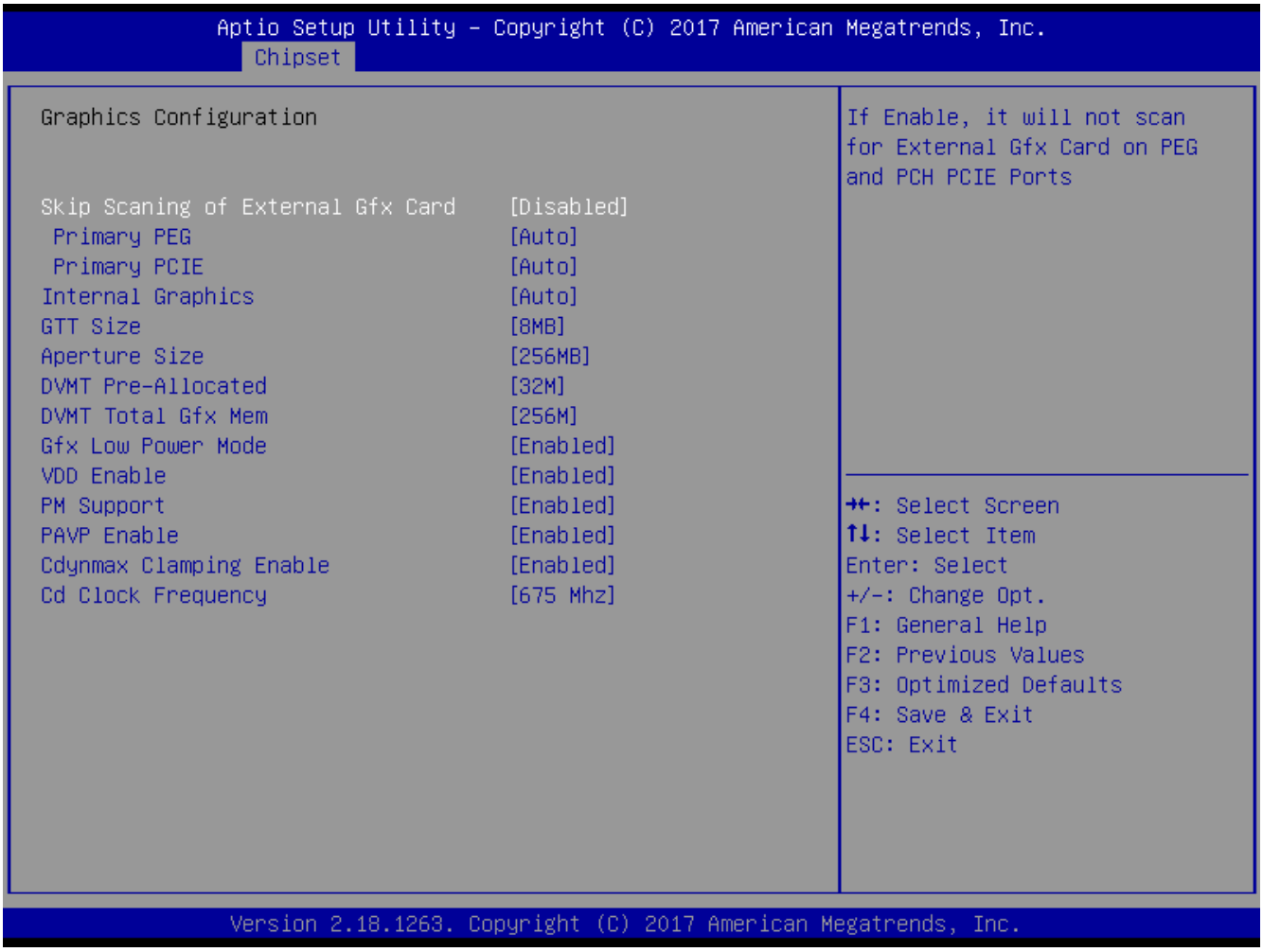
SKY CAM Device (B0:D5:F0)

Enable/Disable SA SKY CAM Device

eDRAM Mode

SW Mode eDRAM On or eDRAM Off

5.5.2 Graphics Configuration



Skip Scaning of External Gfx Card

If Enable, it will not scan for External Gfx Card on PEG and PCH PCIE Ports

Primary PEG

Select PEG0/PEG1/PEG2/PEG3 Graphics device should be Primary PEG.

Primary PCIE

Select Auto/PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE6/PCIE7 of D28:F0/F1/F2/F3/F4/F5/F6/F7, PCIE8/PCIE9/PCIE10/PCIE11/PCIE12/PCIE13/PCIE14/PCIE15 of D29:F0/F1/F2/F3/F4/F5/F6/F7, PCIE16/PCIE17/PCIE18/PCIE19 of

D27:F0/F1/F2/F3, Graphics device should be Primary PCIE

Internal Graphics:

Keep IGFX enabled based on the setup options

GTT Size:

Select the GTT Size

Aperture Size

Select the Aperture Size Note : Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device

DVMT Total Gfx Mem

Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device

Gfx Low Power Mode

This option is applicable for SFF only.

VDD Enable

Enable/Disable forcing of VDD in the BIOS

PM Support

Enable/Disable PM Support

PAVP Enable

Enable/Disable PAVP

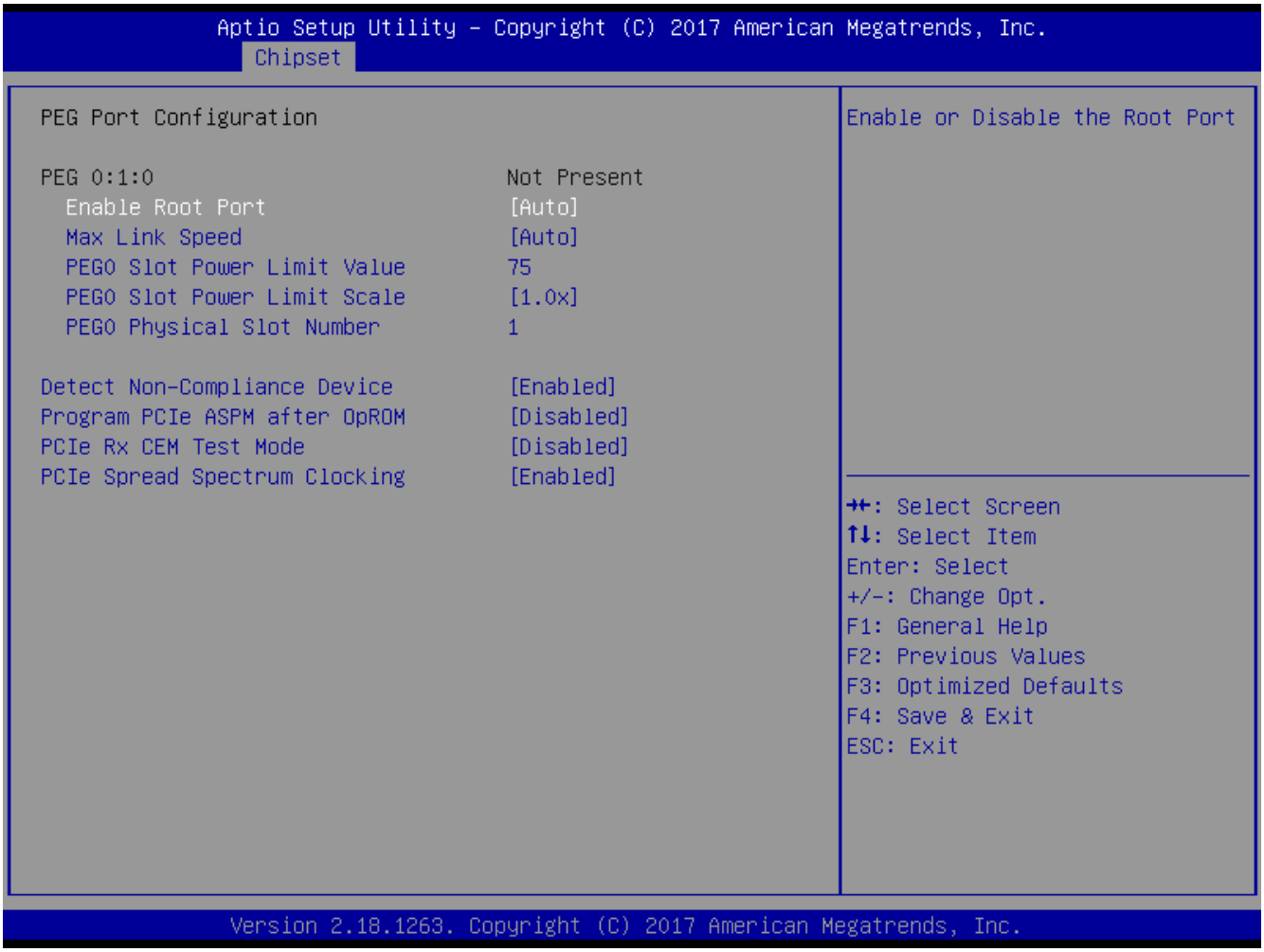
Cdynmax Clamping Enable

Enable/Disable Cdynmax Clamping

Cd Clock Frequency

Select the highest Cd Clock frequency supported by the platform

5.5.3 PEG port Configuration



Enable Root Port

Enable or Disable the Root Port

Max Link Speed

Configure PEG 0:1:0 Max Speed

PEG0 Slot Power Limit Value:

Sets the upper limit on power supplied by slot. Power limit (in Watts) is calculated by multiplying this value by the Slot Power Limit Scale. Values 0-255

PEG0 Slot Power Limit Scale

Select the scale used for the Slot Power Limit Value

PEG0 Physical Slot Number:

Set the physical slot number attached to this Port. The number has to be globally unique within the chassis.

Detect Non-Compliance Device

Detect Non-Compliance PCI Express Device in PEG

Program PCIe ASPM after OpROM

Enabled: PCIe ASPM will be programmed after OpROM.\nDisabled: PCIe ASPM will be programmed before OpROM.

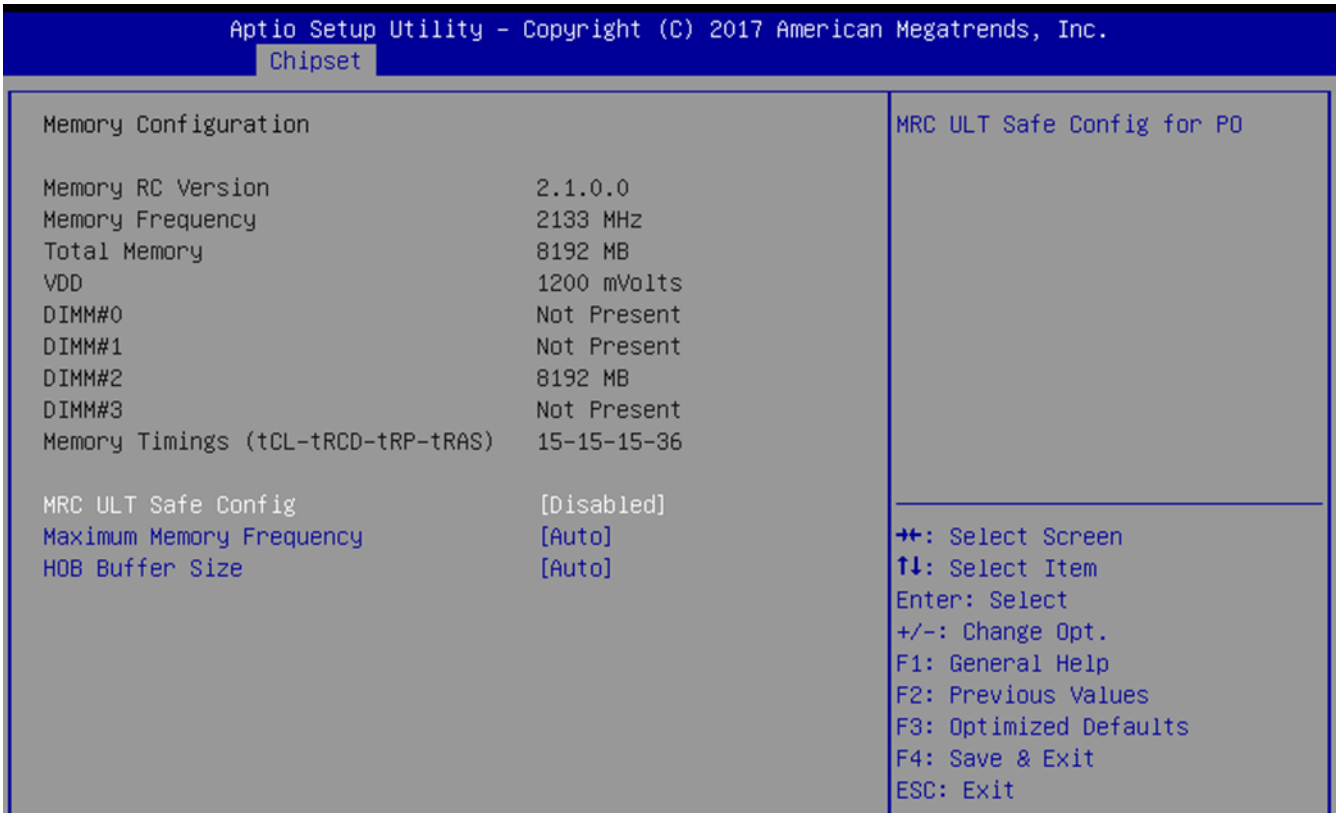
PCIe Rx CEM Test Mode

Enable/Disable PEG Rx CEM Loopback Mode

PCIe Spread Spectrum Clocking

Allows disableing Spread Spectrum Clocking for compliance testing

5.5.4 Memory Configuration



MRC ULT Safe Config

MRC ULT Safe Config for PO

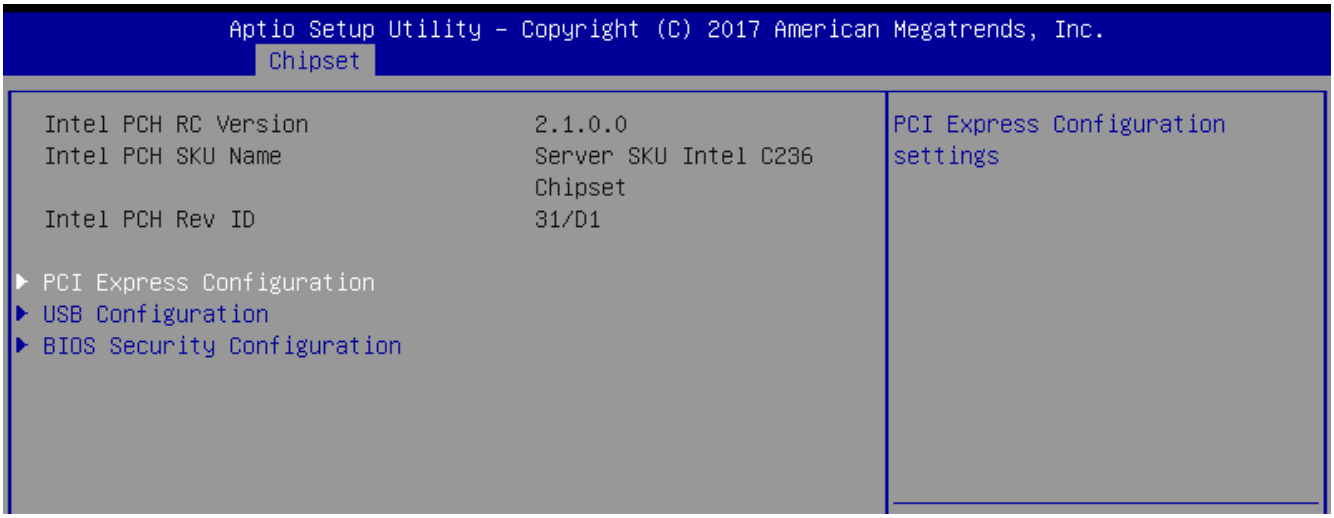
Maximum Memory Frequency

Maximum Memory Frequency Selections in Mhz.

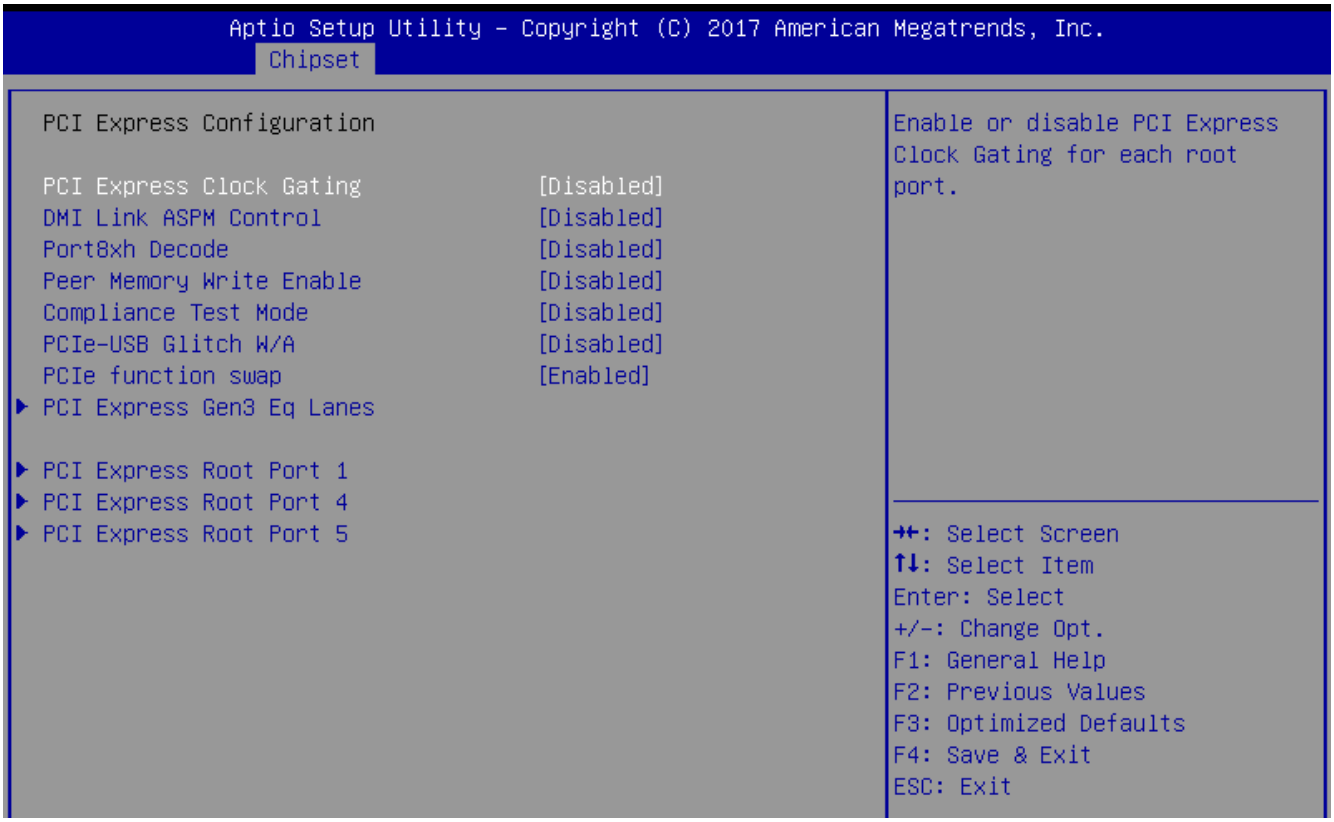
HOB Buffer Size

Size to set HOB Buffer

5.5.5 PCH-IO Conifguration



5.5.5.1 PCI Express Configuration



PCI Express Clock Gating

Enable or disable PCI Express Clock Gating for each root port.

DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI Link.

Port8xh Decode

PCI Express Port8xh Decode Enable/Disable

Peer Memory Write Enable

Peer Memory Write Enable/Disable

Compliance Test Mode

Enable when using Compliance Load Board

PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIE/PEG Port.

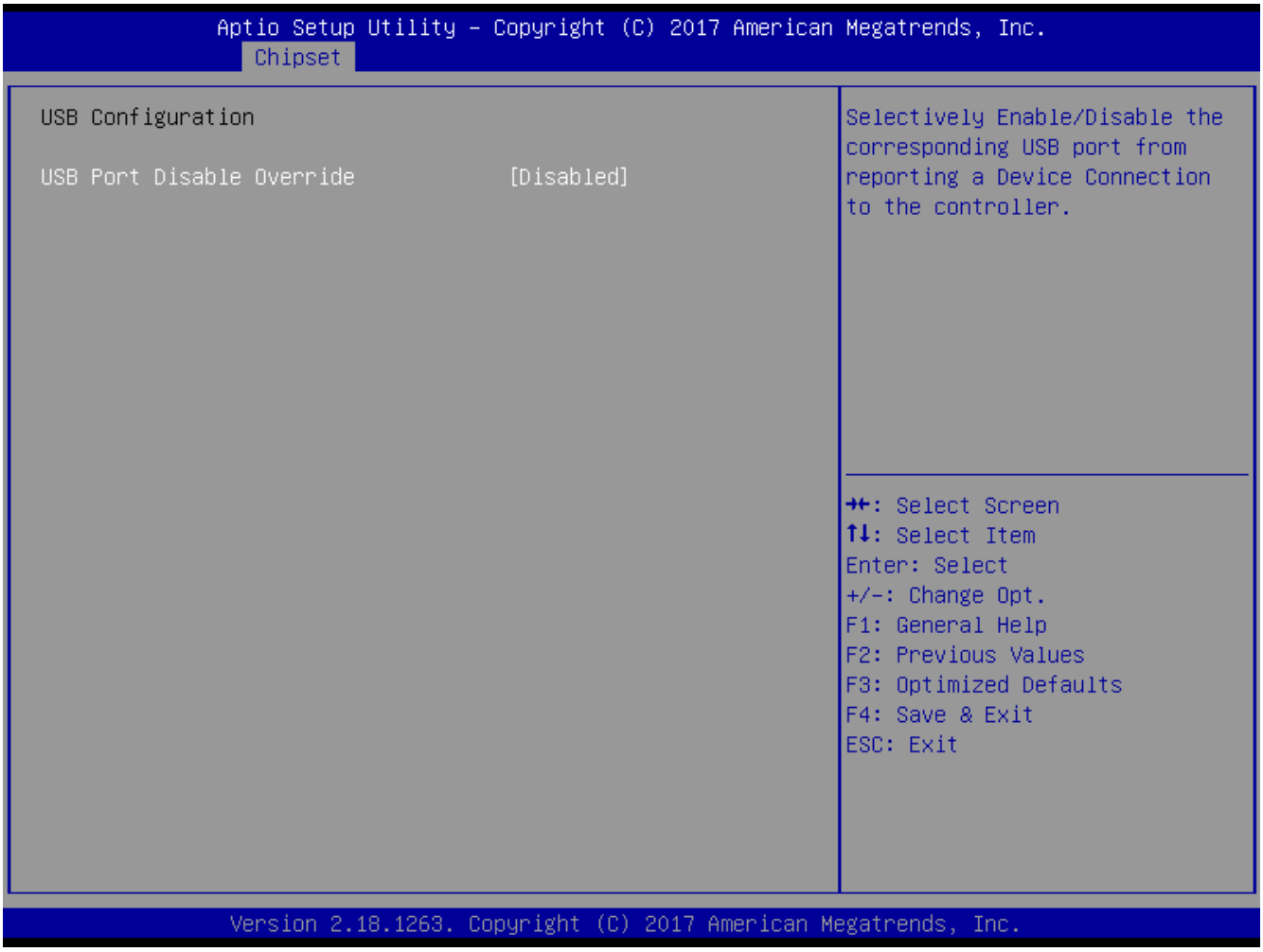
PCIe function swap

When Disabled, prevents PCIE rootport function swap. If any function other than 0th is enabled, 0th will become visible.

PCI Express Gen3 Eq Lanes

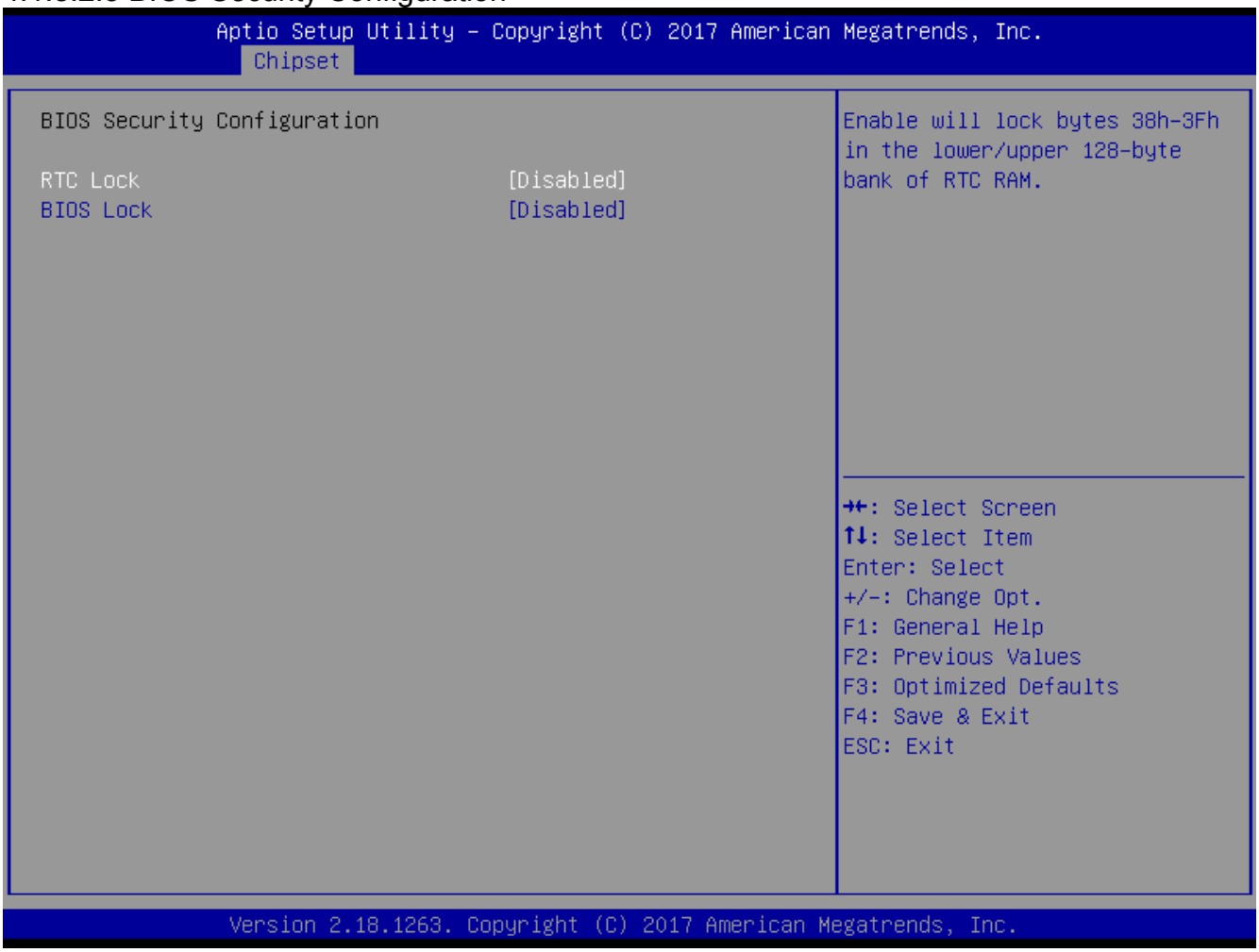
PCI Express Gen3 Equalization settings per PCIe lane

5.5.5.2 USB Configuration



USB Port Disable Override :
Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.

4.1.8.2.3 BIOS Security Configuration



RTC Lock:

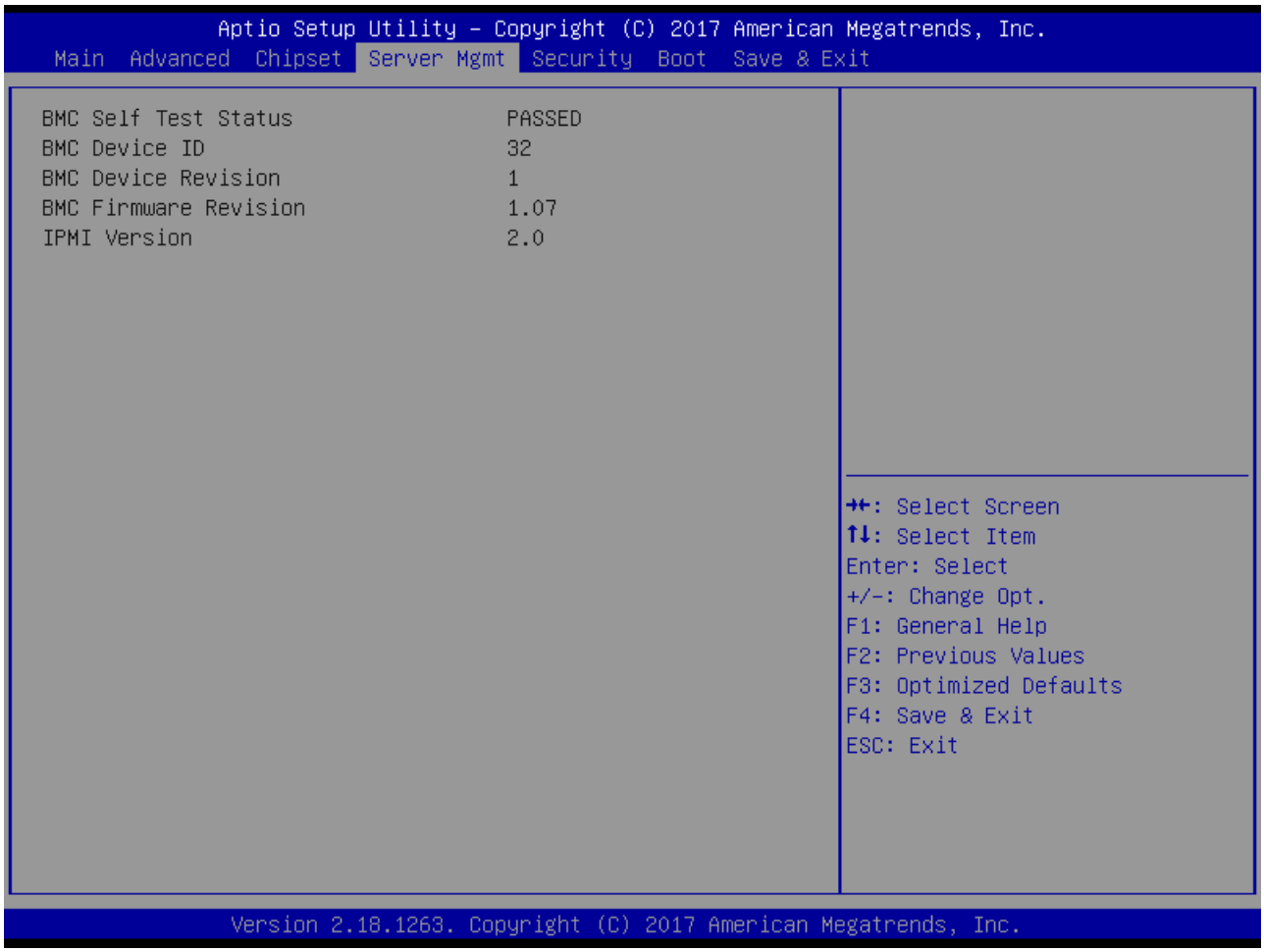
Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM

BIOS Lock

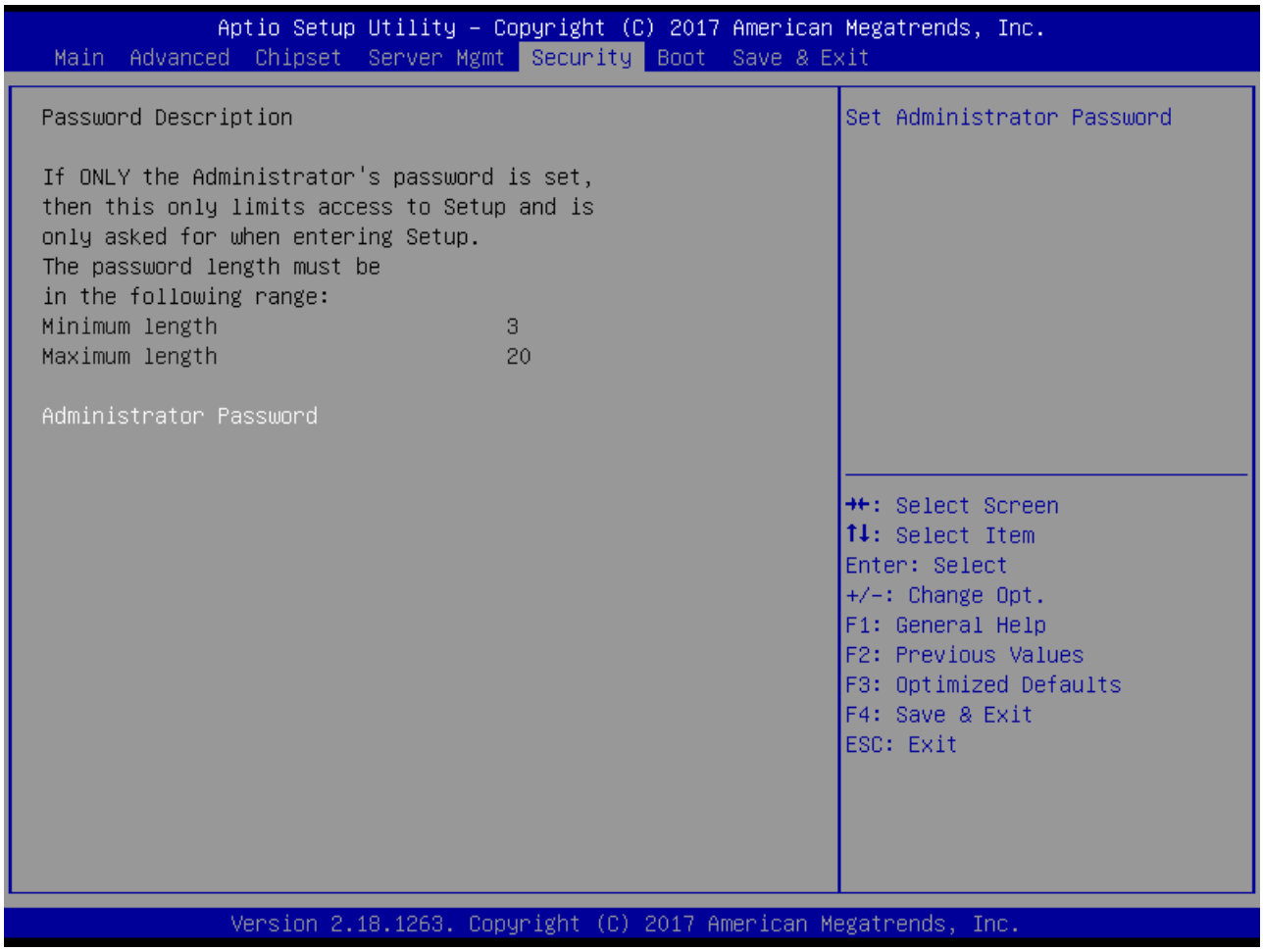
Enable/Disable the PCH BIOS Lock Enable (BLE bit) feature.

5.6 Server Mgmt

Select the Server Mgmt tab from the setup screen to enter the Server Mgmt BIOS Setup screen. Server Management information is displayed on the screen.



5.7 Security Setup



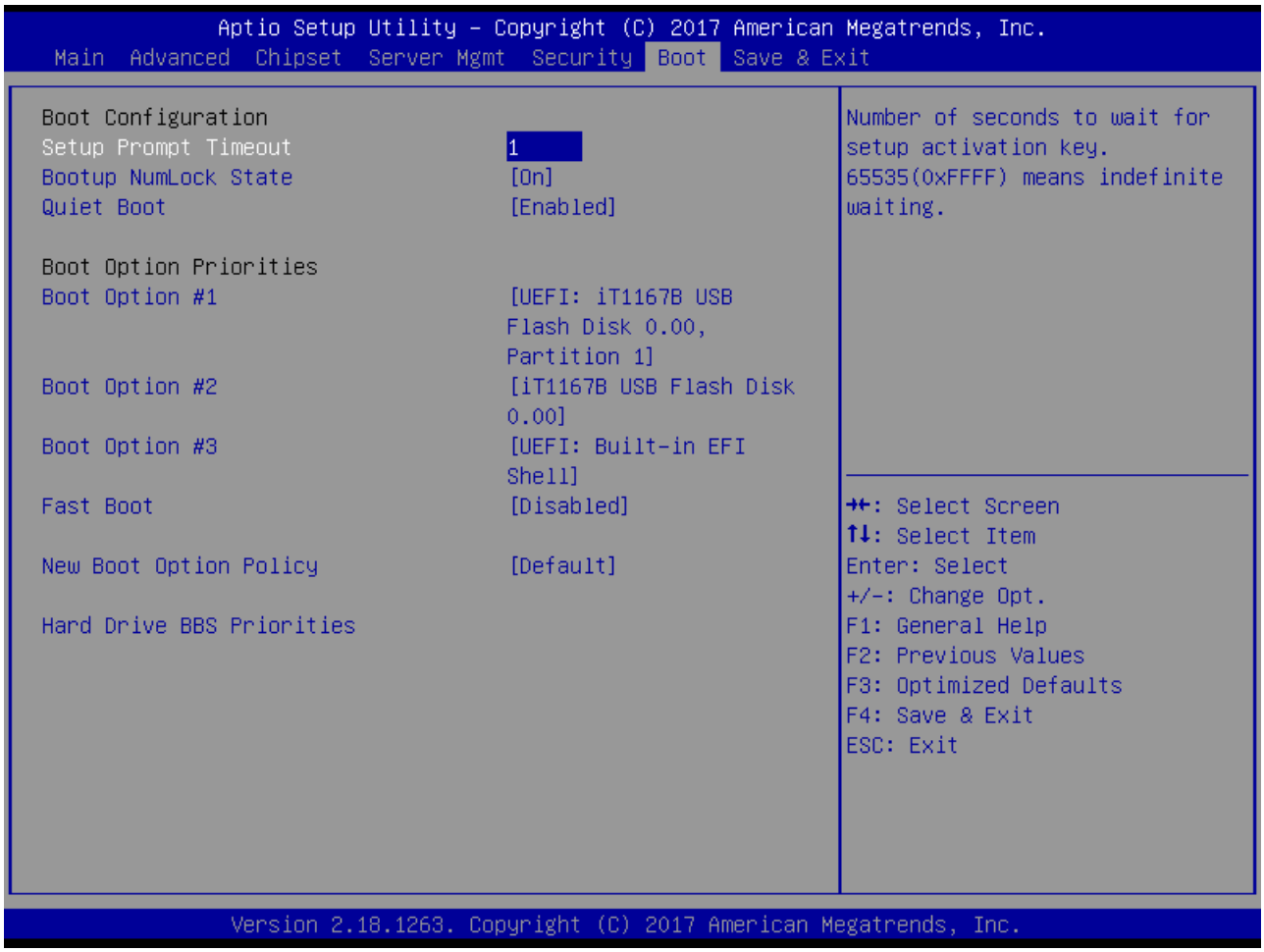
Administrator/User Password

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.

5.8 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

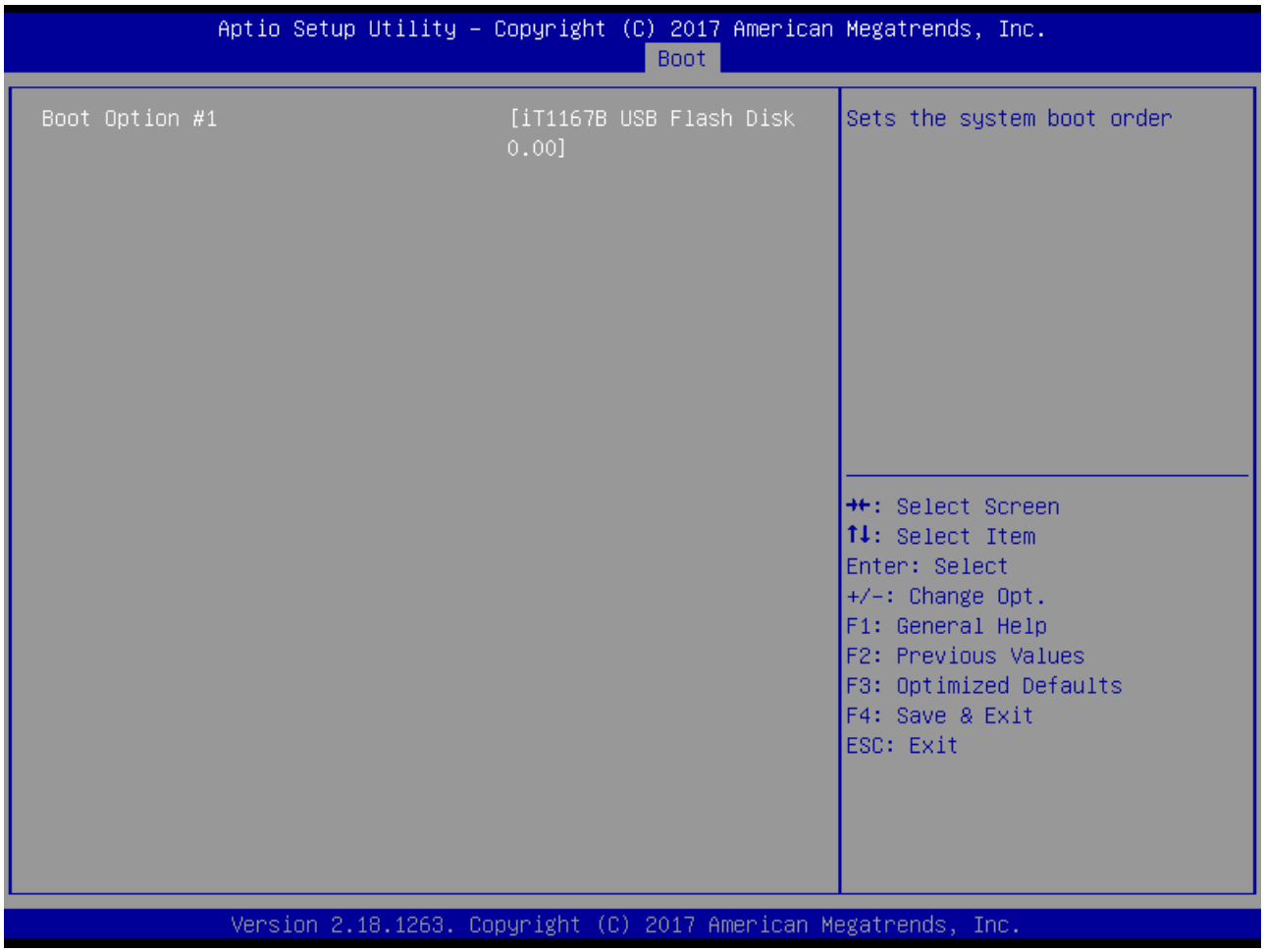
launch active boot option. Has no effect for BBS boot options. Set this value to **Enable / Disable.**

Boot Option Priorities

Set Boot Option #1 -2 boot priority.

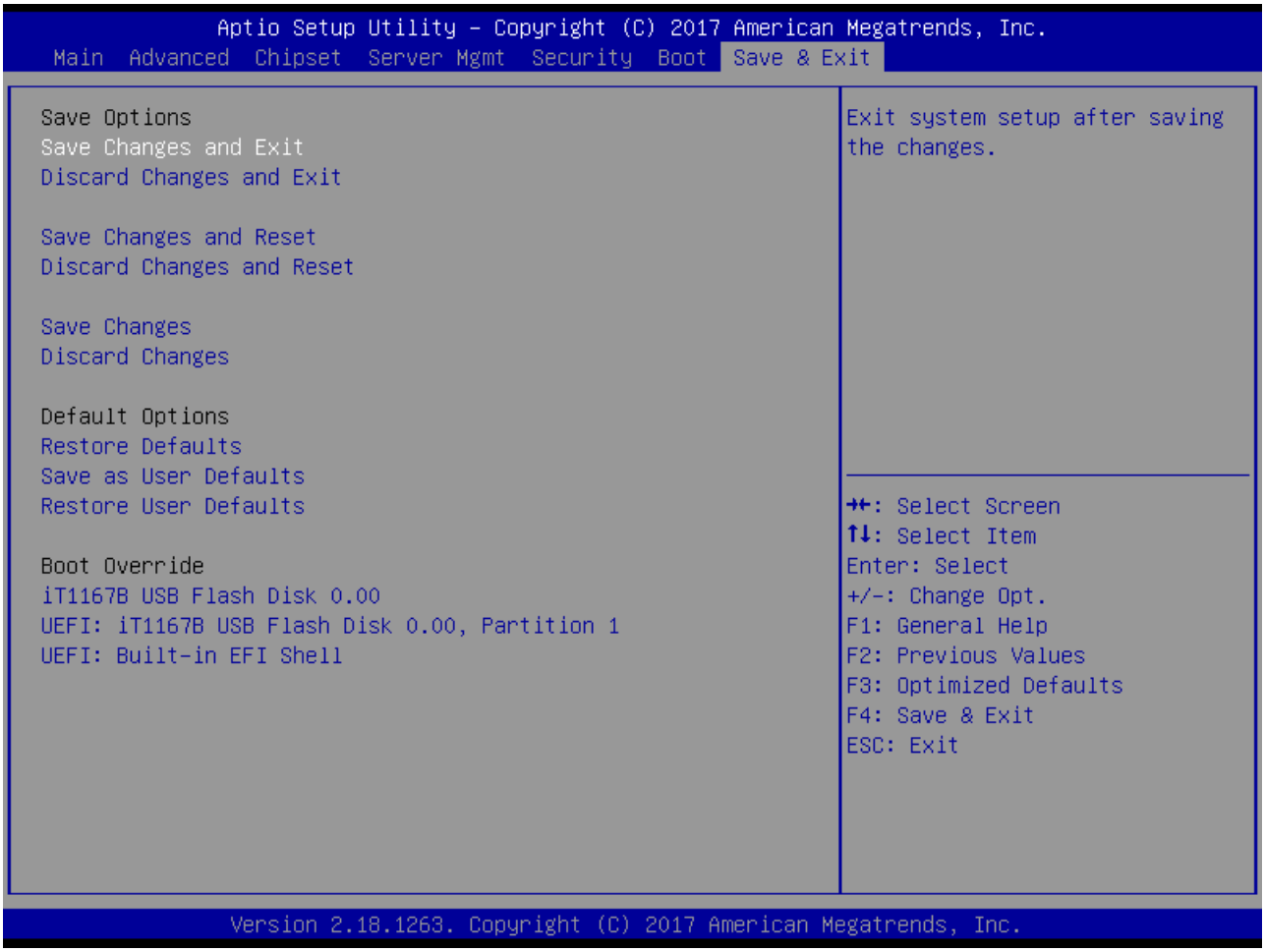
Hard Drive BBS Priorities

Specifies the boot device priority sequence from available hard drives.



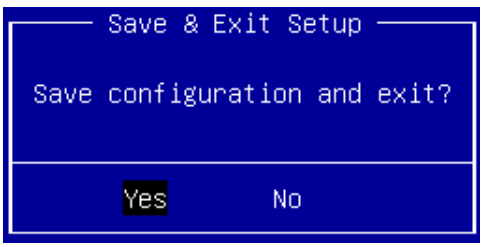
5.9 Save & Exit Menu

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.



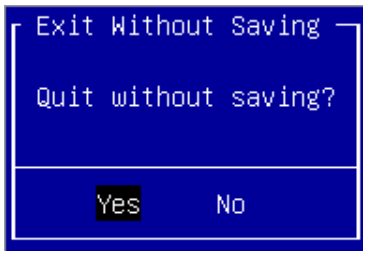
Save Changes and Exit

Exit system setup after saving the changes.



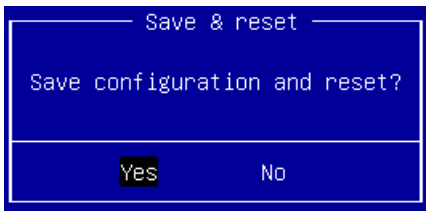
Discard Changes and Exit

Exit system setup without saving any changes.



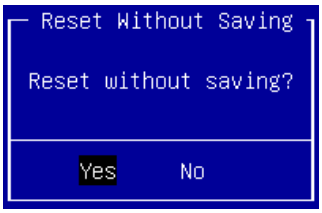
Save Changes and Reset

Reset the system after saving the changes.



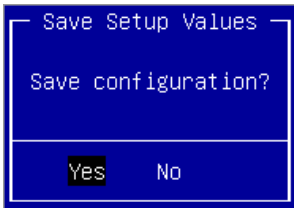
Discard Changes and Reset

Reset system setup without saving any changes.



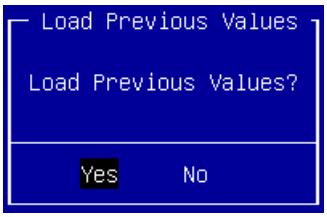
Save Changes

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



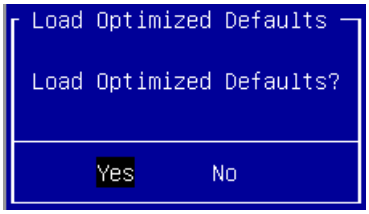
Discard Changes

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



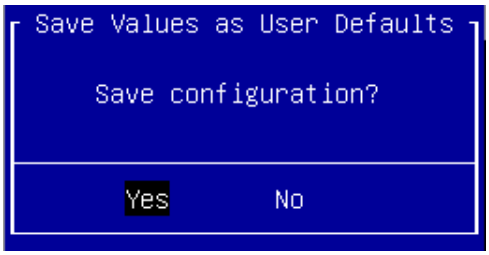
Restore Defaults

Restore/Load Defaults values for all the setup options.



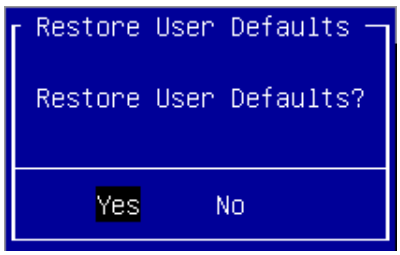
Save as User Defaults

Save the changes done so far as user defaults.



Restore User Defaults

Restore the user defaults to all the setup options.



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 (Sections 3.1-3.5):
   - Turn off power and unplug any power cords/cables, and
   - Reinstall the chassis lid before restoring power.
6. It is recommended that equipment be installed only in a server room or computer room where access is:
   - 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 controlled by the authority responsible for the location.
7. 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.
8. Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
9. 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.**
10. 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.

11. Please pay strict attention to all warnings and advisories appearing on the device, to avoid injury or damage.
12. 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.

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. Il est recommandé que l'équipement soit installé uniquement dans une salle de serveurs ou une salle informatique où l'accès est:
   - Restriction à un personnel qualifié ou à des utilisateurs qui connaissent les restrictions appliquées à l'emplacement, les raisons à cet égard et toute précaution requise;
   - Uniquement par l'utilisation d'un outil ou d'un verrou et d'une clé, ou d'autres moyens de sécurité, et contrôlés par l'autorité responsable de l'emplacement.
7. 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.
8. N'essayez jamais de réparer l'équipement. L'équipement ne doit être réparé que par du personnel qualifié.
9. 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.
10. 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.

11. 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.
12. **ATTENTION!** L’équipement peut avoir plus d’une entrée d’alimentation. Pour réduire le risque d’électrocution, le personnel qualifié devrait déconnecter toutes les entrées d’alimentation avant de procéder à l’entretien.

Getting Service

Ask an Expert: http://askanexpert.adlinktech.com

ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
新北市中和區建一路 166 號 9 樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park, Pudong New Area
Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 11, D-68163, Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.