MECS-6110/6111

1U Edge Server
with Intel® Xeon® D Processor

User's Manual



Manual Rev.:	Rev. 1.4
Revision Date:	February 24, 2023
Part No.:	50M-00037-1040

LEADING EDGE COMPUTING
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Preface

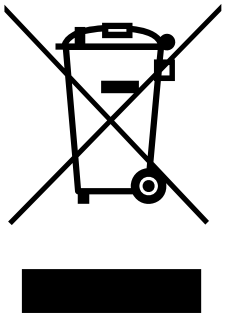
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Revision History

Revision	Release Date	Description of Change(s)
1.0	2021-08-19	Initial release
1.1	2021-10-18	Update BMC eth0/1 IP settings; add BIOS Server Mgmt Settings
1.2	2022-02-21	Correct formatting errors
1.3	2023-02-01	Correct board layout BIOS SPI flash locations
1.4	2023-02-24	Add power and reset button descriptions

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Conventions



Information to prevent minor physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

Informations destinées à prévenir les blessures corporelles mineures, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche.



Information to prevent serious physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

Informations destinées à prévenir les blessures corporelles graves, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche spécifique.

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1 Overview

1.1 Introduction

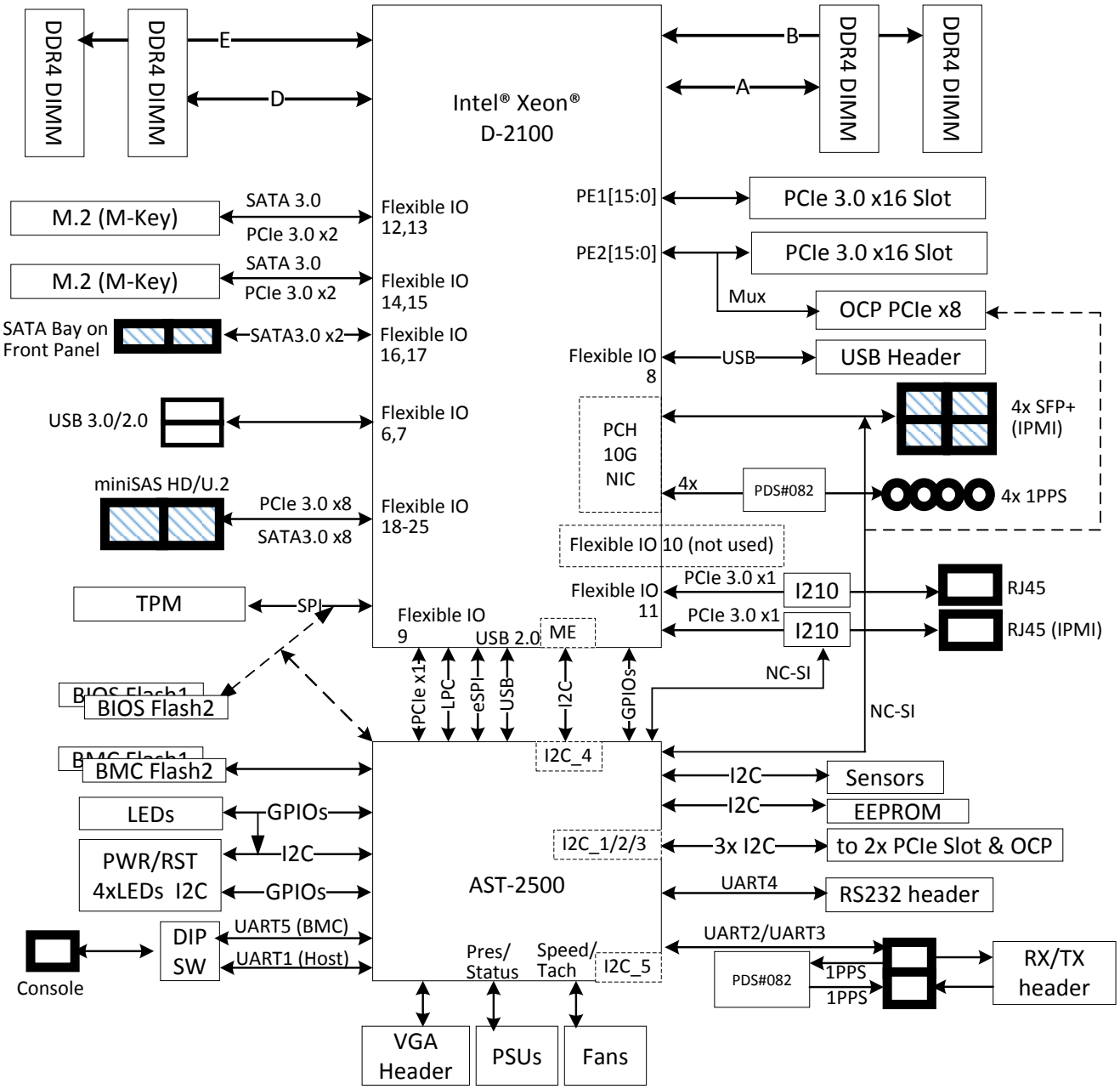
The ADLINK MECS-6110 is a 1U 19" rackmount edge computing server with Intel® Xeon® processor System-on-Chip. The MECS-6110 features an IO intensive architecture with up to 2x PCIe x16 FHFL interfaces, 2x 2.5” SATA drive bays, 4x SFP+ ports. It also features IEEE 1588v2 Precision Time Protocol (PTP) and is an ideal platform for 5G mobile edge computing infrastructure deployment.

The main features of the MECS-6110 as follows:

- 1x Intel® Xeon® D-2100 family processor
- 4x DDR4-2666 RDIMM ECC REG up to 256GB
- 2x 2.5” SATA bays (only for MECS-6110) and 2x M.2 M Key interfaces
- 2x PCIe x16 Gen3 single-slot FHFL interfaces or 1x PCIe x16 Gen3 dual-slot FHFL interface
- 1x PCIe x8 Gen3 OCP interface
- 420mm depth 1U 19” rackmount form factor
- Built-in Intel® QAT support
- TPM 1.2/2.0 module
- 2x IEEE 1588 v2 1PPS/TOD RJ-45 port and 4x 1PPS MMCX input/output
- EMC grade: Class B
- PSUs front accessible for small footprint deployment (MECS-6111 only)

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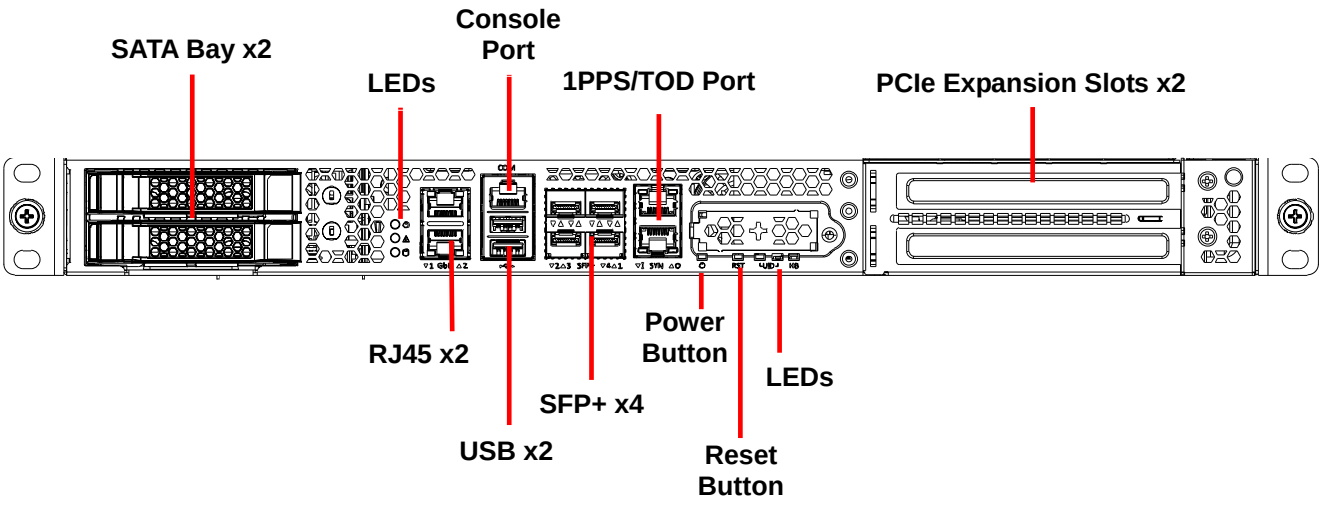
1.2 Block Diagram



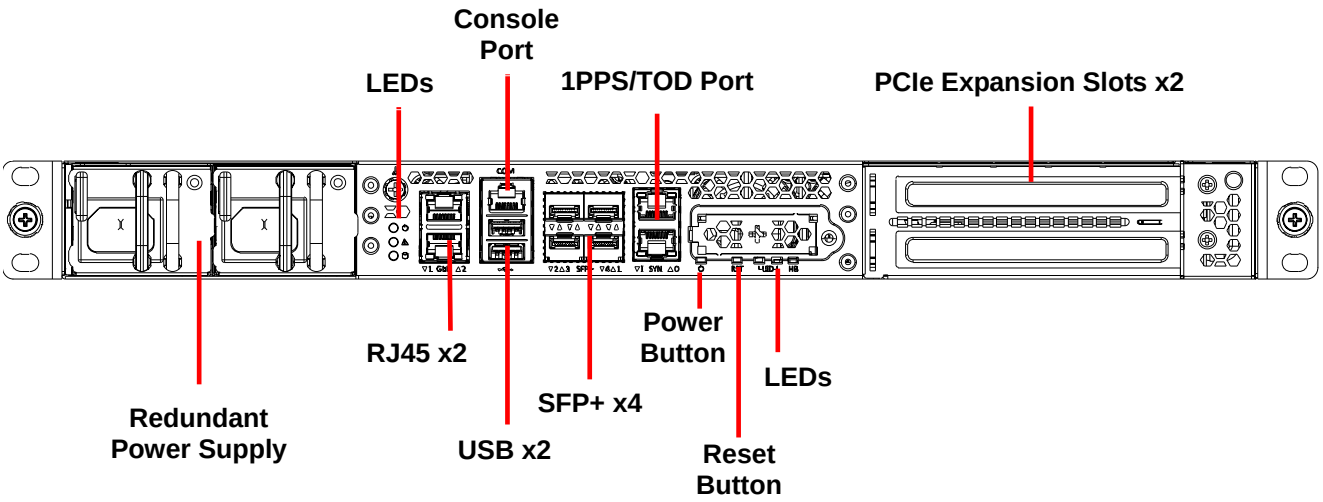
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1.3 Mechanical Overview

1.3.1 MECS-6110 Front Panel

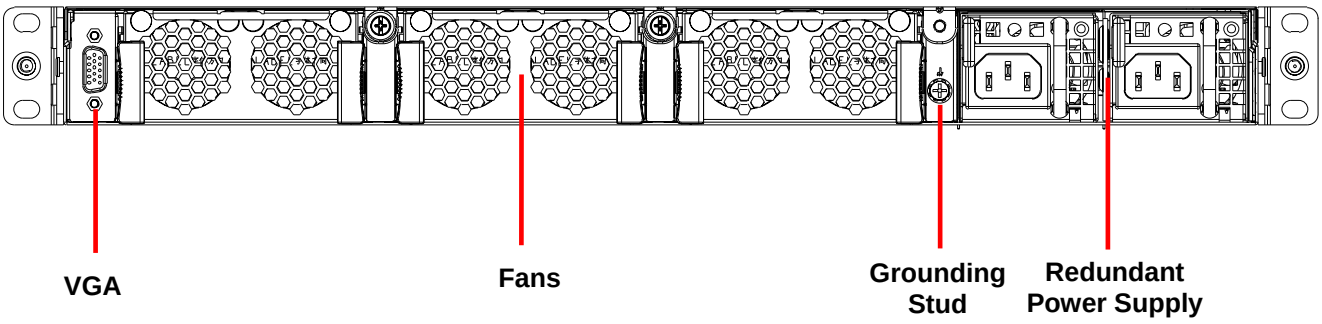


1.3.2 MECS-6111 Front Panel

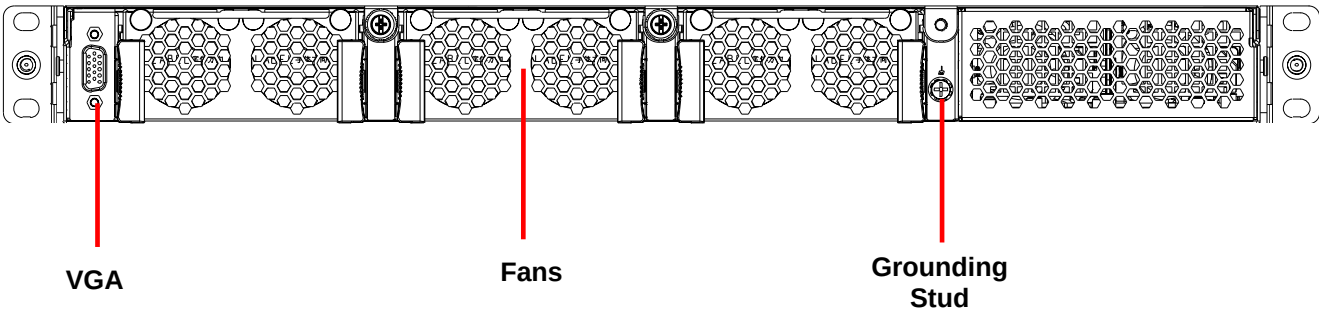


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1.3.3 MECS-6110 Rear Panel

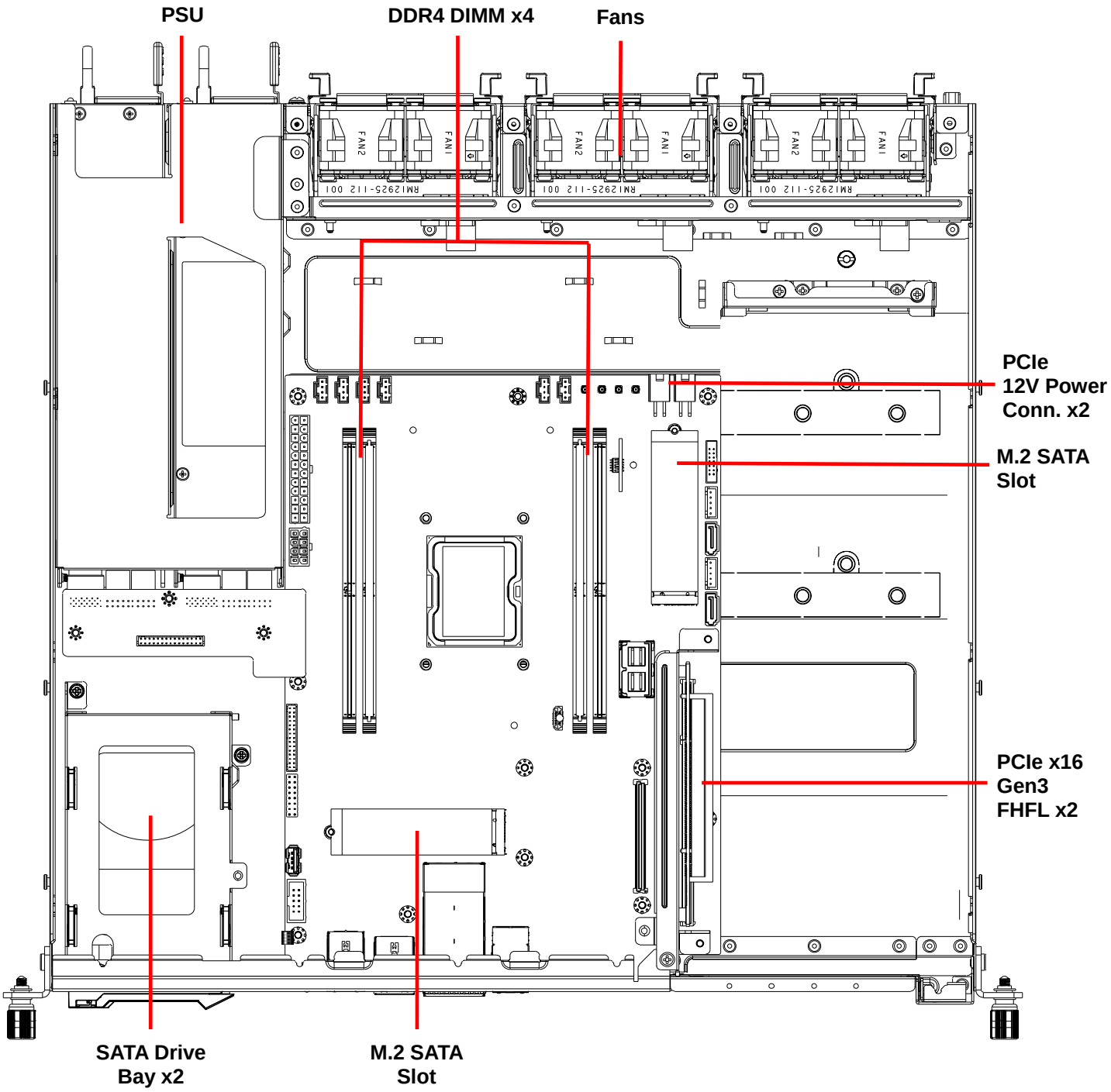


1.3.4 MECS-6111 Rear Panel



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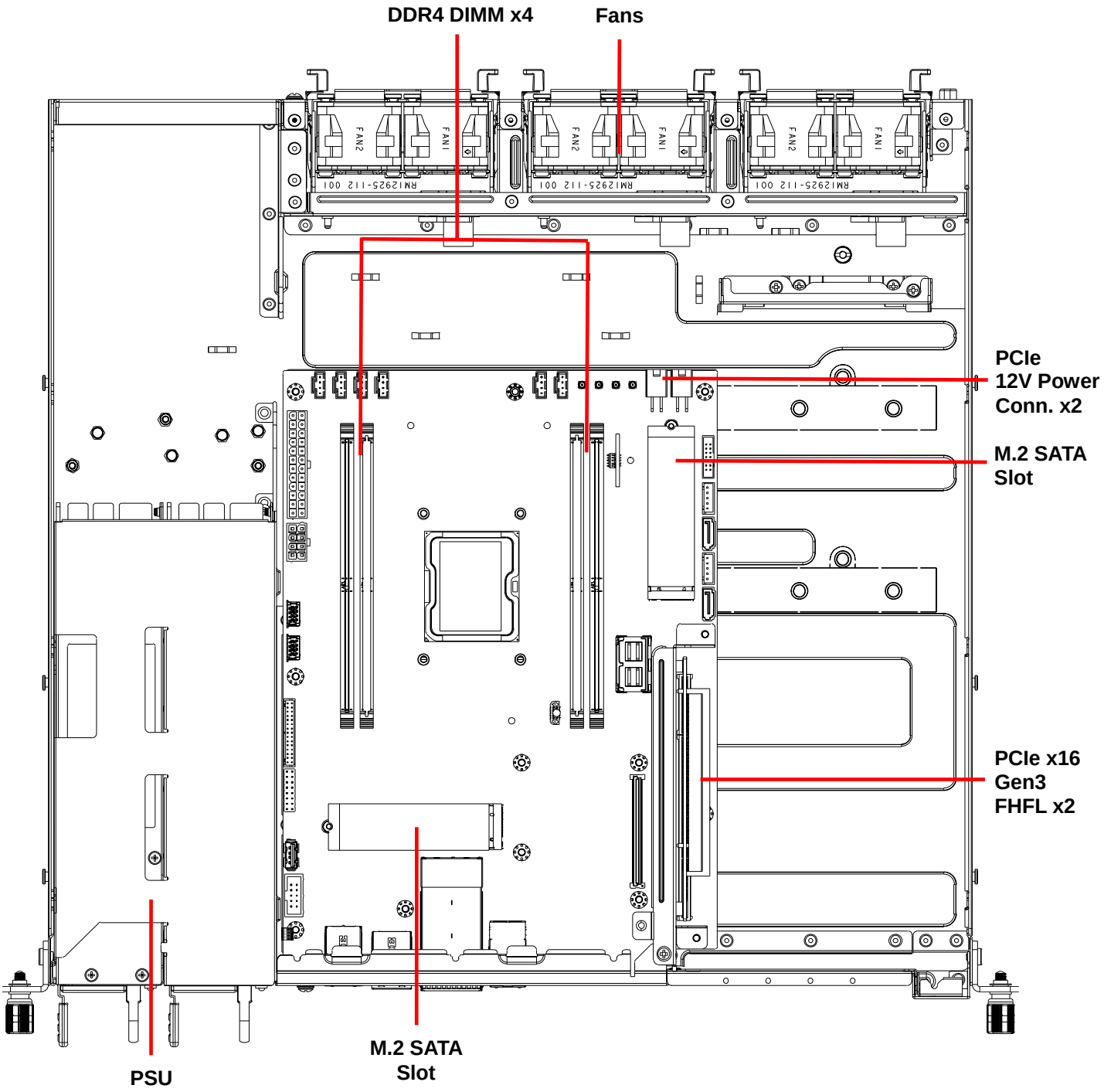
1.3.5 MECS-6110 Internal Layout



See *3.1 Removing the Chassis Cover* on page 15 for instructions on removing the cover.

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1.3.6 MECS-6111 Internal Layout

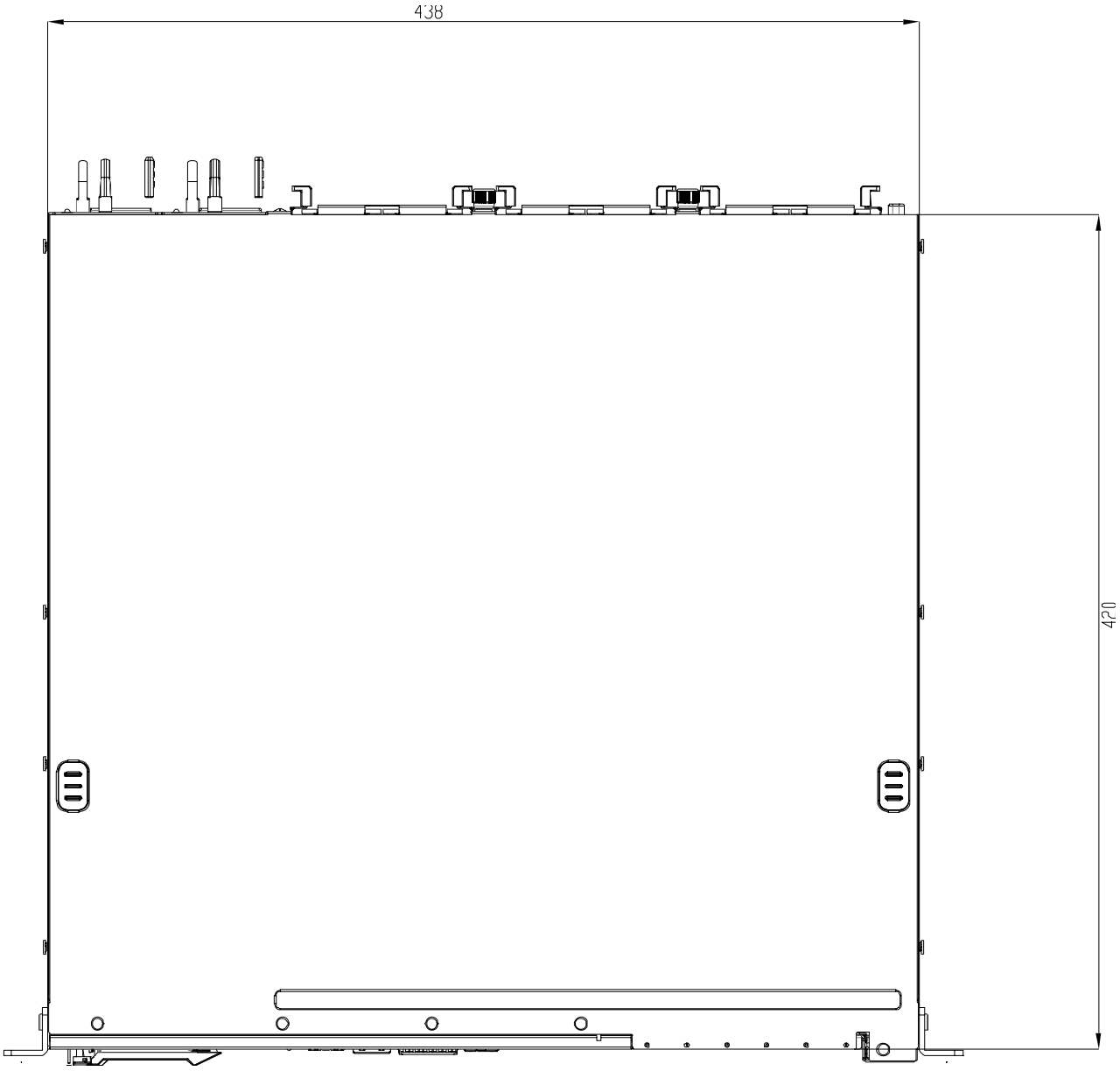


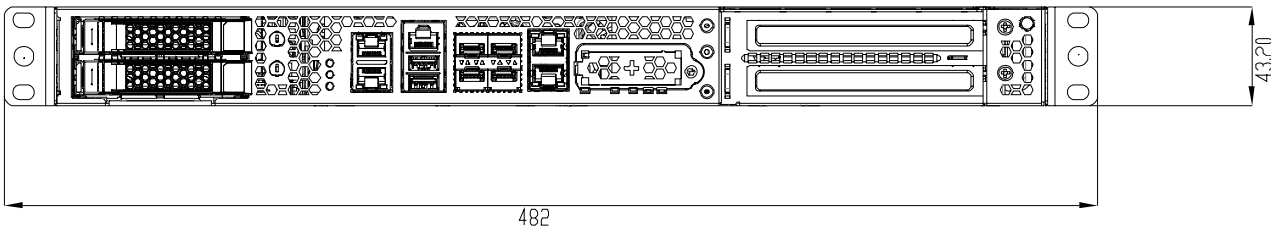
See *3.1 Removing the Chassis Cover* on page 15 for instructions on removing the cover.

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1.4 Mechanical Dimensions

Units: mm





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2 Specifications

2.1 MECS-6110 Specifications

Main System

CPU	Intel® Xeon® D-2177NT Processor 1.90GHz (14C/28T, 105W) Intel® Xeon® D-2183IT Processor 2.20GHz (16C/32T, 100W) Intel® Xeon® D-2187NT Processor 2.00GHz (16C/32T, 110W)
Chipset	Integrated on Intel® Xeon® D SoC
Memory	4x DDR4-2666 1DPC RDIMM sockets, ECC, REG, up to 256GB
BIOS	AMI BIOS on SPI flash memory
Operating System	Microsoft Windows Server 2012/2016 CentOS Linux 7.2/7.6 SuSE Linux Enterprise Server 11/12 Note: No OS installed by default
Hardware Acceleration	100Gb/s Intel® QAT support (SKU dependent)
Trusted Platform Module	TPM1.2/2.0 module (SKU dependent)
Chassis Management	IPMI v2.0 compliant with iKVM and SOL support
Software Support	Validated with DPDK, provides a high throughput for data plane packet processing

Interfaces

Expansion (SKU dependent)	**Option 1:** 2x PCIe x16 Gen3 single-slot FHFL interfaces, passive cooling, up to 110W each **Option 2:** 1x PCIe x16 Gen3 dual-slot FHFL interface, passive cooling, up to 250W **Option 3:** 1x PCIe x16 Gen3 single-slot FHFL interfaces, passive cooling up to 110W +; 1x PCIe x8 Gen3 single-slot FHFL interfaces, passive cooling up to 110W +; 1x PCIe x8 Gen3 OCP NIC v2
Ethernet	2x RJ-45 100/1000BASE-T Ethernet port (front) 4x 10G SFP+ Ethernet port (front)* 2x RJ-45 1PPS/TOD port (front) ***Note:** SFP modules must be IEC 60825-1 certified and Class 1 laser products. For information on verified SFP modules, please contact your ADLINK representative.
Remote Console	1x RJ-45 serial port
USB	2x USB 3.0 (front) 1x USB 2.0 (internal)
Graphics	1x VGA port (rear)
LEDs	Power, Alert, Drive Activity, Health Behavior, UID
Control Buttons	Power, reset, UID (front access)
Other	1x COM (internal) 4x 1PPS MMCX input/output (internal)

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Storage

Drive Bays	2x 2.5” hot-swappable SATA 6Gb/s (MECS-6110 only)
Internal	2x onboard M.2 NVME/SATA socket, 2242/2280 M Key

Mechanical & Environmental

Form Factor	1U 19’’ rackmount 438mm x 44mm x 420mm (WxHxD)
Fans	6 fans, adaptive speed
Power	450W/600W 1+1 redundant PSUs 100V to 240V AC @50-60Hz -36V to -72V DC
Temperature	Operating temp.: -5°C 55°C Storage temp.: -40°C to 70°C Note: Not including SATA drives and PCIe cards.
Humidity	Operating: 5% to 95%, non-condensing Storage: 5% to 95%, non-condensing
Shock	Operating: half-sine 2G, 11ms pulse, 100 pulses on each of three axes
	Non-operating: trapezoidal, 25G, 170 inches/sec delta V, three drops on each of three axes
Vibration	Non-operating: 2.2Grms, 10 minutes per axis on all three axes
Certifications	FCC, CE, CCC Class B, UL, CB and RoHS compliant **Note:** Certifications were passed with 450W PSU installed.
MTBF	1043140 hours @ 25°C

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3 Getting Started

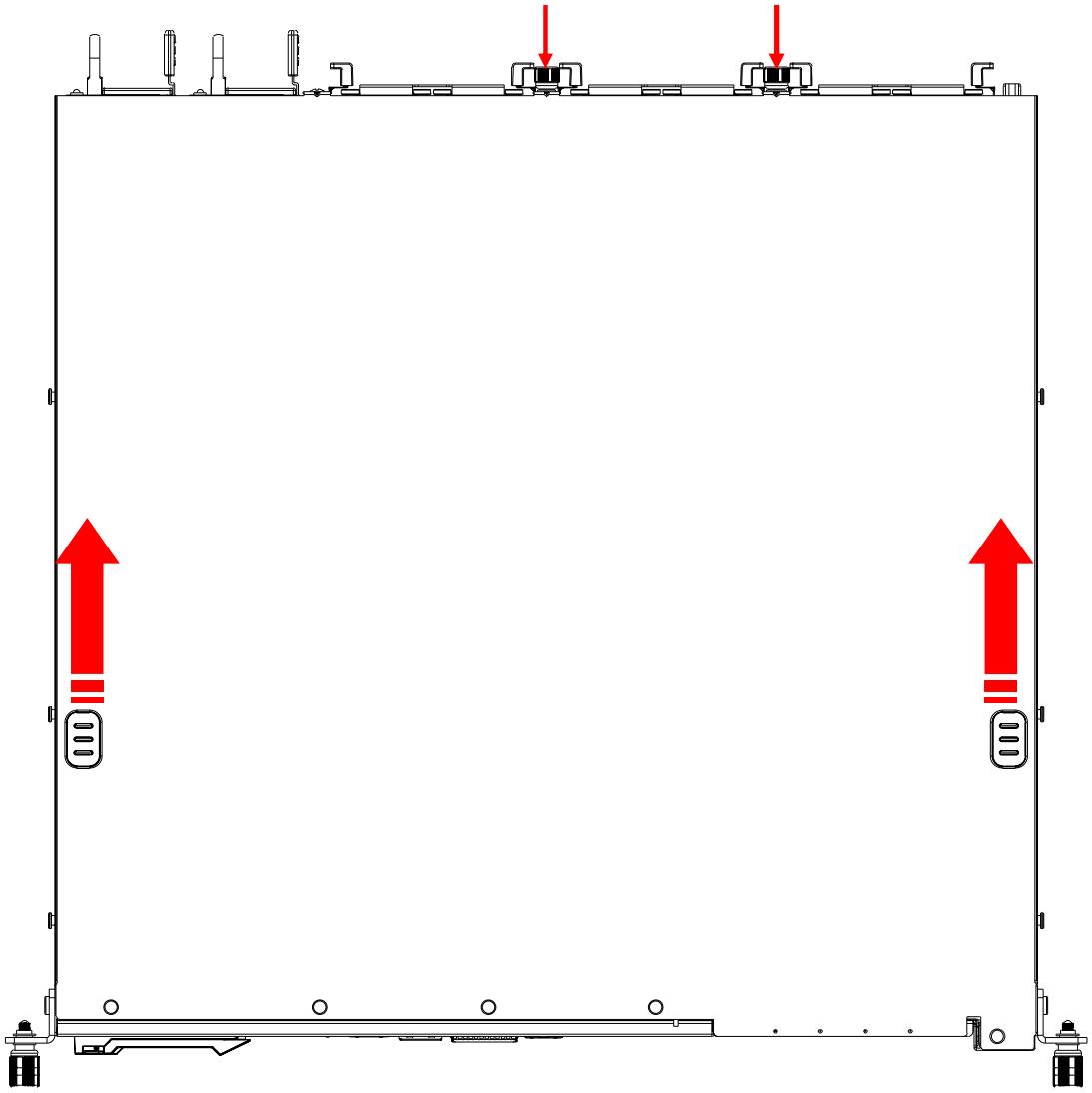
3.1 Removing the Chassis Cover

Follow the instructions below to remove the chassis top cover.

CAUTION:
mise en garde

All installation procedures are restricted to skilled personnel.
Toutes les procédures d'installation sont réservées au personnel qualifié.

1. Loosen the two captive screws at the rear of the cover (arrows).



2. Press down on the two depressions with your thumbs and slide the cover towards the rear of the chassis and remove the cover.

To reinstall the cover, slide it towards the front of the chassis, then tighten the screws loosened in Step 1.

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3.2 Installing Memory Modules

There are no limitations on installing memory modules in this device. Each slot can accept a memory module up to 64GB.



mise en garde

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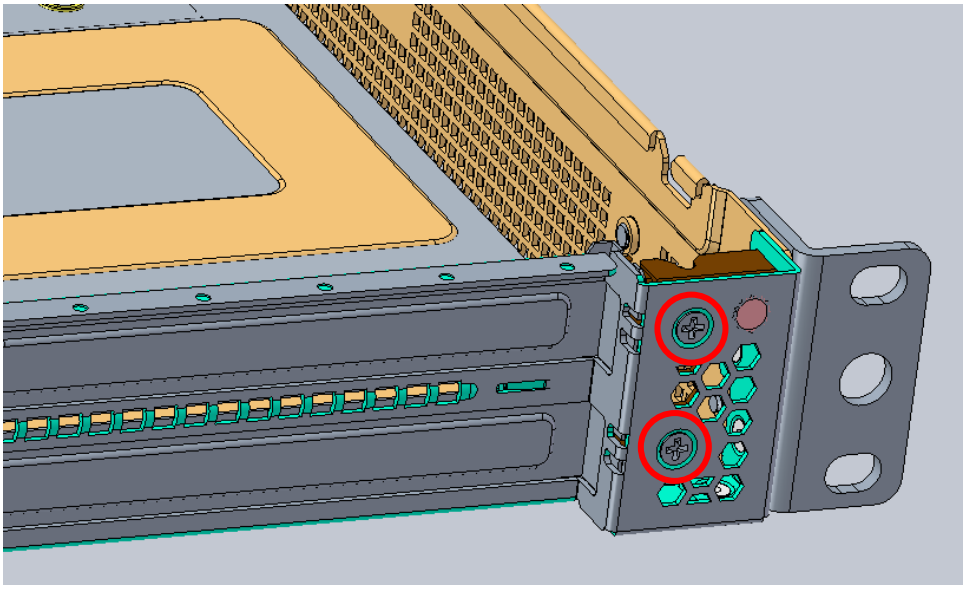
3.3 PCIe Card Installation

Sample installation instructions for FHFL PCIe expansion cards are described below. For detailed information on the specific installation procedures for your cards, please contact your ADLINK representative.

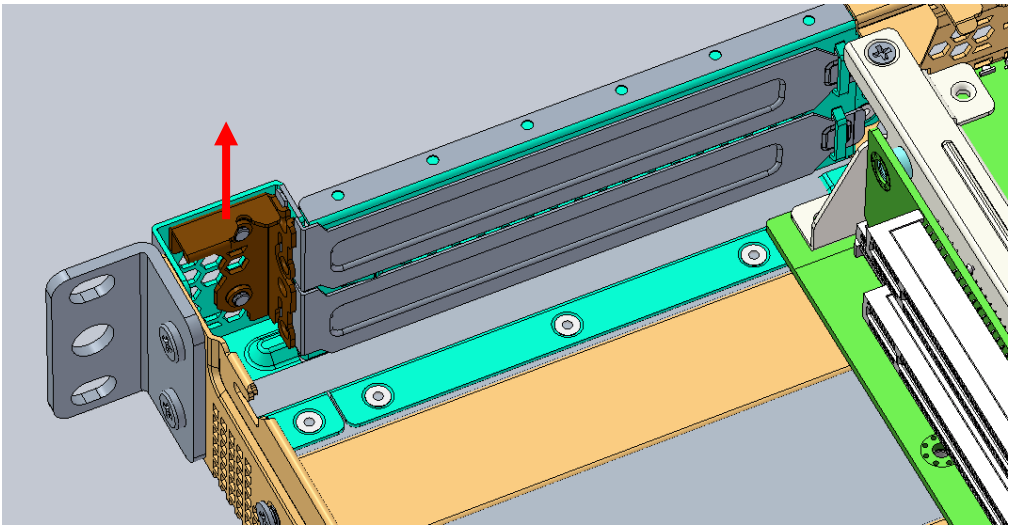
CAUTION:
mise en garde

All installation procedures are restricted to skilled personnel.
Toutes les procédures d'installation sont réservées au personnel qualifié.

1. Remove the two screws from the front panel as shown.

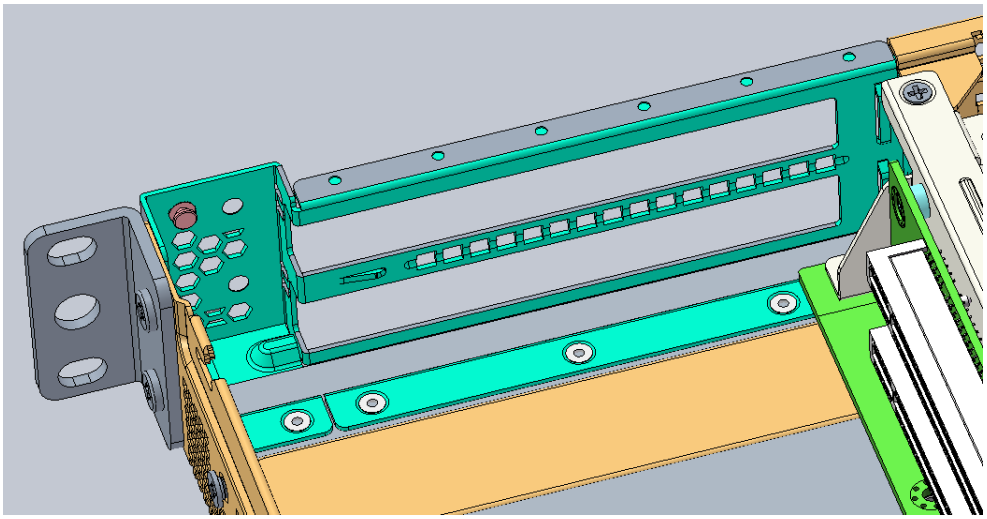


2. Remove the bracket securing the PCIe bracket blanking plates.

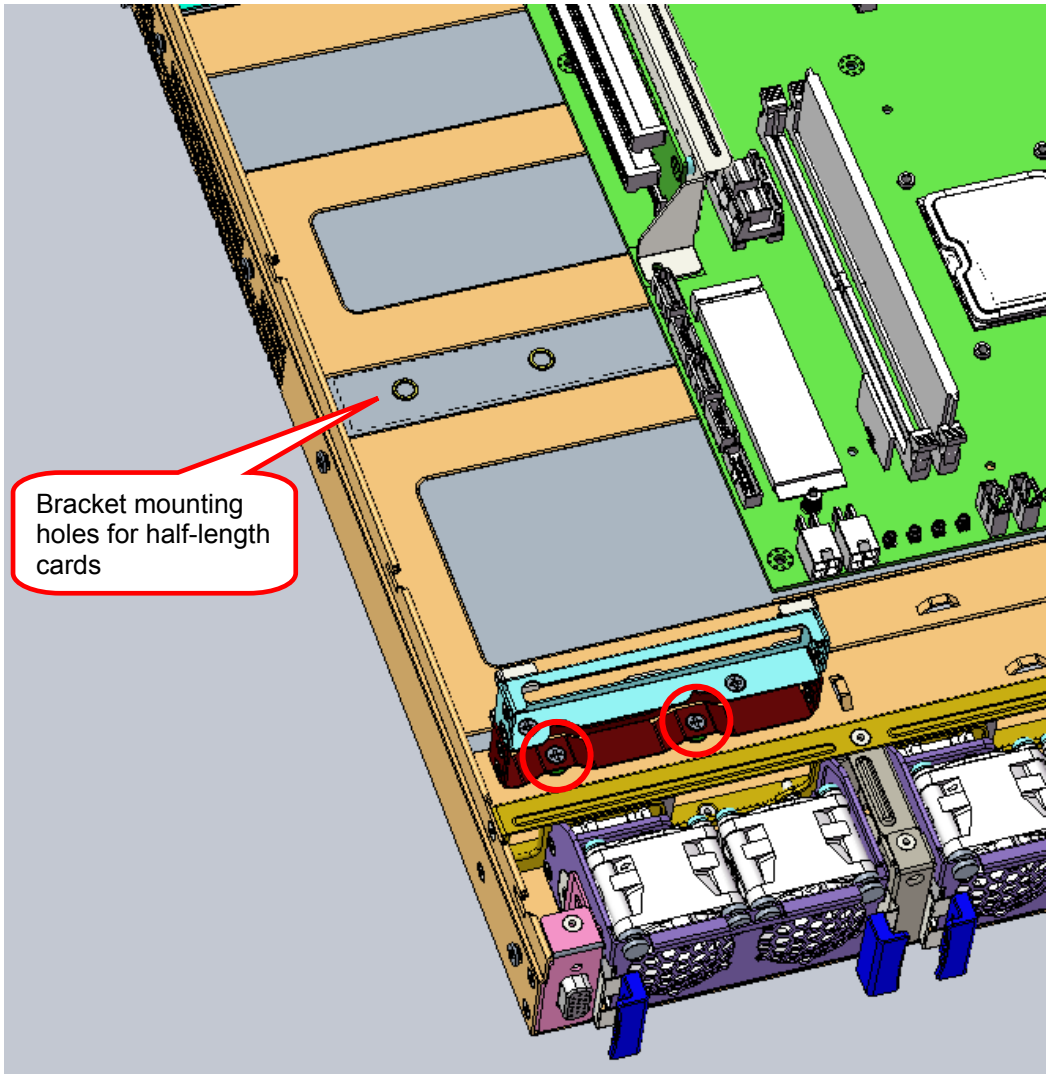


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3. Remove the PCIe bracket blanking plates.

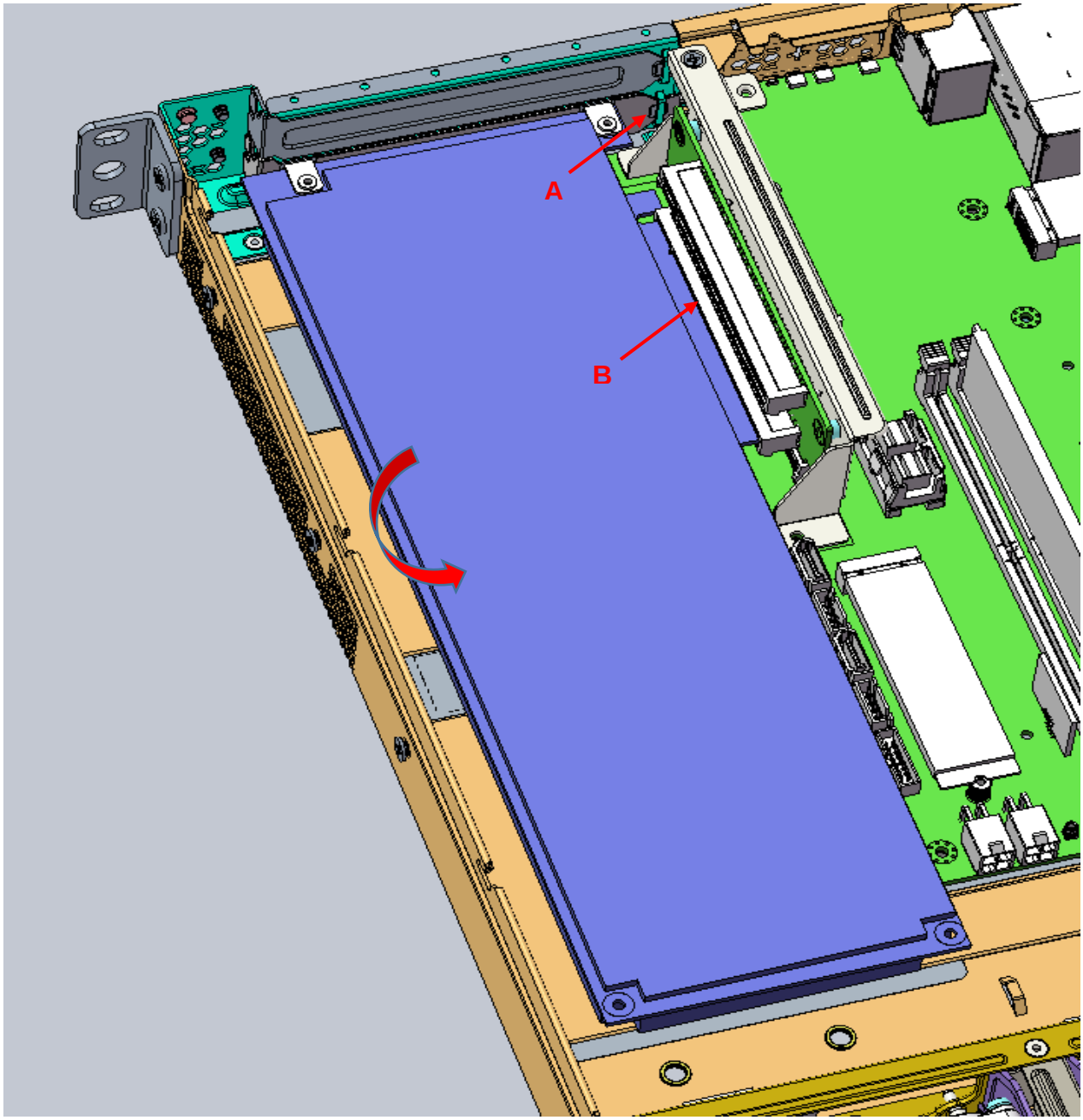


4. Loosen the two screws to remove the internal PCIe bracket used to secure the PCIe cards inside the chassis. The diagram shows the position of the bracket for full-length cards.



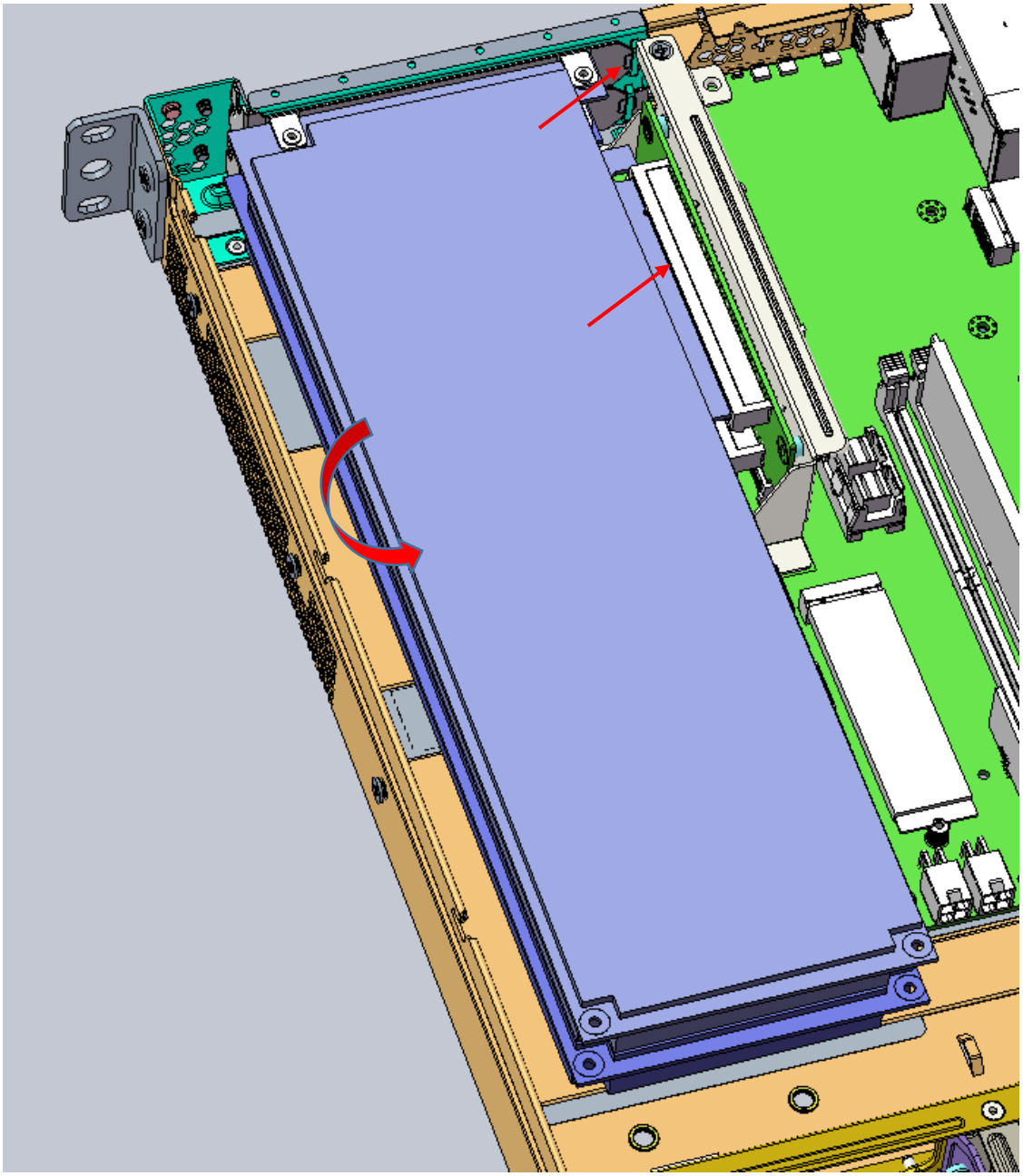
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5. First install the lower PCIe expansion card. Align the tab on the bracket with the opening on the rear I/O panel (A), and insert the PCIe connector into the slot on the riser card (B). Make sure the connector is fully inserted into the PCIe slot.



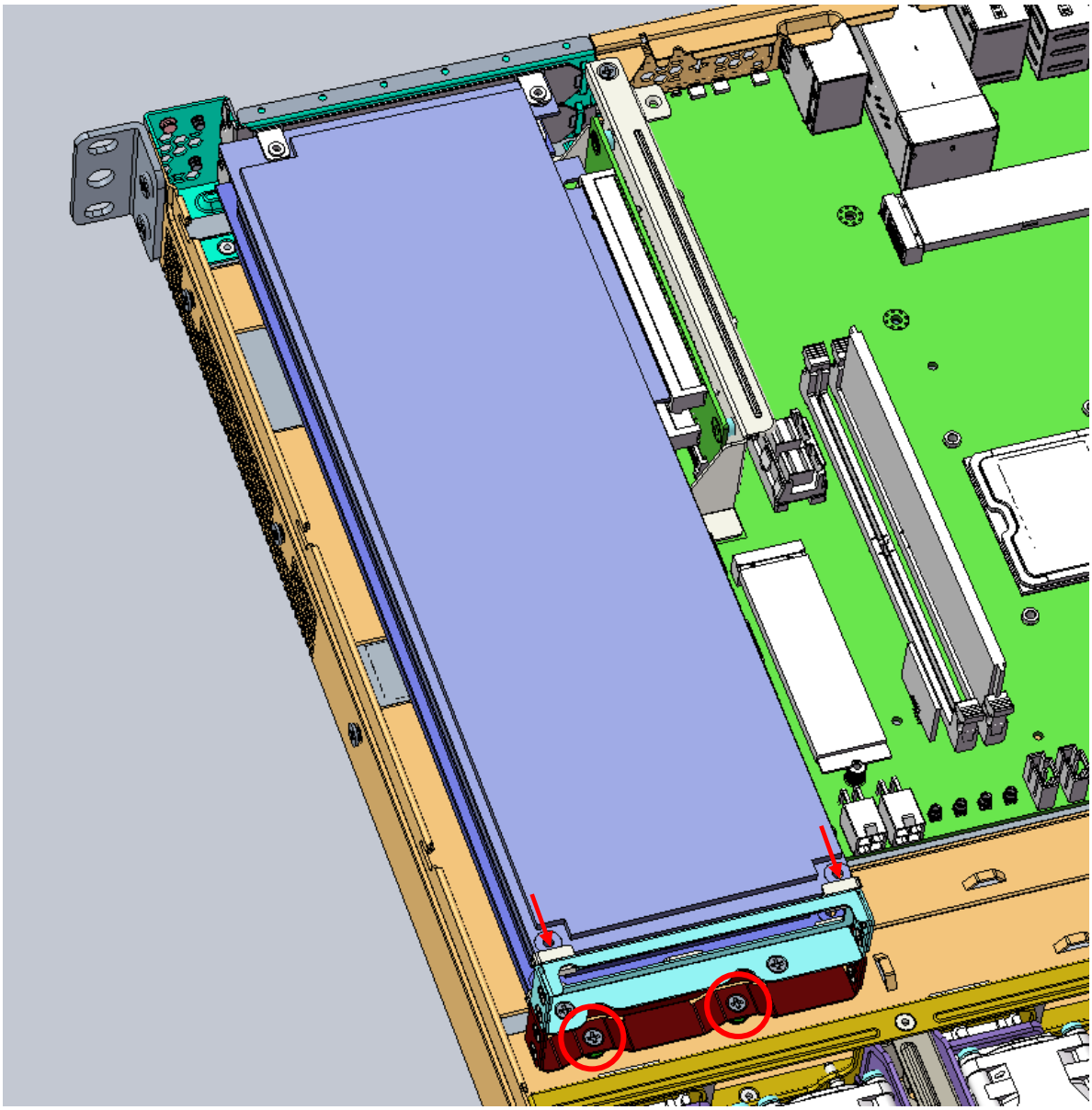
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6. Then install the upper PCIe expansion card, if required



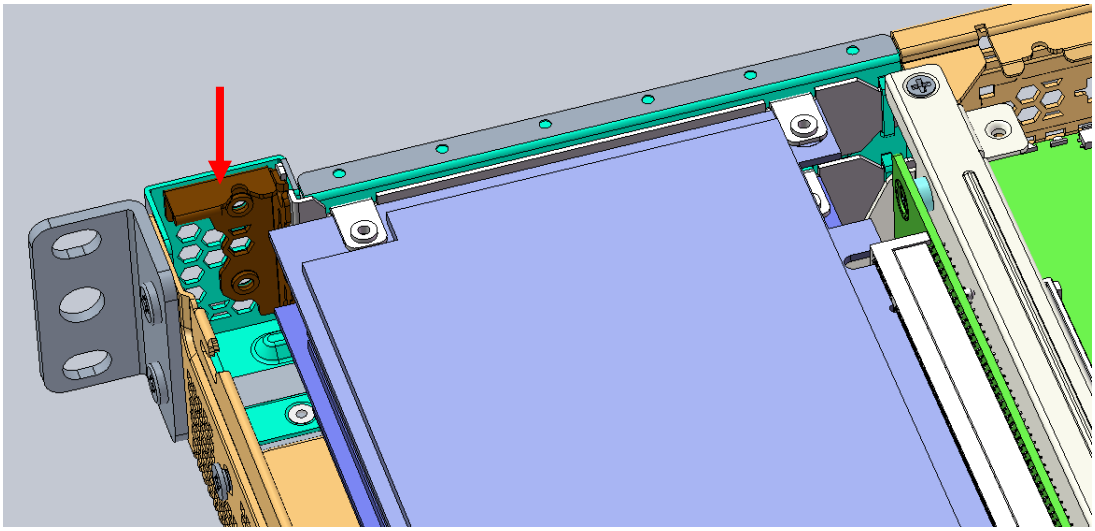
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7. Replace the internal PCIe bracket, insert the PCIe cards into the slots (arrows), and tighten the two screws (circles) to secure the cards inside the chassis.

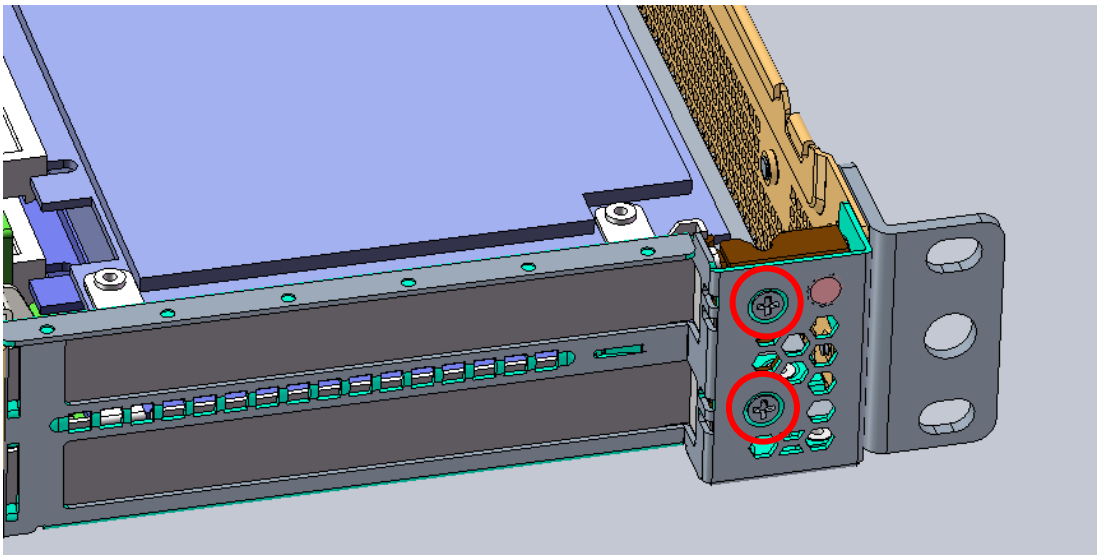


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8. Replace the bracket to secure the PCIe I/O brackets to the chassis.



9. Secure the bracket with two screws as shown.



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3.4 PCIe Slot Secondary Power Supply

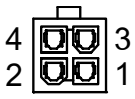
The MECS-6110 is equipped with two 4-pin ATX-type 12V power connectors on the mainboard (see *1.3.5 MECS-6110 Internal Layout* on page 10) to provide secondary power for PCIe expansion cards if required. Two adapter cables are included. The pin definitions of the connectors and cables are described below.

CAUTION:
mise en garde

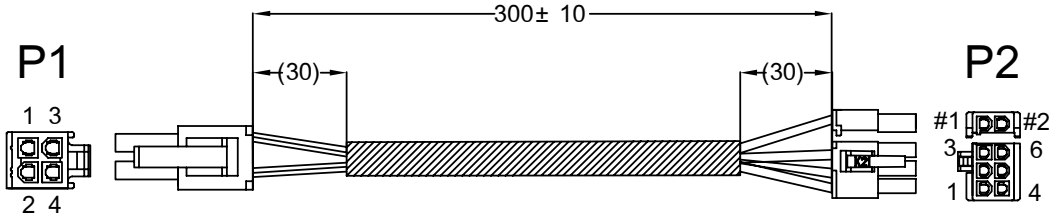
All installation procedures are restricted to skilled personnel.
Toutes les procédures d'installation sont réservées au personnel qualifié.

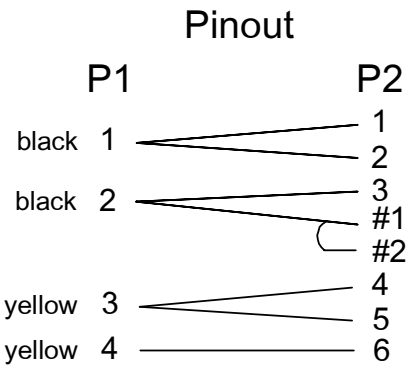
4-pin ATX-type 12V Power Connector Pinout

Pin #	Signal	Color
1	GND	black
2	GND	black
3	P12V	yellow
4	P12V	yellow



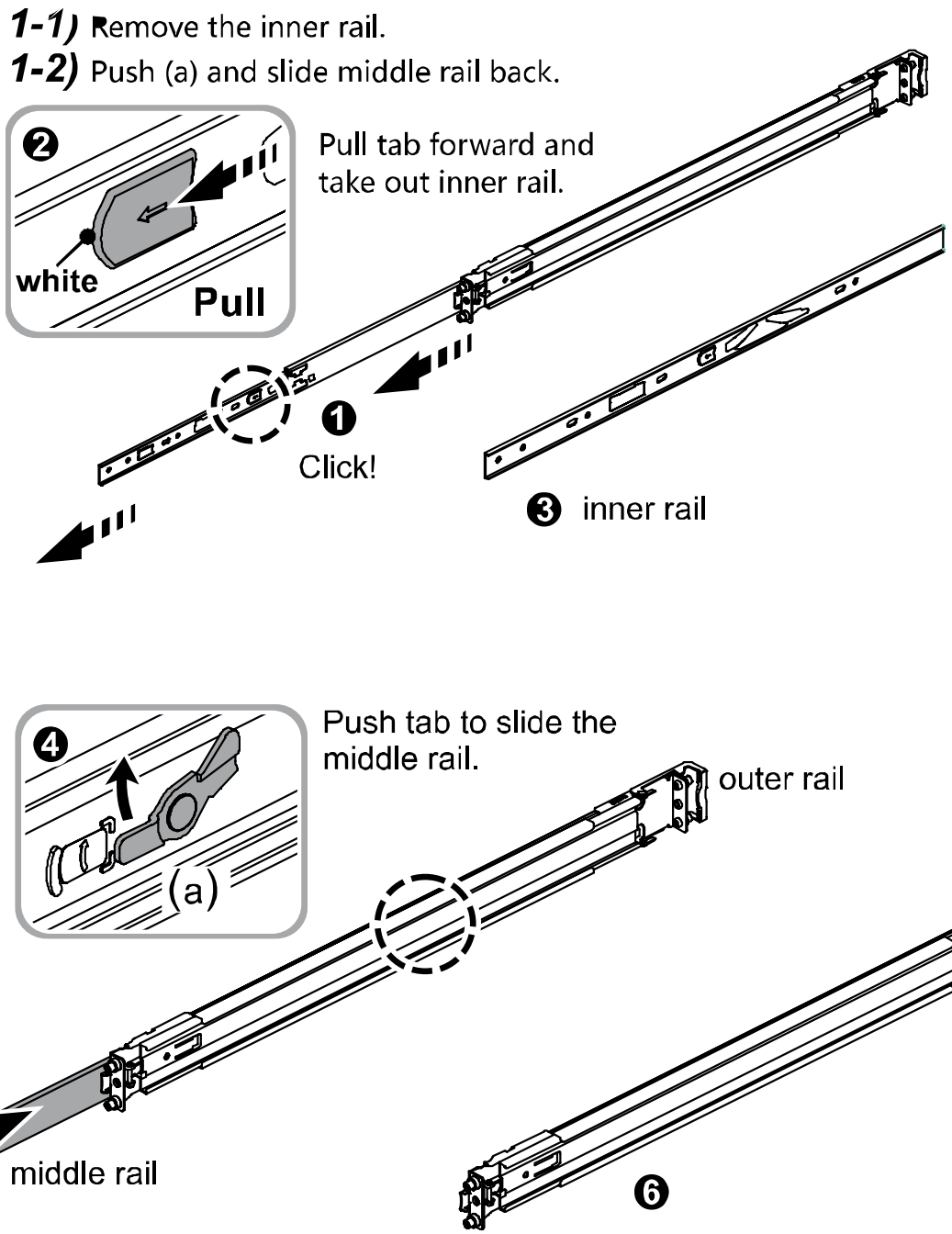
Adapter Cable Connector Pinout





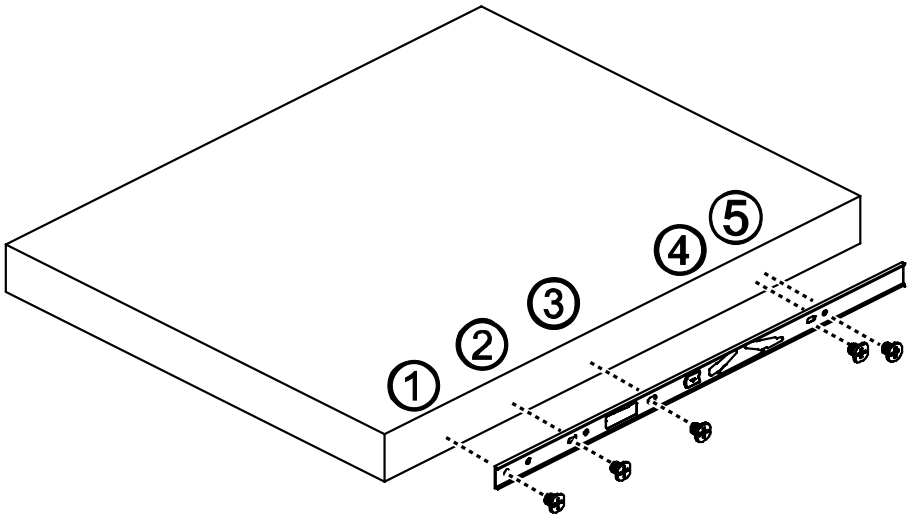
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3.5 Rails Assembly and Rack Installation

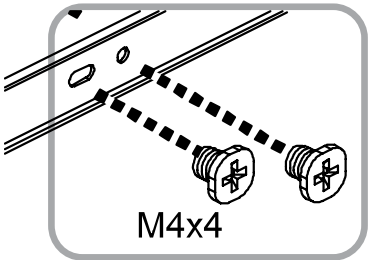


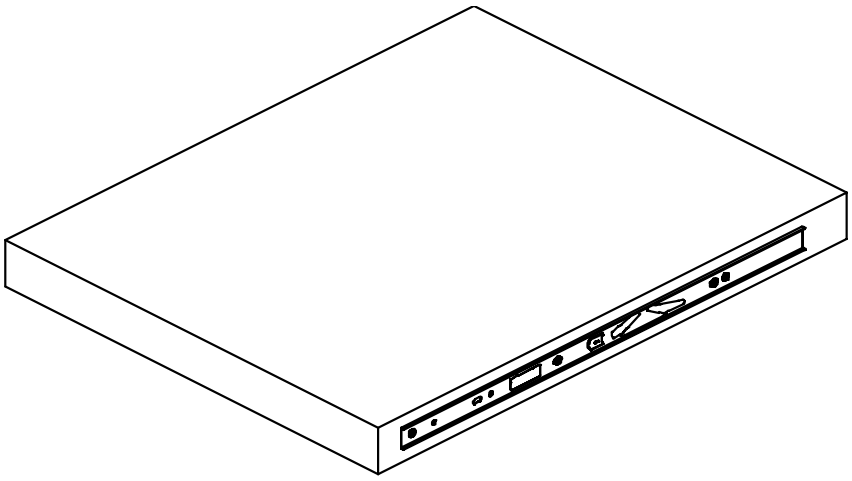
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2) Install the inner rail onto the chassis.



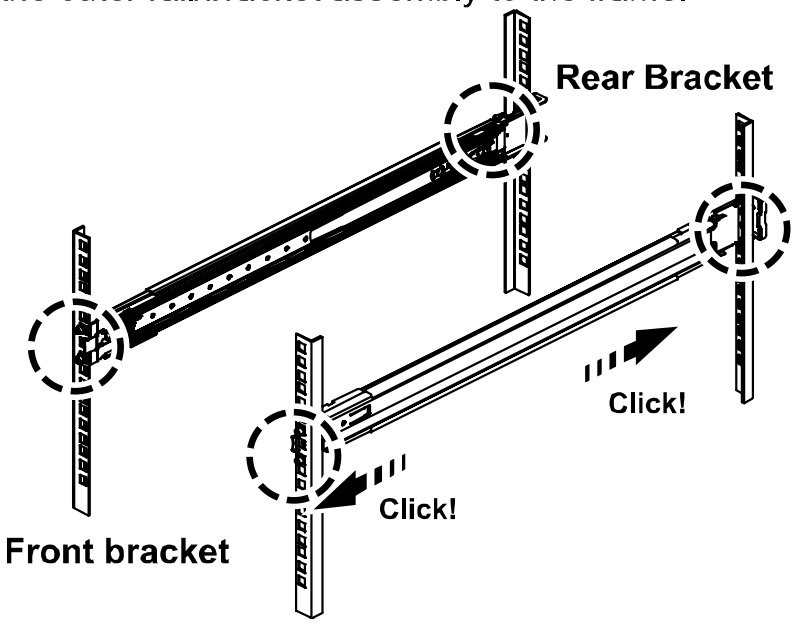
❶ Screw Hole①-⑤

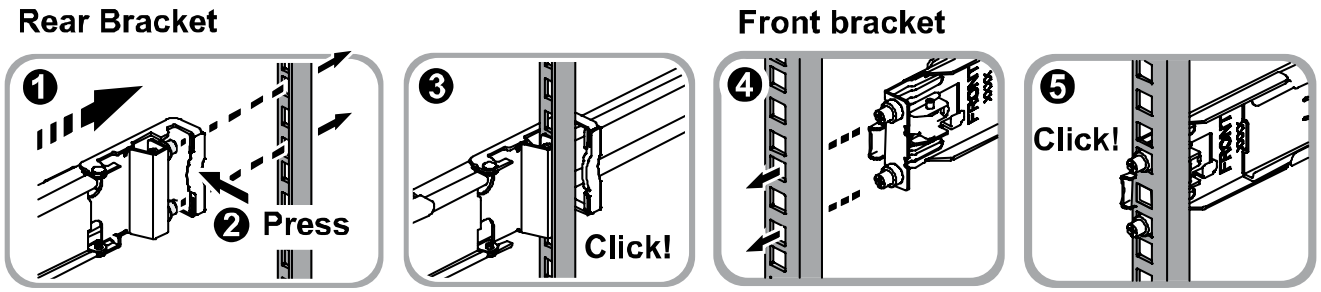




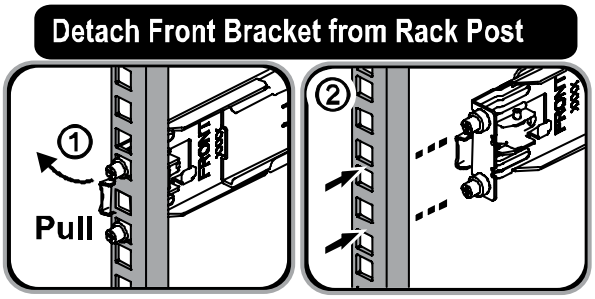
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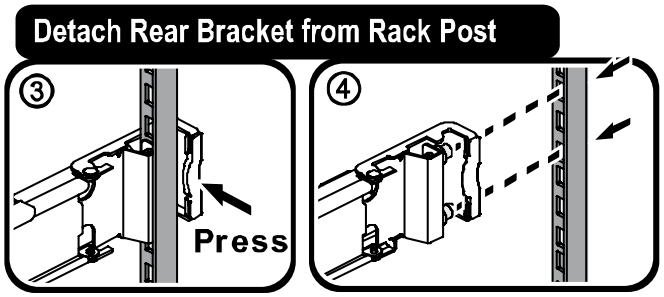
4) Fix the outer rail/bracket assembly to the frame.





❶ Pull the rear bracket the fully extender position.





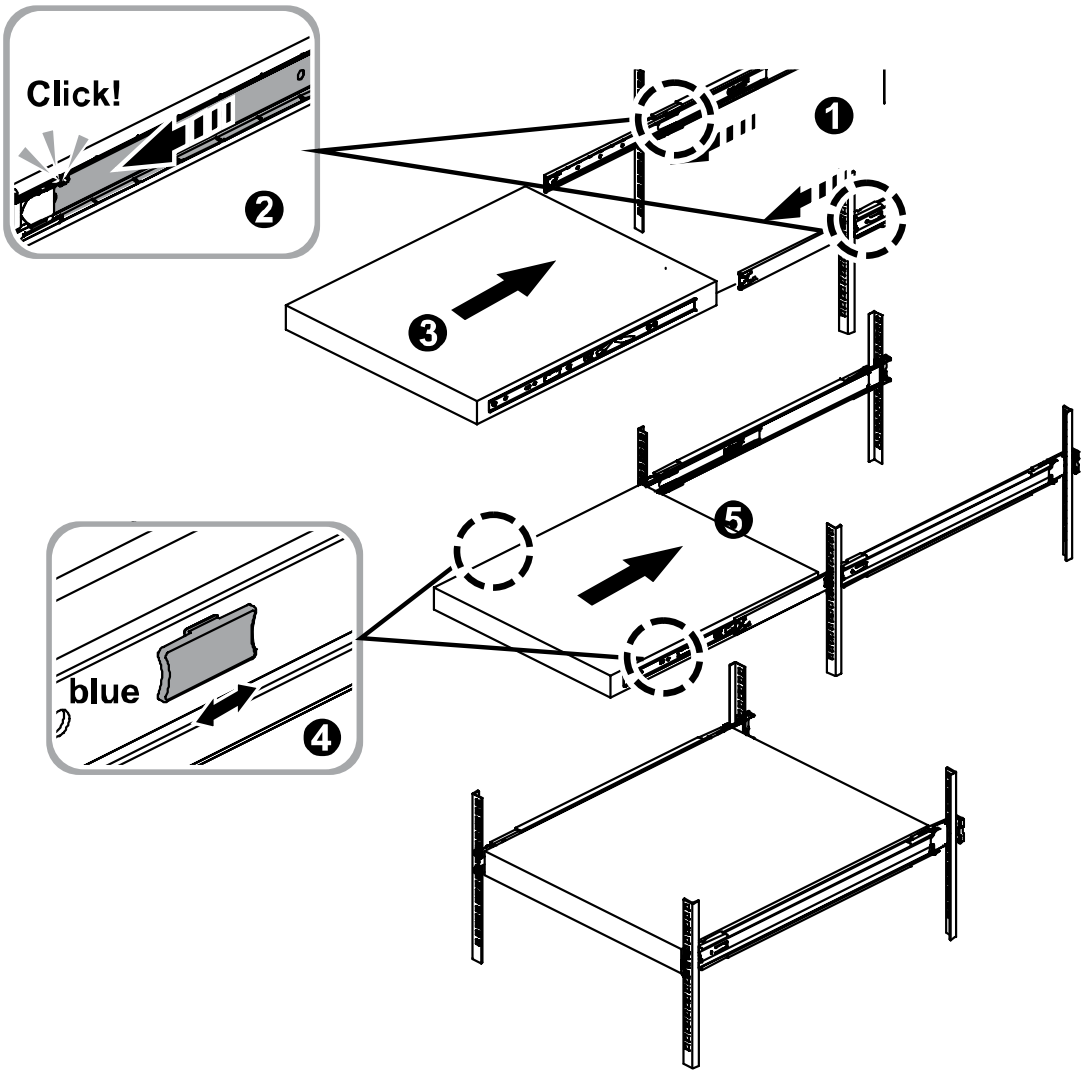
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5) Insert the chassis to complete the installation.

❶❷ Pull the middle rail fully extended in lock position, ensure ball bearing retainer is located at the front of the middle rail.

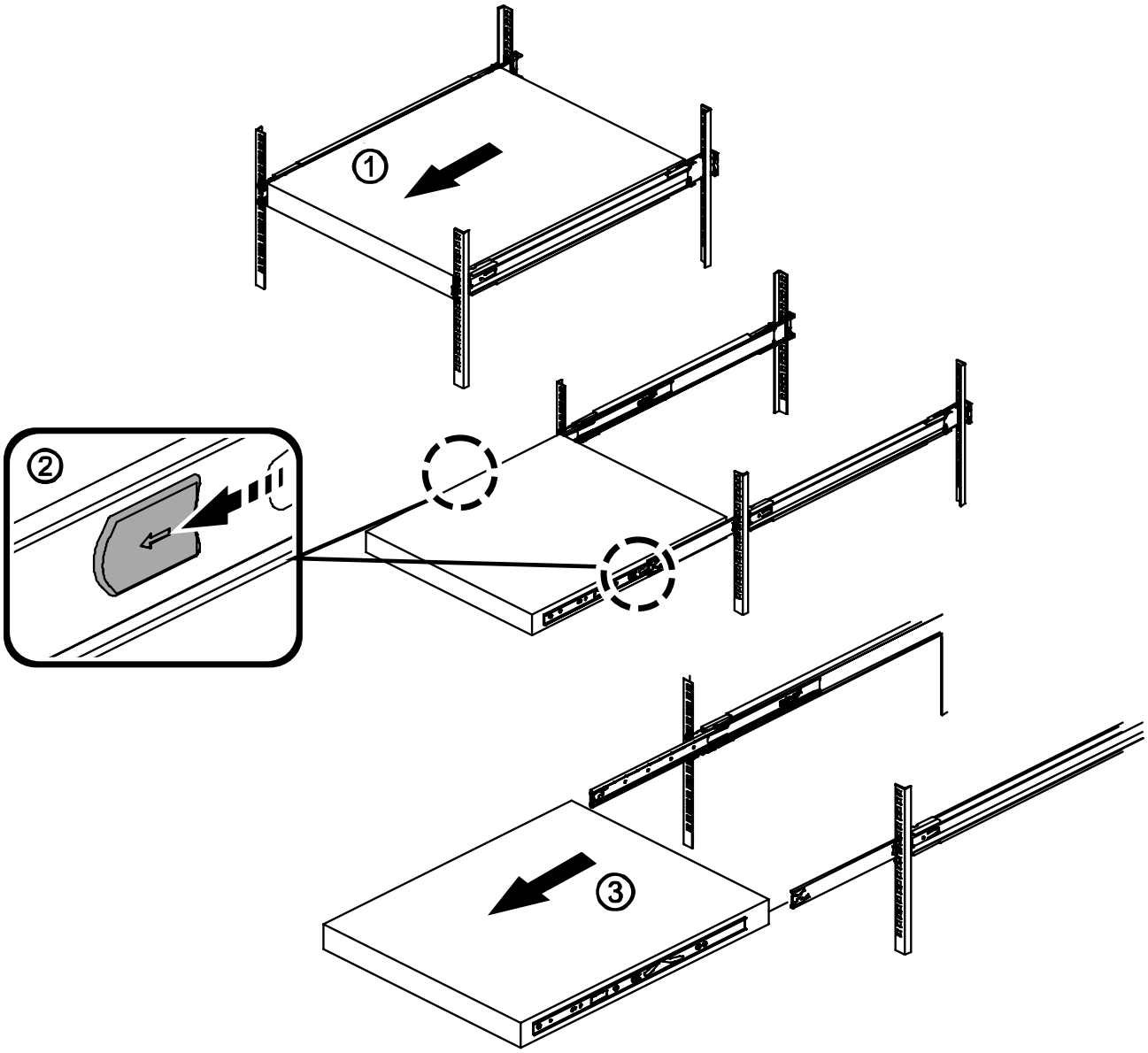
❸ Insert the chassis into middle-outer rails.

❹ ❺When hit a stop, please pull/push the blue release tab on the inner rails.



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3.6 Remove the Chassis from the Rack



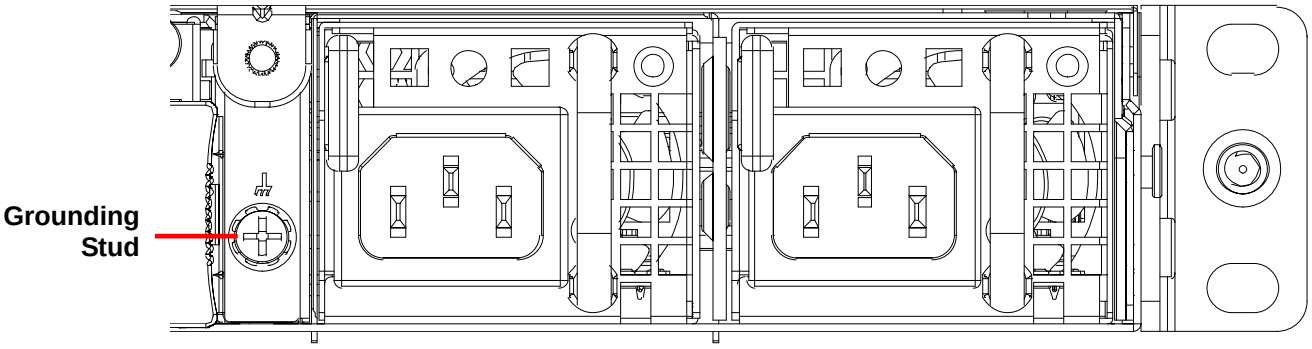
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3.7 Connecting the System to Ground

AC Version

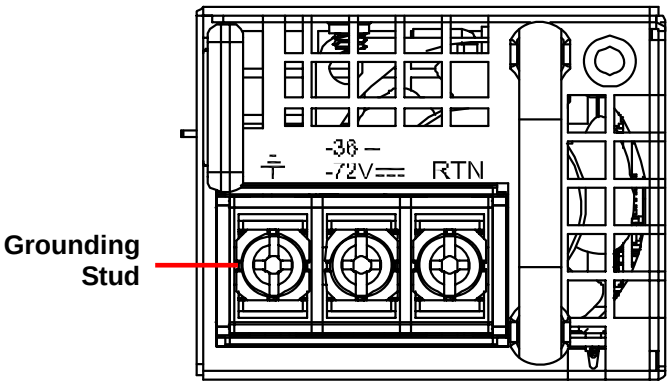
The MECS-6110 is connected to ground by the ground pin of the 3-prong IEC power cord. Please use the power cord provided with the system for your region.

A grounding stud (M4 size) is provided on the rear of the chassis for additional connection to ground.



DC Version

A grounding stud (M3.5, steel zinc plated) is provided on the rear of the chassis for connection to ground.

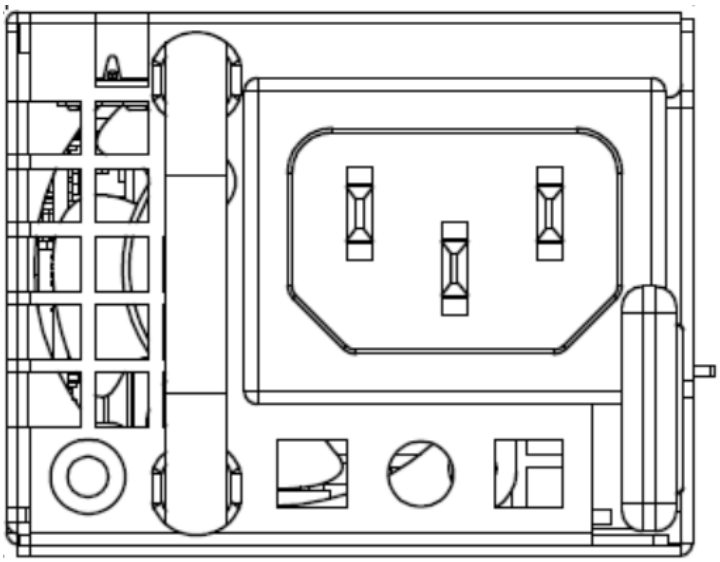


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3.8 System Power Cable Installation

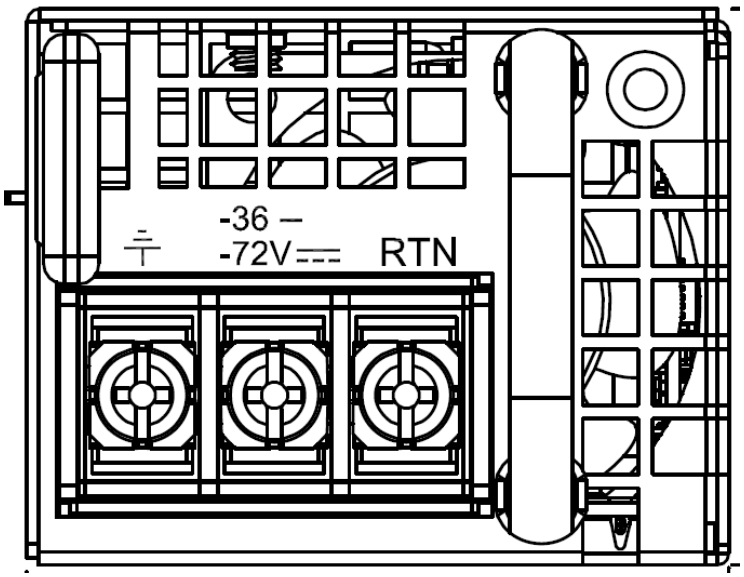
AC PSU Input

3-prong IEC power cord



DC PSU Input

DC Negative: connect to -36V to -72V
DC Positive: connect to RTN



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3.9 Login to the BMC via Console Port

Step 1
Set the Console Port to BMC mode using CN15/16 on the mother board inside the chassis (see *4.9 Board Layout* on page 50).

Console Port Mode	CN15	CN16
default	1-2	1-2
BMC	2-3	2-3

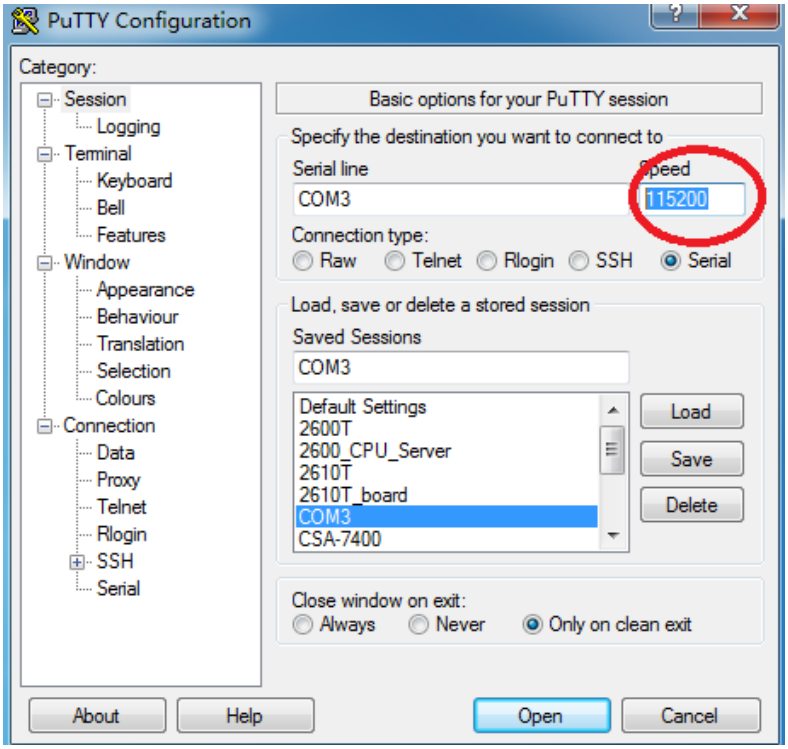
Step 2
Use the included RJ-45 to DB-9 console port adapter cable to connect the PC to the RJ-45 console port of the MECS-6110 (see *1.3.1 MECS-6110 Front Panel* on page 8). See *4.5 Dual USB 3.0 and RJ-45 Console Port* on page 46 for the adapter cable pin definition.



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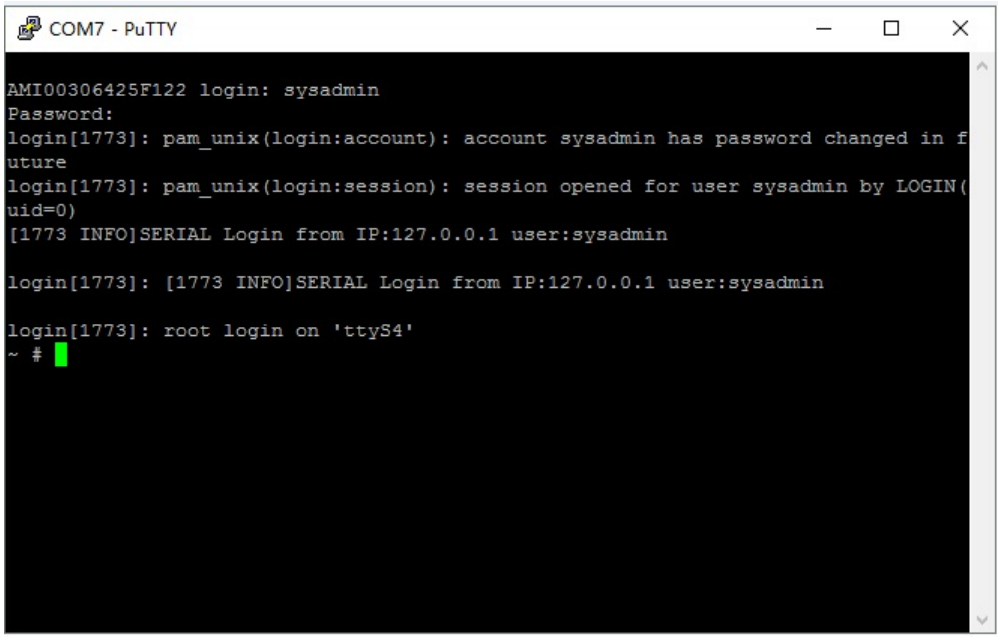
Step 3

Open a serial port console tool (such as PuTTY), choose the higher COM port (it may be different depending on the computer), then set the baud rate to 115200.



Step 3

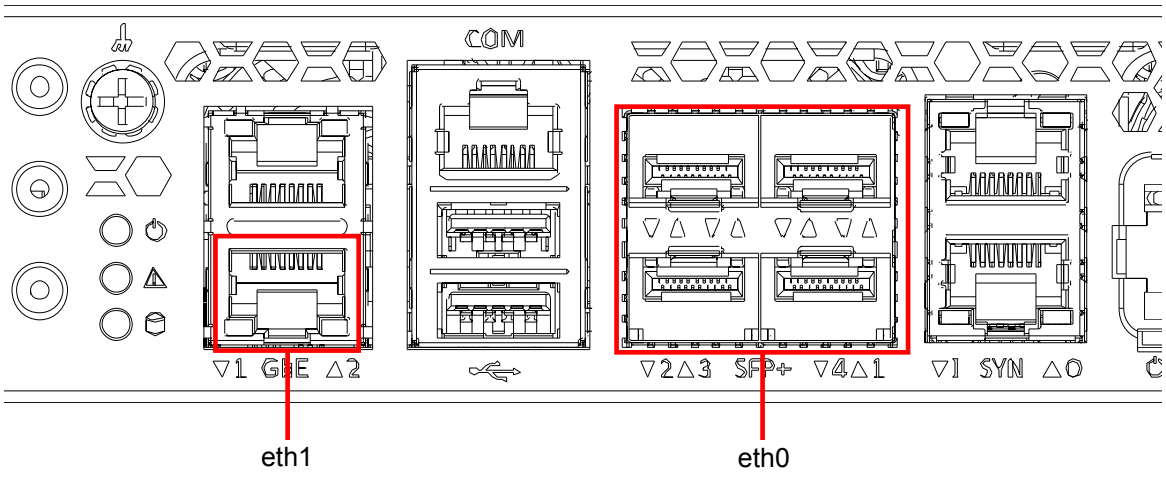
Input the user name “sysadmin” and password “superuser” to login to the system.



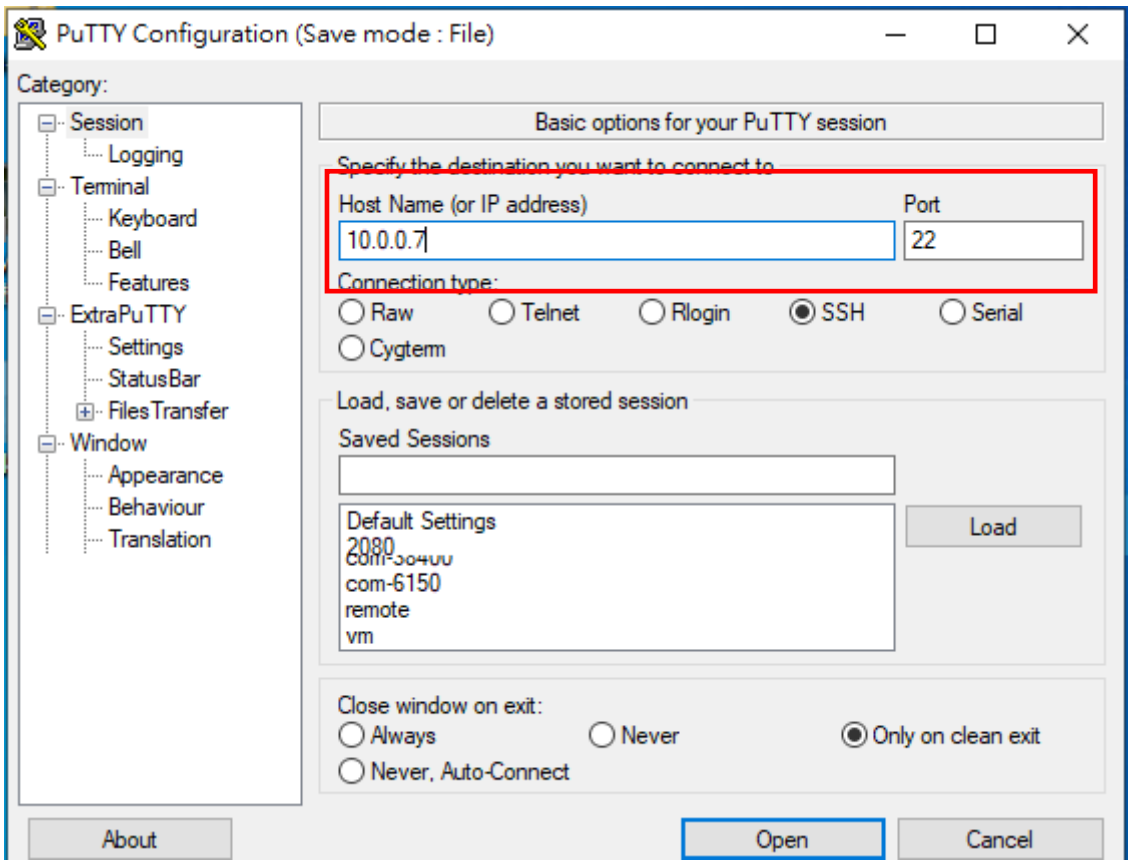
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3.10 Login to the BMC via Network

Step 1
Use a LAN cable to connect either eth0 or eth1 of the MECS-6110 to the PC;

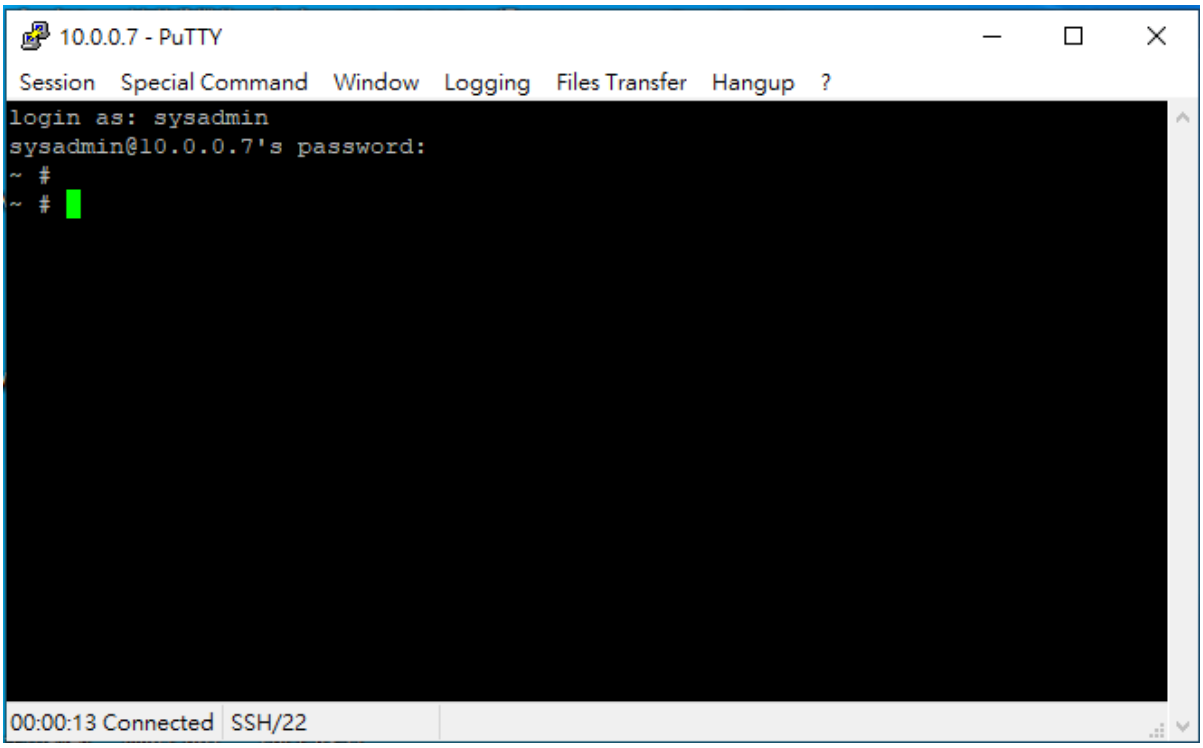


Step 2
Open a serial port console tool (such as PuTTY) enter the IP address, and open a connection to the BMC (login using serial console first to check the IP address).



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Step 3
Input the user name “sysadmin” and password “superuser” to login to the system.



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3.11 BMC eth0 Default and Static IP Settings

The default IP setting is DHCP. Users can login to the BMC to modify the IP.

Static IP Settings:

Show the current LAN setting
- ipmitool lan print 1

Set the IP source to static
- ipmitool lan set 1 ipsrc static

Set the IP address
- ipmitool lan set 1 ipaddr xxx.xxx.xxx.xxx

Set the netmask address
- ipmitool lan set 1 netmask xxx.xxx.xxx.xxx

Set the gateway address
- ipmitool lan set 1 defgw ipaddr xxx.xxx.xxx.xxx

Restore Default:

Set IP source to DHCP
- ipmitool lan set 1 ipsrc dhcp

Note: BMC IP can be set in the BIOS. Refer to “5.8.3 Sub-Menu: BMC Network Configuration”.

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3.12 BMC eth1 Default and Static IP Settings

The default IP setting is DHCP. Users can login to the BMC to modify the IP.

Static IP Settings:

Show the current LAN setting
- ipmitool lan print 8

Set the IP source to static
- ipmitool lan set 8 ipsrc static

Set the IP address
- ipmitool lan set 8 ipaddr xxx.xxx.xxx.xxx

Set the netmask address
- ipmitool lan set 8 netmask xxx.xxx.xxx.xxx

Set the gateway address
- ipmitool lan set 8 defgw ipaddr xxx.xxx.xxx.xxx

Show the lan after setting
- ipmitool lan print 8

Restore Default:

Set IP source to DHCP
- ipmitool lan set 8 ipsrc dhcp

Note: BMC IP can be set in the BIOS. Refer to “5.8.3 Sub-Menu: BMC Network Configuration”.

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3.13 BIOS Update

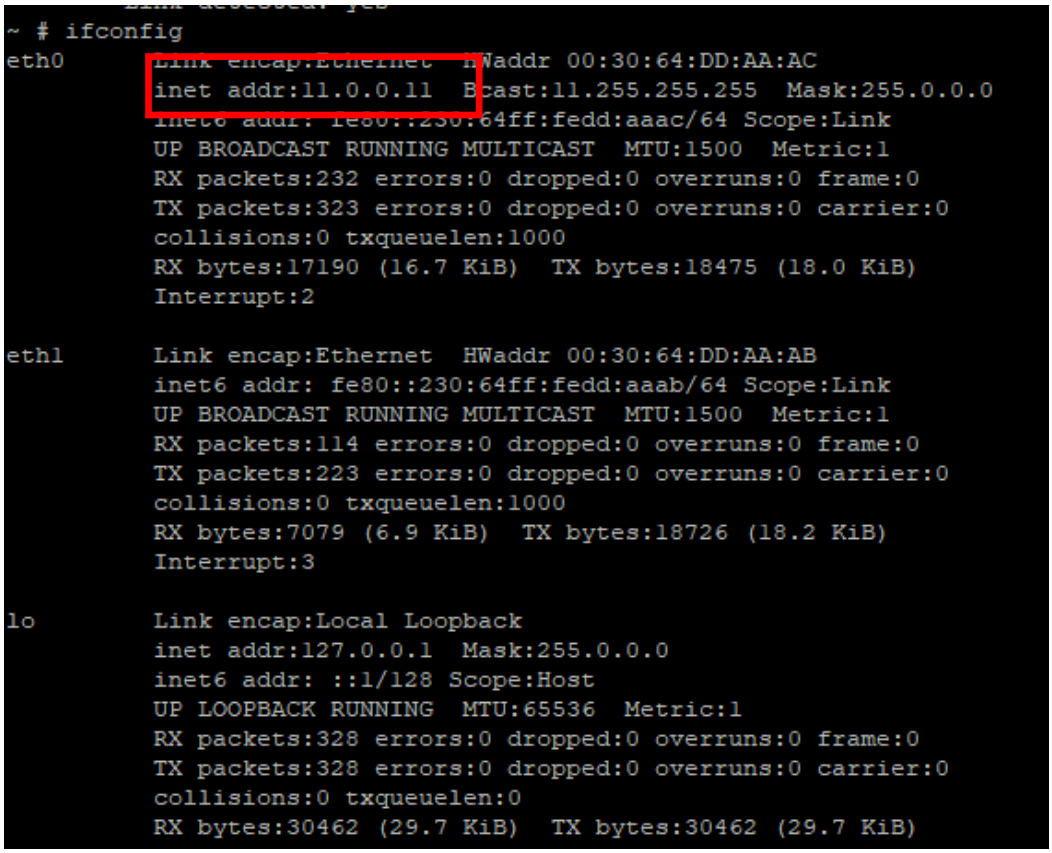
Users can update the MECS-6110 system BIOS over various interfaces (Gigabit LAN, KCS, console port).

3.13.1 Updating the BIOS via Network with BMC Tool

1. Install a Linux distribution, such as Ubuntu 14, to the debug PC.
2. Install “expect” to your debug PC (ex: sudo apt-get install expect).
3. Copy the BMC FW package “BMC_MECS-6110_Release_Vx.xx” to the debug PC;

Upgrade Procedure:

1. Check the IP of the BMC of MECS-6110. Power on the MECS-6110, boot the BMC to Linux (username: sysadmin; Passwd: superuser), and type “ifconfig” check its IP address.



2. On the debug PC, execute the following commands to perform the upgrade.

```
cd BMC_MECS-6110_Release_Vx.xx
cd BIOS
./adlinktool.sh upgradebios1 BIOS_xxxx.bin 11.0.0.11
```

Note: Only “bin” files are supported when updating the BIOS via Network.

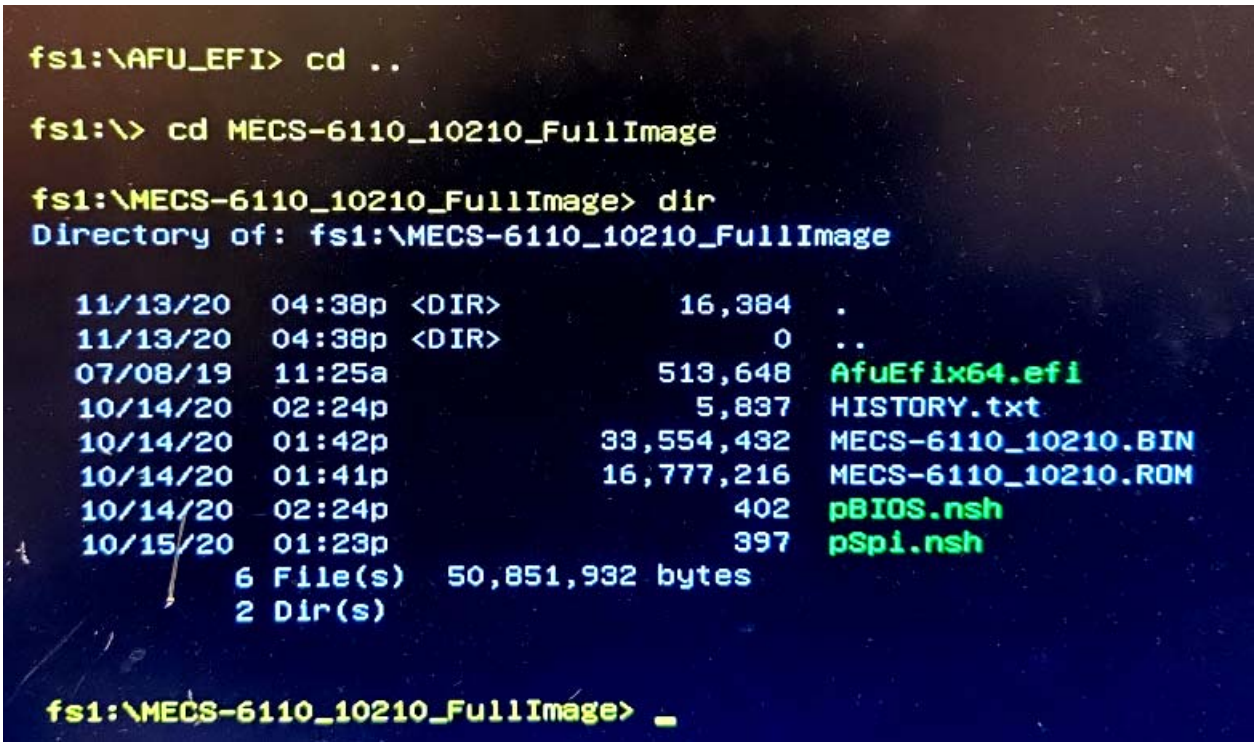
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3.13.2 Updating BIOS via Host with BIOS Tool

1. Boot/Login to Shell
2. Update the BIOS over host with the following commands.

Example:

AfuEfix64 BIOS.ROM /p /b /n /x (to update BIOS without ME)
AfuExfi64 BIOS.BIN /p /b /n /x /me (to update the entire BIOS)



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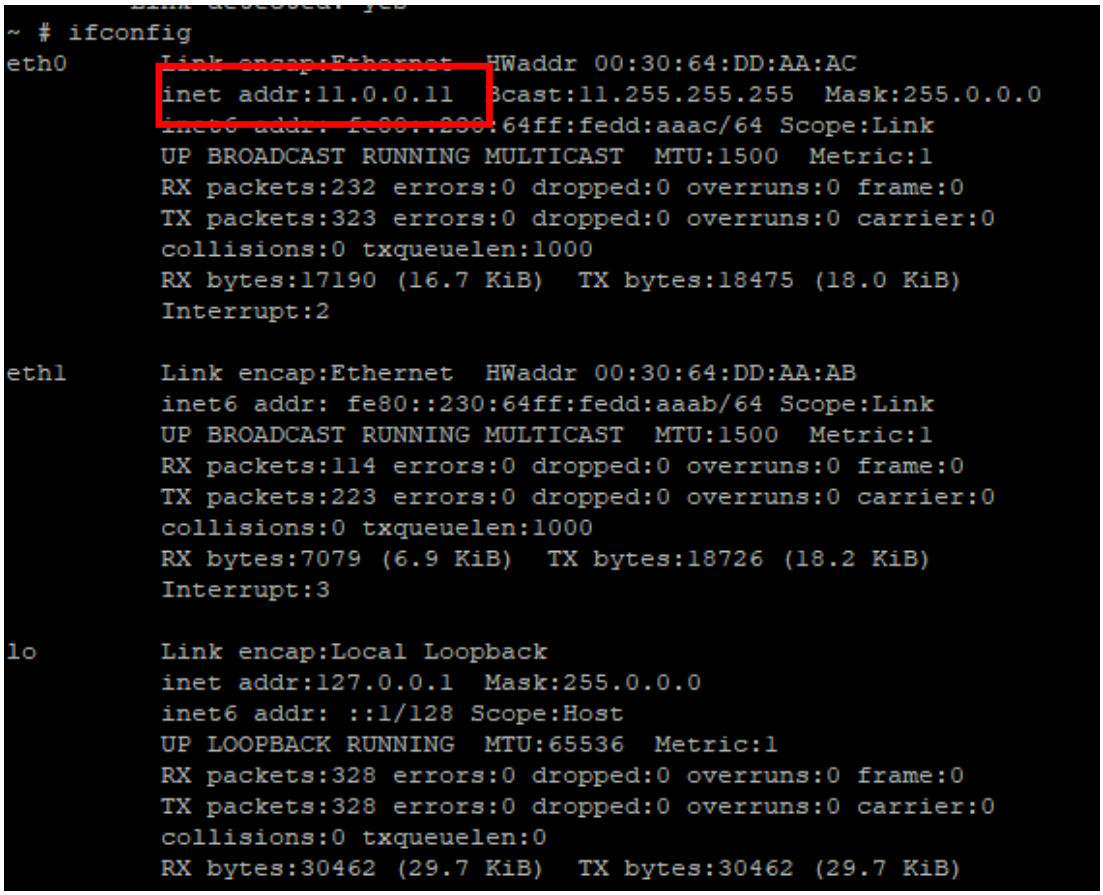
3.14 BMC Firmware Update via Network

The MECS-6110 supports a BMC Chassis Management firmware, IPMI v2.0 compliant. To update the BMC firmware via network, perform the following steps.

1. Install a Linux distribution, such as Ubuntu 14, to the debug PC.
2. Install “expect” to your debug PC (ex: sudo apt-get install expect).
3. Copy the BMC FW package “BMC_MECS-6110_Release_Vx.xx” to the debug PC;

Upgrade Procedure:

1. Check the IP of the BMC of MECS-6110. Power on the MECS-6110, boot the BMC to Linux (username: sysadmin; Passwd: superuser), and type “ifconfig” check its IP address.



2. On the debug PC, execute the following commands to perform the upgrade.

   cd BMC_MECS-6110_Release_Vx.xx

   cd FW

   ./adlinktool.sh bmc1 rom.ima 11.0.0.11

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3.15 BMC Firmware Update via Host with Yafuflash

The MECS-6110 supports a BMC Chassis Management firmware, IPMI v2.0 compliant. To update the BMC firmware via host with Yafuflash, perform the following steps.

1. Login to the OS with root user permission.
2. Update the BMC over host using the commands below:

Example:

```
$ sudo ./Yafuflash -kcs rom.ima

YAFUFlash - Firmware Upgrade Utility (Version 4.117.7)
-----------------------------------------------
(C)Copyright 2016, American Megatrends Inc.
The Module root allocated size is different from the one in the Image
So,Type (Y/y) to do Full Firmware Upgrade or (N/n) to exit
Enter your Option : Y

*********************************************************************
 WARNING!
        FIRMWARE UPGRADE MUST NOT BE INTERRUPTED ONCE IT IS STARTED.
        PLEASE DO NOT USE THIS FLASH TOOL FROM THE REDIRECTION CONSOLE.
*********************************************************************
Uploading Firmware Image : 100%... done
Skipping [boot] Module ....
Flashing [conf] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [root] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [osimage] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [www] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [testapps] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [ast2500e] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Resetting the firmware..........
-----------------------------------------------
Open IPMI Drivers
-----------------------------------------------
Loading Open IPMI Driver:ipmi_devintf
BMC is booting up, Please load ipmi_si Open IPMI Driver after the BMC
Boots up!!!!
Loading Open IPMI Driver:ipmi_msghandler
```


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3.16 Enter BIOS Setup

To enter the BIOS setup screen, follow these steps:

1. Power on the MECS-6110.
2. Press the <Delete> or <ESC> key on your keyboard when you see the following text prompt: “Press DEL or ESC to enter Setup”.
   (Note: If Quick Boot is enabled, the screen below will not display, but pressing the <Delete> or <ESC> key will still allow you to enter the BIOS setup screen.)



3. After pressing the <Delete> or <ESC> key, the main BIOS setup menu will display. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.

3.17 Clear CMOS

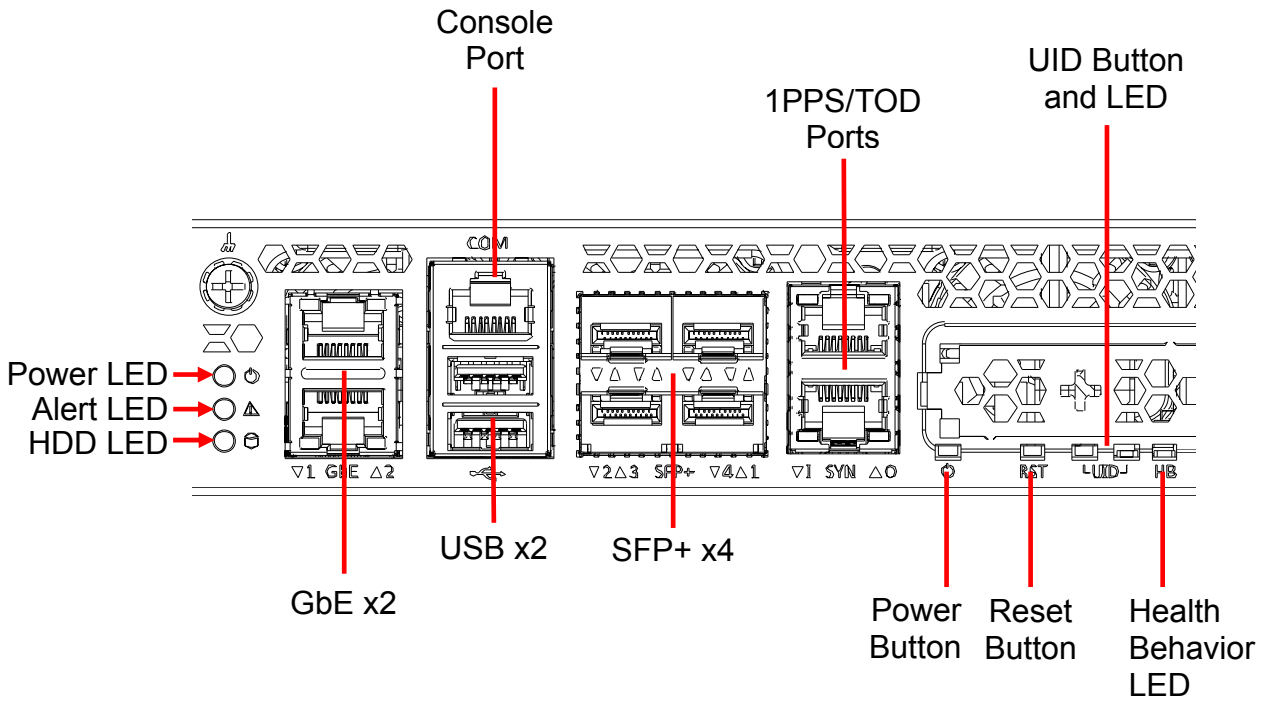
See *4.9 Board Layout* on page 50 for the location of the Clear CMOS jumper (CN25).

CN25	Setting
1-2	default
2-3	Clear CMOS

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4 System Interfaces

4.1 Front Panel I/O



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4.2 Status LEDs and Buttons

Power LED (green)
The Power LED will light when the system is booted up (S0 state).

Alert LED (red)
Off: Indicates normal system operation. On: Indicates a critical alarm.

Drive Activity (HDD) LED (yellow)
The Drive Activity (HDD) LED is controlled by SATALED# from the chipset. When SATA storage is active (read/write), the LED will blink.
Note: This LED can also be user defined. Refer to *4.7 HDD/User LED Jumper* and *4.8 User LED Commands* on page 48.

UID Button and LED (blue)
The UID button/indicator is used to conveniently locate the server. The LED can be turned off or on manually by pressing the UID button or remotely controlled by management command.

Health Behavior LED (green/red)
The Health Behavior LED has the following behavior.

1. Default: Green (blinking) indicates healthy BMC status.

2. Override: User can use the OEM LED command (LED1/LED2) to override the LED status to reflect the system health status.

Power Button
The behaviour of the power buttons is as follows:

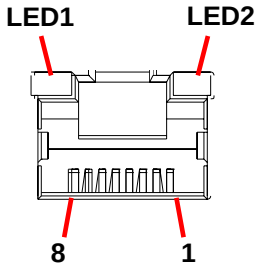
1. When system is powered on, pressing the button briefly will trigger the OS to perform a graceful shut down.
2. When system is powered on, pressing the button for ≥ 4 seconds will trigger a hard shut down.
3. When system is powered off, pressing the button briefly will power on the system.

Reset Button
Pushing the reset button will trigger a cold reset of the system.

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4.3 LAN Ports

Pin #	Signal
1	MDI_P0
2	MDI_N0
3	MDI_P1
4	MDI_N1
5	MDI_P2
6	MDI_N2
7	MDI_P3
8	MDI_N3



LAN LED Behaviour

The LAN LEDs are integrated into the RJ-45 connector. Their behavior is as follows:

The LED1 (Speed) indicates the speed of the LAN connection.

LED1 (Speed)	
10 Mbps	Off
100 Mbps	Green
1000 Mbps	Orange

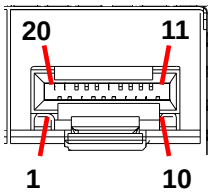
The LED2 (Link/Activity) indicates that a link has been established by lighting orange. When data is transmitted the LED blinks orange.

LED2 (Link/Activity)	
Link with no activity	Steady
Link with activity	Blinking

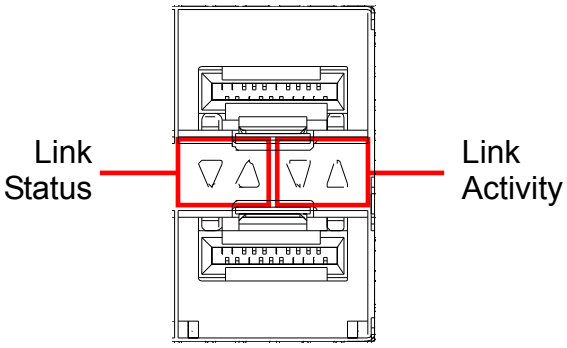
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4.4 SFP+ Ports

Pin	Signal Name
1	GND
2	TX_FAULT
3	TX_DSBL
4	SDA
5	SCL
6	MOD_ABS
7	RS0
8	RX_,OS
9	RS1
10	GND
11	GND
12	RD-
13	RD+
14	GND
15	VCCR
16	VCCT
17	GND
18	TX+
19	TX-
20	GND



SFP+ LED Behaviour



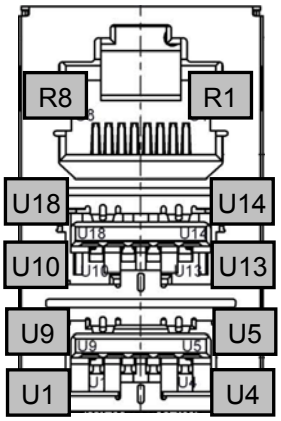
The LEDs point to the respective port.

LED	Status	Behavior
Link Status	Link up	Yellow (steady)
	Link down	Off
Link Activity	Active	Green (blinking)
	Not active	Off

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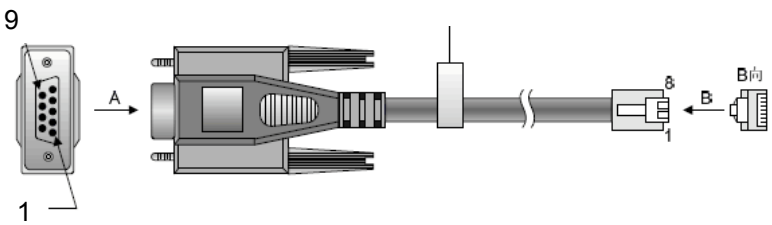
4.5 Dual USB 3.0 and RJ-45 Console Port

Pin	Signal Name
R1	N/C
R2	N/C
R3	COM_TXD
R4	GND
R5	GND
R6	COM_RXD
R7	N/C
R8	N/C
U1	5V
U2	USB2_N
U3	USB2_P
U4	GND
U5	SSRX_N
U6	SSRX_P
U7	GND
U8	SSTX_N
U9	SSTX_P
U10	5V
U11	USB2_N
U12	USB2_P
U13	GND
U14	SSRX_N
U15	SSRX_P
U16	GND
U17	SSTX_N
U18	SSTX_P



The MECS-6110 comes with an RJ-45 to DB-9 console port adapter cable.

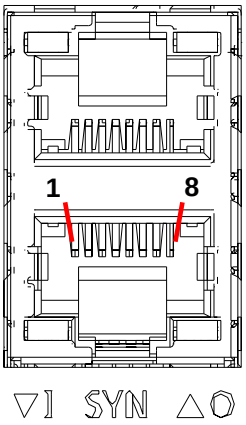
DB-9 Pin	Signal
1	—
2	RXD
3	TXD
4	DTR
5	SG
6	DSR
7	RTS
8	CTS
9	—



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4.6 1PPS/TOD Connector

Pin #	Signal (Upper)	Signal (Lower)
1	NC	NC
2	NC	NC
3	1PPS_TXD_N	1PPS_RXD_N
4	GND	GND
5	GND	GND
6	1PPS_TXD_P	1PPS_RXD_P
7	TOD_TXD_N	TOD_RXD_N
8	TOD_TXD_P	TOD_RXD_P



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4.7 HDD/User LED Jumper

The HDD/User LED Jumper (CN39) can be used to set the function of the Drive Activity LED (default is Drive Activity).

CN25	Setting
1-2	SATA Drive Activity (default)
2-3	User Defined

4.8 User LED Commands

4.8.1 OEM ADLINK Set LED Status

NetFn=2Eh, Cmd=10h

Byte	Data Field
1-3	ADLINK Manufacturer ID – 005F13h, LS byte first.
4	LED ID: 01h= UID LED (blue) 02h = USR LED (yellow, HDD shared) 03h = Alert LED (red) 04h = LED1 (green) 05h = LED2 (red) Other values: reserved
5	LED Function: 00h = LED OFF override. 01h - 1Eh = LED BLINKING override. The off duration is specified by the value of this byte, and the on duration is specified by the value of byte 5. Both values specify the time in hundreds of milliseconds (100 ms-3 s). 1Fh = LED state is restored to Local Control state 20h-FEh Reserved FF = LED ON override
6	On-duration: The LED on-time in hundreds of milliseconds if (01h ≤ Byte 6 ≤ 1Eh) and ignored otherwise. Otherwise, this field is ignored and is set to 0h.
	Response Field
1	Completion Code
2-4	ADLINK Manufacturer ID – 005F13h, LS byte first.

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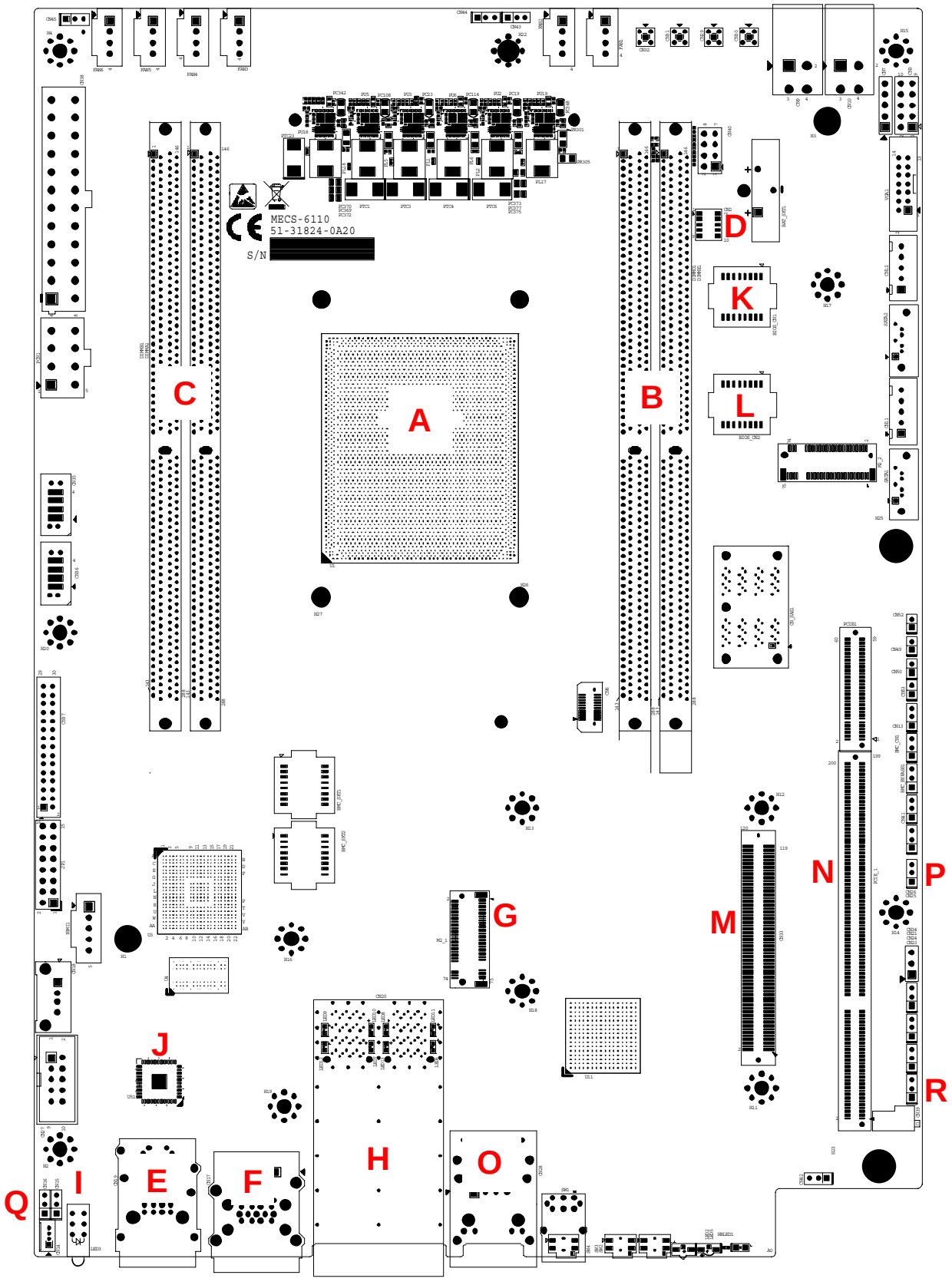
4.8.2 OEM ADLINK Get LED Status

NetFn=2Eh, Cmd=11h

Byte	Data Field
1-3	ADLINK Manufacturer ID – 005F13h, LS byte first.
4	LED ID: 01h= UID LED (blue, UID led) 02h = USR LED (yellow, HDD shared) 03h = Alert LED (red) 04h = LED1 (green, default blink) 05h = LED2 (red, default off) Other values: reserved
	Response Field
1	Completion Code
2-4	ADLINK Manufacturer ID D of ran, LS byte first.
5	LED ID: 01h= UID LED (blue) 02h = USR LED (yellow, HDD shared) 03h = Alert LED (red) 04h = LED1 (green, default blink) 05h = LED2 (red) Other values: reserved
6	LED Function: 00h = LED OFF override. 01h - 1Eh = LED BLINKING override. The off duration is specified by the value of this byte, and the on duration is specified by the value of byte 7. Both values specify the time in hundreds of milliseconds (100 ms-3 s). 1Fh = LED is in Local Control state 20h-FEh Reserved FF = LED ON override
7	On-duration : The LED on-time in hundreds of milliseconds if (01h Byte 6 1Eh) and ignored otherwise set to 0h.

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4.9 Board Layout



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A	Intel® Xeon® D-2100 SOC	**J**	Intel® i210-IT GbE Controller
B	DDR4 Socket 1	**K**	Secondary BIOS SPI Flash
C	DDR4 Socket 2	**L**	Primary BIOS SPI Flash
D	Debug Port (Port 80)	**M**	OCP Connectors
E	BMC/MECS-6110 LAN RJ-45	**N**	PCIe x32 Connector
F	Console Port RJ-45 + USB 3.0	**O**	1PPS+TOD Ports
G	M.2 Slot	**P**	Clear CMOS Jumper (CN25)
H	SFP+ Connectors	**Q**	BMC Mode Jumpers (CN15/16)
I	Status LEDs	**R**	HDD/User LED Jumper (CN39)

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5 BIOS Setup

5.1 BIOS Setup Menu

The BIOS setup utility is invoked by pressing <ESC> or <DEL> keys. User can change BIOS settings during setup utility runs. A system reset is required for new settings to take effect.

In the BIOS setup utility, there are several hot keys are designed for specific purposes, as listed below.

- <F1>: General help in setup menu
- <F8>: Load previous BIOS values
- <F9>: Load BIOS default in setup utility
- <F10>: Save & Exit setup utility

To navigate through the BIOS setup menu, use the following.

→←	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.

5.1.1 Menu Selection Bar

The Menu Selection Bar is located at the top of the screen. It displays the top level available menus to the user:

- Main Menu
- Advanced Menu
- Platform Configuration Menu
- Server Mgmt
- Security Menu
- Boot Menu
- Save & Exit Menu

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5.1.2 Menu Conventions

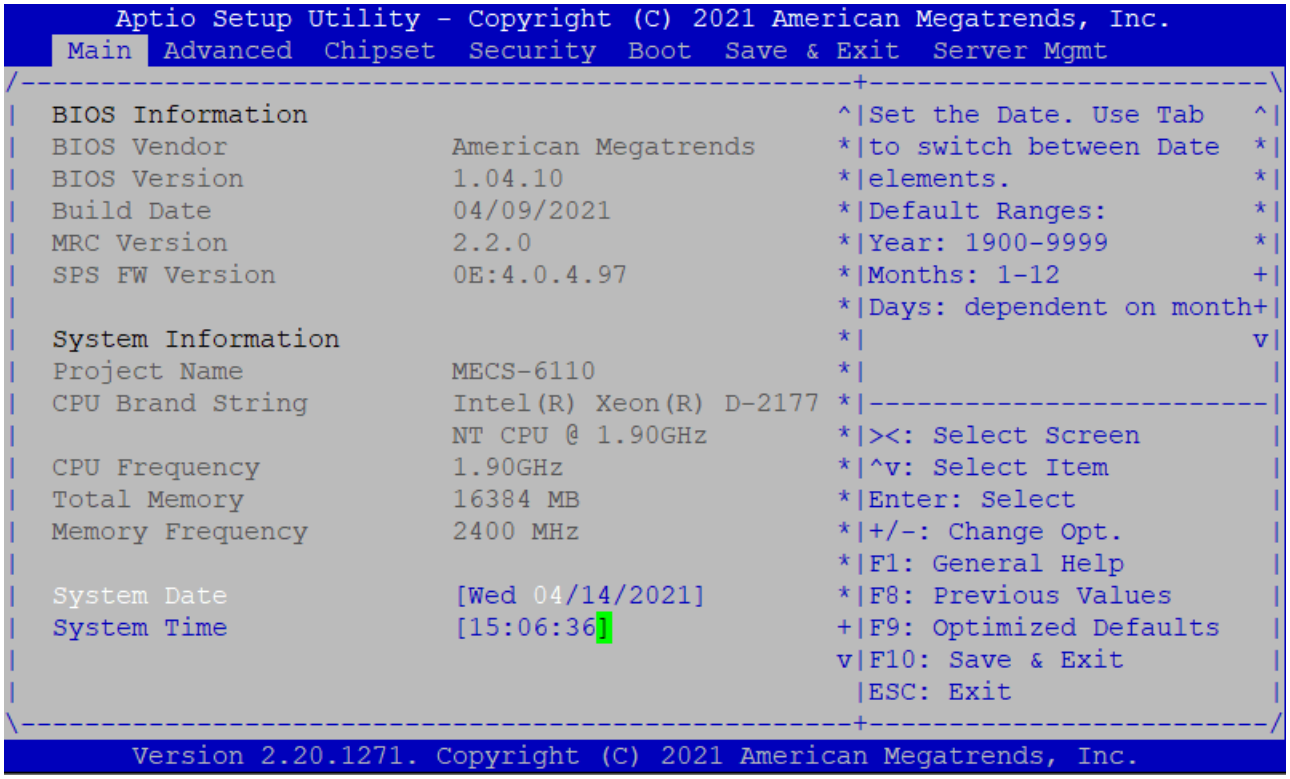
The appearance of the setup menu listed in this chapter is a sample to describe the item list. It is shown on a VT100 terminal via serial console. The menu conventions are as follows.

Using color
The mandatory BIOS setup fields are in black. The BIOS setup fields currently not used are in grey. The display only strings are in black.

Using brackets
Editable menu options are marketed with squares '[' and ']' to distinguish them from display only fields that can't be modified.

5.2 Main Menu

The Main Menu provides read-only information about the system and also allows you to set the system date and time. The tables below show screen shots of the Main menu details, submenus and settings.



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5.2.1 BIOS Information

BIOS Item	Options	Description
BIOS Vendor	**Info-only.** American Megatrends	Display vendor name of system BIOS.
BIOS Version	**Info-only.** x.yy.zz	Display version of booting BIOS.
Build Date	**Info-only.** MM/DD/YYYY	It shows the date that BIOS was built.
MRC Version	**Info-only.** xxx.Ryy	Display the revision of MRC code which is implemented in BIOS.
SPS FW Version	**Info-only.** ww:x.y.z.aaa	Display the version of Intel manageability firmware which is implemented in BIOS.

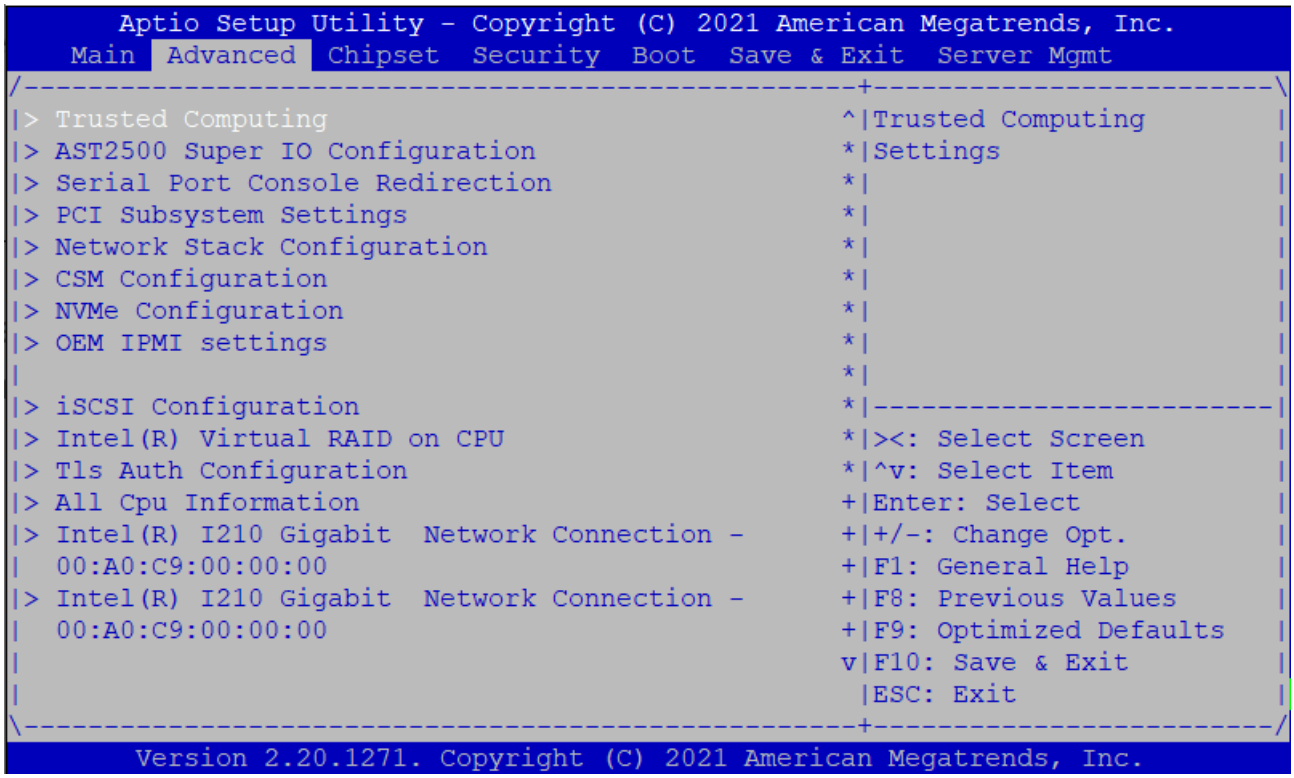
5.2.2 System Information

BIOS Item	Options	Description
Project Name	**Info-only.**	It shows Project Name
CPU Brand String	**Info-only.** Intel(R) Core, …	It shows what CPU is booting the system.
CPU Frequency	**Info-only.** XXXX MHz	It shows CPU's frequency.
Total Memory	**Info-only.** XXXX MB (DDR4)	It shows total memory size used on the motherboard and memory type.
Memory Frequency	**Info-only.** XXXX MHz	It shows memory's frequency.
System Date	MM/DD/YYYY	For configuring/showing system date. When setting the Date, use <Tab> key to switch between Date elements.
System Time	HH:MM:SS	For configuring/showing system time. When setting the Time, use <Tab> key to switch between Time elements.
Access Level	**Info-only.** Administrator/User	It shows what access level is used to enter BIOS setup menu.

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5.3 Advanced Menu

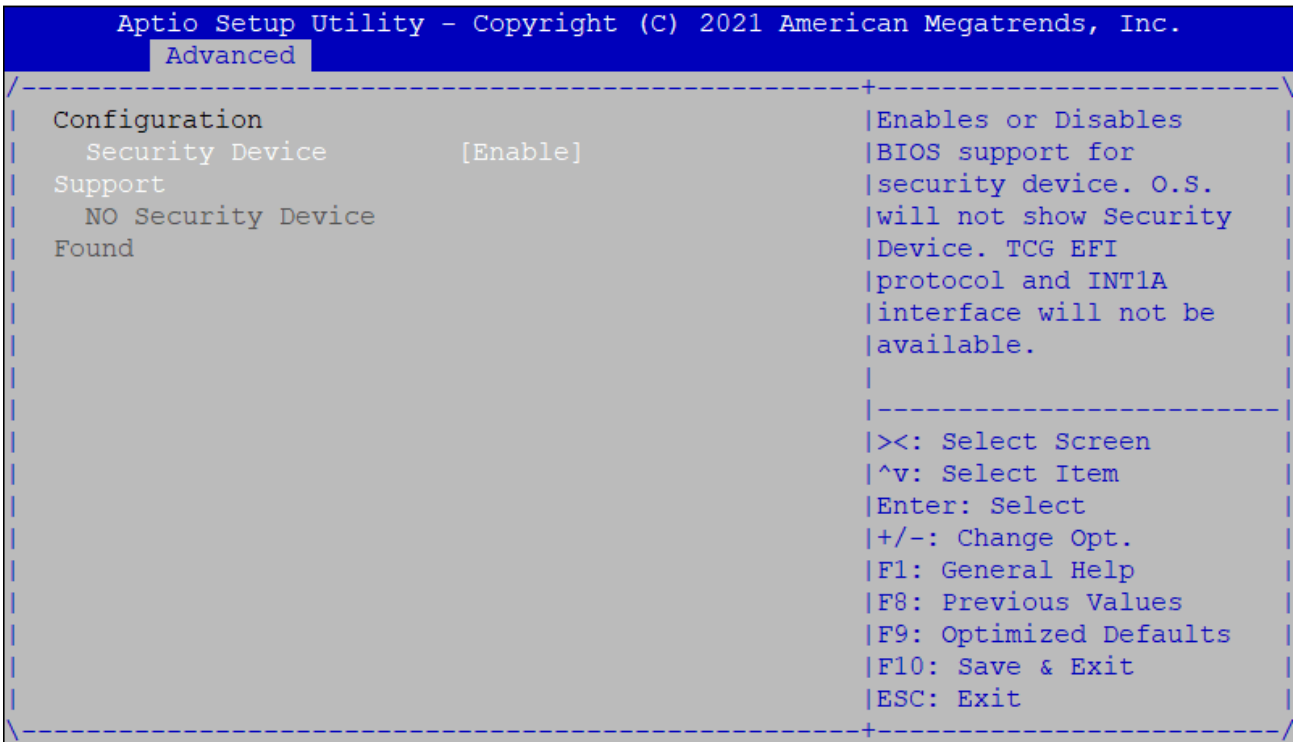
This menu contains the settings for most of the user interfaces in the system.



BIOS Item	Options	Description
Trusted Computing	**Sub-Menu**	For TPM setting
AST2500 Super IO Configuration	**Sub-Menu**	For System Super IO configuration
Serial Port Console Redirection	**Sub-Menu**	For configuring serial console.
PCI Subsystem Settings	**Sub-Menu**	PCI settings
Network Stack Configuration	**Sub-Menu**	For configuring Network Stack.
CSM Configuration	**Sub-Menu**	For CSM configuration
NVME Configuration	**Sub-Menu**	For NVME devices
OEM IPMI Settings	**Sub-Menu**	For OEM IPMI settings
iSCSI Configuration Intel(R) Virtual RAID on CPU Tls Auth Configuration All Cpu Information	**No Detail**	Dynamic page
Intel(R) I210 Gigabit Network Connection - … Intel(R) Ethernet Connection X722 10Gbe SFP+…..	**Sub-Menu**	Onboard Ethernet controller configuration loaded by EFI driver. The setup page designed by Intel and when running Ethernet EFI driver, this page will be shown. It is related to “Network” setting in Boot setup page.

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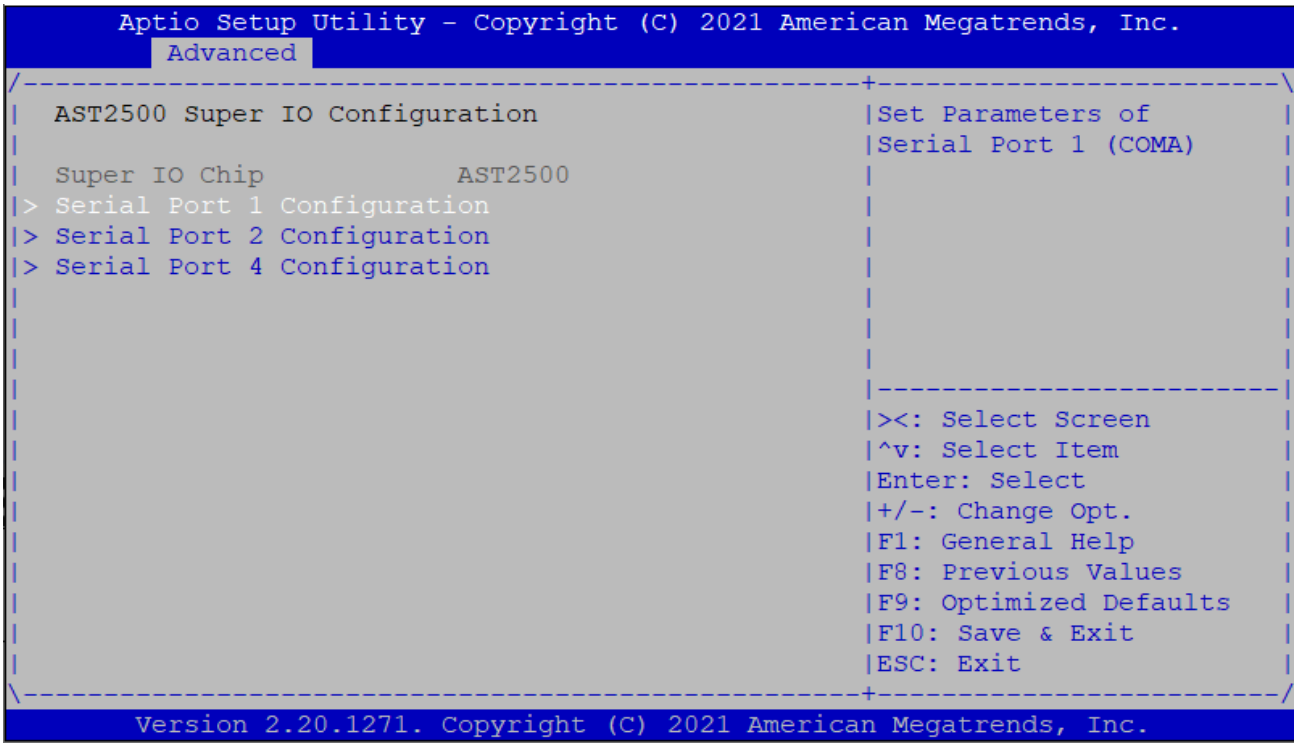
5.3.1 Sub-Menu: Trusted Computing

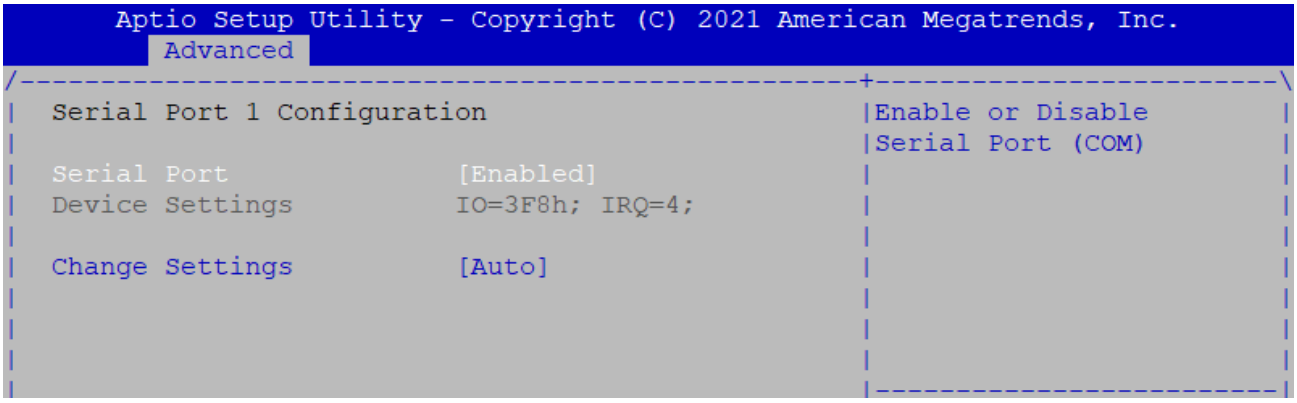


BIOS Item	Options	Description
Security Device	Disabled **Enabled**	Enable or Disable security device, such as TPM

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5.3.2 Sub-Menu: AST2500 Super IO Configuration

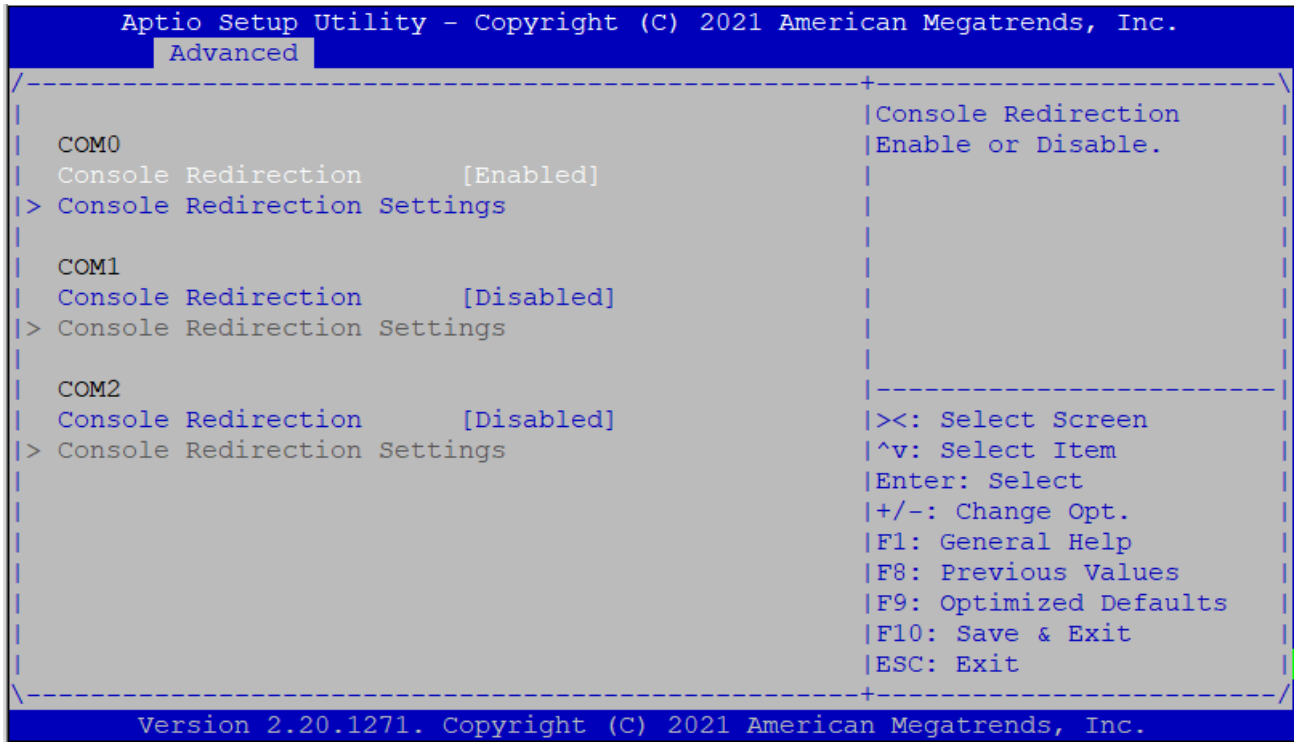




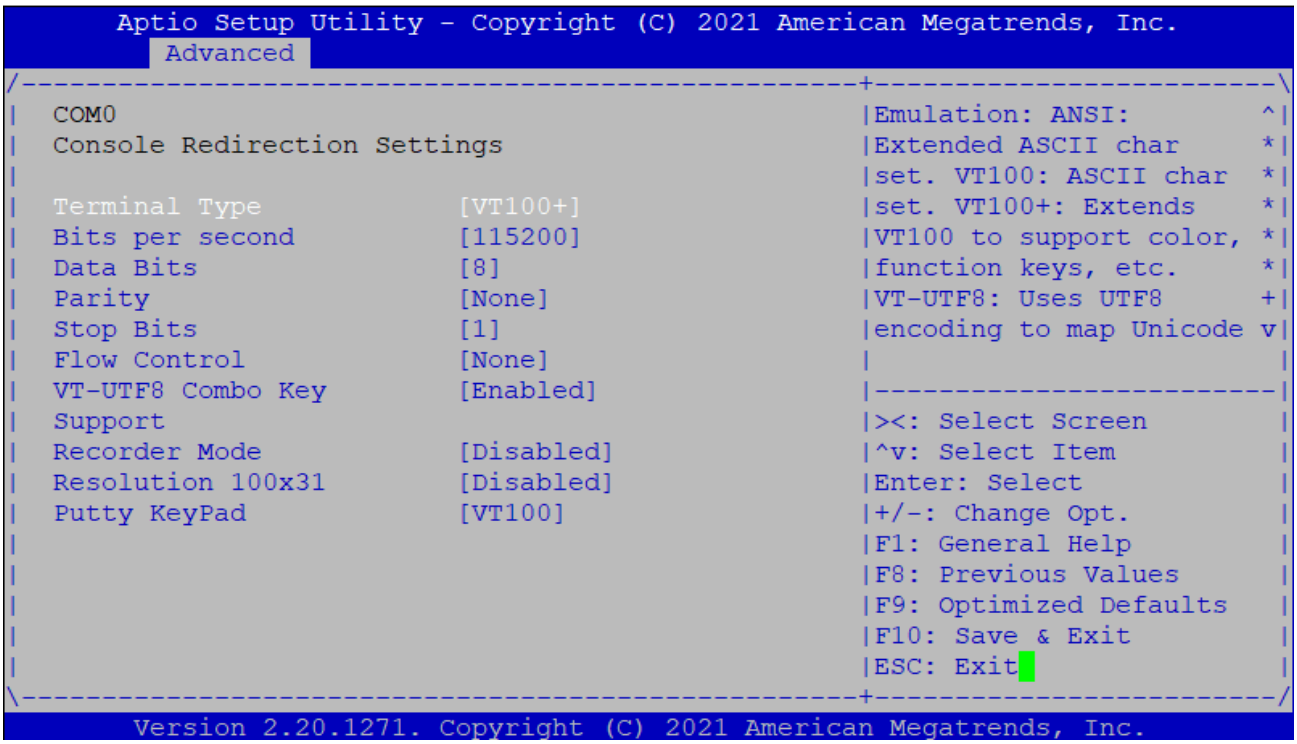
BIOS Item	Options	Description
Serial Port	Disabled **Enabled**	To enable or disable serial Port.
Device Settings	**Info-only**	Show serial port IO address and IRQ source
Change Settings	Auto IO=3F8h; IRQ=4; IO=3F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h;IRQ=3,4,5,6,7,9,10,11,12;	Select optimal resource for SIO

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5.3.3 Sub-Menu: Serial Port Console Redirection



BIOS Item	Options	Description
Console Redirection	**Enabled** Disabled	Enable or disable serial port console redirection function.
Console Redirection Settings	**Sub-Menu**	For configuring serial port settings when console redirection function is enabled.

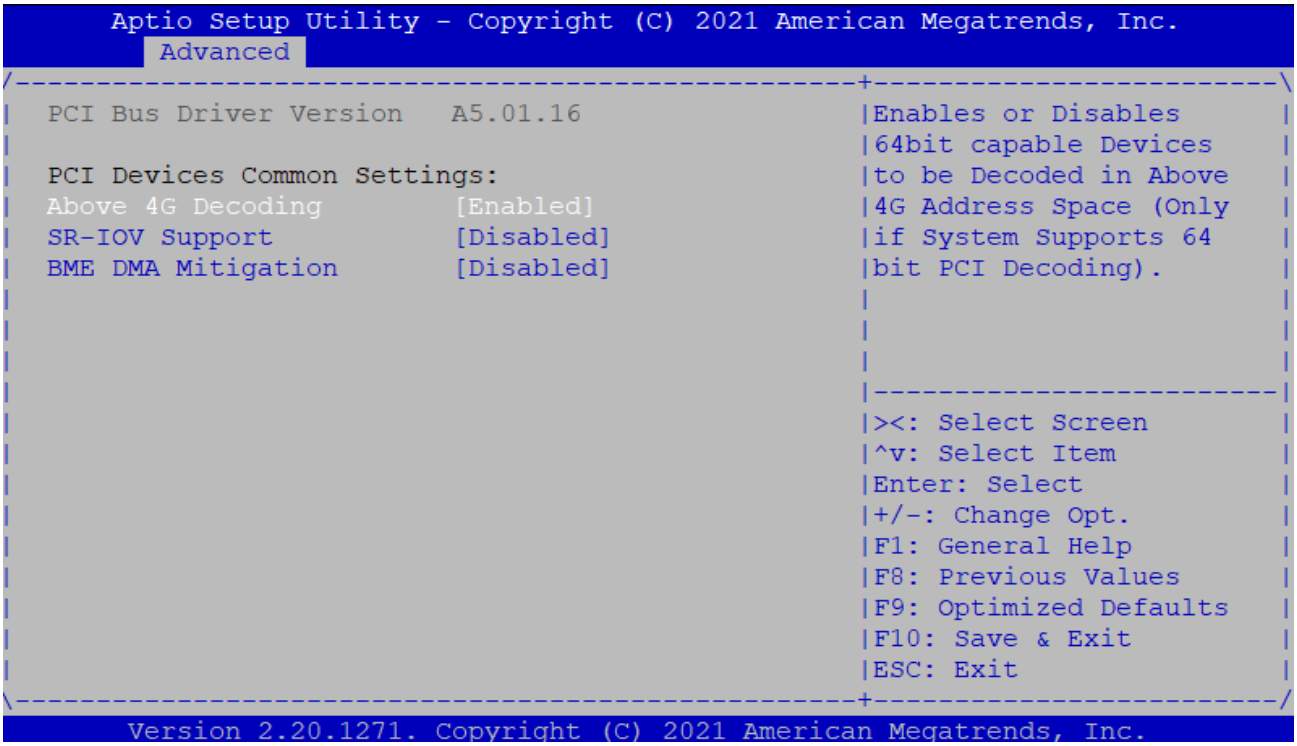


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BIOS Item	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 **ANSI**	Configure the type of console emulation. Emulation: **ANSI:** Extended ASCII char set. **VT100:** ASCII char set. **VT100+:** Extends VT100 to support color, function keys, etc. **VT-UTF8:** Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 **115200**	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speed.
Data Bits	7 **8**	Configure the number of data bits in each transmitted or received serial character for both serial ports.
Parity	**None** Even Odd Mark Space	Configures if parity bit is generated (transmit data) or checked. A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	**1** 2	Configures the number of stop bits transmitted and received in each serial character for both serial ports. 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.
Flow Control	**None** Hardware RTS/CTS	Configures flow control for console redirection. Hardware flow control uses RTC/CTS.
VT-UTF8 Combo Key Support	Disabled **Enabled**	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recordor Mode	**Disabled** Enabled	This mode only text wil be sent
Resolution 100x31	**Disabled** Enabled	To enable or disable extended terminal resolutio
Putty Keypad	**VT100**	Select FunctionKey and keypad on Putty

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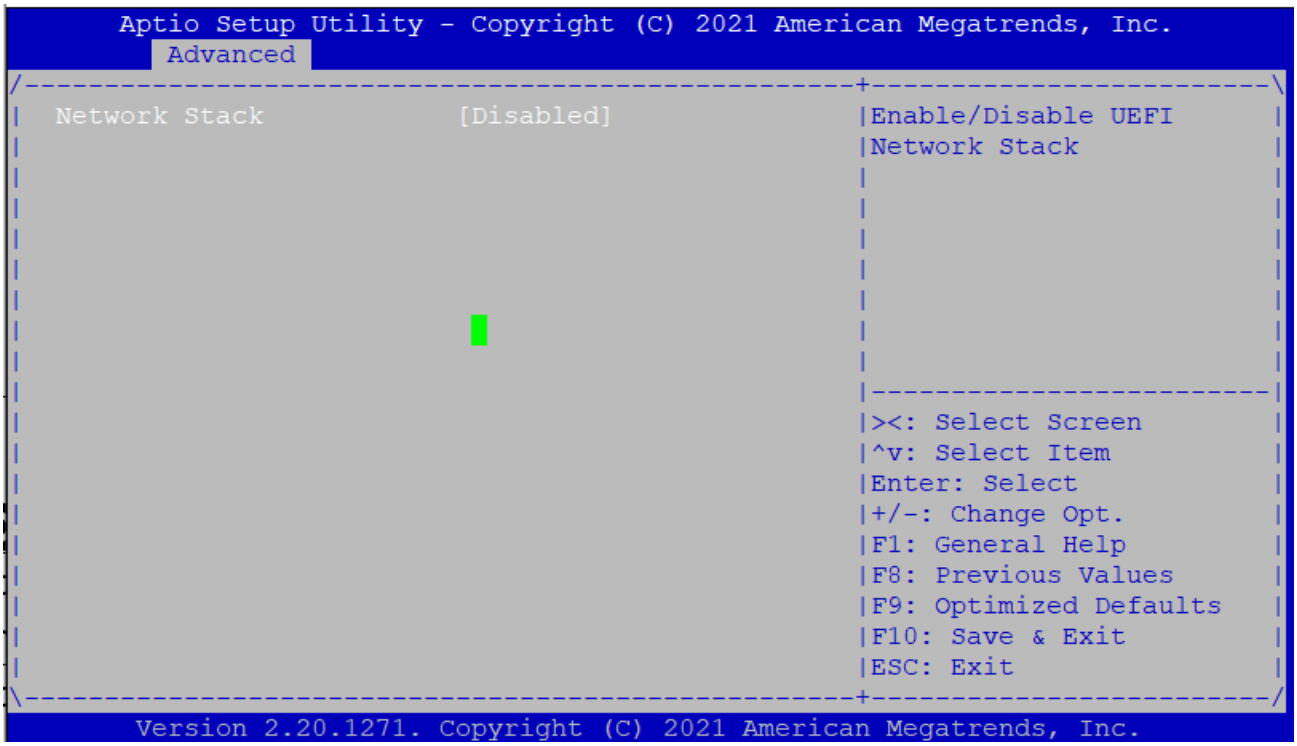
5.3.4 Sub-Menu: PCI Subsystem Settings



BIOS Item	Options	Description
Above 4G Decoding	Disabled **Enabled**	To enable or disable decoded in above 4G address Spacd.
SR-IOV Support	**Disabled** Enabled	Enable or disable Single Root IO virtualization support
BME DMA Mitigation	**Disabled** Enabled	Disable or enable Bus Master Attribute

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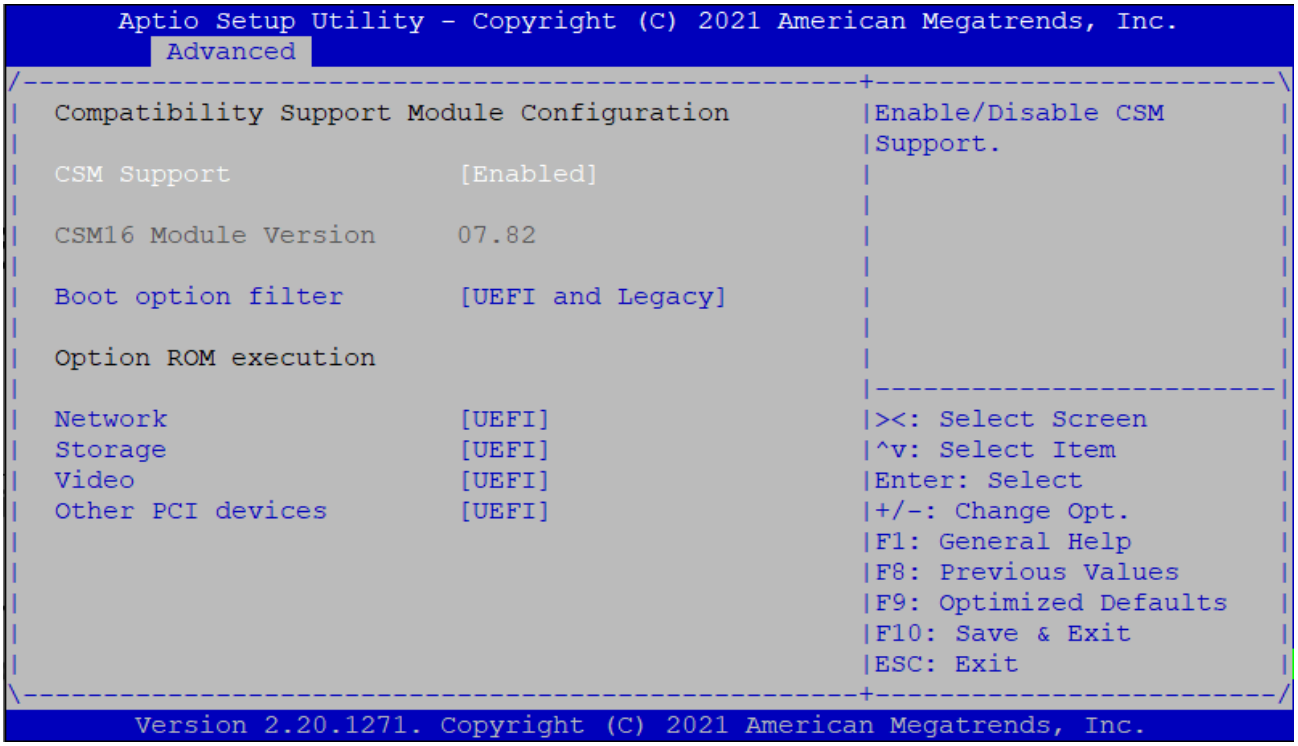
5.3.5 Sub-Menu: Network Stack Configuration



BIOS Item	Options	Description
Network Stack	**Disabled** Enabled	To enable or disable network stack.

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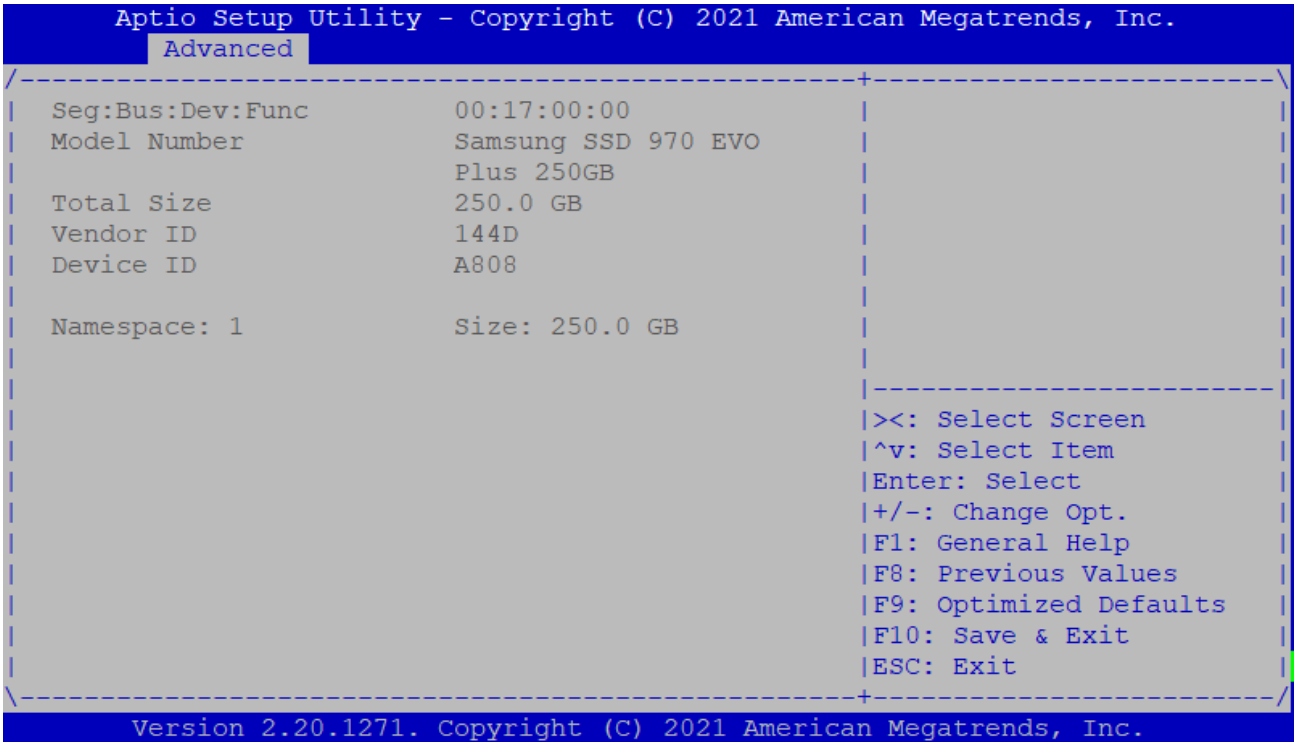
5.3.6 Sub-Menu: CSM Configuration



BIOS Item	Options	Description
CSM Support	Disabled **Enabled**	To enable or disable CSM Support.
CSM16 Module Version	**Info Only**	To show CSM module version
Boot option filter	**UEFI and Legacy** Legacy only UEFI only	Controls Legacy/UEFI Roms priority
Network	**UEFI** Legacy	Select the method of launch option ROM of network controller. **UEFI** will execute EFI driver and **legacy** will search option ROM of device to hook.
Storage	**UEFI** Legacy	Select the method of launch option ROM of storage controller. **UEFI** will execute EFI driver and **legacy** will search option ROM of device to hook.
Video	**UEFI** Legacy	Select the method of launch option ROM of graphic controller. **UEFI** will execute EFI driver and **legacy** will search option ROM of device to hook.
Other PCI devices	**UEFI** Legacy	Select the method of launch option ROM for devices other than Network, Storage, or Video

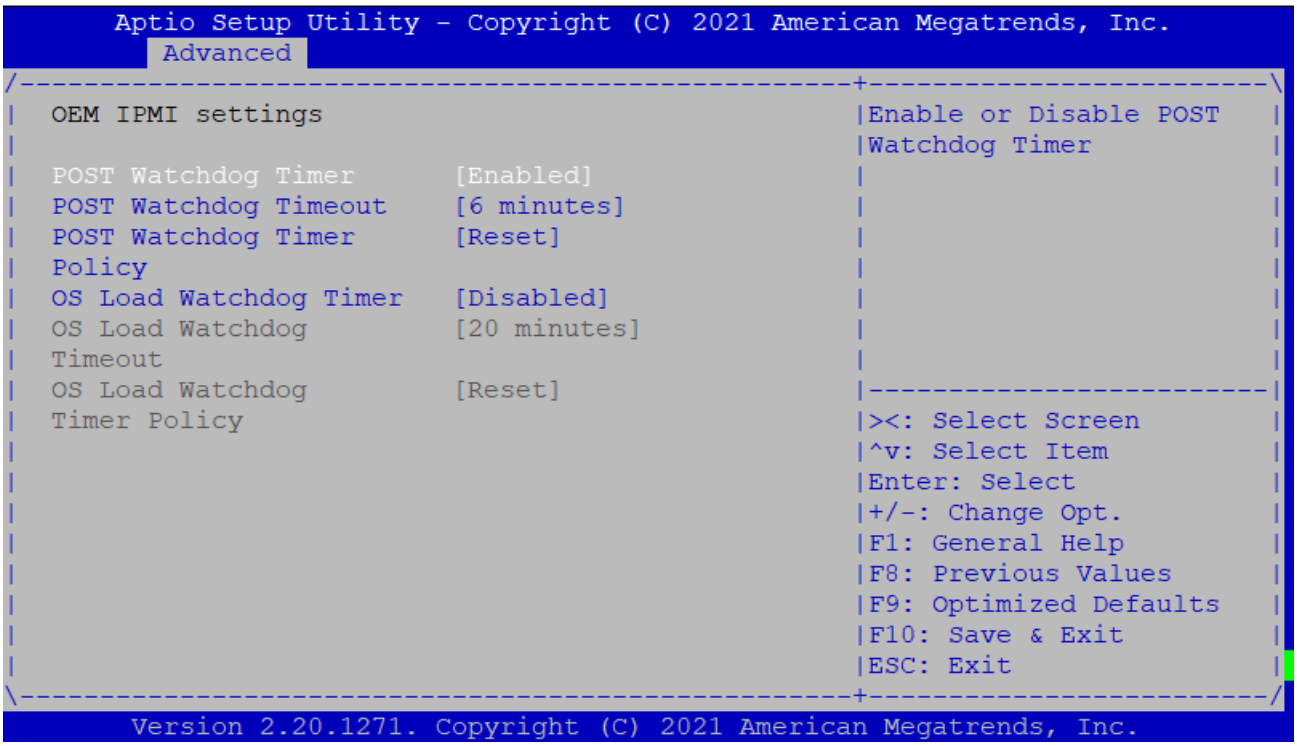
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5.3.7 Sub-Menu: NVMe Configuration



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5.3.8 Sub-Menu: OEM IPMI Settings

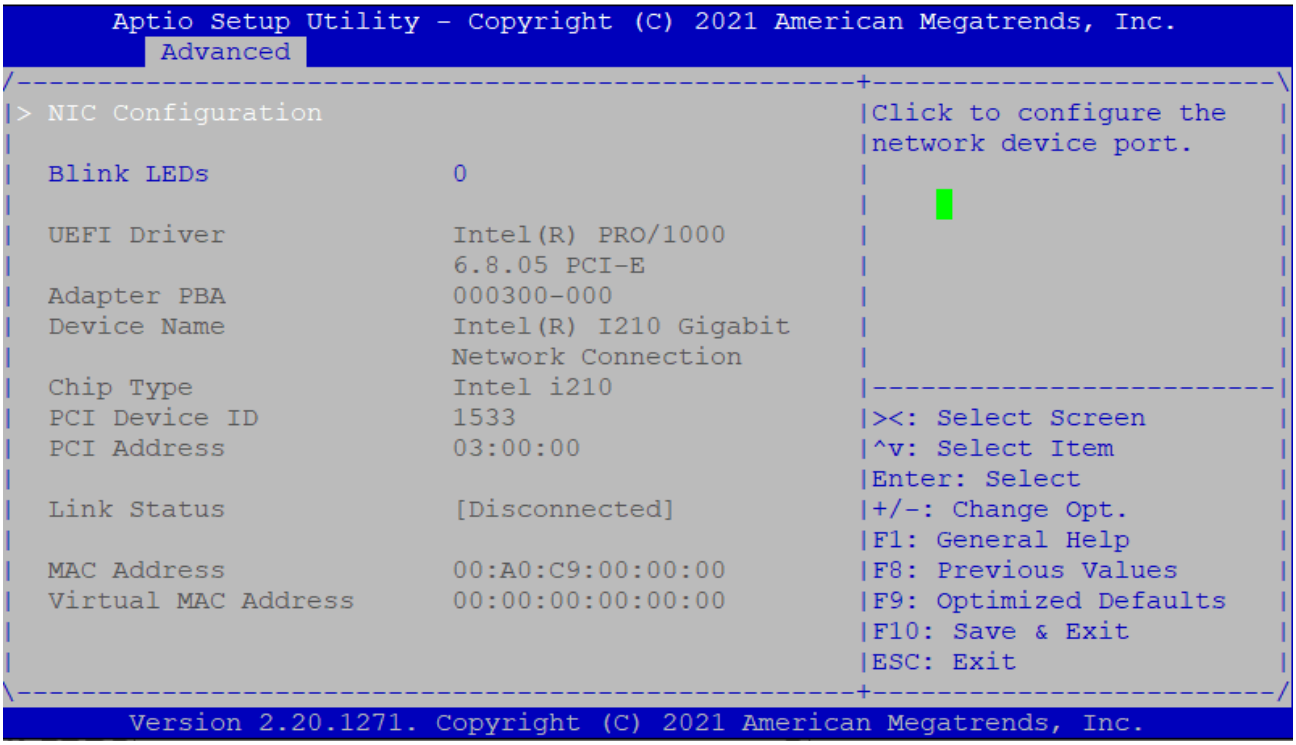


BIOS Item	Options	Description
POST Watchdog Timer	Disabled **Enabled**	Enable or Disable POST watchdog timer
POST Watchdog Timeout	3 minutes 4 minutes 5 minutes **6 minutes**	Select the time value for POST watchdog timer Expiration value
POST Watchdog Timer Policy	Do Nothing **Reset** Power Down	Configure how the system should respond if the POST Watchdog Timer expires.
OS load Watchdog Timer	**Disabled** Enabled	Enable/Disable OS Load watchdog timer.
OS load Watchdog Timeout	5 minutes 10 minutes 15 minutes **20 minutes**	Select the time value of the OS Load Watchdog timer, not available if OS Load watchdog Timer is disabled
OS Load Watchdog Timer Policy	Do Nothing **Reset** Power Down	Configure how the system should respond if the OS Load Watchdog Timer expires.

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5.3.9 Sub-Menu: Intel(R) I210 Gigabit Network Connection

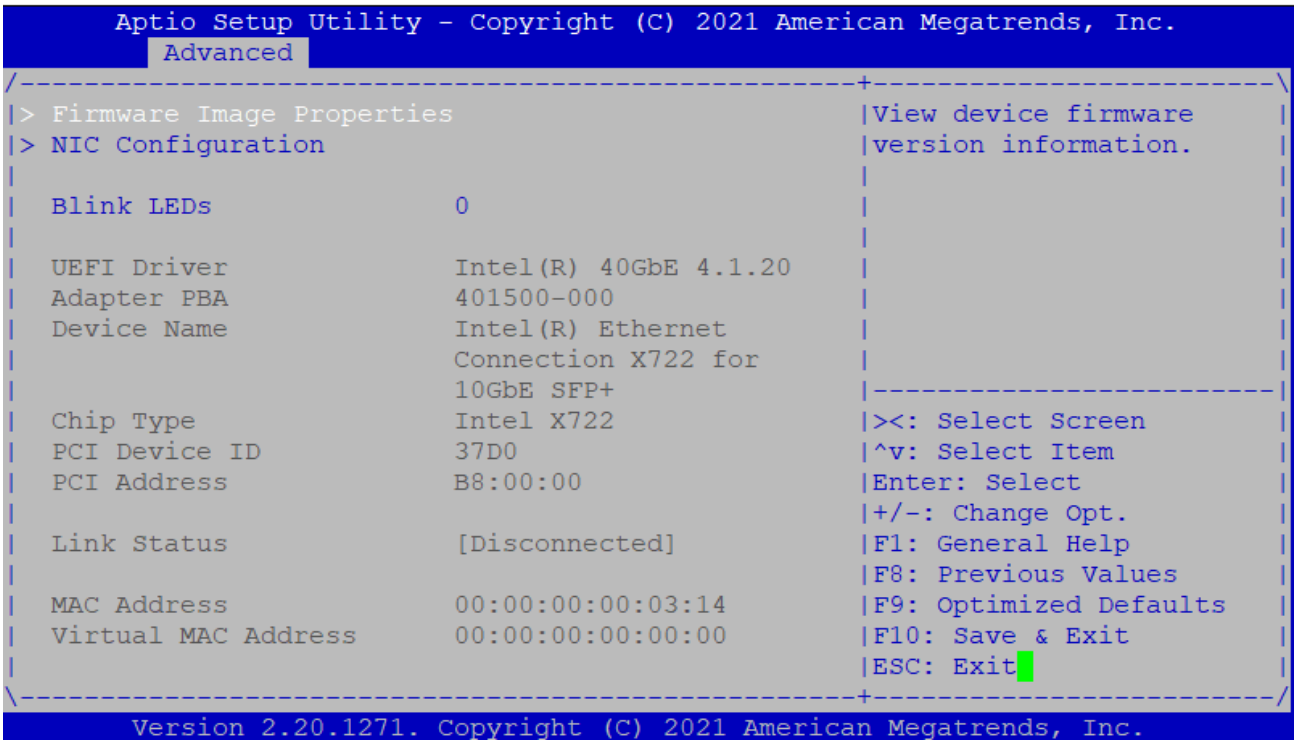
This setup page is shown when “Network” setting in Boot page is set to “UEFI”. When the BIOS boots the system, it will launch the onboard Ethernet I210 controller’s UEFI driver. The driver provides a setup page for configuring Ethernet parameters and shows information about Ethernet controller. When the Ethernet’s UEFI driver is not executed, this setup page will not be shown.



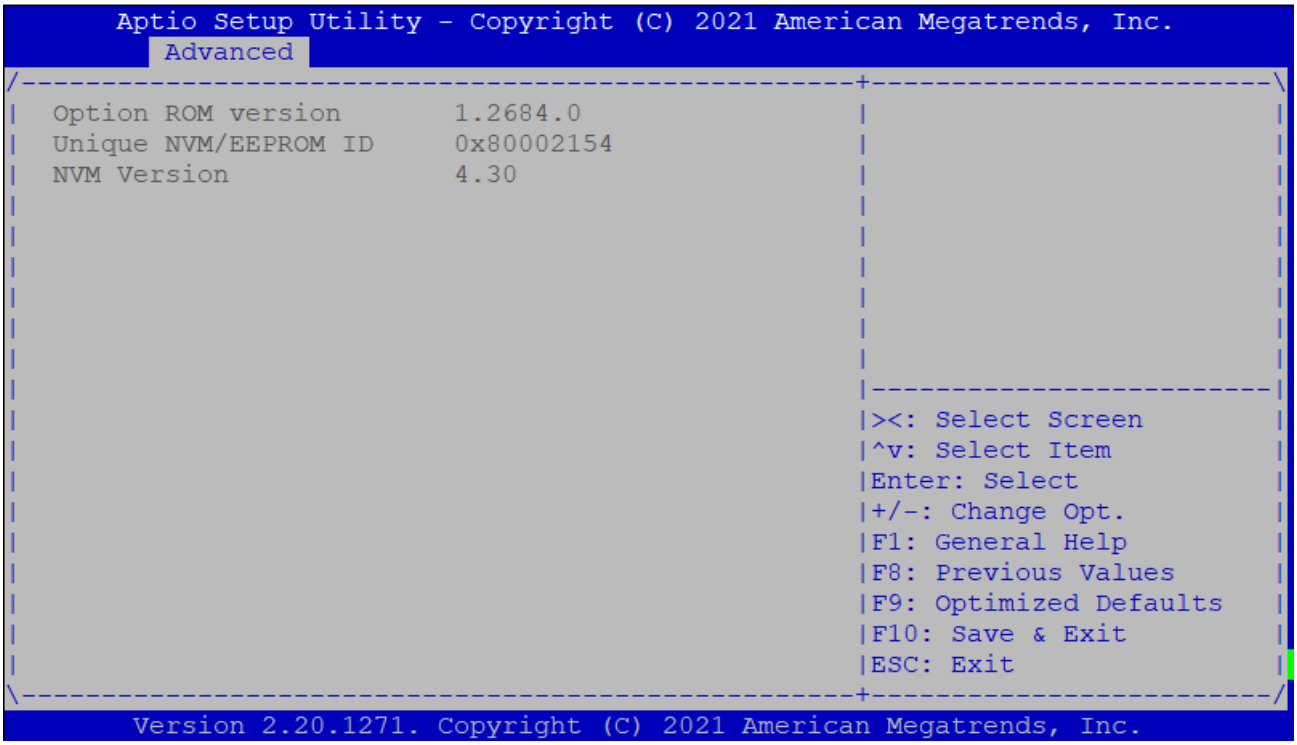
BIOS Item	Options	Description
NIC Configuration		For configuring link speed and wake function.

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5.3.10 Sub-Menu: Intel(R) Ethernet Connection X722 for 10GbE

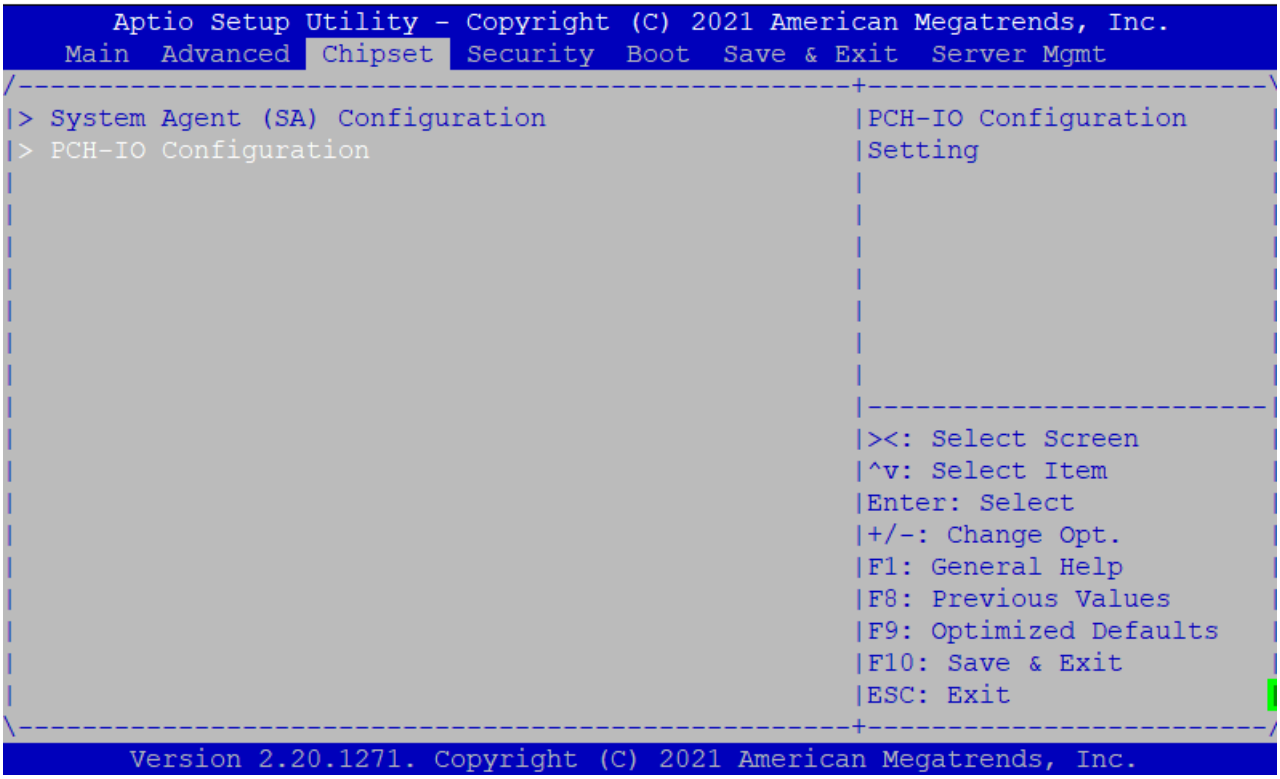


BIOS Item	Options	Description
Firware Image Properties	**As below**	View device firmware version
NIC Configuration		For configuring link speed and wake function.

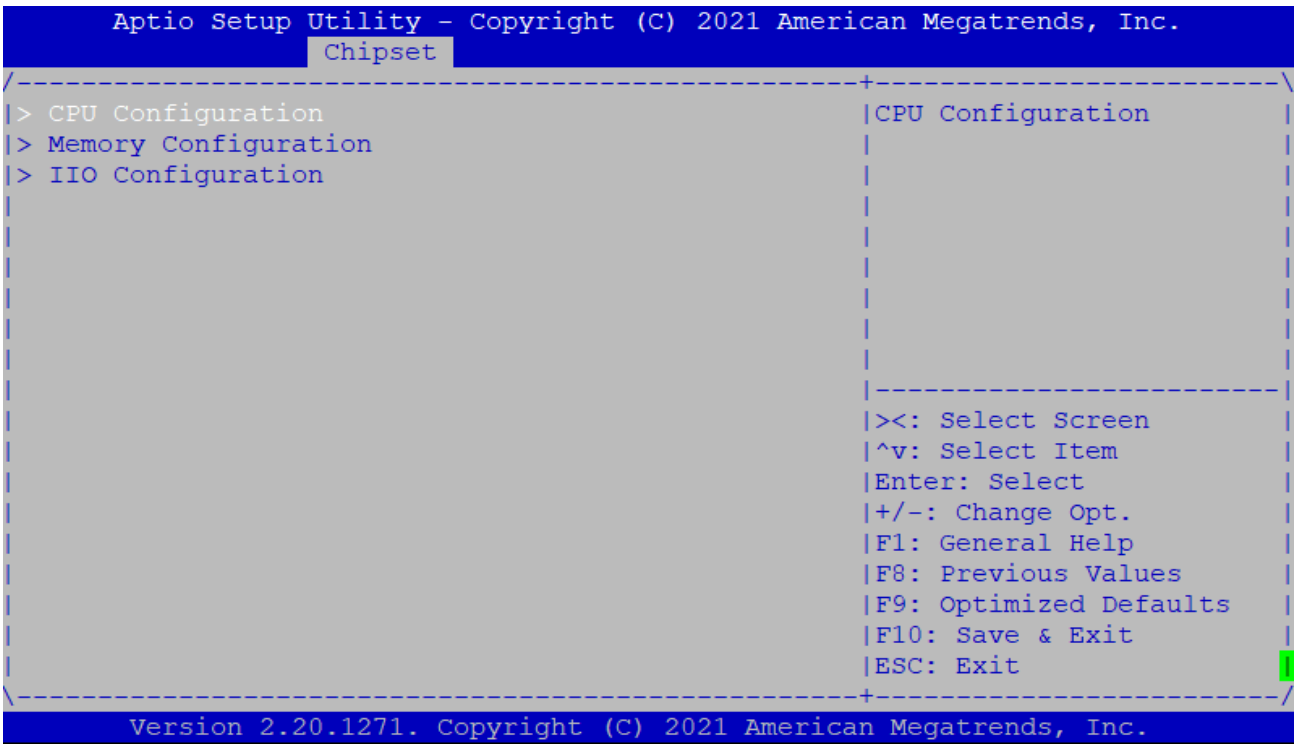


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5.4 Chipset Menu

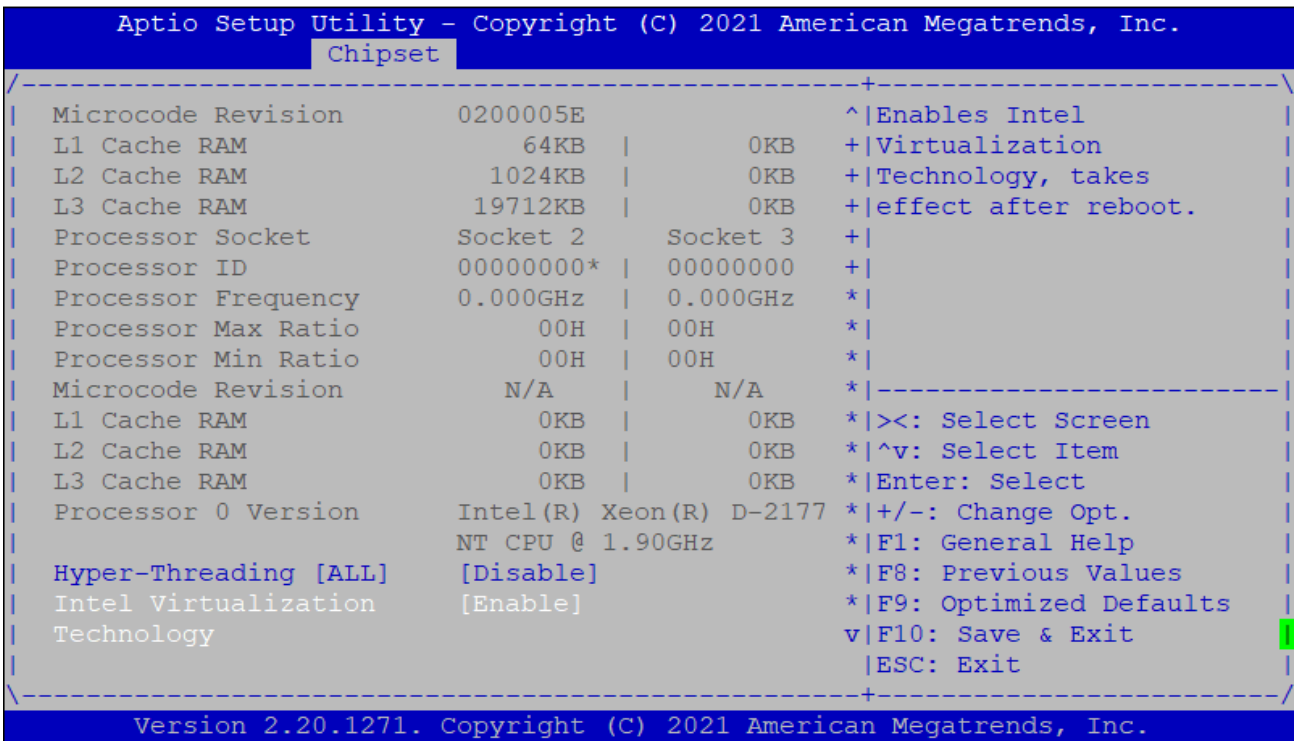


5.4.1 System Agent (SA) Configuration



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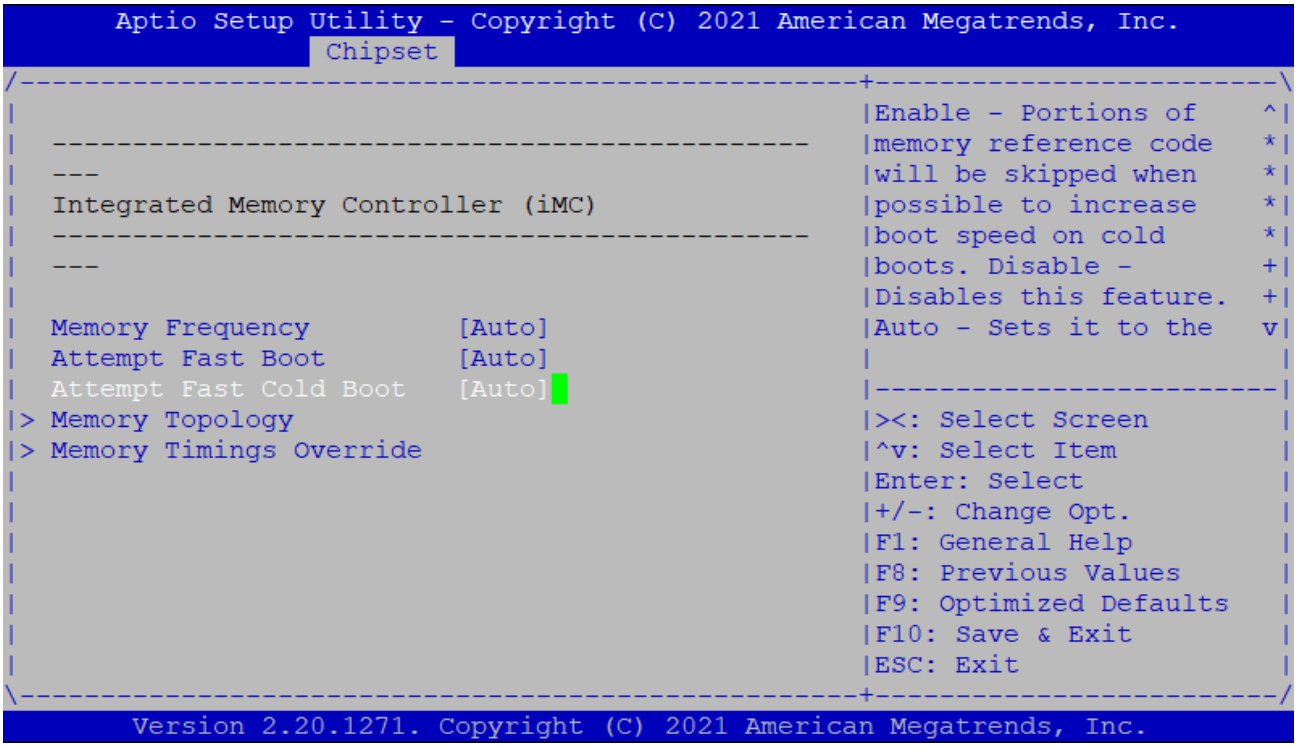
5.4.2 Sub-Menu: CPU Configuration



BIOS Item	Options	Description
CPU string	**Info only**	To show CPU info
Hyper-Threading [ALL]	**Disable** Enable	To enable or disable logical processor threads
Intel Virtualization Technology	**Enable** Disable	To enable or disable Intel Virtualization Technology

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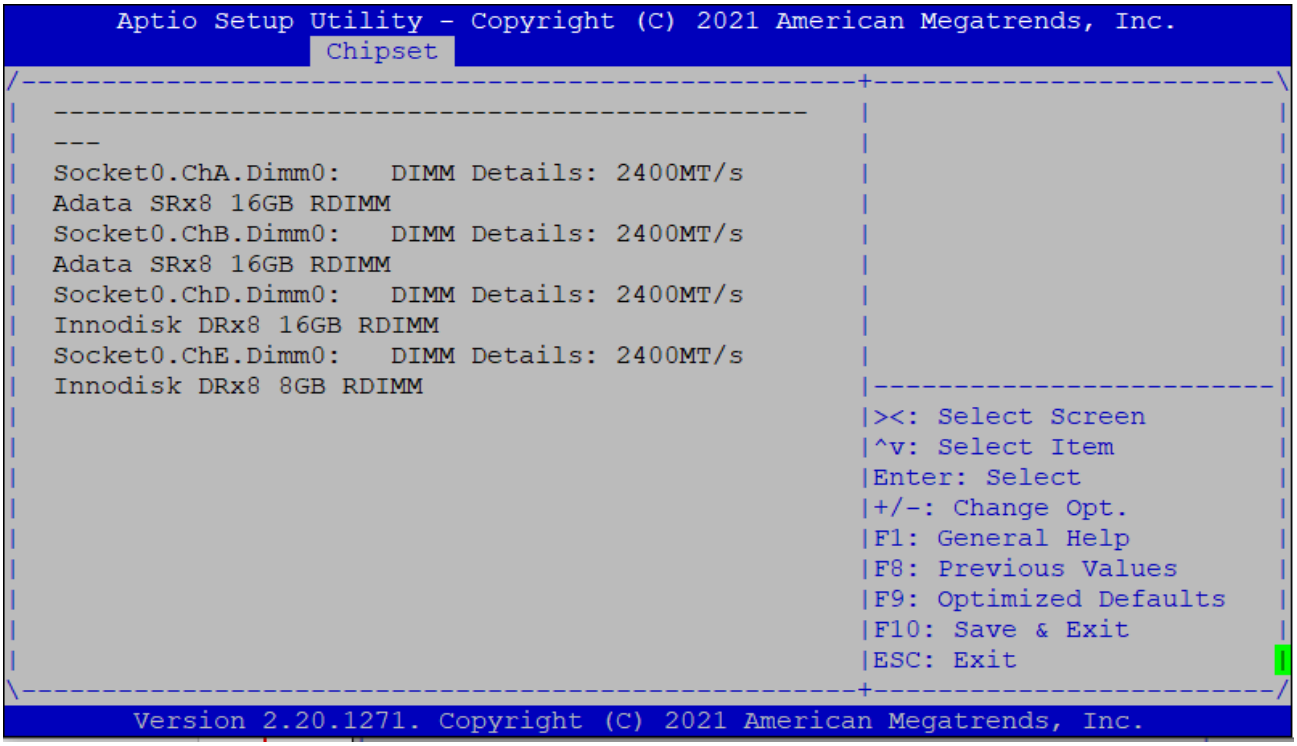
5.4.3 Sub-Menu: Memory Configuration



BIOS Item	Options	Description
Memory Frequency	**Auto** 800 1000 1066 1200	To select maximum memory frequency
Attempt Fast Boot	**Auto** Disable Enable	To enable or disable skip memory reference code on warm boots, Auto is Enable now
Attempt Fast Cold Boot	**Auto** Disable Enable	To enable or disable skip memory reference code on cold boots, Auto is Enable now

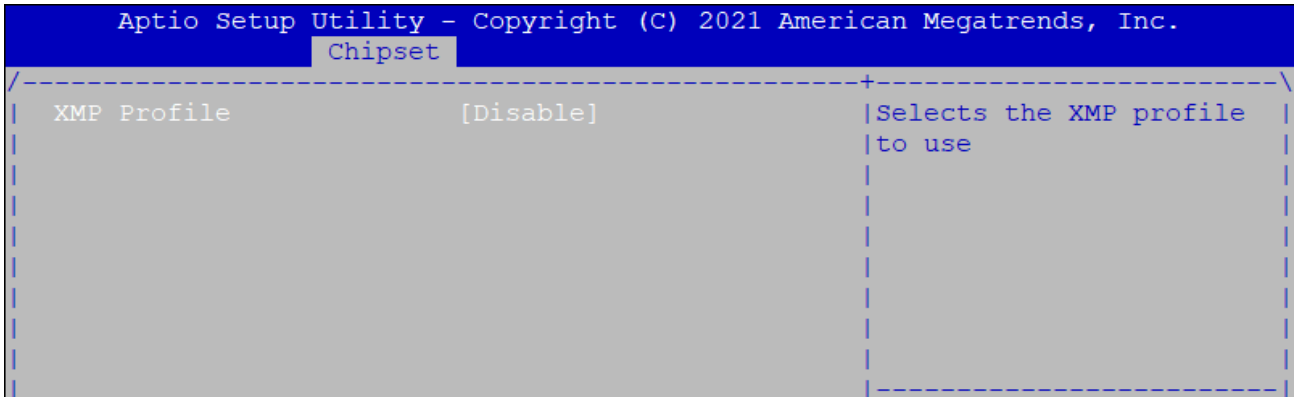
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5.4.3.1. Sub-Menu: Memory Topology



BIOS Item	Options	Description
SocketX.ChX.DimmX	**Info only**	To show channel /dimm spd info

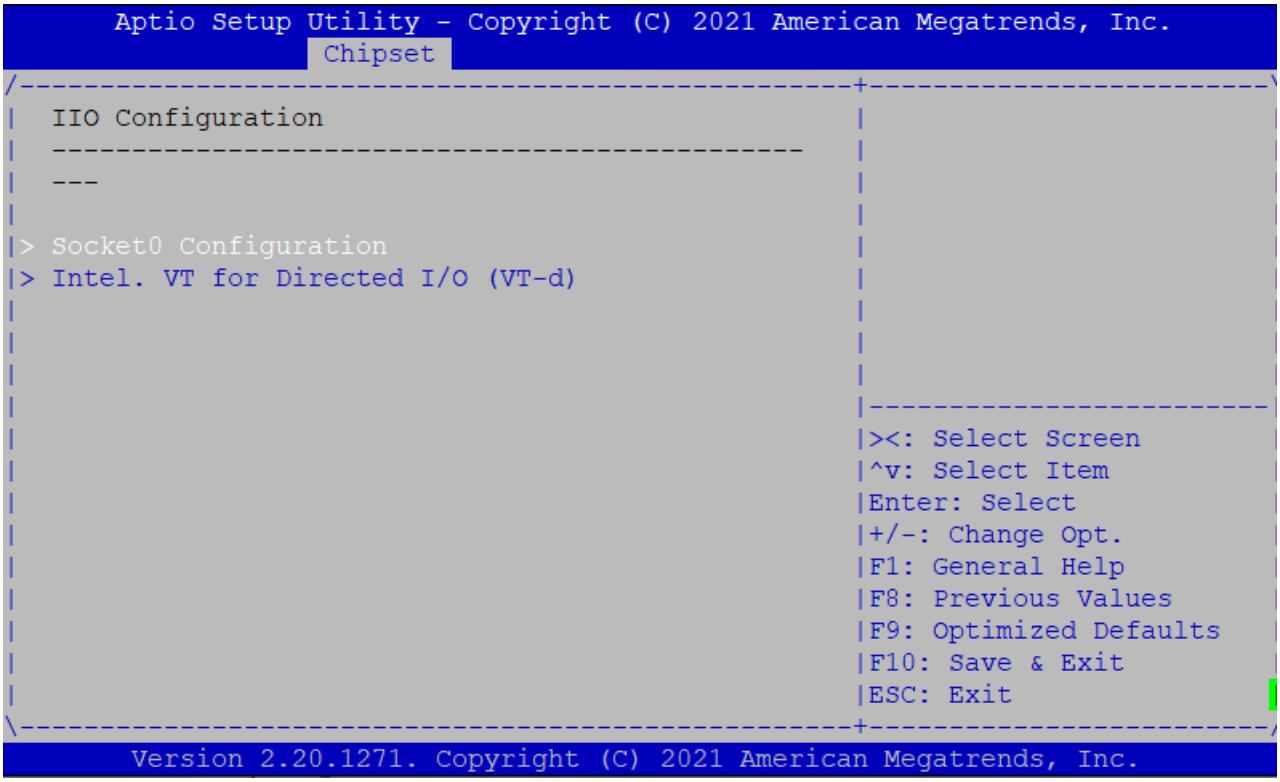
5.4.3.2. Sub-Menu: Memory Timings Override



BIOS Item	Options	Description
XMP Profile	**Disable** Enable	To enable or disable Intel Extreme Memory Profiles to support memory over-clock

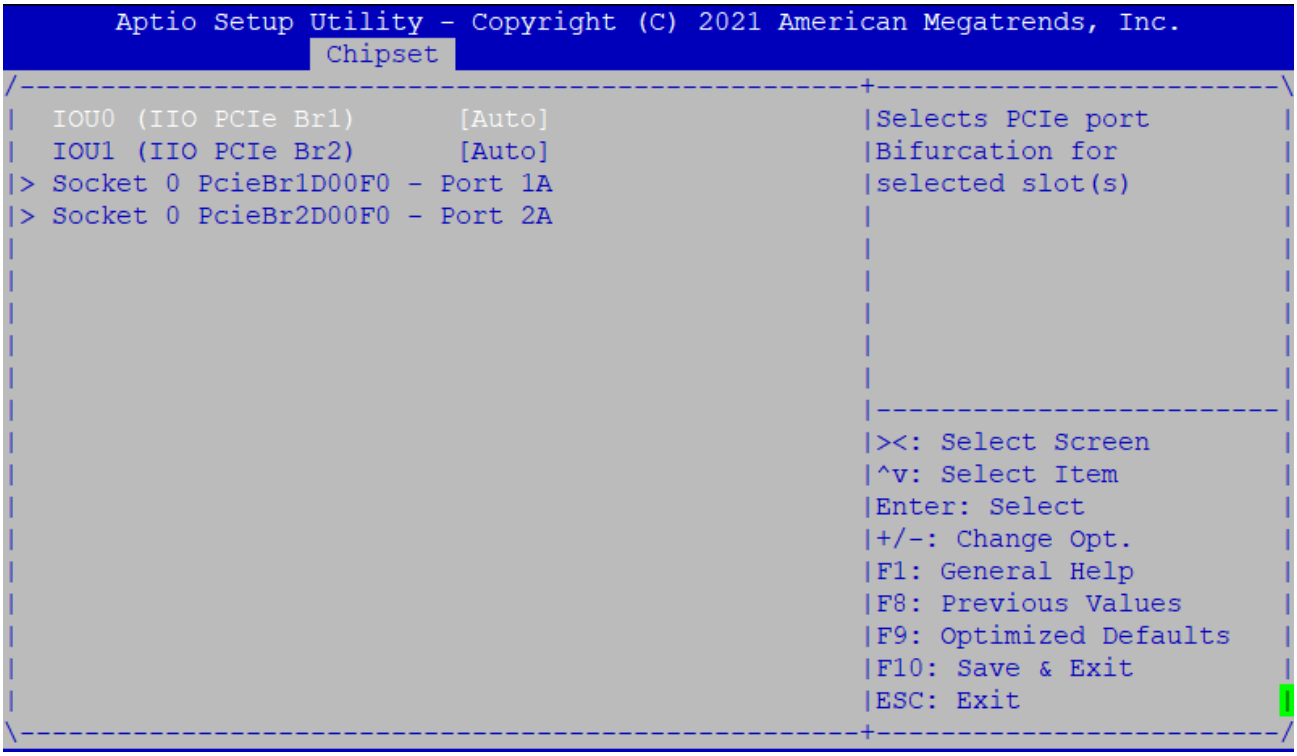
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5.4.4 Sub-Menu: IIO Configuration



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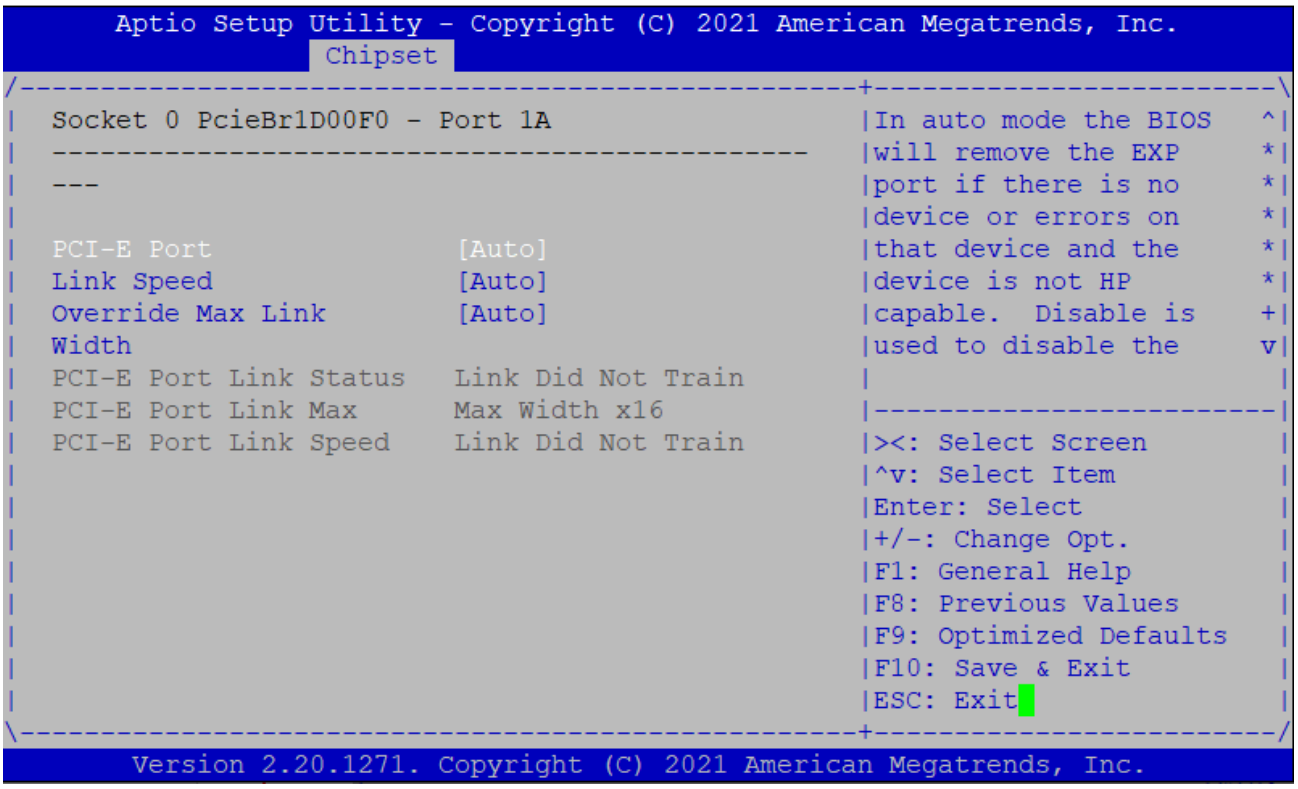
5.4.4.1. Sub-Menu:Socket0 Configuration



BIOS Item	Options	Description
IOU0 (IIO PCIe Br1)	X4x4x4x4 X4x4x8 X8x4x4 X8x8 X16 **Auto**	Selects PCIe port bifurcation for riser card upstream port ,auto is x16
IOU0 (IIO PCIe Br2)	X4x4x4x4 X4x4x8 X8x4x4 X8x8 X16 **Auto**	Selects PCIe port bifurcation for riser card downstream port , auto is x16
Socket 0 PcieBr1D00F0	**Sub Page**	To show PCIe port link status
Socket 0 PcieBr2D00F0	**Sub Page**	To show PCIe port link status

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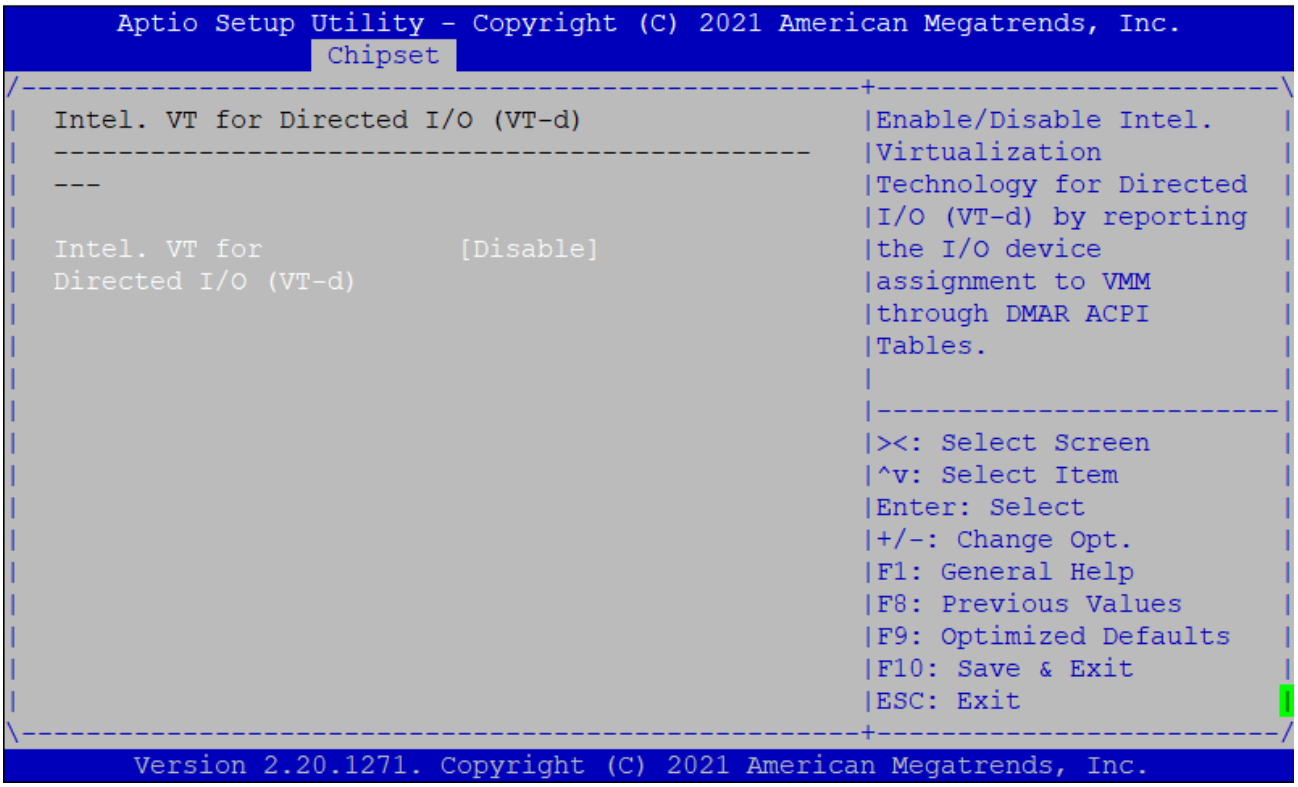
5.4.4.2. Socket0 PcieBrxDxxx



BIOS Item	Options	Description
PCI-E Port	**Auto** Disable Enable	To enable or disable PCI-E Port, Auto is enable
Link Speed	**Auto** Gen 1 (2.5 GT/s) Gen 2 (5 GT/s) Gen 3 (8 GT/s)	Choose Link Speed ,Auto is Gen3
Override Max Link Width	**Auto** X1 X2 X4 X8 X16	Override the max link width that was set by bifurcation
PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed	**Info Only**	To show PCIE-E Port link or lot; width;speed

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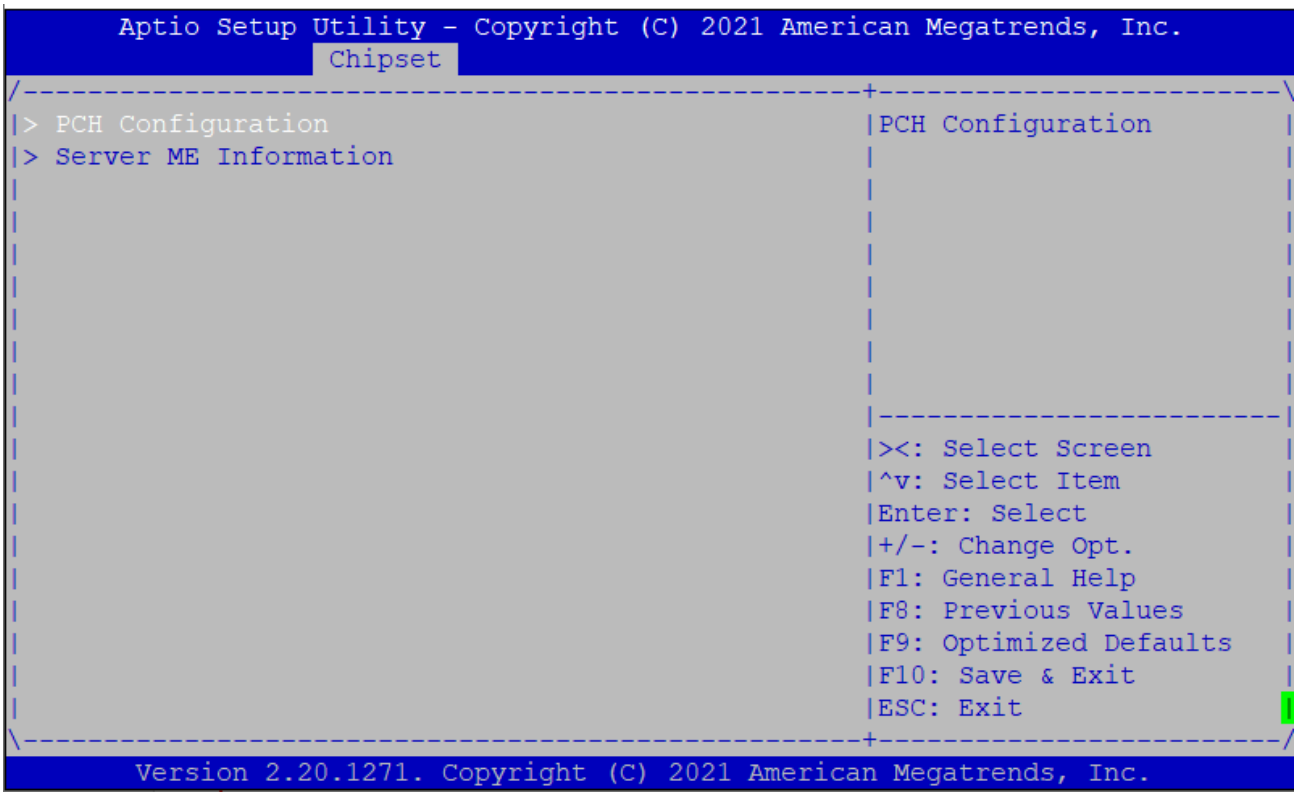
5.4.5 Sub-Menu: Intel(R) VT for Directed I/O (vt-d)



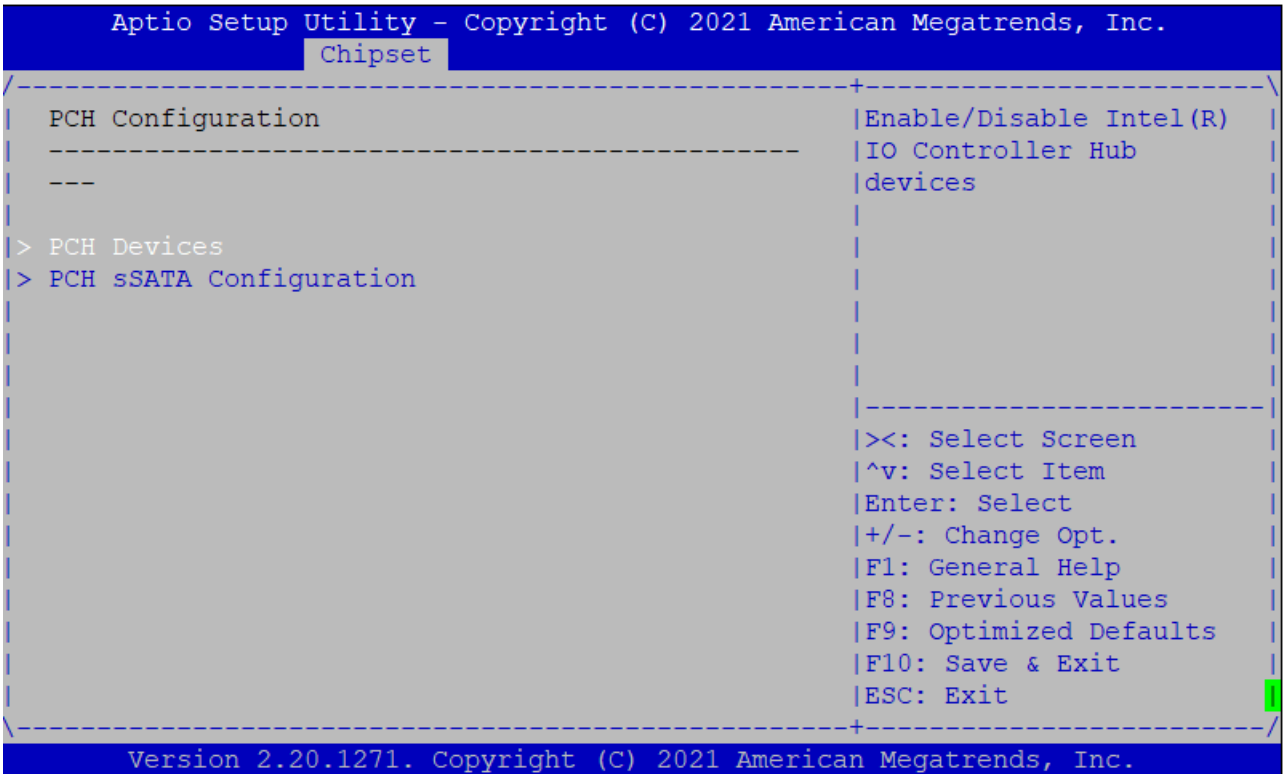
BIOS Item	Options	Description
Intel. VT for Directed I/O (VT-d)	**Disable** Enable	To enable or disable Intel Virtualization Technology for Directed I/O

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5.4.6 PCH-IO Configuration

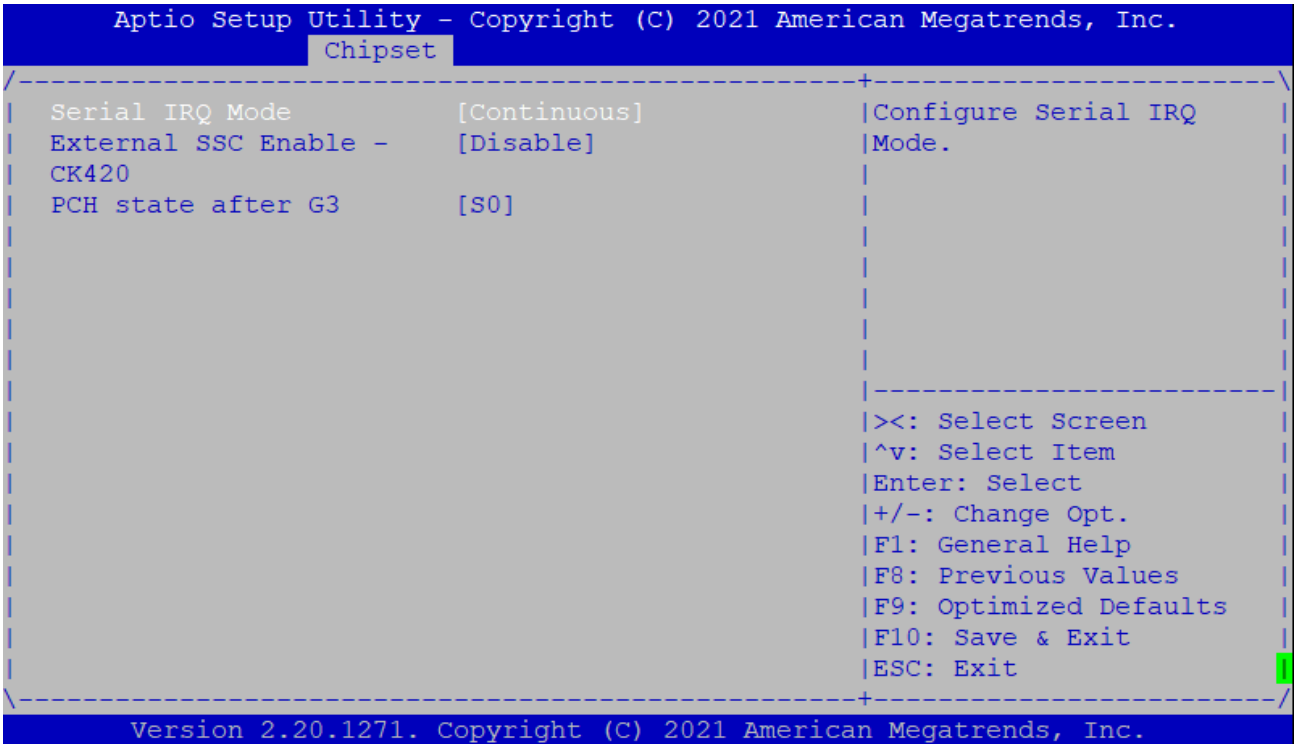


5.4.7 Sub-Menu: PCH Configuration



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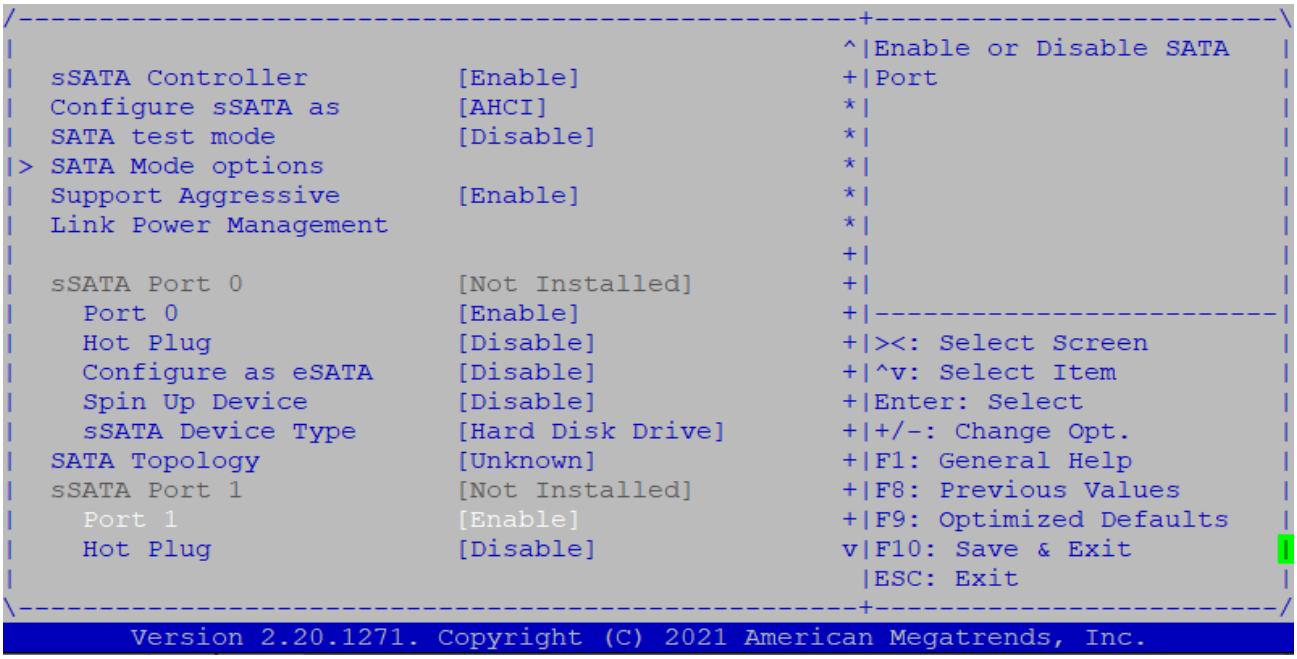
5.4.7.1. Sub-Menu: PCH Devices



BIOS Item	Options	Description
Serial IRQ Mode	Quiet **Continuous**	Configure Serial IRQ Mode
Exrernal SSC Enable – CK420	**Disable** Enable	To enable or disable Spread Spectrum
PCH state after G3	**S0** S5 Leave power state unchanged	Select S0/S5 power state after a G3

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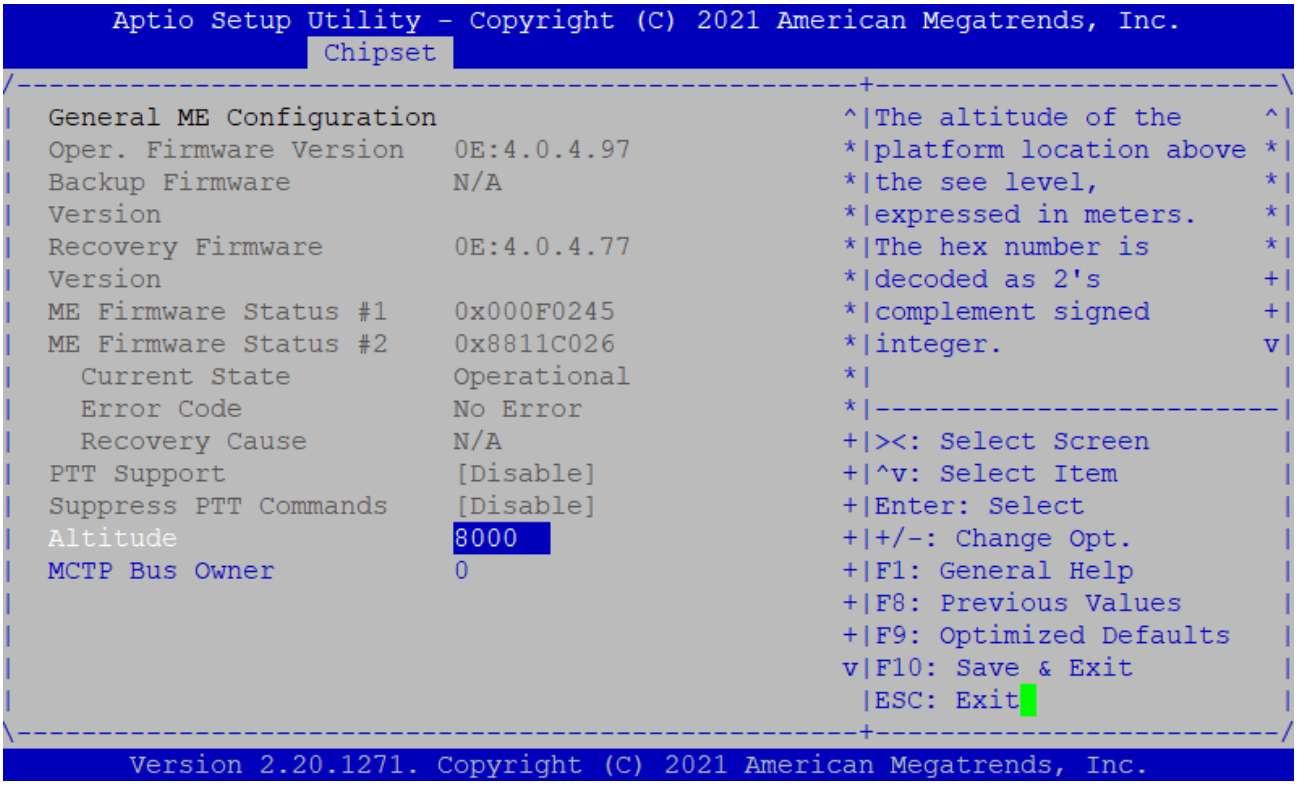
5.4.7.2. Sub-Menu: PCH sSATA Configuration



BIOS Item	Options	Description
sSATA Controller	**Enable** Disable	For controlling sSATA controller's enabling/disabling.
Configure sSATA as	**AHCI** RAID	For sSATA operating mode setting.
SATA test mode	Enable **Disable**	To Enable/Disable SATA test mode
SATA Mode options	**Sub Menu**	SATA mode related options
Support Aggressive Link Power Management	**Enable** Disable	To Enable/Disable SALP
sSATA Port X	**Info Only**	To show installed sata info
Port X	**Enable** Disable	To enable or disable this sata port
Hot Plug	Enable **Disable**	To enable or disable this port as Hot Pluggabel
Configure as eSATA	Enable **Disable**	To enable or disable this port as eSATA
Spin Up Device	Enable **Disable**	To enable to disable spin up at boot
Ssata Device Type	**Hard Disk Drive** Solid State Drive	Identify the sata port is connected to SSD Drive or HDD Drive
SATA Topology	**Unknown** ISATA Direct Connect Flex M2	Setting the Ssata Topology

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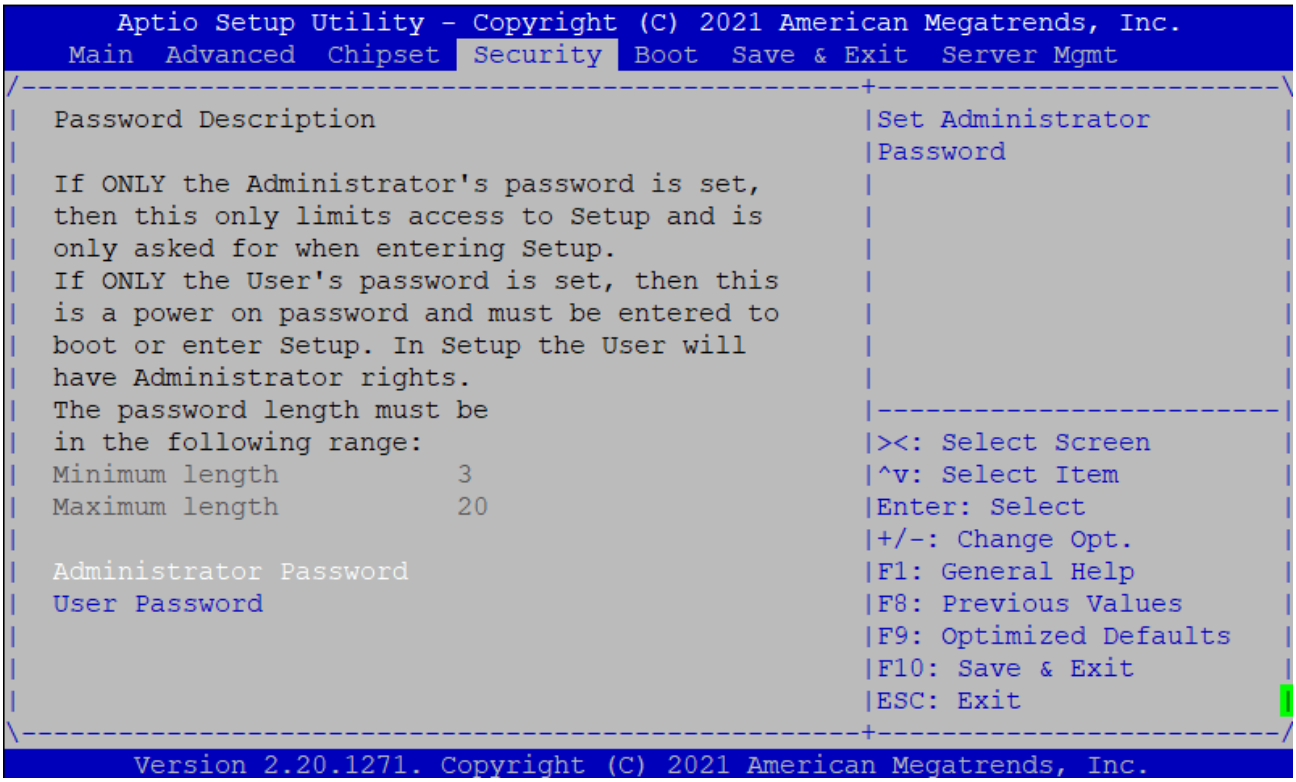
5.4.8 Sub-Menu: Server ME Information



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5.5 Security Menu

This menu contains the settings for system security.

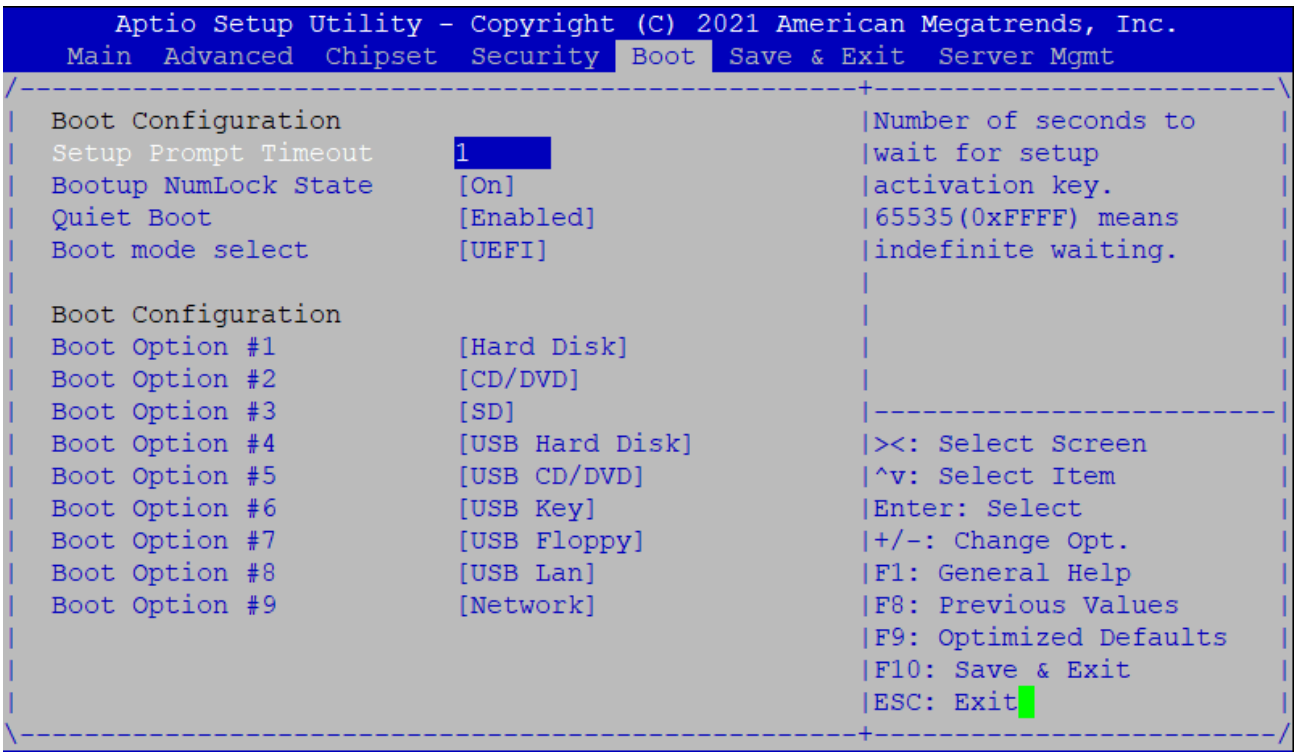


BIOS Item	Options	Description
Administrator Password	**Enter to set password**	Configure/Clear Administrator Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
User Password	**Enter to set password**	Configure/Clear User Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.

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5.6 Boot Menu

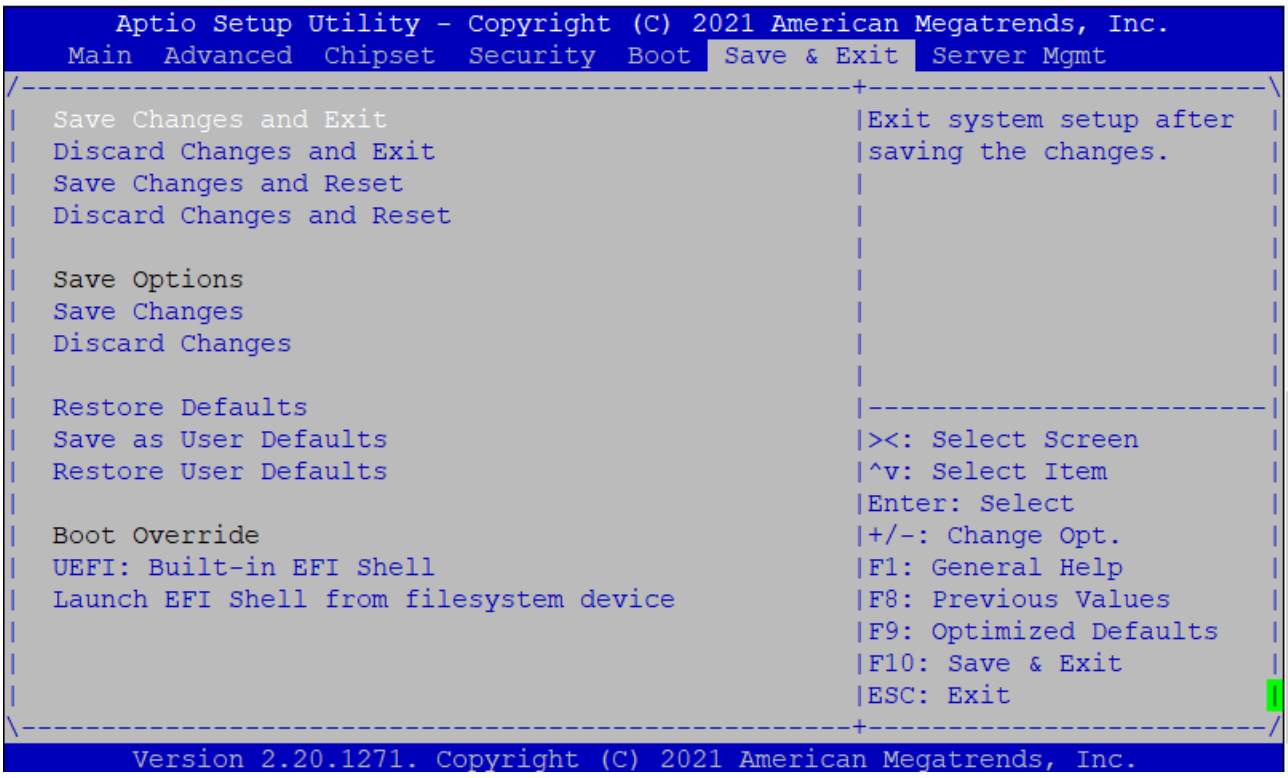
This menu contains the settings for bootable devices in the system.



BIOS Item	Options	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation
Bootup NumLock State	**On** Off	
Quiet Boot	**Enabled** Disabled	
Boot mode select	Legacy **UEFI**	Select boot mode, Legacy/UEFI.
Boot Option #1 ~ #9	#1: Hard Disk #2: CD/DVD #3: SD #4: USB Hard Disk #5: USB CD/DVD #6: USB Key #7: USB Floppy #8: USB LAN #9: Network	For boot priority setting.
XXXX Drive BBS Priorities	**Sub-Menu**	When the bootable device is attached to system and found by BIOS, it will be listed at boot option #. If there are many devices with the same device type found, it can set priority among these devices through this sub-menu.

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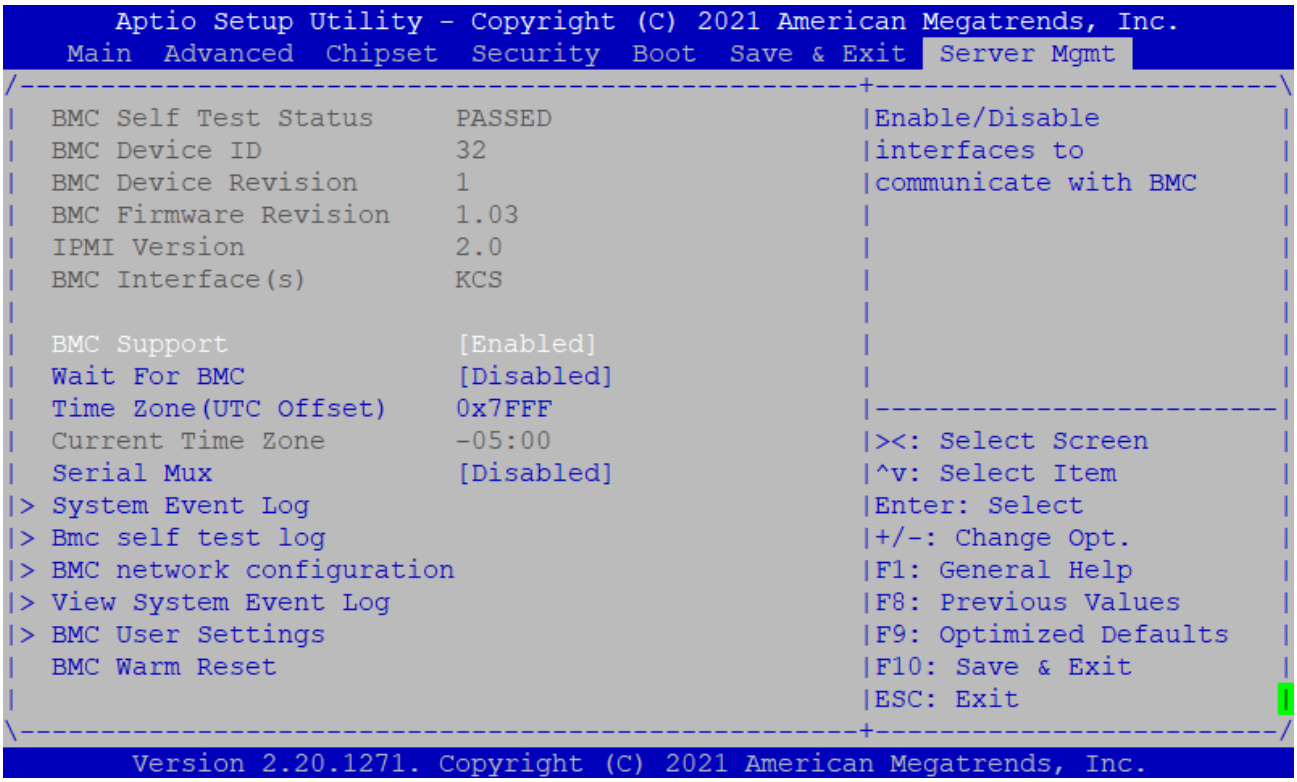
5.7 Save & Exit Menu



BIOS Item	Options	Description
Save Changes and Exit	**Enter**	Save changed settings and exit BIOS setup utility.
Discard Changes and Exit	**Enter**	Skip changed setting and exit BIOS setup utility.
Save Changes and Reset	**Enter**	Save all changed settings and let system do reset to boot system.
Discard Changes and Reset	**Enter**	Discard all changed settings and let system do reset to boot system.
Save Changes	**Enter**	Save all changed settings.
Discard Changes	**Enter**	Discard changes done so far to any of the setup options.
Restore Default	**Enter**	Load the default made when BIOS was built.
Save as User Default	**Enter**	Save all changed done so far as User Defaults.
Restore User Default	**Enter**	Load the default that user save as user defaults.
Boot Override	**Info-only**	

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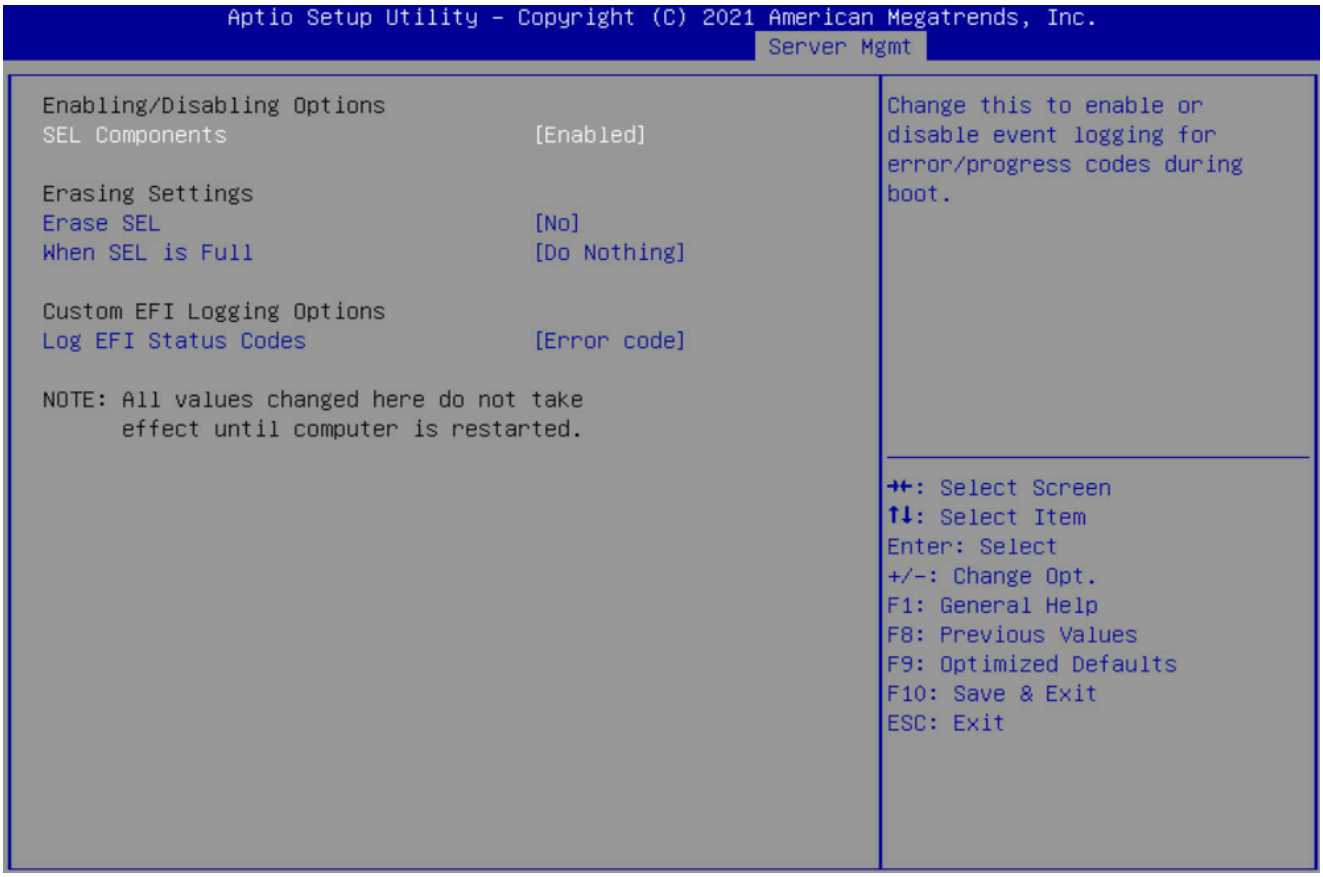
5.8 Server Mgmt Menu



BIOS Item	Options	Description
BMC Self Test Status	**Info-only**	To show BMC self test status
BMC Device ID	**Info-only**	To show BMC Device ID
BMC Device Revision	**Info-only**	To show BMC Device Revision
BMC Firmware Revison	**Info-only**	To show BMC Firmware version
IPMI Version	**Info-only**	To show IPMI version
BMC Interfaces(s)	**Info-only**	To show BMC interface such as KCS
BMC support	**Enabled** Disabled	To enable or disable communicate with BMC
Wait For BMC	Enabled **Disabled**	To enable or disable wait for BMC 30s before sending Self Test command
Time Zone(UTC Offset) Current Time Zone	**0x7FFF** **Info-only**	Enter UTC Offset in hours, ox7FFF to consider BIOS time as local time
Serial Mux	Enabled **Disabled**	To enable or disable serial mux configuration
System Event Log	**Sub-Menu**	To change SEL configuration
BMC self test Log	**Sub-Menu**	Logs the report returned by bmc self test command
BMC network configuration	**Sub-Menu**	Configure BMC network parameters
View System Event log	**Enter**	Press Enter to View SEL records,
BMC User Settings	**Sub-Menu**	To add.delete user and set user privilege limit
BMC Warm Reset	**Enter**	Press Enter to do warm Reset BMC

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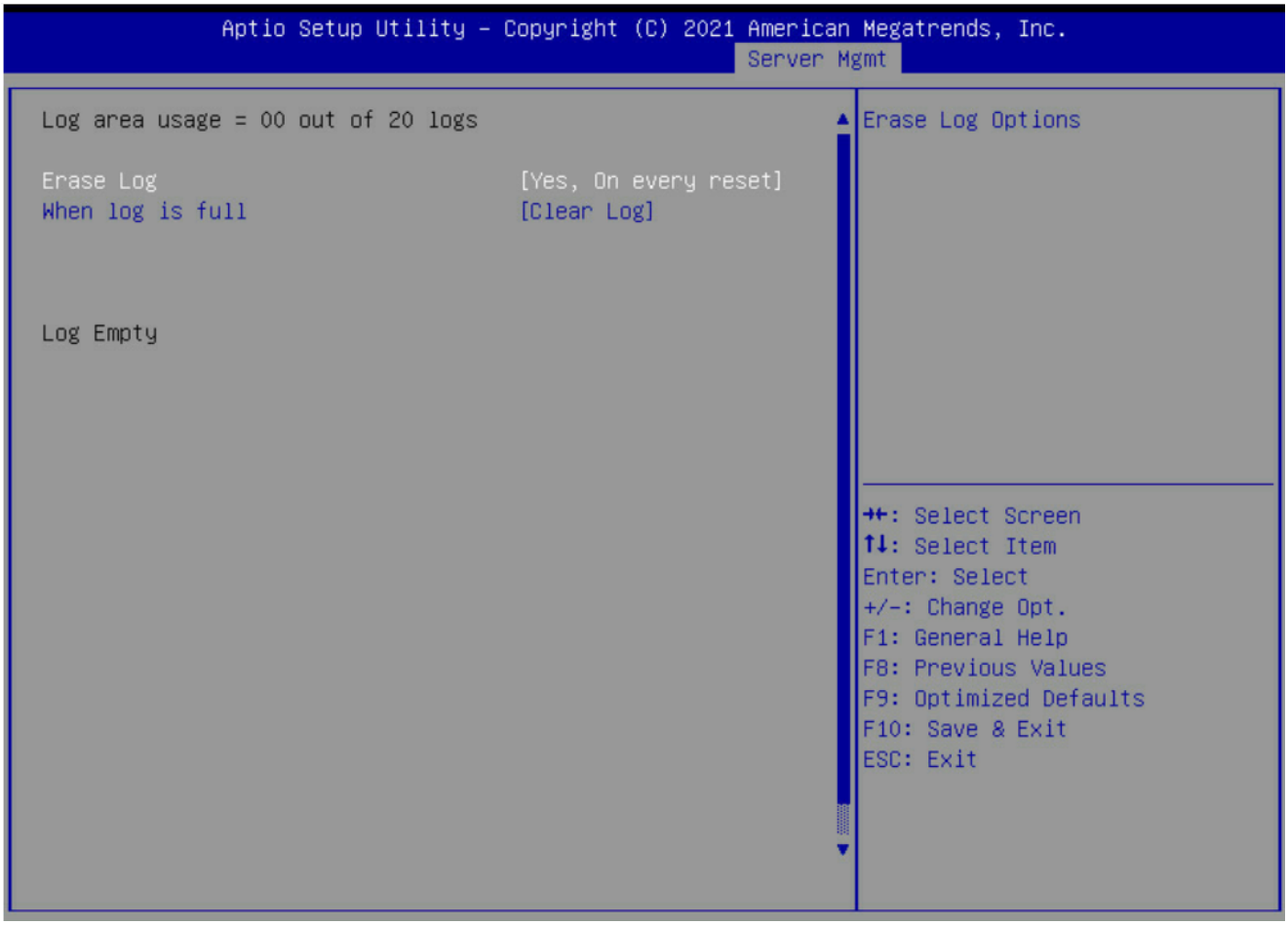
5.8.1 Sub-Menu: System Event Log



BIOS Item	Options	Description
SEL Components	**Enabled** Disabled	To enable or disable event logging for error codes during boot
Erase SEL	**No** Yes, on next reset Yes, on every reset	Choose options for erasing SEL
When SEL is Full	**Do Nothing** Erase immediately	Choose options for reactions when SEL is full
Log EFI Status Codes	Disabled Both **Error code** Progress code	Log Status code type. Error code or progress code or both or disabled
All valus changed here do not take effect until computer is restarted	**Read only**	Note should take computer restart when changing items above

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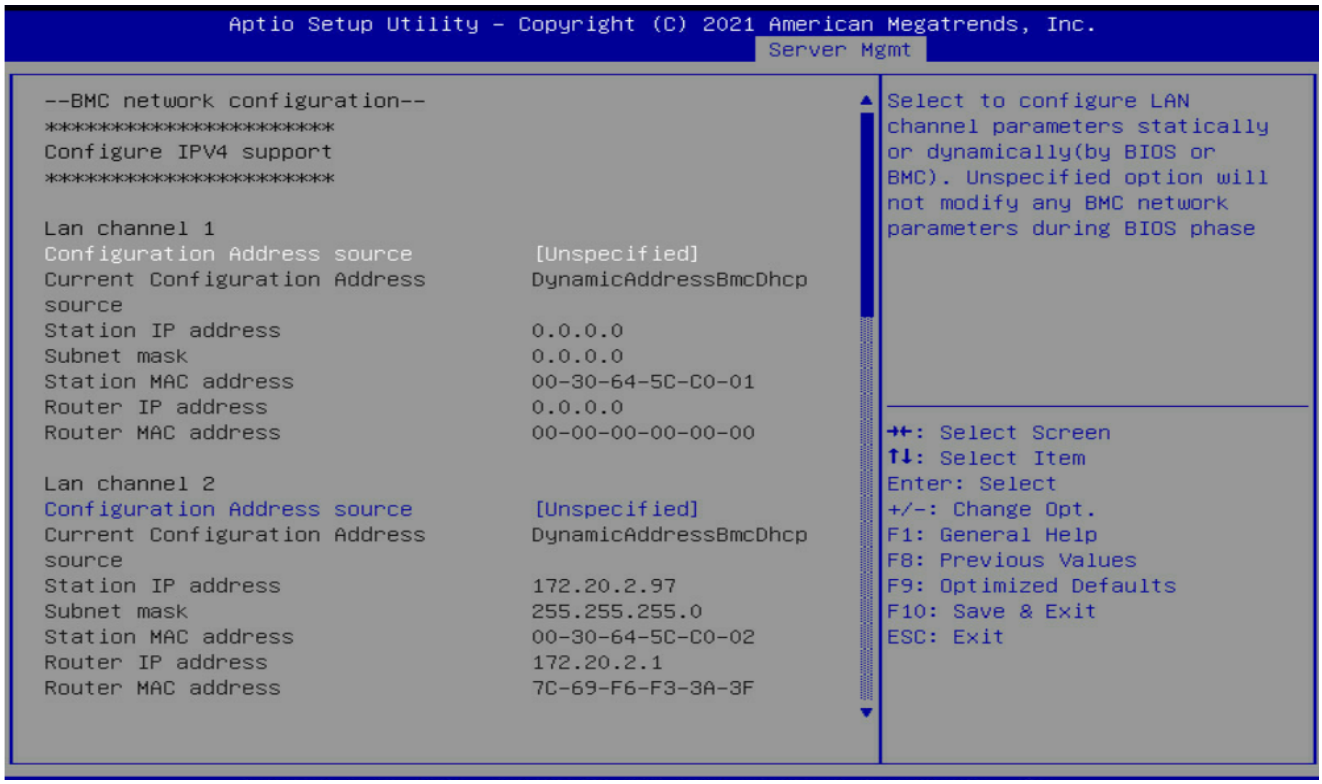
5.8.2 Sub-Menu: BMC Self-test Log



BIOS Item	Options	Description
Log area usage = 00 out of 20 logs	**Read only**	Log area usage numbers
Erase Log	No **Yes, on every reset**	Erase Log Options
When log is Full	**Clear Log** Do not log any more	Select the action to be taken when log is full

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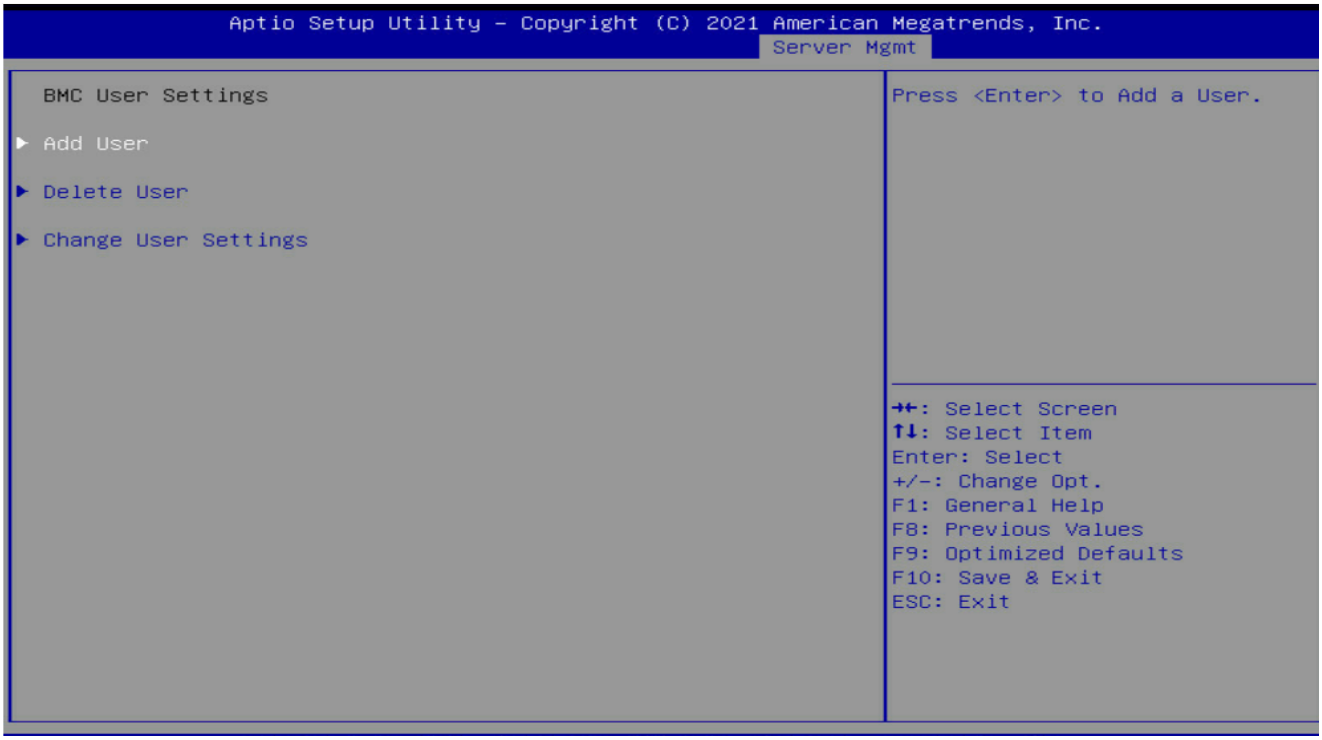
5.8.3 Sub-Menu: BMC Network Configuration



BIOS Item	Options	Description
Configure IPV4 support	**Read only**	
Configuration Address source	**Unspecified** Static DynamicBmcDhcp DynamicBmcNonDhcp	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
Configure IPV6 support	**Read only**	
IPV6 Support	**Disable** Enable	Enable or Disable LAN IPV6 Support
Configuration Address source	**Unspecified** Static DynamicBmcDhcp	To configure LAN Address source when IPV6 supported

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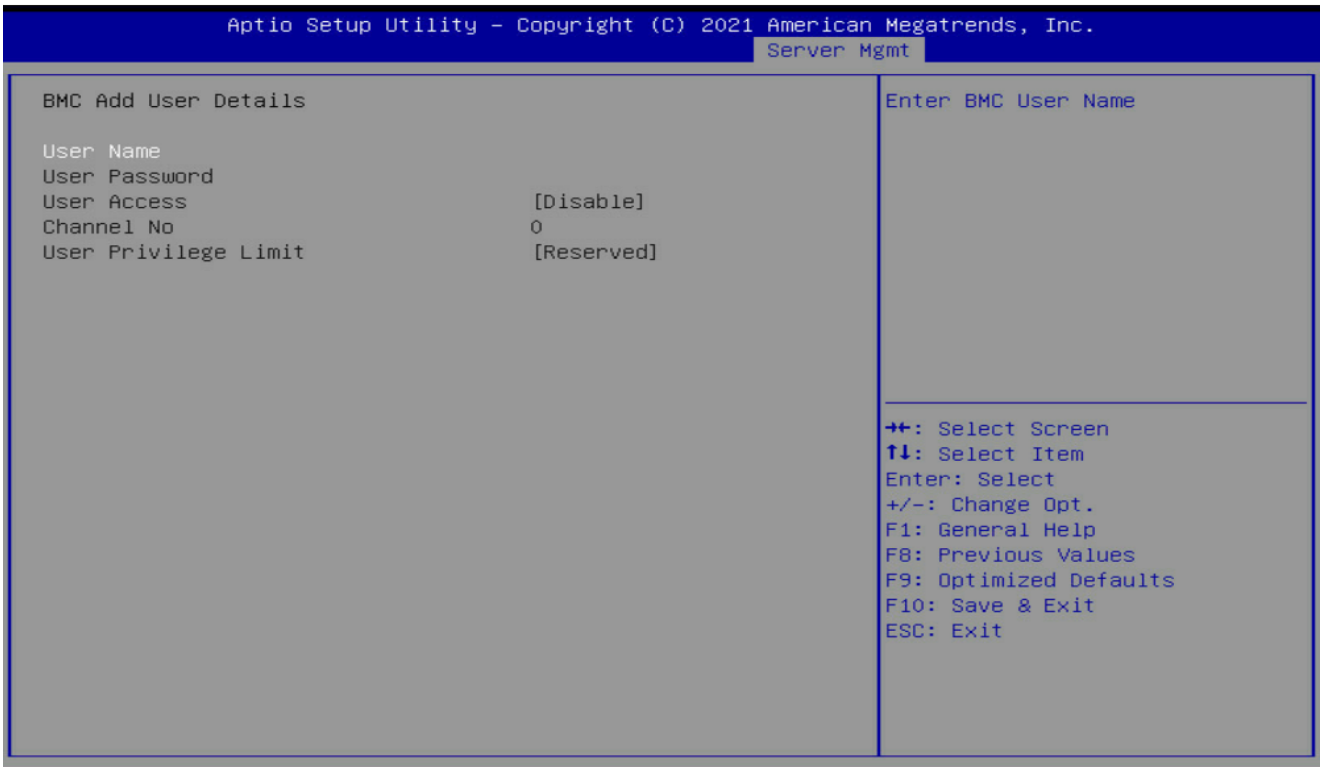
5.8.4 Sub-Menu: BMC User Settings



BIOS Item	Options	Description
Add User	**Sub Menu**	Press <Enter> to Add a User
Delete User	**Sub Menu**	Press <Enter> to Delete a User
Change User Settings	**Sub Menu**	Press <Enter> to Change User Settings

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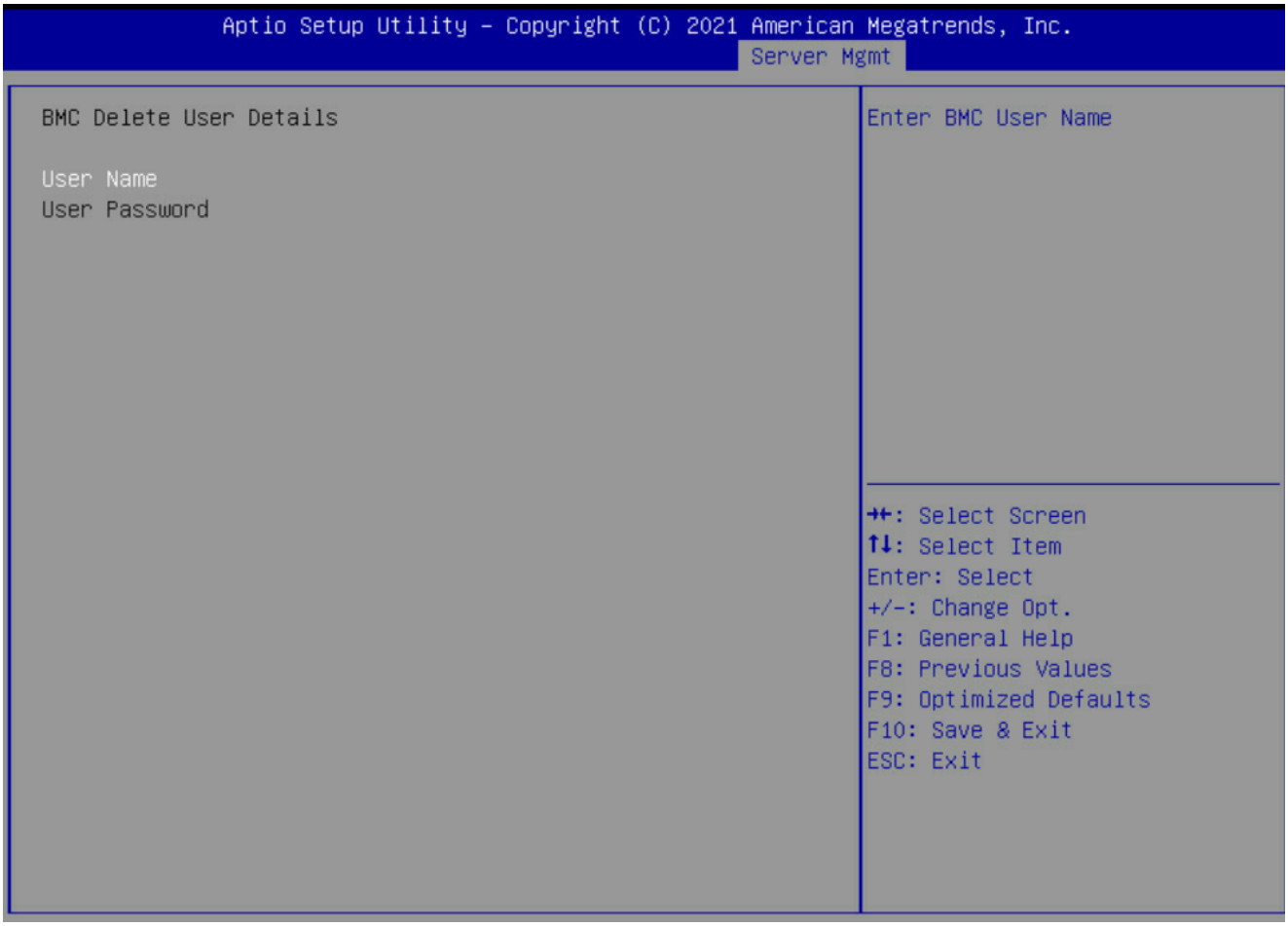
5.8.4.1. Sub-Menu: Add User



BIOS Item	Options	Description
User Name	**Enter to set user name**	Enter BMC User Name
User Password	**Enter to set password**	Enter BMC User Password
User Access	**Disable** Enable	Enable/Disable the BMC User's Access
Channel No	**0**~15	Enter BMC Channel Number
User Privilege Limit	**Reserved** Callback User Operator Administrator OEM Proprietary No Access	Enter BMC User Privilege Limit for Selected Channel

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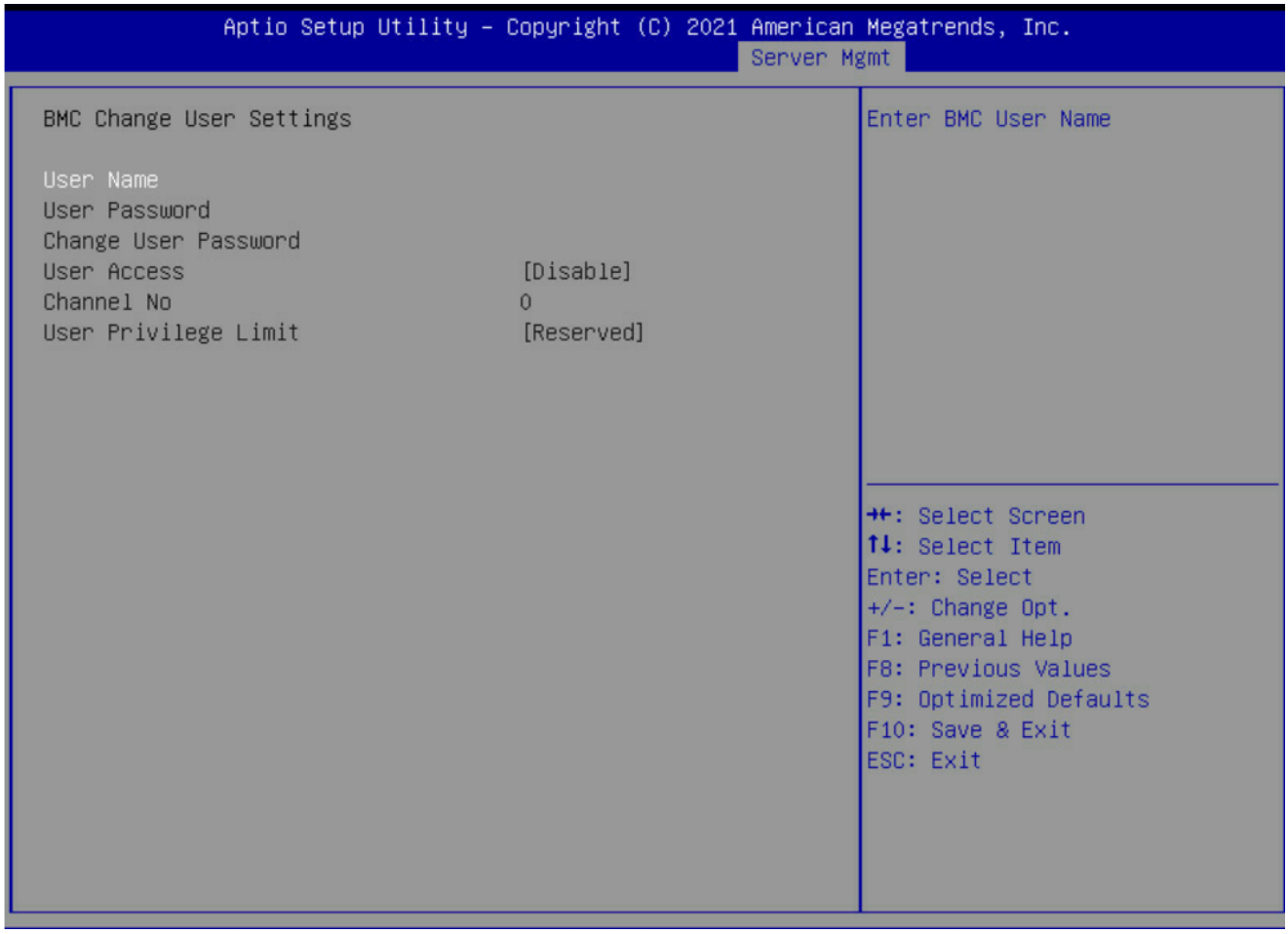
5.8.4.2. Sub-Menu: Delete User



BIOS Item	Options	Description
User Name	**Enter to set user name**	Enter BMC User Name
User Password	**Enter to set password**	Enter BMC User Password

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5.8.4.3. Sub-Menu: Change User Setting



BIOS Item	Options	Description
User Name	**Enter to set user name**	Enter BMC User Name
User Password	**Enter to set password**	Enter BMC User Password
User Access	**Disable** Enable	Enable/Disable the BMC User's Access
Channel No	**0**~15	Enter BMC Channel Number
User Privilege Limit	**Reserved** Callback User Operator Administrator OEM Proprietary No Access	Enter BMC User Privilege Limit for Selected Channel

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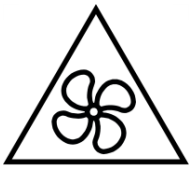
Important Safety Instructions

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 55°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.



Hazardous moving parts. Keep body parts out of the motion path.



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.
   - The power cord must be connected to a socket or outlet with a ground connection.
7. Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
8. An RTC battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Discard used batteries according to the manufacturer's instructions.

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9. This equipment is not suitable for use in locations where children are likely to be present.
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.



Shock hazard! Disconnect all power supply inputs before servicing.



Shock hazard!
Risque d'électrocution!



Multiple power sources
Sources d'alimentation multiples

13. 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 is controlled by the authority responsible for the location.
14. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
15. This product is intended to be supplied by a certified DC power source with output rating: -36 to -72VDC, 17-9A minimum. The DC power rating current is 17-9A. All power connection wiring must be performed by a qualified electrician in accordance with National Electrical Code, ANSI/NFPA 70 and Canadian Electrical Code, Part I, CSA C22.1. The DC power supply should be well-grounded to ensure safe operation. The protective earthing conductor shall be minimum 12 AWG and having green-and-yellow insulation. The ground wire should be installed first (before "+" and "-") and then removed.

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Consignes de Sécurité Importantes

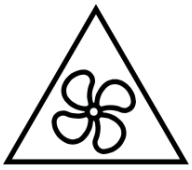
*Pour assurer la sécurité de l'utilisateur, veuillez lire et suivre toutes les **directives**, ainsi que les **AVERTISSEMENTS**, **MISES EN GARDE** et **REMARQUES** de ce manuel et indiqués sur l'équipement associé avant de manipuler ou utiliser l'équipement.*

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 55 °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.*



AVERTISSEMENT

***Pièces mobiles dangereuses.** Gardez les parties du corps hors de la trajectoire.*



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.*
   - *Le cordon d'alimentation doit être connecté à une prise ou à une prise de courant avec mise à la terre.*
7. *N'essayez jamais de réparer l'équipement. L'équipement ne doit être réparé que par du personnel qualifié.*

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8. *Une pile au lithium peut être installée pour assurer l'alimentation de secours ou d'urgence en continu.*



mise en garde

***Risque d'explosio**n si la batterie est remplacée par une batterie d'un type incorrect. Jetez les piles usagées conformément aux instructions du fabricant.*

9. *Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.*
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. *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.*



mise en garde

***Risque d'électrocution!** Débranchez toutes les entrées d'alimentation avant de procéder à l'entretien.*


Shock hazard!
Risque d'électrocution!


Multiple power sources
Sources d'alimentation multiples

13. *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.*
14. *Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.*
15. *Ce produit est destiné à être alimenté par une source d'alimentation CC certifiée avec une puissance de sortie: -36 à -72VDC, 17-9A minimum. Le courant de puissance CC est de 17-9A. Tout le câblage de connexion d'alimentation doit être effectué par un électricien qualifié conformément au Code national de l'électricité, ANSI / NFPA 70 et au Code canadien de l'électricité, Partie I, CSA C22.1. L'alimentation CC doit être bien mise à la terre pour garantir un fonctionnement sûr. Le conducteur de mise à la terre de protection doit être au minimum 12 AWG et avoir une isolation verte et jaune. Le fil de terre doit être installé en premier (avant «+» et «-») puis retiré.*

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Getting Service

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

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