ZEUS-WHI0

4U Rackmount Server System

User's Manual 1st Ed

Last Updated: February 6, 2023

Copyright Notice

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Acknowledgement

Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● ZEUS-WHI0	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur.
Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

产品中有毒有害物质或元素名称及含量

AAEON System QO4-381 Rev.A0

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了GB/T 26572的限量要求，然而该部件仍符合欧盟指令2011/65/EU 的规范。

备注：

一、此产品所标示之环保使用期限，系指在一般正常使用状况下。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Hazardous and Toxic Materials List

AAEON System QO4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)
PCB and Components	X	O	O	O	O	O
Wires & Connectors for Ext.Connections	X	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	X	O	O	O	O	O
HDD Drive	X	O	O	O	O	O
LCD Module	X	O	O	O	O	O
Optical Drive	X	O	O	O	O	O
Touch Control Module	X	O	O	O	O	O
PSU	X	O	O	O	O	O
Battery	X	O	O	O	O	O

This form is prepared in compliance with the provisions of SJ/T 11364.

O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.

X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.
2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.
3. LCD Module and Touch Control Module only applies to certain products which feature these components.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	4U Rackmount Server System
Processor	Single Intel® Xeon® Ice Lake-SP Processor,
	Supports up to 205W
System Memory	DDR4 2666MHz R-DIMM Slot x 6
	Supports up to 192GB (32GB per DIMM)
Chipset	Intel® C621A
Ethernet	Intel® i210 GbE x 2
BIOS	AMI BIOS
COM	RS-232 x 1
USB	USB 3.1 Gen 1 x 6 (Type-A)
	USB 2.0 x 2 (2 x 5P 2.0mm Pin Header)
Audio	Realtek® ALC892-CG
	Line-In x 1
	Line-Out x 1
Serial ATA	SATA III x 8, Supports RAID 0, 1, 5,10
Storage	4-Bay Internal 2.5"/3.5" SATA Drive Bay x 2
	M.2 2280 M-Key x 1 (PCIe Gen 3 Speed)
Expansion Interface	PCIe 1: PCIe [x16] x 1 (Gen 4 x16)
	PCIe 2: PCIe [x8] x 1 (Gen 3 x4)
	PCIe 3: PCIe [x16] x 1 (Gen 4 x16)
	PCIe 4: PCIe [x8] x 1 (Gen 4 x4)
	PCIe 5: PCIe [x16] x 1 (Gen 4 x16)
	PCIe 6: PCIe [x8] x 1 (Gen 3 x4)
	PCIe 7: PCIe [x8] x 1 (Gen 4 x8)
Watchdog Timer	1~255 Steps by Software Programming

System

IPMI	IPMI Module (Optional)
RTC	Internal RTC
TPM	TPM 2.0
System Fan	Middle Fan x 3 (Default)
	Rear Fan x 2 (Optional)
Front I/O Panel	HDD Active LED x 1
	Power On/Off x 1
	USB 3.0 x 2 (USB 2.0 Signal)
Rear I/O Panel	USB 3.1 Gen 1 x 6 (Type-A)
	1Gb RJ-45 LAN x 2
	VGA x 1
	COM x 1
	Audio Jack Line-in x 1
	Audio Jack Line-out x 1
DIO	8-bit Internal Pin Header Digital I/O Interface 2 x 5 (2.0mm)
Color	Black
Power Supply	800W Mini Redundant PSU
	1600W CRPS PSU (Optional)
Dimension	23.5" x 17" x 6.88"(597.2mm x 430mm x 174.8mm)

Display

Chipset	SM750
Resolution	1920 x 1080 (Windows® Server 2019)
	800 x 600 (CentOS 7.3)
Connector	VGA x 1

Environmental

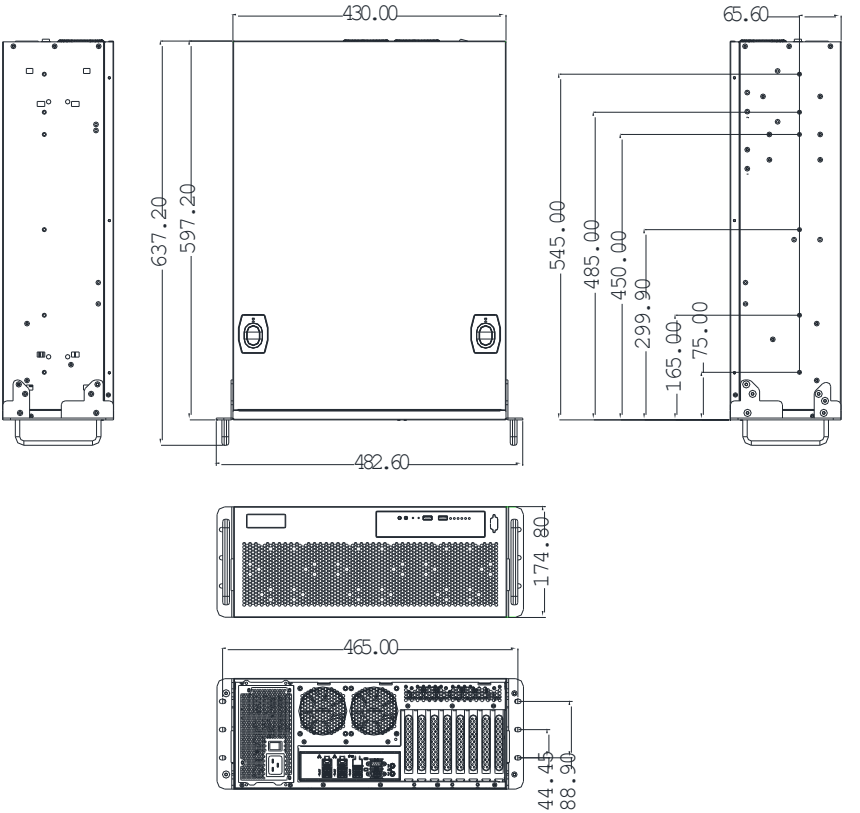
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	10% ~ 90% Relative Humidity, non-condensing
Storage Humidity	10% ~ 80% @40°C; non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (3.5" HDD)
	1.5 Grms/ 5 ~ 500Hz / non-operation
Shock	10 G Peak Acceleration (11 m sec. duration), operation
	20 G Peak Acceleration (11 m sec. duration), non-operation
Certification	CE / FCC Class A

Chapter 2

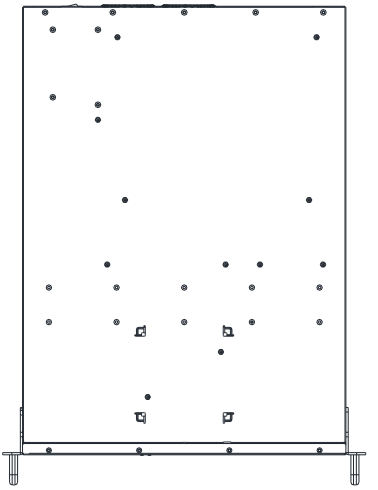
Hardware Information

2.1 Dimensions

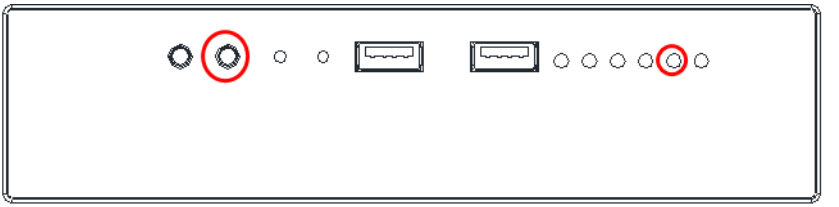
System Top



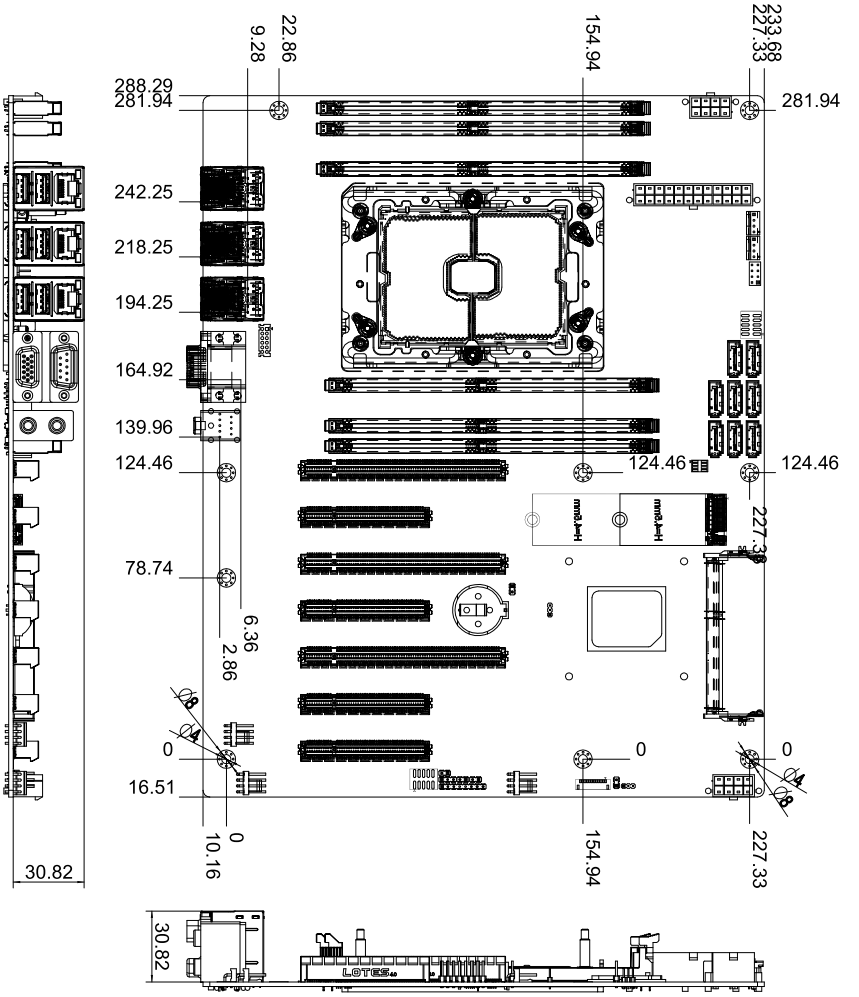
System Bottom



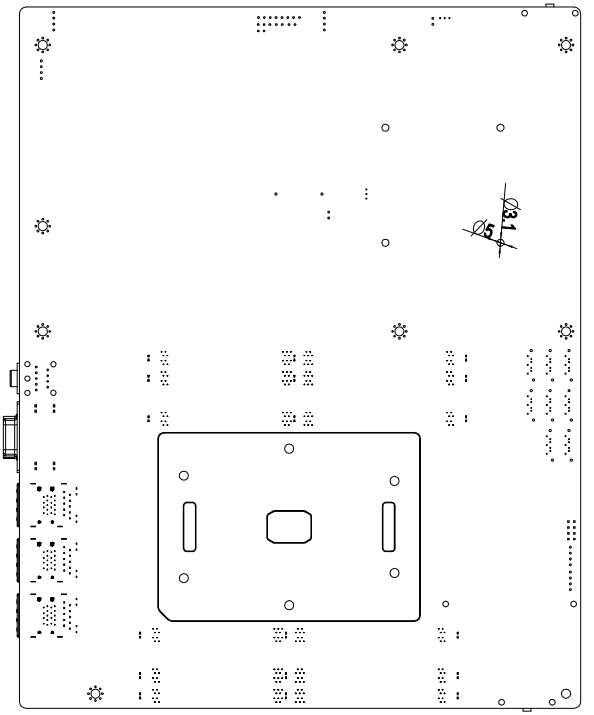
Note: While the chassis contains several LEDs, only the Power LED and HDD LED are functional, as shown.



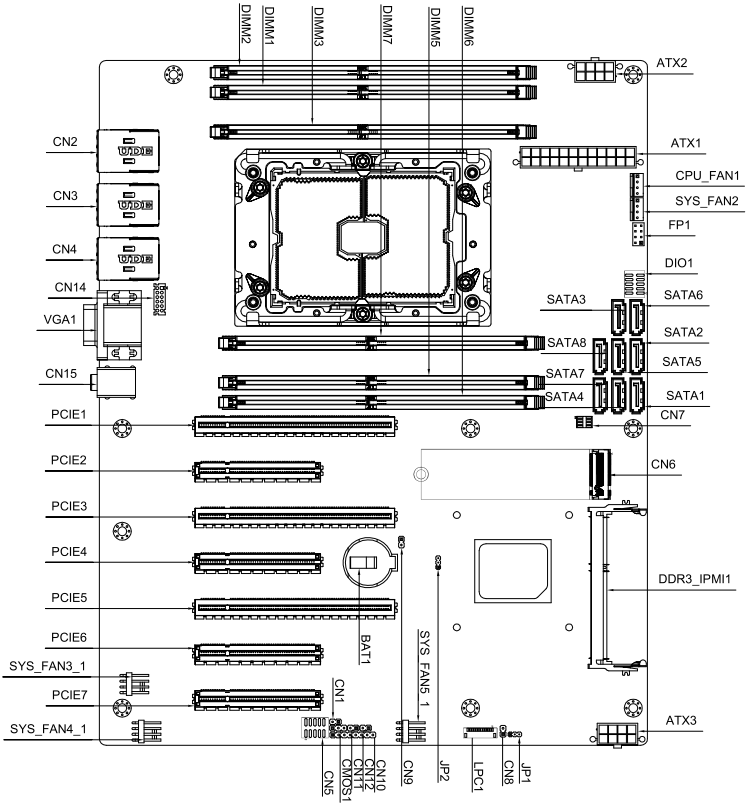
Board Component Side



Board Solder Side



2.2 Jumpers and Connectors



Note:

- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12V Specification 2.0 (or later version) and provides a minimum power of 500W.
- We recommend that you use a PSU with a higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- If you want to use two or more high-end PCIe x16 cards please connect ATX3, and use a PSU with 1000W power or above to ensure the system stability.

2.3 List of Jumpers

Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
CMOS1	RTC Reset
JP1	Auto Power Button
JP2	ME Recover

2.3.1 RTC Reset (CMOS1)

Setting	Configuration
Normal	1-2
Clear CMOS	2-3

2.3.2 Auto Power Button Selection (JP1)

Setting	Configuration
Normal	1-2
Auto PWRBTN	2-3

2.3.3 ME Recover (JP2)

Setting	Configuration
Normal	1-2
ME Recover	2-3

2.4 List of Connectors

Please refer to the table below for all of the board's connectors that you can configure for your application

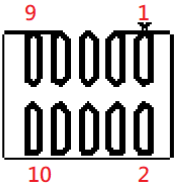
Label	Function
DIO1	Digital I/O
CN5	USB 2.0 Port
FP1	Front Panel Pin Header
CPU_FAN1/2	CPU_FAN1
SYS_FAN3~5	CPU_FAN2
CN6	M.2 2280 M-Key
SATA1~SATA8	SATA Port Connector
ATX1	24-Pin ATX Power Connector
ATX2/ATX3	8-Pin 12V Power Connector
PCIe1~PCIe7	Standard PCIe Slot
DDR3_IPMI1	IPMI Connector (AAEON IPMI only)
CN4	IPMI LAN only
CN14	IPMI LAN Internal Connector.
CN2/CN3	USB 3.0+LAN Connector
VGA1	VGA+COM Connector
CN15	Audio Connector
DIMM1~3	DDR4 Slot
DIMM5~7	DDR4 Slot
CN9	Case Open

Note 1: CN1/CN5/CN7/CN8/CN10/CN11/CN12/LPC1 are for Debug.

Note 2: LAN of CN14 only for IPMI MLAN use. Not Standard LAN port.

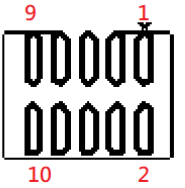
Note 3: PCIe2, PCIe4, PCIe6 are PCIe slots with x4 lanes. PCIe6 connects to PCH.

2.4.1 Digital I/O: 2.0mm Pin Header 2x5P (DIO1)



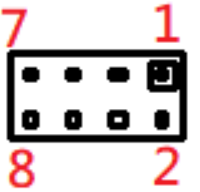
Pin	Signal	Signal Type
1	DIO0	Input / Output
2	DIO1	Input / Output
3	DIO2	Input / Output
4	DIO3	Input / Output
5	DIO4	Input / Output
6	DIO5	Input / Output
7	DIO6	Input / Output
8	DIO7	Input / Output
9	+3.3V	PWR
10	GND	GND

2.4.2 USB 2.0: 2.0mm Box Header 2x10P (CN5)



Pin	Signal	Signal Type
1	+5V_USB	PWR
2	GND	GND
3	USBP_1N	DIFF
4	GND	GND
5	USBP_1P	DIFF
6	USBP_2P	DIFF
7	GND	GND
8	USBP_2N	DIFF
9	GND	GND
10	+5V_USB	PWR

2.4.3 Front Panel Pin Header (FP1)



Pin	Signal	Signal Type
1	Power On Button (+)	Input
2	Reset Switch (+)	Input
3	Power On Button (-)	GND
4	Reset Switch (-)	GND
5	HDD LED (+)	Output
6	Power LED(+)	POWER
7	HDD LED (-)	Output
8	Power LED(-)	GND

2.4.4 Case Open (CN9)

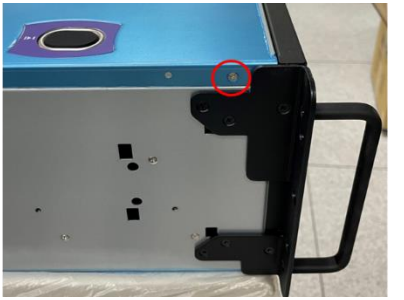
Pin	Signal	Signal Type
1	CASEOPEN#	Input
2	GND	GND

2.5 Hardware Installation

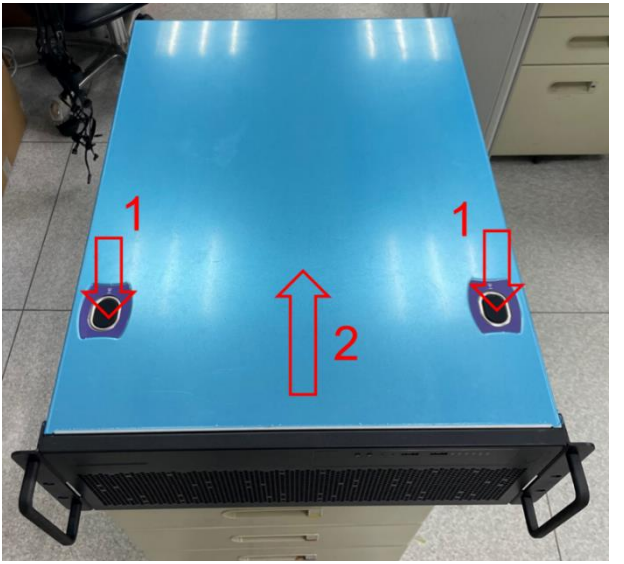
2.5.1 2.5" or 3.5" Hard Disk Drive Installation

This section details how to install the 2.5" or 3.5" HDD.

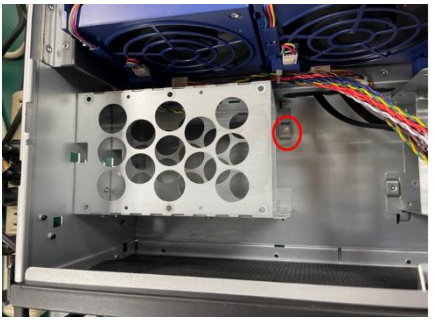
Step 1: Unscrew the upper lid of the chassis.

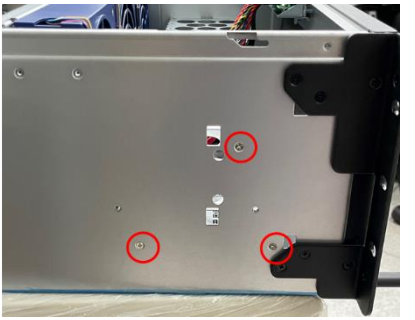


Step 2: Open the upper lid.

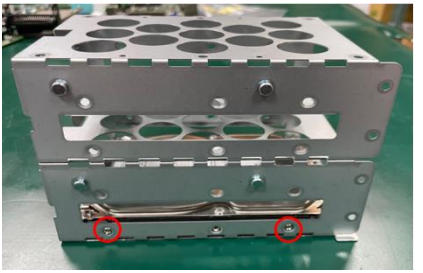


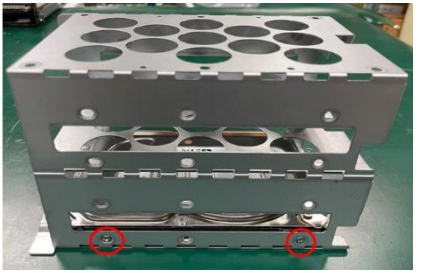
Step 3: Loosen the HDD Bracket screws.



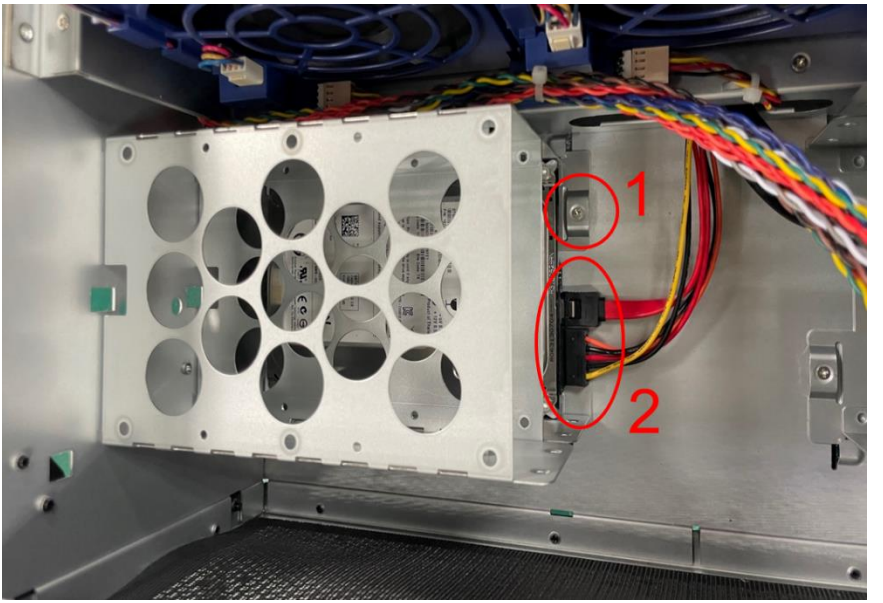


Step 4: Place the HDD in the driver bay and lock with four screws.





Step 5.1: Lock the hard disk driver bay with the screw.

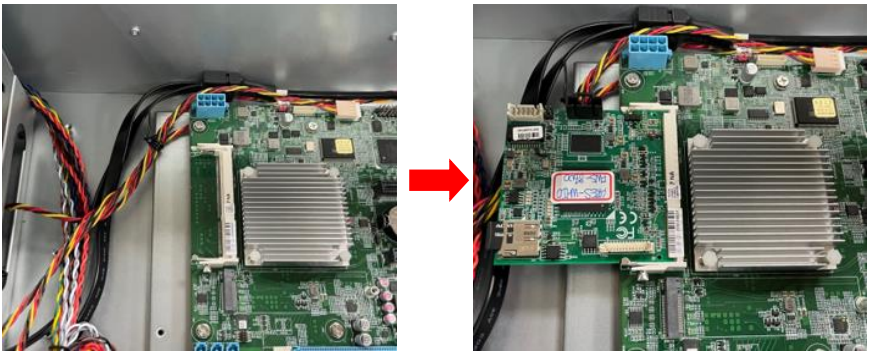


Step 5.2: Connect the SATA and SATA power cables to the Hard Disk.

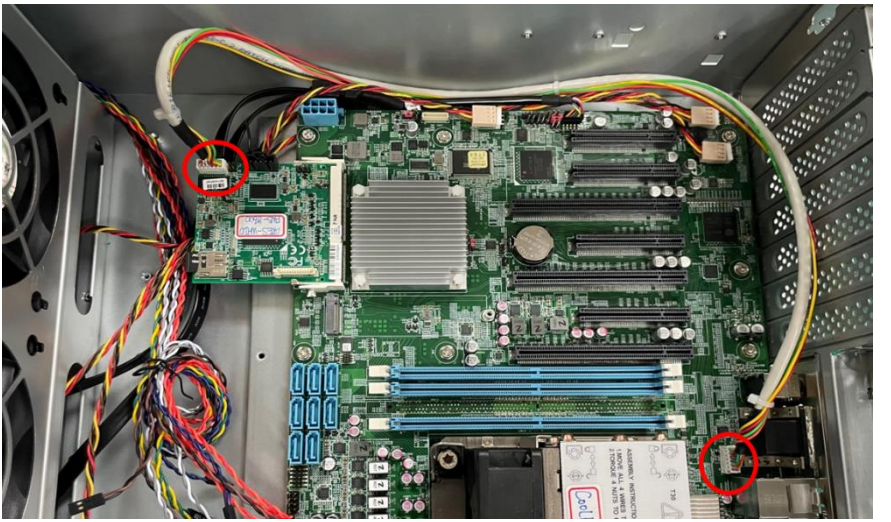
2.5.2 IPMI Module Installation

This section details how to install the IPMI Module (BMC2000).

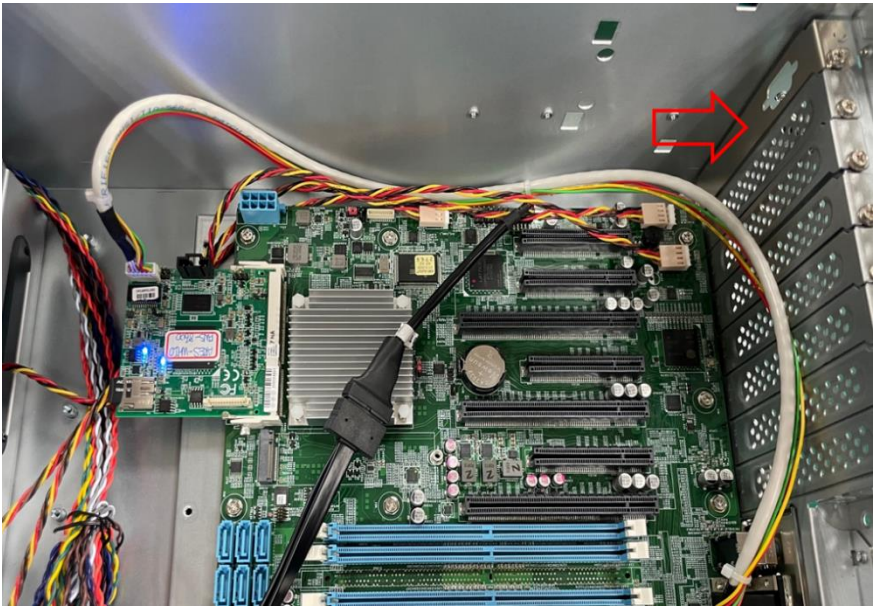
Step 1: Insert the IPMI card.



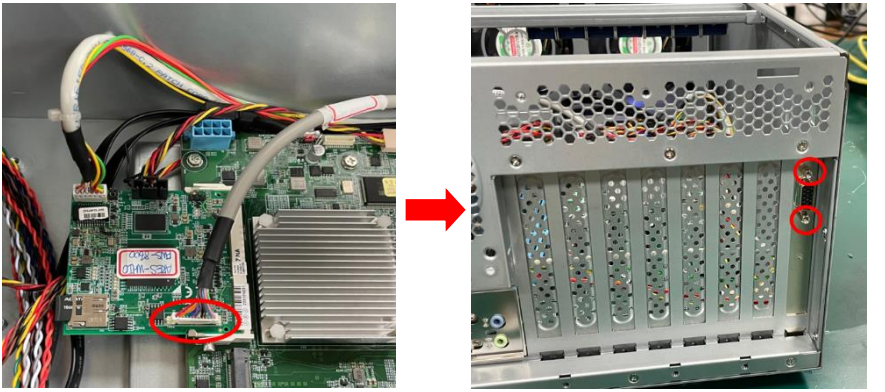
Step 2: Connect Cable 1.



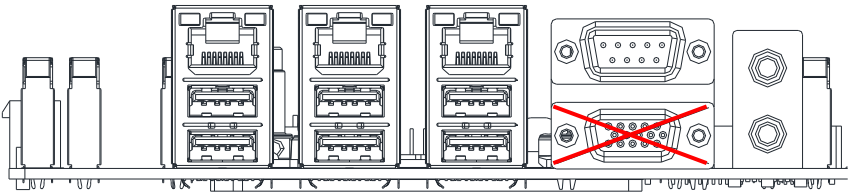
Step 3: Replace the VGA Cable bracket.



Step 4: Connect the VGA Cable.



Note: Onboard VGA is not functional when an IPMI module is installed.



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The board uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Enable/ Disable boot option for legacy network devices

Platform Configuration – For PCH and Server ME configuration

Socket Configuration – Configures processor settings

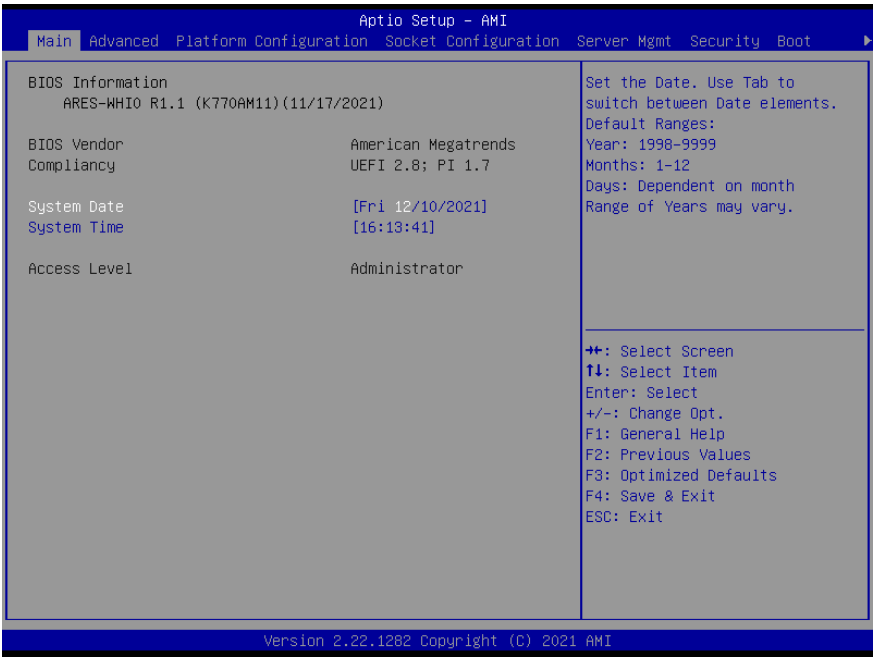
Server Mgmt – BMC information and configuration

Security – The setup administrator password can be set here

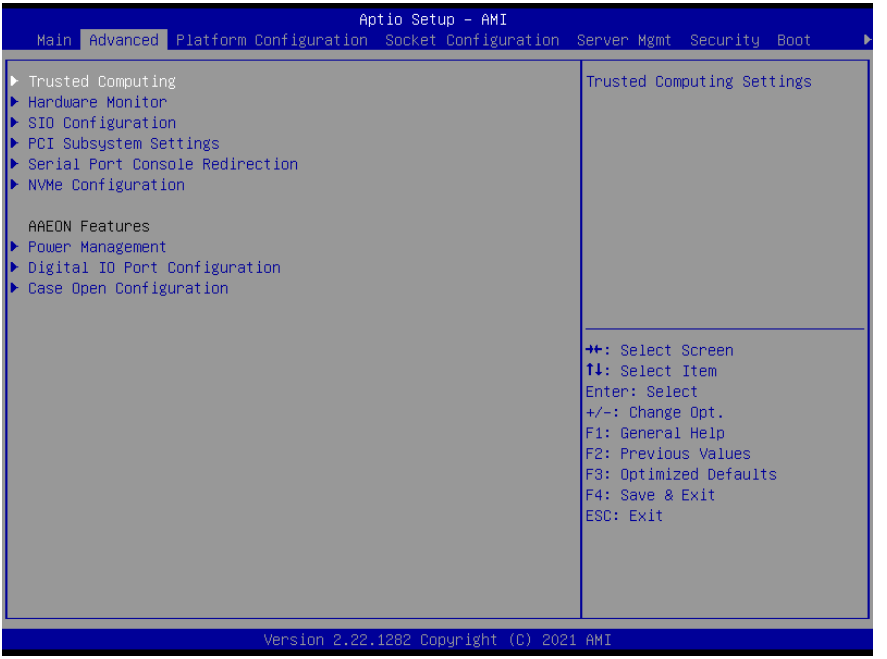
Boot – Enable/ Disable quiet Boot Option

Save & Exit –Save your changes and exit the program

3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced

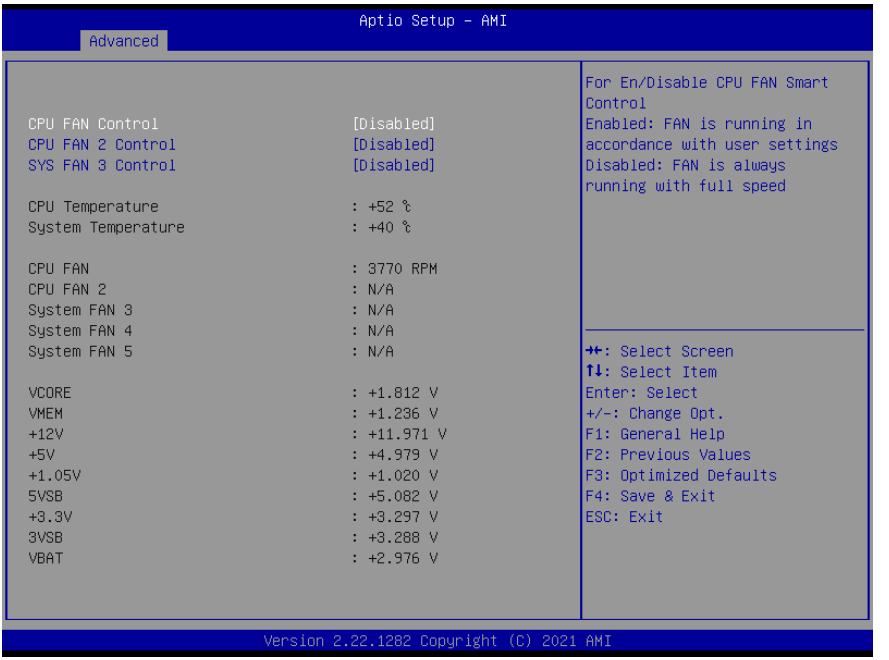


3.4.1 Trusted Computing

Options Summary		
Security Device Support	Enable	Optimal Default, Failsafe Default
	Disable	
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		
SHA-1 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA-1 PCR Bank		
SHA256 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA256 PCR Bank.		
Pending operation	None	Optimal Default, Failsafe Default
	TPM Clear	
Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.		
Platform Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	

Options Summary		
Enable or Disable Platform Hierarchy		
Storage Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Storage Hierarchy		
Endorsement Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Endorsement Hierarchy		
TPM 2.0 UEFI Spec Version	TCG_2	Optimal Default, Failsafe Default
	TCG_1_2	
Select the TCH2 Spec Version Support. TCG_1_2: The Compatible mode for Win8/Win10 TCG_2: Support new TCG2 protocol and event format for Win10 or later		
Physical Presence Spec Version	1.3	Optimal Default, Failsafe Default
	1.2	
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3		
Device Select	Auto	Optimal Default, Failsafe Default
	TPM 1.2	
	TPM 2.0	
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.		

3.4.2 Hardware Monitor



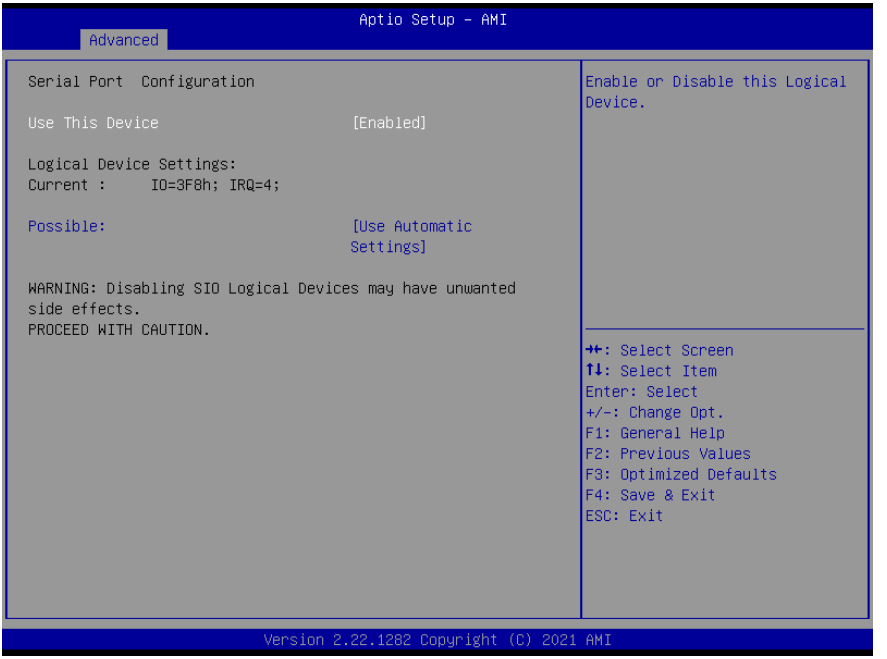
Options Summary		
CPU FAN / CPU FAN 2 / SYS FAN 3 Control	Disabled	
	Enabled	Optimal Default, Failsafe Default
For Enable/Disable CPU FAN / CPU FAN 2 / SYS FAN 3 Smart Control Enabled: FAN is running in accordance with user settings Disabled: FAN is always running with full speed		
FAN Control Mode	Manual Mode	
	Automatic Mode	Optimal Default, Failsafe Default
Manual Mode: Depends on PWM Duty Automatic Mode: FAN Speed depends on CPU Temperature		
PWM Duty	200	Optimal Default, Failsafe Default
Manual Mode: PWM Duty value Range: [0 - 255]		
Spin PWM	100	Optimal Default, Failsafe Default
The PWM Duty of FAN Spin Range: [0 - 255]		

Options Summary		
Off Control Temperature	30	Optimal Default, Failsafe Default
Temperature Limit Value of Fan Off Note: Some fans have the minimum speed even if the PWM value is 0		
Start Control Temperature	50	Optimal Default, Failsafe Default
Temperature Limit Value of FAN Start Control		
Full Speed Temperature	80	Optimal Default, Failsafe Default
Temperature Limit Value of FAN Full Speed		
PWM Slope	5	Optimal Default, Failsafe Default
Slope PWM value/Degree C for FAN Speed Control Range: [1-15]		

3.4.3 SIO Configuration

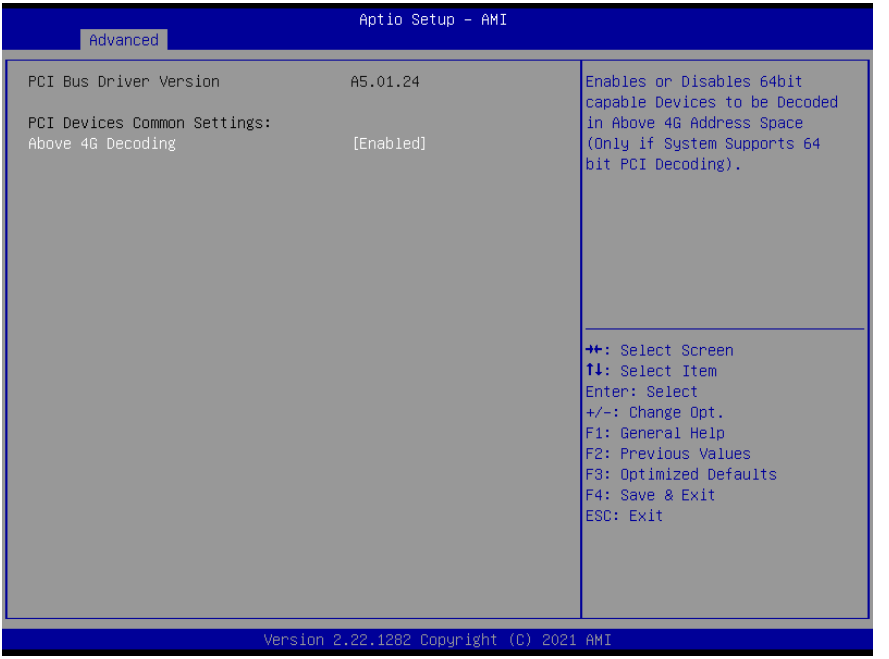
Options Summary
Serial Port
View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.

3.4.3.1 Serial Port Configuration



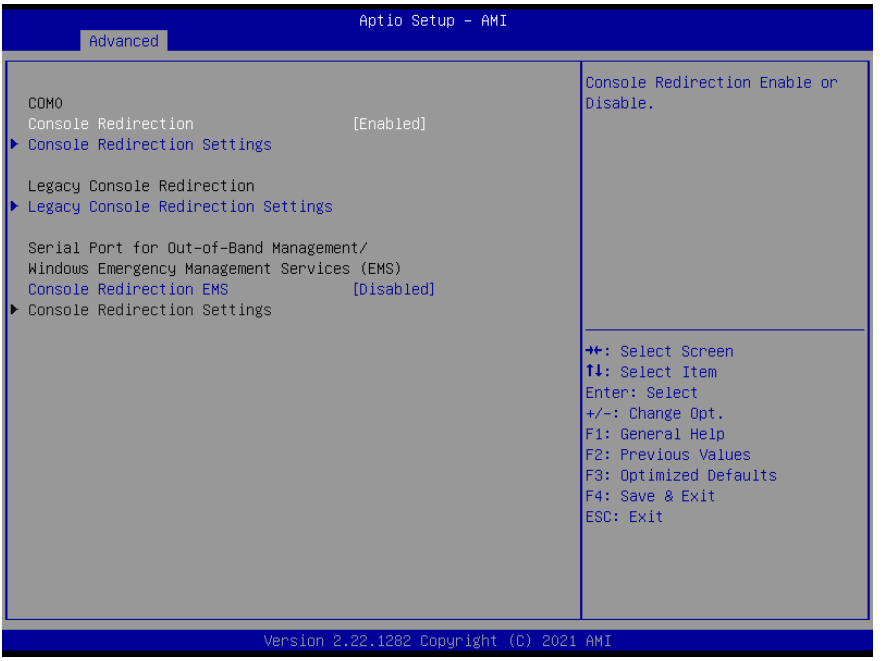
Options Summary		
Use This Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable this Logical Device.		
Possible	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4;	
	IO=2F8h; IRQ=3;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

3.4.4 PCI Subsystem Settings



Options Summary		
Above 4G Decoding	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64-bit PCI Decoding).		

3.4.5 Serial Port Console Configuration



Options Summary		
Console Redirection	Enabled	Optimal Default, Failsafe Default
	Disabled	
Console Redirection Enable or Disable.		
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.		
Console Redirection EMS	Enabled	
	Disabled	Optimal Default, Failsafe Default
Console Redirection Enable or Disable.		

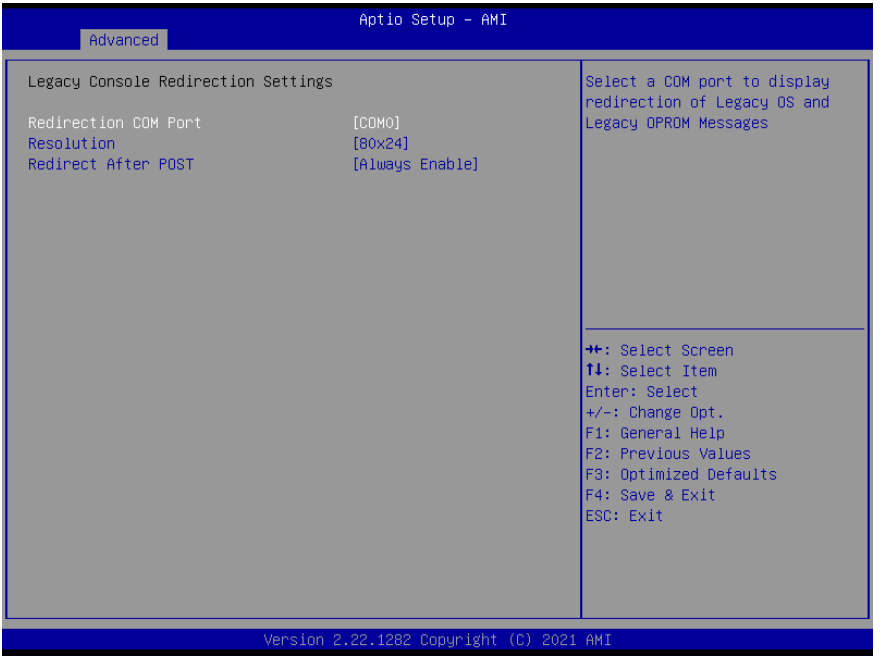
3.4.5.1 COM0 Console Redirection Settings

Options Summary		
Terminal Type	VT100	
	VT100+	Optimal Default, Failsafe Default
	VT-UTF8	
	ANSI	
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.		
Bits per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.		

Options Summary		
Data bit	7	
	8	Optimal Default, Failsafe Default
Data Bits		
Parity	None	Optimal Default, Failsafe Default
	Even	
	Odd	
	Mark	
	Space	
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 the 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	Optimal Default, Failsafe Default
	2	
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.		
Flow control	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.		
VT-UTF8 Combo Key Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.		
Recorder Mode	Disabled	Optimal Default, Failsafe Default
	Enabled	
With this mode enabled only text will be sent. This is to capture Terminal data.		
Resolution 100x31	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enables or disables extended terminal resolution.		
Putty KeyPad	VT100	Optimal Default, Failsafe Default
	LINUX	
	XTERMR6	
	SCO	
	ESCN	
	VT400	

Options Summary
Select FunctionKey and KeyPad on Putty.

3.4.5.2 Legacy Console Redirection Settings



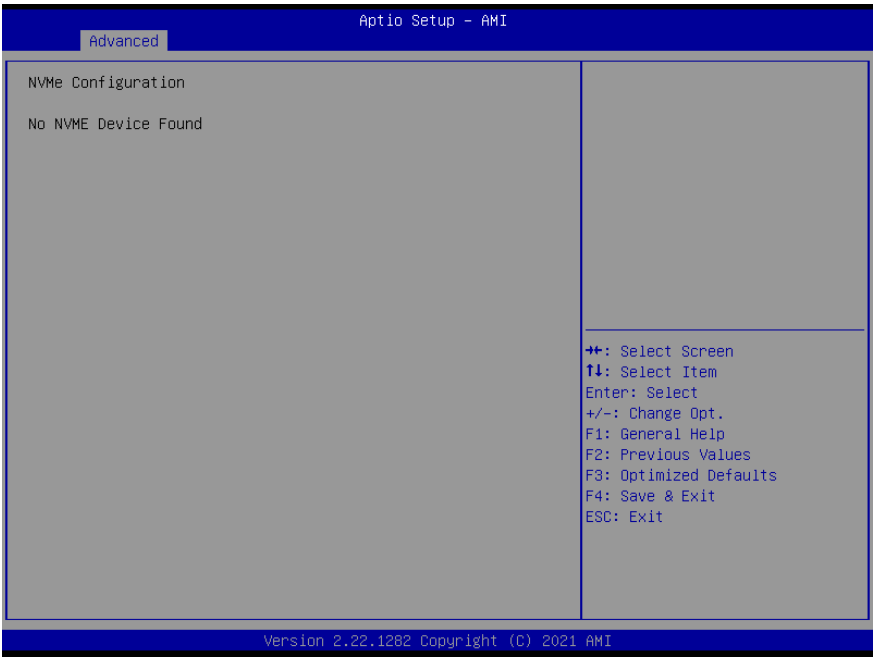
Options Summary		
Redirection COM Port	COM0	Optimal Default, Failsafe Default
Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages		
Resolution	80x24	Optimal Default, Failsafe Default
	80x25	
On Legacy OS, the Number of Rows and Columns supported redirection		
Redirect After POST	Always Enable	Optimal Default, Failsafe Default
	BootLoader	
When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.		

3.4.5.3 Console Redirection EMS Settings

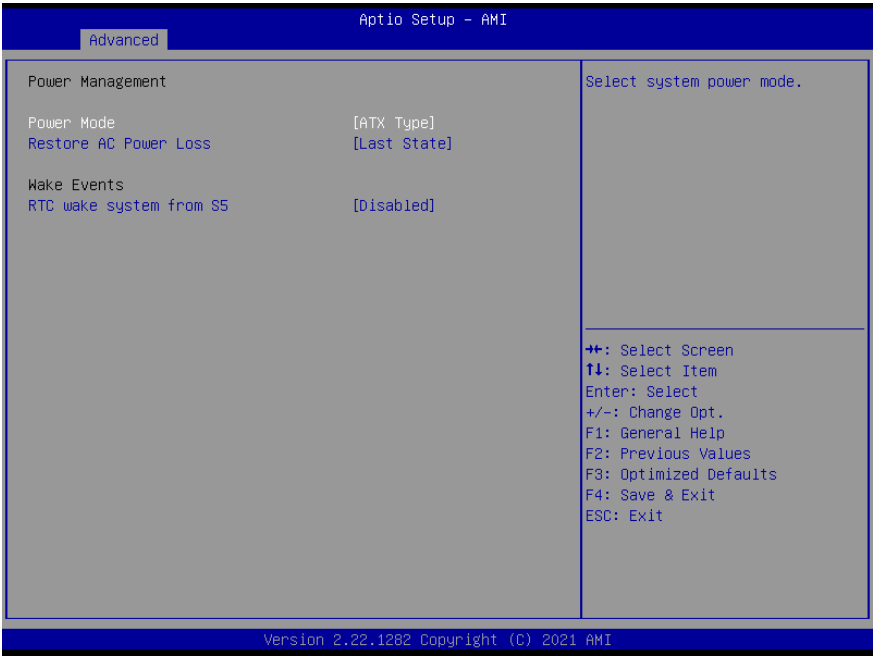
Options Summary		
Terminal Type EMS	VT100	
	VT100+	
	VT-UTF8	Optimal Default, Failsafe Default
	ANSI	
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.		
Bits per second EMS	9600	
	19200	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.		
Flow Control EMS	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
	Software Xon/Xoff	

Options Summary		
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.		
Data Bits EMS	8	Optimal Default, Failsafe Default
Data Bits		
Parity EMS	None	Optimal Default, Failsafe Default
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 EMS	1	Optimal Default, Failsafe Default
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.		

3.4.6 NVMe Configuration

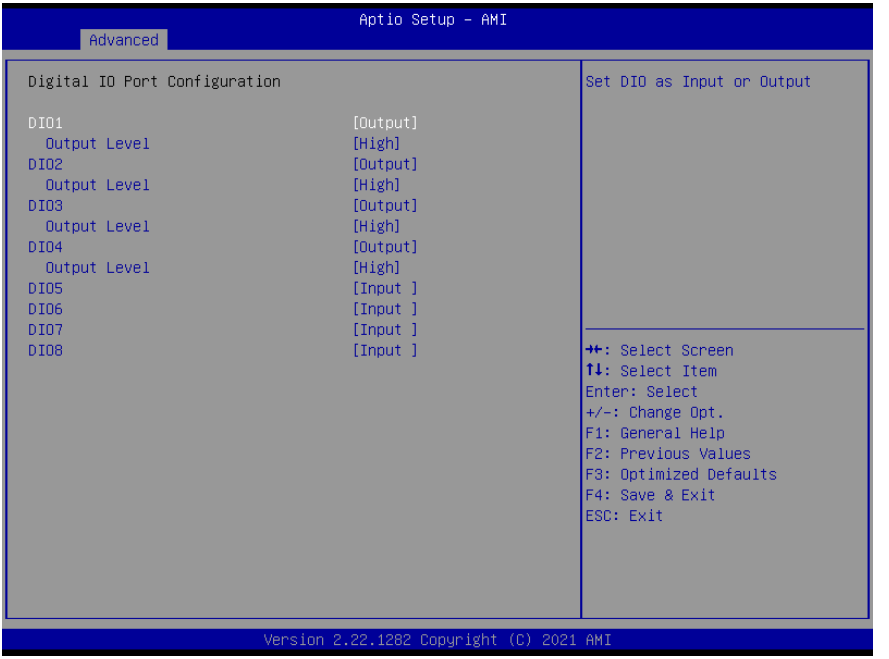


3.4.7 Power Management



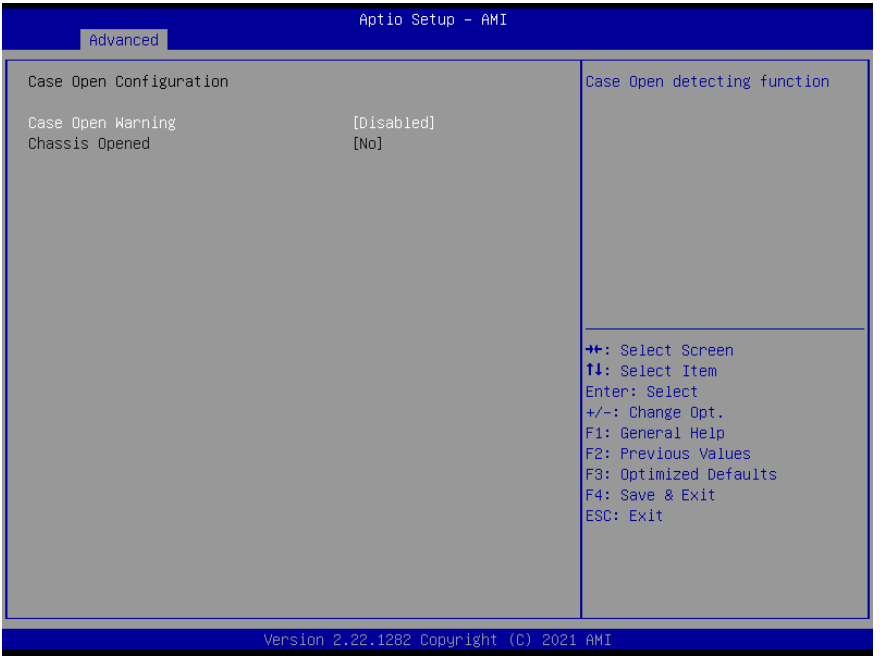
Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
Select power state when power is re-applied after a power failure.		
RTC wake system from S5	Disabled	Optimal Default, Failsafe Default
	Fixed Time	
	Bypass	
Fixed Time: System will wake on the hr :: min :: sec specified Bypass: BIOS will not control RTC wake function during system shutdown.		

3.4.8 Digital IO Port Configuration



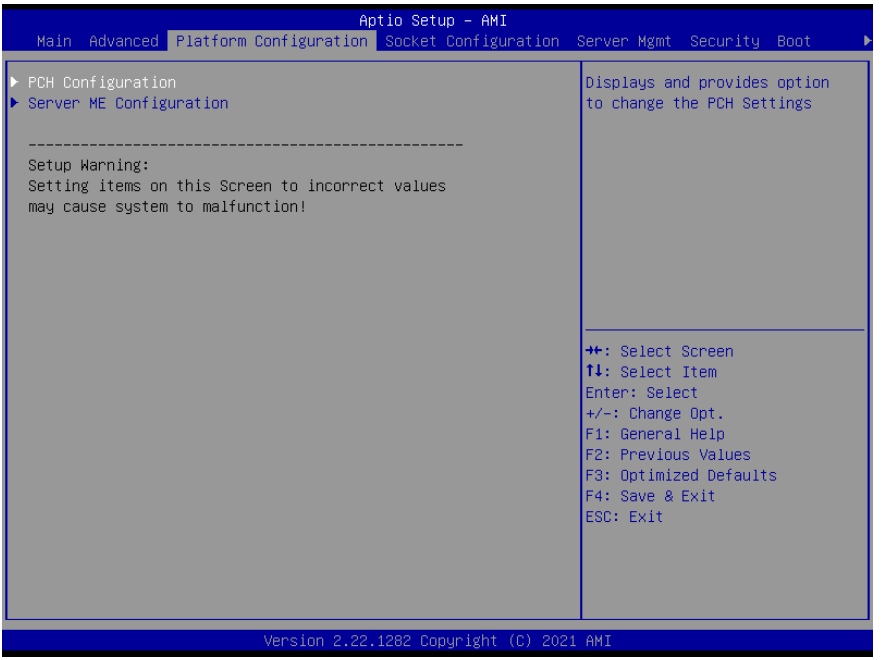
Options Summary		
DIO Port1~4	Output	Optimal Default, Failsafe Default
	Input	
Set DIO as Input or Output		
DIO Port1~4 Output Level	High	Optimal Default, Failsafe Default
	Low	
Set output level when DIO pin is output		
DIO Port5~8	Output	
	Input	Optimal Default, Failsafe Default
Set DIO as Input or Output		
DIO Port5~8 Output Level	High	Optimal Default, Failsafe Default
	Low	
Set output level when DIO pin is output		

3.4.9 Case Open Configuration

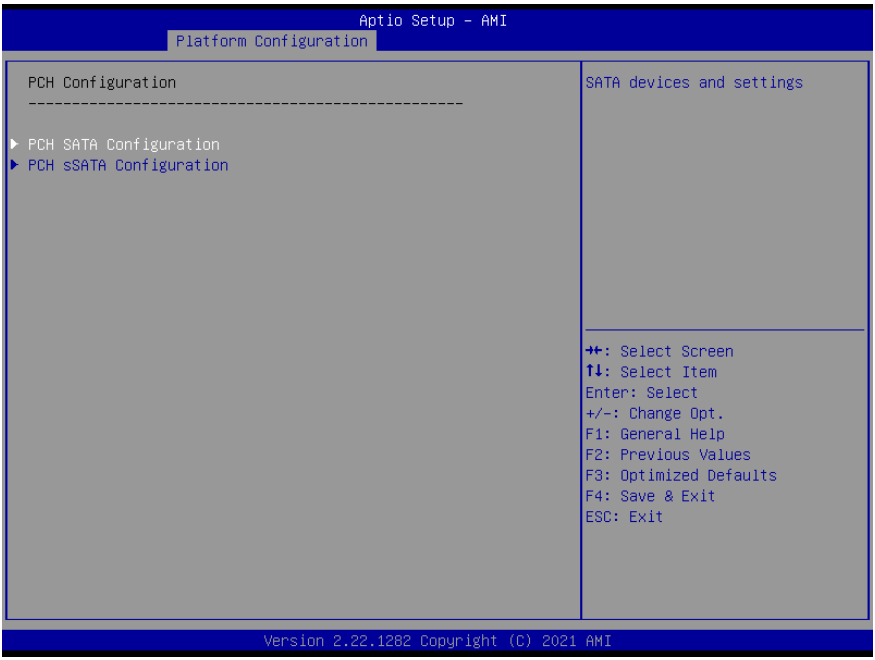


Options Summary		
Case Open Warning	Disabled	Optimal Default, Failsafe Default
	Enabled	
	Clear	
Case Open detecting function		

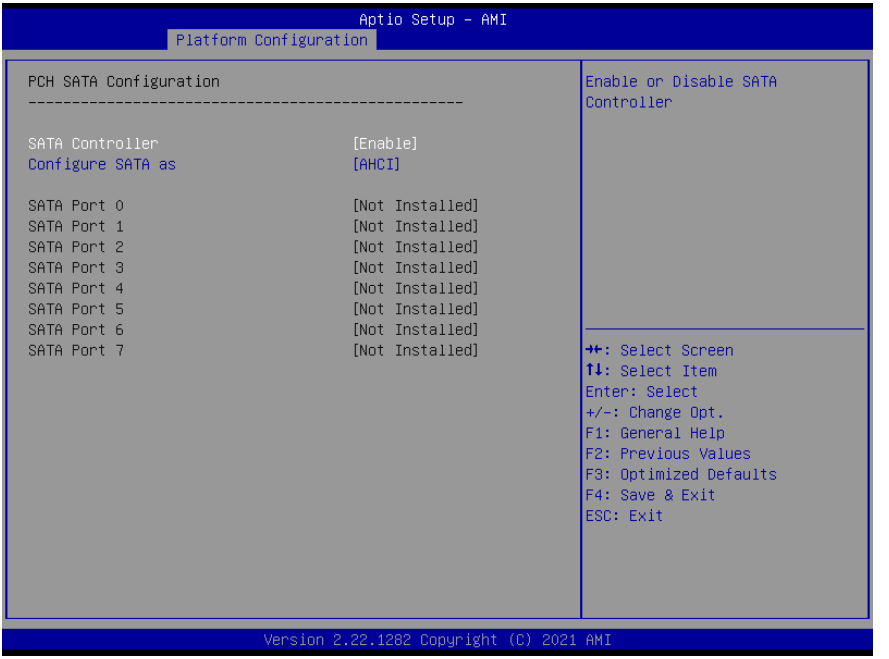
3.5 Setup Submenu: Platform Configuration



3.5.1 PCH Configuration

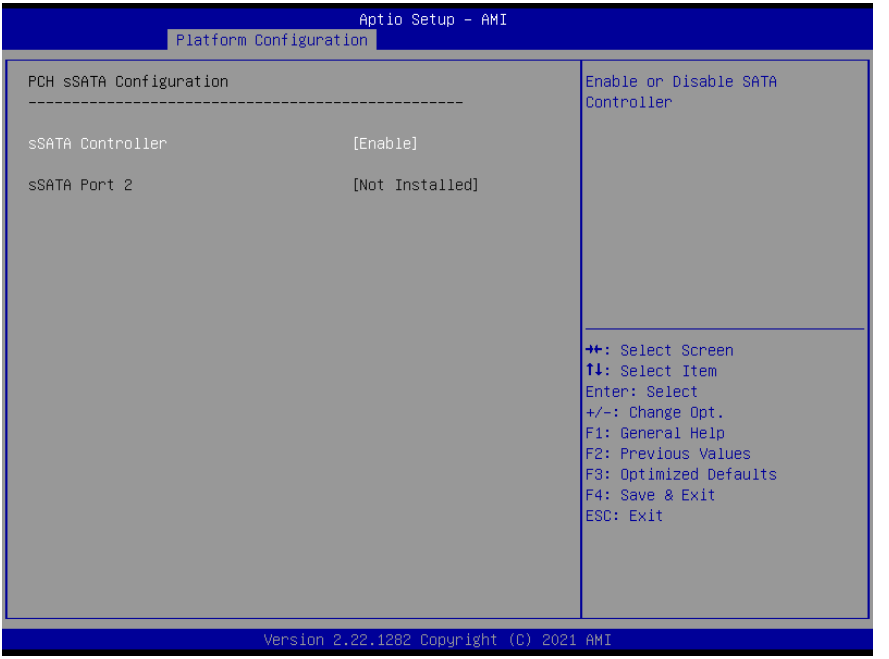


3.5.1.1 PCH SATA Configuration



Options Summary		
SATA Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Controller		
Configure SATA	AHCI	Optimal Default, Failsafe Default
	RAID	
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive		

3.5.1.2 PCH sSATA Configuration



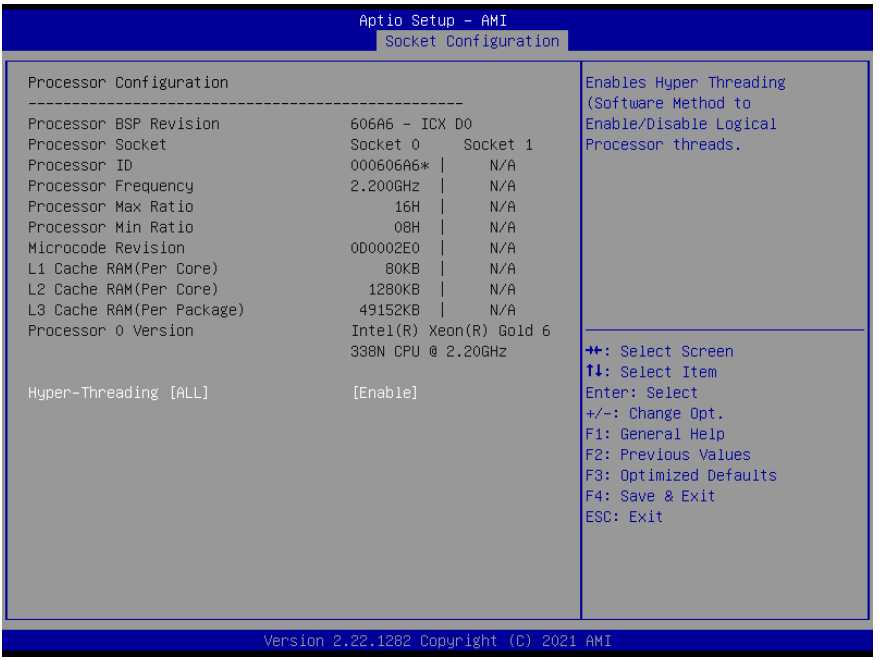
Options Summary		
sSATA Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Controller		

3.5.2 Server ME Configuration

Options Summary		
HMRFPO_ENABLE Message	Disable	Optimal Default, Failsafe Default
	Enable	
Enable/Disable sending HMRFPO_ENABLE Message to ME		

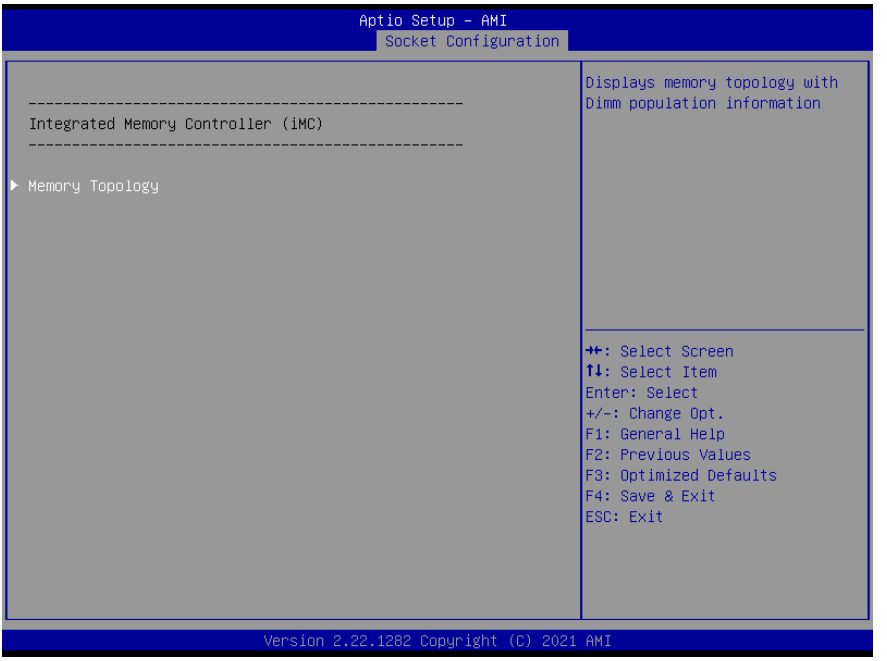
3.6 Setup Submenu: Socket Configuration

3.6.1 Processor Configuration



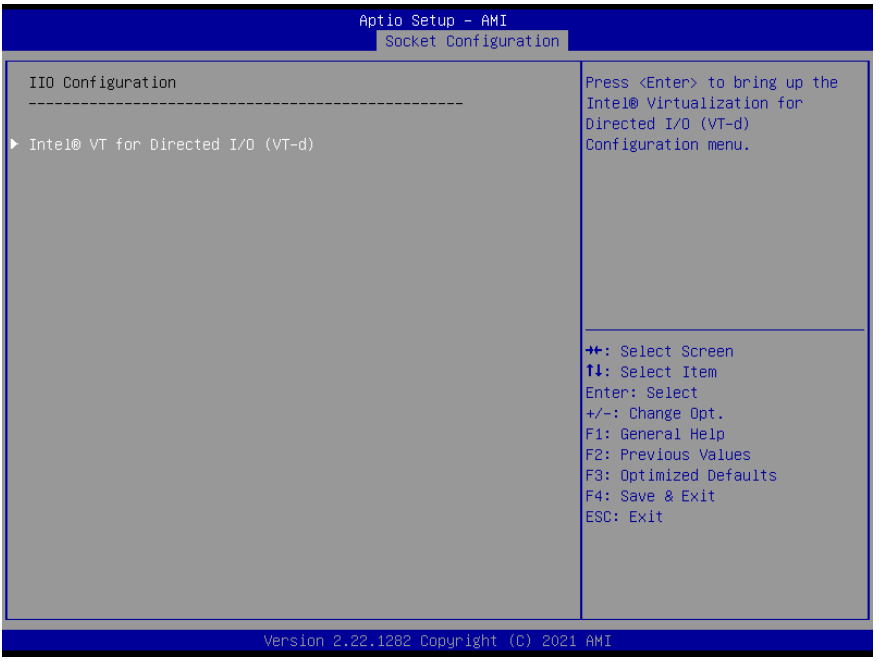
Options Summary		
Hyper-Threading [ALL]	Disable	
	Enable	Optimal Default, Failsafe Default
Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads).		

3.6.2 Memory Configuration

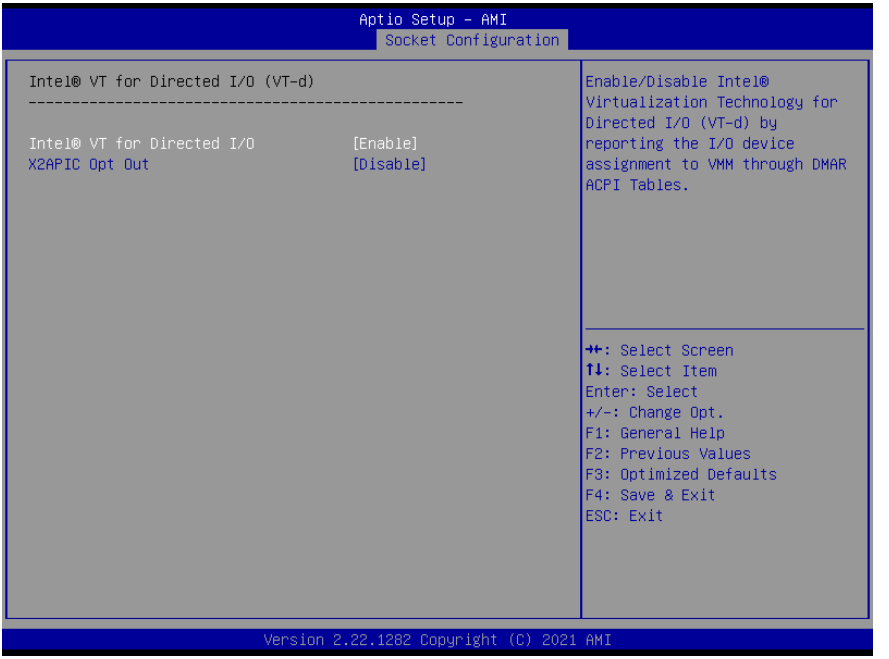


3.6.2.1 Memory Topology

3.6.3 IIO Configuration

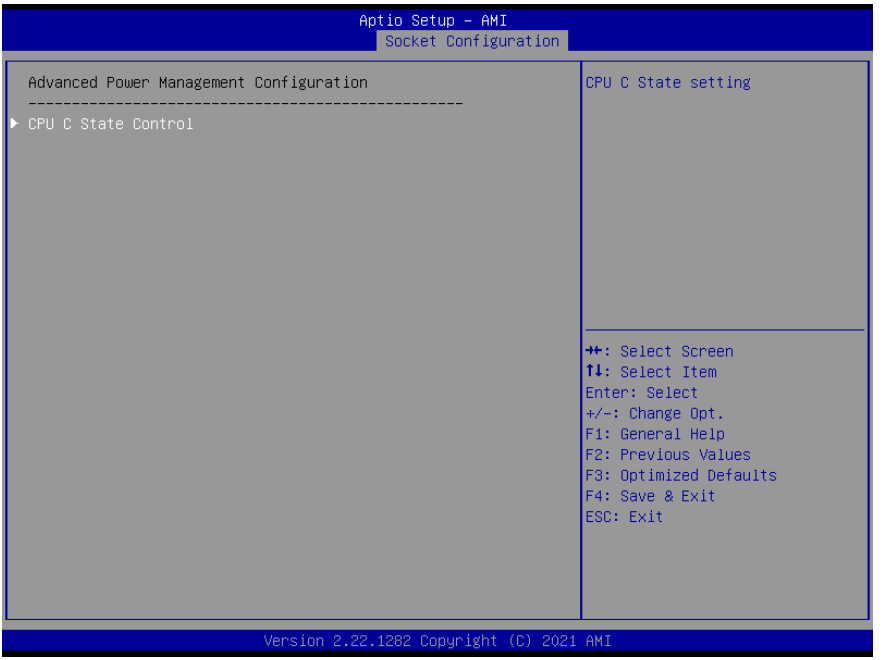


3.6.4 Intel® VT for Directed I/O (VT-d)

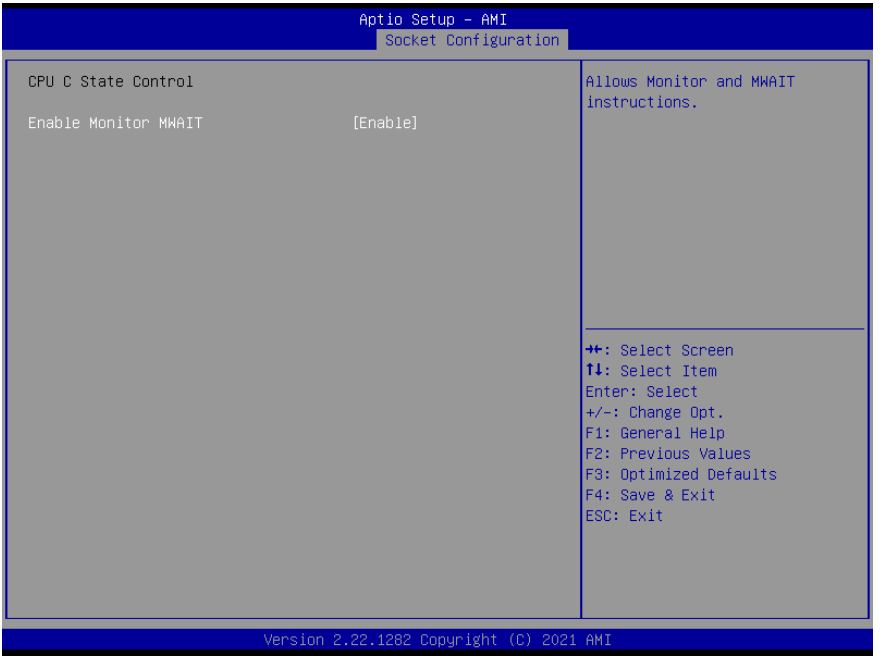


Options Summary		
Intel® VT for Directed I/O	Enable	Optimal Default, Failsafe Default
	Disable	
Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads.		
X2APIC Opt Out	Enable	
	Disable	Optimal Default, Failsafe Default
Enable/Disable X2APIC_OPT_OUT bit		

3.6.5 Advanced Power Management Configuration

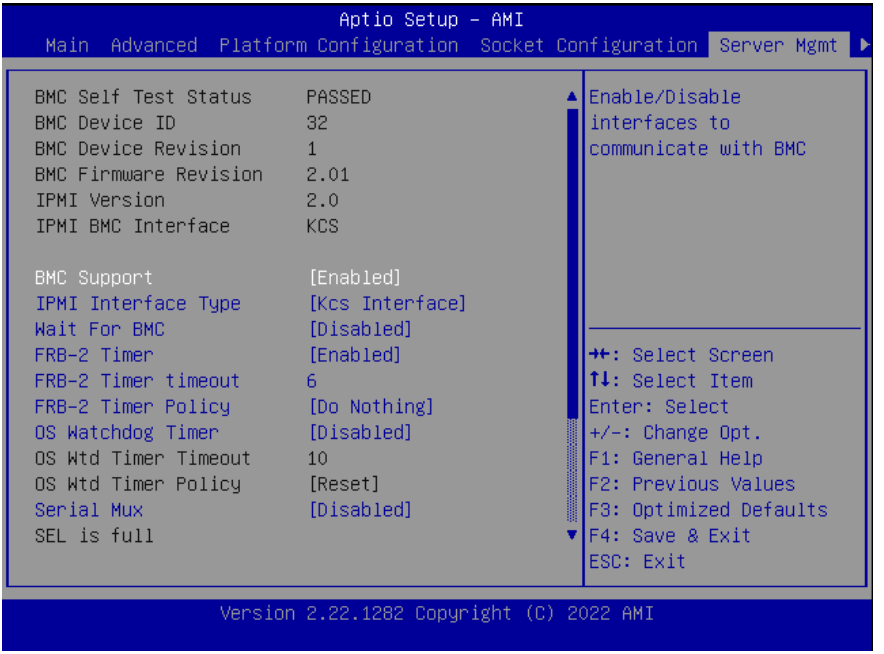


3.6.5.1 CPU C State Control



Options Summary		
Enable Monitor MWAIT	Disable	
	Enable	Optimal Default, Failsafe Default
Allows Monitor and MWAIT instructions.		

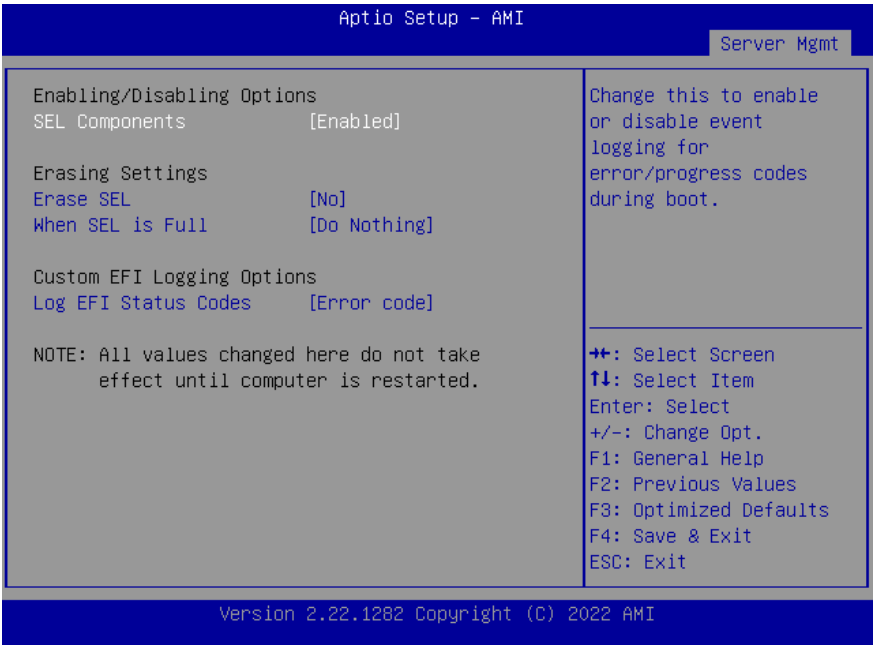
3.7 Setup Submenu: Server Mgmt



Options Summary		
BMC Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable interfaces to communicate with BMC.		
IPMI Interface Type	Kcs Interface	Optimal Default, Failsafe Default
	Bt Interface	
Type of Interface to communicate BMC from HOST.		
Wait For BMC	Disabled	Optimal Default, Failsafe Default
	Enabled	
Wait for BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.		
FRB-2 Timer	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable FRB-2 timer (POST timer).		
FRB-2 Timer timeout	6	Optimal Default, Failsafe Default
Enter value Between 1 to 30 min for FRB-2 Timer Expiration.		

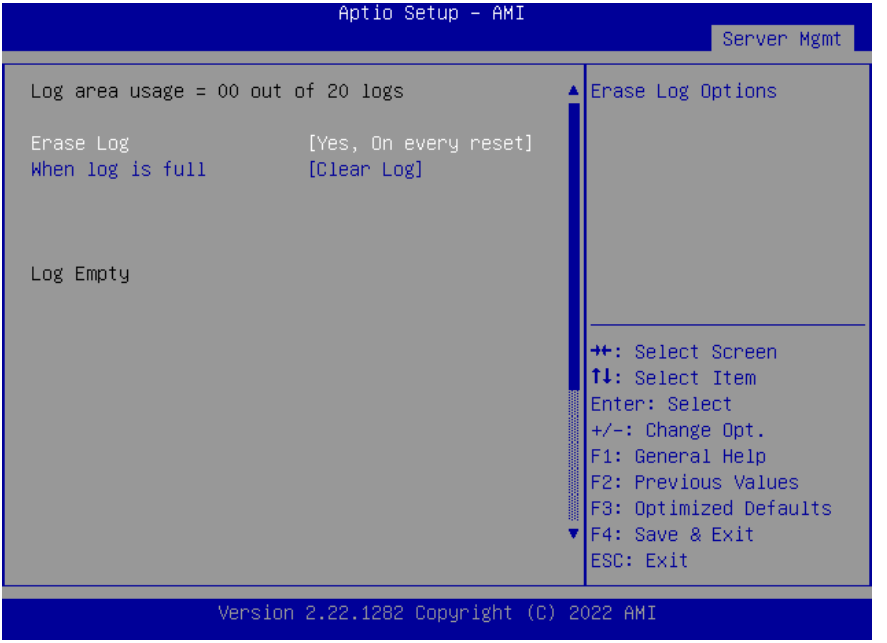
Options Summary		
FRB-2 Timer Policy	Do Nothing	Optimal Default, Failsafe Default
	Reset	
	Power Down	
	Power Cycle	
Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.		
OS Watchdog Timer	Disabled	Optimal Default, Failsafe Default
	Enabled	
If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.		
OS Wtd Timer Timeout	10	Optimal Default, Failsafe Default
Enter the value Between 1 to 30 min for OS Boot Watchdog Timer Expiration. Not available if OS Boot Watchdog Timer is disabled.		
OS Wtd Timer Policy	Do Nothing	
	Reset	Optimal Default, Failsafe Default
	Power Down	
	Power Cycle	
Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot Watchdog Timer is disabled.		
Serial Mux	Disabled	Optimal Default, Failsafe Default
	Enabled	
Press <Enter> to enable or disable Serial Mux configuration.		
BMC Warm Reset	Press <Enter> to do Warm Reset BMC.	

3.7.1 System Event Log



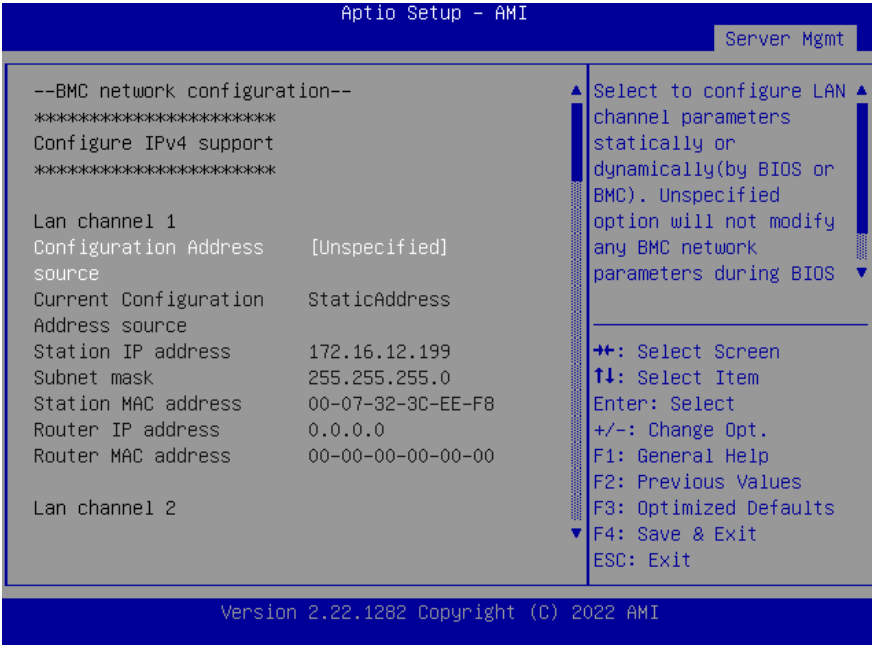
Options Summary		
SEL Components	Disabled	
	Enabled	Optimal Default, Failsafe Default
Change this to enable or disable event logging for error/progress codes during boot.		
Erase SEL	No	Optimal Default, Failsafe Default
	Yes, On next reset	
	Yes, On every reset	
Choose options for erasing SEL.		
When SEL is Full	Do Nothing	Optimal Default, Failsafe Default
	Erase Immediately	
	Delete Oldest Record	
Choose options for reactions to a full SEL.		
Log EFI Status Codes	Disabled	
	Both	
	Error code	Optimal Default, Failsafe Default
	Progress code	
Disable the logging of EFI Status Codes or log only error code or only progress code or both.		

3.7.2 BMC Self-Test Log



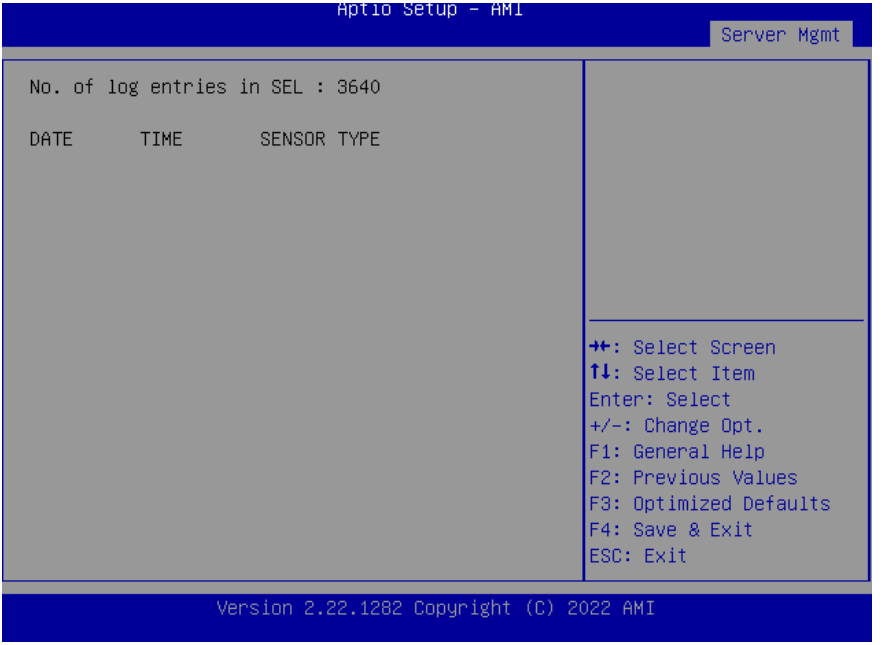
Options Summary		
Erase Log	Yes, On every reset	Optimal Default, Failsafe Default
	No	
Erase Log Options.		
When log is full	Clear Log	Optimal Default, Failsafe Default
	Do not log any more	
Select the action to be taken when log is full.		

3.7.3 BMC Network Event Log

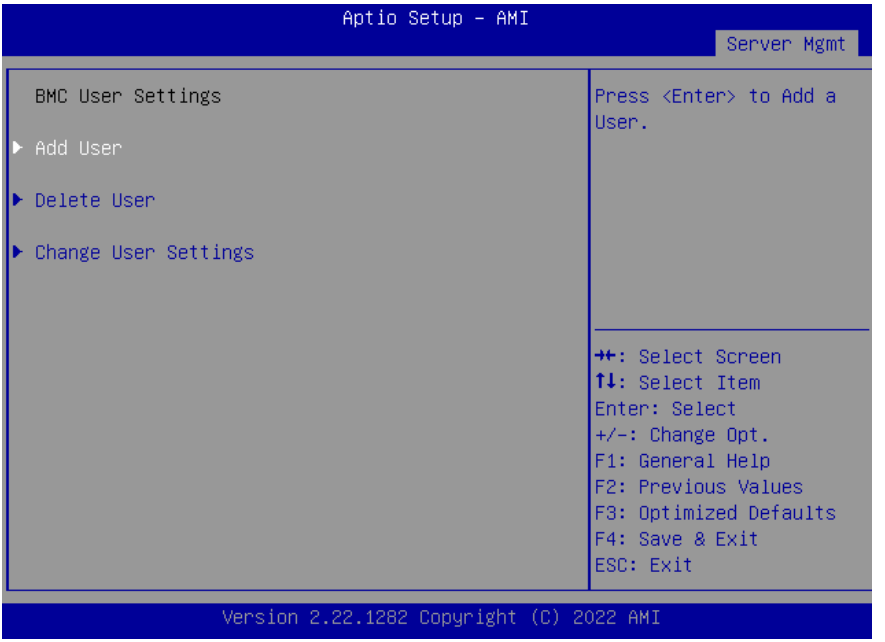


Options Summary		
Configuration Address source	Unspecified	Optimal Default, Failsafe Default
	Static	
	DynamicBmcDhcp	
	DynamicBmcNonDhcp	
Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.		
IPv6 Support	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable LAN IPv6 Support.		
Configuration Router Lan Address source	Unspecified	Optimal Default, Failsafe Default
	Static	
	DynamicBmcDhcp	
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.		

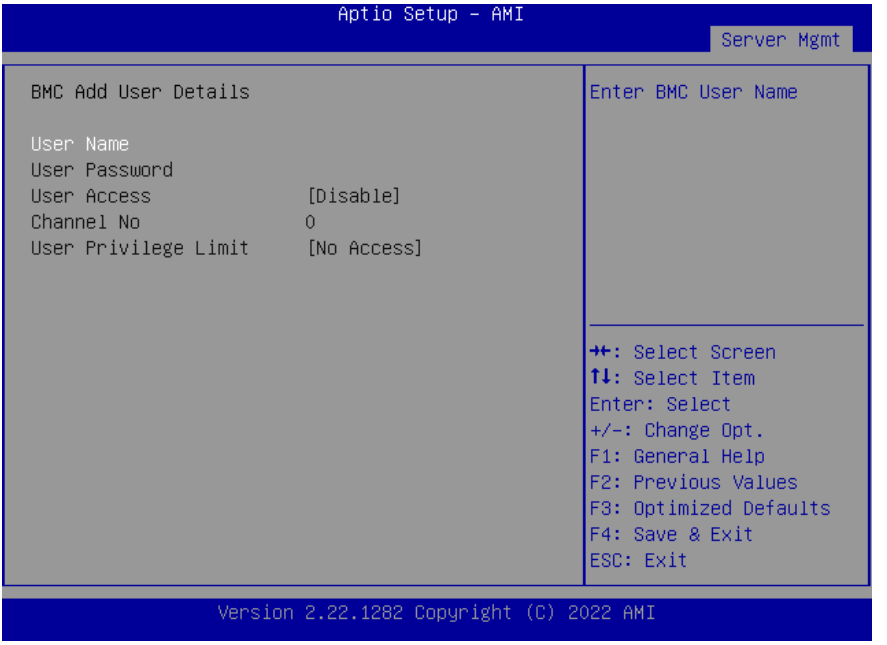
3.7.4 View System Event Log



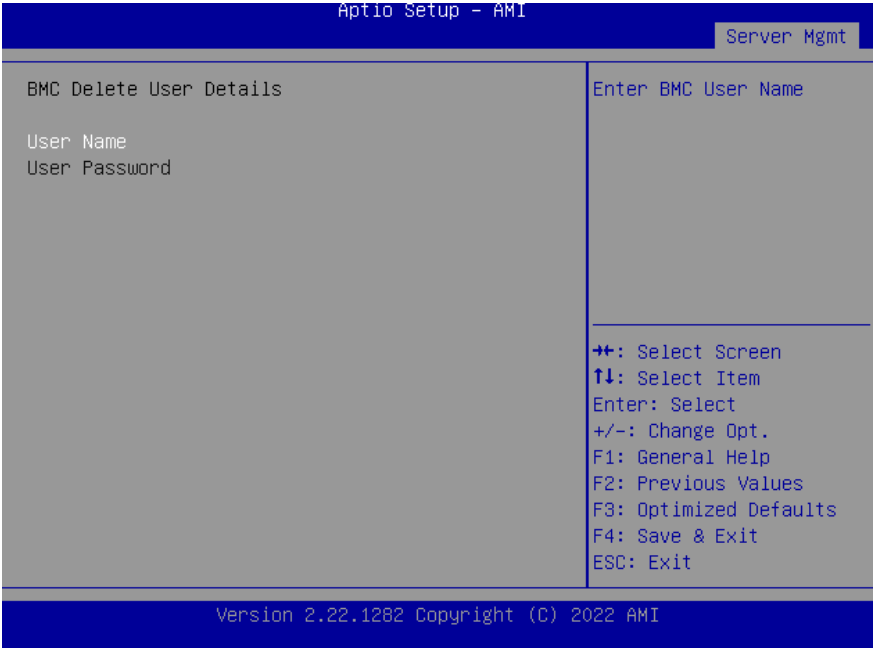
3.7.5 BMC User Settings



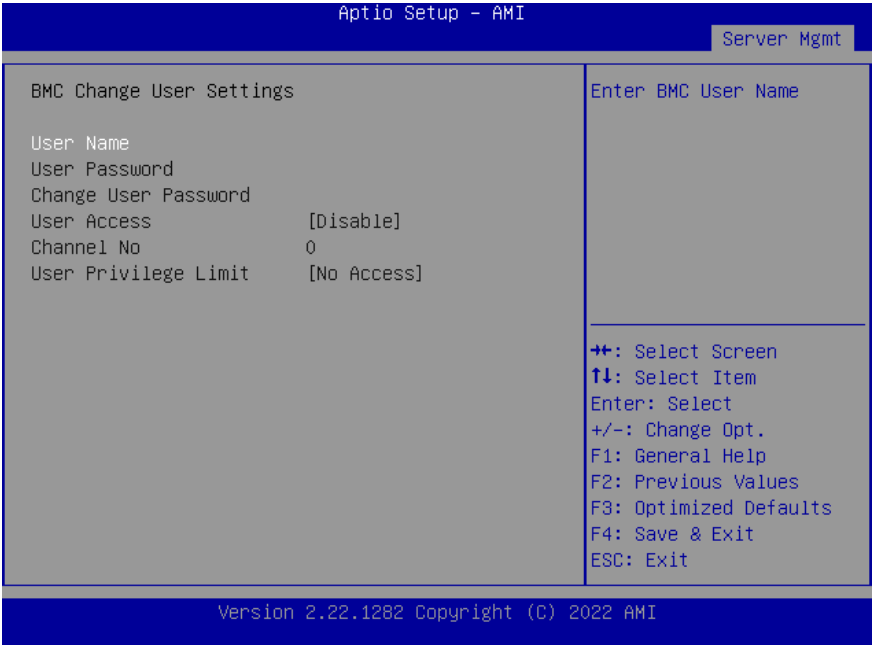
3.7.5.1 Add User



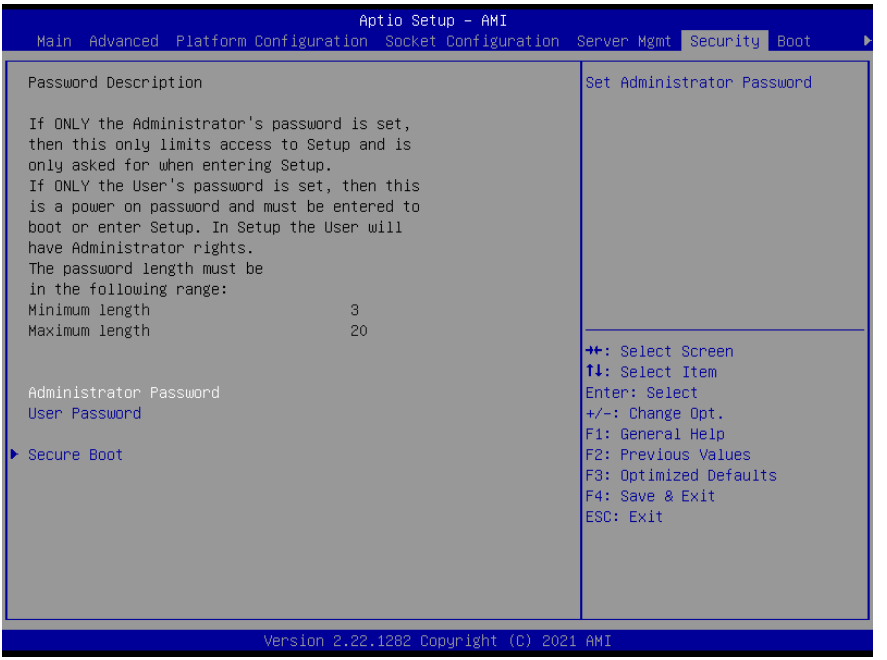
3.7.5.2 Delete User



3.7.6 Change User Settings



3.8 Setup Submenu: Security



Change User/Administrator Password

If an Administrator Password is set, it will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

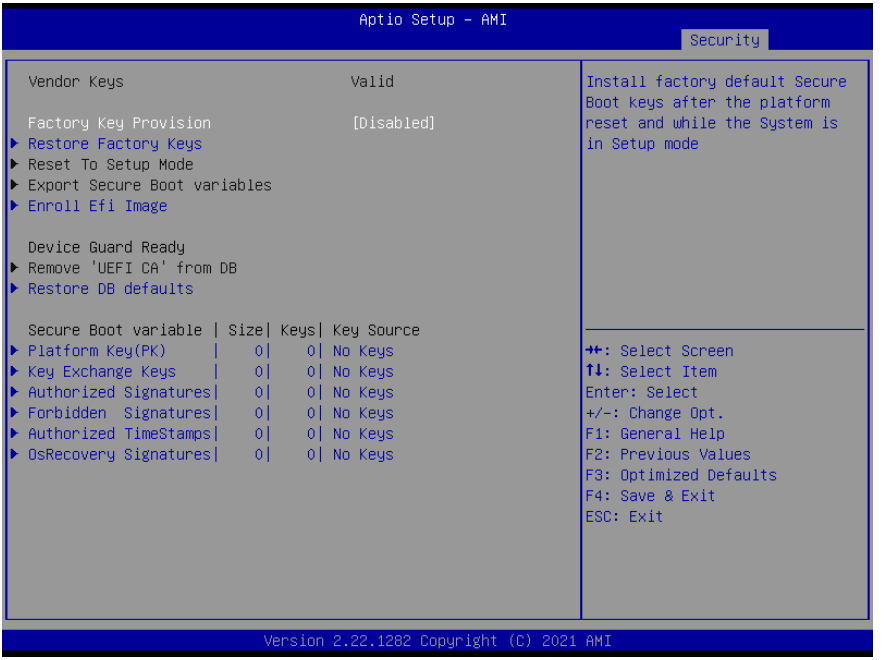
Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

3.8.1 Secure Boot

Options Summary		
Secure Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PLK) is enrolled and the System is in User mode. The mode change requires platform reset.		
Secure Boot Mode	Standard	
	Custom	Optimal Default, Failsafe Default
Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.		
Restore Factory Keys	Force System to User Mode. Install factory default Secure Boot key databases.	
Reset to Setup Mode	Delete all Secure Boot key databases from NVRAM.	

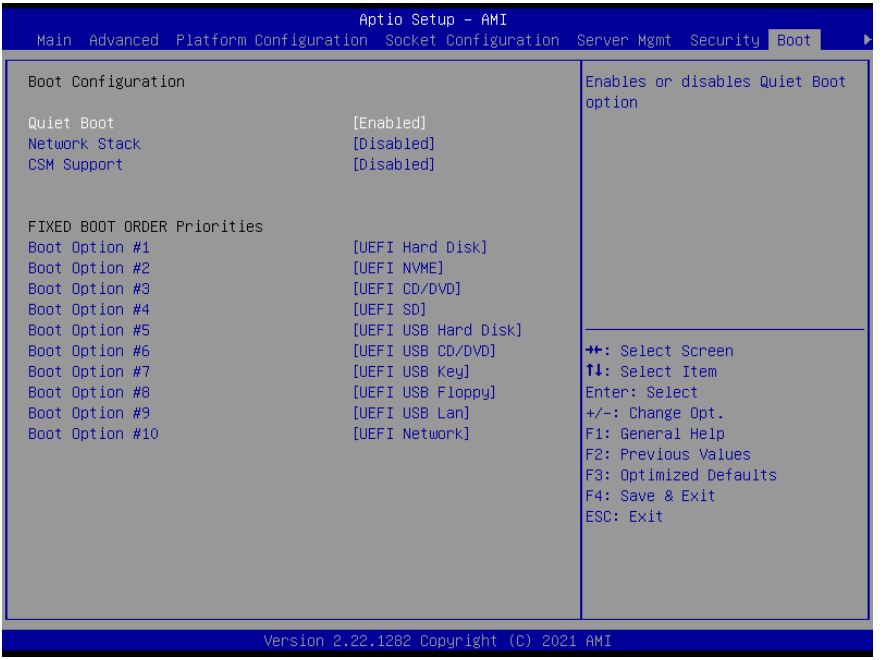
3.8.1.1 Key Management



Options Summary		
Factory Key Provision	Disabled	Optimal Default, Failsafe Default
	Enabled	
Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.		
Restore Factory Keys	Force System to User Mode. Install factory default Secure Boot key databases.	
Reset to Setup Mode	Delete all Secure Boot key databases from NVRAM.	
Export Secure Boot variables	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.	
Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).	
Remove 'UEFI CA' from DB	Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).	
Restore DB defaults	Restore DB variable to factory defaults.	

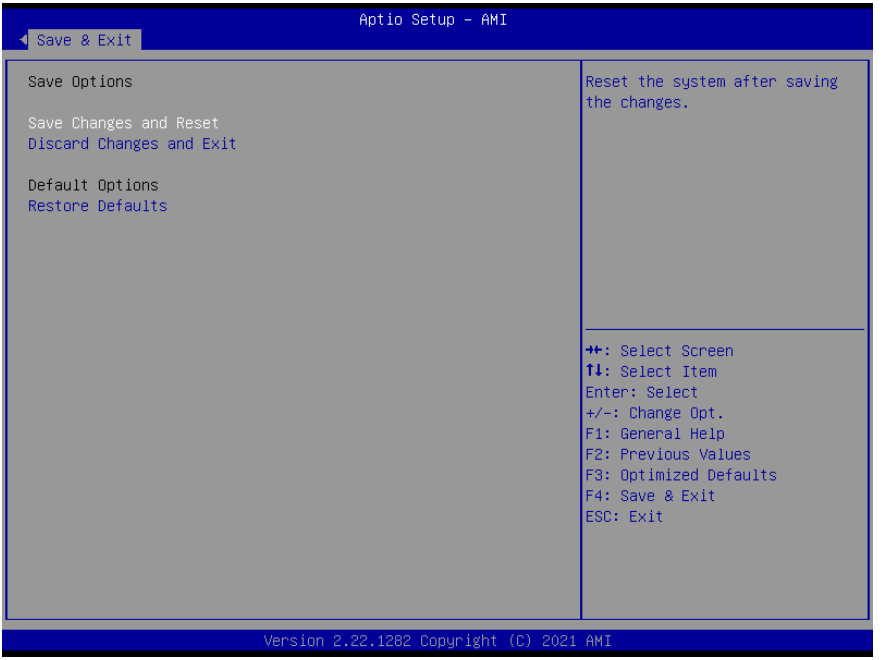
Options Summary
Secure Boot Variables
Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate in: a) EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER encoded) c) EFI_CERT_RSA2048 (bin) d) EFI_CERT_SHAXXX 2. Authenticated UEFI Variable 3. EFI PE/COFF Image (SHA256) Key Source: Default, External, Mixed

3.9 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Quiet Boot option.		
Network Stack	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack.		
CSM Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable CSM Support.		
FIXED BOOT ORDER Priorities		Sets the system boot order

3.10 Setup Submenu: Save & Exit



Options Summary	
Save Changes and Reset	Reset the system after saving the changes.
Discard Changes and Exit	Exit system setup without saving any changes.
Restore Defaults	Restore/Load Default values for all the setup options.

Chapter 4

Driver Installation

4.1 Driver Download/Installation

Drivers for the ZEUS-WHI0 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/p/industrial-4u-whitely-platform-server-intel-xeon-zeus-whi0

Download the driver(s) you need, extract them to their respective folders and follow the steps below to install them.

Step 1 – Install Chipset Drivers

1. Open the **Chipset-10.1.18736.8270-Public-Server-MUP** folder
2. Run the **SetupChipset.exe** in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install Graphics Drivers

1. Open the **SM750 WDDM2.0 v10.00.18.00-1119-sign(MS)-60028** folder
2. Run the **setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3 – Install Network Driver

1. Open the **Intel LAN 26.6** folder, then open the **Wired_driver_26.6_x64** subfolder
2. Run the **Wired_driver_26.6_x64.exe** file in the subfolder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install Audio Driver

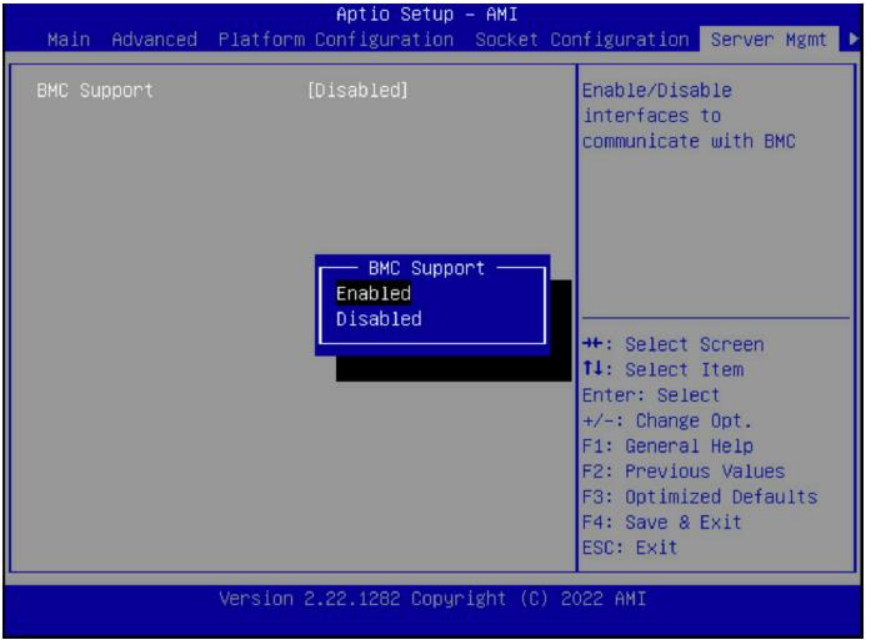
1. Open the **Audio Driver V8978** folder
2. Run the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Appendix A

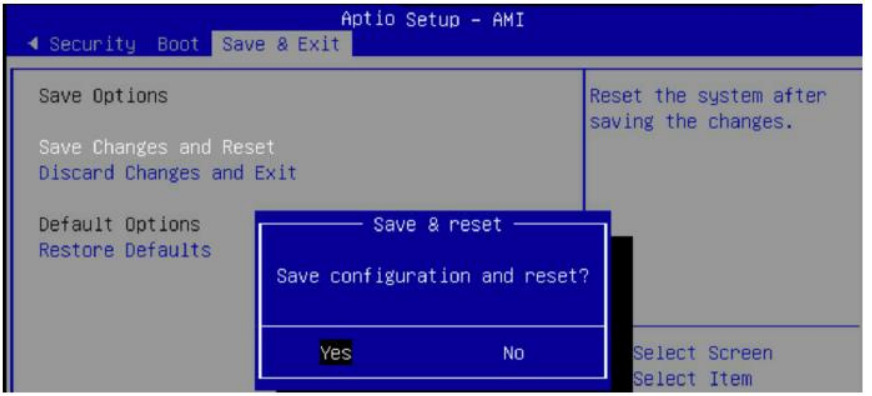
AMI BMC Firmware User Guide

A.1 Login WebUI

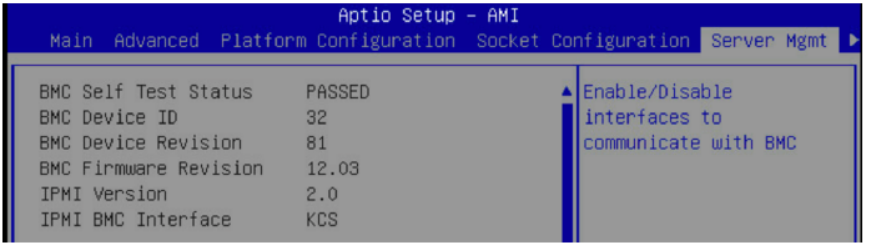
Step 1: To enable BMC support on BIOS, select **Server Mgmt** and change **BMC Support** to **Enabled**.



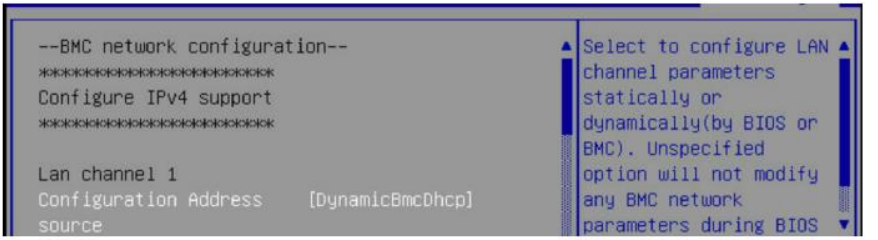
Step 2: Save BIOS Setting and reset system.

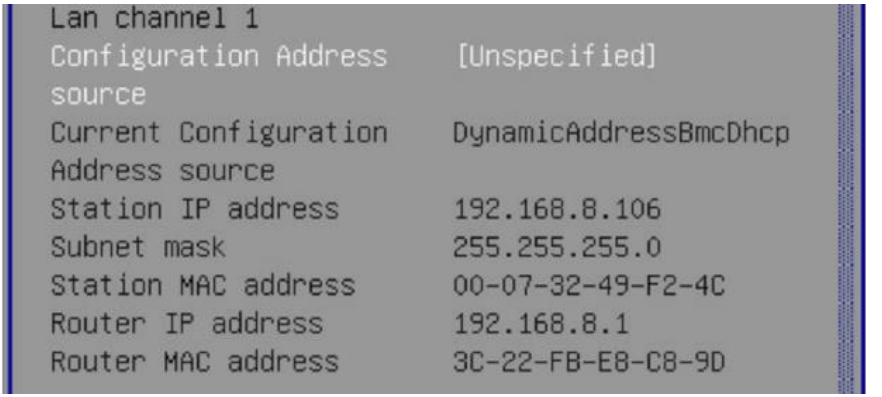


Step 3: Select **Server Mgmt** and check BMC information.



Step 4: To configure the BMC IP address, select **Server Mgmt** > **BMC network configuration**. The user can set the BMC IP source to **Static**, **DynamicBmcDhcp**, or **DynamicBmcNonDhcp**, then reset the system. For the below user guide example, we have selected **DynamicBmcDhcp**. After reset, BMC will get the IP from the DHCP server.



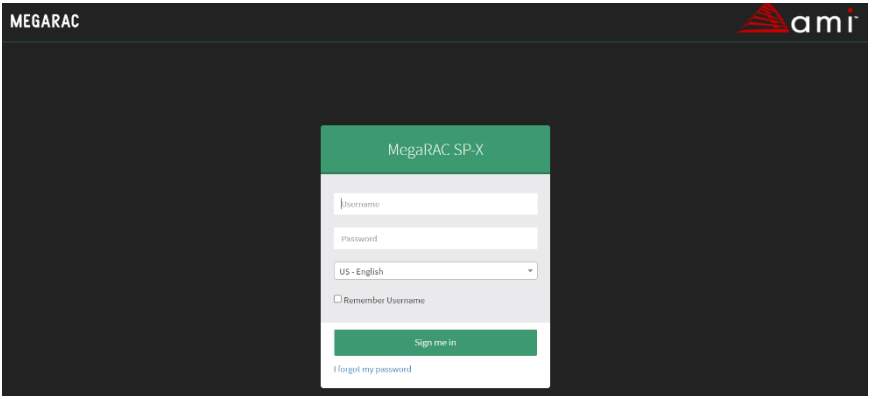


Step 5: Open the browser and type **BMC IP**. In this guide, the BMC IP is 192.168.8.106.

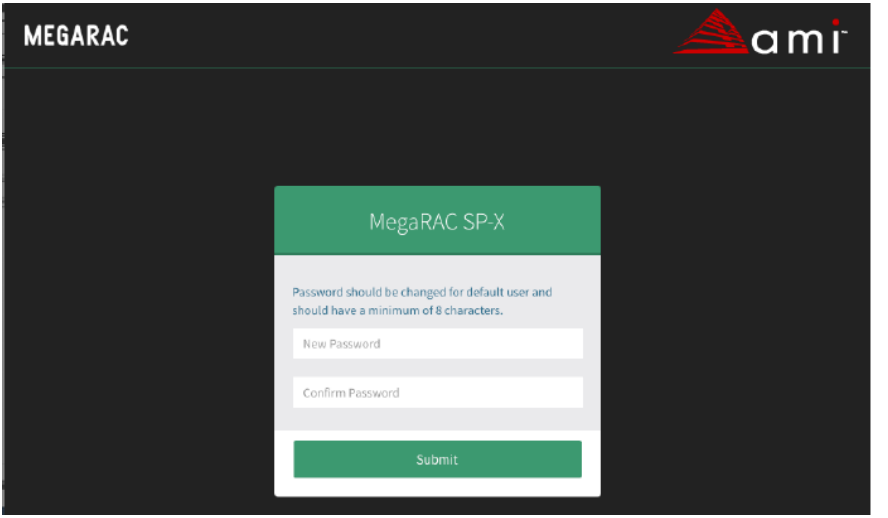
To log in for the first time, enter the following credentials:

Username: **admin**

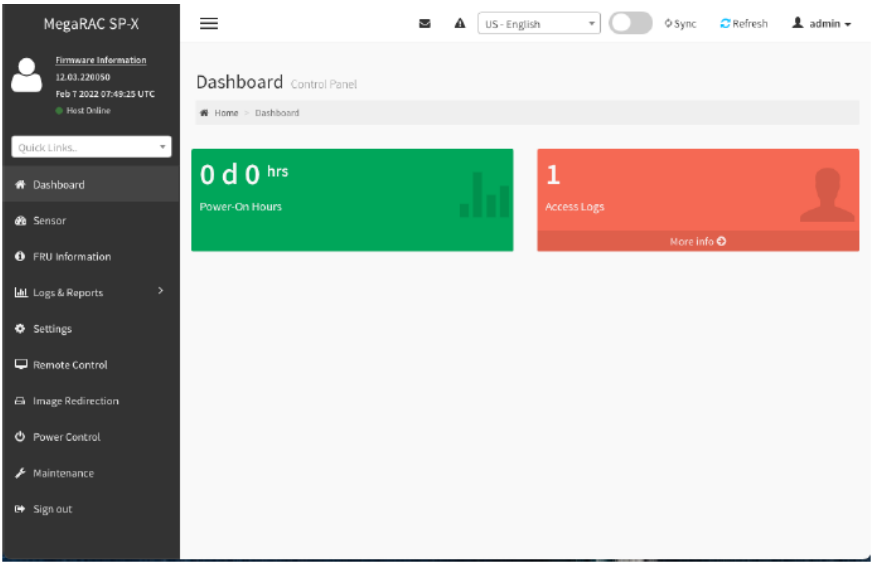
Password: **admin**.



Step 6: When logging in for the first time, BMC will ask the user to change the password. Please change the password and re-login.

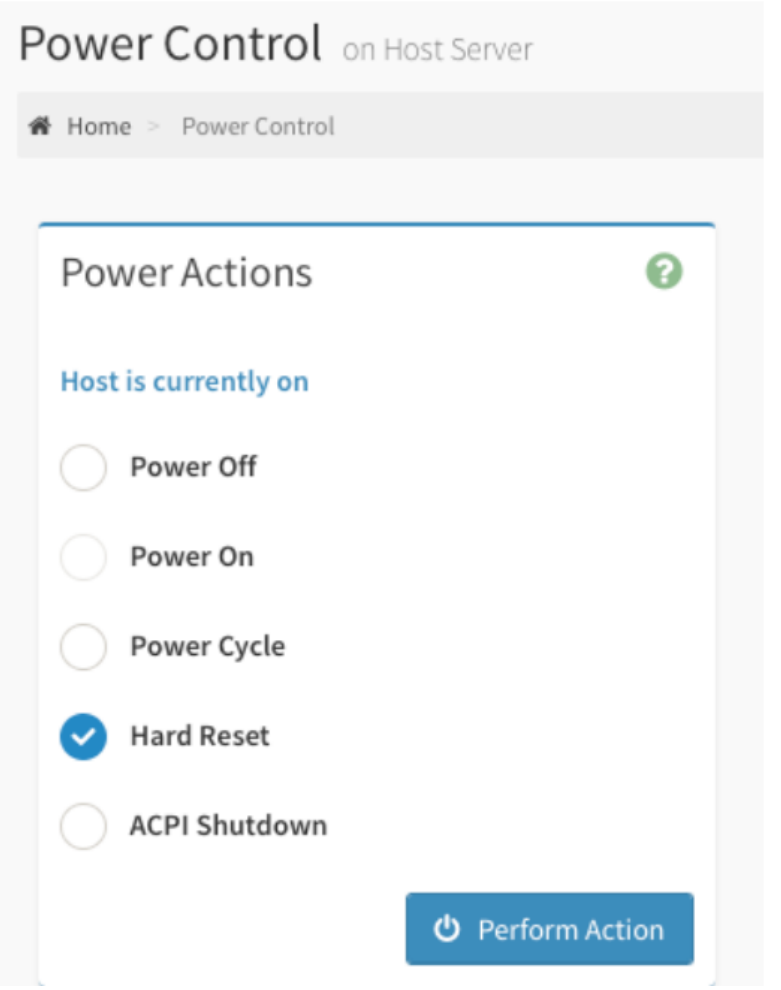


Step 7: When you have successfully logged in, the web dashboard will appear as below.

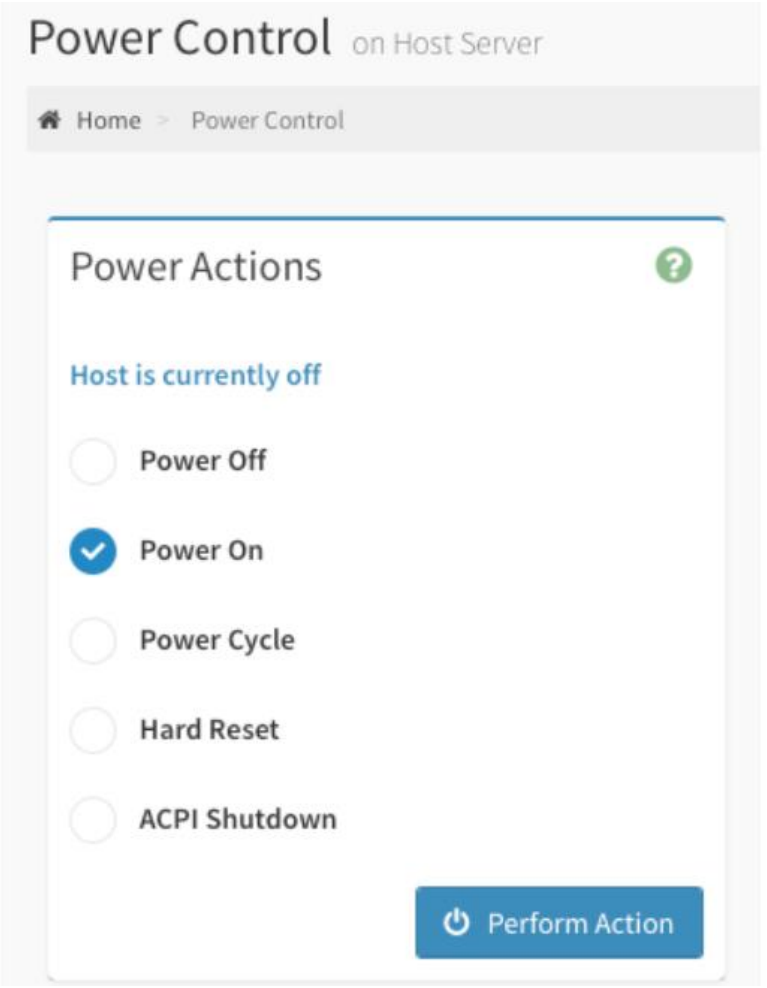


A.2 Power Control

Step 1: On the menu on left side of the screen, select **Power Control**. The page will show the host status and the Power Actions the user can activate on the host server.



Step 2: When the host status is off, the only action that can be selected is **Power On**. Select this and press **Perform Action** to boot the host.

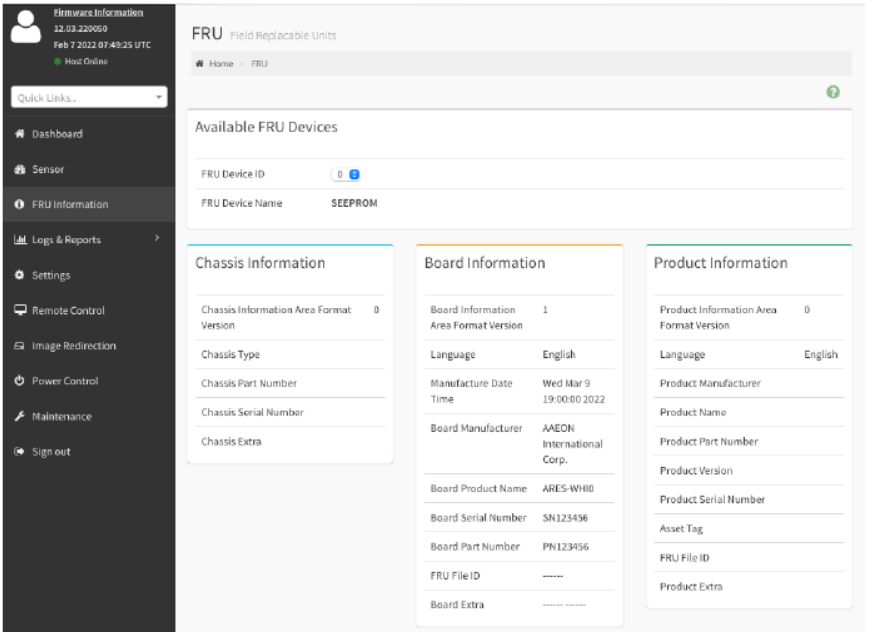


Step 3: When the host status is on, the user can select actions including Power Off, Power Cycle, Hard Reset, and ACPI Shutdown. See below for a description of each power action.

- Power Off - Immediately powers off the server.
- Power Cycle - This option will first power off, and then reboot the system (cold boot).
- Hard Reset - This option will reboot the system without powering off (warm boot).
- ACPI Shutdown - This option will initiate operating system shutdown prior to the shutdown.

A.3 Field Replace Unit (FRU)

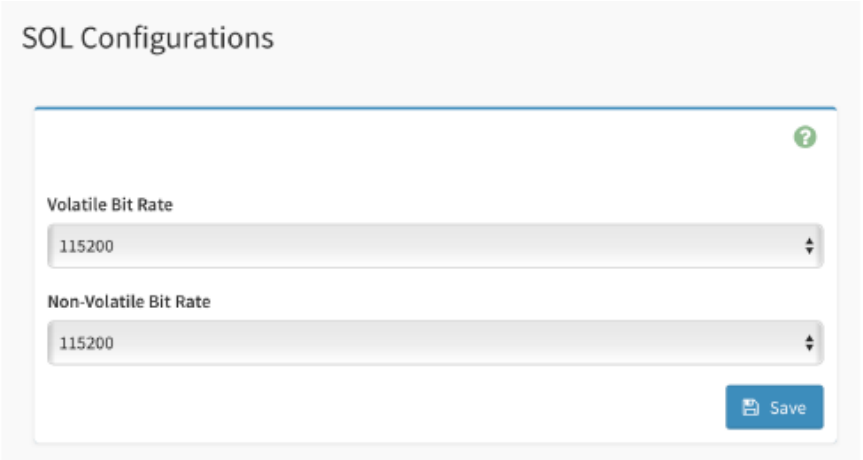
Step 1: The FRU Information page displays the BMC's FRU device information. On left side, select **FRU Information**. This firmware can show 5 FRU. The first provides main board information, the second to fifth can be modified according to the needs of the customer.



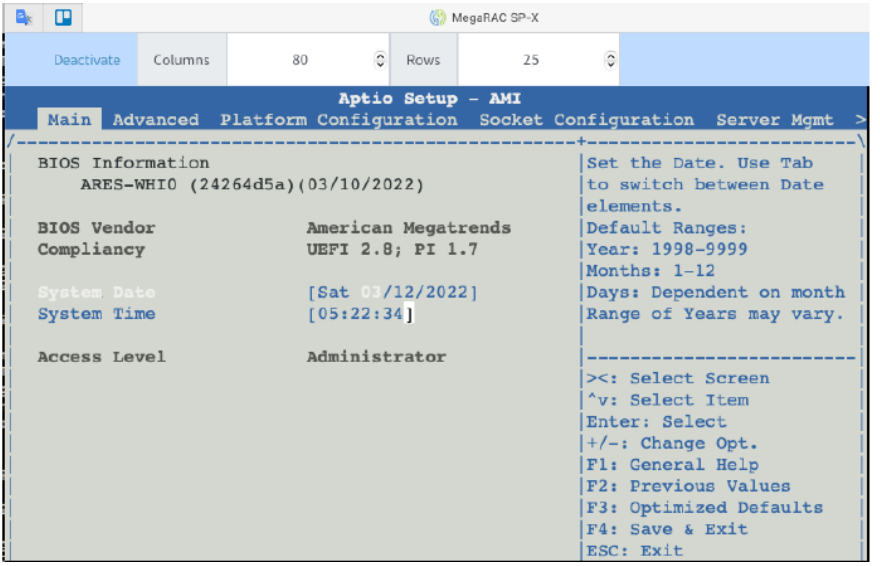
A.4 Remote Control

Serial Over LAN (SOL) provides serial line access over the management LAN.

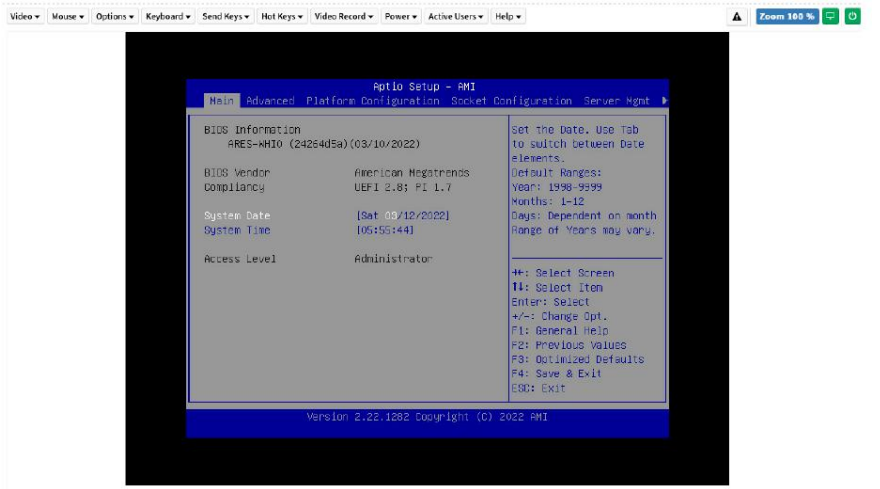
Step 1: On left side, select **Settings** -> **Video Recording** -> **SOL Settings** -> **SOL Configurations**, **Volatile Bit Rate** and **Non-Volatile Bit Rate** are changed to 115200.



Step 2: On the left side, select **Remote Control** and press the **Serial over LAN Activate** button.

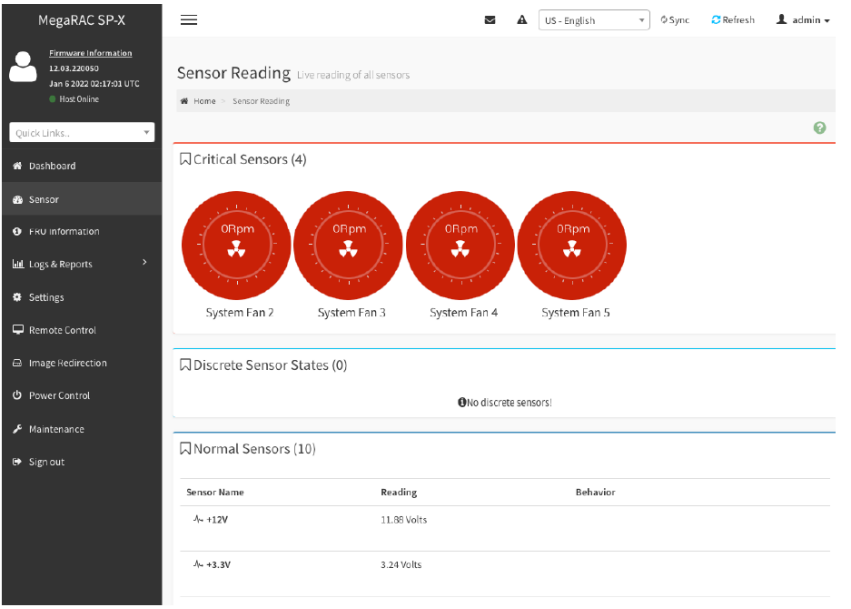


KVM includes H5Viewer and JViewer. One is via HTML5 while the other is via Java.

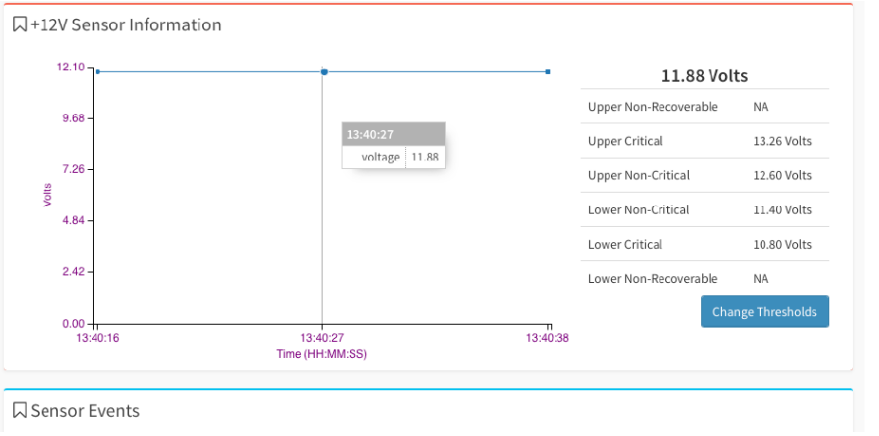


A.5 Sensors Monitor

Step 1: On the left side, select **Sensor**.

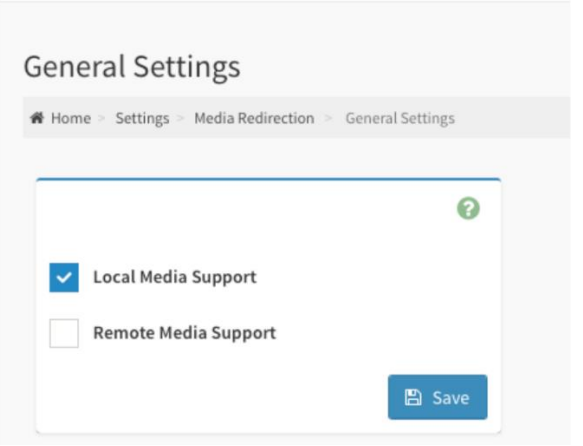


Step 2: Enable **Sync** in the upper left corner, then click **sensors** to see more information.

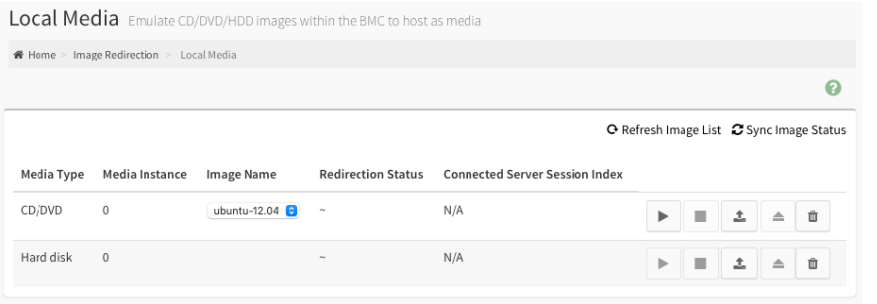


A.6 Virtual Media

Step 1: On the left side, select **Settings** -> **Media Redirection Setting** -> **General Settings**, enable **Local Media Support** and Save.



Step 2: On left side, select **Image Redirection** -> **Local Media**.



Step 3: Click  to upload iso file.

When the iso file is successfully uploaded, click ▶ to start redirection.

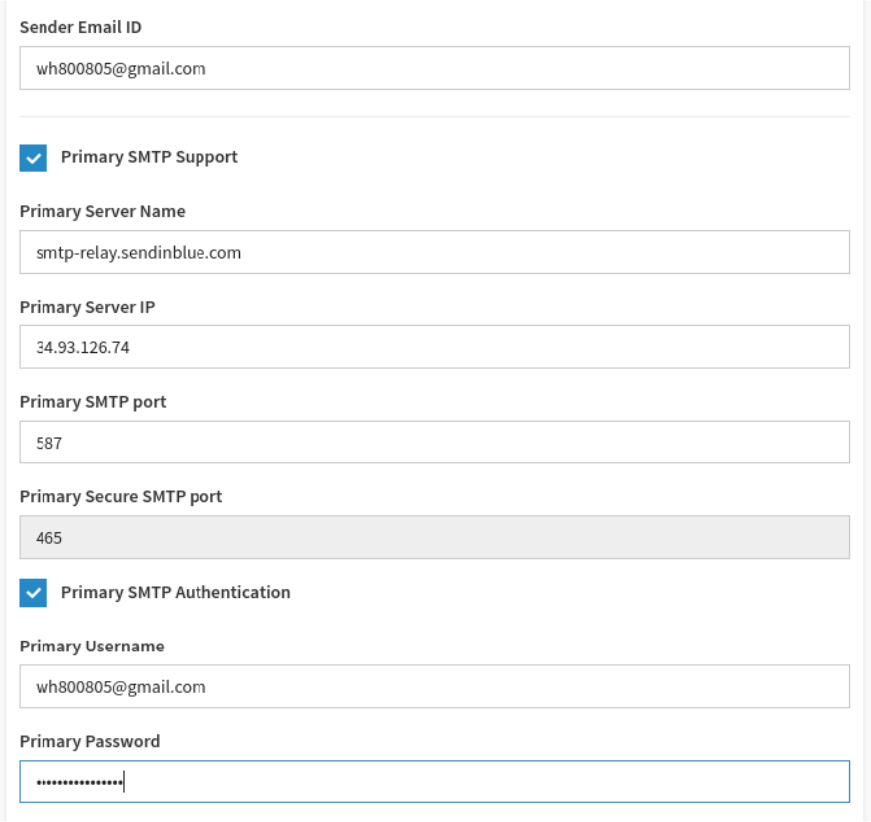
Step 4: Reboot host.

A.7 Alarm Email Settings

Step 1: On the left side, select Settings -> SMTP Settings.

Step 2: Enter the Sender Email ID, Primary Server Name, Primary Server IP, and Primary SMTP port information and enable Primary SMTP Authentication.

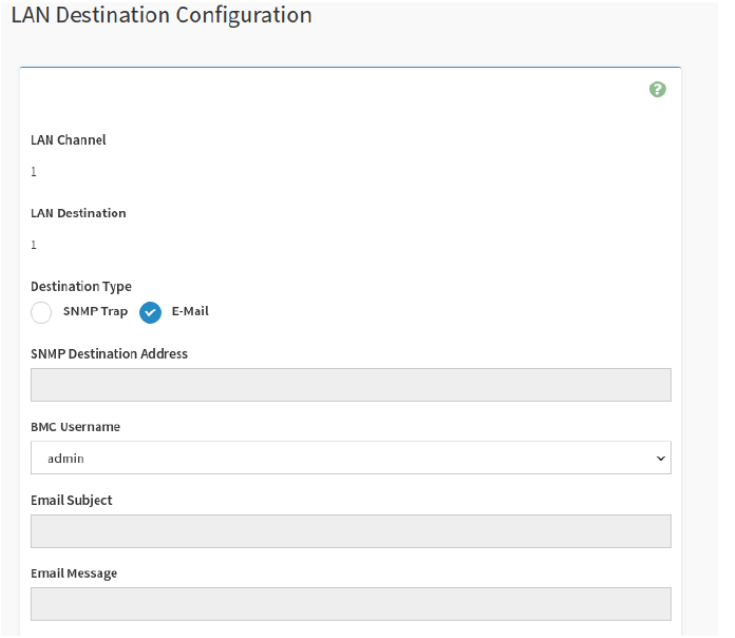
Step 3: Enter Primary Username and Primary Password.



Step 4: On the left side, select **Settings** -> **User Management**, and select **2 admin.** Then enter the **EMail ID**, and save.

Step 5: On the left side, select **Settings** -> **Platform Event Filters** -> **LAN Destinations**.

Step 6: Select **LAN Channel 1**, change **Destination Type** to **E-Mail**, then select **admin** for the **BMC Username** section.



Step 7: On the left side, select **Settings** -> **Platform Event Filters** -> **LAN Destinations.**

Step 8: Click  to send test email.