FWS-7541

1U Rackmount Network Appliance

User's Manual 4th Ed

Last Updated: March 29, 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
● FWS-7541	1
● Console Cable	1
● Ear Bracket (Pair)	1
● SATA Cable	2
● SATA Power Cable	2
● HDD Kit	2

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	1U Rackmount Ice Lake-D LCC Platform Network Appliance
Processor	Intel® Xeon® D-1700 Processors (formerly Ice Lake D)
Chipset	SoC
System Memory	Dual-Channel DDR4 SO-DIMM x 2
Ethernet	RJ-45 x 12 (1GbE Intel® Ethernet Controller I350-AM4 x 3) 10GbE SFP+ x 4 (SKU optional)
Bypass	2 Pairs LAN Bypass 3.1
NIM Slot	NIM Slot x 1 (Optional)
RTC	-
Watchdog Timer	1 ~ 255
Software Button	1
TPM	TPM 2.0 SPI
FAN	System Fan x 1
MTBF (Hours)	TBD
Color	Black
Dimension	16.93" x 7.87" x 1.73" (430mm x 200mm x 44mm)

I/O Interfaces

Front Panel	RJ-45 x 12
	(1GbE Intel® Ethernet Controller I350-AM4 x 3)
	10GbE SFP+ x 4 (SKU optional)
	Power LED x 1
	Status LED x 1
	HDD Active LED x 1
	USB 3.2 Gen 1 x 2
	RJ-45 Console x 1
	LCM Display with Keypad x 1
	Software Programmable Button x 1
Rear Panel	AC Power Input x 1
	Power Switch x 1

Display

Connector	VGA from IPMI x 1 (Project-Based)

Storage

HDD	2.5" HDD x 2 (Default) or 3.5" HDD x 1 (If no NIM Module Present)

Expansion

M.2	M.2 3052 B-Key with SIM x 1 (4G/5G, USB 3.0 + PCIe)
	M.2 2230 E-Key x 1 (PCIe)
IPMI	Project-Based
GPIO	N/A, DIO Pin Header x 1 (4-in/4-out)
	(Optional by BOM SKU)

Environmental

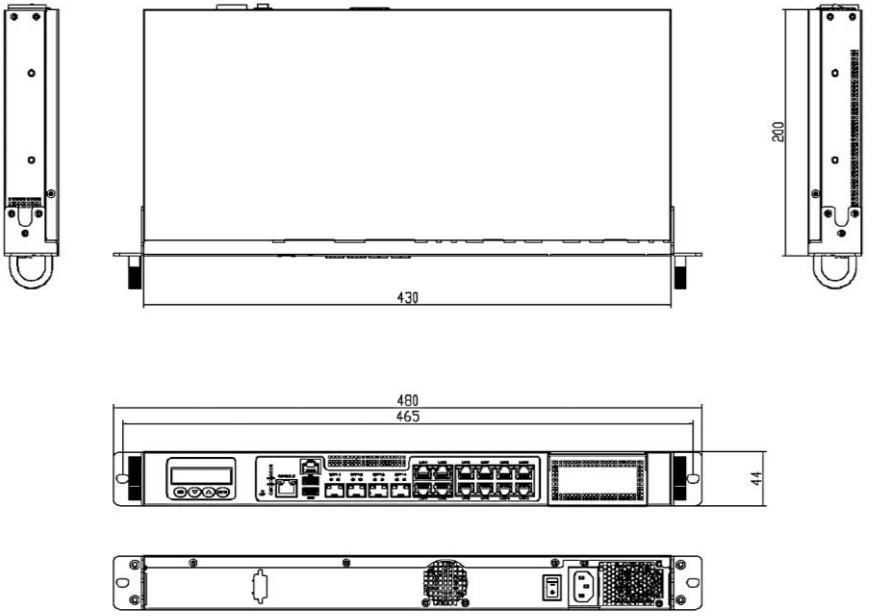
Power Requirement	220W
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing
Storage Humidity	0% ~ 80% @40°C; non-condensing
Vibration	0.5 grms/5 ~ 500Hz / operation (2.5" Hard Disk Drive)
	1.5 grms/5 ~ 500Hz / non-operation
Shock	10 G peak acceleration (11 m sec. duration), operation
	20 G peak acceleration (11 m sec. duration),
	non-operation

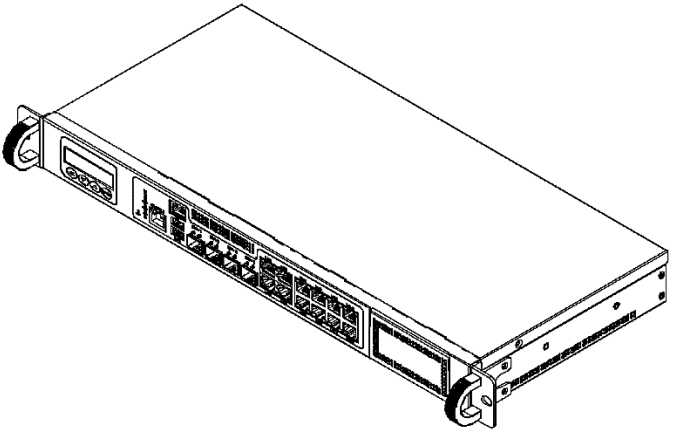
Chapter 2

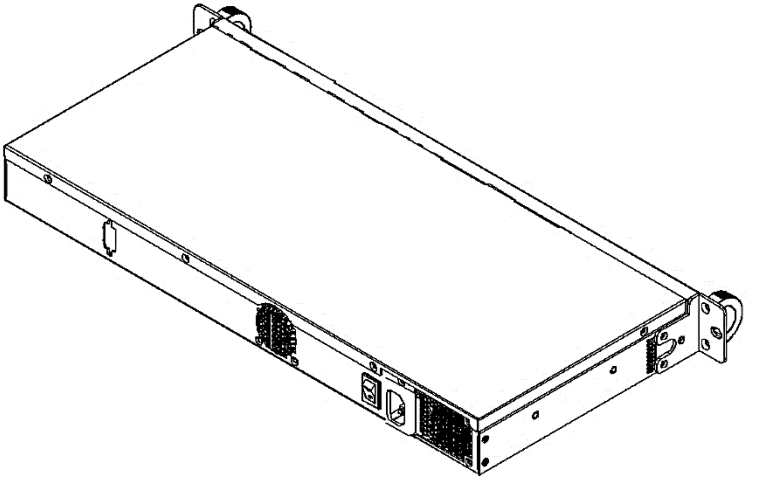
Hardware Information

2.1 Dimensions

System

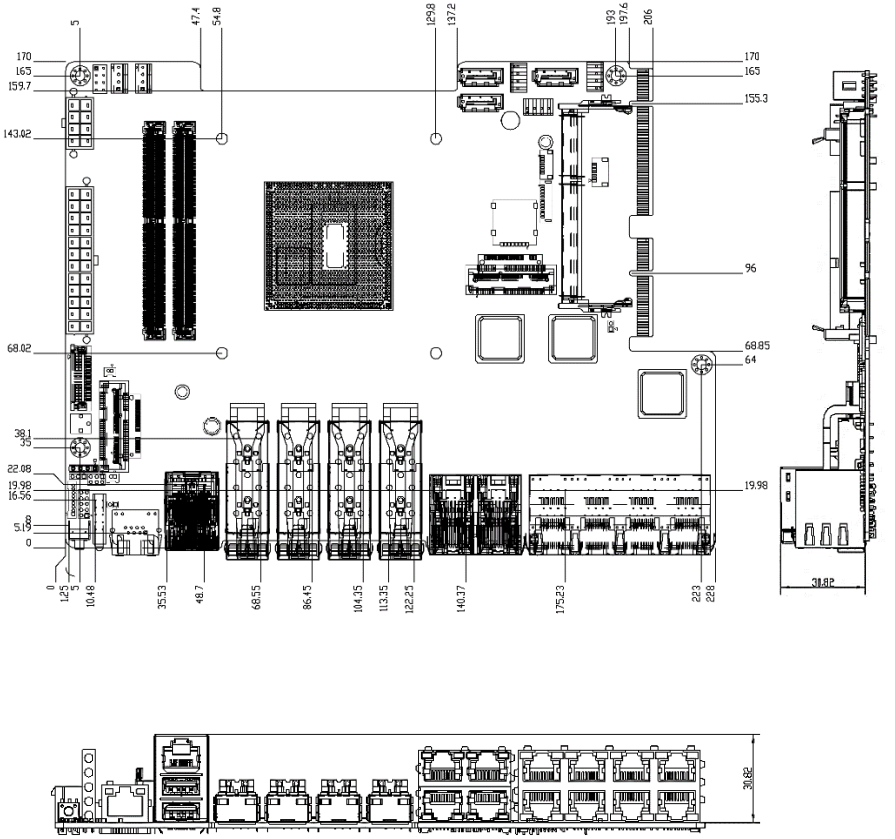




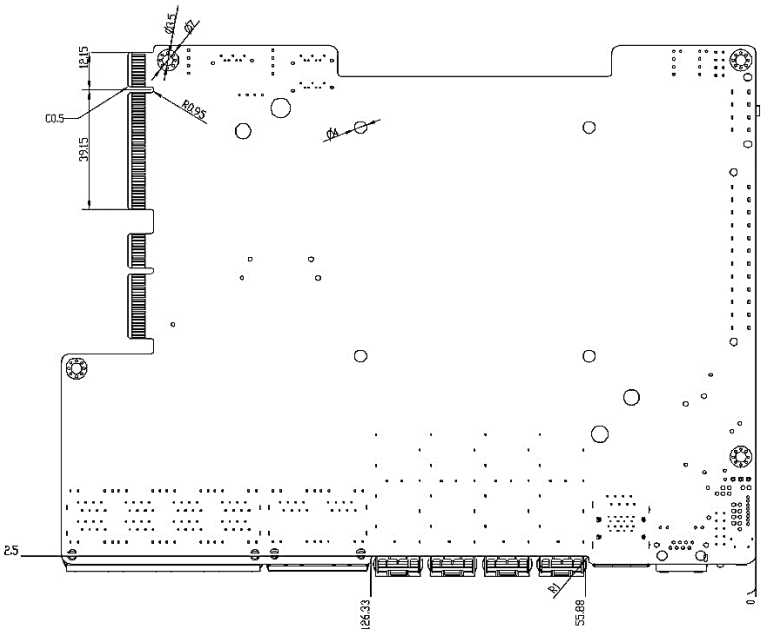


Board

Component Side

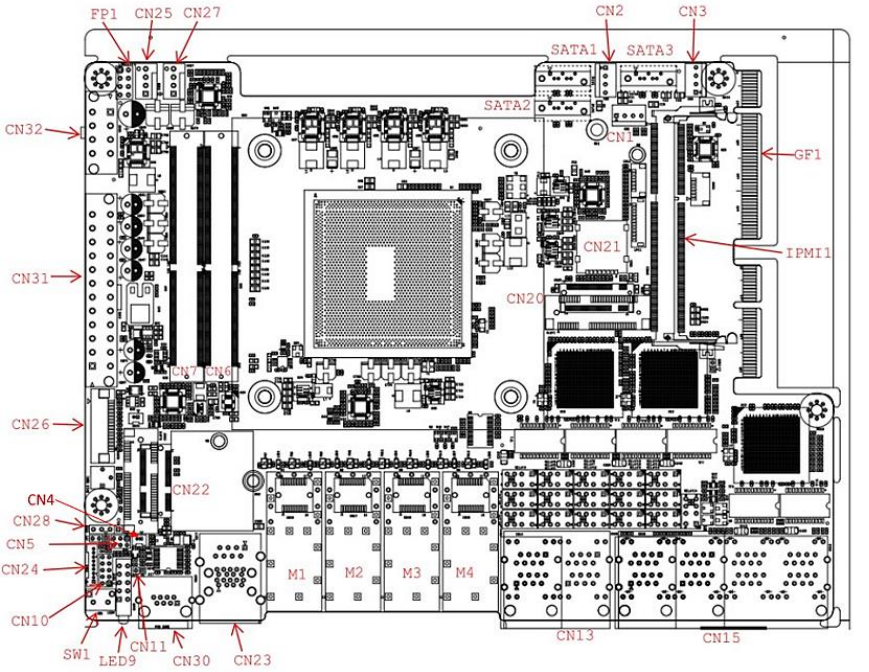


Solder Side



2.2 Jumpers and Connectors

Component Side



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
CN5	Clear CMOS

2.3.1 Clear CMOS (CN5)

Setting	Configuration
Normal	1-3.2-4
Clear CMOS	3-5,4-6

Note: Normal is set as default.

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
LED9	Status LED
CN1, CN2, CN3	SATA Power
CN4	Battery Header
CN6, CN7	DDR4 SO-DIMM*2
CN10	DIO Header
CN11	Case Open Header
CN13	1Gb RJ-45 Port
CN15	1Gb RJ-45 Port
CN20	M.2 3052 B-Key
CN21	Micro SIM
CN22	M.2 2230 E-Key
CN23	USB 3.1 + RJ-45 Connector (IPMI Ethernet)
CN24	Serial Port
CN25, CN27	FAN 1/FAN 2
CN26, CN28	LCM
CN30	Console
CN31, CN32	ATX Power Connector
M1, M2, M3, M4	10Gb SFP+
GF1	PCIe*8 Gold Finger (NIM Riser card PER-R40X only)
SATA1, SATA2, SATA3	SATA Connector
FP1	Front Panel Header
IPMI1	IPMI Slot
SW1	Software Programmable Button

Note: Bypass Function on CN13.

Note: PCIe*8 on GF1 is for NIM riser card PER-R40X only, not for standard PCIe signal.

2.4.1 Battery Holder (CN4)

Pin	Signal	Pin	Signal
1	+3.3V	2	Ground

2.4.2 Digital IO Pin Header (CN10)

Pin	Signal	Pin	Signal
1	Digital I/O bit1	2	Digital I/O bit2
3	Digital I/O bit3	4	Digital I/O bit4
5	Digital I/O bit5	6	Digital I/O bit6
7	Digital I/O bit7	8	Digital I/O bit8
9	+5V	10	GND

2.4.3 Front Panel Header (FP1)

Pin	Signal	Pin	Signal
1	Power Button SW+	2	Ground
3	Hardware Reset SW+	4	Ground
5	PWRLED	6	Ground
7	HDDACT	8	HDD LED-

2.4.4 Case Open Header (CN11)

Pin	Signal	Pin	Signal
1	Ground	2	Case Open

2.4.5 M.2 3052 B-Key Slot (CN20)

Pin	Signal	Pin	Signal
1	CFG3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	PWR_OFF
7	USB2DN	8	W_DISABLE
9	USB2DP	10	NC
11	GND	-	-
-	-	20	NC
21	CFG0	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE1RXP	30	UIMRST
31	PCIE1RXN	32	UIMCLK
33	GND	34	UIMDAT
35	PCIE1TXN	36	UIMPWR
37	PCIE1TXP	38	DEVSLP
39	GND	40	NC
41	PCIE0RXP	42	NC
43	PCIE0RXN	44	NC
45	GND	46	NC

Pin	Signal	Pin	Signal
47	PCIE0TXN	48	NC
49	PCIE0TXP	50	PLTRST#
51	GND	52	NC
53	PCIECLKDN	54	WAKE#
55	PCIECLKDP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SIMDET
67	NC	68	32K_SUSCLK
69	CFG1	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CFG2	-	-

2.4.6 M.2 2230 E-Key Slot (CN22)

Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	NC	4	+3.3V
5	NC	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC

Pin	Signal	Pin	Signal
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC	32	NC
33	GND	34	NC
35	PCIE0TXP	36	NC
37	PCIE0TXN	38	NC
39	GND	40	NC
41	PCIE0RXP	42	NC
43	PCIE0RXN	44	NC
45	GND	46	NC
47	PCIECLK0DP	48	NC
49	PCIECLK0DN	50	32K_SUSCLK
51	GND	52	PLTRST#
53	CLKREQ#	54	DIS2#
55	WAKE#	56	DIS1#
57	GND	58	NC
59	PCIE1TXP	60	NC
61	PCIE1TXN	62	NC
63	GND	64	NC
65	PCIE0RXP	66	NC
67	PCIE0RXN	68	NC
69	GND	70	NC
71	PCIECLK1DP	72	+3.3V
73	PCIECLK1DN	74	+3.3V
75	GND	-	-

2.4.7 Serial Port (CN24)

Pin	Signal	Pin	Signal
1	DCD2	2	DSR2
3	RXD2	4	RTS2
5	TXD2	6	CTS2
7	DTR2	8	RI2
9	GND	-	-

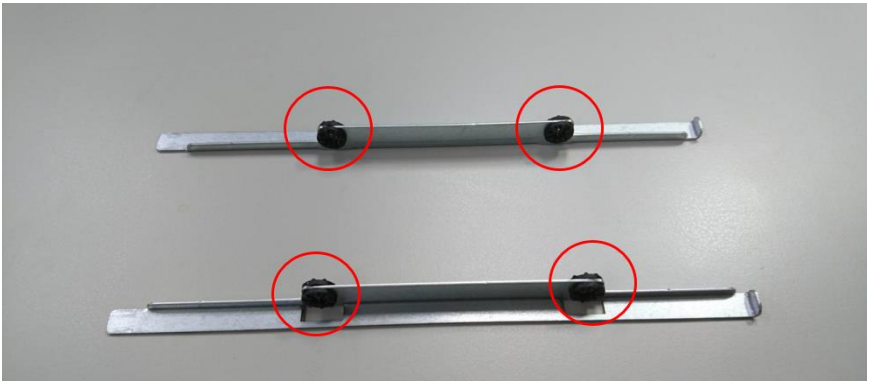
2.5 Hardware Installation

This section details the hardware assembly steps for the FWS-7541. Please read this section thoroughly before beginning installation and ensure you have all necessary components ready. A Phillips head screwdriver is required.

2.5.1 Hard Disk Drive (HDD) Installation

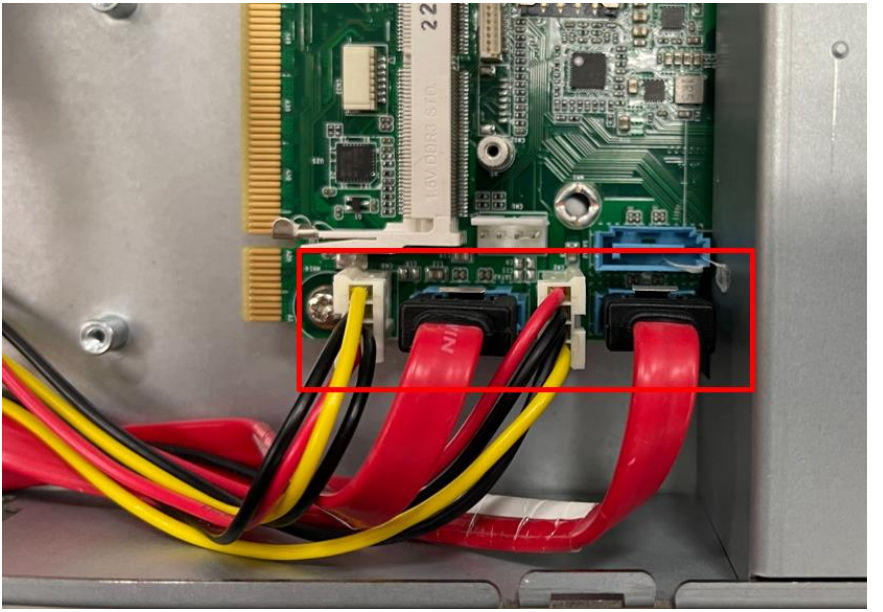
Step 1: Unscrew the upper lid.

Step 2: Place assembled cushions on the hard disk driver bracket.

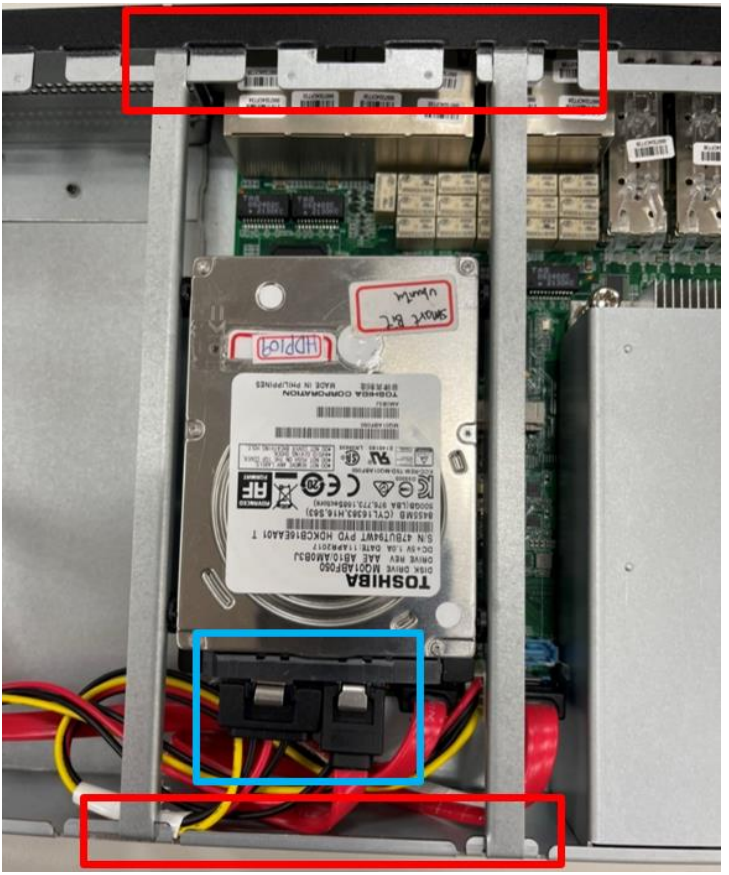


Step 3: Lock HDD on the bottom cushions with four screws.

Step 4: Connect the SATA cable and power cable to the main board.



Step 5: Connect the SATA cable and power cable into the Hard Disk and put hard drive bracket on the chassis.

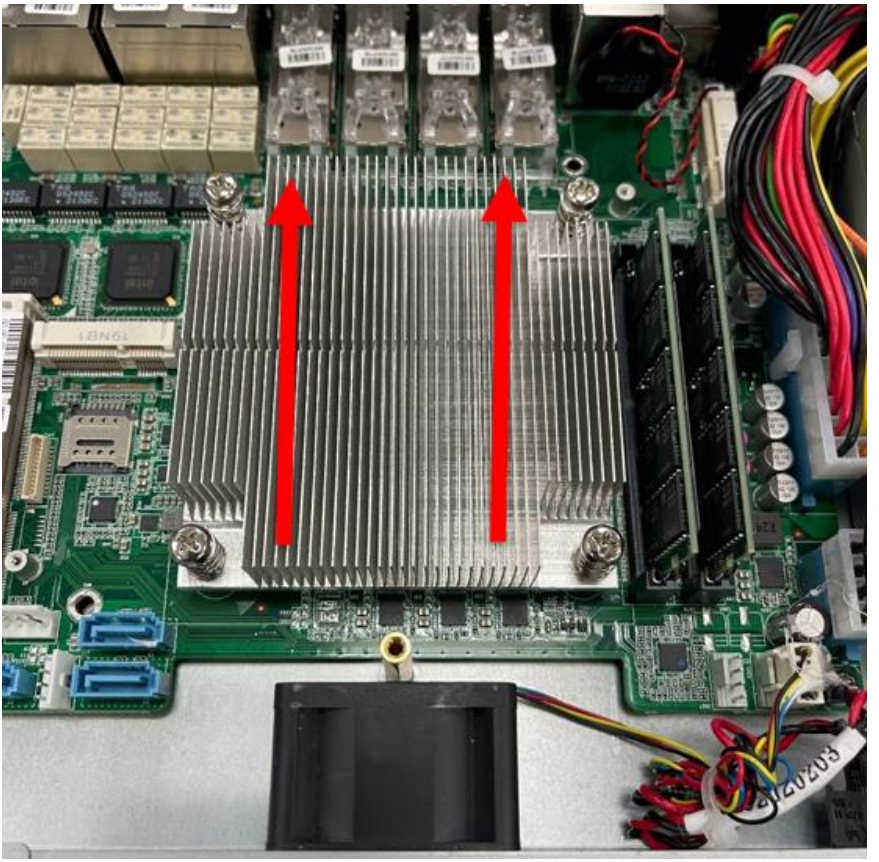


Step 6: Connect the SATA cable and power cable into the Hard Disk and put hard drive bracket on the chassis.

2.5.2 Heat Sink Installation

Step 1: Loosen the screw and remove the fan duct.

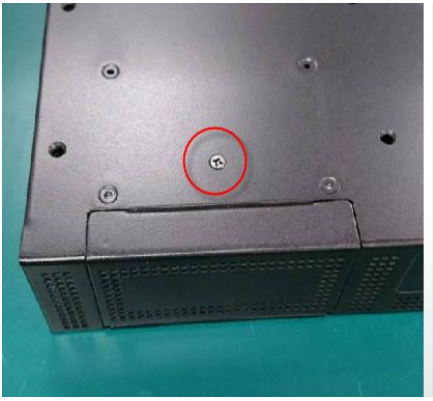
Step 2: Cover the Heatsink on the CPU and ensure the direction of the Heatsink does not obstruct the airflow.



Step 3: Fasten the screw to lock the air duct.

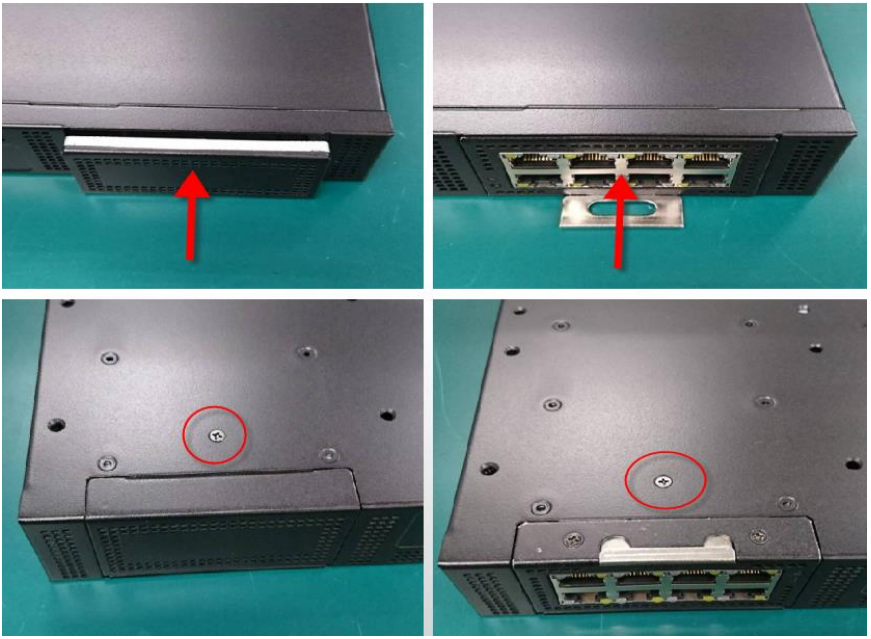
2.5.3 NIM Installation

Step 1: Loosen the screws on the bottom of chassis.



Step 2: Remove the null Module cover or existing LAN module.

Step 3: Insert the LAN Module and fasten the screws.



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification:

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time.
2. You have changed the hardware attached to your system.
3. The system configuration is reset by Clear-CMOS jumper.
4. The CMOS memory has lost power and the configuration information has been erased.

The FWS-7541 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

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

Entering Setup

Power on the computer and press <Del>or <ESC> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

In here, can set power mode, USB configuration and check CPU type and speed.

Platform Configuration

For PCH and Server ME configuration

Server Mgmt

BMC information and configuration

Security

Set setup administrator/user password.

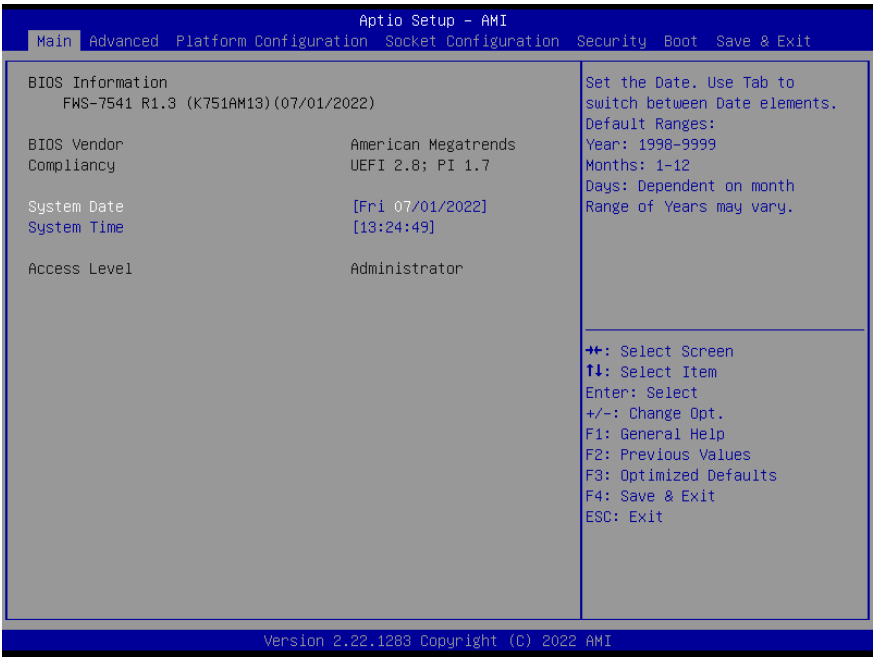
Boot

Enables/disable quiet boot option.

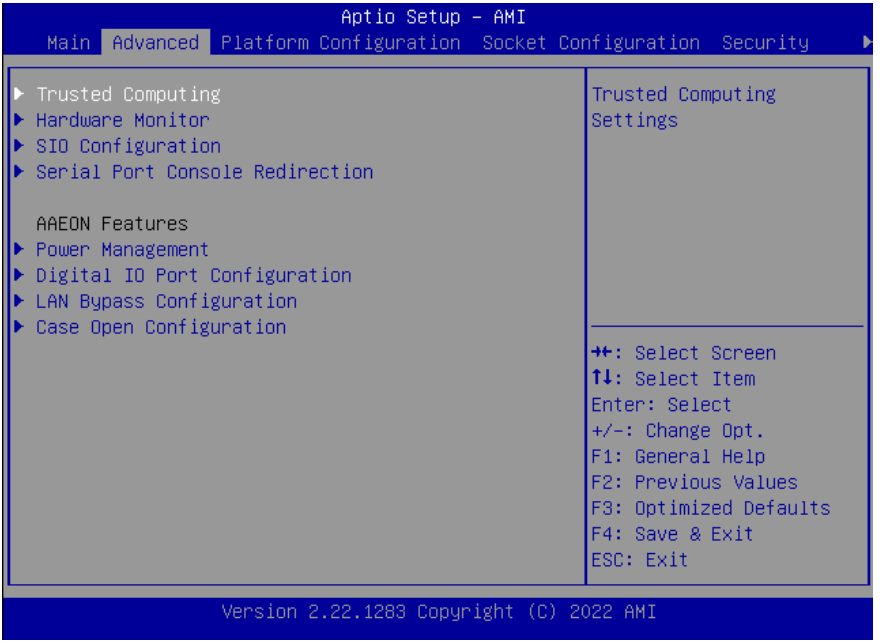
Save & Exit

Exit system setup after saving the changes.

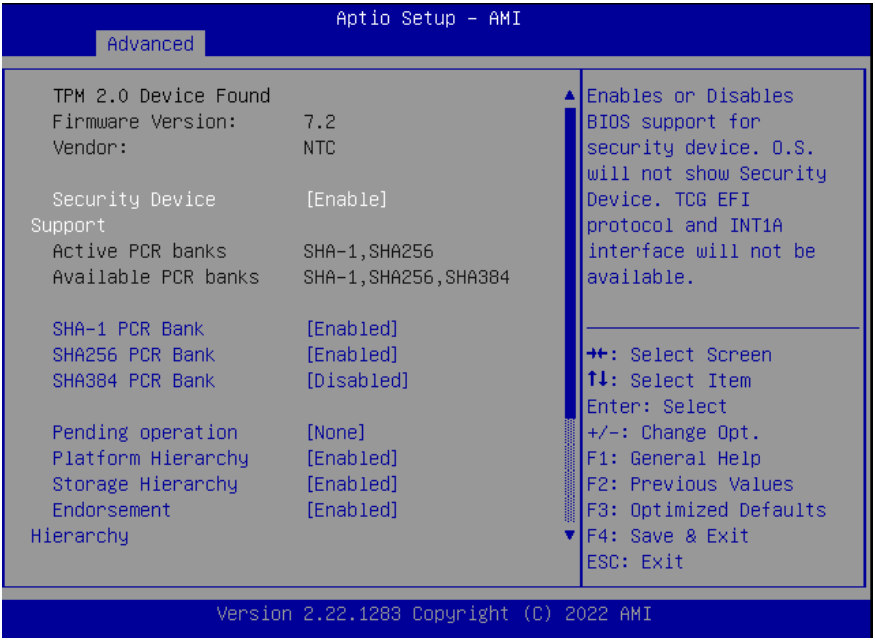
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



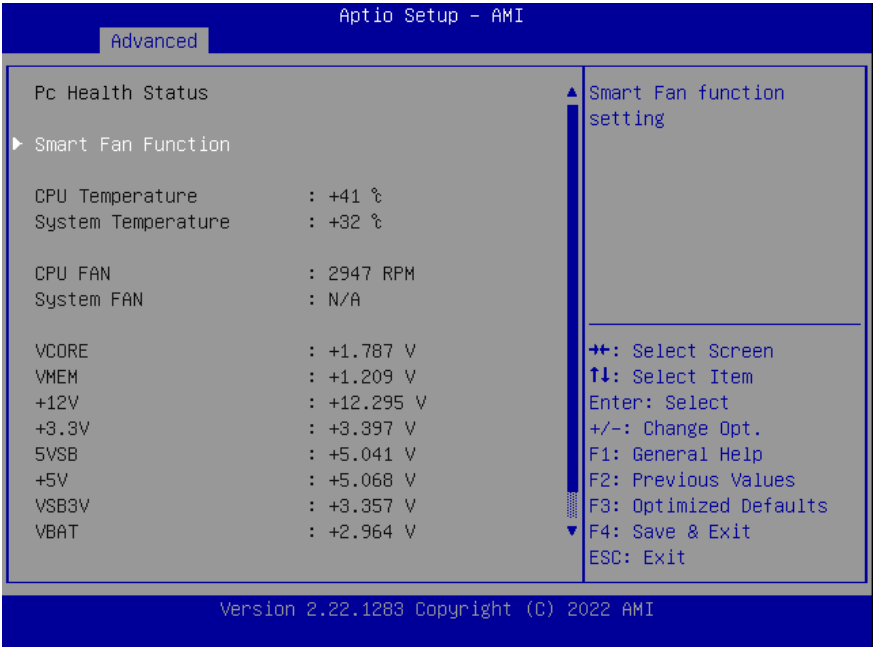
3.4.1 Trusted Computing



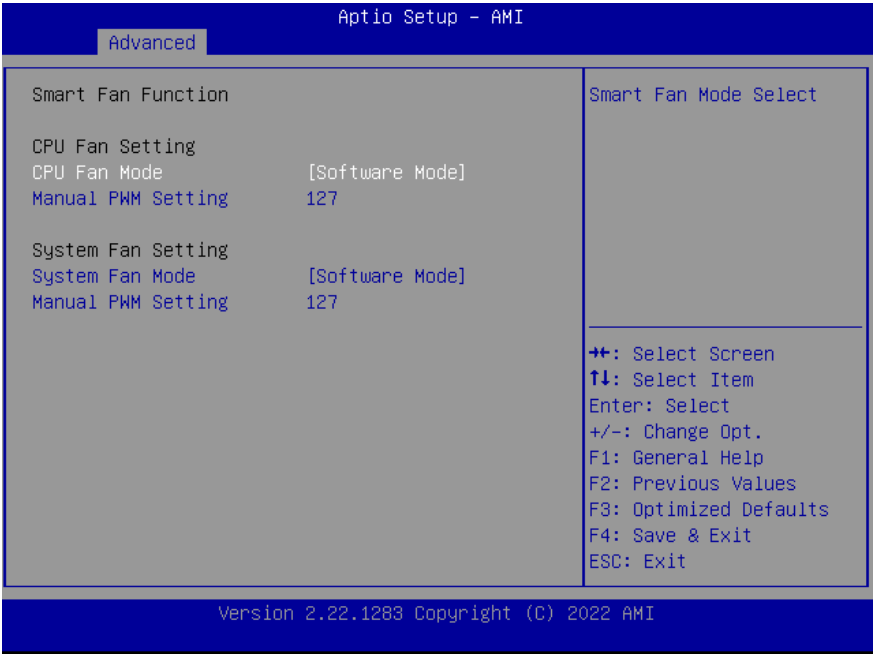
Options Summary		
Security Device Support	Enable	Optimal Default, Failsafe Default
	Disable	
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		
SHA-1 PCR Bank	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SHA-1 PCR Bank		
SHA256 PCR Bank	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SHA256 PCR Bank.		
SHA384 PCR Bank	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enable or Disable SHA384 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.		

Options Summary		
Platform Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
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.		

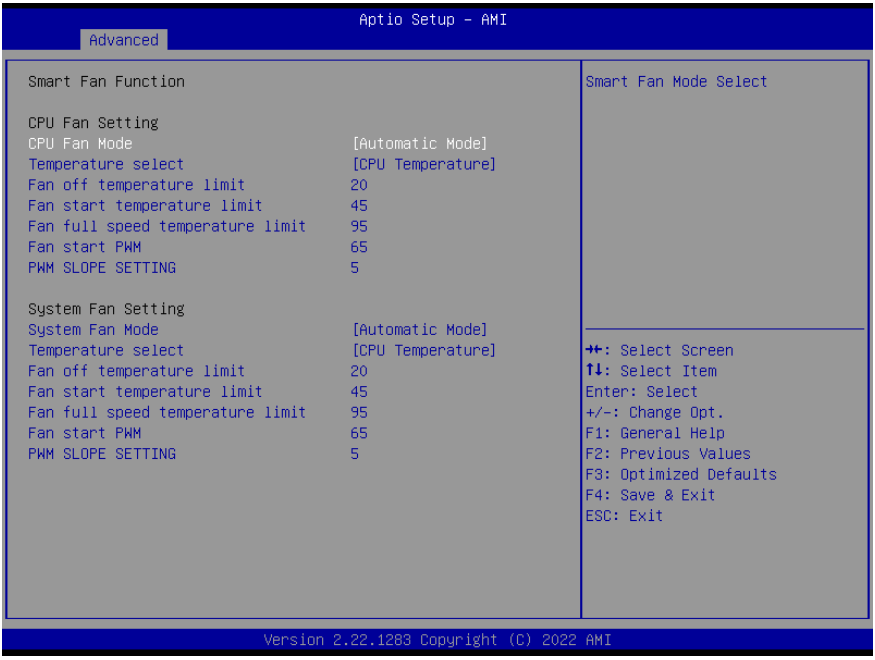
3.4.2 Hardware Monitor



3.4.3 System FAN Setting

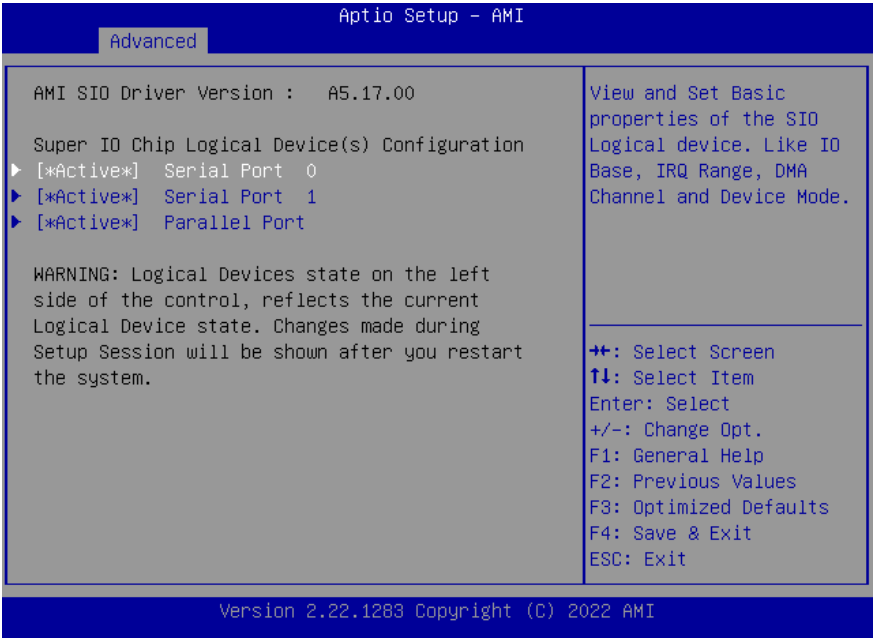


Options Summary		
Manual PWM Setting	127	Optimal Default, Failsafe Default
Fan will work with this Manual PWM Value		

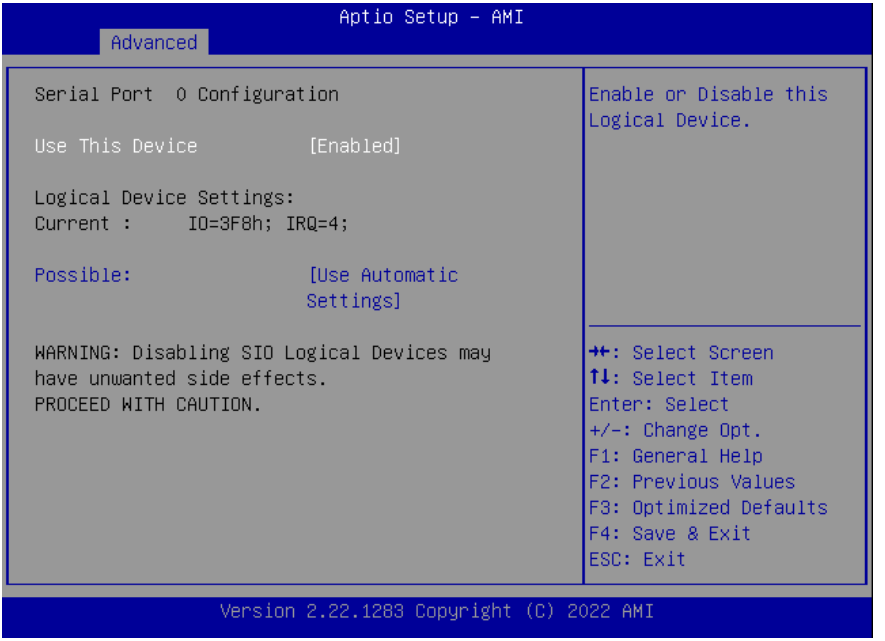


Options Summary		
Smart Fan 1 Mode	Automatic Mode	Optimal Default, Failsafe Default
	Software Mode	
Smart Fan Mode Select		
Fan off temperature limit	20	Optimal Default, Failsafe Default
Fan will off when temperature lower then this limit		
Fan start temperature limit	45	Optimal Default, Failsafe Default
Fan will work when temperature higher then this limit		
Fan full speed temperature limit	95	Optimal Default, Failsafe Default
Fan will full speed when temperature higher then this limit		
Fan start PWM	65	Optimal Default, Failsafe Default
Fan will full start with this PWM value		
PWM SLOPE SETTING	5	Optimal Default, Failsafe Default
PWM SLOPE Selection Slope = PWM value / °C		

3.4.4 SIO Configuration

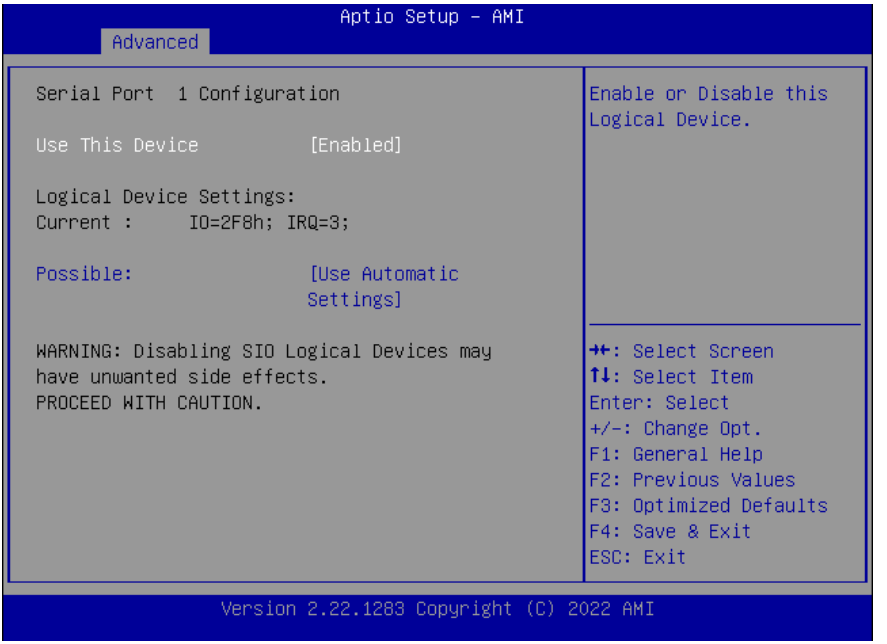


3.4.5 Serial Port 0 Configuration



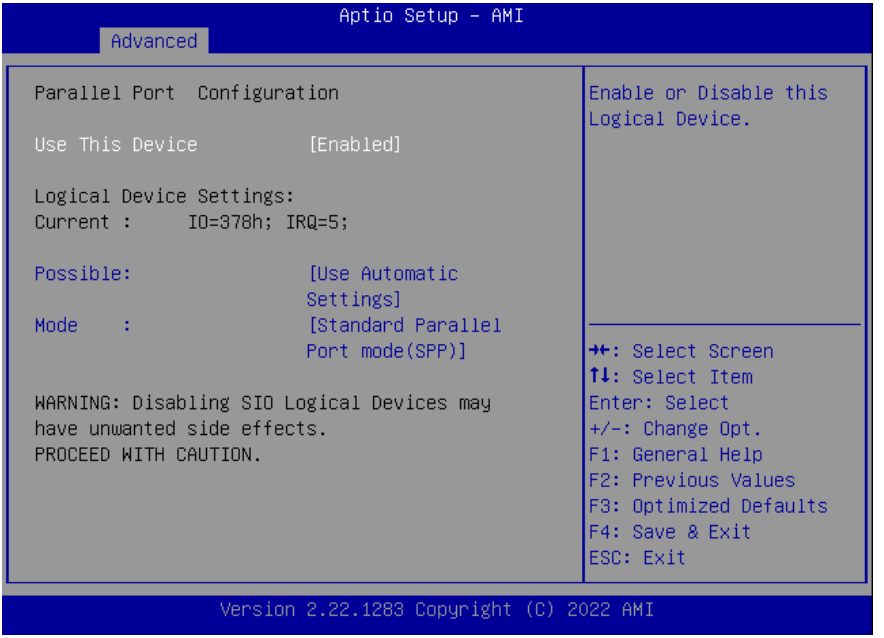
Options Summary		
Use This Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable this Logical Device		
Possible	Use Automatic setting	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows the user to change the device resource settings. New settings will be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

3.4.6 Serial Port 1 Configuration



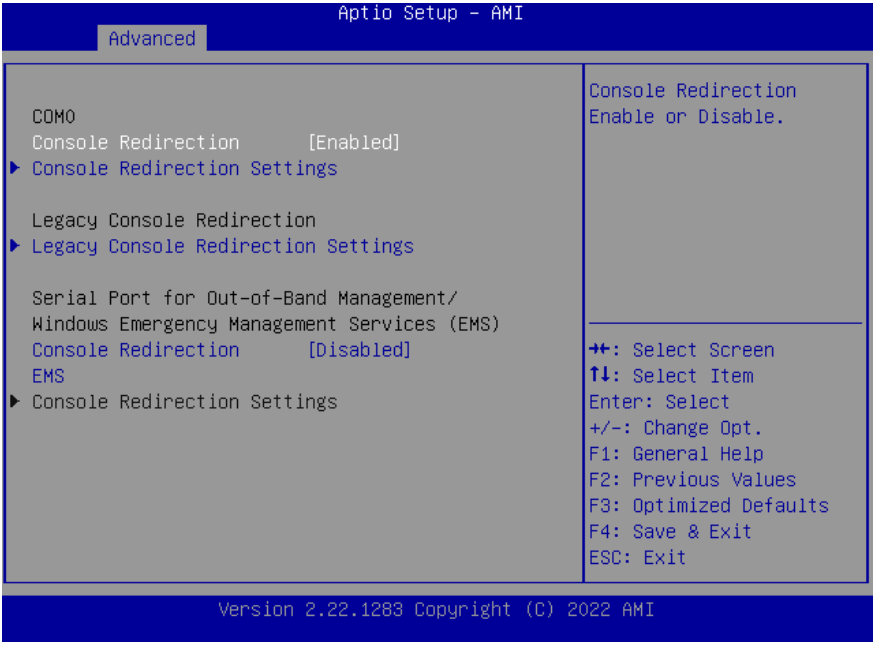
Options Summary		
Use This Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable this Logical Device		
Possible	Use Automatic setting	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows the user to change the device resource settings. New settings will be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

3.4.7 Parallel Port Configuration



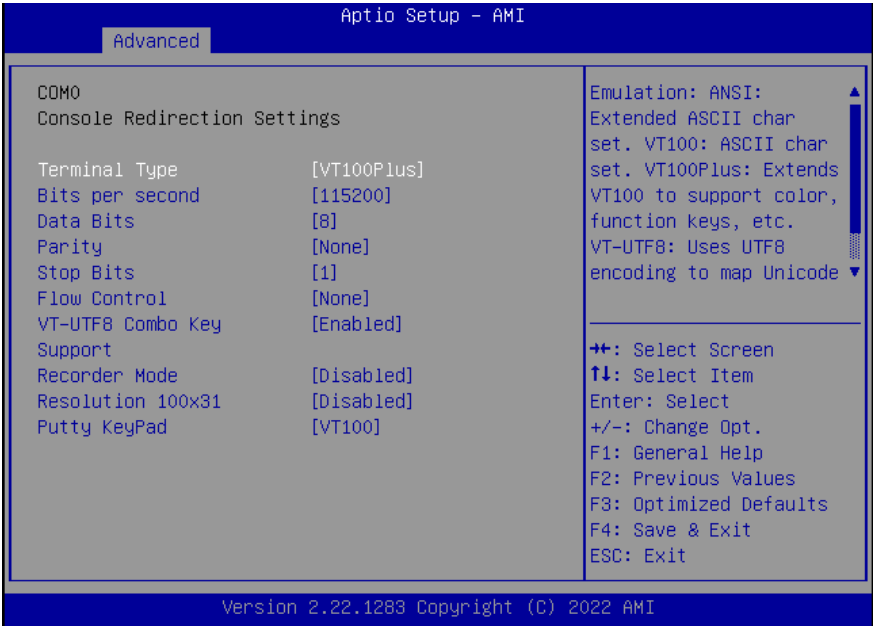
Options Summary		
Use This Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable this Logical Device		
Possible	Use Automatic setting	Optimal Default, Failsafe Default
	IO=378h; IRQ=5	
	IO=378h; IRQ=5, 6, 7, 10, 11, 12	
	IO=278h; IRQ=5, 6, 7, 10, 11, 12	
	IO=3BCh; IRQ=5, 6, 7, 10, 11, 12	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts		
Mode	Standard Parallel Port mode (SPP)	Optimal Default, Failsafe Default
	EPP Mode	
	ECP Mode	
	EPP mode & ECP mode	
Change Parallel Port mode. Some of the Modes require a DMA resource. After Mode changing, Reset the System to reflect actual device settings		

3.4.8 Serial Port Console Redirection



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

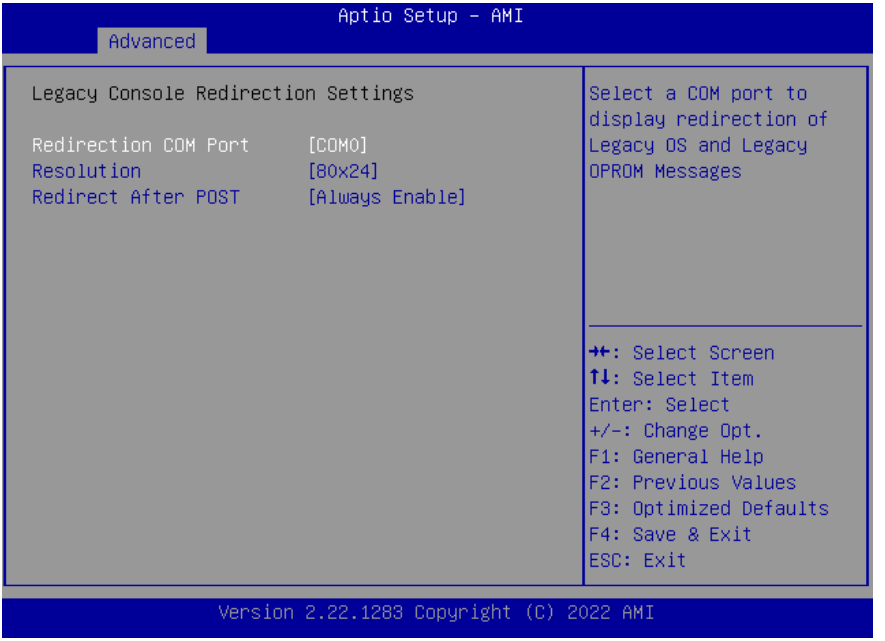
3.4.9 Console Redirection Settings



Options Summary		
Terminal Type	VT100	
	VT100Plus	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 chars onto 1 or more bytes.		
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		
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits		

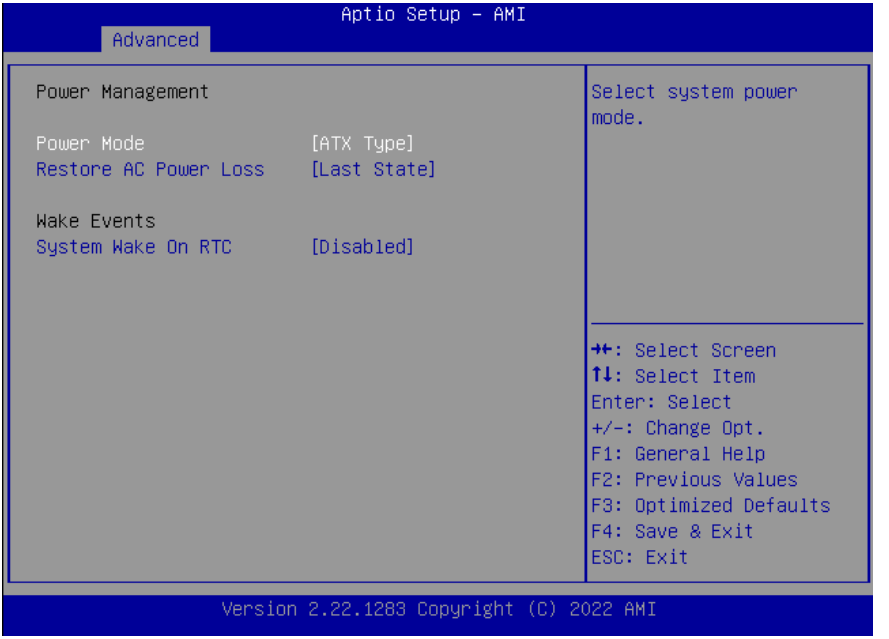
Options Summary		
Parity	None	Optimal Default, Failsafe Default
	Even	
	Odd	
	Mark	
	Space	
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: 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 require more than 1 stop bit.		
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	Enabled	
	Disabled	Optimal Default, Failsafe Default
With this mode enabled only text will be sent. This is to capture Terminal data.		
Resolution 100x31	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enables or disables extended terminal resolution		
Putty KeyPad	VT100	Optimal Default, Failsafe Default
	LINUX	
	XTERMR6	
	SCO	
	ESCN	
	VT400	
Select FunctionKey and KeyPad on Putty.		

3.4.10 Legacy Console Redirection Settings



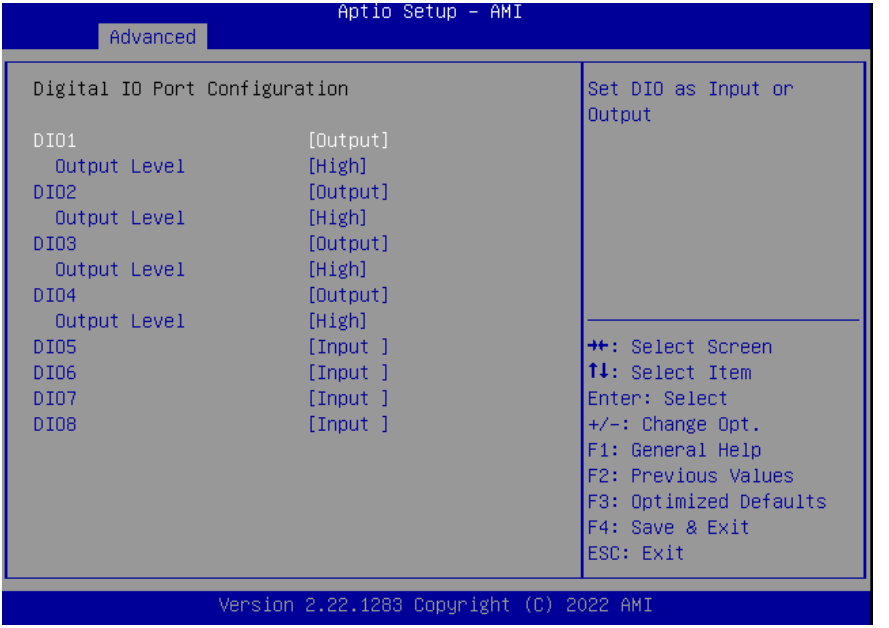
Options Summary		
Redirection COM Port	COM0	Optimal Default, Failsafe Default
Select a COM port to display redirection of Legacy OS and Legacy OPROM Message		
Resolution	80x24	Optimal Default, Failsafe Default
	80x25	
On Legacy OS, the Number of Rows and Columns supported redirection		

3.4.11 Power Management



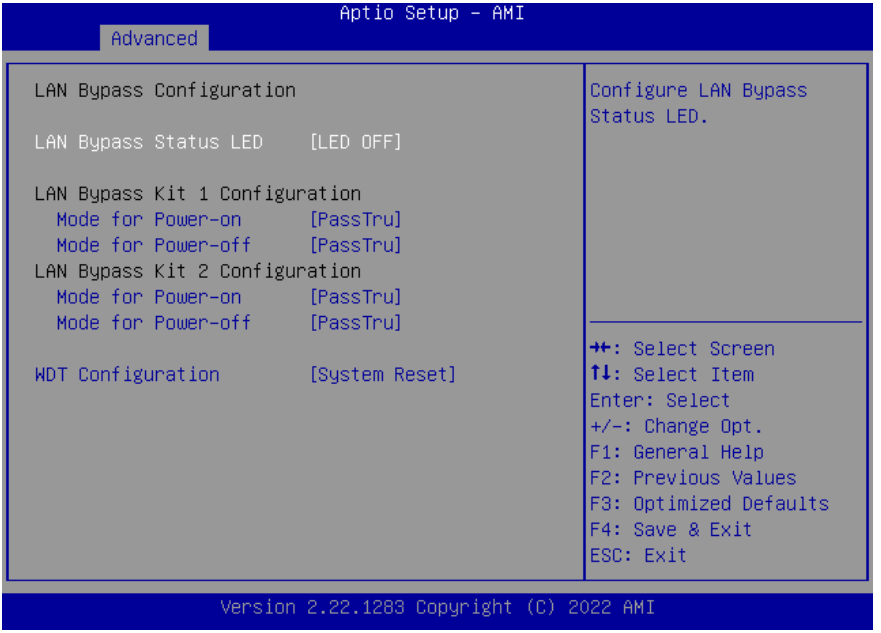
Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
System Wake On RTC	Disabled	Optimal Default, Failsafe Default
	By Date	
	By Weekday	
	Bypass	
By Date: System will wake on the day with hr::min::sec specified./n By Weekday: System will wake on the enabled weekday with hr::min::sec specified./n Bypass: BIOS will not control RTC wake function		

3.4.12 Digital IO Port Configuration



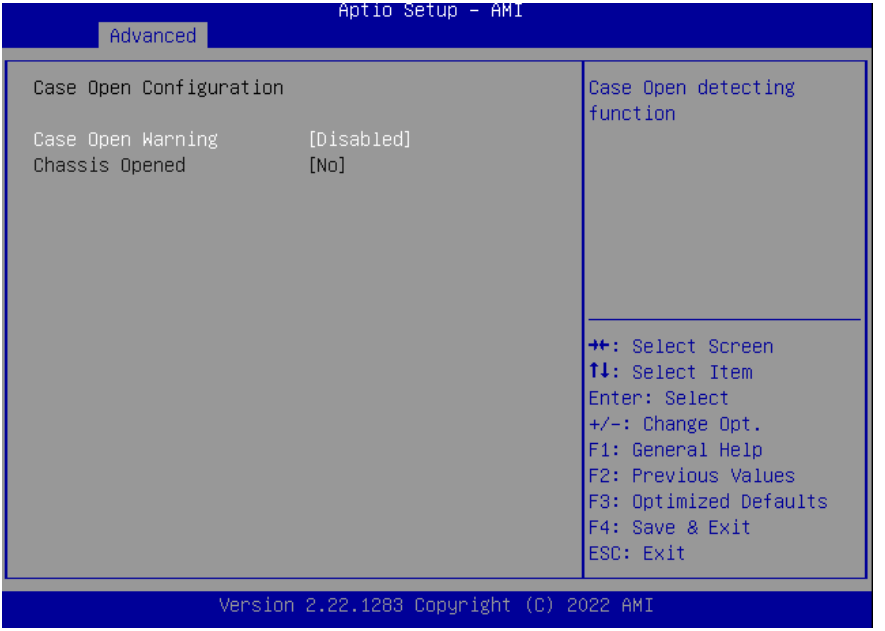
Options Summary		
DIO	Input	
	Output	
Set DIO as Input or Output		
Output Level	High	Optimal Default, Failsafe Default
	Low	
Set output level when DIO pin is output		

3.4.13 LAN Bypass Configuration



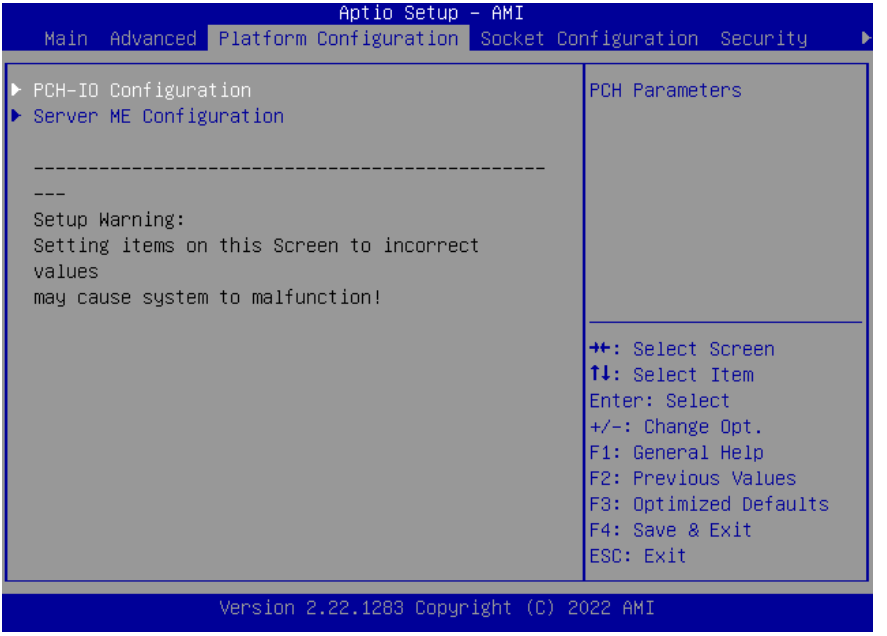
Options Summary		
Lan Bypass Status LED	LED OFF	Optimal Default, Failsafe Default
	RED LED ON	
	RED LED BLINK	
	RED LED FAST BLINK	
	GREEN LED ON	
	GREEN LED BLINK	
	GREEN LED FAST BLINK	
Configure LAN Bypass status LED		
Mode for Power-on	PassTru	Optimal Default, Failsafe Default
	Bypass	
Configure LAN kit behavior when system is in power-on state. (Bypass/Pass Through)		
Mode for Power-off	PassTru	Optimal Default, Failsafe Default
	Bypass	
Configure LAN kit behavior when system is in power-off state. (Bypass/Pass Through)		
WDT Configuration	System Reset	Optimal Default, Failsafe Default
	Force Bypass	
Configure WDT behavior, System Reset, Force Bypass		

3.4.14 Case Open Configuration

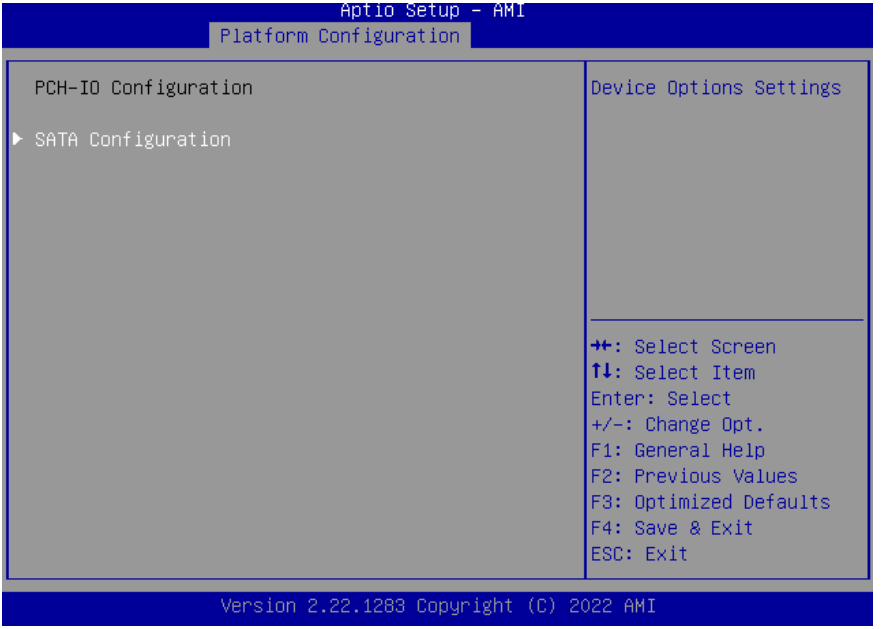


Options Summary		
Case Open Warning	Disabled	Optimal Default, Failsafe Default
	Enabled	
	Clear	
Case Open detecting function		

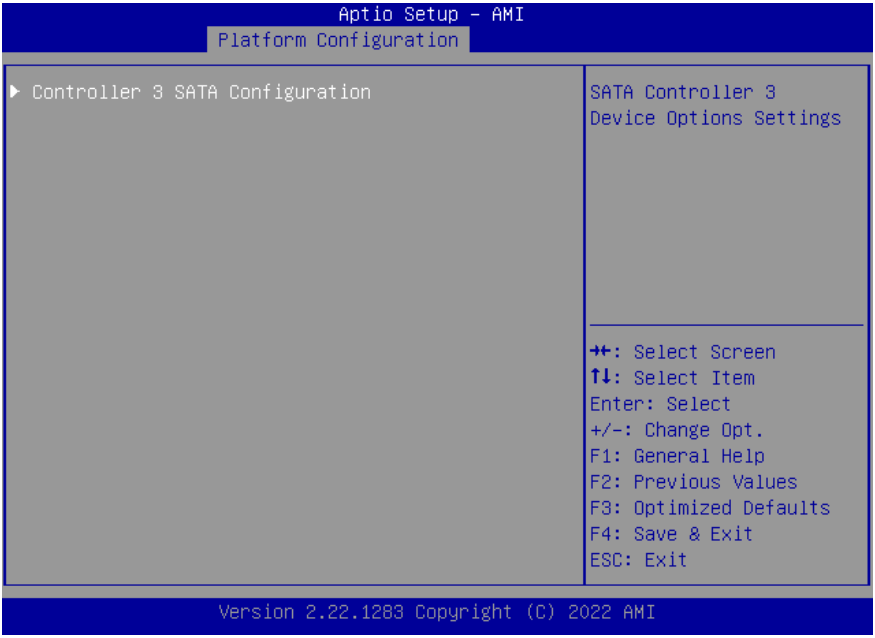
3.5 Setup Submenu: Platform Configuration



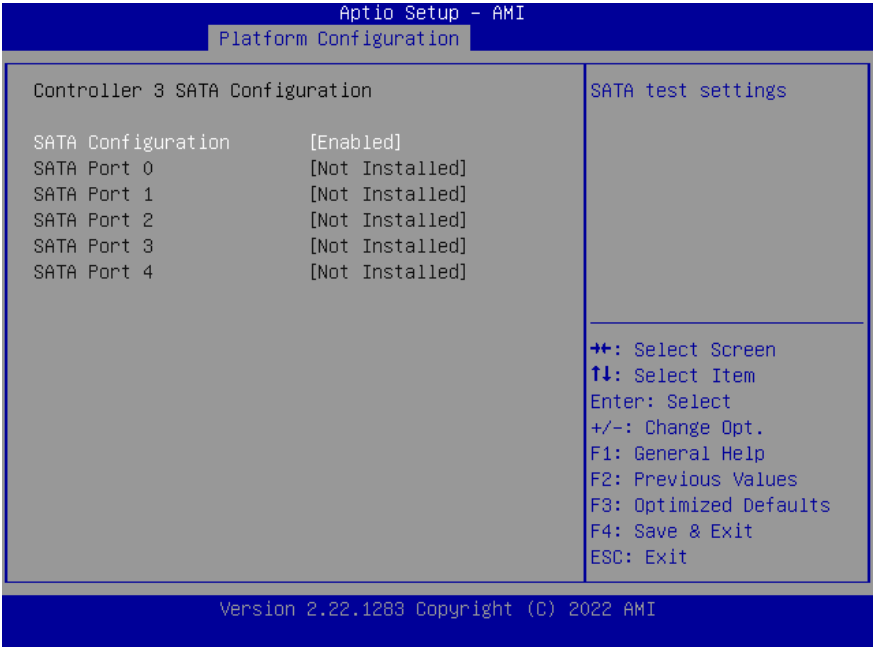
3.5.1 PCH-IO Configuration



3.5.2 SATA Configuration

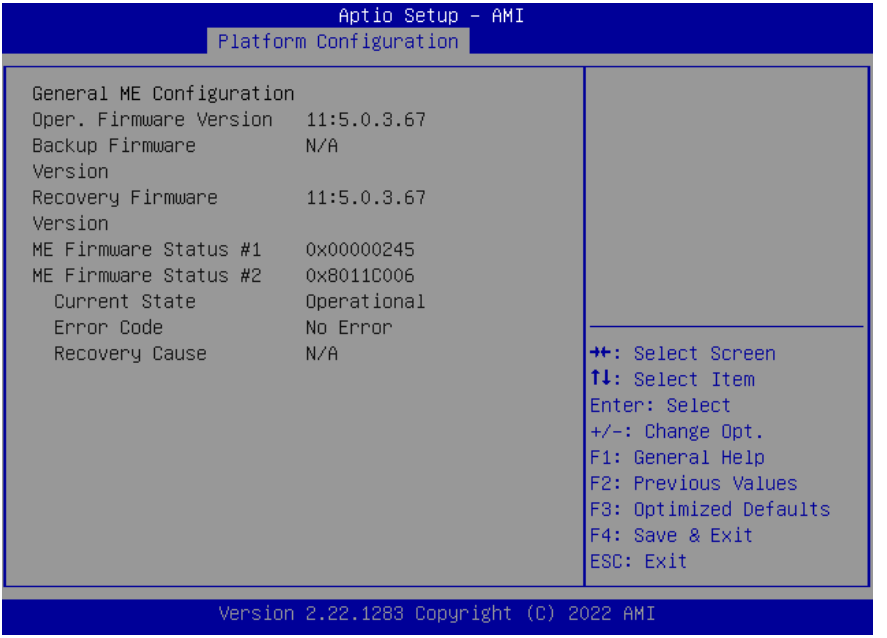


3.5.3 Controller 3 SATA Configuration

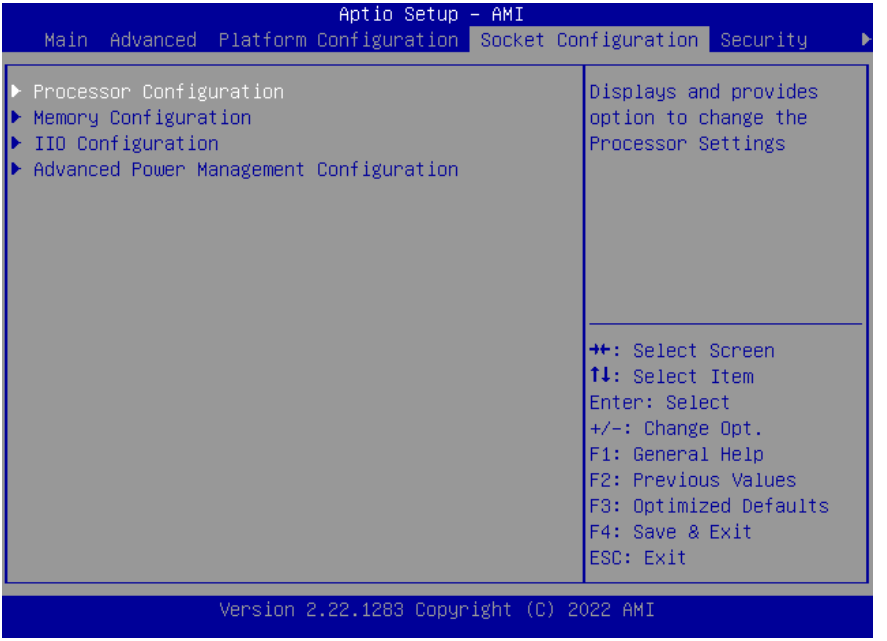


Options Summary		
SATA Configuration	Enabled	Optimal Default, Failsafe Default
	Disabled	
SATA test setting		

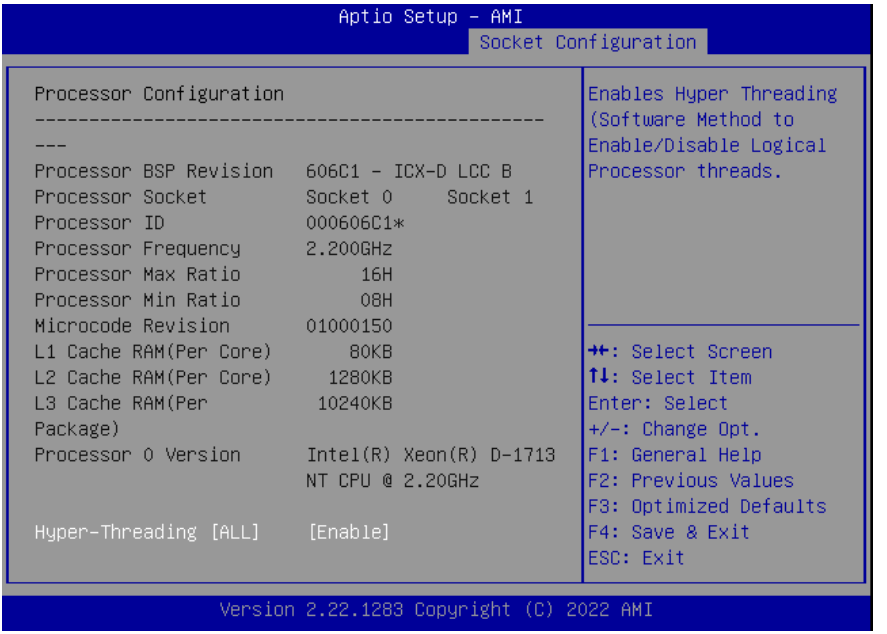
3.5.4 General ME Configuration



3.5.5 Socket Configuration

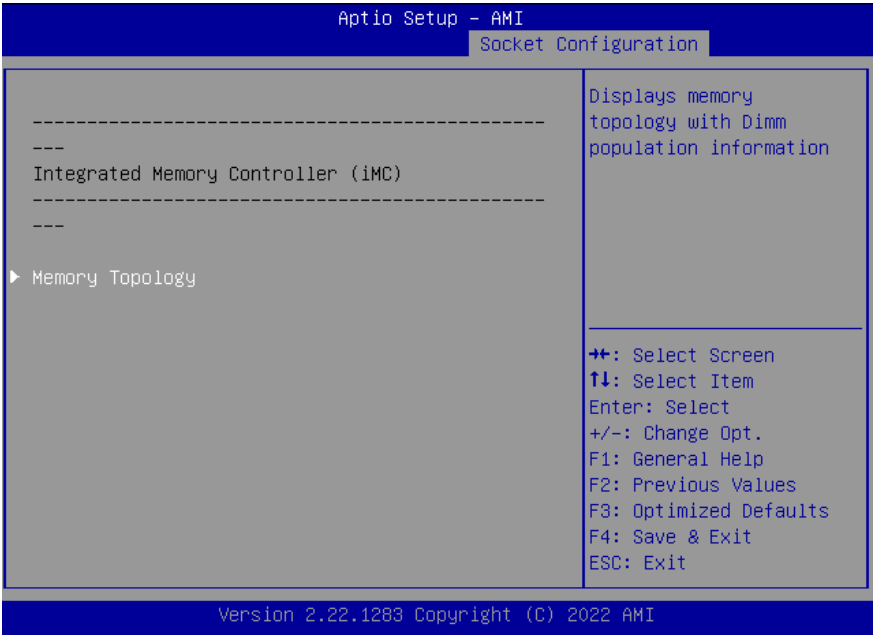


3.5.6 Processor Configuration

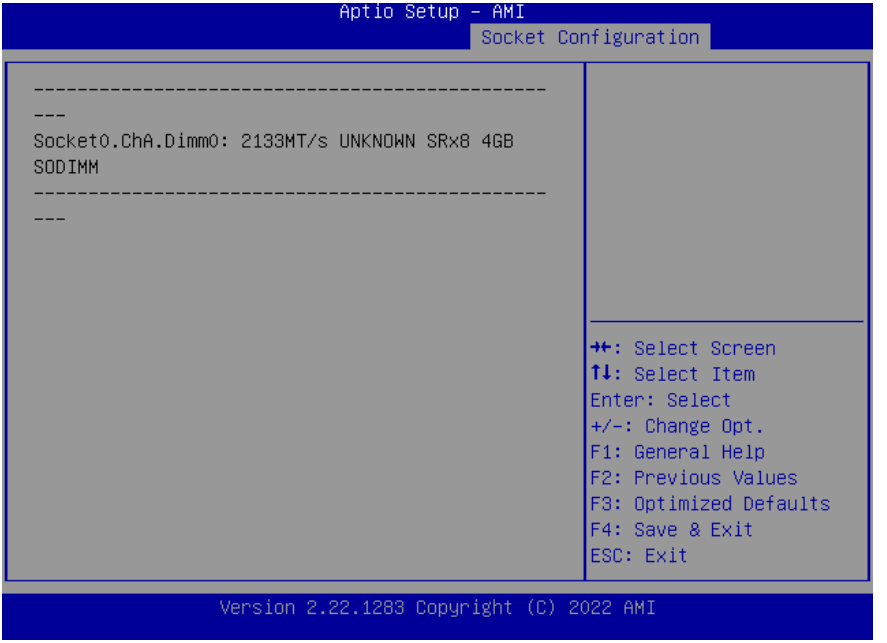


Options Summary		
Hyper-Threading [ALL]	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads.		

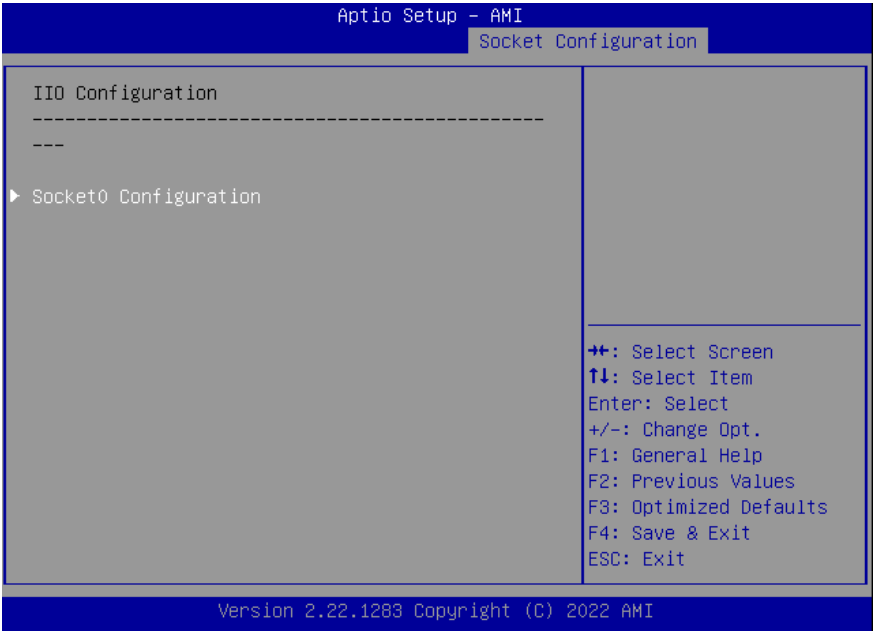
3.5.7 Memory Configuration



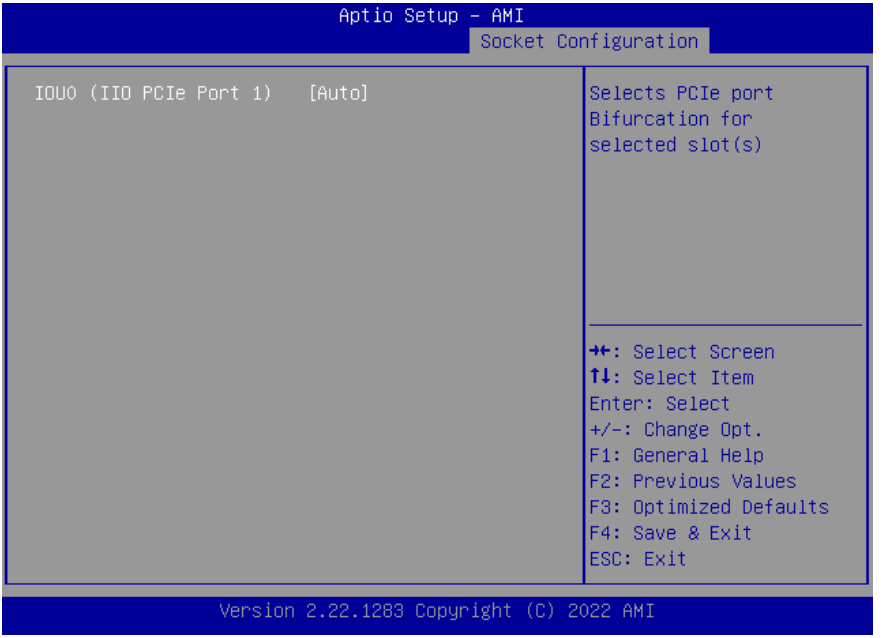
3.5.8 Memory Topology



3.5.9 IIO Configuration

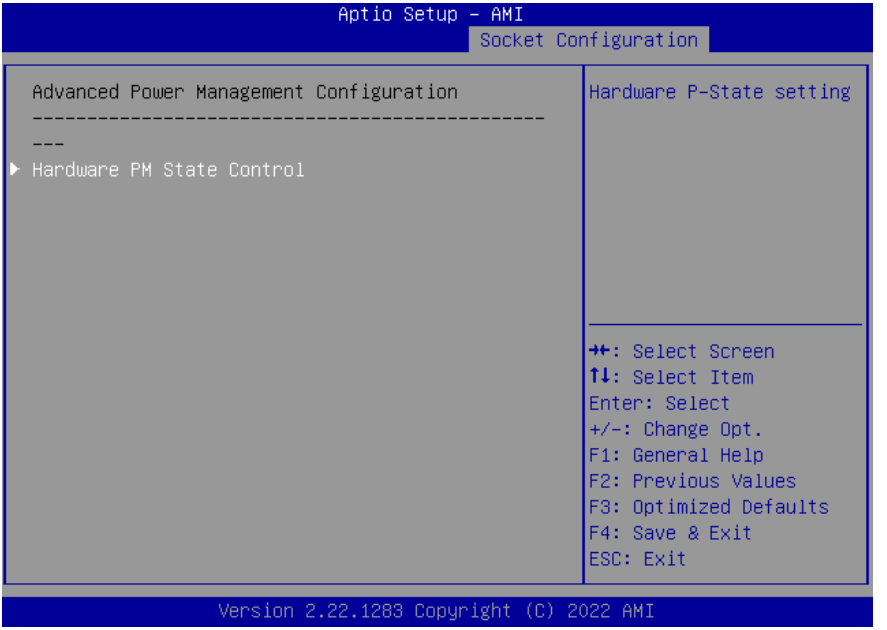


3.5.10 Socket0 Configuration

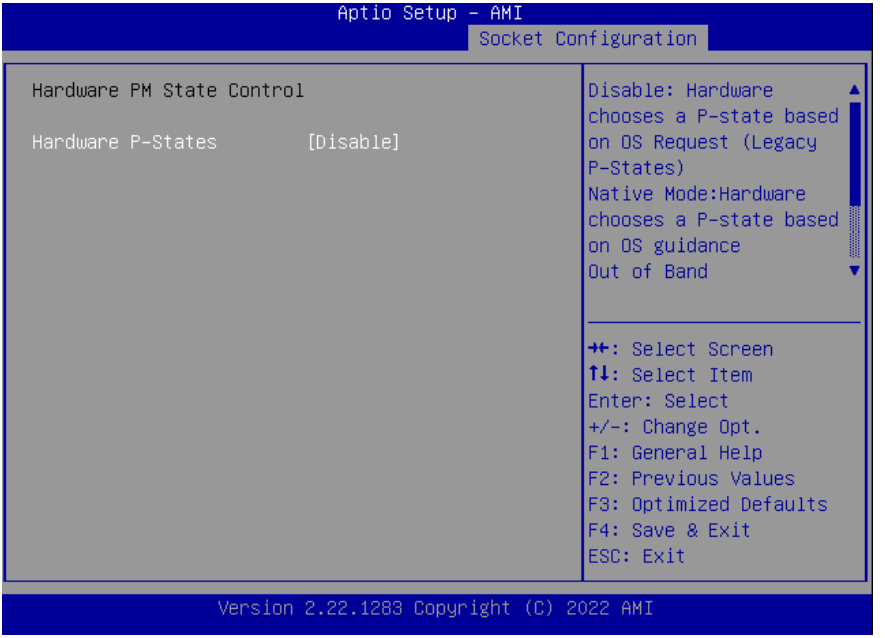


Options Summary		
IOU0 (IIO PCIe Port 1)	Auto	Optimal Default, Failsafe Default
	X4x4x8	
	X8x8	
	X16	
Selects PCIe port Bifurcation for selected slot(s)		

3.5.11 Advanced Power Management Configuration

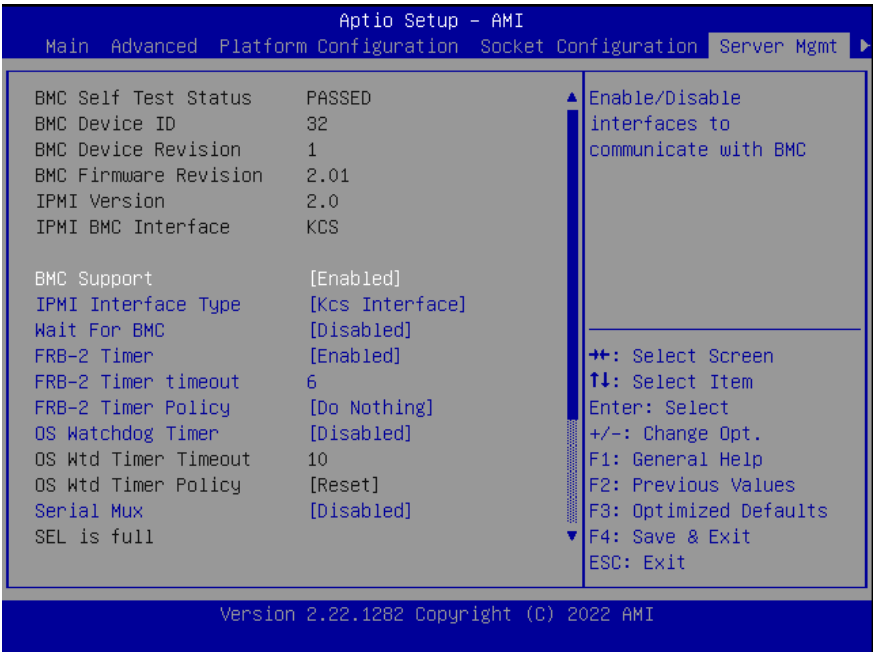


3.5.12 Hardware PM State Control



Options Summary		
Hardware P-States	Disable	Optimal Default, Failsafe Default
	Native Mode	
Disable: Hardware chooses a P-state based on OS Request (Legacy P-States) Native Mode: Hardware chooses a P-state based on OS guidance Out of Band Mode: Hardware autonomously chooses a P-state (no OS guidance)"		

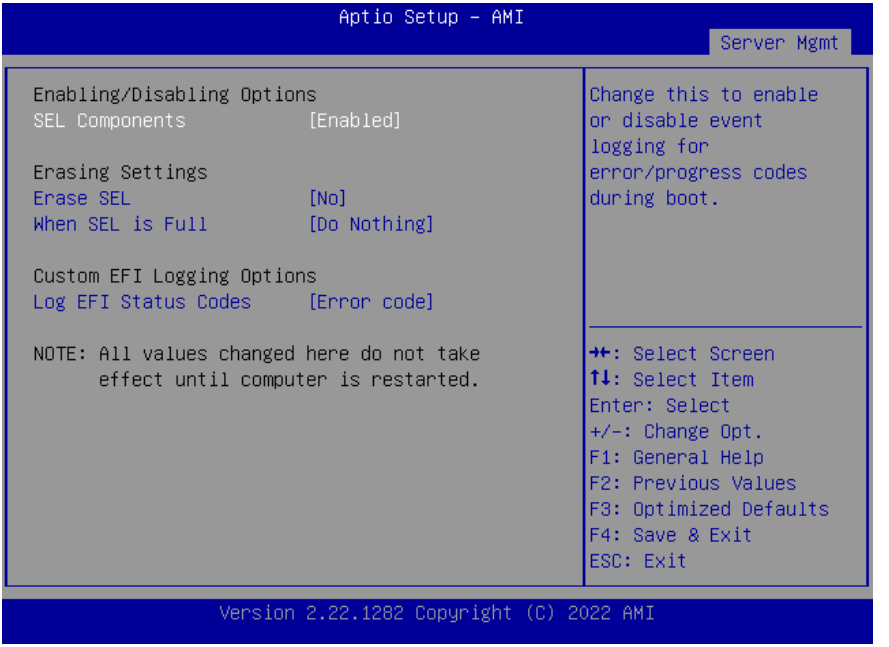
3.6 Setup Submenu: Server Mgmt (Project Base)



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.		

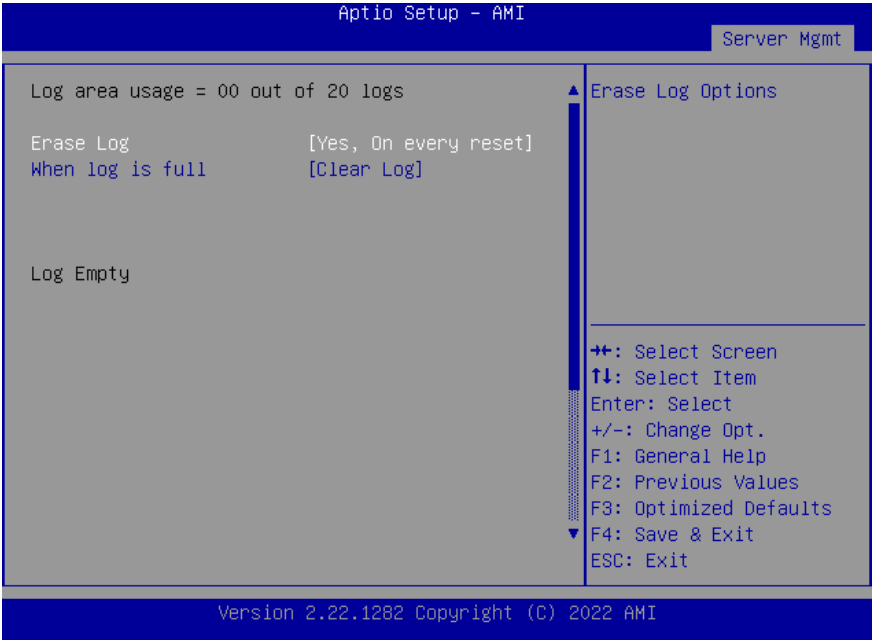
Options Summary		
FRB-2 Timer Policy	Do Nothing	Optimal Default, Failsafe Default
	Reset	
	Power Down	
	Power Cycle	
Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.		
OS Watchdog Timer	Disabled	Optimal Default, Failsafe Default
	Enabled	
If 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.	

3.6.1 System Event Log



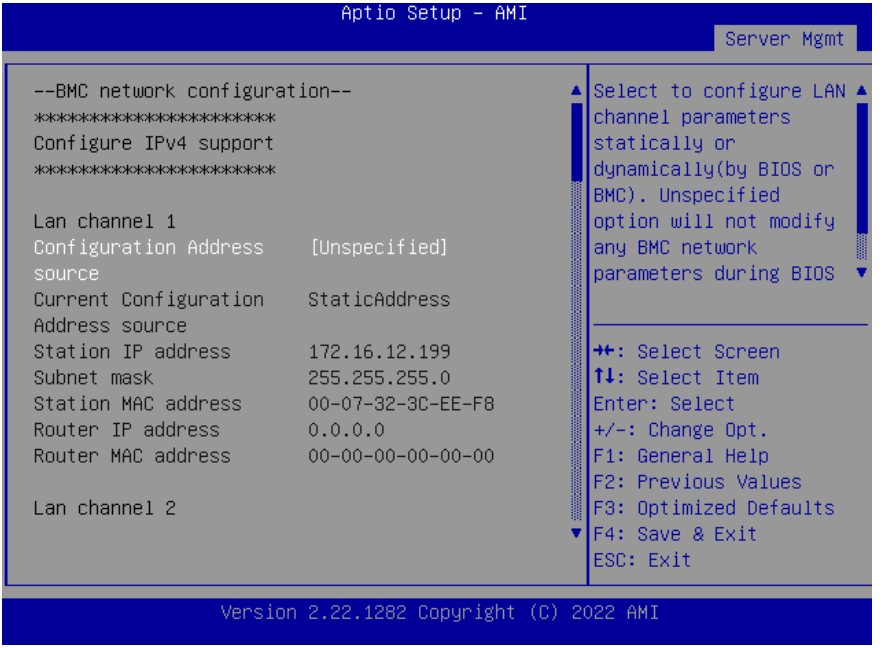
Options Summary		
SEL Components	Disabled	
	Enabled	Optimal Default, Failsafe Default
Change this to enable or disable event logging for error/progress codes during boot.		
Erase SEL	No	Optimal Default, Failsafe Default
	Yes, On next reset	
	Yes, On every reset	
Choose options for erasing SEL.		
When 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.		

3.6.2 BMC Self-Test Log



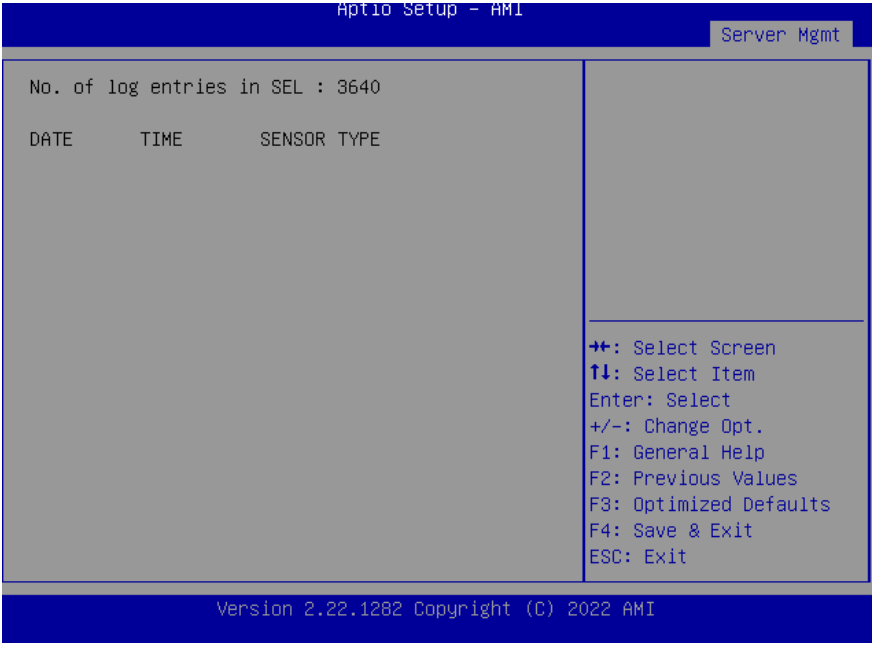
Options Summary		
Erase Log	Yes, On every reset	Optimal Default, Failsafe Default
	No	
Erase Log Options.		
When log is full	Clear Log	Optimal Default, Failsafe Default
	Do not log any more	
Select the action to be taken when log is full.		

3.6.3 BMC Network Event Log

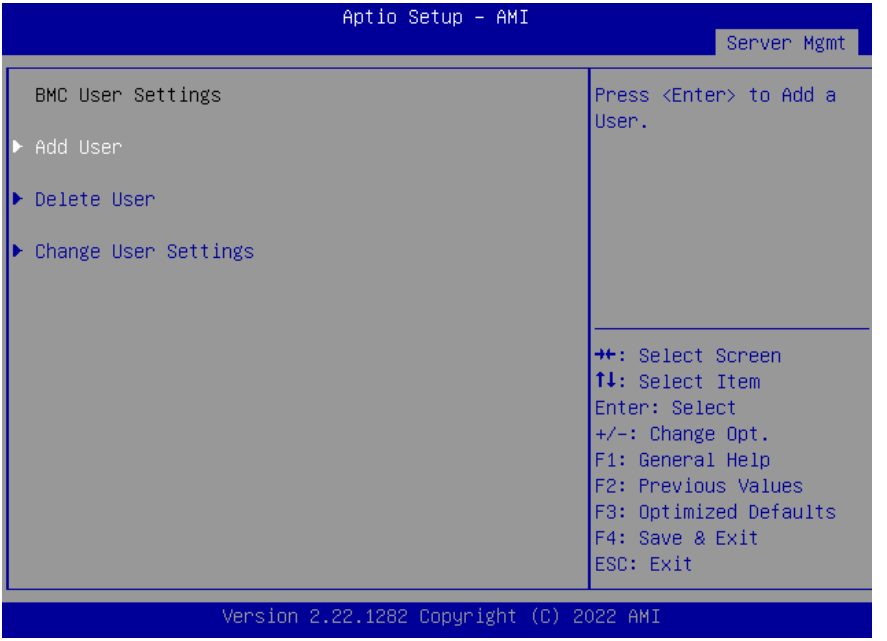


Options Summary		
Configuration Address source	Unspecified	Optimal Default, Failsafe Default
	Static	
	DynamicBmcDhcp	
	DynamicBmcNonDhcp	
Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.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

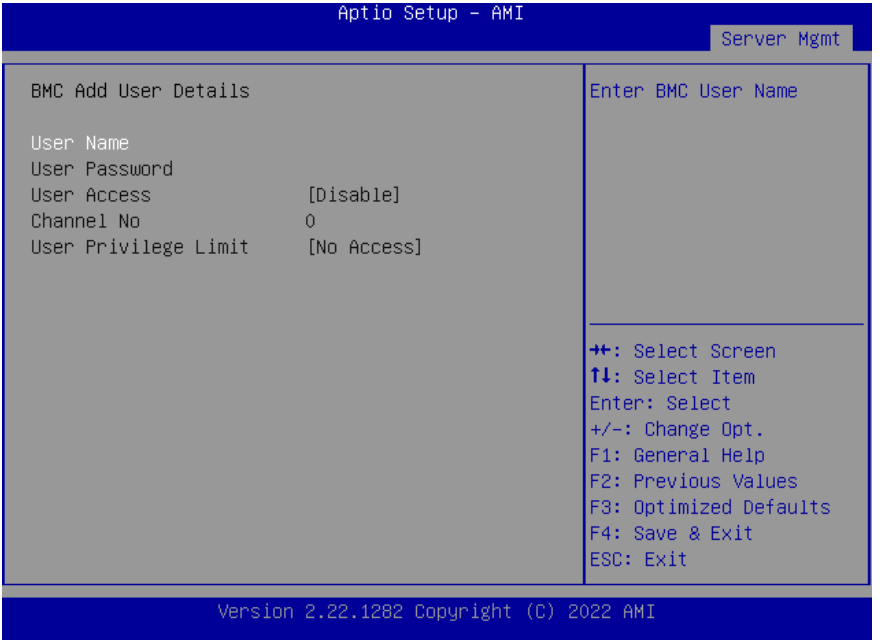
3.6.4 View System Event Log



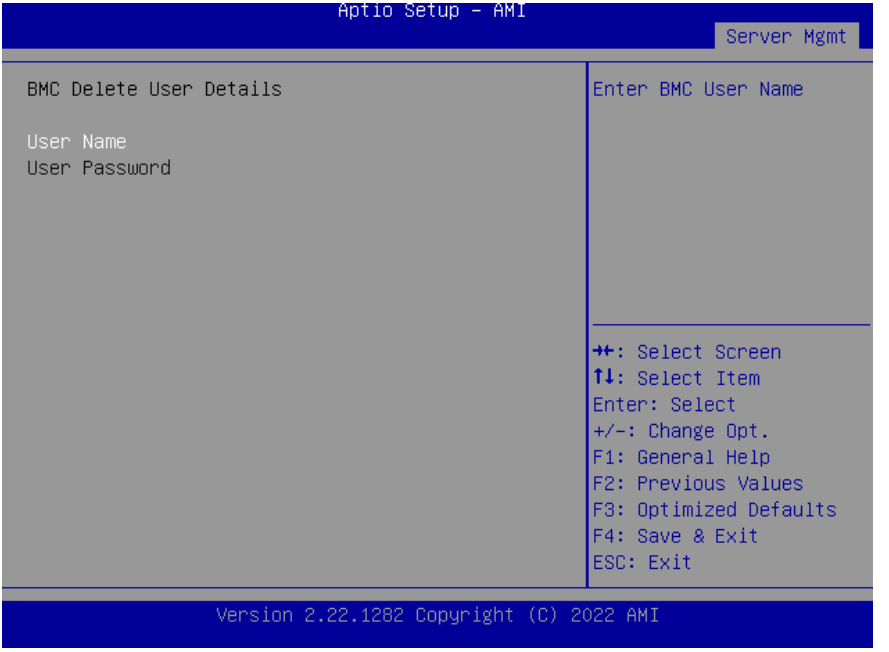
3.6.5 BMC User Settings



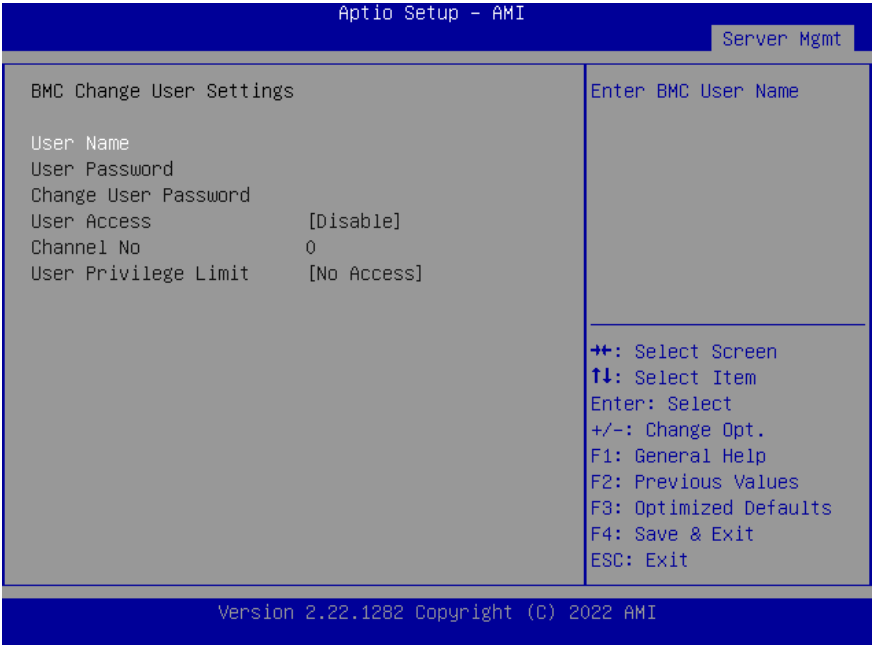
3.6.5.1 Add User



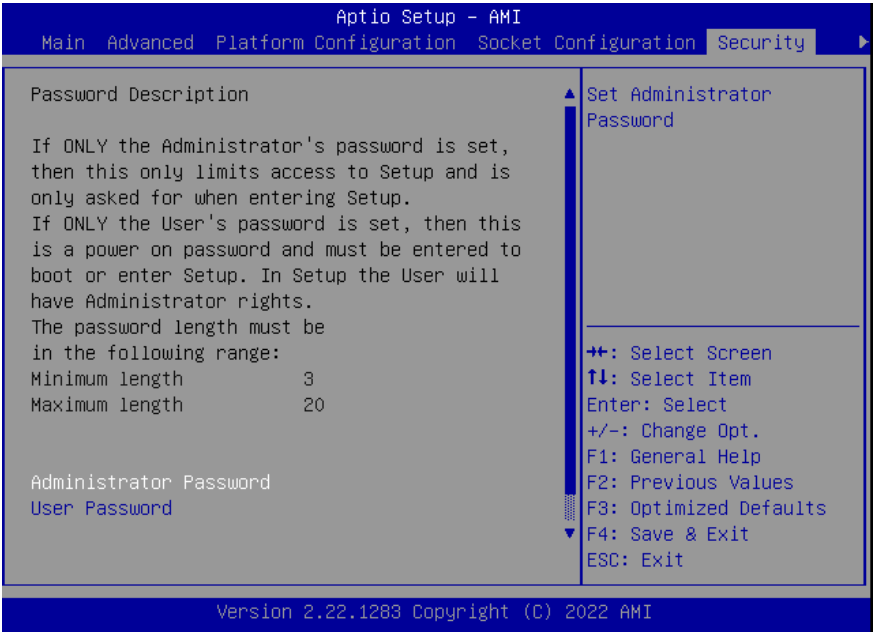
3.6.5.2 Delete User



3.6.6 Change User Settings



3.7 Setup Submenu: Security



Change User/Administrator Password

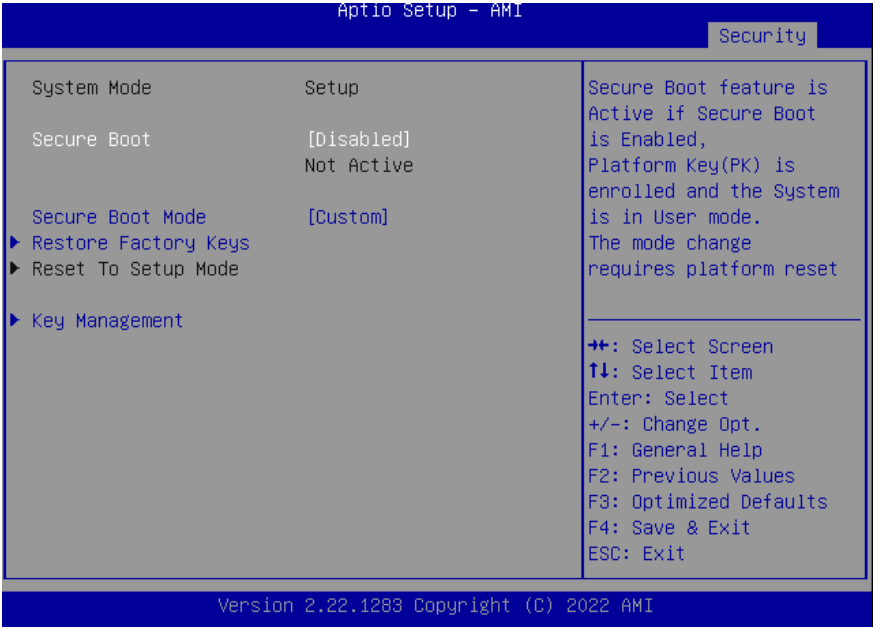
You can install an Administrator password, and if you install an administrator password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

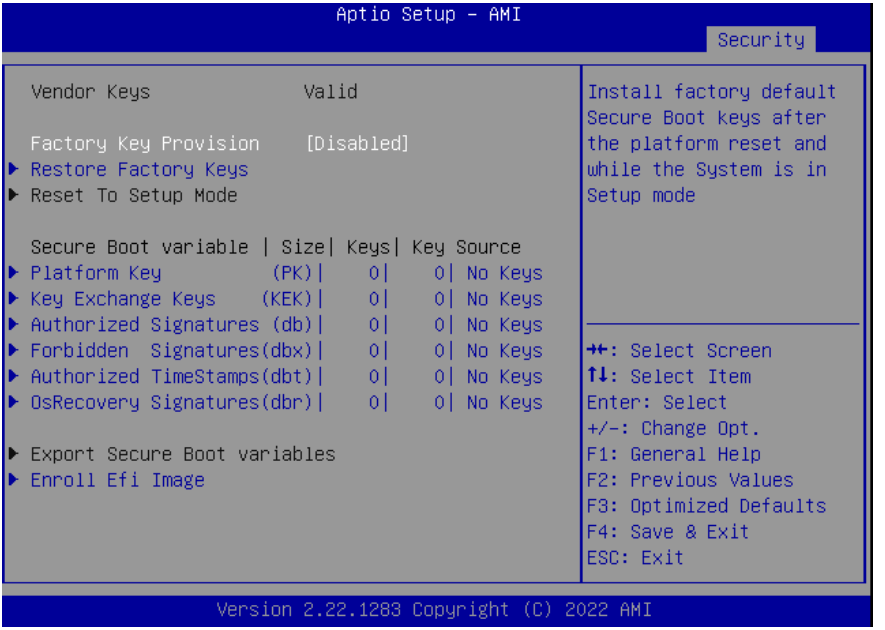
Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

3.7.1 Secure Boot



Options Summary		
Secure Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) 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	

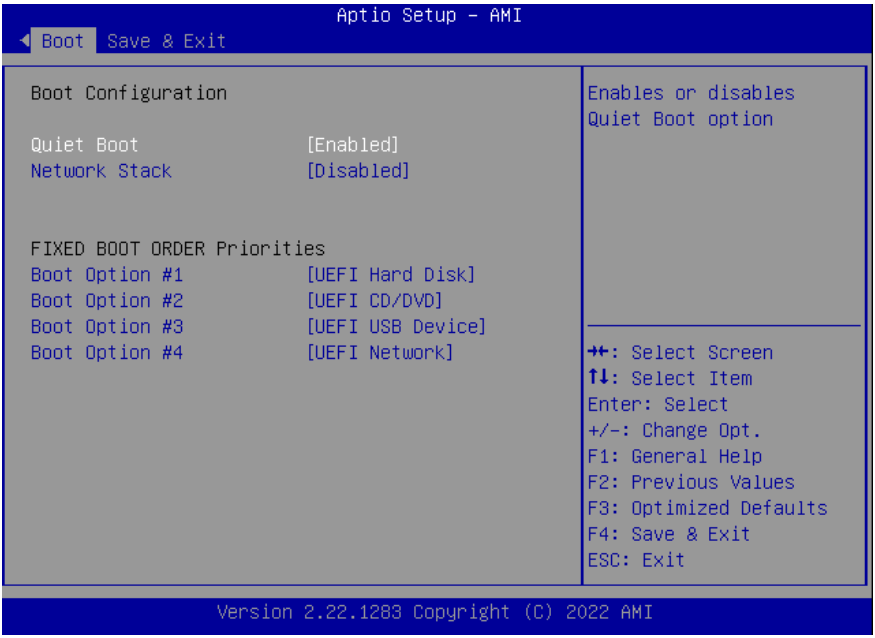
3.7.1.1 Key Management



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.		
Enroll Efi Image		
Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)		

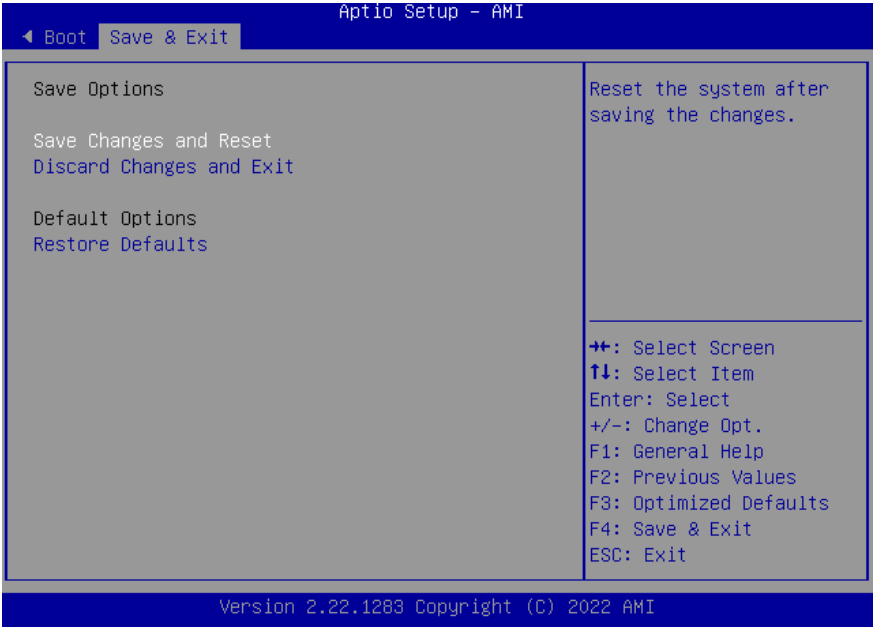
Options Summary
Secure Boot Variables
Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate in: a) EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER encoded) c) EFI_CERT_RSA2048 (bin) d) EFI_CERT_SHAXXX 2. Authenticated UEFI Variable 3. EFI PE/COFF Image (SHA256) Key Source: Default,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

3.8 Setup Submenu: Boot



Options Summary		
Quiet Boot	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Quiet Boot option.		
Network Stack	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enable/Disable UEFI Network Stack.		

3.9 Setup Submenu: Save & Exit



Chapter 4

Driver Installation

4.1 Driver Download/Installation

Because older Linux OS versions do not come equipped with the Intel® Network Adapter Driver for E810 Series Devices under Linux built-in, you may have to manually install the LAN driver for the FWS-7541.

This can be downloaded from the Drivers & Software section of the Intel website by following this link:
https://www.intel.com/content/www/us/en/download/19630/intel-network-adapter-driver-for-e810-series-devices-under-linux.html

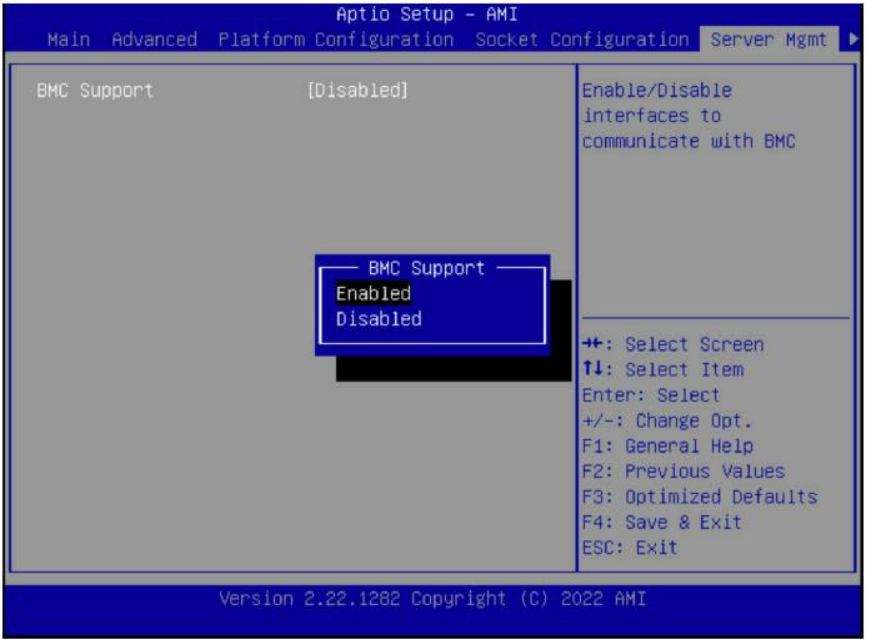
Download the driver(s) you need, extract them to their respective folders and follow the steps provided on the Intel website to install them.

Appendix A

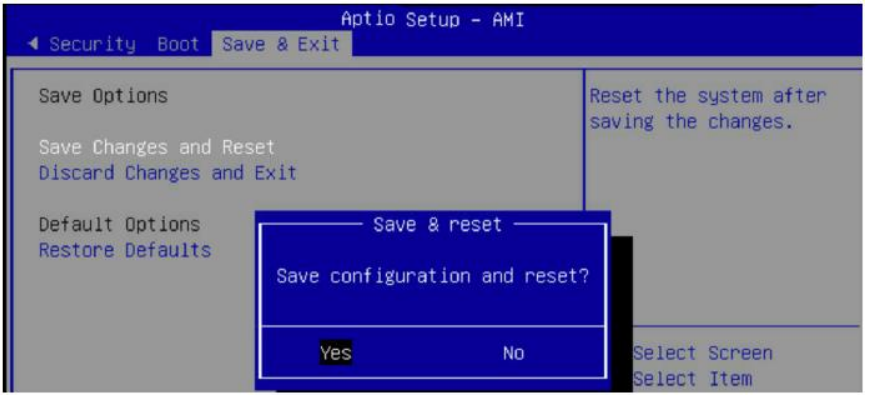
AMI BMC Firmware User Guide (Project Base)

A.1 Login WebUI

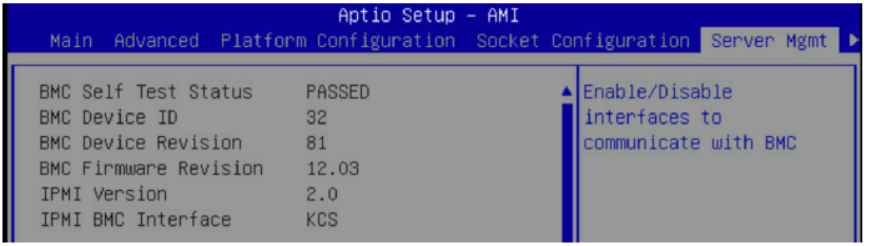
Step 1: To enable BMC support on BIOS, select **Server Mgmt** and change **BMC Support** to **Enabled**.



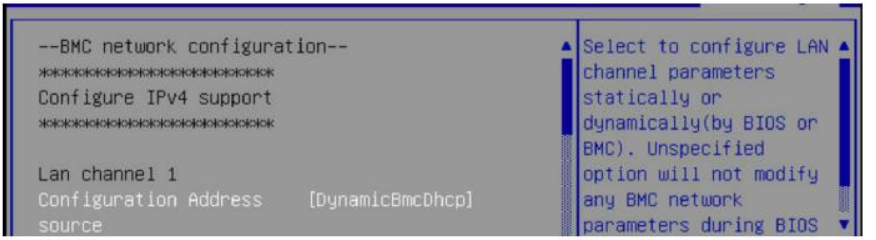
Step 2: Save BIOS Setting and reset system.

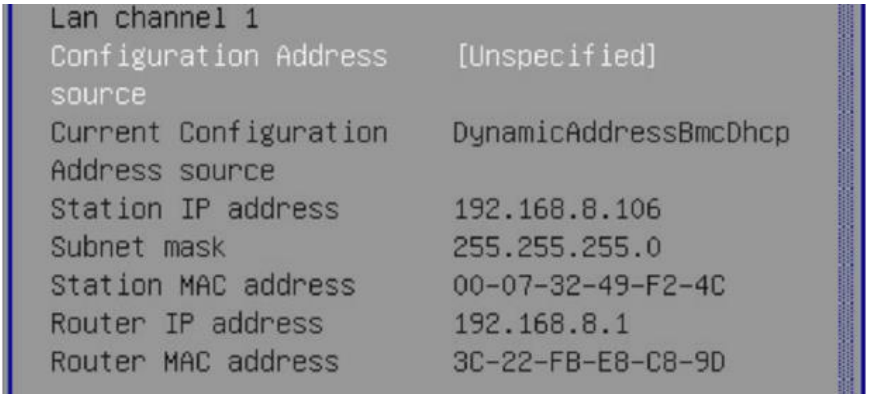


Step 3: Select Server Mgmt and check BMC information.



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.



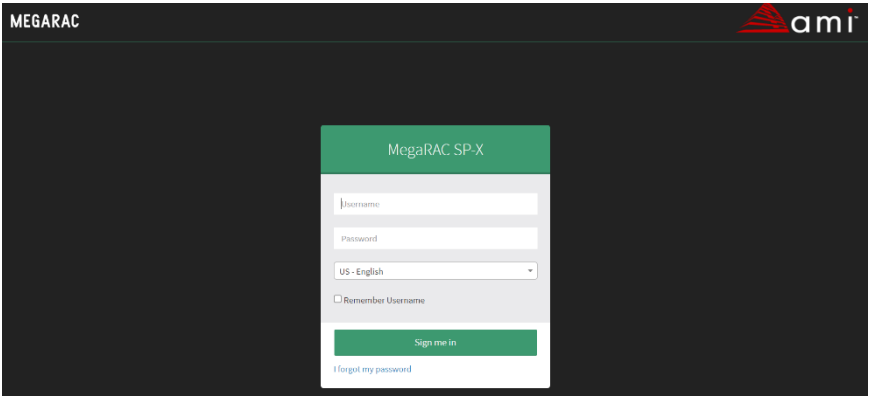


Step 5: Open the browser and type **BMC IP**. In this guide, the BMC IP is 192.168.8.106.

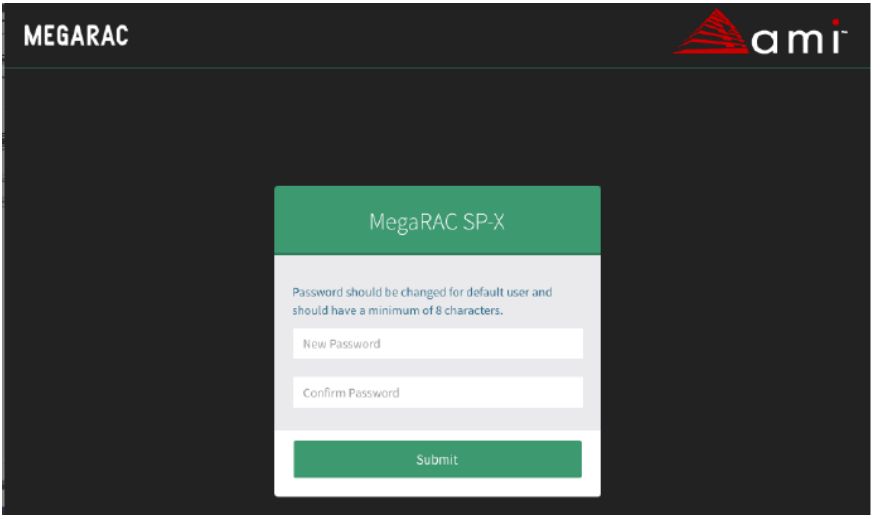
To log in for the first time, enter the following credentials:

Username: **admin**

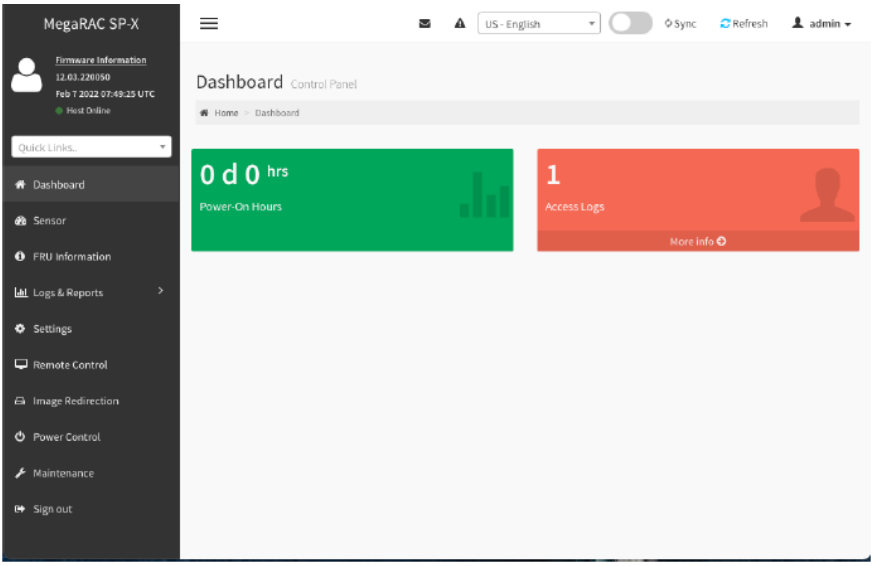
Password: **admin**.



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.

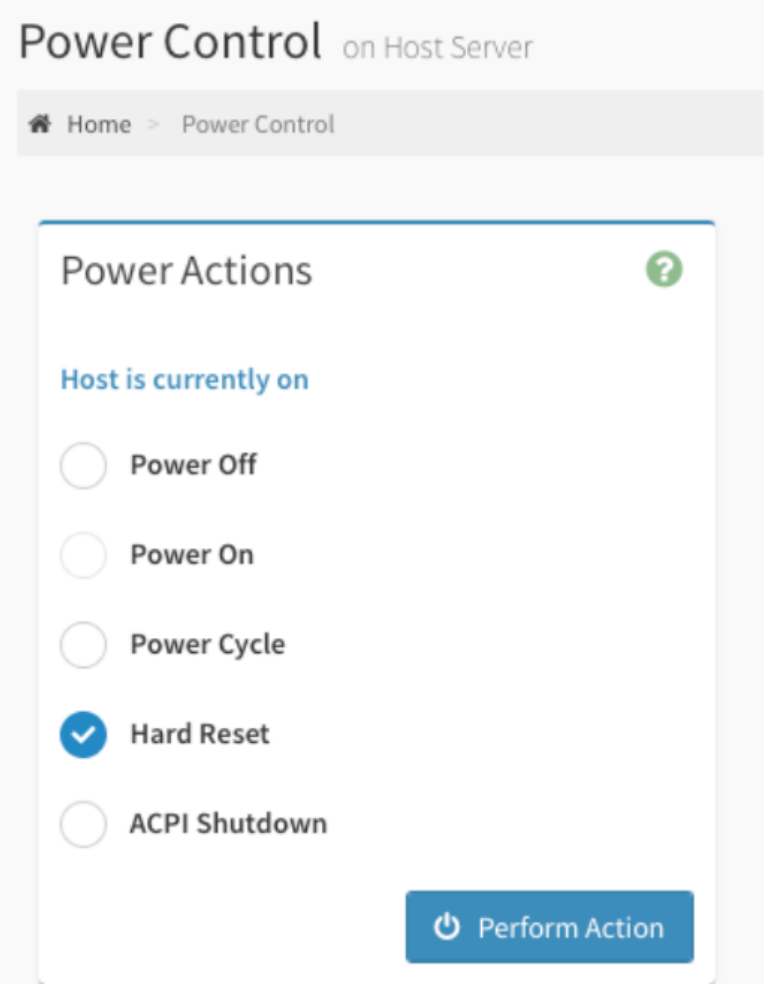


Step 7: When you have successfully logged in, the web dashboard will appear as below.

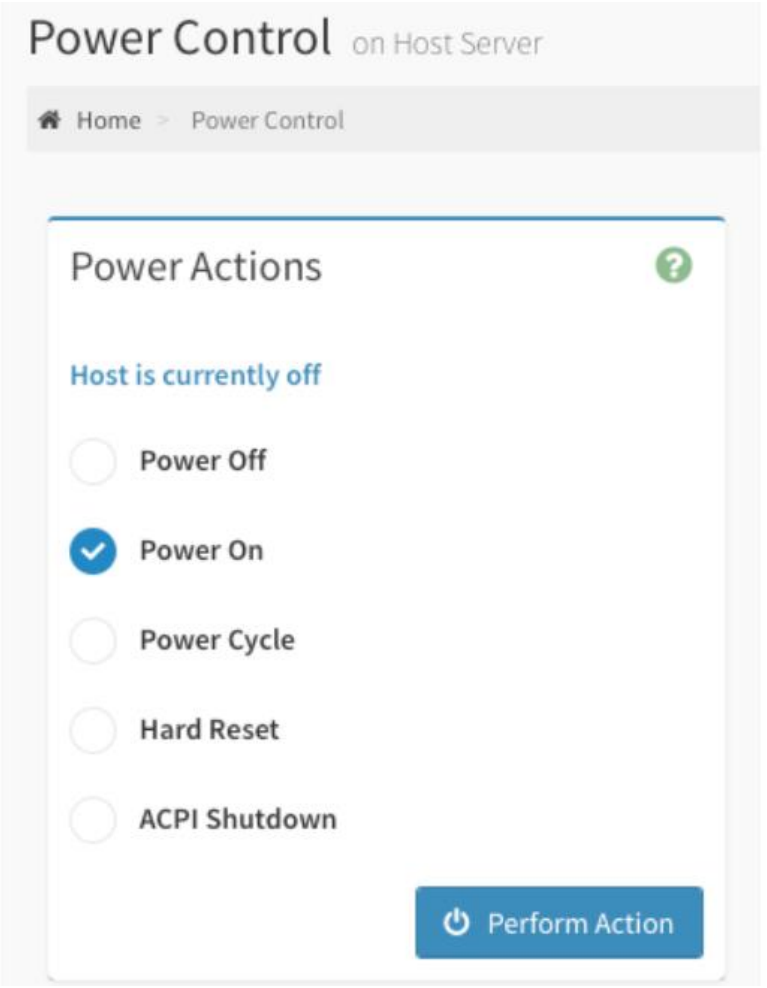


A.2 Power Control

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.

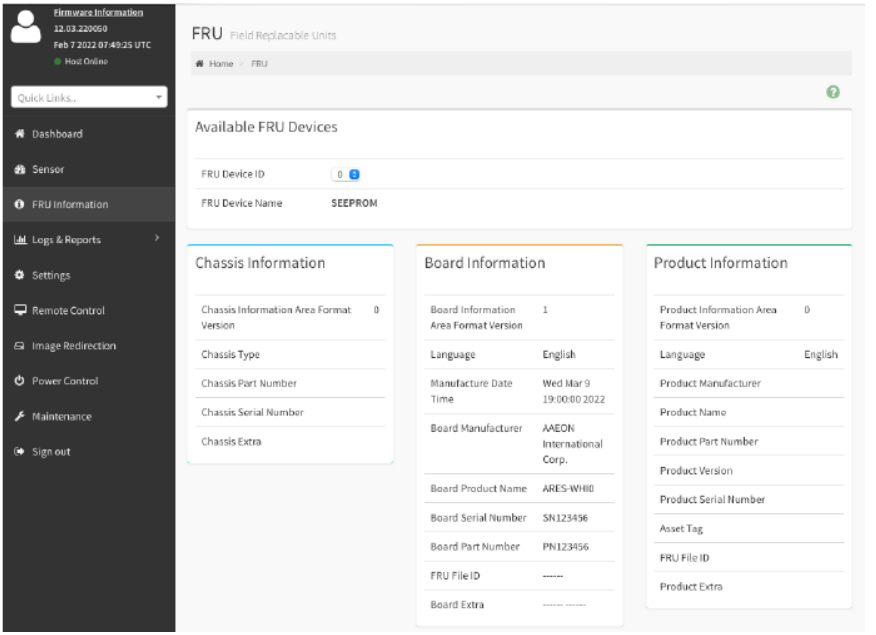


Step 3: When the host status is on, the user can select actions including Power Off, Power Cycle, Hard Reset, and ACPI Shutdown. See below for a description of each power action.

- 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)

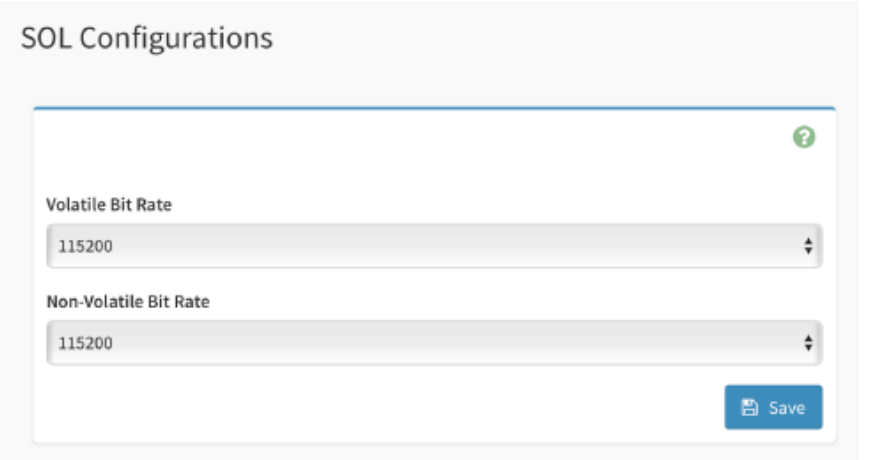
Step 1: The FRU Information page displays the BMC's FRU device information. On left side, select **FRU Information**. This firmware can show 5 FRU. The first provides main board information, the second to fifth can be modified according to the needs of the customer.



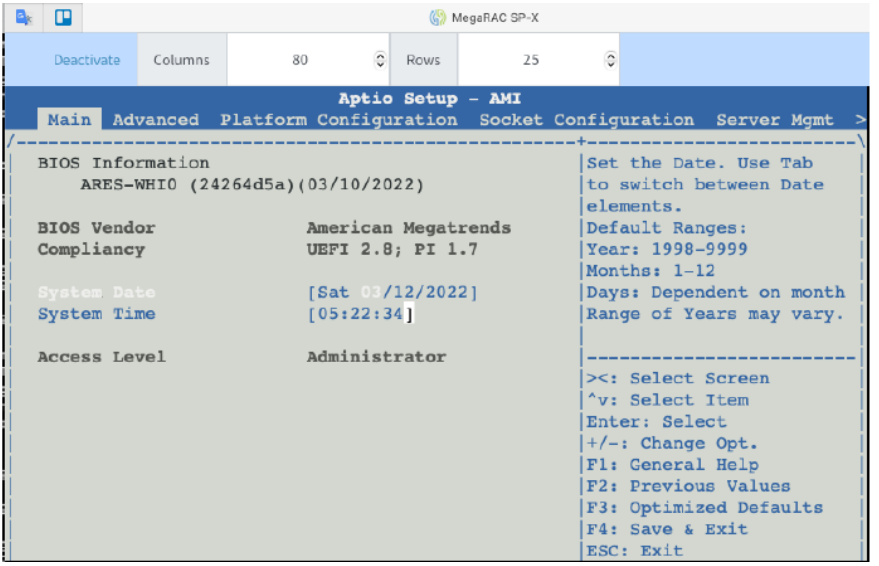
A.4 Remote Control

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

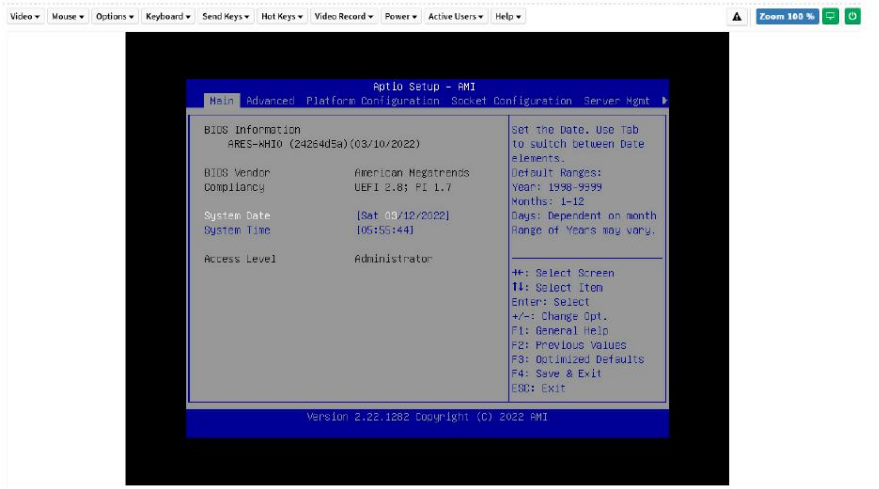
Step 1: On left side, select **Settings** -> **Video Recording** -> **SOL Settings** -> **SOL Configurations**, **Volatile Bit Rate** and **Non-Volatile Bit Rate** are changed to 115200.



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

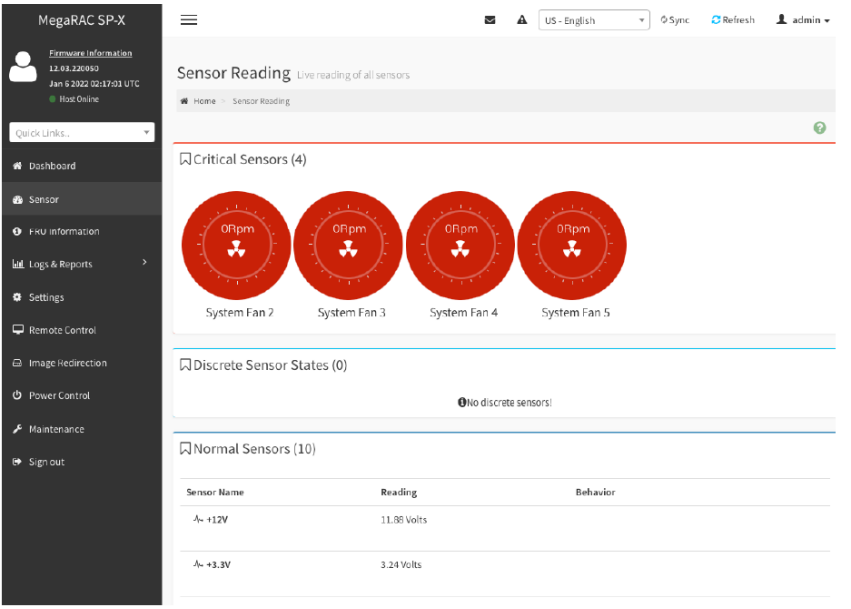


KVM includes H5Viewer and JViewer. One is via HTML5 while the other is via Java.

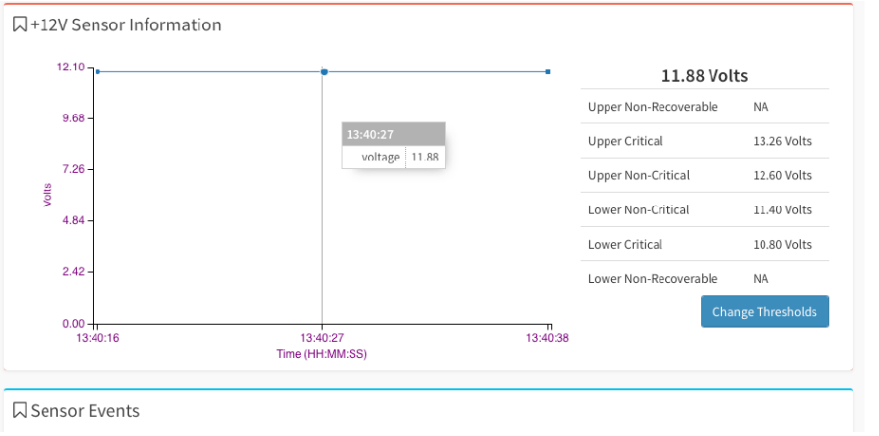


A.5 Sensors Monitor

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

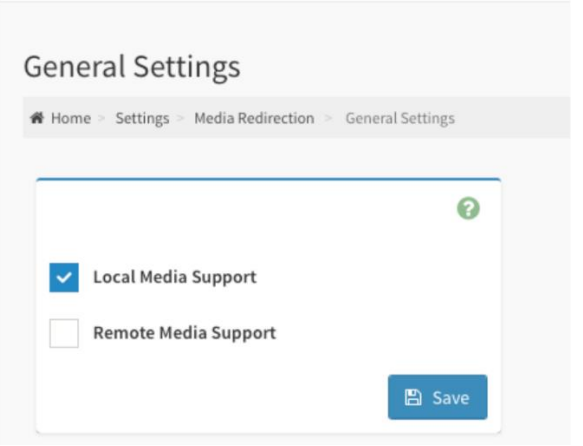


Step 2: Enable **Sync** in the upper left corner, then click **sensors** to see more information.

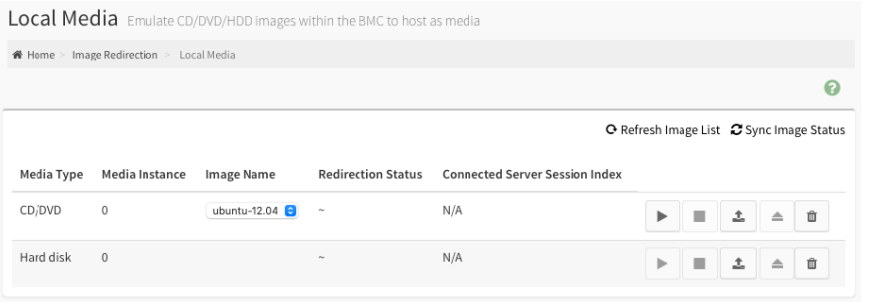


A.6 Virtual Media

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.

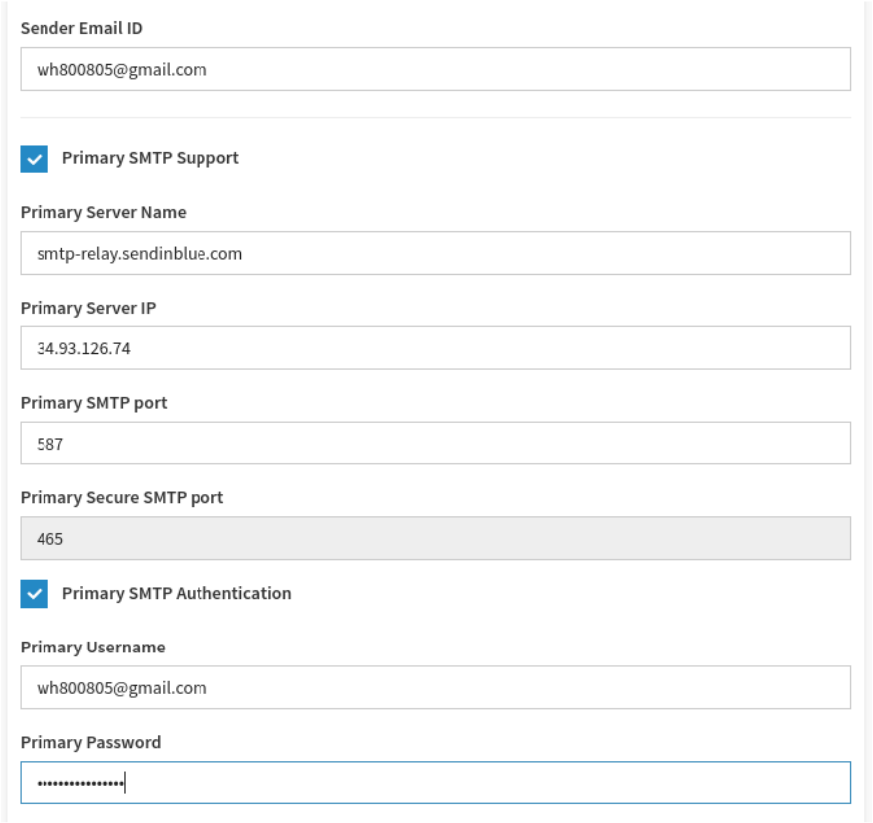
Step 4: Reboot host.

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**.

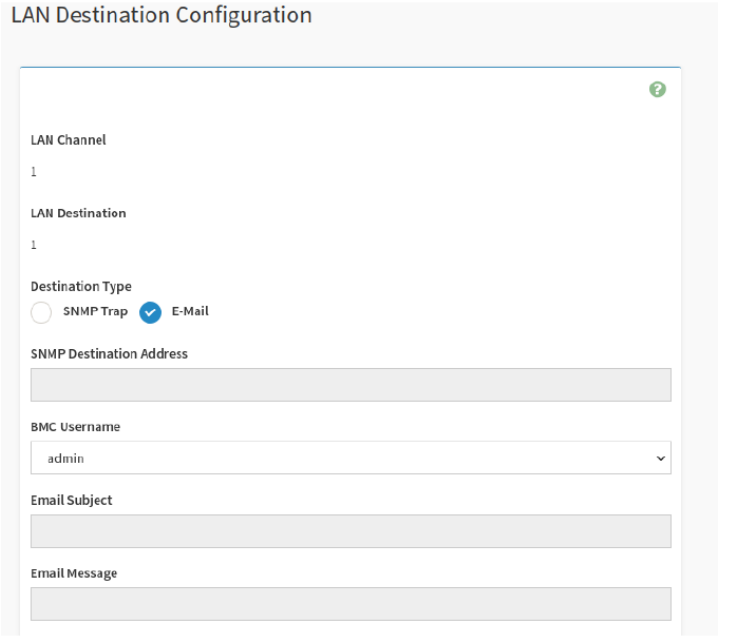
Step 3: Enter **Primary Username** and **Primary Password**.



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.