X14SAE
X14SAE-F

USER'S MANUAL

Revision 1.1 (MNL-2706)

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Manual Revision 1.1

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the X14SAE/X14SAE-F motherboard. Installation and maintenance should be performed by certified service technicians only.

Notes

For your system to work properly, follow the links below to download all necessary drivers/utilities and the user's manual for your motherboard.

- Supermicro product manuals: https://www.supermicro.com/support/manuals
- Product drivers and utilities: https://www.supermicro.com/wdl
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found on our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility
- Frequently Asked Questions: https://www.supermicro.com/FAQ/index.php
- If you still have questions after referring to our FAQs, contact our support team. Region-specific Technical Support email addresses can be found at: "Contacting Supermicro" on page 11
- If you have any feedback on Supermicro product manuals, contact our writing team at: Techwriterteam@supermicro.com

This manual may be periodically updated without notice. Check the Supermicro website for possible updates to the manual revision level.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself.

Warning! Indicates important information given to prevent equipment/property damage or personal injury.

Warning! Indicates high voltage may be encountered while performing a procedure.

Warning! Indicates hazardous moving parts may be encountered while handling a fan or components near a fan.

Important: Important information given to ensure proper motherboard installation or to relay safety precautions.

Note: Additional information given to differentiate various models or to provide information for proper motherboard setup.

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Chapter 1:

Introduction

Congratulations on purchasing your computer motherboard from an industry leader. Supermicro motherboards are designed to provide you with the highest standards in quality and performance.

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1.1 Quick Reference

For details on the X14SAE/X14SAE-F motherboard layout, features, and other quick reference information, refer to the content below.

Checklist

In addition to the X14SAE/X14SAE-F motherboard, several important parts that are included in your shipment are listed below. If anything listed is damaged or missing, contact your retailer.

	Main Parts List	
Description	**Part Number**	**Quantity**
Supermicro Motherboard	X14SAE/X14SAE-F	1
I/O Shield	MCP-260-00192-0B	1
SATA Cables	CBL-0044L	8
Quick Reference Guide	MNL-2706-QRG	1

Motherboard Layout

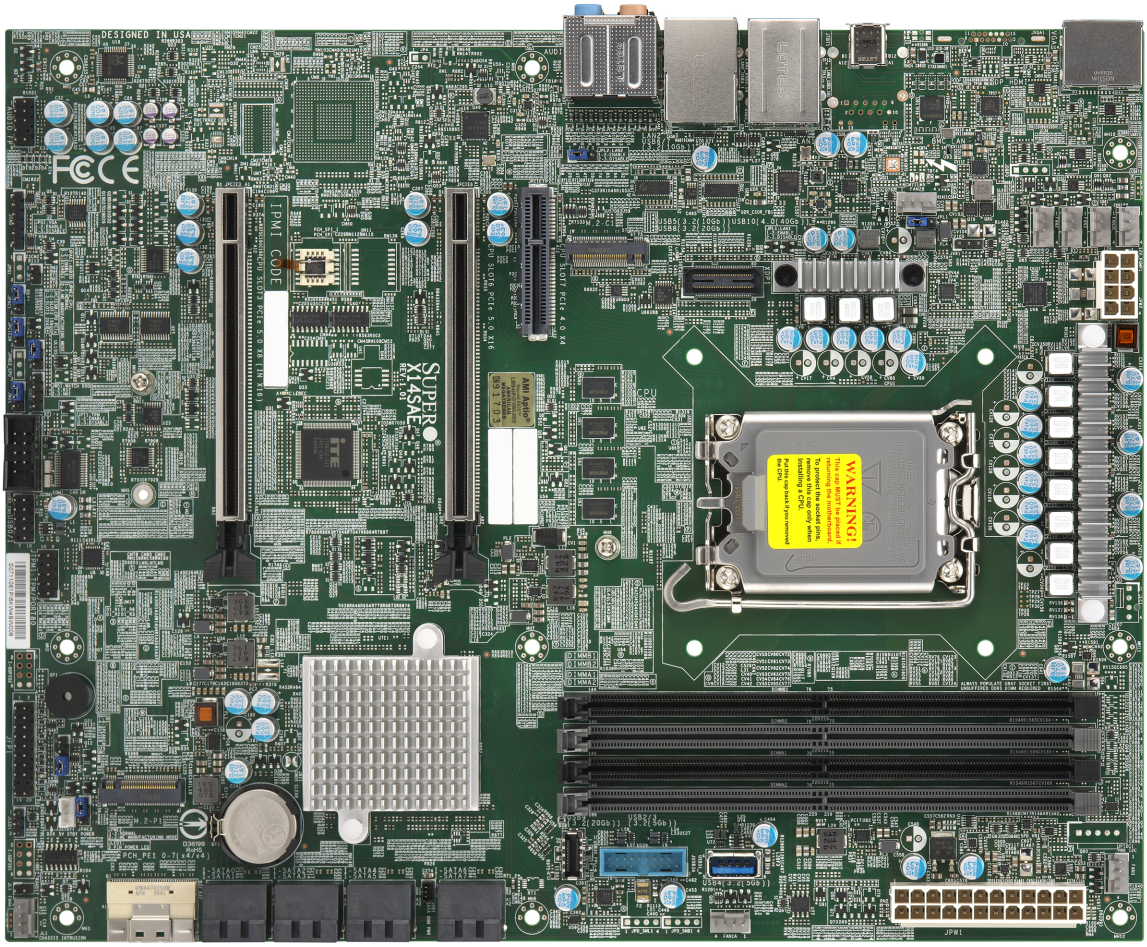

Figure 1-1. X14SAE Motherboard Image

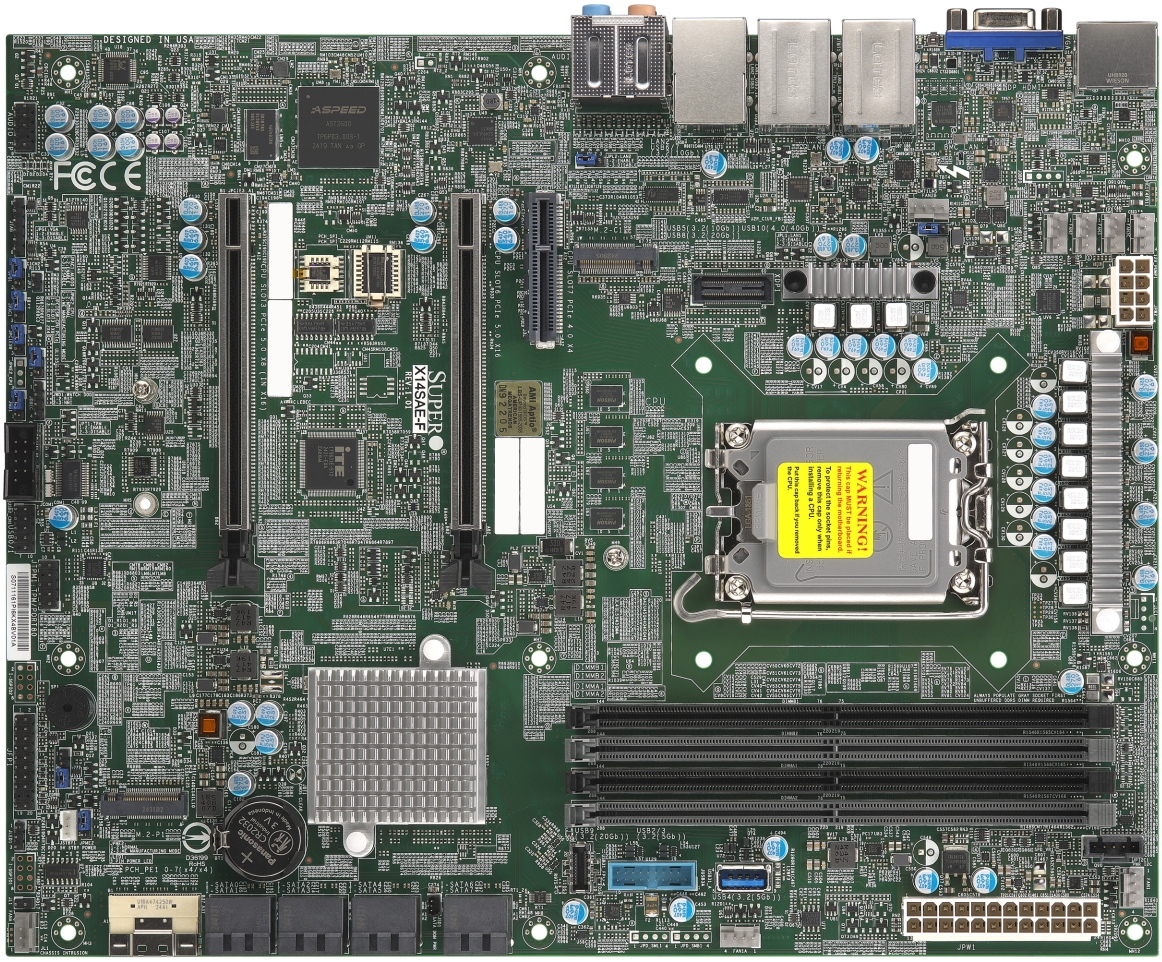

Figure 1-2. X14SAE-F Motherboard Image

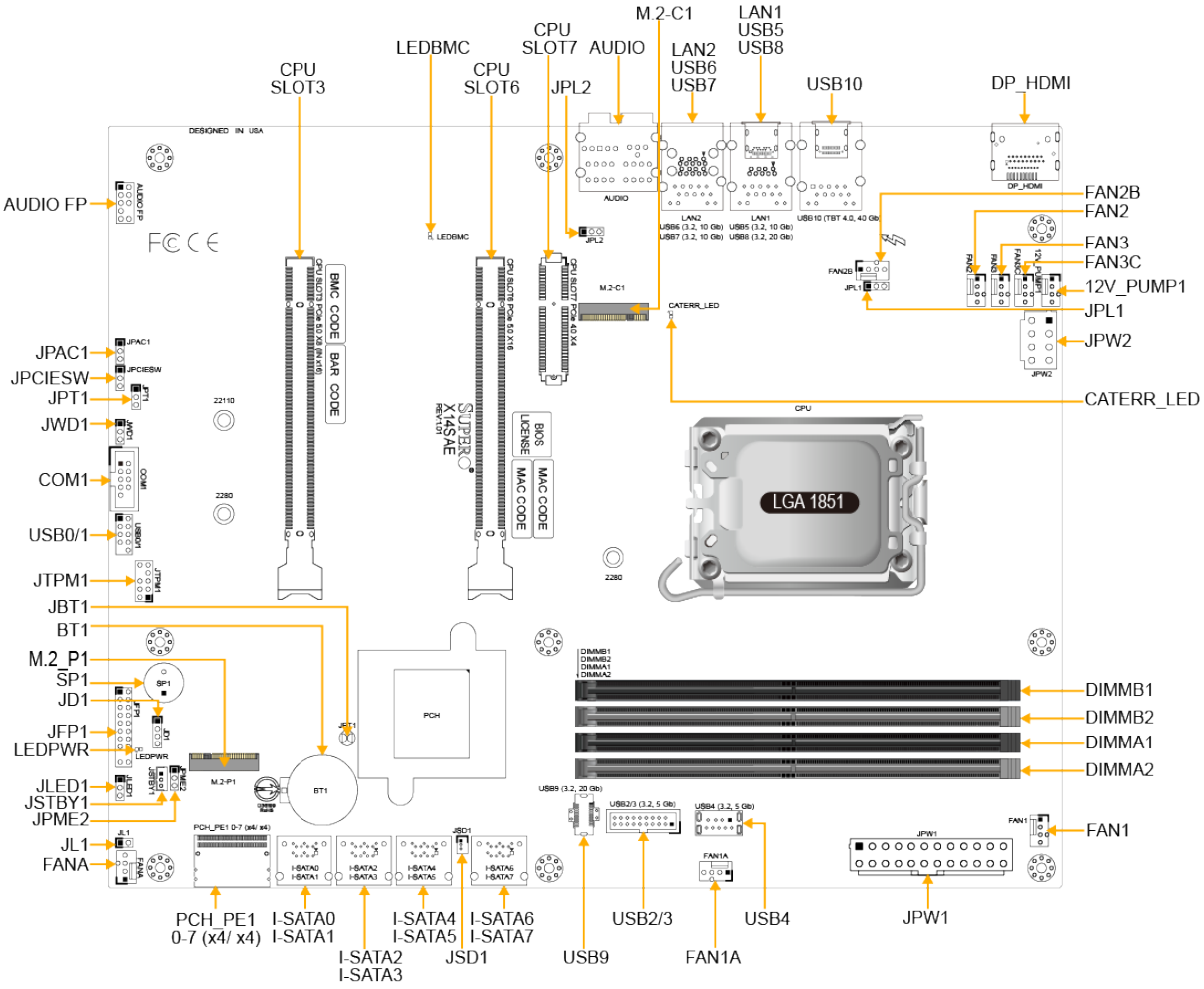

Figure 1-3. X14SAE Motherboard Layout

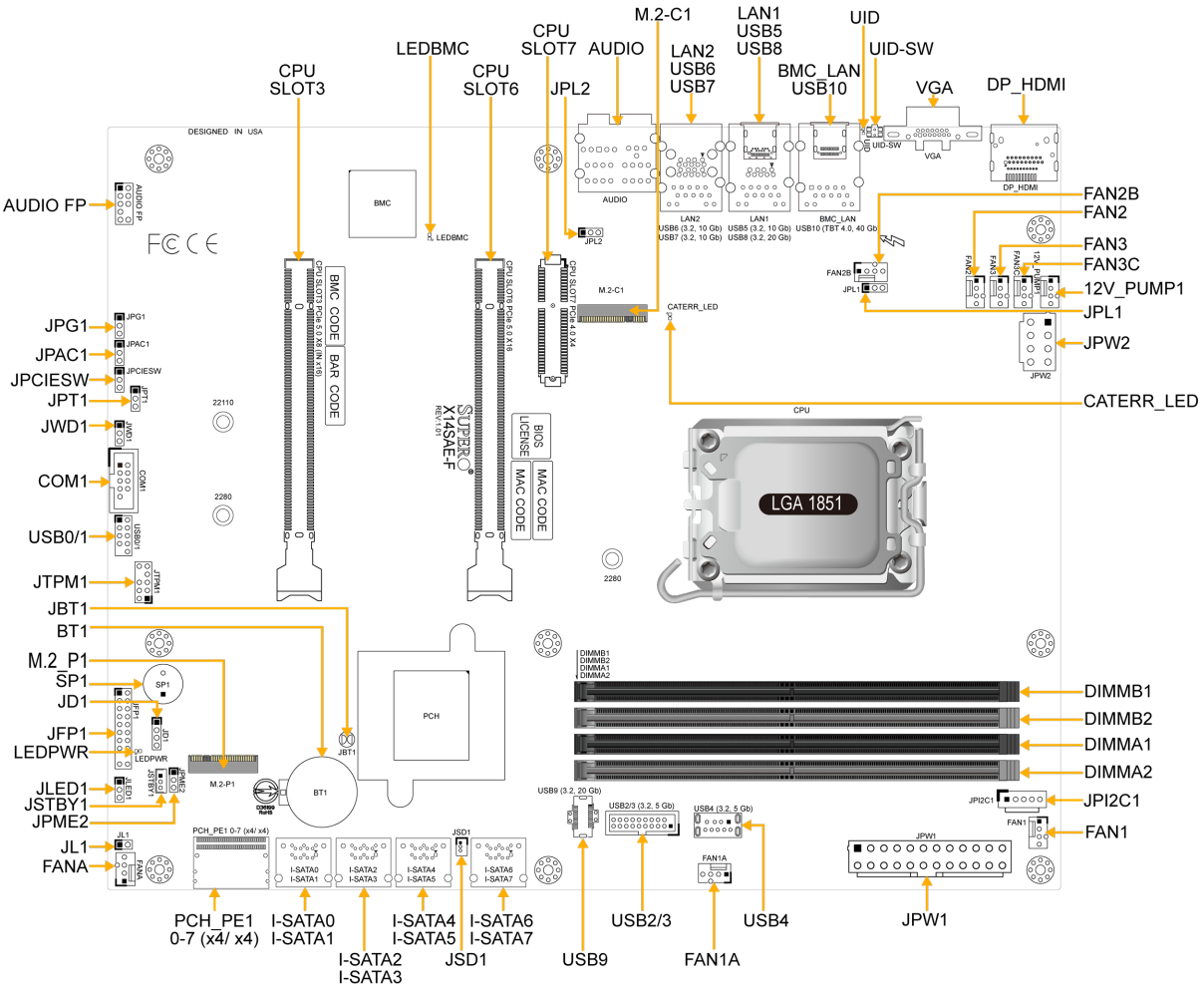

Figure 1-4. X14SAE-F Motherboard Layout

Notes:

- For detailed information on jumpers, connectors, and LED indicators, see "Component Installation" on page 31.
- "■" indicates the location of pin 1.
- "MH" indicates the location of a mounting hole.
- Components not documented are for internal testing purposes only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. To avoid possible explosion, do not install the onboard battery upside down.

Quick Reference Table

Jumper	Description	Default
JBT1	Clear CMOS (Onboard)	Short Pads to Clear CMOS
JD1	External Speaker/Buzzer	Pins 1–4: External Speaker Pins 3–4: Buzzer (Default)
JPAC1	HD Audio Enable/Disable	Pins 1–2 (Enabled)
JPCIESW	CPU PCIe SLOT3 1x8/2x4	Pins 1–2: Slot3 1x8 (Default) Pins 2–3: Slot3 2x4
JPG1	VGA Enable/Disable (X14SAE-F only)	Pins 1–2 (Enabled)
JPL1, JPL2	LAN1/LAN2 Enable/Disable	Pins 1–2 (Enabled)
JPME2	ME Manufacturing Mode	Pins 1–2 (Normal)
JPT1	Onboard TPM 2.0 Enable/Disable	Pins 1–2 (Enabled)
JWD1	Watchdog Function Enable	Pins 1–2 (Reset)

LED	Description	Status
CATERR_ LED	Catastrophic Error LED	Solid Orange: System CATERR
LEDBMC	X14SAE: Standby Power LED X14SAE-F: BMC Heartbeat LED	X14SAE: Solid Green (Standby Power On) X14SAE-F: Blinking Green (BMC Normal)
LEDPWR	Onboard Power LED	Solid Green: Power On
UID	Unit Identifier (UID) LED (X14SAE-F only)	Solid Blue: Unit Identified

Connector	Description
12V_PUMP1	4-pin +12 V Power Connector (for CPU liquid cooling pump)
AUDIO	Rear High Definition Audio Ports

Connector	Description
AUDIO FP	Front Audio Header * The default setting is for a headphone/microphone combo jack. If not using a chassis with the headphone/microphone combo jack, configure Frontside Audio Mode in the BIOS Setup utility.
BMC_LAN	Dedicated BMC LAN Port (X14SAE-F only)
BT1	Onboard Battery
COM1	COM Header
DP_HDMI	DP: Rear DisplayPort 2.1. HDMI: High Definition Multimedia Interface 2.1 (TMDS/FRL compatible, supporting data rates of up to 10 Gbps and resolution of up to 8K at 60 Hz) *TMDS: Transition Minimized Differential Signaling, FRL: Fixed Rate Link
FAN1, FAN1A, FAN2B, FANA	System Fan Headers
FAN2, FAN3, FAN3C	CPU Fan Headers
I-SATA0–I-SATA7	SATA 3.0 Ports (from Intel PCH, 6 Gbps, with support of RAID 0, 1, 5, and 10)
JFP1	Front Control Panel Header
JL1	Chassis Intrusion Header
JLED1	3-pin Power LED Indicator Header
JPI2C1	Power Supply SMBus I^2C Header (X14SAE-F only)
JPW1	24-pin ATX Main Power Connector (Required)
JPW2	8-pin +12 V CPU Power Connector (Required)
JSD1	SATA Disk-On-Module (DOM) Power Connector
JSTBY1	Standby Power Header (5 V)
JTPM1	Trusted Platform Module (TPM)/Port 80 Header (TPM 2.0 only)
LAN1, LAN2	LAN1: RJ45 1 GbE LAN Port LAN2: RJ45 2.5 GbE LAN Port
M.2-C1	PCIe 5.0 x4 M.2 M-key Slot (from CPU, with support of 2280 form factor) * M.2-C1 and M.2-P1 can be mixed to support RAID 0 and 1.

Connector	Description
M.2-P1	PCIe 4.0 x4 M.2 M-key Slot (from PCH, with support of 2280 and 22110 form factors) * M.2-P1 and M.2-C1 can be mixed to support RAID 0 and 1.
PCH_PE1 0-7 (x4/ x4)	PCIe 4.0 x8 SlimSAS 8i Side-facing Connector supporting two U.2 connections (from PCH)
SLOT3	PCIe 5.0 x8 (IN x16) Slot (from CPU, with support of 1x8 or 2x4 bifurcation) * SLOT3 will be enabled only when SLOT6 is populated. * SLOT3 supports single-width and double-width graphics cards.
SLOT6	PCIe 5.0 x16 Slot (from CPU, with support of 1x8 or 1x16 bifurcation) * SLOT6 will function at PCIe 1x8 when SLOT3 is populated or when SLOT3 is configured to 2x4 bifurcation mode. * SLOT6 supports storage and graphics card only.
SLOT7	PCIe 4.0 x4 Slot (from CPU)
SP1	Internal Speaker/Buzzer
UID-SW	Unit Identifier (UID) Switch (X14SAE-F only)
USB0/1	Front Accessible USB 2.0 Header
USB2/3	Front Accessible USB 3.2 Gen 1x1 Header (5 Gb)
USB4	Front Accessible USB 3.2 Gen 1x1 Header (5 Gb, Vertical)
USB5–USB7	Rear USB 3.2 Gen 2x1 Ports (10 Gb, Type-A)
USB8	Rear USB 3.2 Gen 2x2 Port (20 Gb, Type-C)
USB9	Front Accessible USB 3.2 Gen 2x2 Header (20 Gb, Type-C)
USB10	Rear Thunderbolt™ 4 (TBT 4) Port (40 Gb, Type-C)
VGA	VGA Port supported by BMC (X14SAE-F only)

Motherboard Features

Motherboard Features
Processor
• Supports a single Intel® Core™ Ultra 200S (Ultra 9/7/5) Series processor or Core Ultra 200S Plus (Ultra 7/5) Series processor (in LGA 1851/Socket V1) and a thermal design power (TDP) of up to 125 W **Note:** The processor TDP is subject to chassis and heatsink cooling restrictions. For proper thermal management, check the chassis and heatsink specifications for proper TDP sizing.
Memory
• Supports up to 256 GB of Unbuffered (UDIMM) and Clocked Unbuffered (CUDIMM) ECC/non-ECC DDR5 memory with speeds of up to 5600 MT/s (1DPC), 4800 MT/s (2DPC, 1R DIMM), and 4400 MT/s (2DPC, 2R DIMM) in four 288-pin memory slots **Note:** Memory capacity and frequency are processor-dependent.
DIMM Size
• 8 GB, 16 GB, 24 GB, 32 GB, 48 GB, and 64 GB
Chipset
• Intel PCH W880
Expansion Slots
• One PCIe 5.0 x8 (IN x16) Slot (SLOT3, from CPU, with support of 1x8 or 2x4 bifurcation) • One PCIe 5.0 x16 Slot (SLOT6, from CPU, with support of 1x8 or 1x16 bifurcation) • One PCIe 4.0 x4 Slot (SLOT7, from CPU) • One PCIe 5.0 x4 M.2 M-Key Slot (from CPU, with support of 2280 form factor) • One PCIe 4.0 x4 M.2 M-Key Slot (from PCH, with support of 2280 and 22110 form factors) **Notes:** • SLOT3 will be enabled only when SLOT6 is populated. • SLOT3 supports single-width and double-width graphics cards. • SLOT6 supports storage and graphics cards only. • SLOT6 will function at PCIe 1x8 when SLOT3 is populated or when SLOT3 is configured to 2x4 bifurcation mode.

Motherboard Features
Network Controller
• Intel Ethernet i219-LM (1 GbE LAN)(for AMT/vPro) • Intel Ethernet i226-LM (2.5 GbE LAN port) • Realtek RTL8211F (dedicated BMC LAN port, X14SAE-F only)
I/O Devices
• One front accessible COM port header (COM1) • Eight SATA 3.0 ports at 6 Gb/s (I-SATA0–I-SATA7 with support of RAID 0, 1, 5, and 10) • One SlimSAS 8i connector supporting two U.2 connections • One DisplayPort 2.1 connection on the rear I/O • One HDMI 2.1 connection on the rear I/O • One VGA connection on the rear I/O (X14SAE-F only)
Peripheral Devices
• One Thunderbolt 4 port on the rear I/O (40 Gb, Type-C, USB10) • Three USB 3.2 Gen 2x1 ports on the rear I/O (10 Gb, Type-A, USB5–USB7) • One USB 3.2 Gen 2x2 ports on the rear I/O (20 Gb, Type-C, USB8) • One front accessible USB 2.0 header supporting two USB connections (USB0/1) • Two front accessible USB 3.2 Gen 1x1 headers (5 Gb, USB2/3 and USB4) • One front Accessible USB 3.2 Gen 2x2 header (20 Gb, Type-C, USB9)
BIOS
• 256 Mb AMI BIOS® SPI Flash BIOS • ACPI 6.5 or later, Plug and Play (PnP) SPI dual/quad speed support, riser card auto detection support, SMBIOS 3.8 or later
Power Management
• ACPI power management • Power button override mechanism • Power-on mode for AC power recovery • Wake-on-LAN • Power supply monitoring

Motherboard Features
System Health Monitoring
• Onboard voltage monitoring for +12 V, +5 V, +3.3 V, CPU, Memory, VBAT, +5 V stdby, +3.3 V stdby, +1.8 V PCH, +1.05 V PCH, CPU temperature, VRM temperature, PCH temperature, system temperature, and memory temperature • Five CPU switch phase voltage regulators • CPU thermal trip support • Platform Environment Control Interface (PECI)/TSI
Fan Control
• Triple cooling zones • Multi-speed fan control via Embedded Controller (X14SAE) or BMC (X14SAE-F) • Seven 4-pin fan headers
System Management
• SuperServer Automation Assistant (SAA)(X14SAE-F only) • Trusted Platform Module (TPM) support • SuperDoctor® 5 (X14SAE only) • Chassis intrusion header and detection **Note:** Connect a cable from the Chassis Intrusion header at JL1 to the chassis to receive an alert.
LED Indicators
• Standby Power LED (X14SAE)/BMC Heartbeat LED (X14SAE-F) • Catastrophic Error LED (CATERR_LED) • Onboard Power LED (LEDPWR) • LAN activity/status LEDs (on LAN1/2 port) • UID LED (X14SAE-F only)
Dimensions
ATX, 12" x 9.6" (304.8 mm × 243.8 mm) (L x W)

Motherboard Block Diagram

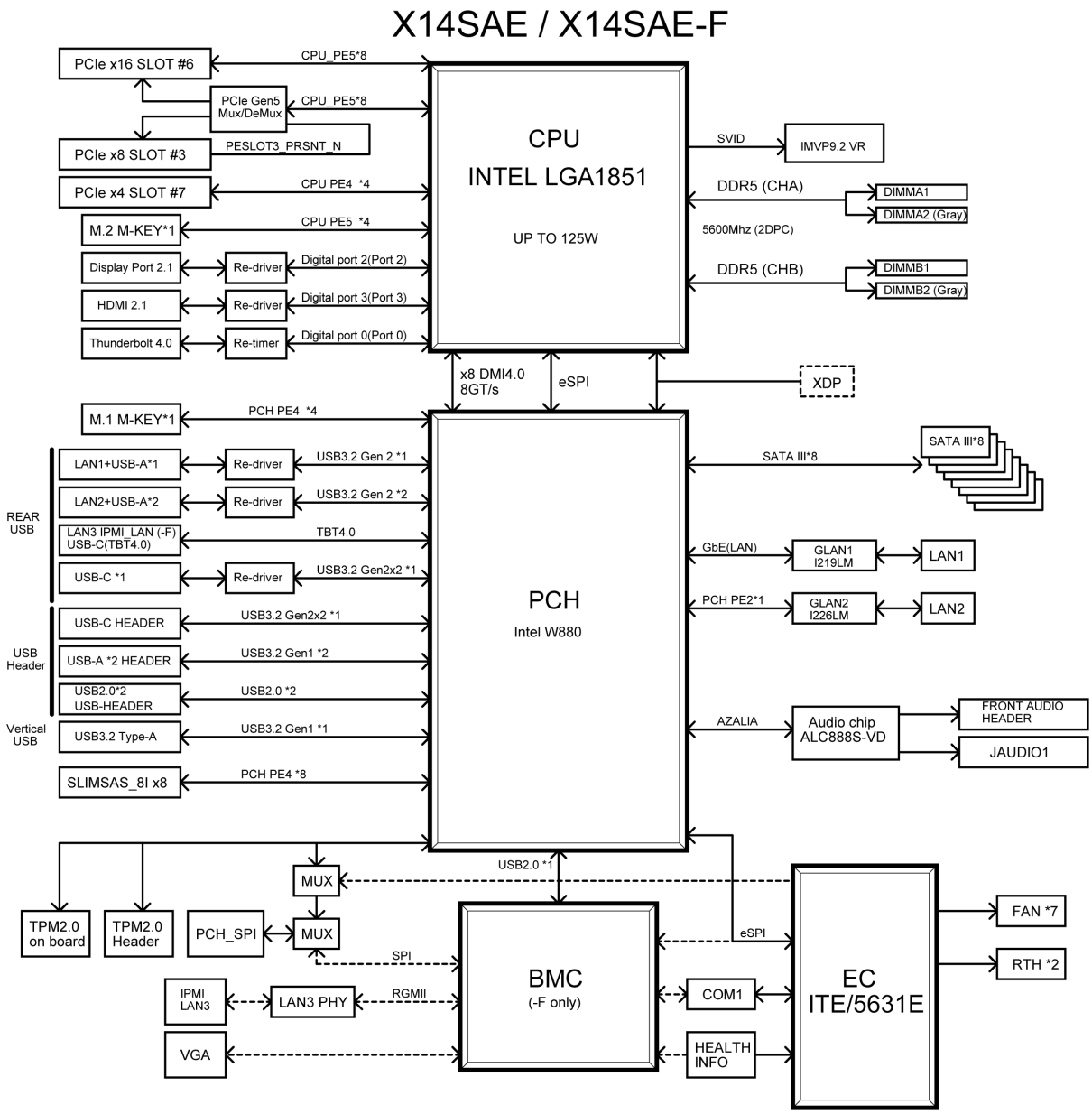

Figure 1-5. Motherboard Block Diagram

1.2 Platform Overview

Built upon the functionality and capability of the Intel Core Ultra 200S (Ultra 9/7/5) Series processor or Core Ultra 200S Plus (Ultra 7/5) Series processor (in LGA 1851/Socket V1) and the Intel 800 Series chipset, the X14SAE/X14SAE- F motherboard provides system performance, power efficiency, and feature sets to address the needs of next- generation computer users.

With the support of the new Intel Microarchitecture 20A Enhanced SuperFin Process Technology, the X14SAE/X14SAE-F motherboard dramatically increases system performance for a multitude of server applications and supports the following features:

- DDR5 288-pin memory support
- Direct Media Interface
- Intel Matrix Storage Technology and Intel Rapid Storage Technology
- Intel I/O Virtualization (VT-d) Support
- Intel Trusted Execution Technology Support
- PCIe 5.0 Interface (up to 32 GT/s)
- SATA Controller (up to 6 Gb/sec)
- Advanced Host Controller Interface (AHCI)

1.3 Special Features

Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. See Advanced Setup Configurations under "UEFI BIOS" on page 87 for this setting. The default setting is **Last State**.

1.4 System Health Monitoring

Onboard Voltage Monitors

An onboard voltage monitor will continuously scan the voltages of the onboard chipset, memory, processor, and battery. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. You can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

PC health monitoring in the BIOS can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via Embedded Controller (EC) for X14SAE or BMC for X14SAE-F.

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once the thermal sensor detects that the CPU temperature is too high, it will automatically turn on the thermal fans to prevent the CPU from overheating. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

Note: To avoid possible system overheating, be sure to provide adequate airflow to your system.

System Resource Alert (X14SAE only)

This feature is available when used with SuperDoctor 5 in the Windows OS or in the Linux environment. SuperDoctor 5 is used to notify the user of certain system events. For example, you can configure SuperDoctor 5 to provide you with warnings when the system temperature, processor temperatures, voltages, and fan speeds go beyond a predefined range.

1.5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a computer system, including its hardware, operating system, and application software. This enables the system to automatically turn on and off peripherals such as network cards, hard disk drives, and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with operating systems such as Microsoft Windows, Red Hat Linux, and Ubuntu Linux. For detailed information about our certified operating systems, refer to OS Compatibility.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start to blink to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will "wake up," and the LED will automatically stop blinking and remain on.

1.6 Serial Header

The X14SAE/X14SAE-F motherboard supports one serial communication connection. The COM header can be used for input/output. The UART supports speeds with a baud rate of 115.2 Kbps, 57.6 Kbps, 38.4 Kbps, 19.2 Kbps, and 9.6 Kbps.

1.7 Embedded Controller

The Embedded Controller supports one high-speed, 16550 compatible serial communication port (UART). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. The UART supports speeds with a baud rate of 115.2 Kbps, 57.6 Kbps, 38.4 Kbps, 19.2 Kbps, and 9.6 Kbps.

The Embedded Controller provides functions that comply with Advanced Configuration and Power Interface (ACPI), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2:

Component Installation

This chapter provides instructions on installing and replacing main system components for the X14SAE/X14SAE-F motherboard. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Installation or replacement of most components require that power first be removed from the system. Follow the procedures given in each section.

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2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your motherboard, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the motherboard only by its edges. Do not touch its components, peripheral chips, memory modules, or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure that your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners, and the motherboard.
- Use only the correct type of onboard CMOS battery. To avoid possible explosion, do not install the onboard battery upside down.

Unpacking

To avoid static damage, the motherboard is shipped in antistatic packaging. When unpacking the motherboard, make sure that the person handling it is static protected.

2.2 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.

Tools Needed

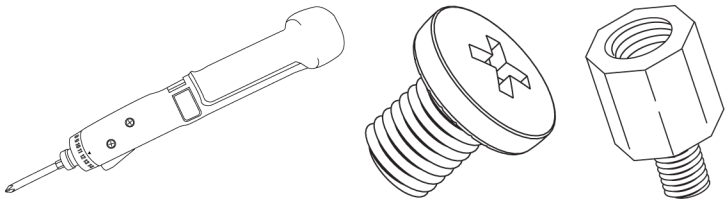

Figure 2-1. Torque Driver (1), Phillips Screws (9), Standoffs (9, only if needed)

Notes:

- To avoid damaging the motherboard and its components, do not use a force greater than 8 lbf-in on each mounting screw during motherboard installation.
- Some components are very close to the mounting holes. Take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

Installing the Motherboard

1. Install the I/O shield into the back of the chassis, if applicable.

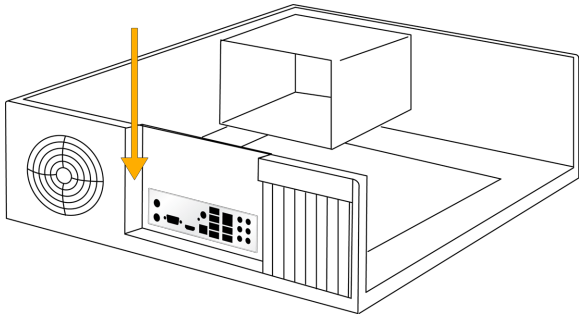

Figure 2-2. Installing the I/O Shield

Note: Images displayed are for illustration purposes only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

2. Locate the mounting holes on the motherboard. See Motherboard Installation for the location.

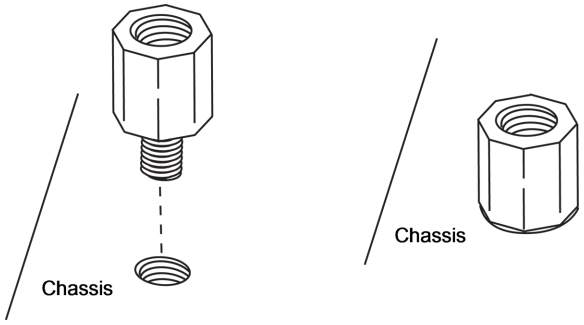

Figure 2-3. Locating the Mounting Holes

3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.

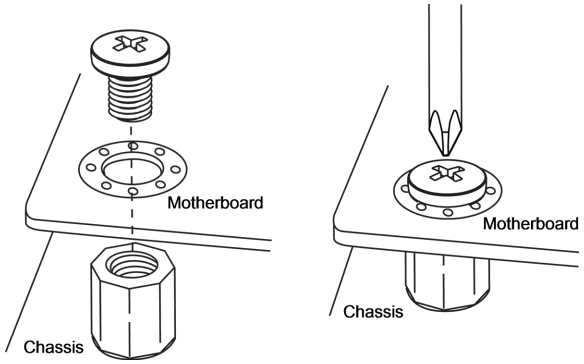

Figure 2-4. Aligning the Mounting Holes

4. Install standoffs in the chassis as needed.
5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.
6. Insert pan head #6 screws into the mounting holes on the motherboard and the matching mounting holes on the chassis.
7. Make sure that the motherboard is securely placed in the chassis.

2.3 Processor and Heatsink Installation

This section provides procedures to install the processor(s) and heatsink(s).

Notes:

- Take industry standard precautions to avoid ESD damage. For details, see "Static-Sensitive Devices" on page 33.
- Before starting, make sure that the plastic socket cap is in place and none of the socket pins are bent. If any damage is noted, contact your retailer.
- Do not connect the system power cord before the processor and heatsink installation is complete.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or processor socket.
- Install the processor in the socket and the motherboard into the chassis before installing the heatsink.
- When buying a processor separately, use only a Supermicro certified heatsink.
- Refer to the Supermicro website for the most recent processor support.
- When installing the heatsink, ensure a torque driver set to the correct force is used for each screw.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.

Installing an LGA 1851 Processor

Important: You can only install the processor in one direction. Make sure it is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your processor. Instead, open the load plate again and double-check that the processor is properly aligned.

1. Remove the plastic protective cover from the load plate.

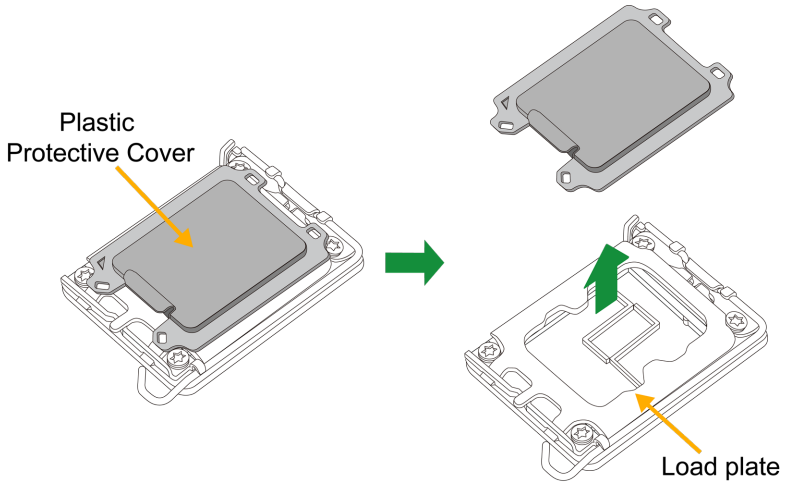

Figure 2-5. Removing the Protective Cover

2. Gently push the load lever down and away from the lever lock, then lift it up completely.

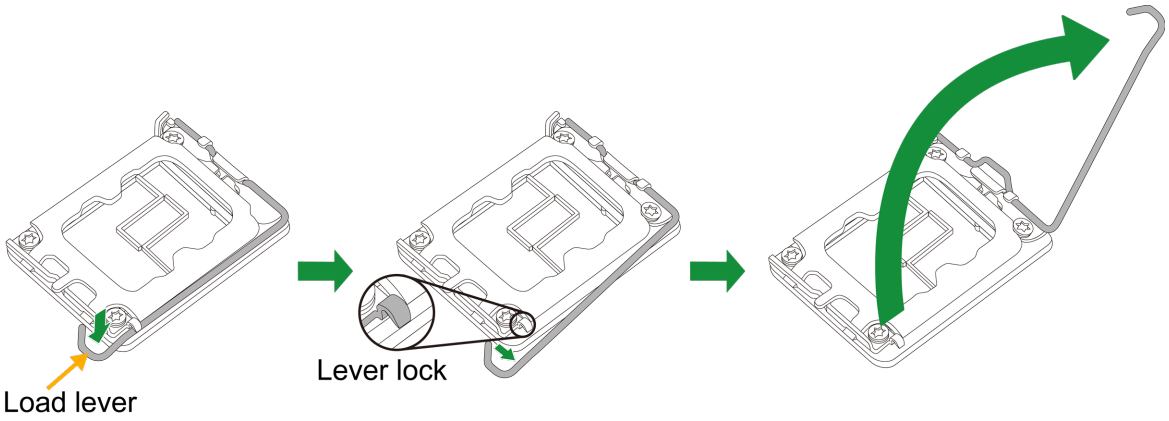

Figure 2-6. Releasing and Lifting the Lever

3. Lift the load plate to open it completely.

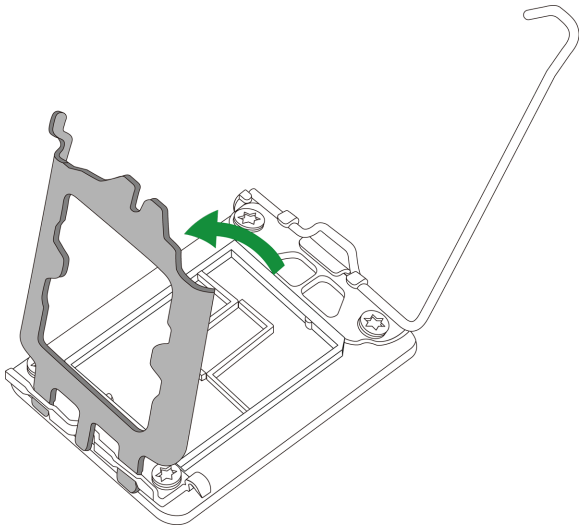

Figure 2-7. Opening the Load Plate

4. Carefully hold the processor by its edges. Align the small triangle marker and notches on the processor with the corresponding triangle marker and notches on the processor load bracket. Once aligned, carefully lower the processor straight down into the socket. (Do not drop the processor on the socket, or move it horizontally or vertically.)

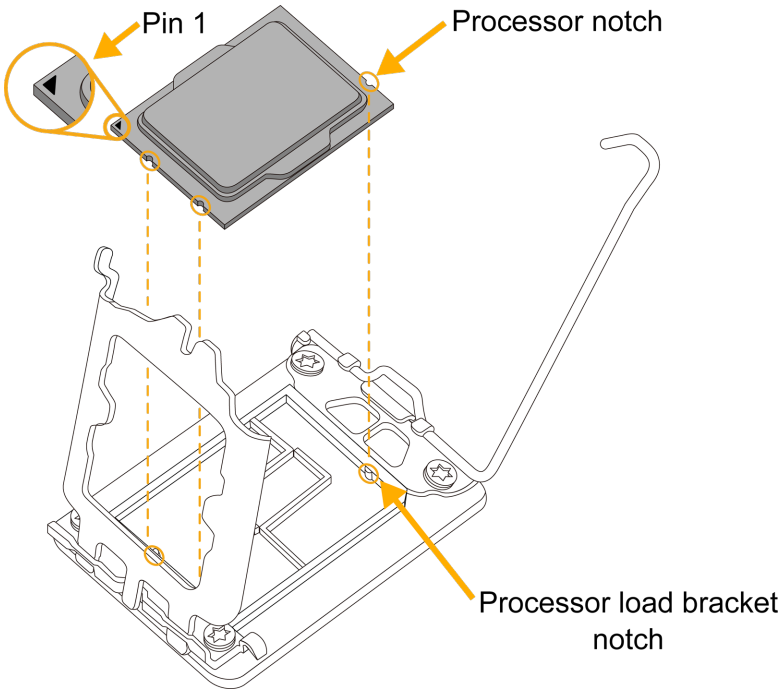

Figure 2-8. Aligning the Notches and Installing the Processor

5. Do not rub the processor against the surface or against any pins of the socket to avoid damaging the processor or the socket.

6. With the processor inside the socket, inspect all the corners to make sure it is properly installed.
7. Close the load plate with the processor inside the socket. Gently push the load lever down until it locks under the lever lock.

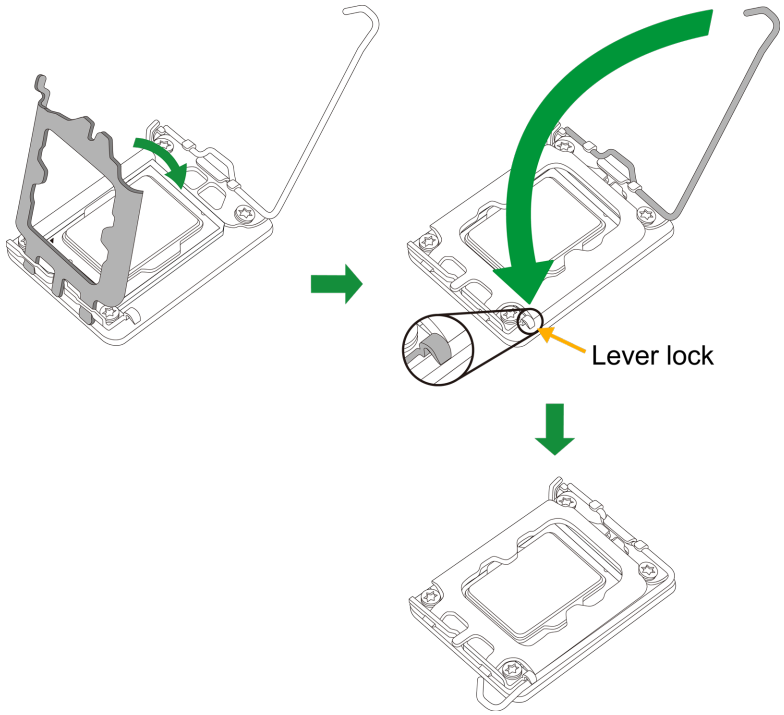

Figure 2-9. Closing the Load Plate and Pushing the Lever Down

Installing a Processor Heatsink

Notes:

- The installation described in this section is for reference only. The actual installation steps may vary depending on the CPU heatsink model. Refer to the heatsink instructions for more details.
- Images displayed are for illustration purposes only. Your components might look different from those shown in this manual.

1. Loosen four screws to release the backplate. Note that one screw is not shown in the illustration below.

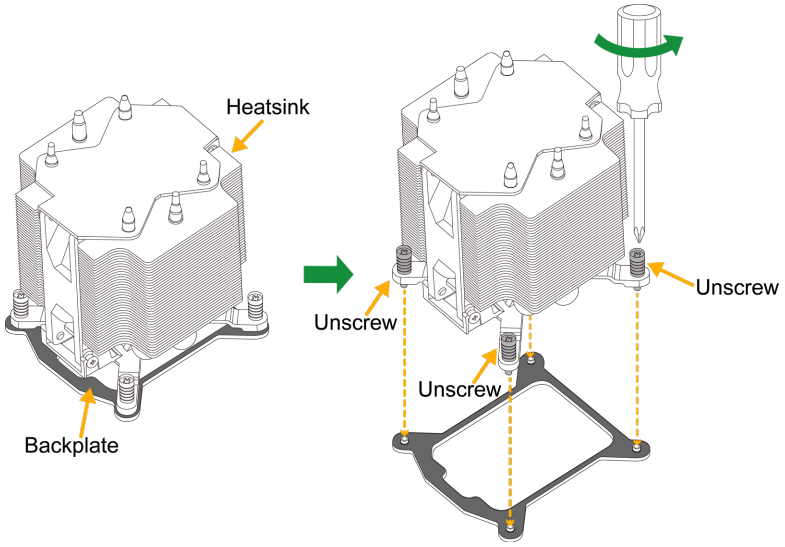

Figure 2-10. Release the Backplate from the Heatsink

2. If there is a thin layer of protective film on the backplate, remove it.

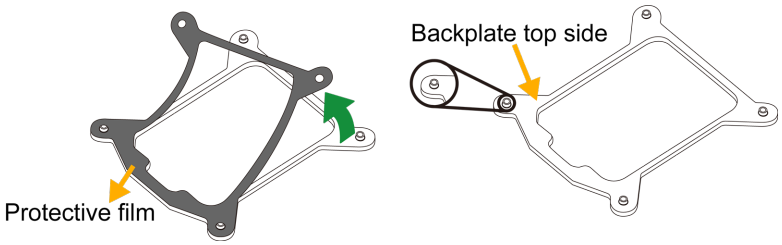

Figure 2-11. Remove the Protective Film

3. Attach the backplate into the mounting holes around the processor socket on the bottom side of the motherboard.

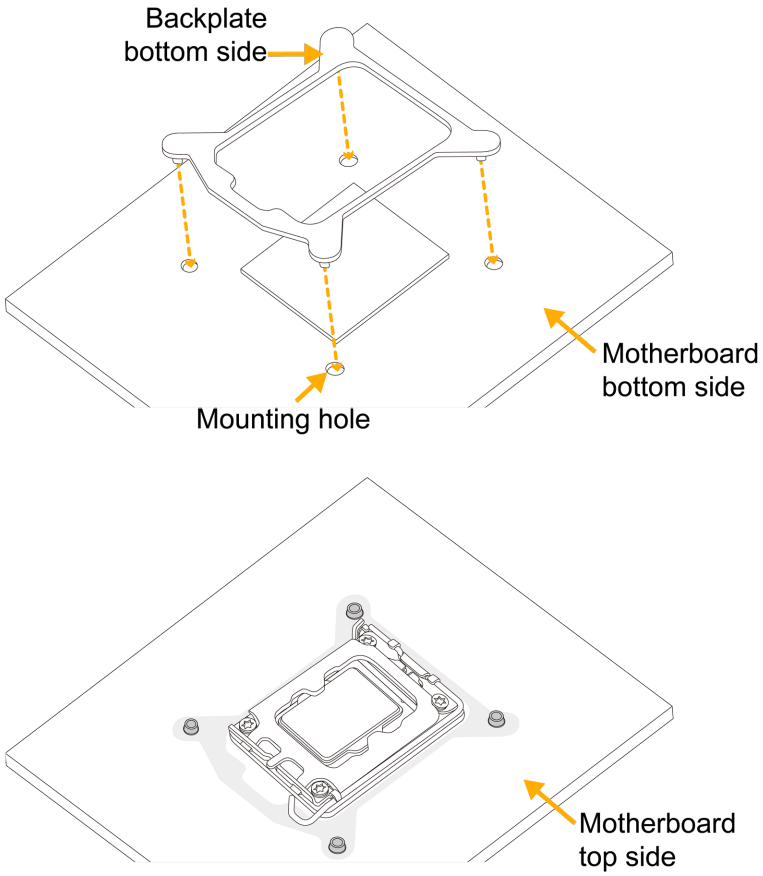

Figure 2-12. Attach the Backplate to the Bottom Side of the Motherboard

4. Apply the proper amount of thermal grease on the processor.

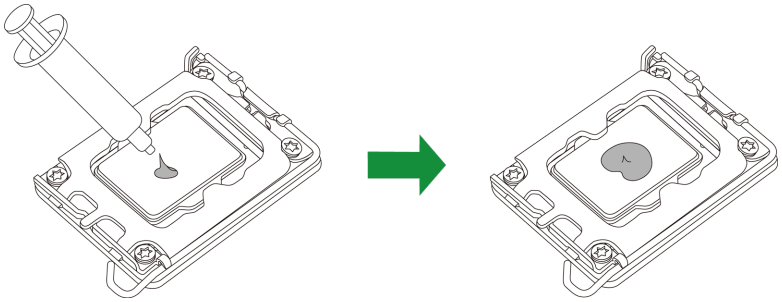

Figure 2-13. Apply Thermal Grease

5. Place the heatsink on top of the processor so that the four mounting holes on the heatsink are aligned with those on the retention mechanism.

6. Tighten the screws.

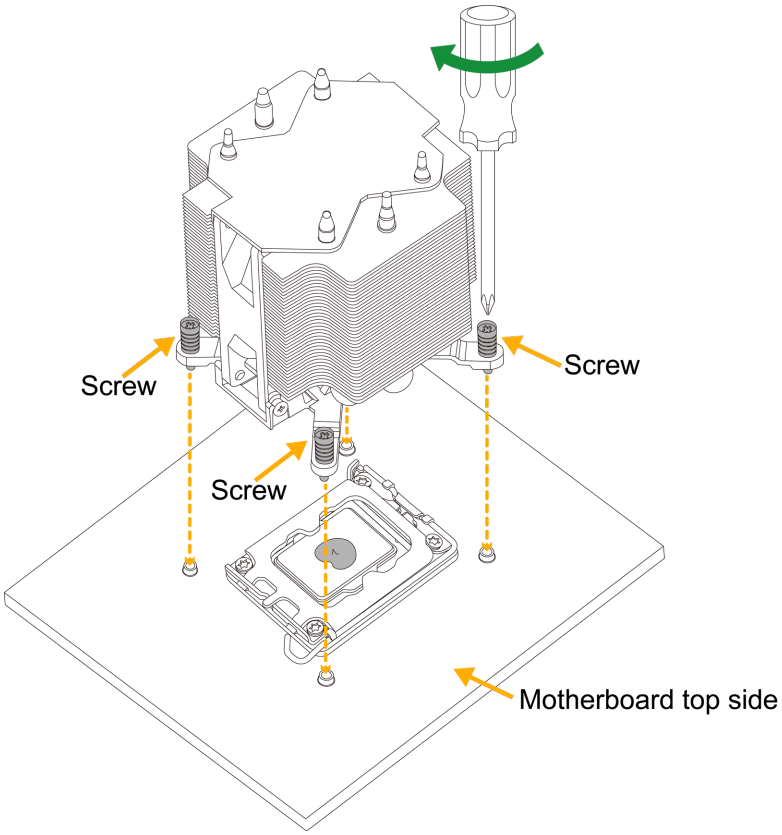

Figure 2-14. Tighten the Heatsink Screws

Removing the Processor Heatsink

Important: We do not recommend that the processor or heatsink be removed. However, if you do need to remove the heatsink, follow the instructions below to remove the heatsink and prevent damage done to the processor or other components.

1. Unplug the power cord from the power supply and the power connector from the cooler and fan header.
2. Loosen the screws as shown in figure in the next step.

3. Gently wiggle the heatsink to loosen it. Do not use excessive force when wiggling the heatsink.

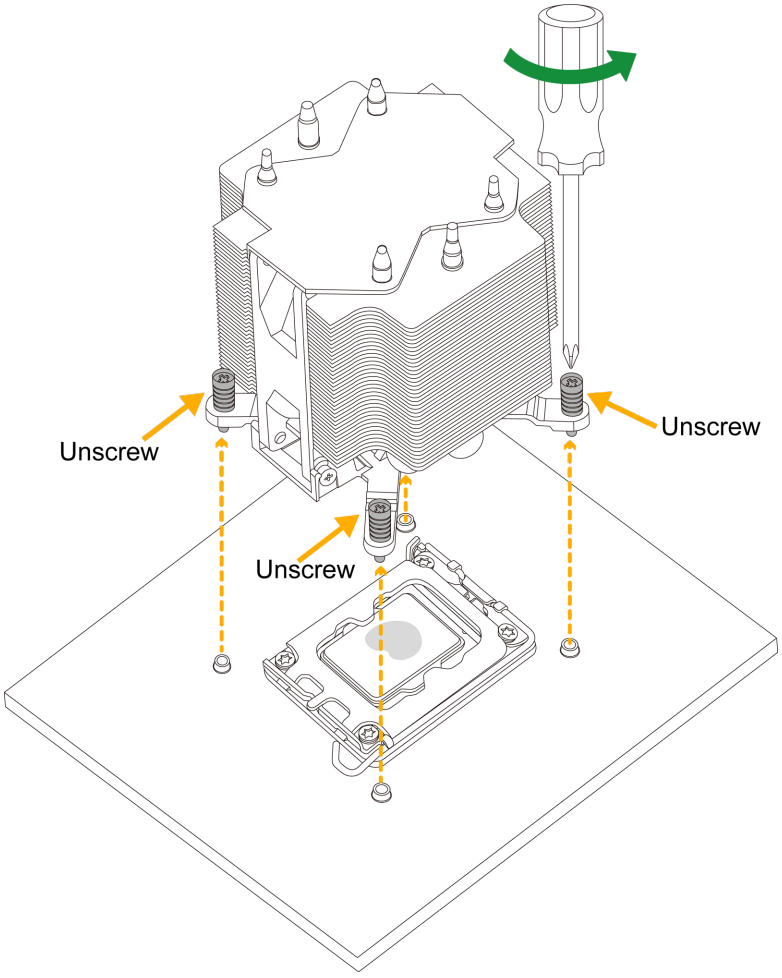

Figure 2-15. Loosening the Heatsink Screws

4. Once the heatsink is loosened, remove it from the motherboard.

2.4 Memory Support and Installation

Important: To prevent any damage, exercise extreme care when installing or removing memory modules.

Note: Check the Supermicro website for recommended memory modules.

Memory Support

The X14SAE/X14SAE-F motherboard supports up to 256 GB of Unbuffered (UDIMM) and Clocked Unbuffered (CUDIMM) ECC/Non-ECC DDR5 memory with speeds of up to 5600 MT/s (1DPC), 4800 MT/s (2DPC, 1R DIMM), and 4400 MT/s (2DPC, 2R DIMM) in four 288-pin memory slots.

Memory Population Table

Recommended Population (Balanced)				
DIMMA1	**DIMMB1**	**DIMMA2**	**DIMMB2**	**Total System Memory**
		8 GB DIMM	8 GB DIMM	16 GB
		12 GB DIMM	12 GB DIMM	24 GB
8 GB DIMM	8 GB DIMM	8 GB DIMM	8 GB DIMM	32 GB
		16 GB DIMM	16 GB DIMM	32 GB
12 GB DIMM	12 GB DIMM	12 GB DIMM	12 GB DIMM	48 GB
		24 GB DIMM	24 GB DIMM	48 GB
16 GB DIMM	16 GB DIMM	16 GB DIMM	16 GB DIMM	64 GB
		32 GB DIMM	32 GB DIMM	64 GB
24 GB DIMM	24 GB DIMM	24 GB DIMM	24 GB DIMM	96 GB
		48 GB DIMM	48 GB DIMM	96 GB
32 GB DIMM	32 GB DIMM	32 GB DIMM	32 GB DIMM	128 GB
		64 GB DIMM	64 GB DIMM	128 GB
48 GB DIMM	48 GB DIMM	48 GB DIMM	48 GB DIMM	192 GB
64 GB DIMM	64 GB DIMM	64 GB DIMM	64 GB DIMM	256 GB

Memory Support Table

Memory Support			
Frequency	**4400 MT/s (2DPC)**	**4800 MT/s (2DPC)**	**5600 MT/s (1DPC)**
DIMMA1	2R DIMM	1R DIMM	N/A
DIMMA2	2R DIMM	1R DIMM	1R or 2R DIMM
DIMMB1	2R DIMM	1R DIMM	N/A
DIMMB2	2R DIMM	1R DIMM	1R or 2R DIMM

General Guidelines for Optimizing Memory Performance

- It is recommended to use DDR5 memory of the same type, size, and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support an odd number of memory modules. However, to achieve the best memory performance, a balanced memory population is recommended.
- When installing memory modules, the DIMM slots should be populated in the following order: DIMMB2, DIMMA2, then DIMMB1, DIMMA1.
- When installing only two memory modules, please use DIMMB2 and DIMMA2.

DIMM Installation

Important: To avoid causing any damage to the memory module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle memory modules with care. To avoid ESD-related damage to your memory modules or components, carefully follow all the instructions given in "Static-Sensitive Devices" on page 33.

1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population table earlier in this section.
2. Push the release tab outwards to unlock the slot.

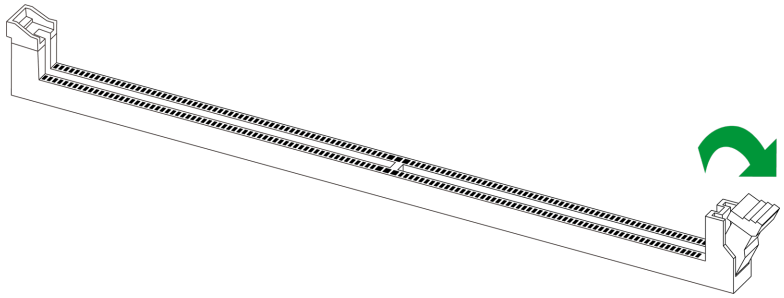

Figure 2-16. Unlocking the DIMM Slot

3. Align the key of the DIMM with the receptive point on the memory slot.

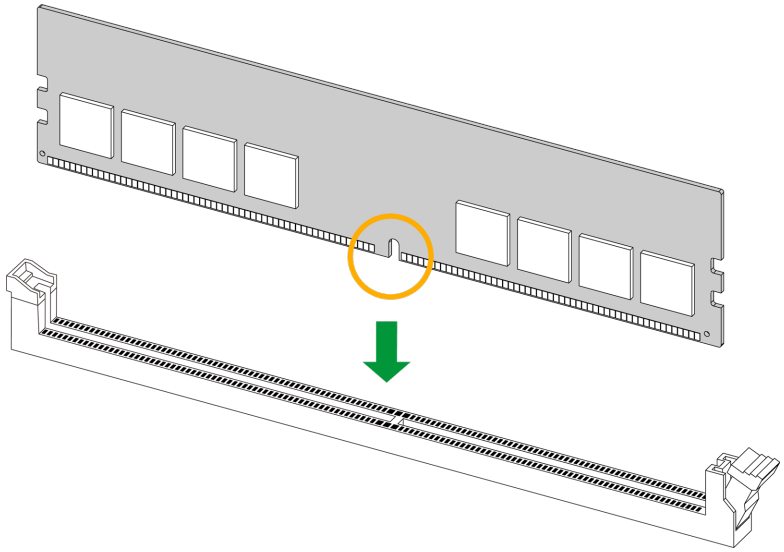

Figure 2-17. Aligning the DIMM Slot with the Receptive Point

4. Align the notches on both ends of the module against the receptive points on the ends of the slot.

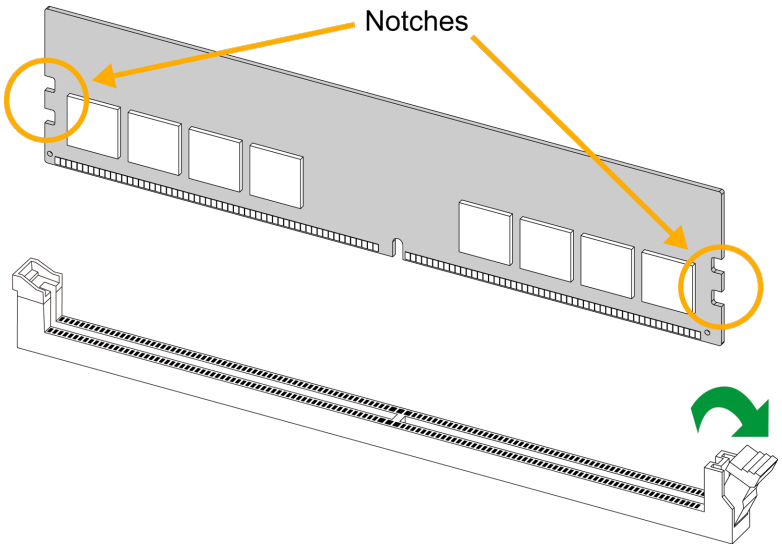

Figure 2-18. Aligning the Notches

5. Press both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tab to the lock position to secure the DIMM into the slot.

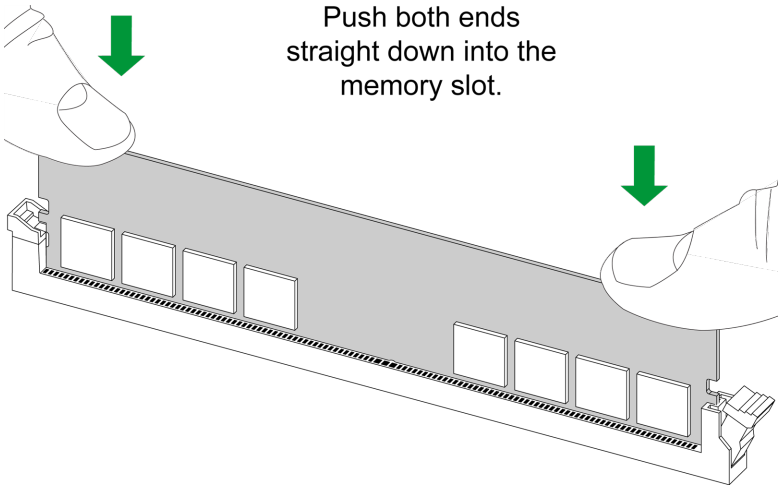

Figure 2-19. Securing the DIMM

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

DIMM Removal

Important: To avoid causing any damage to the memory module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle memory modules with care. To avoid ESD-related damage to your memory modules or components, carefully follow all the instructions given in "Static-Sensitive Devices" on page 33.

Press the release tab of the DIMM socket to unlock it. Once the DIMM is loosened, remove it from the memory slot.

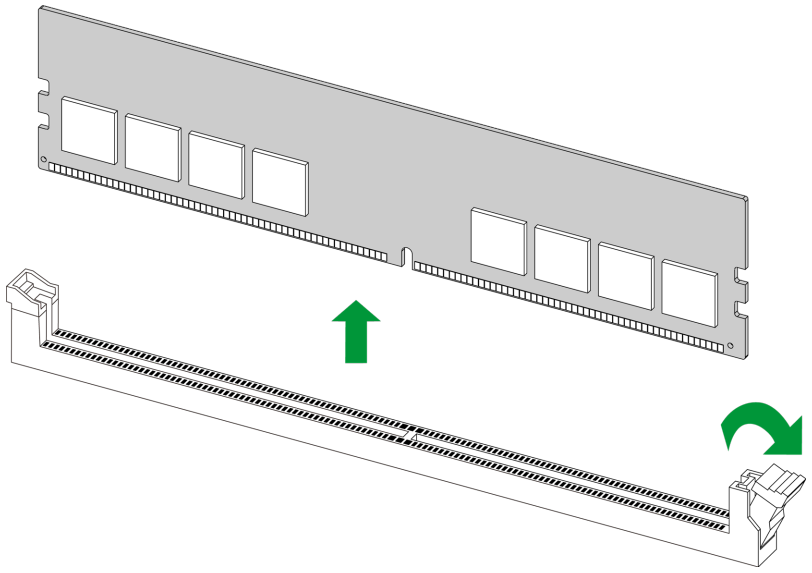

Figure 2-20. Unlocking the DIMM Slot

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

2.5 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Place the system on a workbench.
3. Remove the top cover from the system.
4. Locate the onboard battery as shown below.
5. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
6. Remove the battery.

Proper Battery Disposal

Important: Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Battery Installation

To install an onboard battery, follow steps 1 and 2 above and continue below:

Important: When replacing a battery, be sure to only replace it with the same type.

1. Identify the battery's polarity. The positive (+) side should be facing up.
2. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

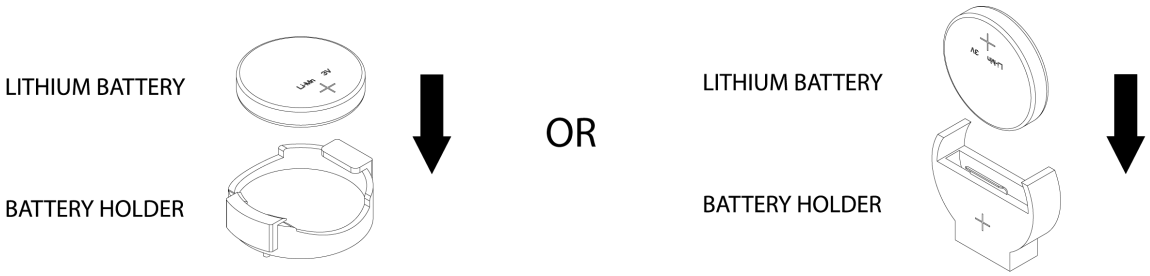

Figure 2-21. Installing a Battery

2.6 M.2 Device Installation

This motherboard has one PCIe 5.0 M.2 M-key slot (M.2-C1) that supports the M.2 2280 modules and one PCIe 4.0 M.2 M-key slot (M.2-P1) that supports the 2280/22110 modules. Two standoffs are pre-installed in the position of 2280 mounting hole (M.2-C1) and 22110 mounting hole (M.2-P1). Follow the steps below to install the M.2 device.

Notes:

- The installation described in this section is for reference only. The actual installation steps may vary depending on the supported M.2 form factors and the standoff pre-installed location.
- Images displayed are for illustration purposes only. Your components might look different from those shown in this manual.

Installing a Standard M.2 Device

1. Locate the screw on the pre-installed standoff. Remove the screw and set it aside.

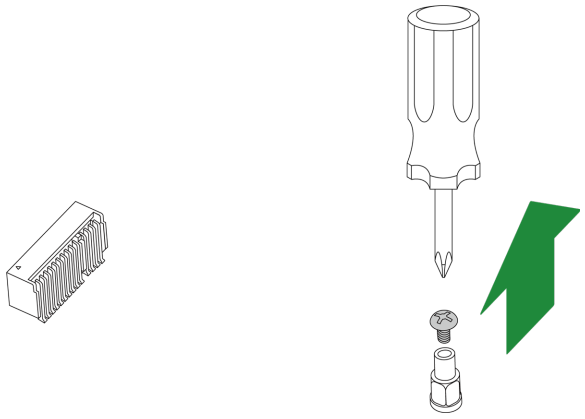

Figure 2-22. Removing the Screw on the Pre-Installed Standoff

2. If the soon-to-be used mounting hole doesn't have a standoff, move the pre-installed one to that mounting hole.

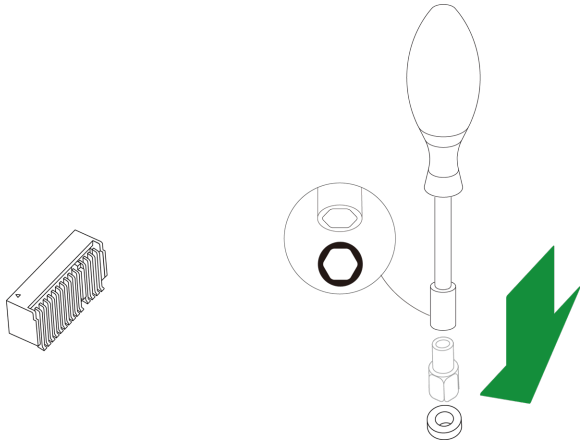

Figure 2-23. Changing the Standoff Position as Needed

3. Carefully insert the M.2 device into the M.2 slot at a 30-degree angle and lower the semi-circle notched end onto the standoff.

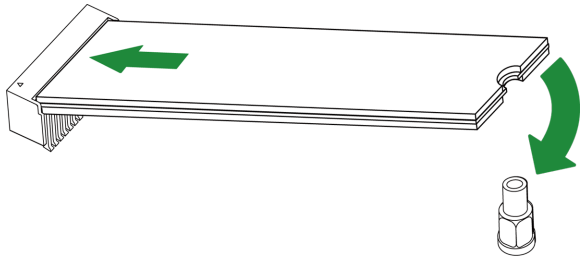

Figure 2-24. Inserting the M.2 Device and Pressing it Down

4. Tighten the standoff screw to secure the M.2 device into place. Do not overtighten so as to avoid damaging the M.2 device.

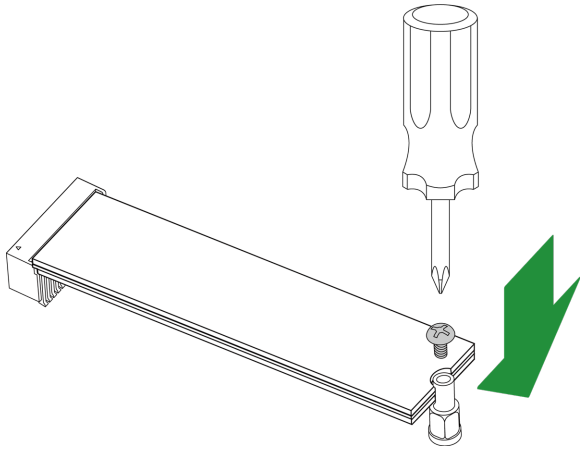

Figure 2-25. Securing the M.2 Device

Installing an M.2 Device with Heatsink (Optional)

It is strongly recommended that you install an M.2 heatsink provided by the M.2 device supplier. If you are using a Supermicro M.2 heatsink, follow the steps below:

1. Remove the thermal pad protective films from the cover and the tray of the M.2 heatsink.

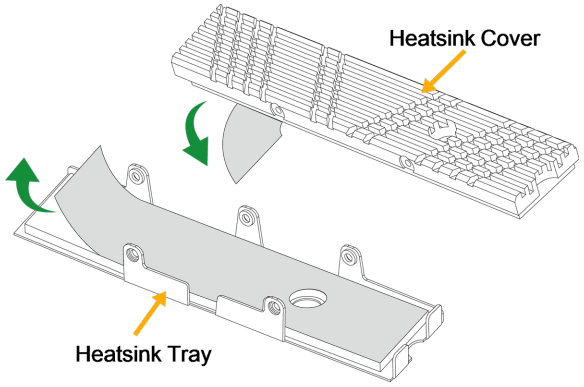

Figure 2-26. Removing the Protective Films from the Heatsink

Note: Images displayed are for illustration only. Your M.2 heatsink may not look exactly the same as the graphics shown in the manual.

2. Place the M.2 device into the tray, then put the heatsink cover in place. Be careful to align the tray holes with the cover holes.

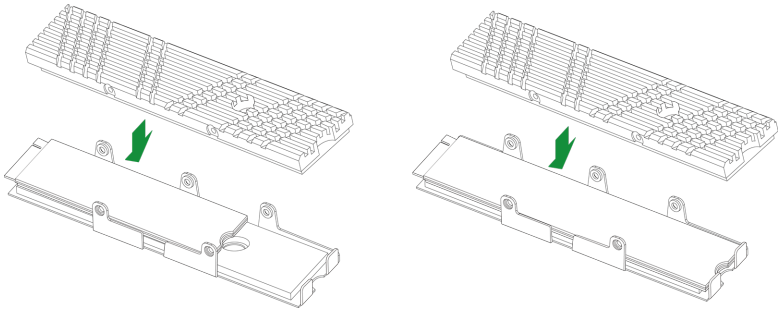

Figure 2-27. Creating the M.2 Heatsink Assembly

3. Tighten the screws to secure the M.2 heatsink assembly.

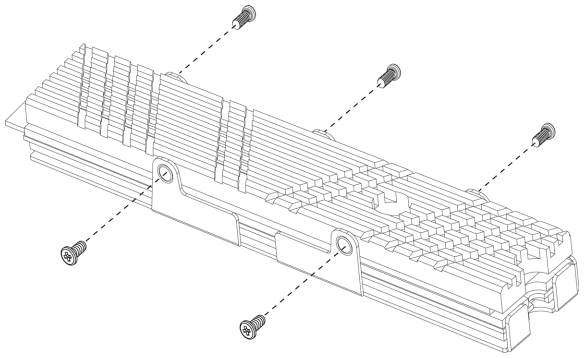

Figure 2-28. Securing the M.2 Heatsink Assembly

4. Locate the pre-installed standoff and screw . Remove the screw and set it aside.

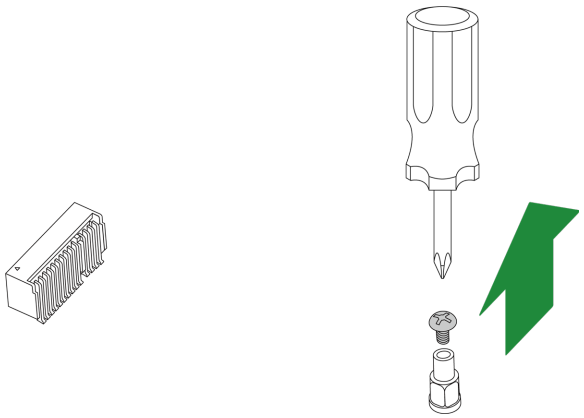

Figure 2-29. Removing the Screw on the Pre-Installed Standoff

5. If the soon-to-be used mounting hole doesn't have a standoff, move the pre-installed one to that mounting hole.

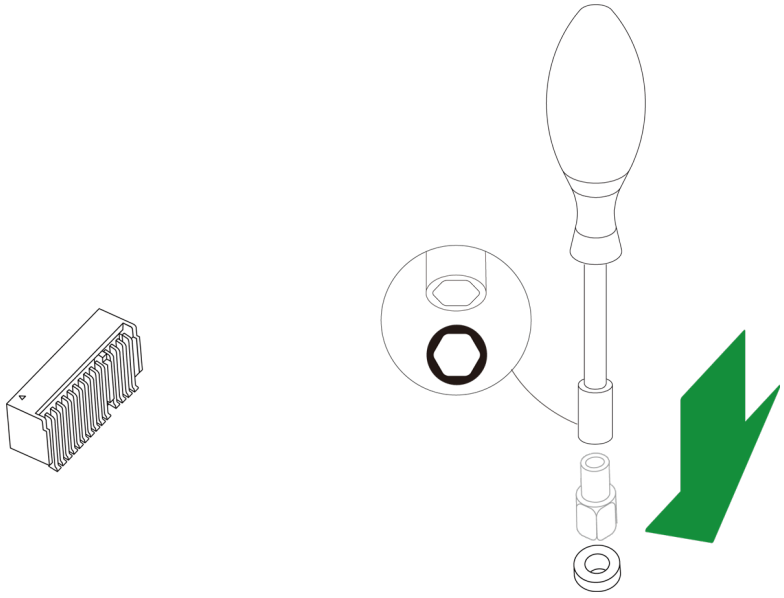

Figure 2-30. Changing the Standoff Position as Needed

6. Carefully insert the M.2 assembly into the M.2 slot at a 30-degree angle and lower the assembly onto the standoff.

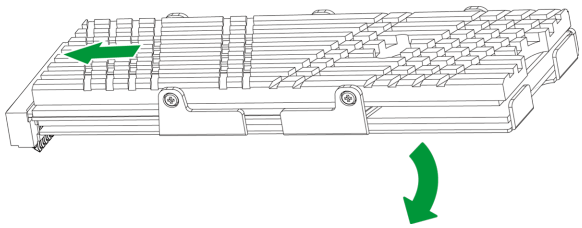

Figure 2-31. Inserting the M.2 Heatsink Assembly and Pressing it Down

7. Tighten the standoff screw to secure the M.2 heatsink assembly into place. Do not overtighten so as to avoid damaging the M.2 assembly.

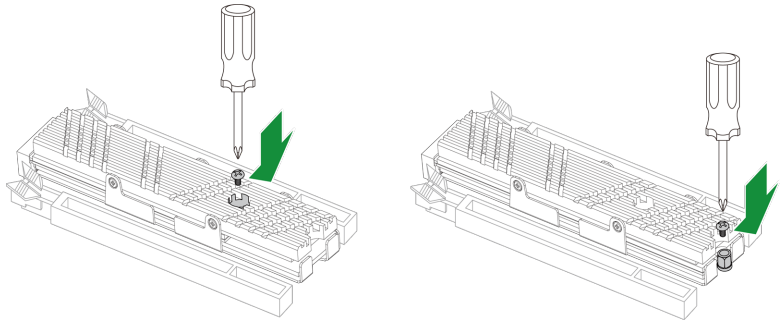

Figure 2-32. Securing the M.2 Heatsink Assembly

2.7 Rear I/O Ports

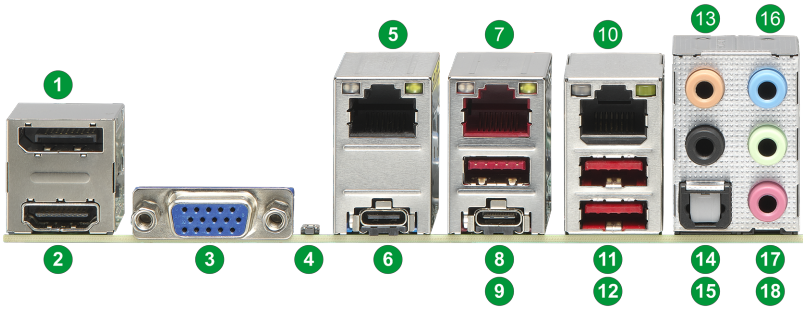

Figure 2-33. Rear I/O Ports (X14SAE-F)

Rear I/O Ports					
No.	**Descriptions**	**No.**	**Descriptions**	**No.**	**Descriptions**
1	DisplayPort 2.1	7	LAN1: RJ45 1 GbE LAN Port	13	Center / Sub-woofer Out
2	HDMI 2.1 Port	8	USB5: USB 3.2 Gen 2x1 Port (10 Gb, Type-A)	14	Rear Speaker Out
3	VGA Port (X14SAE-F only)	9	USB8: USB 3.2 Gen 2x2 Port (20 Gb, Type-C)	15	S/PDIF Out
4	UID Switch (X14SAE-F only)	10	LAN2: RJ45 2.5 GbE LAN Port	16	Line In / Side Speaker Out
5	Dedicated BMC LAN Port (X14SAE-F only)	11	USB6: USB 3.2 Gen 2x1 Port (10 Gb, Type-A)	17	Line Out / Front Speaker Out
6	USB10: TBT 4 (40 Gb, Type-C)	12	USB7: USB 3.2 Gen 2x1 Port (10 Gb, Type-A)	18	Mic In

DisplayPort

DisplayPort 2.1, developed by the VESA consortium, delivers digital display at a fast refresh rate. It can connect to virtually any display device using a DisplayPort adapter for devices, such as VGA, DVI, and HDMI.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

HDMI Port

One High-Definition Multimedia Interface (HDMI) 2.1 port is located on the rear I/O of the X14SAE/X14SAE-F motherboard. This port is used to display both high definition video and digital sound through an HDMI display, using a single HDMI cable (not included).

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

VGA Port (X14SAE-F only)

For X14SAE-F motherboard, a video (VGA) port supported by the BMC is located on the rear I/O. The VGA port provides analog interface support between the computer and the video displays.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Unit Identifier Switch (X14SAE-F only)

A Unit Identifier (UID) switch is located on the rear I/O of the X14SAE-F motherboard, and a UID LED is located near the UID switch. When you press the UID switch on and off, it will turn the UID LED on and off to identify a system unit that may need services.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

LAN Ports and BMC LAN (X14SAE-F only)

One 1 GbE LAN port (LAN1) and one 2.5 GbE LAN port (LAN2) are located on the rear I/O to provide network connections. The LAN port accepts RJ45 type cables. For the X14SAE-F motherboard, a dedicated BMC LAN port is located above the Thunderbolt 4 port (USB10) port on the rear I/O.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

USB Ports

There are three USB 3.2 Gen 2x1 Type-A ports (USB5–USB7), and one USB 3.2 Gen 2x2 Type-C port (USB8) on the rear I/O of the X14SAE/X14SAE-F motherboard. In addition, a Thunderbolt 4 (TBT 4) Type-C port (USB10) is located on the rear I/O of the X14SAE/X14SAE-F motherboard. The Thunderbolt 4 port supports USB, DisplayPort, and PCI Express, enabling you to connect a variety of devices such as external monitors, storage drives, and docking stations.

There are also three front accessible USB headers on the X14SAE/X14SAE-F motherboard. Refer to the "USB Headers" on page 70 section for details.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

High Definition Audio (HD Audio) Ports

This X14SAE/X14SAE-F features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously supports multiple-streaming 7.1 sound playback with 2 channels of independent stereo output through the front panel stereo out for front, rear, center and subwoofer speakers. Use the Advanced software included in the CD-ROM with your motherboard to enable this function.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Audio Configuration					
		2 Channel	4.1 Channel	5.1 Channel	7.1 Channel
1	Orange (Center / Subwoofer Out)			Center / Subwoofer Out	Center / Subwoofer Out
2	Black (Rear Speaker Out)		Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
3	Light Blue (Line In / Side Speaker Out)	Line In			Side Speaker Out
4	Lime (Line Out / Front Speaker Out)	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
5	Pink (Mic In)	Mic In	Mic In	Mic In	Mic In

Figure 2-34. HD Audio Ports

2.8 Front Control Panel

JFP1 on the X14SAE/X14SAE-F motherboard contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators.

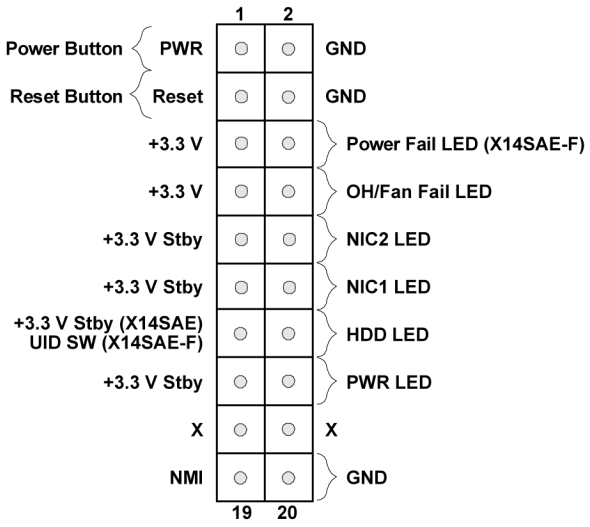

Figure 2-35. Front Control Panel Pin Definitions

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power Button

The Power Button connection is located on pins 1 and 2 of JFP1 on the X14SAE/X14SAE-F motherboard. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS). To turn off the power when the system is in suspend mode, press the button for four seconds or longer.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power Button Pin Definitions (JFP1)	
Pin#	**Definition**
1	Signal
2	GND

Reset Button

The Reset Button connection is located on pins 3 and 4 of JFP1 on the X14SAE/X14SAE-F motherboard. Attach it to a hardware reset switch on the computer case to reset the system.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Reset Button Pin Definitions (JFP1)	
Pin#	**Definition**
3	Reset
4	GND

Power Fail LED (X14SAE-F only)

The Power Fail LED connection is located on pins 5 and 6 of JFP1 on the X14SAE/X14SAE-F motherboard.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power Fail LED Pin Definitions (JFP1)	
Pin#	**Definition**
5	+3.3 V
6	PWR Supply Fail

Overheat (OH)/Fan Fail LED

Connect an LED cable to pins 7 and 8 of the Front Control Panel to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheat or fan failure.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

OH/Fan Fail Indicator Status Pin Definitions (JFP1)	
State	**Definition**
Off	Normal
On	Overheat
Flashing	Fan Fail

OH/Fan Fail Pin Definitions (JFP1)	
Pin#	**Definition**
7	+3.3 V
8	OH/FAN Fail LED

NIC1/NIC2 (LAN1/LAN2) LED

The Network Interface Controller (NIC) LED connection for LAN port 1 is located on pins 11 and 12 of JFP1 on the X14SAE/X14SAE-F motherboard, and LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

LAN1/LAN2 LED Pin Definitions (JFP1)	
Pin#	**Definition**
9	+3.3 V Stby
10	NIC2 Link/Active LED
11	+3.3 V Stby
12	NIC1 Link/Active LED

UID Switch/HDD LED

The UID Switch (X14SAE-F only)/HDD LED connection is located on pins 13 and 14 of JFP1 on the motherboard. Attach a cable to pin 13 to use the UID switch. Attach a cable to pin 14 to show storage drive activity status.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

HDD LED/UID Switch Pin Definitions (JFP1)	
Pin#	**Definition**
13	+3.3 V Stby/UID Switch
14	HDD Activity

Power LED

The Power LED connection is located on pins 15 and 16 of JFP1 on the X14SAE/X14SAE-F motherboard.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power LED Pin Definitions (JFP1)	
Pin#	**Definition**
15	+3.3 V
16	PWR LED

NMI Button

The non-maskable interrupt (NMI) button header is located on pins 19 and 20 of JFP1 on the X14SAE/X14SAE-F motherboard.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

NMI Button Pin Definitions (JFP1)	
Pin#	**Definition**
19	Control
20	GND

2.9 Connections, Jumpers, and LEDs

Refer to the following sections for information about connections, jumpers, and LEDs for the X14SAE/X14SAE-F motherboard.

Power Connections

For information about the power connections of the X14SAE/X14SAE-F motherboard, refer to the following content.

Important: To provide adequate power supply to the motherboard, be sure to connect the 24-pin ATX PWR and the 8-pin PWR connections to the power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates where noisy power transmission is present.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above.

ATX Power Supply Connection

The primary 24-pin power supply connection (JPW1 on the X14SAE/X14SAE-F motherboard) meets the ATX SSI EPS 12 V specification. JPW2 is an 8-pin +12 V DC power input for the processor that must be connected to the power supply.

Important: To provide adequate power supply to the motherboard, be sure to connect the 24-pin ATX PWR and the 8-pin PWR connections to the power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

8-pin CPU Power Pin Definitions: Eight Total	
Pin#	**Definition**
1–4	GND
5–8	+12 V (12 V Power)

ATX Power 24-pin Connection Pin Definitions: 24 Total			
Pin#	**Definition**	**Pin#**	**Definition**
13	+3.3 V	1	+3.3 V
14	No Connection	2	+3.3 V
15	GND	3	GND
16	PS_ON	4	+5 V
17	GND	5	GND
18	GND	6	+5 V
19	GND	7	GND
20	Res (No Connection)	8	PWR_OK
21	+5 V	9	+5 VSB
22	+5 V	10	+12 V
23	+5 V	11	+12 V
24	GND	12	+3.3 V

Headers and Connections

For information about the headers on the X14SAE/X14SAE-F motherboard, refer to the following content.

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the X14SAE/X14SAE-F motherboard. Attach the appropriate cable from the chassis to inform you when the chassis is opened.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Chassis Intrusion Pin Definitions: Two Total	
Pin#	**Definition**
1	Intrusion Input
2	GND

COM Header

There is one COM header at COM1 on the X14SAE/X14SAE-F motherboard. Use a cable with the COM header to provide serial communication support.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

COM Header Pin Definitions: Nine Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	SP_DCD0	6	SP_DSR0
2	SP_RXD0	7	SP_RTS0
3	SP_TXD0	8	SP_CTS0
4	SP_DTR0	9	SP_RI0
5	GND		

DOM Power Connector

The Disk-On-Module (DOM) power connector, located at JSD1, provides 5 V power to a solid state DOM storage device connected to one of the SATA ports.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

DOM Power Connector Pin Definitions: Three Total	
Pin#	**Definition**
1	+5 V
2	GND
3	GND

Fan Headers

There are seven 4-pin fan headers (FAN1, FAN1A, FAN2B, FANA, FAN2, FAN3, and FAN3C) on the X14SAE/X14SAE-F motherboard. Although pins 1-3 of the system fan headers are backwards compatible with the traditional 3-pin fans, the 4-pin fans are recommended to take advantage of the fan speed control. This allows fan speeds to be automatically adjusted based on the motherboard temperature.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

4-pin Fan Header Pin Definitions: Four Total	
Pin#	**Definition**
1	GND (Black)
2	+12 V (Red)
3	Tachometer
4	PWM Control

Front Panel Audio Header

A 10-pin audio header located at AUDIO_FP/AUDIO FP is supported on the X14SAE/X14SAE-F motherboard. This header allows you to connect the motherboard to the audio port on the front panel. If needed, connect an audio cable (not supplied) to the audio header to use this feature.

Note: The audio header's default setting is for a headphone/microphone combo jack. If you want to connect it to HD Audio or AC'97 audio port, configure the Frontside Audio Mode feature in the BIOS Setup utility.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Front Panel Audio Header Pin Definitions: 10 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	Microphone_Left	6	GND
2	Audio_GND	7	Jack_Detect
3	Microphone_Right	8	Key
4	Audio_Detect	9	Line_2_Left
5	Line_2_Right	10	GND

Internal Speaker/Buzzer

The Internal Speaker/Buzzer (SP1) is used to provide audible indications for various beep codes.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Internal Speaker/Buzzer Pin Definitions: Two Total		
Pin#	**Definition**	
1	Pos (+)	Beep In
2	Neg (-)	Alarm Speaker

M.2 M-Key PCIe 5.0/4.0 x4 Slots

Two M.2 M-key slots are located at M.2-C1 and M.2-P1 on the X14SAE/X14SAE-F motherboard. Refer to the table below for more information.

Slots	Signals	Bus Interface	Form Factors	RAID Support
M.2-C1	From CPU	PCIe 5.0 x4	2280	RAID 0 and 1
M.2-P1	From PCH	PCIe 4.0 x4	2280 and 22110	RAID 0 and 1

Note: M.2-C1 and M.2-P1 slots can be mixed to support RAID 0 and 1.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power LED Header

An onboard Power LED header is located at JLED1. This Power LED header is used to indicate the status of system power.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power LED Header Pin Definitions: Three Total	
Pin#	**Definition**
1	POWER LED (+)
2	POWER LED (-)
3	POWER LED (-)

Power SMB (I²C) Header (X14SAE-F only)

The Power System Management Bus (I²C) connector (JPI2C1 on the X14SAE-F motherboard) monitors the power supply, fan, and system temperatures.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Power SMBus Header Pin Definitions: Five Total	
Pin#	**Definition**
1	Clock
2	Data
3	PMBUS_Alert
4	GND
5	+3.3 V

Pump Power Header

The X14SAE/X14SAE-F motherboard has one +12 V header for optional CPU liquid cooling systems. When using a liquid cooling system, attach the pump power cable to the 12V_PUMP1 header.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Pump Power Header Pin Definitions: Four Total	
Pin#	**Definition**
1	GND (Black)
2	2 A/+12 V (Red)
3	No Connection
4	No Connection

SATA 3.0 Ports

Eight Serial ATA (SATA) 3.0 ports (I- SATA0– I- SATA7) are supported on the X14SAE/X14SAE-F motherboard. These I-SATA 3.0 ports are supported by the Intel PCH chip (supporting RAID 0, 1, 5, and 10).

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

SlimSAS 8i Connector

A PCIe 4.0 x8 SlimSAS 8i connector is located at PCH_PE1 0-7 (x4/ x4) on the X14SAE/X14SAE-F motherboard. The connector is supported by the PCH and it supports two PCIe 4.0 x4 U.2 connections.

Standby Power

The Standby Power header is located at JSTBY1 on the motherboard. You must have a card with a Standby Power connector and a cable to use this feature.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Standby Power Pin Definitions: Three Total	
Pin#	**Definition**
1	+5 V Standby
2	GND
3	GND

TPM/Port 80 Header

The JTPM1 header on the X14SAE/X14SAE-F motherboard is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro (optional). A TPM/Port 80 connector is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. Go to the following link for more information on the TPM: https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H__X12_H12.pdf.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Trusted Platform Module Header Pin Definitions: 10 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	+3.3 V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	No Connection
9	+3.3 V Stdby	10	SPI_IRQ#

USB Headers

There is one USB 2.0 header (USB0/1) and one USB 3.2 Gen 1x1 header (USB2/3) on the X14SAE/X14SAE-F motherboard, each supporting two USB connections. There is also one USB 3.2 Gen 1x1 header (USB4, vertical), and one USB 3.2 Gen 2x2 header (USB9) located on the motherboard. These headers provide front access using USB cables (not included).

(USB 2.0) Header
Pin Definitions: 10 Total

Pin#	Definition	Pin#	Definition
1	+5 V	2	+5 V
3	USB_N	4	USB_N
5	USB_P	6	USB_P
7	GND	8	GND
9	Key	10	No Connection

USB 3.2 Gen 2x2 Header
Pin Definitions: 20 Total

Pin#	Definitions	Pin#	Definitions
1	VBUS	11	VBUS
2	TX1+	12	TX2+
3	TX1-	13	TX2-
4	GND	14	GND
5	RX1+	15	RX2+
6	RX1-	16	RX2-
7	VBUS	17	GND
8	CC1	18	D-
9	No Connection	19	D+
10	No Connection	20	CC2

USB 3.2 Gen 1x1 Header
Pin Definitions: 19 Total

Pin#	Definitions	Pin#	Definitions
1	VBUS	11	IntA_P2_D+
2	IntA_P1_SSRX-	12	IntA_P2_D-
3	IntA_P1_SSRX+	13	GND
4	GND	14	IntA_P2_SSTX+
5	IntA_P1_SSTX-	15	IntA_P2_SSTX-
6	IntA_P1_SSTX+	16	GND
7	GND	17	IntA_P2_SSRX+
8	IntA_P1_D-	18	IntA_P2_SSRX-
9	IntA_P1_D+	19	VBUS
10	GND		

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Jumper Settings

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram below for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

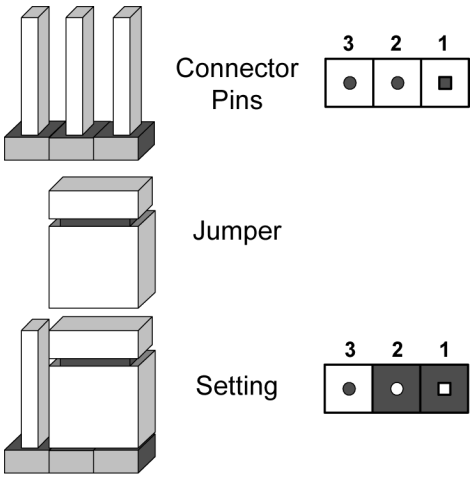

Figure 2-36. Jumping Connector Pins

CMOS Clear

JBT1 on the X14SAE/X14SAE-F motherboard is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

1. Power down the system.
2. Unplug the power cord(s).
3. Remove the cover of the chassis to access the motherboard.

4. Remove the onboard battery from the motherboard.
5. Short the CMOS pads, JBT1, with a metal object such as a small screwdriver for at least four seconds.

   Note: Clearing CMOS will also clear all passwords.

6. Remove the screwdriver or shorting device.
7. Reinsert the battery.
8. Replace the cover.
9. Reconnect the power cord(s).
10. Power on the system.

CPU PCIe SLOT3 1x8/2x4

Use JPCIESW to configure the bifurcation mode for SLOT3. When changing the SLOT3 bifurcation mode, the SLOT6 bifurcation will also be changed. Refer to the table below for jumpers settings and bifurcation modes between SLOT3 and SLOT6.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

JPCIESW Jumper Settings	PCIe SLOT3		PCIe SLOT6
Pins 1–2	1x8 (Default)	Not populated	1x16
Pins 1–2	1x8 (Default)	Populated	1x8
Pins 2–3	2x4	Not populated	1x8
Pins 2–3	2x4	Populated	1x8

External Speaker / Buzzer

On the JD1 header, close pins 3 and 4 with a cap to use the onboard buzzer. If you wish to use an external speaker, close pins 1–4 with a cable.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

External Speaker/Buzzer Jumper Settings	
Pin#	**Definition**
Pins 1–4	External Speaker
Pins 3–4	Buzzer (Default)

HD Audio Enable/Disable

Use JPAC1 to enable or disable HD Audio on the X14SAE/X14SAE-F motherboard. The default setting is Enabled.

HD Audio Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

LAN Enable/Disable

Use JPL1/JPL2 to enable or disable LAN1/LAN2 on the X14SAE/X14SAE-F. The default setting is Enabled.

LAN Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

ME Manufacturing Mode

Close pins 2–3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which will allow the user to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings. The default setting is Normal.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

ME Manufacturing Mode Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Normal (Default)
Pins 2–3	Manufacturing Mode

Onboard TPM Enable/Disable

Use JPT1 to enable or disable the onboard TPM.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

TPM Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

VGA Enable/Disable (X14SAE-F only)

Jumper JPG1 allows you to enable the onboard VGA connector on the X14SAE- F motherboard. The default setting is pins 1–2 to enable the connection.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

VGA Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

Watchdog Timer

Watchdog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1–2 to reset the system if an application hangs. Close pins 2–3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. The watchdog must also be enabled in the BIOS.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Watchdog Timer Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Reset (Default)
Pins 2–3	NMI
Open	Disabled

LED Indicators

For information about the LED indicators on the X14SAE/X14SAE-F motherboard, refer to the following content.

CATERR LED

A CATERR LED is located at CATERR_LED on the X14SAE/X14SAE-F motherboard. The orange LED indicates the system has experienced a catastrophic error.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

CATERR LED Indicator	
LED Color/State	**Definition**
Orange: On	System CATERR

LAN1/LAN2 LEDs

Each of the LAN1 and LAN2 ports of the rear I/O of the X14SAE/X14SAE-F motherboard features two LEDs. The LED on the right indicates activity, and the LED on the left indicates the speed of the connection.

LAN1 Speed LED (Left) LED State	
LED Color	**Definition**
Green	1000 Mbps
Amber	100 Mbps
Off	10 Mbps

LAN2 Speed LED (Left) LED State	
LED Color	**Definition**
Green	2500 Mbps
Amber	1000 Mbps
Off	100/10 Mbps

LAN1/LAN2 Activity LED (Right) LED State		
LED Color	**Status**	**Definition**
Amber	Flashing	1000 Mbps

BMC LAN LEDs (X14SAE-F only)

The dedicated BMC LAN port on the rear I/O of theX14SAE-F motherboard features two LEDs. One LED indicates activity, and the other LED indicates speed.

BMC LAN LEDs		
	Color/State	**Definition**
Link (left)	Amber: Solid Green: Solid	100 Mbps 1 Gbps
Activity (right)	Amber: Blinking	Active

Unit ID (UID) LED (X14SAE-F only)

The UID LED indicator is located at UID on the X14SAE-F motherboard. This UID indicator provides easy identification of a system that may need services.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

UID LED LED Indicator	
LED Color	**Definitions**
Blue: On	System Identified

Onboard Power LED

An Onboard Power LED is located at LEDPWR on the X14SAE/X14SAE-F motherboard. When LEDPWR is on, the AC power cable is connected and the system is on. When LEDPWR is blinking, it is in standby (S3, suspend to RAM) mode.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Onboard Power LED Indicator	
LED Color	**Definition**
Off	System Power Off
On	System Power On
Blinking	S3, suspend to RAM

Standby Power / BMC Heartbeat LED

For X14SAE, the LEDBMC works as a standby power LED. When the LED is solid green, the standby power is on. For X14SAE-F, the LEDBMC works as a BMC Heartbeat LED. When this LED is blinking, the BMC is functioning normally.

For a detailed diagram of the X14SAE/X14SAE-F motherboard, see the layout under "Quick Reference" on page 13.

Standby Power / BMC Heartbeat LED Indicator		
Motherboard	**LED Color/State**	**Definition**
X14SAE	Green: Solid On	Standby Power On
X14SAE-F	Green: Blinking	BMC Normal

Chapter 3:

Troubleshooting

The following content contains information on common issues and how to resolve them.

3.1 Troubleshooting Procedures **78**
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No Power 78
No Video 78
System Boot Failure 78
Memory Errors 79
Losing the System's Setup Configuration 79
If the System Becomes Unstable 79
If the RHEL 9.4 Installation Stops 81
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Simultaneous Usage of Intel vPro/AMT and BMC Remote Control Functions (X14SAE-F) 81
3.2 Technical Support Procedures **82**
3.3 Motherboard Battery **83**
3.4 Where to Get Replacement Components **84**
3.5 Returning Merchandise for Service **85**
3.6 Feedback **86**

3.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the "Technical Support Procedures" on page 82 or "Returning Merchandise for Service" on page 85 section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components. If the below steps do not fix the setup configuration problem, contact your vendor for repairs.

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install the processor (making sure it is fully seated) and connect the front panel connectors to the motherboard.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Make sure that the power connectors are properly connected.
3. Check that the 115 V/230 V switch, if available, on the power supply is properly set.
4. Turn the power switch on and off to test the system, if applicable.
5. Check the processor socket for bent pins and make sure the processor is fully seated.
6. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you do not have video, remove all add-on cards and cables.
2. Remove all memory modules and turn on the system (if the alarm is on, check the specs of memory modules, reset the memory, or try a different one).

System Boot Failure

If the system does not display Power-On-Self-Test (POST) or does not respond after the power is turned on, do the following:

1. Check the screen for an error message.
2. Clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper. Restart the system. Refer to "CMOS Clear" on page 71.
3. Remove all components from the motherboard and turn on the system with only one DIMM installed. If the system boots, turn off the system and repopulate the components back into the system to retest. Add one component at a time to isolate which one may have caused the system boot issue.

Memory Errors

When suspecting faulty memory is causing the system issue, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See "Component Installation" on page 31 for installation instructions. (For memory compatibility, refer to the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DIMMs recommended by the manufacturer.
4. Check for bad DIMMs or slots by swapping a single module among all memory slots and check the results.

Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to "Introduction" on page 12 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

If the System Becomes Unstable

A. If the system becomes unstable during or after OS installation, check the following:

   1. Processor/BIOS support: Make sure that your processor is supported and that you have the latest BIOS installed in your system.

2. Memory support: Make sure that the memory modules are supported. Refer to the product page on our website at https://www.supermicro.com. Test the modules using memtest86 or a similar utility.

   Note: Click on the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.

3. Storage Drive support: Make sure that all storage drives work properly. Replace the failed storage drives with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and processor/system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the processor and system temperatures are within the normal range. Also, check the front panel Overheat LED and make sure that it is not on.
5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

B. If the system becomes unstable before or during OS installation, check the following:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a USB flash or media device.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the processor and a memory module installed) to identify the trouble areas. Refer to the steps listed above in this section for proper troubleshooting procedures.
4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

If the RHEL 9.4 Installation Stops

If the RHEL 9.4 installation process stops at "Started GNOME Display Manager," you can resolve this issue by following the workaround recommended by Red Hat:

1. Switch to text mode during the installation.
2. Edit the configuration file located at /etc/gdm/custom.conf, and remove the comment symbol (#) from the line "WaylandEnable=false".
3. Restart the GNOME Display Manager (GDM) service using the following command:

   # systemctl restart gdm

M.2 RAID Creating Failure

When creating RAID with the M.2 devices via the Intel Rapid Storage Technology (RST) feature in the BIOS Setup utility, it is recommended that you use client M.2 devices instead of enterprise M.2 devices when creating a RAID in the BIOS.

Simultaneous Usage of Intel vPro/AMT and BMC Remote Control Functions (X14SAE-F)

To use Intel vPro/AMT and BMC remote control functions simultaneously on the X14SAE-F motherboard:

1. Make sure that your processor supports Intel vPro/AMT and iGFX.
2. Enter the BIOS Setup utility, go to the Graphics Configuration menu (under Advanced -> Chipset Configuration), and set the Primary Display feature to "IGFX", or make sure the Internal Graphics feature is set to "Enabled".

3.2 Technical Support Procedures

Before contacting Technical Support, take the following steps. Also, note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problems with the specific system configuration that was sold to you.

1. Refer to "Troubleshooting Procedures" on page 78 or see the FAQs on our website (https://www.supermicro.com/FAQ/index.php) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (https://www.supermicro.com/support/resources/bios_ipmi.php).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
   - Motherboard model and PCB revision number
   - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
   - System configuration
4. An example of a Technical Support form is on our website at https://webpr3.supermicro.com/SupportPortal.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. For Supermicro contact information, refer to "Contacting Supermicro" on page 11.

3.3 Motherboard Battery

For information on removing, disposing of, and replacing the motherboard battery of your system, refer to "Battery Removal and Installation" on page 49.

3.4 Where to Get Replacement Components

If you need replacement parts for your X14SAE/X14SAE-F motherboard, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found on the Supermicro website:

https://www.supermicro.com

Under the "Buy" menu, click the "Where to Buy" link.

3.5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations can be requested online at the following page:

https://www.supermicro.com/RmaForm

Whenever possible, repack the motherboard in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the motherboard securely, using packaging material to surround the motherboard so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

3.6 Feedback

Supermicro values your feedback as we strive to improve our customer experience in all facets of our business. Email us at Techwriterteam@supermicro.com to provide feedback on our manuals.

Chapter 4:

UEFI BIOS

The following content contains information on BIOS configuration with the X14SAE/X14SAE-F motherboard.

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4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the motherboard. The BIOS is stored on a chip and can be easily upgraded using the UEFI script (flash.nsh), the BMC WebUI, or the SuperServer Automation Assistant (SAA) utility.

Notes:

- Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual
- Only the X14SAE-F motherboard supports the BIOS upgrade using the BMC WebUI and the SuperServer Automation Assistant (SAA) utility.

Updating BIOS

It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at the following page:

https://www.supermicro.com/support/resources/bios_ipmi.php

Check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading.

Important: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure! Read the motherboard README file carefully before you perform the BIOS update.

Unzip the BIOS file onto a USB device formatted with the FAT/FAT32 file system. When the UEFI shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier. Enter flash.nsh BIOSname#.### at the prompt to start the BIOS update process. Reboot the system when you see the message that BIOS update has completed.

Starting the Setup Utility

To enter the BIOS Setup utility, press the <Delete> key while the system is booting-up. In most cases, the <Delete> key is used to invoke the BIOS Setup screen. There are a few cases when other hot keys are used, such as <F1>, <F2>, etc. Each main BIOS menu option is described in this manual.

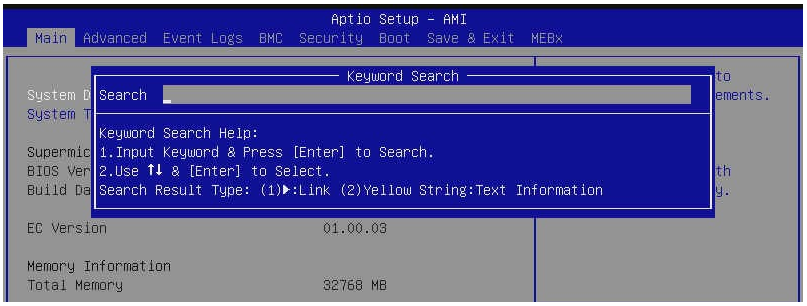
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When a BIOS submenu or item is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in Bold are the default values.

A "►" indicates a submenu. Highlighting such an item and pressing the <Enter> key open the list of settings within that submenu.

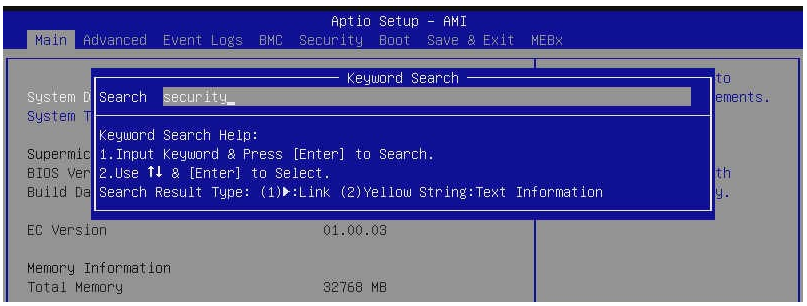
The BIOS Setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <F4>, <F5>, <F6>, <Enter>, <ESC>, the arrow keys, etc.) can be used at any time during the setup navigation process.

Tips on using the <F5> key:

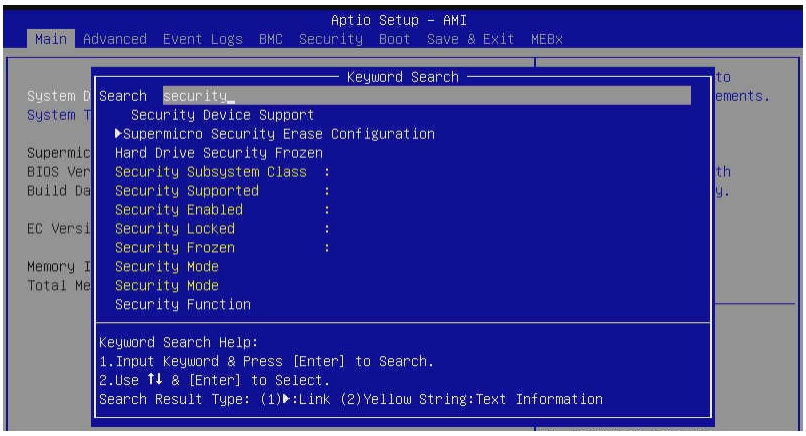
To search for a BIOS menu, submenu, or item using the <F5> key, press <F5> and the Keyword Search screen will appear as shown below.



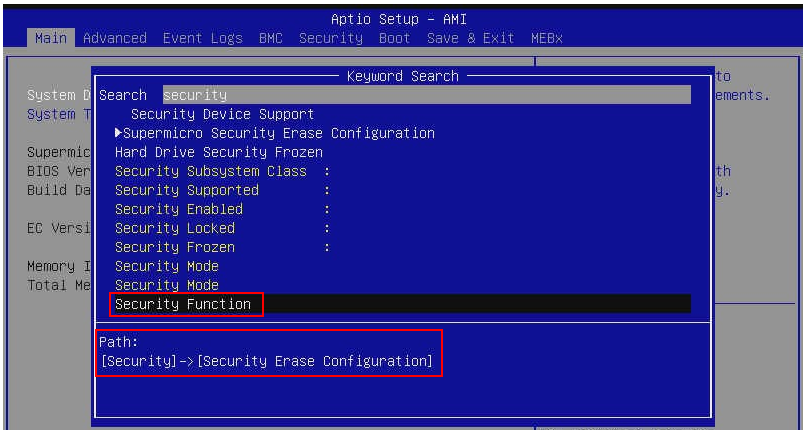
In the Search field, enter a keyword (e.g., security).



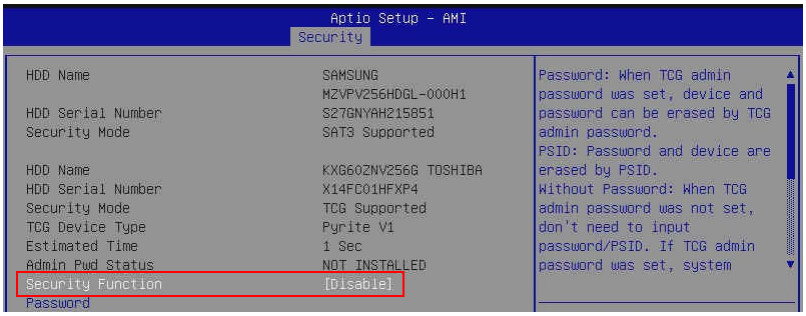
Pressing <Enter> will list the search results.



Use the arrow keys to select, for example, Security Function. The Keyword Search screen will display the path information for Security Function.

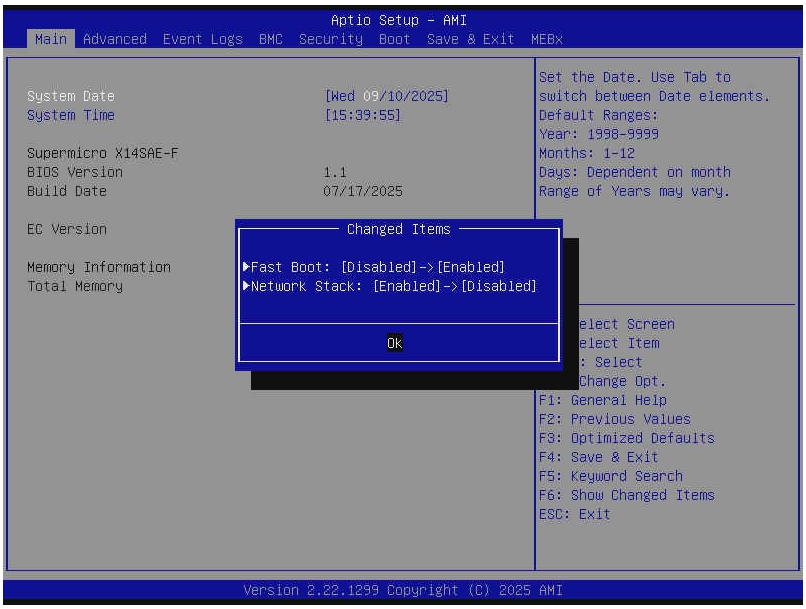


In this case, pressing <Enter> will go to the page that contains the selected BIOS item, which is Security Function.



Tips on using the <F6> key:

The <F6> key can be used as a hot key to display the BIOS settings that have been changed. After pressing <F6>, for example, the BIOS screen below appears. This BIOS screen indicates that "Fast Boot" has been set to Enabled and "Network Stack" has been set to Disabled.



4.2 Main Setup

The Main setup screen appears when the AMI BIOS Setup utility is first entered. To return to the Main setup screen, select the Main tab at the top of the screen. The Main BIOS setup screen is shown below.

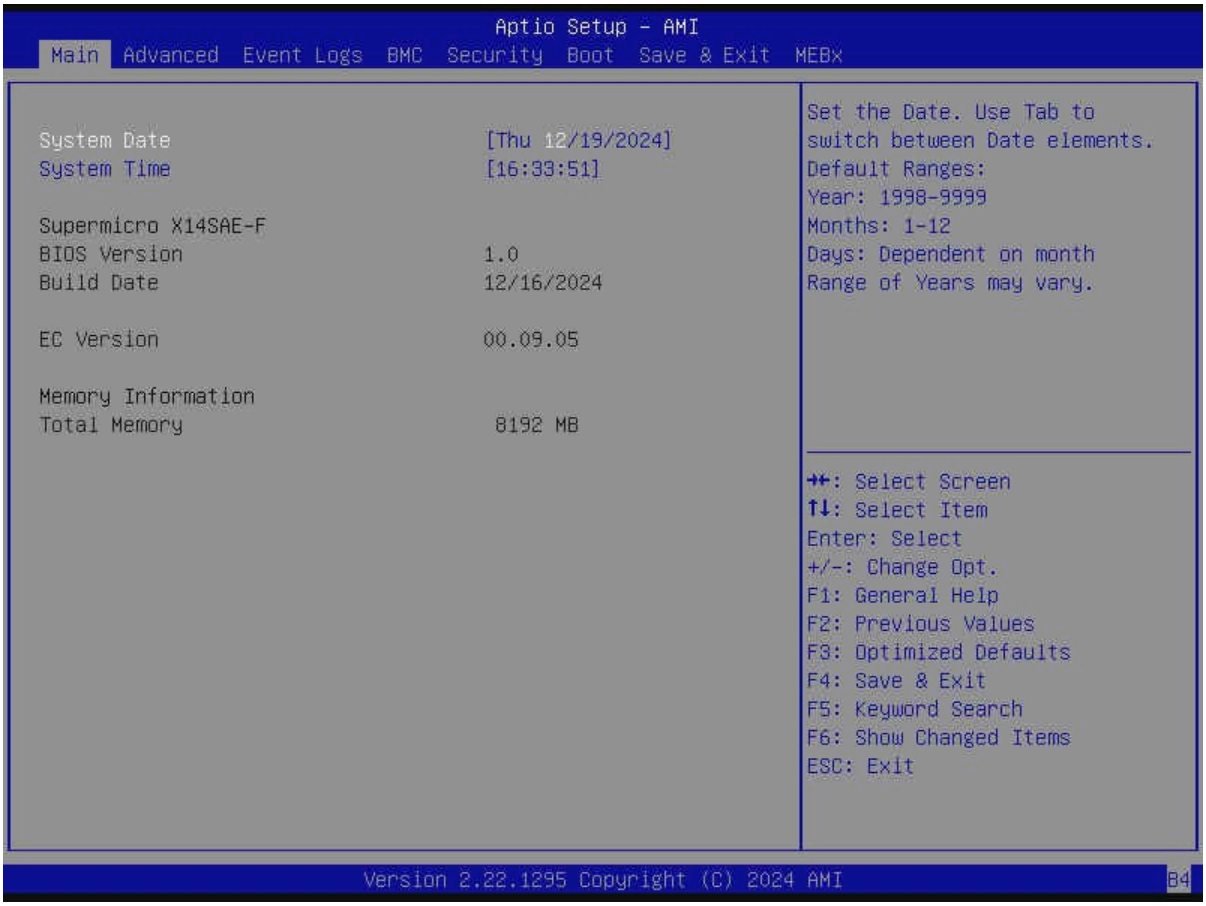


Figure 4-1. Main Screen

System Date/System Time

Use the two features to change the system date and time. Highlight **System Date** or **System Time** using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.

Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

SupermicroX14SAE/X14SAE-F

BIOS Version

This feature displays the version of the BIOS ROM used in the system.

Build Date

This feature displays the date when the version of the BIOS ROM used in the system was built.

EC Version

This feature displays the version of the Embedded Controller (EC) used in the system.

Memory Information

Total Memory

This feature displays the total size of memory available in the system.

4.3 Advanced Setup Configurations

Use the arrow keys to select the Advanced submenu and press <Enter> to access the submenu items.

Important: Use caution when changing the Advanced settings. An incorrect value, an improper DRAM frequency, or a wrong BIOS timing setting may cause the system to malfunction. When this occurs, revert the settings to the default manufacturing settings.

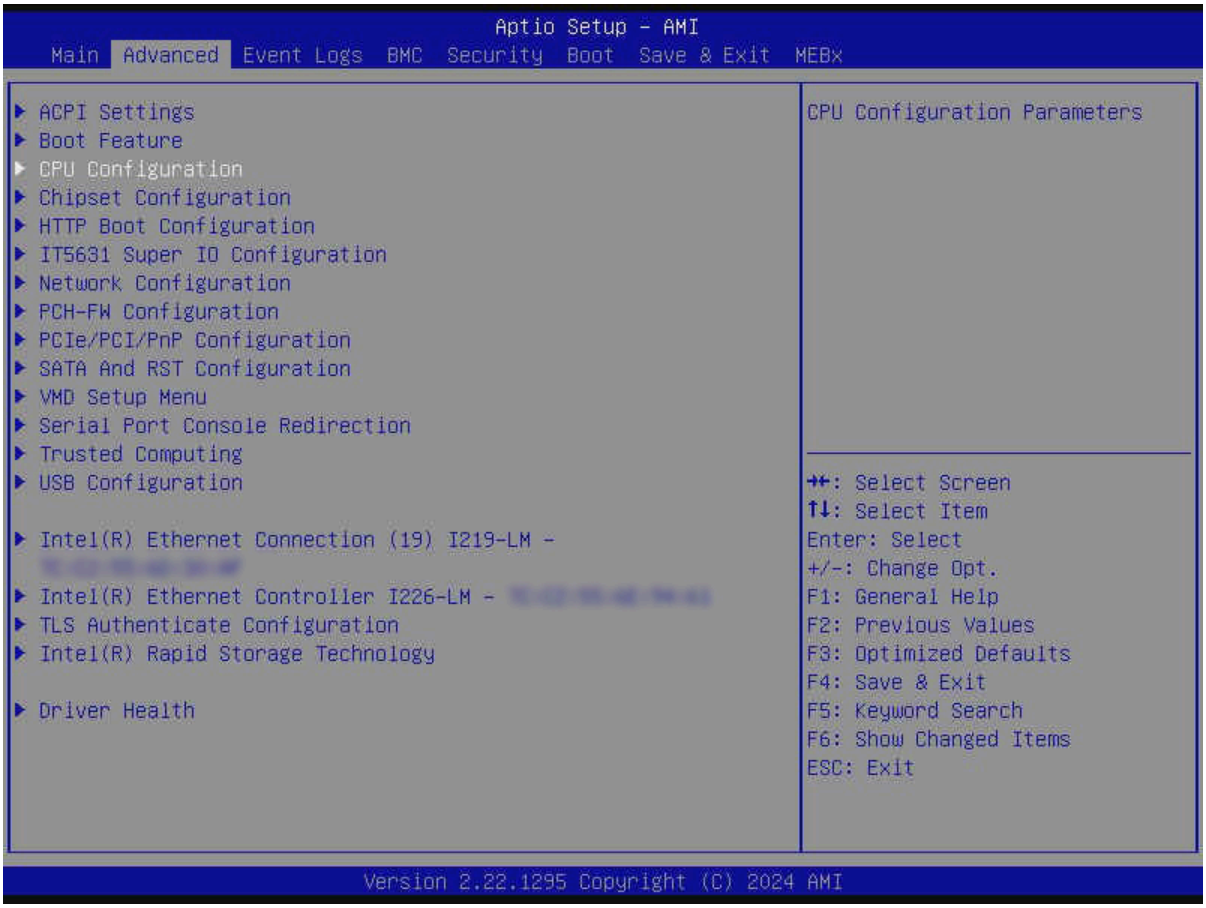


Figure 4-2. Advanced Setup Configuration Screen

ACPI Settings Menu

►ACPI Settings

ACPI Sleep State

Use this feature to select the ACPI Sleep State that the system will enter into when the suspend button is activated. The options are Suspend Disabled and **S3 (Suspend to RAM)**.

WHEA Support

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform. WHEA provides a common infrastructure for the system to handle hardware errors within the Windows OS environment, reducing system crashes and enhancing system recovery and health monitoring. The options are Disabled and **Enabled**.

High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are Disabled and **Enabled**.

Native PCIe Enable

Enable this feature to grant control of PCI Express Native hot plug, PCI Express Power Management Events, and PCI Express Capability Structure Control. The options are Disabled and **Enabled**.

Native ASPM

Select Enabled for the operating system to control the ASPM, or Disabled for the BIOS to control the ASPM. The options are Auto, Enabled, and **Disabled**.

Boot Feature Menu

►Boot Feature

Fast Boot

This feature enables the system to boot with a minimal set of required devices to launch. This has no effect on BBS boot options. The options are **Disabled** and Enabled.

Quiet Boot

Use this feature to select the screen between displaying the Power On Self Test (POST) messages or the OEM logo upon bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Disabled and **Enabled**.

Note: BIOS POST messages are always displayed regardless of the setting of this feature.

Bootup NumLock State

Use this feature to set the power on state for the <Num Lock> key. The options are **On** and Off.

Wait For "F1" If Error

Select Enabled to force the system to wait until the <F1> key is pressed if an error occurs. The options are **Disabled** and Enabled.

Re-try Boot

If this feature is set to Enabled, the system BIOS will automatically reboot the system from an Extensible Firmware Interface (EFI) boot device after an initial boot failure. The options are **Disabled** and Enabled.

Power Configuration

Watch Dog Function

Select Enabled to allow the Watchdog timer to reboot the system when it is inactive for more than five minutes. The options are **Disabled** and Enabled.

Watch Dog Action (Available when "Watch Dog Function" is set to Enabled)

Use this feature to configure the Watchdog timeout setting. The options are **Reset** and NMI.

DeepSx Power Policies

Use this feature to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S4 to use Hibernation mode (Suspend to Disk) so that all data stored in the main memory can be saved in a non-volatile memory area such as in a hard drive and then power down the system. Enable S5 to power off the whole system except the power supply unit (PSU) and keep the power button alive so that you can wake up the system by using a USB keyboard or mouse. The options are **Disabled**, Enabled In S4-S5, and Enabled in S5.

Delay Time Before PCI Enumeration

Use this feature to set the amount of time the system waits before enumerating PCI devices during the boot process. The valid range is 0–30 with a step of 1 second. The default setting is **0** for off, meaning the system will skip the delay time and immediately begin enumerating PCI devices.

CPU Configuration Menu

►CPU Configuration

Important: Setting the wrong values for the features included in the following sections may cause the system to malfunction.

The following processor information is displayed.

- CPU Signature
- Microcode Patch
- Max CPU Speed
- Min CPU Speed
- CPU Speed
- Number of Performance-core(s)
- Number of Efficient-core(s)
- Hyper Threading Technology
- VMX
- SMX/TXT
- 64-bit
- EIST Technology
- CPU C3–C10 State
- Performance L1 Data Cache
- Performance L1 Instruction Cache
- Performance L2 Cache
- Performance L3 Cache
- Efficient L1 Data Cache
- Efficient L1 Instruction Cache
- Efficient L2 Cache
- Efficient L3 Cache

Intel Virtualization Technology

Select Enabled to enable the Intel Vanderpool Technology for Virtualization platform support, which allows multiple operating systems to run simultaneously on the same computer to maximize system resources for performance enhancement. The options are Disabled and **Enabled**. Changes take effect after you save settings and reboot the system.

Active Performance-cores

This feature determines how many performance cores will be activated for each processor package. When all is selected, all cores in the processor will be activated. The options are **All** 7, 6, 5, 4, 3, 2, and 1.

Active Efficient-cores

This feature determines how many efficient cores will be activated for each processor package. When all is selected, all cores in the processor will be activated. The options are **All**, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, ,5, 4, 3, 2, and 1.

Note: The number of cores depend on the processor used in the system.

AES

Select Enabled to use the Intel Advanced Encryption Standard (AES) to ensure data security. The options are Disabled and **Enabled**.

Boot Performance Mode

This feature allows you to select the performance state that the BIOS will set before the operating system handoff. The options are **Max Non-Turbo Performance** and Turbo Performance.

Intel® SpeedStep™

Intel SpeedStep Technology allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disabled and **Enabled**.

Intel® Speed Shift Technology

Use this feature to enable or disable Intel Speed Shift Technology support. When this feature is enabled, the Collaborative Processor Performance Control (CPPC) version 2 interface will be available to control CPU P-States. The options are Disabled and **Enabled**.

Turbo Mode (Available when "Intel SpeedStep" or "Intel Speed Shift Technology" is set to Enabled)

Select Enabled to allow the CPU to operate at the manufacturer-defined turbo speed by increasing CPU clock frequency. This feature is available when it is supported by the processors used in the system. The options are Disabled and **Enabled**.

Power Limit 1 Override

Select Enabled to support average power limit (PL1) override. The options are **Disabled** and Enabled.

Power Limit 2 Override

Select Enabled to support rapid power limit (PL2) override. The options are Disabled and **Enabled**.

Power Limit 2

Use this feature to configure the value for Power Limit 2. The value is in milliwatts and the step size is 125 mW. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting. If the value is 0, the BIOS will set PL2 as 1.25* TDP.

C-States

Use this feature to enable the C-State of the CPU. The options are Disabled and **Enabled**.

Enhanced C-States

Use this feature to enable the enhanced C-State of the CPU. The options are Disabled and **Enabled**.

C-State Auto Demotion

Use this feature to prevent unnecessary excursions into the C-states to improve latency. The options are Disabled and **C1**.

C-State Un-Demotion

This feature allows you to enable or disable the un-demotion of C-State. The options are Disabled and **C1**.

Package C-State Demotion

Use this feature to enable or disable the Package C-State demotion. The options are Disabled and **Enabled**.

Package C-State Un-Demotion

Use this feature to enable or disable the Package C-State un-demotion. The options are Disabled and **Enabled**.

C-State Pre-Wake

This feature allows you to enable or disable the C-State Pre-Wake. The options are Disabled and **Enabled**.

Package C-State Limit

Use this feature to set the Package C-State limit. The options are C0/C1, C2, C3, C6, C7, C7s, C8, C9, C10, Cpu Default, and **Auto**.

Monitor MWAIT

Select Enabled to support Monitor and Mwait, which are two instructions in Streaming SIMD Extension 3 (SSE3) to improve synchronization between multiple threads for CPU performance enhancement. The options are Disabled and **Enabled**.

Performance Mode

Select Enabled for optimal performance, which may increase the risk of CPU overheating. Select Disabled for thermal safety, which may limit CPU performance. The options are **Disabled** and Enabled.

Chipset Configuration Menu

►Chipset Configuration

Important: Setting the wrong values in this section may cause the system to malfunction.

System Agent (SA) Configuration Menu

►System Agent (SA) Configuration

Vt-d

This feature displays if Vt-d is enabled or disabled.

VT-d

Select Enabled to activate Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The options are **Enabled** and Disabled.

X2APIC Enable

Use this feature to enable or disable the Advanced Programmable Interrupt Controller (X2APIC) operating mode. The options are Disabled and **Enabled**.

DMA Control Guarantee

Use this feature to enable or disable DMA Control Guarantee bit. The options are **Enabled** and Disabled.

Memory Configuration Menu

►Memory Configuration

This submenu is used to configure the Integrated Memory Controller (IMC) settings.

- Memory RC Version
- Memory Frequency
- Memory Timings (tCL-tRCD-tRP-tRAS)

- DIMMA1
- DIMMA2
- DIMMB1
- DIMMB2

Maximum Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1600, 2400, 3200, 3600, 4000, 4200, 4400, 4600, 4800, 5000, 5200, 5400, 5600, 5800, 6000, 6200, and 6400.

Max TOLUD

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB, 3.25 GB, and 3.5 GB.

Memory Scrambler

Use this feature to enable or disable memory scrambler support. The options are Disabled and **Enabled**.

Force ColdReset

Use this feature to enable or disable a cold boot during a MRC execution. The options are Enabled and **Disabled**.

Force Single Rank

Select enabled to use only Rank 0 in each DIMM. The options are **Disabled** and Enabled.

Memory Remap

Use this feature to enable or disable memory remap above 4 GB. The options are **Enabled** and Disabled.

MRC Fast Boot

Use this feature to enable or disable fast path through the memory reference code. The options are Disabled and **Enabled**.

Total Memory Encryption

Use this feature to enable or disable Total Memory Encryption (TME). When enabled, Intel TME enhances memory data security. The options are **Disabled** and Enabled.

Graphics Configuration Menu

►Graphics Configuration

This submenu allows you to configure the graphics configuration settings.

Graphics Configuration

IGFX GOP Version

Skip Scanning of External Gfx Card

If this feature is enabled, the system will not scan for an external graphics card on PEG and PCIe slots. The options are **Disabled** and Enabled.

Primary Display

Use this feature to select the primary video display. The options are **Auto** and IGFX.

Internal Graphics

Select Auto to keep an internal graphics device installed on an expansion slot supported by the CPU to be automatically enabled. The options are **Auto**, Disabled, and Enabled.

DVMT Pre-Allocated

Dynamic Video Memory Technology (DVMT) allows dynamic allocation of system memory to be used for video devices to ensure best use of available system memory based on the DVMT 5.0 platform. The options are 0M, 32M, 64M, 96M, **128M**, 4M, 8M, 12M, 16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, and 60M.

Configure GT for use

Use this feature to enable or disable GT configuration. The options are Disabled and **Enabled**.

PAVP Enable

Use this feature to enable or disable PAVP support. The options are Disabled and **Enabled**.

DMI Configuration Menu

►DMI Configuration

This submenu allows you to configure the DMI configuration settings.

DMI ASPM

Use this feature to set the Active State Power Management (ASPM) state on the System Agent (SA) side of the DMI Link. The options are Disabled, ASPM L1, and **Auto**.

PEG Port Configuration

►PEG Port Configuration

CPU SLOT6 PCIe 5.0 x16

CPU SLOT3 PCIe 5.0 x8 (IN X16)

CPU SLOT3 PCIe 5.0 x8 (IN X16)

When a device is detected in the corresponding slot, the BIOS displays the device information.

Note: If CPU SLOT3 is populated with a PCIe 1x8 device, the device information appears in the first "CPU SLOT3 PCIE 5.0 X8 (IN X16)" feature. When CPU SLOT3 is populated with a PCIe 2x4 device, the device information appears in both "CPU SLOT3 PCIE 5.0 X8 (IN X16)" features.

Enable Root Port

Use this feature to enable or disable the PCIe port. The options are Disabled and **Enabled**.

Max Link Speed

Use this feature to select the maximum link speed for the PCIe port. The options are **Auto**, Gen1, Gen2, Gen3, Gen4, and Gen5.

CPU SLOT7 PCIe 4.0 x4

Enable Root Port

Use this feature to enable or disable the PCIe port. The options are Disabled and **Enabled**.

Max Link Speed

Use this feature to select the maximum link speed for the PCIe port. The options are **Auto**, Gen1, Gen2, Gen3, and Gen4.

M.2-C1

When a device is detected in the specified slot, the BIOS displays the device information.

Enable Root Port

Use this feature to enable or disable the PCIe port. The options are Disabled and **Enabled**.

Max Link Speed

Use this feature to select the maximum link speed for the PCIe port. The options are **Auto**, Gen1, Gen2, Gen3, Gen4, and Gen5.

GT - Power Management Control

GT - Power Management Control

RC6 (Render Standby)

Use this feature to enable render standby support. The options are Disabled and **Enabled**.

Maximum GT Frequency

Use this feature to define the Maximum GT frequency. Choose between 1650 MHz (RPN) and 6000 MHz (RP0). Any value beyond this range will be clipped to its min/max supported by the CPU. The options are **Default Max Frequency**, 100Mhz, 150Mhz, 200Mhz, 250Mhz, 300Mhz, 350Mhz, 400Mhz, 450Mhz, 500Mhz, 550Mhz, 600Mhz, 650Mhz, 700Mhz, 750Mhz, 800Mhz, 850Mhz, 900Mhz, 950Mhz, 100Mhz, 1050Mhz, 1100Mhz, 1150Mhz, and 1200Mhz.

Disable Turbo GT Frequency

Use this feature to disable Turbo GT frequency. If set to Enabled, Turbo GT frequency becomes disabled. If set to Disabled, GT frequency limiters will be removed. The options are Enabled and **Disabled**.

PCH-IO Configuration Menu

PCH-IO Configuration

The following information is displayed.

- PCH SKU
- Stepping

Frontside Audio Mode

Use this feature to configure the audio mode for the Front Audio Header. The audio header's default setting is for a headphone/microphone combo jack. Select HD Audio if the audio header is connected to HD Audio port. Select AC'97 if the audio header is connected to AC'97 audio port. The options are HD Audio, AC' 97 and **Combo Jack**.

PCI Express Configuration

PCI Express Configuration

►Onboard LAN2

►SLIMSAS_8I Port0

►SLIMSAS_8I Port1

►M.2-P1

ASPM

Use this feature to activate the Active State Power Management (ASPM) level for a PCIe device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, **L1**, and Auto.

L1 Substates

Use this feature to set the PCI Express L1 Substate. The options are Disabled, L1.1 and **L1.1 & L1.2**.

PCIe Speed

Use this feature to set the PCI Express port speed. The options are **Auto**, Gen1, Gen2, Gen3, and Gen4.

Peer Memory Write Enable

Use this feature to enable or disable Peer Memory Write. The options are **Disabled** and Enabled.

HTTP Boot Configuration Menu

►HTTP Boot Configuration

HTTP Boot Policy

Use this feature to set the HTTP boot policy. The options are Apply to all LANs, **Apply to each LAN**, and Boot Priority #1 instantly.

HTTPS Boot Checks Hostname

Important: Disabling "HTTPS Boot Checks Hostname" is a violation of RFC 6125 and may expose you to Man-in-the-Middle Attacks. Supermicro is not responsible for any and all security risks incurred by you disabling this feature.

Enable this feature for HTTPS boot to check the hostname of the TLS certificates to see if it matches the host name provided by the remote server. The options are **Enabled** and Disabled (WARNING: Security Risk!!).

Priority of HTTP Boot

Instance of Priority 1: (Available when your motherboard supports this feature)

This feature sets the rank target port. The default setting is **1**.

Select IPv4 or IPv6

This feature specifies which connection the target LAN port should boot from. The options are **IPv4** and IPv6.

Boot Description

Use this feature to enter a boot description, which cannot be longer than 75 characters. Be sure to enter a boot description; otherwise, the boot option for the URI cannot be created.

Boot URI

Enter a Boot Uniform Research Identifier (URI) with 128 characters or shorter. This Boot URI determines how IPv4 Boot Option and IPv6 Boot Option will be created.

Instance of Priority 2: (Available when your motherboard supports this feature)

This feature sets the rank target port. The default setting is **0**.

Super IO Configuration Menu

►Super IO Configuration

The following information is displayed.

- Super IO Chip

Note: This submenu is available when your system supports this feature.

Serial Port 1 Configuration Menu

►Serial Port 1 Configuration

Serial Port 1

Select Enabled to enable serial port 1. The options are Disabled and **Enabled**.

Device Settings (Available when "Serial Port 1" above is set to Enabled)

This feature displays the base I/O port address and the Interrupt Request address of serial port 1.

Change Settings (Available when "Serial Port 1" above is set to Enabled)

Use this feature to specify the base I/O port address and the Interrupt Request address of serial port 1. Select Auto for the BIOS to automatically assign the base I/O and IRQ address to serial port 1. The options are **Auto**, (IO=3F8h; IRQ=4;), (IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;), (IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;), (IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;), and (IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;).

Network Stack Configuration Menu

►Network Stack Configuration

Network Stack

Select Enabled to enable Preboot Execution Environment (PXE) or Unified Extensible Firmware Interface (UEFI) for network stack support. The options are Disabled and **Enabled**.

IPv4 PXE Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv4 PXE boot support. If this feature is disabled, it will not create the IPv4 PXE boot option. The options are Disabled and **Enabled**.

IPv4 HTTP Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv4 HTTP boot support. If this feature is disabled, it will not create the IPv4 HTTP boot option. The options are **Disabled** and Enabled.

IPv6 PXE Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv6 PXE boot support. If this feature is disabled, it will not create the IPv6 PXE boot option. The options are Disabled and **Enabled**.

IPv6 HTTP Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv6 HTTP boot support. If this feature is disabled, it will not create the IPv6 HTTP boot option. The options are **Disabled** and Enabled.

PXE Boot Wait Time (Available when "Network Stack" is set to Enabled)

Use this feature to set the wait time (in seconds) upon which the system BIOS will wait for you to press the <ESC> key to abort PXE boot instead of proceeding with PXE boot by connecting to a network server immediately. Press the <+> or <-> key on your keyboard to change the value. The default setting is **0**.

Media Detect Count (Available when "Network Stack" is set to Enabled)

Use this feature to set the wait time (in seconds) for the BIOS ROM to detect the presence of a LAN media either via the Internet connection or via a LAN port. Press the <+> or <-> key on your keyboard to change the value. The default setting is **1**.

MAC:(MAC address)-IPv4 Network Configuration Menu

►MAC:(MAC address)-IPv4 Network Configuration

Configured

Enable this feature to configure network addresses for DHCP, local IP address, local netmask, local gateway, and local DNS server. The options are **Disabled** and Enabled.

Enable DHCP (Available when "Configured" is set to Enabled)

Select Enabled to support Dynamic Host Configuration Protocol (DHCP), which allows the BIOS to search for a DHCP server attached to the network and request the next available IP address for this computer. The options are **Disabled** and Enabled.

Local IP Address (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to enter an IP address for the local machine.

Local NetMask (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to set the netmask for the local machine.

Local Gateway (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to set the gateway address for the local machine.

Local DNS Servers (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to set the Domain Name System (DNS) server address for the local machine.

Save Changes and Exit

Press <Enter> to save changes and exit.

MAC:(MAC address)-IPv6 Network Configuration Menu

►MAC:(MAC address)-IPv6 Network Configuration

►Enter Configuration Menu

The following information is displayed.

- Interface Name
- Interface Type
- MAC address

- Host address
- Route Table
- Gateway addresses
- DNS addresses

Interface ID

Use this feature to change/enter the 64-bit alternative interface ID for the device. The string format is colon separated. The default setting is the MAC address above.

DAD Transmit Count

Use this feature to set the number of consecutive neighbor solicitation messages that have been sent while performing duplicate address detection on a tentative address. The default setting is **1**.

Policy

Use this feature to select how the policy is to be configured. The options are **automatic** and manual.

►Advanced Configuration

Note: This submenu is available when "Policy" is set to manual.

New IPv6 address: Use this feature to enter the IPv6 address for the local machine.

New Gateway addresses: Use this feature to set the gateway address for the local machine.

New DNS addresses: Use this feature to set the DNS server address for the local machine.

Commit Changes and Exit: Press <Enter> to save changes and exit.

Discard Changes and Exit: Press <Enter> to discard changes and exit.

Save Changes and Exit

Press <Enter> to save changes and exit.

MAC:(MAC address)-IPv4 Network Configuration Menu

►MAC:(MAC address)-IPv4 Network Configuration

Configured

Enable this feature to configure network addresses for DHCP, local IP address, local netmask, local gateway, and local DNS server. The options are **Disabled** and Enabled.

Enable DHCP (Available when "Configured" is set to Enabled)

Select Enabled to support Dynamic Host Configuration Protocol (DHCP), which allows the BIOS to search for a DHCP server attached to the network and request the next available IP address for this computer. The options are **Disabled** and Enabled.

Local IP Address (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to enter an IP address for the local machine.

Local NetMask (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to set the netmask for the local machine.

Local Gateway (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to set the gateway address for the local machine.

Local DNS Servers (Available when "Configured" is set to Enabled and "Enable DHCP" is set to Disabled)

Use this feature to set the Domain Name System (DNS) server address for the local machine.

Save Changes and Exit

Press <Enter> to save changes and exit.

MAC:(MAC address)-IPv6 Network Configuration Menu

►MAC:(MAC address)-IPv6 Network Configuration

►Enter Configuration Menu

The following information is displayed.

- Interface Name
- Interface Type
- MAC address
- Host address
- Route Table
- Gateway addresses
- DNS addresses

Interface ID

Use this feature to change/enter the 64-bit alternative interface ID for the device. The string format is colon separated. The default setting is the MAC address above.

DAD Transmit Count

Use this feature to set the number of consecutive neighbor solicitation messages that have been sent while performing duplicate address detection on a tentative address. The default setting is **1**.

Policy

Use this feature to select how the policy is to be configured. The options are **automatic** and manual.

►Advanced Configuration

Note: This submenu is available when "Policy" is set to manual.

New IPv6 address: Use this feature to enter the IPv6 address for the local machine.

New Gateway addresses: Use this feature to set the gateway address for the local machine.

New DNS addresses: Use this feature to set the DNS server address for the local machine.

Commit Changes and Exit: Press <Enter> to save changes and exit.

Discard Changes and Exit: Press <Enter> to discard changes and exit.

Save Changes and Exit

Press <Enter> to save changes and exit.

PCH-FW Configuration

ME Firmware Version: 19.0.0.1797

ME Firmware Mode: Normal Mode

ME Firmware SKU: Corporate SKU

ME FW Image Re-Flash

Use this feature to update the Management Engine firmware. The options are **Disabled** and Enabled.

TPM Device Selection

Use this feature to select dTPM or PTT for the TPM device. dTPM is discrete Trusted Platform Module and PTT is Platform Trusted Technology. The options are **dTPM** and PTT.

AMT Configuration

USB Provisioning of AMT

Use this feature to enable or disable USB provisioning. The options are **Disabled** and Enabled.

MAC Pass Through

Use this feature to enable or disable the MAC Pass Through function. The options are **Disabled** and Enabled.

Activate Remote Assistance Process

Use this feature to activate Remote Assistance. Enabling this feature will also trigger the Client Initiated Remote Access (CIRA) boot. The options are **Disabled** and Enabled.

Unconfigure ME

Use this feature to unconfigure ME with resetting the MEBx password to default on next boot. The options are **Disabled** and Enabled.

ASF Configuration

PET Progress

Use this feature to enable or disable PET Events Progress to receive PET Events alerts. The options are Disabled and **Enabled**.

WatchDog

Select Enabled to allow the Watchdog timer to reboot the system when it is inactive for more than five minutes. The options are **Disabled** and Enabled.

OS Timer / BIOS Timer

These options appear if WatchDog (above) is enabled. This is a timed delay in seconds, before a system power down or reset after a BIOS or operating system failure is detected. Enter the value in seconds. The default setting is **0**.

ASF Sensors Table

Enable this feature for the ASF Sensor Table to be added into the ASF ACPI table. The options are **Disabled** and Enabled.

Secure Erase Configuration

Secure Erase mode

Select Real to securely erase a solid state drive. The options are **Simulated** and Real.

Force Secure Erase

Select Enabled to force a secure erase of the solid state drive on the next boot. The options are **Disabled** and Enabled.

One Click Recovery (OCR) Configuration

OCR Https Boot

Use this feature to enable or disable One Click Recovery Https Boot. One Click Recovery is a recovery process that lets you restore your computer to its last known good state with a single command. The options are Disabled and **Enabled**.

OCR PBA Boot

Use this feature to enable or disable One Click Recovery PBA Boot. The options are Disabled and **Enabled**.

OCR Windows Recovery Boot

Use this feature to enable or disable One Click Recovery Windows Boot. The options are Disabled and **Enabled**.

OCR Disable Secure Boot

Use this feature to allow CSME to request Secure Boot to be disabled for One Click Recovery. The options are Disabled and **Enabled**.

PCIe/PCI/PnP Configuration Menu

PCI PERR/SERR Support

Use this feature to enable or disable the runtime event for PCI errors. The options are **Disabled** and Enabled.

Re-Size BAR Support

Use this feature to enable the Resizable BAR support. Resizable BAR is a PCIe interface technology that allows the CPU to access the entire frame buffer. With this technology, your system will be able to handle multiple CPU to GPU transfers simultaneously rather than queuing, which can improve the frame rate performance. The options are **Disabled** and Enabled.

SR-IOV Support

Select Enabled for Single-Root IO Virtualization support. The options are **Disabled** and Enabled.

BME DMA Mitigation

Enable this feature to help block DMA attacks. The options are **Disabled** and Enabled.

Onboard Video Option ROM

Select EFI to boot the computer using the Extensible Firmware Interface (EFI) device installed on the onboard video port. The options are Disabled and **EFI**.

NVMe Firmware Source

Use this feature to select the NVMe firmware to support system boot. The options are **Vendor Defined Firmware** and AMI Native Support. The option of Vendor Defined Firmware is pre-installed on the drive and may resolve errata or enable innovative functions for the drive. The default option, AMI Native Support, is offered by the BIOS with a generic method.

Consistent Device Name Support

This feature controls the device naming for network devices and slots. The options are **Disabled** and Enabled.

Compatibility device Support

Select Enabled if Supermicro add-on card AOC-SLG3-2M2 is installed in SLOT3 of the motherboard. The options are **Disabled** and Enabled.

Note: This feature is for SLOT3 only, and do not select Enabled if AOC-SLG3-2M2 is not installed.

PCIe/PCI/PnP Configuration

CPU SLOT3 PCIe 5.0 x8 (IN X16) OPROM

CPU SLOT6 PCIe 5.0 x16 OPROM

CPU SLOT7 PCIe 4.0 x4 OPROM

M.2-C1 OPROM

M.2-P1 OPROM

SLIMSAS_8I Port0 OPROM

SLIMSAS_8I Port1 OPROM

Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled and **EFI**.

Onboard LAN1 Support

Use this feature to enable or disable LAN1. The options are Disabled and **Enabled**.

Onboard LAN2 Support

Use this feature to enable or disable LAN2. The options are Disabled and **Enabled**.

Onboard LAN1 Option ROM

Select EFI to boot the computer using the EFI device installed on LAN port 1. The options are Disabled and **EFI**.

Note: This feature is available when your motherboard supports onboard LAN ports.

SATA and RST Configuration

SATA And RST Configuration

SATA Controller(s)

Use this feature to enable or disable the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and Disabled.

Support Aggressive Link Power Management

When this feature is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link in a low power mode during extended periods of I/O inactivity and will return the link to an active state when I/O activity resumes. The options are Disabled and **Enabled**.

SATA0 / SATA1 / SATA2 / SATA3

This feature displays the information detected on the installed SATA drive on the particular SATA port.

Software Preserve Support

Hot Plug

Set this feature to Enable for hot plug support, which allows you to replace a SATA drive without shutting down the system. The options are Disabled and **Enabled**.

Spin Up Device

Set this feature to enable or disable the PCH to initialize the device. The options are **Disabled** and Enabled.

SATA Device Type

Use this feature to specify if the SATA port is connected to a Solid State Drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

VMD Setup Menu

►VMD Setup Menu

VMD Configuration

Enable VMD Controller

Use this feature to enable or disable the VMD controller. The options are **Disabled** and Enabled.

Enable VMD Global Mapping (Available when Enable VMD Controller is set to "Enabled")

Use this feature to enable or disable VMD global mapping. The options are **Disabled** and Enabled.

Map PCH SATA Controller under VMD (Available when Enable VMD Controller is set to "Enabled")

Use this feature to map or unmap the selected root port to VMD. The options are **Disabled** and Enabled.

Serial Port Console Redirection Menu

►Serial Port Console Redirection

COM1 (Available when your system supports the serial port of COM1)

Console Redirection

Select Enabled to enable COM port 1 for Console Redirection, which allows a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and Enabled.

Note: This feature will be set to Enabled if there is no BMC support.

SOL/COM2

Note: This feature is available when your system supports serial port of SOL and/or COM2. The "SOL/COM2" here indicates a shared serial port, and SOL is used as the default.

Console Redirection

Select Enabled to use the SOL/COM2 port for Console Redirection. The options are Disabled and **Enabled**.

AMT SOL Console Redirection

Select Enabled to enable console redirection support for the specified serial port. The options are **Disabled** and Enabled.

►Console Redirection Settings

Note: This submenu is available when "Console Redirection" for COM1, SOL/COM2, or AMT SOL is set to Enabled.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

Bits Per Second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 and **8** (bits).

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0 and the number of 1s in data bits is even. Select Odd if the parity bit is set to 0 and the number of 1s in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark, and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 (stop bit) for standard serial data communication. Select 2 (stop bits) if slower devices are used. The options are **1** and 2.

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Putty KeyPad

Use this feature to select the function key and keypad settings on Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and Bootloader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

Use the features below to configure Console Redirection settings to support Out-of-Band Serial Port management.

Console Redirection EMS

Select Enabled to use the SOL port for Console Redirection. The options are **Disabled** and Enabled.

►Console Redirection Settings

Note: This submenu is available when "Console Redirection EMS" is set to Enabled.

Out-of-Band Mgmt Port

Use this feature to select a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1** and SOL/COM2. Note that the option of SOL/COM2 indicates a shared serial port. SOL is available with BMC support.

Terminal Type EMS

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, VT100+, **VT-UTF8**, and ANSI.

Bits Per Second EMS

This feature sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control EMS

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None**, Hardware RTS/CTS, and Software Xon/Xoff.

The following information is displayed.

- **Data Bits EMS**
- **Parity EMS**
- **Stop Bits EMS**

Trusted Computing Menu

►Trusted Computing

When the TPM 2.0 (either onboard or external) is detected by your system, the following information is displayed.

- TPM 2.0 Device Found
- Firmware Version:
- Vendor:

Note: This submenu is available when the TPM 2.0 (either onboard or external) is detected by the BIOS.

Security Device Support

Select Enabled to enable BIOS support for onboard security devices, which are not displayed in the OS. If this feature is set to Enabled, TCG EFI protocol and INT1A interface will not be available. The options are Disabled and **Enabled**.

When "Security Device Support" is set to Enabled and the TPM 2.0 (either onboard or external) is detected by the BIOS, the following information is displayed.

- Active PCR banks
- Available PCR banks

Note: The following features are available when the TPM 2.0 (either onboard or external) is detected by the BIOS.

SHA256 PCR Bank (Available when "Security Device Support" is set to Enabled)

Select Enabled to enable SHA256 PCR Bank support to enhance system integrity and data security. The options are Disabled and **Enabled**.

SHA384 PCR Bank (Available when "Security Device Support" is set to Enabled)

Select Enabled to enable SHA384 PCR Bank support to enhance system integrity and data security. The options are **Disabled** and Enabled.

Pending Operation (Available when "Security Device Support" is set to Enabled)

Use this feature to schedule a TPM-related operation to be performed by the security TPM (either onboard or external) at the next system boot to enhance system data integrity. The options are **None** and TPM Clear.

Note: If this feature is used, your system will reboot to carry out a pending TPM operation.

Platform Hierarchy (Available when "Security Device Support" is set to Enabled)

Select Enabled for TPM Platform Hierarchy support, which allows the manufacturer to utilize the cryptographic algorithm to define a constant key or a fixed set of keys to be used for initial system boot. These early boot codes are shipped with the platform and are included in the list of "public keys." During system boot, the platform firmware uses the trusted public keys to verify a digital signature in an attempt to manage and control the security of the platform firmware used in a host system via the TPM (either onboard or external). The options are Disabled and **Enabled**.

Storage Hierarchy (Available when "Security Device Support" is set to Enabled)

Select Enabled for TPM Storage Hierarchy support that is intended to be used for non-privacy-sensitive operations by a platform owner such as an IT professional or the end user. Storage Hierarchy has an owner policy and an authorization value, both of which can be set and are held constant (-rarely changed) through reboots. This hierarchy can be cleared or changed independently of the other hierarchies. The options are Disabled and **Enabled**.

Endorsement Hierarchy (Available when "Security Device Support" is set to Enabled)

Select Enabled for Endorsement Hierarchy support, which contains separate controls to address the user's privacy concerns because the primary keys in the hierarchy are certified by the TPM key or by a manufacturer with restrictions on how an authentic TPM (either onboard or external) that is attached to an authentic platform can be accessed and used. A primary key can be encrypted and certified with a certificate created by using TPM2_ActivateCredential, which allows the user to independently enable "flag, policy, and authorization values" without involving other hierarchies. A user with privacy concerns can disable the endorsement hierarchy while still using the storage hierarchy for TPM applications, permitting the platform software to use the TPM. The options are Disabled and **Enabled**.

TPM 2.0 InterfaceType (Available when "Security Device Support" is set to Enabled)

This feature displays the interface type of the detected TPM 2.0 module.

PH Randomization

Select Enabled for Platform Hierarchy (PH) Randomization support, which is used only during the platform developmental stage. This feature cannot be enabled in the production platforms. The options are **Disabled** and Enabled.

Intel Trusted Execution Technology

Intel Trusted Execution Technology (TXT) helps protect against software-based attacks and ensures protection, confidentiality, and integrity of data stored or created on the system. Use this feature to enable or disable TXT Support. The options are **Disabled** and Enabled.

USB Configuration Menu

►USB Configuration

USB Module Version

USB Controllers

USB Devices

XHCI Hand-off

This is a work-around solution for operating systems that do not support Extensible Host Controller Interface (XHCI) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

USB Mass Storage Driver Support

Select Enabled for USB mass storage device support. The options are Disabled and **Enabled**.

USB S5 Wakeup Support

Use this feature to enable or disable USB S5 Wakeup support. The options are Disabled and **Enabled**.

Intel(R) Ethernet Connection (19) I219-LM - (MAC address) Menu

►Intel(R) Ethernet Connection (19) I219-LM - (MAC address)

PORT CONFIGURATION INFORMATION

The following LAN port information will be displayed:

- UEFI Driver
- Adapter PBA
- PCI Device ID
- PCI Address
- MAC Address

Intel Ethernet Controller I226-LM - (MAC address) Menu

►Intel Ethernet Controller I226-LM - (MAC address)

The following LAN port information will be displayed:

- UEFI Driver
- PCI Device ID
- PCI Address
- MAC Address
- Link Status

Link auto-negotiation Timeout

This features controls how long the UEFI PXE driver should wait for link. The default is **8**.

TLS Authenticate Configuration Menu

►TLS Authenticate Configuration

Use this submenu to configure Transport Layer Security (TLS) settings.

►Server CA Configuration

Use this feature to configure the server Certificate Authority (CA).

►Enroll Certification

Use this feature to enroll the certificates in the system.

►Enroll Certification Using File

Use this feature to enroll the security certificates in the system by using a file.

►Commit Changes and Exit

Use this feature to save all changes and exit TLS settings.

►Discard Changes and Exit

Use this feature to discard all changes and exit TLS settings.

►Delete Certification

Use this feature to delete the certificates that have been enrolled in the system.

►Client Certification Configuration

This feature is to manage the certificates used to authenticate remote clients connecting to your system. Add, view, or delete client certificates as needed.

Intel(R) Rapid Storage Technology Menu

Note: This submenu is available only when Advanced > VMD Setup Menu > "Enabled VMD controller" feature is set to Enabled and the changes have taken effect after you save settings and reboot the system.

Intel(R) RST xx.xx.xxxx RST VMD Driver

►Create RAID Volume

This submenu will only appear when VMD controller is enabled and the root port of the storage device for RAID array has been mapped under VMD. The mapped storage devices will appear in the Non-RAID Physical Disks list. For information on VMD configurations, please refer to the "VMD Setup Menu" feature.

Name

Enter a unique name for the RAID volume. The name must not contain space at the beginning or backslash and must be under 16 characters. The default is Volume1.

RAID Level

Select the desired RAID level for the RAID volume. The options are RAID0 (Stripe), RAID1 (Mirror), RAID5 (Parity), and RAID10 (RAID0+1). Available RAID levels depend on the number of disks connected to the system.

Select Disks

To select a desired RAID disk, select X from the drop-down list. Repeat this step to select all the desired disks for the RAID volume. For RAID0/RAID1/RAID5/RAID10, the minimum number of disks required is two/two/three/four respectively.

Strip Size (Available for RAID0/RAID5/RAID10 Only)

Select the desired RAID strip size for your RAID volume. The options vary according the RAID level you select.

Capacity (MB)

Enter the capacity in megabytes(MB) of the RAID volume to be created.

►Create Volume

After finishing the configuration of the Create RAID Volume feature, select Create Volume and you will return to the previous screen displaying the information about the created RAID volume.

RAID Volumes

This feature displays the RAID volumes you have created. You can click the created RAID volume to view more information.

RAID VOLUME INFO

Volume Actions

►Delete

This feature allows you to delete a RAID volume. When asked to confirm deletion of the RAID volume, select Yes to delete the RAID volume.

Note: When deleting a RAID volume, all data on the disks will be deleted as well.

For a created RAID Volume, the following information will be displayed:

- Name
- RAID Level
- Strip Size
- Size
- Status
- Bootable

RAID Member Disks

This feature displays the RAID member disks.

Reset to non-RAID

This feature allows you to reset a RAID member disks to non-RAID disk. When asked to remove the RAID structure on the disk, select Yes to reset the disk.

Note: When resetting a disk, all data on the disk will be deleted as well.

Non-RAID Physical Disks

This feature lists the disks which have not been added to a RAID volume. Select a non-RAID physical disk and you can view the disk information.

Driver Health Menu

►Driver Health

This feature displays the health information of the drivers installed in your system, including LAN controllers, as detected by the BIOS. Select one and press <Enter> to see the details.

Note: This section is provided for reference only. The driver health status will differ depending on the drivers installed in your system. It's also based on your system configuration and the environment that your system is operating in.

4.4 Event Logs

Use this menu to configure Event Logs settings.

Note: After making any changes in this section, be sure to reboot the system for the changes to take effect.

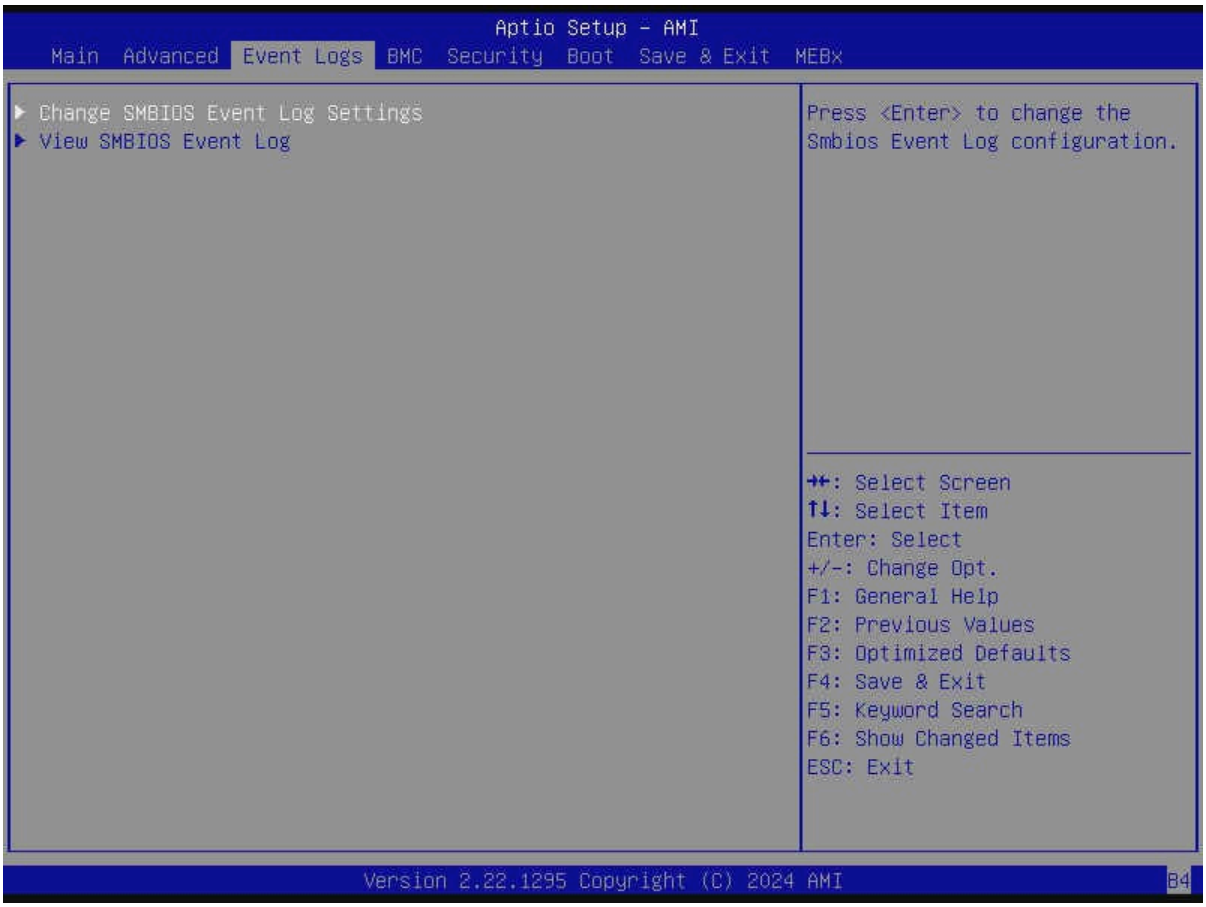


Figure 4-3. Event Logs Screen

►Change SMBIOS Event Log Settings

Note: Reboot the system for the changes in this section to take effect.

Enabling/Disabling Options

SMBIOS Event Log

Select Enabled to enable System Management BIOS (SMBIOS) Event Logging during system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase Event Log (Available when "SMBIOS Event Log" is set to Enabled)

Select No to keep the event log without erasing it upon next system bootup. Select (Yes, Next reset) to erase the event log upon next system reboot. The options are **No**, (Yes, Next reset), and (Yes, Every reset).

When Log is Full (Available when "SMBIOS Event Log" is set to Enabled)

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event (Available when "SMBIOS Event Log" is set to Enabled)

Select Enabled to log system boot events. The options are Enabled and **Disabled**.

MECI (Available when "SMBIOS Event Log" is set to Enabled)

Enter the increment value for the multiple event counter. Enter a number between 1 and 255. The default setting is **1**. (MECI is the abbreviation for Multiple Event Count Increment.)

METW (Available when "SMBIOS Event Log" is set to Enabled)

Use this feature to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 and 99. The default value is **60**. (METW is the abbreviation for Multiple Event Count Time Window.)

►View SMBIOS Event Log

Use this feature to view the events in the system event log. Select this feature and press <Enter> to view the status of an event in the log. The following information is displayed: DATE / TIME / ERROR CODE / SEVERITY.

4.5 BMC (X14SAE-F only)

Use this menu to configure Baseboard Management Console (BMC) settings.

Figure 4-4. BMC Screen

BMC Firmware Revision

This feature indicates the BMC firmware revision used in this system.

BMC STATUS

This feature indicates the status of the BMC firmware installed in this system.

System Event Log Menu

►System Event Log

Note: All values changed in this submenu do not take effect until computer is restarted.

Enabling/Disabling Options

SEL Components

Select Enabled to enable all system event logging upon system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase SEL (Available when "SEL Components" is set to Enabled)

Select (Yes, On next reset) to erase all system event logs upon next system boot. Select (Yes, On every reset) to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No**, (Yes, On next reset), and (Yes, On every reset).

When SEL is Full (Available when "SEL Components" is set to Enabled)

This feature defines what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

BMC Network Configuration Menu

►BMC Network Configuration

Update BMC LAN Configuration

Select Yes for the BIOS to implement all IP/MAC address changes upon next system boot. The options are **No** and Yes.

****

Configure IPv4 Support

****

BMC LAN Selection

This feature displays the type of the BMC LAN.

BMC Network Link Status:

This feature displays the status of the BMC network link for this system.

Configuration Address Source

Use this feature to select the source of the IPv4 connection. If Static is selected, note the IP address of the IPv4 connection and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a Dynamic Host Configuration Protocol (DHCP) server in the

network that is attached to and request the next available IP address for this computer. The options are Static and **DHCP**. It is available for configuration when "Update BMC LAN Configuration" is set to Yes.

Station IP Address

This feature displays the Station IP address in decimal and in dotted quad form (i.e., 172.29.176.131). It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to Static.

Subnet Mask

This feature displays the sub- network that this computer belongs to. It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to Static.

Station MAC Address

This feature displays the Station MAC address for this computer. MAC addresses are six two-digit hexadecimal numbers.

Gateway IP Address

This feature displays the IPv4 gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 172.29.0.1). It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to Static.

****

Configure IPv6 Support

****

IPv6 Address Status

This feature displays the status of the IPv6 address.

IPv6 Support

Use this feature to enable IPv6 support. The options are **Enabled** and Disabled. It is available for configuration when "Update BMC LAN Configuration" is set to Yes.

Configuration Address Source

Use this feature to select the source of the IPv6 connection. If Static Configuration is selected, note the IP address of IPv6 connection and enter it to the system manually in the field. If the other two options are selected, the BIOS will search for a DHCP server in the network that is attached to and request the next available IP address for this computer. The options are Static Configuration, **DHCPv6 Stateless**, and DHCPv6 Stateful. It is available for configuration when "Update BMC LAN Configuration" is set to Yes.

IPv6 Address ("Static," "DHCPv6 Stateless," or "DHCPv6 Stateful," depending on the option you selected for "Configuration Address Source" above)

This feature displays the station IPv6 address. It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to Static Configuration.

Prefix Length

This feature displays the prefix length. It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to Static Configuration.

Gateway IP

This feature displays the IPv6 gateway IP address. It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to Static Configuration.

Advanced Settings

Use this feature to set the DNS server IP. The default setting allows this system to obtain the DNS server IP automatically. The options are **Auto obtain DNS server IP** and Manually obtain DNS server IP. It is available for configuration when "Update BMC LAN Configuration" is set to Yes and "Configuration Address Source" above is set to DHCPv6 Stateless.

Preferred DNS server IP (Available when "Advanced Settings" above is set to Manually obtain DNS server IP)

This feature displays the preferred DNS server IP. It can be configured via Redfish.

Alternative DNS server IP (Available when "Advanced Settings" above is set to Manually obtain DNS server IP)

This feature displays the alternative DNS server IP. It can be configured via Redfish.

****

Configure VLAN Support

****

VLAN Support

Use this feature to enable the virtual LAN (VLAN) support. The options are Enabled and **Disabled**.

VLAN ID (Available when "VLAN Support" is set to Enabled)

Use this feature to create a new VLAN ID. The valid range is 1–4094. The default setting is **1**.

4.6 Thermal & Fan (X14SAE only)

Use this menu to view the thermal and fan information.

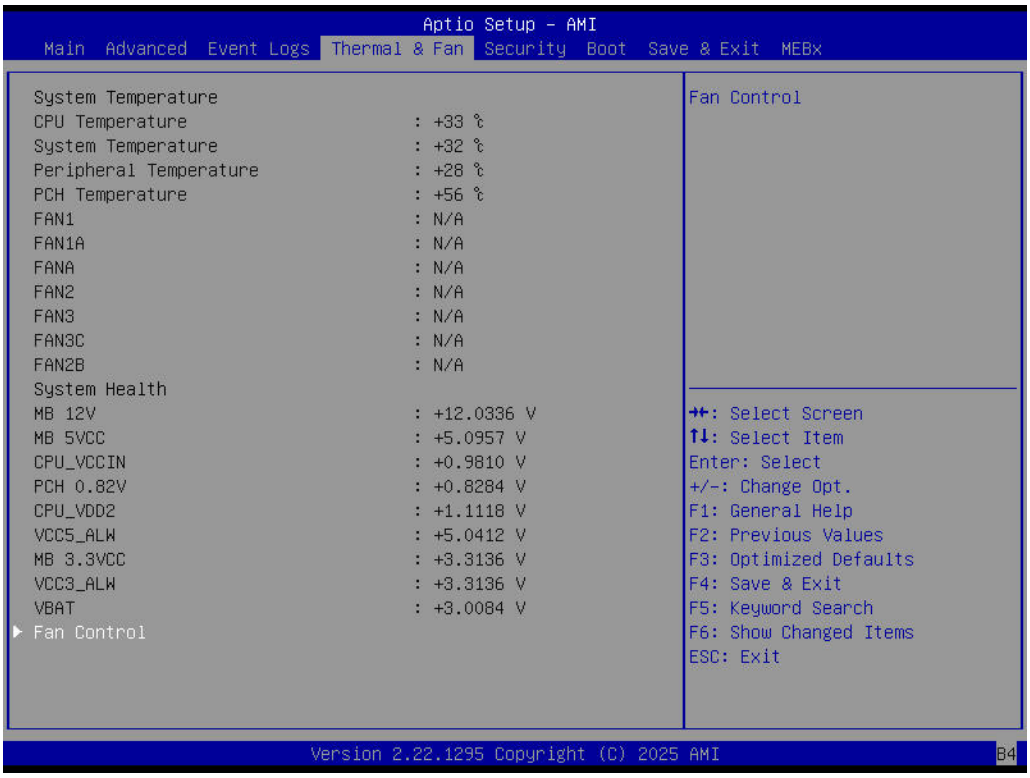


Figure 4-5. Thermal and Fan Screen

System Temperature

The following information is displayed:

- CPU Temperature: The CPU temperature detected by PECI.
- System Temperature: The system internal temperature.
- Peripheral Temperature: The detected peripheral device temperature.
- PCH Temperature: the detected PCH chip temperature.
- FAN #: The detected RPM of the fan.

System Health

The voltages for the following items is displayed:

- MB 12V
- MB 5VCC
- CPU_VCCIN

- PCH 0.82V
- CPU_VDD2
- VCC5_ALW
- MB 3.3VCC
- VCC3_ALW
- VBAT

►Fan Control

Fan Speed Control Mode

This feature allows you to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Silent" to optimize for minimal fan noise and Customize to enter user-specific settings. The options are **Silent**, Performance, Full Speed, and Customize.

Note: The following features are available when “Fan Speed Control Mode” is set to Customize.

Fan2 and Fan3 Control / Fan2 and Fan3 Reference Sensor

Fan2B and Fan3C Control / Fan2B and Fan3C Reference Sensor

Fan1 Control / Fan1 Reference Sensor

Fan1A Control / Fan1A Reference Sensor

FanA Control / FanA Reference Sensor

CPU/Memory/PCH/SSD (U.2)/M.2/AOC/VRM

Set one of the options to Enabled to use it as a reference temperature sensor of fan. The options are Enabled and **Disabled**. If all options are set to Enabled, the sensor reporting the highest temperature will be used as the reference.

Temperature 1 / PWM1 / Temperature 2 / PWM2 / Temperature 3 / PWM3 / Temperature 4 / PWM4

Use this feature to set the reference temperature . The value should be set between 20–100.

Note: By default, only Temperature 1, PWM1, Temperature 2, and PWM2 can be adjusted. Be sure the value you set on each feature must be lower than 100 if you want to adjust Temperature 3, PWM3, Temperature 4, and PWM4, except Temperature 1 and PWM1.

4.7 Security

Use this menu to configure the following security settings for the system.

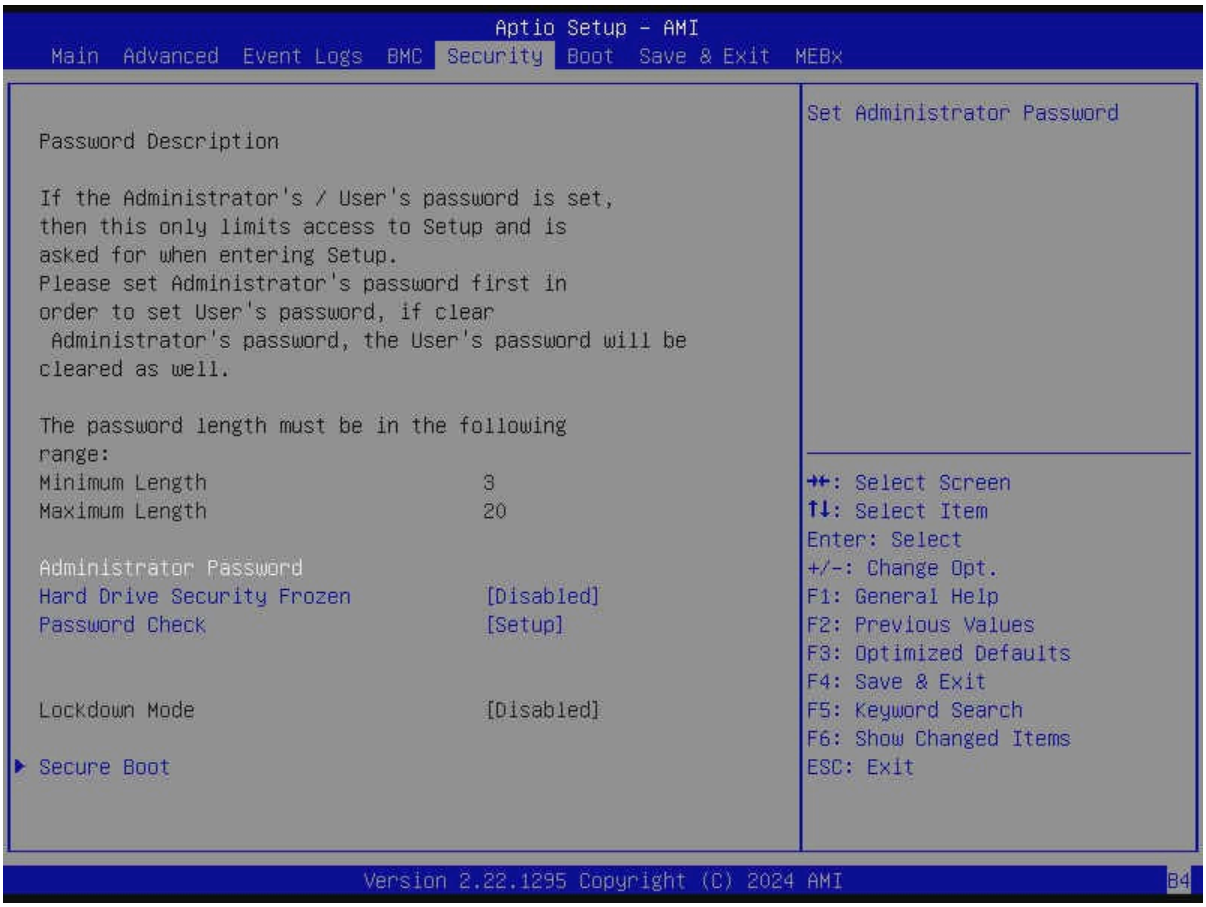


Figure 4-6. Security Screen

Disable Block Sid and Freeze Lock (Available when your storage devices support TCG)

Select Enabled to allow SID authentication to be performed in TCG storage devices. The options are **Disabled** and Enabled. (SID is the abbreviation for Storage ID Authority.)

The following information is displayed:

- Administrator Password
- User Password
- Password Description

Administrator Password

This feature indicates if an administrator password has been installed. Use this feature to set the administrator password, which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

User Password (Available when "Administrator Password" has been set)

This feature indicates if a user password has been installed. Use this feature to set the user password which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

Password Check

Select Setup for the system to check for a password upon entering the BIOS Setup utility. Select Always for the system to check for the passwords needed at bootup and upon entering the BIOS Setup utility. The options are **Setup** and Always.

Hard Drive Security Frozen

Select Enabled to freeze the Lock Security feature for HDD to protect key data in hard drives from being altered. The options are **Disabled** and Enabled.

Lockdown Mode (Available when the DCMS key is activated)

Select Enabled to support the Lockdown Mode, which prevents the existing data or keys stored in the system from being altered or changed in an effort to preserve system integrity and security. The options are **Disabled** and Enabled.

Secure Boot Menu

►Secure Boot

The following information is displayed:

- System Mode
- Secure Boot

Note: For detailed instructions on configuring Security Boot settings, refer to the Security Boot Configuration User's Guide at https://www.supermicro.com/support/manuals.

Secure Boot

Select Enabled to configure Secure Boot settings. The options are **Disabled** and Enabled.

Secure Boot Mode

Use this feature to select the desired secure boot mode for the system. The options are Standard and **Custom**.

►Enter Audit Mode

Select Ok to enter the Audit Mode workflow. It will result in erasing the Platform Key (PK) variables and resetting the system to the Setup/Audit Mode.

Note: This submenu is available when "Secure Boot Mode" is set to Custom.

►Enter Deployed Mode / Exit Deployed Mode

Select Ok to reset system to the User Mode or to the Deployed Mode.

Note: This submenu is available when "Secure Boot Mode" is set to Custom.

►Key Management

The following information is displayed:

- Vendor Keys

Note: This submenu is available when "Secure Boot Mode" is set to Custom.

Provision Factory Defaults

Select Enabled to install the default secure boot keys when the system is in the Setup Mode. Changes take effect after you save settings and reboot the system. The options are **Disabled** and Enabled.

►Restore Factory Keys

Select Yes to restore manufacturer default keys to ensure system security. The options are **Yes** and No. Selecting Yes will reset the system to the User Mode.

Note: This submenu is available when any secure keys have been installed.

►Reset To Setup Mode

This feature resets the system to the Setup Mode. The options are **Yes** and No.

Note: This submenu is available when any secure keys have been installed.

►Enroll Efi Image

This feature allows the Efi image to run in the secure boot mode and enroll the SHA256 Hash certificate of a PE image into the Authorized Signature Database (DB).

►Export Secure Boot Variables

This feature exports the NVRAM contents of secure boot variables to a storage device. The options are **Yes** and No.

Note: This submenu is available when any secure keys have been installed.

Secure Boot variable / Size / Keys / Key Source

►Platform Key (PK)

Use this feature to enter and configure a set of values to be used as platform firmware keys for the system. These values also indicate the sizes, key numbers, and the sources of the authorized signatures. Select Update to update the platform key.

►Key Exchange Keys (KEK)

Use this feature to enter and configure a set of values to be used as Key Exchange Keys for the system. These values also indicate the sizes, key numbers, and the sources of the authorized signatures. Select Update to update the Key Exchange Keys. Select Append to append the Key Exchange Keys.

►Authorized Signatures (db)

Use this feature to enter and configure a set of values to be used as Authorized Signatures for the system. These values also indicate the sizes, key numbers, and sources of the authorized signatures. Select Update to update the Authorized Signatures. Select Append to append the new Authorized Signatures.

►Forbidden Signatures (dbx)

Use this feature to enter and configure a set of values to be used as Forbidden Signatures for the system. These values also indicate sizes, key numbers, and key sources of the forbidden signatures. Select Update to update the Forbidden Signatures. Select Append to append the Forbidden Signature.

►Authorized TimeStamps (dbt)

Use this feature to set and save the timestamps for the Authorized Signatures, which will indicate the time when these signatures are entered into the system. These values also indicate sizes, keys, and key sources of the authorized timestamps. Select Update to update the Authorized TimeStamps. Select Append to append the Authorized TimeStamps.

►OsRecovery Signatures (dbr)

Use this feature to set and save the Authorized Signatures used for OS recovery. Select Update to update the OsRecovery Signatures. These values also indicate sizes, keys, and key sources of the OsRecovery Signatures. Select Append to append the OsRecovery Signatures.

Supermicro Security Erase Configuration Menu

►Supermicro Security Erase Configuration

Use this submenu to configure the Supermicro-proprietary Security Erase settings. When this submenu is selected, the following information is displayed. Note that the order of the following information may differ based on the storage devices being detected.

- HDD Name: This feature displays the model name of the storage device that is detected by the BIOS.
- HDD Serial Number: This feature displays the serial number of the storage device that is detected by the BIOS.
- Security Mode: This feature displays the security mode of the storage device that is detected by the BIOS.
- Estimated Time: This feature displays the estimate time needed to perform the selected Security Erase features.
- HDD User Pwd Status: This feature indicates if a password has been set as a storage device user password, which enables configuring Supermicro Security Erase settings on this storage device.
- TCG Device Type: This feature displays the TCG device type detected by the system.
- Admin Pwd Status: This feature indicates if a password has been set as a storage device administrator password, which enables configuring Supermicro Security Erase settings on this storage device.

Note: This submenu is available when any storage device is detected by the BIOS. For more information about this feature, refer to our website.

Security Function

Select Set Password to set a storage device user password to enable configuring the security settings on the storage device. Select Security Erase - Password to enter a storage device user password to enable erasing the password and the contents previously stored in the storage device. Select Security Erase - Without Password to use the manufacturer default password

"111111111" as the storage device user password and enable erasing the contents of the storage device by using this default password. The options are **Disabled**, Set Password, Change Password, Clear Password, Security Erase - Password, Security Erase - PSID, and Security Erase - Without Password.

Notes:

- The option of Security Erase - PSID is based on the storage device support. PSID is the abbreviation for Physical Security Identification.
- The options of Change Password and Clear Password are available when "Password" below has been set.
- The option of Set Password is NOT available when "Password" below has been set.

Password

Use this feature to set the storage device user password, which enables configuring the Supermicro Security Erase settings by using this user password.

New Password (Available when "Password" above has been set)

Use this feature to set the new user password for the storage device, which enables configuring the Supermicro Security Erase settings by using this new user password.

4.8 Boot

Use this menu to configure Boot settings.

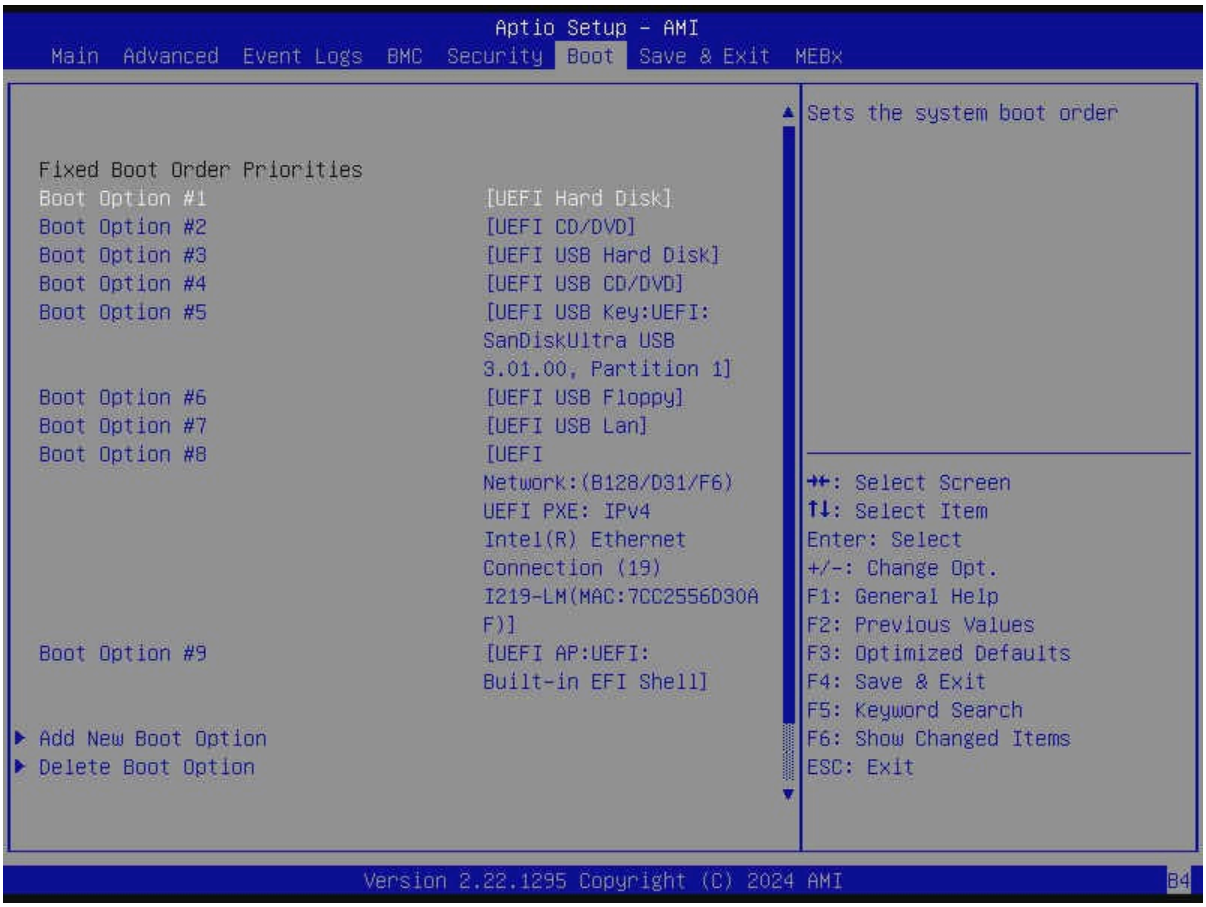


Figure 4-7. Boot Screen

FIXED BOOT ORDER Priorities

Use this feature to prioritize the order of bootable devices from which the system will boot. Press <Enter> on each item sequentially to select the device.

- Boot Option #1 – Boot Option #9

►Add New Boot Option

Use this feature to add a new boot option to the boot priority features for system boot.

Note: This submenu is available when any storage device is detected by the BIOS.

Add boot option

Use this feature to specify the name for the new boot option.

Path for boot option

Use this feature to enter the path for the new boot option in the format fsx:\path\filename.efi.

Boot option File Path

Use this feature to specify the file path for the new boot option.

Create

After setting the name and the file path for the boot option, press <Enter> to create the new boot option in the boot priority list.

►Delete Boot Option

Use this feature to select a boot device to delete from the boot priority list.

Delete Boot Option

Use this feature to remove an EFI boot option from the boot priority list.

►UEFI NETWORK Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

►UEFI Application Boot Priorities

Use this feature to set the system boot order of detected devices.

►UEFI USB Key Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

►UEFI Hard Disk Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

4.9 Save & Exit

Select Save & Exit from the BIOS Setup screen to configure the settings below.

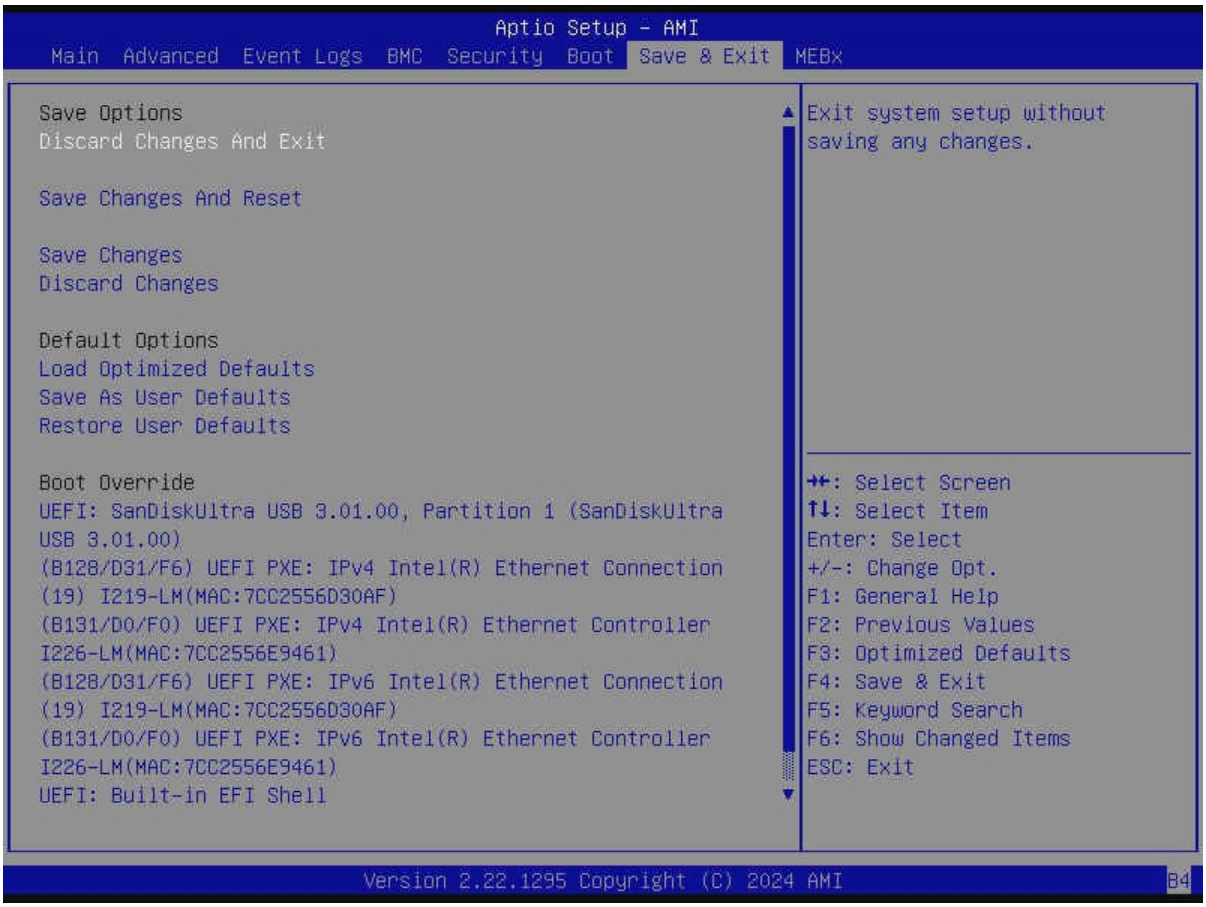


Figure 4-8. Save & Exit Screen

Save Options

Discard Changes and Exit

Use this feature to exit from the BIOS Setup utility without making any permanent changes to the system configuration and reboot the system.

Save Changes and Reset

On completing the system configuration changes, use this feature to exit the BIOS Setup utility and reboot the system for the new system configuration parameters to take effect.

Save Changes

On completing the system configuration changes, use this feature to save all changes made. This will not reset (reboot) the system.

Discard Changes

Select this feature and press <Enter> to discard all changes made and return to the BIOS Setup utility.

Default Options

Restore Optimized Defaults

Select this feature and press <Enter> to load manufacturer optimized default settings, which are intended for maximum system performance but not for maximum stability.

Note: Reboot the system for the changes to take effect to ensure that the system has the optimized default settings.

Save as User Defaults

Select this feature and press <Enter> to save all changes as the default values specified to the BIOS Setup utility for future use.

Restore User Defaults

Select this feature and press <Enter> to restore user-defined default settings that have been saved previously.

Boot Override

Note: Use this section to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified here instead of the one specified in the boot list. This is a one-time boot override.

Launch EFI Shell from filesystem device

Use this feature to launch the EFI shell application (Shell.efi) from one of the available filesystem devices. A filesystem is a virtual, logical, or physical system for organizing, managing, and accessing the files and directories on devices such as SSDs, HDDs, or other storage devices.

4.10 MEBx

Select MEBx from the BIOS Setup screen to configure the settings below.

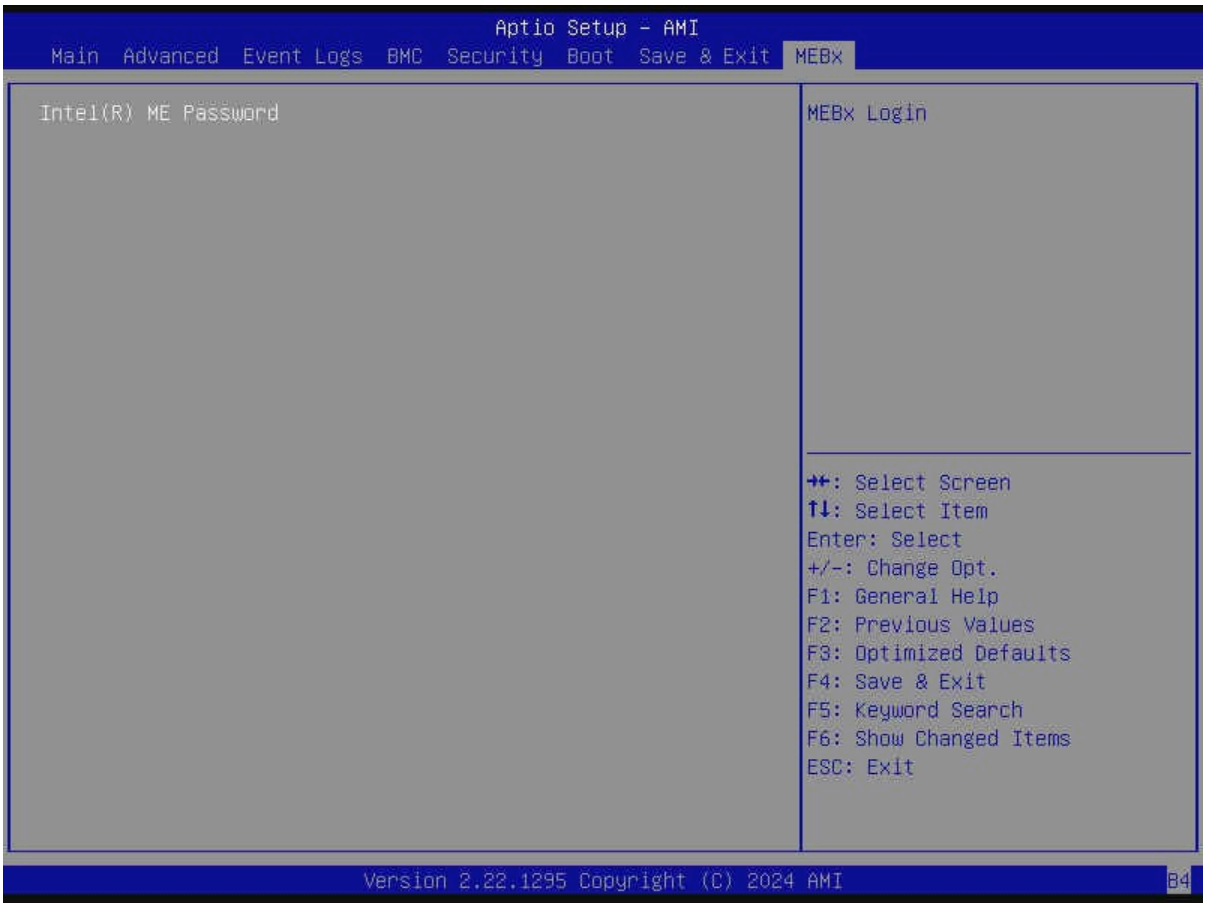


Figure 4-9. MEBx Screen

Intel(R) ME Password

Enter the password to bring up the Intel Management Engine (ME) setting menu. If you are the first time login, you will need to enter the default password. Intel ME will then prompt you to generate a new password. Please follow the guidelines below to set a new password.

- Password length must be between 8 and 32 characters.
- Must contain both upper and lower case letter.
- Must have at least one numeric character.
- Must have at least one ASCII non-alphanumeric character (!, @, #, $, %, ^, &, *).

Intel(R) AMT (Available after entering a password for Intel(R) ME Password)

Use this feature to enable or disable Active Management Technology (AMT). The options are Disabled, Partially Disabled, and **Enabled**. Changes take effect after you save settings and reboot the system.

Change Password (Available after entering a password for Intel(R) ME Password)

Press Enter and follow the prompt to change the password.

Intel(R) AMT Configuration

►Intel(R) AMT Configuration Menu

Redirection features

►Redirection features

SOL

Use this feature to enable the SOL firmware interface. The options are Disabled and **Enabled**.

Storage Redirection

Use this feature to enable the firmware remote storage redirection. The options are Disabled and **Enabled**.

KVM Feature Selection

Use this feature to enable the firmware KVM feature. The options are Disabled and **Enabled**.

User Consent

►User Consent

User Opt-in

Use this feature to configure when user consent is required. The options are None, **KVM**, and ALL.

Opt-in Configurable from Remote IT

Use this feature to enable or disable the remote change capability of the User Opt-in feature. The options are Disabled and **Enabled**.

Password Policy

Password Policy

Use this feature to set the password policy. The options are **Default Password Only**, During Setup And Configuration, and Anytime.

Network Setup

►Network Setup

Intel(R) ME Network Name Settings

►Intel(R) ME Network Name Settings Menu

FQDN

Use this feature to specify the fully qualified domain name.

Shared/Dedicated FQDN

Use this feature to select dedicated or shared for the fully qualified domain name. The options are Dedicated and **Shared**.

TCP/IP Settings

►TCP/IP Settings

►Wired LAN IPv4 Configuration

DHCP Mode

Use this feature to enable or disable IPv4 DHCP mode. The options are Disable and **Enabled**.

The following features are available when "DHCP Mode" is set to Disabled.

IPV4 Address

Use this feature to enter an IP address for the wired LAN.

Subnet Mask Address

Use this feature to set the subnet mask for the wired LAN.

Default Gateway Address

Use this feature to set the gateway address for the wired LAN.

Preferred DNS Address

Use this feature to set the Domain Name System (DNS) server address for the wired LAN.

Alternate DNS Address

Use this feature to set the alternative Domain Name System (DNS) server address for the wired LAN.

Network Access State

Network Access State

Use this feature to change the state of the network state of ME. The options are Network Active, **Network Inactive**, and Full Unprovision.

Remote Setup And Configuration

►Remote Setup And Configuration Menu

Provisioning Server address

Use this feature to enter the provisioning server address. It's either a host name, IPv4, or IPv6.

Provisioning server port number

Use this feature to enter the provisioning server port number. The port numbers can range from 0 to 65535. The default is **9971**.

Remote Configuration **

Use this feature to enable or disable remote configuration. The options are Disabled and **Enabled**.

PKI DNS Suffix

Use this feature to enter the PKI DNS suffix.

Activate Remote Configuration

Use this feature to activate remote configuration.

Manage Certificates

►**Manage Certificates Menu**

►**Go Daddy Class 2 CA**

►**Go Daddy Root CA-G2**

►**Comodo AAA CA**

►**Starfield Class 2 CA**

►**Starfield Root CA-G2**

►**VeriSign Class 3 Primary CA-G5**

►**Baltimore CyberTrust Root**

►**USERTrust RSA CA**

►**Verizon Global Root**

►**Entrust.net CA (2048)**

►**Entrust Root CA**

►**Entrust Root CA-G2**

►**VeriSign Universal Root CA**

►**Affirm Trust Premium**

►**DigiCert Global Root CA / G2 / G3**

►**DigiCert Trusted Root G4**

►**GlobalSign Root CA - R3**

►**GlobalSign ECC Root CA - R5**

►**GlobalSign Root CA - R6**

Active

Use this feature to set the certificate to active. The options are NO and **YES**.

Default

This feature displays if this certificate is the default.

Hash type

This feature displays the hash type of the certificate.

Hash data

This feature displays the hash data of the certificate.

Power Control

►Power Control Menu

Note that the following configurations are effective only after ME provisioning has started.

ME ON in Host Sleep States

Use this feature to select the host sleep states. The options are Desktop: ON in S0 and **Desktop: ON in S0, ME Wake in S3, S4-5**.

Idle Timeout

Use this feature to enter the timeout value. The value can range from 1 to 65535. The default is **65535**.

Appendix A:

BIOS Codes

For information about BIOS codes for the X14SAE/X14SAE-F motherboard, refer to the following content.

BIOS Error POST (Beep) Codes

During the Power-On Self-Test (POST) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot up process. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps that can be heard on an external buzzer connected to JD1. The table shown below lists some common errors and their corresponding beep codes encountered by users.

BIOS Beep (POST) Codes		
Beep Code	**Error Message**	**Description**
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
5 short, 2 long	Display memory read/write error	Video adapter missing or with faulty memory
1 long continuous	System OH	System overheat condition

Additional BIOS POST Codes

The AMI BIOS supplies additional checkpoint codes, which are documented online at https://www.supermicro.com/support/manuals ("AMI BIOS POST Codes User's Guide").

For information on AMI updates, refer to https://www.ami.com/products.

Appendix B:

Software

After the X14SAE/X14SAE-F motherboard has been installed, you can install the Operating System (OS), configure RAID settings, and install the drivers.

Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at https://www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the Microsoft Windows installation ISO file. That can be a USB flash or media drive, or the BMC KVM console.
2. Retrieve the proper drivers. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities," select the proper driver, and copy it to a USB flash drive.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing <F11> during the system bootup.

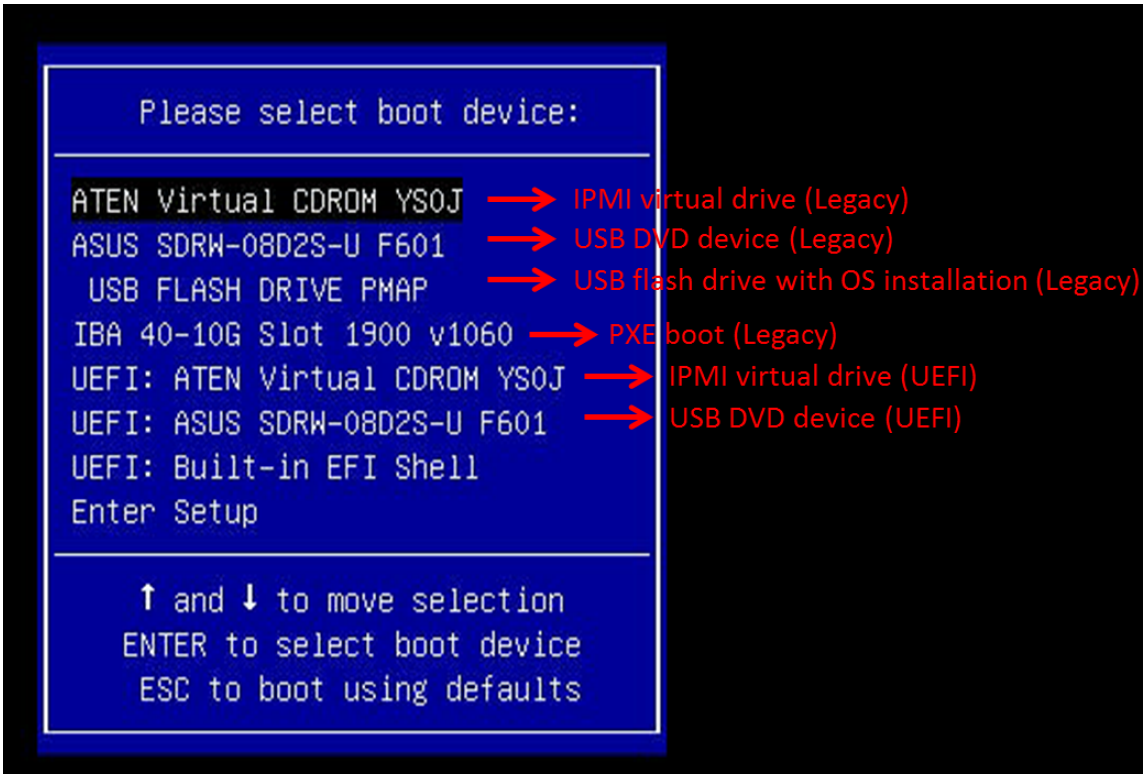


Figure B-1. Selecting the Boot Device

4. During Windows Setup, continue to the dialog box where you select the drives on which to install Windows. If the disk you want to use is not listed, click on the “Load driver” link at the bottom left corner.

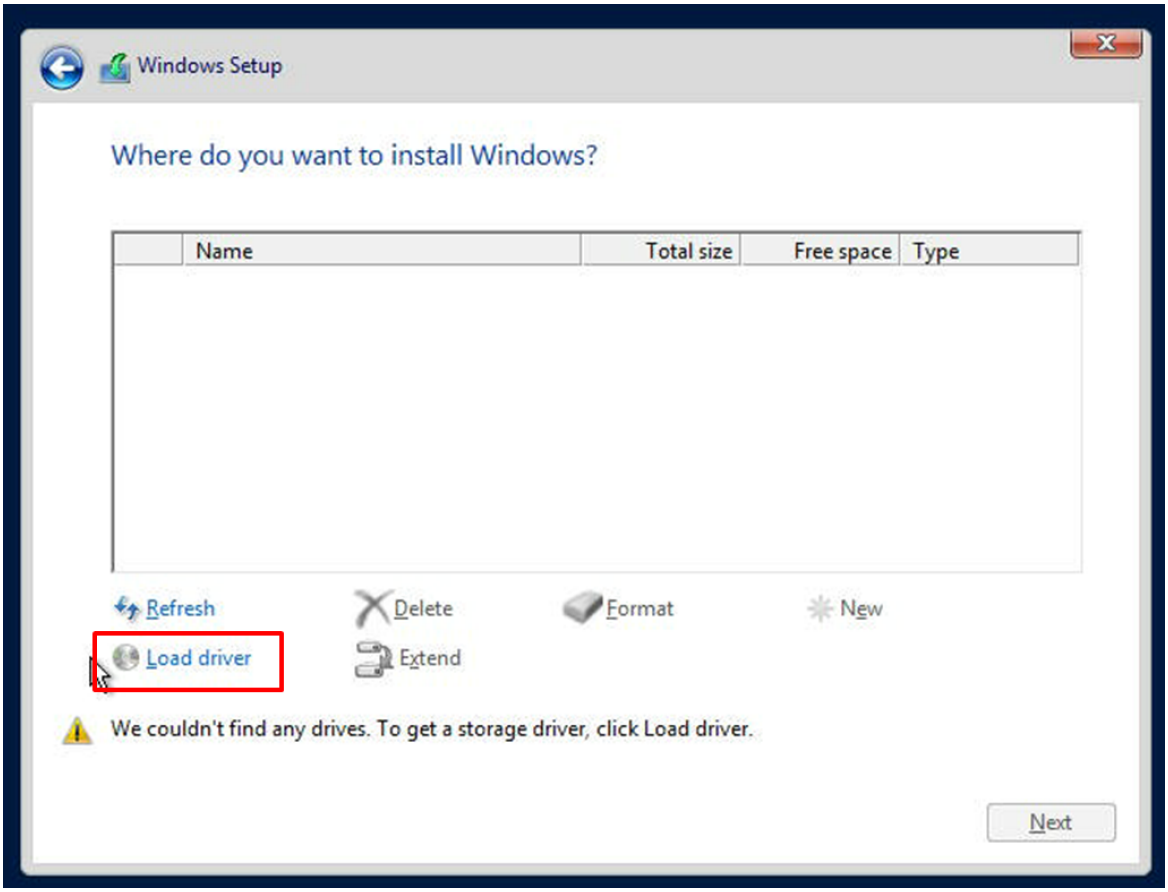


Figure B-2. Loading the Driver Link

To load the driver, browse the USB flash drive for the proper driver files.

5. Once all devices are specified, continue with the installation.
6. After the Windows OS installation has completed, the system will automatically reboot multiple times for system updates.

Driver Installation

The Supermicro website contains drivers and utilities for your system at the following page:

https://www.supermicro.com/wdl.

Some of these drivers and utilities must be installed, such as the chipset driver. After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash or media drive. You may also use a utility to extract the ISO file if preferred.

Another option is to go to the Supermicro website at https://www.supermicro.com. Find the product page for your motherboard and download the latest drivers and utilities. Insert the flash drive or disk, and the screenshot shown below should appear.

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to bottom) one at a time. *After installing each item, you must reboot the system before moving on to the next item on the list.* The bottom icon with a CD on it allows you to view the entire contents.

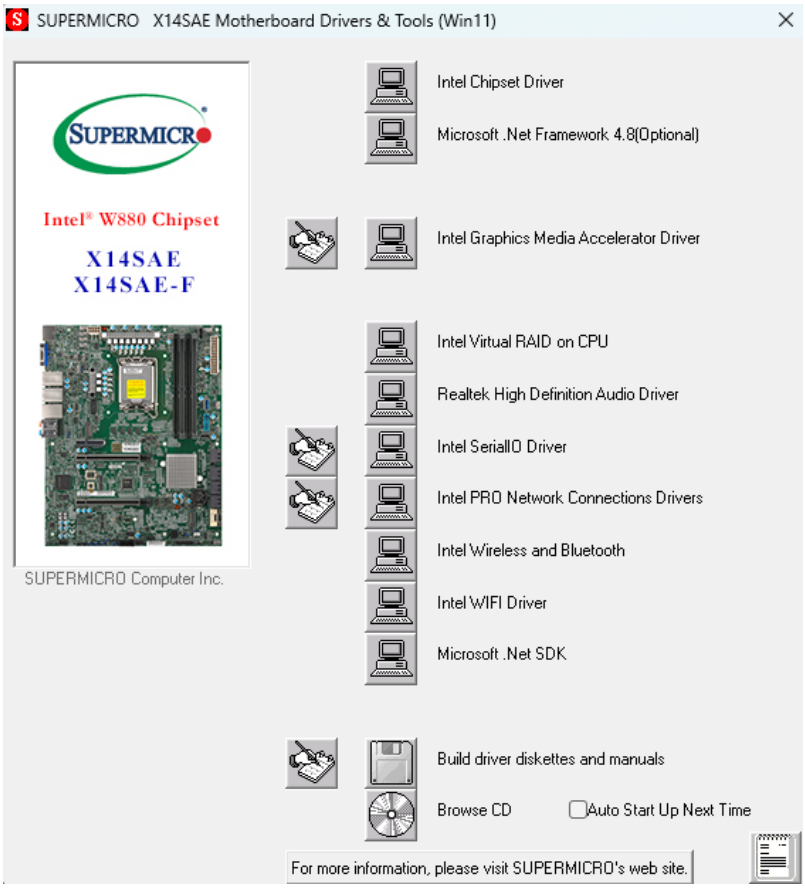


Figure B-3. Driver & Tools Installation Screen

SuperDoctor 5 (X14SAE only)

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SuperDoctor 5 Management Server monitors HTTP and SMTP services to optimize the efficiency of your operation.

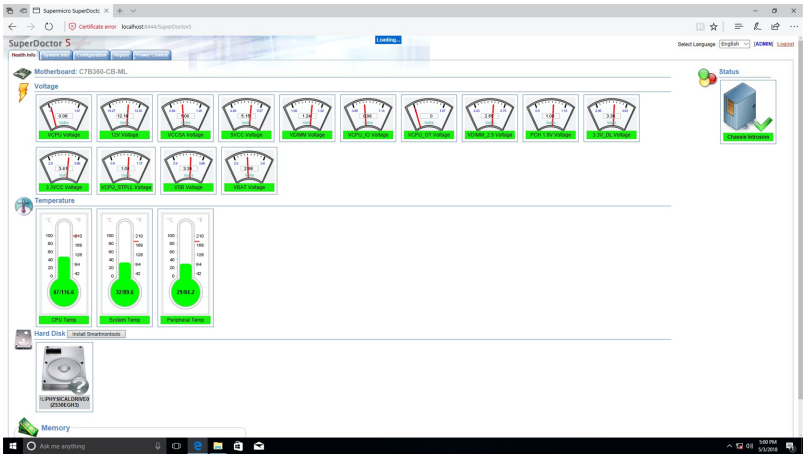


Figure B-4. SuperDoctor 5 Interface Display Screen (Health Information)

BMC (X14SAE-F only)

The X14SAE-F motherboard provides remote access, monitoring, and management through the baseboard management controller (BMC) and other management controllers distributed among different system modules. There are several BIOS settings that are related to BMC. For general documentation and information on BMC, visit our website at the following page:

https://www.supermicro.com/en/solutions/management-software/bmc-resources

BMC ADMIN User Password

For security, each system is assigned a unique default BMC password for the ADMIN user. The password can be found on a sticker on the motherboard and a sticker on the chassis, for Supermicro chassis. The sticker also displays the BMC MAC address. If necessary, the password can be reset using the Supermicro IPMICFG tool.

Figure B-5. BMC Password Label

Appendix C:

Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this section in its entirety before installing or configuring components in the Supermicro X14SAE/X14SAE-F motherboard.

These warnings may also be found on our website at the following page:

https://www.supermicro.com/about/policies/safety_information.cfm

Battery Handling

Warning! There is risk of explosion if the battery is replaced by an incorrect type. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

تحذير! يوجد خطر حدوث انفجار إذا تم استبدال البطارية بنوع غير صحيح. استبدل البطارية بنفس النوع أو نوع مكافئ موصى به من قبل الشركة المصنعة فقط. يجب التخلص من البطاريات المستخدمة وفقًا لإرشادات الجهة المصنعة.

警告！如果更换的电池类型不正确，有爆炸危险。更换电池时，请使用制造商推荐的相同或同等型号的电池。请按制造商的说明处理废旧电池。

警告！如果更換的電池類型不正確，有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Advarsel! Der er risiko for eksplosion, hvis batteriet skiftes med et batteri af den forkerte type. Batteriet må kun skiftes med et batteri af samme eller tilsvarende type, der anbefales af producenten. Opbrugte batterier skal bortskaffes i henhold til vejledningerne fra producenten.

Waarschuwing! Er bestaat een explosiegevaar als de batterij wordt vervangen door een onjuist type. Vervang de batterij alleen door hetzelfde type of een soortgelijk type aanbevolen door de fabrikant. Verwijder gebruikte batterijen overeenkomstig de instructies van de fabrikant.

Varoitus! Väärän tyyppisen akun käyttö voi aiheuttaa räjähdysvaaran. Vaihda akku vain valmistajan suosittelemaan samaan tai vastaavaan tyyppiseen akkuun. Hävitä käytetyt paristot valmistajan ohjeiden mukaisesti.

Attention! Il y a un risque d'explosion si la batterie est remplacée par une d'un type incorrect. Remplacez la batterie uniquement par une d'un type identique ou équivalent recommandé par le fabricant. Éliminez les batteries usagées conformément aux instructions du fabricant.

Warnung! Es besteht Explosionsgefahr, wenn die Batterie durch einen falschen Typ ersetzt wird. Ersetzen Sie die Batterie ausschließlich durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgen Sie gebrauchte Batterien gemäß den Anweisungen des Herstellers.

אזהרה! קיימת סכנת פיצוץ אם הסוללה תוחלף בסוללה מסוג שגוי. החלף את הסוללה רק בסוללה מאותו סוג או בסוללה מקבילה המומלצת על ידי היצרן. השלך סוללות משומשות בהתאם להוראות היצרן.

चेतावनी! यदि बैटरी को गलत प्रकार से बदला जाता है तो विस्फोट का जोखिम है। बैटरी को केवल निर्माता द्वारा अनुशंसित समान या समकक्ष प्रकार से ही बदलें। इस्तेमाल की गई बैटरियों का निपटान निर्माता के निर्देशों के अनुसार करें।

警告！電池を間違ったタイプに交換すると爆発する危険があります。交換する電池はメーカーが推奨するタイプ、または同等のものを使用してください。使用済み電池は、メーカーの指示に従って廃棄してください。

경고! 배터리를 잘못된 종류로 교체하면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Advarsel! Det er fare for eksplosjon hvis batteriet byttes ut med et av feil type. Batterier skal kun byttes ut med et av lik eller tilsvarende type, som anbefalt av produsenten. Kast brukte batterier i henhold til produsentens instruksjoner.

¡Advertencia! Existe riesgo de explosión si se sustituye la batería por una de tipo incorrecto. Reemplace la batería únicamente con el mismo tipo o uno equivalente recomendado por el fabricante. Deseche las baterías usadas de acuerdo con las instrucciones del fabricante.

Varning! Det finns risk för explosion om batteriet byts ut mot en felaktig typ. Byt endast ut batteriet mot ett batteri av samma eller likvärdig typ som rekommenderas av tillverkaren. Kassera förbrukade batterier i enlighet med tillverkarens anvisningar.

Connection to Earth

Warning! Equipment shall be connected to an Earth mains socket-outlet.

تحذير! يجب توصيل الأجهزة بمقبس كهربائي أرضي.

警告！设备应连接到接地电源插座。

警告！應將設備連接至接地電源插座。

Advarsel! Dette udstyr skal sluttes til en jordforbundet stikkontakt.

Waarschuwing! De apparatuur moet worden aangesloten op een geaard netstopcontact.

Varoitus! Laitteet on kytkettävä maadoitettuun pistorasiaan.

Attention! L'équipement doit être connecté à une prise de courant avec mise à la terre.

Warnung! Das Gerät muss an eine geerdete Netzsteckdose angeschlossen werden.

אזהרה! יש לחבר את הציוד לשקע חשמל עם הארקה.

चेतावनी! उपकरण को एक अर्थ मेन्स सॉकेट-आउटलेट से जोड़ा जाना चाहिए।

警告！機器は、接地主電源コンセントに接続するものとします。

경고! 장비는 접지된 전원 콘센트에 연결해야 합니다.

Advarsel! Utstyret skal kobles til en jordet stikkontakt.

¡Advertencia! El equipo deberá conectarse a una toma de corriente con conexión a tierra.

Varning! Utrustningen ska vara ansluten till ett jordat eluttag.

Product Disposal

Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.

تحذير! يجب التخلص النهائي من هذا المنتج وفقًا لجميع القوانين واللوائح الوطنية.

警告！本产品的废弃处理应根据所有国家的法律和规章进行。

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Appendix D:

UEFI BIOS Recovery

The following content contains information on BIOS configuration with the X14SAE/X14SAE-F motherboard.

Important: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

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Overview

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism that will allow the UEFI OS loader stored in an external storage device to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

Recovering the UEFI BIOS Image

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The recovery block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is turned on, the recovery block codes execute first. Once this process is complete, the main BIOS code will continue with system initialization and the remaining Power-On Self-Test (POST) routines.

Notes:

- Follow the BIOS recovery instructions for BIOS recovery when the main BIOS block crashes.
- If the recovery block processes fail, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. Refer to the instructions under "Returning Merchandise for Service" on page 85.

Recovering the Main BIOS Block with a USB Device

This feature allows the user to recover the main BIOS image using a USB device without additional utilities used. A USB flash or media drive can be used for this purpose. However, a USB hard disk drive cannot be used for BIOS recovery at this time.

Note: The USB flash drive doesn't have to be bootable; however, it has to be formatted to FAT16/FAT32 file system.

To perform UEFI BIOS recovery using a USB device, follow the instructions below.

Use a different machine to download the BIOS package for your motherboard or your system from the product page available on our website at www.supermicro.com.

1. Extract the BIOS package to a USB device. Copy the BIOS ROM file [BIOSname#.###] that is included in the BIOS package into the Root "\" directory of the USB device.
2. Rename the BIOS ROM file [BIOSname#.###] in the root directory to SUPER.ROM for BIOS recovery use.

   Note: Before recovering the main BIOS image, confirm that the SUPER.ROM file you have is the same version or a close version meant for your motherboard.

3. Insert the USB device that contains the SUPER.ROM file into the system before you power on the system or when the following screen appears.

Figure D-1. Startup Screen

4. After locating the SUPER.ROM file, the system will enter the BIOS Recovery menu. Select the item "Proceed with flash update" and press the <Enter> key.

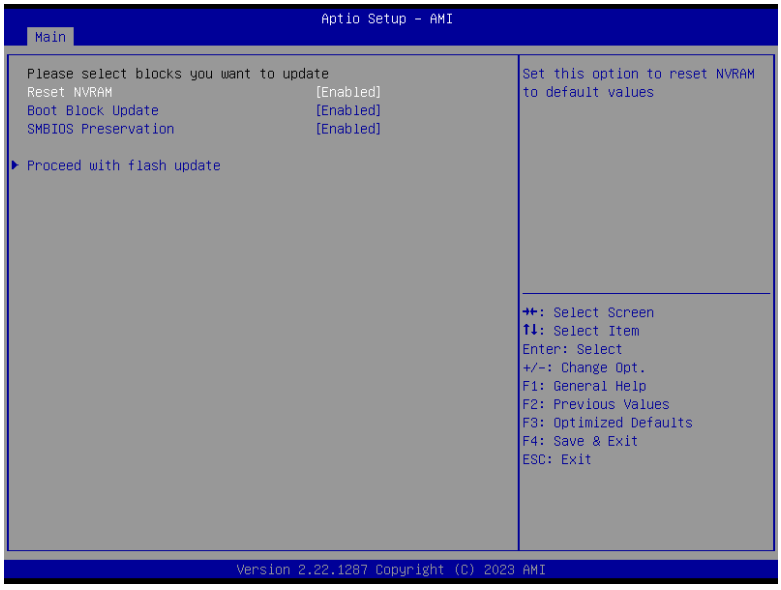

Figure D-2. BIOS Recovery Menu

5. You will see the BIOS recovery progress as shown in the screen below. Wait for the BIOS flashing process to complete.

   Note: Do not interrupt the BIOS flashing process until it is complete.

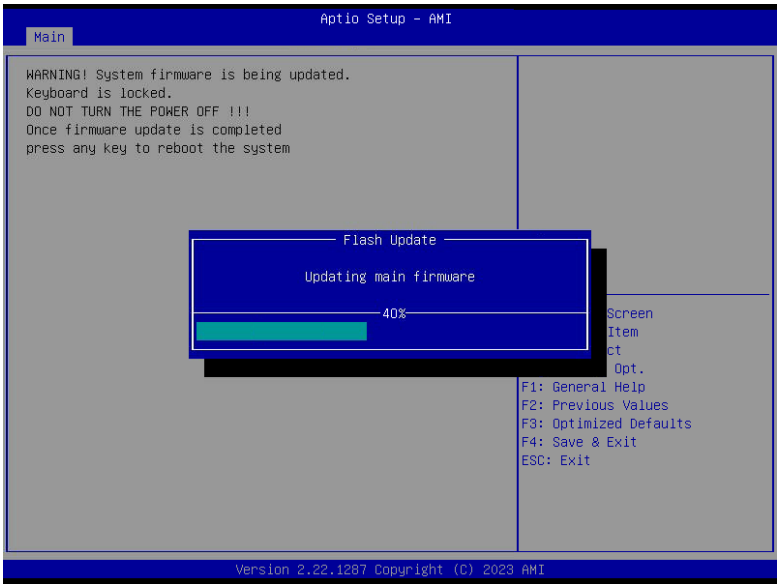

Figure D-3. BIOS Recovery In Progress Screen

6. After the BIOS recovery process is complete, press any key to reboot the system.

Note: After BIOS recovery, it is recommended that you update your BIOS. Please refer to the "Updating BIOS" on page 88 section for more information.