



B4SA1-CPU

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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## Preface

### About This Manual

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the B4SA1-CPU motherboard.

### About This Motherboard

The Supermicro B4SA1-CPU motherboard supports a 12th/13th Generation Intel® Core™ i5/i7/i9 processor in an LGA 1700 socket with up to 125W TDP. Built with the W680 chipset, this motherboard features up to 128GB of DDR5 ECC UDIMM memory with speeds of up to 4400 MT/s in four DIMM slots, one M.2 M-Key PCIe 4.0 or SATA 3.0 connector (2280/22110), one PCIe 4.0 x8 SlimSAS slot, and an onboard Trusted Platform Module (TPM) header. The B4SA1-CPU is optimized for data centers and cloud computing. Note that this motherboard is intended to be installed and serviced by professional technicians only. For processor and memory updates, refer to our website at <http://www.supermicro.com/products/>.

### 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.



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



**Note:** Additional Information given to differentiate various models or to provide information for proper system 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.

In addition to the motherboard, several important parts that are included in the retail box are listed below. If anything listed is damaged or missing, contact your retailer.

### 1.1 Checklist

| Main Parts List                       |              |          |
|---------------------------------------|--------------|----------|
| Description                           | Part Number  | Quantity |
| Supermicro Motherboard                | B4SA1-CPU    | 1        |
| <a href="#">Quick Reference Guide</a> | MNL-2535-QRG | 1        |

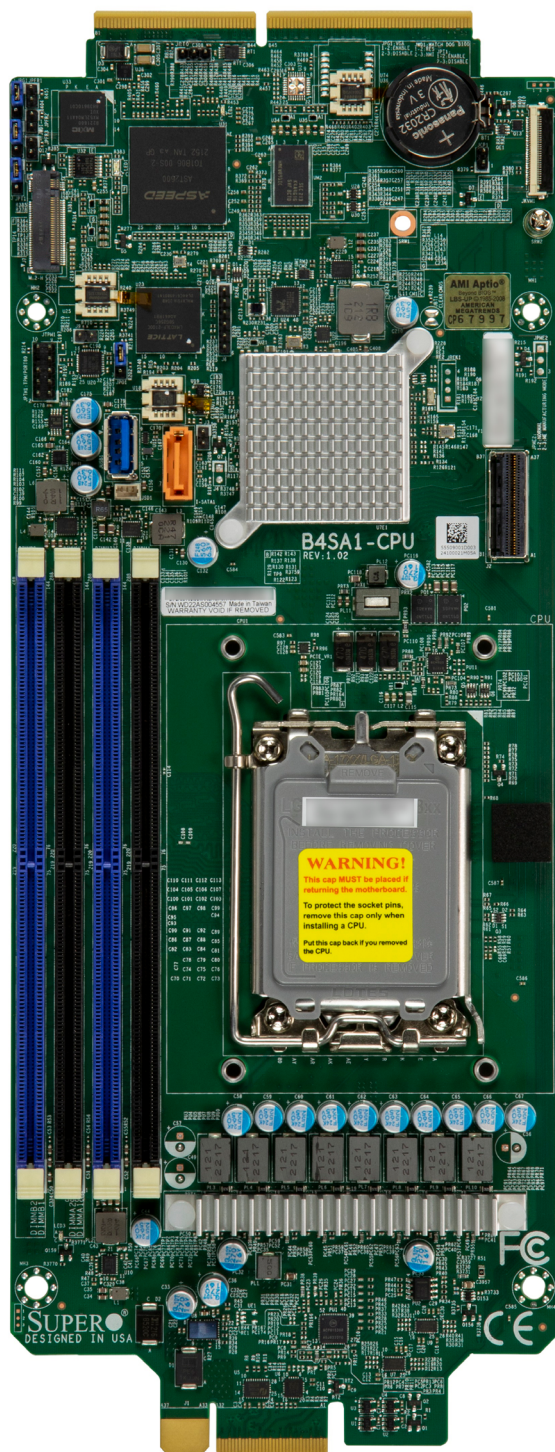
### Important Links

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

- Frequently Asked Questions: <https://www.supermicro.com/FAQ/index.php>
- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wdl/driver/>
- Product safety info: [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://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 at our website: [https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wftp/utility/Lot9\\_Secure\\_Data\\_Deletion\\_Utility/](https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wftp/utility/Lot9_Secure_Data_Deletion_Utility/)
- If you have any questions, contact our support team at: [support@supermicro.com](mailto:support@supermicro.com)

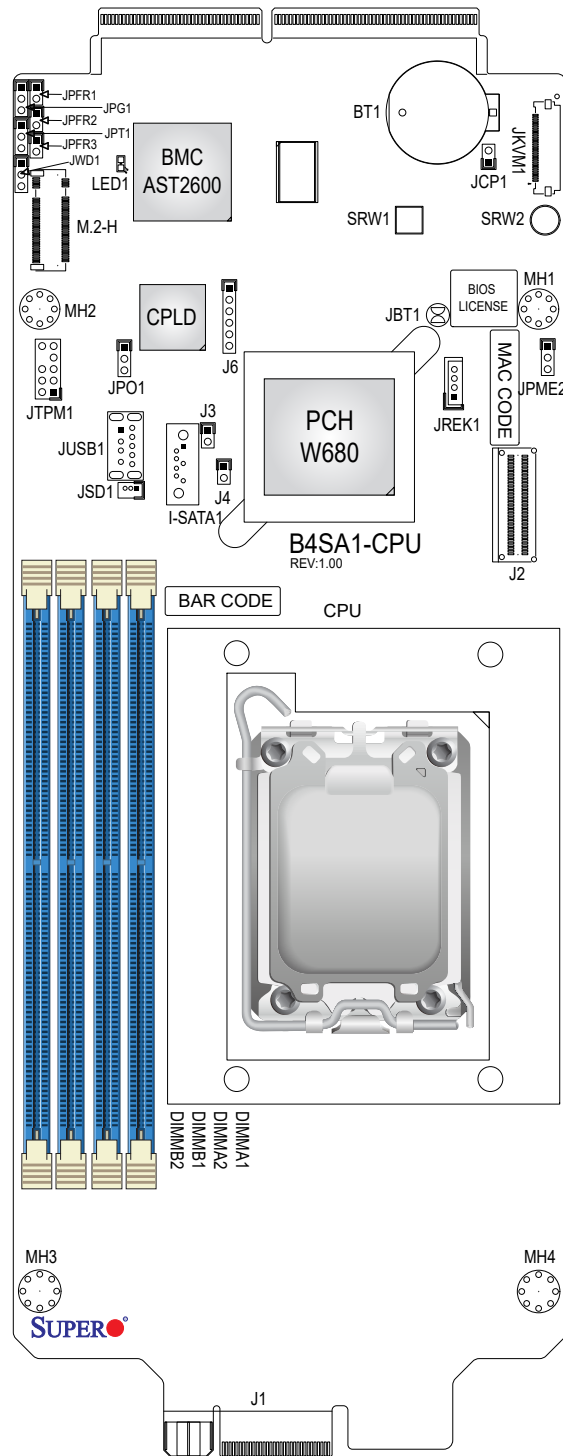
This manual may be periodically updated without notice. Check the Supermicro website for possible updates to the manual revision level.

Figure 1-1. B4SA1-CPU Motherboard Image



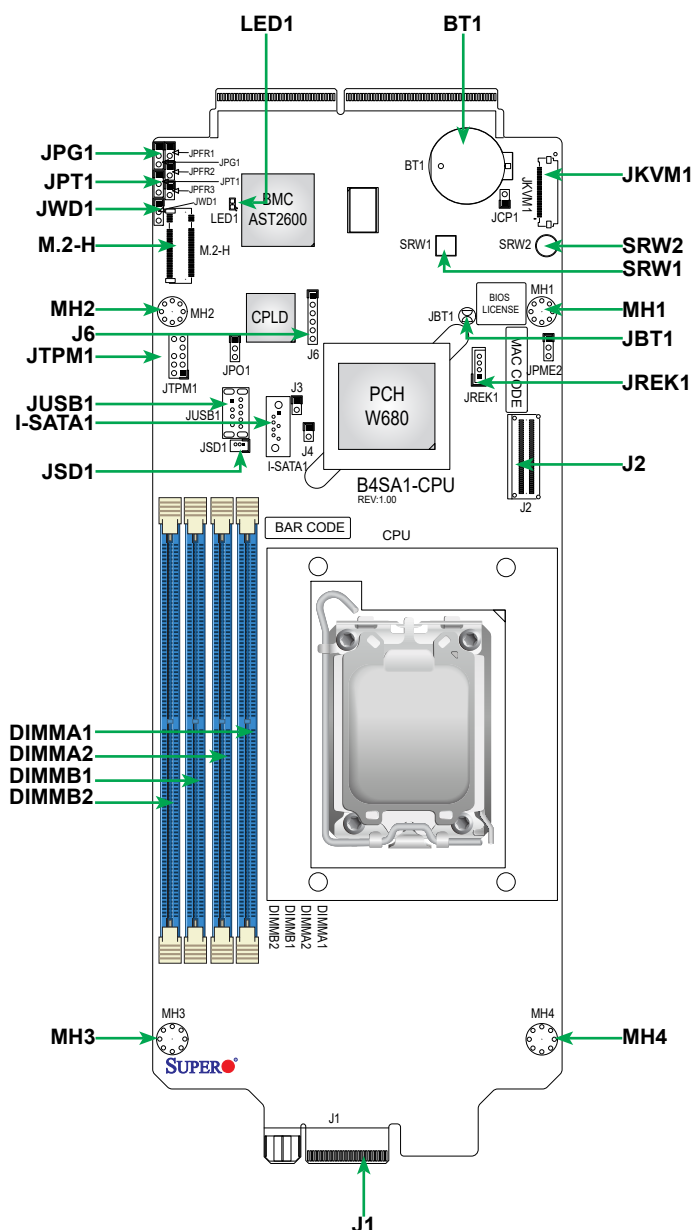
 **Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

**Figure 1-2. Motherboard Layout**  
(not drawn to scale)



**Note:** Components not documented are for internal testing only.

## Quick Reference



### Notes:

- See [Chapter 2](#) for detailed information on jumpers, I/O ports, and JF1 front panel connections.
- "■" indicates the location of Pin 1.
- Jumpers/LED indicators not indicated are used for testing only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

## Quick Reference Table

| Jumper        | Description                                           | Default Setting            |
|---------------|-------------------------------------------------------|----------------------------|
| JBT1          | Onboard CMOS Clear                                    | Open (Normal)              |
| JPG1          | VGA Enable/Disable                                    | Pins 1-2 (Enable)          |
| JPT1          | Onboard TPM 2.0 Enable/Disable                        | Pins 1-2 (Enable)          |
| JWD1          | Watchdog Timer                                        | Pins 1-2 (Reset)           |
| Connector     | Description                                           |                            |
| BT1           | Onboard CMOS Battery                                  |                            |
| I-SATA1       | SATA 3.0 Port                                         |                            |
| J1            | Chassis Backplane Connector                           |                            |
| J2            | PCIe 4.0 x8 SlimSAS Slot                              |                            |
| J6            | CPLD JTAG Header                                      |                            |
| M.2-H         | M.2 M-Key PCIe 4.0 or SATA 3.0 Connector (2280/22110) |                            |
| JKVM1         | VGA/USB Module Connector                              |                            |
| JREK1         | Intel RAID Key Header                                 |                            |
| JTPM1         | Trusted Platform Module (TPM)/Port 80 Connector       |                            |
| JSD1          | SATA DOM Power Connector                              |                            |
| JUSB1         | Internal USB 3.2 Type-A Port                          |                            |
| MH1 – MH4     | Mounting Holes                                        |                            |
| SRW_1 – SRW_2 | M.2 Mounting Holes                                    |                            |
| LED           | Description                                           | Status                     |
| LED1          | BMC Heartbeat LED                                     | Blinking Green: BMC Normal |

## Motherboard Features

| Motherboard Features                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CPU</b> <ul style="list-style-type: none"> <li>Supports a 12th/13th Generation Intel Core i5/i7/i9 processor in an LGA 1700 socket with up to 24 (8P+16E) cores and 125W TDP</li> </ul>          |
| <b>Memory</b> <ul style="list-style-type: none"> <li>Supports up to 128GB of DDR5 ECC UDIMM memory with speeds of up to 4400 MT/s in four DIMM slots</li> </ul>                                     |
| <b>DIMM Size</b> <ul style="list-style-type: none"> <li>Up to 128GB</li> </ul>                                                                                                                      |
| <b>Chipset</b> <ul style="list-style-type: none"> <li>Intel PCH W680</li> </ul>                                                                                                                     |
| <b>Expansion Slots</b> <ul style="list-style-type: none"> <li>One PCIe 4.0 x4 M.2 M-Key or SATA 3.0 slot in the 2280 and 22110 form factors</li> <li>One PCIe 4.0 x8 SlimSAS slot</li> </ul>        |
| <b>Baseboard Management Controller (BMC)</b> <ul style="list-style-type: none"> <li>Aspeed AST2600</li> </ul>                                                                                       |
| <b>Super I/O</b> <ul style="list-style-type: none"> <li>Aspeed AST2600</li> </ul>                                                                                                                   |
| <b>Graphics</b> <ul style="list-style-type: none"> <li>Aspeed AST2600</li> </ul>                                                                                                                    |
| <b>I/O Devices</b> <ul style="list-style-type: none"> <li>One SATA 3.0 SATA DOM port</li> </ul>                                                                                                     |
| <b>Peripheral Devices</b> <ul style="list-style-type: none"> <li>One internal USB 3.2 Type-A port</li> </ul>                                                                                        |
| <b>BIOS</b> <ul style="list-style-type: none"> <li>256Mb AMI BIOS® SPI Flash BIOS</li> <li>ACPI, Plug and Play (PnP), Real Time Clock (RTC) Wakeup, SPI dual/quad speed support</li> </ul>          |
| <b>Power Management</b> <ul style="list-style-type: none"> <li>ACPI power management (supports S5)</li> <li>Power button override mechanism</li> <li>Power-on mode for AC power recovery</li> </ul> |



**Note:** The table above is continued on the next page.

| Motherboard Features                                                                                                                                                                                                                                                                                                                |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>System Health Monitoring</b>                                                                                                                                                                                                                                                                                                     |  |
| <ul style="list-style-type: none"> <li>Onboard voltage monitoring for +3.3V, +5V, +12V, +3.3VStb, +5VStb, Vcore, and Vmem</li> <li>Temperature of CPU, PCH, System, DIMM, and peripheral</li> <li>CPU thermal trip support</li> <li>Platform Environment Control Interface (PECI)/TSI</li> </ul>                                    |  |
| <b>System Management</b>                                                                                                                                                                                                                                                                                                            |  |
| <ul style="list-style-type: none"> <li>Trusted Platform Module (TPM)/Port 80 header onboard</li> <li>SuperDoctor® 5</li> <li>IPMIView, SMCIPMITOOL, IPMICFG, SPM, SSM, SUM (Supermicro Update Manager) InBand, SUM-OOB</li> <li>Redundant power supply unit detection sensor</li> <li>Intel vPro (available on i5/i7/i9)</li> </ul> |  |
| <b>LED Indicators</b>                                                                                                                                                                                                                                                                                                               |  |
| <ul style="list-style-type: none"> <li>CPU/System Overheat LED</li> <li>Power/Suspend State Indicator LED</li> <li>Fan Failed LED</li> <li>UID LED</li> <li>LAN Activity LED</li> </ul>                                                                                                                                             |  |
| <b>Optimized Chassis</b>                                                                                                                                                                                                                                                                                                            |  |
| <ul style="list-style-type: none"> <li>MBE-620E</li> </ul>                                                                                                                                                                                                                                                                          |  |
| <b>Dimensions</b>                                                                                                                                                                                                                                                                                                                   |  |
| <ul style="list-style-type: none"> <li>12.6" (L) x 4.8" (W) (320.0mm x 121.9mm)</li> </ul>                                                                                                                                                                                                                                          |  |

 **Note 1:** The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, check the chassis and heatsink specifications for proper CPU TDP sizing.

 **Note 2:** For IPMI configuration instructions, refer to the Embedded IPMI Configuration User's Guide available at <http://www.supermicro.com/support/manuals/>.

 **Note 3:** If you purchase a Supermicro Out of Band (OOB) software license key (Supermicro P/N: SFT-OOB-LIC), DO NOT change the IPMI MAC address. Once the Mac address has been changed, the OOB license key will be invalid.

 **Note 4:** Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard.

[illegible]

**Note:** This is a general block diagram and may not exactly represent the features on your motherboard. See the previous pages for the actual specifications of your motherboard.

## 1.2 Processor and Chipset Overview

The Supermicro B4SA1-CPU motherboard, with the W680 chipset, supports a 12th/13th Generation Intel Core i5/i7/i9 processor and provides superb performance, efficient power management while providing a rich feature set based on cutting edge technology to address today's needs in advanced computing, engineering simulation, and automation.

The processor and the chipset support the following features:

- Intel Hyper-Threading, Intel VT-D, VT-x
- Intel Turbo Boost Technology
- Intel Rapid Storage Technology
- Up to 128GB memory support
- ACPI Power Management

## 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 case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. See the Advanced BIOS Setup section for this setting. The default setting is **Last State**.

## 1.4 System Health Monitoring

### Onboard Voltage Monitors

An onboard voltage monitor will scan the voltages of the onboard chipset, memory, CPU, and battery continuously. 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.

## Environmental Temperature Control

System Health sensors monitor temperatures and voltage settings of onboard processors and the system in real time via the IPMI interface. Whenever the temperature of the CPU or the system exceeds a user-defined threshold, system/CPU cooling fans will be turned on to prevent the CPU or the system from overheating.



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

## System Resource Alert

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

## 1.5 ACPI Features

The Advanced Configuration and Power Interface (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 CD-ROMs, 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 appropriate Windows operating systems. For detailed information regarding OS support, refer to the Supermicro website.

## 1.6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. This is even more important for processors that have high CPU clock rates. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## Chapter 2

# Installation

### 2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your system board, 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 by its edges only; 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. Do not install the onboard battery upside down to avoid possible explosion.

#### Unpacking

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

## 2.2 Processor and Heatsink Installation

**Warning:** When handling the processor package, avoid placing direct pressure on the label area of the fan.

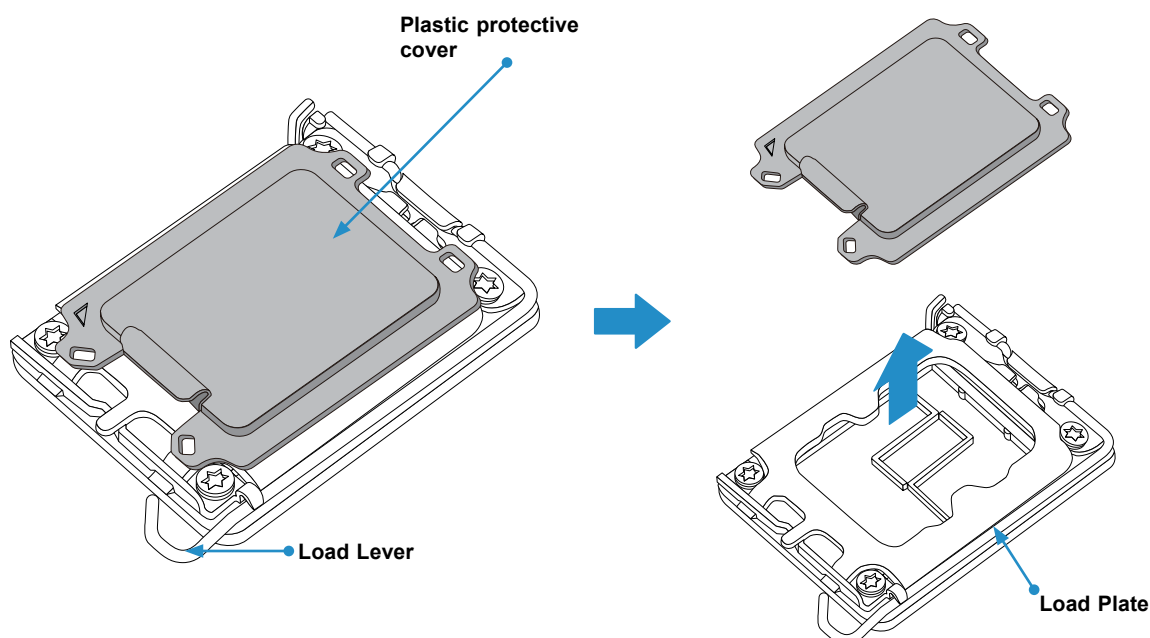


**Important:**

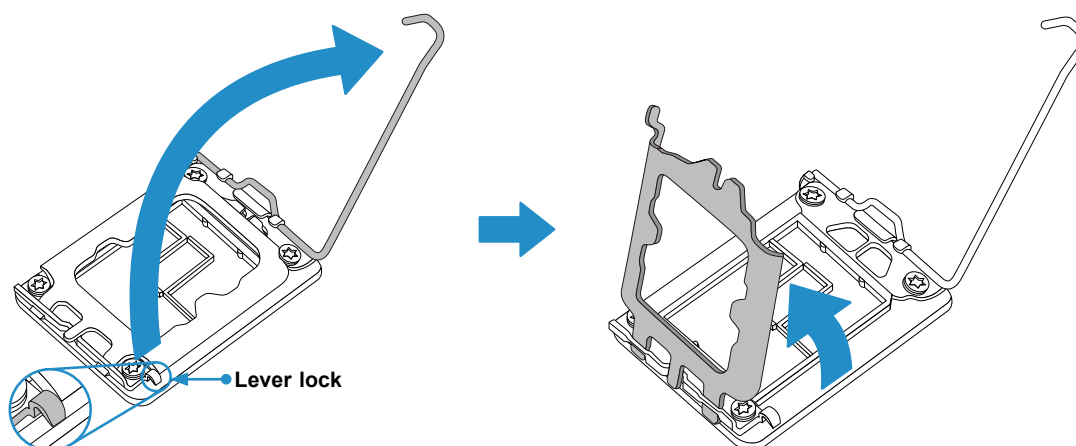
- Use ESD protection.
- Shut down the system and then unplug the AC power cord from all power supplies.
- Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or socket, which may require manufacturer repairs.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.
- Refer to the Supermicro website for updates on processor support.
- All graphics in this manual are for illustrative purposes only. Your components may look different.

### Installing the 12th/13th Generation Intel Core i5/i7/i9 processor

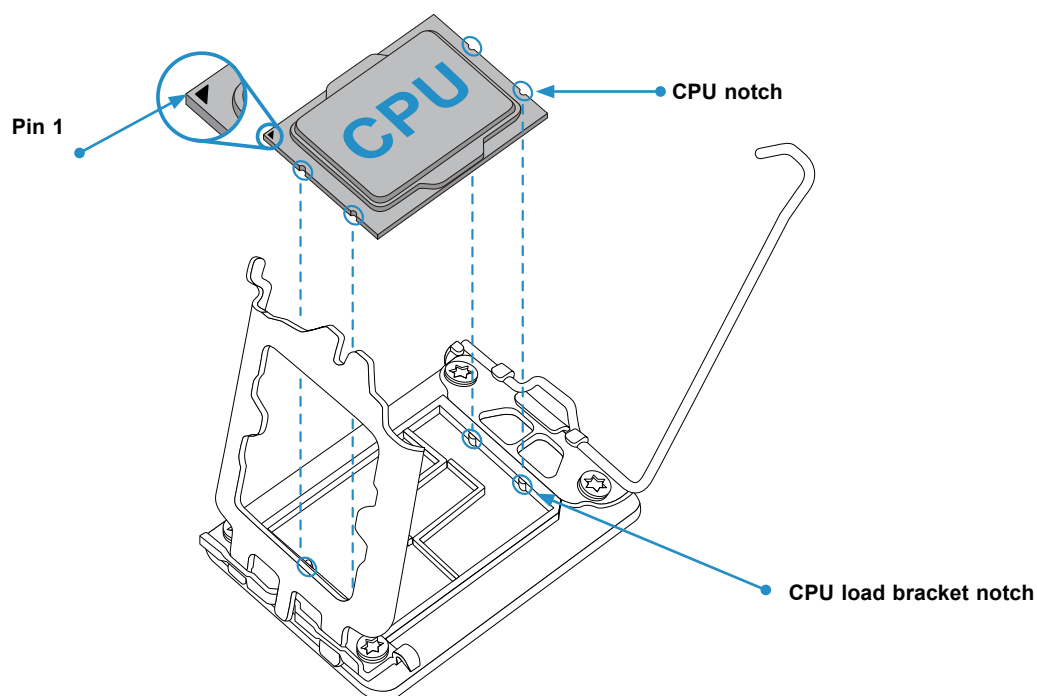
1. Remove the plastic protective cover from the socket load plate.



2. Gently push down the load lever to release and lift it, then lift the load plate.

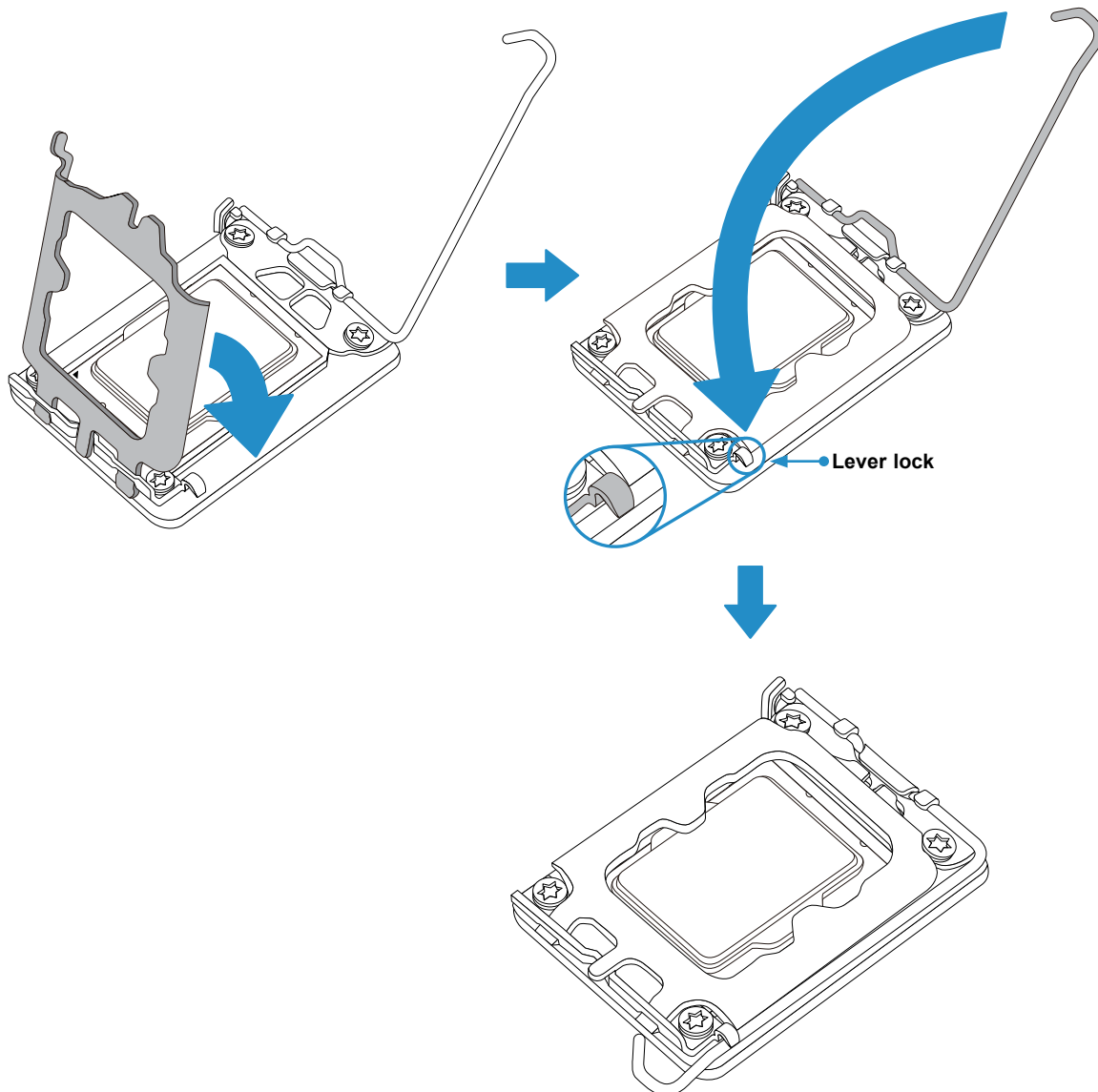


3. Hold the CPU over the CPU socket. Use your thumb and index finger to lift the CPU from the center of its north and south edges. Align the small triangle marker on the CPU to its corresponding triangle marker on the socket. Once it is aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, or move it horizontally or vertically.



**Note:** Do not rub the CPU against any surface or against any pins of the socket. You may cause irreparable damage to the CPU or the socket pins.

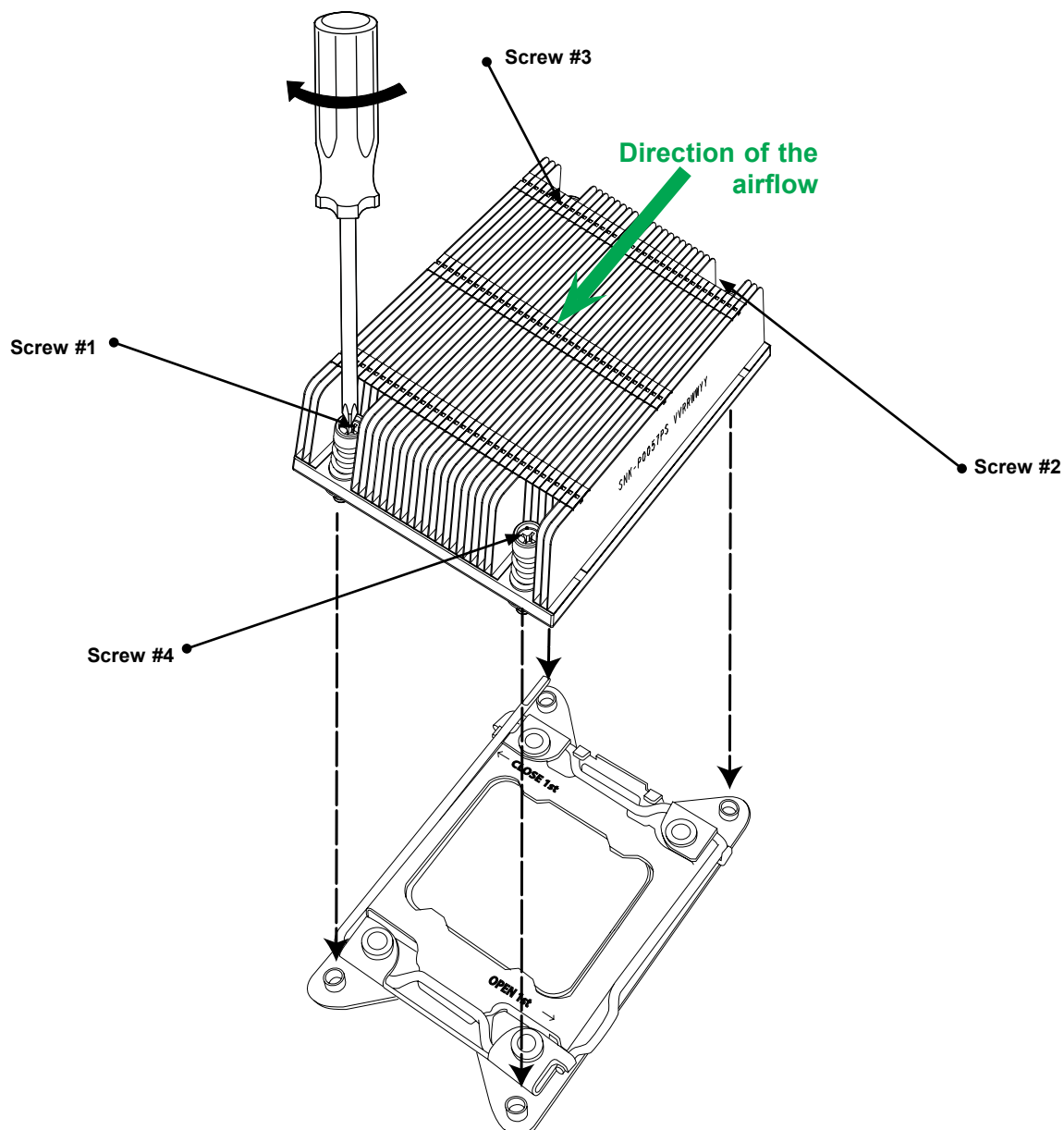
4. Inspect the four corners of the CPU to ensure it is properly installed. Close the load plate with the CPU inside the socket. Gently push the load lever down until it locks under the load lever lock latch. This will secure the CPU under the socket load plate.



- ! **Attention!** Ensure the CPU is properly inserted into the CPU socket before closing the load plate. The CPU fits inside the socket in only one direction. Do not force the load plate to close, as you may damage your CPU. Instead, reopen the load plate and double-check that the CPU is aligned properly.

## Installing the CPU Heatsink

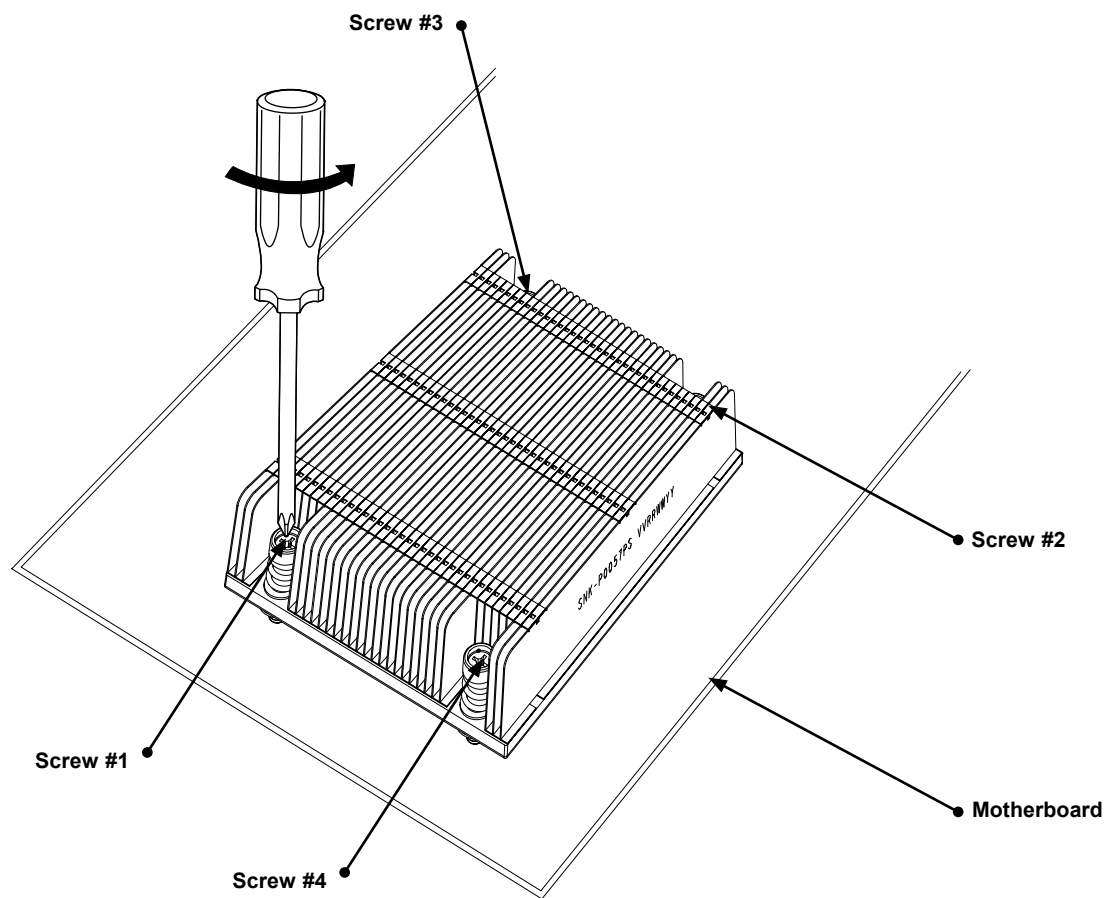
1. Do not apply thermal grease to the heatsink or the CPU; the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the motherboard and the heatsink bracket underneath
3. With a Phillips screwdriver, gradually tighten screws #1, #2, then #3, #4 to ensure even pressure. The order of the screws is shown below. To avoid damaging the processor or socket, do not use a force greater than 12 lbf-in when tightening the screw.
4. Examine all corners to ensure the heatsink is firmly attached to the motherboard.



## Removing the Heatsink

 **Note:** We do not recommend that the CPU 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 CPU or other components.

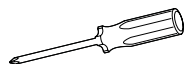
1. Unplug the power connector from the power supply.
2. Unscrew the heatsink screws in the sequence shown below.
3. Gently lift the heatsink up and remove it from the CPU.



## 2.3 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



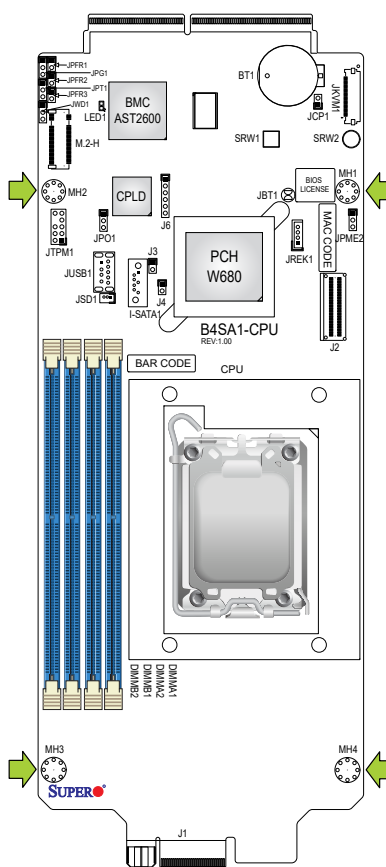
**Phillips  
Screwdriver  
(1)**



**Phillips Screws  
(4)**



**Standoffs (4)  
Only if Needed**



### Location of Mounting Holes



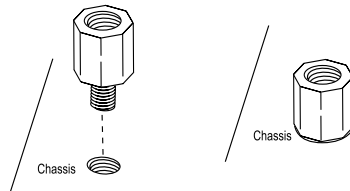
**Note 1:** To avoid damaging the motherboard and its components, do not use a force greater than 8 lbf-in on each mounting screw during motherboard installation.



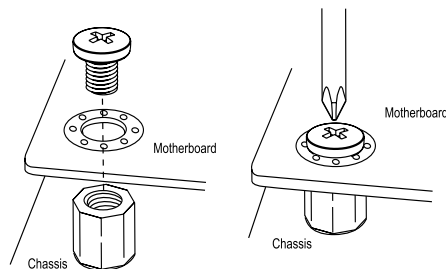
**Note 2:** Some components are very close to the mounting holes. Take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

## Installing the Motherboard

1. Locate the mounting holes on the motherboard and the mounting tray. See the previous page for the location.
2. Install the standoffs on the mounting tray. Align the mounting holes on the motherboard against the mounting holes on the tray.



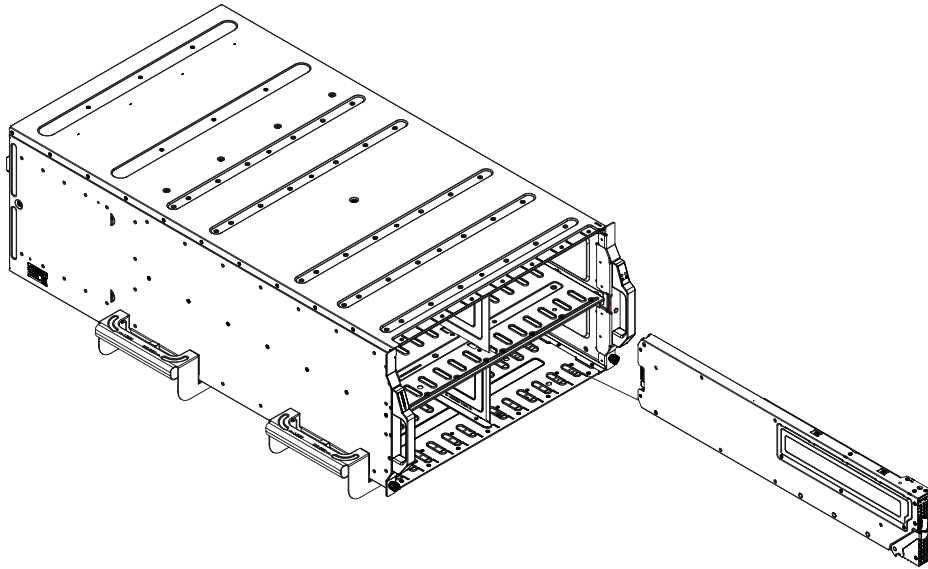
3. Using the Phillips screwdriver, insert a Phillips head #6 screw into the mounting hole on the motherboard and its matching hole on the tray.



4. Repeat step 3 to insert #6 screws to all mounting holes located on the motherboard and the tray and securely install the motherboard onto the tray.

## Installing the Motherboard into the Superblade Chassis

1. When the motherboard is securely installed on the mounting tray, push the tray into the Superblade chassis shown below.



2. Once the mounting tray is pushed into the chassis, the connectors on the motherboard's edge will make contact with the chassis' backplane, which provides the connections to the chassis power, network, and other I/O devices.

 **Note:** Images displayed are for illustrative purposes only. Your chassis or components may look different from those shown in this manual.

## 2.4 Memory Support and Installation



**Note:** Check the Supermicro website for recommended memory modules.



**Important:** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

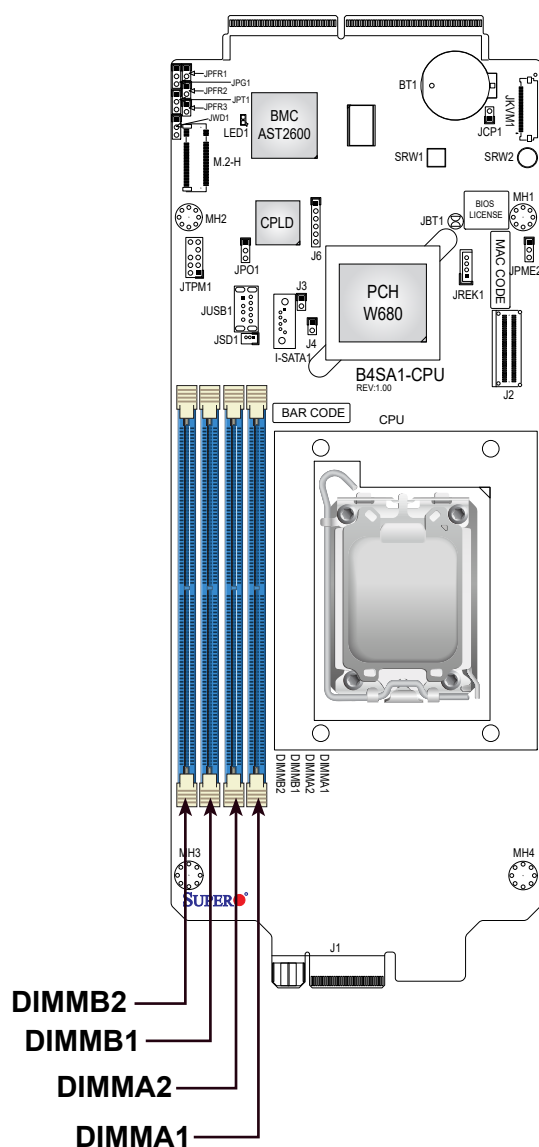
### Memory Support

The B4SA1-CPU supports up to 128GB of DDR5 ECC UDIMM memory with speeds of up to 4400 MT/s in four DIMM slots.

| 1 CPU, 4 DIMM Slots |                                      |
|---------------------|--------------------------------------|
| Number of DIMMs     | Memory Population Sequence           |
| 1                   | DIMMA1<br>DIMMA2<br>DIMMB1<br>DIMMB2 |
| 2                   | DIMMB2 / DIMMA2<br>DIMMB1 / DIMMA1   |
| 4                   | DIMMA1 / DIMMA2 / DIMMB1 / DIMMB2    |

## General Guidelines for Optimizing Memory Performance

- It is recommended to use DDR5 ECC UDIMM 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 not support an odd-numbered amount of DIMM modules except for a single DIMM module necessary for board operation.

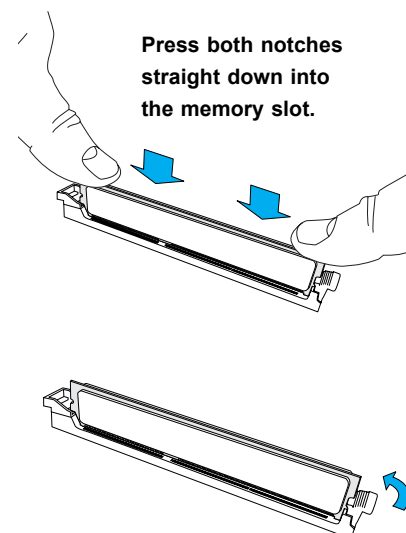
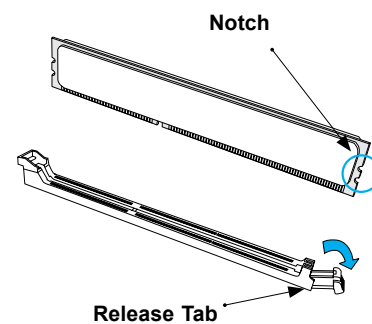
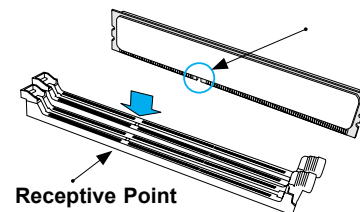
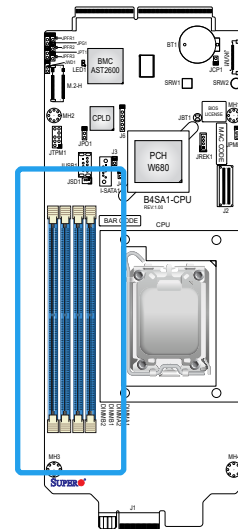


## DIMM Installation

1. For the system to work properly, use memory modules of the same type and speed. Refer to the table in [Chapter 2.4](#) for the memory population sequence.
2. Align the DIMM module key with the receptive point on the single-latch DIMM slot.
3. Push the release tab outwards to unlock the slot.
4. Align the notch on the end of the module against the receptive point on the end of the slot.
5. Press both ends of the module straight down into the slot until the module snaps into place.
6. Push the release tab to the lock position to secure the module into the slot.

## DIMM Removal

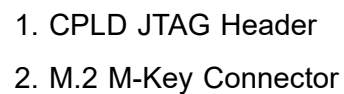
Press the release tab on one end of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.





A Complex-Programmable-Logical-Device (CPLD) JTAG header is located at J6 on the motherboard.

This motherboard has one hybrid M.2 slot at M.2-H. M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCIe. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. M.2-H supports an M-Key PCIe 4.0 x4 or SATA 3.0 device in the 2280 and 22110 form factors.



Use JKVM1 to connect to a VGA/USB module.

The JREK1 header allows you to enable RAID functions for NVMe connections. Refer to the table below for pin definitions.

1. VGA/USB Module Connector
2. Intel RAID Key Header



### Trusted Platform Module (TPM)/Port 80 Header

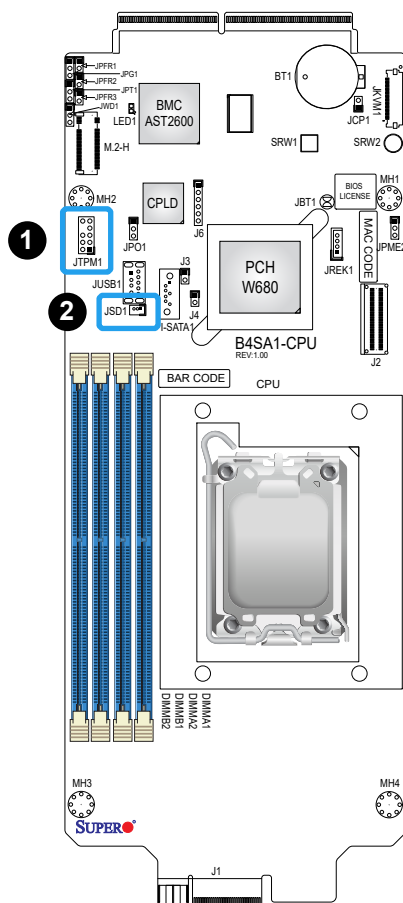
A Trusted Platform Module (TPM)/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. Refer to the table below for pin definitions. Go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

| Trusted Platform Module Header<br>Pin Definitions |            |      |            |
|---------------------------------------------------|------------|------|------------|
| Pin#                                              | Definition | Pin# | Definition |
| 1                                                 | +3.3V      | 2    | SPI_CS#    |
| 3                                                 | RESET#     | 4    | SPI_MISO   |
| 5                                                 | SPI_CLK    | 6    | GND        |
| 7                                                 | SPI_MOSI   | 8    |            |
| 9                                                 | +3.3V Stby | 10   | SPI_IRQ#   |

### SATA DOM Power Connector

A SATA Disk-On-Module (DOM) power connector at JSD1 provides 5V power to a solid-state DOM storage device connected to one of the SATA ports. Refer to the table below for pin definitions.

| DOM Power<br>Pin Definitions |            |
|------------------------------|------------|
| Pin#                         | Definition |
| 1                            | 5V         |
| 2                            | Ground     |
| 3                            | Ground     |



There is one internal USB 3.2 port (JUSB1) on the motherboard.

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

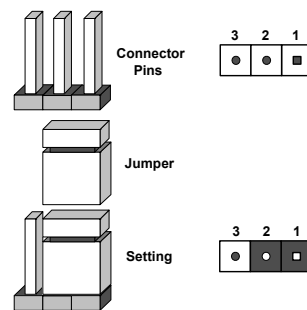


## 2.6 Jumper Settings

### How Jumpers Work

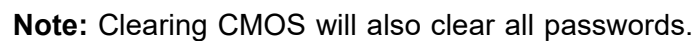
To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram below for an example of jumping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



JBT1 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.

1. First power down the system and unplug the power cord(s).
2. Remove the cover of the chassis to access the motherboard.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Remove the screwdriver or shorting device.
6. Replace the cover, reconnect the power cord(s), and power on the system.



## 1. Clear CMOS

## VGA Enable/Disable

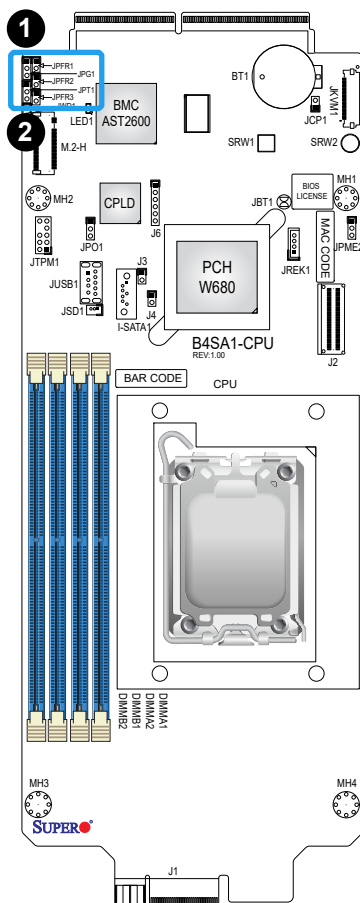
Use JPG1 to enable or disable the VGA port using the onboard graphics controller. The default setting is Enabled.

| VGA Enable/Disable<br>Jumper Settings |                   |
|---------------------------------------|-------------------|
| Jumper Setting                        | Definition        |
| Pins 1-2                              | Enabled (Default) |
| Pins 2-3                              | Disabled          |

## Onboard TPM 2.0 Enable/Disable

Use jumper JPT1 to enable or disable support for the onboard TPM 2.0 module. The default setting is enabled.

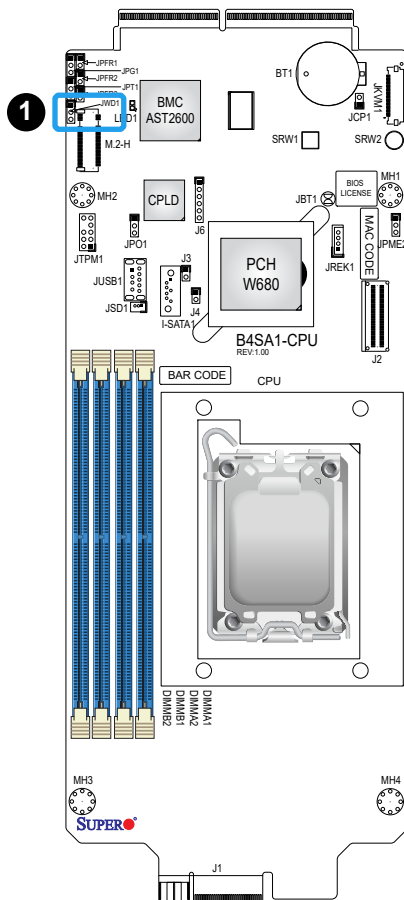
| TPM 2.0 Enable/Disable<br>Jumper Settings |                   |
|-------------------------------------------|-------------------|
| Jumper Setting                            | Definition        |
| Pins 1-2                                  | Enabled (Default) |
| Pins 2-3                                  | Disabled          |



JWD1 controls the Watchdog function. Watchdog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watchdog to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. Watchdog must also be enabled in BIOS.



| Watchdog<br>Jumper Settings |                 |
|-----------------------------|-----------------|
| Jumper Setting              | Definition      |
| Pins 1-2                    | Reset (Default) |
| Pins 2-3                    | NMI             |
| Open                        | Disabled        |



## 1. Watchdog



## Chapter 3

# Troubleshooting

### 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' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components.

#### 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 CPU (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 ATX power connectors are properly connected.
3. Check that the 115V/230V 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. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3VDC. If it does not, replace it with a new one.

## No Video

1. If the power is on, but you have no video, remove all add-on cards and cables.
2. Use the speaker to determine if any beep codes are present. Refer to Appendix A for details on beep codes.
3. 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, check the following:

1. Check for any error beep from the motherboard speaker.
  - If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, replace the motherboard.
  - If there are error beeps, clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper (JBT1). Refer to [Chapter 2.6](#) for instructions on how to clear CMOS.
2. Remove all components from the motherboard, especially the DIMM modules. Make sure that system power is on and that memory error beeps are activated.
3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors troubleshooting procedure in this chapter.

## Memory Errors

When a no-memory beep code is issued by the system, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See Chapter 2 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 DDR5 ECC UDIMM modules recommended by the manufacturer.

4. Check for bad DIMM modules 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 Chapter 2 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

## When the System Becomes Unstable

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

1. CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported by testing 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. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and CPU/system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the CPU 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 drive.
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 CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above 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.

## 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. Go through the Troubleshooting Procedures and Frequently Asked Questions (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/FAQ/index.php>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website ([http://www.supermicro.com/ResourceApps/BIOS\\_IPMI\\_Intel.html](http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html)).
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 <http://www.supermicro.com/RmaForm/>.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. We can be reached by email at [support@supermicro.com](mailto:support@supermicro.com).

## 3.3 Frequently Asked Questions

**Question:** What type of memory does my motherboard support?

**Answer:** The supports up to 128GB of DDR5 ECC UDIMM memory with speeds of up to 4400 MT/s in four DIMM slots.

**Question:** How do I update my BIOS?

**Answer:** 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 [http://www.supermicro.com/ResourceApps/BIOS\\_IPMI\\_Intel.html](http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html). 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. Unzip the BIOS file onto a bootable USB device. Run the batch file using the format FLASH.BAT filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

**Warning:** Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!



**Note:** The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, refer to the AMI BIOS Recovery Instructions posted at <http://www.supermicro.com/support/manuals/>.

## 3.4 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. Locate the onboard battery as shown below.
3. 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.
4. Remove the battery.

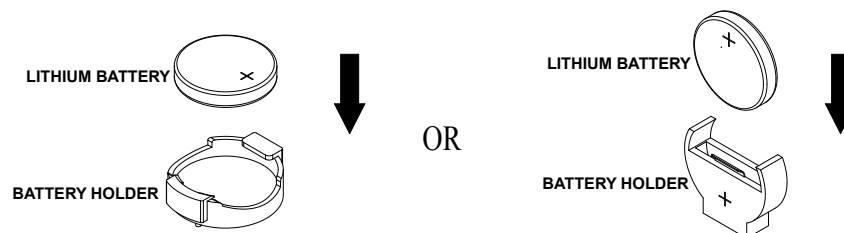
### Proper Battery Disposal

**Warning:** Handle a used battery carefully. Do not discard it in the garbage or a public landfill. Comply with the regulations set up by your local hazardous waste management agency to dispose a used battery properly.

### Battery Installation

1. To install an onboard battery, follow steps 1 and 2 above and continue below:
2. Identify the battery's polarity. The positive (+) side should be facing up.
3. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

**Warning:** When replacing a battery, replace it with the same type.



## 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, you can also request a RMA authorization online (<http://www.supermicro.com/RmaForm/>).

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

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

## Chapter 4

# UEFI BIOS

### 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 a flash program.



**Note:** 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.

### Starting the Setup Utility

To enter the BIOS Setup Utility, hit 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 keys are used, such as <F1>, <F2>, etc. Each main BIOS menu option is described in this manual.

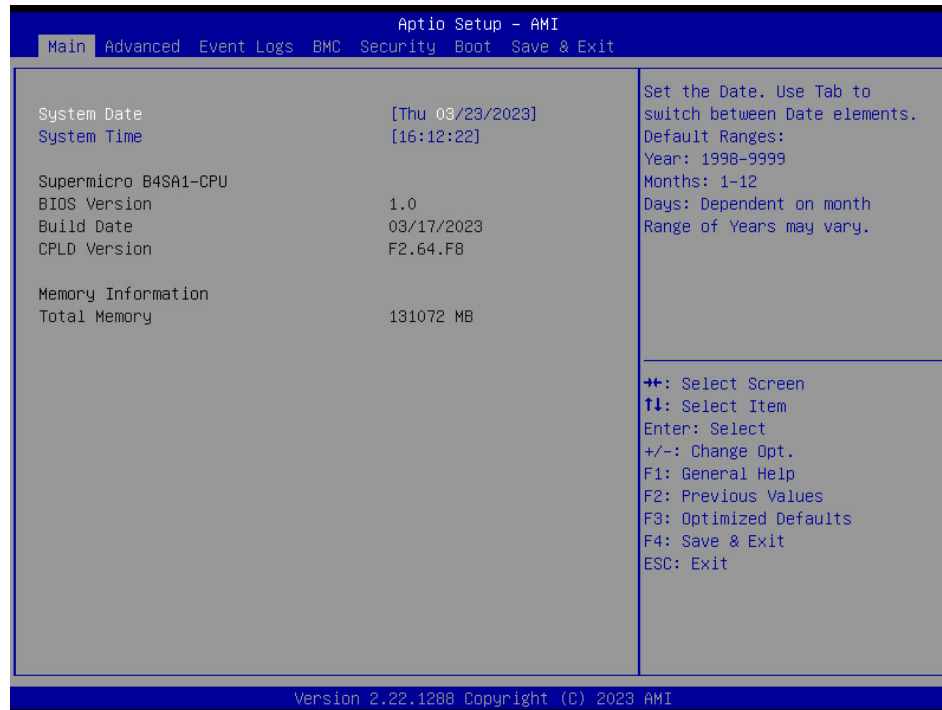
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message 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>, <F10>, <Enter>, <ESC>, Arrow keys, etc.) can be used at any time during the setup navigation process.

## 4.2 Main Setup

When you first enter the AMI BIOS setup utility, you enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS setup screen is shown below. The following Main menu items be displayed:



### System Date/System Time

Use this option 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.

### Supermicro B4SA1-CPU

#### 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.

#### CPLD Version

This feature displays the version of the CPLD.

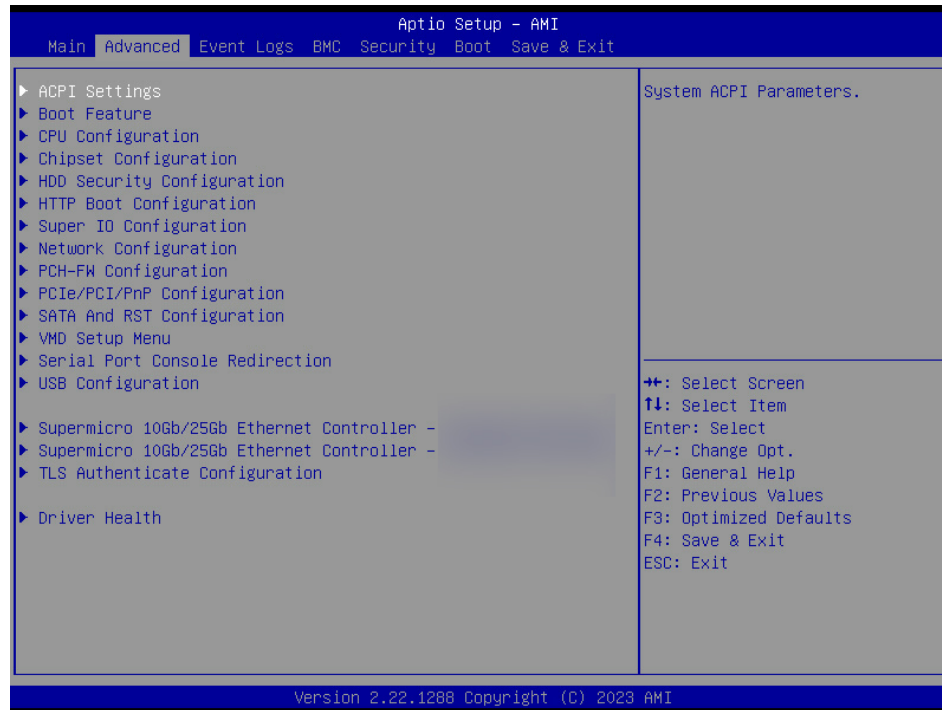
## **Memory Information**

### **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.



**Warning:** Take 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 setting to the manufacture default settings.

### ►ACPI Settings

#### ACPI Settings

##### ACPI Sleep State

Use this feature to set the highest ACPI sleep state that the system will enter when the SUSPEND button is pressed. The options are Suspend Disabled and **S3 (Suspend to RAM)**.

##### WHEA Support

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

### High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET). The HPET 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. The HPET replaces the 8254 Programmable Interval Timer. The options are Disabled and **Enabled**.

### Native PCIe Enable

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

### Native ASPM

Use this feature to set whether ASPM should be controlled by the OS or by the BIOS. The options are Auto, Enabled, and **Disabled**.

## ► Boot Feature

### Fast Boot

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

### Quiet Boot

Use this feature to select the screen display between the 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 Power-on Self Test (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 <Numlock> 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 enabled, the BIOS will automatically reboot the system from a specified boot device after its initial boot failure. The options are **Disabled** and EFI Boot.

## Power Configuration

### Watch Dog Function

If this feature is enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on the JWD1 jumper on the motherboard when it is inactive for more than five minutes. The options are **Disabled** and Enabled.

### Watch Dog Function

If this feature is enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on the Watch Dog Timer and Watch Dog Action BIOS settings when it is inactive for more than five minutes. The options are **Disabled** and Enabled.

### Watch Dog Timer (Available when Watch Dog Function is set to Enabled)

Use this feature to configure the Watch Dog Timer. The range is from 1 second to 1024 seconds. The default setting is **72**.

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

Use this feature to configure the Watch Dog Action. The options are Reset and **NMI**.

### Front USB Port(s) (Available when DCMS key is activated)

Select Enabled to allow the specific type of USB devices to be used in the front USB ports. Select Enabled (Dynamic) to allow or disallow this particular type of USB device to be used in the front USB ports without rebooting the system. The options are **Enabled**, Disabled, and Enabled (Dynamic).

### Rear USB Port(s) (Available when DCMS key is activated)

Select Enabled to allow the specific type of USB devices to be used in the rear USB ports. Select Enabled (Dynamic) to allow or disallow this particular type of USB device to be used in the rear USB ports without rebooting the system. The options are **Enabled**, Disabled, and Enabled (Dynamic).

### AC Loss Policy Depend On

Use this feature to set the power state after a power outage. Select Power Off for the system power to remain off after a power loss. Select Power On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Stay Off, Power On, and **Last State**.

### Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for you to power off the system after pressing and holding the power button for four seconds or longer. Select Instant Off to instantly power off the system as soon as you presses the power button. The options are **Instant Off** and 4 Seconds Override.

### DeepSx Power Policies

This feature enables DeepSx Power Policy configuration. The options are **Disabled**, Enabled in S4-S5, and Enabled in S5.

### ► CPU Configuration

The following CPU information is displayed:

- Processor Name
- CPU Signature
- Microcode Patch
- Max CPU Speed
- Min CPU Speed
- CPU Speed
- Number of Performance-cores
- Number of Efficient-cores
- Hyper Threading Technology
- VMX
- SMX/TXT
- 64-bit
- EIST Technology
- CPU C3 State
- CPU C6 State
- CPU C7 State
- CPU C8 State
- CPU C9 State
- CPU 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

### **C6DRAM**

This feature enables moving DRAM contents to PRM memory when the CPU is in a C6 state. The options are Disabled and **Enabled**.

### **Hardware Prefetcher**

If this feature is set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory into the L2 cache to improve CPU performance. The options are Disabled and **Enabled**.

### **Adjacent Cache Line Prefetch**

If this feature is set to Disabled, the CPU will prefetch cache lines for 64 bytes. If set to Enabled, the CPU will prefetch cache lines for 128 bytes as comprised. The options are Disabled and **Enabled**.

### **Intel (VMX) Virtualization Technology**

Select Enabled to use the Intel Virtualization Technology so that I/O device assignments will be reported to Virtual Memory Management (VMM) through the DMAR ACPI Tables. This feature offers fully-protected I/O resource sharing across Intel platforms, allowing for greater reliability, security, and availability in networking and data sharing. The options are Disabled and **Enabled**.

### **Active Performance-cores**

This feature determines how many Performance-cores will be activated. When All is selected, all Performance-cores will be activated. The default setting is **All**.

### **Active Efficient-cores**

This feature determines how many Efficient-cores will be activated. When All is selected, all Performance-cores will be activated. The default setting is **All**.

### **Hyper-threading**

Select Enabled to support Intel Hyper-Threading Technology to enhance CPU performance. The options are **Enabled** and Disabled.

### **Boot Performance Mode**

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

### **Intel(R) SpeedStep(tm)**

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(R) Speed Shift Technology**

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**

Select Enabled for processor cores to run faster than the frequency specified by the manufacturer. 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 average 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 125mW. Use the number keys on your keyboard to enter the value. The default setting is dependent on the CPU.

### **C-States**

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

### **Enhanced C-States**

Use this feature to enable enhanced C-States (C1E). When enabled, the CPU will switch to minimum speed if all cores are in C-State. The options are Disabled and **Enabled**.

**C-State Auto Demotion**

Use this feature to prevent unnecessary excursion into C-States. The options are Disabled and **C1**.

**C-State Un-Demotion**

Use feature to enable or disable un-demotion of C-States. the options are Disabled and **C1**.

**Package C-State Demotion**

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

**Package C-State Un-Demotion**

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

**C-State Pre-Wake**

Use this feature to enable or disable 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**.

**MonitorMWait**

Use this feature to enable or disable Monitor MWait. The options are Disabled and **Enabled**.  
The options are Disable and **Enable**.

## ► Chipset Configuration

**Warning:** Setting the wrong values in the following features may cause the system to malfunction.

### ► System Agent (SA) Configuration

#### System Agent (SA) Configuration

The following System Agent information will be displayed:

- VT-d

### ► Memory Configuration

#### Memory Configuration

The following memory information will be displayed:

- Memory RC Version
- Memory Frequency
- Memory Timings (tCL-tRCD-tRP-tRAS)
- DIMMA1
- DIMMA2
- DIMMB1
- DIMMB2

#### Maximum Memory Frequency

This feature selects the type/speed of the memory installed. The default is **Auto**. All values are in MHz.

#### Max TOLUD

This feature sets the Top of Low Usable DRAM (TOLUD) value. The TOLUD value specifies the memory space 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.

 **Note:** TSEG is a block of memory that is only accessible by the processor while operating in System Management Mode (SMM).

**Memory Scrambler**

This feature enables memory scrambler support for memory error correction. The options are Disabled and **Enabled**.

**Force ColdReset**

Use this feature when ColdBoot is required during MRC execution. The options are Enabled and **Disabled**.

**Force Single Rank**

When enabled, only Rank0 will be use in each DIMM. The options are **Disabled** and Enabled.

**Memory Remap**

PCI memory resources will overlap with the total physical memory if 4GB of memory (or above) is installed on the motherboard. When this occurs, enable this function to reallocate the overlapped physical memory to a location above the total physical memory to resolve the memory overlap-ping situation. The options are **Enabled** and Disabled.

**MRC Fast Boot**

This feature enables or disables fast path through the MRC. The options are Disabled and **Enabled**.

**Total Memory Encryption (Available when CPU supports TME capability)**

Use this feature to enable the Total Memory Encryption (TME) function for physical memory protection with multiple encryption keys. The options are **Disabled** and Enabled.

## ►Graphics Configuration

**Graphics Configuration**

The following graphic information will be displayed:

- IGFX GOP Version

**Graphics Turbo IMON Current**

Enter a value for the Graphics Turbo IMON current. The range is 14-31. The default value is **31**.



**Note:** This feature becomes configurable if the installed CPU has a built-in integrated graphics function.

### Skip Scanning of External Gfx Card

This feature disables scanning for external graphics cards. When this feature is set to Enabled, the system will not scan for external graphics cards on PEG and PCH PCIe ports. The options are **Disabled** and Enabled.



**Note:** This feature becomes configurable if the installed CPU has a built-in integrated graphics function.

### Primary Display

This feature controls which graphics device will be used as the primary display. The options are **Auto**, IGFX, PEG Slot, and PCH PCI.

### Internal Graphics

This feature keeps the Internal Graphics Device (IGD) enabled, based on setup options. The options are **Auto**, Disabled, and Enabled.

### GTT Size

This feature controls the memory allocation size for the graphics translation table (GTT). The options are 2MB, 4MB, and **8MB**.

### Aperture Size

This feature controls the graphics aperture size. For optimal performance, select the size that matches the installed graphics card's size. The options are 128MB, **256MB**, 512MB, 1024MB, and 2048MB.

### DVMT Pre-Allocated

This feature controls the DVMT 5.0 Pre-allocated graphics memory size to be used by the internal graphics device. The options are 0M, 32M, 64M, 96M, 128M, 160M, 4M, 8M, 12M, 16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, and **60M**.

### PM Support

This feature enables PM support. The options are **Enabled** and Disabled.

### PAVP Enable

This feature enables PAVP support. The options are **Enabled** and Disabled.

### Cdynmax Clamping Enable

This feature enables Cdynmax Clamping. The options are Enabled and **Disabled**.

### Graphics Clock Frequency

This feature controls the graphics clock frequency. Available settings depend on the highest clock frequency supported by the platform. The default is **Max CdClock freq based on Reference Clk**.

### ► DMI/OPI Configuration

#### DMI/OPI Configuration

The following DMI information is displayed:

- DMI

#### DMI Gen3 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, Auto, ASPM L0s, **ASPM L1**, and ASPM L0sL1.

### ► PEG Port Configuration

#### PEG Port Configuration

##### CPU SLOT2 PCIe 3.0 x4 / CPU SLOT1 PCIe 3.0 x8

##### Enable Root Port

Select Enable to activate the Root Port. The options are Disabled, **Enabled**.

##### Max Link Speed

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

##### ASPM

Use this feature to set the Active State Power Management level. The options are Disabled, L0s, **L1**, and L0sL1.

##### L1 Substates

Use this feature to configure PCIe L1 Substates. The options are Disabled, L1.1, and **L1.1 & L1.2**.

## ►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

This feature defines the Maximum GT Frequency. Choose between 100MHz (RPN) and 1200MHz (RP0). Any value beyond this range will be clipped to its min/max supported by the CPU. The options are **Default Max Frequency** and a value in the range 100MHz – 1200MHz in increments of 50MHz.

#### Disable Turbo GT Frequency

This feature disables 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**.

### VT-d

Select Enabled to enable 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 you with greater reliability, security and availability in networking and data sharing. The options are **Enabled** and Disabled.

#### GNA Device (B0:D8:F0)

Use this feature to enable SA GNA device. The options are Enabled and **Disabled**.

## ► PCH-IO Configuration

### PCH-IO Configuration

The following PCH information is displayed:

- PCH SKU
- Stepping

## ► PCI Express Configuration

### PCI Express Configuration

#### ► M.2-H PCIe 3.0 x4

##### ASPM

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

##### PCIe Speed

Use this feature to select 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** or Enabled.

## ►HDD Security Configuration (Available when any HDD is installed)

The following information is displayed.

- HDD Password Description:
- HDD PASSWORD CONFIGURATION:
- P6:
- Security Supported:
- Security Enabled:
- Security Locked:
- Security Frozen:
- HDD User Pwd Status:
- HDD Master Pwd Status:

### Set User Password

Use this feature to set the HDD User Password. Power cycle after setting hard disk passwords.

## ►HTTP Boot Configuration

### HTTP Boot Configuration

#### HTTP Boot Policy

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



**Note:** To configure each LAN port, select Apply to each LAN or Boot Priority #1 instantly. Only "Instance of Priority 1" appears when selecting the option of Apply to all LANs.

#### HTTP Boot Checks Hostname

Selects whether HTTPS Boot Checks Hostname of TLS certificates matches the hostname provided by the remote server. The options are **Enabled** and Disabled (WARNING: Security Risk!!).

**Warning:** Disabling this option 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 option.

## Priority of HTTP Boot

### Instance of Priority 1

Use this feature to rank the targeted port.

 **Note:** "Instance of Priority 2" is available for configuring when "HTTP Boot Policy" is set to "Apply to each LAN" or "Boot Priority #1 instantly."

 **Note:** The features below will be hidden if the Instance of Priority 1 and Instance of Priority 2 are set to 0.

### Select IPv4 or IPv6

Use this feature to select the Targeted LAN port that is boot from IPv4 or IPv6. The options are **IPv4** and IPv6.

### Boot Description

Use this feature to input the HTTP boot option description, otherwise the boot option for the URI will not be created. The maximum length should not be more than 75 characters.

### Boot URI

Use this feature to input the URI address for HTTP Boot feature. The maximum length should not be more than 128 characters.

### Instance of Priority 2

Use this feature to rank the targeted port.

## ► Super IO Configuration

### Super IO Configuration

- Super IO Chip - AST2600

## ► Serial Port 1 Configuration

### Serial Port 1 Configuration

#### Serial Port 1

This feature will enable or disable the serial port. The options are Disabled or **Enabled**.

**Device Settings - IO=3F8h; IRQ=4;**

#### Change Settings

This feature configures the IRQ setting for the serial port. The options are **Auto**, IO=3F8h; IRQ=4;, IO=2F8h; IRQ=4;, IO=3E8h; IRQ=4;, and IO=2E8h; IRQ=4;.

## ► Serial Port 2 Configuration

### Serial Port 2 Configuration

#### Serial Port 2

This feature will enable or disable the serial port. The options are Disabled or **Enabled**.

#### Device Settings - IO=2F8h; IRQ=3;

#### Change Settings

This feature configures the IRQ setting for the serial port. The options are **Auto**, IO=2F8h; IRQ=3;, IO=3F8h; IRQ=3;, IO=3E8h; IRQ=3;, and IO=2E8h; IRQ=3;.

#### Serial Port 2 Attribute

Use this feature to set the attribute of the serial port. The options are **SOL** and COM.

## ► Network Configuration

### Network Stack

Select Enabled to enable 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 Preboot Execution Environment (PXE) for boot support. If this feature is set to Disabled, IPv4 PXE boot option will not be supported. The options are Disabled and **Enabled**.

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

Use this feature to enable IPv4 HTTP boot support. The options are **Disabled** and Enabled.

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

Select Enabled to enable IPv6 Preboot Execution Environment (PXE) for boot support. If this feature is set to Disabled, IPv6 PXE boot option will not be supported. The options are Disabled and **Enabled**.

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

Use this feature to enable IPv6 HTTP boot support. The options are **Disabled** and Enabled.

**PXE boot wait time (Available when Network Stack is set to "Enabled")**

Enter a value for the wait time (in seconds) to press the <ESC> key to abort the PXE boot. The default is **0**.

**Media detect count (Available when Network Stack is set to "Enabled")**

Enter a value for the number of times the presence of media will be checked. The default is **1**.

▶ **MAC: XXXXXXXXXXXXX-IPv4 Network Configuration**  
▶ **MAC: XXXXXXXXXXXXX-IPv4 Network Configuration**

**Configured**

This feature indicates whether a network address configured successfully or not. The options are **Disabled** and **Enabled**.

***\*If this feature is set to Enabled, the following features will become available for configuration:***

**Enable DHCP**

Use this feature to set the DHCP. The options are **Disabled** and **Enabled**.

***\*If this feature is set to Disabled, the following features will become available for configuration:***

**Local IP Address** - Enter an IP address in dotted-decimal notation

**Local NetMask** - Enter a NetMask in dotted-decimal notation

**Local Gateway** - Enter a Gateway in dotted-decimal notation

**Local DNS Servers** - Enter a DNS Servers in dotted-decimal notation

**Save Changes and Exit**

Select this feature to save the changes you've made and return to the upper configuration page.

► **MAC: XXXXXXXXXXXXX-IPv6 Network Configuration**  
► **MAC: XXXXXXXXXXXXX-IPv6 Network Configuration**

► **Enter Configuration Menu**

Information for the following is displayed:

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

**Interface ID**

Enter an ID for the device.

**DAD Transmit Count**

Enter a value for Duplicate Address Detection (DAD) Transmit Count. A value of zero indicates the DAD is not performed. The default is **1**.

**Policy**

Use this feature to set the Policy. The options are **Automatic** and Manual.

***\*If this feature is set to Manual, the following features will become available for configuration:***

► **Advanced Configuration**

**New IPv6 Address** - Enter a new IPv6 address

**New Gateway Addresses** - Enter a Gateway address

**New DNS Addresses** - Enter a new DNS address

**Commit Changes and Exit**

Select this feature to save the changes you've made and return to the upper configuration page.

**Discard Changes and Exit**

Select this feature to discard all the changes and return to the upper configuration page.

**Save Changes and Exit**

Select this feature to save the changes you've made and return to the upper configuration page.

**►PCH-FW Configuration**

The following PCH-IO information is displayed:

- **ME Firmware Version**
- **ME Firmware Mode**
- **ME Firmware SKU**

**ME FW Image Re-Flash**

Use this feature to enable or disable the ME Firmware image reflash capability. The options are **Disabled** and Enabled.

**TPM Device Selection**

Use this feature to select the TPM device. The options are **dTPM** and PTT.

**►PCIe/PCI/PnP Configuration****Option ROM execution****Video**

This feature controls which option ROM to execute for the Video device. The options are Do Not Launch and **EFI**.

**PCI PERR/SERR Support**

Select Enabled to allow a PCI device to generate a PERR/SERR number for a PCI Bus Signal Error Event. The options are **Disabled** and Enabled.

**Above 4GB MMIO BIOS Assignment**

Select Enable for remapping of BIOS above 4GB. The options are **Enabled** and Disabled.

**Re-Size BAR Support**

Select Enable to allow Resizable BAR for Resizable BAR-capable PCIe devices. The options are **Disabled** and Enabled.

**SR-IOV Support**

Use this feature to enable or disable 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**

Use this feature to select the Onboard Video Option ROM type. The options are **Disabled** and **EFI**.

**NVMe Firmware Source**

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

**Consistent Device Name Support**

Use this feature to enable device name support for onboard devices and slots. The options are **Disabled** and **Enabled**.

**PCIe/PCI/PnP Configuration****CPU SLOT1 PCIe 3.0 x8 OPROM / CPU SLOT2 PCIe 3.0 x4 OPROM / M.2-H PCIe 3.0 x4 OPROM**

Select EFI to allow you to boot the computer with the EFI device installed on the specified PCIe slot. The options are **Disabled** and **EFI**.

**► SATA And RST Configuration****SATA And RST Configuration****SATA Controller(s)**

This feature enables SATA device(s). The options are **Disabled** and **Enabled**.

***\*If this feature is set to Enabled, the following features will become available for configuration:***

**Storage Option ROM/UEFI Driver**

This feature controls the execution of UEFI and legacy storage OpROM. The options are **Do not launch** and **EFI**.

### **Support Aggressive Link Power Management**

This feature enables the PCH to aggressively enter link power state. The options are Disabled and **Enabled**.

### **SATA-III DOM**

#### **Software Preserve**

#### **Hot Plug**

This feature designates the port specified for hot plugging. Set the setting to Enabled for hot-plugging support, which will allow you to replace a SATA disk drive without shutting down the system. The options are Disabled and **Enabled**.

#### **Spin Up Device**

When this feature is disabled, all drives will spin up at boot. When this option is enabled, it will perform Staggered Spin Up on any drive this option is activated. The options are **Disabled** and Enabled.

#### **SATA Device Type**

Use this feature to identify the type of HDD that is connected to the SATA port. The options are **Hard Disk Drive** and Solid State Drive.

## **► VMD Setup Menu**

### **VMD Configuration**

#### **Enable VMD Controller**

Use this feature to enable 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 the VMD Global Mapping. The options are Disabled and **Enabled**.

#### **Map this Root Port under VMD (Available when "Enable VMD Global Mapping" is set to "Disabled")**

Use this feature to map or unmap this Root Port to VMD. The options are Disabled and **Enabled**.

#### **Root Port BDF details**

Display the information of Root Port BDF.

## ► Serial Port Console Redirection

### COM1 / SOL/COM2

#### COM1 Console Redirection / SOL/COM2 Console Redirection

Use this feature to enable the console redirection support for a serial port specified by you. The options for COM1 Console Redirection are **Disabled** and **Enabled**. The options for SOL/COM2 Console Redirection are **Disabled** and **Enabled**.

#### ► COM1 Console Redirection Settings / ► SOL/COM2 Console Redirection Settings (Available when "Console Redirection" is set to "Enabled")

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer.

#### COM1 Console Redirection Settings / SOL/COM2 Console Redirection Settings

##### 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.

##### 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 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's 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**

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

**Recorder Mode**

Use this feature 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**

Use this feature to enable for extended terminal resolution support. The options are Disabled and **Enabled**.

**Putty KeyPad**

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

**Legacy OS Redirection Resolution**

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

**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)****Console Redirection**

Select Enabled to use a COM port selected by you for EMS Console Redirection. The options are **Disabled** and Enabled.

## ► Console Redirection Settings

### Out-of-Band Mgmt Port

This feature selects 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**, SOL, and AMT SOL.

### 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, VT100Plus, **VT-UTF8**, and ANSI.

### Bits Per Second

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

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 setting for each of these features is displayed:

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

## ► USB Configuration

### USB Configuration

The following information will be displayed:

- USB Module Version
- USB Controllers
- USB Devices

**XHCI Hand-off**

This feature is a workaround 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 options are **Enabled** and Disabled.

**USB Mass Storage Driver Support**

This feature enables USB mass storage driver support. The options are Disabled and **Enabled**.

**USB S5 Wakeup Support**

This feature enables or disables the ability of the system to wake-up from the S5 sleep state through USB ports (USB0/1). The options are Disabled and **Enabled**.

► **Supermicro 10Gb/25Gb Ethernet Controller -  
XX:XX:XX:XX:XX:XX**

► **Supermicro 10Gb/25Gb Ethernet Controller -  
XX:XX:XX:XX:XX:XX**

► **Firmware Image Menu**

This feature displays information about the Ethernet controller. The following information is displayed:

- Family Firmware Version
- Boot Code
- MBA
- EFI
- iSCSI Boot
- CCM
- NCSI
- RDMA FW

## ► Device Configuration Menu

### Multi-Function Mode

Use this feature to configure NIC Hardware Mode. Switching from multi-function to single function will result in the clearing of Virtual Function values in the extended partitions. Advanced NPar option is a feature preview only. The options are **SF** and NPAR 1.0.

### SR-IOV

Use this feature to enable or disable Single Root I/O Virtualization. The options are **Disabled** and Enabled.

### Number of MSI-X Vectors per VF

Use this feature to configure number of Message-Signaled Interrupts (MSI-X) Vectors per Virtual Function (VF). This feature takes a number ranging from 0 to 128. The default setting is **16**.

### Max Number of PF MSI-X Vectors

Use this feature to configure the maximum number of PF MSI-X Vectors. This feature takes a number ranging from 0 to 512. The default setting is **74**.

### Link FEC

Use this feature to configure Link Forward Error Correction mode (Link FEC). The options are **Disabled**, CL74 - Fire Code, and CL91 - Reed Solomon.

### Operational Link Speed

Use this feature to configure the default link speed for the selected port. On dual port adapters, if one port is configured for 10G and user select 25G on the other port, both ports will be set to 25G, or vice versa. If either port is set to Auto Negotiated, ensure that one port does not attempt to operate at 10Gbps while the other attempts to operate at 25 Gbps, otherwise link establishment and link speed reporting will be unreliable. The speeds available for this field will be affected by the value of the Autodetect Speed Exclude Mask. The options are AutoNeg, 1Gbps, and **10Gbps**.

### Support RDMA

Use this feature to configure RDMA Support for this port. The options are **Disabled** and Enabled.

### DCB Protocol

Use this feature to enable or disable Data Center Bridging (DCB) Protocol. The options are Disabled, **Enabled (IEEE only)**, CEE (only), and Both (IEEE preferred with fallback to CEE).

**LLDP nearest bridge**

Use this feature to configure Link Layer Discovery Protocol (LLDP) nearest bridge state. The options are **Disabled** and Enabled.

**Auto-negotiation Protocol**

Use this feature to configure the protocol used during auto-negotiation. The options are **IEEE and BAM**, IEEE and Consortium, IEEE 802.3by, BAM Only, and Consortium Only.

**Media Auto Detect**

Use this feature to configure if firmware will auto detect capability of the link transceiver. If the DAC cable can support AN, then both AN and forced speeds are enabled. The options are **Disabled** and Enabled.

**Default EVB Mode**

Use this feature to configure the default Edge Virtual Bridging (EVB) mode. The options are **VEB**, VEPA, and None.

**Enable PME Capability**

Use this feature to configure Power Management Event (PME) capability. The options are **Disabled** and Enabled.

**Flow Offload**

Use this feature to configure Flow Offload Mode. This feature is supported on Linux DPDK only. Not supported on Windows or ESX OS. The options are **Disabled** and Enabled.

**Live Firmware Upgrade**

Use this feature to enable upgrade of device firmware with minimal down time and minimal traffic interruption. Avoids host reboot, device power cycle and driver reload. This feature is supported on Linux OS only. The options are **Disabled** and Enabled.

**Adapter Error Recovery**

Use this feature to enable recovery of firmware from fatal errors without manual intervention, host reboot and power cycle. The options are **Disabled** and Enabled.

## ► MBA Configuration Menu

### Option ROM

Use this feature to enable or disable Boot Option ROM. The options are **Disabled** and **Enabled**.

### Legacy Boot Protocol

Use this feature to select a non-UEFI Boot Protocol. The options are **PXE**, iSCSI, and **NONE**.

### Boot Strap Type

Use this feature to select boot strap type. The options are **Auto Detect**, BBS, Int 18h, and Int 19h.

### Hide Setup Prompt

Use this feature to configure whether the Setup Prompt is displayed during ROM initialization. The options are **Disabled** and **Enabled**.

### Setup Key Stroke

Use this feature to set key strokes for invoking the configuration menu. The options are **Ctrl-S** and **Ctrl-B**.

### Banner Message Timeout

Use this feature to specify the number of seconds that the Option ROM banner is displayed during POST. This feature accepts a number ranging from 0 and 15. The default setting is **7**.

### VLAN Mode

Use this feature to configure virtual LAN mode. The options are **Disabled** and **Enabled**.

### VLAN ID (1-4094) (Available when "VLAN Mode" is set to Enabled)

Use this feature to configure the virtual LAN ID. This feature accepts a number ranging from 1 and 4094. The default setting is **1**.

### Boot Retry Count

Use this feature to select the number of boot retries. The options are **No Retry**, 1 Retry, 2 Retries, 3 Retries, 4 Retries, 5 Retries, 6 Retries, Indefinite Retries.

## ► iSCSI Boot Configuration Menu

### ► iSCSI General Parameters

#### **TCP/IP Parameters via DHCP**

Use this feature to acquire TCP/IP configuration via DHCP. The options are Disabled and **Enabled**.

#### **IP Autoconfiguration (Available when "TCP/IP Parameters via DHCP" is set to "Disabled")**

Use this feature to automatically configure IP when TCP/IP parameters via DHCP is disabled. The options are Disabled and **Enabled**.

#### **iSCSI Parameters via DHCP**

Use this feature to acquire iSCSI parameters via DHCP. The options are **Disabled** and Enabled.

#### **CHAP Authentication**

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

#### **Boot to iSCSI Target**

Use this feature to enable or disable booting to iSCSI target after logon. The options are Disabled, **Enabled**, and One Time Disabled.

#### **DHCP Vendor ID**

Use this feature to configure DHCP vendor ID. This features accepts a string up to 32 characters long.

#### **Link Up Delay Time**

Use this feature to configure link up delay time in seconds. This features accepts a number ranging from 0 to 255. The default setting is **0**.

#### **Use TCP Timestamp**

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

#### **Target as First HDD**

Use this feature configure whether the target appears as the first hard disk drive (HDD) in the system. The options are **Disabled** and Enabled.

### **LUN Busy Retry Count**

Use this feature to configure number of retries in two second intervals when LUN is busy. This features accepts a number between 0 to 60. The default setting is **0**.

### **IP Version**

Use this feature to set the IP version support. Modifying this parameter will reset all IP-related fields. The options are **IPv4** and IPv6.

## **►iSCSI Initiator Parameters**

Use this feature to configure the iSCSI initiator parameters. The following items are available for configuration:

- **IP Address**
- **Subnet Mask**
- **Subnet Mask Prefix (Available when "IP Version" is IPv6)**
- **Default Gateway**
- **Primary DNS**
- **Secondary DNS |**
- **iSCSI Name |**
- **CHAP ID (Available when "Chap Authentication" is enabled)**

Use this feature to set the CHAP ID.

- **CHAP Secret (Available when "Chap Authentication" is enabled)**

Use this feature to set the CHAP Secret for the iSCSI boot host software. If the string is empty, then no CHAP Secret is present.

## **►iSCSI First Target Parameters**

Use this feature to configure the iSCSI initiator parameters. The following items are available for configuration:

- **Connect**

Use this item to set target establishment. The options are **Disabled** and Enabled.

- **IP Address**

Use this item to set the IP address.

- **TCP Port**

Use this item to set target TCP port number. This item accepts a number ranging from 1 to 65535. The default setting is **3260**.

- **Boot LUN**

Use this item to set the target boot LUN number. This item accepts a number ranging from 0 to 255. The default setting is **0**.

- **iSCSI Name**

Use this item to set the iSCSI name.

- **CHAP ID (Available when "Chap Authentication" is enabled)**

Use this item to set the CHAP ID.

- **CHAP Secret (Available when "Chap Authentication" is enabled)**

Use this item to set the CHAP Secret for the iSCSI boot host software. If the string is empty, then no CHAP Secret is present.

## ► **Secondary Device**

### **Secondary Device**

Use this feature to set the secondary device MAC address. This feature accepts a MAC address in XX:XX:XX:XX:XX:XX format.

### **Use Independent Target Portal**

Use this feature to enable or disable independent target portal when multipath I/O is enabled. The options are **Disabled** and Enabled.

### **Use Independent Target Name**

Use this feature to enable or disable independent target name when multipath I/O is enabled. The options are **Disabled** and Enabled.

### **Blink LEDs (range 0-15 seconds)**

Use this feature to identify the physical network port by blinking the associated LED. Highlight this feature and enter a number of seconds in the range of 0 to 15 to set the amount of seconds to blink the LED. The default setting is **0**.

The following information is displayed:

- Link Status
- Physical Link Speed
- Chip Type
- PCI Device ID
- Bus:Device:Function
- Permanent MAC Address
- Virtual MAC Address

### **Restore Defaults**

Use this feature to restore default settings for the network adapter.

## **► TLS Authenticate Configuration**

This submenu allows you to configure Transport Layer Security (TLS) settings.

### **► Server CA Configuration**

#### **► Enroll Cert**

##### **► Enroll Certification Using File**

Use this feature to enroll certification from a file.

##### **Certification GUID**

Use this feature to input the certification Global Unique Identifier (GUID).

##### **► 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 certification.

**►Client Certification Configuration****►Enroll Certification****►Enroll Certification Using File**

Use this feature to enroll certification from a file.

**Certification GUID**

Use this feature to input the certification Global Unique Identifier (GUID).

**►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 certification.

**►Driver Health**

This submenu displays the health of the LAN and its related controller.

## 4.4 Event Logs

Use this feature to configure Event Log settings.



### ► Change SMBIOS Event Log Settings

#### Enabling/Disabling Options

##### SMBIOS Event Log

Change this feature to enable or disable all features of the SMBIOS Event Logging during system boot. The options are Disabled and **Enabled**.

#### Erasing Settings

##### Erase Event Log

If No is selected, data stored in the event log will not be erased. Select Yes, Next Reset, data in the event log will be erased upon next system reboot. Select Yes, Every Reset, data in the event log will be erased upon every system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

##### When Log is Full

Select Erase Immediately for all messages to be automatically erased from the event log when the event log memory is full. The options are **Do Nothing** and Erase Immediately.

## **SMBIOS Event Log Standard Settings**

### **Log System Boot Event**

This option toggles the System Boot Event logging to enabled or disabled. The options are Enabled and **Disabled**.

### **MECI**

The Multiple Event Count Increment (MECI) counter counts the number of occurrences that a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

### **METW**

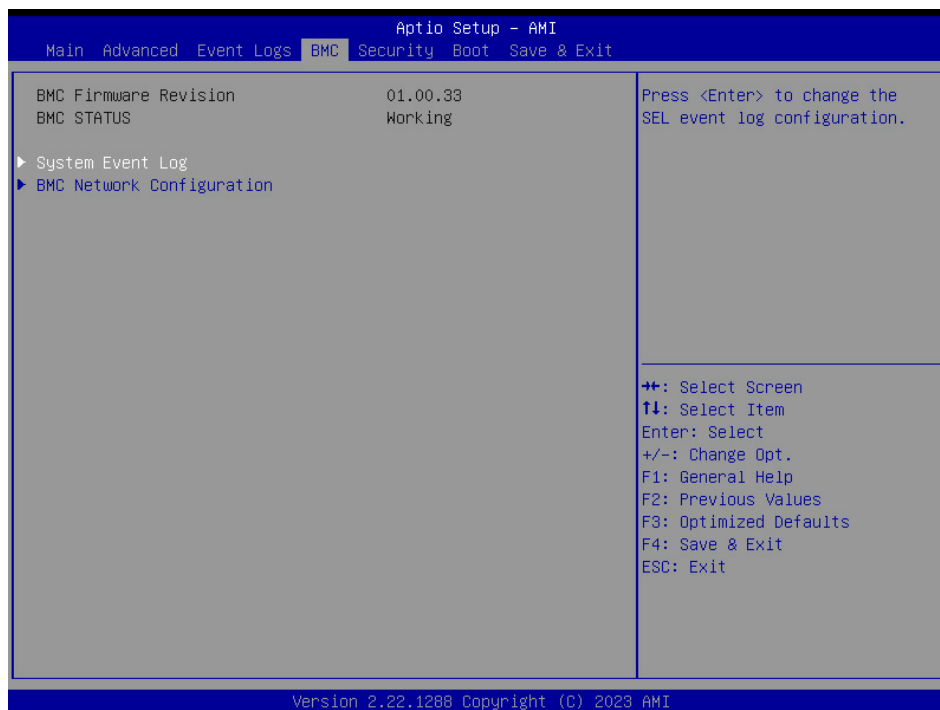
The Multiple Event Time Window (METW) defines the number of minutes that must pass between duplicate log events before the MECI is incremented. Highlight this feature and enter a number between 0 to 99. The default value is **60**.



**Note:** Reboot the system after changing these settings for changes to take effect.

## 4.5 BMC

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



### BMC Firmware Revision

This feature indicates the IPMI firmware revision used in your system.

### IPMI Status (Baseboard Management Controller)

This feature indicates the status of the IPMI firmware installed in your system.

### ► System Event Log

#### Enabling/Disabling Options

##### SEL Components

Select Enabled for all system event logging at boot up. 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 reboot. 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 allows you to decide 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****--BMC Network Configuration--****Update IPMI LAN Configuration**

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

***\*If this feature above is set to Yes, the following features will become available for configuration:***

\*\*\*\*\*

**Configure IPv4 Support**

\*\*\*\*\*

**IPMI LAN Selection**

This feature displays the IPMI LAN setting. The default setting is **Dedicated**.

**IPMI Network Link Status**

This feature displays the IPMI Network Link status. The default setting is **Dedicated LAN**.

### Configuration Address Source

This feature allows you to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer 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 **DHCP** and Static.

***\*If the Configuration Address Source is set to DHCP, the following features will be displayed:***

- Station IP Address
- Subnet Mask
- Station MAC Address
- Gateway IP Address

***\*If the Configuration Address Source is set to Static, the following features will become available for configuration:***

#### Station IP Address

This feature displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

#### Subnet Mask

This feature displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.

#### 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 Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 172.31.0.1).

### VLAN

This feature enables the IPMI VLAN function. The options are **Disabled** and Enabled.

***\*If the feature above is set to Enabled, the following feature will become available for configuration:***

#### VLAN ID

Use this feature to enter the VLAN ID. The default setting is **1**.

\*\*\*\*\*

## Configure IPv6 Support

\*\*\*\*\*

### IPv6 address status

This section displays status of station IPv6 address to BMC.

### IPv6 Support

Use this feature to enable IPv6 support. The options are **Enabled** and Disabled.

***\*If the feature above is set to Enabled, the following feature will become available for configuration:***

### Configuration Address Source

This feature allows you to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer 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**.

***\*If the Configuration Address Source is set to DHCP, the following features will be displayed:***

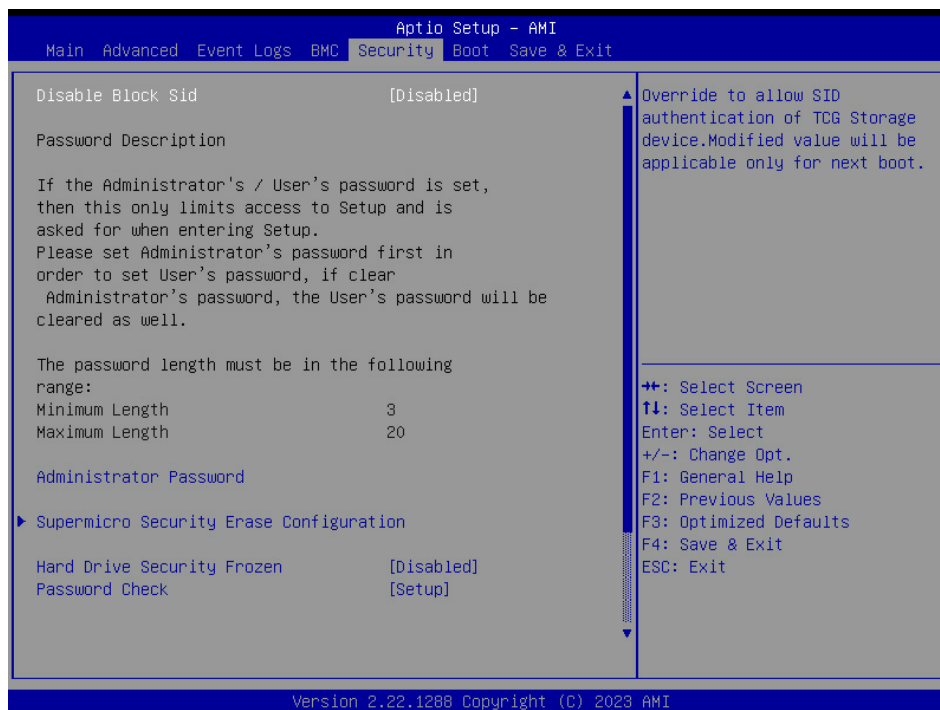
- Station IPv6 Address
- Prefix Length
- IPv6 Router1 IP Address

***\*If the Configuration Address Source is set to Static, the following features will become available for configuration:***

- Station IPv6 Address
- Prefix Length
- IPv6 Router1 IP Address

## 4.6 Security

This menu allows you to configure the following security settings for the system.



### Disable Block Sid

Use this feature to enable or disable SID authentication performed in TCG storage devices. The options are **Disabled** and Enabled.

### Administrator Password

Press <Enter> to create a new or change an existing administrator password.

***\*If the password has been created, the feature of User Password below will become available for configuration.***

### ► Supermicro Security Erase Configuration

 **Note:** This submenu becomes configurable when a storage device has been plugged into the motherboard. The features displayed in this section will change depending on what storage devices are detected.

The following information is displayed:

- HDD Name
- HDD Serial Number
- Security Mode

- Estimated Time
- HDD User Pwd Status
- **Security Function**



**Note:** Use this feature to secure erase the storage device or set a password for secure erasing this storage device. The options are **Disable**, Set Password, Security Erase – Password, and Security Erase – Without Password.

- **Password**



**Note:** Use this feature to set the user password.

## ► Secure Boot

This section displays the contents of the following secure boot features:

- System Mode
- Secure Boot

### Secure Boot

Select Enabled for Secure Boot flow control. This feature is available when the platform key (PK) is pre-registered, the platform operates in the user mode, and CSM is disabled in the Setup utility. The options are **Disabled** and Enabled.

### Secure Boot Mode

This feature allows selection of the Secure Boot Mode between Standard and Custom. Selecting Custom enables users to change the Image Execution Policy and manage Secure Boot Keys. The options are **Custom** and Standard.

***\*If the feature above is set to Custom, the following features will become available for configuration:***

### Enter Audit Mode

This submenu can only be used if current System Mode is set to User (refer to Exit Deployed Mode). The PK variable will be erased on transition to Audit Mode.

### Enter Deployed Mode

Press <Enter> button to transition between Deployment and User Mode.

### Exit Deployed Mode

Press <Enter> button to switch between Deployment and User Mode.

## **Key Management**

### **▶ Restore Factory Keys**

This feature resets the content of all UEFI Secure Boot key databases to factory defaults.

### **▶ Reset to Setup Mode**

This feature deletes the contents of all UEFI Secure Boot key databases. This will result in entering Setup Mode.

### **▶ Export Secure Boot variables**

This feature allows you to copy NVRAM content of Secure boot variables to files in a root folder on a file system device.

### **▶ Enroll EFI Image**

This feature allows the image to run in Secure Boot Mode. Enroll SHA256 Hash Certificate of the image into the Authorized Signature Database.

## **Secure Boot Variable / Size / Keys / Key Source**

### **▶ Platform Key (PK)**

This feature allows you to configure the settings of the platform keys.

#### **Details**

Review details on current settings of the platform keys.

#### **Export**

This feature allows you to export Platform Keys to an available file system.

#### **Update**

Select Yes to load the new Platform Keys (PK) from the manufacturer's defaults. Select No to load the Platform Keys from a file.

#### **Delete**

Select OK to confirm deletion of the Platform Key from NVRAM.

### **▶ Key Exchange Keys**

#### **Details**

Review details on current settings of the Key Exchange Keys.

**Export**

This feature allows you to export Key Exchange Keys to an available file system.

**Update**

Select Yes to load the KEK from the manufacturer's defaults. Select No to load the KEK from a file.

**Append**

Select Yes to add the KEK from the manufacturer's defaults list to the existing KEK. Select No to load the KEK from a file.

**Delete**

Select Yes to delete the Key Exchange Keys. Select No to delete only a certificate from the key database.

**► Authorized Signatures****Details**

Review details on current settings of Authorized Signatures.

**Export**

This feature allows you to export Authorized Signatures to an available file system.

**Update**

Select Yes to load the factory default DB. Select No to load the DB from an external file.

**Append**

Select Yes to add the database from the manufacturer's defaults to the existing DB. Select No to load the DB from a file.

**Delete**

Select Yes to delete the Authorized Signatures key database. Select No to delete only a certificate from the key database.

**► Forbidden Signatures****Details**

Review details on current settings of the Forbidden Signatures.

**Export**

This feature allows you to export Forbidden Signatures to an available file system.

### **Update**

Select Yes to load the DBX factory default 'dbx.' Select No to load it from an external file.

### **Append**

Select Yes to add the DBX from the manufacturer's defaults to the existing DBX. Select No to load the DBX from a file.

### **Delete**

Select Yes to delete the Forbidden Signatures key database. Select No to delete only a certificate from the key database.

## **► Authorized TimeStamps**

### **Details**

Review details on current settings of the Authorized TimeStamps.

### **Export**

This feature allows you to export Authorized TimeStamps to an available file system.

### **Update**

Select Yes to load the DBT from the manufacturer's defaults. Select No to load the DBT from a file.

### **Append**

Select Yes to add the DBT from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file.

### **Delete**

Select Yes to delete the Authorized TimeStamps key database. Select No to delete only a certificate from the key database.

## **► OsRecovery Signatures**

### **Details**

Review details on current settings of the OsRecovery Signatures.

### **Export**

This feature allows you to export OsRecovery Signatures to an available file system.

### **Update**

Select Yes to load the DBT from the manufacturer's defaults. Select No to load the DBT from a file.

**Append**

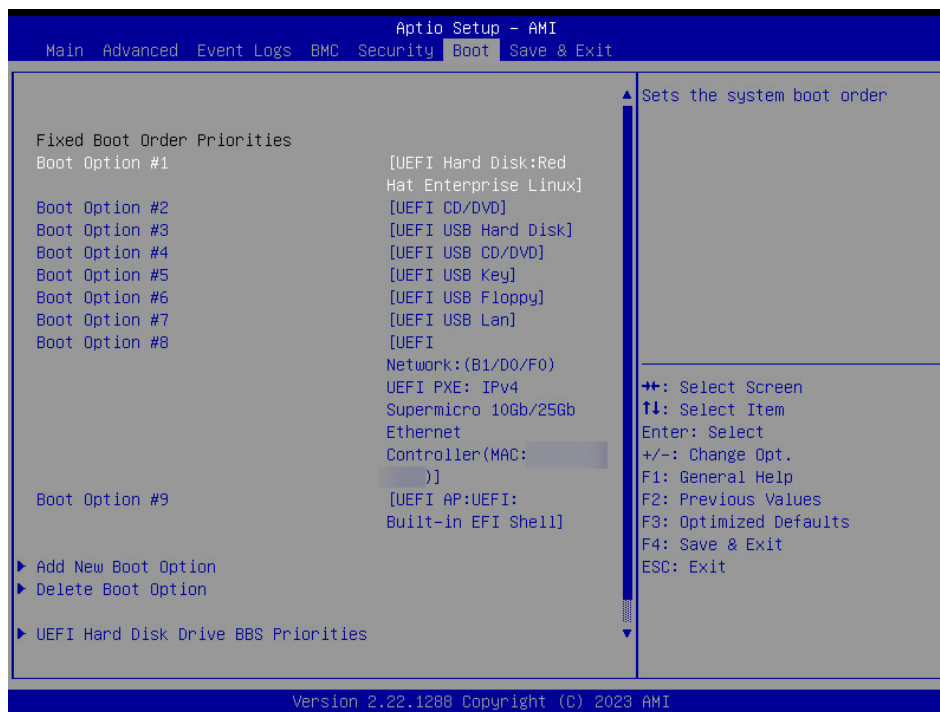
Select Yes to add the DBT from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file.

**Delete**

Select Yes to delete the OsRecovery Signatures key database. Select No to delete only a certificate from the key database.

## 4.7 Boot

Use this feature to configure Boot Settings:



### Fixed Boot order Priorities

This feature prioritizes the order of a bootable device from which the system will boot. Press <Enter> on each item sequentially to select devices.

### UEFI Boot Option #1 – #9

The available options are UEFI Hard Disk, UEFI CD/DVD, UEFI USB Hard Disk, UEFI USB CD/DVD, USB Key, UEFI USB Floppy, UEFI USB Lan, UEFI Network, UEFI AP, and Disabled.

### ► Add New Boot Option (Available when any storage device is detected by the BIOS)

This feature allows you to add a new boot option to the boot priority features for system boot.

#### Add boot option

This feature allows you 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

This feature allows you to specify the file path for the new boot option.

**Create**

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

**►Delete Boot Option****Delete Boot Option**

Removes an EFI boot option from the boot order.

**►UEFI Hard Disk Drive BBS Priorities / UEFI NETWORK Drive BBS Priorities / UEFI Application Boot Priorities**

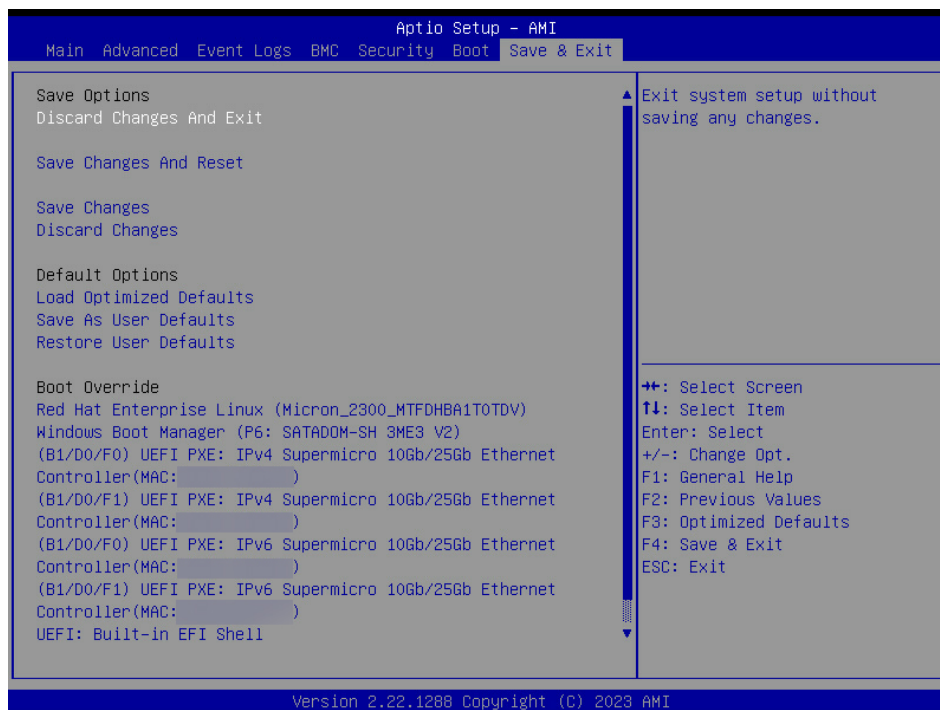
**Note:** These submenus are subject to change depending on the devices installed on this motherboard.

**Boot Option #1 – X**

Use this feature to set the system boot order. The number of X is depending on the devices installed on the motherboard.

## 4.8 Save & Exit

Use this feature to save the configurations or leave the BIOS Setup utility.



### Save Options

#### Discard Changes and Exit

Select this feature to leave the BIOS Setup utility without making any permanent changes to the system configuration, and reboot the computer.

#### Save Changes and Reset

When you have completed the system configuration changes, select this feature to leave the BIOS Setup utility and reboot the computer, so the new system configuration parameters can take effect.

#### Save Changes

After completing the system configuration changes, select this feature to save the changes you have made. This will not reset (reboot) the system.

#### Discard Changes

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

## **Default Options**

### **Load Optimized Defaults**

Select this feature and press <Enter> to load the optimized defaults. These are factory settings designed for maximum system stability, but not for maximum performance.

### **Save As User Defaults**

Select this feature and press <Enter> to save as the user defaults. This enables you to save any changes to the BIOS setup for future use.

### **Restore User Defaults**

Select this feature and press <Enter> to restore the user defaults. Use this feature to retrieve user-defined settings that were saved previously.

### **Boot Override**

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select a desired feature and press <Enter>. Your system will boot to the selected boot option.

## Appendix A

### BIOS Codes

#### A.1 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 procedure. 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. 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 long, 2 short        | Display memory read/write error | Video adapter missing or with faulty memory  |
| 1 long continuous      | System OH                       | System overheat condition                    |

## A.2 Additional BIOS POST Codes

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

For information on AMI updates, refer to <http://www.ami.com/products/>.

## Appendix B

### Software

After the hardware has been installed, you can install the Operating System (OS), configure RAID settings and install the drivers.

#### B.1 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 [www.supermicro.com/support/manuals](http://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.
2. Retrieve the proper RST/RSTe driver. 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 startup.

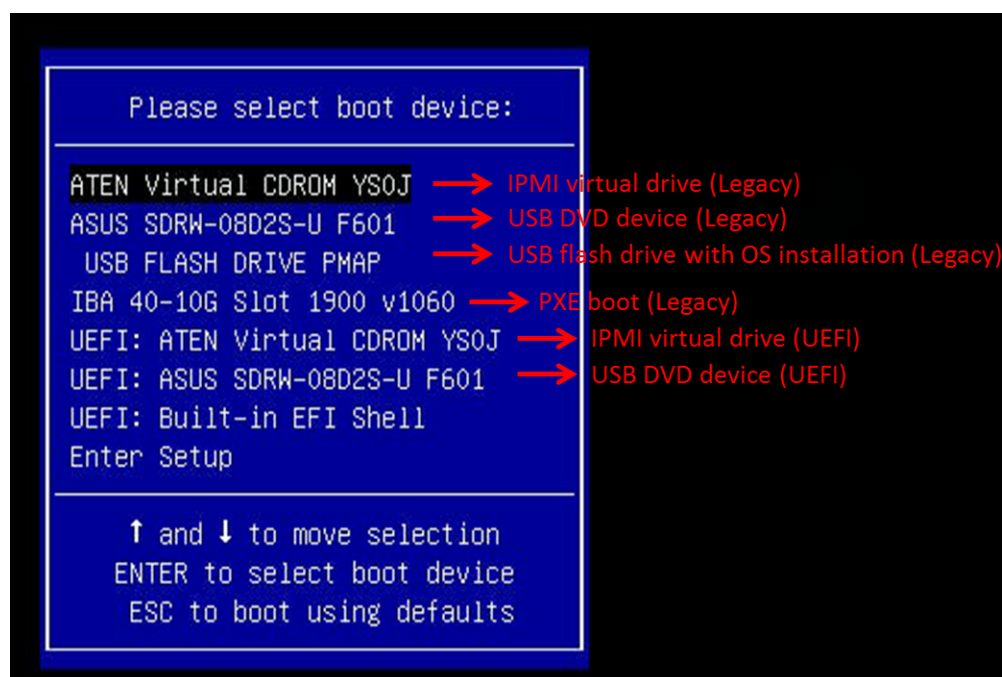


Figure B-1. Select Boot Device

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

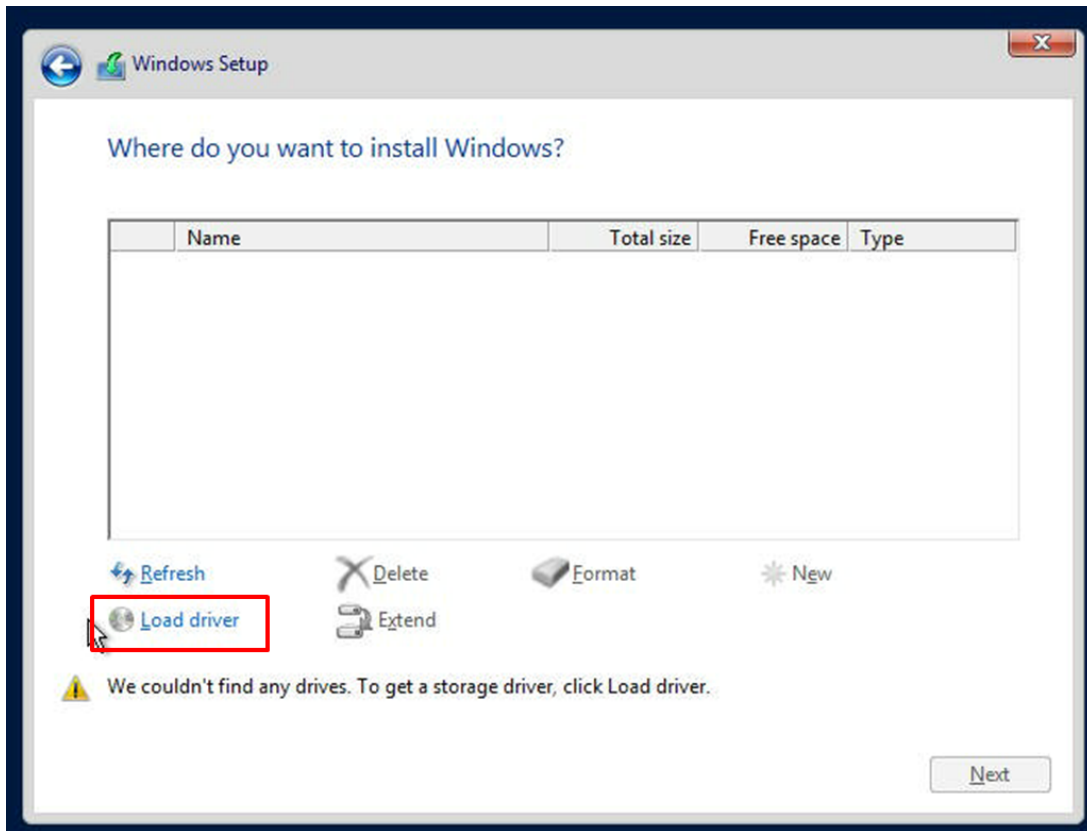


**Figure B-2. Load Driver Link**

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

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.
  - For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.
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.

## B.2 Driver Installation

The Supermicro website that contains drivers and utilities for your system is at <https://www.supermicro.com/wdl/driver/>. Some of these 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 <http://www.supermicro.com/products/>. 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.

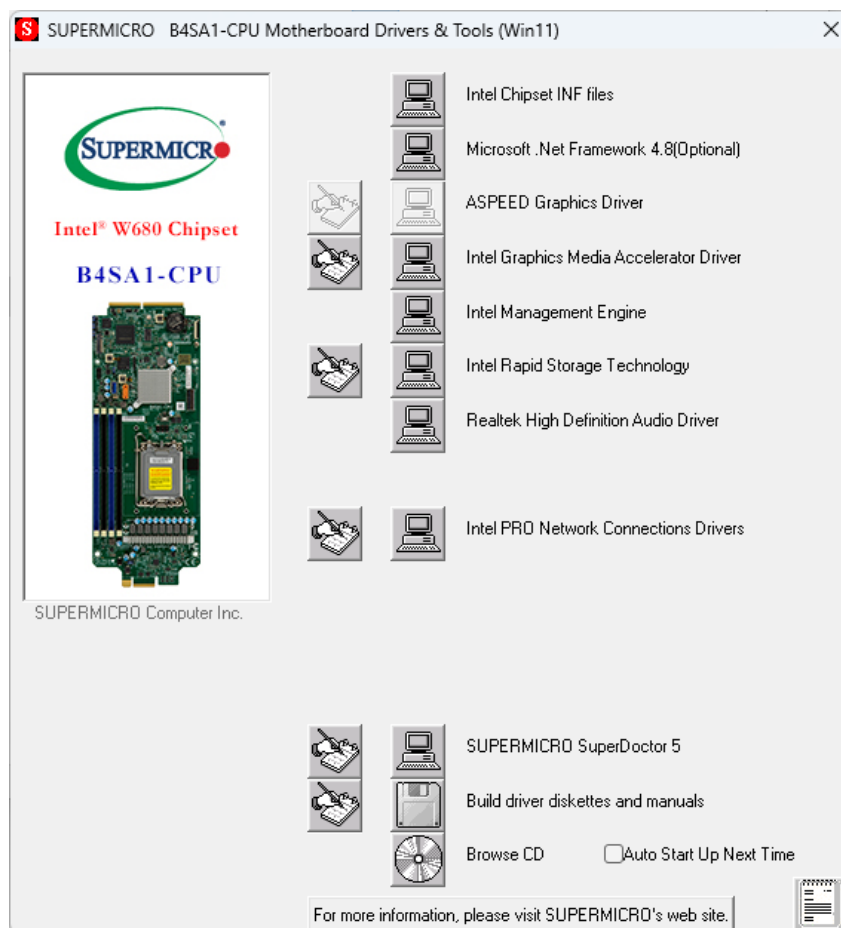


Figure B-3. Driver & Tool Installation Screen

**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.

## B.3 SuperDoctor® 5

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, FTP, and SMTP services to optimize the efficiency of your operation.



**Note:** The default User Name and Password for SuperDoctor 5 is ADMIN / ADMIN.

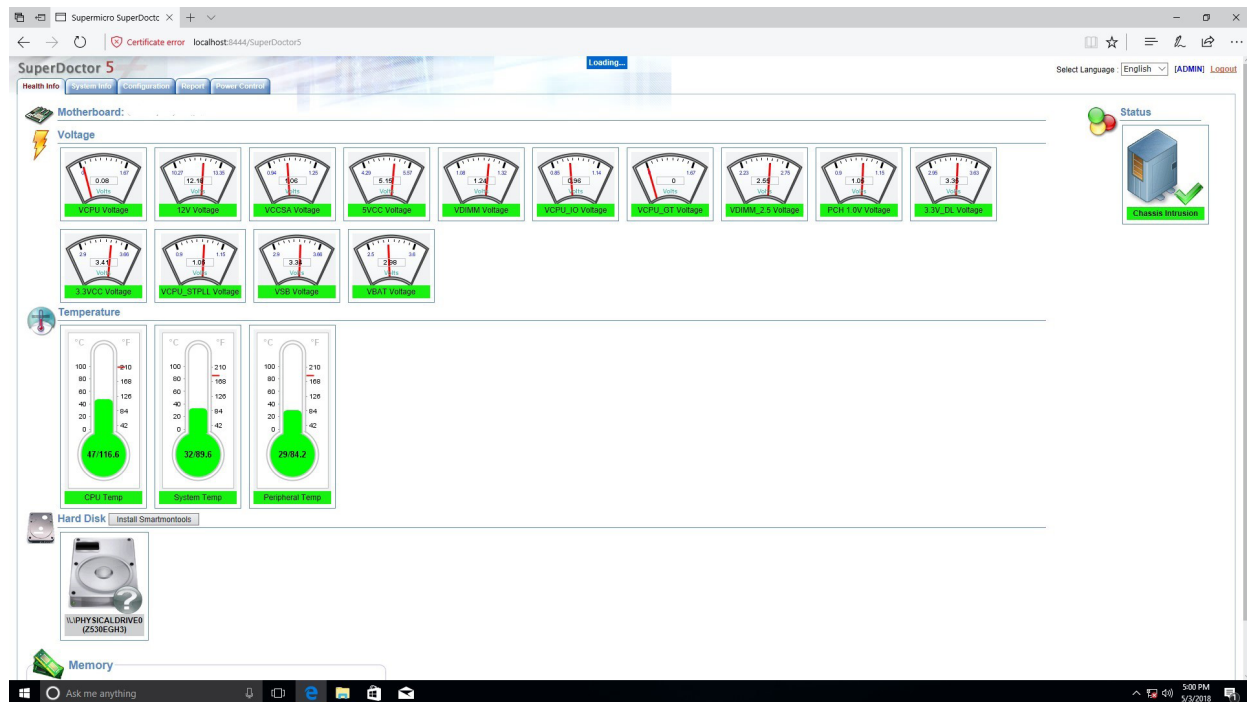


Figure B-4. SuperDoctor 5 Interface Display Screen (Health Information)

## B.4 IPMI

The B4SA1-CPU supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard. For general documentation and information on IPMI, visit our website at <http://www.supermicro.com/products/nfo/IPMI.cfm>.

## 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.

These warnings may also be found on our website at [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm).

#### Battery Handling



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

##### 電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

##### 警告

電池更換不當會有爆炸危險。請只使用同類電池或制造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

##### 警告

電池更換不當會有爆炸危險。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。

##### Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

#### Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

#### ¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

#### אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת. סילוק הסוללות המושמשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة فاعلil

اسبدال البطارية

فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة

جخلص من البطاريات المسحمة وفقا لعمليات الشركة الصانعة

#### 경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

#### Waarschuwing

Er is ontplofingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

## Product Disposal



**Warning!** Ultimate disposal of this product should be handled according to all national laws and regulations.

### 製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

### 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。

### 警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

### Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

### ¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

### Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה!

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

### 경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

### Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

## Appendix D

### UEFI BIOS Recovery

**Warning:** 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.

#### D.1 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 add-on card to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

#### D.2 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 you to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is first turned on, the boot block codes execute first. Once this process is completed, the main BIOS code will continue with system initialization and the remaining Power-On Self-Test (POST) routines.

 **Note 1:** Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS block crashes.

 **Note 2:** When the BIOS recovery block crashes, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. (For a RMA request, see section 3.5 for more information). Also, you may use the Supermicro Update Manager (SUM) Out-of-Band (OOB) ([https://www.supermicro.com.tw/products/nfo/SMS\\_SUM.cfm](https://www.supermicro.com.tw/products/nfo/SMS_SUM.cfm)) to reflash the BIOS.

## D.3 Recovering the BIOS Block with a USB Device

This feature allows you to recover the main BIOS image using a USB-attached 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.

The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32), which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below:

1. Using a different machine, copy the "Super.ROM" binary image file into the disc Root "\" directory of a USB flash or media drive.

 **Note 1:** If you cannot locate the "Super.ROM" file in your driver disk, visit our website at [www.supermicro.com](http://www.supermicro.com) to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

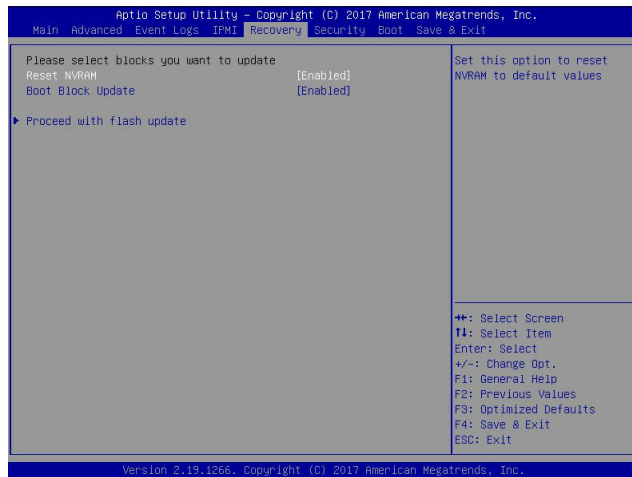
 **Note 2:** Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB port and reset the system until the following screen appears:



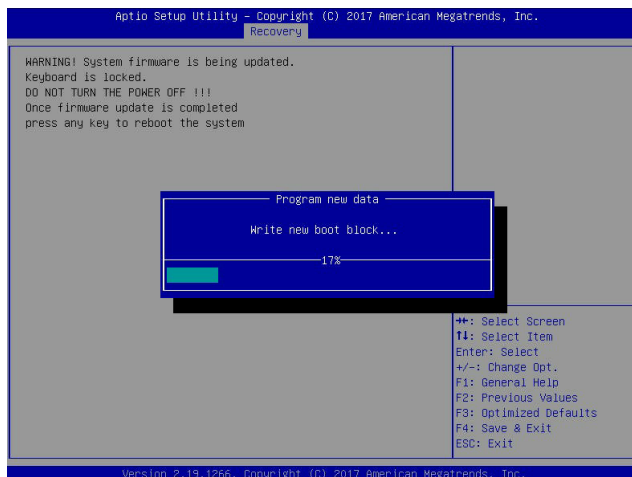
- After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below:

 **Note:** At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

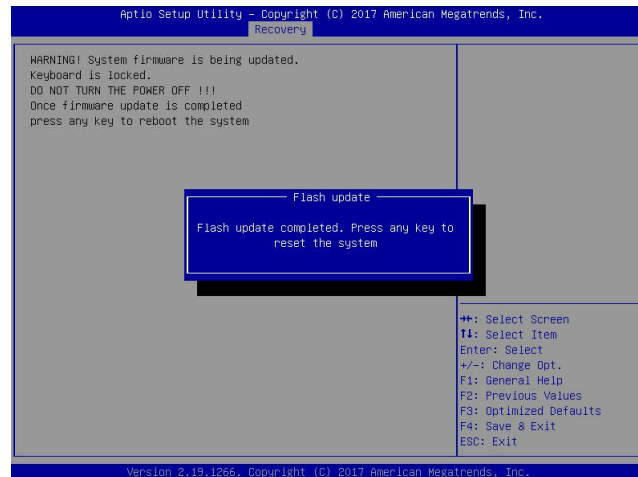


- When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below:

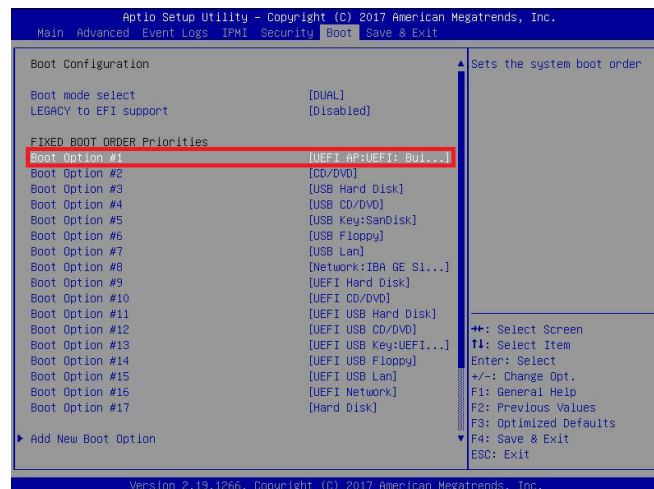
 **Note:** Do not interrupt the BIOS flashing process until it has completed.



5. After the BIOS recovery process is completed, press any key to reboot the system.



6. Using a different system, extract the BIOS package into a USB flash drive.
7. Press <Del> during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.



8. 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 from Step 6. Enter `flash.nsh BIOSname.###` at the prompt to start the BIOS update process.

```
UEFI Interactive Shell v2.1
EDK II
UEFI v2.50 (American Megatrends, 0x0005000C)
Mapping table
  FS0: Alias(s):HD(0)MB:BLK1:
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x37901072,0x800,0x1
CR3992)
  BLK0: Alias(s):
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press F8 in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:\> cd AFUD08
FS0:\AFUD08> cd SKJPM2_03162017
FS0:\AFUD08\SKJPM2_03162017> flash.nsh X10PU7.314
```



**Note:** Do not interrupt this process until the BIOS flashing is complete.

```
Done.
[ Access Cmos Part Ex ]
<Read>
Index 0x51: 0x10

Done.
*****
* Program BIOS and ME (including FDT) regions...
*****
| AMT Firmware Update Utility v5.09.01.1317 |
| Copyright (C)2017 American Megatrends Inc. All Rights Reserved. |
|-----|
CPUID = 50652

Reading flash ..... done
- ME Data Size checking - ok
- FFS checksums ..... ok
- Check RomLayout ..... OK
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... 0x00132000 (0%)
```

```
Verifying NCB Block ..... done
- Update success for FBR
- Update success for IE
- Successful Update Recovery Loader to OPRx!!
- Successful Update MFSB!!
- Successful Update FPRx!!
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FLOG and UTOK!!
- ME Entire Image update success !!
WARNING: System must power-off to have the changes take effect!
Moving FS0:\AFUD08\SKJPM2_03162017\dtx64.efi -> FS0:\AFUD08\SKJPM2_03162017\
dt.smc
- [ok]
Moving FS0:\AFUD08\SKJPM2_03162017\afueflx64.efi -> FS0:\AFUD08\SKJPM2_0316201
7\afuefl.smc
- [ok]
*****
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*****
Deleting " "
Delete successful.
FS0:\>
```

9. The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug the AC power cable in the power supply again to power on the system.
10. Press `<Del>` to enter the BIOS Setup utility.
11. Press `<F3>` to load the default settings.
12. After loading the default settings, press `<F4>` to save the settings and exit the BIOS Setup utility.