



X11SRi-IF

USER'S MANUAL

Revision 1.0b

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Manual Revision 1.0b

Release Date: April 16, 2020

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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 X11SRi-IF motherboard.

## About This Motherboard

The Supermicro X11SRi-IF supports an Intel® Xeon® W (Socket R4) processor with up to 18 cores and a thermal design power (TDP) of up to 165W. Built with the Intel C422 chipset, the X11SRi-IF supports 4-channel, 4-DIMM DDR4 ECC RDIMM/LRDIMM memory with speeds of up to 2933 MHz. This motherboard offers features such as OCuLink connectors, dual 1G Base-T ports, and a Trusted Platform Module (TPM) header. The X11SRi-IF is the perfect high-performance small form factor solution for space-constraint and multi-node systems. Please note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, please 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 provides 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, please contact your retailer.

### 1.1 Checklist

Main Parts List		
Description	Part Number	Quantity
Supermicro Motherboard	X11SRi-IF	1
I/O Shield	MCP-260-00146-0N	1
Quick Reference Guide	MNL-2201-QRG	1

### Important Links

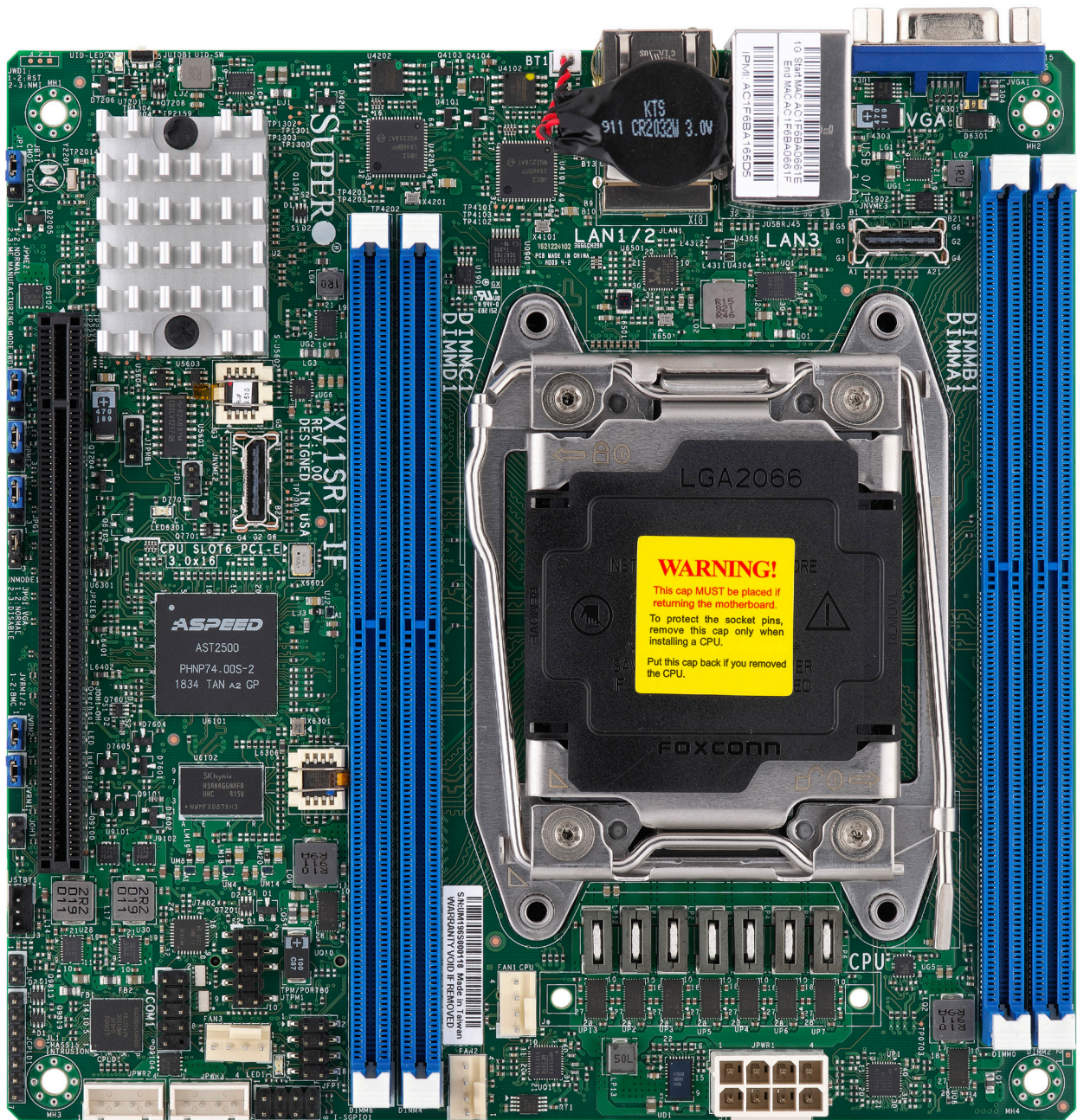
For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wftp/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, please contact our support team at: [support@supermicro.com](mailto:support@supermicro.com)

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

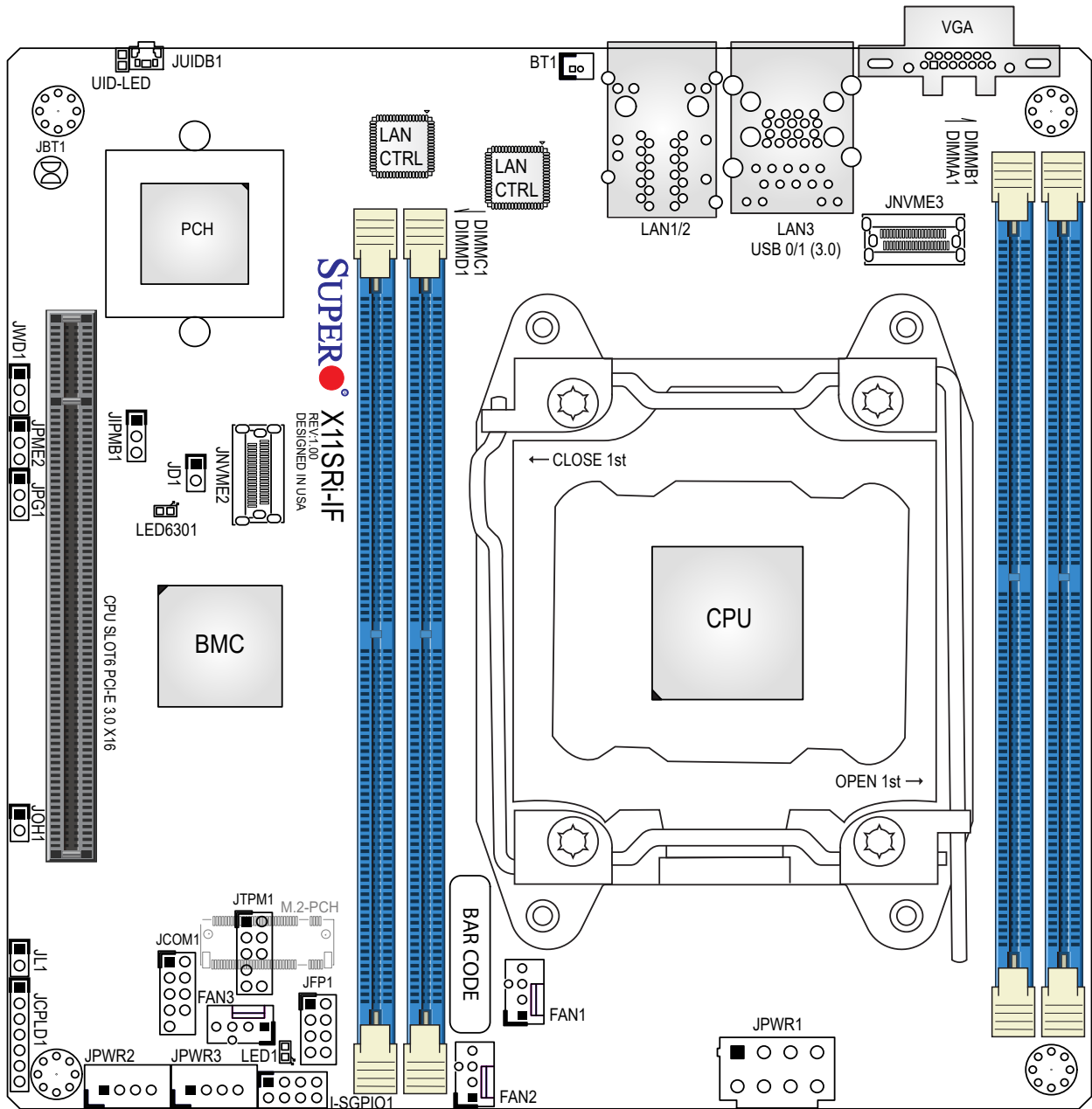


Figure 1-1. X11SRi-IF Motherboard Image



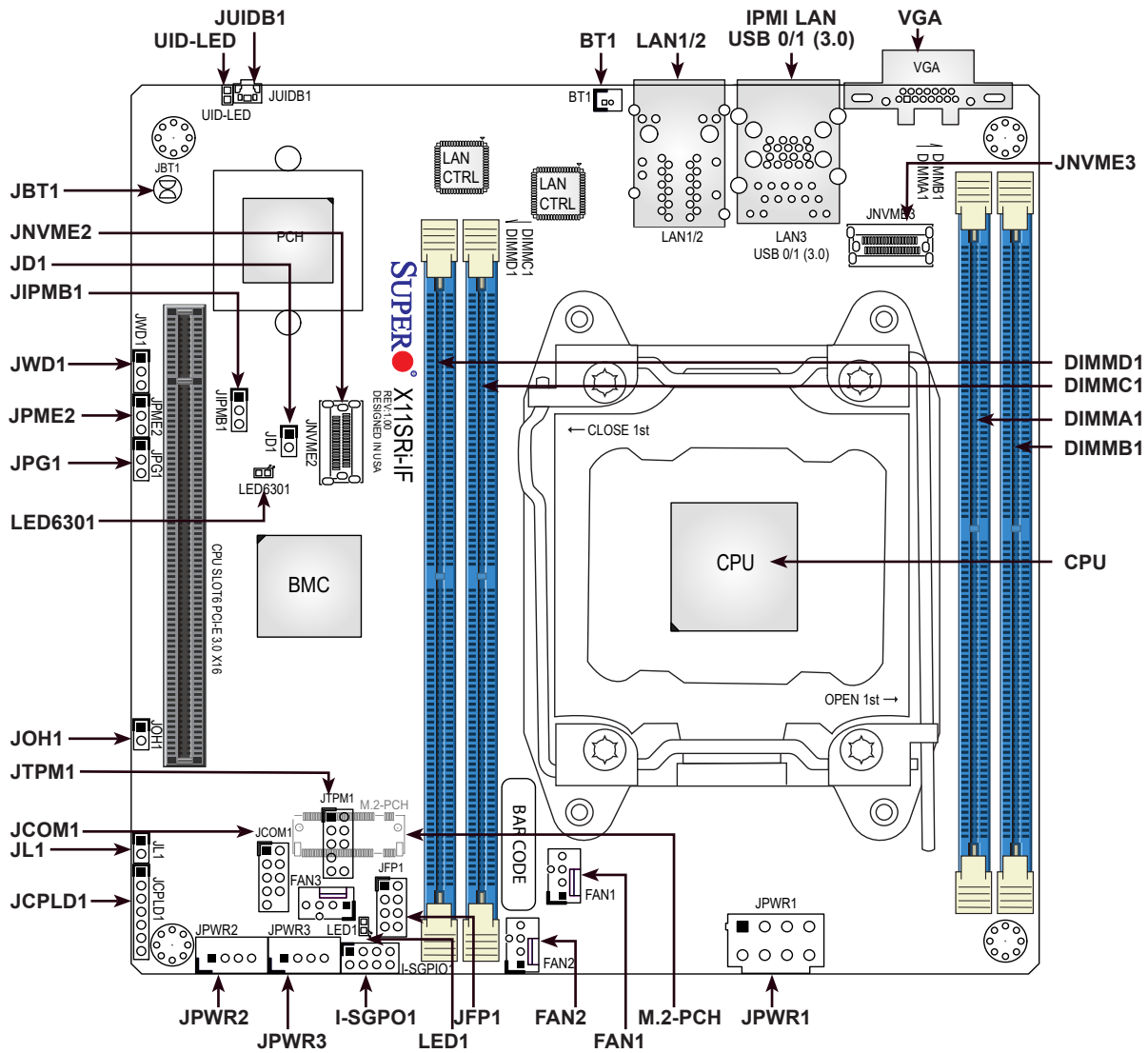
**Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

**Figure 1-2. X11SRi-IF Motherboard Layout**  
(not drawn to scale)



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

## Quick Reference



## Notes:

- Refer to [Chapter 2](#) for detailed information on jumpers, I/O ports, and JFP1 front control 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.

## Quick Reference Table

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JWD1	Watchdog Timer	Pins 1-2 (Reset)



LED	Description	Status
LED1	Onboard Power LED	Solid Green: Power On
LED6301	BMC Heartbeat LED	Blinking Green: BMC Normal
UID-LED	Unit Identifier (UID) LED	Solid Blue: Unit Identified

Connector	Description
BT1	Onboard Battery Header
FAN1, FAN2	CPU/Memory Fan Headers
FAN3	System Fan Header (for Add-on Card or PCH)
I-SGPIO1	Serial Link General Purpose I/O Connection Header
JCOM1	COM Header
JD1	Speaker Header (Pin 1: positive terminal, Pin 2: negative terminal)
JFP1	Front Control Panel Connector
JIPMB1	3-pin BMC External I <sup>2</sup> C Header (for an IPMI card)
JL1	Chassis Intrusion Header
JNVME2	Dual-function Connector for SATA 3.0 or NVMe (PCI-E 3.0 x4)
JNVME3	NVMe (PCI-E 3.0 x4) Connector
JOH1	Overheat/Fan Fail LED Header
JPWR1	8-pin ATX Power Connector
JPWR2, JPWR3	4-pin SATA Power Connectors
JTPM1	Trusted Platform Module (TPM)/Port 80 Connector
JUIDB1	Unit Identifier (UID) Switch
LAN1, LAN2	1GbE LAN (RJ45) Ports
LAN3	Dedicated IPMI LAN Port
M.2-PCH	M.2 PCI-E 3.0 x4 Socket (Supports M-Key 2280)
SLOT6	CPU PCI-E 3.0 x16 Slot
USB0, USB1	Back Panel Universal Serial Bus (USB) 3.0 Ports
VGA	VGA Port



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

## Motherboard Features

<b>Motherboard Features</b>	
<b>CPU</b>	
<ul style="list-style-type: none"> <li>Supports an Intel Xeon W-2200/2100 series (Socket R4) processor with up to 18 cores and a thermal design power (TDP) of up to 165W</li> </ul>	
<b>Memory</b>	
<ul style="list-style-type: none"> <li>Up to 256GB of RDIMM and 512GB of LRDIMM DDR4 (288-pin) ECC memory with speeds of up to 2933 MHz in four memory slots</li> </ul> <p> <b>Notes:</b></p> <ol style="list-style-type: none"> <li>Memory speed support depends on the processors used in the system. DDR4-2933MHz memory speed support is available with selected Intel Xeon W-2200 series processors.</li> <li>16Gb density DRAM module is supported by Intel Xeon W-2200 series processors.</li> </ol>	
<b>DIMM Size</b>	
<ul style="list-style-type: none"> <li>Up to 128GB at 1.2V</li> </ul> <p> <b>Note:</b> For the latest CPU/memory updates, please refer to our website at <a href="http://www.supernano.com/products/motherboard">http://www.supernano.com/products/motherboard</a>.</p>	
<b>Chipset</b>	
<ul style="list-style-type: none"> <li>Intel PCH C422</li> </ul>	
<b>Expansion Slots</b>	
<ul style="list-style-type: none"> <li>One (1) OCuLink PCI-Express 3.0 x4 Connector (Dual-function for SATA 3.0 or NVMe)</li> <li>One (1) OCuLink PCI-Express 3.0 x4 Connector (for NVMe)</li> <li>One (1) PCI-Express 3.0 x16 Slot (CPU SLOT6)</li> </ul>	
<b>Network</b>	
<ul style="list-style-type: none"> <li>Intel Ethernet Controller i210 for Dual 1G BASE-T Ports</li> <li>One (1) Dedicated IPMI LAN located on the rear I/O panel</li> </ul>	
<b>Baseboard Management Controller (BMC)</b>	
<ul style="list-style-type: none"> <li>ASPEED AST2500 BMC</li> </ul>	
<b>Graphics</b>	
<ul style="list-style-type: none"> <li>Graphics controller via ASPEED AST2500 BMC</li> </ul>	
<b>I/O Devices</b>	
<ul style="list-style-type: none"> <li>Serial (COM) Port</li> <li>Video (VGA) Port</li> </ul>	<ul style="list-style-type: none"> <li>One (1) front accessible serial port header (JCOM1)</li> <li>One (1) VGA connection on the rear I/O panel</li> </ul>
<b>Peripheral Devices</b>	
<ul style="list-style-type: none"> <li>Two (2) USB 3.0 ports on the rear I/O panel (USB0/USB1)</li> </ul>	



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

## Motherboard Features

### BIOS

- 256Mb AMI BIOS® SPI Flash UEFI BIOS
- ACPI 6.2, Plug and Play (PnP), SPI dual speed support, and SMBIOS 3.0 or later

### Power Management

- ACPI power management
- Power button override mechanism
- Power-on mode for AC power recovery
- Power supply monitoring

### System Health Monitoring

- Onboard voltage monitoring for 12V, 5VCC, 3.3VCC, VBAT, VCPU, VDIMMAB, VDIMMCD, 5VSB, 3.3VSB, 1.8V\_PCH, 1.0V\_PCH, CPU temperature, CPU VRM Temperature, PCH temperature, System temperature, DIMM temperature, DIMM VRM Temperature, and Peripheral Temperature
- Six phase CPU switching voltage regulator
- CPU thermal trip support
- Platform Environment Control Interface (PECI)

### Fan Control

- Fan status monitoring via IPMI connections
- Two cooling zones
- Multi-speed fan control via onboard BMC
- Three (3) 4-pin fan headers

### System Management


- Trusted Platform Module (TPM) support
- SuperDoctor® 5
- Chassis intrusion header and detection
- Intel Management Engine

### LED Indicators

- Power/suspend-state indicator LED
- UID/remote UID
- HDD activity LED
- LAN activity LED

### Dimensions

- 6.75" (W) x 6.75" (L) Mini-ITX (171.45mm x 171.45mm)

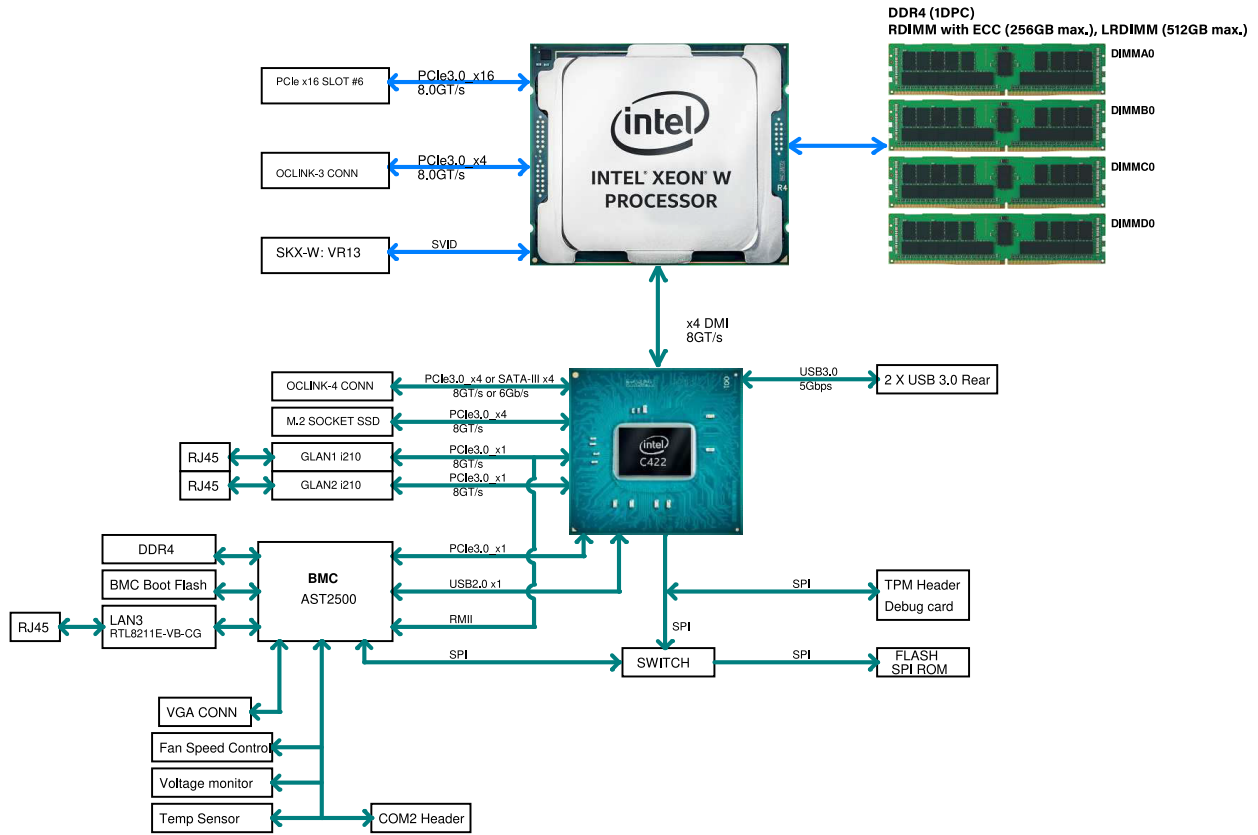
 **Note 1:** The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, please check the chassis and heatsink specifications for proper CPU TDP sizing.


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

**Note 3:** For proper BMC configuration, please refer to [http://www.supermicro.com/products/info/files/IPMI/Best\\_Practices\\_BMC\\_Security.pdf](http://www.supermicro.com/products/info/files/IPMI/Best_Practices_BMC_Security.pdf)

**Note 4:** If you purchase a Supermicro Out of Band (OOB) software license key (Supermicro P/N: SFT-OOB-LIC), please do not change the IPMI MAC address. Once you change the IPMI MAC address, the license will be invalid.

**Figure 1-3.**  
**System Block Diagram**



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



## 1.2 Processor and Chipset Overview

Built upon the functionality and capability of the Intel Xeon W series (Socket R4) processor and the Intel C422 chipset, the X11SRi-IF motherboard provides system performance, power efficiency, and feature sets to address the needs of next-generation computer users.

With the support of the new Intel Microarchitecture 14nm Process Technology, the X11SRi-IF dramatically increases system performance for a multitude of server applications.

The Intel C422 chipset provides Enterprise SMBus support, including the following features:

- DDR4 288-pin memory support
- Support for Management Engine (ME)
- Support of SMBus speeds of up to 400 KHz for BMC connectivity
- SPI Enhancements
- BMC supports remote management, virtualization, and the security package for enterprise platforms

## 1.3 Special Features

### Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. Refer to 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. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

## Fan Status Monitor with Firmware Control

The system health monitor embedded in the BMC chip can check the RPM status of the cooling fans. The CPU and chassis fans are controlled via IPMI.

## 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, please 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 the user 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

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

## 1.6 Power Supply

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

**Warning:** The X11SRi-IF motherboard accommodates an 8-pin ATX power supply. To avoid damaging the power supply or the motherboard, be sure to connect the power supply using the 8-pin power connector (JPWR1) on the motherboard. Failure in doing so may void the manufacturer warranty on your power supply and motherboard.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant. (For more information, please refer to the website at <http://www.ssiforum.org/>).

## 1.7 Serial Header

The X11SRi-IF motherboard supports one serial communication connection. The COM header can be used for input/output. The UART provides legacy speeds with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support a high-speed serial communication device.

## Chapter 2

# Installation

### 2.1 Before the Installation

Be sure to read the precautions below carefully before assembling the motherboard and components.

1. The location of the M.2 socket is on the bottom side of the motherboard. To prevent the M.2 socket and the installed device from hitting the chassis, keep a 5.5mm clearance from the bottom side of the motherboard and the chassis.
2. To support all the features of this motherboard, use a power supply unit with a least 500W. To support a double width add-on card on the motherboard, use a power supply unit with at least 700W.
3. The power of this motherboard is supplied by a 12V DC-in directly. Short a wire from PS-ON# to GND on ATX-24Pin cable plug if using an ATX power supply unit.
4. Refer to [Section 2.7 Front Control Panel](#) for detailed PIN definition.
5. The devices of SATA or NVMe can be extended via a specific Supermicro cable. Refer to the table below and contact Supermicro for more detailed information.

Cable List	
Description	Part Number
SATA cable	CBL-SAST-0933 (for 4x SATA drive expansion)
	CBL-SAST-0886 (for SATA power connection)
NVMe extension cable	CBL-SAST-0956

## 2.2 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 motherboard 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.

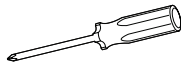
### Unpacking

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.

## 2.3 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)**

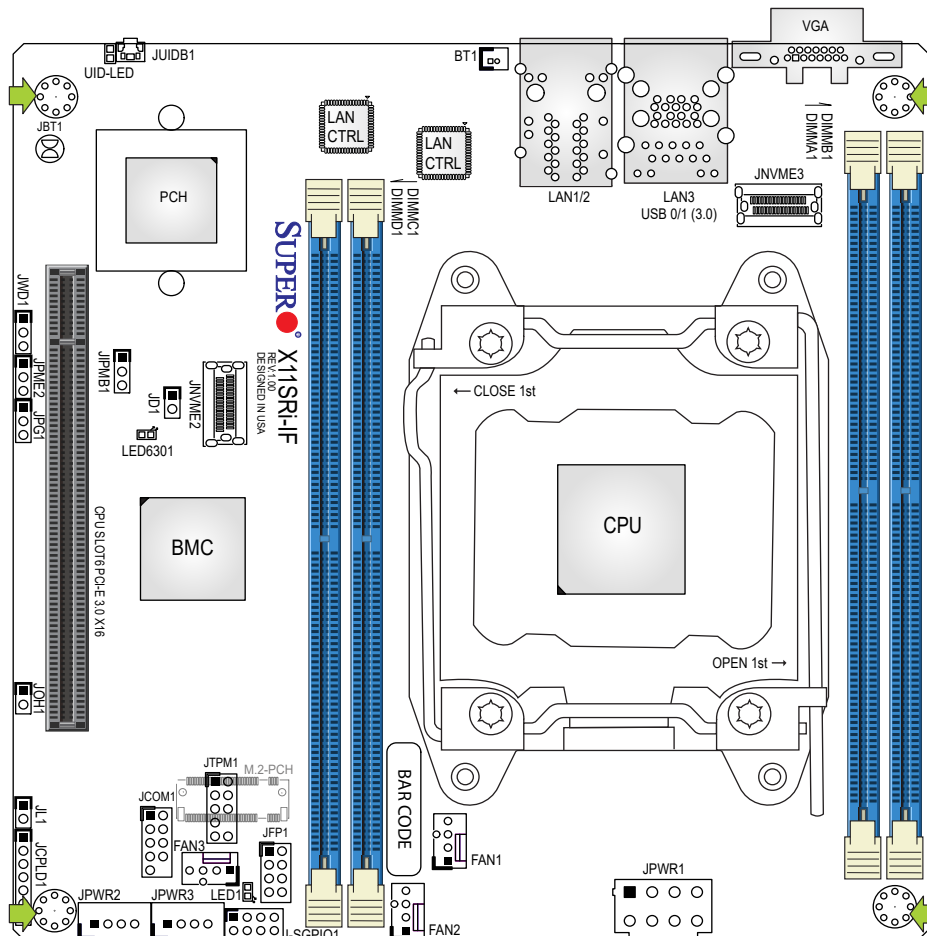



**Phillips Screws (4)**



**Standoffs (4)  
Only if Needed**

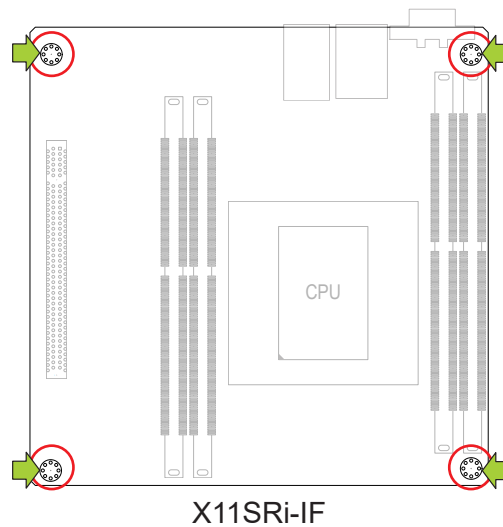
### Location of Mounting Holes



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

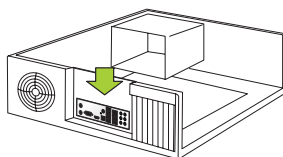
**Note 2:** Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

**Note 3:** Before assembling the motherboard, pay attention to the location of mounting holes. Please select the chassis which fits the mounting hole locations of this motherboard. Refer to the illustration below for the location details.

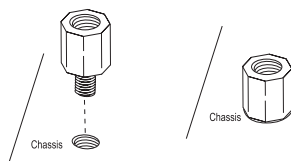


## Installing the Motherboard

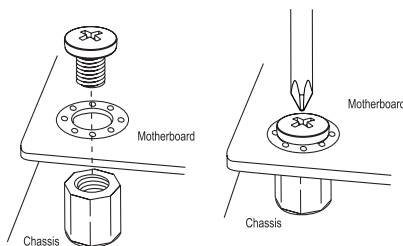
1. Install the I/O shield into the back of the chassis, if applicable.




2. Locate the mounting holes on the motherboard. Refer to the previous page for the location.



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



4. Install standoffs in the chassis as needed.
5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.
6. Using the Phillips screwdriver, insert a pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.
7. Repeat Step 5 to insert #6 screws into all mounting holes.
8. Make sure that the motherboard is securely placed in the chassis.

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



## 2.4 Processor and Heatsink Installation

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

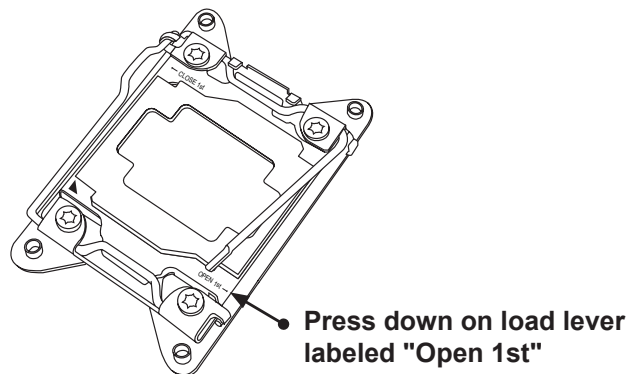


### Important:

- Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the motherboard into the chassis before you install the CPU heatsink.
- When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro website for updates on CPU support.

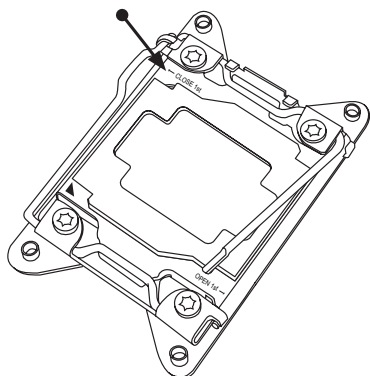
### Installing a CPU

1. There are two load levers on the LGA 2066 socket. To open the socket cover, press and release the load lever labeled "Open 1st".

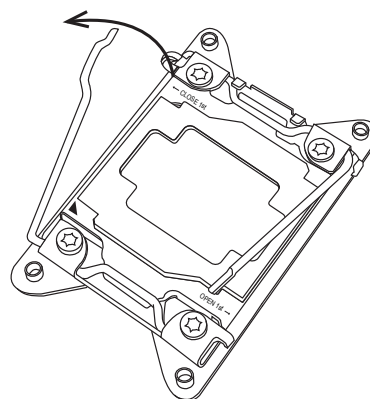


2. Press the second load lever labeled "Close 1st" to release the load plate that covers the CPU socket from its locking position.

1 Press down on load lever "Close 1st"

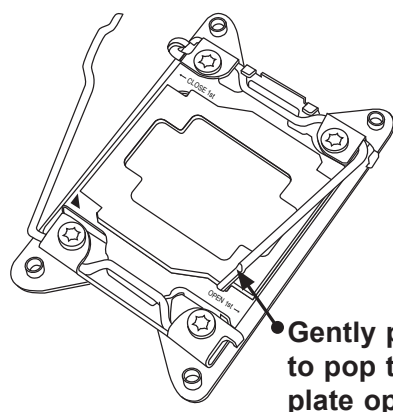


2 Pull lever away from socket



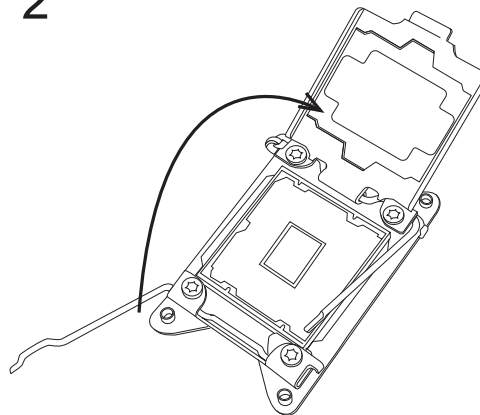
3. With the "Close 1st" lever fully retracted, gently push down on the "Open 1st" lever to open the load plate. Lift the load plate to open it completely.

1



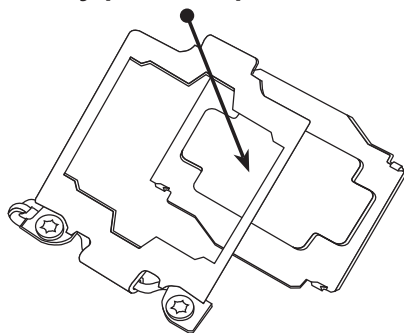
Gently push down to pop the load plate open


2



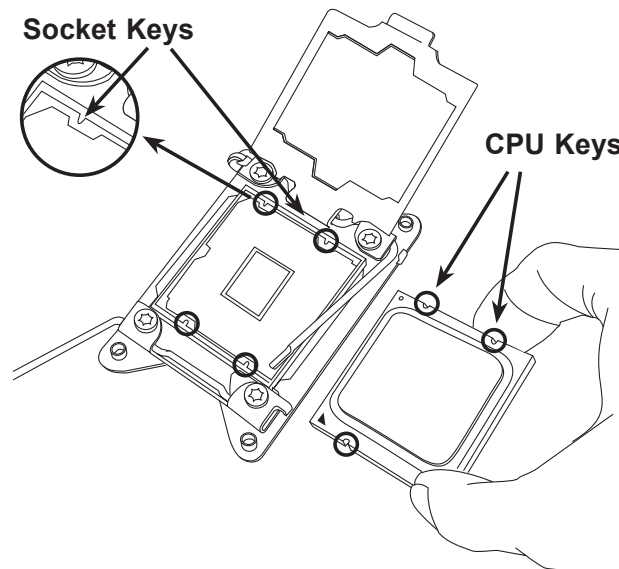
4. Remove the protective cover away from the load plate by pushing the cover slightly.

Gently push the protective cover outward

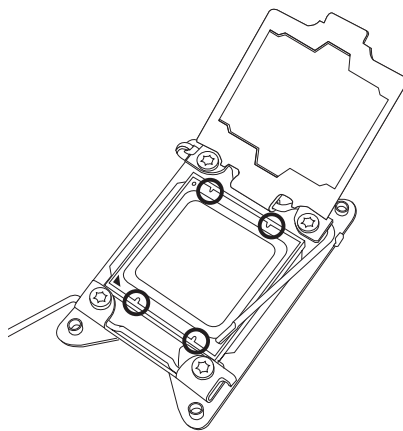


 **Note:** To protect the socket pins, make sure the protective cover is assembled on the load plate if there is no CPU installed.

5. Use your thumb and index finger to hold the CPU by its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

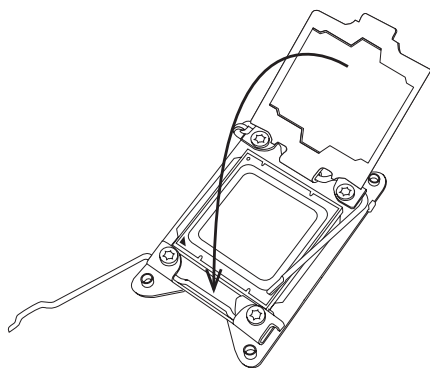


6. Once they are aligned, carefully lower the CPU straight down into the socket. To avoid damaging the CPU or socket, do not drop the CPU onto the socket, move it horizontally or vertically, or rub it against the socket pins. Note that you can only install the CPU inside the socket in one direction.
7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that it is properly installed.

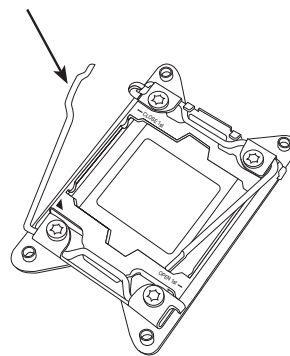


8. Close the load plate with the CPU inside the socket. Lock the "Close 1st" lever first, then lock the "Open 1st" lever second. Gently push the load levers down to the lever locks.

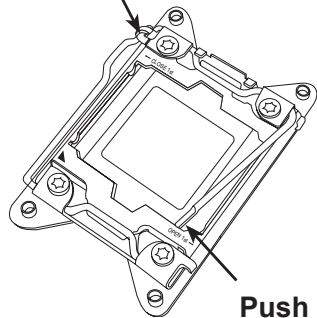
**1 Gently close the load plate**



**2 Push down and lock the lever labeled "Close 1st"**

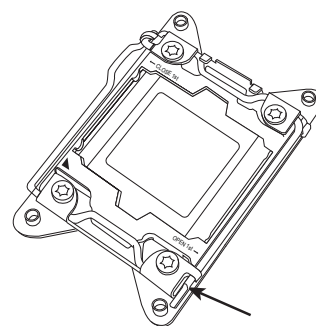


**3 Lever Lock**



**Push down and lock the lever labeled "Open 1st"**

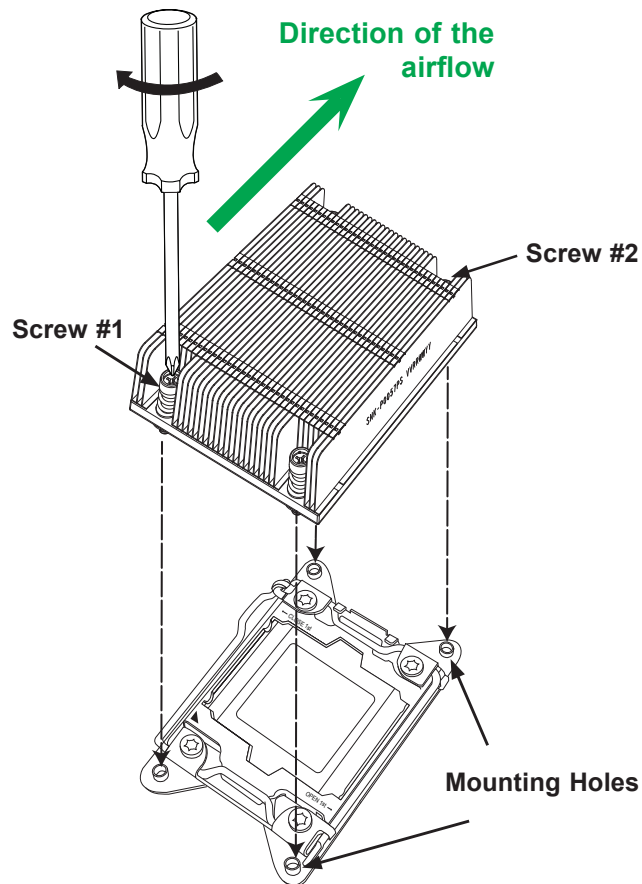
**4**




**Lever Lock**

## Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- 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. Screw in two diagonal screws (e.g., the #1 and the #2 screws) until just snug. Do not over-tighten the screws to avoid damaging the CPU and the motherboard.
4. Finish the installation by fully tightening all four screws.

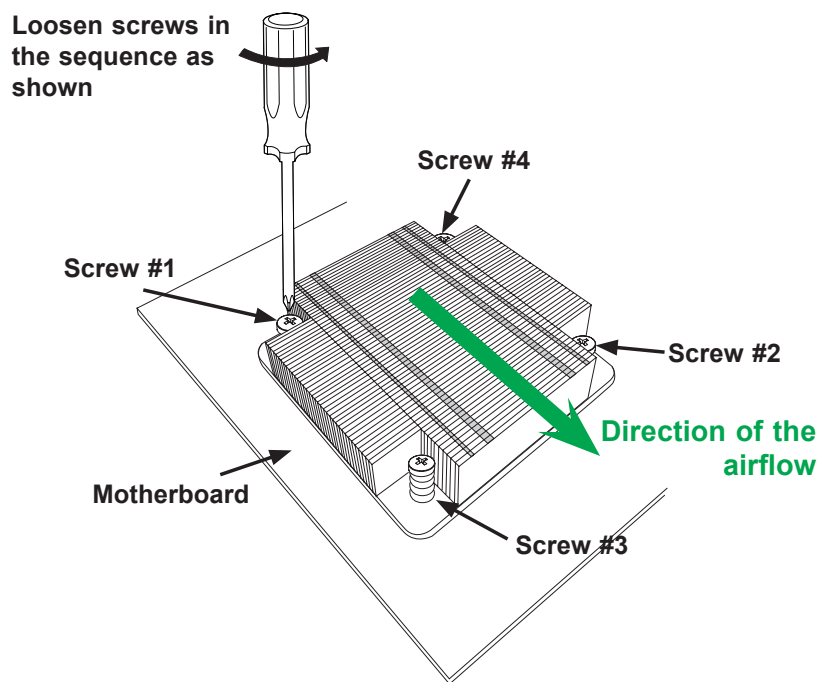


 **Note:** For optimal airflow, please follow your chassis airflow direction to correctly install the CPU heatsink. Graphic drawings included in this manual are for reference only. They might look different from the components installed in your system.

## Removing the CPU and the Heatsink

**Warning:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the CPU or the heatsink, please follow the instructions below to uninstall the heatsink to avoid damaging the CPU or other components.

1. Unscrew the heatsink screws from the motherboard in the sequence as shown in the illustration below.
2. Gently wriggle the heatsink to loosen it from the CPU. Do not use excessive force when loosening the heatsink.
3. Once the heatsink is loosened from the socket, remove the heatsink from the CPU socket. Next, remove the CPU from the socket if needed.
4. Remove the used thermal grease and clean the surface of the CPU and the heatsink. Reapply the proper amount of thermal grease on the surface before reinstalling the CPU and the heatsink.



## 2.5 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 X11SRi-IF supports up to 256GB of RDIMM and 512GB of LRDIMM DDR4 (288-pin) ECC memory with speeds of up to 2933 MHz in four memory slots. Refer to the tables below for the recommended DIMM population order and additional memory information.

1 CPU, 4-DIMM Slots	
Number of DIMMs	Memory Population Sequence
1	DIMMA1
2	DIMMA1 / DIMMC1
3 (Unbalanced: not recommended)	DIMMA1 / DIMMC1 / DIMMB1
4	DIMMA1 / DIMMC1 / DIMMB1 / DIMMD1

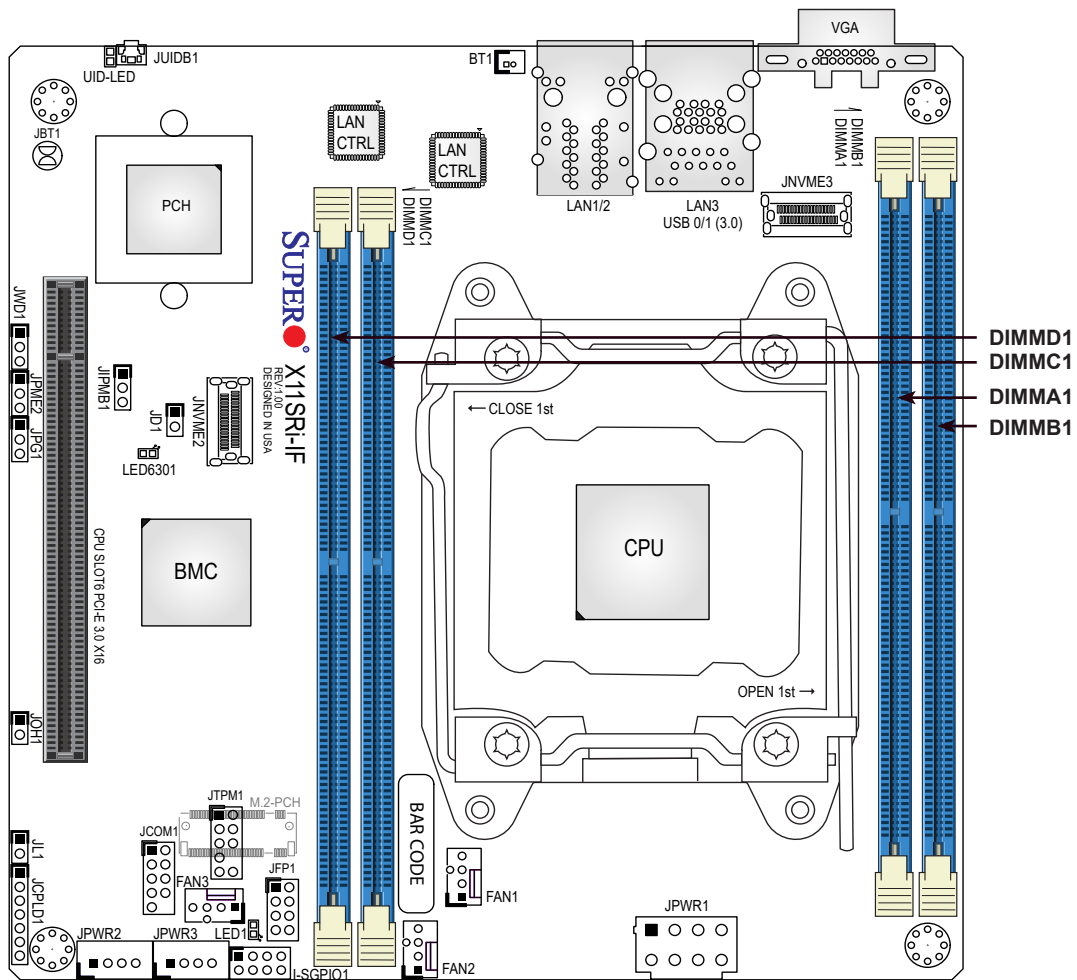
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)			Speed (MT/s), Voltage (V), Slot Per Channel (SPC), and DIMMs Per Channel (DPC)
		DRAM Density			1 Slot Per Channel
		4Gb	8Gb	16Gb	1DPC
RDIMM	SRx4	8GB	16GB	16GB	2933 MHz*
RDIMM	SRx8	4GB	8GB	32GB	
RDIMM	DRx8	8GB	16GB	32GB	
RDIMM	DRx4	16GB	32GB	64GB	
LRDIMM	QRx4	32GB	64GB	128GB	



**Notes:** 1. 16Gb density DRAM module is supported by Intel Xeon W-2200 series processors.  
2. DDR4-2933MHz memory speed support is available with selected Intel Xeon W-2200 series processors.

## General Guidelines for Optimizing Memory Performance

- Always use DDR4 memory of the same type, size, and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support odd-numbered modules (one or three modules installed). However, to achieve the best memory performance, a balanced memory population is recommended.



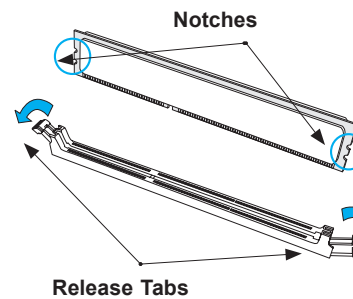
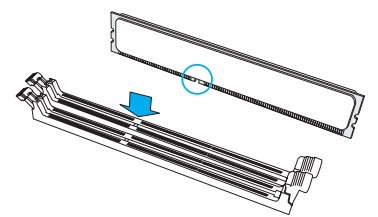
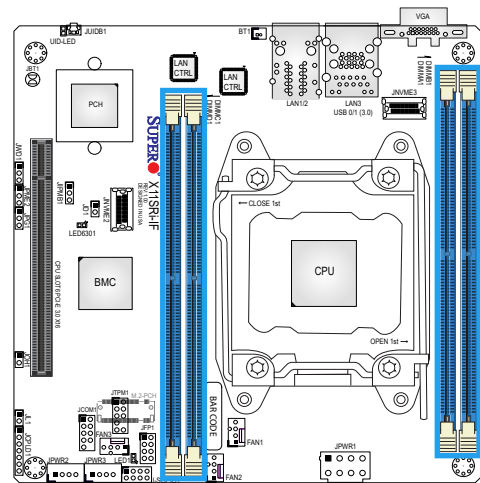


## DIMM Installation

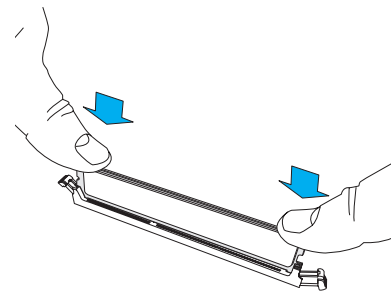
1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population table on [page 31](#).
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key of the DIMM module with the receptive point on the memory slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Press the notches on both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

## DIMM Removal

Press both release tabs on the ends of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.



Insert the DIMM module into the memory slot.



## 2.6 Rear I/O Ports

Refer to Figure 2-1 below for the locations and descriptions of the various I/O ports on the rear of the motherboard.

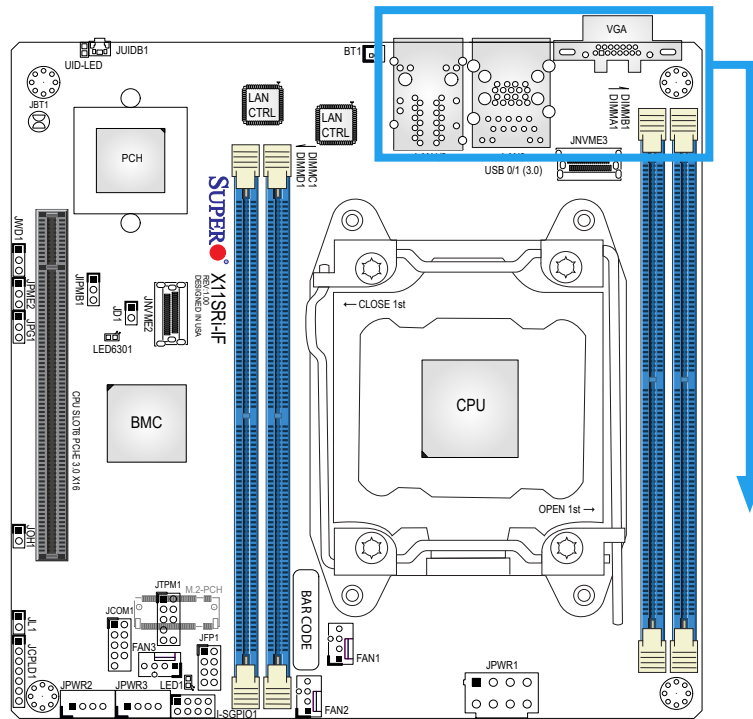
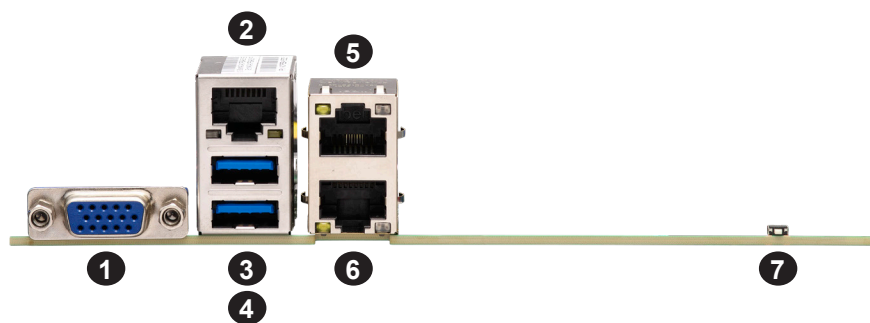


Figure 2-1. I/O Port Locations and Definitions



#	Description	#	Description
1	VGA Port	5	LAN1
2	Dedicated IPMI LAN (LAN3)	6	LAN2
3	USB0	7	UID Switch
4	USB1		

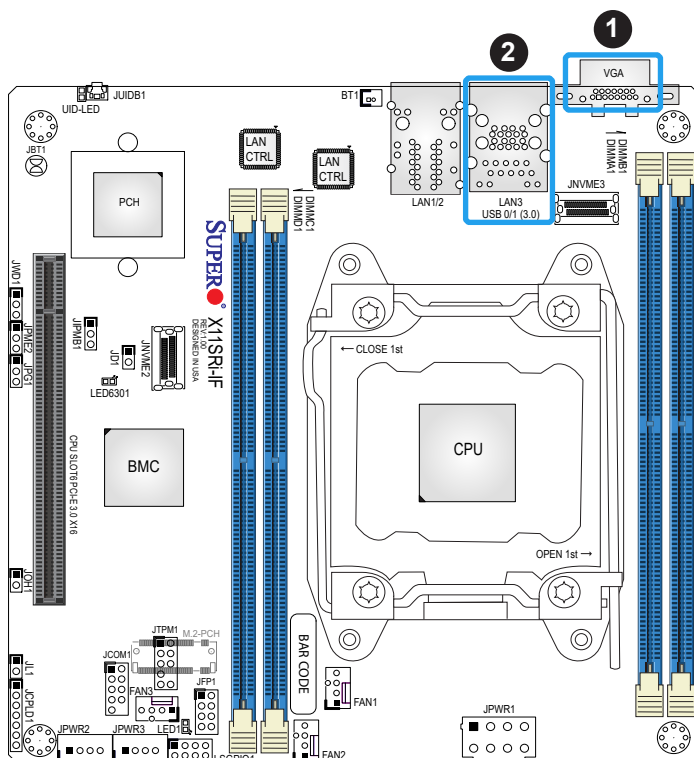
## VGA Port

A video (VGA) port is located next to LAN3 on the I/O back panel. Refer to the layout below for the location.

## Universal Serial Bus (USB) Ports

There are two USB 3.0 ports (USB0/USB1) located on the I/O back panel. Refer to the table below for pin definitions.

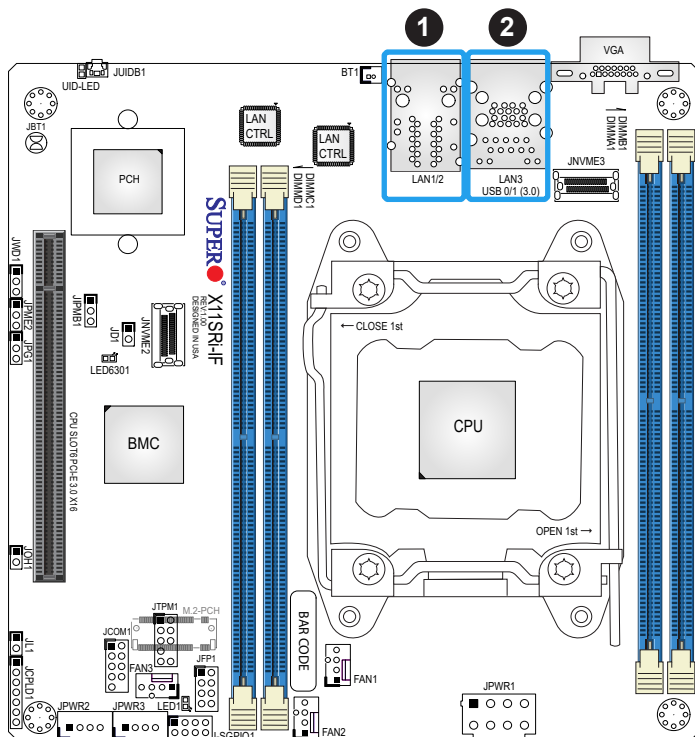
Back Panel USB Port Pin Definitions			
Up		Down	
USB 3.0 Port 0		USB 3.0 Port 1	
Pin#	Definition	Pin#	Definition
10	VBUS	1	VBUS
11	USB_N	2	USB_N
12	USB_P	3	USB_P
13	GND	4	GND
14	Std_a_SSRX-	5	Std_a_SSRX-
15	Std_a_SSRX+	6	Std_a_SSRX+
16	GND	7	GND
17	Std_a_SSTX-	8	Std_a_SSTX-
18	Std_a_SSTX+	9	Std_a_SSTX+



1. VGA Port
2. USB0/USB1

## LAN Ports


Two Gigabit Ethernet ports (LAN1, LAN2) are located on the I/O back panel. In addition, a dedicated IPMI LAN port (LAN3) is located above the USB0/USB1 ports on the back panel. All of these ports accept RJ45 cables. Please refer to Section [2.10 LED Indicators](#) for LAN LED information.



- 1. LAN1/LAN2
- 2. LAN3 (IPMI LAN Port)

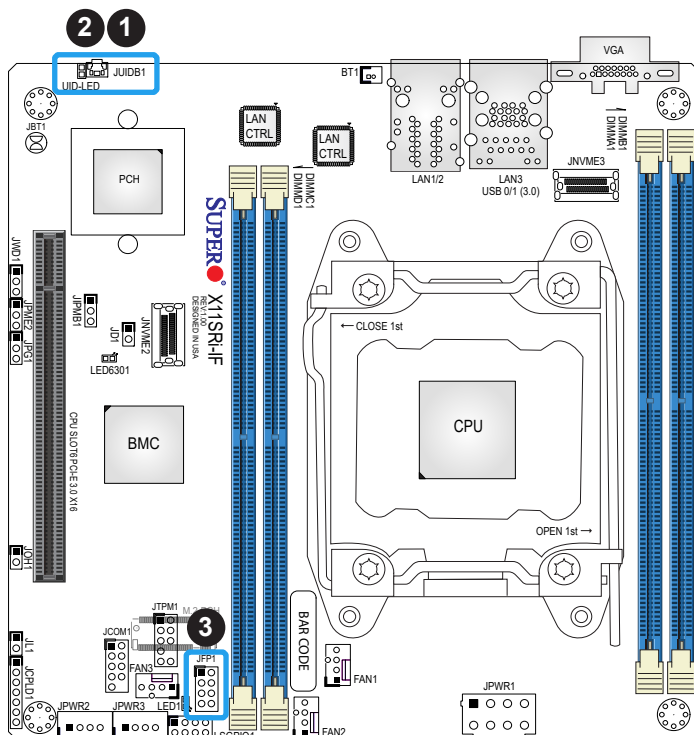
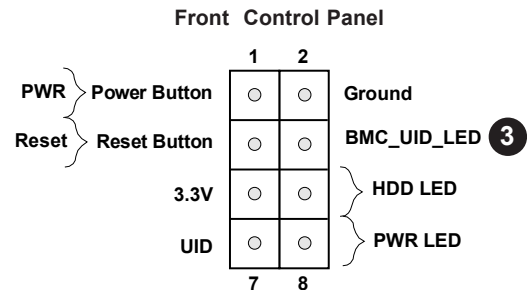
## Unit Identifier Switch/UID LED Indicator

A rear Unit Identifier (UID) switch (JUIDB1) and a rear LED Indicator (UID-LED) are located on the rear side of the motherboard. The front UID LED is located on Pin 7 of the Front Control Panel (JFP1). When you press the UID switch, both front and rear UID LED indicators will be turned on. Press the UID switch again to turn off the LED indicators. The UID Indicators provide easy identification of a system unit that may be in need of service.

 **Note:** UID can also be triggered via IPMI on the motherboard. For more information on IPMI, please refer to the IPMI User's Guide posted on our website at <http://www.supermicro.com>.

UID Switch Pin Definitions	
Pin#	Definition
1	Button In
2	GND
3	GND
4	GND
5	GND

UID-LED LED Indicator	
Color	Status
Blue: On	Unit Identified



1. UID Switch
2. Rear UID LED
3. Front UID LED

## 2.7 Front Control Panel

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

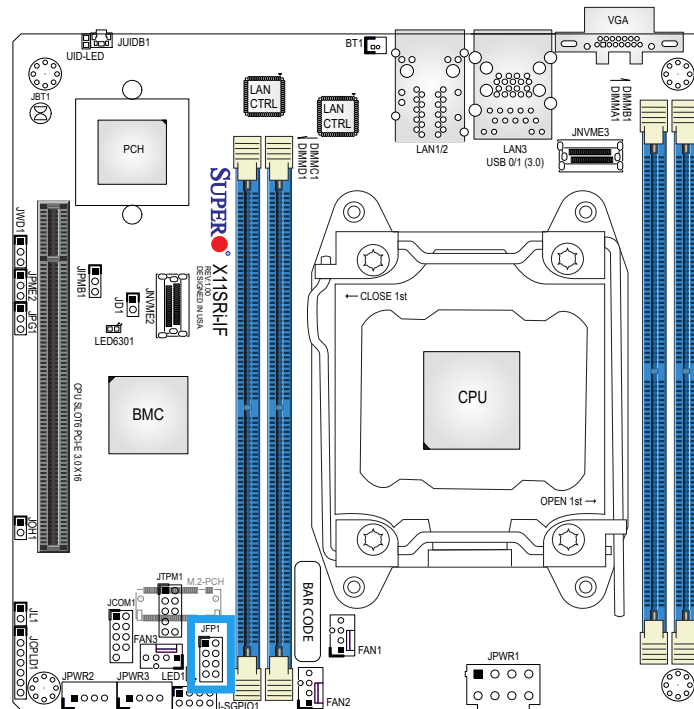
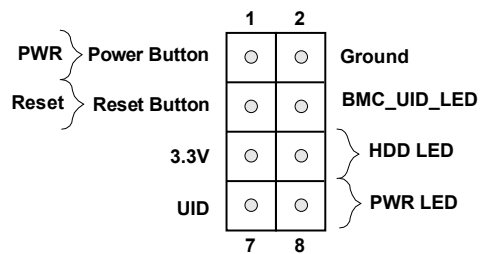


Figure 2-2. JFP1 Header Pins



## Power Button

The Power Button connection is located on pins 1 and 2 of JFP1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - refer to [Chapter 4](#)). To turn off the power when the system is in suspend mode, press the button for four seconds or longer. Refer to the table below for pin definitions.

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

## Reset Button

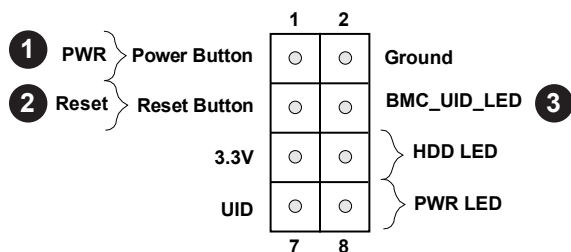
The Reset Button connection is located on pin 3 of JFP1. Attach it to a hardware reset switch on the computer case to reset the system. Refer to the table below for pin definition.

Reset Button Pin Definitions (JFP1)	
Pin#	Definition
3	Reset

## BMC\_UID\_LED

Connect an LED cable to BMC\_UID\_LED connection on pin 4 of JFP1 to provide front UID LED indication and warnings of overheating or fan failure. Refer to the table below for pin definition.

BMC_UID_LED Pin Definitions (JFP1)	
Pin#	Definition
4	Front UID LED



1. PWR Button
2. Reset Button
3. Front UID LED

### HDD\_LED

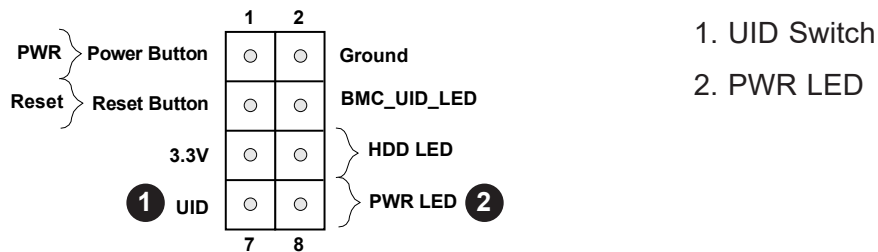
The HDD LED connection is located on pins 5 and 6 of JFP1. Attach a cable to pin 6 to show hard drive activity status. Refer to the table below for pin definitions.

HDD LED Pin Definitions (JFP1)	
Pin#	Definition
5	3.3V Stdby
6	HDD Active

### UID/Power LED

Connect a cable to pin 7 of JFP1 to use the UID switch. The Power LED connection is located on pin 8 of JFP1. Refer to the table below for pin definitions.

Power LED Pin Definitions (JFP1)	
Pin#	Definition
7	UID SW
8	PWR LED





## 2.8 Connectors

### Power Connection

#### 8-Pin Power Connector

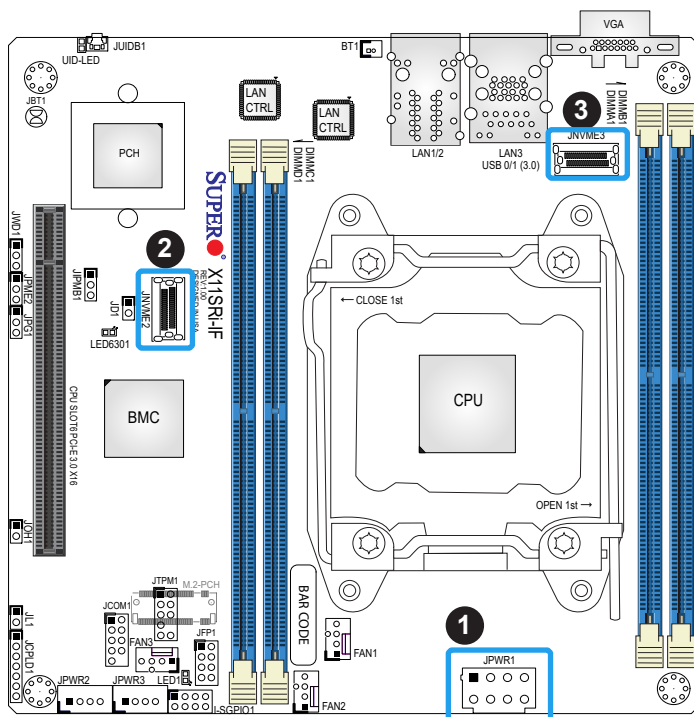
JPWR1 is an 8-pin 12V DC power input for the system that must be connected to the power supply. Refer to the table below for pin definitions.

8-pin Power Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 8	P12V (12V Power)

#### Required Connection

#### NVMe Connector

The X11SRi-IF motherboard supports two Non-Volatile Memory Express (NVMe) connectors (JNVME2 and JNVME3) that provide connections for devices like solid state drives. JNVME2 is a dual-function connector designed for SATA 3.0 or NVMe (PCI-E 3.0 x4). By default, JNVME2 is set to SATA x4 and selectable in the BIOS menu. JNVME3 is designed for NVMe (PCI-E 3.0 x4) only.



1. 8-Pin ATX PWR
2. SATA/NVMe Connector (JNVME2)
3. NVMe Connector (JNVME3)

### 4-Pin SATA Power Connectors

The 4-pin SATA power connectors located at JPWR2 and JPWR3 are designed to provide power to the SATA devices. Refer to the table below for pin definitions.

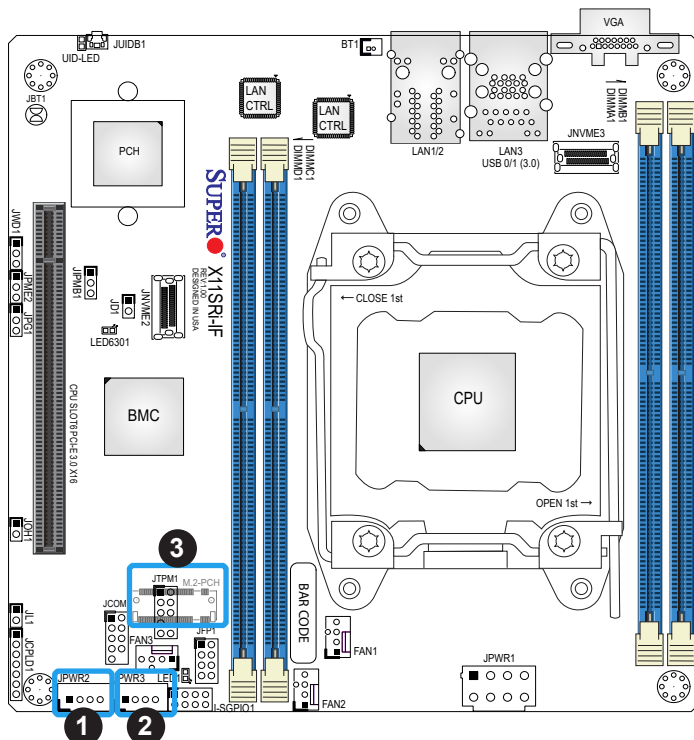


**Note:** Check the Cable list on [Section 2.1 Before the Installation](#) for detailed power cable information.

4-Pin SATA Power Pin Definitions	
Pin#	Definition
1	12V
2	GND
3	GND
4	5V

### M.2-PCH Socket

The X11SRi-IF motherboard has one M.2-PCH socket that is located on the bottom side of the motherboard. M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCI-E. The M.2-PCH socket on the motherboard supports PCI-E 3.0 x4 (32 Gb/s) SSD cards in 2280 form factor only.



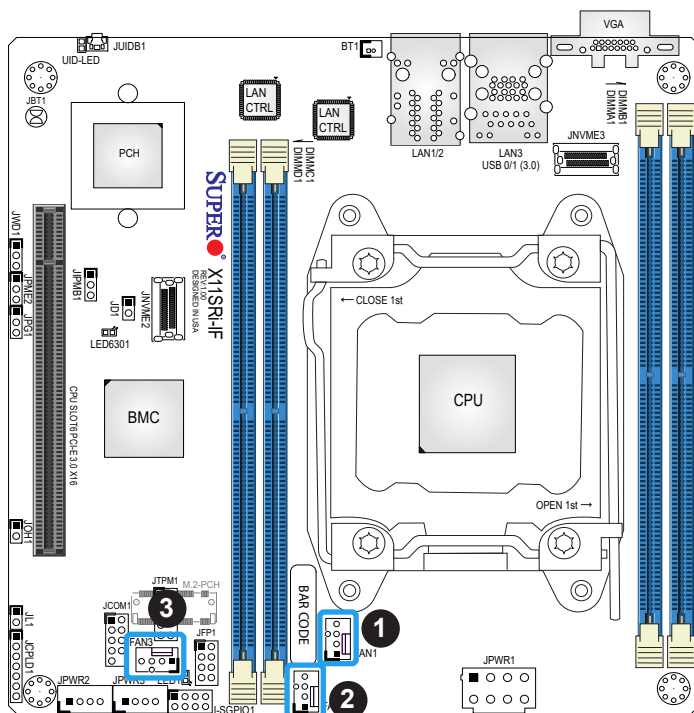
1. JPWR2
2. JPWR3
3. M.2 PCH Socket  
(on the bottom side)

## Headers

### Fan Headers

There are three 4-pin fan headers (FAN1, FAN2, and FAN3) on the motherboard. All these 4-pin fan headers are backwards compatible with the traditional 3-pin fan headers. However, fan speed control is available for 4-pin fan headers only by Thermal Management via the IPMI 2.0 interface. Refer to the table below for pin definitions.

Fan Headers Pin Definitions	
Pin#	Definition
1	GND (Black)
2	+12V (Red)
3	Tachometer
4	PWM_Control



1. FAN1
2. FAN2
3. FAN3

### SGPIO Header

There is a Serial Link General Purpose Input/Output (I-SGPIO1) header located on the motherboard. Refer to the tables below for more information.

I-SGPIO Header 1	
I-SGPIO1	JNVME2

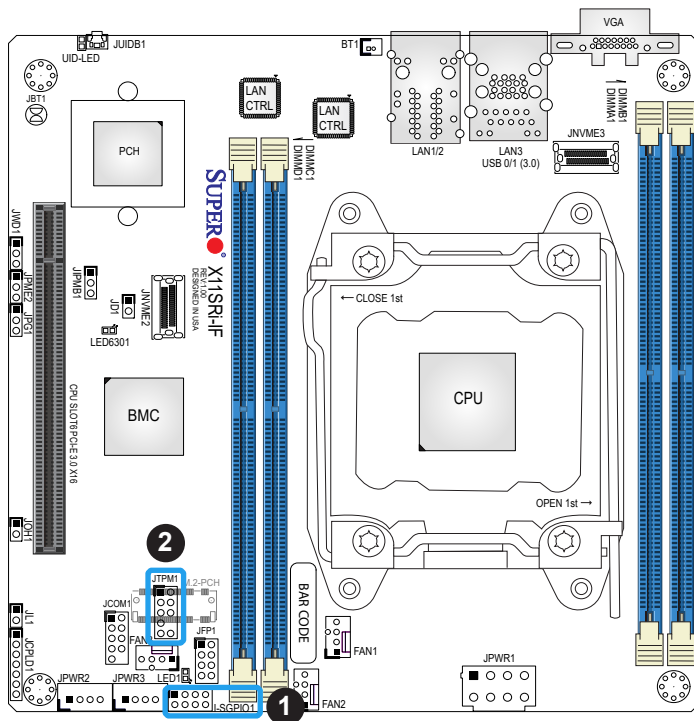
SGPIO Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	NC	2	NC
3	GND	4	Data
5	Load	6	GND
7	Clock	8	NC

NC = No Connection

### 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. Please go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

Trusted Platform Module Header 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	NC
9	+3.3V Stdby	10	SPI_IRQ#



1. I-SGPIO1 Header
2. TPM Header

## Onboard Buzzer

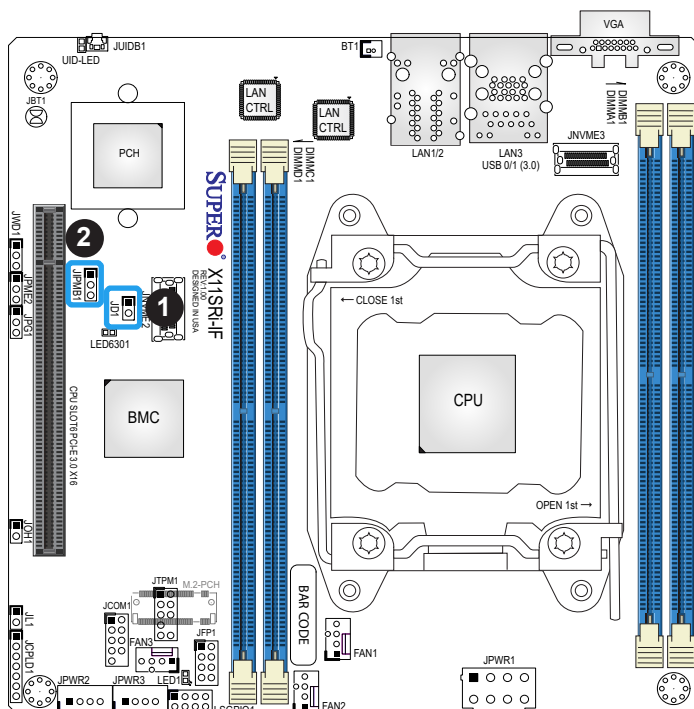
The Onboard Buzzer is used to provide audible indicators for various beep codes. By default, pins 1-2 of JD1 are closed with a cap, which enables the use of this buzzer. Refer to the table below for pin definitions.

Onboard Buzzer Pin Definitions		
Pin#		Definition
1	Pos (+)	DC 5V
2	Neg (-)	Signal In

## 3-pin BMC External I<sup>2</sup>C Header

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I<sup>2</sup>C connection on your system. Refer to the table below for pin definitions.

External I <sup>2</sup> C Header Pin Definitions	
Pin#	Definition
1	Data
2	GND
3	Clock



1. Buzzer Header
2. BMC External I<sup>2</sup>C Header

### Overheat/Fan Fail LED Header

The JOH1 header is used to connect an LED indicator to provide warnings of chassis overheating and fan failure. This LED will blink when a fan failure occurs. Refer to the tables below for pin definitions.

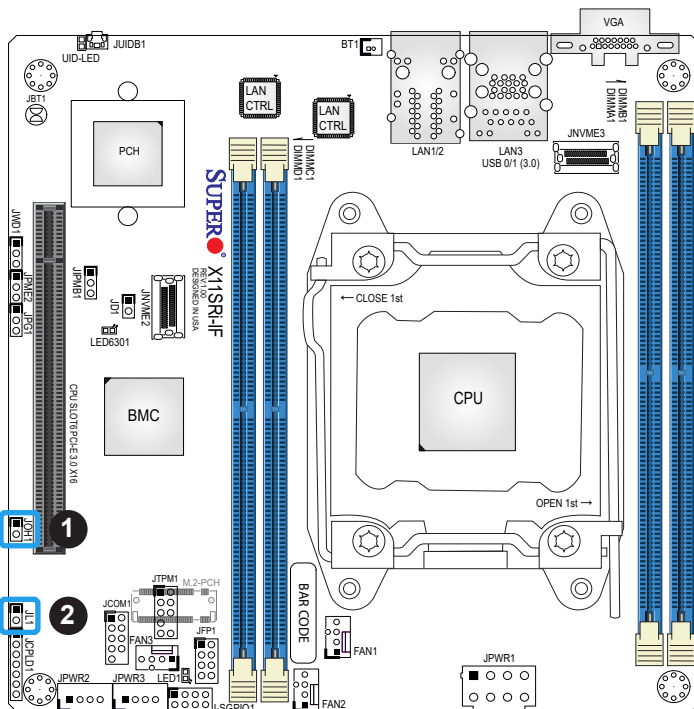
Overheat LED Header Status	
State	Definition
Solid	Overheat
Blinking	Fan Fail

Overheat LED Pin Definitions	
Pin#	Signal
1	Pull high to +3.3V power high to +3.3V power through 330-ohm resistor
2	OH Active

### Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened. Refer to the table below for pin definitions.

Chassis Intrusion Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground




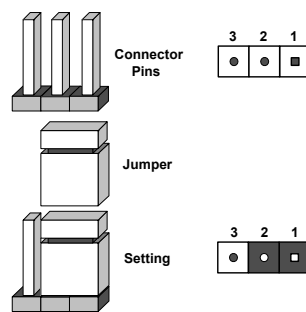
1. Overheat/Fan Fail LED Header
2. Chassis Intrusion

## 2.9 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. Refer to 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.




### CMOS Clear

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.

#### To Clear 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.

 **Note:** Clearing CMOS will also clear all passwords.

Do not use the PW\_ON connector to clear CMOS.



### Watchdog

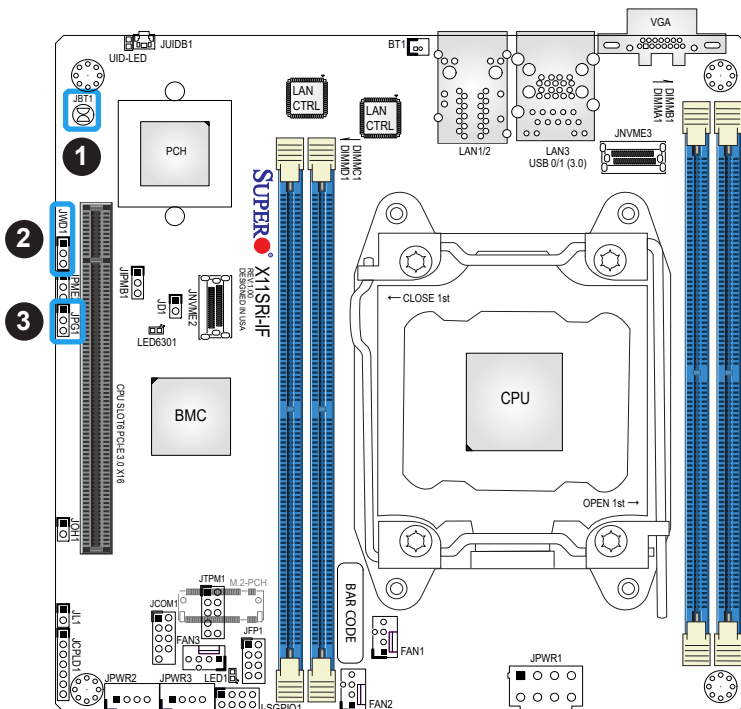
Watchdog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. Refer to the table below for jumper settings.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

Watchdog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

### VGA Enable/Disable

JPG1 allows the user to enable the onboard VGA port. The default setting is pins 1-2 to enable the connection. Refer to the table below for jumper settings.

VGA Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled



1. CMOS Clear
2. Watchdog
3. VGA Enable



## 2.10 LED Indicators

### LAN LEDs

Two LAN ports (LAN1 and LAN2) are located on the I/O back panel of the motherboard. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the other Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables below for more information.

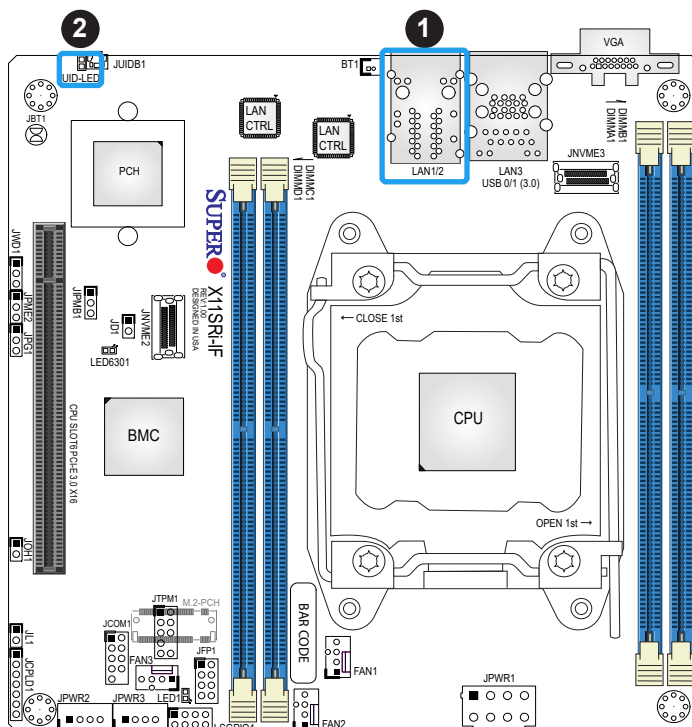
LAN1/LAN2 Activity LED (Left) LED State		
Color	Status	Definition
Yellow	Flashing	Active

LAN1/LAN2 Link LED (Right) LED State	
LED Color	Definition
Off	No Connection/10 Mbps
Amber	1 Gbps
Green	100 Mbps

### Unit ID LED

A rear UID LED indicator (UID-LED) is located near the UID switch on the I/O back panel. This UID indicator provides easy identification of a system unit that may need service.

UID-LED LED Indicator	
LED Color	Definition
Blue: On	Unit Identified



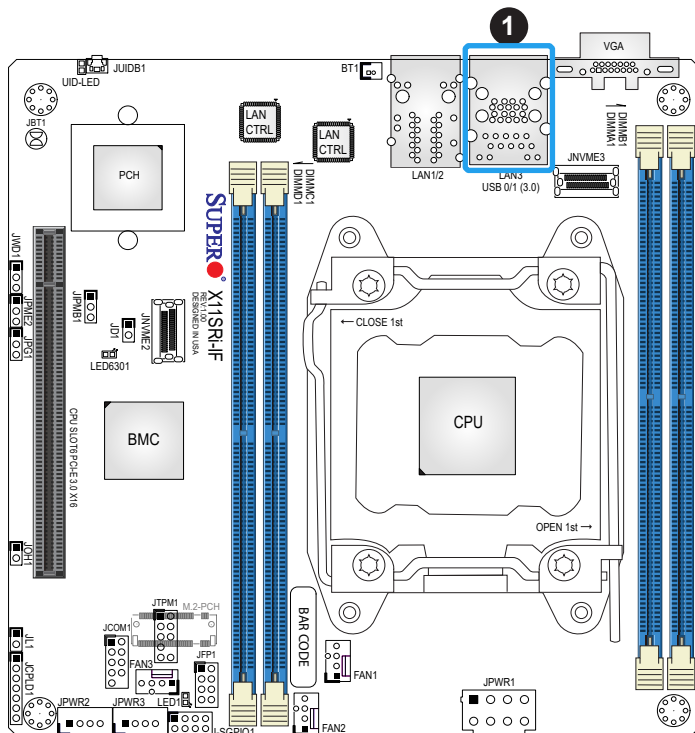
1. LAN1/LAN2 LEDs
2. UID LED

### IPMI LAN LEDs

In addition to LAN1 and LAN2, an IPMI LAN port (LAN3) is also located on the I/O back panel. The amber LED on the left indicates activity, while the LED on the right indicates the speed of the connection. Refer to the table below for more information.



IPMI LAN LEDs (LAN3)		
	Color/State	Definition
Link (Left)	Green: Solid	100 Mbps
	Amber: Solid	1Gbps
Activity (Right)	Amber: Blinking	Active



1. IPMI LAN LEDs (LAN3)

## Onboard Power LED

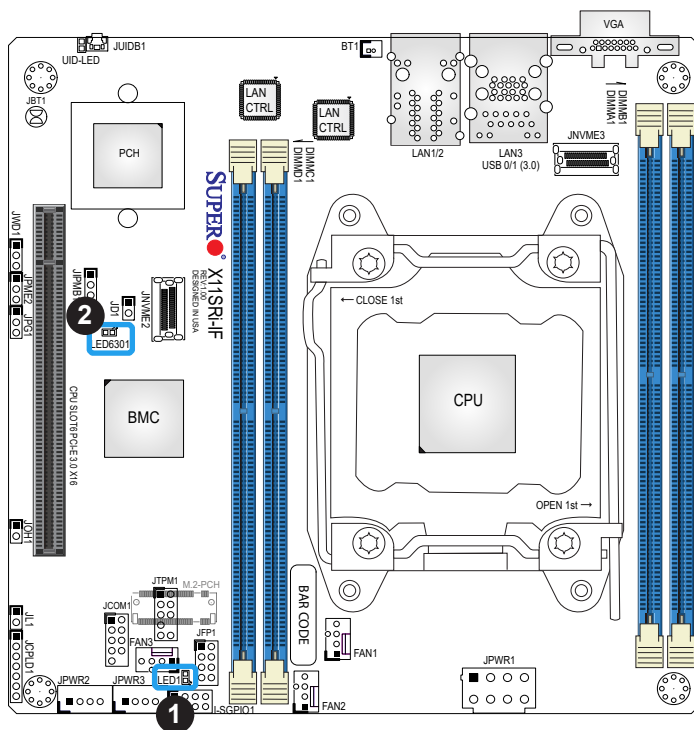
The Onboard Power LED is located at LED1 on the motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. Refer to the table below for more information.

Onboard Power LED Indicator	
LED Color	Definition
Off	System Off / Standby
Green	System On

## BMC Heartbeat LED

A BMC Heartbeat LED is located at LED6301 on the motherboard. When LED6301 is blinking, the BMC is functioning normally. Refer to the table below for more information.

BMC Heartbeat LED Indicator	
LED Color	Definition
Green: Blinking	BMC Normal



1. Onboard Power LED
2. BMC Heartbeat LED (LED6301)

## 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 ~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 POST (Power-On-Self-Test) 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 [Section 2.9](#) in Chapter 2.
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 that the DIMMs are properly and fully installed. (For memory compatibility, refer to the memory compatibility chart posted on our website at <http://www.supermicro.com>.)
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 ECC DDR4 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.

5. Make sure that all memory modules are fully seated in their slots. Follow the instructions given in [Section 2.5](#) in Chapter 2.
6. Please follow the instructions given in the DIMM population tables listed in [Section 2.5](#) to install your memory modules.

## 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 [1.6 Power Supply](#) for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~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:** Refer to the product page on our website at <http://www.supermicro.com> for memory and CPU support and updates.

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. Please 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 CD/DVD.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Using 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. Identifying 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, please take the following steps. Also, please 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. Please 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/>.
  - Distributors: For immediate assistance, please 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 motherboard supports DDR4 ECC RDIMM and LRDIMM modules. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on [Section 2.5](#).

**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). Please 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. To update your BIOS under the UEFI shell, please unzip the BIOS file onto a USB device formatted with the FAT/FAT32 file system. When the UEFI shell prompt appears, type `fs#` to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier. Enter `flash.nsh BIOSname#.###` at the prompt to start the BIOS update process. Reboot the system when you see the message that BIOS update has completed. Refer to [Appendix D](#) UEFI BIOS Recovery and/or the readme file for more information.

**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, please 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:

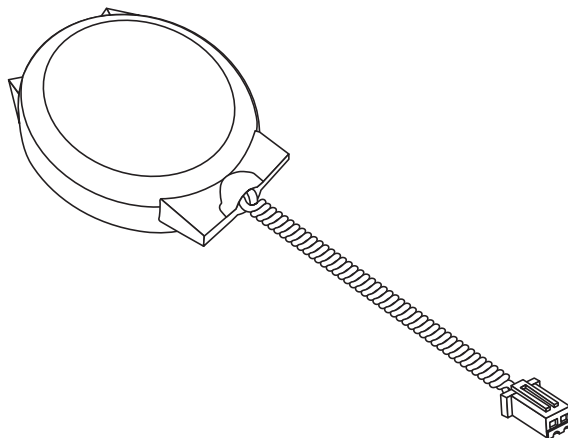
1. Power off your system and unplug your power cable(s).
2. Remove the battery cable from the BT1 header on the motherboard.
3. Remove the battery.

### Proper Battery Disposal

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

### Battery Installation

1. Power off your system and unplug your power cable(s).
2. Connect the battery cable into the battery header (BT1) and push it down until you hear a click to ensure that the cable is securely locked.
3. Use the foam tape on the back side of the battery to secure the battery to a flat surface on the top of LAN1 port. **DO NOT** place the battery on the heatsink.



### 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. Please refer to the Manual Download area of our website for any changes to the 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.

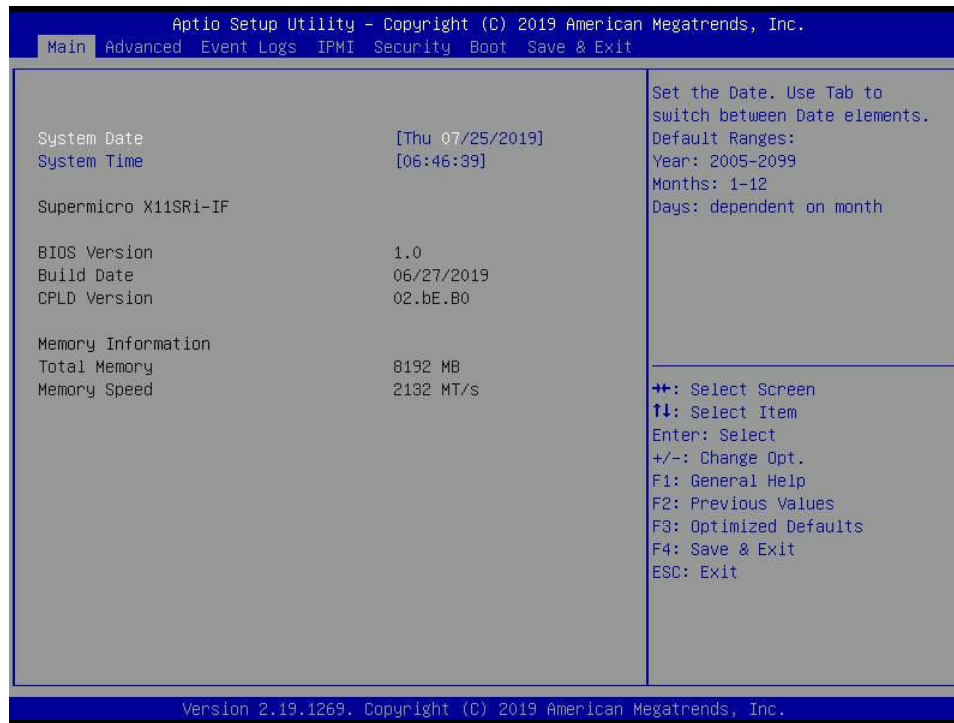
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that the 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 will open the list of settings within that submenu.

The BIOS Setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <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 will enter the Main setup screen. You can always return to this screen by selecting the Main tab at the top of the screen. The Main setup screen is shown below and the following features will 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. The date's default value is the BIOS build date after RTC reset.

## **Supermicro X11SRi-IF**

### **BIOS Version**

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

### **Build Date**

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

### **CPLD Version**

This feature displays the version of the CPLD (Complex-Programmable Logical Device) used in the system.

### **Memory Information**

#### **Total Memory**

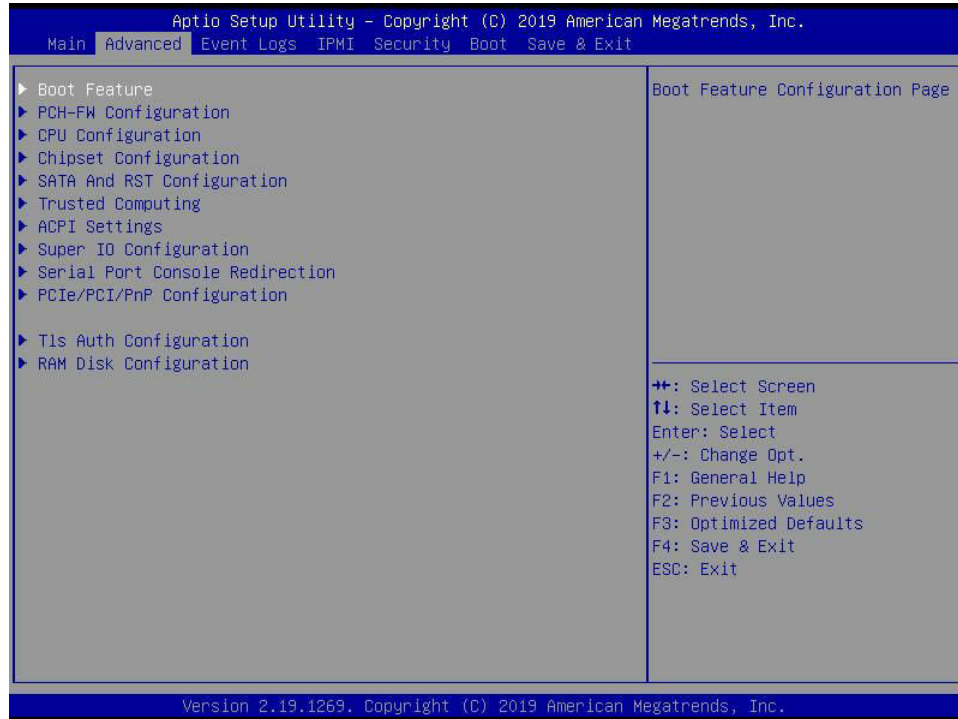
This feature displays the total size of memory available in the system.

#### **Memory Speed**

This feature displays the default speed of the memory modules installed in the system.

## 4.3 Advanced Setup Configurations

Use the arrow keys to select the Advanced menu and press <Enter> to access the submenu features:



**Warning:** Take caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency, or an incorrect DRAM timing setting may make the system unstable. When this occurs, revert to default manufacturer settings.

### ► Boot Feature

#### Boot Configuration

##### Fast Boot

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

##### Quiet Boot

Use this feature to select the screen between displaying POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.



**Note:** POST message is always displayed regardless of the item setting.

### **Bootup NumLock State**

Use this feature to set the Power-on state for the <Numlock> key. The options are **On** and Off.

### **Option ROM Messages**

This feature controls the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

### **INT19 Trap Response**

Interrupt 19 is the software interrupt that handles the boot disk function. When this feature is set to Immediate, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot up immediately and allow the drives that are attached to these host adaptors to function as bootable disks. If this feature is set to Postponed, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately and will allow the drives attached to these adaptors to function as bootable devices at boot up. The options are **Immediate** and Postponed.

### **Port 61h Bit-4 Emulation**

This feature enables port 61h bit-4 toggling in SMM. The options are **Disabled** and Enabled.

### **Wait For "F1" If Error**

Use this feature 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**, Legacy Boot, and EFI Boot.

### **Power Configuration**

#### **Watch Dog Function**

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

#### **Power Button Function**

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user 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 the user presses the power button. The options are **Instant Off** and 4 Seconds Override.



### **Restore on AC Power Loss**

Use this feature to set the power state after a power outage. Select Stay 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 Power On, **Stay Off**, and Last State.

### **►PCH-FW Configuration**

The following firmware information will display:

- ME Firmware Version
- ME Firmware Mode
- ME Firmware SKU
- ME File System Integrity Value
- ME Firmware Status 1
- ME Firmware Status 2

### **ME FW Image Re-Flash**

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

### **►CPU Configuration**

The following CPU information will display:

- Processor BSP Revision
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision

- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor 0 Version

### **Hyper-Threading (ALL) (Available when supported by the CPU)**

Select Enable to support Intel Hyper-threading Technology to enhance CPU performance. The options are Disable and **Enable**.

### **Max CPUID Value Limit**

This feature allows the user to set the maximum CPU ID value. Enable this function to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are **Disable** and Enable.

### **Execute Disable Bit (Available if supported by the OS & the CPU)**

Use this feature to enable the Execute Disable Bit, which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The options are Disable and **Enable**. (Refer to the Intel and Microsoft® websites for more information.)

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

Select Enable to support Intel Virtualization Technology, which will allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Disable and **Enable**.



**Note:** If a change is made to this setting, you will need to reboot the system for the change to take effect. Refer to Intel's website for detailed information.

### **PPIN Control**

Select Unlock/Enable to use the Protected Processor Inventory Number (PPIN) in the system. The options are Unlock/Disable and **Unlock/Enable**.

### **Hardware Prefetcher (Available when supported by the CPU)**

If set to Enable, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disable and **Enable**.

**Adjacent Cache Prefetch (Available when supported by the CPU)**

The CPU prefetches the cache line for 64 bytes if this feature is set to Disabled. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to Enable. The options are **Enable** and Disable.

**DCU Streamer Prefetcher (Available when supported by the CPU)**

Select Enable to enable the DCU (Data Cache Unit) Streamer Prefetcher, which will stream and prefetch data and send it to the Level 1 data cache to improve data processing and system performance. The options are **Enable** and Disable.

**DCU IP Prefetcher (Available when supported by the CPU)**

Select Enable for DCU (Data Cache Unit) IP Prefetcher support, which will prefetch IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

**LLC Prefetch**

If set to Enable, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L3 cache to improve CPU performance. The options are **Disable** and Enable.

**DCU Mode**

Use this feature to set the data prefetching mode. A write of "1" selects the DCU mode as 16KB 4-way with ECC. The options are **32KB 8Way Without ECC** and 16KB 4Way With ECC.

**Extended APIC**

Select Enable to activate Advanced Programmable Interrupt Controller (APIC) support. The options are **Disable** and Enable.

**AES-NI**

Select Enable to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are Disable and **Enable**.

**APIC Physical Mode**

Use this feature to enable the APIC physical destination mode. The options are **Disable** and Enable.

## ► Advanced Power Management Configuration

### ► CPU P State Control

This feature allows the user to configure the following CPU power settings:

#### **SpeedStep (Pstates)**

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

#### **EIST PSD Funtion**

This feature allows the user to choose between Hardware and Software to control the processor's frequency and performance (P-state). In HW\_ALL mode, the processor hardware is responsible for coordinating the P-state, and the OS is responsible for keeping the P-state request up to date on all Logical Processors. In SW\_ALL mode, the OS Power Manager is responsible for coordinating the P-state and must initiate the transition on all Logical Processors. In SW\_ANY mode, the OS Power Manager is responsible for coordinating the P-state and may initiate the transition on any Logical Processors. The options are **HW\_ALL**, SW\_ALL, and SW\_ANY.

#### **Turbo Mode**

This feature will enable dynamic control of the processor, allowing it to run above stock frequency. The options are Disable and **Enable**.

### ► Hardware PM State Control

#### **Hardware P-States**

This allows the user to select between OS and hardware-controlled P-states. Selecting Native Mode allows the OS to choose a P-state. Selecting Out of Band Mode allows the hardware to autonomously choose a P-state without OS guidance. Selecting Native Mode with No Legacy Support functions as Native Mode with no support for older hardware. The options are **Disable**, Native Mode, Out of Band Mode, and Native Mode with No Legacy Support.

### ► CPU C State Control

#### **Autonomous Core C-State**

Enabling this feature allows the hardware to autonomously choose to enter a C-state based on power consumption and clock speed. The options are **Disable** and Enable.

### **CPU C6 Report**

Select Enable to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all cache is turned off. The options are Disable, Enable, and **Auto**.

### **Enhanced Halt State (C1E)**

Select Enable to use Enhanced Halt State technology, which will significantly reduce the CPU's power consumption by reducing its clock cycle and voltage during a Halt state. The options are Disable and **Enable**.

### **► Package C State Control**

#### **Package C State**

This feature allows the user to set the limit on the C State package register. The options are C0/C1 State, C2 State, C6 (Non Retention) State, C6 (Retention) State, No Limit, and **Auto**.

### **► CPU T State Control**

#### **Software Controlled T-States**

Use this feature to enable Software Controlled T-States. The options are Disable and **Enable**.

### **► Chipset Configuration**

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

#### **► North Bridge**

This feature allows the user to configure the following North Bridge settings.

#### **► Memory Configuration**

##### **Enforce POR**

Select POR (Plan of Record) to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **POR** and Disable.

##### **Memory Frequency**

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1866, 2000, 2133, 2400, 2666, and 2933.

### **Custom Refresh Enable**

Use this feature to enable a custom memory controller refresh rate. The options are **Disable** and **Enable**.

### **MC BGF Threshold**

Use the HA to MC BGF threshold feature to schedule MC requests in bypass condition. The default value is **0**.

### **DLL Reset Test**

Use this feature to set the number of loops to execute the Dynamic Link Library (DLL) reset test. The test will execute the Rank Margin Test (RMT) for the provided number of loops without DLL resets. Then it will execute RMT for the same number of loops with DLL resets. The default value is **0**.

## **►Memory Topology**

This feature displays the information of onboard memory modules as detected by the BIOS.

## **►Memory RAS Configuration**

### **Static Virtual Lockstep Mode**

Select **Enable** to run the system's memory channels in lockstep mode to minimize memory access latency. The options are **Disable** and **Enable**.

### **Mirror Mode**

Select **Enable** to set all 1LM/2LM memory installed in the system on the mirror mode, which will create a duplicate copy of data stored in the memory to increase memory security, but it will reduce the memory capacity into half. The options are **Mirror Mode 1LM**, **Mirror Mode 2LM**, and **Disable**.

### **ADDDC Sparing**

Adaptive Double Device Data Correction (ADDDC) Sparing detects when the predetermined threshold for correctable errors is reached, copying the contents of the failing DIMM to spare memory. The failing DIMM or memory rank will then be disabled. The options are **Disable** and **Enable**.

### **Patrol Scrub**

Patrol Scrub is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this feature is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are Disable and **Enable**.

### **Patrol Scrub Interval**

This feature allows the user to decide how many hours the system should wait before the next complete patrol scrub is performed. Use the keyboard to enter a value from 0-24. The default setting is **24**.

### **Patrol Scrub Address Mode**

Use this feature to select the Patrol Scrub Address mode. The options are Reverse Address and **System Physical Address**.

## **► IIO Configuration**

### **IIO Configuration**

#### **EV DFX Features**

When this feature is set to Enable, the EV\_DFX Lock Bits that are located on a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

## **► CPU1 Configuration**

### **IOU0 (IIO PCIe Br1) / IOU2 (IIO PCIe Br3)**

This features configure the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

#### **► Socket 0 PcieBr0D00F0 - Port 0/DMI**

##### **Link Speed**

This feature configures the link speed of a PCI-E port specified by the user. The options are **Auto**, Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and Gen 3 (Generation 3) (8 GT/s).

##### **PCI-E Port Link Status**

This feature displays the current PCI-E Link Status.

### **PCI-E Port Link Max**

This feature displays the PCI-E Link maximum value.

### **PCI-E Port Link Speed**

This feature displays the current PCI-E Link Speed.

### **PCI-E Port Max (Maximum) Payload Size**

Select Auto for the system BIOS to automatically set the maximum payload value for a PCI-E device specified by to the user to enhance system performance. The options are **Auto**, 128B, and 256B.

### **►Socket 0 PcieBr0D00F0 - Port 1A/Socket 0 PcieBr0D00F0 - Port 3A**

#### **PCI-E Port**

Select Enable to enable the PCI-E port specified by the user. The options are **Auto**, Enable, and Disable.

#### **Link Speed**

This feature configures the link speed of a PCI-E port specified by the user. The options are **Auto**, Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and Gen 3 (Generation 3) (8 GT/s).

#### **PCI-E Port Link Status**

This feature displays the current PCI-E Link Status.

#### **PCI-E Port Link Max**

This feature displays the PCI-E Link maximum value.

#### **PCI-E Port Link Speed**

This feature displays the current PCI-E Link Speed.

#### **PCI-E Port Max (Maximum) Payload Size**

Select Auto for the system BIOS to automatically set the maximum payload value for a PCI-E device specified by to the user to enhance system performance. The options are **Auto**, 128B, and 256B.



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## ► IOAT Configuration

### Disable TPH

Transparent Huge Pages (TPH) is a Linux memory management system that enables communication in larger blocks (pages). Enabling this feature will increase performance. The options are **No** and **Yes**.

### Prioritize TPH

Use this feature to enable Prioritize TPH support. The options are **Enable** and **Disable**.

### Relaxed Ordering

Select **Enable** to enable Relaxed Ordering support, which will allow certain transactions to violate the strict-ordering rules of PCI bus for a transaction to be completed prior to other transactions that have already been enqueued. The options are **Disable** and **Enable**.

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

### Intel® VT for Directed I/O (VT-d)

Select **Enable** to use Intel Virtualization Technology for Direct I/O VT-d support by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI tables. This feature offers fully protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data sharing. The options are **Enable** and **Disable**.

### Interrupt Remapping

Use this feature to enable Interrupt Remapping support, which detects and controls external interrupt requests. The options are **Enable** and **Disable**.

### PassThrough DMA

Use this feature to allow devices such as network cards to access the system memory without using a processor. Select **Enable** to use the Non-Isoch VT\_D Engine Pass Through Direct Memory Access (DMA) support. The options are **Enable** and **Disable**.

### ATS

Use this feature to enable Non-Isoch VT-d Engine Address Translation Services (ATS) support. ATS translates virtual addresses to physical addresses. The options are **Enable** and **Disable**.

### **Posted Interrupt**

Use this feature to enable VT\_D Posted Interrupt. The options are **Enable** and Disable.

### **Coherency Support (Non-Isoch)**

Use this feature to maintain setting coherency between processors or other devices. Select Enable for the Non-Isoch VT-d engine to pass through DMA to enhance system performance. The options are **Enable** and Disable.

## **► Intel® VMD Technology**

### **► Intel® VMD for Volume Management Device on CPU1**

#### **VMD Config for PStack0**

##### **Intel® VMD for Volume Management Device for PStack0**

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

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

##### **VMD Port 1A/1B/1C/1D (Available when the device is detected by the system)**

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

##### **Hot Plug Capable (Available when the device is detected by the system)**

Use this feature to enable hot plug support for PCIe root ports 1A~1D. The options are **Disable** and Enable.

## **IIO-PCIE Express Global Options**

### **PCIe Hot Plug**

This feature enables or disables PCIe Hot Plug globally. The options are **Enable** and Disable.

### **PCI-E Completion Timeout Disable**

Use this feature to enable PCI-E Completion Timeout support for electric tuning. The options are **Yes**, No, and Per-Port.

### **PCI-E Completion Timeout Disable**

Use this feature to enable PCI-E Completion Timeout support for electric tuning. The options are Yes, **No**, and Per-Port.

## **► South Bridge**

The following USB information will display:

- USB Module Version
- USB Devices

### **Legacy USB Support**

This feature enables support for USB 2.0 and older. The options are **Enabled**, Disabled, and Auto.

### **XHCI Hand-off**

When this feature is disabled, the motherboard will not support USB 3.0. The options are **Enabled** and Disabled.

### **Port 60/64 Emulation**

This feature allows legacy I/O support for USB devices like mice and keyboards. The options are Enabled and **Disabled**.

## **► SATA and RST Configuration**

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chipset and displays the following features:

### **SATA Controller(s)**

This feature enables or disables the onboard SATA controller supported by the Intel PCH chipset. The options are **Enabled** and Disabled.

### **Aggressive Link Power Management**

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

### **Serial ATA Port 0~3**

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

- Software Preserve Support

### **Port 0~3 Hot Plug**

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

### **Port 0~3 Spin Up Device**

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

### **Port 0~3 SATA Device Type**

Use this feature to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

## **► Trusted Computing (Available when a TPM device is installed and detected by the BIOS)**

When a TPM (Trusted-Platform Module) device is detected in your machine, the following information will be displayed.

- Vendor Name
- Firmware Version

### **Security Device Support**

If this feature and the TPM jumper (JTPM1) on the motherboard are both enabled, the onboard security (TPM) device will be enabled in the BIOS to enhance data integrity and system security. Please note that the OS will not show the security device. Neither TCG EFI protocol nor INT1A interaction will be made available for use. If you have made changes on the setting on this feature, be sure to reboot the system for the change to take effect. The options are Disable and **Enable**.

## **► ACPI Settings**

### **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 to reduce system crashes and to enhance system recovery and health monitoring. The options are Disabled and **Enabled**.

### High Precision Event Timer

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

### Native PCIE Enable

Use this feature to enable PCI-E Native Hot Plug/Power Management Events controls. The options are Disabled and **Enabled**.

### Native ASPM

Use this feature to select which system will control the Active State Power Management (ASPM). Select Enabled for OS-controlled ASPM. Select Disabled for BIOS-controlled ASPM. The options are **Auto**, Enabled, and Disabled.

### Numa

This setting enables or disables Non-Uniform Memory Access (NUMA), a feature that improves memory-to-processor communication and performance. The options are **Disabled** and Enabled.

## ► Super IO Configuration

The following Super IO information will display:

- Super IO Chip AST2500

### ► Serial Port 1 Configuration

This submenu allows the user to configure the settings of Serial Port 1.

#### Serial Port 1

Select Enabled to enable the selected onboard serial port. The options are Disabled and **Enabled**.

#### Device Settings

This feature displays the status of a serial part specified by the user.

#### Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4;), (IO=2F8h; IRQ=4;), (IO=3E8h; IRQ=4;), and (IO=2E8h; IRQ=4;).

## ► Serial Port 2 Configuration

This submenu allows the user to configure the settings of Serial Port 2.

### Serial Port 2

Select Enabled to enable the selected onboard serial port. The options are Disabled and Enabled.

### Device Settings

This feature displays the status of a serial port specified by the user.

### Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options for Serial Port 2 are **Auto**, (IO=3F8h; IRQ=3;), (IO=2F8h; IRQ=3;), (IO=3F8h; IRQ=3;), and (IO=2E8h; IRQ=3;).

### Serial Port 2 Attribute

Select SOL to use COM Port 2 as a Serial Over LAN (SOL) port for console redirection. The options are **SOL** and COM.

## ► Serial Port Console Redirection

### COM1

#### Console Redirection

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

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

#### ► Console Redirection Settings

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

#### Terminal Type

This feature allows the user 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 Bits and **8 Bits**.

**Parity**

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 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**

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

**Recorder Mode**

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

**Resolution 100x31**

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

**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**.

### **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, SC0, ESCN, and VT400.

### **Redirection After BIOS POST**

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

## **COM2/SOL**

### **Console Redirection**

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

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

#### **► Console Redirection Settings**

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

#### **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 ANSI, VT100, **VT100+**, and VT-UTF8.

#### **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 Bits and **8 Bits**.



### Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 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

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

### Recorder Mode

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

### Resolution 100x31

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

### 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.

### Putty KeyPad

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

### Redirection After BIOS POST

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

## Legacy Console Redirection

### ► Legacy Console Redirection Settings

#### Legacy Serial Redirection Port

Use this feature to select a COM port to display redirection of Legacy OS and Legacy OPRM messages. The options are **COM1** and COM2/SOL.

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

##### Console Redirection

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

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

### ► Console Redirection Settings

This feature allows the user to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

#### Out-of-Band Mgmt Port

The 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** and COM2/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, VT100+, **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.

### Data Bits, Parity, Stop Bits

## ► PCIe/PCI/PnP Configuration

The following information will display:

- PCI Bus Driver Version
- PCI Devices Common Settings

### SR-IOV Support

Use this feature to enable or disable Single Root IO Virtualization support. The options are **Disabled** and Enabled.

### MMCFG Size

Use this feature to select the MMCFG size. The options are 64M, 128M, **256M**, 512M, 1G, and 2G.

### MMIO High Base

Use this feature to select the base memory size according to memory-address mapping for the IO hub. The options are **56T**, 40T, 24T, 16T, 4T, and 1T.

### MMIO High Granularity Size

Use this feature to select the high memory size according to memory-address mapping for the IO hub. The options are 1G, 4G, 16G, 64G, 256G, and **1024G**.

### Above 4G Decoding (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Disabled and **Enabled**.

### VGA Priority

Use this feature to select the graphics device to be used as the primary video display for system boot. The options are **Auto**, Onboard, and Offboard.

### PCH Oculink Port Device Selection

Use this feature to select the PCH OCuLink port device. The options are **SATA** and NVMe.

### **Onboard Video**

Use this feature to select the Onboard Video Option ROM type. The options are Do not launch, EFI, and **Legacy**.

### **Onboard Storage**

Use this feature to select the Onboard Storage ROM type. The options are Do not launch, EFI, and **Legacy**.

### **CPU1 Onboard NVME OPROM**

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

### **CPU1 Slot 1 PCI-E X16 OPROM**

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

### **Onboard LAN 1 Option ROM**

Use this feature to select which firmware type to be loaded for onboard LAN ports. The options are Disabled, EFI, and **Legacy**.

### **Onboard LAN 2 Option ROM**

Use this feature to select which firmware type to be loaded for onboard LAN ports. The options are **Disabled**, EFI, and Legacy.

## **► Network Stack Configuration**

### **Network Stack**

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

### **Ipv4 PXE Support**

Select Enabled to enable IPv4 PXE boot support. The options are Disabled and **Enabled**.

### **Ipv4 HTTP Support**

Select Enabled to enable IPv4 HTTP boot support. The options are **Disabled** and Enabled.

### **Ipv6 PXE Support**

Select Enabled to enable IPv6 PXE boot support. The options are Disabled and **Enabled**.

### **Ipv6 HTTP Support**

Select Enabled to enable IPv6 HTTP boot support. The options are **Disabled** and Enabled.

**PXE Boot Wait Time**

Use this feature to specify the wait time to press the ESC key to abort the PXE boot. Press "+" or "-" on your keyboard to change the value. The default setting is **0**.

**Media Detect Count**

Use this feature to specify the number of times media will be checked. Press "+" or "-" on your keyboard to change the value. The default setting is **1**.

**► TLS Auth Configuration**

When this submenu is selected, the following features will become available for user's configuration.

**► Server CA Configuration****► Enroll Cert (Certification)**

This feature allows the user to enroll the certificate in the system.

**► Enroll Cert (Certification) Using File**

This feature allows the user to enroll the security certificate in the system by using a file.

**Cert (Certification) GUID (Global Unique Identifier)**

This feature displays the GUID for this system.

**► Commit Changes and Exit**

Select this feature to keep the changes you have made and exit from the system.

**► Discard Changes and Exit**

Select this feature to discard the changes you have made and exit from the system.

**► Delete Cert**

Use this feature to delete certification.

## ▶RAM Disk Configuration

This feature allows the user to configure the settings for the RAM disks installed in the system.

### Disk Memory Type

This feature specifies the type of memory that is available for you to create a RAM disk. The options are **Boot Service Data** and **Reserved**.

### ▶Create Raw

This feature allows the user to create a raw RAM disk from all available memory modules in the system.

#### Size (Hex):

Use this feature to set the size of the raw RAM disk. The default setting is **1**.

#### Create & Exit

Select this feature when you want to exit from this submenu after you've created a raw RAM disk.

#### Discard & Exit

Select this feature when you want to abandon the changes you've made and to exit from the submenu

### ▶Create from File

This feature allows the user to create a RAM disk from a file specified by the user.

#### Create RAM Disk List

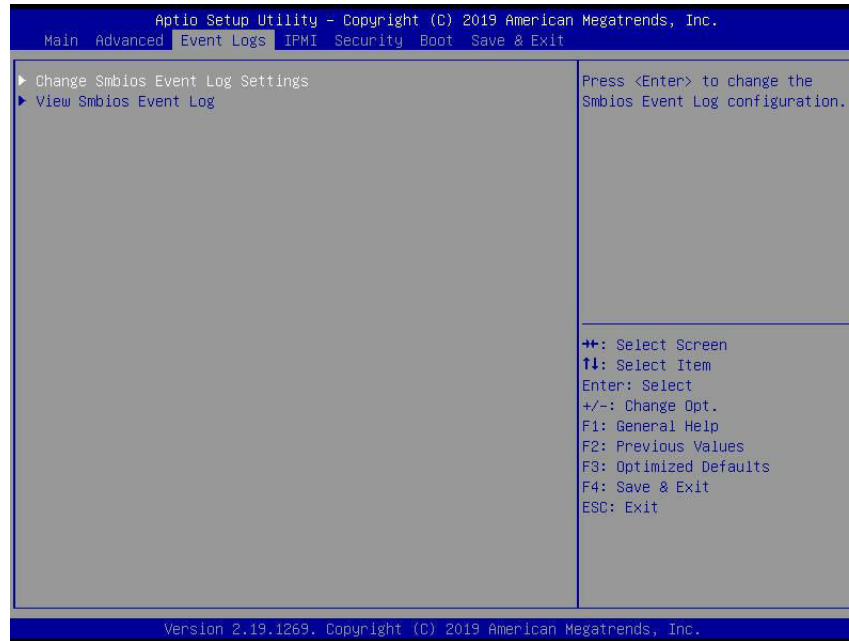
Use this feature to create a RAM disk list.

#### Remove Selected RAM Disk(s)

Use this feature to delete the RAM disk(s) specified by the user.

## 4.4 Event Logs

Use this feature to configure Event Log settings.



### ► Change SMBIOS Event Log Settings



**Note:** After making changes on a setting, be sure to reboot the system for the changes to take effect.

#### 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 MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.

### **Custom Options**

#### **Log EFI Status code**

Select Enabled to log EFI Status Codes as OEM Codes. The options are Disabled and **Enabled**.

#### **Convert EFI Status Codes to Standard SMBIOS Type**

Select Enabled to convert EFI Status Codes to that of standard SMBIOS Type. The options are **Disabled** and Enabled.

### **►View SMBIOS Event Log**

Select this submenu and press enter to see the contents of the SMBIOS event log. The following categories will be displayed: Date/Time/Error Code/Severity.



## 4.5 IPMI

Use this feature to configure Intelligent Platform Management Interface (IPMI) settings.



### IPMI 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



**Note:** After making changes on a setting, be sure to reboot the system for the changes to take effect.

### Enabling/Disabling Options

#### SEL Components

Select Enabled for all system event logging at bootup. The options are Disabled and **Enabled**.

#### Erasing Settings

##### Erase SEL

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

This feature allows the user 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.

### Custom EFI Logging Options

#### Log EFI Status Codes

Use this feature to select how EFI status codes are logged. The options are Disabled, Both, **Error code**, and Progress code.

### ►BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection: This feature displays the IPMI LAN setting. The default setting is **Failover**.
- IPMI Network Link Status: This feature displays the IPMI Network Link status. The default setting is **Shared LAN**.
- Station MAC Address: This feature displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.
- VLAN: This feature displays the status of VLAN support. The default setting is **Disabled**.
- IPv4 Address Source: This feature displays the source of IPv4 addresses. The default setting is **DHCP**.
- 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.
- 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., 192.168.10.253).
- IPv6 Address Status: This feature displays the IPv6 address status. The default setting is **Disabled**.
- Station IPv6 Address: This feature displays the station IPv6 address.
- Prefix Length: This item displays the prefix length.
- IPv6 Router IP Address: This feature displays the IPv6 router IP address.

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

### IPMI LAN Selection

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

### VLAN

Select **Enabled** to enable IPMI VLAN function support. The default setting is **Disabled**.

### VLAN (Available when VLAN above is set to Enabled)

Specifies the VLAN ID (Identifier) for which the access list has to be applied. This value ranges between 0 and 4093. The default setting is **0**.

## Configure IPV4 Support

### Configuration Address Source

This feature allows the user 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 DHCP (Dynamic Host Configuration Protocol) 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 feature above is set to Static, the following features will become available for configuration:***

### Station MAC Address

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

### 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.

### 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).

### **Configure IPV6 Support**

Use this feature to display configuration settings for 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 the user to select the source of the IP address for this computer. If **Static** is selected, the user 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 DHCP (Dynamic Host Configuration Protocol) server in the network that it is attached to and request the next available IP address for this computer. If **Unspecified** is selected, the BMC network parameters will not be modified during the BIOS phase. The options are **Unspecified**, **Static**, and **DHCP**.

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

### **Station IPV6 Address**

Use this feature to enter the IPv6 address.

### **Prefix Length**

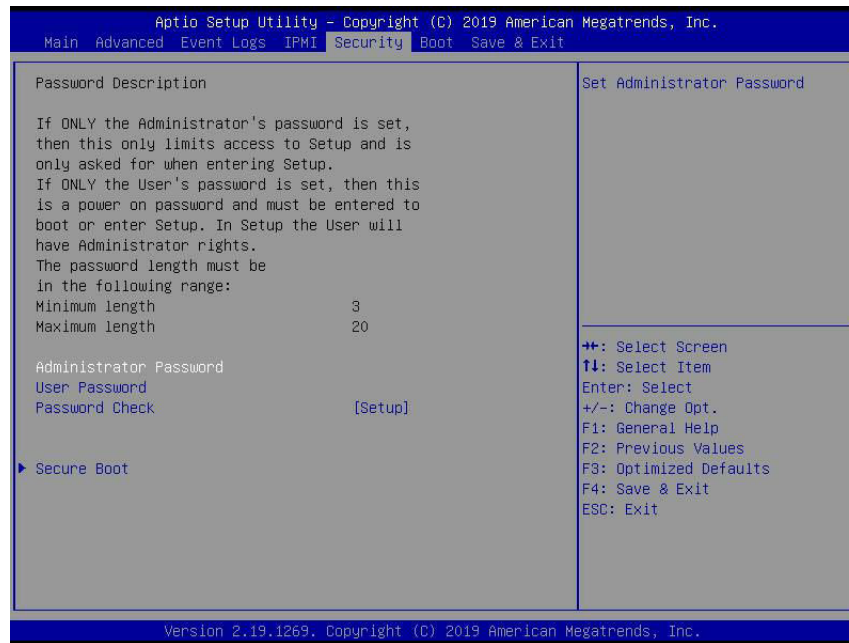
Use this feature to change the prefix length.

### **IPV6 Router IP Address**

Use this feature to change the IPv6 Router1 IP address.

## 4.6 Security

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



### Administrator Password

Press <Enter> to create a new or change an existing Administrator Password.

### User Password

Press <Enter> to create a new or change an existing User Password.

### Password Check

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

### ▶ Secure Boot

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

- System Mode
- Vendor Keys

### Secure Boot Enable

Use this feature to enable secure boot. The options are **Disabled** and **Enabled**.

## Secure Boot Mode

Use this feature to configure Secure Boot variables without authentication. The options are Standard and **Custom**.

### ▶ Restore Factory Keys

Use this feature to reset the content of all UEFI Secure Boot key databases to their manufacturer default values. The options are **Yes** and No.

### ▶ Reset to Setup Mode

Use this feature to delete the content of all UEFI Secure Boot key databases. This will put the system in Setup mode. The options are **Yes** and No.

### ▶ Key Management

This submenu allows the user to configure the following Key Management settings.

#### Provision Factory Defaults

Select Enabled to install the default Secure Boot keys set by the manufacturer. The options are **Disabled** and Enabled.

##### ▶ Restore Factory Keys

Select Yes to restore all factory keys to the default settings. The options are **Yes** and No.

##### ▶ Reset to Setup Mode

Select Yes to delete all Secure Boot key databases and force the system to Setup Mode. The options are **Yes** and No.

##### ▶ Export Secure Boot variables

Use this feature to copy the NVRAM contents of the secure boot variables to a file.

##### ▶ Enroll Efi Image

This feature allows the image to run in Secure Boot mode.

#### Device Guard Ready

##### ▶ Remove 'UEFI CA' from DB

Use this feature to remove the Microsoft UEFI CA certificate from the database. The options are **Yes** and No.

**►Restore DB defaults**

Select Yes to restore all DBs to the default settings. The options are **Yes** and No.

**Secure Boot Variable****►Platform Key (PK)**

This feature allows the user to enter and configure a set of values to be used as Platform Key for the system. The size, keys, and key source of the platform key will be indicated as well. Select Update to update the platform key.

**►Key Exchange Keys**

This feature allows the user to enter and configure a set of values to be used as Key Exchange Keys for the system. The size, keys, and key source of the Key Exchange Keys will be indicated as well. Select Update to update your "Key Exchange Keys". Select Append to append your "Key Exchange Keys". The settings are **Update** and Append.

**►Authorized Signatures**

This feature allows the user to enter and configure a set of values to be used as Authorized Signatures for the system. These values also indicate the size, keys, and the source of the authorized signatures. Select Update to update your "Authorized Signatures". Select Append to append your "Authorized Signatures". The settings are **Update** and Append.

**►Forbidden Signatures**

This feature allows the user to enter and configure a set of values to be used as Forbidden Signatures for the system. These values also indicate size, keys, and key source of the forbidden signatures. Select Update to update your "Forbidden Signatures". Select Append to append your "Forbidden Signatures". The settings are **Update** and Append.

**►Authorized TimeStamps**

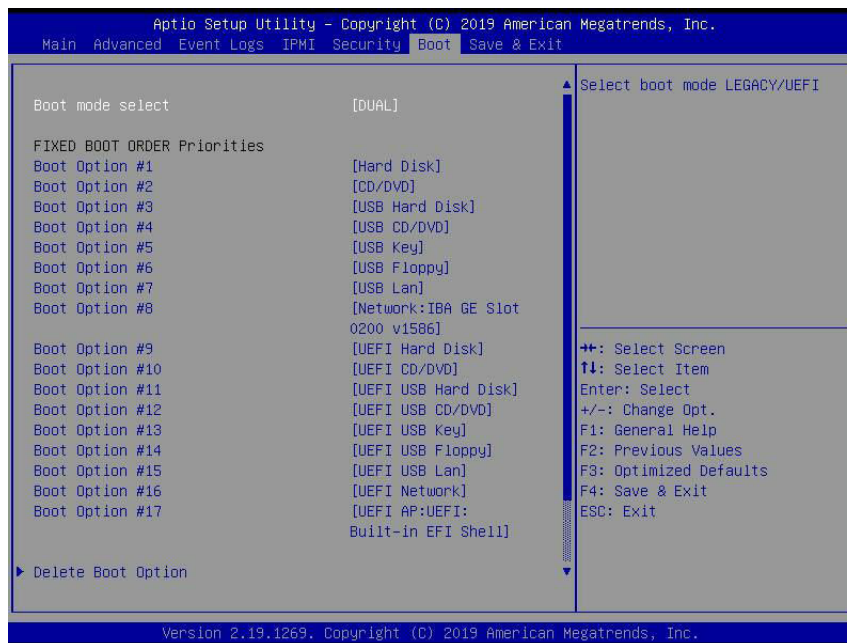
This feature allows the user to set and save the timestamps for the authorized signatures which will indicate the time when these signatures are entered into the system. Select Update to update your "Authorized TimeStamps". Select Append to append your "Authorized TimeStamps". The settings are **Update** and Append.

**►OsRecovery Signatures**

This feature allows the user to set and save the authorized signatures used for OS recovery. Select Update to update your "OS Recovery Signatures". Select Append to append your "OS Recovery Signatures". The settings are **Update** and Append.

## 4.7 Boot

Use this feature to configure Boot settings.



### Boot Mode Select

Use this feature to select the type of device that the system is going to boot from. The options are Legacy, UEFI, and **Dual**.

### 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.

When the feature above -"Boot Mode Select" is set to Legacy, the following features will be displayed for configuration:

- Boot Option #1 - Boot Option #8

When the feature above -"Boot Mode Select" is set to UEFI, the following features will be displayed for configuration:

- Boot Option #1 - Boot Option #9

When the feature above -"Boot Mode Select" is set to **Dual** (default), the following features will be displayed for user's configuration:

- Boot Option #1 - Boot Option #17



### ► Delete Boot Option

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

#### Delete Boot Option

Use this feature to remove an EFI boot option from the boot priority list. The options are **Select one to Delete** and UEFI: Built-in EFI Shell.

### ► Delete Driver Option

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

#### Delete Drive Option

Select the target boot driver to delete from the boot priority list.

### ► UEFI Application Boot Priorities

This feature allows the user to specify which UEFI devices are boot devices.

- Boot Option #1

### ► Network Drive BBS Priorities

This feature allows the user to specify which Network devices are boot devices.

- Boot Option #1
- Boot Option #2

## 4.8 Save & Exit

Select the Save & Exit tab from the BIOS setup screen to configure the settings below:



### Save Options

#### Discard Changes and Exit

Select this option to exit from 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 option to leave the BIOS Setup utility and reboot the computer for the new system configuration parameters to become effective.

#### Save Changes

When you have completed the system configuration changes, select this option to save all changes made. This will not reset (reboot) the system.

#### Discard Changes

Select this option and press <Enter> to discard all the changes you've made and return to the AMI BIOS Setup utility.

## **Default Options**

### **Restore Optimized Defaults**

To set this feature, select Restore Optimized Defaults from the Save & Exit menu and press <Enter> to load manufacturer default settings which are intended for maximum system performance but not for maximum stability.

### **Save As User Defaults**

To set this feature, select Save as User Defaults from the Save & Exit menu and press <Enter>. This enables the user to save all changes to the BIOS setup for future use.

### **Restore User Defaults**

To set this feature, select Restore User Defaults from the Save & Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

### **Boot Override**

This feature allows the user to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified by the user instead of the one specified in the boot list. This is an one-time override.

## Appendix A

### BIOS Codes

#### A.1 BIOS Error POST (Beep) Codes

During the POST (Power-On Self-Test) 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.supermicro.com/support/manuals/> ("AMI BIOS POST Codes User's Guide").

When BIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, a diagnostic card can be attached to the computer to read I/O port 0080h (Supermicro p/n AOC-LPC80-20).

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

## Appendix B

### Software


#### B.1 Installing Software Programs

The Supermicro website that contains drivers and utilities for your system is at <https://www.supermicro.com/wftp/driver/>. Some of these must be installed, such as the chipset driver.

After accessing the website, go into the CDR\_Images directory and locate the ISO file for your motherboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure B-1 should appear.

Another option is to go to the Supermicro website at <http://www.supermicro.com/products/>. Find the product page for your motherboard here, where you may download individual drivers and utilities to your hard drive or a USB flash drive and install from there.

 **Note:** To install the Windows OS, please refer to the instructions posted on our website at <http://www.supermicro.com/support/manuals/>.

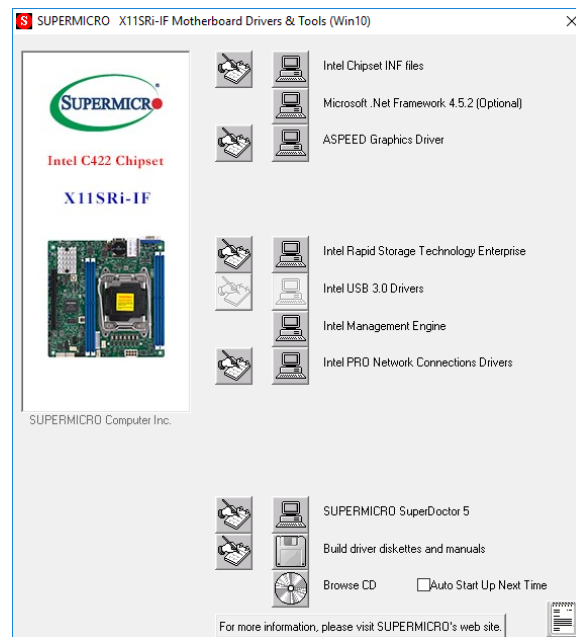


Figure B-1. Driver/Tool Installation Display Screen

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

## B.2 SuperDoctor<sup>®</sup> 5

The Supermicro SuperDoctor 5 is a hardware monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such 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. SD5 Management Server monitors HTTP and SMTP services to optimize the efficiency of your operation.



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

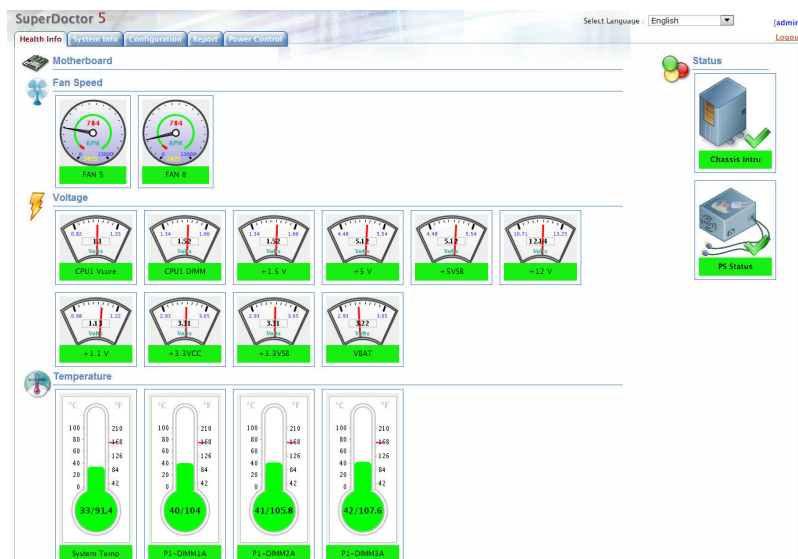


Figure B-2. SuperDoctor 5 Interface Display Screen (Health Information)



**Note:** The SuperDoctor 5 program and user's manual can be downloaded from the Supermicro website at [http://www.supermicro.com/products/nfo/sms\\_sd5.cfm](http://www.supermicro.com/products/nfo/sms_sd5.cfm).

## B.3 IPMI

The X11SRi-IF 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.

Starting in 2020, Supermicro ships standard products with a unique password that can be found on a label on the motherboard. For products shipped before 2020, the manufacturer default username is ADMIN and the password is ADMIN. For general documentation and information on IPMI, please visit our website at: [https://www.supermicro.com/en/support/BMC\\_Unique\\_Password](https://www.supermicro.com/en/support/BMC_Unique_Password).



## 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 המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة فعلياً  
اسبدال البطارية  
فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة  
جخلص من البطاريات المسحمة وفقاً لتعليمات 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 ontploffingsgevaar 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 external storage device 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 the user to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is turned on, the recovery block codes execute first. Once this process is complete, the main BIOS code will continue with system initialization and the remaining POST (Power-On Self-Test) routines.



**Note 1:** Follow the BIOS recovery instructions in [Section D.3](#) for BIOS recovery when the main BIOS block crashes.

**Note 2:** If the recovery instructions in [Section D.3](#) for BIOS recovery fail, 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.


**Note 3:** If the recovery block processes stated in Note 1 and Note 2 above fail, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. Refer to [Section 3.5](#) for more information about the RMA request.

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

This feature allows the user to recover the main BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or a USB CD/DVD ROM/RW device 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.

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

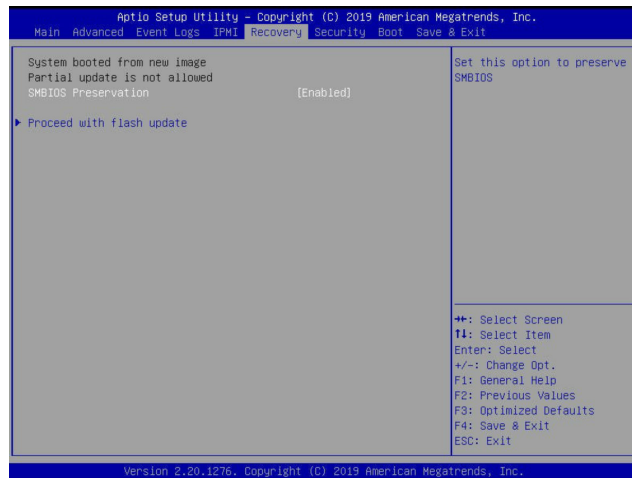
1. Please use a different machine to download the BIOS package for your motherboard or your system from the product page available on our website at [www.supermicro.com](http://www.supermicro.com).
2. Extract the BIOS package to a USB device and rename the BIOS ROM file [BIOSname#.###] that is included in the BIOS package to SUPER.ROM for BIOS recovery use.
3. Copy the SUPER.ROM file into the Root "\\" directory of the USB device.

 **Note:** Before recovering the main BIOS image, confirm that the SUPER.ROM file you have is the same version or a close version meant for your motherboard.

4. Insert the USB device that contains the SUPER.ROM file into the system before you power on the system or when the following screen appears.



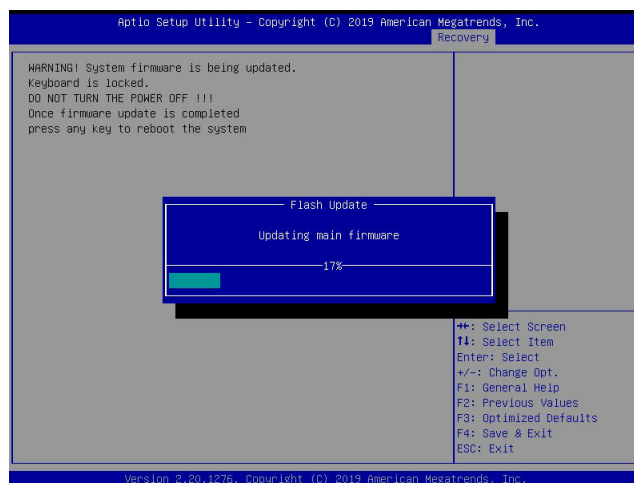
- After locating the SUPER.ROM file, the system will enter the BIOS Recovery menu as shown below.



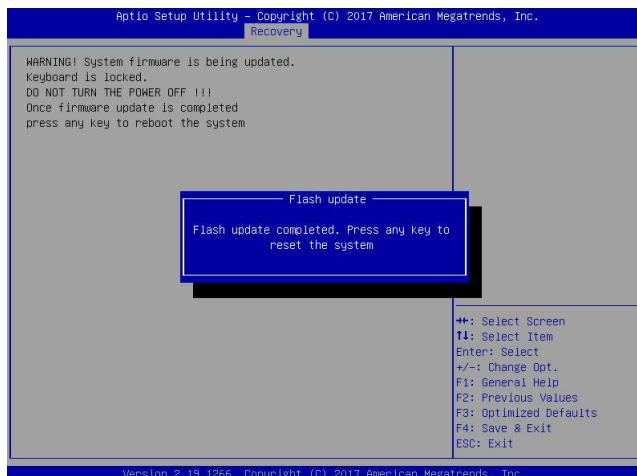
**Note:** At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.


- 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 is complete.

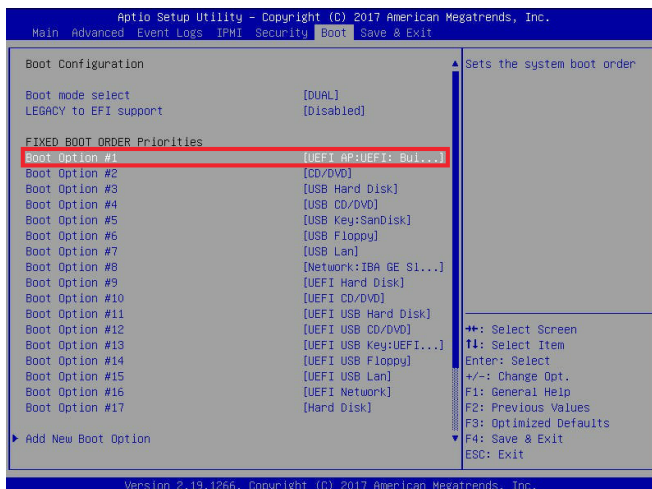


7. After the BIOS recovery process is complete, press any key to reboot the system.




 **Note:** It is recommended that you update your BIOS after BIOS recovery. Please refer to [Chapter 3](#) for BIOS update instructions.

8. 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.



- 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 2](#). 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
  FSO: Alias(s):HD0:0b:1:BLK1:
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x37901072,0x800,0x1
CRBS92)
  BLK0: Alias(s):
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press ESC in 1 seconds to skip startup.nsh or any other key to continue.
Shell: FSO
FS0:\> cd \EFI\BOOT
FS0:\EFI\BOOT> cd S\BIOS\ME2_03162017
FS0:\EFI\BOOT\S\BIOS\ME2_03162017> flash.nsh X11DPU7.314
```

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

```
Done.
[ Access Cmos Port Ex ]
Read:
Index 0x51: 0x18

Done.
*****
* Program BIOS and ME (including FDT) regions...
*****
-----
      AMI Firmware Update Utility v5.09.01.1917
      Copyright (C)2017 American Megatrends Inc. All Rights Reserved.
-----
CPUID = 50652

Reading Flash ..... done
- ME Data Size checking . ok
- FFS Checksums ..... OK
- Check Rom output ..... OK
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... 0x0152000 (0%)
```

- The screen above indicates that the BIOS update process has completed. Reboot the system when you see the screen below.

```
Verifying MBR Block ..... done
- Update success for FDS
- Update success for IE. -
- Successful Update Recovery Loader to GPRX!!
- Successful Update MFSB!!
- Successful Update FIPR!!
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FLOG and UTDK!!
- ME Entice Image update success !!!
WARNING * System must power-off to have the changes take effect!
Moving FSO:\EFI\BOOT\S\BIOS\ME2_03162017\dt\dtx64.efi -> FSO:\EFI\BOOT\S\BIOS\ME2_03162017\
dt.smc
- [ok]
Moving FSO:\EFI\BOOT\S\BIOS\ME2_03162017\afuef1x64.efi -> FSO:\EFI\BOOT\S\BIOS\ME2_0316201
7\afuef1.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:\>
```