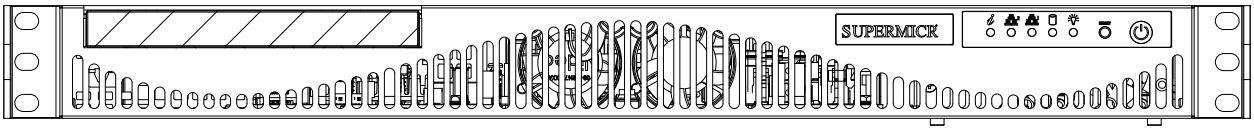
# SUPERSERVER
# 5019C-M4L



## USER'S MANUAL

Revision 1.0a

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Manual Revision 1.0a

Release Date: October 28, 2019 mk

# Preface

## About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of this server. Installation and maintenance should be performed by experienced technicians only.

Please refer to the 5019C-M4L server specifications page on our website for updates on supported memory, processors and operating systems (http://www.supermicro.com).

## Notes

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
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm

If you have any questions, please contact our support team at:
support@supermicro.com

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

## Warnings

Special attention should be given to the following symbols used in this manual.

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

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

# Contents

***Chapter 6 BIOS***

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# Chapter 1

# Introduction

## 1.1 Overview

This chapter provides a brief outline of the functions and features of the 5019C-M4L server. It is based on the X11SCL-LN4F motherboard and the SC512F-350B1 chassis.

In addition to the motherboard and chassis, several important parts that are included with the system are listed below.

| Main Parts List | | |
|---|---|---|
| **Description** | **Part Number** | **Quantity** |
| Power supply module | PWS-350-1H | 1 |
| Fans | FAN-0087L4 | 2 |
| Air Shroud | MCP-310-50504-0B | 1 |
| Heatsink | SNK-P0049P | 1 |
| Riser Card | RSC-RR1U-E16 | 1 |

## 1.2 Unpacking the System

Inspect the box in which the system was shipped, and note if it was damaged. If any equipment appears damaged, file a claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. It will also require a grounded AC power outlet nearby. Be sure to read the precautions and considerations noted in Appendix B.

## 1.3 System Features

The following table is an overview of the main features of the 5019C-M4L server.

| System Features |
|---|
| **Motherboard** |
| X11SCL-LN4F |
| **Chassis** |
| SC512F-350B1 |
| **CPU** |
| Intel Xeon E-2200/2100, 9th/8th Generation Core i3, Pentium, or Celeron (in Socket H4 - LGA 1151) with a thermal design power (TDP) of up to 95W and six cores |
| **Memory** |
| Up to 128 GB of unbuffered (UDIMM) DDR4 (288-pin) ECC memory with speeds of up to 2666MHz in four memory slots |
| **Chipset** |
| Intel C242 |
| **Expansion Slots** |
| One PCI-Express 3.0 x16 |
| **Storage Drives** |
| Internal SATA drives: up to two 3.5" or up to three 2.5"<br>One M.2 slot for PCI-Express 3.0 x4 (Supports M-Key 2280 / 22110 and Intel Optane Memory) |
| **Power** |
| 350 W redundant 80Plus Platinum level modules |
| **Cooling** |
| Two 4-cm counter-rotating fans, CPU heatsink, air shroud to direct air flow |
| **Input/Output** |
| USB: Two USB 2.0 ports, two USB 3.1 Gen 1 ports on the rear I/O panel<br>One serial header; one VGA port |
| **LAN ports** |
| Four 1GbE BASE-T ports (Intel i210)<br>One dedicated IPMI port |
| **Form Factor** |
| 1U rackmount; (WxHxD) 17.2 x 1.7 x 14.5 in. (437 x 43 x 369 mm) |

# 1.4 Chassis Features

## Control Panel

Power switches and status LEDs are located on the control panel on the front of the chassis.

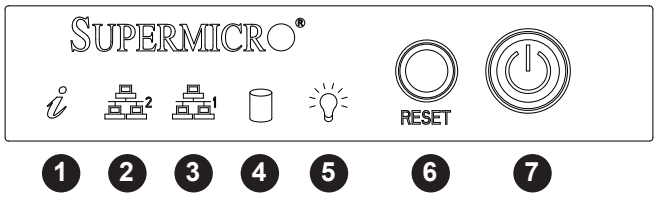



**Figure 1-1. Control Panel**

| Control Panel Features | | |
|---|---|---|
| **Item** | **Features** | **Description** |
| 1 | Information LED | Alerts operator to several states, as noted in the table below |
| 2 | NIC2 LED | Indicates network activity on LAN port 2 when flashing |
| 3 | NIC1 LED | Indicates network activity on LAN port 1 when flashing |
| 4 | HDD LED | Indicates hard drive activity when flashing |
| 5 | Power LED | Indicates power is being supplied to the system power supply; illuminated when the system is operating normally |
| 6 | Reset Button | Reboots the system |
| 7 | Power Button | Applies or removes power from the power supply to the server; standby power is maintained |

| Information LED | |
|---|---|
| **Status** | **Description** |
| Continuously on and red | An overheat condition has occurred. (This may be caused by cable congestion.) |
| Blinking red (1Hz) | Fan failure, check for an inoperative fan. |
| Blinking red (0.25Hz) | Power failure, check for a non-operational power supply. |
| Solid blue | UID has been activated locally to locate the server in a rack environment. |
| Blinking blue | UID has been activated using IPMI to locate the server in a rack environment. |

## Front Features

The illustration below shows the features included on the front of the chassis.

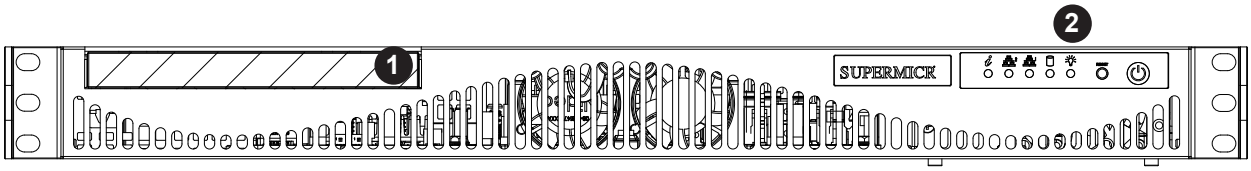



**Figure 1-2. Chassis Front View**

| Front Chassis Features | | |
|---|---|---|
| **Item** | **Feature** | **Description** |
| 1 | DVD | Optional DVD drive |
| 2 | Control Panel | Front control panel with LEDs and buttons (see preceding page) |

## Chassis Rear

The illustration below shows the features included on the rear of the chassis. Power supply modules display status lights.

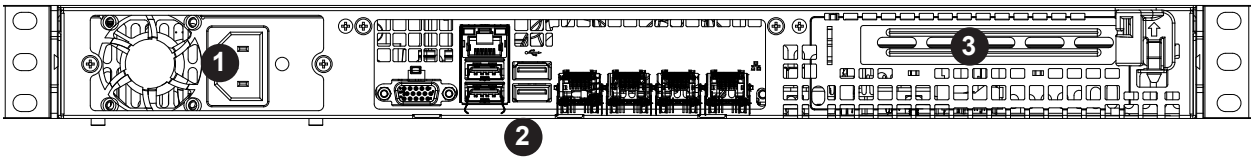



**Figure 1-3. Rear View**

| Chassis Rear Features | | |
|---|---|---|
| **Item** | **Features** | **Description** |
| 1 | Power Supply | 350W Platinum Level Power Supply (p/n PWS-350-1H) |
| 2 | I/O Backpanel | Rear I/O ports (see below and Section 4.3) |
| 3 | Expansion Card Slot | Slot for one expansion card (requires pre-installed riser card) |

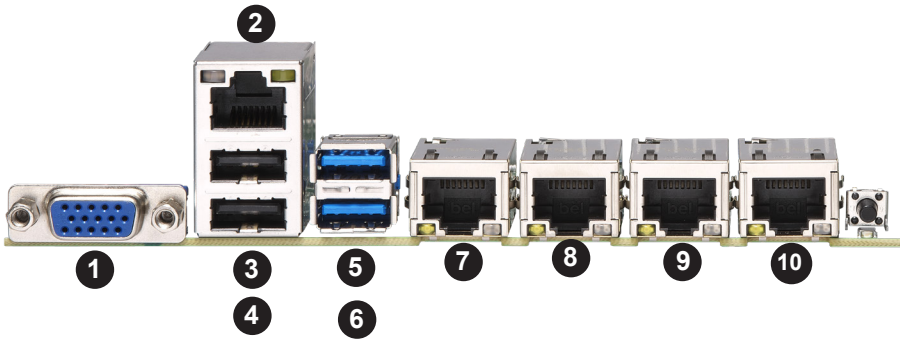



**Figure 1-4. Rear Input/Output Ports**

| # | Description | # | Description |
|---|---|---|---|
| 1 | VGA Port | 6 | USB4 (USB 3.1 Gen 1) |
| 2 | Dedicated IPMI LAN | 7 | LAN1 |
| 3 | USB1 | 8 | LAN2 |
| 4 | USB0 | 9 | LAN3 |
| 5 | USB5 (USB 3.1 Gen 1) | 10 | LAN4 |

## 1.5 Motherboard Layout

Below is a layout of the X11SCL-LN4F motherboard with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4.

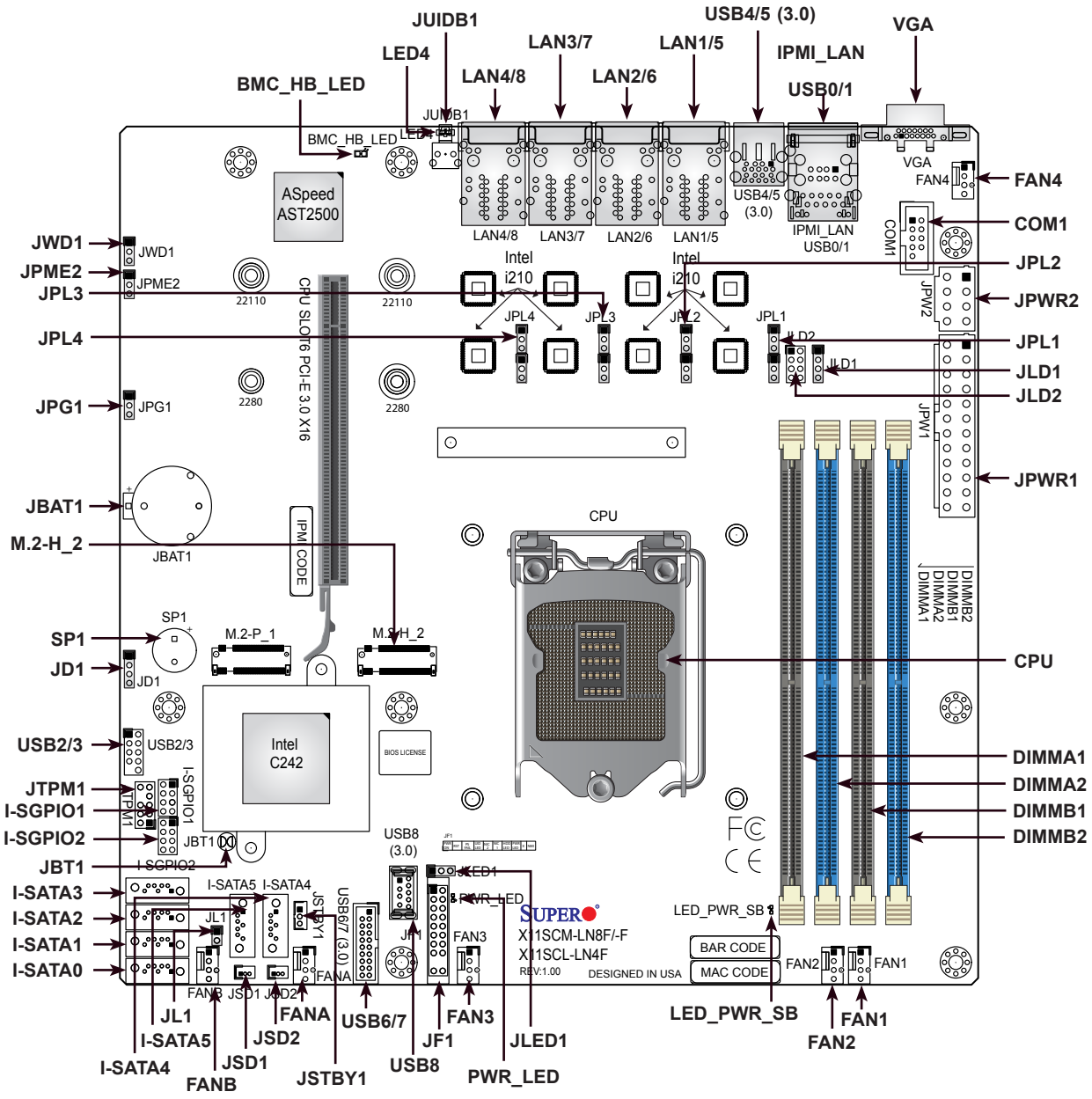



**Figure 1-5. Motherboard Layout**

## Quick Reference

| Jumper | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | Open (Normal) |
| JPG1 | VGA Enable | Pins 1-2 (Enabled) |
| JPL1 – JPL4 | GLAN Enable | Pins 1-2 (Enabled) |
| JPME2 | ME Manufacturing Mode | Pins 1-2 (Normal) |
| JWD1 | Watchdog Timer | Pins 1-2 (Reset) |

| Connector | Description |
|---|---|
| COM1 | COM Header |
| FAN1 – FAN4<br>FANA, FANB | CPU/System Fan Headers |
| IPMI_LAN | Dedicated IPMI LAN Port |
| I-SATA0 – I-SATA5 | Intel PCH SATA 3.0 Ports (with RAID 0, 1, 5, 10)<br>I-SATA4 and I-SATA5 supports SuperDOM |
| I-SGPIO1, I-SGPIO2 | Serial Link General Purpose I/O Headers |
| JBAT1 | Onboard Battery |
| JD1 | Speaker Header<br>(Pins 1-4: Speaker; Pins 3-4: Onboard Buzzer) |
| JF1 | Front Control Panel Header |
| JL1 | Chassis Intrusion Header |
| JLED1 | Onboard Power LED Header |
| JLD1 | LAN3 – LAN4 Activity LED Connector |
| JLD2 | LAN5 – LAN8 Activity LED Connector (not applicable in this system) |
| JPW1 | 24-pin ATX Power Supply Connector |
| JPW2 | 8-pin Power Connector |
| JSD1, JSD2 | SATA DOM Power Connectors |
| JSTBY1 | Standby Power Header |
| JTPM1 | Trusted Platform Module (TPM)/Port 80 Header |
| JUIDB1 | Unit Identifier (UID) Switch |
| LAN1 – LAN4 | 1GbE LAN Ports , LAN 1-4 |
| M.2-H_2 | M.2 Slot for PCI-E 3.0 x4 (Supports M-Key 2280 / 22110 and Intel Optane Memory) |
| SLOT6 | CPU PCI-E 3.0 x16 Slot |
| SP1 | Onboard Buzzer |
| USB0/1 | Back Panel Universal Serial Bus (USB) 2.0 Ports |
| USB2/3 | Front Accessible USB 2.0 Header |
| USB4/5 | Back Panel USB 3.1 Gen 1 Ports |
| USB6/7 | Front Accessible USB 3.1 Gen 1 Header |
| USB8 | USB 3.1 Gen 1 Type-A Header |
| VGA | VGA Port |

| LED | Description | State: Status |
|---|---|---|
| BMC_HB_LED | BMC Heartbeat LED | Blinking Green: BMC Normal |
| LED4 | Unit Identifier (UID) LED | Solid Blue: Unit Identified |
| LED_PWR_SB | Standby Power LED | Solid Green: Power Supply On |
| PWR_LED | Onboard Power LED | Solid Green: System On |

## System Block Diagram

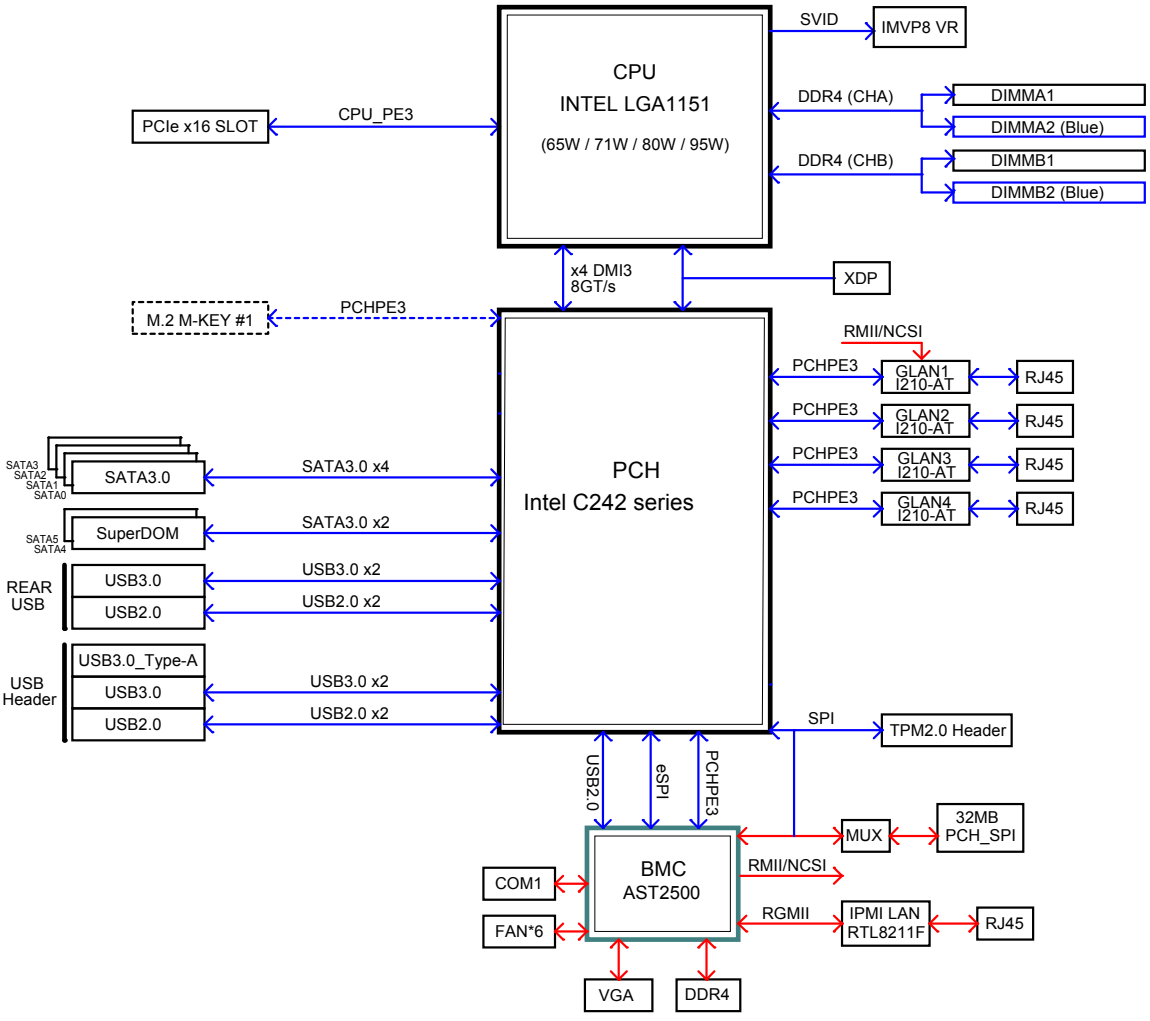



**Figure 1-6. System Block Diagram**

## 1.6 Where to Get Replacement Components

If you need replacement parts for your system, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found at: http://www.supermicro.com. Click the "Where to Buy" link.

## 1.7 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 to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

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

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

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

# Chapter 2

# Server Installation

## 2.1 Overview

This chapter provides advice and instructions for mounting your system in a server rack. If your system is not already fully integrated with processors, system memory etc., refer to Chapter 4 for details on installing those specific components.

**Caution:** Electrostatic Discharge (ESD) can damage electronic components. To prevent such damage to PCBs (printed circuit boards), it is important to use a grounded wrist strap, handle all PCBs by their edges and keep them in anti-static bags when not in use.

## 2.2 Preparing for Setup

The box in which the system was shipped should include the rackmount hardware needed to install it into the rack. Please read this section in its entirety before you begin the installation.

### Choosing a Setup Location

- The system should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.
- Leave enough clearance in front of the rack so that you can open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).
- This product is not suitable for use with visual display workplace devices according to §2 of the German Ordinance for Work with Visual Display Units.

### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are extended to the floor so that the full weight of the rack rests on them.
- In single rack installations, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a server or other component from the rack.
- You should extend only one server or component at a time - extending two or more simultaneously may cause the rack to become unstable.

## Server Precautions

- Review the electrical and general safety precautions in Appendix B.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components at the bottom of the rack first and then work your way up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow any drives and power supply modules to cool before touching them.
- When not servicing, always keep the front door of the rack and all covers/panels on the servers closed to maintain proper cooling.

## Rack Mounting Considerations

### *Ambient Operating Temperature*

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the room's ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer’s maximum rated ambient temperature (Tmra).

### *Airflow*

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

### *Mechanical Loading*

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

### *Circuit Overloading*

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection

and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

### *Reliable Ground*

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

## 2.3 Installing Directly Into a Rack

The server may be affixed directly to the rack with screws, or can be installed using an optional sliding rail kit.

The server has two rack mounting "ear" brackets, which are located on each side of the front of the chassis. To mount the system into a rack, simply screw these brackets directly to the front of the rack, two screws for each bracket.

## 2.4 Installing with a Rail Kit

This is a guideline for installing the unit into a rack with the optional sliding rail kit (MCP-290-00004-03). There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. Refer also to instructions that came with the rack.

The rail hardware includes two assemblies that consists of two sections: an inner rail that secures to the chassis and an outer rail that secures to the rack. Note that the rails are left/right side specific.

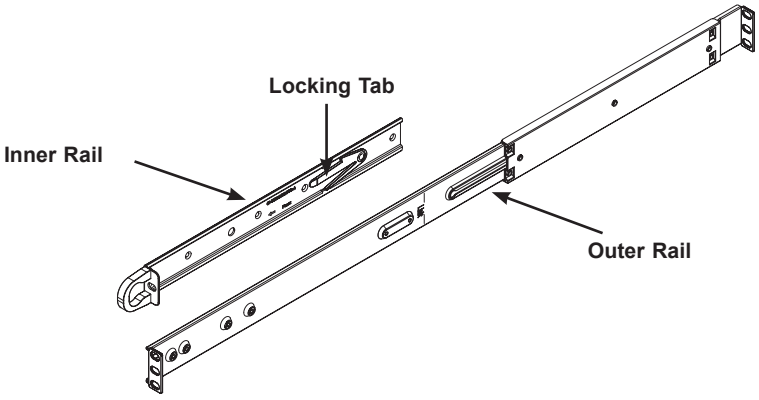



**Figure 2-1. Identifying the Sections of the Rack Rails**

***Installing the Inner Rails***

1. Detach the two rail sections from each other by depressing the locking tab on the inner rail to release it from its locked position, then slide the inner rail completely out.
2. Position the inner rail along the side of the chassis making sure the three screw holes line up.
3. Screw the rail securely to the side of the chassis.

You will also need to attach the inner rails when installing into a telco rack.

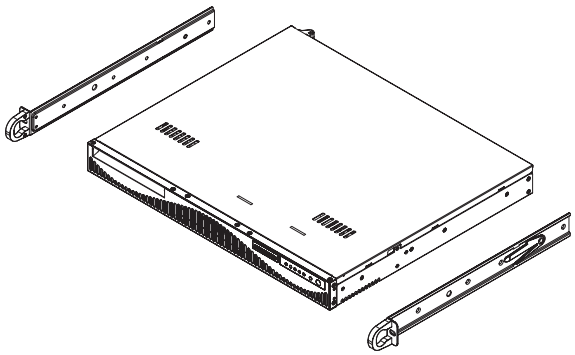


**Figure 2-2. Installing the Chassis Rails**

### *Installing the Outer Rails*

1. Determine where you want to place the server in the rack (see Rack and Server Precautions in Section 2-3).
2. Position the outer rail assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack.
3. Screw the assembly securely to front and rear posts of the rack.
4. Attach the other outer rail assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

### *Installing the Server into the Rack*

After the rails attached to both the chassis and the rack:

1. Line up the rear of the inner rails with the front of the rack rails.
2. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting).
3. When the server has been pushed completely into the rack, you should hear the locking tabs "click".
4. Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

**Locking Tabs:** The inner rails have a locking tab It locks the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing. If you need to remove the server completely, depress the locking tabs on each side as you pull it out.

**Warning:** Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

**Warning:** Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Slide rail mounted equipment is not to be used as a shelf or a work space.

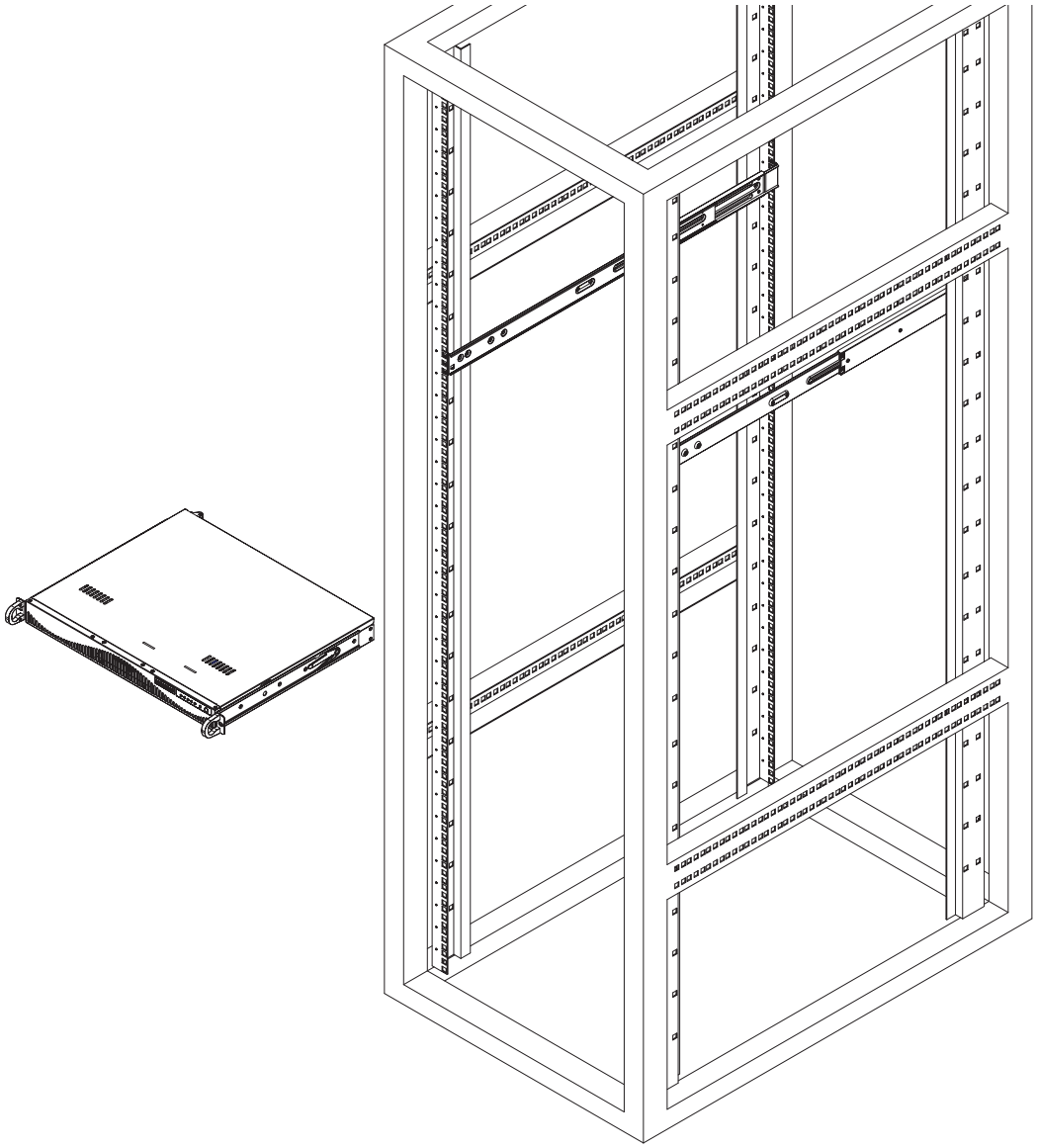


**Figure 2-3. Installing the Server into a Rack (with Optional Rail Kit)**

**Note:** Figures are for illustrative purposes only. Always install servers to the bottom of a rack first.

## 2.5 Installing the Server into a Telco Rack

If you are installing the 5019C-M4L into a two post (Telco) rack, follow the directions on the previous pages. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accommodate the width of the telco rack.

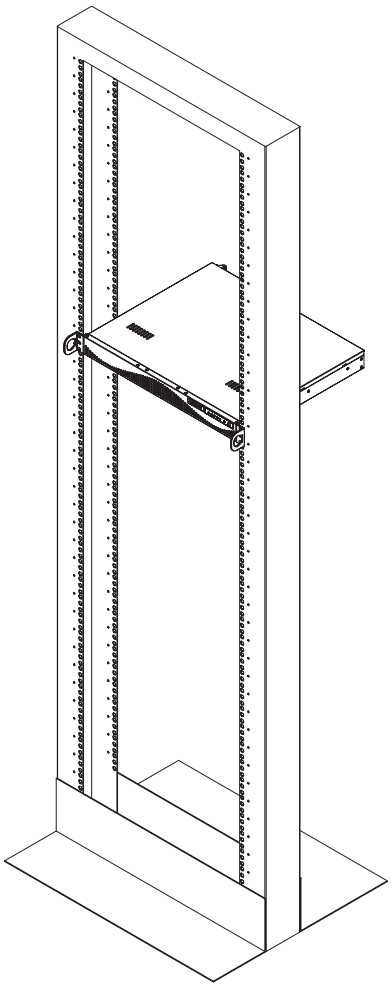


**Figure 2-4. Installing the Server into a Telco Rack**

**Note:** Figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

# Chapter 3

# Maintenance and Component Installation

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

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

## 3.1 Removing Power

Use the following procedure to ensure that power has been removed from the system. This step is necessary when removing or installing non hot-swap components or when replacing a non-redundant power supply.

1. Use the operating system to power down the system.
2. After the system has completely shut-down, disconnect the AC power cord(s) from the power strip or outlet. (If your system has more than one power supply, remove the AC power cords from all power supply modules.)
3. Disconnect the power cord(s) from the power supply module(s).

## 3.2 Accessing the System

The chassis features a removable top cover.

***Removing the Top Cover***

1. Remove the screws securing the cover to the chassis.
2. Slide the cover toward the rear of the chassis.
3. Lift the cover from the chassis.

Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

**Caution**: Except for short periods of time, do not operate the server without the cover in place. The chassis cover must be in place to allow for proper airflow and to prevent overheating.

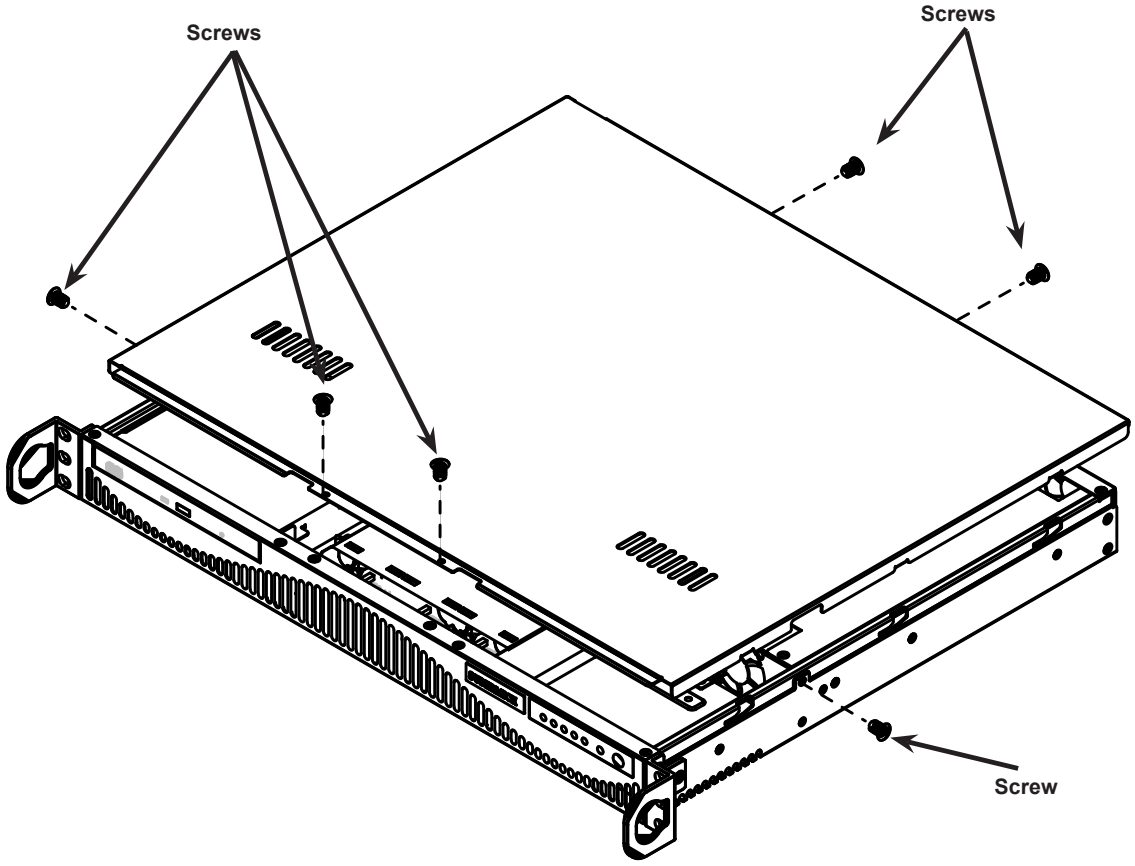



**Figure 3-1. Removing the Chassis Cover**

# 3.3 Motherboard Components

## Processor and Heatsink Installation

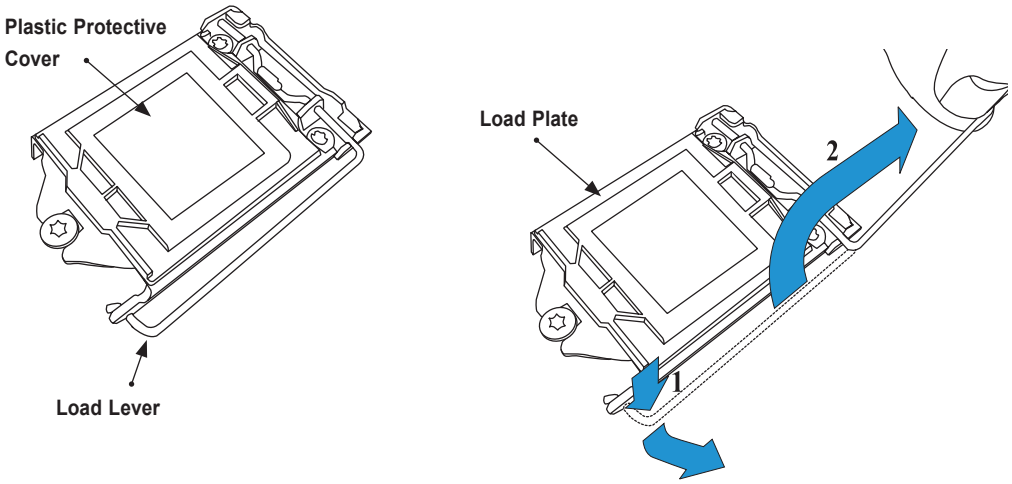
**Notes:**

- Use ESD protection.
- Unplug the AC power cord from all power supplies after shutting down the system.
- Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or CPU socket, which may require manufacturer repairs.
- Refer to the Supermicro website for updates on processor support.
- Graphics in this manual are for illustration only. Your components may look different.

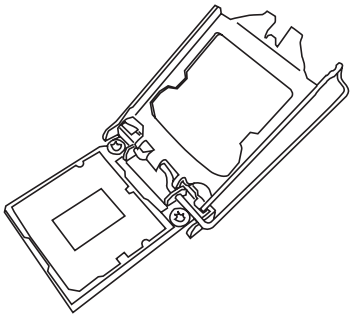
### *Installing the LGA 1151 Processor*

The motherboard should be installed in the chassis before the processor is installed.

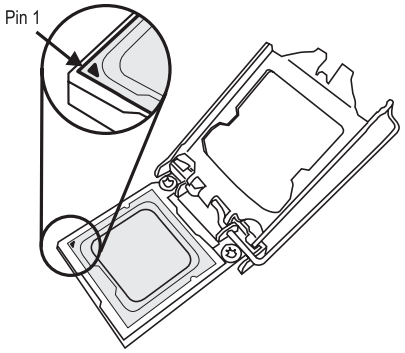
1. Press the load lever down to release the load plate from its locking position.

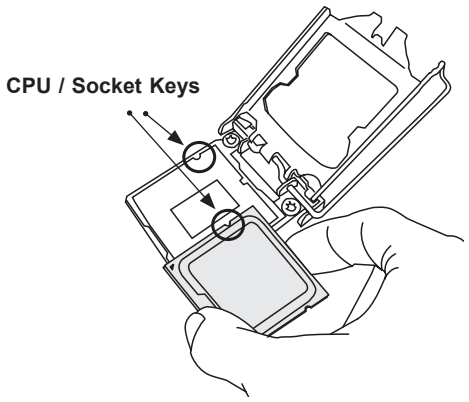


2. Gently lift the load lever to open the load plate. Remove the plastic protective cover. Do not touch the CPU socket contacts.

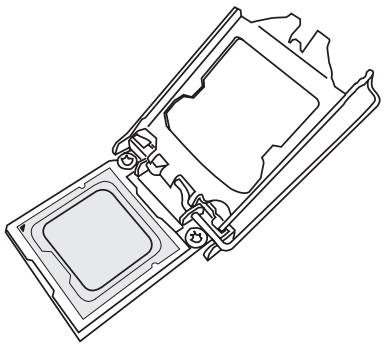


3. Locate the triangle on the CPU and CPU socket, which indicates the location of Pin 1. Holding the CPU by the edges with your thumb and index finger, align the triangle on the CPU with the triangle on the socket. The CPU keys (the semi-circle cutouts) may also be aligned against the socket keys as a guide.

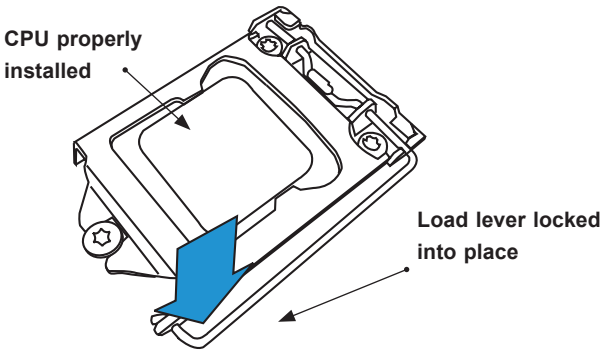



4. Carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, or move it horizontally or vertically to avoid damaging the CPU or socket. Inspect the four corners of the CPU to make sure that the CPU is properly installed.



5. Close the load plate, then gently push down the load lever into its locking position.




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

### *Installing the CPU Heatsink*

**Notes**:

- If you bought a CPU separately, use an Intel-certified multi-directional heatsink only.
- Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

1. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the heatsink retention bracket.
2. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until they are just snug. Do not fully tighten the screws or you may damage the CPU.
3. Add the two remaining screws then finish the installation by fully tightening all four screws (be careful not to overtighten).

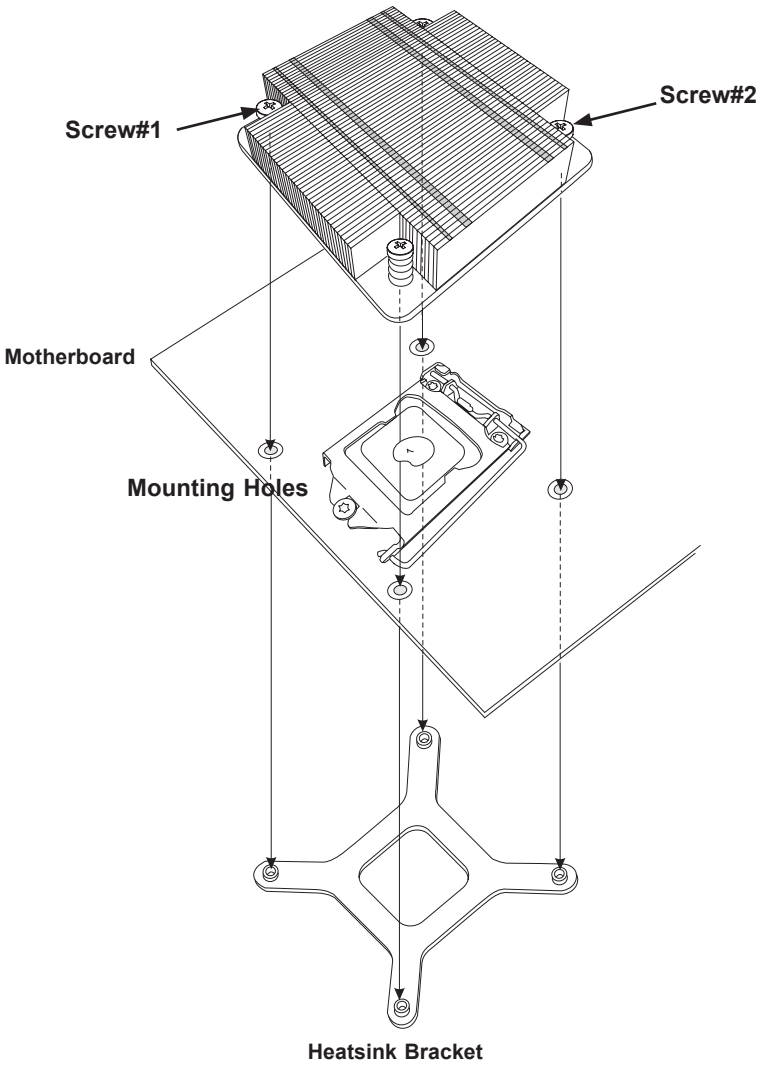



**Figure 3-2. Installing the Heatsink**

### *Removing a Heatsink*

We do not recommend removing the heatsink. If necessary, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the figure below.
2. Hold and gently pivot the heatsink back and forth to loosen it from the CPU. (Do not use excessive force when dislodging the heatsink.)
3. Once the heatsink is loose, remove it from the CPU.
4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease to the surface before you re-install the heatsink.

**Note:** Wait for the heatsink to cool down before removing it.

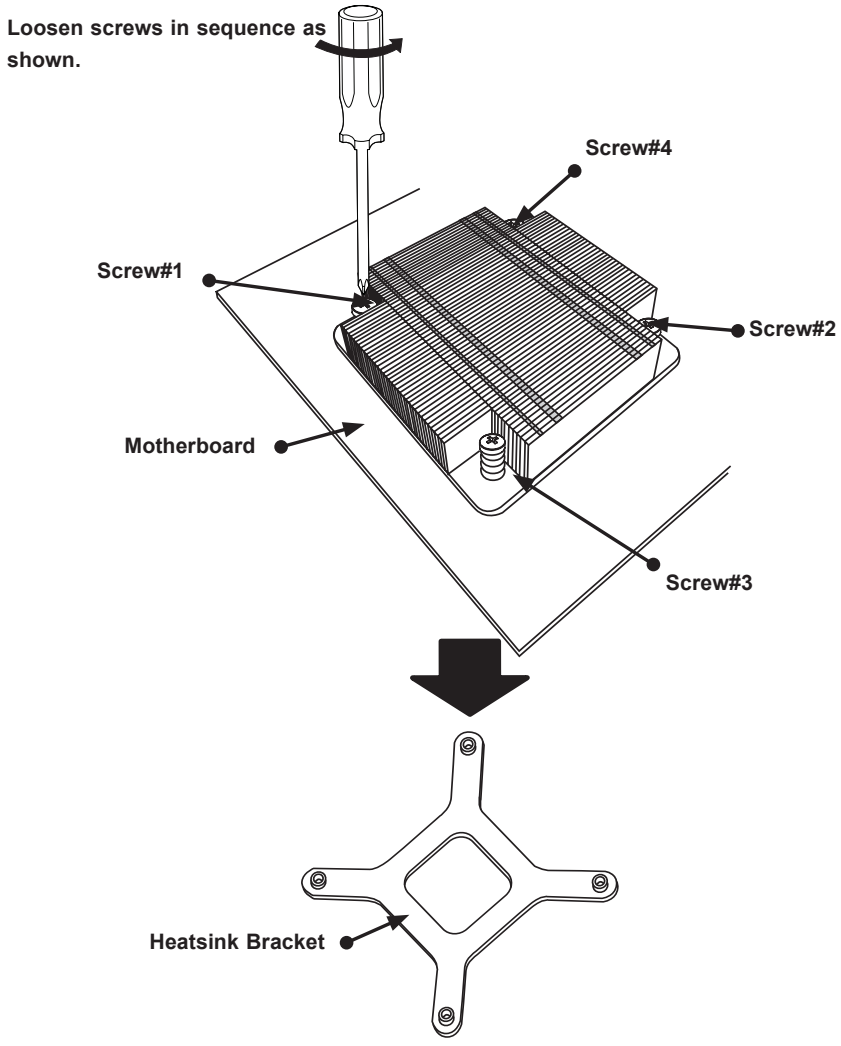



**Figure 3-3. Removing the Heatsink**

## Memory

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

### *Memory Support*

The X11SCL-LN4F supports up to 128 GB of unbuffered (UDIMM) DDR4 (288-pin) ECC memory (2-DIMM per channel) with speeds of up to 2666MHz in four memory slots. Refer to the tables below for the recommended DIMM population order and additional memory information.

| DIMM Type | Ranks Per DIMM and Data Width | DIMM Capacity (GB) | | Speed (MT/s), Voltage (V), Slot Per Channel (SPC), and DIMM Per Channel (DPC) | |
|---|---|---|---|---|---|
| | | | | 2 Slots Per Channel | |
| | | DRAM Density | | 1DPC | 2DPC |
| | | 4GB | 8GB | 1.2V | 1.2V |
| Unbuffered DDR4 ECC | SR | 16GB (4x 4GB DIMMs) | 32GB (4x 8GB DIMMs) | 2666 | 2666 |
| | DR | 32GB (4x 8GB DIMMs) | 64GB (4x 16GB DIMMs) | | |

### *General Guidelines for Optimizing Memory Performance*

- The blue slots must be populated first.
- 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. However, to achieve the best memory performance, a balanced memory population is recommended.

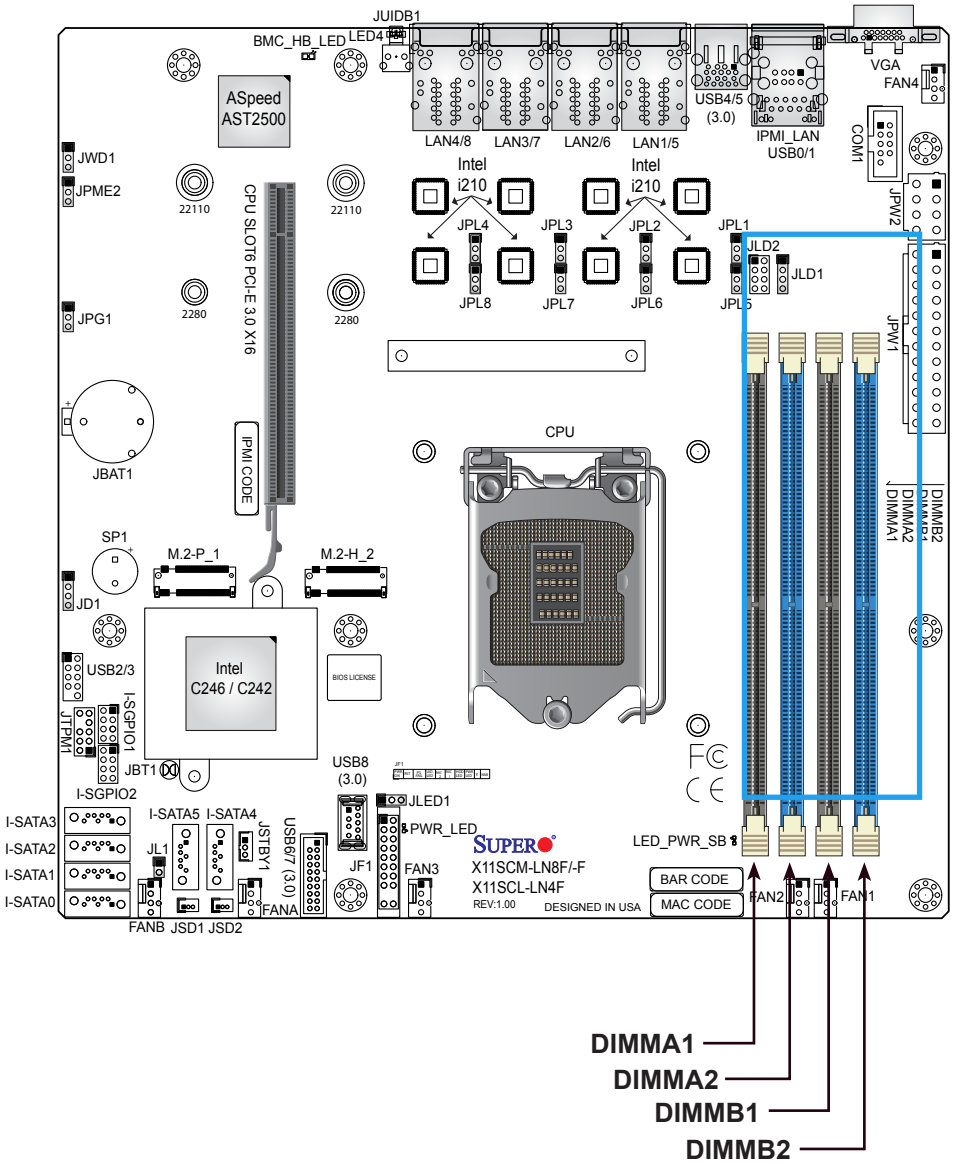



**Figure 3-4. DIMM Slots**

| Memory Population Sequence | |
|---|---|
| **Number of DIMMs** | **Sequence** |
| 1 | DIMMB2 |
| 2 | DIMMB2 / DIMMA2 |
| 3 (Unbalanced: not recommended) | DIMMB2 / DIMMA2 / DIMMB1 |
| 4 | DIMMB2 / DIMMBA2 / DIMMB1/ DIMMA1 |

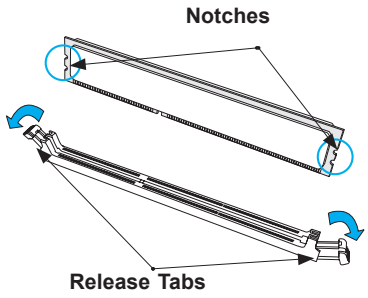
### *DIMM Installation*

Insert the desired number of DIMMs into the memory slots based on the recommended population table on the previous page.

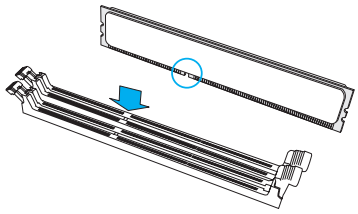
#### *Installing Memory*

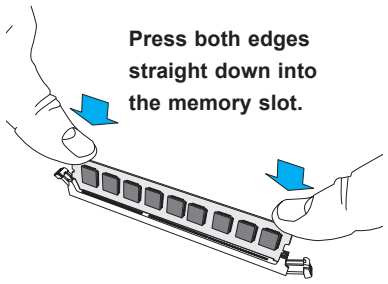
Begin by removing power from the system as described in Section 3.1.

1. Starting with P1-DIMMA1, push the release tabs outwards on both ends of the DIMM slot to unlock it.




2. Align the key of the DIMM with the receptive point on the memory slot and with your thumbs on both ends of the module, press it straight down into the slot until the module snaps into place.






3. Press the release tabs to the locked position to secure the DIMM module into the slot.

To remove a DIMM, unlock the release tabs then pull the DIMM from the memory slot.

**Caution:** Exercise extreme caution when installing or removing memory modules to prevent any possible damage to the DIMMs or slots.

## Motherboard Battery

The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by a lithium battery residing on the motherboard.

### *Replacing the Battery*

Begin by removing power from the system as described in section 3.1.

1. Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.
2. To insert a new battery, slide one edge under the lip of the holder with the positive (+) side facing up. Then push the other side down until the clamp snaps over it.

**Note:** 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.

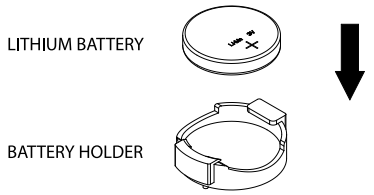



**Figure 3-5. Installing the Onboard Battery**

**Warning:** There is a danger of explosion if the onboard battery is installed upside down (which reverses its polarities). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032).

# 3.4 Chassis Components

This section provides instructions on installing and replacing system components. To assure compatibility, only use components that match the specifications or part numbers given.

## Storage Drives

The system supports two internal 3.5" storage drives, or up to three 2.5" drives using optional brackets. An optional slim DVD drive may be added.

**Note:** Enterprise level drives are recommended for use in Supermicro servers. For information on recommended HDDs, visit the Supermicro website product pages at https://www.supermicro.com/products/nfo.

### *Installing Storage Drives*

1. Remove power as described in Section 3.1 and remove the chassis cover.
2. Remove the fan tray and the DVD drive, if they are installed.
3. Install new drive(s) into the chassis with the printed circuit board side facing down and so that the mounting holes align with those in the chassis, as depicted below.
4. Secure each drive to the tray with the four screws.

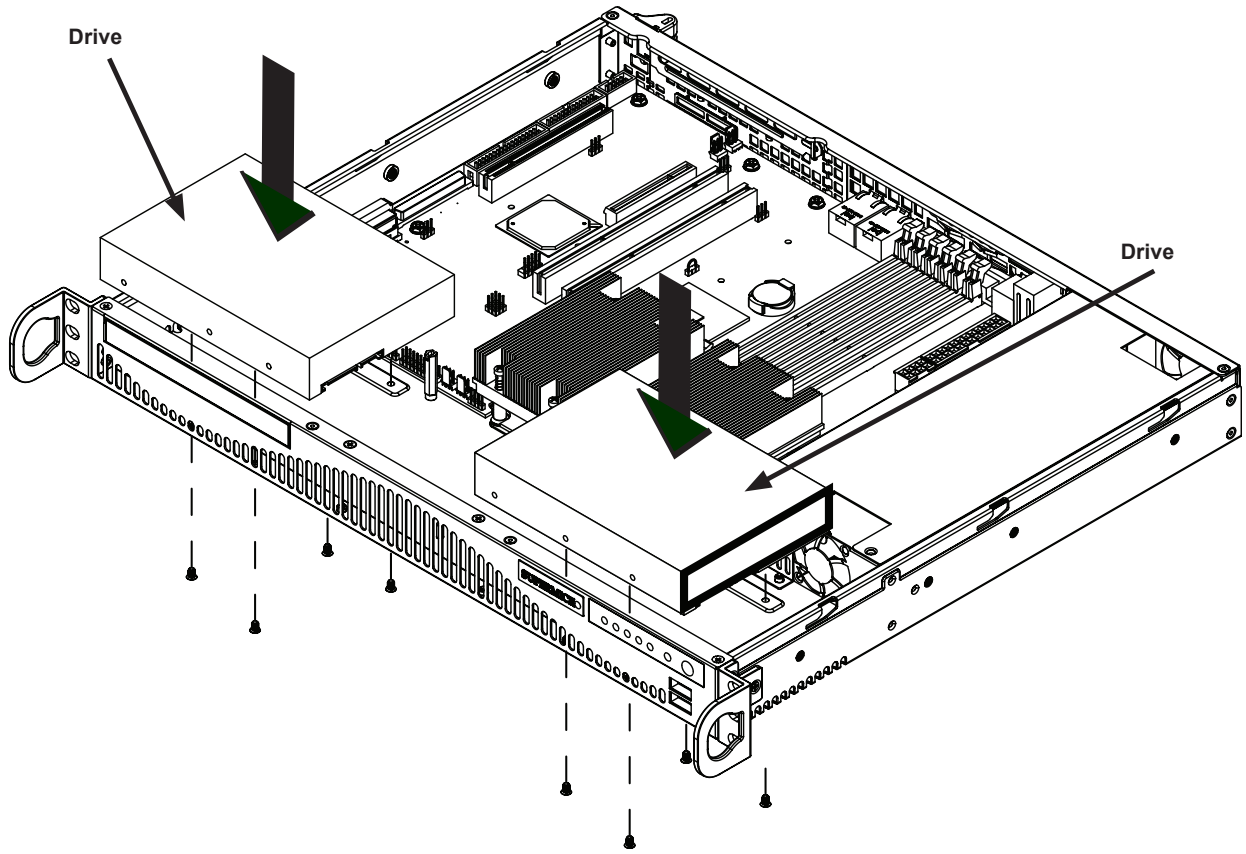



**Figure 3-6. Installing 3.5" Storage Drives**

5. Connect the drive cables to provide power and data connection.
6. Replace the fans, the DVD drive and the chassis cover.

## DVD Drive

An optional slim DVD drive is supported.

***Installing a DVD Drive***

1. Remove power as described in Section 3.1 and remove the chassis cover.
2. Secure the DVD drive with two screws, one through the side of the chassis, and one internal.
3. Connect power and data cables.

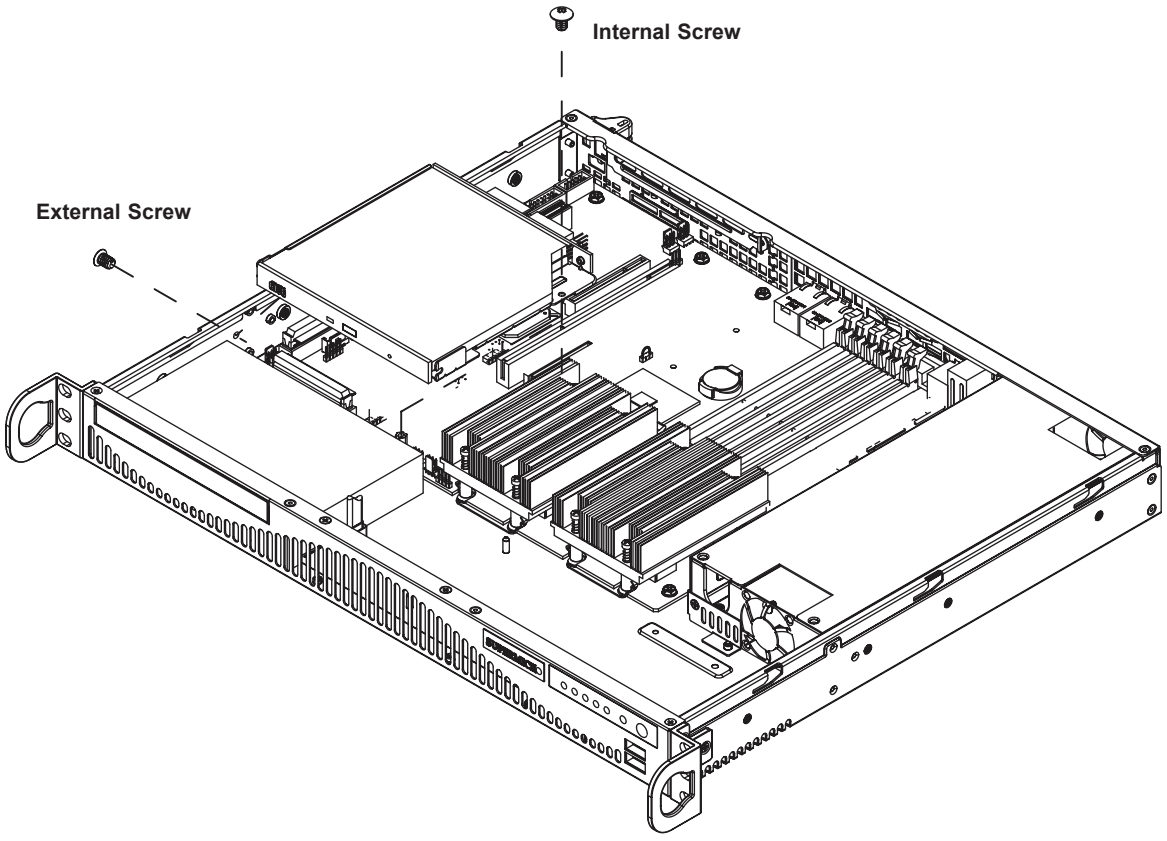



**Figure 3-7. Installing DVD Drive**

**Note:** Figure is for illustrative purposes only. The SC512F chassis varies slightly from the one shown above.

## PCI Expansion Cards

The chassis includes a slot at the rear for an expansion card. The card is connected to the motherboard by means of a pre-installed riser card.

### *Installing PCI Expansion Cards*

**Note**: When installing with 2.5 storage drives, install the drives first.

1. Remove power as described in section 3.1 and remove the chassis cover.
2. Remove the PCI slot shield on the chassis by releasing the locking clip.
3. Insert the expansion card into the riser card slot while aligning the PCI rear shield in the chassis slot.
4. Secure the card with the locking tab.

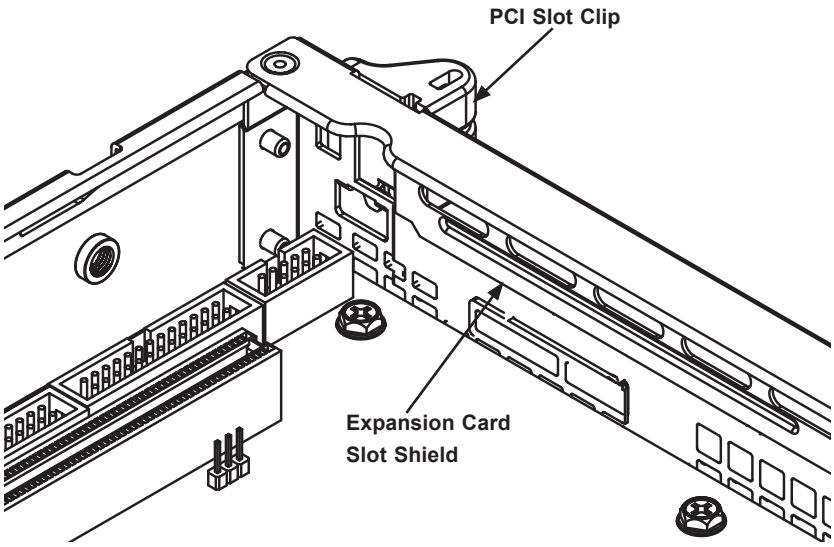



**Figure 3-8. Installing an Expansion Card**

## System Fans

The system employs two sets of 4-cm counter-rotating fans. Each fan unit is made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels.

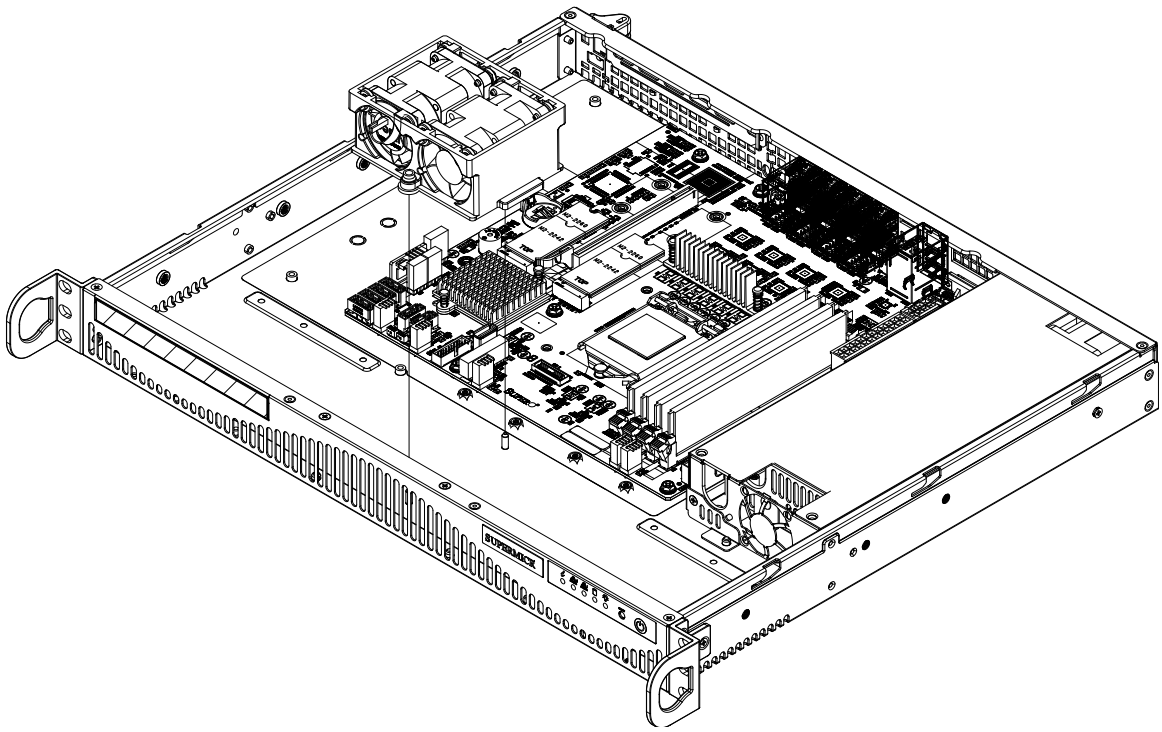
The fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by IPMI. Each fan in a set has its own separate tachometer.

If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will blink on and off. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

**Note:** The chassis top cover must be installed for proper airflow.

### *Replacing System Fans*

1. Determine which fan has failed using IPMI, or if necessary, open the chassis while the system is running. Never run the server for long without the chassis cover.
2. Power remove power from the system as described in Section 3.1.
3. Detach the fan wiring then grasp the failed fan unit and lift it out of the chassis.
4. Push the new fan into the housing making sure the arrows on the top of the fan, indicating air direction, point in the same direction as the arrows on the other fans.
5. Reconnect the fan wires to the same chassis fan headers.
6. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.



**3-9. Installing Fans**

### *Installing the Air Shroud*

Air shrouds concentrate airflow to maximize fan efficiency. It does not require screws to install.

- Position the air shroud in the chassis as illustrated below (in red outline). The air shroud fits over the fans and over the CPU. If necessary, move any cables that interfere with the air shroud placement. Remove perforated tabs if necessary for a good fit.

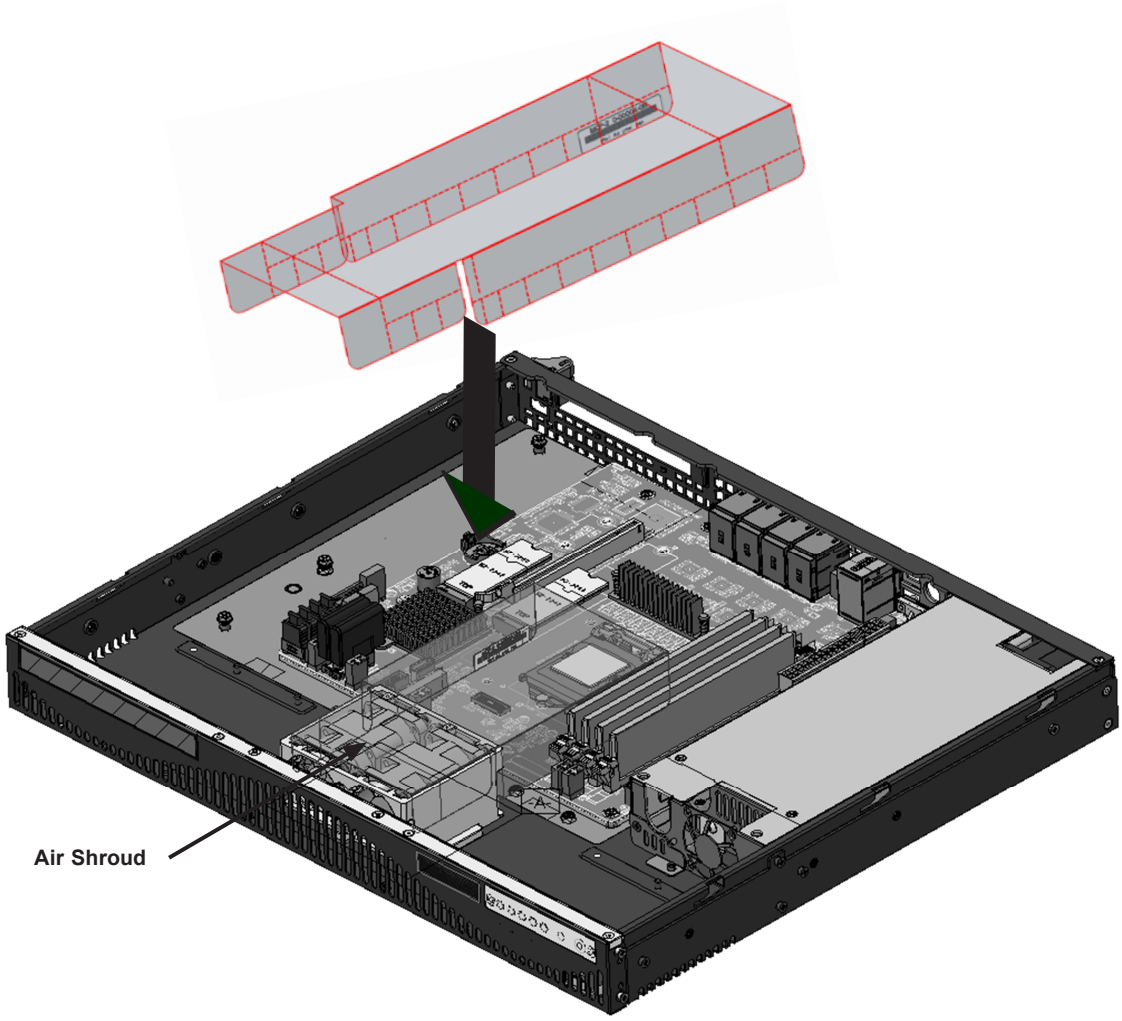



**Figure 3-10. Installing the Air Shroud**

### *Checking the Server Air Flow*

- Make sure there are no objects to obstruct airflow in and out of the server.
- Use only recommended server parts.
- Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

The control panel LEDs display system heat status. See “Control Panel” in Chapter 1 for details.

### *Overheating*

There are several possible responses if the system overheats.

***If the server overheats:***

1. Use the LEDs to determine the nature of the overheating condition.
2. Confirm that the chassis covers are installed properly.
3. Make sure all fans are present and operating normally.
4. Check the routing of the cables.
5. Verify that the heatsinks are installed properly.

## Power Supply

This power supply can operate at an input voltage from 100 to 240 volts. If replacing, use the exact same model. New units can be ordered directly from Supermicro or authorized distributors.

### *Changing the Power Supply Module*

1. Power down the system and unplug the AC cord from the module.
2. Remove the power cables to internal components.
3. Remove the two screws on the back of the power supply and a third from the front of the power supply, which secures it to the bottom of the chassis. Lift the unit straight out of the chassis.
4. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit and the third at the front.
5. Reconnect the internal power cables and the external power cord, and replace the chassis top cover.
6. Turn on the power switch on the power supply.

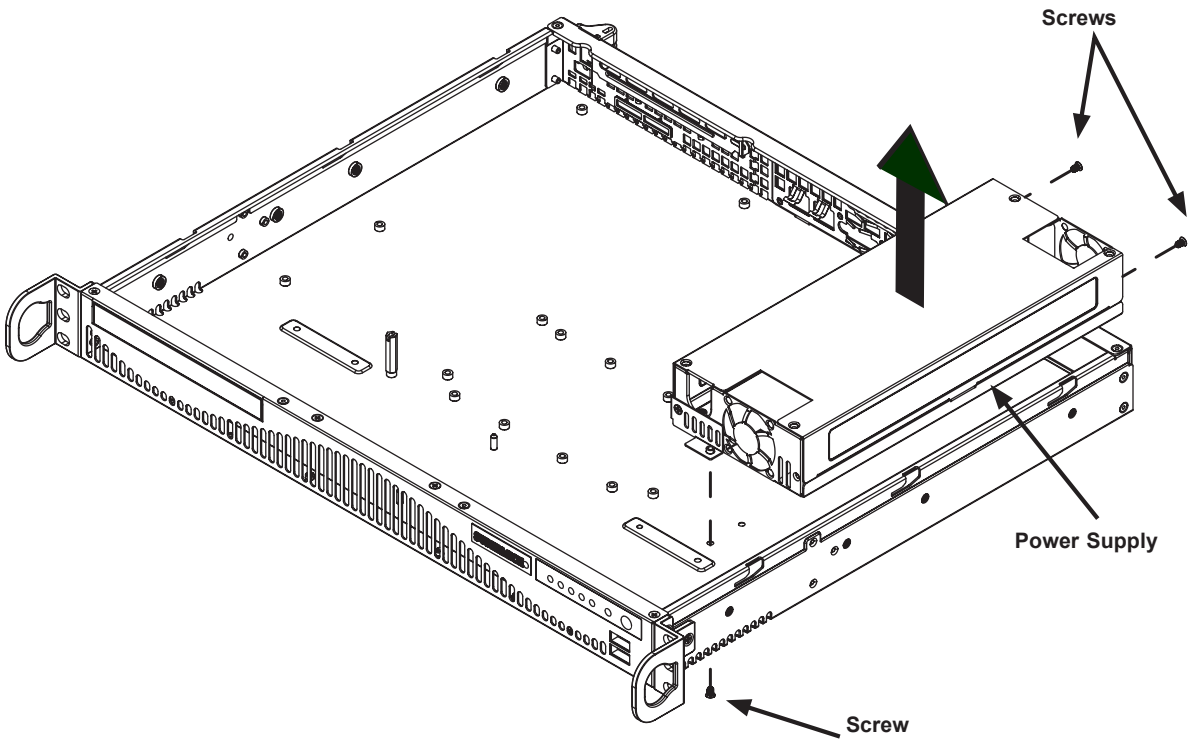



**Figure 3-11. Replacing the Power Supply**

# Chapter 4

# Motherboard Connections

This section describes the connections on the motherboard and provides pinout definitions. Note that depending on how the system is configured, not all connections are required. The LEDs on the motherboard are also described here. A motherboard layout indicating component locations may be found in Chapter 1.

Please review the Safety Precautions in Chapter 3 before installing or removing components.

## 4.1 Power Connections

### ATX Power Supply Connector

The primary 24-pin power supply connector (JPW1) meets the ATX SSI EPS 12V specification. An 8-pin (JPW2) processor power connector must also be connected to your power supply.

**ATX Power 24-pin Connector Pin Definitions**

| Pin# | Definition | Pin# | Definition |
|---|---|---|---|
| 13 | +3.3V | 1 | +3.3V |
| 14 | NC | 2 | +3.3V |
| 15 | GND | 3 | GND |
| 16 | PS_ON | 4 | +5V |
| 17 | GND | 5 | GND |
| 18 | GND | 6 | +5V |
| 19 | GND | 7 | GND |
| 20 | Res (NC) | 8 | PWR_OK |
| 21 | +5V | 9 | 5VSB |
| 22 | +5V | 10 | +12V |
| 23 | +5V | 11 | +12V |
| 24 | GND | 12 | +3.3V |

### 8-Pin Power Connector

JPWR2 is an 8-pin 12V DC power input for the CPU 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 | GND |
| 5 - 8 | P12V (12V Power) |

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

# 4.2 Headers and Connectors

### Onboard Fan Header

There are six 4-pin fan headers (FAN1–FAN4, FANA, FANB) on the motherboard. They are backward compatible with a traditional 3-pin fan. The onboard fan speed is controlled by Thermal Management (via Hardware Monitoring) in the IPMI 2.0. Use all 4-pin fans on the motherboard for better thermal management.

**Fan Header Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Ground (Black) |
| 2 | +12V (Red) |
| 3 | Tachometer |
| 4 | PWM Control |

### TPM/Port 80 Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro. TPM/Port 80 is a security device which supports encryption and authentication in hard drives. For more informatio, see: 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# |

### Onboard Power LED Header

JLED1 is the header for the onboard power LED.

**Onboard PWR LED Pin Definitions**

| Pins | Definition |
|---|---|
| 1 | VCC |
| 2 | GND |
| 3 | GND |

### COM Header

There is one COM header (COM1) on the motherboard that can provide serial communication support.

**COM Header Pin Definitions**

| Pin# | Definition | Pin# | Definition |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | GND | 10 | N/A |

### Standby Power

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

**Standby Power Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | +5V Standby |
| 2 | Ground |
| 3 | No Connection |

### LAN Activity LED Connectors

There are two LAN Activity LED connectors on the motherboard. JLD1 enables the LED for LAN3 and LAN4, while JLD2 enables LAN5 – LAN8 (not applicable in this system). Attach Network Interface Controller (NIC) LED cables here to display network activity.

**LAN Activity LED Connector (JLD1) Pin Definitions**

| Pins | Definition |
|---|---|
| 1 | 3.3V Stby |
| 2 | LAN3 Active LED |
| 3 | 3.3V Stby |
| 4 | LAN4 Active LED |

### 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.

**Chassis Intrusion Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Intrusion Input |
| 2 | GND |

### SGPIO Headers

There are two Serial Link General Purpose Input/Output (I-SGPIO1, I-SGPIO2) headers located on the motherboard. The SGPIO headers are used to communicate with the enclosure management chip on the back panel.

| I-SGPIO 1/2 | |
|---|---|
| I-SGPIO1 | I-SATA 3.0 Ports 0-3 |
| I-SGPIO2 | I-SATA 3.0 Ports 4-5 |

| SGPIO Header Pin Definitions | | | |
|---|---|---|---|
| Pin# | Definition | Pin# | Definition |
| 1 | NC | 2 | NC |
| 3 | GND | 4 | DATA Out |
| 5 | Load | 6 | GND |
| 7 | Clock | 8 | NC |

**NC = No Connection**

### Onboard Buzzer

The Onboard Buzzer (SP1) is used to provide audible indicators for various beep codes. See also Speaker Header, JD1.

### Speaker Header

JD1 is used to connect an extra speaker. By default, pins 3-4 are closed with a cap to enable the onboard buzzer at SP1. To use an extra speaker instead, connect the speaker connector to pins 1-4.

| Speaker/Onboard Buzzer Header Pin Definitions | |
|---|---|
| Pin# | Signal |
| 1 | P5V |
| 2 | Key |
| 3 | R_SPKPIN_N |
| 4 | R_SPKPIN |

### Disk-On-Module Power Connector

Two power connectors for SATA DOM (Disk-On-Module) devices are located at JSD1 and JSD2. Connect appropriate cables here to provide power support for your Serial Link DOM devices.

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

### SATA Ports

The X11SCL-LN4F has six SATA 3.0 ports (I-SATA0 – I-SATA5) supported by the Intel C242 chipset. These SATA ports support RAID 0, 1, 5, and 10.

**Note**: Supermicro SuperDOMs are yellow SATADOM connectors with power pins built in and do not require separate external power cables. These connectors are backwards compatible with non-Supermicro SATADOMS that require an external power supply.

### M.2 Slot

The X11SCL-LN4F motherboard has one M.2 slot supporting PCI-E 3.0 x4. This offers solid state storage in a small form factor. The motherboard supports cards in a 2280 or 22110 form factor.

## Front Control Panel

JF1 contains header pins for various control panel connections. Refer to the figure below for the pin locations and definitions of the control panel buttons and LED indicators.

All JF1 wires have been bundled into a single cable to simplify this connection. Verify that the red wire plugs into pin 1 as marked on the motherboard. The other end connects to the control panel PCB board.

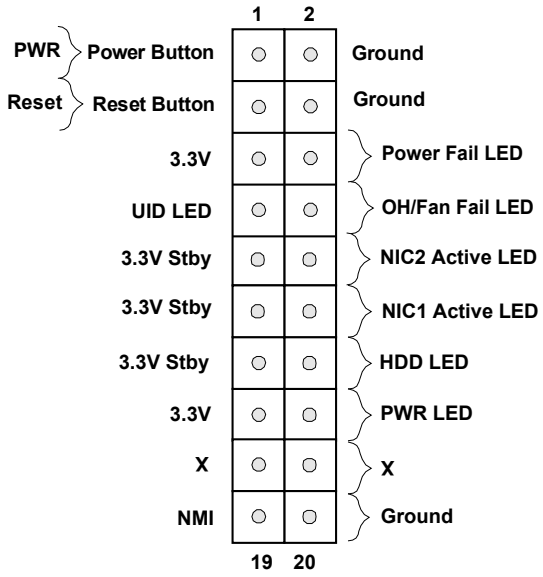



**Figure 4-1. JF1: Control Panel Pins**

### Power Button

The Power Button connection is located on pins 1 and 2 of JF1. 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 (see Chapter 4). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer. Refer to the table below for pin definitions.

| Power Button Pin Definitions (JF1) | |
|---|---|
| **Pins** | **Definition** |
| 1 | Signal |
| 2 | Ground |

### Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case to reset the system. Refer to the table below for pin definitions.

| Reset Button Pin Definitions (JF1) | |
|---|---|
| **Pins** | **Definition** |
| 3 | Reset |
| 4 | Ground |

### Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table below for pin definitions.

| Power Fail LED Pin Definitions (JF1) | |
|---|---|
| **Pin#** | **Definition** |
| 5 | 3.3V |
| 6 | PWR Supply Fail |

### Overheat (OH)/Fan Fail LED

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

| OH/Fan Fail Indicator Status | |
|---|---|
| **State** | **Definition** |
| Off | Normal |
| On | Overheat |
| Flashing | Fan Fail |

| OH/Fan Fail LED Pin Definitions (JF1) | |
|---|---|
| **Pin#** | **Definition** |
| 7 | Blue LED |
| 8 | OH/Fan Fail LED |

### NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity. Refer to the table below for pin definitions.

| LAN1/LAN2 LED Pin Definitions (JF1) | |
|---|---|
| **Pin#** | **Definition** |
| 9/10 | NIC 2 Activity LED |
| 11/12 | NIC 1 Activity LED |

### HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable to pin 14 to show hard drive activity status. Refer to the table below for pin definitions.

| HDD LED Pin Definitions (JF1) | |
|---|---|
| **Pins** | **Definition** |
| 13 | 3.3V Stdby |
| 14 | HDD Active |

### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table below for pin definitions.

| Power LED Pin Definitions (JF1) | |
|---|---|
| **Pins** | **Definition** |
| 15 | 3.3V |
| 16 | PWR LED |

### NMI Button

The non-maskable interrupt (NMI) button header is located on pins 19 and 20 of JF1. Refer to the table below for pin definitions.

| NMI Button Pin Definitions (JF1) | |
|---|---|
| **Pins** | **Definition** |
| 19 | Control |
| 20 | Ground |

## 4.3 Ports

The following input/output ports are provided by the motherboard.

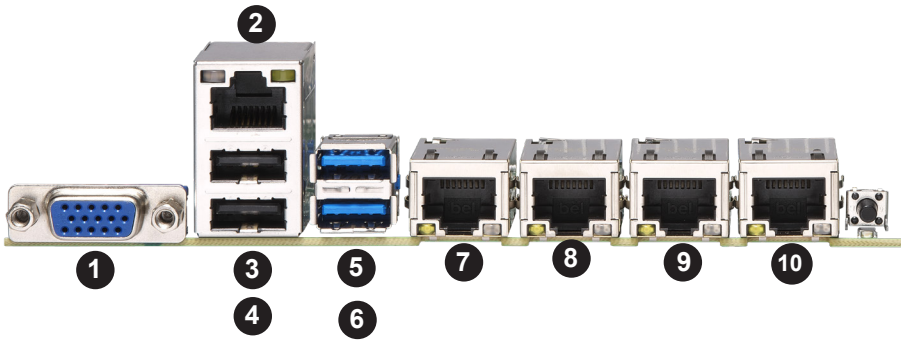



**Figure 4-2. Rear I/O Ports**

| # | Description | # | Description |
|---|---|---|---|
| 1 | VGA Port | 6 | USB4 (USB 3.1 Gen 1) |
| 2 | Dedicated IPMI LAN | 7 | LAN1 |
| 3 | USB1 | 8 | LAN2 |
| 4 | USB0 | 9 | LAN3 |
| 5 | USB5 (USB 3.1 Gen 1) | 10 | LAN4 |

### IPMI LAN Port

A dedicated IPMI GbE LAN port is on the I/O back panel. IPMI LAN is supported by the Aspeed AST2500 BMC (Baseboard Management Controller). This port accepts a RJ45 type cable. Refer to the LED Indicator Section for IPMI LAN LED information.

### Universal Serial Bus (USB) Ports

There are two USB 2.0 ports (0/1) and two USB 3.1 Gen 1 ports (4/5) on the I/O back panel.

### Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) Switch (UID-SW) and a rear LED Indicator (UID-LED) are located on the I/O back panel. When the user presses the UID switch, the UID LED indicator illuminates. Press the UID switch again to turn off the UID LED. The UID indicator provides easy identification of a system unit that might be in need of service.

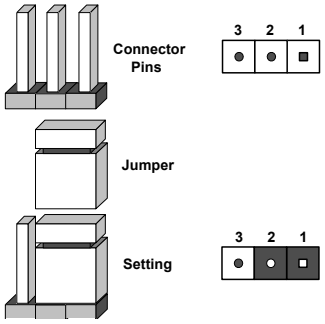
**Note:** UID can also be triggered via IPMI on the motherboard. For more information on IPMI, refer to the IPMI User's Guide posted on our website: http://www.supermicro.com.

# 4.4 Jumpers

### *Explanation of Jumpers*

To modify the operation of the motherboard, jumpers are used to choose between optional settings. Jumpers create shorts between two pins to change the function associated with it. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout page for jumper locations.

**Note:** On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" indicates the jumper is either on only one pin or has been completely removed.




**CMOS Clear**

JBT1 is used to clear CMOS, which also clears any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

***To Clear CMOS***

1. 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.

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

Do not use the PW_ON connector to clear CMOS.


**JBT1 contact pads**

### ME Manufacturing Mode

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

| Manufacturing Mode Jumper Settings | |
|---|---|
| **Jumper Setting** | **Definition** |
| Pins 1-2 | Normal |
| Pins 2-3 | Manufacturing Mode |

### Watchdog Timer

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

**Note:** When Watch Dog is enabled, the user needs to write their own application software to disable it.

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

### VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port, which is supported by the onboard BMC controller. The default setting is Enabled.

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

### LAN Port Enable

Change the setting of jumpers JPL1 – JPL4 for LAN1 – LAN4 to enable or disable the LAN ports. The default setting is Enabled.

| LAN Port Enable/Disable Jumper Settings | |
|---|---|
| **Jumper Setting** | **Definition** |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

# 4.5 LED Indicators

### LAN LEDs

The LAN ports, located on the rear I/O panel, each have two LEDs. One LED indicates activity when flashing, while the other LED may be green, amber or off to indicate the speed of the connection.

| LAN Link LED (Right) LED State | |
|---|---|
| **LED Color** | **Definition** |
| Off | No Connection/10 Mbps |
| Amber | 1 Gbps |
| Green | 100 Mbps |

### IPMI LAN LEDs

A dedicated IPMI LAN, supported by the onboard Baseboard Management controller, is located on the I/O rear panel. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection.

| IPMI LAN Link LED (Left) LED State | |
|---|---|
| **LED Color** | **Definition** |
| Off | No Connection/10 Mbps |
| Amber | 1 Gbps |
| Green | 100 Mbps |

### BMC Heartbeat LED

BMC_HB_LED is the BMC heartbeat LED. When the LED is blinking green, BMC is functioning normally.

### Unit ID LED

A rear UID LED indicator (LED4) is located near the UID switch on the I/O back panel. If activated, this LED provides easy identification of a unit that needs service.

### Onboard Power LED

The Onboard Power LED is located at PWR_LED on the motherboard. When this LED is active, the system is powered on.

### Standby Power LED

An onboard Standby Power LED is located at LED_PWR_SB. When this LED is on, the AC power cable is connected and the power supply hard switch is on.

# Chapter 5

# Software

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

## 5.1 OS Installation

You must first configure RAID settings (if using RAID) before you install the Windows OS and the software drivers. To configure RAID settings, please refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

### Installing the Windows OS for a RAID System

1. Insert Microsoft's Windows Setup DVD in the DVD drive and the system will start booting up from the DVD.
2. Insert the USB stick containing Windows drivers to a USB port on the system.
   **Note:** for older legacy OS's, please use a method to slipstream the drivers.
3. Select the partition on the drive in which to install Windows.
4. Browse the USB folder for the proper driver files.
5. Choose the RAID driver indicated in the Windows OS Setup screen, then choose the hard drive in which you want to install it.
6. Once all devices are specified, continue with the installation.
7. After the Windows OS installation is completed, the system will automatically reboot.

### Installing Windows to a Non-RAID System

1. Insert Microsoft's Windows OS Setup DVD in the DVD-ROM drive and the system will start booting up from the DVD.
2. Continue with the installation. The Windows OS Setup screen will display.
3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows installation.
4. After the installation has completed, the system will automatically reboot.

## 5.2 Driver Installation

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

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

After creating a DVD with the ISO files, insert the disk into the DVD drive on your system and the display shown in Figure 5-1 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/.

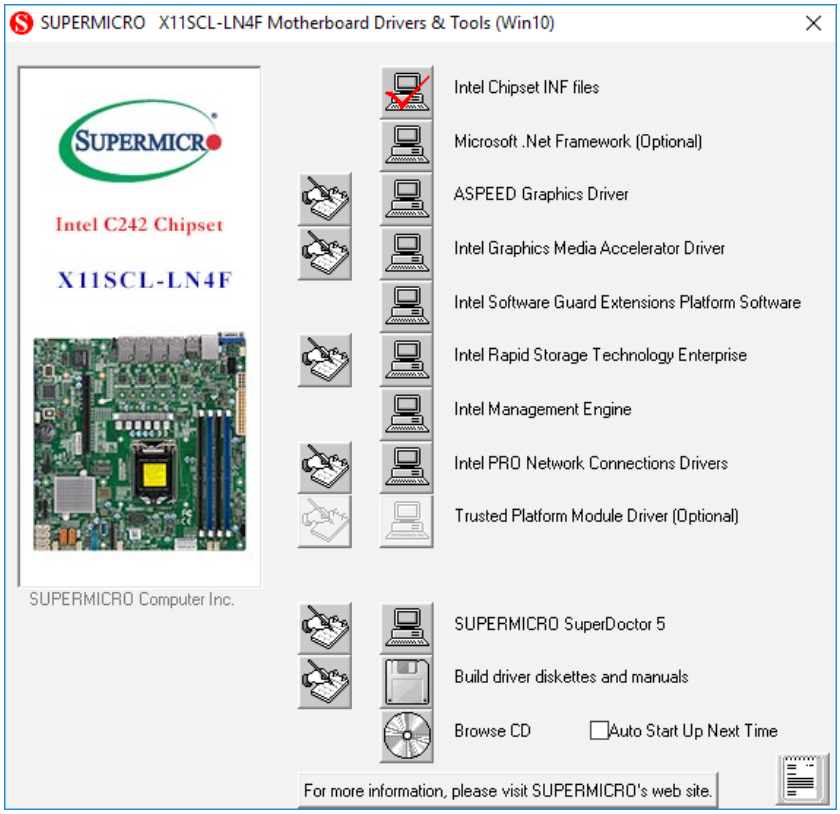



**Figure 5-1. Driver & Tool Installation Screen**

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

## 5.3 SuperDoctor® 5

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

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

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

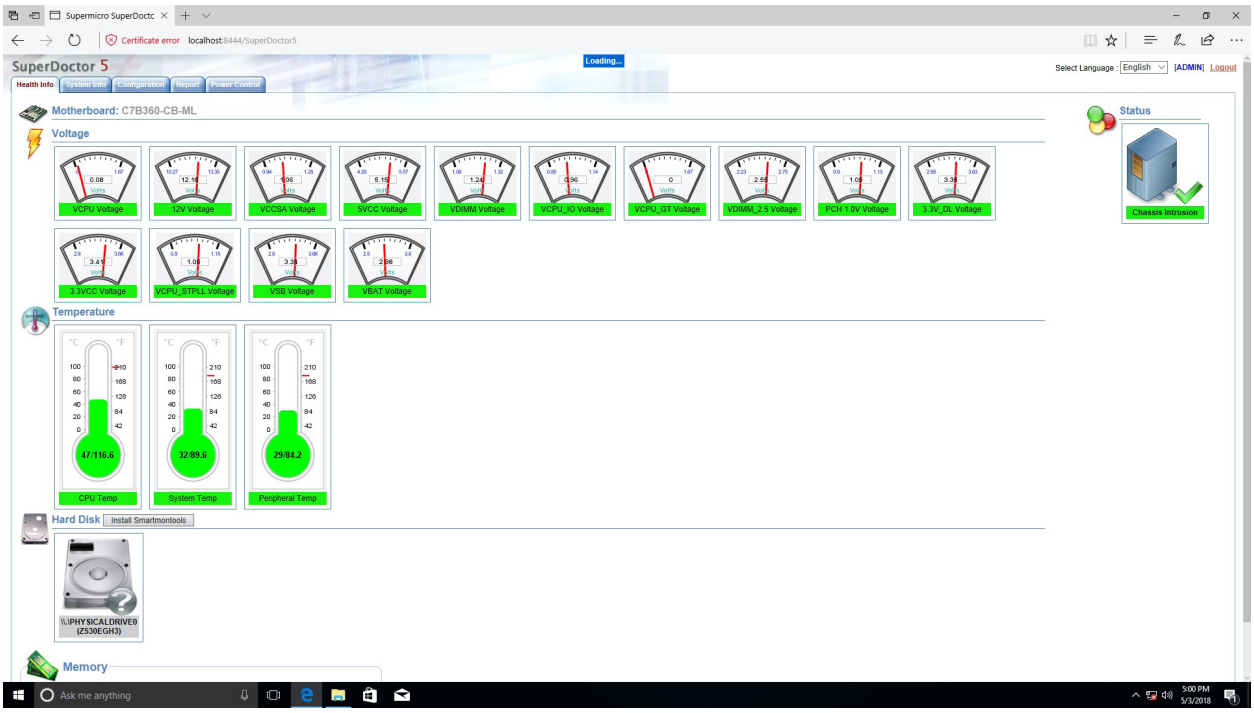



**Figure 5-2. SuperDoctor 5 Interface Display Screen (Health Information)**

## 5.4 IPMI

The SuperServer 5019C-M4L 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.

For general documentation and information on IPMI, please visit our website at: http://www.supermicro.com/products/nfo/IPMI.cfm.

# Chapter 6

# BIOS

## 6.1 Introduction

This chapter describes the AMI BIOS setup utility for the X11SCL-LN4F and provides the instructions on navigating the setup screens. The BIOS is stored in a Flash EEPROM and can be updated.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted since this manual was published.

### Starting BIOS Setup Utility

To enter the AMI BIOS setup utility screens, press the <Delete> key while the system is booting up. (There are a few cases when other keys are used, such as <F1>, <F2>, etc.)

The BIOS screens have three main frames. The large left frame displays options can be configured by the user. These are blue. When an option is selected, it is highlighted in white. Settings printed in **Bold** are the default values.

In the left frame, a " ▶" indicates a submenu. Highlighting such an item and pressing the <Enter> key opens the list of settings in that submenu.

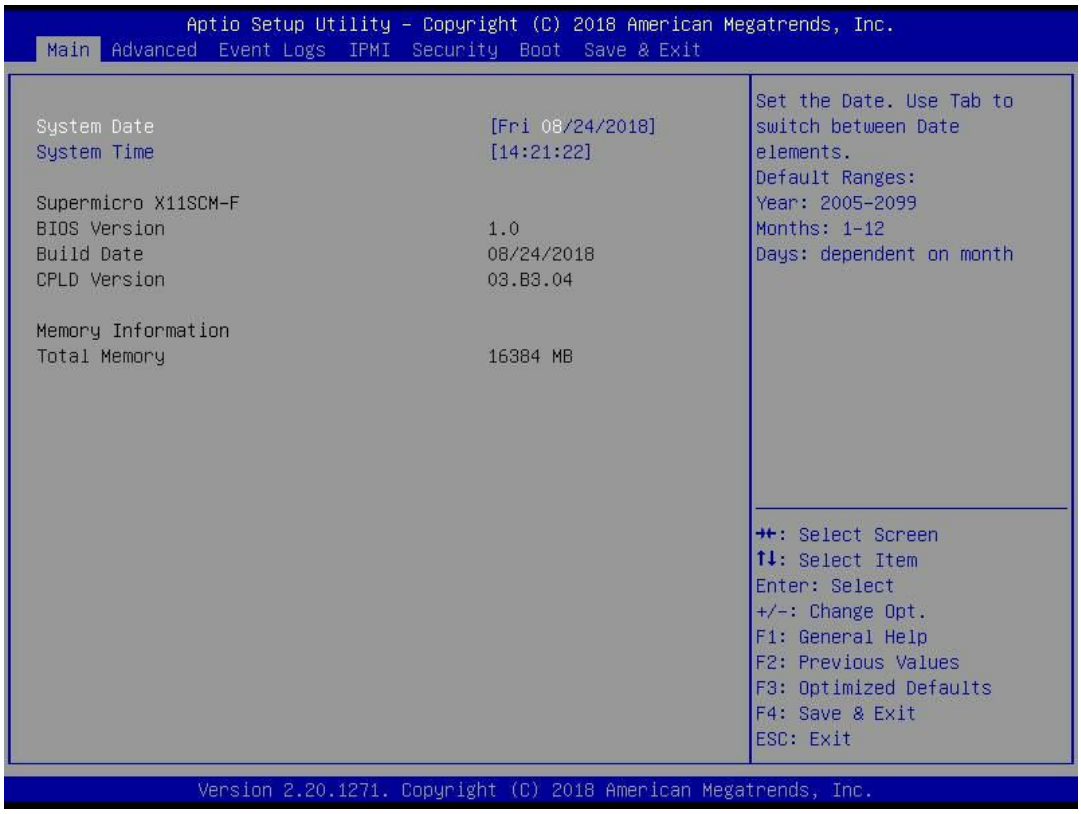
The upper right frame displays helpful information for the user. The AMI BIOS has default informational messages built in. The manufacturer retains the option to include, omit, or change any of these informational messages.

The lower right frame lists navigational methods. The AMI BIOS setup utility uses a key-based navigation system called *hot keys*. Most of these hot keys can be used at any time during setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

Some system parameters may be changed.

## 6.2 Main Setup

When running the AMI BIOS setup utility, it starts with the Main screen. You can always return to it by selecting the Main tab on the top of the screen.




The Main tab page allows you to set the date and time, and it displays system information.

**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 01/01/2016 after RTC reset.

**Supermicro X11SCL-LN4F (Motherboard model)**

**BIOS Version**

**Build Date (of the BIOS)**

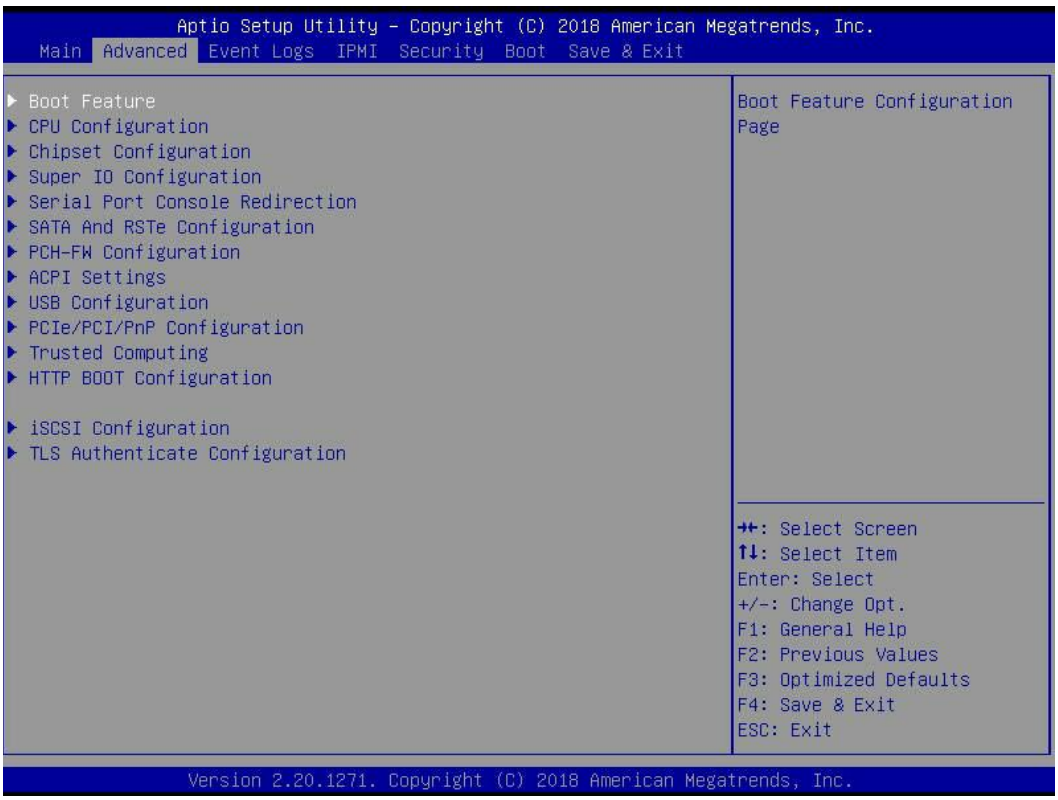
**CPLD (Complex Programmable Logic Device) Version: This item displays the CPLD version used in the system.**

**Memory Information**

**Total Memory (for the system)**

## 6.3 Advanced Setup Configurations

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




**Caution**: 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. If this occurs, revert to the manufacture default settings.

### ▶Boot Feature

#### Fast Boot

Enable this feature to reduce the time the computer takes to boot up. The computer will boot with a minimal set of required devices. This feature does not have an effect on BBS boot options in the Boot tab. The options are **Disabled** and Enabled.

#### Quiet Boot

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

#### 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**

Use this feature to set the display mode for the Option ROM. Select Keep Current to display the current AddOn ROM setting. Select Force BIOS to use the Option ROM display set by the system BIOS. The options are **Force BIOS** and Keep Current.

**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.

**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.

**AC Loss Policy Depend On**

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 Stay Off, Power On, and **Last State**.

**Power Button Function**

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for 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**.**

**DeepSx Power Policies**

Use this feature to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S4-S5 to power off the whole system except the power supply unit (PSU) and keep the power button “alive” so that the user can “wake up” the system by using a USB keyboard or mouse. The options are **Disabled** and Enabled in S4-S5.

## ▶CPU Configuration

The following CPU information will display:

- Type
- CPU Signature
- Microcode Revision

- CPU Speed
- L1 Data Cache
- L1 Instruction Cache
- L2 Cache
- L3 Cache
- L4 Cache
- VMX
- SMX/TXT

**CPU Flex Ratio Override**

Select Enabled to activate CPU Flex Ratio programming.The flex ratio should be under the CPU's max ratio. The options are **Disabled** and Enabled.

***If the feature above is set to Enabled, "CPU Flex Ratio Settings" will become available for configuration:***

**CPU Flex Ratio Settings**

When CPU Flex Ratio Override is enabled, this feature sets the value for the CPU Flex Ratio. This value must be between the maximum efficiency ratio and maximum non-turbo ratio. The default value is dependent on the CPU.

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

If set to Enabled, 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 Disabled and **Enabled**.

**Adjacent Cache Line 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 Enabled. The options are Disabled and **Enabled**.

**Intel (VMX) Virtualization Technology**

Use this feature to enable the Vanderpool Technology. This technology allows the system to run several operating systems simultaneously. The options are Disabled and **Enabled**.

**Active Processor Cores**

This feature determines how many CPU cores will be activated for each CPU. When All is selected, all cores in the CPU will be activated. (Please refer to Intel's website for more information.) The options are **All**, 1, 2 , 3, 4, and 5.

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

Intel Hyper-Threading Technology efficiently uses processor resources by executing multiple threads on each core. It improves processor execution efficiency and enhances the overall performance of the thread software. The options are Disabled and **Enabled**.

**BIST**

Use this feature to enable the Built-In Self Test (BIST) at system reset or reboot. The options are **Disabled** and Enabled.

**AES**

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

**Boot Performance Mode**

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

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

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

**Intel(R) Speed Shift Technology**

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

**Always Turbo Mode**

Use this feature to enable the system to always run in turbo mode. The options are **Disabled** and Enabled.

**Turbo Mode**

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

**Monitor/Mwait**

Select Enabled to enable the Monitor/Mwait instructions. The Monitor instructions monitor a region of memory for writes, while MWait instructions instruct the CPU to stop until the monitored region begins to write. The options are Disabled and **Enabled**.

**C-States**

C-State architecture, a processor power management platform developed by Intel, can further reduce power consumption from the basic C1 (Halt State) state that blocks clock cycles to the CPU. Select Enabled for CPU C-State support. The options are Disabled and **Enabled**.

**Enhanced C-States**

Use this feature to enable C1E, which is a power saving feature for the CPU. C1E drops the frequency and voltage of the CPU to reduce power usage when the system is idle. The options are Disabled and **Enabled**.

**C-State Auto Demotion**

Use this feature to prevent unnecessary excursions into C-States to improve latency. The options are Disabled, C1, C3, and **C1 and C3**.

**C-State Un-Demotion**

This feature allows the user to enable or disable the un-demotion of C-States. The options are Disabled, C1, C3, and **C1 and C3**

**Package C-State Demotion**

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

**Package C-State Un-Demotion**

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

**C-State Pre-Wake**

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

**Package C-State Limit**

Use this feature to set the Package C-State limit. The options are C0/C1, C2, C3, C6, C7, C7S, C8, C9, C10, CPU Default, and **Auto**.

## ▶Chipset Configuration

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

### ▶System Agent (SA) Configuration

The following information is displayed:

- SA PCIe Code Version
- VT-d

## ▶Memory Configuration

- Memory RC Version
- Memory Frequency
- Memory Timings (tCL-tRCD-tRP-tRAS)
- DIMMA1 ~ DIMMB2 information

**Maximum Memory Frequency**

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1067, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, 2400, 2600, and 2667.

**ECC Support**

Use this feature to enable Error Checking & Correction (ECC) support for onboard memory modules. The options are Disabled and **Enabled**.

**Max TOLUD**

This feature sets the maximum TOLUD value, which specifies the “Top of Low Usable DRAM” memory space to be used by internal graphic devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic** and 1 GB ~ 3.5 GB (in 0.25 GB increments).

**Memory Scrambler**

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

**Fast Boot**

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

**REFRESH_2X_MODE**

Use this feature to select the memory controller 2x refresh rate mode. The options are **Disabled**, 1- Enabled for WARM or HOT, and 2- Enabled HOT only.

## ▶DMI/OPI Configuration

The following DMI information will display:

- DMI

**DMI Link ASPM Control**

Use this feature to set the Active State Power Management (ASPM) state on the System Agent (SA) side of the DMI Link. The options are Disabled, L0s, **L1**, and L0sL1

**DMI Extended Sync Control**

Use this feature to enable or disable the DMI extended synchronization. The options are Enabled and **Disabled**.

**DMI De-Emphasis Control**

Use this feature to configure the De-emphasis control on DMI. The options are -6 dB and **-3.5 dB**.

## ▶PEG Port Configuration

**CPU SLOT6 PCI-E 3.0 x16**

**Enable Root Port**

Use this feature to enable or disable the PCI Express Graphics (PEG) device in the port specified by the user. The options are Disabled, Enabled, and **Auto**.

**Max Link Speed**

Use this feature to configure the link speed of a PCI-E port specified by the user. The options are **Auto**, Gen1, Gen2, and Gen3.

**Power Limit Value**

Use this feature to set the upper limit on the power supplied by the PCIE slot. Press "+" or "-" on your keyboard to change this value. The default setting is **75**.

**Power Limit Scale**

Use this feature to select the scale used for the slot power limit value. The options are **1.0x**, 0.1x, 0.01x, and 0.001x.

**Physical Slot Number**

Use this feature to set the physical slot number attached to this port. Press "+" or "-" on your keyboard to change the setting to a value between 0-8191. The default setting is **1**.

**Max Payload Size**

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

**Program PCIe ASPM After OPROM**

PCIe ASPM, the Active State Power Management for PCI-Express slots, is a power management protocol used to manage power consumption of serial-link devices installed on PCI-E slots during a prolonged off-peak time. If this feature is set to Enabled, PCI-E ASPM will be programmed after OPROM. If this feature is set to Disabled, the PCI-E ASPM will be programmed before OPROM. The options are **Disabled** and Enabled.

**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 Disabled and **Enabled**.

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

This feature enables the SA GNA device. The options are **Enabled** and Disabled.

**X2APIC Opt Out**

X2APIC, an extension of the XAPIC architecture, is designed to support 32-bit processor addressability. X2APIC enhances the performance of interrupt delivery. The options are Enabled and **Disabled**.

## ▶PCH-IO Configuration

### ▶PCI Express Configuration

**DMI Link ASPM Control**

Use this feature to set the Active State Power Management (ASPM) state on the System Agent (SA) side of the DMI Link. The options are Disabled, L0s, L1, L0sL1, and **Auto**.

**Peer Memory Write Enable**

Use this feature to enable or disable peer memory write. The options are **Disabled** or Enabled.

#### ▶M.2-P_1 / M.2-H_2 (**Not available on X11SCL-LN4F)

**M.2-P_1 / M.2-H_2** ASPM Support**

This feature controls the Active State Power Management (ASPM) setting. The options are Disabled, L0s, L1, L0sL1, and **Auto**.

**M.2-P_1 / M.2-H_2** L1 Substates**

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

**M.2-P_1 / M.2-H_2** PCIe Speed**

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

**Port 61h Bit-4 Emulation**

Select Enabled to enable the emulation of Port 61h bit-4 toggling in System Management Mode (SMM). The options are Disabled and **Enabled**.

**PCIE PLL SSC**

Use this feature to enable PCI-E phase-locked loop (PLL) spread spectrum clocking (SSC). The options are **Enabled** and Disabled.

## ▶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 item 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 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 item 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=3E8h; 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 **Disabled** and Enabled.

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

### ▶COM1 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.

**COM1 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.

**COM1 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).

**COM1 Data Bits**

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

**COM1 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.

**COM1 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.

**COM1 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.

**COM1 VT-UTF8 Combo Key Support**

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

**COM1 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.

**COM1 Resolution 100x31**

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

**COM1 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**.

**COM1 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.

**COM1 Redirection After 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.

**SOL Console Redirection**

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

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

## ▶SOL 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.

**SOL 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.

**SOL 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).

**SOL Data Bits**

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

**SOL 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.

**SOL 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.

**SOL 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.

**SOL VT-UTF8 Combo Key Support**

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

**SOL 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.

**SOL Resolution 100x31**

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

**SOL 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**.

**SOL 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.

**SOL Redirection After 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 Redirection COM Port**

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

**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**.

**Legacy Redirection After POST**

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

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

**EMS Console Redirection**

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

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

## ▶EMS 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.

**EMS Out-of-Band Mgmt Port**

This feature selects a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1** and SOL.

**EMS 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.

**EMS 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).

**EMS 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.

**EMS Data Bits, Parity, Stop Bits**

## ▶SATA and RSTe Configuration

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

**SATA Controller(s)**

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

***If the feature "SATA Controller(s)" above is set to Enabled, the following settings will become available for configuration:***

**SATA Mode Selection**

Use this feature to select the mode for the installed SATA drives. The options are **AHCI** and RAID.

**SATA Frozen**

Use this feature to enable the HDD Security Frozen Mode. The options are Enabled and **Disabled**.

**Aggressive LPM Support**

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

**Storage Option ROM/UEFI Driver**

Select UEFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Do Not Launch, UEFI, and **Legacy**.

**Serial ATA Port 0 ~ Port 6 (For X11SCL-LN4F: Port 0 ~ Port 5)**

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

- Model number of drive and capacity
- Software Preserve Support

**Port 0 ~ Port 6 Hot Plug (For X11SCL-LN4F: Port 0 ~ Port 5)**

Set this feature to Enabled 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 ~ Port 6 Spin Up Device (For X11SCL-LN4F: Port 0 ~ Port 5)**

On an edge detect from 0 to 1, set this feature to allow the PCH to initialize the device. The options are **Disabled** and Enabled.

**Port 0 ~ Port 6 SATA Device Type (For X11SCL-LN4F: Port 0 ~ Port 5)**

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.

## ▶PCH-FW Configuration

The following firmware information will display:

- Operational Firmware Version
- Backup Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1
- ME Firmware Status #2
- Current State
- Error Code

## ▶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**

Enable this feature to grant native control of hot plug, Power Management Events, PCI-E Advanced Error Reporting, PCI-E Capability Structure Control, and Latency Tolerance Reporting Control. The options are Disabled and **Enabled**.

**Native ASPM**

Select Enabled for the operating system to control the Active State Power Management (ASPM). Select Disabled for the BIOS to control the ASPM. The options are **Auto**, Enabled, and Disabled.

## ▶USB Configuration

The following USB items will be displayed:

- USB Module Version
- USB Controllers
- USB Devices

**Legacy USB Support (Available when USB Functions are not Disabled)**

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disabled to have USB devices available for Extensive Firmware Interface (EFI) applications only. The settings are **Enabled**, Disabled, and Auto.

**XHCI Hand-off**

This feature is for operating systems that do not support eXtensible Host Controller Interface (XHCI) hand-off. When this feature is enabled, XHCI ownership change will be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

**USB Mass Storage Driver Support**

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

**Port 60/64 Emulation**

Select Enabled for I/O port 60h/64h emulation support which will provide complete USB keyboard legacy support for the operating system that does not support Legacy USB devices. The options are Disabled and **Enabled**.

## ▶PCIe/PCI/PnP Configuration

**Option ROM Execution**

**Video**

This feature controls which option ROM to execute for the video device. The options are Do Not Launch, UEFI, and **Legacy**.

**PCI PERR/SERR Support**

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

**Above 4GB MMIO BIOS Assignment**

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

**VGA Priority**

Use this feature to select VGA priority when multiple VGA devices are detected. Select Onboard to give priority to your onboard video device. Select Offboard to give priority to your graphics card. The options are **Onboard** and Offboard.

**Onboard Video Option ROM**

Use this feature to select the onboard video firmware type to be loaded. The options are **Legacy** and EFI.

**NVMe Firmware Source**

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

**PCIe/PCI/PnP Configuration**

**CPU SLOT6 PCI-E 3.0 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.

**M.2-P_1 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.

**M.2-H_2 OPROM (Not available on X11SCL-LN4F)**

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 Option ROM Type**

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

***If the feature above is set to Legacy, the following LAN ports will be listed and become available for configuration:***

**Onboard LAN1 ~ LAN2 (X11SCM-F) / Onboard LAN1 ~ LAN4 (X11SCL-LN4F) / Onboard LAN1 ~ LAN8 (X11SCM-LN8F) Option ROM Type**

Use this feature to select which firmware function to be loaded for the specified onboard LAN port at system boot. The options are **Disabled**, PXE, and iSCSI*.

***iSCSI is only supported on Onboard LAN1. The default setting for Onboard LAN1 is PXE.***

**Network Stack**

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

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

**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.

**IPSEC Certificate**

Internet Protocol Security (IPSEC) offers a secure connection for remote computers using a secure tunnel. 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**.

## ▶Trusted Computing

The X11SCL-LN4F supports TPM 1.2 and 2.0. The following Trusted Platform Module (TPM) information will display if a TPM 2.0 module is detected:

- Firmware Version
- Vendor Name

**Security Device Support**

If this feature and the TPM jumper on the motherboard are both set to Enable, onboard security devices will be enabled for TPM (Trusted Platform Module) support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

- Active PCR Bank
- SHA256 PCR Bank

***If a TPM is installed and the feature above is set to Enable, "SHA-1 PCR Bank", "SHA256 PCR Bank", and additional settings will become available for configuration:***

**SHA-1 PCR Bank**

Use this feature to disable or enable the SHA-1 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

**SHA256 PCR Bank**

Use this feature to disable or enable the SHA256 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

**Pending Operation**

Use this feature to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **None** and TPM Clear.

**Platform Hierarchy**

Use this feature to disable or enable platform hierarchy for platform protection. The options are Disabled and **Enabled**.

**Storage Hierarchy**

Use this feature to disable or enable storage hiearchy for cryptographic protection. The options are Disabled and **Enabled**.

**Endorsement Hierarchy**

Use this feature to disable or enable endorsement hierarchy for privacy control. The options are Disabled and **Enabled**.

**TPM2.0 UEFI Spec Version**

Use this feature to specify the TPM UEFI spec version. TCG 1.2 supports Windows® 2012, Windows 8, and Windows 10. TCG 2 supports Windows 10 or later. The options are TCG_1_2 and **TCG_2**.

**Physical Presence Spec Version**

Use this feature to select the PPI spec version. The options are 1.2 and **1.3.**

**PH Randomization**

Use this feature to disable or enable Platform Hiearchy (PH) Randomization. The options are Disabled and **Enabled**.

**Device Select**

Use this feature to select the TPM version. TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support for TPM 2.0 devices. Select Auto to enable support for both versions. The options are TPM 1.2, TPM 2.0, and **Auto**.

**SMCI BIOS-Based TPM Provision Support**

Use feature to enable the Supermicro TPM Provision support. The options are Disabled and **Enabled**.

**TXT Support**

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

## ▶HTTP Boot Configuration

**Http Boot One Time**

After creating and saving a HTTP boot option, enable this feature to have the system auto boot into the newly created HTTP boot option the next time the system is powered on. The options are **Disabled** and Enabled.

**Input The Description**

Use this feature to input the HTTP boot option description.

**Boot URi**

Use this feature to input the URi address for HTTP Boot feature.

## ▶iSCSI Configuration

This submenu is available for configuration when "Network Stack" is enabled under the submenu, "PCIe/PCI/PnP Configuration".

**iSCSI Initiator Name**

This feature allows the user to enter the unique name of the iSCSI Initiator in IQN format. Once the name of the iSCSI Initiator is entered into the system, configure the proper settings for the following features.

**▶Add an Attempt**

**▶Delete Attempts**

**▶Change Attempt Order**

## ▶TLS Authentication Configuration

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

### ▶Server CA Configuration

#### ▶Enroll Certification

**Enroll Certification Using File**

Use this feature to enroll certification from a file.

**Certification GUID**

Use this feature to input the certification GUID.

**Commit Changes and Exit**

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

**Discard Changes and Exit**

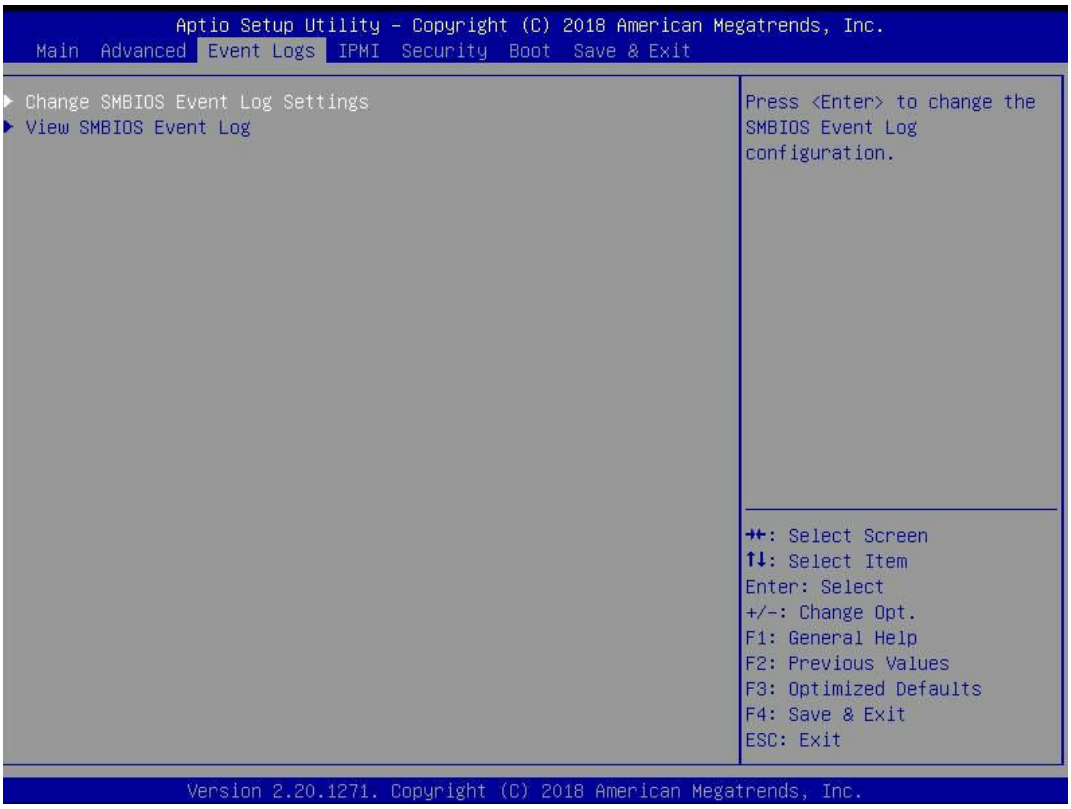
Use this feature to discard all changes and exit TLS settings.

#### ▶Delete Certification

Use this feature to delete certification.

# 6.4 Event Logs

Use this tab page to configure Event Log settings.




## ▶Change SMBIOS Event Log Settings

### Enabling/Disabling Options

### SMBIOS Event Log

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

### Erasing Settings

### Erase Event Log

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

### When Log is Full

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

**SMBIOS Event Log Standard Settings**

**Log System Boot Event**

This feature 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 occurences 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**.

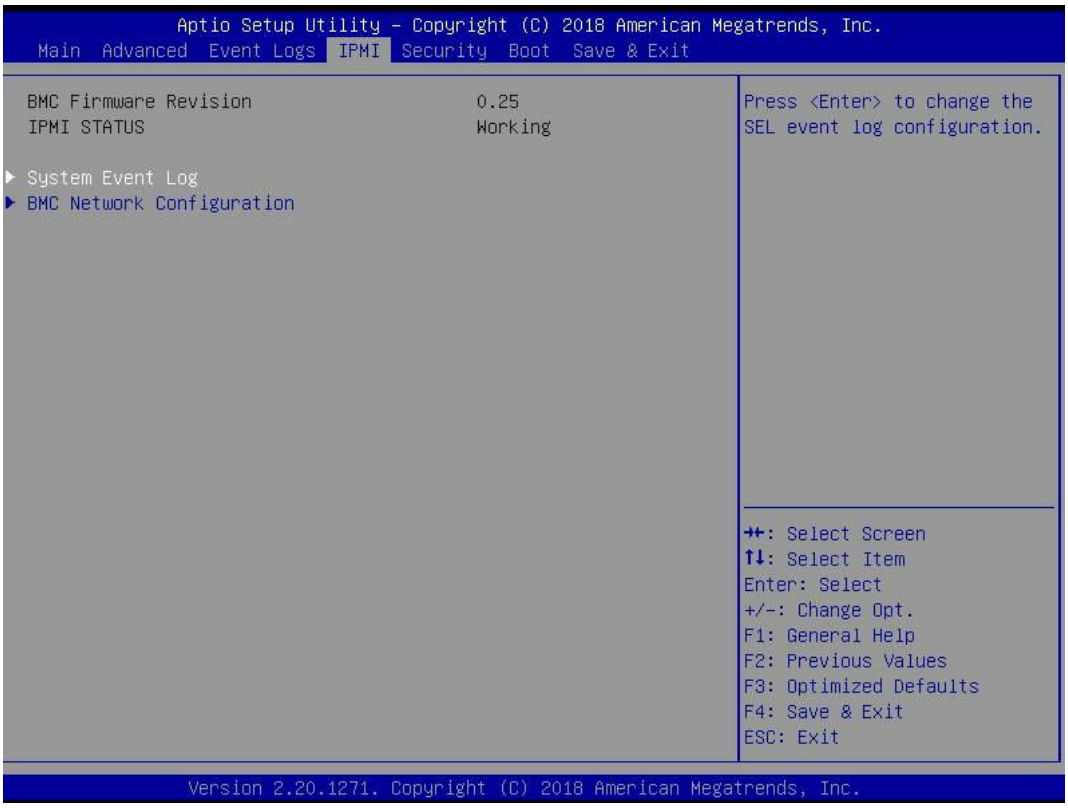
**Note**: After making changes on a setting, be sure to reboot the system for the changes to take effect.

## ▶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 Codes/Severity.

# 6.5 IPMI

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




**BMC Firmware Revision**

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

**IPMI Status (Baseboard Management Controller)**

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

## ▶System Event Log

### Enabling/Disabling Options

### SEL Components

Select Enabled for all system event logging at 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.

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

## ▶BMC Network Configuration

**BMC Network Configuration**

**Update IPMI LAN Configuration**

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

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

**Configure IPV4 Support**

This section displays configuration features for IPV4 support.

**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**.

**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 attached to the network and request the next available IP address for this computer. The options are Static and **DHCP**.

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

**Station IP Address**

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

**Subnet Mask**

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

**Station MAC Address**

This feature displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

**Gateway IP Address**

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

**VLAN**

This feature displays the virtual LAN settings. The options are **Disable** and Enable.

***If the feature above is set to Enable, "VLAN ID" will become available available for configuration:***

**VLAN ID**

Use this feature to enter the VLAN ID. The default setting is **0**.

**Configure IPV6 Support**

This section displays configuration features for IPV6 support.

**IPV6 Address Status**

This feature displays the IPV6 Address status. The default setting is **Disabled**.

**IPV6 Support**

Use this feature to enable IPV6 support. The options are **Enabled** and Disabled.

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

**Configuration Address Source**

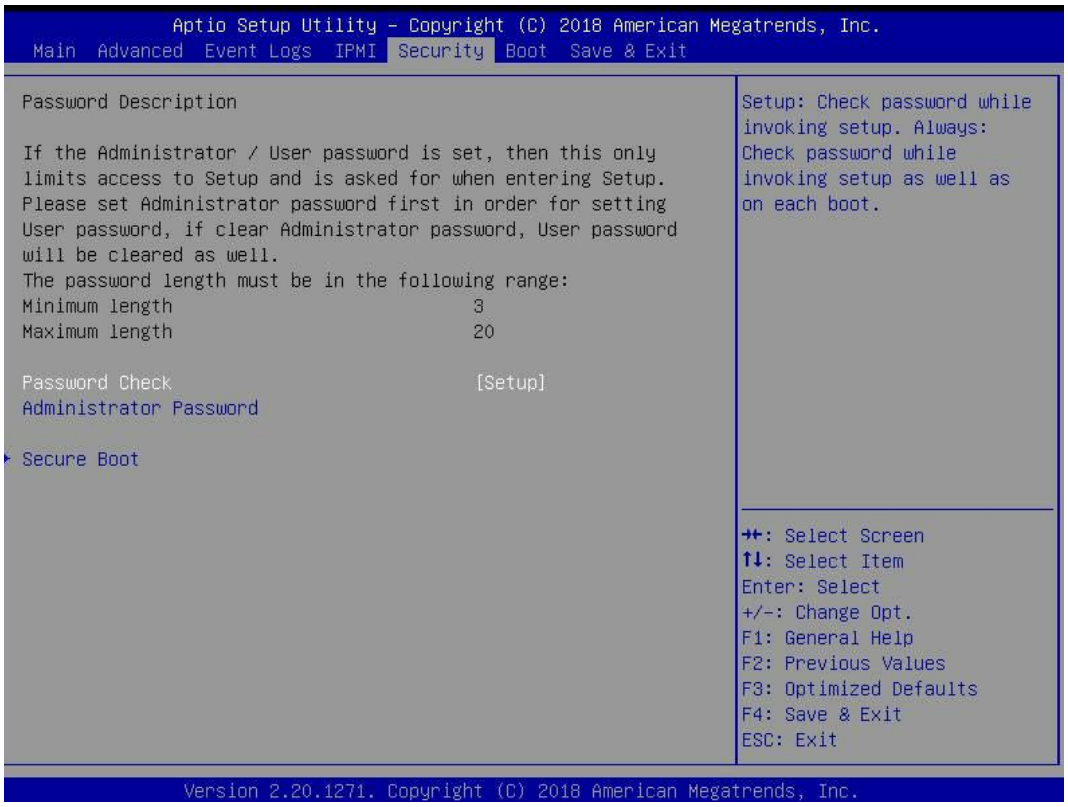
This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server attached to the network and request the next available IP address for this computer. The options are Static and **DHCP**.

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

- Station IPV6 Address
- Prefix Length
- IPV6 Router1 IP Address

# 6.6 Security

Use this tab page to configure Security settings.




### 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.

### Administrator Password

Press Enter to create a new, or change an existing, Administrator password.

## ▶Secure Boot

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

- System Mode
- Vendor Keys
- Secure Boot

### Secure Boot

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**.

**CSM Support**

Select Enabled to support the EFI Compatibility Support Module (CSM), which provides compatibility support for traditional legacy BIOS for system boot. The options are Disabled and **Enabled**.

### ▶Key Management

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

**▶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. Enroll SHA256 Hash Certicate of the image into the Authorized Signature Database.

**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 the DB defaults.The options are **Yes** and No.

**Secure Boot Variable**

**▶Platform Key (PK)**

This feature allows the user to update the settings of the platform keys.

**Update**

Select Yes to load a factory default PK or No to load from a file on an external media. The options are **Yes** and No.

### ▶Key Exchange Keys

**Update**

Select Yes to load the KEK from the manufacturer's defaults. Select No to load the KEK from a file. The options are **Yes** and No.

**Append**

Select Yes to add the KEK from the manufacturer's defaults list to the existing KEK. Select No to load the KEK from a file. The options are **Yes** and No.

### ▶Authorized Signatures

**Update**

Select Yes to load the database from the manufacturer's defaults. Select No to load the DB from a file. The options are **Yes** and No.

**Append**

Select Yes to add the database from the manufacturer's defaults to the existing DB. Select No to load the DB from a file. The options are **Yes** and No.

### ▶Forbidden Signatures

**Update**

Select Yes to load the DBX from the manufacturer's defaults. Select No to load the DBX from a file. The options are **Yes** and No.

**Append**

Select Yes to add the DBX from the manufacturer's defaults to the existing DBX. Select No to load the DBX from a file. The options are **Yes** and No.

### ▶Authorized TimeStamps

**Update**

Select Yes to load the DBT from the manufacturer's defaults. Select No to load the DBT from a file. The options are **Yes** and No.

**Append**

Select Yes to add the DBT from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file. The options are **Yes** and No.

## ▶OsRecovery Signature

This feature uploads and installs an OSRecovery Signature. You may insert a factory default key or load from a file. The file formats accepted are:

1) Public Key Certificate

a. EFI Signature List

b. EFI CERT X509 (DER Encoded)

c. EFI CERT RSA2048 (bin)

d. EFI SERT SHA256 (bin)

2) EFI Time Based Authenticated Variable

When prompted, select "Yes" to load Factory Defaults or "No' to load from a file.

### Update

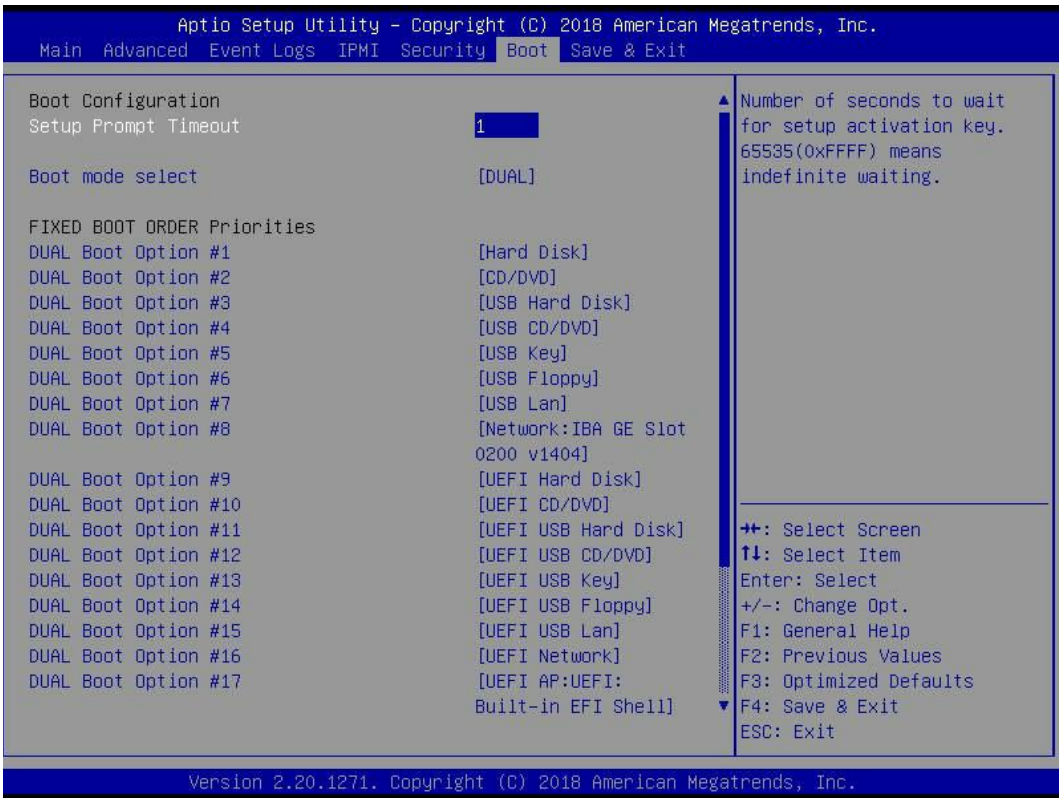
Select Yes to load the DBR from the manufacturer's defaults. Select No to load the DBR from a file. The options are **Yes** and No.

### Append

This feature uploads and adds an OSRecovery Signature into the Key Management. You may insert a factory default key or load from a file. When prompted, select "**Yes**" to load Factory Defaults or "No" to load from a file.

# 6.7 Boot

Use this tab page to configure Boot Settings.




### Setup Prompt Timeout

Use this feature to indicate the length of time (the number of seconds) for the BIOS to wait before rebooting the system when the setup activation key is pressed. Enter the value of 65535 (0xFFFF) for the BIOS to wait indefinitely. The default setting is **1**.

### 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 bootable devices that the system boots from. Press <Enter> on each entry from top to bottom to select devices.

***If the feature "Boot Mode Select" above is set to Legacy, UEFI, or Dual, the following settings will be available for configuration:***

- Legacy/UEFI/Dual Boot Option #1
- Legacy/UEFI/Dual Boot Option #2
- Legacy/UEFI/Dual Boot Option #3

- Legacy/UEFI/Dual Boot Option #4
- Legacy/UEFI/Dual Boot Option #5
- Legacy/UEFI/Dual Boot Option #6
- Legacy/UEFI/Dual Boot Option #7
- Legacy/UEFI/Dual Boot Option #8
- UEFI/Dual Boot Option #9
- Dual Boot Option #10
- Dual Boot Option #11
- Dual Boot Option #12
- Dual Boot Option #13
- Dual Boot Option #14
- Dual Boot Option #15
- Dual Boot Option #16
- Dual Boot Option #17

## ▶Delete Boot Option

This feature allows the user to select an EFI boot option to delete from the boot order.

**Delete Boot Option**

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

## ▶Delete Driver Option

This feature allows the user to select an EFI driver option to delete from the drive order.

***If any storage media is detected, "Add New Boot Option" and "Add New Driver Option" will become available for configuration:***

## ▶Add New Boot Option

This feature allows the user to add a new EFI boot option to the boot order for your system.

**Add Boot Option**

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

**Path for Boot Option**

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

**Boot Option File Path**

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

**Create**

Use this feature to set the name and the file path of the new boot option.

## ▶Add New Driver Option

This feature allows the user to add a new EFI driver option to the driver order for your system.

**Add Driver Option**

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

**Path for Boot Option**

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

**Driver Option File Path**

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

**Create**

Use this feature to set the name and the file path of the new driver option.

## ▶UEFI Application Boot Priorities

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

- UEFI Boot Option #1

## ▶NETWORK Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

***If any storage media is detected, the following features will become available for configuration:***

### ▶UEFI Hard Disk Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

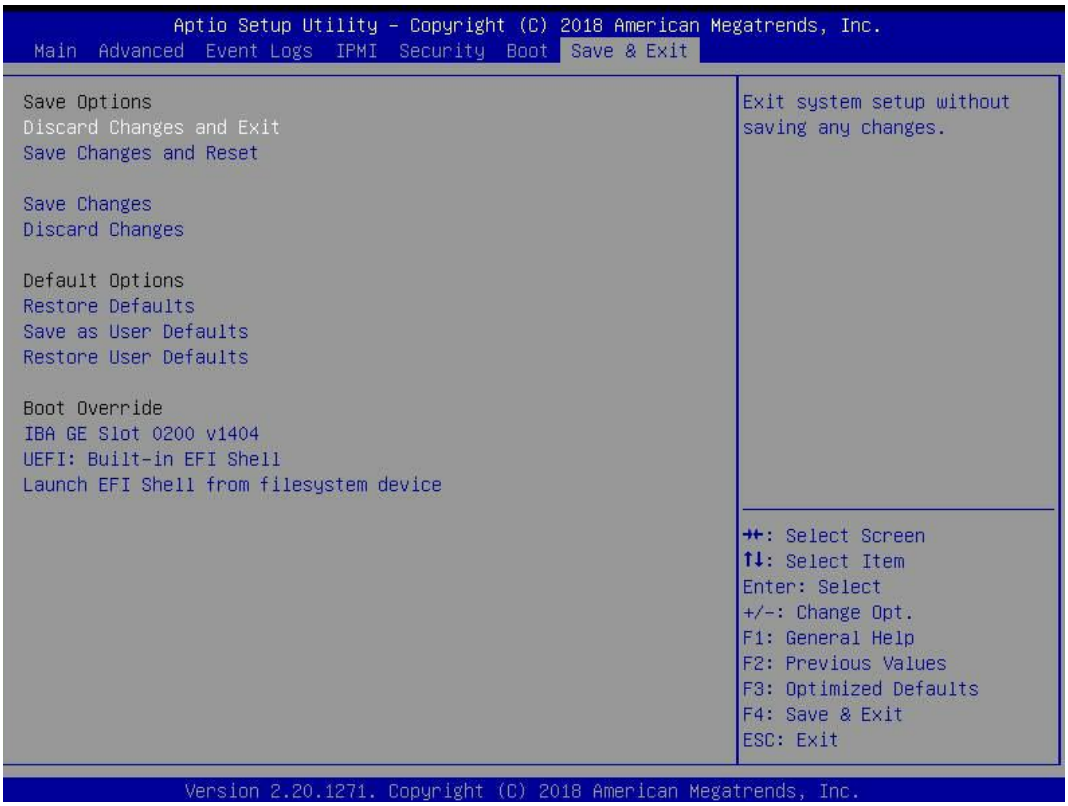
### ▶Hard Disk Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

# 6.8 Save & Exit

Use this tab page to configure Save & Exit settings.




### Save Options

### Discard Changes and Exit

Select this feature to quit the BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>.

### Save Changes and Reset

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

### Save Changes

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 take effect. Select Save Changes from the Save & Exit menu and press <Enter>.

### Discard Changes

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

### Default Options

#### Restore Defaults

To set this feature, select Restore Defaults from the Save & Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

#### 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 any 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

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

# Appendix A

# BIOS Error Codes

## A.1 BIOS Error Beep (POST) 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 below lists some common errors and their corresponding beep codes encountered by users.

| BIOS Error Beep (POST) Codes | | |
|---|---|---|
| **Beep Code** | **Error Message** | **Description** |
| 1 short | 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

# Standardized Warning Statements for AC Systems

## About 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 appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our website at http://www.supermicro.com/about/policies/safety_information.cfm.

## Warning Definition

**Warning!** This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

**警告の定義**

**この警告サインは危険を意味します。**

**人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、**

**電気回路に含まれる危険性**に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

ا كً ف حالة وٌكي أى تتسبب ف اصابة جسد ةٌ هذا الزهز عٌ خطز !تحذ زٌ .
قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال ٱجوة عي الذوائز
الكهزبائ ةٍ
وكي على درا ةٌ بالووارسات البقائ ةٍ لو عٌ وقع أي حادث
استخذم رقن الب إٍى الو صٌص ف هًا ةٌ كل تحذ زٌ للعشر تزجوتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

## Installation Instructions

**Warning!** Read the installation instructions before connecting the system to the power source.

**設置手順書**

**システムを電源に接続する前に、設置手順書をお読み下さい。**

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

## Circuit Breaker

**Warning!** This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

**サーキット・ブレーカー**

**この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。**

**保護装置の定格が250 V、20 Aを超えないことを確認下さい。**

警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

警告

此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי
המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250VDC, 20A

هذا المنتج يعتمد على معداث الحمايت مه الدوائرالقصيرة التي تم تثبيتها في
المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من : 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다.
보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 250V, 20A.

## Power Disconnection Warning

**Warning!** The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

**電源切断の警告**

**システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。**

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

אזהרה מפני ניתוק חשמלי

!אזהרה

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק

.לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים

يجب فصم انتظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد
انطاقت قبم
انصل إنى اىمناطق انداخهيت نههيكم نتثبيج أو إزانت مكناث الجهاز

경고!
시스템에 부품들을 장착하거나 제거하기 위해서는 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing
Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

## Equipment Installation

**Warning!** Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

**機器の設置**
**トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。**

警告
只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告
只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung
Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!
Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה!

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

والمدربيه لتزكيب واستبدال أو خدمة هذا الجهاس يجب أن يسمح فقط للمظفيه المؤهليه

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

## Restricted Area

**Warning!** This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

**アクセス制限区域**

**このユニットは、アクセス制限区域に設置されることを想定しています。**

**アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。**

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת
'כלי אבטחה בלבד )מפתח, מנעול וכד.)

تخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .
،مَكن انصبل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت
أو أ وس هُت أخري نلالأمما قفم ومفتاح

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

## 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

电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

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 اسحبذال البطارية بطريقة غير صحيحة فعليل
اسحبذال البطارية
فقط بنفس النع أو ما يعادلها مما أوصث به الشرمة المصنعة
جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة 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.

## Redundant Power Supplies

**Warning!** This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

**冗長電源装置**

**このユニットは複数の電源装置が接続されている場合があります。**

**ユニットの電源を切るためには、すべての接続を取り外さなければなりません。**

警告
此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告
此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה!

ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

## Backplane Voltage

**Warning!** Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際には注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה!

קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر مه التيار الكهزبائي أوالطاقة المجبدة على اللحة
عندما يكن النظام يعمل كه حذرا عند خدمة هذا الجهاس

경고!
시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생 합니다. 서비스 작업 시 주의하십시오.

Waarschuwing
Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

## Comply with Local and National Electrical Codes

**Warning!** Installation of the equipment must comply with local and national electrical codes.

**地方および国の電気規格に準拠**

**機器の取り付けはその地方および国の電気規格に準拠する必要があります。**

警告
设备安装必须符合本地与本国电气法规。

警告
設備安裝必須符合本地與本國電氣法規。

Warnung
Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!
La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention
L'équipement doit être installé conformément aux normes électriques nationales et locales.

תיאום חוקי החשמל הארצי
אזהרה!
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقاويه المحلية والبطية المتعلقة
بالكهرباء

경고!
현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing
Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

## 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.

التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القانين واللائح البطنية عند

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.

## Hot Swap Fan Warning


**Warning!** Hazardous moving parts. Keep away from moving fan blades. The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

**ファン・ホットスワップの警告**

**警告!回転部品に注意。運転中は回転部(羽根)に触れないでください。シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。**

警告!

警告！危险的可移动性零件。请务必与转动的风扇叶片保持距离。 当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

危險的可移動性零件。請務必與轉動的風扇葉片保持距離。 當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Gefährlich Bewegende Teile. Von den bewegenden Lüfterblätter fern halten. Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Riesgo de piezas móviles. Mantener alejado de las aspas del ventilador. Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Pieces mobiles dangereuses. Se tenir a l'ecart des lames du ventilateur Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה!

חלקים נעים מסוכנים. התרחק מלהבי המאוורר בפעולהכאשר מסירים את חלקי
המאוורר מהמארז, יתכן והמאוררים עדיין עובדים. יש להרחיק למרחק בטוח את
האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير! أجزاء متحركة خطرة. ابتعد عن شفرات المروحة المتحركة.من الممكن أن
المراوح لا تزال تدورعند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع
.ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة

경고!

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조림품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Gevaarlijk bewegende onderdelen. Houd voldoende afstand tot de bewegende ventilatorbladen. Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

## Power Cable and AC Adapter

**Warning!** When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the cord) for any other electrical devices than products designated by Supermicro only.

**電源コードとACアダプター**

**製品を設置する場合、提供または指定および購入された接続ケーブル、電源コードとACアダプターを 該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。**

**電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。**

警告

安装此产品时,请使用本身提供的或指定的或采购的连接线,电源线和电源适配器，包含遵照当地法规和安全要求的合规的电源线尺寸和插头.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止
使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的或採購的連接線,電源線和電源適配器，包含遵照當地法規和安全要求的合規的電源線尺寸和插頭.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止
使用未經UL或CSA認證的線材。 (線材上會顯示UL/CSA符號)。

Warnung

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adapater, die Ihre örtlichen Sicherheitsstandards einhalten. Der Gebrauch von anderen Kabeln und Adapter können Fehlfunktionen oder Feuer verursachen. Die Richtlinien untersagen das Nutzen von UL oder CAS zertifizierten Kabeln (mit UL/CSA gekennzeichnet), an Geräten oder Produkten die nicht mit Supermicro gekennzeichnet sind.

¡Advertencia!

Cuando instale el producto, utilice la conexión provista o designada o procure cables, Cables de alimentación y adaptadores de CA que cumplan con los códigos locales y los requisitos de seguridad, incluyendo el tamaño adecuado del cable y el enchufe. El uso de otros cables y adaptadores podría causar un mal funcionamiento o un incendio. La Ley de Seguridad de Aparatos Eléctricos y de Materiales prohíbe El uso de cables certificados por UL o CSA (que tienen el certificado UL / CSA en el código) para cualquier otros dispositivos eléctricos que los productos designados únicamente por Supermicro.

Attention

Lors de l'installation du produit, utilisez les cables de connection fournis ou désigné ou achetez des cables, cables de puissance et adaptateurs respectant les normes locales et les conditions de securite y compris les tailles de cables et les prises electriques appropries. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et la Loi sur la Sécurité Matériel interdit l'utilisation de câbles certifies- UL ou CSA (qui ont UL ou CSA indiqué sur le code) pour tous les autres appareils électriques sauf les produits désignés par Supermicro seulement.

AC ימאתמו סיילמשח סילבכ

!הרהזא

ךרוצל ומאתוה וא ושכרנ רשא AC סימאתמו סיקפס ,סילבכב שמתשהל שי ,רצומה תא סיניקתמ רשאכ לכב שומיש . עקתהו לבכה לש הנוכנ הדימ ללוכ ,תוימוקמה תוחיטבה תושירדל ומאתוה רשאו ,הנקתהה למשחה יריש כמב שומישה יקוחל סאתהב .ילמשח רצק וא הלקתל סורגל לולע ,רחא גוסמ סאתמ וא לבכ לש דוק סהילע עיפומ רשאכ) CSA-ב וא UL -ב סיכמסומה סילבכב שמתשהל רוסיא סייק ,תוחיטבה יקוחו .דבלב Supermicro י"ע סאתוה רשא רצומב קר אלא ,רחא ילמשח רצומ לכ רובע UL/CSA)

عند تركيب المنتج، قم باستخدام التوصيلات المتوفرة أو المحددة أو قم بشراء الكابلات الكهربائية ومحولات التيار المتردد مع الالتزام بقوانين ومتطلبات السلامة المحلية بما في ذلك حجم الموصل والقابس السليم. استخدام أي كابلات ومحولات أخرى قد يتسبب في عطل أو حريق. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام الكابلات المعتمدة من قبل UL أو CSA لمنتجات المعينة والمحددة من قبل Supermicro. والتي تحمل علامة (UL/CSA) مع أي معدات أخرى غير

전원 케이블 및 AC 어댑터

경고! 제품을 설치할 때 현지 코드 및 적절한 굵기의 코드와 플러그를 포함한 안전 요구 사항을 준수하여 제공되거나 지정된 연결 혹은 구매 케이블, 전원 케이블 및 AC 어댑터를 사용하십시오.

다른 케이블이나 어댑터를 사용하면 오작동이나 화재가 발생할 수 있습니다. 전기 용품 안전법은 UL 또는 CSA 인증 케이블 (코드에 UL / CSA가 표시된 케이블)을 Supermicro 가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

Stroomkabel en AC-Adapter

Waarschuwing! Bij het aansluiten van het Product uitsluitend gebruik maken van de geleverde Kabels of een andere geschikte aan te schaffen Aansluitmethode, deze moet altijd voldoen aan de lokale voorschriften en veiligheidsnormen, inclusief de juiste kabeldikte en stekker. Het gebruik van niet geschikte Kabels en/of Adapters kan een storing of brand veroorzaken. Wetgeving voor Elektrische apparatuur en Materiaalveiligheid verbied het gebruik van UL of CSA -gecertificeerde Kabels (met UL/CSA in de code) voor elke andere toepassing dan de door Supermicro hiervoor beoogde Producten.

# Appendix C

# System Specifications

**Processors**

Single Intel Xeon E-2200/2100, 9th/8th Generation Core i3, Pentium, or Celeron in a H4 - LGA 1151 socket with a thermal design power (TDP) of up to 95W and six cores
Note: Refer to the motherboard specifications pages on our website for updates to supported processors.

**Chipset**

Intel C242

**BIOS**

256Mb AMI BIOS® SPI Flash BIOS

**Memory**

Up to 128 GB of unbuffered (UDIMM) DDR4 (288-pin) ECC memory with speeds of up to 2666MHz in four memory slots

**Storage Drives**

Internal SATA drives: up to two 3.5" or up to three 2.5"
One M.2 slot for PCI-E 3.0 x4 (Supports M-Key 2280 / 22110 and Intel Optane Memory)

**PCI Expansion Slots**

One PCI-Express 3.0 x16

**Input/Output**

Network: Four 1GbE BASE-T ports (Intel i210)
IPMI: Dedicated LAN port
USB: Two USB 2.0 ports, two USB 3.1 Gen 1 ports on the rear I/O panel
Video: One VGA port
Serial: One serial port header (COM1) (internal)

**Motherboard**

X11SCL-LN4F; 9.6" (W) x 9.6" (L) (243.8mm x 243.8mm)

**Chassis**

SC512F-350B1; 1U rackmount; (WxHxD) 17.2 x 1.7 x 14.5 in. (437 x 43 x 369 mm)

**System Cooling**

Two 4-cm counter-rotating fans, CPU heatsink, air shroud to direct air flow

**Power Supply**

Model: PWS-350-1H, 350 W module, 80Plus Platinum level
AC Input
  100-127 Vac, 50-60 Hz
  200-240 Vac, 50-60 Hz
+12 V: 29 A
+12 V standby: Max: 3 A, Min: 0 A
+ 5 V: 15 A
+3.3 V: 12 A

**Operating Environment**

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)

### Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55032 Class A, EN 61000-3-2/3-3, CISPR 32 Class A
Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)
Other: VCCI-CISPR 32 and AS/NZS CISPR 32
Environmental: Directive 2011/65/EU and Directive 2012/19/EU
Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

### Perchlorate Warning

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

# 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 do update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

## D.1 Overview

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism that will allow the UEFI OS loader stored in an add-on card to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

## D.2 Recovering the UEFI BIOS Image

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The recovery block contains critical BIOS codes, including memory detection and recovery codes for 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 below for BIOS recovery when the main BIOS block crashes.

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

## 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. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

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

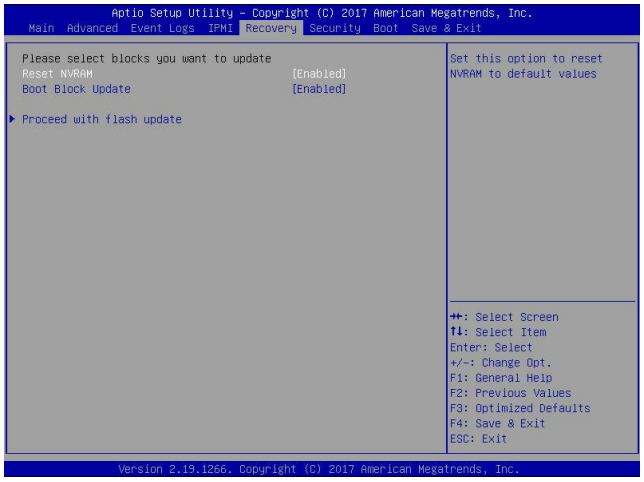
1. Using a different machine, copy the "Super.ROM" binary image file into the Root "\" directory of a USB device or a writable CD/DVD.

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

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

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

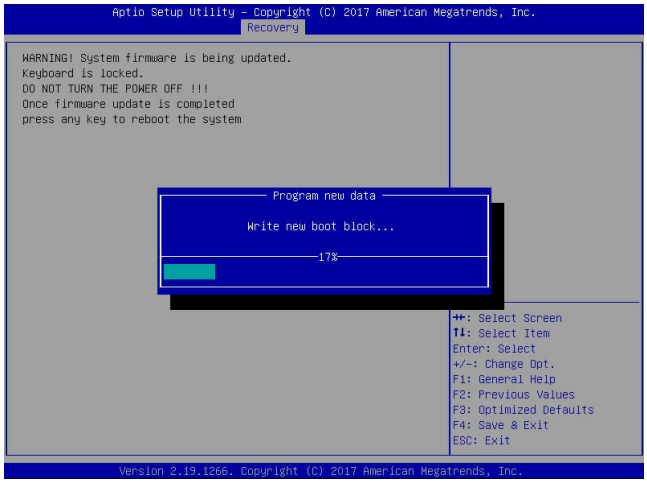
3. After locating the healthy BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



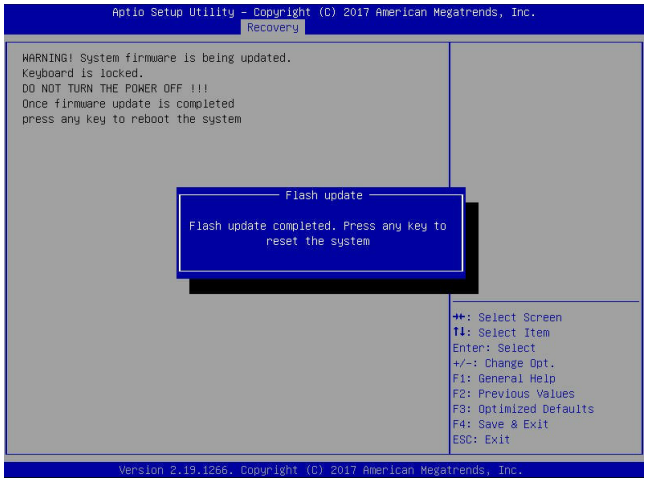

**Note**: At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

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

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

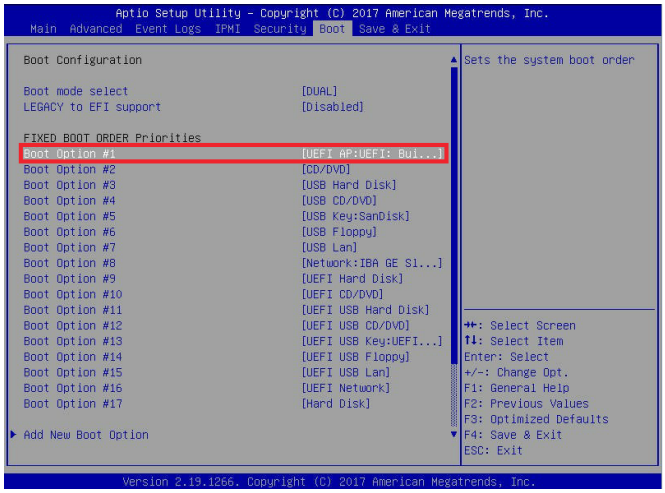


5. After the BIOS recovery process is complete, press any key to reboot the system.

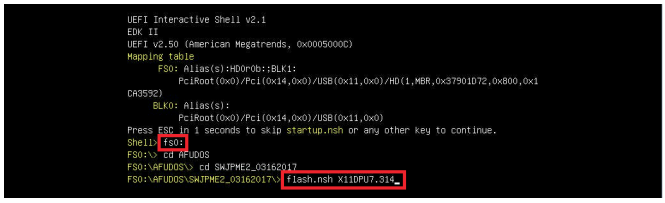



6. Using a different system, extract the BIOS package into a USB flash drive.

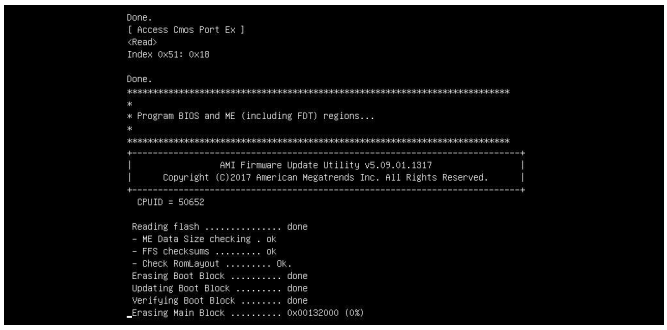
7. Press <Del> continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings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



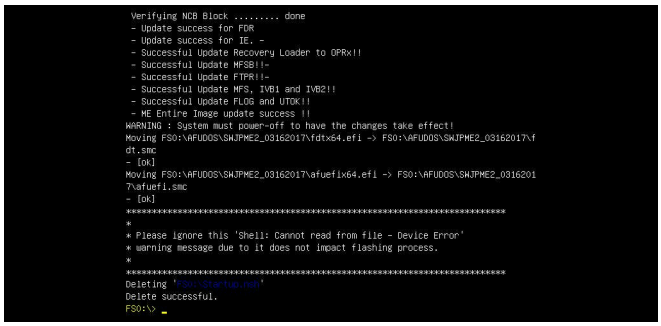
8. When the UEFI Shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter flash.nsh BIOSname.### at the prompt to start the BIOS update process.




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




9. The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug the AC power cable in the power supply again to power on the system.




10. Press <Del> continuously to enter the BIOS Setup utility.

11. Press <F3> to load the default settings.

12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.