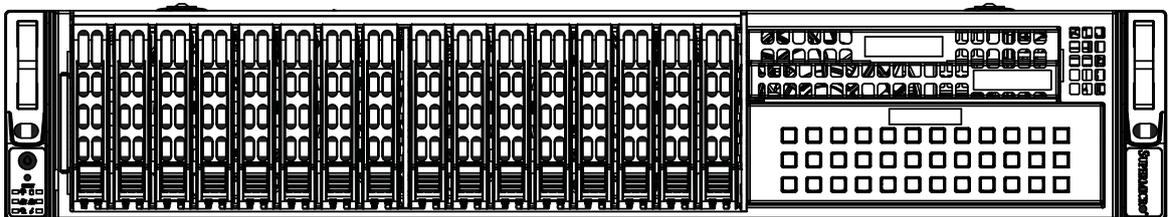




SUPERSERVER<sup>®</sup>

2028R-TXR



USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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# Preface

## About This Manual

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

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# Chapter 1

## Introduction

### 1-1 Overview

The 2028R-TXR is a high-end server comprised of two main subsystems: the SC213XAC-R1K05 2U server chassis and the X10DRX serverboard.

Please refer to our website for information on operating systems that have been certified for use with the system ([www.supermicro.com](http://www.supermicro.com)).

In addition to the serverboard and chassis, various hardware components have been included with the 2028R-TXR, as listed below:

- Four 8-cm system fans (FAN-0174L4)
- One air shroud
- Two 2U passive CPU heatsinks (SNK-P0048PS)
- One rack rail kit (MCP-290-00053-0N)
- SATA accessories:
  - One HDD backplane (BPN-SAS3-213A)
  - Sixteen 2.5" hard disk drive bays (MCP-220-00047-0B)

**Note:** 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.

- Product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety information:  
[http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm)

For support, email [support@supermicro.com](mailto:support@supermicro.com).

### 1-2 Serverboard Features

At the heart of the SuperServer 2028R-TXR lies the X10DRX processor serverboard based upon the Intel PCH C612 chipset. Below are the main features of the serverboard.

## Processor

Each serverboard supports up to two Intel® Xeon® E5-2600 v3/v4 processors in an LGA 2011 socket (Socket R3). Each processor supports dual full-width Intel QuickPath Interconnect (QPI) links (of up to 9.6 GT/s one direction per QPI). Refer to our website for a complete listing of supported processors.

## Memory

Each serverboard has 16 DIMM slots that can support up to 2TB ECC 3DS of Load Reduced (LRDIMM) registered memory or up to 512GB of registered (RDIMM) DDR4 ECC modules, 2400/2133/1866/1600 MHz.

**Note:** Refer to Section 5-6 before installing memory and the Supermicro website for recommended DIMMs.

## Onboard SATA

A SATA controller is integrated into the chipset for 10 SATA3 (6Gbps) ports that supports RAID 0, 1, 5, and 10. The SATA drives are hot-swappable units.

## PCIe Expansion Slots

The system has ten low profile PCIe-E 3.0 x8 and one PCI-E 2.0 x4 (in x8) slots for a total of eleven PCI expansion slots.

## I/O Ports

The rear I/O ports include one COM port, a VGA (monitor) port, two USB 2.0 ports, two USB 3.0 ports, a dedicated IPMI LAN port and two Gb Ethernet LAN ports.

## 1-3 Chassis Features

The following is a general outline of the main features of the SC213XAC-R1K05 server chassis.

### Hard Drives

The SC213 chassis includes sixteen 2.5" hard drive bays and one 5.25" drive bay. It can accommodate sixteen hot-swap drives. The drives can be hot-swappable if supported by the operating system. Hard drives must be purchased separately. The drives are enabled through a backplane.

A slim DVD drive is optional.

### System Power

The system includes two redundant hot-plug, high-efficiency power supplies, each rated at 1000 Watts.

### Front Control Panel

The control panel on the server provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system information and power supply failure. A main power button and a system reset button are also included.

### Cooling System

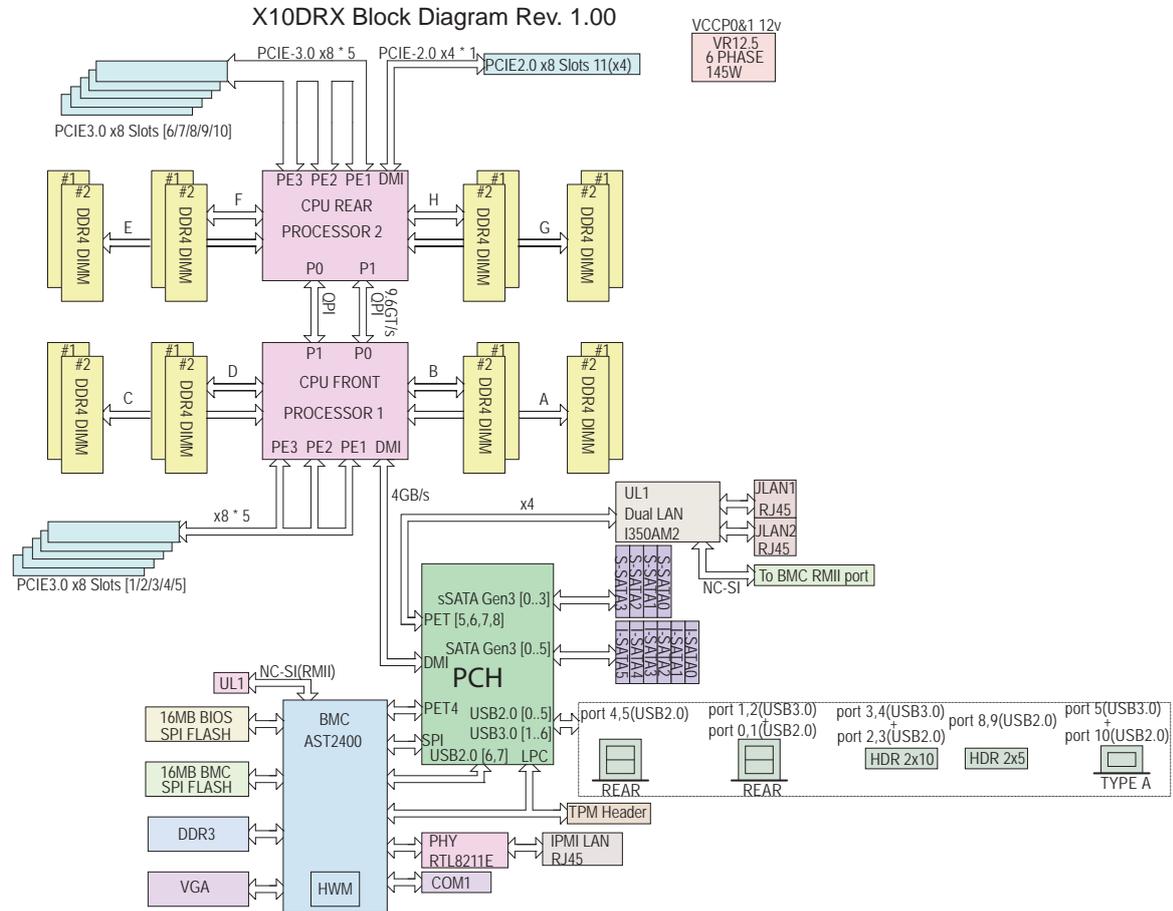
The system supports four fans connected to the motherboard. It also includes heatsinks for each CPU and a mylar air shroud that directs the airflow where cooling is needed on the serverboard.

### Mounting Rails

The system includes a set of quick-release rails, and can be placed in a rack for secure storage and use.

**Figure 1-1. Intel C612 Chipset:  
System Block Diagram**

**Note:** This is a general block diagram. Please see Chapter 5 for details.



## 1-4 Contacting Supermicro

### Headquarters

Address: Super Micro Computer, Inc.  
980 Rock Ave.  
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: [marketing@supermicro.com](mailto:marketing@supermicro.com) (General Information)  
[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)

Website: [www.supermicro.com](http://www.supermicro.com)

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's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

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[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto:rma@supermicro.nl) (Customer Support)

Website: [www.supermicro.nl](http://www.supermicro.nl)

### Asia-Pacific

Address: Super Micro Computer, Inc.  
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Zhonghe Dist., New Taipei City 235  
Taiwan (R.O.C)

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

Website: [www.supermicro.com.tw](http://www.supermicro.com.tw)

## 1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning 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

This chapter outlines the procedure to install your system into a rack. If your system is not already fully integrated with a drives, processors, or system memory refer to the relevant chapter for details on installing components.

### 2-1 Unpacking the System

You should inspect the box in which your server was shipped and note if it was damaged. If the server itself shows damage, file a claim with the carrier.

### 2-2 Preparing for Setup

Decide on a suitable location for the rack unit that will hold the server. It should be in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. It must be near a grounded power outlet.

The box in which the server was shipped includes two sets of rail assemblies, two rail mounting brackets and mounting screws to install the system into the rack. The installation procedure is provided later in this chapter. Please read this section and "Warnings and Precautions" section before beginning the installation procedure.

#### Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices according to §2 of the German Ordinance for Work with Visual Display Units.

## 2-3 Warnings and Precautions

### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, 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 component from the rack.
- You should extend only one 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 Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow any hot plug drives and power supply modules to cool before touching them.
- Always keep the rack front door and all panels and components on the servers closed when not servicing 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 ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature ( $T_{mra}$ ).

### Reduced 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.).



**Warning!** 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:

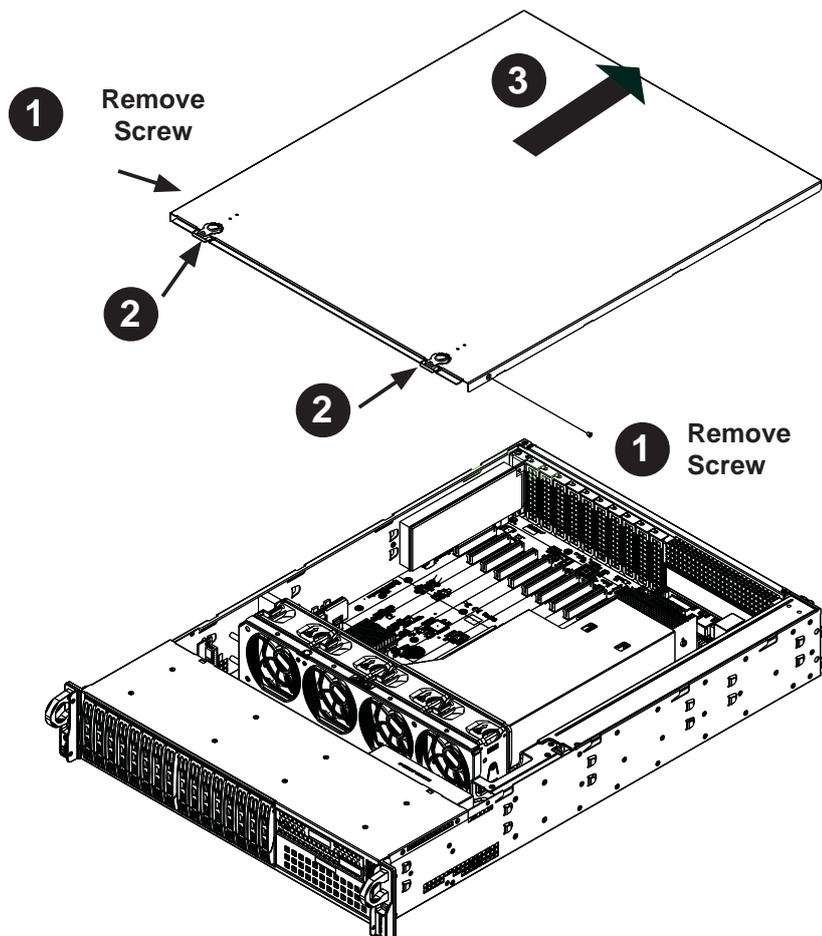
- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- Slide rail mounted equipment is not to be used as a shelf or a work space.

## 2-4 Checking the Setup

Open the unit to make sure the serverboard is properly installed and all the connections have been made.

### *Removing the Chassis Cover*

1. Remove the two screws on each side of the cover, which secure the cover to the chassis.
2. Press the release tabs to remove the cover from the locked position. Press both tabs at the same time.
3. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis and up.
4. Before operating the server for the first time, it is important to remove the protective film covering the top of the chassis, to allow for proper ventilation and cooling.



**Figure 2-1. Removing the Chassis Cover**

**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 proper airflow and prevent overheating. Lift the cover off the chassis.

## Completing the Configuration

Your server may or may not come with hard disk drives, processors or system memory already installed. The following sections refer you to the procedures for installing these components.

### *Checking the Components and Setup*

- To install processors and heatsinks into the serverboard, see Chapter 5 for the procedure.
- To install system memory DIMMs, refer to Chapter 5.
- To install hard disk drives or optional peripheral drives, see the procedures in Chapter 6.
- To install expansion cards to the system, see Chapter 6.

### *Checking the Airflow*

- Airflow is provided by three 8-cm chassis cooling fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.
- To install the air shroud that assists with air flow, see Chapter 6.
- Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans.

### *Providing Power*

After installing or checking components and mounting your server in its rack, connect the power.

1. Plug the power cords from the power supply units into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).
2. Depress the power button on the front of the chassis.

## 2-5 Installing the System into a Rack

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **Note:** This rail will fit a rack between 26.5" and 36.4" deep.

### Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies. Each assembly consists of three sections: An inner rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.

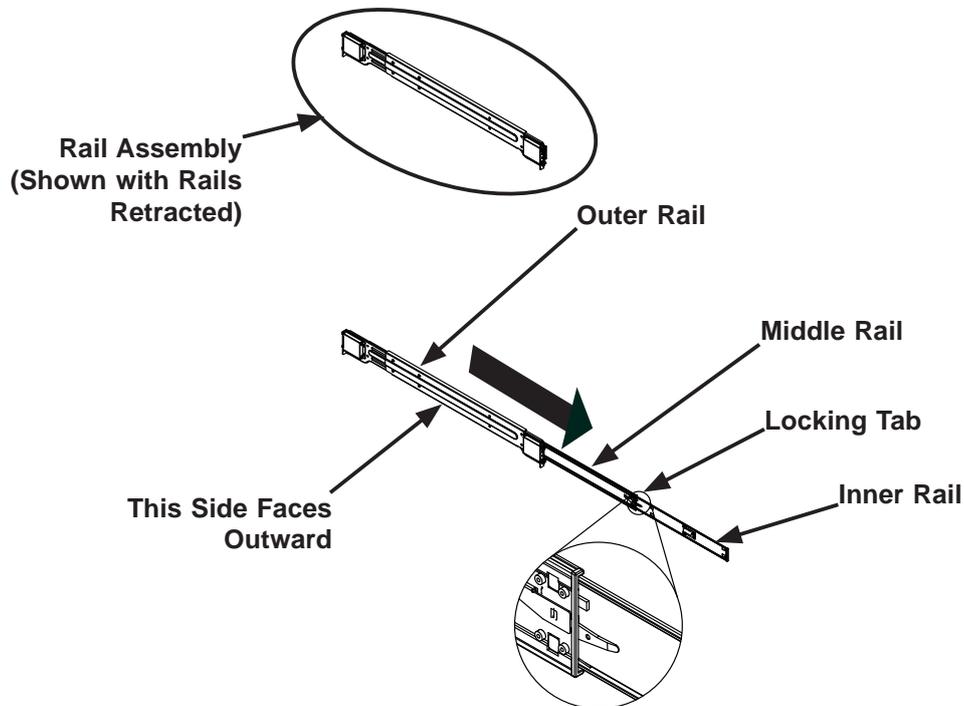


Figure 2-2. Identifying the Outer Rail, Middle Rail and Inner Rail (Left Rail Assembly Shown)

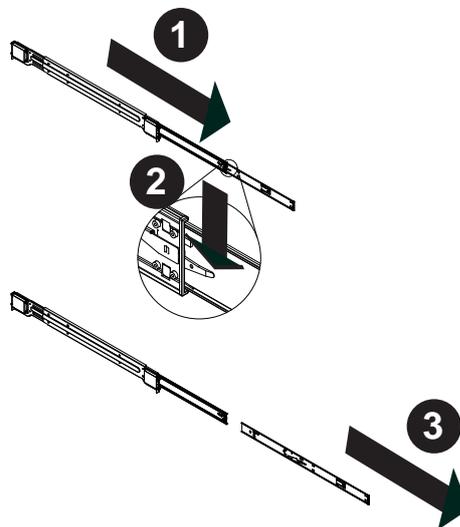
## Releasing the Inner Rail

Each inner rail has a locking latch. This latch prevents the server from coming completely out of the rack when the chassis is pulled out for servicing.

To mount the rail onto the chassis, first release the inner rail from the outer rails.

### *Releasing Inner Rail from the Outer Rails*

1. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
2. Press the locking tab down to release the inner rail.
3. Pull the inner rail all the way out.
4. Repeat for the other outer rail.



**Figure 2-3. Extending and Releasing the Inner Rail**

## Installing the Inner Rails on the Chassis

### *Installing the Inner Rails*

1. Identify the left and right inner rails. They are labeled.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the quick release bracket snaps into place, securing the rail to the chassis.
4. Optionally, you can further secure the inner rail to the chassis with a screw.
5. Repeat for the other inner rail.

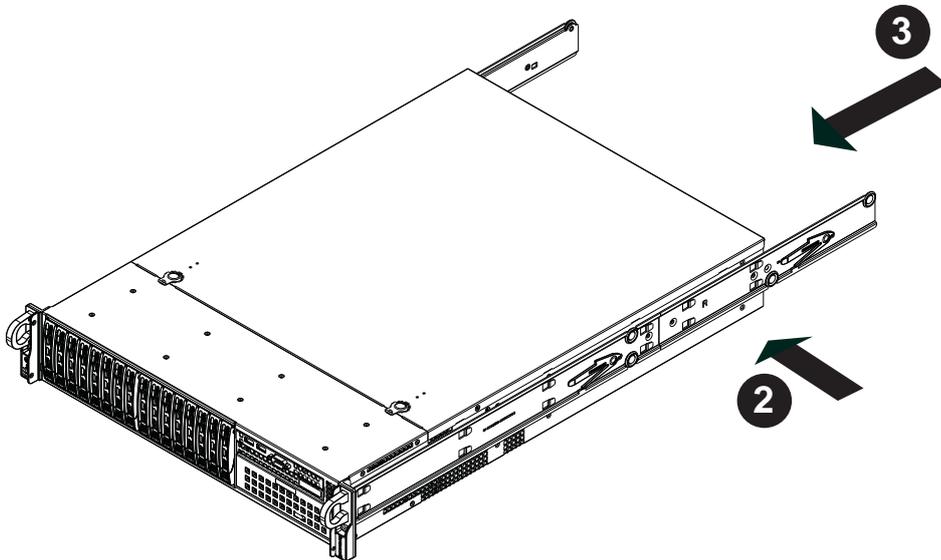
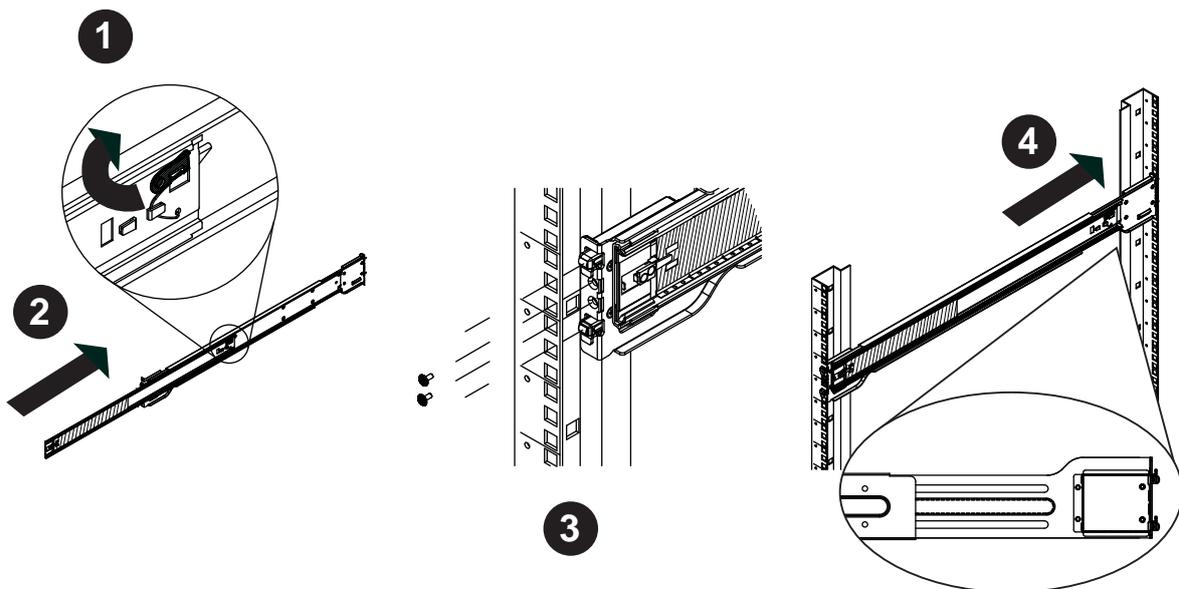


Figure 2-4. Installing the Inner Rails

## Installing the Outer Rails onto the Rack

### *Installing the Outer Rails*

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks on the front of the outer rail onto the square holes on the front of the rack. If desired, use screws to secure the outer rails to the rack.
4. Pull out the rear of the outer rail, adjusting the length until it just fits within the posts of the rack.
5. Hang the hooks of the rear section of the outer rail onto the square holes on the rear of the rack. Take care that the proper holes are used so the rails are level. If desired, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat for the other outer rail.



**Figure 2-5. Extending and Mounting the Outer Rails**



**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.

Do not use a two post "telco" type rack.

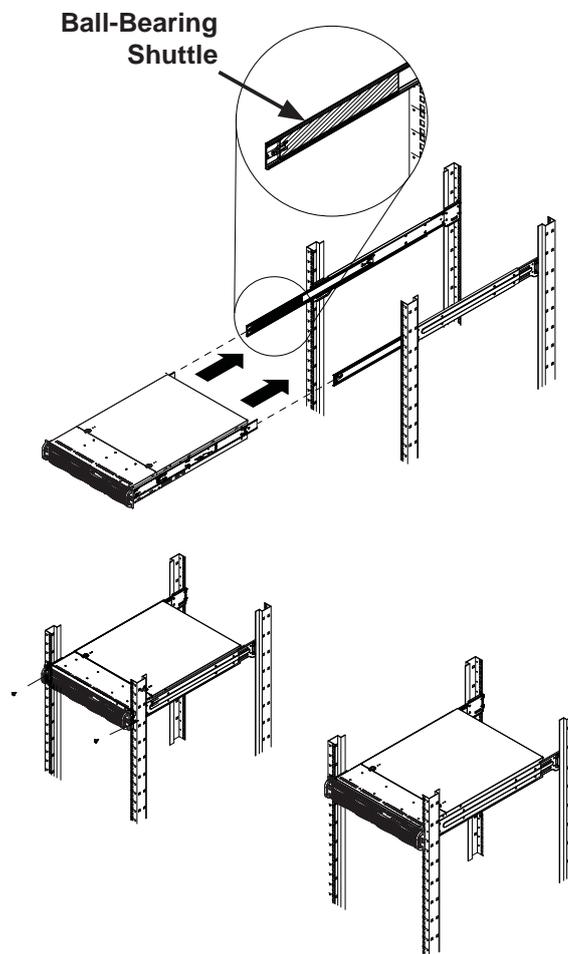
## Sliding the Chassis onto the Rack Rails



**Warning:** Mounting the system into the rack requires at least two people to support the chassis during installation. Please follow safety recommendations printed on the rails.

### *Installing the Chassis into a Rack*

1. Extend the outer rails as illustrated above.
2. Align the inner rails of the chassis with the outer rails on the rack.
3. Slide the inner rails into the outer rails, keeping the pressure even on both sides. When the chassis has been pushed completely into the rack, it should click into the locked position.
4. Optional screws may be used to hold the front of the chassis to the rack.



**Figure 2-6. Installing into a Rack**

**Note:** The figure above is for illustrative purposes only. Always install servers to the bottom of the rack first.



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

# Chapter 3

## System Interface

### 3-1 Overview

The server includes:

- A control panel on the front that houses power buttons and status monitoring lights
- Status lights on the externally accessible hard drives
- Status lights for the power supply visible from the back of the chassis

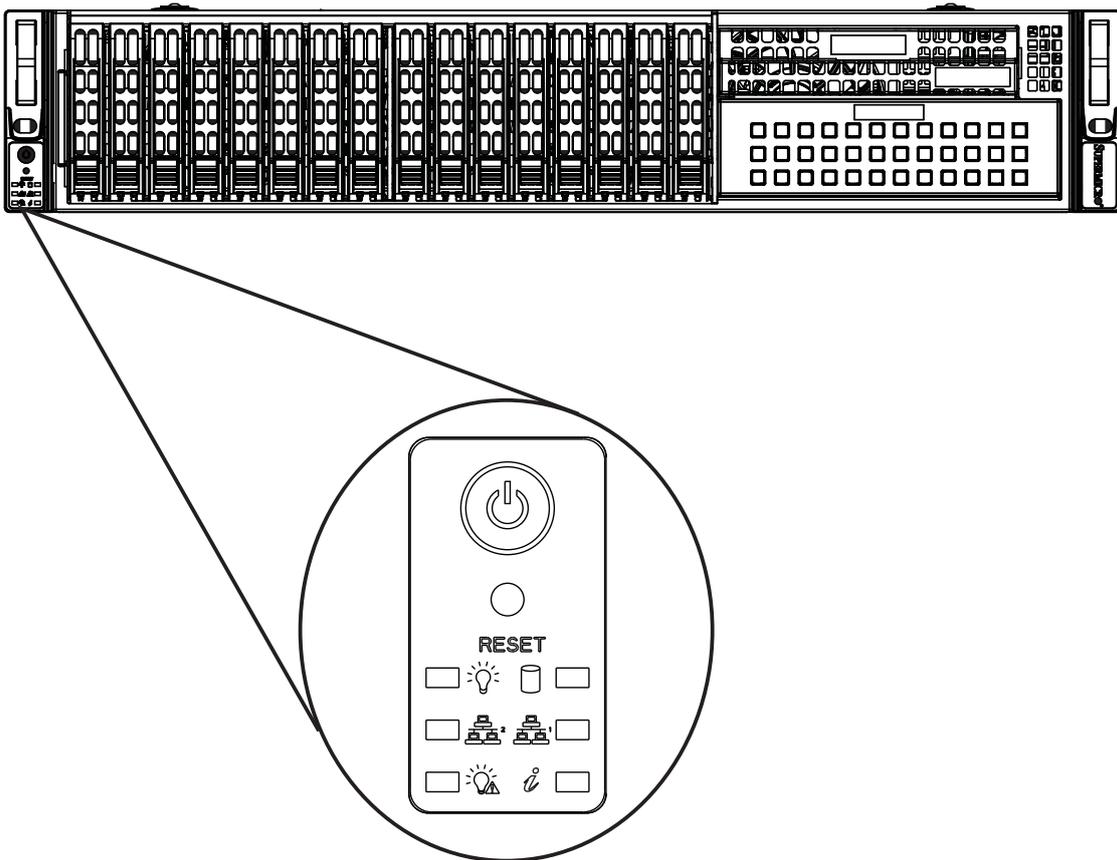


Figure 3-1. Control Panel

### 3-2 Control Panel Buttons

The chassis includes two push-buttons that control power to the system.



**Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.



RESET

**Reset:** The reset button is used to reboot the system.

### 3-3 Control Panel LEDs

There are six LEDs that provide status information about the system.



**Power:** Indicates power is being supplied to the system power supply units. This LED should normally be illuminated when the system is operating.



**HDD:** Indicates activity on a hard drive when flashing.



**NIC2:** Indicates network activity on GLAN2 when flashing.



**NIC1:** Indicates network activity on GLAN1 when flashing.



**Power Fail:** Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. When this LED turns solid red or blinks red, check the AC source. This LED should be off when the system is operating normally.



**Information LED:** Alerts operator of several states, as noted in the table below.

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	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue	Remote UID is on. Use this function to identify the server from a remote location.

## Overheating

There are several possible responses if the system overheats.

### Responses

**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. Check the routing of the cables and make sure all fans are present and operating normally.
4. Verify that the heatsinks are installed properly.

### 3-4 Drive Carrier LEDs

The chassis includes externally accessible SAS/SATA drives. Each drive carrier displays two status LEDs on the front of the carrier.

- **Green:** When illuminated, this LED indicates drive activity. It blinks on and off when that particular drive is being accessed. This function is controlled by the backplane.
- **Red:** When illuminated, this LED indicates a drive failure. You should be notified by your system management software.

### 3-5 Power Supply LEDs

On the rear of the power supply module, an LED displays the status.

- **Solid Green:** When illuminated, indicates that the power supply is on.
- **Solid Amber:** When illuminated, indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.
- **Blinking Amber:** When blinking, this system power supply temperature has reached 63C. The system will automatically power-down when the power supply temperature reaches 70C and restarts when the power supply temperature goes below 60C.

## Chapter 4

# Standardized Warning Statements for AC Systems

### 4-1 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](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。

此警告符号代表危險。

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.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .  
قبل أن تعمل على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر  
الكهربائية  
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث  
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

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.

اقرأ 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

此产品的短路(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-250 V, 20 A

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في المبنى

تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 250V, 20A

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 elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 220V, 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 châssis pour installer ou enlever des composants de système.

**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 فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل الوصول إلى المناطق الداخلية للهيكल لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 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.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتكريب واستبدال أو خدمة هذا الجهاز

### 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').

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .  
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،  
قفل ومفتاح أو أي وسيلة أخرى للأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어 있습니다. 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

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

### 警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

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

Attention

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

¡Advertencia!

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

**אזהרה!**

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

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

Waarschuwing

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

## 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

此装置连接的电源可能不只一个，必须切断所有电源才能停止对该装置的供电。

### Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein Strom 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!**

ליחידה 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 لعزل 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。

修理する際にはご注意ください。

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 من التيار الكهربائي أو الطاقة الموجودة على اللوحة عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

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 للقوانين المحلية والوطنية 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.

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

경고!

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

Waarschuwing

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

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。

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 el montaje del ventilador del chasis. Mantenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Pieces mobiles dangereuses. Se tenir a l'écart 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 בפעולה כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير! أجزاء متحركة خطيرة. ابتعد عن شفرات المروحة المتحركة. من الممكن أن المراوح لا تزال تدور عند 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. 새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 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 code) 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、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。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连接线,电源线和电源适配器.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連接線,電源線和電源適配器.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

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

### ¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

**Attention**

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

**חשמליים ומתאמי AC****אזהרה!**

כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרקמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية ومحوالات التيار المتردد التي . أن استخدام أي كابلات ومحوالات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات UL أو CSA معتمدة من قبل لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro (التي تحمل علامة UL/CSA)

**경고!**

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL 또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

**Waarschuwing**

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

# Notes

## Chapter 5

# Advanced Serverboard Setup

This chapter covers the steps required to install processors and heatsinks to the X10DRX serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system sufficiently.

### 5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling.

The following measures are generally sufficient to protect your equipment from static discharge.

#### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

#### Unpacking

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

## 5-2 Installing the Processor and Heatsink

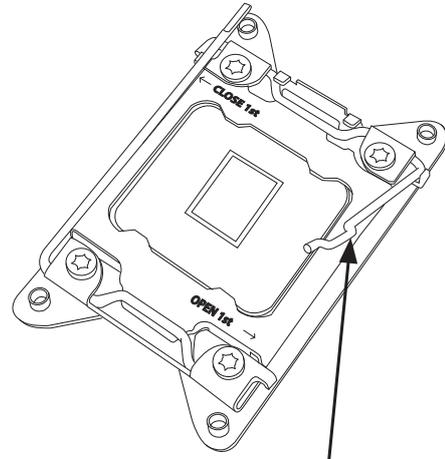
### Notes:

- Always remove the power cord before adding, removing or changing a CPU.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- If you buy a CPU separately, use only an Intel-certified, multi-directional heatsink.
- Avoid placing direct pressure to the top of the processor package.
- Install the processor into the CPU socket before installing the heatsink.
- Refer to the Supermicro website for updates on CPU support.

### Installing an LGA 2011 Processor

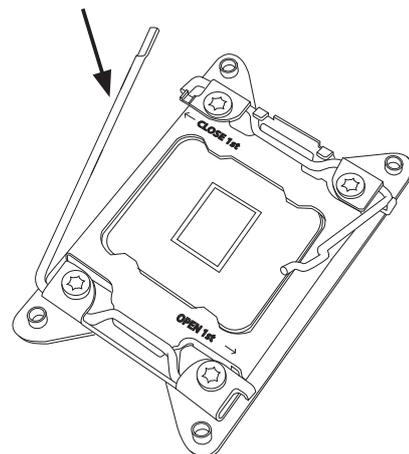
#### *Installing a CPU*

1. There are two load levers on the LGA 2011 socket. First press and release the load lever labeled "Open 1st".
2. Press the second load lever labeled "Close 1st" to release the load plate from its locked position.



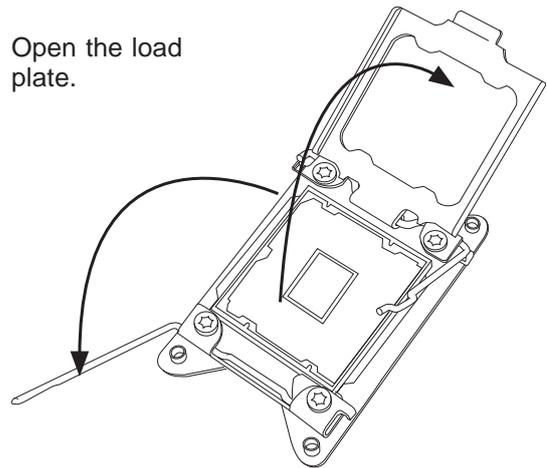
Release the lever labeled "Open 1st"

Release the lever labeled "Close 1st"

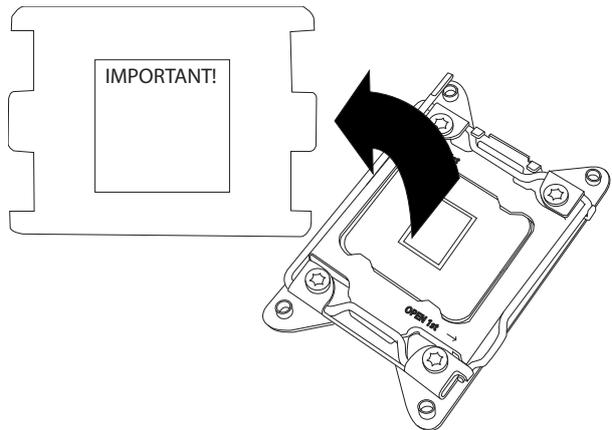


3. With the second lever fully retracted, gently push down on the "Open 1st" lever to loosen the load plate. Lift the load plate with your fingers to open it completely.

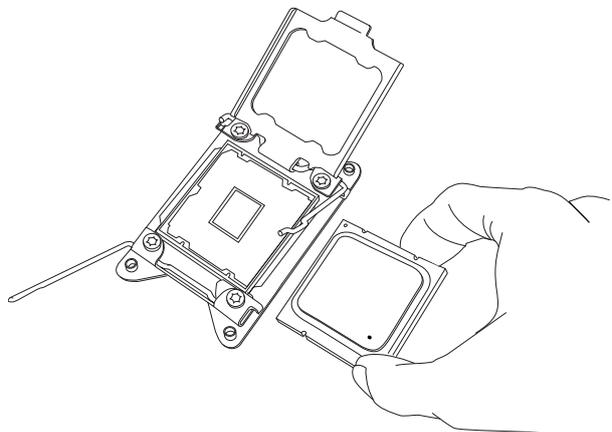
Open the load plate.



4. Pop the plastic cap marked "Warning" out of the load plate.
5. Holding the CPU carefully above the socket, orient the CPU so that all keys and edges will fit the socket.



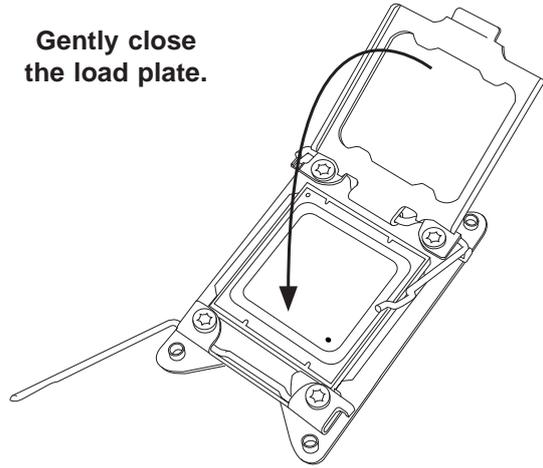
6. Carefully lower the CPU straight down into the socket. Do not move the CPU horizontally, and do not rub the pins of the socket. This may damage the CPU or the socket.



**Caution:** You can only install the CPU into the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it does not 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 aligned properly.

7. With the "Close 1st" lever fully retracted, gently close the load plate.

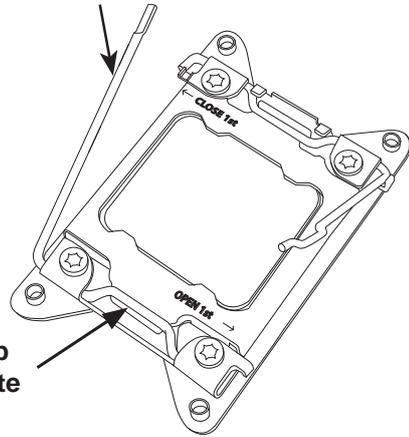
**Gently close the load plate.**



8. Make sure the locking mechanism on the "Close 1st" lever catches the lip of the load plate. Close and lock the "Close 1st" lever.

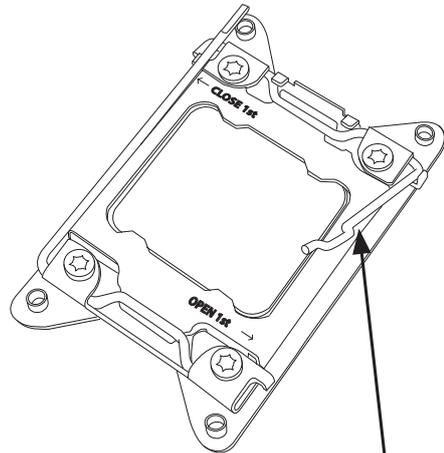
**Push down and lock the lever labeled "Close 1st".**

**Engage the lip of the load plate and locking portion of the lever.**



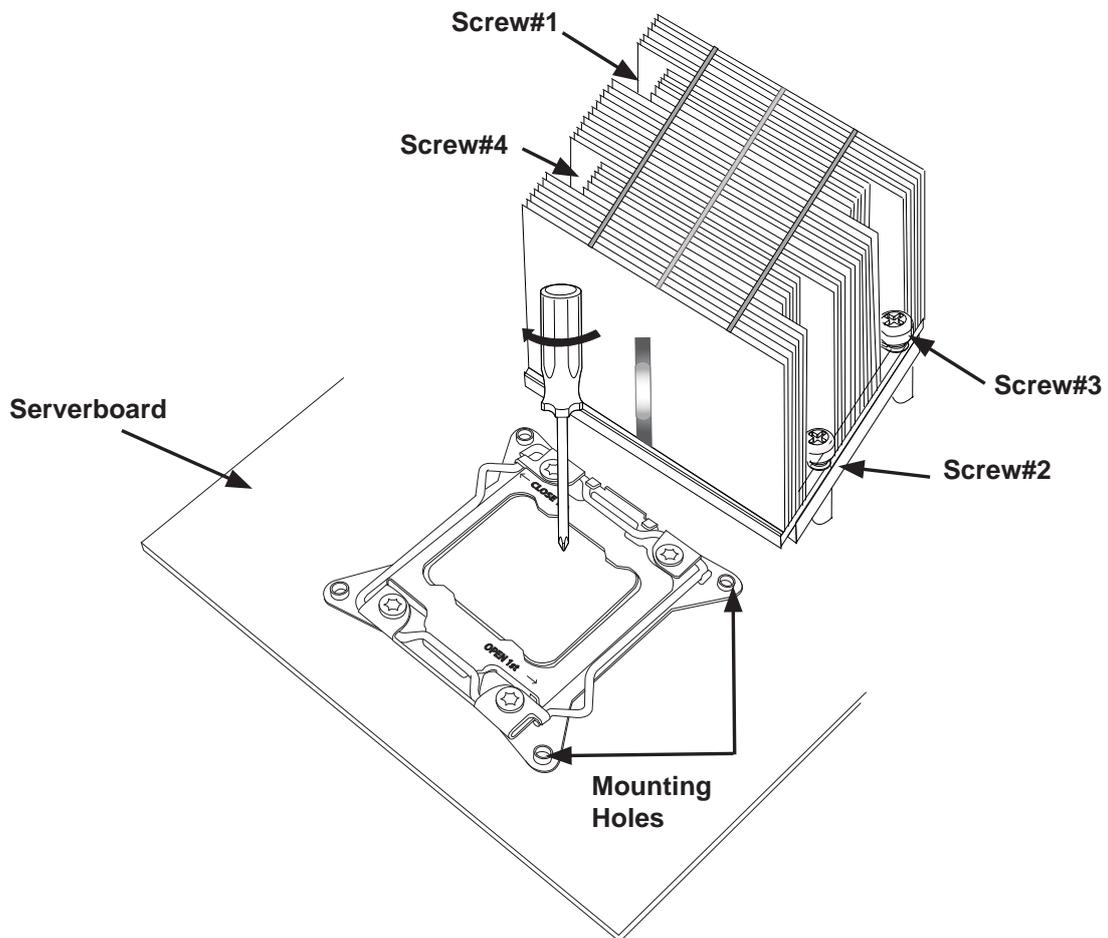
9. Close and lock the "Open 1st" lever.

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



## Installing a Passive CPU Heatsink

1. Apply the proper amount of thermal grease to the heatsink.
2. Place the heatsink on top of the CPU so that the two mounting holes on the heatsink are aligned with those on the retention mechanism.
3. Insert two push-pins on the sides of the heatsink through the mounting holes on the motherboard, and turn the push-pins clockwise to lock them.



**Figure 5-1. Installign a Passive CPU Heatsink**

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

## Removing the Passive Heatsink

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

1. Unplug the power cord from the power supply.
2. Press down the push-pin on the heatsink, and turn counter-clock-wise to loosen it. Repeat the same step to loosen the second push-pin.
3. Hold the heatsink as shown in the picture below, and gently wriggle the heatsink to loosen it. (Do not use excessive force when wriggling the heatsink.)
4. Once the heatsink is loosened, remove it from the motherboard.

Loosen screws in the sequence as shown.

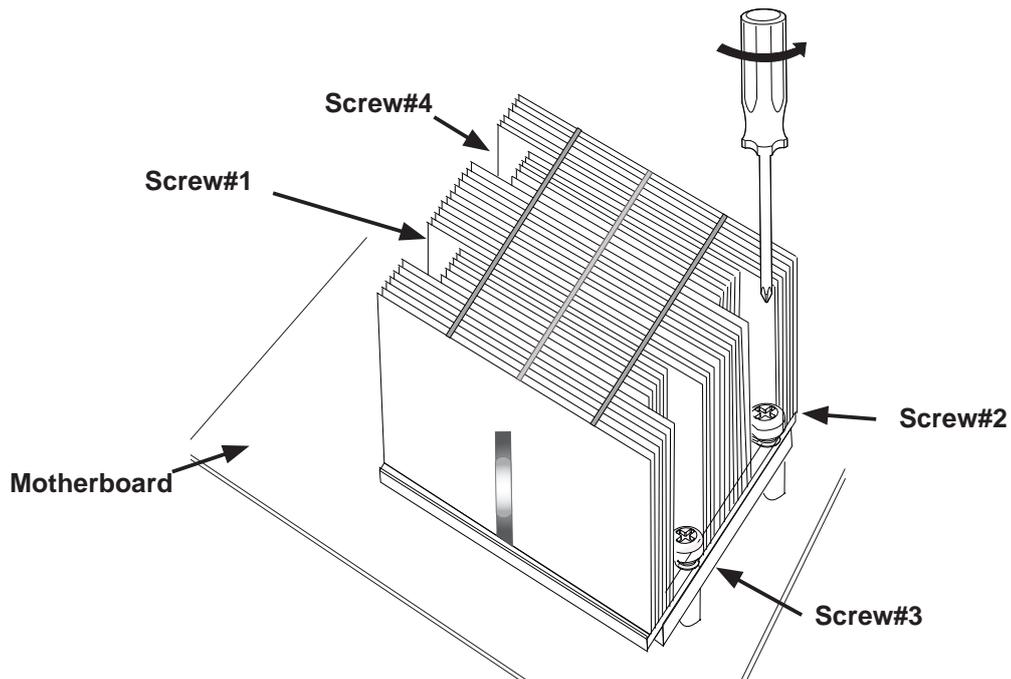


Figure 5-2. Removing the Passive Heatsink

## 5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. These include the data cables for the peripherals and control panel and the power cables.

### Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them and be aware of the pin 1 locations. If you are configuring the system, keep the airflow in mind when routing the cables.

### Connecting Power Cables

The serverboard has a 24-pin primary power supply connector designated J24 for connection to the power supply. There are also two 8-pin power connectors, JPWR1 and JPWR2. Connect the appropriate cable connectors from the power supply. Connector pin definitions are explained later in the chapter.

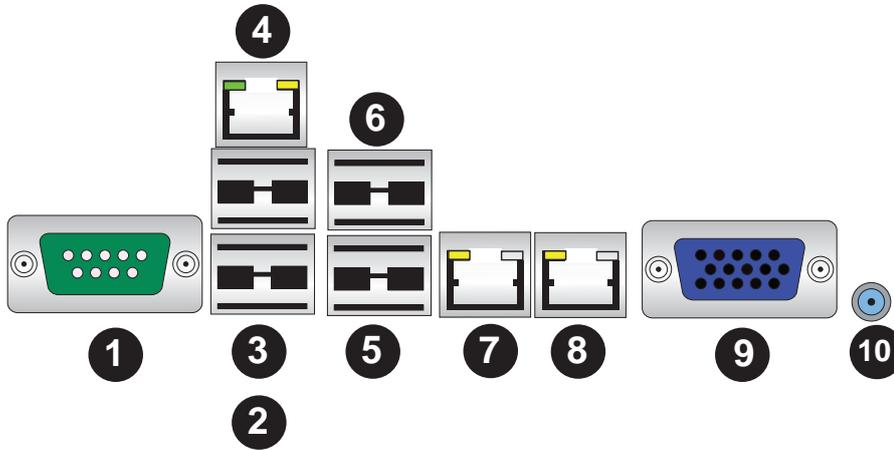
### Connecting the Control Panel

JF1 contains header pins for the front control panel connectors. All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

## 5-4 I/O Ports

Figure 5-3 shows the I/O ports on the rear of the system.



**Figure 5-3. Rear Panel I/O Ports**

1. COM Port 1 (Turquoise)
2. Back Panel USB 3.0 Port 4
3. Back Panel USB 3.0 Port 5
4. Dedicated IPMI LAN
5. Back Panel USB 2.0 Port 1
6. Back Panel USB 2.0 Port 2
7. LAN Port 1
8. LAN Port 2
9. VGA
10. UID Switch/UID LED (LED1)

## 5-5 Installing Memory

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

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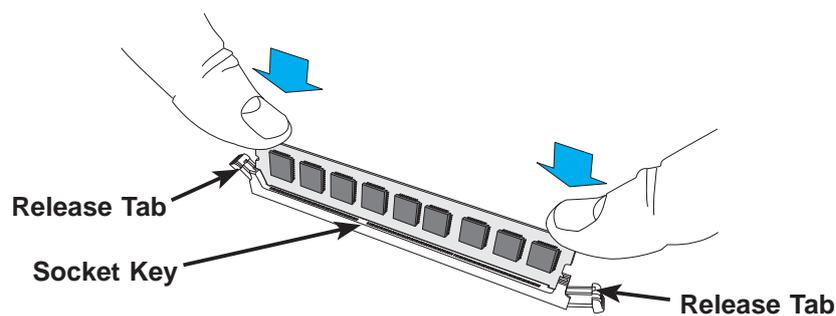
### **CAUTION**

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

---

#### ***Installing DIMMs***

1. Insert the desired number of DIMMs into the memory slots, starting with slot DIMMA1.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key on the DIMM module with the receptive point on the slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Use two thumbs together to press on both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM module into the slot. See Figure 5-4.



**Figure 5-4. Installing DIMM into Slot**

## Memory Support

The server features 16 DIMM slots that can support up to 2048 GB of Load Reduction (LRDIMM) or up to 512 GB of Registered (RDIMM) ECC 2400/2133/1866/1600 MHz modules. For the latest memory updates, please refer to our website at <http://www.supermicro.com/products/motherboard>.

### Processor & Memory Module Population Configuration

For memory to work properly, follow the tables below for memory installation.

Processors and their Corresponding Memory Modules								
CPU#	Corresponding DIMM Modules							
<b>CPU 1</b>	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	P1-DIMMD1	P1-DIMMA2	P1-DIMMB2	P1-DIMMC2	P1-DIMMD2
<b>CPU2</b>	P2-DIMME1	P2-DIMMF1	P2-DIMMG1	P2-DIMMH1	P2-DIMME2	P2-DIMM F2	P2-DIMMG2	P2-DIMMH2

### Populating RDIMM/LRDIMM DDR4 Memory Modules for the E5-2600v3-based Motherboard

Populating RDIMM/LRDIMM DDR4 Memory Modules						
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot per Channel (SPC) and DIMM per Channel (DPC)		
				1 Slot Per Channel	2 Slots Per Channel	
				1DPC	1DPC	2DPC
		4 Gb	8 Gb	1.2 V	1.2 V	1.2 V
RDIMM	SRx4	8 GB	16 GB	2133	2133	1866
RDIMM	SRx8	4 GB	8 GB	2133	2133	1866
RDIMM	DRx8	8 GB	16 GB	2133	2133	1866
RDIMM	DRx4	16 GB	32 GB	2133	2133	1866
LRDIMM	QRx4	32 GB	64 GB	2133	2133	2133
LRDIMM 3DS	8Rx4	64 GB	128 GB	2133	2133	2133

**Caution:** For the memory to work properly, install DIMMs of the same type and speed. Mixing of DIMMs of different types or speeds is not allowed.

*Populating DDR4 Memory Modules for the E5-2600v4-based Motherboard*

Populating RDIMM/LRDIMM DDR4 Memory Modules						
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot per Channel (SPC) and DIMM per Channel (DPC)		
				1 Slot Per Channel	2 Slots Per Channel	
				1DPC	1DPC	2DPC
		4 Gb	8 Gb	1.2 V	1.2 V	1.2 V
RDIMM	SRx4	8 GB	16 GB	2400	2400	2133
RDIMM	SRx8	4 GB	8 GB	2400	2400	2133
RDIMM	DRx8	8 GB	16 GB	2400	2400	2133
RDIMM	DRx4	16 GB	32 GB	2400	2400	2133
LRDIMM	QRx4	32 GB	64 GB	2400	2400	2400
LRDIMM 3DS	8Rx4	64 GB	128 GB	2400	2400	2400

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	CPU and Memory Population Configuration Table (For memory to work properly, please follow this table.)
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
1 CPU & 6 or 8 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1 + any pair of P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2 slots
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 10–16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 + any pair of P1, P2 DIMM slots
2 CPUs & 16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1, P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2, P2-DIMME2/P2-DIMMF2/P2-DIMMG2/P2-DIMMH2

## 5-6 Serverboard Details

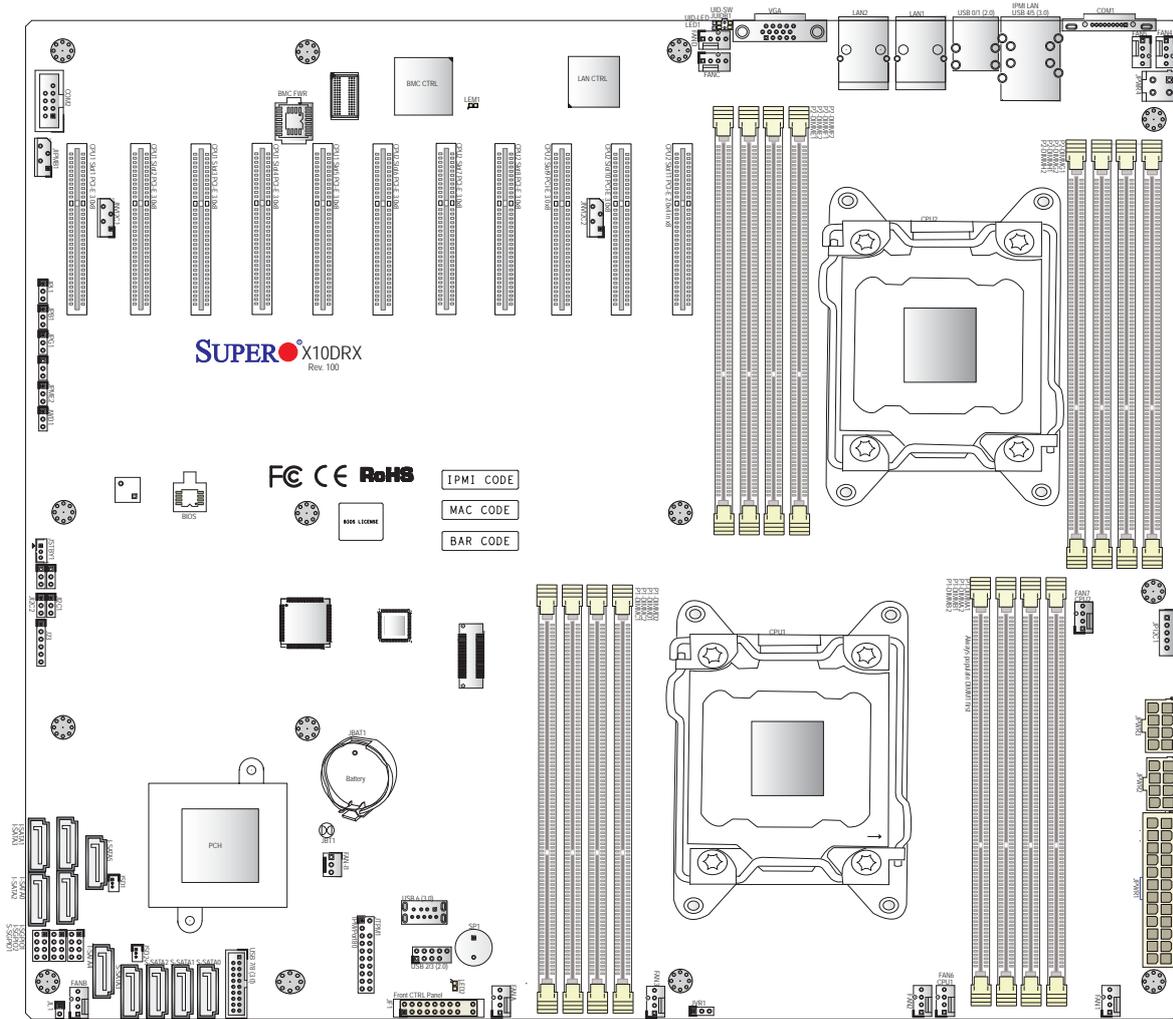


Figure 5-5. X10DRX Layout

**Notes:**

- "■" indicates the location of "Pin 1".
- Jumpers/LEDs not indicated are for testing purposes only. Also, components that are not documented in this manual are reserved for internal use only.

## Serverboard Quick Reference

### Jumpers

Jumper	Description	Default Setting
JBT1	Reset BIOS Configuration	See Section 5-8
JI <sup>2</sup> C1/JI <sup>2</sup> C2	SMB to PCI-E Slots	Pins 2-3 (Disabled)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	LAN1/2 Enable	Pins 1-2 (Enabled)
JPME2	Manufacturing (ME) Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Reset)

### Connectors

Connector	Description
Battery (JBAT1)	Onboard CMOS Battery
COM1/COM2	Backplane COM port1/Serial connector header 2
FAN1-7, FANA-D	CPU/System Fan Headers (FAN6: CPU1 fan, FAN7: CPU2 fan)
JF1	Front Panel Control Header
JL1	Chassis Intrusion Header
JIPMB1	4-pin External BMC I <sup>2</sup> C Header (for an IPMI Card)
JSD1/JSD2	3-pin power connectors for SATA DOM (Device on Module) devices (external power required)
JTPM1	TPM (Trusted Platform Module)/Port 80 Header
JUIDB1	UID (Unit Identification) Button
JNVI2C1/2	VPP header for NVMe add-on cards (AOC)
IPMI_LAN	Dedicated IPMI LAN support by the Aspeed controller
JSTBY1	Standby power connector
LAN1/LAN2	Gigabit LAN Ethernet ports 1/2
JPI <sup>2</sup> C1	Power supply SMBus I <sup>2</sup> C header
JPWR1	24-pin ATX main power connector
JPWR2/3	12V 8-pin power connectors
JPWR4	12V 4-pin power connector
I-SATA 0-5	SATA 3.0 connectors supported by Intel PCH (I-SATA4/I-SATA5: support SuperDOMs with power-pins built-in)
S-SATA 0-3	SATA 3.0 Connectors supported by Intel SCU (S-SATA 0-3)
I-SGPIO1/2	Serial link General Purpose I/O (GPIO) headers 1/2 (for I-SATA0-3, I-SATA 4/5)
S-SGPIO1	Serial link General Purpose I/O (GPIO) header (for S-SATA0-3)
SP1	Internal speaker/buzzer
JUIDB1	Unit Identification (UID) switch

(BP) USB 0/1 (2.0)	Backpanel USB 2.0 Ports 0/1
(BP) USB 2/3 (2.0)	Front accessible USB 2.0 connection 2/3 header
(FP) USB 4/5 (3.0)	Backpanel USB 3.0 ports 4/5
(FP) USB 6 (3.0)	Front accessible Type A USB 3.0 port 6
(FP) USB 7/8 (3.0)	Front accessible USB 3.0 connection 7/8 Header
VGA	Backpanel VGA Port

### LED Indicators

LED	Description	State	Status
LED1	Rear UID LED	Blue: On	Unit Identified
LED2	Onboard Power LED	On	System PWR On
LEM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

## 5-7 Connector Definitions

### Serial Ports

Two COM connections (COM1 & COM2) are located on the motherboard. COM1 is located on the Backplane I/O panel. COM2, located next to CPU1 PCI-E Slot1, provides front access support. See the table on the right for pin definitions.

Serial Port (COM2) Pin Definitions			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A

### Video Connection

A Video (VGA) port is located next to the UID button on the I/O back panel.

### Universal Serial Bus (USB)

Two USB 3.0 ports (USB 4/5) and two USB 2.0 ports (USB 0/1), located on the I/O back panel, provide rear chassis USB support. A Type A USB connector (USB 6), and a USB header with two USB connections (USB 7/8) provide total of three USB 3.0 connections for front access. In addition, a USB 2.0 header also provides two USB 2.0 support (USB 2/3) for front access. (Cables are not included). See the tables below for pin definitions.

Backplane USB (3.0) 4/5 Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

USB (2.0) 0/1, 2/3 Pin Definitions	
Pin#	Description
1	VBUS
2	SSRX-
3	SSRX+
4	Ground
5	SSTX-
6	SSTX+
7	GND_DRAIN
8	D-
9	D+

Front Panel USB (3.0) USB 6, 7/8 Pin Definitions			
Pin#	Description	Pin#	Description
1	USB3.0_Front_VCC	11	USB2_P9
2	USB3_RE_RXN6	12	USB2_N9
3	USB3_RE_RXP6	13	Ground
4	Ground	14	USB3_RE_TXP5
5	USB3_RE_TXN6	15	USB3_RE_TXN5
6	USB3_RE_TXP6	16	Ground
7	Ground	17	USB3_RE_RXP5
8	USB2_N8	18	USB3_RE_RXN5
9	USB2_P8	19	USB3.0_Front_VCC
10	Ground		

### Ethernet Ports

Two Gigabit Ethernet ports (LAN1, LAN2) are located on the I/O backplane on the motherboard. These ethernet ports support Gigabit LANs on the motherboard. In addition, an IPMI\_Dedicated LAN is located above USB 0/1 ports on the backplane. All these ports accept RJ45 type cables. Please refer to the LED Indicator Section for LAN LED information.

### Unit Identifier Switches & UID LED Indicators

A rear unit identifier switch (JUIDB1) is located next to the VGA port on the IO back panel, and a front UID switch is located on pin 13 on the front control panel (JF1). The rear UID LED (LED1) is located next to the rear UID switch, and the front UID LED is located on pins 7 on JF1. When you press the front UID switch or the rear UID switch, both front and rear UID LED indicators will be turned on. Press the UID switch again to turn off the LEDs. The UID Indicators provide easy identification of a system unit that may be in need of service. Refer to the layout below for the locations of the front control panel and the I/O back panel.

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

UID Button	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Button In

UID LED Status	
Color/State	Status
Blue: On	Unit Identified

## Power Connectors

A 24-pin main power supply connector (JPWR1), two 8-pin CPU power connectors (JPWR2/JPWR3), and a 4-pin Auxiliary power connector (JPWR4) are located on the motherboard. These power connectors meet the SSI EPS 12V specification and must be connected to your power supply to provide adequate power to the system. See the tables on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V (NC)	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

4-pin Power Connector Pin Definitions	
Pin#	Definition
1	+12V
2	Ground
3	Ground
4	+12V

12V 8-pin Power Connector Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

(Required)

## Fan Headers

This motherboard has 11 system/cooling fan headers (FAN1-FAN7, FANA-FAND) on the motherboard. FAN6 is for CPU1, and FAN7, for CPU2. All these 4-pin fan headers are backward compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via IPMI 2.0 interface. See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

**TPM/Port 80 Header**

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

TPM/Port 80 Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_STBY	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

**Internal Speaker**

The internal speaker (SP1) can be used to provide audible indications for various beep codes. See the table on the right for pin definitions.

Internal Buzzer Pin Definition		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

**External Powered SATA DOM Power Connectors**

Two external powered SATADOM (Device-on-Module) power connectors are located at JSD1/JSD2 on the motherboard. These connectors provide backward-compatible power support to non-Supercard SATADOMs that require external power supply.

JSD1/JSD2 Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

**IPMB**

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

IPMB Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

### I-SGPIO1/2 & S-SGPIO1 Headers

Three SGPIO (Serial-Link General Purpose Input/Output) headers are located on the motherboard. I-SGPIO1/2 support onboard I-SATA 0-5, and S-SGPIO supports S-SATA 0-3 connections. See the tables on the right for more information.

I-SGPIO1/2 & S-SGPIO1 Headers Pin Definitions			
Pin #	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

**Note:** NC= No Connection

I-SGPIO1/2 & S-SGPIO1 Support	
I-SGPIO & S-SGPIO Support	
I-SGPIO1	Supports I-SATA0-3
I-SGPIO2	Supports I-SATA4/5
S-SGPIO1	Supports S-SATA0-3

### Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an 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	Ground

### Power SMB (I<sup>2</sup>C) Connector

Power System Management Bus (I<sup>2</sup>C) Connector (JPI<sup>2</sup>C1) monitors power supply, fan speeds, and temperatures. See the table on the right for pin definitions.

PWR SMB Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	+3.3V

### Standby Power Header

The +5V Standby Power header is located at JSTBY1 on the motherboard. See the table on the right for pin definitions. (You must also have a card with a Standby Power connector and a cable to use this feature.)

Standby PWR Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	No Connection

**NMI Button**

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

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

**Power LED**

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

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	3.3V
16	PWR LED

**HDD LED/UID Switch**

The HDD LED/UID switch connection is located on pins 13 and 14 of JF1. Attach a cable to pin 14 to show HDD activity status. Attach a cable to pin 13 to use the UID button. See the table on the right for pin definitions.

HDD LED/UID Switch Pin Definitions (JF1)	
Pin#	Definition
13	UID Switch
14	HD Active

**Overheat (OH)/Fan Fail/PWR Fail/UID LED**

Connect an LED cable to pins 7 and 8 of JF1 to use the Overheat/Fan Fail/Power Fail and UID LED connections. The red LED on pin 8 provides warnings of system overheating, fan failure or power failure. The blue LED on pin 7 works as the front panel UID LED indicator. Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_UID LED Pin Definitions (JF1)	
Pin#	Definition
7	Blue_UID LED
8	OH/Fan Fail/Power Fail

OH/Fan Fail/PWR Fail LED Status (Red LED)	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

### Power Fail LED

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

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	3.3V
6	PWR Supply Fail

### 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. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

### 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 7). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	Ground

### NIC1/NIC2 LED Indicators

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

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC 2 Activity LED
10	NIC 2 Link LED
11	NIC 1 Activity LED
12	NIC 1 Link LED

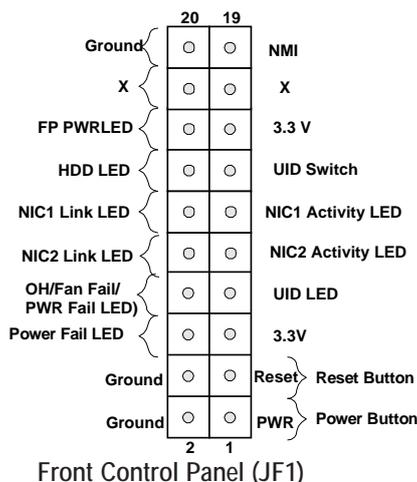
### Unit Identifier Switches & UID LED Indicators

A rear unit identifier switch (JUIDB1) is located next to the VGA port on the IO back panel, and a front UID switch is located on pin 13 on the front control panel (JF1). The rear UID LED (LED1) is located next to the rear UID switch, and the front UID LED is located on pins 7 on JF1. When you press the front UID switch or the rear UID switch, both front and rear UID LED indicators will be turned on. Press the UID switch again to turn off the LEDs. The UID Indicators provide easy identification of a system unit that may be in need of service. Refer to the layout below for the locations of the front control panel and the I/O back panel.

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

UID Button	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Button In

UID LED Status	
Color/State	Status
Blue: On	Unit Identified

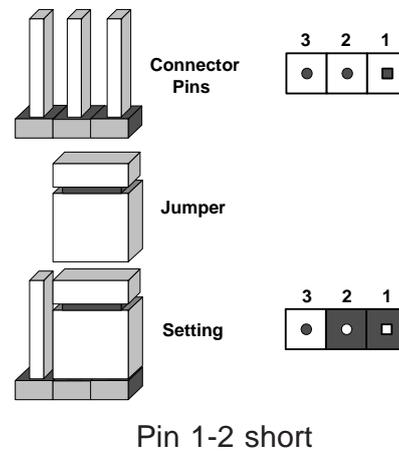


## 5-8 Jumper Settings

### Explanation of Jumpers

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

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



### ME Manufacturing Mode Select

Close pins 2 and 3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacturer (ME) mode, allowing the user to flash the system firmware from a host server for system setting modifications. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacture Mode

### CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection.

**Note:** Please completely shut down the system, and then short JBT1 to clear CMOS.

### Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that will 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 signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (Default)
Pins 2-3	NMI
Open	Disabled

### VGA Enable/Disable

JPG1 allows you to enable or disable the onboard VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

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

### BMC Enable

Jumper JPB1 allows you to enable the embedded the onboard BMC (Baseboard Management) controller to provide IPMI 2.0 support on the motherboard. See the table on the right for jumper settings.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enable (Default)
Pins 2-3	Normal

### LAN Enable/Disable

JPL1 enables or disables Gigabit LAN ports 1/2 on the motherboard. See the table on the right for jumper- settings. The default setting is Enabled.

LAN Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

### I<sup>2</sup>C Bus to PCI-Exp. Slots

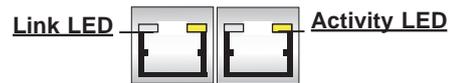
Use Jumpers JI<sup>2</sup>C1 and JI<sup>2</sup>C2 to connect the System Management Bus (I<sup>2</sup>C) to PCI-Express slots to improve PCI performance. These two jumpers are to be set at the same time. The default setting is on pins 2/3 to disable the connections. See the table on the right for jumper settings.

I <sup>2</sup> C for PCI-E slots Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled (Default)

## 5-9 Onboard Indicators

### LAN 1/2 LEDs

Two LAN ports (LAN 1/LAN 2) are located on the I/O back panel of the motherboard. Each Ethernet LAN port has two LEDs. The green LED indicates activity, while the other Link LED may be green, amber or off to indicate the speed of the connections. See the tables on the right for more information.

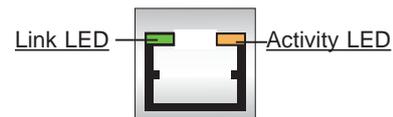


LAN 1/LAN 2 Activity LED (Right) LED State		
Color	Status	Definition
Green	Flashing	Active

GLAN 1/2 Link LED (Left) LED State	
LED Color	Definition
Off	10 Mbps or No Connection
Green	100 Mbps
Amber	1 Gbps

### Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is located on the I/O back panel. The amber LED on the right indicates activity, while the other LED on the left indicates the speed of the connection. See the tables on the right for more information.



Dedicated IPMI LAN Activity LED LED State (Right)		
Color	Status	Definition
Amber	Flashing	Active

Dedicated IPMI LAN Link LED LED State (Left)	
LED Color	Definition
Off	10 Mbps, or No Connection
Green	100 Mbps
Amber	1 Gbps

### Onboard Power LED

An Onboard Power LED is located at LED2 on the serverboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator LED States	
Color/State	Definition
Off	System Off (PWR cable not connected)
Green: On	System Power On

**BMC Heartbeat LED**

A BMC Heartbeat LED is located at LEM1 on the serverboard. When this LED is blinking, BMC functions normally. See the table at right for more information.

BMC Heartbeat LED States	
Color/State	Definition
Green: Blinking	BMC: Normal

## 5-10 SATA Connections

**SATA 3.0 Ports**

Ten SATA 3.0 ports (I-SATA0-5, S-SATA0-3) are located on the motherboard. I-SATA0-5 are supported by the Intel PCH, and S-SATA0-3 are supported by the Intel SCU. I-SATA4/5 can be used with Supermicro SuperDOMs which are yellow SATA DOM connectors with power pins built in, and do not require external power cables. Supermicro SuperDOMs are backward-compatible with regular SATA HDDs or SATA DOMs that need external power cables.

**Note:** For more information on SATA HostRAID configuration, please refer to the *Intel SATA HostRAID User's Guide* posted on our website at <http://www.supermicro.com>

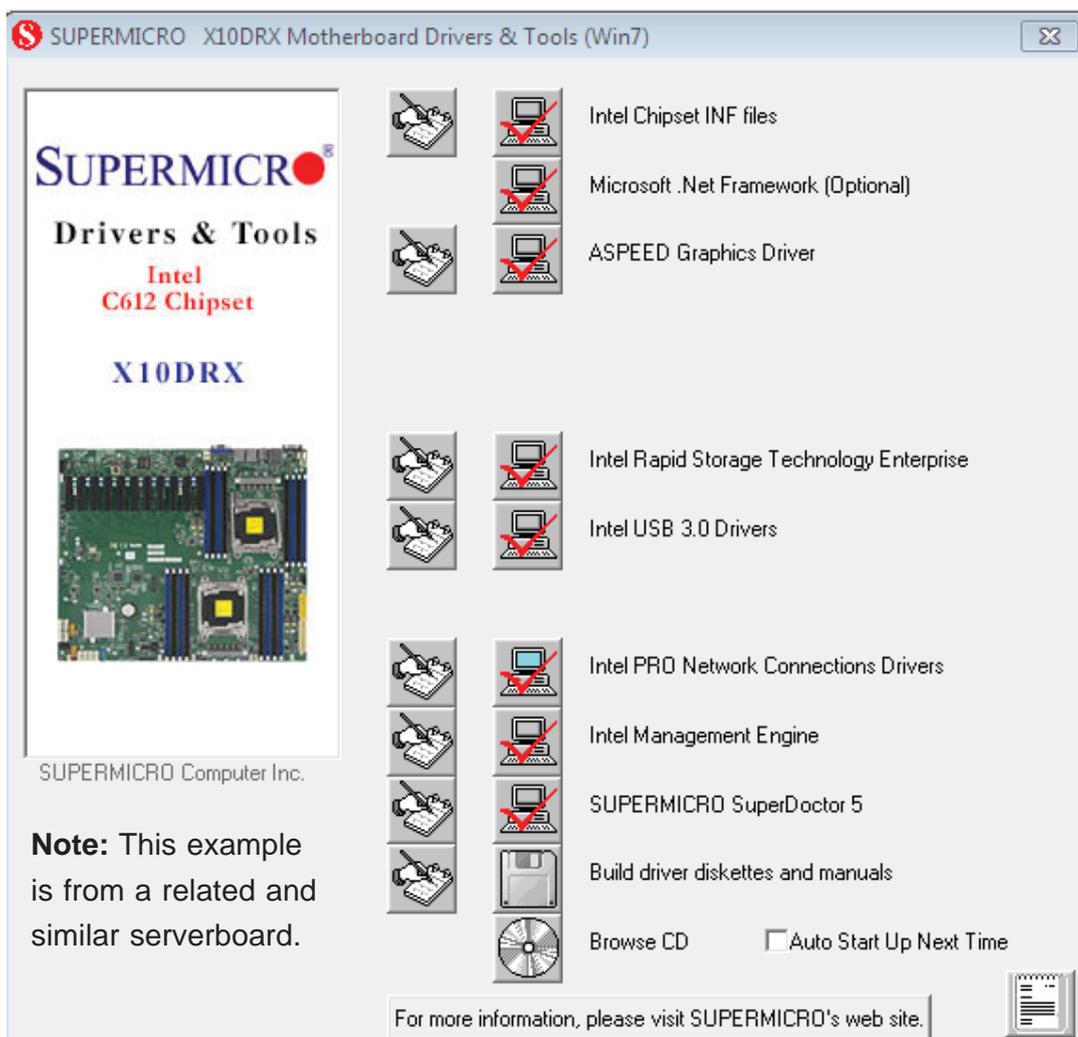
## 5-11 Installing Software

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

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

Another option is to go to the Supermicro Website at <http://www.supermicro.com/products/>. Find the product page for your serverboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-6 should appear.



**Figure 5-6. Driver Installation Display 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 reboot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

## SuperDoctor® 5

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

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

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

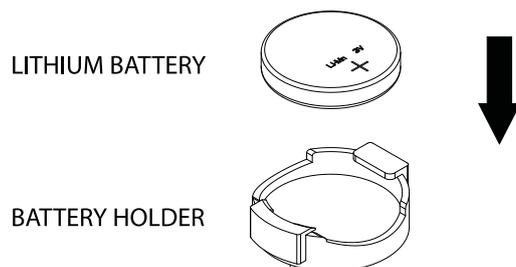


Figure 5-7. SuperDoctor 5 Interface Display Screen (Health Information)

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

## 5-12 Onboard Battery

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



**Figure 5-8. Installing the Onboard Battery**

# Notes

## Chapter 6

# Advanced Chassis Setup

This chapter provides the procedures to install components and perform maintenance on the SC213XAC-R1K05 chassis. The only tool required is a Phillips screwdriver.

Your system may require the installation of processors, memory, drives or expansion cards. Other procedures presented in this chapter are for maintenance or replacement.

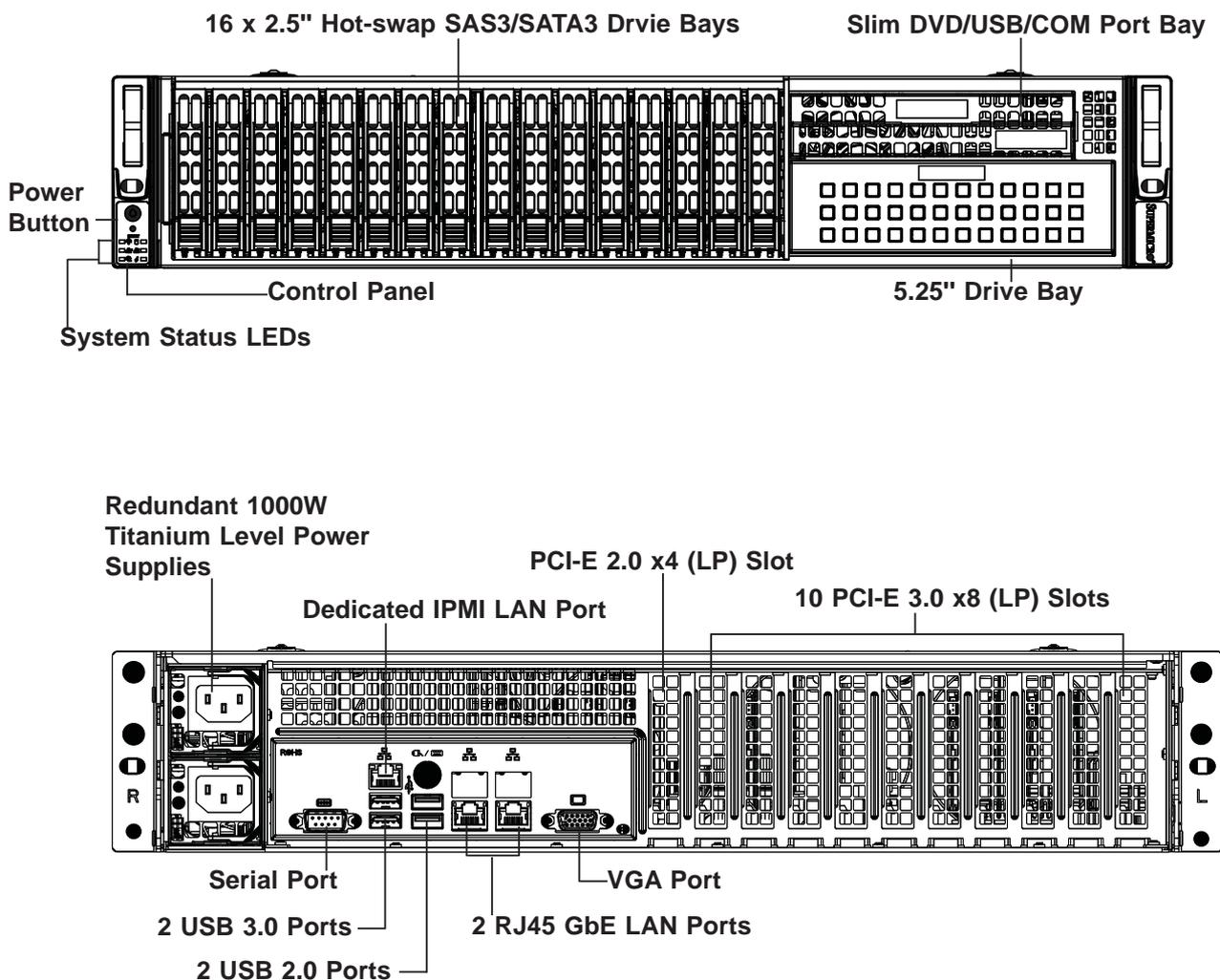


Figure 6-1. Front and Rear Chassis Views

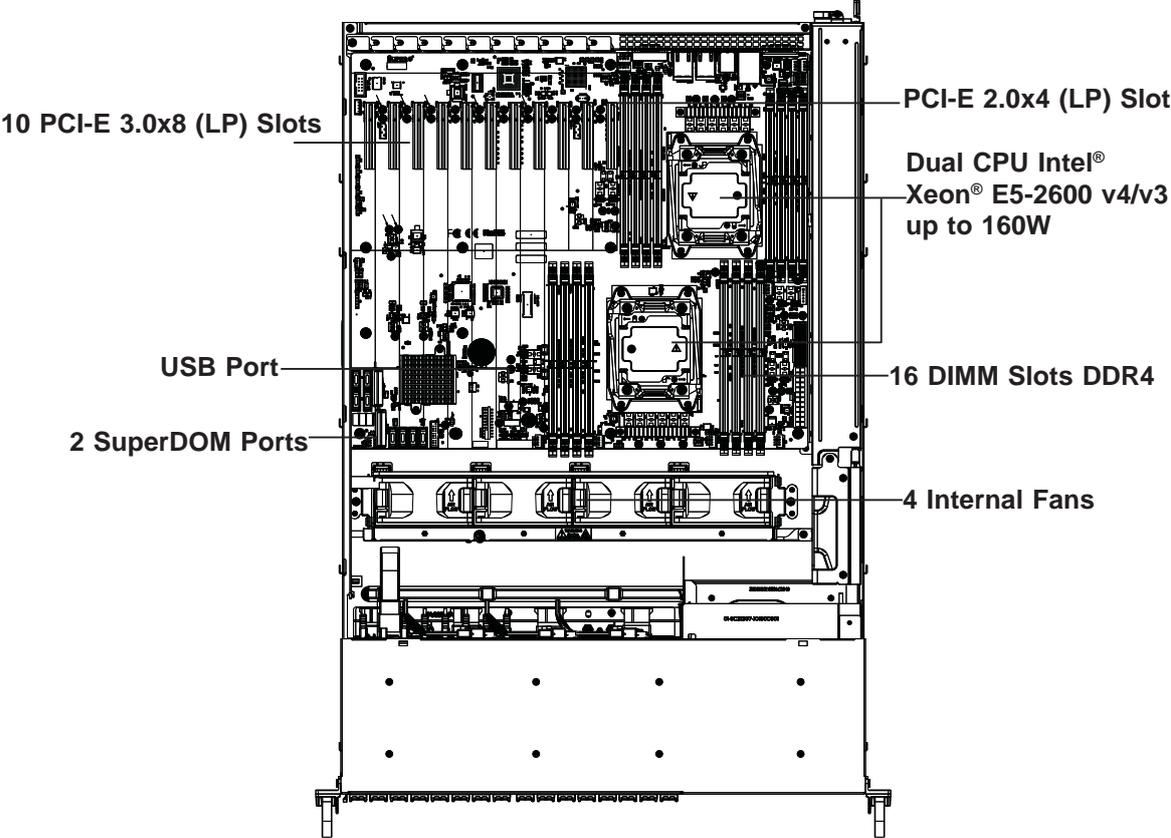


Figure 6-2. Top Chassis View

## 6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, extension cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

### Unpacking

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

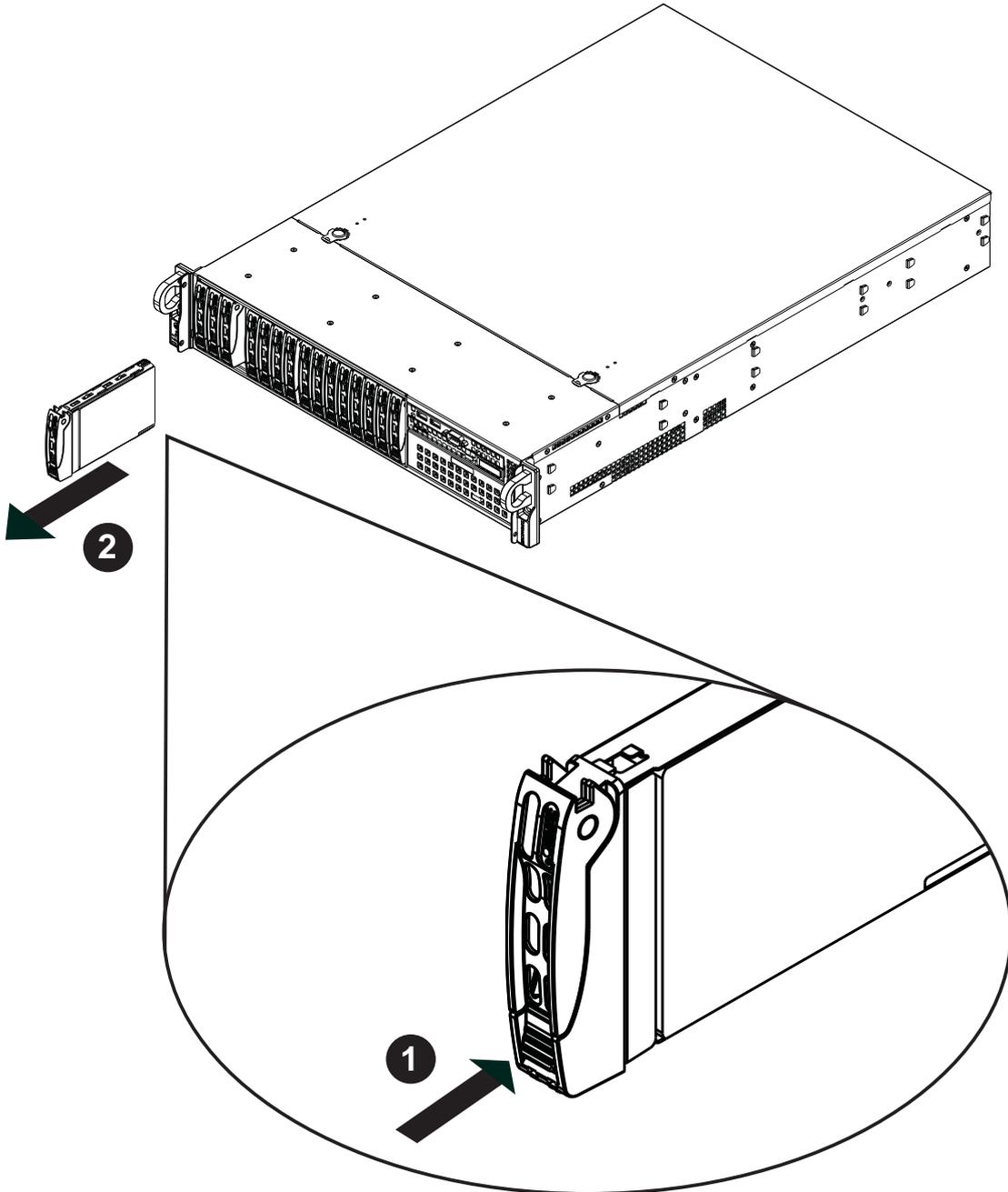
## 6-2 Hard Disk Drives

The SC213 chassis features sixteen 2.5" drive bays accessible from the front of the chassis. The drives are mounted in drive carriers to simplify their installation and removal. These carriers also help promote proper airflow for the drive bays.

The hard disk drive are sold separately. Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro website at <http://www.supermicro.com/products/nfo/files/storage/SAS-CompList.pdf>

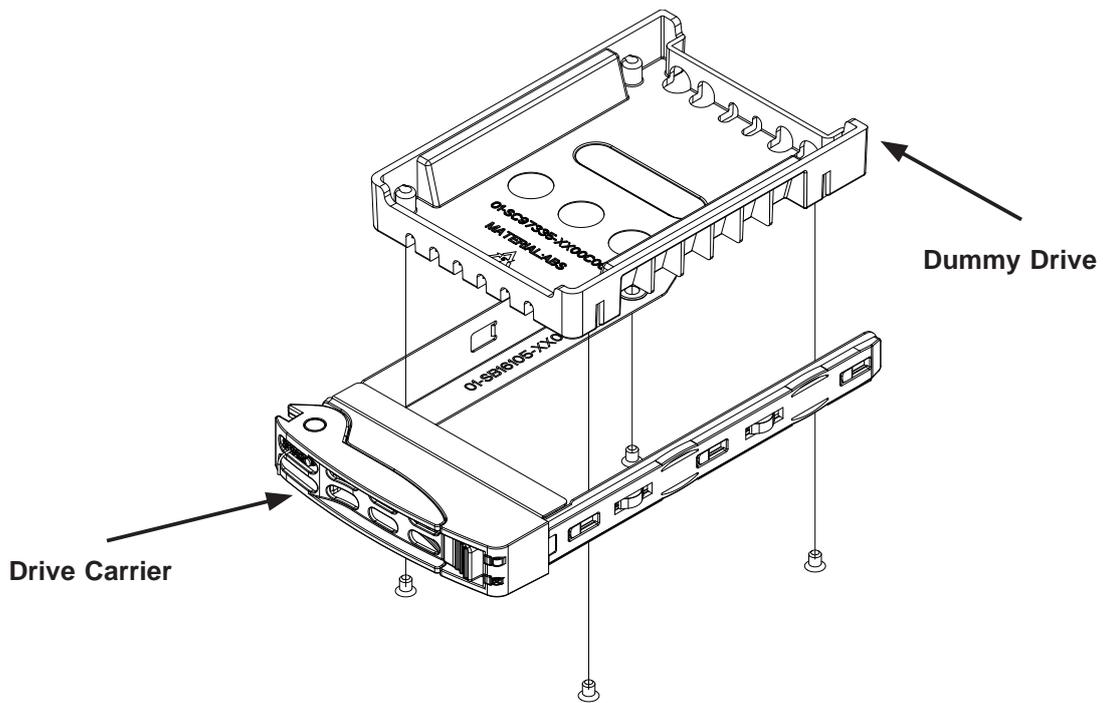
### ***Removing Hard Drive Carriers from the Chassis***

1. Press the release button on the drive carrier. This extends the drive bay handle.
2. Use the handle to pull the drive out of the chassis.
3. Remove the dummy drive from the carrier (Figure 6-3).



**Figure 6-3. Removing a Drive Carrier**

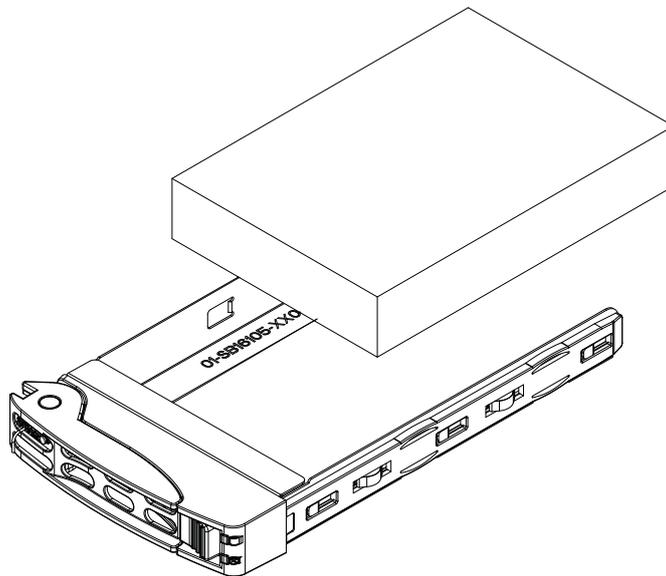
**Caution:** Except for short periods of time while swapping hard drives, do not operate the server without the carriers in the drive bays.



**Figure 6-4. Removing a Dummy Drive from Carrier**

***Installing a Drive into the Carrier***

1. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes in the drive align with those in the carrier.
2. Secure the hard drive into the carrier with the screws.



**Figure 6-5. Installing a Drive into the Carrier**

3. Use the open handle to replace the drive carrier into the chassis.
4. Gently close the drive carrier handle to secure the drive and carrier into the chassis drive bay.

## 6-3 Peripheral Drive Installation

The chassis includes a 5.25' bay for a variety of peripheral drive options, including a slim DVD drive or an additional hard disk drive. For a complete listing of peripheral drive options, visit the Supermicro website.

### *Installing or Replacing a Peripheral Drive*

1. Power down the system and remove the cover.
2. Unplug the power and data cables from the serverboard and/or backplane.
3. **If you are adding a new drive:** Remove the dummy tray from the drive bay. The mini-bezel can be removed by pulling out the hard drive beneath the drive bay, then pulling the mini-bezel forward.

**If you are replacing a drive:** Locate the locking tab at the rear (left hand side when viewed from the front) of the peripheral drive. Push the tab toward the drive and push the drive unit out the front of the chassis.

4. Re-use the side rails or install the side rails onto the peripheral drive.
5. Insert the new drive unit in the slot until the tab locks in place.
6. Reconnect the data and power cables.
7. Replace the chassis cover and power up the system.

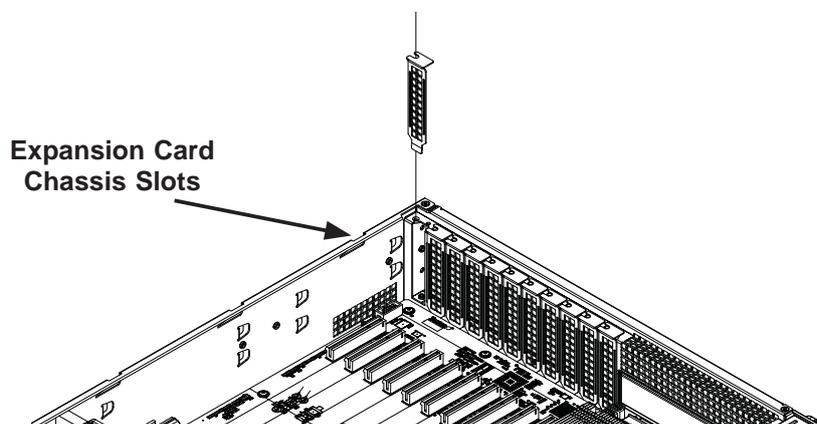
## 6-4 Installing Expansion Cards

The 2028R-TXR system includes eleven slots for expansion cards. The serverboard must be installed before expansion cards.

### *Installing an Expansion Card for an LP Model Chassis*

1. Power down the system and remove the cover.
2. Begin by removing the shield for the PCI slot you wish to populate. Make sure that the card you are installing is supported by the slot (see the table below).
3. In the rear of the chassis, remove the blank PCI shield that is pre-installed covering the expansion slot.
4. Slide the expansion card into the expansion slot on the serverboard while aligning it with the chassis slot in the rear of the chassis.
5. Secure the expansion card shield onto the rear of the chassis with a screw.

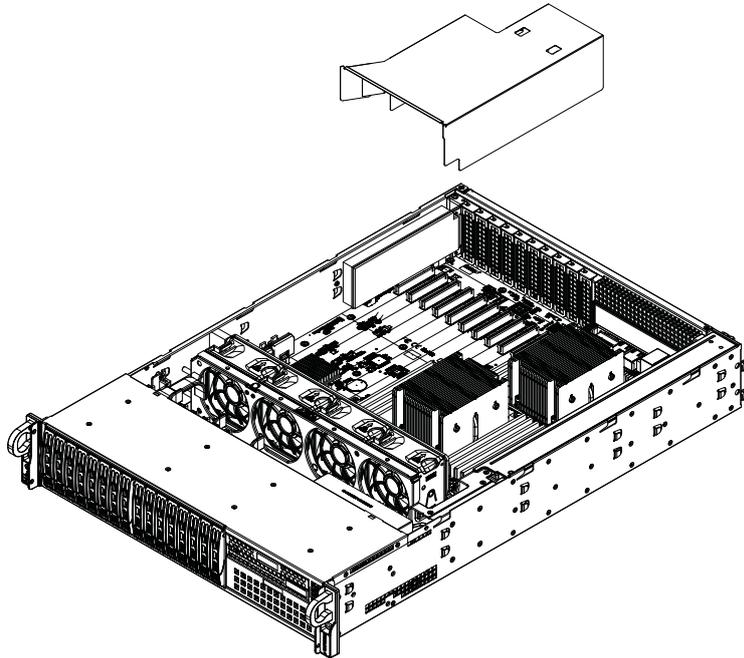
PCIe Slot	Processor Connection	Link Width	Slot Width
Slot1	CPU1	x8	x8 (open-ended)
Slot2	CPU1	x8	x8 (open-ended)
Slot3	CPU1	x8	x8 (open-ended)
Slot4	CPU1	x8	x8 (open-ended)
Slot5	CPU1	x8	x8 (open-ended)
Slot6	CPU2	x8	x8 (open-ended)
Slot7	CPU2	x8	x8 (open-ended)
Slot8	CPU2	x8	x8 (open-ended)
Slot9	CPU2	x8	x8
Slot10	CPU2	x8	x8
Slot11	CPU2	x4	x8



**Figure 6-6. Removing a Blank PCI Shield**

## 6-5 Installing the Air Shroud

The air shroud concentrates airflow to maximize fan efficiency. It does not require screws to install.



**Figure 6-7. Air Shroud**

### ***Installing the Air Shroud***

1. Confirm that your air shroud matches your chassis model. For ordering information, visit the Supermicro website at [www.supermicro.com](http://www.supermicro.com) and click on the Where to Buy link.
2. Place the air shroud in the chassis. It fits behind the two fans closest to the power supply.

## **Checking the Air Flow**

### ***Checking the Air Flow***

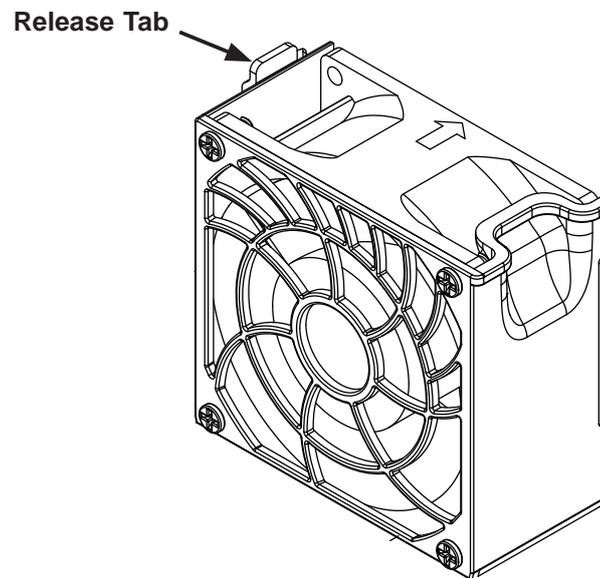
- Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.
- Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.
- Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

## 6-6 System Fans

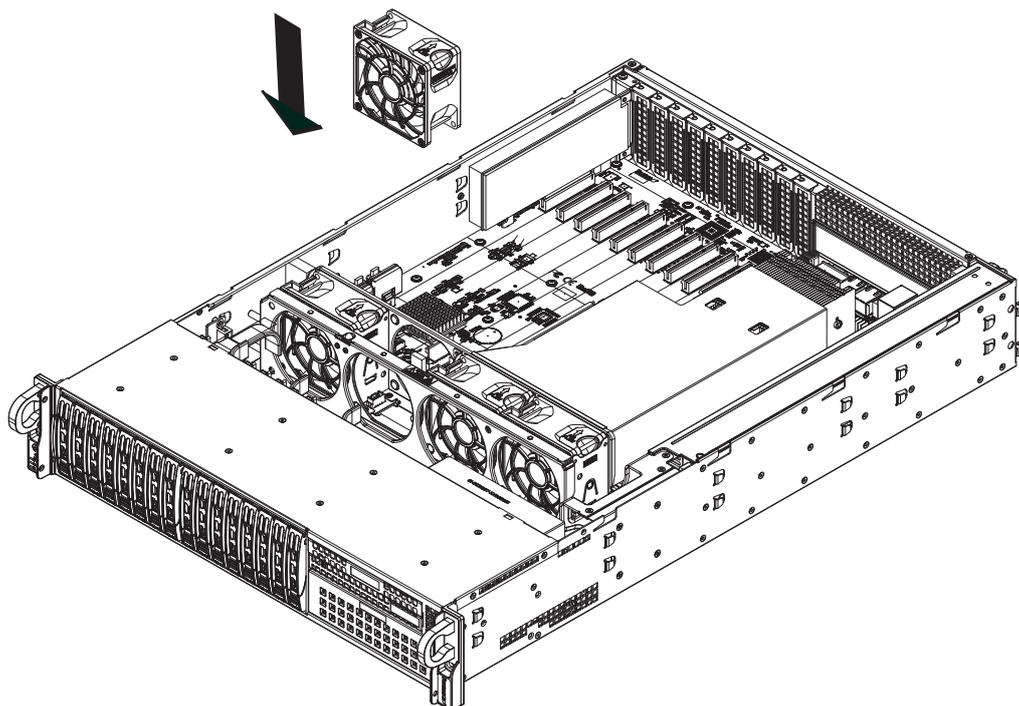
Three heavy duty fans provide cooling for the system components.

### *Replacing a System Fan*

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis open.)
2. Turn off the power to the system and unplug the system from the outlet.
3. Remove the failed fan's power cord from the serverboard.
4. Press the fan release tab to lift the failed fan from the chassis and pull it completely from the chassis.



**Figure 6-8. System Fan**



**Figure 6-9. Placing a System Fan**

5. Place the new fan into the vacant space in the housing while 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.
6. Power up the system and check that the fan is working properly before replacing the chassis cover.

## 6-7 Installing the Serverboard

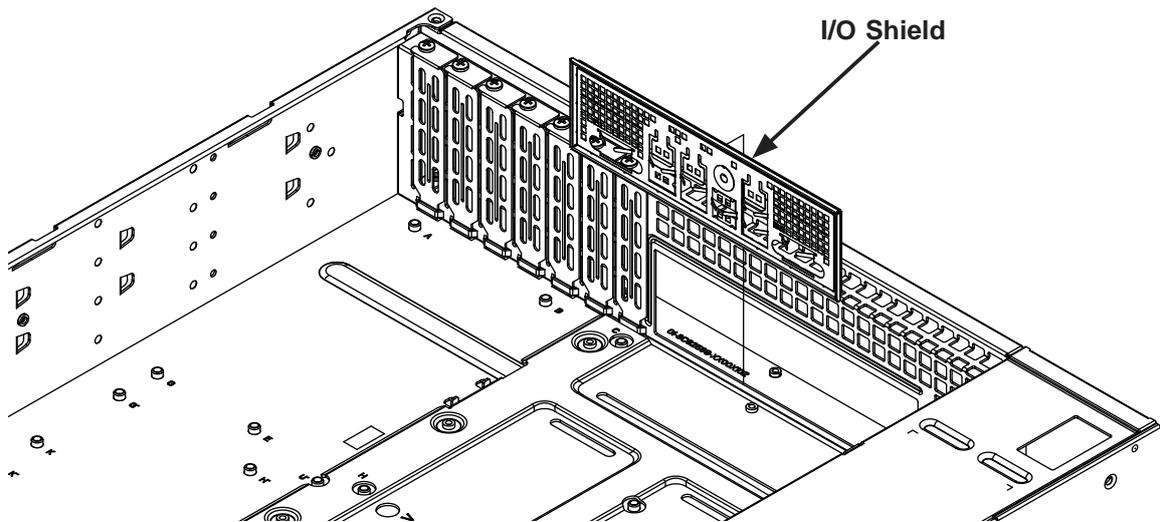


Figure 6-10. I/O Shield Placement

### I/O Shield

The I/O shield holds the serverboard ports in place. Install the I/O shield before installing the serverboard.

### Installing the I/O Shield

#### *Installing the I/O Shield*

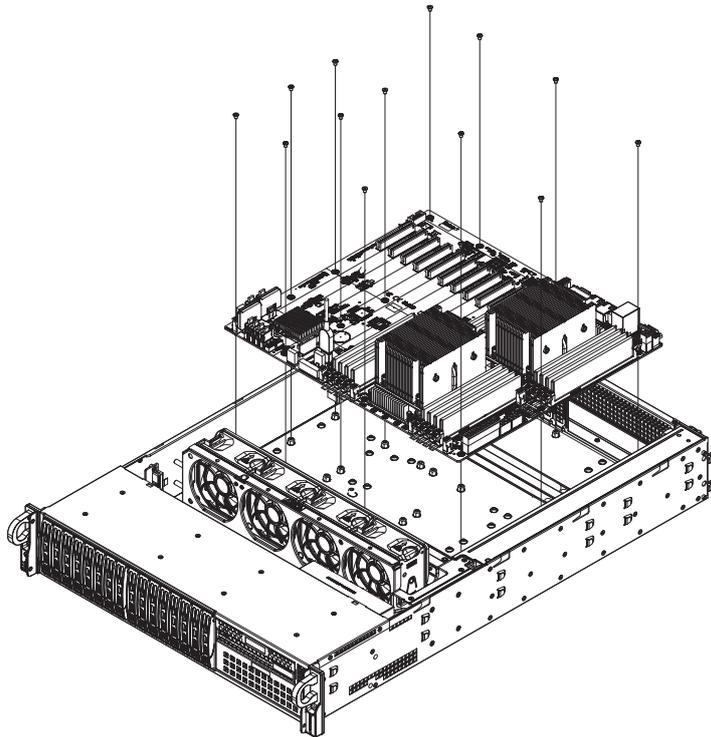
1. Review the documentation that came with your serverboard. Become familiar with component placement, requirements, and precautions.
2. Open the chassis cover.
3. With the illustrations facing the outside of the chassis, place the shield into the space provided.

Once installed, the serverboard will hold the I/O shield in place.

## Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the serverboard and the chassis surface. The chassis includes permanent standoffs in locations used by most serverboards. These standoffs accept the rounded Phillips head screws included in the accessories packaging.

Some serverboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included to these serverboards. To use an optional standoff, you must place the hexagonal screw through the bottom the chassis and secure the screw with the hexagon nut (rounded side up).



**Figure 6-11. Chassis Standoffs**

### ***Installing the Serverboard***

1. Review the documentation that came with your serverboard. Become familiar with component placement, requirements, precautions, and cable connections.
2. Open the chassis cover.
3. As required by your serverboard, install standoffs in any areas that do not have a permanent standoff. To do this:
  - A. Place a hexagonal standoff screw through the bottom the chassis.
  - B. Secure the screw with the hexagon nut (rounded side up).
4. Lay the serverboard on the chassis aligning the permanent and optional stand-offs
5. Secure the serverboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque when tightening down the serverboard.
6. Secure the CPUs, heatsinks, and other components to the serverboard as described in the serverboard documentation.
7. Connect the cables between the serverboard, backplane, chassis, front panel, and power supply, as needed. Also, the fans may be temporarily removed to allow access to the backplane ports.

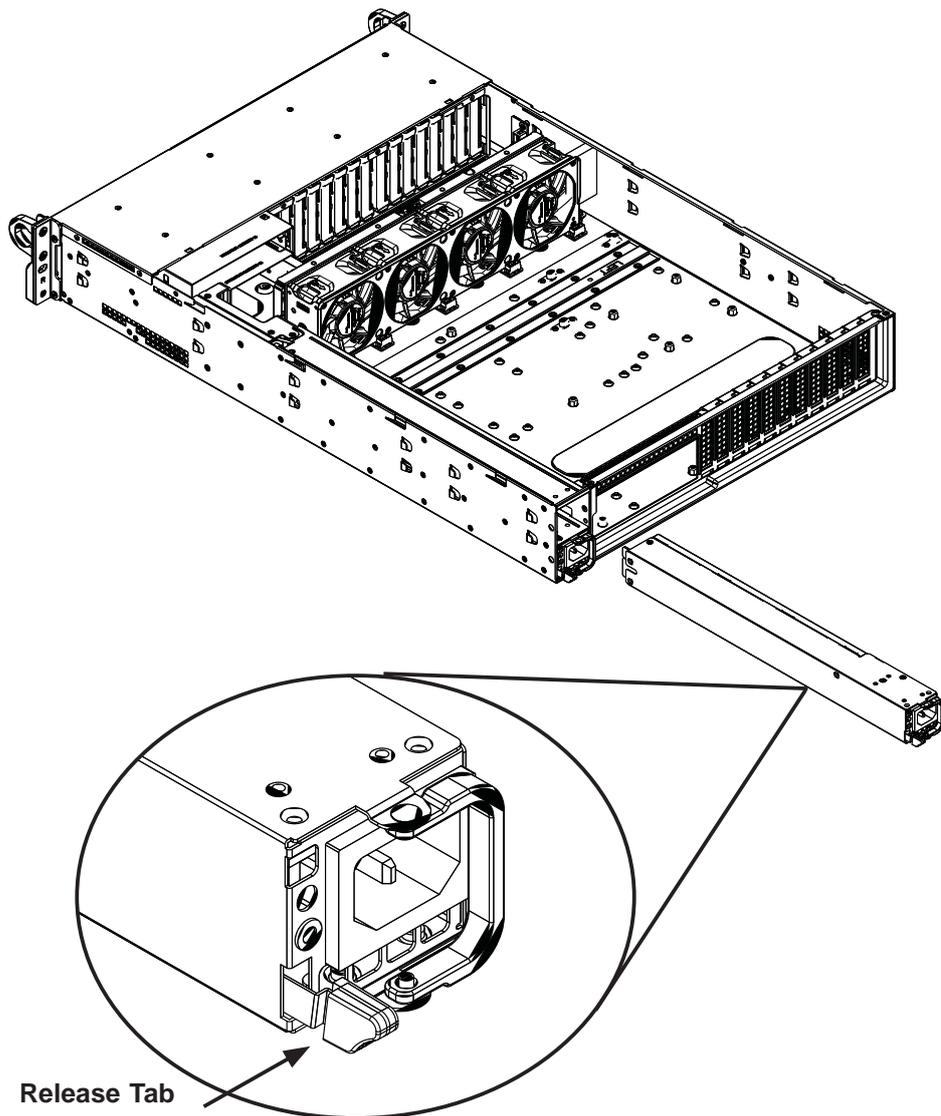
## **6-8 Power Supply**

The system has two 1000 Watt, redundant, hot-plug power supply modules. They automatically sense the input voltage between 100v to 240v, and operate at that voltage. An amber light on the power supply is illuminated when the power is switched off. An green light indicates that the power supply is operating.

Replacement units can be ordered directly from Supermicro. Replace a failed power supply module with the same model.

### ***Replacing the Power Supply***

1. Unplug the AC cord from the module you want to replace.
2. Push the release tab on the back of the power supply, as illustrated.
3. Pull the power supply out using the handle.
4. Push the new power supply module into the power bay until it clicks.
5. Plug the AC power cord back into the module and power up the server.



**Figure 6-12. Removing the Power Supply**

# Chapter 7

## BIOS

### 7-1 Introduction

This chapter describes the AMI BIOS setup utility for the X10DRX. It also provides the instructions on how to navigate the AMI BIOS setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

#### Starting BIOS Setup Utility

To enter the AMI BIOS setup utility screens, press the <Del> key while the system is booting up.

**Note:** In most cases, the <Del> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F3>, <F4>, etc.

Each main BIOS menu option is described in this manual. The AMI BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

**Note:** the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.

The AMI BIOS setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F3>, <F4>, <Enter>, <Esc>, arrow keys, etc.

**Note:** Options printed in **Bold** are default settings.

**Note:** <F3> is used to load optimal default settings. <F4> is used to save the settings and exit the setup utility.

#### How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS setup utility. This setup utility can be accessed by pressing <F2> at the appropriate time during system boot.

## Starting the Setup Utility

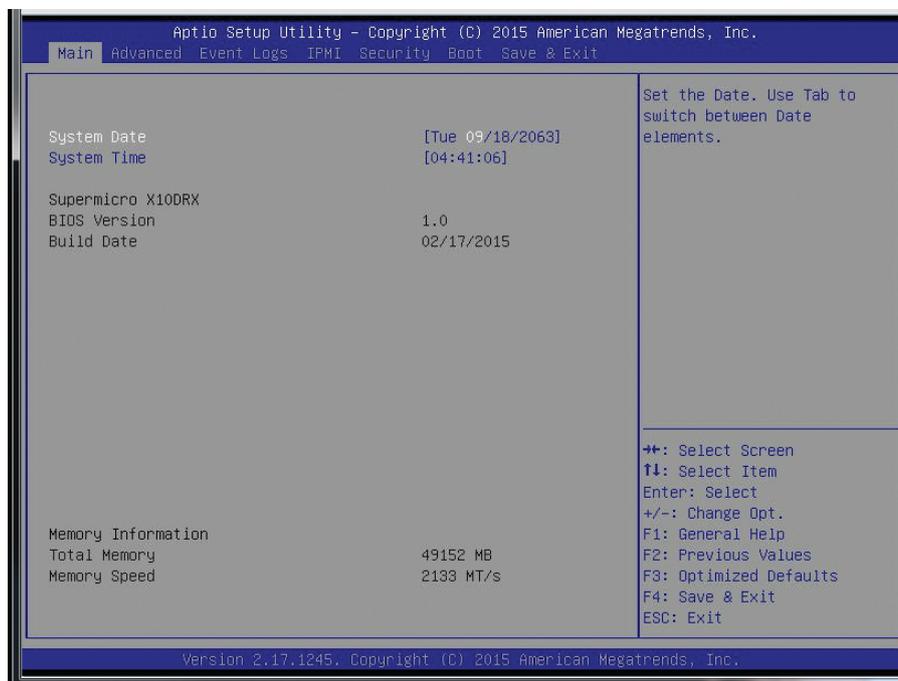
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <F2> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

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

## 7-2 Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.

The AMI BIOS main menu displays the following information:



**System Date**

This item displays the system date in Day MM/DD/YY format (e.g. Wed 10/12/2011).

**System Time**

This item displays the system time in HH:MM:SS format (e.g. 15:32:52).

**Supermicro X10DRX**

**BIOS Version**

This item displays the version of the BIOS ROM used in this system.

**Build Date**

This item displays the date that the BIOS setup utility was built.

**Memory Information**

**Total Memory**

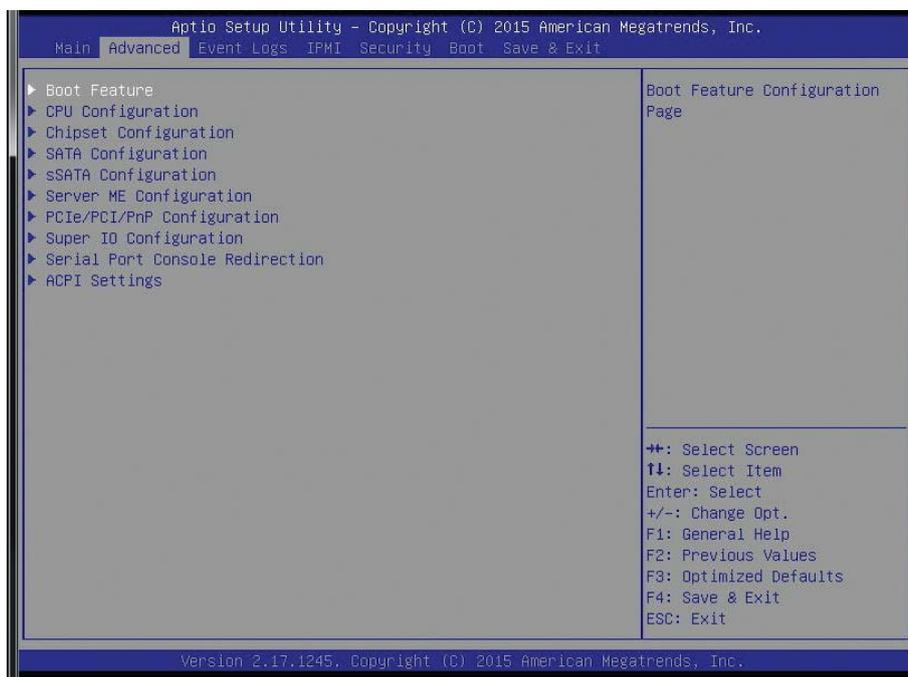
This displays the amount of memory that is available in the system.

**Memory Speed**

This displays the detected system memory speed.

## 7-3 Advanced Setup Configurations

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



### ► Boot Features

#### Quiet Boot

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

#### AddOn ROM Display Mode

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

#### Bootup Num-Lock

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

#### Wait For 'F1' If Error

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

### **INT19 (Interrupt 19) Trap Response**

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

### **Re-try Boot**

Use this feature to force the system to reboot when the initial system boot has failed. Select Legacy Boot to reboot the system using a legacy bootable device. Select EFI to reboot the system using an EFI bootable device. The options are **Disabled**, Legacy Boot, and EFI Boot.

## **Power Configuration**

### **Watch Dog Function**

If enabled, the Watch Dog timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled**.

### **Power Button Function**

If this feature is set to Instant\_Off, the system will power off immediately as soon as the user presses the power button. If this feature is set to 4-Second Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant Off** and 4 Seconds Override.

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

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

## ► CPU Configuration

This submenu displays the information of a CPU as detected by the BIOS. It also allows the user to configuration CPU settings.

### Socket 1 CPU Information/Socket 2 CPU Information

This submenu displays the following information regarding the CPU installed in Socket 1 and (or) Socket 2 as detected by the BIOS.

- Processor Socket
- Processor ID
- Processor Frequency
- Processor Maximum Ratio
- Processor Minimum Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- CPU1 Version
- CPU2 Version

### Clock Spread Spectrum

Select Enable to enable Clock Spectrum support, which will allow the BIOS attempt to reduce the level of Electromagnetic Interference caused by the components when needed. The options are **Disabled** and Enabled.

### Hyper-Threading (ALL)

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

### Cores Enabled

Set a numeric value to enable the number of CPU cores. (Please refer to Intel's website for more information.) Enter **0** to enable all cores.

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

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

**PPIN Control**

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

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

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

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

If this item is set to Disable, the CPU prefetcher will prefetch the cache line for 64 bytes. If this item is set to Enable, the CPU prefetcher will prefetch both cache lines for 128 bytes as comprised. The options are Disable and **Enable**.

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

Select Enable to enable the DCU (Data Cache Unit) Streamer prefetcher which will stream and prefetch data and send it to Level 1 (L1) data cache to improve data processing and system performance. The options are Disable and **Enable**.

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

If this feature is set to Enable, the DCU (Data Cache Unit) IP prefetcher will prefetch the IP address in advance to improve network connectivity and system performance. The options are Disable and **Enable**.

**Direct Cache Access (DCA)**

Select Enable to use Intel's DCA (Direct Cache Access) technology to improve data transfer efficiency. The options are Disable, Enable, and **Auto**.

**X2APIC**

Select Enable to support the APIC (Advanced Programmable Interrupt Controller) extended mode for system performance enhancement. The options are Enable and **Disable**.

**AES-NI**

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

**Intel® Virtualization Technology (Available when supported by the CPU)**

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

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

**► Advanced Power Management Configuration**

This section is used to configure the following CPU Power Management settings.

**Power Technology**

Select **Energy Efficiency** to support power-saving mode. Select **Custom** to customize system power settings. Select **Disabled** to disable power-saving settings. The options are **Disable**, **Energy Efficiency**, and **Custom**.

**Energy Performance Tuning**

Select **Enable** to support energy-performance tuning to enhance CPU energy efficiency. The options are **Enable** and **Disable**.

**Energy Performance Bias Setting**

Use this feature to select an appropriate fan-speed setting for your system. Select **Performance** to maximize system performance with maximum cooling, which will increase power consumption. Select **Power** to maximize energy efficiency by reducing fan-speeds, which might compromise system performance. The fan speeds are controlled by the firmware management via IPMI 2.0. The options are **Performance**, **Balanced Performance**, **Balanced Power**, and **Power**.

**Energy Efficiency Turbo**

Select **Enable** for Energy Efficiency Turbo support to turn up CPU core frequency to improve CPU performance without compromising energy efficiency. The options are **Enable** and **Disable**.

*If the item above - Power Technology is set to 'Custom' the following options will be displayed:*

## ► CPU P State Control

### EIST (P-States)

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

### Turbo Mode (Available when Intel® EIST Technology is enabled)

Select Enable to use the Turbo Mode to boost system performance. The options are **Enable** and Disable.

### P-State Coordination

This feature determines how an ACPI-aware operating system will coordinate P-State transitions between logical processors. P-State is also known as "SpeedStep" for Intel processors. Select HW\_ALL to change the P-State coordination type for all hardware components. This option is recommended for the E5-2600 V3/V4 platform. Select SW\_ALL to change the P-State coordination type for all software installed in the system. Select SW\_ANY to change the P-State coordination type for a particular software program specified by the user. The options are **HW\_All**, SW\_ALL, and SW\_ANY.

## ► CPU C State Control

### Package C-State limit

Use this item to set the limit on the C-State package register. The options are C0/C1 State, C2 State, C6 (Non Retention) State, and **C6 (Retention) State**.

### CPU C3 Report

Select Enable to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are Enable and **Disable**.

### CPU C6 Report

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

### Enhanced Halt State (C1E)

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

## ▶ CPU T State Control

### ACPI (Advanced Configuration Power Interface) T-States

Select Enable to support CPU throttling by the operating system to reduce power consumption. The options are **Enable** and Disable.

## ▶ Chipset Configuration

### ▶ North Bridge

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

### ▶ IIO Configuration

#### EV DFX (Device Function On-Hide) Feature

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

### ▶ IIO1 Configuration

#### IOU2 (IIO1 PCIe Port 1)

This item configures the PCI-E Bifurcation setting for a PCI-E port specified by the user. The options are x4x4, X8, and **Auto**.

#### CPU1 SLOT3 PCI-E 3.0 x8 Link Speed

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

#### IOU0 (IIO1 PCIe Port 2)

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

#### CPU1 SLOT1 PCI-E 3.0 x8 Link Speed

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

**CPU1 SLOT2 PCI-E 3.0 x8 Link Speed**

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

**IOU1 (II01 PCIE Port 3)**

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

**CPU1 SLOT4 PCI-E 3.0 x8 Link Speed**

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

**CPU1 SLOT5 PCI-E 3.0 x8 Link Speed**

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

**► IIO2 Configuration****IOU2 (II02 PCIe Port 1)**

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4, X8, and **Auto**.

**CPU2 SLOT11 PCI-E 2.0 x4 (in x8) Link Speed**

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

**CPU2 SLOT10 PCI-E 3.0 x8 Link Speed**

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

**IOU0 (II02 PCIE Port 2)**

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

**CPU2 SLOT8 PCI-E 3.0 x8 Link Speed**

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

**CPU2 SLOT9 PCI-E 3.0 x8 Link Speed**

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

**IOU1 (II02 PCIE Port 3)**

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

**CPU2 SLOT6 PCI-E 3.0 x8 Link Speed**

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

**CPU2 SLOT7 PCI-E 3.0 x8 Link Speed**

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

**►IOAT (Intel® IO Acceleration) Configuration****Enable IOAT**

Select Enable to enable Intel I/OAT (I/O Acceleration Technology) support, which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are **Enable** and Disable.

**No Snoop**

Select Enable to support no-snoop mode for each CB device. The options are **Disable** and Enable.

**Relaxed Ordering**

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

## ► Intel VT for Directed I/O (VT-d)

### Intel® VT for Directed I/O (VT-d)

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

### Interrupt Remapping

Select Enable for Interrupt Remapping support to enhance system performance. The options are **Enable** and Disable.

## ► QPI (Quick Path Interconnect) Configuration

### QPI Status

The following information will display:

- Number of CPU
- Number of IIO
- Current QPI Link Speed
- Current QPI Link Frequency
- QPI Global MMIO Low Base/Limit
- QPI Global MMIO High Base/Limit
- QPI PCIe Configuration Base/Size

### Link Frequency Select

Use this feature to select the desired QPI link frequency. The options are 6.4 GT/s, 8.0 GT/s, 9.6 GT/s, **Auto**, and Auto Limited.

### Link L0p Enable

Select Enable for the QPI to enter the L0p state for power saving. The options are Disable and **Enable**.

### Link L1 Enable

Select Enable for the QPI to enter the L1 state for power saving. The options are Disable and **Enable**.

**COD Enable (Available when the OS and the CPU support this feature)**

Select Enable for Cluster-On-Die support to enhance system performance in cloud computing. The options are Enable and **Disable**.

**Early Snoop (Available when the OS and the CPU support this feature)**

Select Enable for Early Snoop support to enhance system performance. The options are Enable, Disable, and **Auto**.

**Isoc Mode**

Select Enable to enable Isochronous support to meet QoS (Quality of Service) requirements. This feature is especially important for Virtualization Technology. The options are Enable and **Disable**.

**► Memory Configuration****Integrated Memory Controller (IMC)****Enforce POR**

Select Enable to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **Enabled** and Disabled.

**Memory Frequency**

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

**Data Scrambling**

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are **Auto**, Disabled and Enabled.

**Enable ADR**

Asynchronous DRAM Refresh (ADR), supported by the Haswell-EP/EN processors, provides a mechanism to preserve the key data in DDR4 NVDIMM system memory when an AC power-supply failure occurs. The options are ADR + NVDIMMs, ADR + Battery-backed DIMMs, and **Disabled**.

**DRAM RAPL (Running Average Power Limit) Baseline**

Use this feature to set the run-time power-limit baseline for DRAM modules. The options are Disable, DRAM RAPL Mode 0, and **DRAM RAPL Mode 1**.

### **Set Throttling Mode**

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled and **CLTT** (Closed Loop Thermal Throttling).

### **A7 Mode**

Select Enable to support A7 (Addressing) mode to improve memory performance. The options are **Enable** and Disable.

### **► DIMM Information**

This item displays the status of a DIMM module specified by the user.

- P1-DIMMA1 - P1-DIMMD2
- P2-DIMME1 - P2-DIMMH2

### **► Memory RAS (Reliability\_Availability\_Serviceability) Configuration**

Use this submenu to configure the following Memory RAS settings.

#### **RAS Mode**

When Disable is selected, RAS is not supported. When Mirror is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel to boost performance. The options are **Disable**, Mirror, and Lockstep Mode.

#### **Memory Rank Sparing**

Select Enable to enable memory-sparing support for memory ranks to improve memory performance. The options are **Disabled** and Enabled.

#### **Patrol Scrub**

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, read-and-write will be performed every 16K cycles per cache line if there is no delay caused by internal processing. The options are **Enable** and Disable.

### **Demand Scrub**

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select **Enable** to use Demand Scrubbing for ECC memory correction. The options are **Enable** and **Disable**.

### **Device Tagging**

Select **Enable** to support device tagging. The options are **Disable** and **Enable**.

## **►South Bridge Configuration**

The following South Bridge information will display:

- USB Module Version
- USB Devices

### **Legacy USB Support**

Select **Enabled** to support onboard legacy USB devices. Select **Auto** to disable legacy support if there are no legacy USB devices present. Select **Disable** to have all USB devices available for EFI applications only. The options are **Enabled**, **Disabled** and **Auto**.

### **XHCI Hand-Off**

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

### **EHCI Hand-Off**

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

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

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

**USB 3.0 Support**

Select Enabled for USB 3.0 support. The options are Smart Auto, **Auto**, Enabled, Disabled and Manual.

**EHCI1**

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #1 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

**EHCI2**

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #2 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

**XHCI Pre-Boot Driver**

Select Enabled to load the Intel XHCI (Extensible Host Controller Interface) pre-boot driver for system boot. The settings are **Enabled** and Disabled.

**►SATA Configuration**

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

**SATA Controller**

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

**Configure SATA as**

Select IDE to configure a SATA drive specified by the user as an IDE drive. Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

*\*If the item above "Configure SATA as" is set to AHCI, the following items will display:*

**Support Aggressive Link Power Management**

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

### **SATA Port 0~ Port 5**

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

- Model number of drive and capacity
- Software Preserve Support

### **SATA Port 0~ Port 5**

Select Enabled to enable a SATA port specified by the user. The options are Disabled and **Enabled**.

### **Port 0 ~ Port 5 Hot Plug**

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

### **Port 0 ~ Port 5 Spin Up Device**

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

### **Port 0 ~ Port 5 SATA Device Type**

Use this item 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.

*\*If the item above "Configure SATA as" is set to IDE, the following items will display:*

### **SATA Port 0~ Port 5**

This item indicates that a SATA port specified by the user is installed (present) or not.

### **Port 0 ~ Port 5 SATA Device Type (Available when a SATA port is detected)**

Use this item 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.

*\*If the item above "Configure SATA as" is set to RAID, the following items will display:*

**Support Aggressive Link Power Management**

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

**SATA RAID Option ROM/UEFI Driver**

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, EFI, and **Legacy**.

**SATA/sSATA RAID Boot Select**

Select SATA Controller to boot the system from a SATA RAID device. Select sSATA Controller to boot the system from a S-SATA RAID device. Select Both to boot the system either from a SATA RAID device or from an sSATA RAID device. Please note that the option-Both is not supported by the Windows Server 2012/R2 OS. The options are Both, SATA Controller, and **sSATA Controller**.

**SATA Port 0~ Port 5**

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

**SATA Port 0~ Port 5**

Select Enabled to enable a SATA port specified by the user. The options are Disabled and **Enabled**.

**Port 0 ~ Port 5 Hot Plug**

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

**Port 0 ~ Port 5 Spin Up Device**

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

### Port 0 ~ Port 5 SATA Device Type

Use this item 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.

## ►sSATA Configuration

When this submenu is selected, AMI BIOS automatically detects the presence of the SATA devices that are supported by the sSATA controller and displays the following items:

### sSATA Controller

This item enables or disables the onboard SATA controller supported by the Intel sSATA controller. The options are **Enabled** and Disabled.

### Configure sSATA as

Select IDE to configure an sSATA drive specified by the user as an IDE drive. Select AHCI to configure an sSATA drive specified by the user as an AHCI drive. Select RAID to configure an sSATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

*\*If the item above "Configure sSATA as" is set to AHCI, the following items will display:*

### Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

### sSATA Port 0~ Port 3

This item displays the information detected on the installed on the sSATA port. specified by the user.

- Model number of drive and capacity
- Software Preserve Support

### sSATA Port 0~ Port 3

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and Enabled.

**sSATA Port 0 ~ Port 3 Hot Plug**

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

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

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

**Port 0 ~ Port 3 sSATA Device Type**

Use this item to specify if the sSATA 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.

*\*If the item above "Configure sSATA as" is set to IDE, the following items will display:*

**sSATA Port 0~ Port 3**

This item indicates that an sSATA port specified by the user is not installed or not detected.

**Port 0 ~ Port 3 sSATA Device Type (Available when a SATA port is detected)**

Use this item to specify if the sSATA 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.

*\*If the item above "Configure sSATA as" is set to RAID, the following items will display:*

**Support Aggressive Link Power Management**

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

**sSATA RAID Option ROM/UEFI Driver**

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, EFI, and **Legacy**.

**SATA/sSATA RAID Boot Select**

Select SATA Controller to boot the system from a SATA RAID device. Select sSATA Controller to boot the system from a S-SATA RAID device. Select Both to boot the system either from a SATA RAID device or from an sSATA RAID device.

Please note that the option-Both is not supported by the Windows Server 2012/R2 OS. The options are Both, SATA Controller, and **sSATA Controller**.

### **sSATA Port 0~ Port 3**

This item displays the information detected on the installed sSATA drives on the particular sSATA port.

- Model number of drive and capacity
- Software Preserve Support

### **sSATA Port 0~ Port 3**

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and Enabled.

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

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

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

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

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

Use this item to specify if the sSATA 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.

## **► Server ME (Management Engine) Configuration**

This feature displays the following system ME configuration settings.

- General ME Configuration
- Operational Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1

ME Firmware Status #2

- Current State
- Error Code

## ►PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

### PCI Bus Driver Version

### PCI Devices Common Settings:

#### PCI PERR/SERR Support

Select Enabled for the system to log an error event when a PERR (PCI/PCI-E Parity Error) or a SERR (System Error) occurs. The options are Enabled and **Disabled**.

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

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

#### SR-IOV (Available if the system supports Single-Root Virtualization)

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

#### Maximum Payload

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 Bytes, and 256 Bytes.

#### Maximum Read Request

Select Auto for the BIOS to automatically set the maximum size for a read request for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

#### ASPM Support

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are **Disabled** and Auto.

**Warning:** Enabling ASPM support may cause some PCI-E devices to fail!

**MMIOHBase**

Use this item to select the base memory size according to memory-address mapping for the IO hub. The base memory size must be between 4032G to 4078G. The options are **56T**, 48T, 24T, 512G, and 256G.

**MMIO High Size**

Use this item to select the high memory size according to memory-address mapping for the IO hub. The options are **256G**, 128G, 512G, and 1024G.

**CPU1 Slot1 PCI-E 3.0 x8 OPROM - CPU1 Slot5 PCI-E 3.0 x8 OPROM/CPU2 Slot6 PCI-E 3.0 x8 OPROM - CPU2 Slot10 PCI-E 3.0 x8 OPROM/CPU2 Slot11 PCI-E 2.0 x4 OPROM**

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are Disabled, **Legacy** and EFI.

**Onboard LAN Option ROM Type**

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are **Legacy** and EFI.

**Onboard LAN1 Option ROM/Onboard LAN2 Option ROM**

Use this option to select the type of device installed in a LAN port specified by the user for system boot. The default setting for LAN1 Option ROM is **PXE**, and the default setting for LAN2 Option ROM is **Disabled**.

**Onboard Video OPROM**

Select Legacy to boot the system using a legacy video device installed on the motherboard. The options are Disabled, **Legacy** and EFI.

**VGA Priority**

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

**Network Stack**

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

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## ► Super IO Configuration

### Super IO Chip AST2400

#### ► Serial Port 1 Configuration/Serial Port 2 Configuration

##### Serial Port 1/Serial Port 2

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and Disabled.

##### Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.

##### Change Port 1 Settings/Change Port 2 Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1 or Serial Port 2. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

The options for Serial Port 2 are **Auto**, (IO=2F8h; IRQ=3), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

##### Serial Port 2 Attribute

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

#### ► Serial Port Console Redirection

##### COM 1

##### COM 1 Console Redirection

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

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

## ►COM1 Console Redirection Settings

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

### Bits Per second

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

### Data Bits

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

### Parity

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

### Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are 1 and 2.

### Flow Control

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

### VT-UTF8 Combo Key Support

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

**Recorder Mode**

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

**Resolution 100x31**

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

**Legacy OS Redirection Resolution**

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

**Putty KeyPad**

Use this item to configure the settings for the function keys and the key pad for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

**Redirection After BIOS Post**

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

**SOL/COM2****Console Redirection**

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

*\*If the item above set to Enabled, the following items will become available for user's configuration:*

**► SOL/COM2 Console Redirection Settings**

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

**Terminal Type**

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

**Bits Per second**

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

**Data Bits**

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

**Parity**

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

**Stop Bits**

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

**Flow Control**

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

**VT-UTF8 Combo Key Support**

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

**Recorder Mode**

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

**Resolution 100x31**

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

### **Legacy OS Redirection Resolution**

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

### **Putty KeyPad**

Use this item to configure the settings for the function keys and the key pad for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

### **Redirection After BIOS Post**

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When this feature is set to Bootloader, legacy Console Redirection is disabled before booting the OS. When this feature is set to Always Enable, legacy Console Redirection remains enabled upon OS boot. The options are **Always Enable** and Bootloader.

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

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

#### **EMS Console Redirection**

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

*\*If the item above set to Enabled, the following items will become available for user's configuration:*

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

#### **Out-of-Band Management Port**

The feature selects a serial port in a client server to be used by the Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1 (Console Redirection)** and COM2/SOL (Console Redirection).

#### **Terminal Type**

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

**Bits Per Second**

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

**Flow Control**

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

The setting for each these features is displayed:

**Data Bits, Parity, Stop Bits****►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 **Enabled** and Disabled.

**High Precision 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 **Enabled** and Disabled.

**NUMA (Available when the OS supports this feature)**

Select Enabled to enable Non-Uniform Memory Access support to enhance system performance. The options are **Enabled** and Disabled.

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

### Configuration

#### Security Device Support

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

#### TPM State

Select Enabled to use TPM (Trusted Platform Module) settings to enhance system data security. Please reboot your system for any change on the TPM state to take effect. The options are Disabled and **Enabled**.

#### Pending Operation

Use this item 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**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

**Note:** Your system will reboot to carry out a pending TPM operation.

#### Current Status Information

This item displays the status of the TPM support on this motherboard:

- TPM Enabled Status
- TPM Active Status
- TPM Owner Status

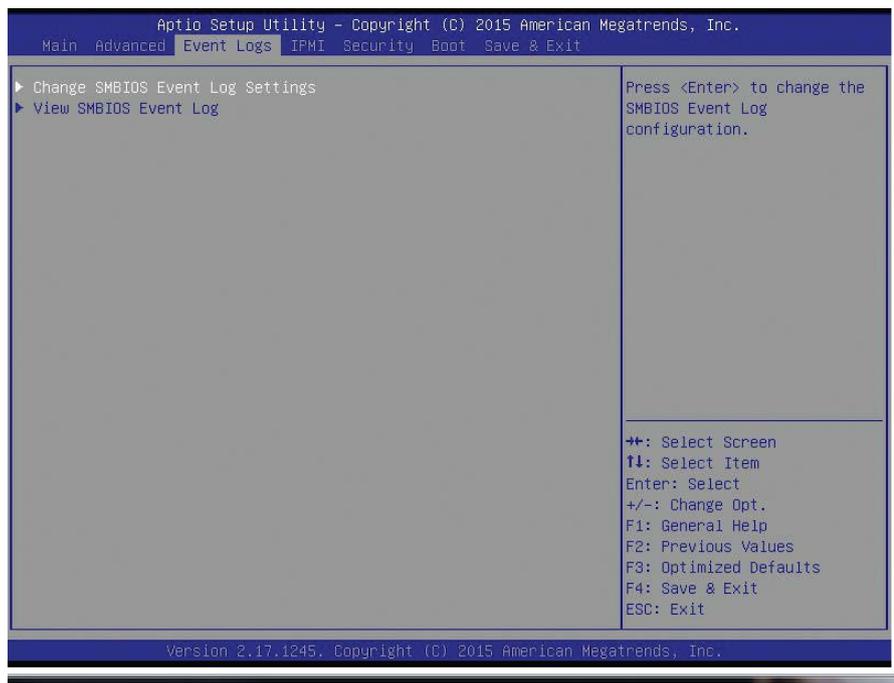
#### TXT Support

Select Enabled to enable TXT (Trusted Execution Technology) settings to improve data and network security. The options are **Disabled** and Enabled.

**Note:** For more information on TPM, please refer to the TPM manual at <http://www.supermicro.com/manuals/other/TPM.pdf>.

## 7-4 Event Logs

Use this feature to configure Event Log settings.



### ► Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

#### Enabling/Disabling Options

##### SMBIOS Event Log

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

##### Runtime Error Logging Support

Select Enable to support Runtime Error Logging. The options are Enable and **Disable**. If this item is set to Enable, the following item will be available for configuration:

#### Erasing Settings

##### Erase Event Log

Select Enabled to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No** and Yes.

##### When Log is Full

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

## **SMBIOS Event Log Standard Settings**

### **Log System Boot Event**

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

### **MECI (Multiple Event Count Increment)**

Enter the increment value for the multiple event counter. Enter a number between 1 to 255. The default setting is 1.

### **METW (Multiple Event Count Time Window)**

This item is used to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

**Note:** Please reboot the system for the changes to take effect.

### **►View SMBIOS Event Log**

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log. The following categories are displayed:

**Date/Time/Error Code/Severity**

## 7-5 IPMI

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



### IPMI Firmware Revision

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

### IPMI Status

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

### ► System Event Log

#### Enabling/Disabling Options

#### SEL Components

Select Enabled to enable all system event logging support at bootup. The options are **Enabled** and Disabled.

#### 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 determine 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

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

### Update IPMI LAN Configuration

Select Yes for the BIOS to automatically reset the following IPMI settings at next system boot. The options are Yes and **No**.

### Configuration Address Source (Available when the item above - Update IPMI LAN Configuration is set to Yes)

Use this item to select the IP address source 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, AMI 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 **DHCP** Unspecified, and Static.

### Station IP Address

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

### Station MAC Address

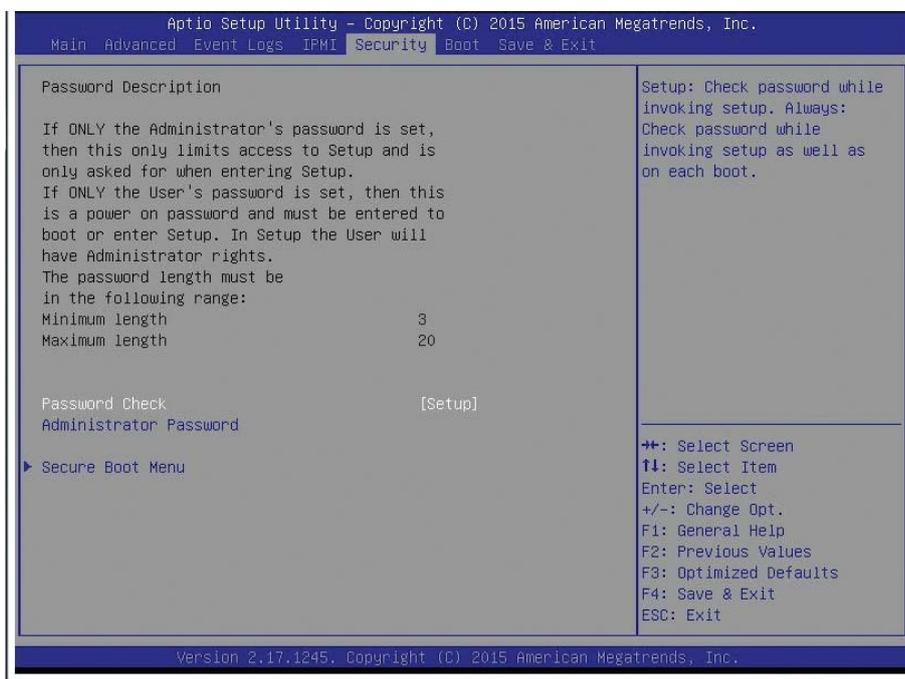
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

### Gateway IP Address

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

## 7-6 Security Settings

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



### Password Check

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

### Administrator Password

Use this feature to set the administrator password which is required before entering the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

### User Password

Use this feature to set the user password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

## ► Secure Boot Menu

### Secure Boot

Select Enable for secure boot support to ensure system security at bootup. The options are Enabled and Disabled.

### Secure Boot Mode

This feature allows the user to select the desired secure boot mode for the system. The options are Standard and Custom.

## ► Key Management

### Default Keys Provision

Select Enable to install all manufacture defaults for the following system security settings. The options are Disabled and **Enabled**.

### ► Enroll All Factory Default Keys

This feature allows the user to store security-related boot data in a file of the same named in the system root folder of your computer.

### ► Save All Secure Boot Variables

This feature allows the user to save the secure boot settings specified by the user.

### Platform Key (PK)

#### ► Delete PK

Select <Yes> to confirm deletion of the Platform Key (PK) from the system.

#### ► Set New Key

Select <Yes> to load the manufacture\_default platform keys for your system. Select No to load the default settings from other sources.

### Key Exchange Key (KEK)

#### ► Delete KEK (Key Exchange Key)

Select <Yes> to confirm deletion of the KEK from the system.

#### ► Set New KEK (Key Exchange Key)

Select <Yes> to confirm that a new KEK will be set in the system.

▶ **Append KEK (Key Exchange Key)**

Select <Yes> to load the new KEK from the manufacture defaults. Select <No> to load the new KEK from other sources.

**Authorized Signatures**

▶ **Delete DB (DataBase)**

Select <Yes> to confirm deletion of a database from the system.

▶ **Set New DB (DataBase)**

Select <Yes> to confirm that a new database will be set in the system.

▶ **Append DB (DataBase)**

Select <Yes> to load the new database from the manufacture defaults. Select <No> to load the new database from other sources

**Authorized TimeStamps**

▶ **Delete DBT (DataBase Timer)**

Select <Yes> to confirm deletion of the database timer from the system.

▶ **Set New DBT (DataBase Timer)**

Select <Yes> to confirm that the new database timer will be set in the system.

▶ **Append DBT (DataBase Timer)**

Select <Yes> to load the new database timer from the manufacture defaults. Select <No> to load the new database timer from other sources

**Forbidden Signatures**

▶ **Delete DBX**

Select <Yes> to confirm deletion of the DBX files from the system.

▶ **Set New DBX**

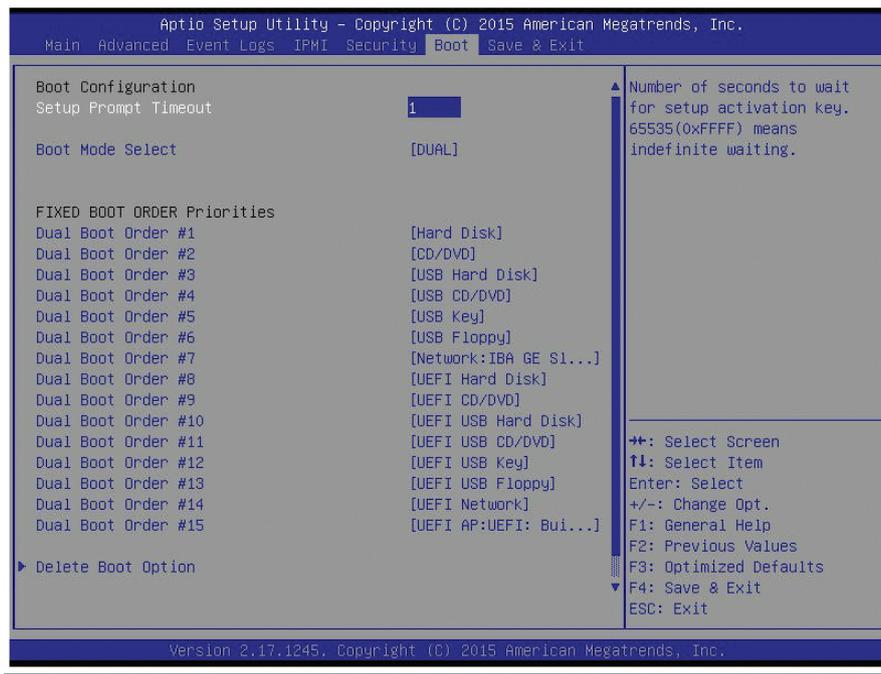
Select <Yes> to confirm that the new DBX files will be downloaded to the system.

▶ **Append DBX (DataBase Timer)**

Select <Enabled> to load the new DBX files from the manufacture defaults. Select <No> to load the new DBX files from other sources. The options are Disabled and **Enabled**.

## 7-7 Boot Settings

Use this feature to configure Boot Settings:



### Boot Configuration

#### Setup Prompt Timeout

Use this item to indicate how many seconds the system shall wait for the BIOS setup activation key to respond before the system starts to boot. The default setting is **1**.

#### Boot Mode Select

Use this item to select the type of device to be used for system boot. The options are Legacy, UEFI, and **Dual**.

#### Fixed Boot Order Priorities

This option prioritizes the order of bootable devices from which the system will boot. Press <Enter> on each entry from top to bottom to select devices.

*\*If the item - **Boot Mode Select** above is set to **Dual**, the following items will display:*

- Dual Boot Order #1 ~ Dual Boot Order #15

*\*If the item - **Boot Mode Select** above is set to **UEFI**, the following items will display:*

- UEFI Boot Order #1 ~ UEFI Boot Order #8

*\*If the item - **Boot Mode Select** above is set to **Legacy**, the following items will display:*

- UEFI Boot Order #1 ~ UEFI Boot Order #7

▶ **Delete Boot Option**

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

**Delete Boot Option**

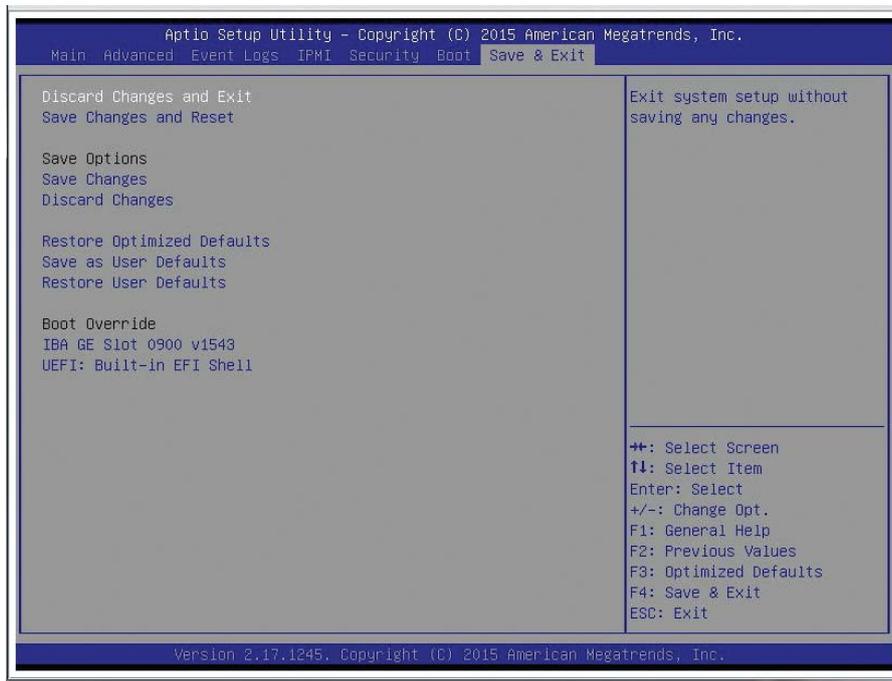
Select the target boot device to delete.

▶ **Network Drive BBS Priorities**

- Legacy Boot Order #1

## 7-8 Save & Exit

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



### Discard Changes and Exit

Select this option 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 Exit menu and press <Enter>.

### Save Changes and Reset

When you have completed the system configuration changes, select this option to leave the BIOS setup utility and reboot the computer for the new system configuration parameters to take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

### Save Options

### Save Changes

When you have completed the system configuration changes, select this option to save all changes made. This will not reset (reboot) the system. In order for the changes you've made to take effect, please be sure to reboot the system.

### Discard Changes

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

### **Restore Defaults**

Select Restore Defaults from the Exit menu and press <Enter> to load manufacture default settings for your system to maximize system performance but not stability.

### **Save As User Defaults**

Select Save as User Defaults from the Exit menu and press <Enter> to save changes to the BIOS setup for future use.

### **Restore User Defaults**

Select Restore User Defaults from the Exit menu and press <Enter> to retrieve user-defined settings that have been previously saved.

### **Boot Override**

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

## Appendix A

### BIOS Error Beep Codes

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

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

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

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

#### A-1 AMIBIOS Error Beep Codes

Motherboard BIOS Error Beep Codes		
Beep Code/LED	Error Message	Description
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL.  Con-Out includes Video Controller, PCI or Serial Console Redirection, IPMI SOL.
1 beep per device	Refresh	1 beep for each USB device detected
<b>IPMI Error Codes</b>		
1 Continuous Beep	System OH	System Overheat

# Notes

## Appendix B

# System Specifications

### Serverboard

Super X10DRX

### Chassis

213XAC-R1K05

### Processors

Two Intel Xeon E5-2600 v3/v4 series processors in an LGA 2011 socket (Socket R3)

**Note:** See the Supermicro website for details on supported processors.

### Chipset

Intel PCH C612

### BIOS

128 MB SPI AMI BIOS® SM Flash UEFI BIOS

### Memory Capacity

Up to 2TB ECC 3DS LRDIMM, 512GB DDR4 ECC RDIMM, 2400/2133/1866/1600 MHz

### Drive Bays

8 x 2.5" SATA

### Expansion Slots

11 Low-profile PCI-E slots

### Length

88.1 X 444.9 X 650.6 mm (3.52 x 26.02 x 26.02 in)

## **Weight**

Gross weight: 72 lbs (16.4 kg)

Net weight: 36 lbs (28.58 kg)

## **Form Factor**

2U Rackmont

## **System Cooling**

Four 8-cm system fans

## **System Input Requirements**

AC Input Voltage: 100-240V AC auto-range

Rated Input Current: 9A - 5A

Rated Input Frequency: 50 to 60 Hz

## **Power Supply**

Rated Output Power: 800W @ 100-127Vac/ 1000W @ 200-240Vac

Rated Output Voltages: +12V (66.7A @ 800W/ 83A @1000W), +5Vsb (4A)

Efficiency: 80 PLUS Titanium 96%

## **Operating Environment**

Operating Temperature: 10° to 35° C (50° to 95° F)

Non-operating Temperature: -40° to 70° C (-40° to 158° 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 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 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)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

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](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)" for further details.

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# Notes