SUPER●®

SUPERSERVER®

6027R-CDNRT+

USER'S MANUAL

1.0

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 SuperServer 6027R-CDNRT+. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 6027R-CDNRT+ is a 2U rackmount server based on the SC-826BAC4-R920WB chassis and the X9DRD-CNT+ serverboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X9DRD-CNT+ serverboard and the SC826BAC4-R920WB chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the 6027R-CDNRT+ into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: Standardized Warning Statements

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6027R-CDNRT+.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X9DRD-CNT+ serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC826BAC4-R920WB server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring hard drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Chapter 1

Introduction

1-1   Overview

The SuperServer 6027R-CDNRT+ is a 2U server comprised of two main sub-systems: the SC826BAC4-R920WB chassis and the X9DRD-CNT+ serverboard. Please refer to our website for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the 6027R-CDNRT+, as listed below:

- Three 8-cm cooling fans (FAN-0126L4)

- Two passive CPU heatsinks (one SNK-P0048PS and one SNK-P0048PT)

- Two riser cards (RSC-R2UW-2E8E16+ and RSC-R2UW-E8R-UP)

- SATA Accessories
  One hard drive backplane (BPN-SAS3-826A-N4)
  Eight SATA/SAS drive carriers (MCP-220-00075-0B)
  Four NVMe drive carriers (MCP-220-00116-0B)

Rackmount Rail Kit
- One rack rail kit (MCP-290-00053-0N)

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.

- Supermicro product manuals: http://www.supermicro.com/support/manuals/

- Product drivers and utilities: ftp://ftp.supermicro.com

- Product safety info: http://super-dev/about/policies/safety_information.cfm

1-2   Serverboard Features

At the heart of the SuperServer 6027R-CDNRT+ lies the X9DRD-CNT+, a dual processor serverboard based on the Intel® C602 chipset. Below are the main features of the X9DRD-CNT+. (See Figure 1-1 for a block diagram of the chipset).

Processors

The X9DRD-CNT+ supports single or dual Intel® Xeon E5-2600 (v2) series processors in R3-LGA2011 sockets. Please refer to our website for a complete listing of supported processors (www.supermicro.com).

Memory

The X9DRD-CNT+ has 24 DIMM sockets that can support up to 1.5 TB of ECC LRDIMM, 768 GB of ECC RDIMM or 384 GB of ECC/non-ECC UDIMM DDR3-2133/1866/1600 memory. Please refer to Chapter 5 for installing memory.

Note that DDR3-1866 memory speed is dependent on Intel E5-2600 v2 CPUs.

SATA

A SATA controller is integrated into the chipset to provide a ten-port, SATA subsystem, which is RAID 0, 1, 5 and 10 supported. The I-SATA0-1 ports are SATA 3.0, the rest are SATA 2.0. The SATA drives are hot-swappable. The serverboard also supports the use of a SATA DOM device.

SAS

Eight SAS 3.0 ports are supported by the onboard LSI 3108 SAS controller. RAID 0, 1, 5, 6, 10, 50 and 60 supported with optional SuperCAP battery support. The SAS drives are hot-swappable.

NVMe

NVMe (Non-Volatile Memory Express) is a standard interface used for accessing SSDs (Solid-State Drives) in a computer system, also referred to as NVMe drives. The NVMe interface eliminates the bottlenecks associated with older interfaces that were originally used for SSDs and reduces resources by having a single driver work for different types of computers and SSDs.

The 6027R-CDNRT+ can support up to four NVMe drives (controlled from CPU2). The NVMe drives are hot-swappable.

PCI Expansion

Two riser cards have been pre-installed in the system to support PCI expansion cards. The RSC-R2UW-2E8E16+ can support two full-height, half-length PCI-E 3.0 x8 cards and one full-height, half-lenght PCI-E 3.0 x16 card. The RSC-R2UW-E8R-UP can support one low-profile PCI-E 3.0 x8 card.

Rear I/O Ports

The rear I/O ports include one VGA (monitor) port, one COM port, four USB 2.0 ports, two 10 Gb LAN ports and a dedicated IPMI LAN port.

1-3   Server Chassis Features

The SC826BAC4-R920WB is a 2U form factor chassis. The following is a general outline of the main features of the SC826BAC4-R920WB chassis.

System Power

The SC826BAC4-R920WB features a redundant, hot-plug 920W power supply composed of two separate power modules. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

Hard Drive Subsystem

The SC826BAC4-R920WB chassis was designed to support 12 3.5" hot-swap hard drives.

Front Control Panel

The control panel on the SC826BAC4-R920WB provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity and power supply failure. A Univeral Information LED can alert the user of several conditions including fan fail and overheat. A main power button and a system reset button are also included on the control panel.

Cooling System

The SC826BAC4-R920WB chassis includes three 8-cm hot-plug system cooling fans located in the middle section of the chassis. An air shroud channels the airflow from the system fans to efficiently cool the processor area of the system. Each power supply module also includes a cooling fan.

**Figure 1-1. Intel C602 Chipset:
System Block Diagram**

Note: This is a general block diagram. Please see Chapter 5 for details.
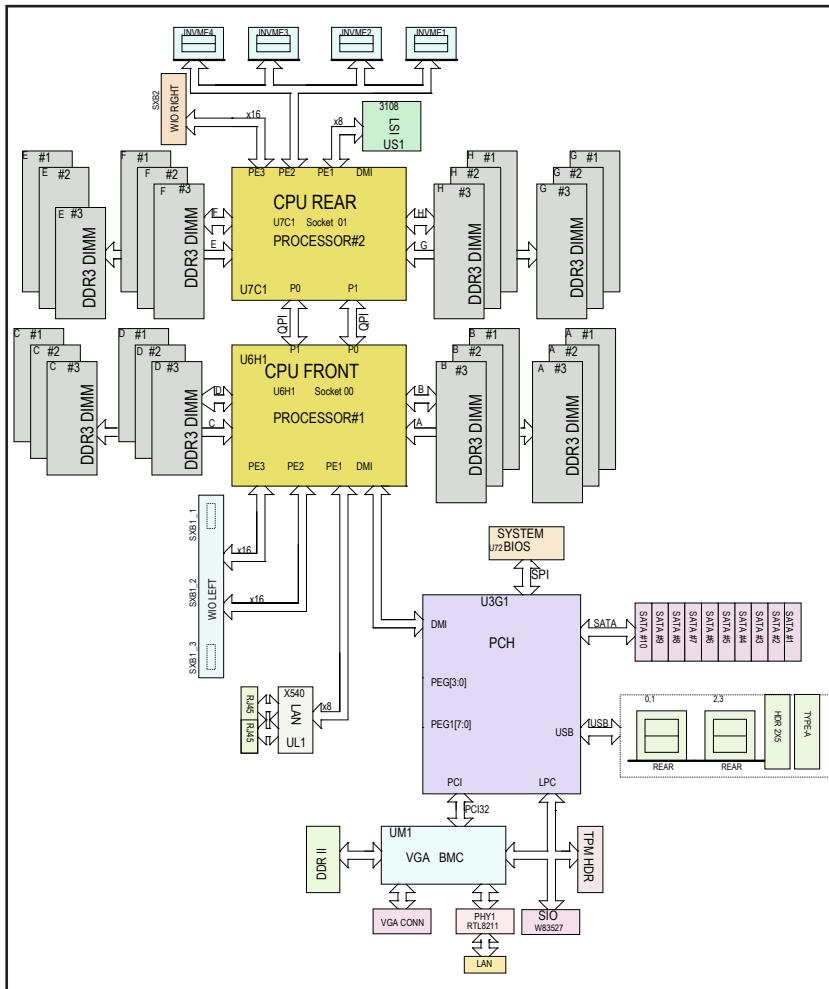
1-4   Contacting Supermicro

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Notes

Chapter 2

Server Installation

2-1   Overview

This chapter provides a quick setup checklist to get your 6027R-CDNRT+ up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2   Unpacking the System

You should inspect the box the 6027R-CDNRT+ was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 6027R-CDNRT+. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3   Preparing for Setup

The box the 6027R-CDNRT+ was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

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 acccording to §2 of the the German Ordinance for Work with Visual Display Units.

2-4   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's 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 tempera-ture 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 tempera-ture (Tmra).

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 connec-tions 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.

2-5   Installing the System into a Rack

This section provides information on installing the SC826 chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Separating the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Installing the Inner Rail Extension

The SC826 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached to the chassis, and do not interfere with normal use of the chassis if you decide not to use a server rack. The inner rail extension is attached to the inner rail to mount the chassis in the rack.

Installing the Inner Rails

1. Place the inner rail extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.

2. Slide the extension toward the front of the chassis.

3. Secure the chassis with 2 screws as illustrated. Repeat steps for the other inner rail extension.

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

Figure 2-1. Separating the Rack Rails

Rail Assembly

Extending the Rails

Quick-Release Tab

Separating the Inner Rail Extension
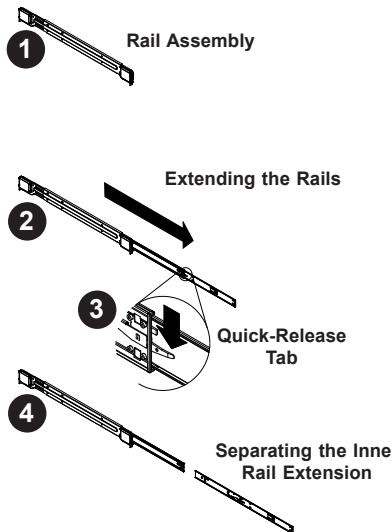
Separating the Inner and Outer Rails

1. Locate the rail assembly in the chassis packaging.

2. Extend the rail assembly by pulling it outward.

3. Press the quick-release tab.

4. Separate the inner rail extension from the outer rail assembly.

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

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.
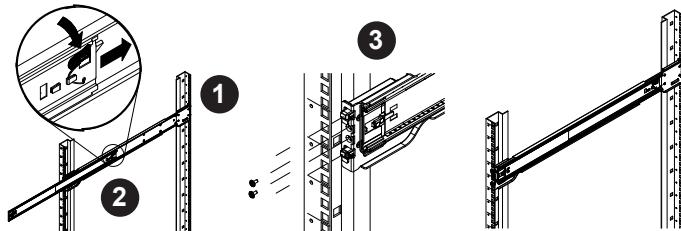
Figure 2-2. Assembling the Outer Rails

Outer Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the SC826 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack

1. Secure the back end of the outer rail to the rack, using the screws provided.

2. Press the button where the two outer rails are joined to retract the smaller outer rail.

3. Hang the hooks of the rails onto the rack holes and if desired, use screws to secure the front of the outer rail onto the rack.

4. Repeat steps 1-3 for the remaining outer rail.
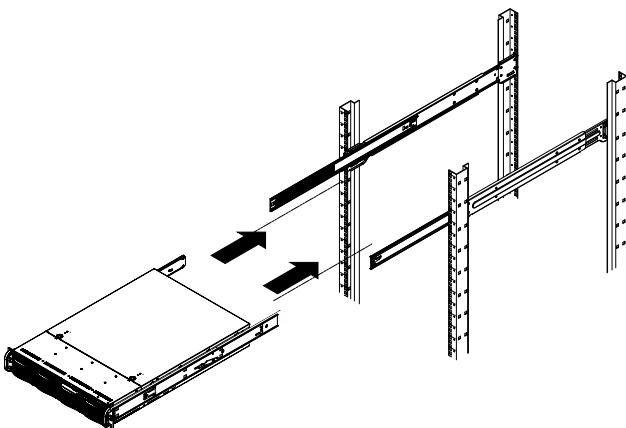
Figure 2-3. Installing the Rack Rails

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 secure the to hold the front of the chassis to the rack.

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

Notes

Chapter 3

System Interface

3-1   Overview

There are several LEDs on the control panel as well as others on the drive carri-
ers to keep you constantly informed of the overall status of the system as well as
the activity and health of specific components. There are also two buttons on the
chassis control panel.

3-2   Control Panel Buttons

There are two buttons located on the front of the chassis: a reset button and a
power on/off button.

RESET

Reset

Use the reset button to reboot the system.

Power

This is the main power button, which is used to apply or turn off the main system
power. Turning off system power with this button removes the main power but keeps
standby power supplied to the system.

3-3   Control Panel LEDs

The control panel located on the front of the chassis has several LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

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. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.

Universal Information LED

This LED will be blue when the UID function has been activated. When flashing red it indicates a fan failure. When red continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

Universal Information LED States	
State	**Indication**
Fast Blinking Red (1x/sec)	Fan Fail
Solid Red	CPU Overheat
Slow Blinking Red (1x/4 sec)	Power Fail
Solid Blue	Local UID Button Depressed
Blinking Blue	IPMI-Activated UID

NIC1

Indicates network activity on the LAN1 port when flashing.

NIC2

Indicates network activity on the LAN2 port when flashing.

HDD

On the 6027R-CDNRT+, this LED indicates hard drive activity when flashing.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4   Drive Carrier LEDs

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

	LED Color	Blinking Pattern	Behavior for Device
Activity LED	Blue	Solid On	SAS/NVMe drive installed
	Blue	Blinking	I/O activity
Status LED	Red	Solid On	Failed drive for SAS/SATA/NVMe with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive for SAS/SATA/NVMe with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for SAS/SATA/NVMe with RSTe support
	Red	On for five seconds, then off	Power on for SAS/SATA/NVMe with RSTe support
	Red	Blinking at 4 Hz	Identify drive for SAS/SATA/NVMe with RSTe support
	Green	Solid On	Safe to remove NVMe device
	Amber	Blinking at 1 Hz	Attention state—do not remove NVMe device

NVMe

The NVM Express ports provide high-speed, low-latency connections directly from the CPU to NVMe Solid State drives (SSDs). This greatly increases SSD throughput and significantly reduces storage device latency by simplifying driver and software requirements resulting from the direct PCI-E interface between the CPU and the NVMe SSD drives.

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 restart 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 web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

 Warning!

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

警告の定義
この警告サインは危険を意味します。
人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、
電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעייה 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 على 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.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

⚠ Warning!

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-60VDC, 20A

هذا المنتج يعتمد على معدات الحماية مه الدوائرالؤصيرة التي تم تثبيتها ف المبنى

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

경고!

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

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 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、シャーシー内部にアクセスするには、
システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前，必须将系统完全断电，并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !

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 للهيكل لتثبيت أو إزالة مكونات الجهاز

경고!

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

Waarschuwing

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

Equipment Installation

⚠ **Warning!**

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

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

警告
只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告
只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

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

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب 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 للالأمان

경고!

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

Waarschuwing

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

Battery Handling

 Warning!

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

電池の取り扱い

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

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

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة 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

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה !

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات 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。
修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

هناك خطر من التيار الكهربائي أوالطاقة 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!

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

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
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

當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

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!

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

Attention

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 !
כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש
להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

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!

섀시로부터 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

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.

<div dir="rtl">

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

</div>

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 UL또는 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 X9DRD-CNT+ 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 Processor and Heatsink Installation

Notes:

- Always connect the power cord last and always remove it before adding, re-moving or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.

- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.

- 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.

- Refer to the Supermicro website for updates on CPU support.

Installing a Processor

1. There are two levers on the LGA 2011 socket. First press and re-lease the load lever labeled 'Open 1st'.

2. Press the second load lever labeled 'Close 1st' to release the load plate from its locked position.

Press down on the lever labeled 'Close 1st'
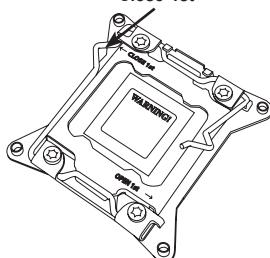
Pull lever away from the socket
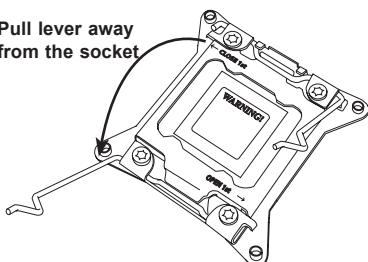
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.
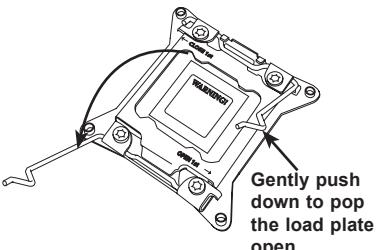
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.

Gently push down to pop the load plate open.

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

6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically and do not rub the CPU against any pins of the socket, which may damage the CPU or the socket.)

Socket Keys

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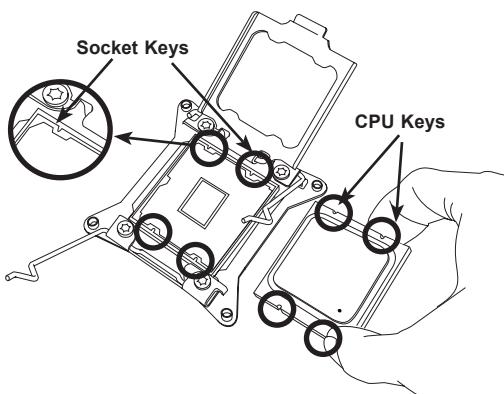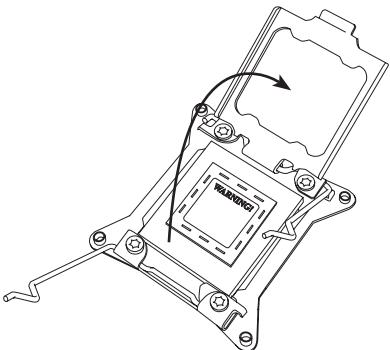
Warning: You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is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

7. With the CPU in the socket, in-spect the four corners of the CPU to make sure that they are flush with the socket.

8. Close the load plate. Lock the lever labeled 'Close 1st', then lock the lever labeled 'Open 1st'. Use your thumb to gently push the load levers down until the lever locks.

Gently close the load plate.

Push down and lock the level labeled 'Close 1st'.
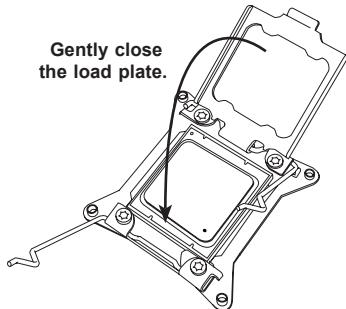
Lever Lock

Push down and lock the lever labeled 'Open 1st'.
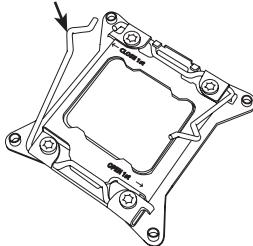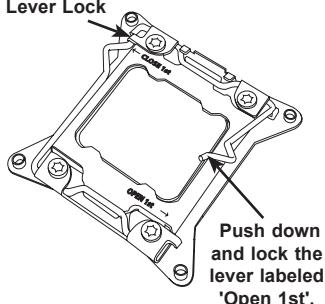
Installing a CPU Heatsink

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

2. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug (do not over-tighten the screws, which may damage the CPU.)

3. Finish the installation by fully tightening all four screws.

Note: SNK-P0048PS (for CPU1) pictured below. CPU2 uses the SNK-P0048PT heatsink.
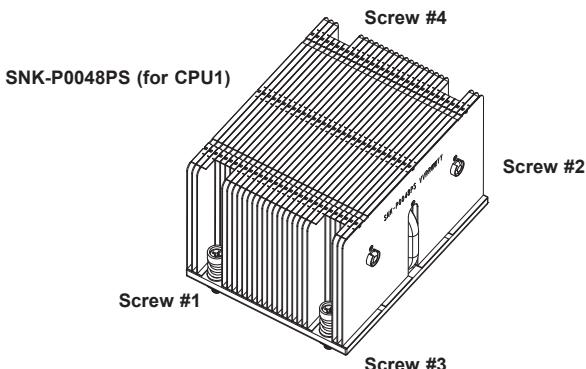
Removing the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. If you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unplug the power cord from the power supply.

2. Unscrew and remove the heatsink screws in the sequence shown in the picture above.

3. Hold the heatsink and <u>gently</u> wiggle it to loosen it from the CPU. (Do not use excessive force when doing this!)

4. Once the heatsink has been loosened, remove it from the CPU.

5. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before you re-install the 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 (ribbon) 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.

See the serverboard layout diagram in this chapter for connector locations.

Connecting Power Cables

The X9DRD-CNT+ has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to JPW1 to supply power to the serverboard. See the Connector Definitions section in this chapter for power connector pin definitions.

In addition, your power supply must be connected to the 8-pin Processor Power connectors at JPW2 and JPW3.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Even and odd numbered pins are on opposite sides of each header.

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.

Figure 5-1. Front Control Panel Header Pins (JF1)

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	P3V3-LED
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link	○	○	NIC1 Activity
NIC2 Link	○	○	NIC2 Activity
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	P3V3-LED
Ground	○	○	Reset — Reset Button
Ground	○	○	PWR — Power Button
	2	1	
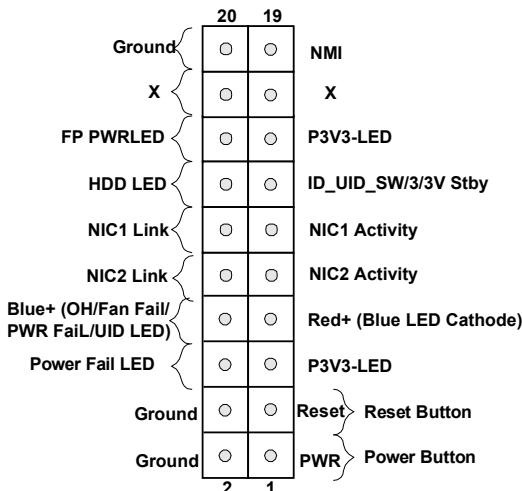
5-4   I/O Ports

See Figure 5-2 below for the locations of the various I/O ports located on the rear of the serverboard.

Figure 5-2. Rear Panel I/O Ports
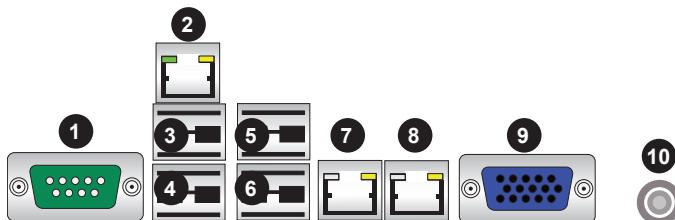
Rear I/O Ports	
1. COM Port	6. USB 2.0 Port
2. IPMI LAN Port	7. 10 G LAN1 Port
3. USB 2.0 Port	8. 10 G LAN1 Port
4. USB 2.0 Port	9. VGA Port
5. USB 2.0 Port	10. UID Button

5-5   Installing Memory

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see Figure 5-3).

2. Install starting with slot P1-DIMMA1. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

3. With the notches aligned, gently press down on the memory module until it snaps into place. Repeat to populate the desired number of slots.

4. See the tables that follow for details on populating the memory slots.

Note: you should remove the power cord from the system before installing or changing memory modules. Refer to our website for memory that has been tested on the X9DRD-CNT+ serverboard. For best performance, use memory modules of the same type and speed in the same bank.

Memory Support

Twenty-four DIMM sockets support up to 1.5 TB of ECC LRDIMM, 768 GB of ECC RDIMM or 384 GB of ECC/non-ECC UDIMM DDR3-2133/1866/1600 memory.

Note: Check the Supermicro website for the latest memory support information.

Processors and their Corresponding Memory Modules												
CPU	Corresponding DIMMs											
CPU1 (P1-DIMM)	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
CPU2 (P2-DIMM)	E1	F1	G1	H1	E2	F2	G2	H2	E3	F3	G3	H3

Figure 5-3. Installing DIMM into Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove: Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

Notch

Notch

Front View

Note: Notch should align with the receptive key point on the slot.

Release Tab

Release Tab

Top View of DDR3 Slot
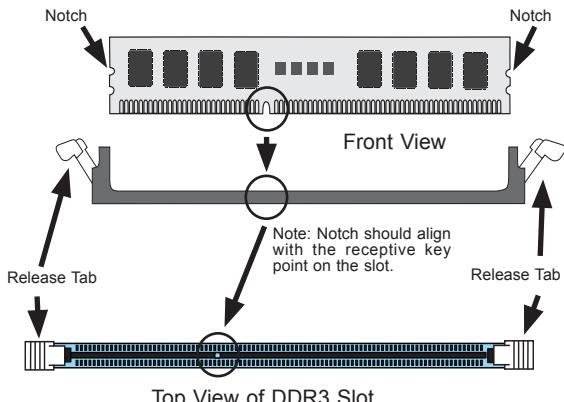
Populating UDIMM (ECC/Non-ECC) Memory Modules

Intel E5-2600 (v2) Series Processor UDIMM Memory Support

Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)							
				2 Slots Per Channel				3 Slots Per Channel			
				1DPC		2DPC		1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333, 1600, 1866	NA	1066, 1333, 1600	N/A	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333, 1600, 1866	NA	1066, 1333, 1600	N/A	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333, 1600, 1866	NA	1066, 1333, 1600	N/A	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
SRx8 ECC	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600

Note: For detailed information on memory support and updates, please refer to the Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Intel E5-2600 Series Processor UDIMM Memory Support

Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)							
				2 Slots Per Channel				3 Slots Per Channel			
				1DPC		2DPC		1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333	NA	1066, 1333	N/A	1066, 1333,	N/A	1066, 1333
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333	NA	1066, 1333	N/A	1066, 1333,	N/A	1066, 1333
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333	NA	1066, 1333	N/A	1066, 1333	N/A	1066, 1333
SRx8 ECC	1GB	2GB	4GB	1066, 1333	1066, 1333	1066	1066, 1333	1066	1066, 1333,	1066, 1333	1066, 1333
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333	1066	1066, 1333	1066	1066, 1333,	1066, 1333	1066, 1333

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Populating RDIMM (ECC) Memory Modules

Intel E5-2600 (v2) Series Processor RDIMM Memory Support

Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)									
				2 Slots Per Channel				3 Slots Per Channel					
				1DPC		2DPC		1 DPC		2DPC		3DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
DRx4	4GB	8GB	16 GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
QRx4	8GB	16 GB	32 GB	800	800, 1066	800	800	800	800, 1066	800	800	N/A	N/A
QRx8	4GB	8GB	16 GB	800	800, 1066	800	800	800	800, 1066	800	800	N/A	N/A

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Intel E5-2600 Series Processor RDIMM Memory Support

Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)									
				2 Slots Per Channel				3 Slots Per Channel					
				1DPC		2DPC		1 DPC		2DPC		3DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
DRx4	4GB	8GB	16 GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
QRx4	8GB	16 GB	32 GB	800	1066	800	800	800	1066	800	800	N/A	N/A
QRx8	4GB	8GB	16 GB	800	1066	800	800	800	1066	800	800	N/A	N/A

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Populating LRDIMM (ECC) Memory Modules

Intel E5-2600 Series Processor LRDIMM Memory Support												
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)		Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)									
			2 Slots Per Channel				3 Slots Per Channel					
			1DPC		2DPC		1DPC		2DPC		3DPC	
			1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V
QRx4 (DDP)	16 GB	32 GB	1066, 1333, 1600	1066, 1333, 1600, 1866	1066, 1333, 1600	1066, 1333, 1600	1066, 1333, 1600	1066, 1333, 1600, 1866	1066, 1333, 1600	1066, 1333, 1600	1066	1066
8Rx4 (QDP)	32 GB	64 GB	1066	1066	1066	1066	1066	1066	1066	1066	1066	1066
Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.												

Intel E5-2600 Series Processor LRDIMM Memory Support												
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)		Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)									
			2 Slots Per Channel				3 Slots Per Channel					
			1DPC		2DPC		1DPC		2DPC		3DPC	
			1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V
QRx4 (DDP)	16 GB	32 GB	1066	1066, 1333	1066	1066, 1333	1066	1066, 1333	1066	1066, 1333	1066	1066
QRx8 (QDP)	8GB	16 GB	1066	1066, 1333	1066	1066, 1333	1066	1066	1066	1066	1066	1066
Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.												

5-6   Adding PCI Expansion Cards

PCI Expansion Slots

Two riser cards have been pre-installed in the system to support PCI expansion cards. The RSC-R2UW-2E8E16+ can support two full-height, half-length PCI-E 3.0 x8 cards and one full-height, half-lenght PCI-E 3.0 x16 card. The RSC-R2UW-E8R-UP can support one low-profile PCI-E 3.0 x8 card.

Installing a PCI Add-on Card

1. Release the locking tab that corresponds to the slot you wish to populate.

2. Insert the expansion card into the riser card, pushing down with your thumbs evenly on both sides of the card.

5-7   Serverboard Details

Figure 5-4. SUPER X9DRD-CNT+ Layout
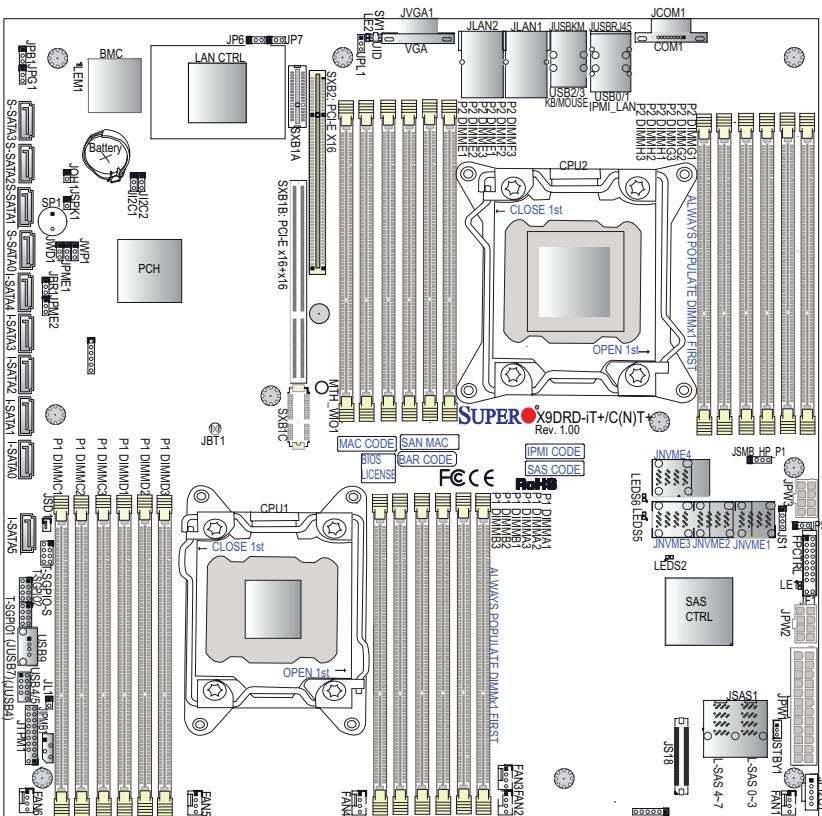
Notes

- "■" 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.

X9DRD-CNT+ Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-9
JI²C1/JI²C2	SMB to PCI-E Slots	Pins 2-3 (Disabled)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JBR1	BIOS Recovery Enable/Disable	Pins 1-2 (Normal)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	GLAN1/GLAN2 Enable/Disable	Pins 1-2 (Enabled)
JPME1	Manufacture Recovery Mode	Pins 1-2 (Normal)
JPME2	Manufacture Mode Select	Pins 1-2 (Normal)
JPS1	SAS Enable/Disable	Pins 1-2 (Enabled)
JSPK1	Onboard Buzzer Enable/Disable	Pins 1-2 (Enabled)
JWD1	Watch Dog Timer	Pins 1-2 (Reset)

Connector	Description
FAN1~6	CPU/System Fan Headers
JIPMB1	4-pin External BMC I²C Header (for IPMI Card)
JL1	Chassis Intrusion Header
JLAN1/2	10 Gb LAN (Ethernet) Ports
JNVME1/2/3/4	NVM Express (PCI-Express 3.0 x4) Ports
JOH1	Overheat LED Indicator Header
JPI²C1	Power Supply SMBbus I²C Header
JPW1	24-Pin ATX Main Power Connector
JPW2/3	12V 8-Pin Power Connectors
JS18	80-pin CVFM (Cache Vault Flash Module) Connector
JSAS1	SAS Ports 0-3, 4-7 (supported by the LSI 3108 controller)
JSD1	SATA DOM (Device on Module) Power Connector
JSTBY1	+5V Standby Power Header
JTPM1	TPM (Trusted Platform Module)/Port 80
JUSBRJ45	Dedicated IPMI LAN & USB Ports 0/1
JUSBKM	USB Keyboard/Mouse & USB Ports 2/3
JUSB4	Front Panel Accessible USB Connections (4/5)
JUSB7	Type A USB Embedded Drive Connector
I-SATA 0-5	SATA Ports (supported by the Intel PCH)
S-SATA 0-3	SATA Ports (supported by the Intel SCU)
SXB1A/1B/1C	Proprietary PCI-Express 3.0 x32 slots for WIO riser cards
SXB2	PCI-Express 3.0 x16 SMCI-Proprietary WIO Slot

SW1 (UID)	UID (Unit Identification) Switch
T-SGPIO-S	Serial Link General Purpose I/O Headers for S-SATA0-3 Ports
T-SGPIO1/2	Serial Link General Purpose I/O Headers for I-SATA0-5 (T-SGPIO1: I-SATA0-3, T-SGPIO2: I-SATA4/5)

LED	Description	State	Status
LE1	PWR LED	Green: On	MB PWR On
LE2	UID LED	Blue: On	Unit Identified
LEDS2	SAS Heartbeat LED	Green: Blinking	SAS Normal
LEDS5	SAS Activity	Green: Blinking	SAS Active
LEDS6	SAS Fault	Red: On	SAS: In Fault Condition
LEM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

5-8   Connector Definitions

ATX Power Connector

The 24-pin main power connector (JPW1) is used to provide power to the serverboard. Two 8-pin power connectors (JPW2/3) are also required for processor power (below). These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	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

Processor Power Connectors

JPW2 and JPW3 must also be connected to the power supply to provide power for the processor(s). See the table on the right for pin definitions.

Processor Power Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

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

The HDD LED connection is located on pins 13 and 14 of JF1. These pins are used to display hard drive activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	P3V3_LED_SW
14	HD Active

NIC1/NIC2 LED Indicators

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

NIC1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC2 Activity LED
10	NIC2 Link LED
11	NIC1 Activity LED
12	NIC1 Link LED

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 overheat, fan failure or power failure. The blue LED on pin 7 works as the front UID LED indicator. The red LED takes precedence over the blue LED by default. 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_LED_ON_N)
8	(RED_LED_ON_N)

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 the 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. To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

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

Standby Power Header

The +5V Standby Power header is located at JSTBY1 on the serverboard. 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	Not Connected

Universal Serial Bus (USB)

Four Universal Serial Bus ports (USB 0/1, USB 2/3) are located on the rear I/O. In addition, a USB header located close to the P1-DIMMC1 slot provides two front-accessible USB connections (USB 4/5). One Type A connector (USB9), located next to the USB 4/5 header, also provides front panel USB support (cables are not included). See the tables on the right for pin definitions.

Rear USB (0/1,2/3) Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

Type A USB 9 Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground

FP USB (2.0) (#4/5) Pin Definitions			
USB 4 Pin #	Definition	USB 5 Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	Ground

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. (+)	P5V_SPK
Pin 2	Neg. (-)	SPKR_IN

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

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

Fan Headers

The X9DRD-CNT+ has seven fan headers, designated Fan1 through Fan6. Pins 1-3 of the fan headers are backward compatible with traditional 3-pin fans, but will only run at full speed. Use 4-pin fans to allow IPMI to automatically set fan speed based on the system temperature. See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWM Control

TPM Header/Port 80

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and a 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_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

Serial Port

The serial port (COM1) is located on the rear I/O panel.

Ethernet Ports

Two 10G Ethernet ports (LAN1, LAN2) are located on the rear I/O panel. In addition, a dedicated IPMI LAN port is located above the USB 0/1 ports to provide KVM support for IPMI 2.0. All these ports accept RJ45 type cables.

Power SMB (I²C) Connector

The Power System Management Bus (I²C) header (JPI²C1) is used to monitor the power supply, fan and system temperatures. See the table on the right for pin definitions.

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

Overheat LED/Fan Fail

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

Overheat LED Pin Definitions	
Pin#	Definition
1	P5V_LED
2	OH Active

OH/Fan Fail LED Status	
State	Message
Solid	Overheat
Blinking	Fan Fail

SuperDOM Connector

A powered SATADOM (Device-on-Module) connector at JSD1 may be used with Supermciro SuperDOMs to provide backward-compatible power support to non-Supermicro SATA-DOMs that require external power.

SuperDOM Connector Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

IPMB I²C

A System Management Bus header for IPMI 2.0 is located at JIPMB. Connect the appropriate cable here to use the IPMB I²C connection on your system.

IPMB I²C Pin Definitions (IPMB)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

T-SGPIO 1/2 & 3-SGPIO 1/2 Headers

Three SGPIO (Serial Link General Purpose Input/Output) headers are provided on the serverboard. T-SGPIO1/2 support I-SATA ports 0-5, and T-SGPIO-S supports S-SATA ports 0-3. See the table on the right for pin definitions.

Serial Link SGPIO Pin Definitions			
Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

Note: NC indicates no connection.

Unit Identifier Switch/UID LED Indicators

A rear Unit Identifier (UID) button and two UID LEDs are provided with the system. The UID switch is located next to the VGA port. The front UID LED connects to pins 7-8 of JF1. The rear UID LED is located next ot eh UID button. When you press the UID button, both front and rear UID LEDs will turn on. Press the UID button again to turn off both LEDs. The UID Indicators provide easy identification of a system installed in a rack.

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

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

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

5-9   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.

Connector Pins

3 2 1

Jumper

Setting

3 2 1

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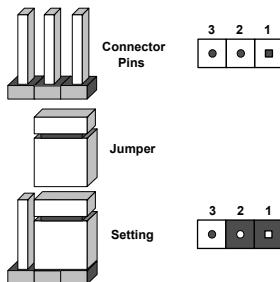
CMOS Clear

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

To clear CMOS

1. First power down the system and unplug the power cord(s).

2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.

3. Remove the screwdriver (or shorting device).

4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS.*

VGA Enable/Disable

JPG1 allows you to enable or disable the 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 (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/2 Enable/Disable

Change the setting of jumper JPL1 to enable or disable the onboard Ethernet (RJ45) ports LAN1 and LAN2. See the table on the right for jumper settings. The default setting is enabled.

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

Watch Dog Enable/Disable

JWD1 controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application "hangs". Pins 1-2 will cause WD to reset the system if an application hangs. Pins 2-3 will generate a non-maskable interrupt signal for the application that has hung. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

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

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

BMC Enable/Disable

Jumper JPB1 allows you to enable the embedded BMC (Baseboard Management) Controller to provide IPMI 2.0/ KVM support on the serverboard. See the table on the right for jumper settings.

BMC Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enabled
Pins 2-3	Normal

Onboard Buzzer Enable/Disable

Close jumper JSPK1 to use the onboard buzzer. The default setting is closed for normal system mode. See the table on the right for jumper settings.

Onboard Buzzer Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

Manufacture Mode Select

Close pin 2 and pin 3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacture Mode, allowing the user to flash the system firmware from a host server for system setting modifications.

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

I²C Bus to PCI-Exp. Slots

Use jumpers JI²C1 and JI²C2 to connect the System Management Bus (I²C) to the PCI-Express slots to improve PCI slot performance. These two jumpers are to be set to the same setting.

I²C to PCI-E Slots Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Management Engine Recovery

Use JPME1 to select ME Firmware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain normal power operation and management. In the single operation mode, an online upgrade will be available via Recovery mode.

ME Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	ME Recovery

SAS Enable/Disable

JPS1 is used to enable onboard SAS connections. See the table on the right for jumper settings.

SAS Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

BIOS Recovery

Close pins 2/3 of JBR1 to force the system into BIOS Recovery mode to recover BIOS in a crisis situation. The default setting is to close pins 1/2 to use normal system operation mode.

BIOS Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Force BIOS Recovery

5-10 Onboard Indicators

LAN Port LEDs

The two 10 Gb Ethernet ports (located each have two LEDs. One LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED Connection Speed Indicator	
LED Color	Definition
Off	No connection, 10 Mb/s, 100 Mb/s
Green	10 Gb/s
Amber	1 Gb/s

Dedicated IPMI LAN LEDs

In addition to LAN1 and LAN2, the X9DRD-CNT+ has a dedicated IPMI LAN port. The amber LED indicates activity, while the green LED indicates the speed of the connection. See the table on the right for more information.

IPMI LAN Link LED (Left) & Activity LED (Right)		
LED	Color/State	Definition
Link (Left)	Green: Solid	100 Mbps
Activity (Right)	Amber: Blinking	Active

Onboard Power LED

An Onboard Power LED is located at LE1 on the serverboard. This LED is on whenver the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the table on the right for more information.

Onboard PWR LED Indicator LED States	
LED Color	Definition
Off	Normal Power Off (w/ power cable connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State

BMC Heartbeat LED

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

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

SAS Heartbeat LED

A SAS Heartbeat LED is located at LEDS2. When LEDS2 is blinking, SAS is functioning normally. See the table on the right for more information.

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

SAS Activity LED

A SAS Activity LED is located at LEDS5. When LEDS5 is blinking, SAS is active. See the table on the right for more information.

SAS Activity LED States	
Color/State	Definition
Green: Blinking	SAS Active

SAS Fault LED

A SAS Fault LED is located at LEDS6. When LEDS6 is on, a SAS error has occured. See the table on the right for more information.

SAS Fault LED States	
Color/State	Definition
Red: On	SAS Error

5-11 SATA Ports

SATA Ports

Four SATA 2.0 ports (I-SATA2-5) and two SATA 3.0 (I-SATA0/1) are provided on the serverboard. These ports are supported by the Intel PCH. In addition, four S-SATA ports (S-SATA0-3) are provided, which are supported by Intel SCU.

Notes: For more information on SATA HostRAID configuration, please refer to the Intel SATA HostRAID User's Guide posted on our website at www.supermicro.com.

5-12 NVMe Ports

Four NVMe Express ports are provided on the serverboard. These NVMe ports provide PCI-Exp. 3.0 x4 connections and are controlled by CPU2.

The NVM Express ports provide high-speed, low-latency connections directly from the CPU to NVMe Solid State drives (SSDs). This greatly increases SSD throughput and significantly reduces storage device latency by simplifying driver and software requirements resulting from the direct PCI-E interface between the CPU and the NVMe SSD drives.

5-13 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 5-5 should appear.

Figure 5-5. Driver Installation Display Screen
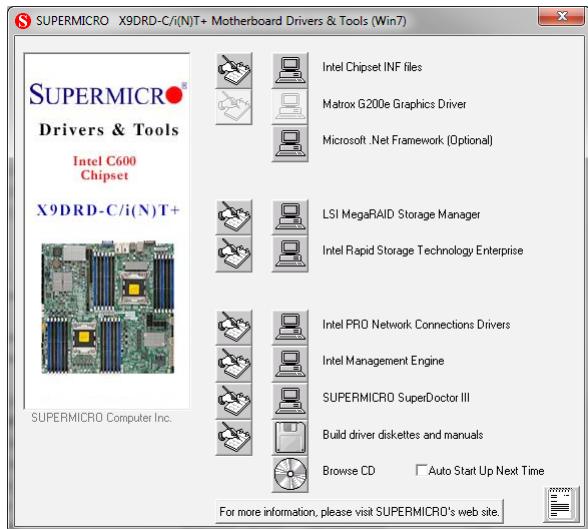
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

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 5-6. SuperDoctor 5 Interface Display Screen (Health Information)
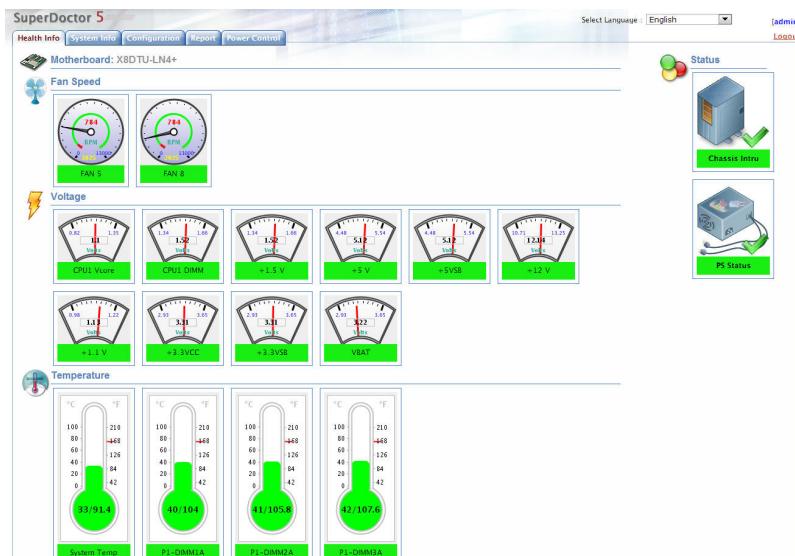
Note: The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

5-14 Onboard Battery

Care must be taken to assure that the chassis cover is in place when the system is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 5-7. Installing the Onboard Battery

LITHIUM BATTERY

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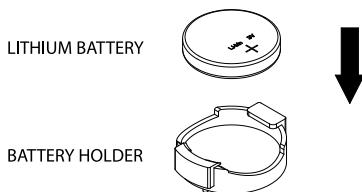
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency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

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform mainte-nance on the SC826BAC4-R920WB chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

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, add-on 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.

Figure 6-1. Front and Rear Chassis Views

Control Panel   **SATA/NVMe Hard Drives (12)**
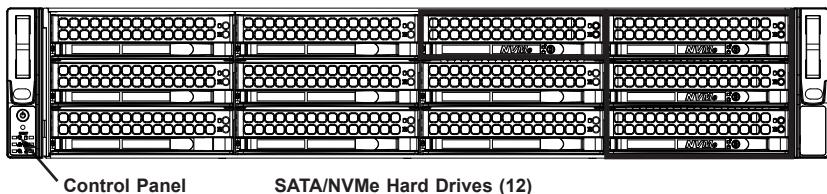
Note: NVMe drive bays are outlined above (four total).

Power Supplies   **PCI Expansion Slots**

I/O Ports
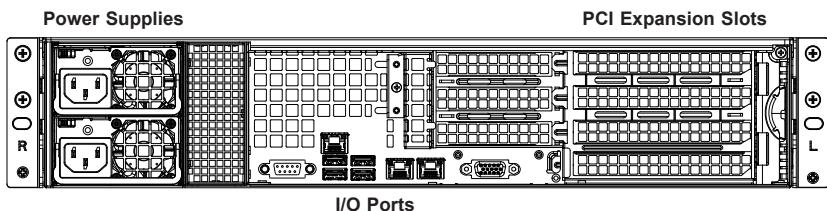
6-2   Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The LEDs inform you of system status.

See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3   Accessing the Inside of the Chassis

Some maintenance will require accessing the inside of the server.

Removing the Chassis Cover (Figure 6-2)

1.   Remove the two screws from the sides of the chassis cover.

2.   Press both release tabs at the same time to unlock the cover.

3.   Slide the cover toward the rear of the chassis.

4.   Lift the cover off the chassis.

Figure 6-2. Removing the Chassis Cover
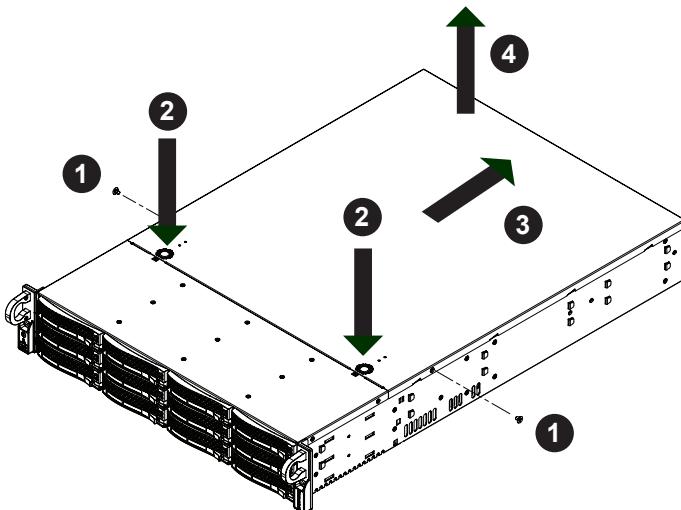
6-4   System Fans

Three 8-cm hot-swap fans provide the cooling for the system. It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components.

System Fan Failure

Fan speed is controlled by system temperature via IPMI. If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover while the system is still running to determine which of the fans has failed.

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

Replacing System Fans

1. If necessary, open the chassis while the power is running to determine which fan requires changing. (Never run the server for an extended period of time with the chassis open.)

2. Press the fan release tab to lift the failed fan from the chassis and pull it completely from the chassis.

3. 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.

4. Power up the system and check that the fan is working properly before re-placing the chassis cover.

Figure 6-3. Replacing System Cooling Fans
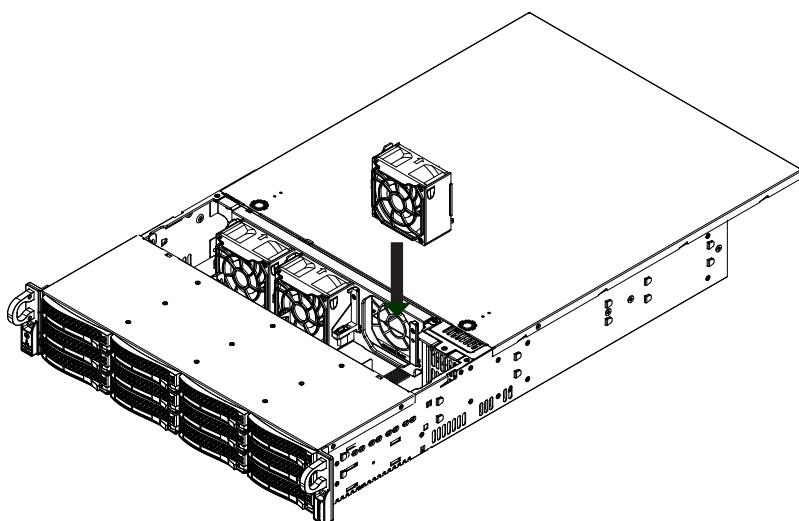
6-5   Drive Bay Installation/Removal

Accessing the Drive Bays

You do not need to access the inside of the chassis or remove power to replace or swap hard drives. Up to eight SATA/SAS and four NVMe drives may be installed in the server.

Drive Installation

The drives are mounted in carriers to simplify their installation and removal from the chassis. The carriers also help promote proper airflow for the drives. For this reason, even empty carriers without hard drives installed must remain in the chassis.

Removing a Drive Carrier

1. Push the release button located beside the drive's LEDs.

2. Swing the handle fully out and use it to pull the drive carrier straight out (see Figure 6-5).

Mounting a Drive in a Drive Carrier

1. To add a new hard drive, install the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with four screws, as shown in Figure 6-4.

Caution: 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/storage.cfm

Figure 6-4. Removing a Hard Drive Carrier
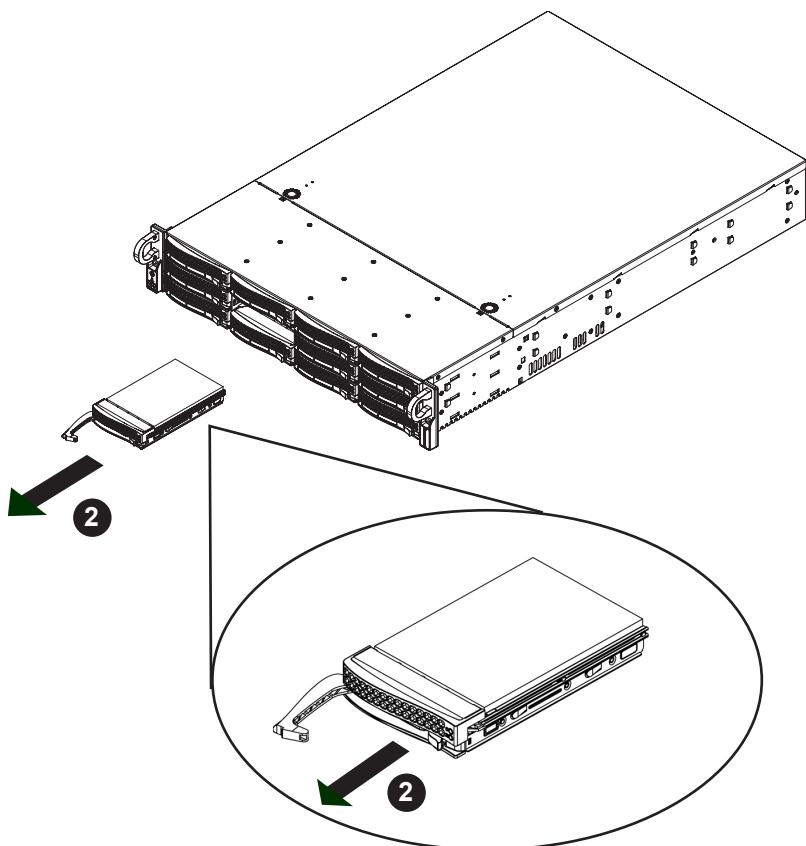
Caution: Regardless of how many hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

Figure 6-5. Mounting a Drive in a Carrier
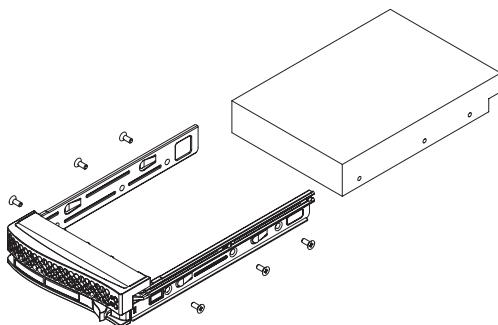
Hard Drive Backplane

The hard drives plug into a backplane (p/n BPN-SAS3-826A-N4) that provides power, drive ID and bus termination. The supplied RAID controller provides hot-swap capability with drive state indication. The backplane is already preconfigured, so no jumper or switch configurations are required.

Figure 6-6. Backplane
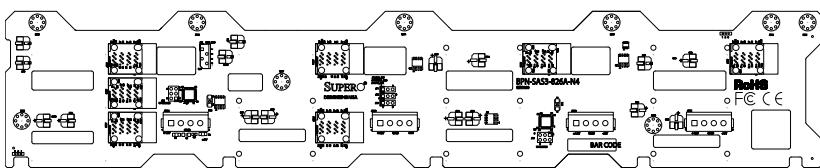
Caution: Use care when working around the backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

6-6   Power Supply

The 6027R-CDNRT+ has a 920 watt redundant, hot-plug power supply consisting of two power modules. Each power supply module has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage.

Power Supply Failure

An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating. If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The Power Fail LED on the front control panel will illuminate and remain on until the failed unit has been replaced.

Replacement units can be ordered directly from Supermicro. The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

Removing/Replacing the Power Supply

You do not need to shut down the system to replace a power supply unit. The backup power supply module will keep the system up and running while you replace the failed hot-swap unit. Replace with the same model (see part number in the Appendix), which can be ordered directly from Supermicro.

Removing the Power Supply (Figure 6-7)

1. First unplug the AC power cord from the failed power supply module.

2. Depress the locking tab on the power supply module.

3. Use the handle to pull it straight out with the rounded handle.

Installing a New Power Supply

1. Replace the failed hot-swap unit with another identical power supply unit.

2. Push the new power supply unit into the power bay until you hear a click.

3. Secure the locking tab on the unit.

4. Finish by plugging the AC power cord back into the unit.

Figure 6-7. Removing the Power Supply
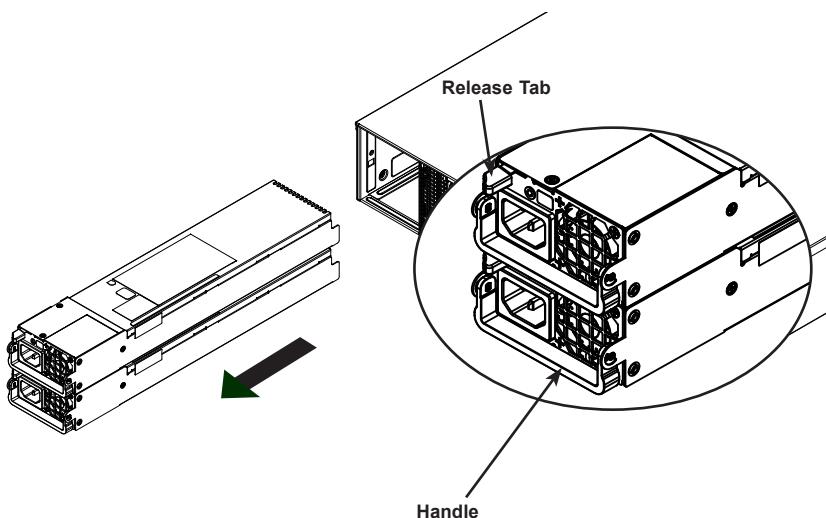
Notes

Chapter 7

BIOS

7-1   Introduction

This chapter describes the AMI BIOS setup utility for the X9DRD-iT+/CT/CNT+. 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 Main 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. The manufacturer 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 setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

> **Note 1**: Options printed in **Bold** are default settings.

> **Note 2**: <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 BIOS setup utility can be accessed by pressing <F2> at the appropriate time during system boot.

Note: For AMI UEFI BIOS Recovery, please refer to the UEFI BIOS Recovery User Guide posted @ http://www.supermicro.com/support/manuals/.

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 the manufacturer be liable for direct, indirect, special, incidental, or consequential damage arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is being updated 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.

```
          Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                              Set the Date. Use Tab to
                                                              switch between Date
  System Date                          [Thu 06/12/2014]       elements.
  System Time                          [01:57:28]

  Supermicro X9DRD-C/i(N)T+
  Version                              3.0a
  Build Date                           06/12/2014

  Memory Information
  Total Memory                         16384 MB (DDR3)

                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit

          Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

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 05/28/2014).

System Time

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

Supermicro X9DRD-iT+/CT+/CNT+

 Version

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

Build Date

This item displays the date that the BIOS setuputility was built.

Memory Information

Total Memory

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

7-3 Advanced Setup Configurations

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

```
          Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                      System Boot Feature
  ▶ Boot Feature                                      Setting.
  ▶ CPU Configuration
  ▶ Chipset Configuration
  ▶ SATA Configuration
  ▶ SCU Configuration
  ▶ PCIe/PCI/PnP Configuration
  ▶ Super IO Configuration
  ▶ Serial Port Console Redirection
  ▶ ACPI Settings
  ▶ ME Subsystem

  ▶ Intel RSTe SCU Controller
                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



          Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

▶Boot Features

Quiet Boot

This feature allows the user to select 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 set 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 feature 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**.

Interrupt 19 Capture

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

Re-try Boot

When EFI Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after its initial boot failure. Select Legacy Boot, to allow the BIOS to automatically reboot the system from a Legacy boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to 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 Seconds 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 loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power On, Stay Off and **Last State**.

▶CPU Configuration

This submenu displays the information of the 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 CPUs installed in Socket 1/ Socket 2.

- Type of CPU

- CPU Signature

- Microcode Patch

- CPU Stepping

- Maximum CPU Speed

- Minimum CPU Speed

- Processor Cores

- Intel HT (Hyper-Threading) Technology

- Intel VT-x Technology

- Intel SMX Technology

- L1 Data Cache

- L1 Code Cache

- L2 Cache

- L3 Cache

CPU Speed

This item displays the speed of the CPU installed in Socket 1/Socket 2.

64-bit

This item indicates if the CPU installed in Socket 1 or Socket 2 supports 64-bit technology.

Clock Spread Spectrum

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

RTID (Record Types IDs)

This feature displays the total number of Record Type IDs for local and remote pools. The options are **Optimal** and Alternate.

Hyper-threading

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

Active Processor Cores

Set to Enabled to use a processor's second core and above. (Please refer to Intel's website for more information.) The options are **All,** 1, 2, 3, 4, and 5.

Limit CPUID Maximum

Use this feature to set the maximum CPU ID value. Enable this function to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are Enabled and **Disabled** (for the Windows OS).

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

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

Intel® AES-NI

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

MLC Streamer Prefetcher (Available when supported by the CPU)

If set to Enabled, the MLC (mid-level cache) streamer prefetcher will prefetch streams of data and instructions from the main memory to Level 2 (L2) Cache to improve CPU performance. The options are Disabled and **Enabled**.

MLC Spatial Prefetch (Available when supported by the CPU)

If this feature is set to Disabled, the MLC (mid-level cache) spatial prefetcher will prefetch the cache line for 64 bytes. If this feature is set to Enabled, the MLC (mid-level cache) spatial prefetcher will prefetch both cache lines for 128 bytes as comprised. The options are Disabled and **Enabled**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enabled to support Data Cache Unit (DCU) prefetch of L1 data to speed up data accessing and processing in the DCU to enhance CPU performance. The options are Disabled and **Enabled**.

DCU IP Prefetcher

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

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

Select Enabled 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 **Enabled** and Disabled.

> **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's website for detailed information.)

PPIN Support

Select Enabled to use the Protected-Processor Inventory Number (PPIN) in the system which will the processor to return a 64-bit IO number via the PPIN MSR. The options are **Enabled** and Disabled.

▶ CPU Power Management Configuration

This submenu allows the user 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 Disabled, **Energy Efficiency**, and Custom. If the option is set to Custom, the following items will display:

EIST (Available when Power Technology is set to Custom)

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 Disabled (GV3 Disabled), and **Enabled (GV3 Enabled)**. (**Note**: GV3 is Intel Speedstep support used on older platforms.)Please refer to Intel's website for detailed information.)

Turbo Mode (Available when Power Technology is set to Custom)

Select Enabled to use the Turbo Mode to boost system performance. The options are **Enabled** and Disabled.

C1E Support (Available when Power Technology is set to Custom)

Select Enabled to enable Enhanced C1 Power State to boost system performance. The options are **Enabled** and Disabled.

CPU C3 Report (Available when Power Technology is set to Custom)

Select Enabled 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 Enabled and **Disabled.**

CPU C6 Report (Available when Power Technology is set to Custom)

Select Enabled 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 **Enabled** and Disabled.

Package C-State limit (Available when Power Technology is set to Custom)

This feature allows the user to set the limit on the C-State package register. The options are C0, C2, **C6,** and No Limit.

Energy/Performance Bias

This setting allows the user to adjust the fan speed based on performance (maximum cooling) or energy efficiency (maximum energy savings). The options are Performance, **Balanced Performance**, Balanced Energy, and Energy Efficient.

Factory Long Duration Power Limit

This item displays the power limit set by the manufacturer during which long duration power is maintained.

Long Duration Power Limit

This item displays the power limit set by the manufacturer during which long duration power is maintained.

Factory Long Duration Maintained (Available when Power Technology is set to Custom)

This item displays the period of time set by the manufacturer during which long duration power is maintained.

Long Duration Maintained

This item displays the period of time during which long duration power is maintained.

Recommended Short Duration Power

This item displays the short duration power settings recommended by the manufacturer.

Short Duration Power Limit

This item displays the time period during which short duration power is maintained.

▶Chipset Configuration

▶North Bridge

This feature allows the user to configure the settings for the Intel North Bridge.

▶Integrated IO Configuration

Intel VT-d

Select Enabled to enable Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to the VWM (Virtual Working Memory) 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 **Enabled** and Disabled.

Ageing Timer Rollover

Use this feature to determine how long to set the Ageing timer. Set this feature to default to follow the BIOS setting. The options are Disabled, 32 us, **128 us**, and 512 us.

Intel® I/OAT

Select Enabled to enable Intel I/OAT (I/O Acceleration Technology), which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The default setting is **Enabled**.

DCA Support

Select Enabled to use Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The options are **Enabled** and Disabled.

MMCFG Base

Use this setting to set the default PCI MMIO base address. The default setting is **0x90000000**.

Left Riser Card/Right Riser Card

When detected by the BIOS, these items display riser card information.

IIO 1 PCIe Port Bifurcation Control

This submenu configures the following IO PCIe Port Bifurcation Control settings for IIO 1 PCIe ports to determine how the available PCI-Express lanes to be distributed between the PCI-Exp. Root Ports.

II0 1 IOU2-PCIe Port

This feature allows the user to set the bus speed between the IOU1 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

II0 1 IOU3-PCIe Port

If this feature allows the user to set the bus speed between the IOU3 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

II0 2 PCIe Port Bifurcation Control

This submenu configures the following IO PCIe Port Bifurcation Control settings for IIO 2 PCIe ports to determine how the available PCI-Express lanes to be distributed between the PCI-Exp. Root Ports.

II0 2 IOU3-PCIe Port

If this feature allows the user to set the bus speed between the IOU3 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

▶QPI Configuration

Current QPI Link Speed

This item displays the current speed of the QPI Link.

Current QPI Frequency

This item displays the frequency of the QPI Link.

Isoc

Select Enabled to enable Ischronous support to meet QoS (Quality of Service) requirements. This feature is especially important for virtualization technology. The options are Enabled and **Disabled**.

QPI (Quick Path Interconnect) Link Speed Mode

Use this feature to select data transfer speed for QPI Link connections. The options are **Fast** and Slow.

QPI Link Frequency Select

Use this feature to select the desired QPI frequency. The options are **Auto**, 6.4 GT/s, 7.2 GT/s, and 8.0 GT/s.

▶**DIMM Configuration**

This section displays the following DIMM information.

Current Memory Mode

This item displays the current memory mode.

Current Memory Speed

This item displays the current memory speed.

Mirroring

This item displays if memory mirroring is supported by the motherboard. Memory mirroring creates a duplicate copy of the data stored in the memory to enhance data security.

Sparing

This item displays if memory sparing is supported by the motherboard. Memory sparing enhances system performance.

▶**DIMM Information**

The status of each memory module will be displayed as detected by the BIOS.

P1-DIMM1/P1-DIMM2/P1-DIMM3

P2-DIMM1/P2-DIMM2/P2-DIMM3

Memory Mode

When Independent is selected, all DIMMs are available to the operating system. The options are **Independent**, Mirroring, and Lock Step.

DRAM RAPL Mode

RAPL (Running Average Power Limit) provides mechanisms to enforce power consumption limits on supported processors The options are DRAM RAPL MODE0 , **DRAM RAPL MODE1**, and Disabled.

DDR Speed

Use this feature to force a DDR3 memory module to run at a frequency other than what is specified in the specification. The options are **Auto**, Force DDR3 800, Force DDR3 1066, Force DDR3 1333, Force DDR3 1600, Force DDR3 1866, and Force SPD.

Channel Interleaving

This feature selects from the different channel interleaving methods. The options are **Auto**, 1 Way, 2 Way, 3, Way, and 4 Way.

Rank Interleaving

This feature allows the user to select a rank memory interleaving method. The options are **Auto**, 1 Way, 2 Way, 4, Way, and 8 Way.

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 Enabled, the IO hub will read and write back one cache line every 16K cycles, if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Enabled** and Disabled.

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 Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

Data Scrambling

Select Enabled to enable data scrubbing to ensure data security and integrity. The options are Disabled and **Enabled**.

Device Tagging

Select Enabled to support device tagging. The options are **Disabled** and Enabled.

A7 Address Mode

Select Enabled to support A7 (Addressing) Mode to improve memory performance. The options are **Auto**, Enable, and Disable.

Thermal Throttling

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).

Double Refresh

Select Enabled for Double Refresh support which will achieve memory stability when the memory temperature is high. The options are **Auto**, Enabled, and Disabled.

▶South Bridge Configuration

This feature allows the user to configure the settings for the Intel PCH chip.

PCH Information

This feature displays the following PCH information.

Name: This item displays the name of the PCH chip.

Stepping: This item displays the status of the PCH stepping.

USB Devices: This item displays the USB devices detected by the BIOS.

All USB Devices

This feature enables all USB ports/devices. The options are Disabled and **Enabled**. (If set to Enabled, EHCI Controller 1 and Controller 2 will appear.)

EHCI Controller 1/EHCI Controller 2 (Available when All USB Devices is set to Enabled)

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 1 or Controller 2. The options are Disabled and **Enabled**.

Legacy USB Support (Available when USB Functions is not Disabled)

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

Port 60/64 Emulation

Select Enabled to enable I/O port 60h/64h emulation support for the legacy USB keyboard so that it can be fully supported by the operating systems that does not recognize a USB device. The options are Disabled and **Enabled**.

EHCI Hand-Off

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

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of IDE or SATA devices and displays the following items.

SATA Port0~SATA Port5: The AMI BIOS displays the status of each SATA port as detected by the BIOS.

SATA Mode

Use this feature to configure SATA mode for a selected SATA port. The options are Disabled, IDE Mode, **AHCI Mode**, and RAID Mode. The following are displayed depending on your selection:

IDE Mode

The following items are displayed when IDE Mode is selected:

Serial-ATA (Serial-ATA) Controller 0~1

Use this feature to activate or deactivate the SATA controller, and set the compatibility mode. The options for Controller 0 are Enhanced and **Compatible**. The default for SATA Controller 0 is Compatible. The default of SATA Controller 1 is **Enhanced**.

AHCI Mode

The following items are displayed when the AHCI Mode is selected.

Aggressive Link Power Management

Select Enabled to enable Aggressive Link Power Management support for Cougar Point B0 stepping and beyond. The options are **Enabled** and Disabled.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for a particular port, which will allow the user to change a hardware component or device without shutting down the system. The options are **Enabled** and Disabled.

Staggered Spin-Up

Select Enabled to enable Staggered Spin-up support to prevent excessive power consumption caused by multiple HDDs spinning-up simultaneously. The options are Enabled and **Disabled**.

RAID Mode

The following items are displayed when RAID Mode is selected:

SATA RAID Option ROM/UEFI Driver

Select Enabled to support onboard SATA RAID Option ROM which will allow the user to bootup the system using a SATA RAID device. Select Disabled for UEFI device support. The options are **Enabled** and Disabled.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for the particular port, which will allow the user to change the device installed in a port specified by the user without turning off the system power. The options are **Enabled** and Disabled.

▶SCU (Storage Control Unit) Configuration

Storage Controller Unit

Select Enabled to enable PCH SCU storage devices. The options are Disabled and **Enabled**.

SCU RAID Option ROM/UEFI Driver

Select Enabled to support onboard SCU RAID Option ROM which will allow the user to bootup the system using a SCU RAID device. Select Disabled for UEFI device support. The options are **Enabled** and Disabled.

▶PCIe/PCI/PnP Configuration

Launch Storage OpROM Policy

Use this feature to select the device which you want to use Option ROM to boot the system from when there are multiple Option ROM devices available in the system. The options are Legacy Only and **UEFI Only**.

PCI Latency Timer

Use this feature to set the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248 (PCI Bus Clocks).

PERR# Generation

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

SERR# Generation

Select Enabled to allow a PCI device to generate an SERR (System Error) number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

Maximum Payload

Select Auto to allow 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 to allow the system BIOS to automatically set the maximum Read Request size 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

This feature allows the user to set the Active State Power Management (ASPM) level for a PCI-E device. Select Force L0 to force all PCI-E links to operate at L0 state. Select Auto to allow the system BIOS to automatically set the ASPM level for the system. Select Disabled to disable ASPM support. The options are **Disabled**, and Auto.

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

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**.

Onboard LAN Option ROM Select

Select iSCSI to use the iSCSI Option ROM to boot the computer using a network device. Select PXE (Preboot Execution Environment) to use an PXE Option ROM to boot the computer using a network device. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable the onboard LAN1 Option ROM and LAN2 Option ROM. This is to boot the computer using a network device. The default setting for LAN1 Option ROM is **Enabled**, and the default settings for LAN2 Option ROM is **Disabled**.

VGA Priority

This feature allows the user to select the graphics adapter to be used as the primary boot device. The options are **Onboard**, and Offboard.

Network Stack

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

▶Super IO Configuration

Super IO Chip: This item displays the Super IO chip used in the motherboard.

▶Serial Port 1 Configuration

Serial Port

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

Device Settings

This item displays the settings of Serial Port 1.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of COM Port 1. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12.

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **Normal** and High Speed.

▶Serial Port 2 Configuration

SOL (Serial-Over-LAN) Serial Port

Select Enabled to enable a serial port specified by the user to be used as a Serial-Over-LAN port. The options are **Enabled** and Disabled.

Device Settings

This item displays the settings of Serial Port 2.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of COM Port 2. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12.

SOL (Serial-Over-LAN) Device Mode

Use this feature to select the desired mode for the serial port specified. The options are **Normal** and High Speed.

Serial Port 2 Attribute

Use this feature to select the attribute for serial port 2. The options are **SOL** (Serial -Over-LAN) and COM.

▶Serial Port Console Redirection

- **COM1, COM2/SOL**

These two submenus allow the user to configure the following Console Redirection settings for a COM Port specified by the user.

Console Redirection

Select Enabled to use a COM Port selected by the user for Console Redirection. The options are Enabled and Disabled. The default setting for COM1 is **Disabled**, and for COM2 is **Enabled**.

▶Serial Port Console Redirection

COM1 and SOL

These two submenus allow the user to configure the following Console Redirection settings for a serial port selected by the user.

COM1 Console Redirection/SOL Console Redirection

Select Enabled to use a serial port selected by the user to be used for Console Redirection. The options are Enabled and Disabled. The default setting for COM1 is **Disabled**, and for SOL is **Enabled**.

▶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 the 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

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

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, Linux, XTERMR6, SC0, ESCN, and VT400.

Redirection After BIOS POST (Power-On Self-Test)

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

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

The submenu is used to configure Console Redirection settings to support Out-of-Band Serial Port management for Windows Emergency Management Services (EMS) support.

EMS Console Redirection

The feature is used to configure Console Redirection settings for a local machine to communicate with a remote server for EMS support. The options are Enabled and **Disabled**. If this option is set to Enabled, the following items will display:

▶Console Redirection Settings (for EMS)

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.

Out-of-Band Management Port

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

Terminal Type

This feature is used 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 the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

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

Data Bits, Parity, Stop Bits

The status of these features is displayed.

▶ACPI Settings

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

ACPI Sleep State

Use this feature to select the ACPI State when the system is in sleep mode. Select S1 (CPU_Stop_Clock) to erase all CPU caches and stop executing instructions. Power to the CPU(s) and RAM is maintained, but RAM is refreshed. Select Suspend to use power-reduced mode. Power will only be supplied to limited components

(such as RAMs) to maintain the most critical functions of the system. The options are **S1 (CPU_Stop_Clock)**, Suspend and Disabled.

NUMA (NON-Uniform Memory Access)

Select Enabled to enable the Non-Uniform Memory Access ACPI support. The options are **Enabled** and Disabled.

High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback, 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.

▶Trusted Computing (Available when a TPM device is detected by the BIOS)

Configuration

TPM Support

Select Enabled on this item and enable the TPM jumper on the motherboard to enable TPM support to improve data integrity and network security. The options are **Enabled** and Disabled.

TPM State

Select Enabled to enable TPM security settings to improve data integrity and network security. The options are **Disabled** and Enabled.

Pending Operation: This item displays the status of a pending operation.

Current Status Information: This item displays the information regarding the current TPM status.

TPM Enable Status

This item displays the status of TPM Support to indicate if TPM is currently enabled or disabled.

TPM Active Status

This item displays the status of TPM Support to indicate if TPM is currently active or deactivated.

TPM Owner Status

This item displays the status of TPM Ownership.

▶ME (Management Engine) Subsystem Configuration

This feature displays the following Intel ME Subsystem Configuration settings.

- ME BIOS Interface Version

- ME Version

▶Intel RSTe SCU (Storage Controller Unit) Controller (Available on the X9DRD-CNT+ Only)

This submenu is used to configure the SCU settings. The SCU information will be displayed as well.

Intel RSTe 3.8.0.1029 SCU Driver

▶Super_DOM, RAID0(Stripe)/Super_DOM1, RAID0(Stripe)

This submenu will display SuperDOM information and allow the user to configure the SuperDOM settings as follows:

RAID Volume Info

This item displays RAID volume information for the SuperDOM device specified by the user.

RAID Actions

This item displays the status of RAID Actions for the SuperDOM device specified by the user.

▶Delete

Delete

Select Yes to delete the RAID volume from a SuperDOM device specified by the user. All data stored in the RAID volume will be deleted. The options are Yes and No.

The following information are displayed as well:

Name:

RAID Level:

Strip Size:

Status:

Bootable

▶Port 0

The following information will be displayed:

Physical Disk Information

Disk Actions

▶Reset to Non-RAID

Select Yes to reset the RAID drive installed in a SuperDOM device specified by the user to non-RAID. All RAID configuration settings will be removed from this disk drive. The options are Yes and No.

The following information are displayed as well:

Port:

Model Number:

Serial Number:

Size:

Status:

7-4 Event Logs

Use this feature to configure Event Log settings.

```
           Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

 ▶ Change Smbios Event Log Settings                          Press <Enter> to change
                                                             the Smbios Event Log
   View Smbios Event Log                                     configuration.




                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/–: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

▶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 Enabled to support Runtime Error Logging. The options are **Enabled** and Disabled.

Memory Correctable Error Threshold

This feature allows the user to enter the threshold value for correctable memory errors. The default setting is **10**.

PCI Error Logging Support

Select Enabled to support error event logging for PCI slots. The options are Enabled and **Disabled**.

Erasing Settings

Erase Event Log

Select Enabled to erase the SMBIOS (System Management BIOS) Event Log, which is completed before a event logging is initialized upon system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately to immediately erase SMBIOS error event logs that exceed the limit when the SMBIOS 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 allows the user to decide 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.

The following IPMI information will be displayed:

IPMI Firmware Revision

IPMI Status

►System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging 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 decide what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

Customize EFI Logging Options

Log EFI Status Codes

Select Enabled to log EFI (Extensible Firmware Interface) Status Codes, Error Codes or Progress Codes. The options are **Enabled** and Disabled.

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

▶BMC Network Configuration

LAN Channel 1: This feature allows the user to configure the settings for LAN1 Port.

IPMI LAN Selection: This feature is used to configure the IPMI_LAN settings.

Update IPMI LAN Configuration

This feature allows the user to decide if the BIOS should configure the IPMI setting at next system boot. The options are **No** and Yes. If the option is set to Yes, the user is allow to configure the IPMI settings at next system boot.

Configuration Address Source

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

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 separated by dots 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   Boot

This submenu allows the user to configure the following boot settings for the system.

```
  Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                        Set Boot Priority.
  Set Boot Priority
  1st Boot Device                      [CD/DVD]
  2nd Boot Device                      [Hard Disk]
  3rd Boot Device                      [USB Hard Disk]
  4th Boot Device                      [Removable]
  5th Boot Device                      [Network:IBA XE S1...]
  6th Boot Device                      [UEFI: Built-in EF...]

▶ Delete Boot Option

▶ Network Device BBS Priorities
▶ UEFI Boot Drive BBS Priorities
                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

Set Boot Priority

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

1st Boot Device ~ 6th Boot Device

▶**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 Device BBS Priorities**

1st Boot Device

▶**UEFI Device BBS Priorities**

1st Boot Device

7-7   Security

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

```
         Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

   Password Description                                    Setup: Check password
                                                           while invoking setup.
   If ONLY the Administrator's password is set,            Always: Check password
   then this only limits access to Setup and is            while invoking setup as
   only asked for when entering Setup.                     well as on each boot.
   If ONLY the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have Administrator rights.
   The password length must be
   in the following range:
   Minimum length                     3
   Maximum length                     20
                                                           →←: Select Screen
                                                           ↑↓: Select Item
   Password Check                  [Setup]                 Enter: Select
   Administrator Password                                  +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

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```

Password Check

Select Setup for the system to prompt for a password at Setup. 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 to enter the BIOS setup utility. The length of the password should be from 3 characters to 8 characters in length.

User Password

Use this feature to set a User Password which is required to log into the system and to enter the BIOS setup utility. The length of the password should be from 3 characters to 8 characters in length.

7-8 Save & Exit

This submenu allows the user to configure the Save and Exit settings for the system.

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, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, click **Yes** to quit BIOS without saving the changes, or click No to quit the BIOS and save changes.

Save Changes and Reset

When you have completed the system configuration changes, select this option to save the changes and reboot the computer so that the new system configuration settings can take effect. Select Save Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, click **Yes** to quit BIOS without saving the changes, or click No to quit the BIOS and save changes.

Save Options

Save Changes

Select this option and press <Enter> to save all changes you've done so far and return to the AMI BIOS utility Program. When the dialog box appears, asking you if you want to save configuration, click **Yes** to save the changes, or click No to return to the BIOS without making changes.

Discard Changes

Select this feature and press <Enter> to discard all the changes and return to the BIOS setup. When the dialog box appears, asking you if you want to load previous values, click **Yes** to load the values previous saved, or click No to keep the changes you've made so far.

Restore Optimized Defaults

Select this feature and press <Enter> to load the optimized default settings that help optimize system performance. When the dialog box appears, asking you if you want to load optimized defaults, click **Yes** to load the optimized default settings, or click No to abandon optimized defaults.

Save as User Defaults

Select this feature and press <Enter> to save the current settings as the user's defaults. When the dialog box appears, asking you if you want to save values as user's defaults, click **Yes** to save the current values as user's default settings, or click No to keep the defaults previously saved as the user's defaults.

Restore User Defaults

Select this feature and press <Enter> to load the user's defaults previously saved in the system. When the dialog box appears, asking you if you want to restore user's defaults, click **Yes** to restore the user's defaults previously saved in the system, or click No to abandon the user's defaults that were previously saved.

Boot Override

This feature is used to enter a new setting to overwrite the original setting that was saved for the following devices:

- IBA XE Slot 0100 v2304

- UEFI: Built-in EFI Shell

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed at each system boot, errors may occur.

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

Fatal errors will not allow the system to continue with bootup 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 correspond to the number of beeps for the corresponding error.

X9 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 or each USB device detected
X9 IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors

Dual Intel® Xeon E5-2600 v2 series processors in an R3-LGA2011 sockets

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

Intel C602 chipset

BIOS

128 Mb Award® SPI Flash ROM

Memory Capacity

Twenty-four DIMM sockets that support up to 1.5 TB of ECC LRDIMM, 768 GB of ECC RDIMM or 384 GB of ECC/non-ECC UDIMM DDR3-2133/1866/1600 memory

See the memory section in Chapter 5 for details.

SATA

Intel on-chip controllers support two SATA 3.0 and eight SATA 2.0 ports for hot-swap SATA drives.

SAS

Onboard LSI 3108 controller to support eight SAS 3.0 ports for hot-swap SAS drives.

NVMe

A total of four hot-swap NVMe drives (controlled from CPU2) may be used in the system

Drive Bays

Twelve 3.5" hot-swap drive bays to house four NVMe and eight SATA/SAS hard drives

Serverboard

X9DRD-CNT+

Dimensions: 13.68" x 13.4" in (347.5x 340.4 mm)

Chassis

SC826BAC4-R920WB (2U rackmount)

Dimensions: (WxHxD) 17.2 x 3.5 x 25.5 in. (437 x 89 x 648 mm)

Weight

Gross Weight: 64 lbs. (29 kg.)

System Cooling

Three 8-cm system cooling fans

System Input Requirements

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

Rated Input Current: 11 - 4.5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 920W (Part# PWS-920P-SQ)

Rated Output Voltages: +12V (75A), +5Vsb (4A)

Operating Environment

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

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5% to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 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"

(continued from front)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.