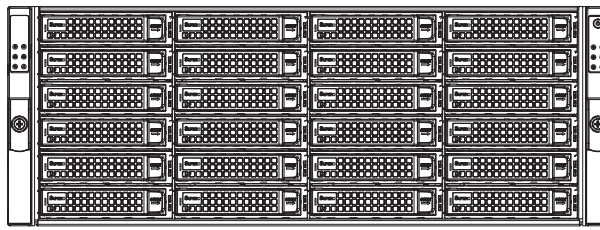
SuperStoreSystem

6048R-DE2CR24L



User's Manual

Revision 1.0

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Manual Revision 1.0
Release Date: May 25, 2016

Printed in the United States of America

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 6048R-DE2CR24L SuperStoreSystem. Installation and maintenance for this system should be performed by experienced technicians only.

The 6048R-DE2CR24L SuperStoreSystem is a high-end storage server solution based on the SC947 4U rackmount chassis and the X10DRS dual processor 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 X10DRS serverboard and the SC947ETS-R0NDBP chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the 6048R-DE2CR24L SuperStoreSystem 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 panels on the chassis as well the HDD carrier LEDs.

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 6048R-DE2CR24L SuperStoreSystem.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X10DRS 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 SC947 server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA or peripheral 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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Appendix A BIOS Error Beep Codes

Appendix B System Specifications

Notes

Chapter 1

Introduction

1-1 Overview

The 6048R-DE2CR24L is a high-end Super Storage Bridge Bay (SBB) system comprised of two main subsystems: the SC947ETS-R0NDBP chassis and two X10DRS dual processor serverboards. Please refer to our web site 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 6048R-DE2CR24L, as listed below. Quantities indicate the number included in the whole system (two nodes).

- Four passive CPU heatsinks (SNK-P0048PS)
- Four (4) 8-cm fans (FAN-0164L4)
- Four (4) 4-cm counter-rotating fans (FAN-0157L4)
- Two (2) Air Shrouds (MCP-310-94701-0N)
- Twenty-four hard drive carriers (MCP-220-93703-0B)
- One set of rackmount hardware (MCP-290-00057-0N)

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://www.supermicro.com/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at: support@supermicro.com

1-2 Serverboard Features

The 6048R-DE2CR24L SuperStoreSystem is built around two X10DRS serverboards for a dual-node system that shares storage resources as well as features a dedicated PCI-E bus between server nodes for High Availability (HA), Cluster in a Box (CiB) applications The X10DRS is a dual processor serverboard based on the Intel® PCH C612 chipset. Below are the main features of the X10DRS. (See Figure 1-1 for a block diagram of the chipset).

Processors

The X10DRS supports single or dual Intel® Xeon E5-2600 v3/v4 series processors in LGA 2011 R3 type sockets. Two X10DRS boards are included in the storage system. Please refer to the serverboard description pages on our website for a complete listing of supported processors (www.supermicro.com).

Memory

Each X10DRS has eight DIMM slots that can support up to 1 TB of LRDIMM (Load Reduced) or 256 GB of Registered (RDIMM) DDR4 (288-pin) ECC 2400/2133/1866/1600 MHz memory. See Chapter 5 for details.

SAS Disk Controller

An IR mode SAS controller is located on a mezzanine card included in each of the server nodes. Each controller supports twenty-four (24) disks in the front as well as two external SAS 3.0 ports (x8 connectivity).

SAS Expander

One 40-port SAS expander is integrated into each X10DRS board.

SATA

Each X10DRS has two SATA 3.0 ports with power headers to support two SATA Disk-on-Module (SATA DOM) devices per node. RAID 0 and 1 are supported by the PCH.

NTB Connectivity

Non Transparent Bridge connectivity featuring 8 lanes of PCI-E 3.0 between server nodes.

PCI Expansion Slots

Each X10DRS features one PCI-E 3.0 x24 for 3x AOC support with riser card.

Rear Chassis Ports

The rear of each serverboard node includes one set of dual 10GBase-T RJ45 LAN, two SAS3 JBOD expansion ports(8x lanes) and one KVM connector (includes USB, VGA and COM ports).

Graphics Controller

The X10DRS features an integrated ASpeed AST 2400 BMC video controller.

1-3 Server Chassis Features

System Power

The 6048R-DE2CR24L SuperStoreSystem features a redundant Titanium Level 1600W power supply composed of two separate power modules. This power redundancy feature allows you to replace a failed power module without shutting down the system.

SAS Subsystem

The 6048R-DE2CR24L SuperStoreSystem supports up to 24 3.5" SAS drives. These drives are hot-swappable units and are connected to a midplane that provides power and control.

Front Control Panel

Two control panels are included on each end of the 6048R-DE2CR24L SuperStoreSystem to provide you with system monitoring and control. LEDs indicate system power, network (NIC) activity, system overheat and power supply failure. Each set of LEDs are associated with the node/serverboard on the same side of the chassis. A single power button is located on the right side control panel. When pressed, both nodes will power on or off according to the BIOS setup settings.

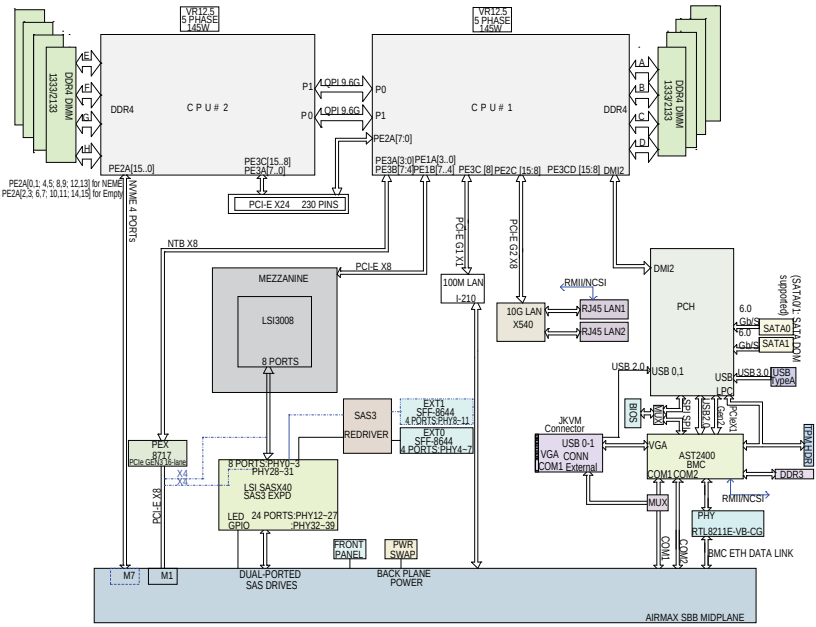
Cooling System

The SC947ETS-R0NDBP chassis has four (4) 8-cm fans behind HDD backplane and two (2) back-to-back, 4-cm counter-rotating fans at the rear of each node. This counter-rotating action works to dampen vibration levels while generating exceptional airflow.

Each power supply module also includes a cooling fan.

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

Note: This is a general block diagram and may not exactly represent the features on your motherboard. Please see Chapter 5 for details.



1-4 Contacting Supermicro

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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	+886-(2)-8226-3990

1-5 SBB: Storage Bridge Bay

The 6048R-DE2CR24L Super SBB was designed to function as a fully redundant, fault-tolerant "cluster-in-a-box" system. The standard support for twenty-four (24) 3.5" hot-swap HDDs (SAS2 or SAS3) may be expanded to support additional storage with the optional SBB JBOD SSG-947R-E2CJB configuration.

The Super SBB provides hot-swappable canisters for all active components. Each of the two serverboard canisters support dual-processors, eight (8) DIMM slots, three (3) PCI-E Gen3 slots and twelve (12) Gbps SAS (SAS3). The 6048R-DE2CR24L features eight lanes of PCI-E 3.0 connecting the left server module with the right server module. This connection is used for high speed data transfers between nodes for High Availability/server fail-over. This fail-over capability is fully dependent on the software/OS installed and how the chosen software uses the connection (Active-Active or Active-Passive). 6048R-DE2CR24L hardware is supplied without a storage OS or fail-over software.

Equipped with 1600 Watt 80+ Titanium Level redundant power supplies and redundant cooling fans, the 6048R-DE2CR24L offers fully redundant high-availability while maintaining energy efficient operation.

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your 6048R-DE2CR24L 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., then 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 6048R-DE2CR24L 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 6048R-DE2CR24L. 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 6048R-DE2CR24L 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 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 temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (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 connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

2-5 Installing the System into a Rack

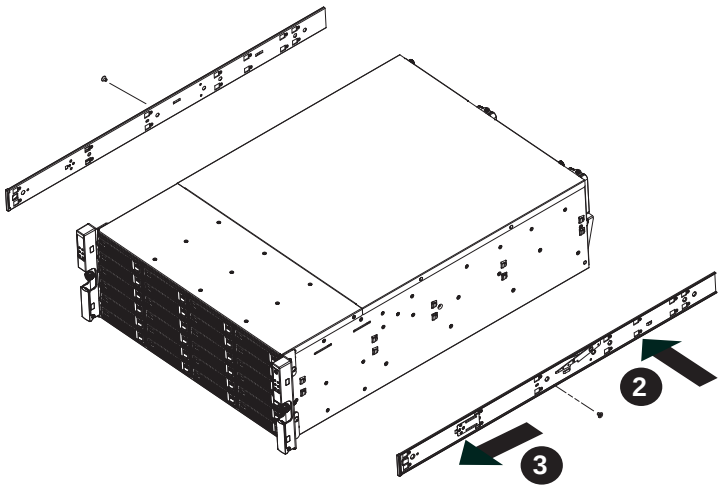
This section provides information on installing the SC947 chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Installing the Inner Rack Rails

Installing the Inner Rails

1. Extend the inner rail toward the front of the rail assembly as far as possible, then depress the locking tab to pull it completely out.
2. Place the inner rail on the side of the chassis aligning the hooks of the chassis with the rail extension holes.
3. Slide the extension toward the front of the chassis.
4. You may secure the chassis with screws if desired.
5. Repeat steps 1-3 for the other inner rail.

Figure 2-1. Installing the Inner Rack Rails



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

Installing the Outer Rack Rails

Outer rails attach to the server rack and hold the server in place. The outer rails for the SC947 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails

1. Attach the right outer rail to the rack by inserting the hooks included on the rails into the holes provided on the rack.
2. If desired, screw the rails to the chassis for added support.
3. Repeat these steps for the left outer rail.

Figure 2-2. Outer Rack Rails

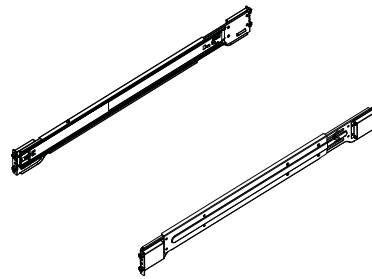
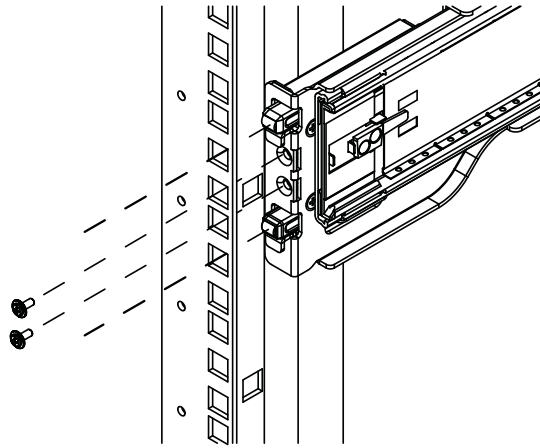


Figure 2-3. Outer Rack Rail Install



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.

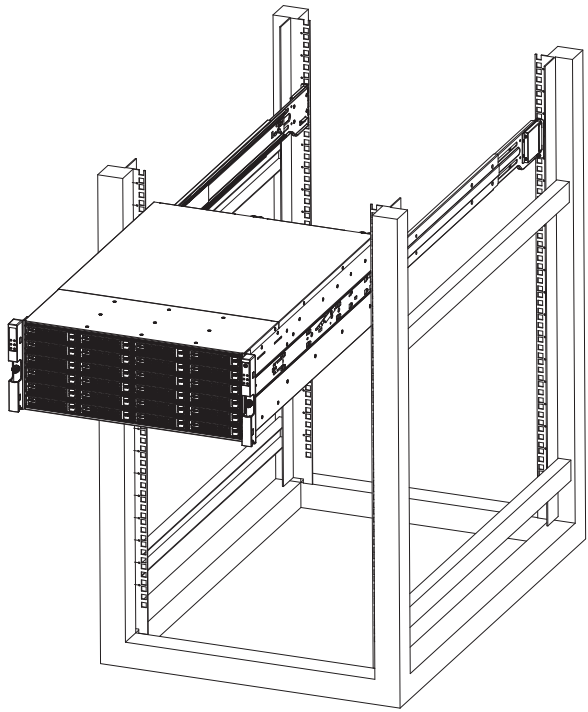
Installing the Chassis into a Rack

Installing into a Rack

1. Confirm that the inner and outer rails are properly installed.
2. Line up the inner (chassis) rails with the front of the outer (rack) rails.
3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click" into position.
4. (Optional) Insert and tighten the thumbscrews that hold the front of the server to the rack.

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

Figure 2-3. Installing the Chassis into the Rack



Chapter 3

System Interface

3-1 Overview

There are several LEDs on two control panels as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. A main power button is also located on the right side (only) control panel.

3-2 Control Panel Button

Power

The single button located on the right control panel is the power on/off button. Depressing this button will either power both nodes on or off.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 two control panels located on the front of the chassis have several LEDs. With the exception of the power fail LED, these LEDs provide you with critical information related to the node on the same side of the chassis. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Power

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

Heartbeat

On the 6048R-DE2CR24L, this is a serverboard heartbeat LED and indicates that power is being supplied to the serverboard.

NIC1

Indicates network activity on the LAN1 port when flashing.

NIC2

Indicates network activity on the LAN2 port when flashing.

Power Fail

Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.

Overheat/Fan Fail:

When this LED flashes, it indicates a fan failure. When on 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.

3-4 Drive Carrier LEDs

Each drive carrier has two LEDs:

- **Green:** When illuminated, the green LED on the drive carrier indicates the drive is powered on. If this LED is not lit, it means no power is being provided for the drive. Please refer to Chapter 6 for instructions on replacing failed drives.

- **Red:** A steady red LED indicates a drive failure. If one of the drives fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed drives.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this chapter in its entirety before installing or configuring components in the Supermicro chassis. Some warnings may not apply for your system.

These warnings may also be found on our web site at www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

Warning!

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

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

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

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

안전을 위한 주의사항

경고!

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

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를

참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

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 دعامة الحماية من الدوائر القصيرة التي تم تثبيتها في المبنى
تأكد من أن الجهاز الواقي لا يتجاوز الحد الأقصى 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 (if applicable to your system)

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 (if applicable to your system)

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 발생합니다. 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 (if applicable to your system)

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 והמאוררים 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 조림품 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.

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)

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 provides detailed information on the X10DRS serverboard. All serverboard jumpers and connections are described. A layout and quick reference chart are also included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). 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 electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- 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.

5-2 Cable and Device Connections

All data and power connections between the serverboard to the system (including the power supplies and the hard drives) are provided through the midplane. Most of these connections are made automatically when the system is assembled. "Right" and "left" refer to the side of the chassis as viewed from the front of the system. Also refer to Chapter 6 Section 5 for an image of the midplane with the connections listed below.

Power Connections

Power is routed from the power supplies to the power distribution board which in turn connects to the midplane. When the serverboards are seated in their bays they plug into the midplane to receive power.

Fan Cabling

The 4 fans behind midplane are powered and controlled through midplane while the 2 fans in each node connected to MB. All fans in the system is managed by BMC.

Control Panels

A ribbon cable connects each control panel to the midplane. The right and left side control panels connect to JP1 and JP2 on the midplane, respectively.

5-3 Installing the Processor and Heatsink

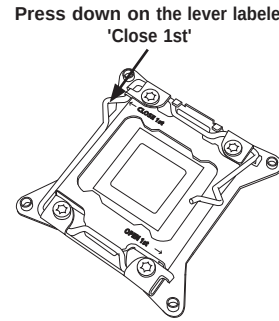
- **Caution:** When handling the processor package, avoid placing direct pressure on the label area of the fan.

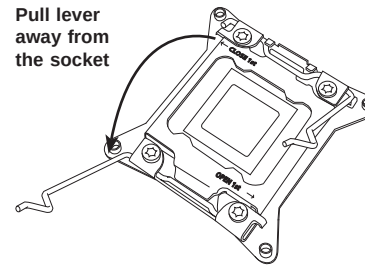
Notes:

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the 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 web site for updates on CPU support.

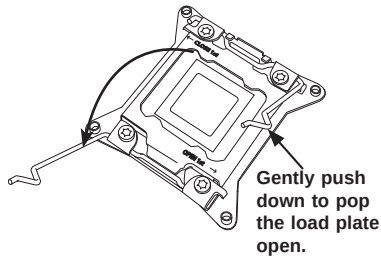
Installing an LGA2011 Processor

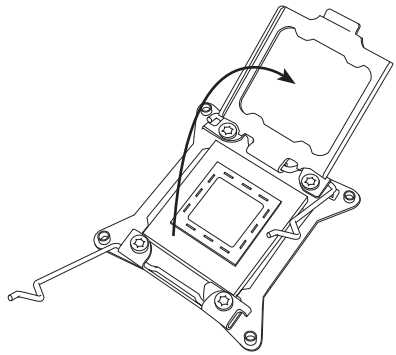
1. There are two levers on the LGA2011 socket. First press and release the load lever labeled 'Open 1st'.
2. Press the second load lever labeled 'Close 1st' to release the load plate from its locked position.

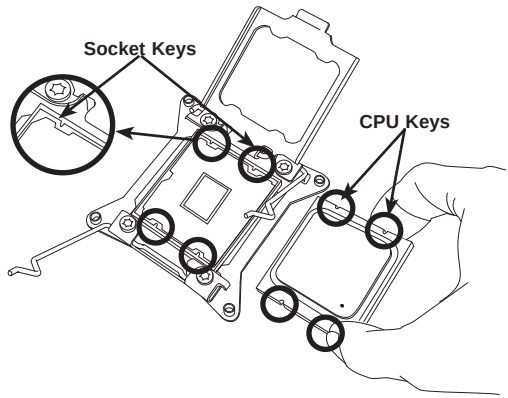




3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.
5. Use your thumb and index finger to hold the 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.)
7. With the CPU in the socket, inspect the four corners of the CPU to make sure that they are flush with the socket.

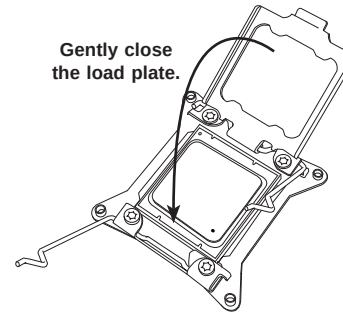


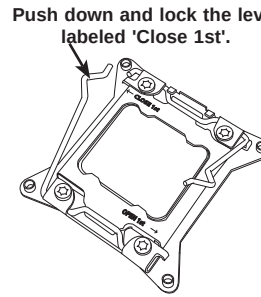


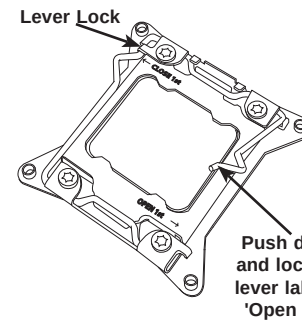


- **Warning:** You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the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

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.

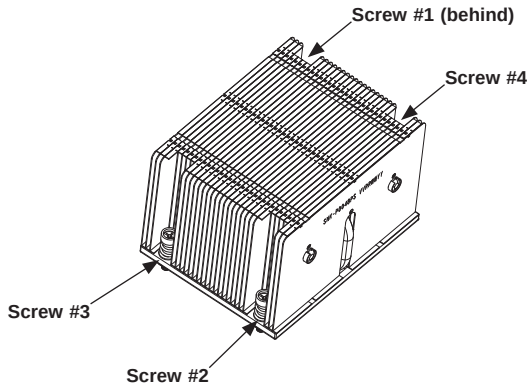






Installing a CPU Heatsink

1. Remove power from the system and unplug the AC power cord from the power supply.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.
3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)
4. Add the two remaining screws then finish the installation by fully tightening all four screws.



Removing the Heatsink

- **Warning:** Removing the CPU or the heatsink is not recommended. If you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Power down the node and unplug the AC power cord.
2. Unscrew and remove the heatsink screws in the sequence shown in the illustration above.
3. Hold the heatsink and gently wiggle it to loosen it from the CPU. (Do not use excessive force when doing this!) Once the heatsink is loosened, remove it from the CPU.
4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before you re-install the heatsink.

5-4 Installing Memory

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

Memory Support

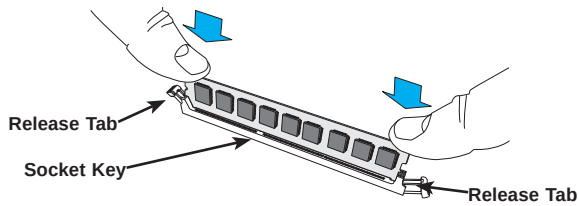
Each X10DRS-4U has eight (8) DIMM slots that can support up to 1 TB of LRDIMM (Load Reduced) or 512 GB of Registered (RDIMM) DDR4 (288-pin) ECC 2400/2133/1866/1600 MHz memory. See the following tables for memory installation. For the latest memory updates, please refer to the Supermicro website.

DIMM Installation

Installing Memory Modules

1. Insert the desired number of DIMMs into the memory slots starting with DIMM slot #P1-DIMMA1. For optimal memory performance, please install a pair (or pairs) of memory modules of the same type and speed (see the Memory Installation Table below).
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it. Insert each DIMM module vertically into its slot. Pay attention to the key along the bottom of the module to avoid installing incorrectly (see Figure 5-3).
3. Gently press down on the DIMM module until it snaps into place in the slot. Press the release tabs to the locking positions to secure the DIMM module into the slot. Repeat for all modules.

Figure 5-3. DIMM Installation



DIMM Module Population Configuration

Memory speed support depends on the CPUs installed in your system. For the latest memory updates, please refer to our website at http://www.supermicro.com/products/motherboard. For memory to work properly, follow the tables below for memory installation.

Processors and their Corresponding Memory Modules				
CPU#	**Corresponding DIMM Modules**			
CPU1	**P1-DIMMA1-P1-DIMMD1**			
P1-DIMMs	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	P1-DIMMD1
CPU2	**P2-DIMME1-H1**			
P2-DIMMs	P2-DIMME1	P2-DIMMF1	P2-DIMMG1	P2-DIMMH1

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table (For memory to work properly, please follow the instructions below.)**
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMME1, P2-DIMMF1/P2-DIMMG1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1

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

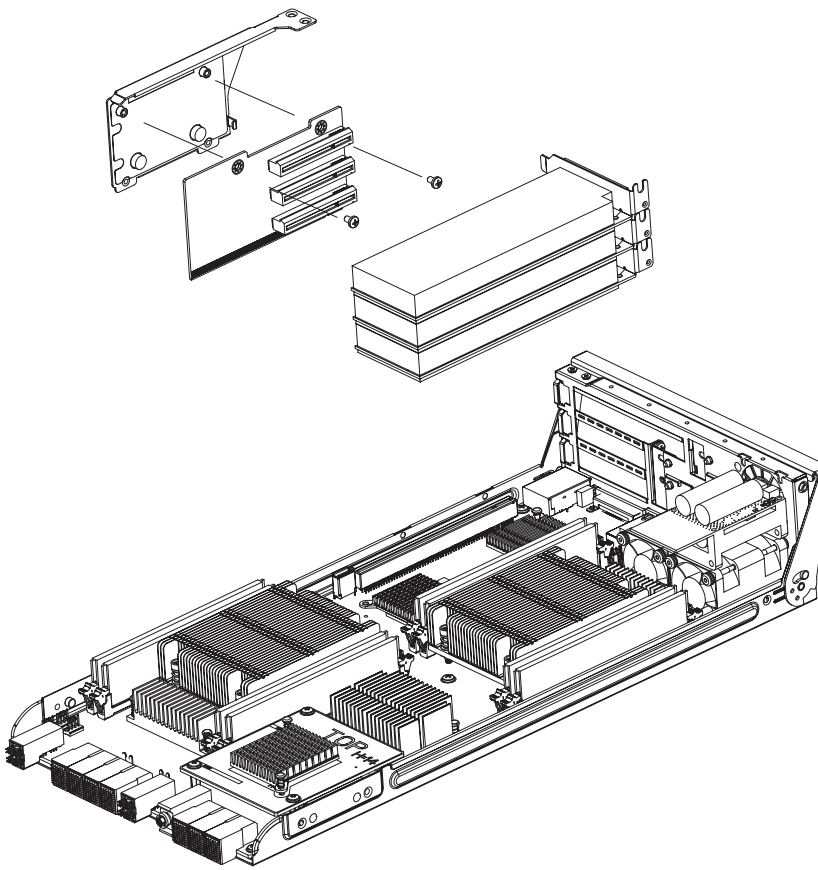
5-5 Installing PCI Add-On Cards

Each node in the 6048R-DE2CR24L can accommodate up to three PCI-E 3.0 x8 add-on cards.

Installing an Add-on Card (Figure 5-4)

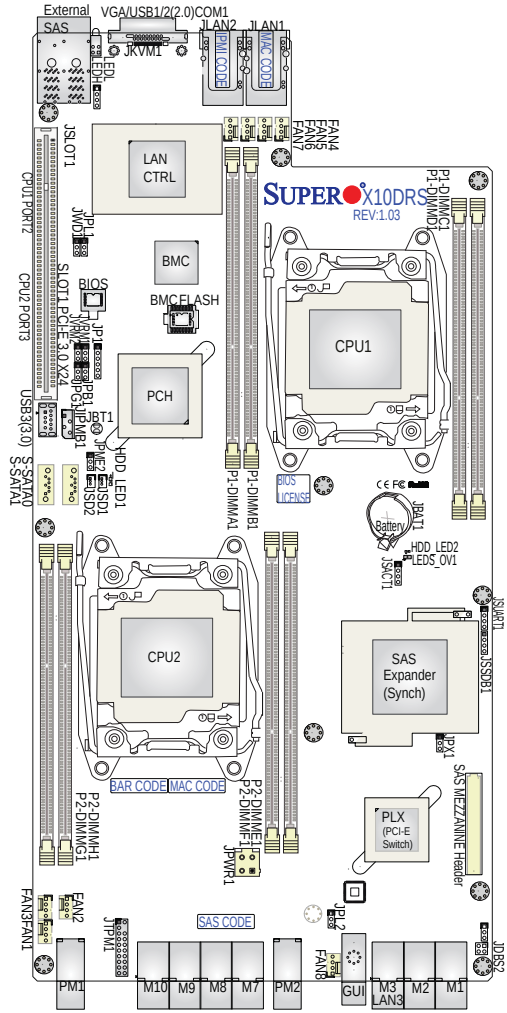
1. Begin by removing the node you wish to populate with add-on cards.
2. Locate the riser card and fully seat the cards into the slots in the riser, pushing down with your thumbs evenly on both sides of the card.
3. If standard size cards are used, only passive heatsinks may be used for the processors as the card size will interfere with active type heatsinks.

Figure 5-4. Installing Add-on Cards



5-6 Serverboard Details

Figure 5-5. X10DRS Layout
(not drawn to scale)



Notes

- "■" Indicates the location of pin 1.
- Jumpers not indicated are for test purposes only and should not have their settings changed.

X10DRS Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-8
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	10G(T) LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JPME2	Manufacture (ME) Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog Timer Enable/Disable	Open (Disabled)
JPX1	PCI-E Switch (PLX) Enable/Disable	Pins 1-2 (Enabled)

Connectors	Description
External SAS	SAS 3.0 port (AOM-S3008-L8-SB required for SAS support)
FAN1-8	System/CPU Fan Headers
JIPMB1	4-pin External BMC I²C Header (for an IPMI card)
JKVM1	VGA/COM1/USB 0/1 (2.0) Connector
JPWR1	4-pin Power Header
JSD1/JSD2	SATA DOM (Device on Module) Power Connectors
JSLOT1	Slot1 PCI-E CPI-E 3.0 x24 (x8 + x16) (CPU1 Port2 + CPU2 Port3)
JTPM1	TPM (Trusted Platform Module)/Port 80 Header
LAN1/2	10G(T) LAN Ethernet Ports 1/2
PM1/PM2	System Power Connectors
S-SATA 0/1	SATA 3.0 Connectors (supported by Intel SCU)
SAS Mezzanine Header	SMC-proprietary PCI-E 3.0 x8 Mezzanine Slot w/SAS Support
USB1/2	USB 2.0 Ports (JKVM1)
USB3	USB 3.0 Header

LED	Description	State	Status
HDD_LED1	(PCH) HDD Activity LED	Green: Blinking	(PCH) HDD Active
HDD_LED2	(SAS) HDD Activity LED	Green: Blinking	(SAS) HDD Active
LEDH (Upper)	BMC Heartbeat LED	Green: Blinking	BMC Normal
LEDL (Lower)	System Heartbeat LED	Green: Blinking	System/Power Normal
LEDSOV1	SAS Overheat LED	Red	SAS Overheating

5-7 Connector and Port Definitions

VGA/COM1/USB 2.0 Connector (JKVM1)

A VGA/COM1/USB 2.0 connector is located next to LAN2 on the I/O back panel. JKVM1 provides a video port as well as serial and USB (2.0) connections with SMCI-proprietary cable (CBL-0218L) connected to JKVM1.

10GbE LAN (TLAN) Ports & IPMI LAN Port

Two 10-Gigabit Ethernet LAN ports (LAN1/2) are located on the I/O back panel. LAN port 1 can also be used as IPMI LAN for Serial-Over-LAN (SOL) support. All these ports accept RJ45-type cables. Please refer to the LED Indicator section for LAN LED information.

External SAS Port

An external SAS 3.0 port is supported by the AOM-S3008-L8-SB add-on module, which is located next to the JKVM1 connector on the I/O back panel.

Universal Serial Bus (USB)

In addition to the two USB 2.0 ports (USB 1/2) on the I/O back panel, a Type A connector is also located on the motherboard to provide USB 3.0 support (USB 3, cables not included). See note below.)

Back Panel USB0/1 (USB2.0) Pin Definitions

Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

USB3 (USB3.0) Pin Definitions

Pin#	Description
1	VBUS
2	SSRX-
3	SSRX+
4	Ground
5	SSTX-
6	SSTX+
7	GND_DRAIN
8	D-
9	D+

Fan Headers

The X10DRS has eight fan headers (Fan1 - Fan8). These 4-pin fans headers are backward compatible with traditional 3-pin fans (which do not support fan speed control). Fan speed is controlled by IPMI. See the table on the right for pin definitions.

Fan Header Pin Definitions

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

TPM Header/Port 80

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

TPM/Port 80 Header Pin Definitions

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

SATA DOM Power Connectors

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

DOM PWR Pin Definitions

Pin#	Definition
1	+5V
2	Ground
3	Ground

IPMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect an appropriate cable here to use the IPMB I2C connection on your system.

IPMB Header Pin Definitions

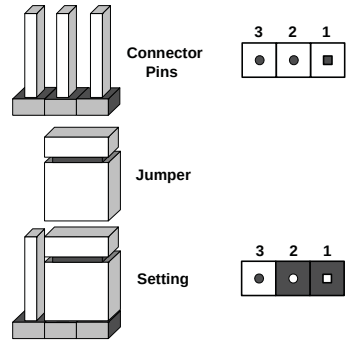
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

5-8 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the serverboard layout pages for jumper locations.

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



CMOS Clear

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

To clear CMOS,

1. First power down the system and unplug the power cord(s).
2. 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.*

LAN1/2 Enable/Disable

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

LAN1/2 Enable/Disable Jumper Settings (JPL1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

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

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

Watch Dog Jumper Settings

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

Manufacture Mode

JPME1 allows the user to flash the system firmware from a host server. Jump pins 2-3 to bypass SPI flash security, and force ME into Recovery mode in order to use recovery jumpers. See the table on the right for jumper settings.

ME Mode Select Jumper Settings

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

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA connector. The default setting is on pins 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

PCI-E Switch Enable

Close pins 1-2 of JPX1 to enable the onboard PCI-E switch on the motherboard. See the table on the right for jumper settings.

PCI-E Switch Enable Jumper Settings

Jumper Setting	Definition
Pins 1-2	SAS Enable (Default)
Pins 2-3	Disabled

BMC Enable

Close pins 1/2 of jumper JPB1 to enable the ASpeed AST 2400 BMC (Baseboard Management Controller) to provide IPMI 2.0/KVM support on the motherboard. Please install an SMCI-proprietary cable (CBL-218L) on the connector JKVM1 on the I/O backplane for KVM support. See the table on the right for jumper settings.

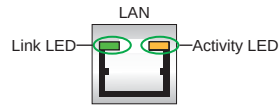
BMC Enable Jumper Settings

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

5-9 Onboard Indicators

LAN LEDs

The Ethernet ports (located on the I/O backplane) have two LEDs. On each port: the orange LED flashes to indicate activity while the other LED may be green, amber or off to indicate the speed of the connection. Please note that LAN1 also functions as an IPMI LAN. See the table on the right for the functions associated with the connection speed LED.



10Gbps LAN1/2 Link LED (Connection Speed Indicator)

LED Color	Definition
Off	No Connection, 10 Mb/s or 10 Mb/s
Amber	1 Gb/s
Green	10 Gb/s

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDH, the upper LED on I/O back panel. When LEDH is blinking, the BMC is functioning normally. See the table at right for more information.

BMC Heartbeat/System Heartbeat LED Status

State	Definition
Green Blinking	BMC Normal

(PCH) HDD LED

The (PCH) HDD LED is located at HDD LED1 on the motherboard. When this LED is blinking, HDD supported by the Intel PCH is active. See the table at right for more information.

(PCH) HDD Activity LED LED Status

State	Definition
Green: Blinking	PCH HDD: Active

System Heartbeat/Power LED

A System Heartbeat/Power LED (LEDL) is located below the BMC Heartbeat LED on I/O back panel. When LEDL is blinking, your system and its power supply are working properly. See the table on the right for more information.

System Heartbeat/Power LED Status	
State	Definition
Green: Blinking	System/PWR: Normal

SAS HDD LED

The LED indicator for the SAS HDD is located at HDD LED2 on the motherboard. When this LED is blinking, the SAS HDD supported by the LSI SAS controller is active. See the table at right for more information.

SAS HDD Activity LED LED Status	
Color/State	Definition
Green: Blinking	SAS HDD: Active

SAS Overheat LED

A SAS Overheat LED is located at LEDSOV1 on the motherboard. When this LED is on, SAS overheating has occurred.

SAS Overheat LED LED Status	
Color/State	Definition
Red: On	SAS Overheating

5-10 Serial ATA Ports

Serial ATA Ports

An onboard SATA port is located next to the USB3 port on the serverboard to provide serial-link signal transmission.

Note: 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.

5-11 Installing Software

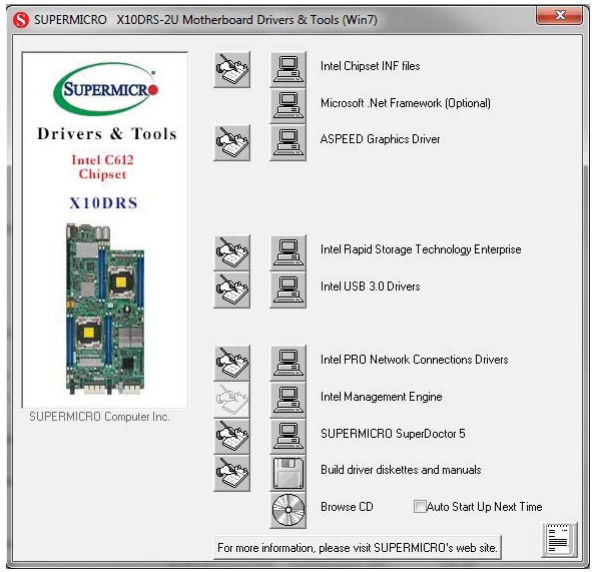
The Supermicro FTP site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

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

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

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

Figure 5-6. Driver/Tool 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.

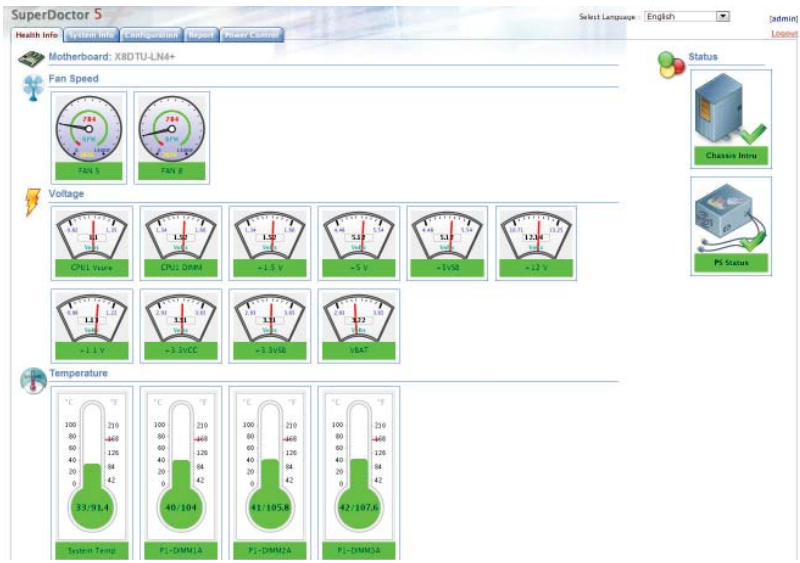
SuperDoctor® 5

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

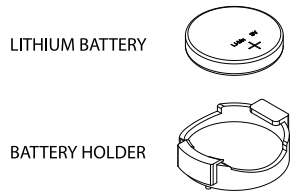


Note: The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro website at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

5-12 Onboard Battery

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

Figure 5-8. Installing the Onboard Battery



Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC947 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.

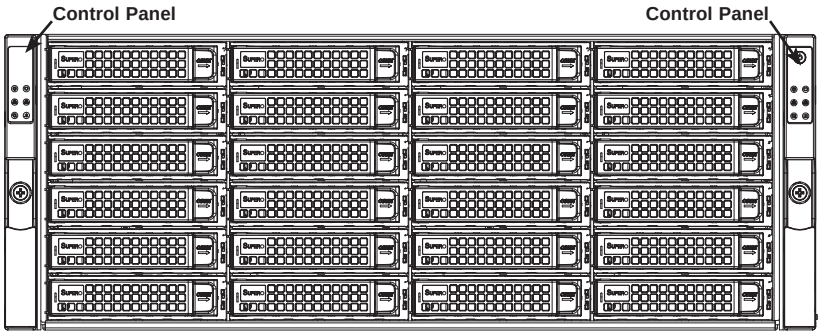
Precautions

- 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.

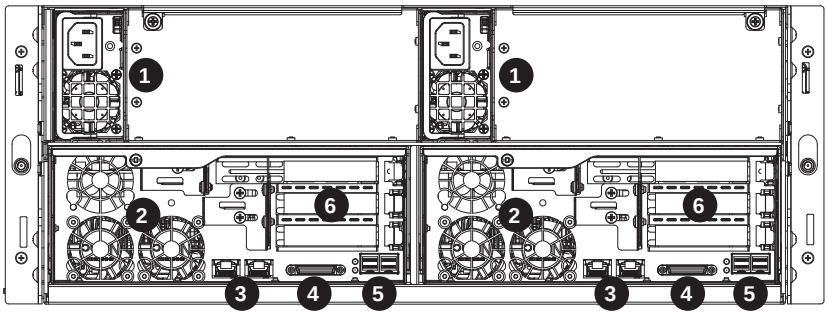
Unpacking

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



Removable Drives (24)



Rear Chassis Features	
1. Power Supply	4. KVM Connection
2. Fan Assembly	5. Dual SAS Ports
3. LAN Ports (10-Gb)	6. Add-on Card Slots

6-2 Control Panel

The control panels are connected to the serverboards through the midplane. The LEDs on the control panels are associated with the node on the same side of the chassis. Note that only the right-side control panel includes a power button. Depressing this button will turn both nodes on or based on BIOS setting.

See Chapter 3 for details on the LEDs and the control panel buttons.

6-3 System Fans

System cooling is provided by four 8-cm hot swappable midplane fans as well as two 4-cm counter-rotating fans on each of the server node.

It is very important that the chassis cover is properly installed and making a good seal 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 (of the same side as the failed fan) will turn on.

The fans may also be visually inspected for failure. 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.

Replacing Midplane Fans

Replace a failed midplane fan with an identical 4-cm, 12-volt counter-rotating fan (p/n FAN-0164L4, available from Supermicro). See Figures 6-2 and 6-3.

Replacing Fans

1. Shutdown the system and remove the AC power cord.
2. Open the system cover
3. Remove the failed fan assembly from the midplane and replace its fan with an identical replacement.
4. Replace the fan assembly back into the chassis midplane.
5. Reconnect the AC power cord and power up the system.
6. Inspect the replaced fan to verify it is working.
7. Replace the cover back on the system.

Figure 6-2. Removing the Chassis Cover

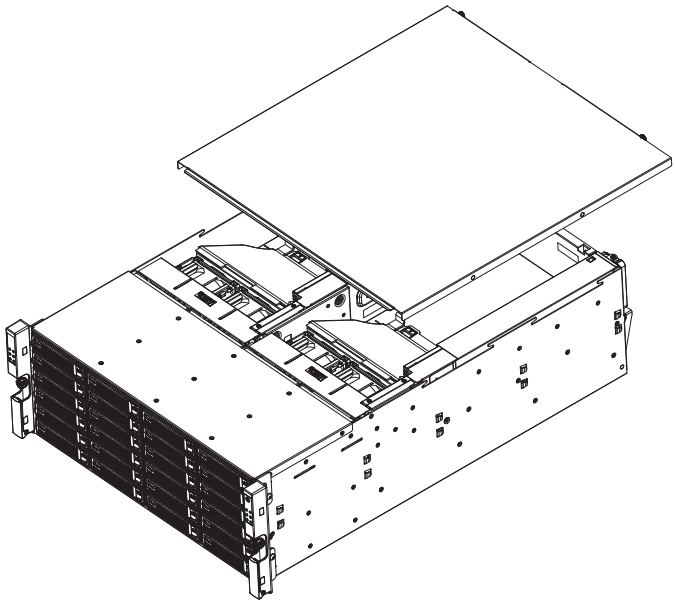
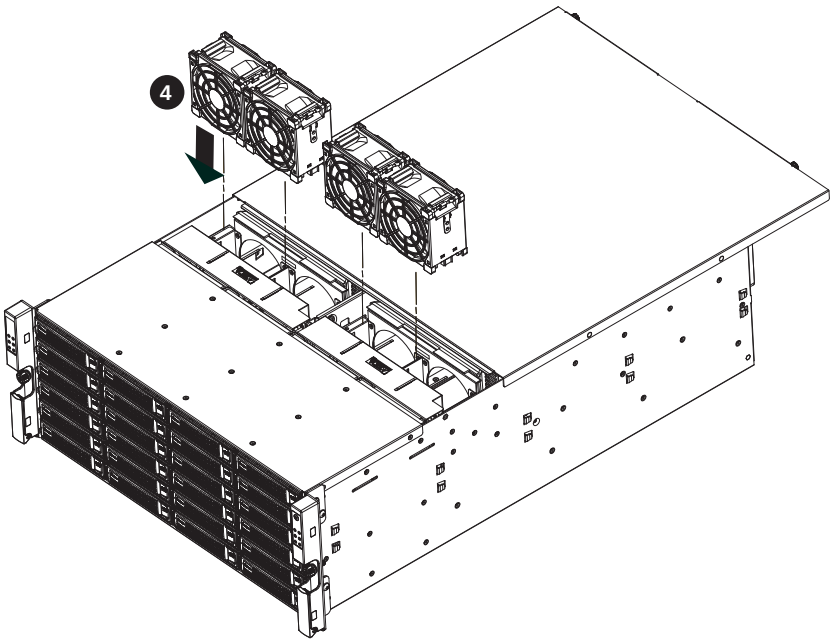


Figure 6-4. Replacing a Midplane Fan



Replacing Node Fans

Replace the failed node fan with an identical 4-cm, 12-volt counter-rotating fan (p/n FAN-0157L4, available from Supermicro). See Figures 6-4 and 6-5.

Replacing Fans

1. Shutdown the node with the failed fan(s) and remove the AC power cord.
2. On the node with the failed fan, push the release bar down to unlock the serverboard tray.
3. Use the bar to pull the node/serverboard from the chassis.
4. Remove the failed fan from the assembly and replace it with an identical replacement. You may need to remove the assembly to replace the lower fan.
5. Slide the serverboard tray back into the chassis. When seated, lift the release bar to lock it into place.
6. Reconnect the AC power cord and power up the node.
7. Inspect the replaced fan to verify it is working.

Figure 6-4. Replacing a Serverboard Fan

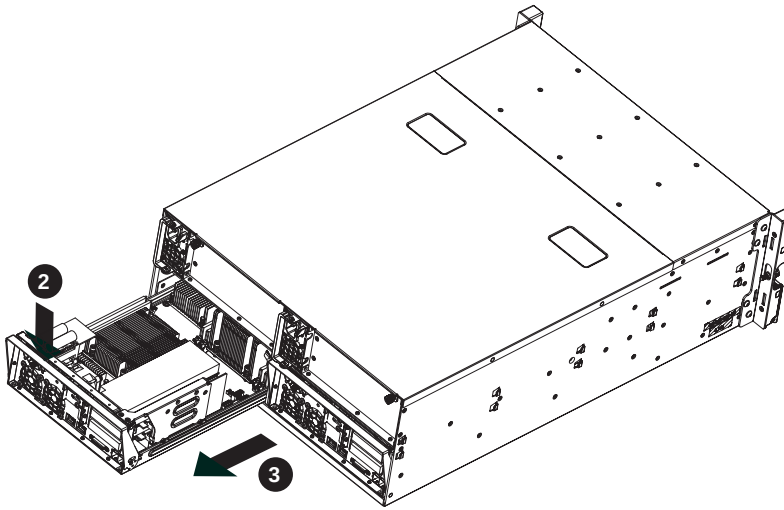
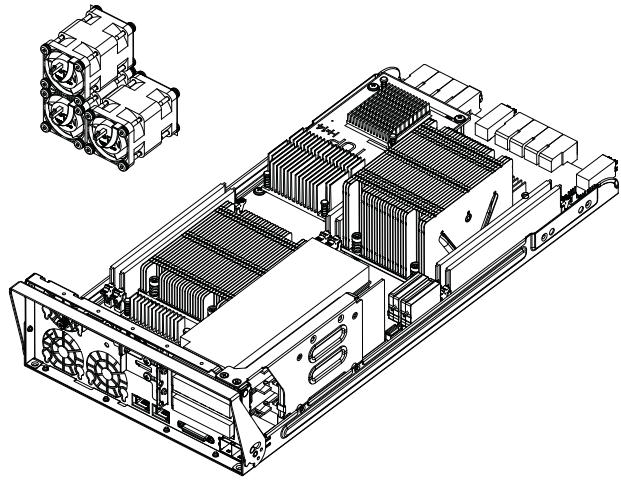


Figure 6-5. Replacing Node Fans



6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SAS Drives: You do not need to access the inside of the chassis or remove power to replace or swap SAS drives. Proceed to the next step for instructions. Typically Large Form Factor 3.5" x 1" deep SAS drives are used. Optional conversion trays are available to install Small Form Factor 2.5" drives.

Note: Refer to Supermicro's website for additional information at http://www.supermicro.com/support/manuals/.

Hard Drive Midplane

The hard drives plug into a midplane that provides power, drive ID and bus termination. This system uses an IR mode disk controller, offering users the most flexibility in creating fault tolerant software. Many open source platforms and modern commercial operating systems support data redundancy as well as other techniques to allow hot-swap maintenance of the storage devices. The midplane is already pre-configured, so no jumper or switch configurations are required.

SAS 3.0 Controller

The SAS 3.0 controller (LSI 3008) is located on a mezzanine card that plugs into the "SAS Controller Card" slot (see serverboard layout diagram for location).

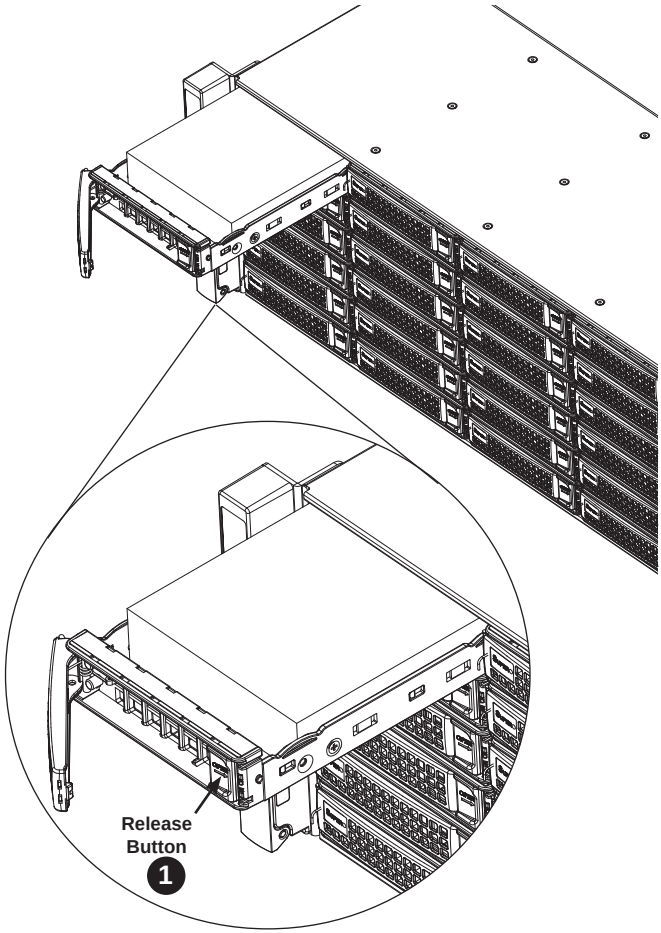
SAS Drive Installation

These drives are mounted in drive 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 HDD Carrier from the Chassis (Figure 6-6)

1. Press the release button on the drive tray. This extends the drive tray handle.
2. Use the handle to pull the drive out of the chassis.

Figure 6-6. Removing a HDD Carrier from the Chassis



Warning: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro website.

Warning: Regardless of how many hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

Installing a SAS Hard Drive (Figures 6-7 and 6-8)

1. Remove the screws securing the dummy drive to the drive carrier.
2. Remove the dummy drive. Place the carrier on a flat surface.
3. Slide the hard drive into the carrier with the printed circuit board side down.
4. Carefully align the mounting holes in both the drive tray and the hard drive.
5. Secure the hard drive to the tray using the screws provided.
6. Insert the drive carrier into the chassis. Make sure to close the carrier handle to lock the carrier into place.

Figure 6-7. Removing the Dummy Drive from the Carrier

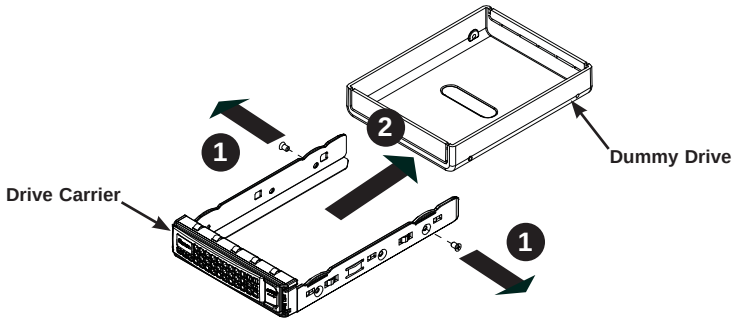
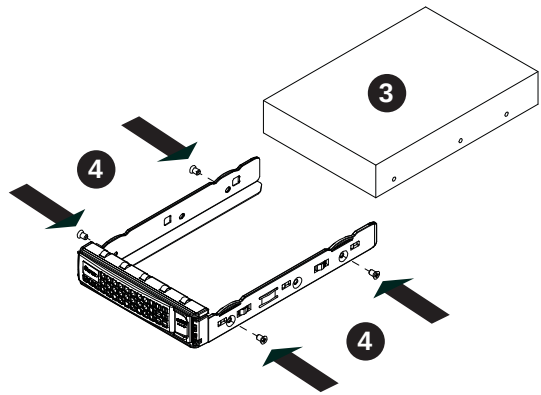


Figure 6-8. Installing a Drive to a Carrier

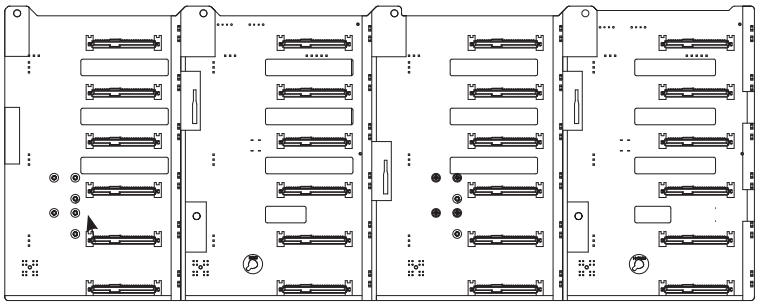


6-5 Midplane

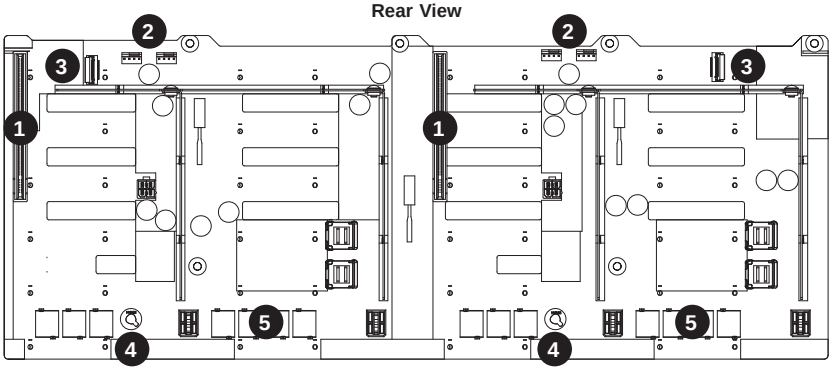
The midplane is a passive component that provides a reliable hot-swap interconnect between the active components of the system. See Figure 6-9 below for a list of connections to the midplane.

Figure 6-9. Midplane Connections

Front View



Rear View



Item	Description	Connects To
1.	Power Connections	Power Distribution Board
2.	Fan Headers (four total)	Fan Assemblies
3.	Control Panel Connections	Control Panel
4.	Guide Pin	N/A
5.	SBB (Storage Bridge Bay) Connections	Node/Serverboard

Warning: Use caution when working around the midplane. Do not touch the midplane with any metal objects and make sure no cables touch the midplane or obstruct the holes, which aid in proper airflow.

6-6 Power Supply

The 6048R-DE2CR24L has a 1600 Watt redundant power supply consisting of two separate 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.

When fully inserted into the chassis, the power supplies connect automatically to a power distribution board (PDB). The PDB in turn connects to the midplane via two black power connectors as shown in Figure 6-9.

Power Supply Failure

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 PWR Fail LED 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.

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.

Replacing the Power Supply

1. The SC947 chassis includes a redundant power supply (at least two power modules), you can leave the server running if you remove only one power supply at a time.
2. Unplug the power supply that you will replace.
3. Push the release tab (on the back of the power supply) as illustrated.
4. Pull the power supply out using the handle provided.
5. Replace the failed power module with the same model.
6. Push the new power supply module into the power bay until you hear a click.
7. Plug the AC power cord back into the module and power up the server.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS setup utility for the X10DRS-2U/3U/4U. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS setup utility screens.

> **Note:** For AMI BIOS recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

Starting BIOS Setup Utility

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

> **Note**: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen.

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

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

The AMI BIOS setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <Esc>, arrow keys, etc.

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

How To Change the Configuration Data

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

How to Start the Setup Utility

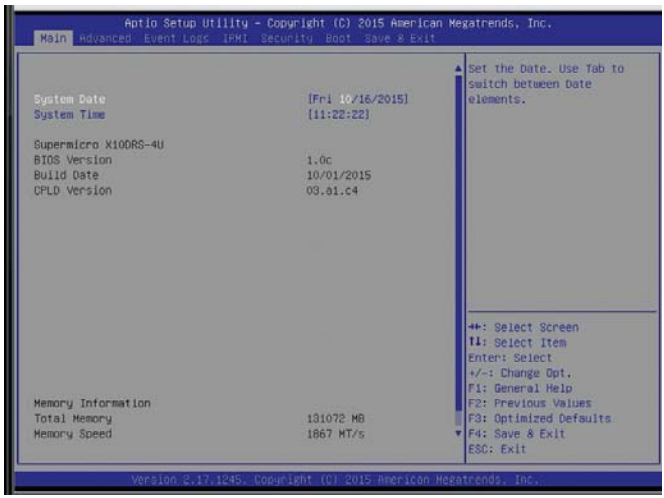
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the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

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

7-2 Main Setup

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

The following Main menu items will be displayed:



System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YYYY format. The time is entered in HH:MM:SS format.

> **Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

Supermicro X10DRS-4U

BIOS Version: This item displays the version of the BIOS ROM installed in your system.

Build Date: This item displays the date when the version of the BIOS ROM that is used in the system was built.

CPLD Version: This item displays the version of the Complex-Programmable Logic-Device architecture installed in your system.

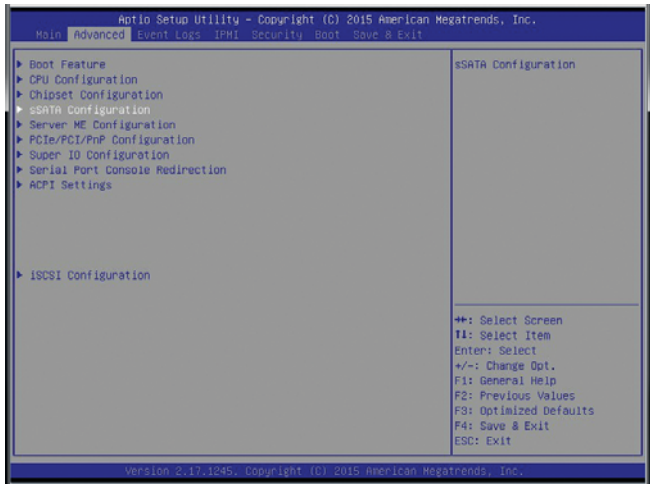
Memory Information

Total Memory: This item displays the total size of memory available in the system.

Memory Speed: This item displays the default speed of the memory modules installed in the system.

7-3 Advanced Setup Configurations

Use the arrow keys to select Advanced setup and press <Enter> to access the submenu items:



Warning: Take Caution when changing the Advanced settings. An incorrect value, an improper DRAM frequency, or a wrong timing setting may cause the system to malfunction. When this occurs, restore the setting to the manufacture default setting.

▶Boot Feature

Boot Configuration

Quiet Boot

Use this item to select the screen display between POST (Power-On Self -Test) messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

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 State

Use this item to set the power-on state for the Numlock key. When this item is set to On, the NumLock key will be enabled at bootup. 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 Immediate, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to the host adaptors to function as bootable disks. If this item is set to Postponed, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately to allow the drives attached to the adaptors to function as bootable devices at bootup. The options are **Immediate** and Postponed.

Re-try Boot

Select EFI Boot to allow the BIOS to 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

CPLD Watch Dog

Select Power On for the BIOS to turn on the CPLD (Complex Programmable Logic Device) Watch Dog timer at the early stage of POST (Power-on Self-Test) without turning it off. Select POST for the BIOS to turn on the CPLD Watch Dog timer at the early stage of POST and will turn it off upon the completion of POST. Select OS for the BIOS to turn on the CPLD Watch Dog timer when it is ready to boot the OS. The options are **Disabled**, Power On, POST, and OS.

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on jumper settings when the system is inactive more than 5 minutes. The options are Enabled and **Disabled**.

Power Button Function

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

AC Loss Policy Depend On

Select BIOS for the AMI BIOS to set the AC power loss policy. Select IPMI for the IPMI to set the AC power loss policy. The options are IPMI and **BIOS.**

Restore on AC Power Loss

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

▶CPU Configuration

This submenu displays the following CPU information as detected by the BIOS. It also allows the user to configure CPU settings.

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

Clock Spread Spectrum

Select Enable to allow the BIOS to attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disable** and Enable.

Hyper-Threading (All)

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

Cores Enabled

This feature allows the user to determine the number of CPU cores to be enabled. Enter "0" to enable all cores. The default setting is **0**, which enables all CPU cores in the system.

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

Select Enable to support Execute Disable Bit Technology, 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 to damage the system during an attack. The options are **Enable** and Disable. (Refer to Intel's and Microsoft's websites for more information.)

PPIN Control

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

Hardware Prefetcher (Available when supported by the CPU)

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

Adjacent Cache Prefetch (Available when supported by the CPU)

Select Enable for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disable for the CPU to prefetch both cache lines for 64 bytes. The options are Disable and **Enable**.

> **Note**: Please reboot the system for changes on this setting to take effect. Please refer to Intel's website for detailed information.

DCU (Data Cache Unit) Streamer Prefetcher (Available when supported by the CPU)

If set to Enable, the DCU Streamer prefetcher will prefetch data streams from the cache memory to the DCU (Data Cache Unit) to speed up data accessing and processing to enhance CPU performance. The options are Disable and **Enable**.

DCU IP Prefetcher

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

Direct Cache Access (DCA)

Select Enable to use Intel DCA (Direct Cache Access) technology to improve the efficiency of data transferring and accessing. The options are **Auto**, Enable, and Disable.

X2 APIC (Advanced Programmable Interrupt Controller)

Based on Intel's Hyper-Threading architecture, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this feature is set to Enable, the APIC ID will expand(X2) from 8 bits to 16 bits to provide 512 APIDs to each thread for CPU performance enhancement. The options are **Disable** and Enable.

AES-NI

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

Intel Virtualization Technology

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

▶Advanced Power Management Configuration

Advanced Power Management Configuration

Power Technology

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

**If the option is set to Custom or Energy Efficient, the following items will display:*

Energy Performance Tuning (Available when Power Technology is set to Custom or Energy Efficient)

Select Enable for energy-performance tuning support to enhance energy efficiency, which might compromise system performance. The options are Enable and **Disable**.

Energy Performance BIAS Setting (Available when Power Technology is set to Custom or Energy Efficient)

Use this feature to select an appropriate fan setting to achieve maximum system performance (with maximum cooling) or maximum energy efficiency with maximum power saving). The fan speeds are controlled by the firmware management via IPMI interface. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

Energy Efficiency Turbo (Available when Power Technology is set to Custom or Energy Efficient)

Select Enable for the system to operate at turbo mode with reduced power consumption so that your machine can achieve maximum system performance with the maximum power efficiency possible. The options are **Enable** and Disable.

**If the option is set to Custom, the following items will display:*

▶CPU P State Control (Available when Power Technology is set to Custom)

EIST (P-states)

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

Turbo Mode

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

P-state Coordination

This item is used to change the P-state (Power-Performance State) coordination type. P-state is also known as "SpeedStep" for Intel processors. Select HW_ALL to change the P-state coordination type for hardware components only. Select SW_ALL to change the P-state coordination type for all software installed in the system. Select SW_ANY to change the P-state coordination type for a software program in the system. The options are **HW_ALL,** SW_ALL, and SW_ANY.

▶CPU C State Control (Available when Power Technology is set to Custom)

Package C State limit

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

CPU C3 Report

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

CPU C6 Report

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

Enhanced Halt State (C1E)

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

▶CPU T State Control (Available when Power Technology is set to Custom)

ACPI (Advanced Configuration Power Interface) T-States

If this item is set to Enable, CPU throttling will be supported by the operating system to reduce power consumption. The options are Disable and **Enable**.

▶Chipset Configuration

Warning! Please set the correct settings for the items below. A wrong configuration setting may cause the system to become malfunction.

▶North Bridge

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

▶IIO Configuration

EV DFX (Device Function On-Hide) Features

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

▶IIO1 Configuration

IOU2 (IIO1 PCIe Port 1)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

IOU0 (IIO1 PCIe Port 2)

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

IOU1 (IIO1 PCIe Port 3)

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

▶IIO2 Configuration

IOU2 (IIO2 PCIe Port 1)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

IOU0 (IIO2 PCIe Port 2)

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

IOU1 (IIO2 PCIe Port 3)

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

▶IOAT (Intel® IO Acceleration) Configuration

Enable IOAT

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

No Snoop

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

Relaxed Ordering

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

▶Intel VT for Directed I/O (VT-d)

Intel® VT for Directed I/O (VT-d)

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

Interrupt Remapping

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

▶QPI (Quick Path Interconnect) Configuration

▶QPI General Configuration

▶QPI Status

The following information will display:

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

Link Frequency Select

Use this item to select the desired frequency for QPI Link connections. The options are 6.4GB/s, 8.0GB/s, 9.6GB/s, **Auto,** and Auto Limited.

Link L0p Enable

Select Enable for Link L0p support to reduce power consumption. The options are **Enable** and Disable.

Link L1 Enable

Select Enable for Link L1 support to reduce power consumption. The options are **Enable** and Disable.

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

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

Isoc Mode

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

▶Memory Configuration

This submenu allows the user to configure Integrated Memory Controller (IMC) settings.

Enforce POR

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

Memory Frequency

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

Data Scrambling

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

Enable ADR

Select Enabled for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The options are Disabled and **ADR + NVDIMMs**.

Erase-Arm NVDIMMs

Select Enabled for NDVIMM Erasing and Arming support to enhance memory performance. The options are Disabled and **Enabled**.

Restore NVDIMMs

Select Enabled for the BIOS to restore onboard NVDIMM memory support automatically to enhance memory performance. The options are Disabled and **Enabled**.

Interleave NVDIMMs

Select Enabled to configure onboard NVDIMM modules for interleaving support to enhance memory performance. The options are **Disabled** and Enabled.

Global Reset

Select Enabled to trigger a global reset instead of the normal reset to allow ADR to save NVDIMM settings. The options are Disabled and **Enabled**.

DRAM RAPL (Running Average Power Limit) Baseline

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

Set Throttling Mode

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

Socket Interleave Below 4GB

Select Enable for the memory above the 4G Address space to be split between two sockets. The options are Enable and **Disable**.

A7 Mode

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

▶DIMM Information

This item displays the status of a DIMM module as detected by the AMI BIOS.

- P1-DIMMA1 - P1-DIMMD1
- P2-DIMME1 - P2-DIMMH1

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

RAS Mode

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

Memory Rank Sparing

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

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, 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 **Enable** and Disable.

Patrol Scrub Interval

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

Demand Scrub

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

Device Tagging

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

▶South Bridge Configuration

The following South Bridge information will display:

▶USB Configuration

- USB Module Version
- USB Devices

Legacy USB Support

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

XHCI Hand-Off

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

EHCI Hand-Off

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

Port 60/64 Emulation

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

USB 3.0 Support

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

EHCI1

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

EHCI2

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

XHCI Pre-Boot Drive

Select Enabled to enable XHCI (Extensible Host Controller Interface) support on a pre-boot drive specified by the user. The options are **Enabled** and Disabled.

▶sSATA Configuration

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

sSATA Controller

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

Configure sSATA as

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

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

Support Aggressive Link Power Management

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

sSATA Port 0~ Port 1

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

- Model number of drive and capacity

sSATA Port 0~ Port 1

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

Hot Plug

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

Spin Up Device

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

sSATA Device Type

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

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

sSATA Port 0~ Port 1

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

sSATA Device Type (Available when a sSATA port is detected)

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

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

Support Aggressive Link Power Management

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

sSATA RAID Option ROM/UEFI Driver

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

SATA/sSATA RAID Boot Select

Select SATA Controller to boot the system from a SATA RAID device. Select sSATA Controller to boot the system from a sSATA RAID device. Select Both to boot the system either from a SATA RAID device or from an sSATA RAID device. Please note that the option-Both is not supported by the Windows Server 2012/R2 OS. The options are None, Both, SATA Controller, and **sSATA Controller**.

sSATA Port 0~ Port 1

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

Hot Plug

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

Spin Up Device

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

sSATA Device Type

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

▶Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

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

▶PCIe/PCI/PnP Configuration

PCI Latency Timer

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

PCI PERR/SERR Support

Select Enabled to support PERR (PCI/PCI-E Parity Error Runtime Reporting)/SERR (System Error Runtime Reporting) for a PCI/PCI-E slot. The options are Enabled and **Disabled**.

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

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

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

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

Maximum Payload

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

Maximum Read Request

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

ASPM Support

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

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

MMIOHBase

Use this item to select the I/O base memory size according to memory-address mapping for the PCH chip. The options are **56T**, 48T, 24T, 2T, 512G, and 256G.

MMIO High Size

Use this item to select the high I/O memory size according to memory-address mapping for the PCH chip. The options are **256G**, 128G, 512G, and 1024G.

PCI Devices Option ROM Setting

PCI/PCI X/PCIe Slot 1 OPROM//PCI/PCIX/PCIe Slot 2 OPROM//PCI/PCI X/ PCIe Slot 3 OPROM

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

Onboard SAS Option ROM

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

Onboard LAN Option ROM Type

Select Legacy to enable Legacy support for the LAN controller for system boot. The options are **Legacy** and EFI.

Onboard LAN 1 Option ROM/Onboard LAN 2 Option ROM//Onboard LAN 3 Option ROM/Onboard Video Option ROM

Use this feature to select the type of device to be installed in a LAN port specified by the user for system boot. The default setting for LAN1 Option ROM is **PXE**. The default settings for LAN2 Option ROM, LAN 3 Option ROM and Onboard Video Option ROM are **Disabled**.

VGA Priority

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

Network Stack

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

IPv4 PXE Support

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

IPv6 PXE Support

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

Onboard PLX Device

Select Enabled for onboard PLX device support. The options are **Enabled** and Disabled.

▶Super IO Configuration

Super IO Chip AST2400

▶Serial Port 1 Configuration/Serial Port 2 Configuration

Serial Port 1/Serial Port 2

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

Device Settings

This item displays the base I/O port address and the Interrupt Request address for a serial port specified by the user. The default setting for Serial Port 1 is IO=3F8h IRQ=4; for Serial Port 2 is IO=2F8h, IRQ=3.

Change Port 1 Settings/Change Port 2 Settings

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

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

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

Serial Port 2 Attribute

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

▶Serial Port Console Redirection

COM 1 Console Redirection

Console Redirection

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

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

▶COM1 Console Redirection Settings

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

Use this item to select Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this item to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When "BootLoader" is selected, legacy Console Redirection is disabled before booting the OS. When "Always Enable" is selected, legacy Console Redirection remains enabled while the OS boots up. The options are **Always Enable** and BootLoader.

SOL/COM2

SOL/COM2 Console Redirection

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

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

▶SOL/COM2 Console Redirection Settings

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

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS Post

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

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

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

(EMS) Console Redirection

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

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

▶EMS Console Redirection Settings (Available when EMS Console Redirection is enabled)

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

Terminal Type

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

Bits Per Second

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

Flow Control

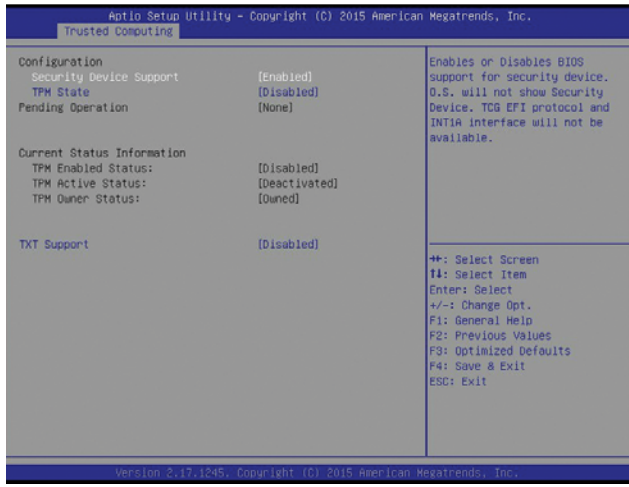
Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None,** Hardware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

The following settings will be displayed:

Data Bits, Parity, Stop Bits

▶Trusting Computing (Available when a TPM device is installed)

If a TPM (Trusted Platform Module) device is detected by the BIOS, the following screen will display:



Security Device Support

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

TPM State

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

Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for system. Please reboot your system for the BIOS to carry out a pending TPM operation. The options are **0**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Current Status Information

This item displays the following status of Trusting Computing on this motherboard:

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

TXT Support

Select Enabled to enable Intel Trusted Execution Technology (TXT) support. The options are **Disabled** and Enabled.

Note: If the option for TXT Support is set to Enabled, be sure to disable EV DFX (Device Function On-Hide) support for the system to work properly. (EV DFX is under "IIO Configuration" in the "Chipset/North Bridge" submenu on Page 4-10).

Note: For more information on TPM, please refer to the TPM manual at http://www.supermicro.com/manuals/other/AOM-TPM-9655V_9655H.pdf

▶ACPI Settings

WHEA Support

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

High Precision Event Timer

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

NUMA (Available when the OS supports this feature)

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

▶iSCSi Configuration

iSCSI Initiator Name

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

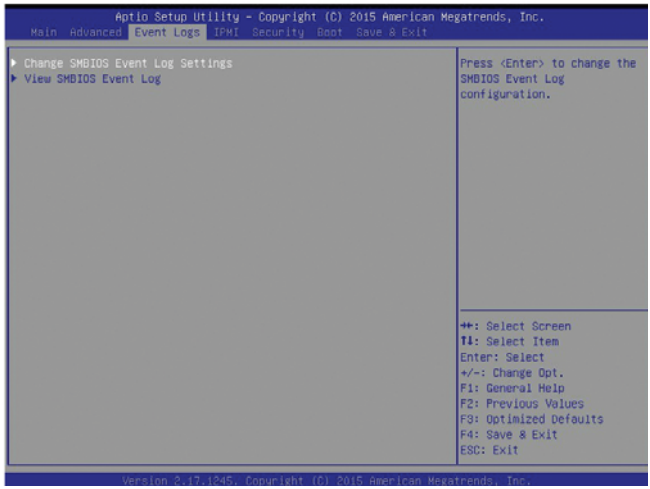
▶Add an Attempt

▶Delete Attempts

▶Change Attempt Order

7-4 Event Logs

This submenu allows the user to configure Event Log settings.



▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

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

Runtime Error Logging Support

Select Enable to support Runtime Error logging. The options are **Enable** and Disable.

Erasing Settings

Erase Event Log

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

When Log is Full

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

SMBIOS Event Log Standard Settings

Log System Boot Event

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

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

This item is used to determine how long (in minutes) the multiple event counter should 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.

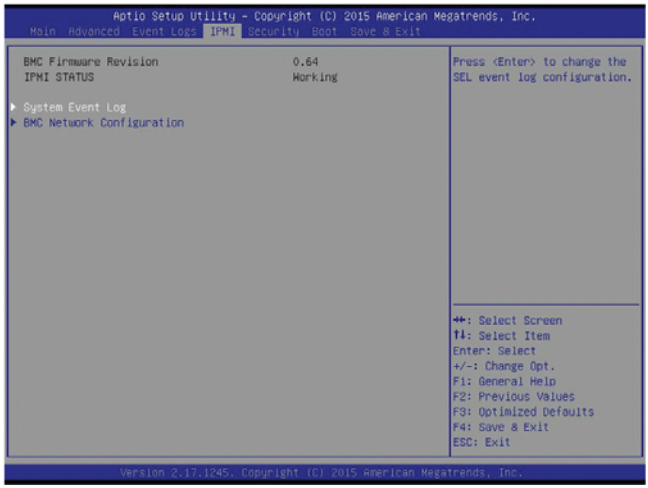
▶View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. The following categories are displayed:

Date/Time/Error Code/Severity

7-5 IPMI

This submenu allows the user to configure Intelligent Platform Management Interface (IPMI) settings.



The following items will display:

- BMC Firmware Revision
- IPMI Status

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No,** Yes, On next reset, and Yes, On every reset.

When SEL is Full

This feature allows the user to determine what the AMI BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

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

▶BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

Update IPMI LAN Configuration

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

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

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

Station IP Address

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

Subnet Mask

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

Station MAC Address

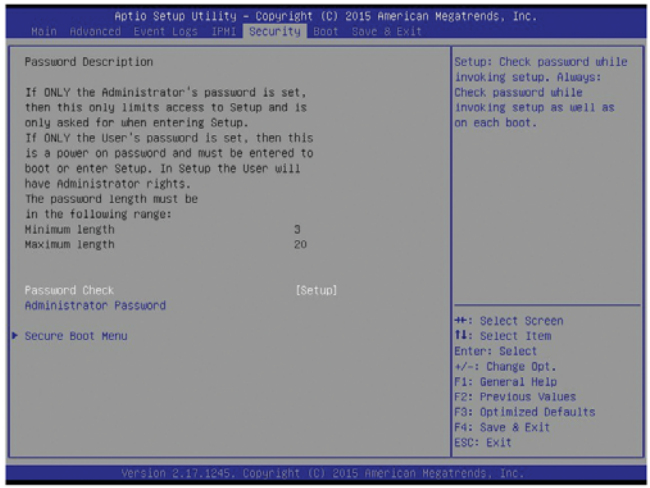
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Gateway IP Address

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

7-6 Security Settings

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



Password Check

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

Administrator Password

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

User Password (Available after an Administrator Password is entered)

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

▶Secure Boot Menu

The following items will display:

- System Mode
- Secure Boot

Secure Boot

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

Secure Boot Mode

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

CSM Support

Select Enabled to enable CSM support to enhance system security. The options are Disabled and **Enabled**.

▶Key Management

Default Key Provision

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

▶Enroll All Factory Default Keys

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

▶Save All Secure Boot Variables

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

Platform Key

▶Delete PK

Select <Yes> to confirm deletion of the Platform Key (PK) from the NVRAM (Non-Volatile RAM).

▶Set New PK (Key)

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

Key Exchange Key (KEK)

▶Delete KEK (Key Exchange Key)

Select <Yes> to confirm deletion of the KEK from the NVRAM (Non-Volatile RAM).

▶Set New KEK (Key Exchange Key)

Select <Yes> to confirm that a new KEK will be set in the NVRAM (Non-Volatile RAM).

▶Append KEK (Key Exchange Key)

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

Authorized Signatures

▶Delete DB (DataBase)

Select <Yes> to confirm deletion of a database from the NVRAM (Non-Volatile RAM).

▶Set New DB (DataBase)

Select <Yes> to confirm that a new database will be set in the NVRAM (Non-Volatile RAM).

▶Append DB (DataBase)

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

Authorized TimeStamps

▶Delete DBT (DataBase Timer)

Select <Yes> to confirm deletion of the database timer from the NVRAM (Non-Volatile RAM).

▶Set New DBT (DataBase Timer)

Select <Yes> to confirm that the new database timer will be set in the NVRAM (Non-Volatile RAM).

▶Append DBT (DataBase Timer)

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

Forbidden Signatures

▶Delete DBX

Select <Yes> to confirm deletion of the DBX files from the Non-Volatile RAM (NVRAM).

▶Set New DBX

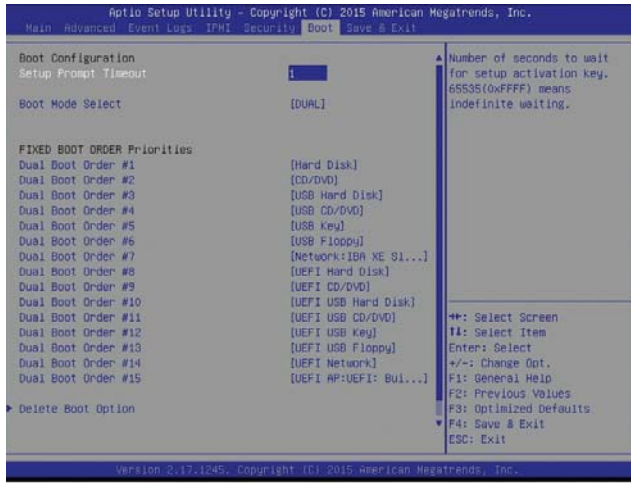
Select <Yes> to confirm that the new DBX files will be downloaded to the Non-Volatile RAM (NVRAM).

▶Append DBX (DataBase Timer)

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

7-7 Boot Settings

This submenu allows the user to configure Boot settings for this system:



Boot Configuration

Setup Prompt Timeout

Use this item to set the number of seconds for the system to wait until the setup key is activated. Enter 65535 (0xFFFF) to wait indefinitely.

Boot Mode Select

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

Fixed Boot Order Priorities

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

- *When the item above -"Boot Mode Select" is set to Dual (default), the following items will be displayed for configuration:*

Boot Option #1 - Boot Option #15

- *When the item above -"Boot Mode Select" is set to Legacy, the following items will be display for configuration:*

Boot Option #1 - Boot Option #7

- *When the item above -"Boot Mode Select" is set to UEFI, the following items will be display for configuration:*

Boot Option #1 - Boot Option #8

▶Add New Boot Option

Use this item to select a new boot device to add to the boot priority list.

Add New Boot Option

Use this feature to select a new boot device to add to the boot priority list.

▶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 from the boot priority list.

▶Delete Driver Option

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

Delete Boot Option

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

▶Hard Disk Drive BBS Priorities

- Legacy Boot Order #1

▶Network Drive BBS Priorities

- Legacy Boot Order #1

▶USB Key Drive BBS Priorities

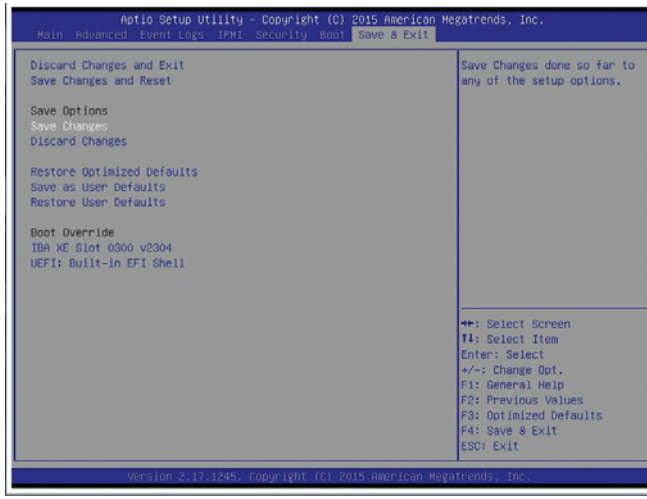
- Legacy Boot Order #1

▶UEFI USB Key Drive BBS Priorities

- UEFI Boot Order #1

7-8 Save & Exit

This submenu allows the user to configure the following Save & Exit settings:



Discard Changes and Exit

Select this item to exit from the BIOS setup without making any permanent changes to the system configuration, and reboot the computer.

Save Changes and Reset

After you have completed the system configuration changes, select this item to save the changes and reboot the computer for the new system configuration settings to take effect.

Save Options

Save Changes

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

Discard Changes

Select this item to discard all the changes and return to the AMI BIOS setup utility. Select Yes and press <Enter> to discard all changes made.

Restore Optimized Defaults

Select this item and press <Enter> to load the manufacture default settings which are designed to optimize system performance but not for maximum system stability.

Save as User Defaults

Select this item and press <Enter> to save the current BIOS settings as user's default settings for future use.

Restore User Defaults

Select this item and press <Enter> to retrieve the user-defined default settings that were previously saved to be used as current default settings.

Boot Override

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

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed 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.

X10 Serverboard 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
X10 IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors (Each Node)

Single or dual Intel Xeon E5-2600 v3/v4 series processors in
Socket R3-LGA 2011 sockets (both CPUs must be of the same type)

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

Chipset

Intel PCH 612

BIOS

16 MB SPI AMI BIOS® SM Flash UEFI BIOS

Memory Capacity (Each Node)

Each X10DRS has eight (8) DIMM slots that can support up to 1 TB of LRDIMM (Load Reduced) or 512 GB of Registered (RDIMM), DDR4 (288-pin) ECC 2400/2133/1866/1600 MHz speed, 512 MB, 1 GB, 2 GB, 4 GB, 8 GB, 16 GB, 32 GB or 64 GB size, 1.2v voltage SDRAM memory.

Note: see Section 5-6 for details.

SAS/SATA (Each Node)

Two external SAS 3.0 x4 ports (eight 12Gb/s lanes) and two SATA 3.0 ports with power header for for SATA DOM

Drive Bays

Twenty-four (24) hot-swap drive bays to house 3.5" hard drives

Expansion Slots (Each Node)

Riser card with one (1) PCI-E 3.0 x24 slot

Serverboard (Two Per System)

X10DRS (Proprietary form factor)
Dimensions: (LxW) 16.72" x 8.10" (424.69 mm x 205.74 mm)

Chassis

SC947ETS-R0NDBP (4U rackmount)
Dimensions: (WxHxD) 17.2 x 5.2 x 26.5 in. (437 x 132 x 673 mm)

Weight

Net Weight: 64 lbs. (29 kg)
Gross Weight: 88 lbs. (39.91 kg)

System Cooling

Four (4) 8-cm fans connected to the midplane and two (2) 4-cm counter-rotating fans connected to each node's MB.

System Input Requirements

AC Input Voltage: 100 - 140V/180 - 240V AC auto-range
Rated Input Current: 10 - 7/11 - 8A max
Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 1600W (Part# PWS-1K68A-1R) 80 Plus Titanium Certified
Rated Output Voltages: +12V (133A at 1600W, 66A at 800W, 26A at 320W, 13A at 160W), +5Vsb (1A at 1600W)

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: 20% 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”

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