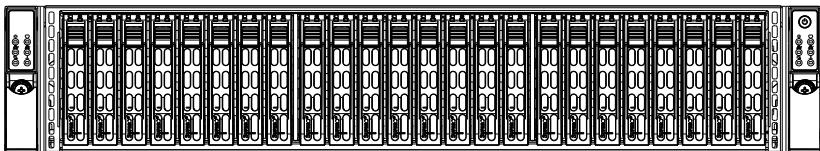




SUPER STORAGE SYSTEM

2028R-DE2CR24L



USER'S MANUAL

Revision 1.0b

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Manual Revision 1.0b

Release Date: January 28, 2019

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Preface

About this Manual

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

Please refer to the 2028R-DE2CR24L server specifications page on our website for updates on supported memory, processors and operating systems (<http://www.supermicro.com>).

Notes

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

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wftp>
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Warnings

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



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



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

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Chapter 1

Introduction

1-1 Overview

Storage Bridge Bay

The 2028R-DE2CR24L Super Storage Bridge Bay (SSB) was designed to function as a fully redundant, fault-tolerant "cluster-in-a-box" system. The standard support for 24 hot-swap HDDs (SAS3) may be expanded to support additional storage with the optional SBB JBOD SSG-927R-E2CJB configuration.

The Super SBB provides hot-swappable nodes for all active components. Each of the two motherboard nodes support dual-processors, eight DIMM slots, three PCI-E Gen3 slots and 12 Gbps SAS (SAS3). The system 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). The 2028R-DE2CR24L hardware is supplied without a storage operating system or fail-over software.

Refer to our website for information on operating systems that have been certified for use with the system (www.supermicro.com).

Hardware Components

The 2028R-DE2CR24L is a high-end SBB system comprised of the SC927ETS-R1200B chassis with two distinct computing nodes, each powered by an X10DRS-2U dual processor motherboard. It features a dedicated PCI-E bus between server nodes for High Availability, Cluster-in-a-Box applications. Equipped with 1200W 80PLUS Titanium Level redundant power supplies and redundant cooling fans, the 2028R-DE2CR24L offers fully redundant high-availability while maintaining energy efficient operation.

In addition to the motherboard and chassis, various hardware components have been included, as listed below. Quantities indicate the number included in the whole system (two nodes).

- SAS/SATA Accessories
 - One SAS midplane (BPN-SAS3-927-N4)
 - Twenty-four drive carriers (MCP-220-92701-0N)

- Eight sets of counter-rotating 4-cm fans (FAN-0157L4)
- Four passive CPU heatsinks (SNK-P0048PS [2] and SNK-P0047PS [2])
- Two riser cards for PCI-Express 3.0 expansion cards (RSC-R2US-3E8R)
- Two SAS controller mezzanine cards (one per node) (AOM-S3008-L8-SB)
- One set of rackmount hardware (MCP-290-00057-0N)
- Two cooling air shrouds (MCP-310-92702-0N)
- Two power distribution boards (PDB-PT927-SG)

Supporting Links

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

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety info:
http://www.supermicro.com/about/policies/safety_information.cfm

For support, email support@supermicro.com.

1-2 Motherboard Features

The X10DRS-2U is a dual processor motherboard based on the Intel PCH C612 chipset. The system includes two motherboards. The main features are listed below. (See Figure 1-1 for a block diagram of the chipset.)

Processors

The motherboard supports single or dual Intel Xeon E5-2600 v3/v4 Series processors in LGA2011 R3 sockets (Socket R3). Refer to the Supermicro web site for a complete listing of supported processors (www.supermicro.com).

Memory

The motherboard has eight DIMM slots that can support up to 1 TB of LRDIMM (Load Reduced) or 512 GB of Registered (RDIMM) ECC DDR4-2400/2133/1866/1600 memory. See Chapter 5 for details

SAS Disk Controller

Two external SAS 3.0 ports are supported by a disk controller on a mezzanine card included on each motherboard (for a total of four in the system).

SAS Expander

An IR mode SAS controller is located on a mezzanine card included in each of the server nodes. One 40-port SAS expander is integrated into each board.

SATA

Each motherboard 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

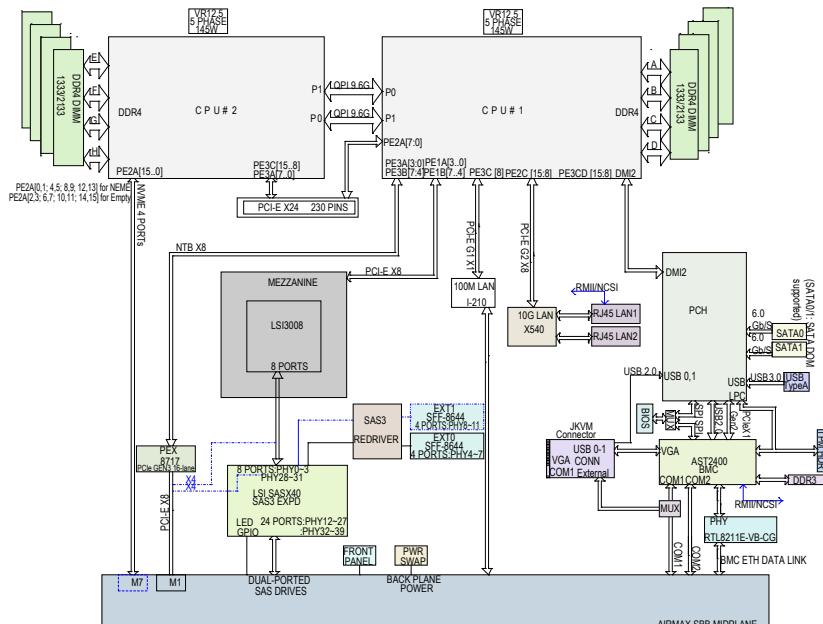
Non-Transparent Bridge connectivity features eight lanes of PCI-E 3.0 between server nodes.

Rear Input/Output Ports

The rear of each motherboard includes two external mini SAS HD ports, two 10 Gb Ethernet ports and a KVM connector (includes USB, VGA and COM ports).

Graphics Controller

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



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

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

1-3 Chassis Features

The system is built upon the SC927ETS-R1200B chassis. The following are the main features.

System Power

The system features a redundant 1200 W power supply with two hot-plug power modules. They have 80 Plus certification at Titanium level high-efficiency. The system will continue to operate if one module fails or is replaced.

Hard Drives

The chassis supports up to twenty-four 2.5" hot-swap SAS hard drives connected through a backplane that provides power and control.

PCI Expansion Slots

Each node can accommodate up to three PCI-E 3.0 x8 expansion cards.

Front Control Panel

The chassis features a front control panel for each node that provides system monitoring and power control. A single power button located on the right side control panel controls power for both nodes according to the BIOS setup settings.

Cooling System

The system includes a total of eight doubled fans--four mid-chassis, and two at the rear of each motherboard node. These are 4-cm counter-rotating fans. The counter-rotating action works to dampen vibration levels while generating exceptional airflow. Fan speed is optimized based on system temperature and BMC fan control settings.

Each node includes an air shroud to channel air from the fans for maximum cooling where it is needed.

Each power supply module also includes a cooling fan.

1-4 Contacting Supermicro

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Fax: +886-(2) 8226-3992
Email: support@supermicro.com.tw
Web Site: www.supermicro.com.tw

Chapter 2

Rack Installation

This chapter provides instructions for preparing and mounting your chassis in a rack.

2-1 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with the carrier who delivered it.

2-2 Preparing for Setup

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

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws to mount the system into the rack. Please read this chapter in its entirety before beginning the installation procedure.

Choosing a Setup Location

- Leave at least 25 inches clearance in front of the rack to open the front door completely.
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and access for servicing.
- It should be a restricted access location, such as a dedicated equipment room or a service closet.

2-3 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installations, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure that the rack is stable before extending a component from the rack.
- Only one chassis should be extended from the rack at a time. Extending two or more chassis simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- 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 upward.
- 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 the hot-swappable hard 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).

Sufficient Airflow

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

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

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



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

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

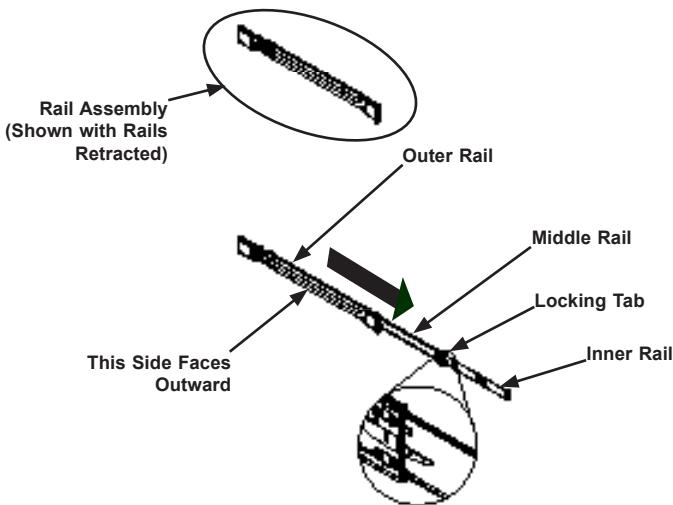
2-4 Installing the Rails

There are a variety of rack units on the market, and some may require a slightly different assembly procedure. The following is a basic guideline for installing the system into a rack with the provided rack rails. Also refer to the installation instructions that came with the specific rack you are using.

This rail set fits a rack between 26.5" and 36.4" deep. Do not use a two post "telco" type rack.

Identifying the Rails

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



**Figure 2-1. Identifying the Outer Rail, Middle Rail, and Inner Rail
(Left Rail Assembly Shown)**

Note: Both front chassis rails and the rack rails have a locking tab, which serves two functions. First, it locks the server into place when installed and pushed fully into the rack (its normal operating position). In addition, these tabs lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when pulled out for servicing.

Releasing the Inner Rail

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

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

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

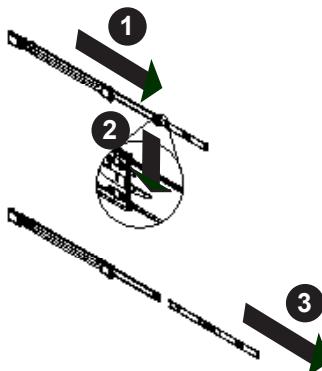


Figure 2-2. Extending and Releasing the Inner Rail

Installing the Inner Rails on the Chassis

Installing the Inner Rails

1. Identify the left and right inner rails. They are labeled.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis and under the hooks until the quick release bracket snaps into place, securing the rail to the chassis.
4. If desired, add screws (flat head M4 x 4mm) through the rail into the chassis for extra security.

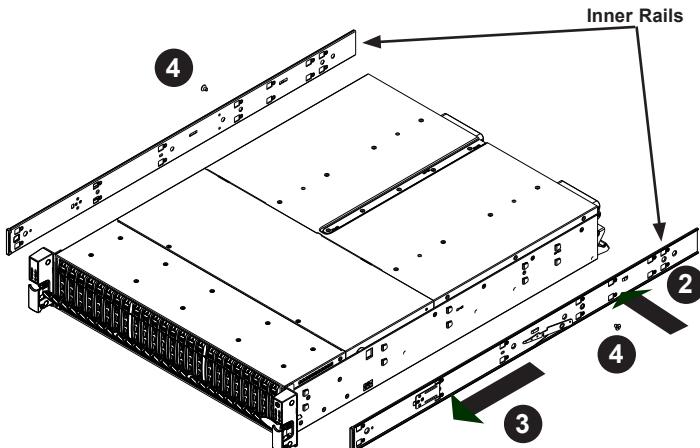


Figure 2-3. Installing the Inner Rails

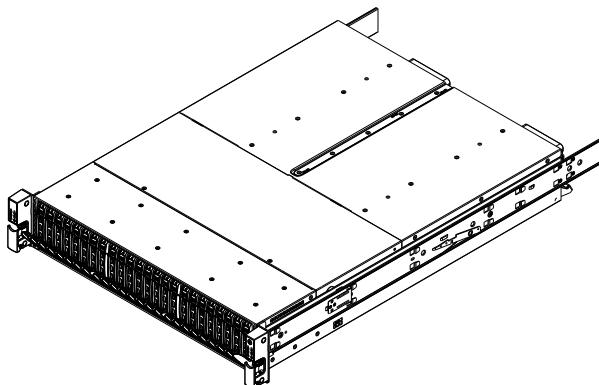


Figure 2-4. Inner Rails Installed on the Chassis

Installing the Outer Rails onto the Rack

Installing the Outer Rails

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

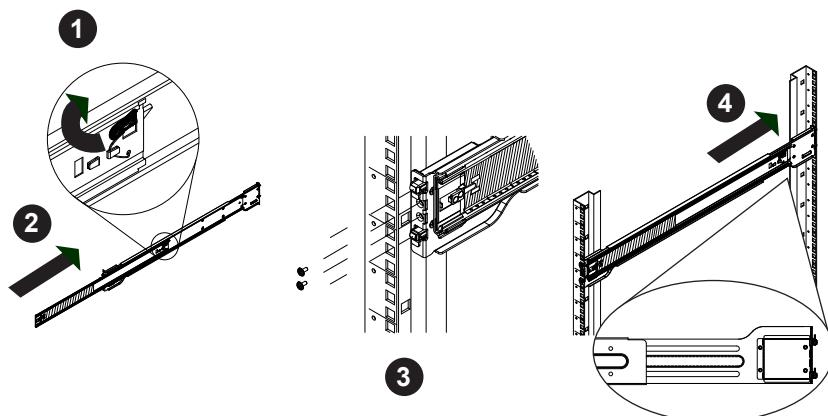


Figure 5-7. Extending and Mounting the Outer Rails



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

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

2-5 Sliding the Chassis onto the Rack Rails



Warning: This requires at least two people to support the chassis during installation. Please follow safety recommendations printed on the rails.

Installing the Chassis into a Rack

1. Pull the middle rail out of the front of the outer rail and make sure that the ball bearing shuttle is locked at the front of the middle rail.
2. Align the rear of the chassis rails with the middle rails and then push evenly on both sides of the chassis until it clicks into the fully extended position.
3. Depress the locking tabs on both sides of the chassis and push the it fully into the rack. The locking tabs should "click".
4. Optional screws may be used to hold the front of the chassis to the rack.

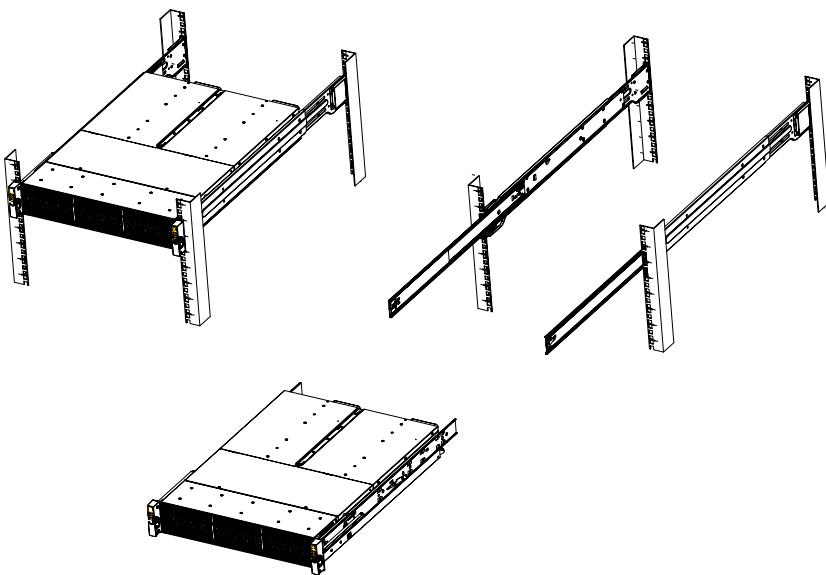


Figure 2-8. Installing into a Rack

Note: The figure above is for illustrative purposes only. Always install servers to the bottom of the rack first. Also, your chassis may look slightly different.

Removing the Chassis from the Rack

Caution! It is dangerous for a single person to off-load the heavy chassis from the rack without assistance. Be sure to have sufficient assistance supporting the chassis when removing it from the rack. Use a lift

Removing the Chassis from the Rack

1. Pull the chassis forward out the front of the rack until it stops.
2. Press the release latches on each of the inner rails downward simultaneously and move the chassis forward in the rack.

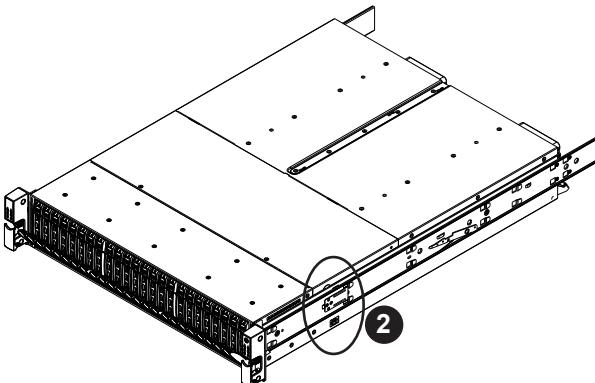


Figure 2-9. Removing the Chassis From the Rack



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

Notes

Chapter 3

System Interface

3-1 Overview

The server includes two control panels on the front, one for each node, that house a power button and status monitoring lights. The externally accessible hard drives display status lights. The power supply displays status lights visible from the back of the chassis.

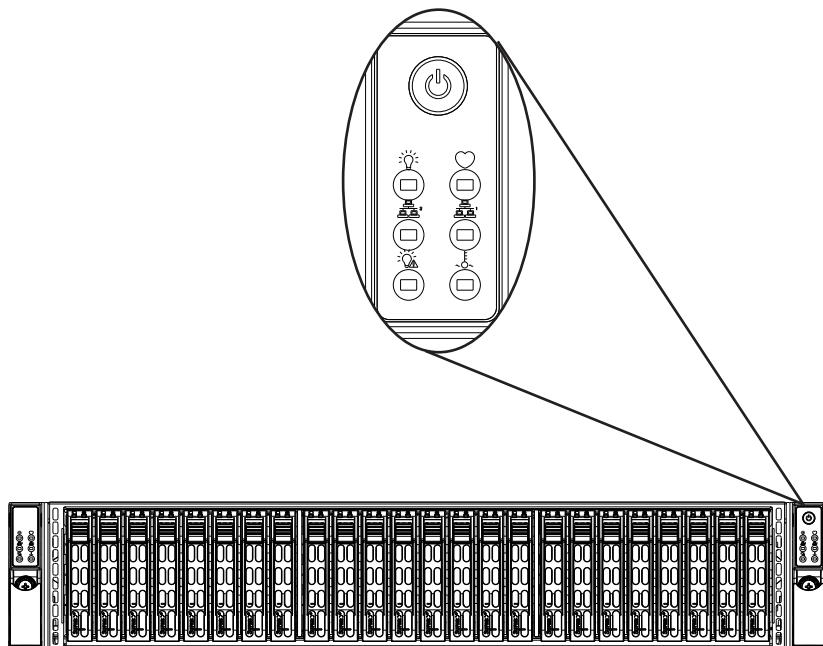


Figure 3-1. Front Control Panel

3-2 Control Panel Buttons

The chassis includes one push-button on the right side control panel that controls power to both nodes.



Power

The main power switch applies or removes primary power from the power supply to the computing nodes but maintains standby power. To perform most maintenance tasks, unplug the system to remove all power.

3-3 Control Panel LEDs

There are six LEDs on each control panel that provide status information about the system.



Power

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



Heartbeat

This LED indicates that power is being supplied to the motherboard.



NIC2

Indicates network activity on GLAN2 when flashing.



NIC1

Indicates network activity on GLAN1 when flashing.



Overheat/Fan Fail:

When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition. This LED will remain flashing or on as long as the indicated condition exists. Overheating is discussed in the following section.



Power Fail

Indicates a power supply module has failed.

Overheating

Multiple sensors within system will post overheat alerts, check IPMI for current temperature readings, and threshold and critical values. There are several possible responses if the system overheats.

If the server overheats:

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

3-4 Drive Carrier LEDs

Each drive carrier has two LEDs:

- **Green:** When illuminated, it indicates the drive is powered on. If this LED is not on, no power is being provided for the drive. Refer to Chapter 6 for instructions on replacing failed drives.
- **Red:** A steady red indicates a drive failure. Flashing red at once per second indicates RAID rebuilding activity. If a drive fails, you should be notified by your system management software. Refer to Chapter 6 for instructions on replacing failed drives.

3-5 Power Supply LEDs

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

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

Chapter 4

Standardized Warning Statements for AC Systems

About Standardized Warning Statements

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

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

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

Warning Definition



Warning!

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符号代表危險。

您目前所處的工作環境可能讓您受傷。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 התקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידת או יותר או שאלות או היקלחות בבעיה כלשה, יש ליזור קשר עם מחלקה תומיכה טכנית של סופרמייקרו. טכנים מוסמכים בלבד רשאיות להתקין או להציג את הרכיבים. יש לקרוא את הנ篇章 במלואו לפני התקנת או הגדיר את הרכיבים במאורי סופרמייקרו.

اَكَفَ حَالَةٍ وُكِيَ اَيْ تَتَسَبَّبُ فِي اَصَابَةٍ جَسْدَهُ هَذَا الرَّهْزُ عُ خَطَرٌ ! تَحْذِيرٌ .
قَبْلَ اَيْ تَعْوِلَ عَلَى اَيْ هَذَنَاتِ، كَيْ عَلَى عَلَنِ بِالْوَخَاطِرِ الْأَجْوَهُ عَيْ الْذَّوَائِزِ
الْكَهْرِيَّاتِ .

وَكَيْ عَلَى دَرَاهُ بِالْوَوَارِسَاتِ الْبَقَائِيَّةِ لَوْعُ وَقَعَ اَيْ حَادِثٍ
اَسْتَخِذْ رَقْنَ الْبَلِيِّ الْوَصُّصِ فَهَاهُ كُلَّ تَحْذِيرٍ لِلْعَشْرِ تَزْجُوْهُا

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 waarschuwingssymbool 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 במבנה למונעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ- 250VDC, 20A-M.

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

경고!

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

Waarschuwing

Dit product is afhankelijk van de kortsleutbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning



Warning!

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

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシ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 châssis pour installer ou enlever des composants de système.

ازהרה מפני ניתוק חשמלי.

ازהרה!

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק. לפניה גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل جميع مصادر انطاقت وإزالت سلك انكهرباء من وحدة امداد انطاقت قبم

انصلل إني امانتق انداخهيت نههيكم تشبييج أو إزالت مكتبات الجهاز

경고!

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

Waarschuwing

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

Equipment Installation



Warning!

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

ازهارה!

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

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

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.

אזרע עם גישה מוגבלת
אזהרה!

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

تحصيص هذه الأندية نترك بها فمناطق محظورة تم .
يمكن انصس إلن منطق ممحظورة فقط من خلال استخدام أداة خاصة
أو أوس هُن أخرى نلاًاما قم ومقتاح

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.

ازהה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג החותם מחברת יצרן מומלצת. סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسحبدال البطارية بطريقة غير صحيحة فعليل اسحبدال البطارية

فقط بنفس النوع أو ما يعادلها مما أوصى به الشرمة المصنعة جخلص من البطاريات المنسحุมة وفقا لتعليمات الشرمة الصانعة

경고!

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

Waarschuwing

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

Redundant Power Supplies



Warning!

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד
אוורהה!

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لغسل الوحدة عن الكهرباء

경고!

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

Waarschuwing

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

Backplane Voltage



Warning!

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

バックプレーンの電圧

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

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.

מתוח בפנل האחורי
אוורה!

קיימות סכנת מתוח בפנל האחורי בזמן תפעול המערכת. יש להיזהר ממהלך
העובדה.

هناك خطر من التيار الكهربائي أو الطاقة المبجدة على اللحمة
عندما يكن النظام يعمل كه حذرا عند خدمة هذا الجهاز

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes



Warning!

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

תיאום חוקי החשמל הארץ
אוורה!

התקנת הציג חיבת לחיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يتناسب 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.

التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقاً لجميع القوانين واللائح البيئية عند

경고!

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

Waarschuwing

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

Hot Swap Fan Warning

Warning!



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

ファン・ホットスワップの警告

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

警告!

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

ازهرا!

חלקים נעים מסוימים. התרחק מלהבי המא Orr בפיעולה כאשר מסירים את חלקו המא Orr מהמארז, יתכן והמא Orrים עדיין עובדים. יש להרחק בטווח את הא צבעות וכלי עבודה שונים מהפתחים בתוך המא Orr

تحذير! أجزاء متحركة خطيرة. ابتعد عن شفرات المروحة المتحركة. من الممكن أن المروحة لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيداً عن الفتحات في كتلة المروحة.

경고!

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

Waarschuwing

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

Power Cable and AC Adapter



Warning!

Warning! When installing the product, use the provided or designated connection or procure cables, power cables and AC adaptors complying with local codes and safety requirements including proper cord size and plug. 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、提供または指定および購入された接続ケーブル、電源コードとACアダプターを、該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

**AC כבלים شاملים ומותאמים!
אזהרה!**

אשר נרכשו או AC כאשר מתקנים את המוצר, יש להשתמש בכבליים, ספקים ומתחמים הותאמו לצורך התקנה, ואשר הותאמו לדרישות הבטיחות המקומיות, כולל מידת נוכנה של הcabל והתקע . שימוש בכל או מותאם מסווג אחה, עלול לנגרום לתקלה או קצ'ר השם. בהתאם לחוקי השימוש במכשורי החשמל והוויי הבטיחות, קיים איסור להשתמש בעבר (UL/CSA) (אשר מופיע עליהם קוד של UL-CSA-או ב UL -כבליים המוסמכים ב Supermicro כל מוצר شامل אחד, אלא רק ב מוצר אשר הותאם ע"י.

عند تركيب المنتج، قم باستخدام التوصيات المتوفرة أو المحددة أو قم بشراء الكابلات الكهربائية ومحولات التيار المتزددة مع الالتزام بقوانيين ومتطلبات السلامة المحلية لها في ذلك حجم الموصول والقبسات السليمة. استخدام أي كابلات ومحولات أخرى قد يتسبب في عطل أو حريق. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام مع أي معدات أخرى غير المنتجات المعنية (UL/CSA) والتي تحمل علامة CSA أو UL الكابلات المعتمدة من قبل Supermicro والمحددة من قبل.

전원 케이블 및 AC 어댑터

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

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

Stroomkabel en AC-Adapter

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

Chapter 5

Advanced Motherboard Setup

This chapter provides detailed information on the X10DRS motherboard. All motherboard 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 motherboard to better cool and protect the system.

5-1 Handling the Motherboard

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 motherboard 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 motherboard, 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 motherboard.

5-2 Cable and Device Connections

All data and power connections between the motherboard 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 motherboards are seated in their bays they plug into the midplane to receive power.

Fan Cabling

Four fans are connected to the midplane while two fans connected to each node.

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 plastic cap.

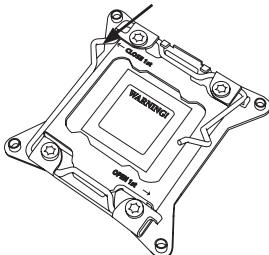
Notes:

- 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 motherboard into the chassis before you install the CPU heatsinks.
- When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

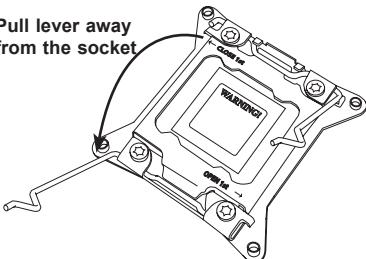
Installing an LGA2011 Processor

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.

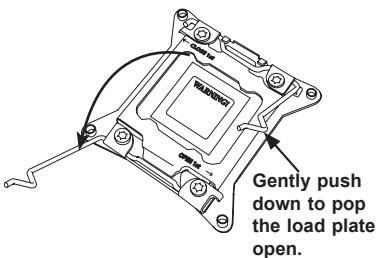
Press down on the lever labeled
'Close 1st'



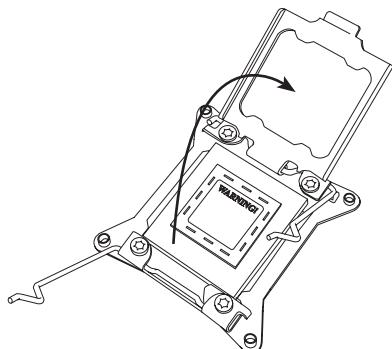
Pull lever away
from the socket



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

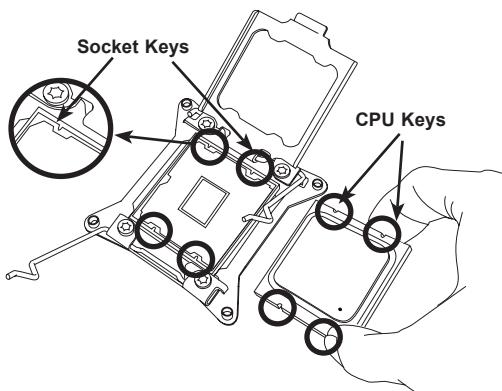


4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.



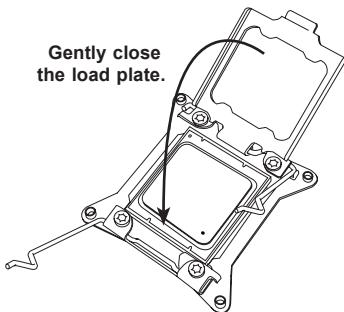
5. Use your thumb and index finger to hold the CPU by its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

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.)

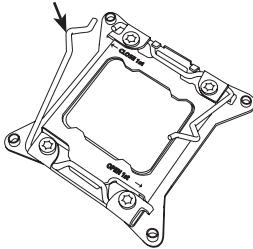


Warning: You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is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

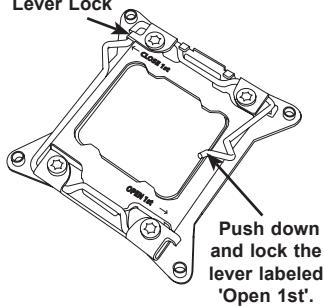
7. With the CPU in the socket, inspect the four corners of the CPU to make sure that they are flush with the socket.
8. Close the load plate. Lock the lever labeled 'Close 1st', then lock the lever labeled 'Open 1st'. Use your thumb to gently push the load levers down until the lever locks.



Push down and lock the lever labeled 'Close 1st'.



Lever Lock



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.

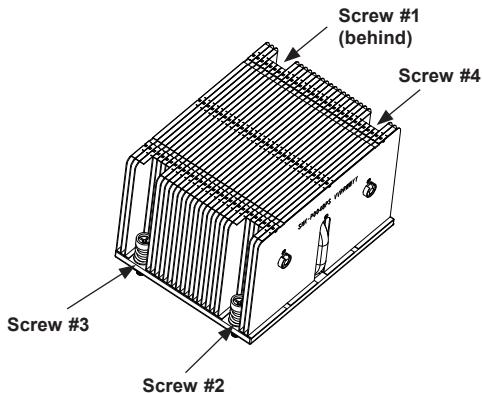


Figure 5-2. Heatsink Installation

Removing the Heatsink

Caution: 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-2U has eight DIMM slots that can support up to 1 TB of LRDIMM (Load Reduced) or 512 GB of Registered (RDIMM) ECC DDR4-2400/2133/1866/1600 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.

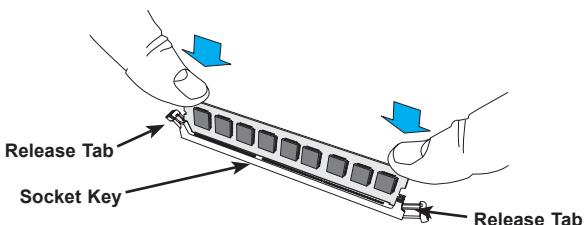


Figure 5-3. DIMM Installation

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-DIMMD1, P2-DIMME1/P2-DIMMF1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1

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)			
				2 Slots per Channel			
		4 Gb		1 DPC		2 DPC	
				E5-2600 V3	E5-2600 V4	E5-2600 V3	E5-2600 V4
		4 Gb	8 Gb	1.2 V	1.2 V	1.2 V	1.2 V
RDIMM	SRx4	8 GB	16 GB	2133	2400	1866	2133
RDIMM	SRx8	4 GB	8 GB	2133	2400	1866	2133
RDIMM	DRx8	8 GB	16 GB	2133	2400	1866	2133
RDIMM	DRx4	16 GB	32 GB	2133	2400	1866	2133
LRDIMM	QRx4	32 GB	64 GB	2133	2400	2133	2400
LRDIMM 3DS	8Rx4	64 GB	128 GB	2133	2400	2133	2400

5-5 Motherboard Details

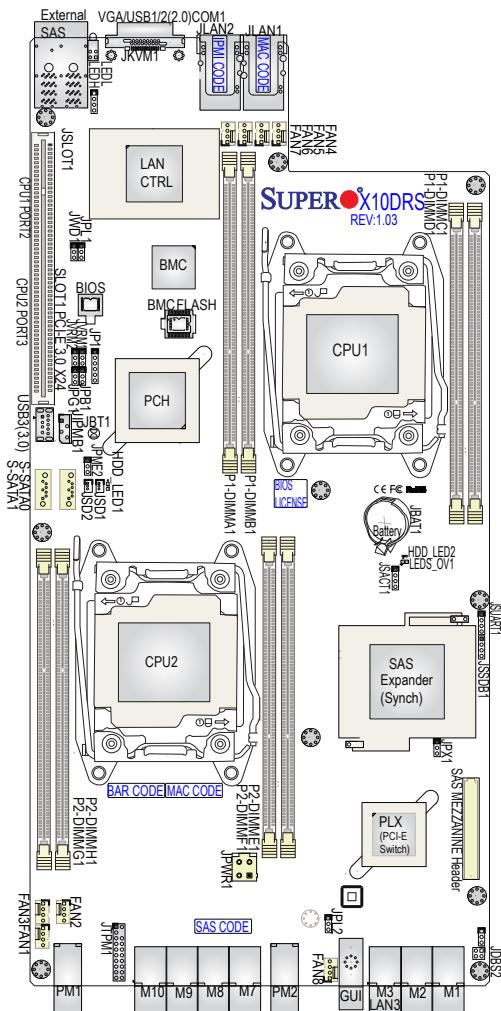


Figure 5-5. X10DRS Layout

(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 I ² C 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	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

5-6 Installing PCI Expansion Cards

Each node in the server can accommodate up to three PCI-E 3.0 x8 expansion cards. The installation procedure is in Chapter 6 of this manual.

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

Two external SAS 3.0 ports are 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.)

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	LFRAFME#	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.

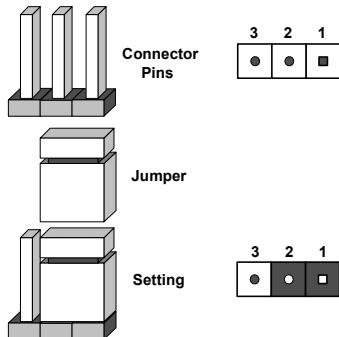
IPMB Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

5-8 Jumper Settings

Explanation of Jumpers

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



LAN1/2 LED (Connection Speed Indicator)	
LED Color	Definition
Off	No Connection, 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 motherboard 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 website contains drivers and utilities for your system at <https://www.supermicro.com/wftp/driver>. Some of these must be installed, such as the chipset driver.

After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash drive or a DVD. (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 motherboard, and "Download the Latest Drivers and Utilities".

Insert the flash drive or disk and the screenshot shown below should appear. DVD drive on your system and the display shown in Figure 5-6 should appear.

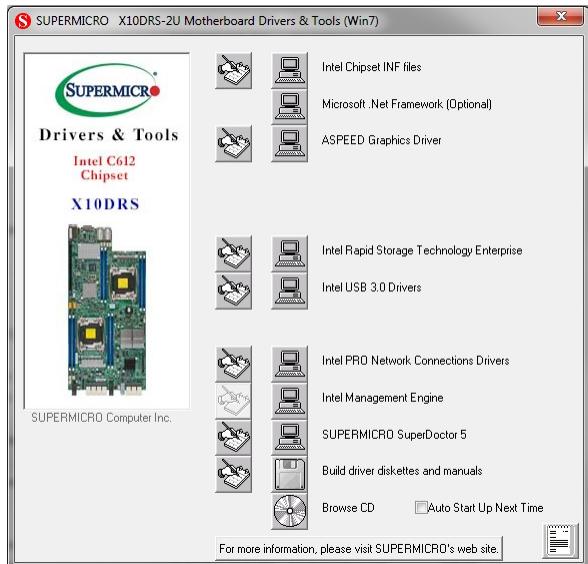


Figure 5-6. Driver/Tool Installation Display Screen

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.

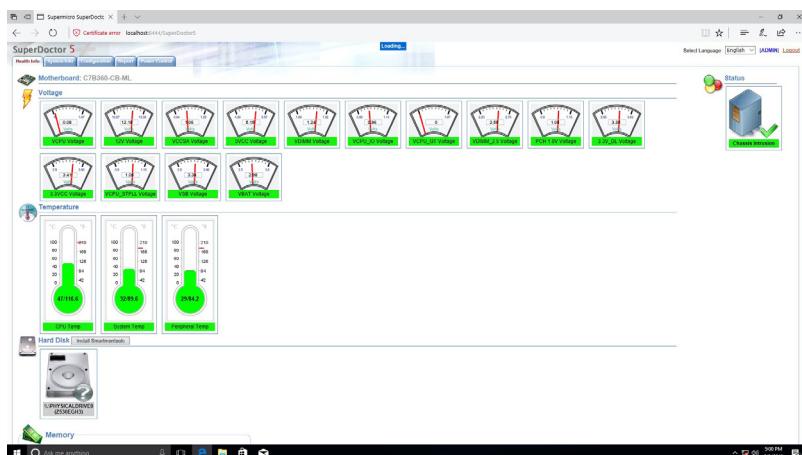


Figure 5-7. SuperDoctor 5 Interface Display Screen (Health Information)

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

5-12 Onboard Battery

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

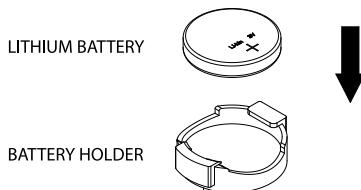


Figure 5-8. Installing the Onboard Battery

Notes

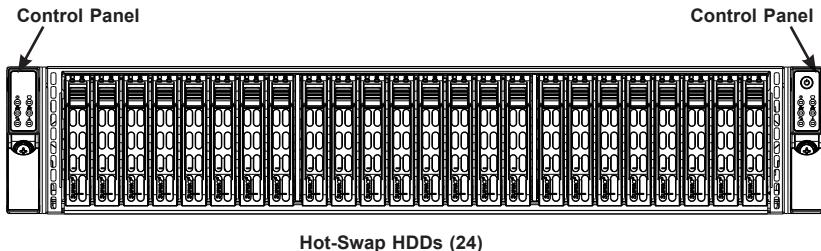
Chapter 6

Chassis Setup and Maintenance

6-1 Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool required is a Phillips screwdriver.

Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: *Warning Statements for AC Systems* and the warning/precautions listed in the setup instructions.



Hot-Swap HDDs (24)

Figure 6-1. Front View

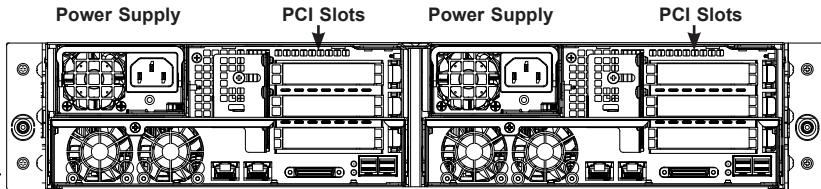


Figure 6-2. Rear View

6-2 Removing Power from the System

Before performing some setup or maintenance tasks, use the following procedure to ensure that power has been removed from the system.

Powering Down One Node

1. Use the operating system to power down the node, following the on-screen prompts.
2. After the node has completely shut down, carefully grasp the head of the power cord and pull it from the back of the power supply module. If your system has dual power supplies, remove the cords from both modules.
3. Disconnect the cords from the power strip or wall outlet.

For any task that requires removing power from the entire system, power down both nodes as described above.

6-3 Removing the Chassis Cover

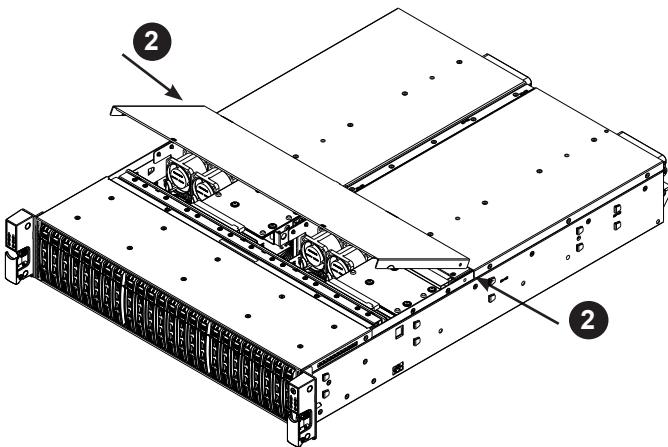


Figure 6-3. Removing the Chassis Cover

Removing the Chassis Cover

1. If necessary, unplug the chassis from any power source
2. Remove the two screws securing the cover to the side of the chassis.
3. Lift the cover up and off.

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

6-4 Installing Hard Drives

The SC927ETS chassis supports twenty-four 2.5" hard drives. They can be removed without powering down the system if your operating system supports RAID. Be sure your data is protected by means of redundancy before replacing a drive.

Each hard drive carrier has two LED indicators. These are described in Chapter 3.

Note: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro website at <http://www.supermicro.com/products/info/files/storage/SBB-HDDCompList.pdf>.

Hard Drive Installation

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow through the drive bays.

Removing Hard Drive Carriers from the Chassis

1. Press the release button on the drive carrier, which will extend the drive carrier handle.
2. Use the drive carrier handle to pull the drive out of the chassis.

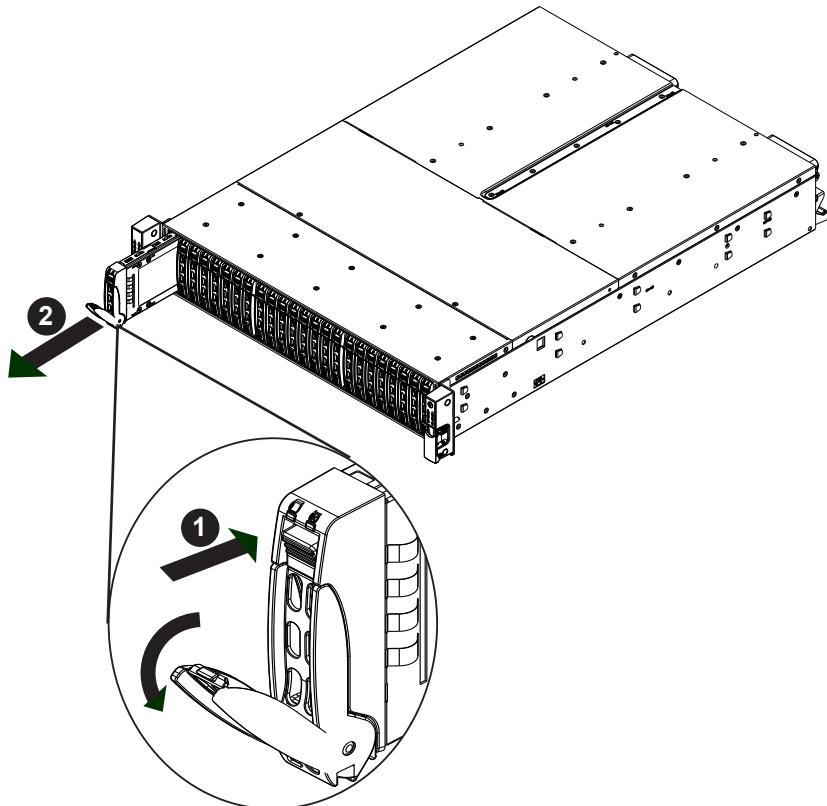


Figure 6-4. Removing a Hard Drive Carrier

Caution: Except for short periods of time, such as swapping hard drives, do not operate the server with the hard drive bays empty.

Installing a Hard Disk Drive

1. Remove the screws connecting the dummy drive to the carrier.
2. Remove the dummy dirve from the carrier.

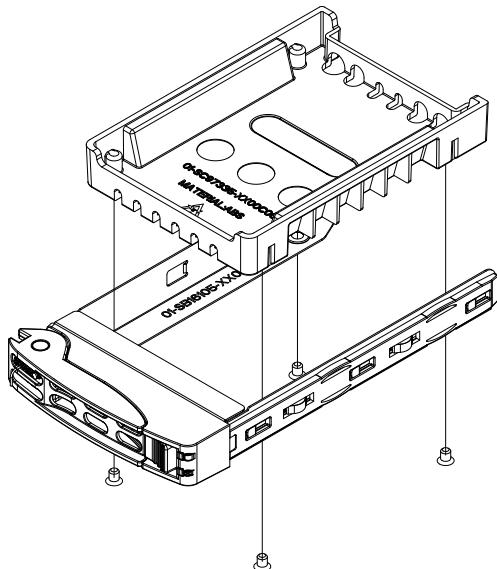


Figure 6-5. Removing a Dummy Drive from the Drive Carrier

3. Place the carrier on a flat, stable surface.
4. Insert the hard drive into the carrier with the printed circuit board side facing downward and so that the mounting holes in the drive align with those in the carrier.

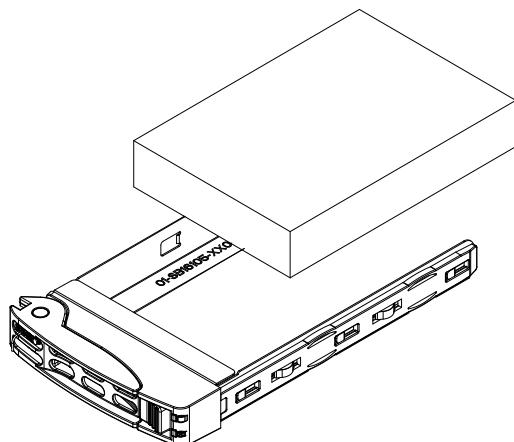


Figure 6-6. Installing a Hard Drive in the Carrier

5. Secure the hard drive to the carrier with the four screws included with the hard drive.
6. Use the open handle of the drive carrier to insert the carrier into the drive bay.
7. Secure the drive carrier into the bay by closing the handle

6-5 Installing PCI Expansion Cards

Each node in the 2028R-DE2CR24L can accommodate up to three half-height PCI-E 3.0 x8 expansion cards.

Installing an Expansion Card

1. In the node you wish to populate, locate the riser card.
2. Insert the expansion card(s) into the slots in the riser card.
3. Insert the riser card into the expansion slot on the motherboard while fitting the PCI brackets into the rear of the node chassis. Secure with a screw.

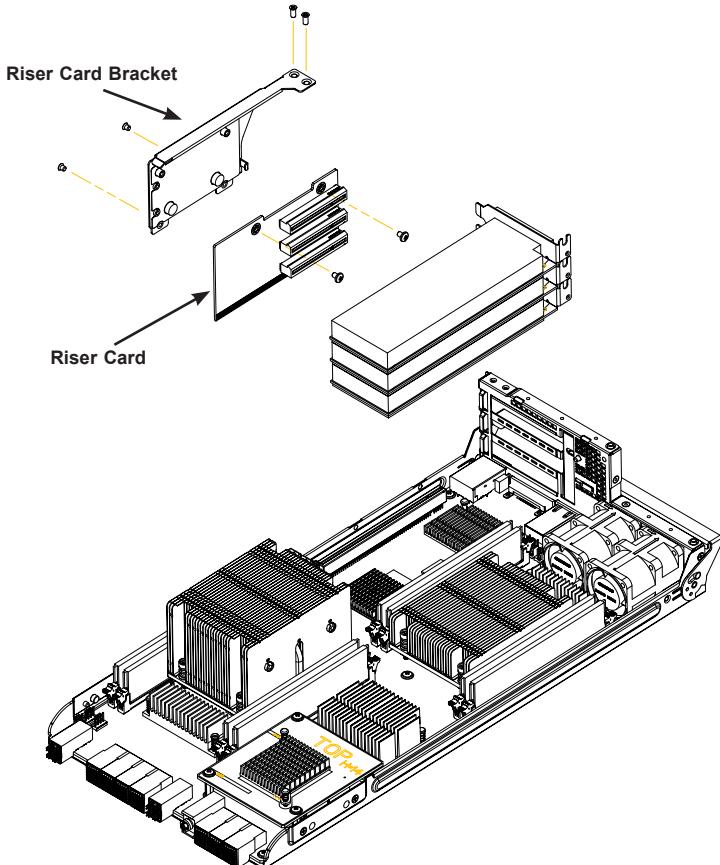


Figure 6-7. Installing Expansion Cards

6-6 System Fans

The system includes a total of eight doubled fans--four mid-chassis controlled by the backplane, and two at the rear of each motherboard node. See Figures 6-8 and 6-9.

Fan speed is controlled by system temperature using an IPMI setting. If a fan fails, the remaining fans will ramp up to full speed and the Overheat/Fan fail LED on the related control panel will blink. The system can continue to run with a failed fan.

The fans may also be visually inspected for failure. Remove the top chassis cover while the system is still running to determine which fan has failed.

Replacing System Fans

Fans can be accessed for replacement by opening the top cover or by removing the entire hot-swap server module. Replace any failed fan at your earliest convenience with the same type and model (p/n FAN-0157L4, available from Supermicro).

Note: An air shroud has been preinstalled to fit over CPU2 and should not be removed.

It is important that the chassis cover is properly installed and making a good seal to properly cool the components.

Replacing Node Fans

1. Shut down 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 node tray.
3. Use the bar to pull the node tray 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 node 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.

Replacing the Mid-Chassis Fans

Remove the chassis top cover to replace the fans.

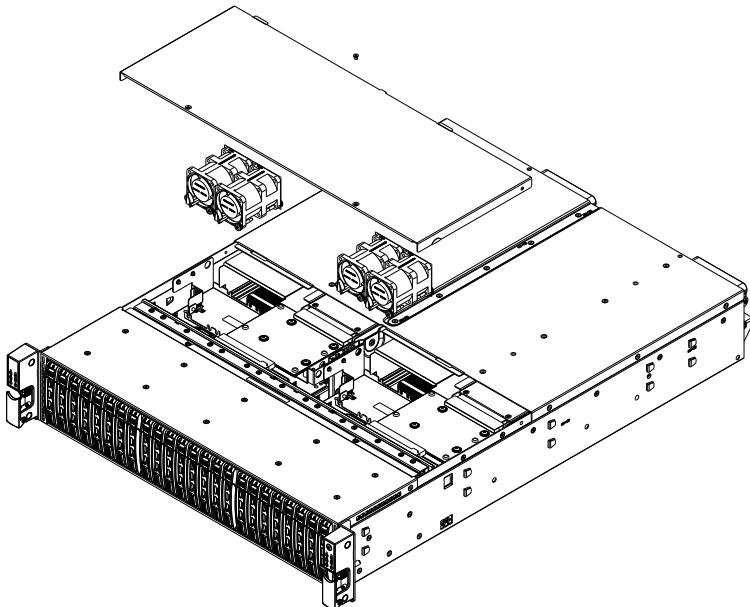


Figure 6-8. Mid-chassis Fans

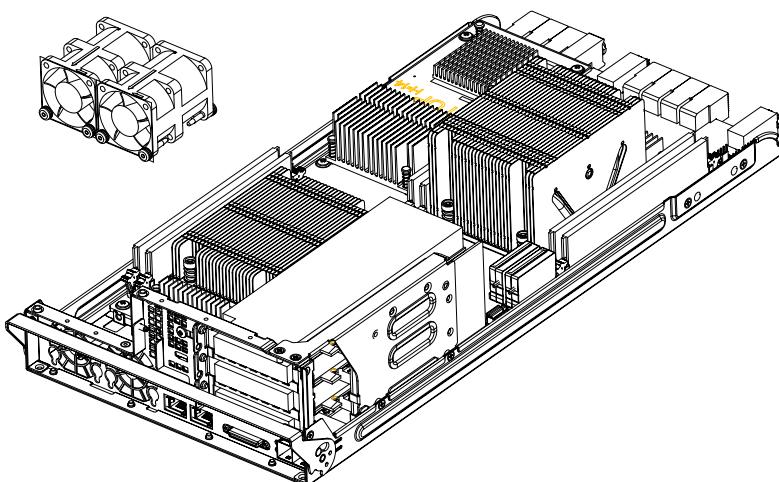


Figure 6-9. Node Fans

6-7 Installing the Air Shrouds

Air shrouds concentrate airflow to maximize fan effectiveness. Install two on each node.

Installing the Air Shrouds

1. Power down the node and remove it from the chassis.
2. Place the air shrouds in the chassis as pictured below.
3. Secure with screws.

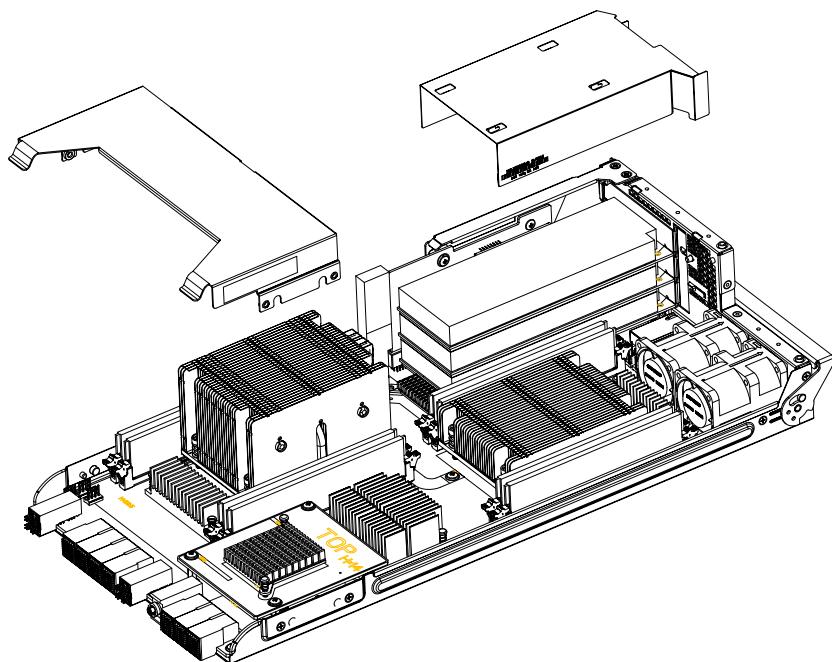


Figure 6-10. Air Shroud Installation

6-8 Power Supply

The chassis features redundant power supplies. They are hot-swappable, meaning they can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120v or 180-240v. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Changing the Power Supply:

1. Unplug the AC cord from the module to be replaced.
2. Push the release tab on the back of the power supply as illustrated.

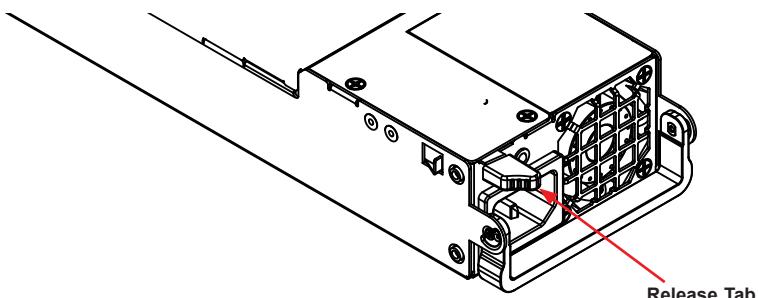


Figure 6-11. Power Supply Release Tab

3. Pull the power supply out using the handle provided.
4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay until it clicks.
6. Plug the AC power cord back into the module.

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 at the appropriate time during system boot.

How to Start the Setup Utility

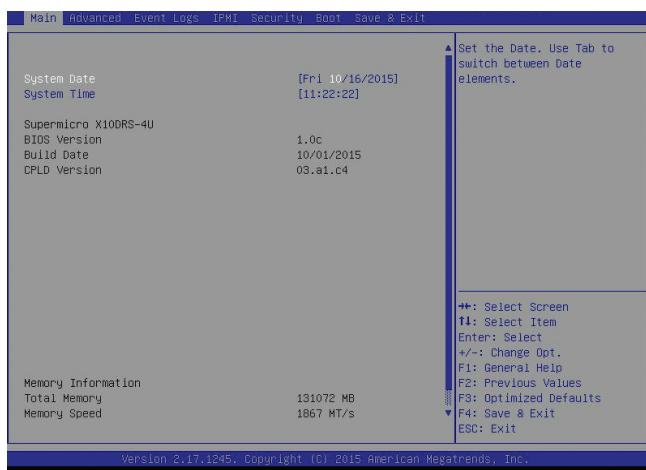
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the 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-2U

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.

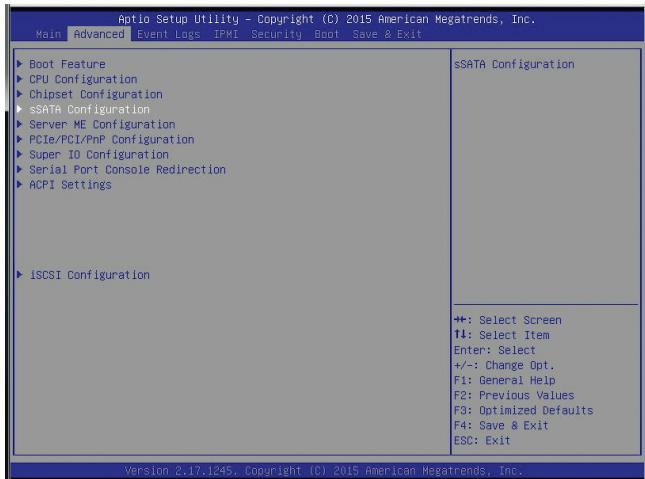
Memory Information

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 Bifurcation 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 Bifurcation 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 Bifurcation 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 Bifurcation 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 Bifurcation 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 Bifurcation 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

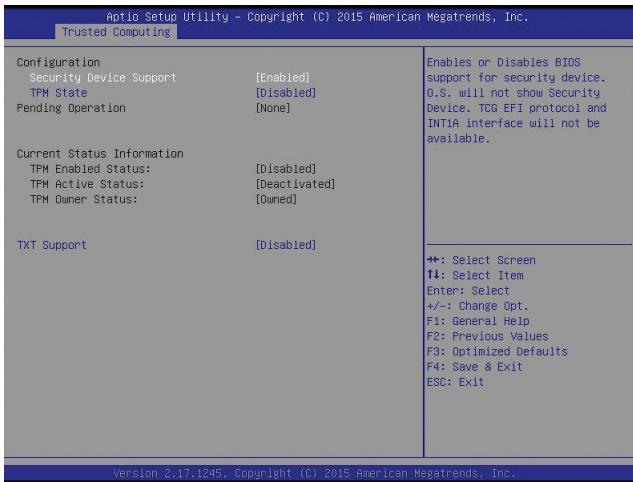
Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None**, Hardware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

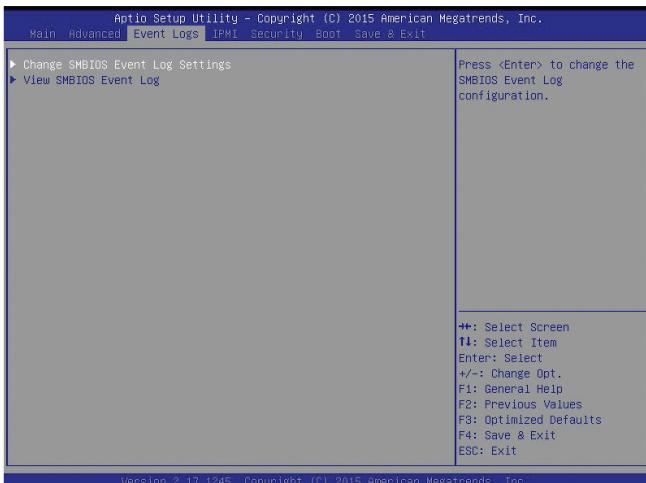
►Add an Attempt

►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.

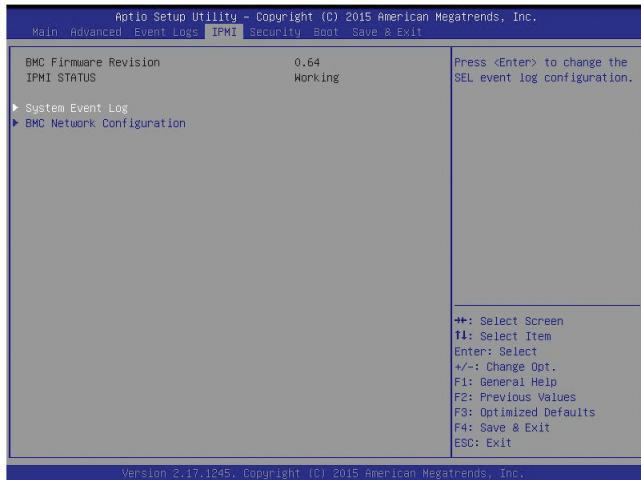
►View SMBIOS Event Log

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

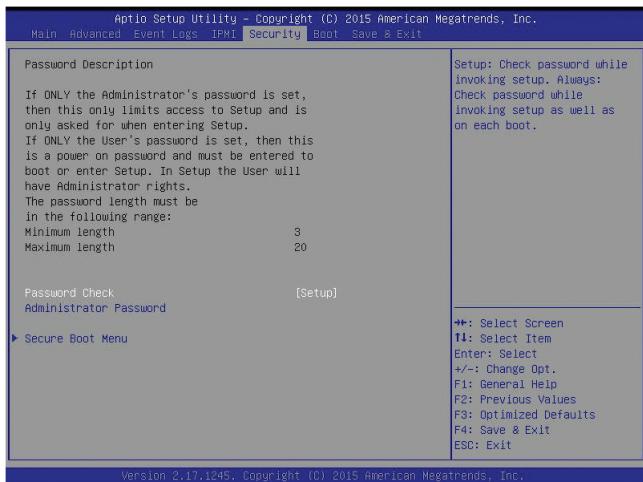
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

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

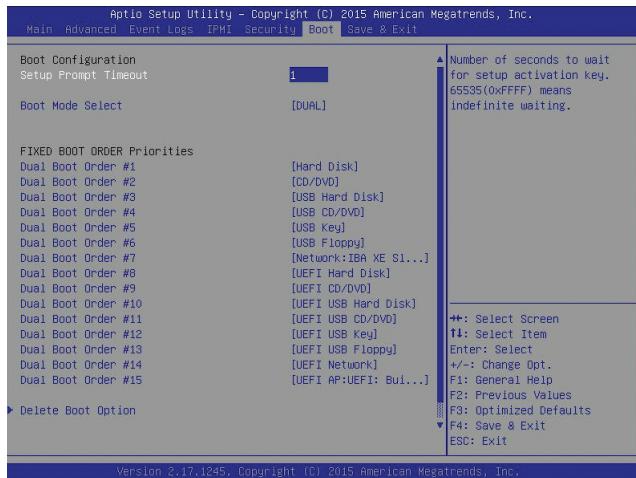
Select <Yes> to confirm that the new DBX files will be downloaded to the Non-Volatile RAM (NVRAM).

►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 the 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

UEFI BIOS Recovery Instructions

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

B-1 An Overview to the UEFI BIOS

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

B-2 How to Recover the UEFI BIOS Image (-the Main BIOS Block)

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The boot block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a new BIOS image if the original main BIOS image is corrupted. When the system power is on, the boot block codes execute first. Once it is completed, the main BIOS code will continue with system initialization and bootup.

Note: Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS boot crashes. However, when the BIOS boot block crashes, you will need to follow the procedures below for BIOS recovery.

B-3 To Recover the Main BIOS Block Using a USB-Attached Device

This feature allows the user to recover a BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or a USB CD/DVD ROM/RW device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

The file system supported by UEFI is FAT (including FAT12, FAT16, and FAT32) installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large because it contains too many folders and files.

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

1. Using a different machine, copy the "Super.ROM" binary image file into the disc Root "\" Directory of a USB device or a writeable CD/DVD.
- Note:** If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS image into a USB flash device and rename it "Super.ROM" for BIOS recovery use.
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system
3. While powering on the system, please keep pressing <Ctrl> and <Home> simultaneously on your keyboard until the following screen (or a screen similar to the one below) displays.

Caution: Please **stop** pressing the <Ctrl> and <Home> keys immediately when you see the screen (or a similar screen) below; otherwise, it will trigger a system reboot.



Note: On the other hand, if the following screen displays, please load the "Super.ROM" file to the root folder and connect this folder to the system. (You can do so by inserting a USB device that contains the new "Super.ROM" image to your machine for BIOS recovery.)



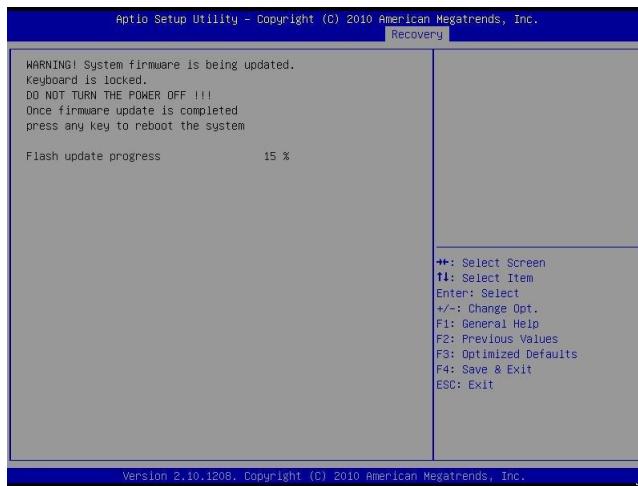
4. After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below.

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



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

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



6. After the process of BIOS recovery is completed, press any key to reboot the system.



7. Using a different system, extract the BIOS package into a bootable USB flash drive.
8. When a DOS prompt appears, enter FLASH.BAT BIOSname.#### at the prompt.

Note: Do not interrupt this process until BIOS flashing is completed.

9. After seeing the message that BIOS update is completed, unplug the AC power cable from the power supply to clear the CMOS, and then plug the AC power cable in the power supply again to power on the system.
10. Press continuously to enter the BIOS Setup utility.
11. Press <F3> to load default settings.
12. After loading default settings, press <F4> to save the settings and exit the BIOS Setup utility.

Appendix C

System Specifications

Processors (each node)

Single or dual Intel Xeon E5-2600 v3/v4 Series Series processors in LGA2011 sockets

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

Chipset

Intel PCH C612 chipset

BIOS

16 MB AMI SPI Flash EEPROM

Memory Capacity (each node)

Eight DIMM slots that can support up to 1 TB of LRDIMM (Load Reduced) or 512 GB of Registered (RDIMM) ECC DDR4-2400/2133/1866/1600 memory

SATA Controller

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 hot-swap drive bays to house 2.5" hard drives

Expansion Slots (each node)

Riser card with three PCI-E 3.0 x8 (in x24 slots)

Motherboard (two per system)

X10DRS-2U (Proprietary form factor)

Dimensions: 17 x 16.8 in (431.8 x 426.7 mm)

Chassis

SC927ETS-R1200B (2U rackmount)

Dimensions: (WxHxD) 17.2 x 3.5 x 26.75 in. (437 x 88 x 679 mm)

Weight

Gross Weight: 67 lbs. (30.4 kg.)

Net weight: 42.5lbs. (19.3 kg.)

System Cooling

Eight doubled 4-cm counter-rotating fans--four mid-chassis, and two on each motherboard node; each fan set contains two fans back-to-back; an air shroud channels air flow

System Input Requirements

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

Rated Input Current: 11 - 4.5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 1200 W (Part# PWS-1K23A-1R) 80 Plus Titanium Certified

Rated Output Voltages: +5V (45A), 3.3V (24A), -12V (0.6A)

Operating Environment

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

Non-Operating Temperature: -40° to 70° C (-40° to 158° F)

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

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

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55032 Class A, EN 61000-3-2/3-3, CISPR 32 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Other: VCCI-CISPR 32 and AS/NZS CISPR 32, CNS14336-1, CNS13438, GB4943.1-2011, GB9254-2008(Class A) and GB17625.1-2012

Environmental: Directive 2011/65/EU and DELEGATED DIRECTIVE (EU) 2015/863 and Directive 2012/19/EU

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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