SUPERSERVER®

4028GR-TR
4028GR-TRT
4028GR-TR2
4028GR-TRT2

USER'S MANUAL

Revision 1.0d

Preface

About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 4028GR-TR(T)(2). Installation and maintenance should be performed by experienced technicians only.

Please refer to the server specifications page on our Web site 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: ftp://ftp.supermicro.com

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

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

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

Warnings

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

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

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

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Chapter 1

Introduction

1-1   Overview

The SuperServer 4028GR-TR(T)(2) is a GPU/Xeon Phi optimized server comprised of two main subsystems: the SC418GTS-R3200B/R4000B 4U server chassis and the X10DRG-O(T)+ motherboard, augmented by a daughter board for PCIe expansion capabilities. The models and features are:

Model	Network Ports	PCIe Board	Power Supply
4028GR-TR	1 Gb	X9DRG-O-PCIE	1600 W, Platinum
4028GR-TRT	10 Gb	X9DRG-O-PCIE	1600 W, Platinum
4028GR-TR2	1 Gb	X10DRG-O-PCIE	2000 W, Titanium
4028GR-TRT2	10 Gb	X10DRG-O-PCIE	2000 W, Titanium

Other components are:

● Eight 9-cm fans (FAN-0151L4)

● One air shroud (MCP-310-41808-0B) over PCI slots

● Two passive CPU heatsinks (SNK-P0048PS)

● Storage Accessories
  One SAS backplane (BPN-SAS3-216A)
  Twenty-four hot-swap drive carriers (MCP-220-00047-0B)

● Riser card (RSC-X9DRG-O)

● One rail set (MCP-290-00057-0N)

Operating systems certified for use with the system are listed on the web site.

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

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

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

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

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

1-2   Motherboard Features

At the heart of the server is the X10DRG-O(T)+-CPU, a dual processor motherboard based on the Intel PCH C612 chipset. Below are the main features. (See Figure 1-1 for a block diagram)

Processors

The X10DRG-O(T)+-CPU supports dual Intel E5-2600 v3/v4 series processors in LGA 2011 sockets (Socket R3). Each processor supports dual Intel QuickPath Interconnect (QPI) links of up to 9.6 GT/s per QPI. Refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The motherboard has 24 DIMM slots that can support up to 3 TB of Load Reduced (LRDIMM) or 1.5 TB of Registered (RDIMM) DDR4 ECC, 288-pin, at 2400/2133/1866/1600/1333 MHz. DIMMs up to 64 GB at 1.2V. See Chapter 5 for details.

Serial ATA

The motherboard supports a ten SATA 3.0 ports. That is four I-SATA, two more I-SATA with SuperDOM support, and four S-SATA. RAID 0, 1, 5 and 10 can be enabled.

PCI Expansion Slots

The system includes a daughter board that supports PCI-E expansion cards.

- Daughterboard X9DRG-O-PCIE (SYS-4028GR-TR[T]) supports eleven PCI-E 3.0 devices, including up to eight double-width graphic processor units (GPUs) with x16 full signal slots, plus two PCI-E 3.0 x8 and one PCI-E 2.0 x4 expansion cards.

- Daughterboard X10DRG-O-PCIE (SYS-4028GR-TR[T]2) supports up to ten double-width GPUs with x16 full signal slots, or eight double width GPUs with three PCI-E 3.0 x16 and one PCI-E 3.0 x8 expansion cards

The daughter boards are further described in Chapter 5.

Note that both CPUs must be installed to enable use of all PCI-E slots.
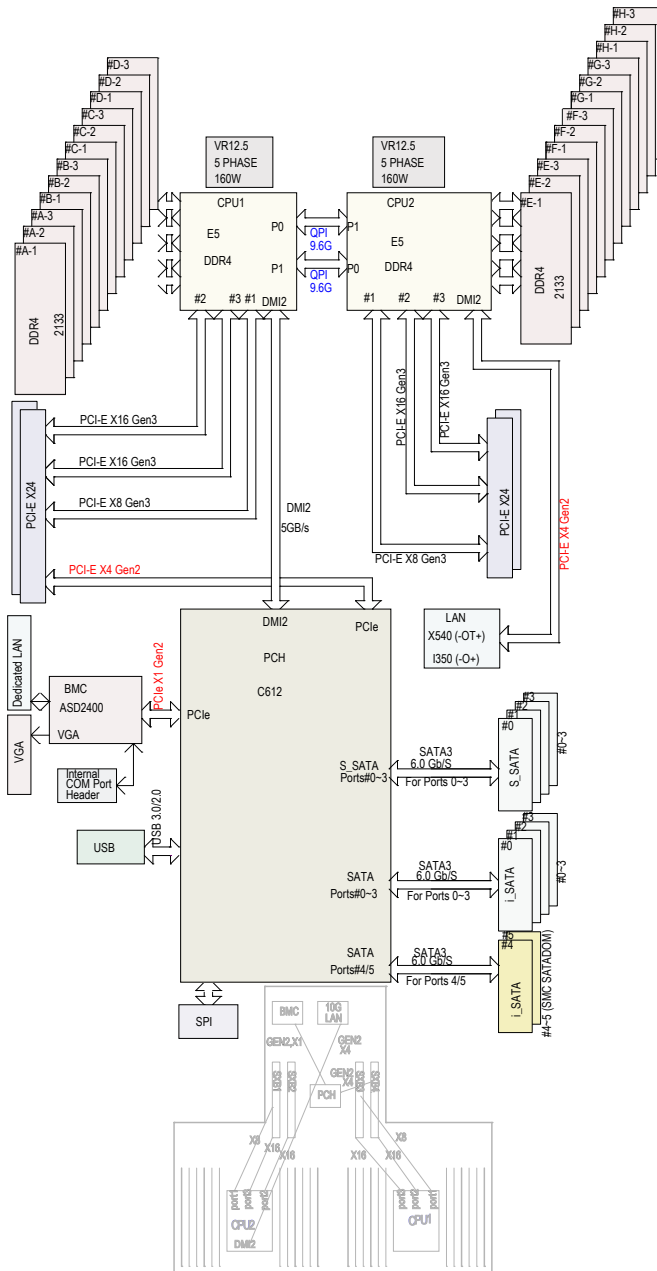
Figure 1-1. Intel PCH C612 Chipset System Block Diagram

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

Input/Output Ports

The rear I/O ports include a VGA (monitor) port, four USB 3.0 ports, two Ethernet LAN ports (1Gb for X10DRG-O+, 10Gb for X10DRG-OT+) and one dedicated IPMI 2.0 LAN port.

The motherboard also includes two headers for four front access USB 2.0 ports and one USB 2.0 Type A port.

IPMI

Intelligent Platform Management Interface (IPMI) 2.0 is a hardware-level interface specification that provides remote access, monitoring and administration for Supermicro servers. IPMI enables administrators to view a server hardware status remotely, receive an alarm automatically if a failure occurs, and power cycle a system that is non-responsive.

1-3   Chassis Features

The 4028GR-TR(T) server uses the SC418GTS-R3200P chassis; the 4028GR-TR(T)2 server uses the SC418GTS-R4000P chassis.

System Power

The chassis features a 2+2 redundant power supply system composed of four hot-plug, high efficiency power modules.

Storage Drives

The chassis includes twenty-four 2.5" drive bays, which house hot-swappable SATA drives.

Front Control Panel

The control panel provides a system monitoring and control interface. LEDs indicate system power, HDD activity, network activity, and a system overheat/fan-fail/UID LED. A main power button and a system reset button are also included.

Cooling System

The chassis has an innovative cooling design that includes eight 9-cm heavy-duty fans. They offer status monitoring through IPM, dual cooling zones, fan speed control, and Pulse Width Modulation (PWM) control.

In addition, an air shroud helps channel air over the motherboard and PCI slots for maximum cooling. The power supply modules also include a cooling fan. All chassis and power supply fans operate continuously.

1-4   GPU Subsystem

The 4028GR-TR(T)(2) server represents one of Supermicro's massively parallel processing multiple GPU/Xeon Phi servers, with support for up to eight GPUs/ Xeon Phis. NVIDIA Tesla GPUs place this system at the forefront of today's GPU computing solutions. Refer to the NVIDIA web site (www.nvidia.com) for details on Tesla GPUs.

The GPUs process complex image calculations and then route the data out through the VGA port on the motherboard.

NVIDIA K40/K80 GPUs have been tested for use with this system. Any combination of these cards (up to a total of eight may have come bundled with the system.

Power Notes

To provide power for the GPU cards, connect the GPU power cable from each of the GPUs to JPW4, 6, 7, 12, 13, 14, 15, 16 on the motherboard (one cable for each card).

1-5   Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)
Web Site:	www.supermicro.com

Asia-Pacific

Address:	Super Micro Computer, Inc.
	3F, No. 150, Jian 1st Rd.
	Zhonghe Dist., New Taipei City 235
	Taiwan (R.O.C)
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3992
Email:	support@supermicro.com.tw
Tel:	+886-(2)-8226-3990
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.

- When initially installing the server to a rack, test that the rail locking tabs engage to prevent the server from being overextended. Have a rack lift in place as a precaution in case the test fails.

- In any instance of pulling the system from the rack, always use a rack lift and follow all associated safety precautions.

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   Procedure for Rack Mounting

This section provides information on installing a 4U chassis into a rack unit with the rails provided. There are a variety of rack units on the market, so the assembly procedure may differ slightly. Also refer to the installation instructions for your rack unit.

Note: This rail will fit a rack between 26.5"and 36.4" deep.

Identifying the Inner Rack Rails

The chassis package includes one pair of rack rail assemblies in the rack mounting kit. Each assembly consists of an inner rail that secures to the chassis and an outer rail that is attached directly to the rack. The inner rails are etched with "L" (Left side) and "R" (Right side).

Inner Rail Assembly
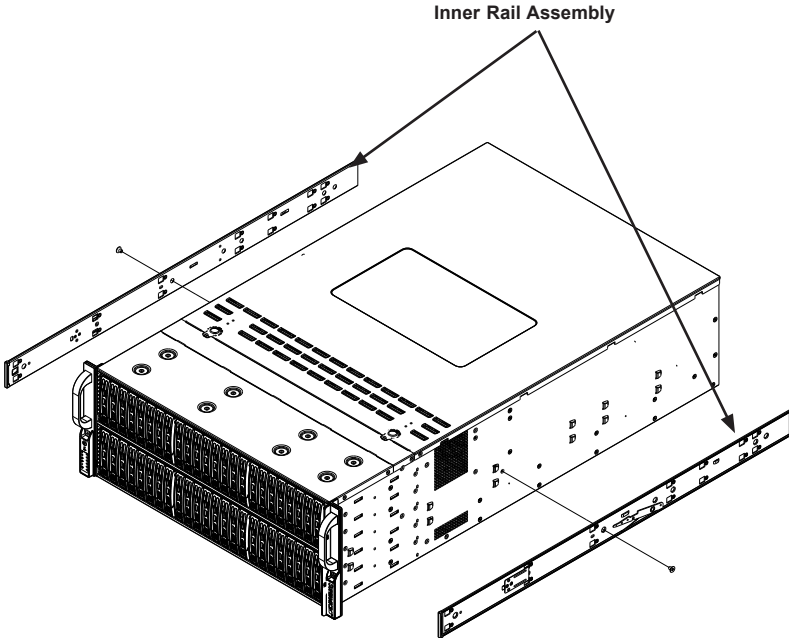
Figure 2-1. Identifying the Rack Rails
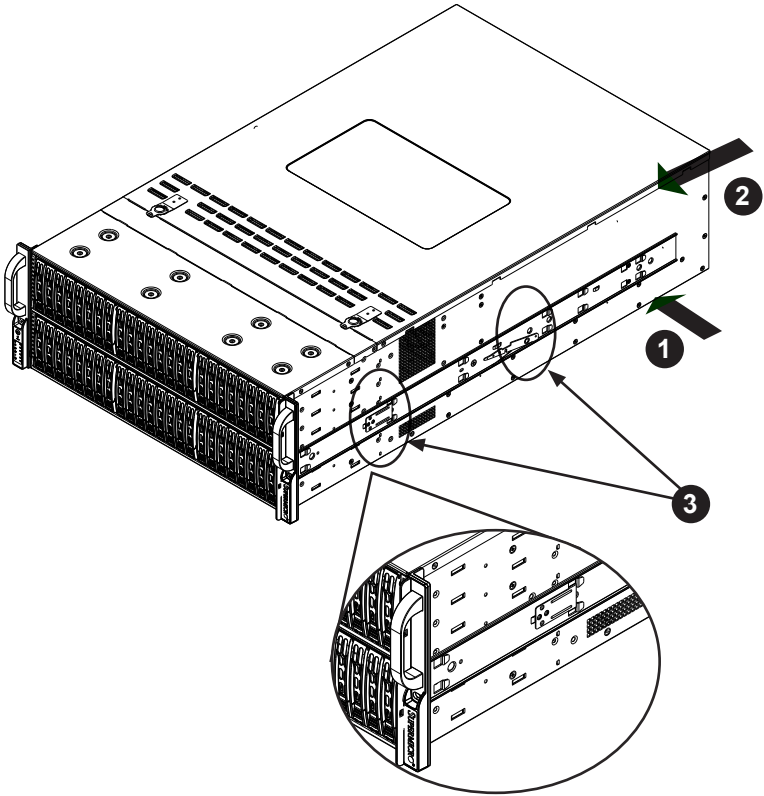
Figure 2-2. Installing the Inner Rails

Installing the Inner Rails on the Chassis

Installing the Inner Rails

1. Identify the left and right side inner rails. Place the correct inner rail on the side of the chassis, aligning the hooks of the chassis with the inner rail holes. Make sure the rail faces "outward" so that it will fit with the rack's mounting bracket.

2. Slide the rail toward the front of the chassis to hook the inner rail onto the side of the chassis.

3. If desired, secure the rail with two flat head M4 x 4mm screws as illustrated.

4. Repeat for the other inner rail.

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

Installing the Outer Rails onto the Rack

Installing the Outer Rails

1. Press upward on the locking tab at the rear end of the middle rail.

2. Push the middle rail back into the outer rail.

3. Hang the hooks on the front of the outer rail onto the square holes on the front of the rack. If desired, use screws to secure the outer rails to the rack.

4. Pull out the rear of the outer rail, adjusting the length until it just fits within the posts of the rack.

5. Hang the hooks of the rear section of the outer rail onto the square holes on the rear of the rack. Take care that the proper holes are used so the rails are level. If desired, use screws to secure the rear of the outer rail to the rear of the rack.

6. Repeat for the other outer rail.
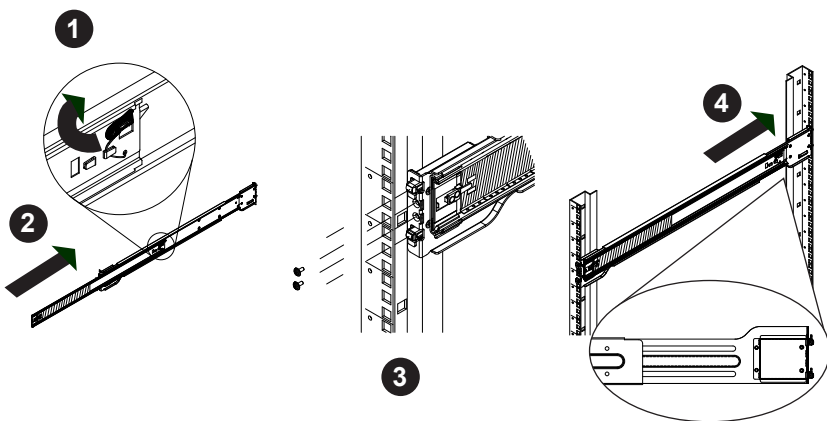
Figure 2-3. Extending and Mounting the Outer Rails

⚠️ **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.
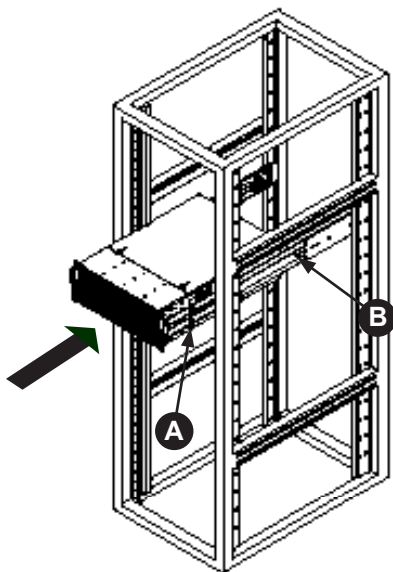
Figure 2-4. Installing the Chassis into a Rack

Note: Figures are for illustrative purposes only. Always install servers into racks in the lower positions first.

Installing the Chassis into a Rack

Installing the Chassis into a Rack:

1. Align the chassis rails (A) with the front of the rack rails (B).

2. Slide the chassis rails into the rack rails, keeping the pressure even on both sides. You may have to depress the locking tabs while inserting. When the server has been pushed completely into the rack, the locking tabs should "click" into the locked position.

3. If screws are used, tighten the screws on the front and rear of the outer rails.

4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

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.
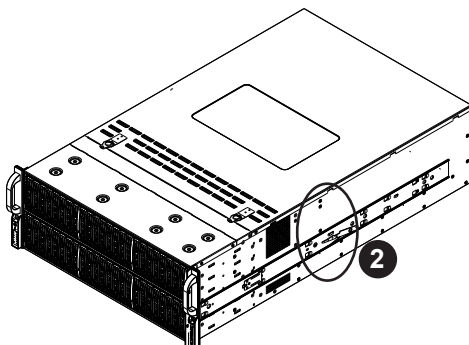
Figure 2-5. Removing the Chassis From the Rack

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.

Chapter 3

System Interface

3-1   Overview

The server includes a control panel on the front that houses power buttons 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.
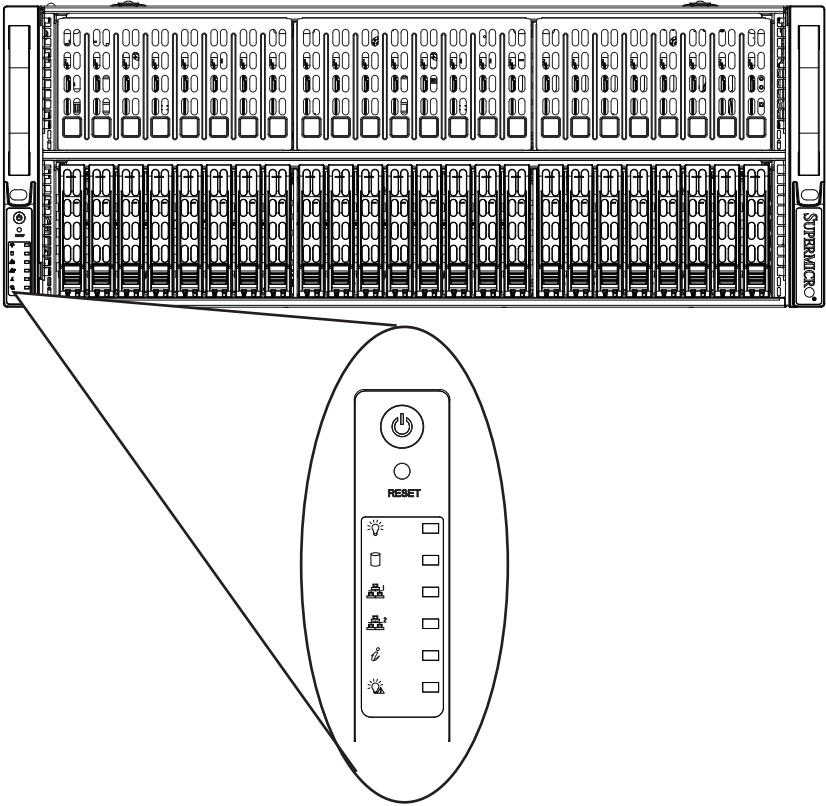
Figure 3-1. Front Control Panel

3-2   Control Panel Buttons

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

Power

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

Reset

The reset button is used to reboot the system.

3-3   Control Panel LEDs

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

Power

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

HDD

Indicates activity on the hard disk drive when flashing.

2

NIC2

Indicates network activity on GLAN2 when flashing.

1

NIC1

Indicates network activity on GLAN1 when flashing.

Information LED

Alerts operator to several states, as noted in the table below.

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occured. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue	Remote UID is on. Use this function to identify the server from a remote location.

Power Fail

Indicates a power supply module has failed.

Overheating

There are several possible responses if the system overheats.

Overheat Temperature Setting

Some backplanes allow the overheat temperature to be set at 45, 50, or 55 by changing a jumper setting. For more information, consult the backplane user manual at www.supermicro.com. (Click Support, then the Manuals link.)

Responses

If the server overheats:

1. Use the LEDs to determine the nature of the overheating condition.

2. Confirm that the chassis covers are installed properly.

3. Check the routing of the cables and make sure all fans are present and operating normally.

4. Verify that the heatsinks are installed properly.

3-4 Drive Carrier LEDs

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

	LED Color	Blinking Pattern	Behavior for Device
Activity LED	Blue	Solid On	SAS/NVMe drive installed
	Blue	Blinking	I/O activity
Status LED	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support

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.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

About Standardized Warning Statements

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

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

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

Warning Definition

Warning!

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

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

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

<div dir="rtl">

תקנון הצהרות אזהרה

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

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

</div>

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

안전을 위한 주의사항

경고!

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

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를

참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

 Warning!

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前，请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

 Warning!

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

Power Disconnection Warning

 Warning!

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

電源切断の警告

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

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前,必須將系統完全斷電,並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !

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

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

경고!

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

Waarschuwing

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

Equipment Installation

 Warning!

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !

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

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

경고!

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

Waarschuwing

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

Restricted Area

 Warning!

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

アクセス制限区域
このユニットは、アクセス制限区域に設置されることを想定しています。
アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

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

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

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

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

경고!

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

Waarschuwing

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

Battery Handling

 Warning!

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

電池の取り扱い

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

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

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies (if applicable to your system)

⚠ **Warning!**

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

冗長電源装置
このユニットは複数の電源装置が接続されている場合があります。
ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

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

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

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

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

Waarschuwing

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

Backplane Voltage (if applicable to your system)

 Warning!

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

バックプレーンの電圧
システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。
修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

هناك خطر من التيار الكهربائي أوالطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 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.

<div dir="rtl">

תיאום חוקי החשמל הארצי

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

</div>

<div dir="rtl">

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

</div>

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

Product Disposal

Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה !
סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

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

경고!

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

Waarschuwing

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

Hot Swap Fan Warning

Warning!

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

ファン・ホットスワップの警告

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

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !

חלקים נעים מסוכנים. התרחק מלהבי המאוורר בפעולה.כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאוררים עדיין עובדים. יש להרחיק למרחק בטוח את

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

경고!

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

Waarschuwing

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

Power Cable and AC Adapter

 Warning!

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

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製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告
安装此产品时，请使用本身提供的或指定的连接线，电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品，电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告
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Warnung

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

¡Advertencia!

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

Attention

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

חשמליים ומתאמי AC

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

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

경고!

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

Waarschuwing

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

Notes

Chapter 5

Advanced Motherboard Setup

This chapter covers connecting cables and describes jumpers. A layout and quick reference chart are included.

The 4028GR-TR(2) uses the X10DRG-O+-CPU motherboard, and the 4028GR-TRT(2) uses the X10DRG-OT+-CPU motherboard. They use the X9DRG-O-PCIE or X10DRG-O-PCIE daughter board to facilitate PCI-E expansion cards.

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.

Unpacking

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

5-2   Connecting Cables

Assuming the X10DRG-O(T)+ motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them. Make sure the red wires connect to the pin 1 locations. See the layout in section 5-6 for connector locations.

Important! Make sure the the cables do not come into contact with the fans.

Connecting Power Cables

The motherboard has many power connectors. See Section 5-7 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-4 for the pin locations.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Section 5-7 for details.

5-3   Input/Output Ports
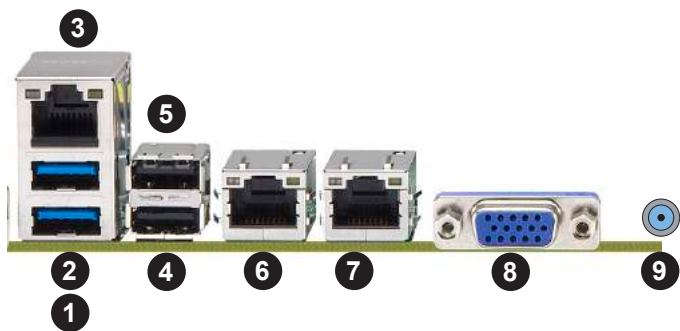
Figure 5-1. I/O Ports

IO Ports			
1.	USB 3.0 Port 5	6.	LAN Port 1
2.	USB 3.0 Port 6	7.	LAN Port 2
3.	IPMI Dedicated LAN	8.	VGA Port
4.	USB 3.0 Port 7	9.	UID Switch
5	USB 3.0 Port 8		

For X10DRG-O+ the LAN ports are 1Gb; for X10DRG-OT+ the LAN ports are 10Gb.

5-4 Installing the Processor and Heatsink

Notes:

- Always remove the power cord before adding, removing or changing a CPU.

- 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.

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

- Avoid placing direct pressure to the top of the processor package.

- Install the processor into the CPU socket before installing the heatsink.

- Refer to the Supermicro web site for updates on CPU support.

Installing an LGA 2011 Processor

Installing a CPU

1. There are two levers on the LGA 2011 socket. First press and release the load lever labeled "Open 1st".

Release the lever labeled "Open 1st"
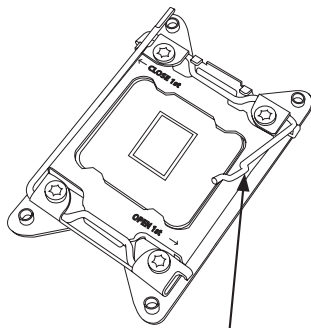
Release the lever labeled "Close 1st"

2. Press the second load lever labeled "Close 1st" to release the load plate from its locked position.
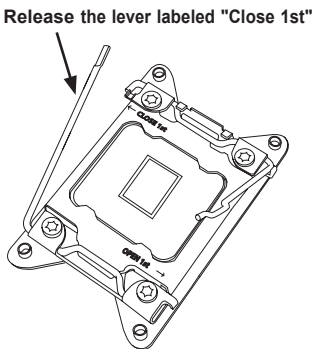
3. With the second lever fully retracted, gently push down on the "Open 1st" lever to loosen the load plate. Lift the load plate with your fingers to open it completely.

Open the load plate.
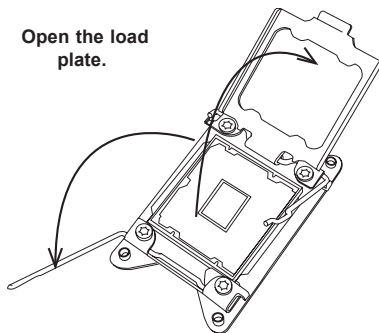
4. Pop the plastic cap marked "Warning" out of the load plate.

IMPORTANT!

5. Holding the CPU carefully above the socket, orient the CPU so that all keys and edges will fit the socket.
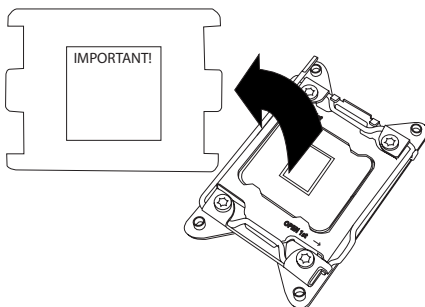
6. Carefully lower the CPU straight down into the socket. Do not move the CPU horizontally, and do not rub the pins of the socket. This may damage the CPU or the socket.
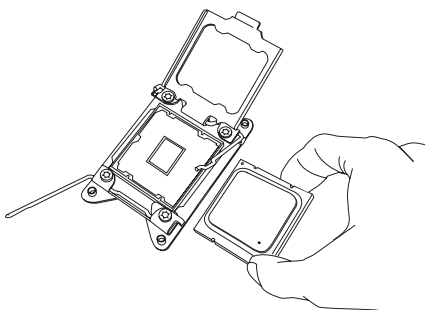
Caution: You can only install the CPU into the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it does not close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

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

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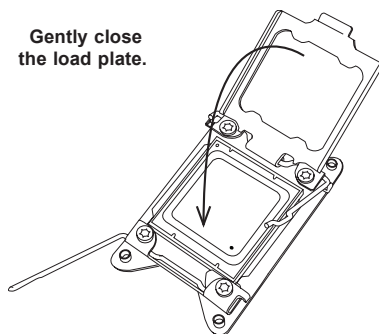
8. Make sure the locking mechanism on the "Close 1st" lever catches the lip of the load plate. Close and lock the "Close 1st" lever.

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

Engage the lip of the load plate and locking portion of the lever."
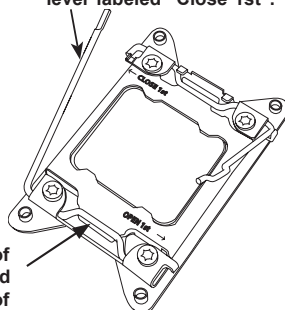
9. Close and lock the "Open 1st" lever.

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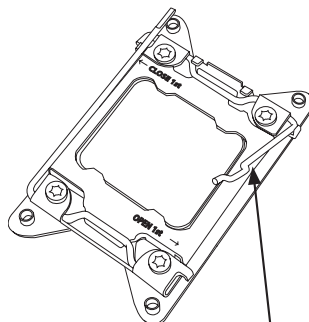
Installing a CPU Heatsink

1. Remove power from the system and unplug the AC power cord from the power supply.

2. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

3. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.

Figure 5-2. SNK-P0048PS

4. Screw in two diagonal screws until just snug. Do not fully tighten the screws or you may damage the CPU.)

5. Add the two remaining screws then finish the installation by fully tightening all four screws.
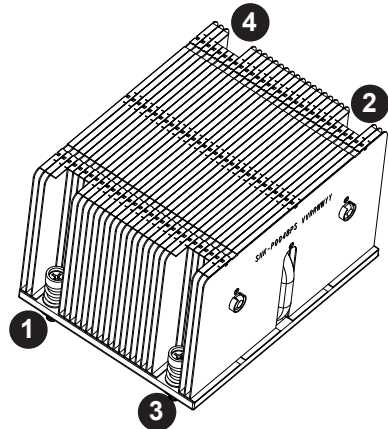
Removing the Heatsink

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

1. Unplug the power cord from the power supply.

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

3. Hold the heatsink and gently wriggle it to loosen it from the CPU. (Do not use excessive force!)

4. Once the heatsink is loosened, remove it from the CPU.

5. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before re-installing the heatsink.

5-5   Installing Memory

The motherboard supports up to 3 TB of Load Reduced (LRDIMM) or 1.5 TB or Registered (RDIMM). Memory modules should be DDR4 ECC 288-pin 2400/2133/1866/1600 MHz in 24 slots. Memory speed is dependent on the CPUs. For best memory performance, install memory modules of the same type and same speed. For the latest CPU/memory updates, refer to the Supermicro website.

Caution: Exercise care installing or removing DIMM modules to avoid damage.

Installing Memory Modules

Insert the desired number of DIMMs into the memory slots, starting with P1-DIMM 1A

1. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

2. Align the key on the DIMM module with the receptive point on the slot.

3. Use two thumbs together to press on both ends of the module straight down into the slot until the module snaps into place.

4. Press the release tabs to the lock positions to secure the DIMM module into the slot. See Figure 5-2.
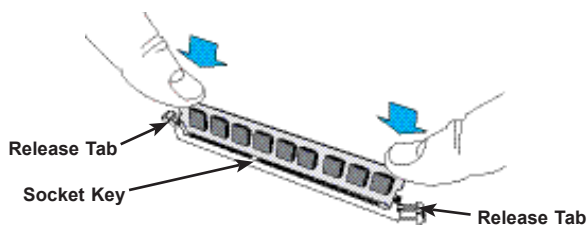
Figure 5-3. Installing DIMM into Slot

Processor/DIMM Population Configurations

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

- Install DIMMs in pairs, that is, use an even number of DIMMs.

- All channels in a system will run at the fastest common frequency.

Processors and their Corresponding Memory Modules												
CPU#	Corresponding DIMM Modules											
CPU 1 P1-DIMM-	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
CPU2 P2-DIMM-	E1	F1	G1	H1	E2	F2	G2	H2	E3	F3	G3	H3

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)				
				3 Slots per Channel				
				1 DPC		2 DPC		3 DPC	
				E5-2600 V3	E5-2600 V4	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	1.2 V	1.2 V
RDIMM	SRx4	8 GB	16 GB	2133	2400	1866	2133	1600	1600
RDIMM	SRx8	4 GB	8 GB	2133	2400	1866	2133	1600	1600
RDIMM	DRx8	8 GB	16 GB	2133	2400	1866	2133	1600	1600
RDIMM	DRx4	16 GB	32 GB	2133	2400	1866	2133	1600	1600
LRDIMM	QRx4	32 GB	64 GB	2133	2400	2133	2400	1600	1866
LRDIMM 3DS	8Rx4	64 GB	128 GB	2133	2400	2133	2400	1600	1866

5-6 Motherboard Details
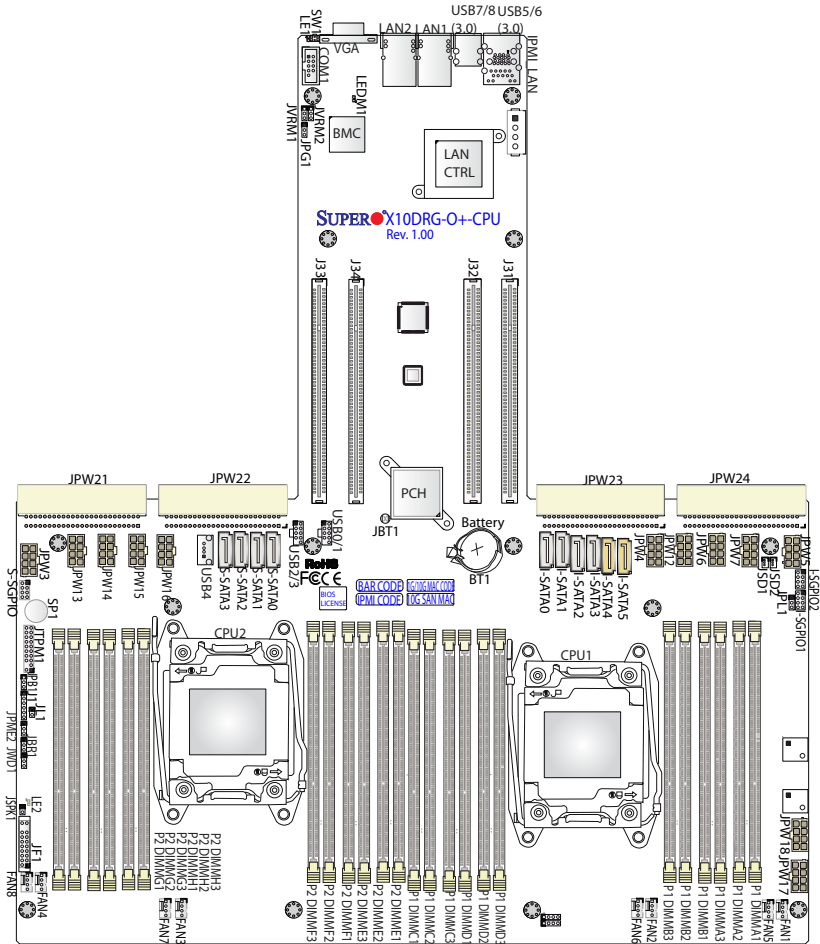
Figure 5-4. X10DRG-O(T)+ Layout

Notes

Jumpers not indicated are for test purposes only.

"■" indicates the location of Pin 1.

The X10DRG-OT+ supports two X540-based 10G LAN ports, the X10DRG-O+ supports two I350-based 1G LAN ports.

Jumpers		
Jumper	**Description**	**Default Setting**
JBT1	Clear CMOS	See Section 5-8
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JPME2	Manufacturer (ME) Mode Select	Pins 1-2 (Normal)
JWD1	Watch-Dog Timer Enable	Pins 1-2 (Reset)

Connectors	
Connectors	**Description**
Battery (JBT1)	Onboard CMOS battery
COM1	Backpanel COM Port 1 for front access
FAN1-FAN8	CPU/system cooling fan headers (Fans 1-8)
JF1	Front_Panel_Control header
J31, J32, J33, J34	PCI-E Slots (J31/J32: supported by CPU1; J33/J34: supported by CPU2; used by PCI-E daughter board)
JL1	Chassis intrusion header
SP1	Onboard speaker header
JPW21/22/23/24	Proprietary main power connectors
JPW3-7, JPW12-18	12V 8-pin power connectors (JPW17/JPW18: white power connectors used for BPD HDDs only.)
JSD1/JSD2	Power connector SATA DOM
JTPM1	TPM (Trusted Platform Module)/Port 80 header
JVRM1/JVRM2	VRM 1²C (SMBus) to CPU headers
LAN1/LAN2	G-bit Ethernet (GLAN) ports 1/2
IPMI_LAN	IPMI_dedicated LAN support by the Aspeed controller
SP1	Internal buzzer/speaker
(I-)SATA 0-3	SATA 3.0 connectors from Intel PCH
(I-)SATA 4/5	SATA SuperDOM connectors from Intel PCH
(S)-SATA0-3	SATA connectors from Intel SCU
I-SGPIO1/2	Serial_Link General-Purpose I/O (SGPIO) headers for I-SATA connections (I-SGPIO1 for I-SATA0-3, I-SGPIO2 for I-SATA4/5)
S-SGPIO	Serial_Link General-Purpose I/O (SGPIO) headers for S-SATA connections (S-SATA0-3)
SW1	UID (Unit Identifier switch)
USB 0/1	USB 2.0 connections 0/1 for front access
USB 2/3	USB 2.0 connections 2/3 for front access
USB 4	Type A USB (2.0) connector 4 for front access
USB 5/6, 7/8	USB 3.0 rear panel connectors

LED Indicators			
LED	Description	State	Status
LE1	Rear UID LED	Blue: On	Unit Identified
LE2	Onboard PWR LED	On	System Power On
LEDM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

Daughter Boards

The system includes a daughter board for GPU/PCIe expansion capabilities.
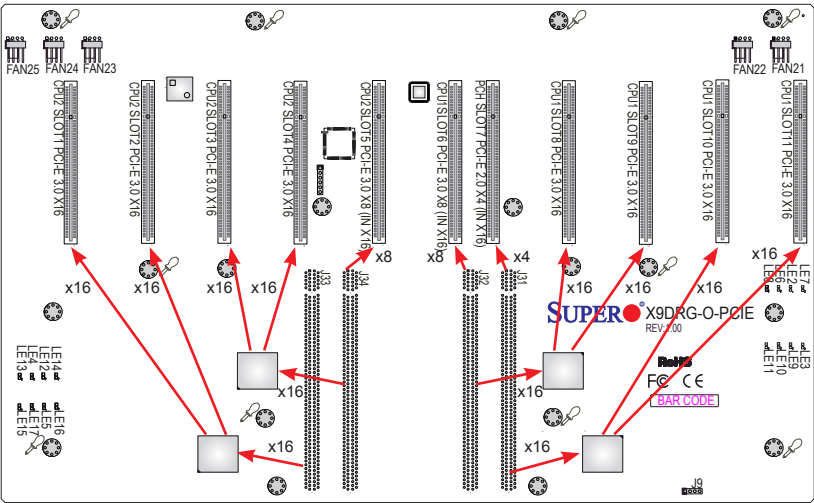
Figure 5-5. X9DRG-O-PCIE Daughter Board (for 4028GR-TR[T])
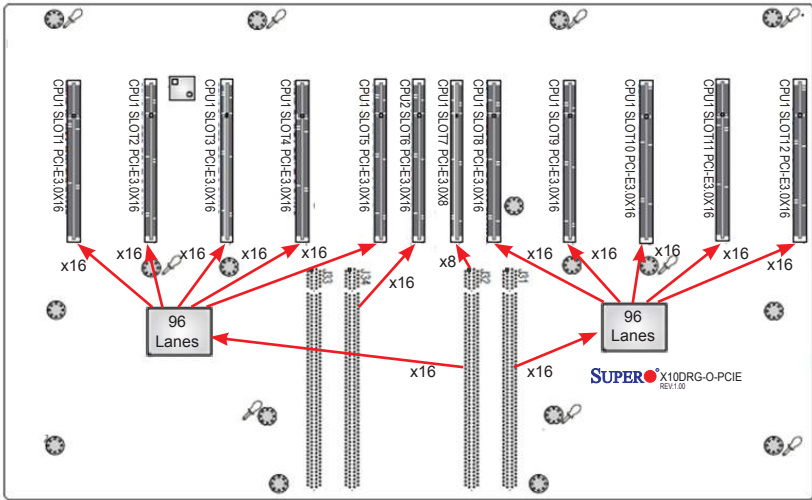
Figure 5-6. X10DRG-O-PCIE Daughter Board (for 4028GR-TR[T]2)

5-7   Connector Definitions

Power Connectors

The motherboard has four proprietary main power connectors (JPW21-JPW24). These must be connected to the power supply to provide adequate power to the system. The motherboard also includes ten 8-pin GPU power connectors (JPW3-7, JPW12-16). See the table on the right for the pin definitions.

Note: The two white JPW17/18 connectors are reserved for BPD HDD use only.

12V 8-pin Power Connector Pin Definitions	
Pins	Definition
1 through 3	+12
4 through 8	Ground

Control Panel Connectors

	20	19	
Ground	●	●	NMI
x (Key)	●	●	x (Key)
Power On LED	●	●	3.3V
HDD LED	●	●	FP UID/3.3V Stby
NIC1 LED (Link)	●	●	NIC1 LED (Activity)
NIC2 LED (Link)	●	●	NIC2 LED (Activity)
OH/Fan Fail/UID LED	●	●	Blue LED (UID Cathode)
PWR Fail LED	●	●	3.3V
Ground	●	●	Reset (Button)
Ground	●	●	Power (Button)
	2	1	
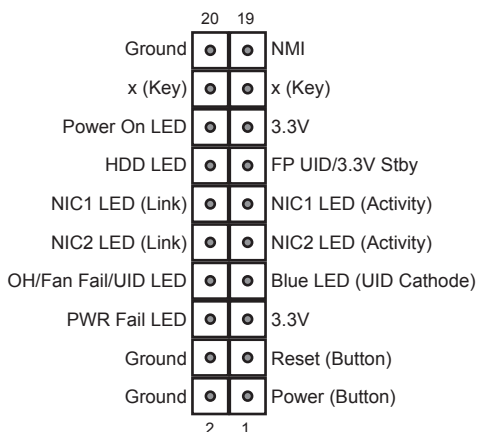
Figure 5-7. JF1 Control Panel Header Pins

Power Button Connector

The PW_ON connector is on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS, see Chapter 7). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

This header should be connected to the chassis power button.

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

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

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

Power Fail LED

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

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

Overheat/Fan Fail/UID LED

Connect an LED cable to pins 7 and 8 of JF1 for the Overheat/Fan Fail and UID LED connections. The Red LED on pin 8 provides warnings of overheating or fan failure. The Blue LED on pin 7 works as the front panel UID LED indicator. UID switch is located on pin 13 of JF1. Refer to the tables on the right for more information.

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

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

NIC2 (LAN2) LED

The LED connections for LAN2 are on pins 9 and 10 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Activity LED
10	Link LED

NIC1 (LAN1) LED

The LED connections for LAN1 are on pins 11 and 12 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Activity LED
12	Link LED

HDD LED/ UID Button

The HDD LED connection is pin 14 of JF1. It lights the LED upon HDD activity.

The pin 13 connection carries the signal from the UID button on the front panel. It lights the UID LED (on pin 7 of JF1). The UID button toggles on or off the UID LED to assist a technician in finding the unit among other servers in a rack.

HDD/UID LED Pin Definitions (JF1)	
Pin#	Definition
13	UID Signal/3.3V
14	HDD Activity

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

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

NMI Header

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

NMI Button Pin Definitions (JF1)	
Pin#	Definition
1	Control
2	Ground

Rear Input/Output Connections

Universal Serial Bus (USB)

Four USB 3.0 ports (USB 5, 6, 7, and 8) are accessable on the I/O panel at the rear of the chassis. In addition, two internal headers provide four USB 2.0 connections (USB 0/1, USB 2/3) for front panel support. Also provided is one internal header for a Type A USB 2.0 connection (USB 4). Cables are not included.

Ethernet Ports

Two Ethernet ports (LAN1, LAN2) are located on the rear I/O panel. These Ethernet ports support 10G LAN connections on the X10DRG-OT+, and Gigabit LAN connections on the X10DRG-O+.

In addition, an IPMI_Dedicated LAN that supports Gigabit LAN is located above USB 4/5 ports on the rear I/O shield. All Ethernet ports accept RJ45 type cables.

Video Connection

A video (VGA) port is located next to LAN ports 0/1 on the rear I/O shield. Refer to the motherboard layout below for the location.

Unit Identifier

The Unit Identifier (UID) system can assist a technician in finding the unit among other servers in a rack. There is a switch and a blue LED on the rear I/O panel, and a switch and a blue LED on the front control panel. Pressing either switch toggles both LEDs on or off. The UID function can also be triggered using IPMI.

The rear switch is labeled SW1; the rear LED is labeled LE1. The front switch and LED are described with the connector JF1.

Internal Headers

Fan Headers

The motherboard has eight system/CPU fan headers (Fans 1~8). All are 4-pin fan headers, which are backward compatible with traditional 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via IPMI 2.0 interface. See the table on the right for pin definitions.

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

Internal Speaker

The speaker header, located at SP1, provides audible alarms for various beep codes. See the table on the right for pin definitions.

Internal Speaker Pin Definitions		
Pin#		Definitions
Pin 1	Pos. (+)	5V
Pin 2	Neg. (-)	Alarm Speaker

TPM/Port 80 Header

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

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

I-SGPIO1/2 & S-SGPIO Headers

Three SGPIO (Serial-Link General Purpose Input/Output) headers are provided on the motherboard. I-SGPIO1 supports I-SATA 0-3, I-SGPIO2 supports I-SATA 4/5. S-SGPIO is used for S-SATA 0-3. See the table on the right for pin definitions.

T-SGPIO Pin Definitions			
Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to trigger an alert when the chassis is opened.

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

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 Serial Link DOM devices.

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

Serial Port

A COM connection (COM1) is located on the motherboard near the VGA port.

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.

Connector Pins

| 3 | 2 | 1 |

Jumper

Setting

| 3 | 2 | 1 |

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.
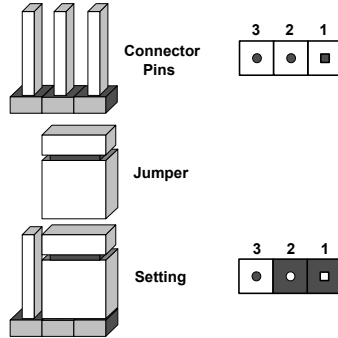
CMOS Clear

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/LAN2 Ethernet ports on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

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

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA.

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

Watch Dog Enable/Disable

JWD1 controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. The jumper on pins 1-2 (default) causes the Watch Dog to reset the system if an application hangs. The jumper on pins 2-3 generates 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 must write their own application software to disable the Watch Dog Timer.

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

BMC Enable/Disable

Use jumper JPB1 to enable or disable the BMC (Baseboard Management Controller), which supports IPMI 2.0/KVM. See the table on the right for jumper settings.

BMC Enable/Disable Jumper Settings	
Both Jumpers	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Manufacturer Mode Select

Close jumper JPME1 to bypass SPI flash security and force the system to operate in Manufacturer Mode, which allows the user to flash the system firmware from a host server to modify system settings. See the table on the right for jumper settings.

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

5-9   Onboard Indicators

LAN Port LEDs

The Ethernet ports have two LEDs. On each port, one LED indicates activity and the other indicates the link speed of the connection. It may be green, amber or off. See the tables for the colors indicating the link speed.

LAN 1/2

Link LED ──────── Activity LED

GLAN Activity Indicator LED		
Color	Status	Definition
Yellow	Flashing	Active

LAN Link LED (X10DRG-O+)	
Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

LAN Link LED (For X10DRG-OT+)	
Color	Definition
Off	No Connection, 10 or 100 Mbps
Amber	1 Gbps
Green	10 Gbps

Dedicated IPMI LAN Port LEDs

A dedicated IPMI LAN port is also located on the I/O backplane. The amber LED on the right indicates activity, while the LED on the left indicates the speed of the connection. See the table at right.

IPMI LAN

Link LED ──── Activity LED
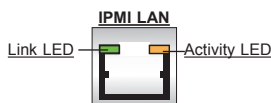
IPMI LAN Port LEDs		
	Color/State	Definition
Link (Left)	Green: Solid Amber: Solid	100 Mbps 1 Gbps
Activity (Right)	Amber: Blinking	Active

Onboard Power LED

An Onboard Power LED is located at LE2. This LED indicator is on when the system is on. Be sure to unplug the AC power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator	
LED Color	Definition
Off	System Off (power cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State

BMC Heartbeat LED

The BMC Heartbeat LED is designated LEDM1. When it is blinking, the BMC (Baseboard Management Controller) is functioning normally.

BMC Heatbeat Indicator LED Status	
Green: Blinking	BMC: Normal

5-10 SATA Ports

There are six Serial ATA 3.0 ports (I-SATA0-I-SATA5), supported by the Intel PCH on the motherboard. There are also four S-SATA connectors (S-SATA0-3), supported by the Intel SCU. I-SATA4/5, colored in yellow, are used with Supermicro SuperDOM (Disk-on-Module) connectors with power pins built in, and are compatible with regular SATA HDDs and SATA DOMs that requires external power cables.

5-11 Installing Software

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

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

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

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-8 should appear.
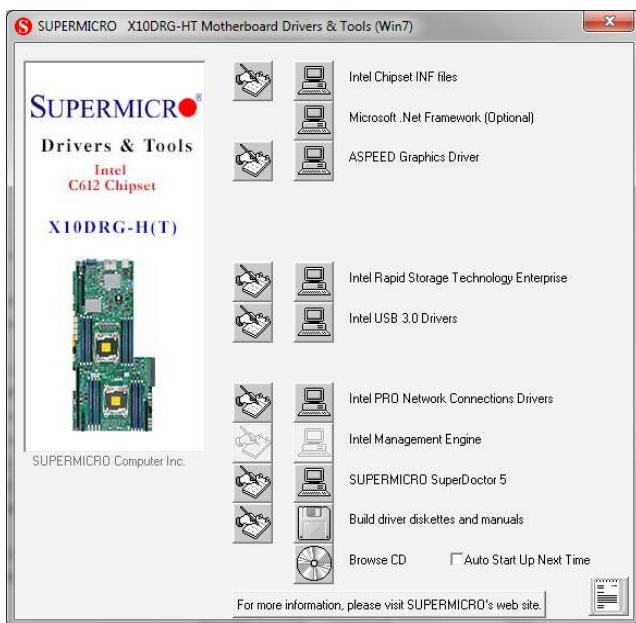
Figure 5-8. Driver Installation Display Screen

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

SuperDoctor® 5

The Supermicro SuperDoctor 5 is a hardware and operating system services monitoring 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 5-9. SuperDoctor 5 Interface Display Screen (Health Information)

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

Figure 5-10. SuperDoctor 5 Interface Display Screen (Remote Control)

Note: The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/nfo/sms_sd5.cfm. For Linux, we recommend that you use the SuperDoctor II application instead.

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.

LITHIUM BATTERY

BATTERY HOLDER
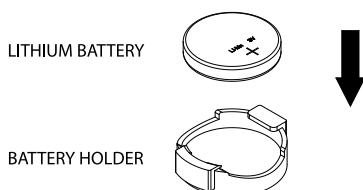
Figure 5-11. Installing the Onboard Battery

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC418GTS-R3200BP chassis. The only tool required is a Phillips screwdriver.

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

Control Panel　　　　　**Hard Disk Drives (24)**
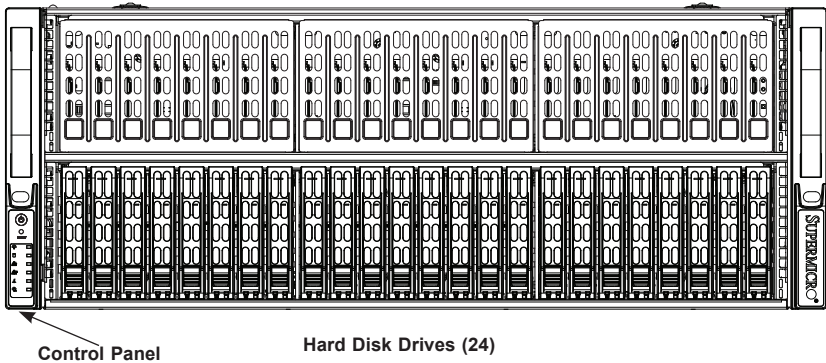
Figure 6-1. Front Chassis View

Power Supplies　　　　**I/O Ports**　　　　**Power Supplies**
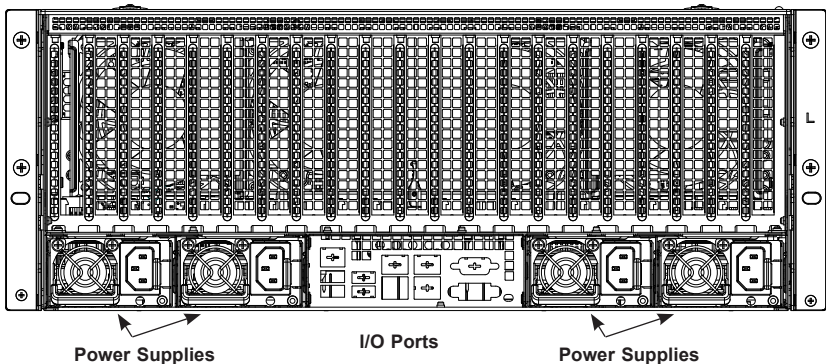
Figure 6-2. Rear Chassis View

6-1 Static-Sensitive Devices

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

Precautions

- Use a grounded wrist strap designed to prevent static discharge.

- Touch a grounded metal object before removing any board from its antistatic bag.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put expansion cards and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

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.

1. Use the operating system to power down the node, following the on-screen prompts.

2. After the system has completely shut-down, carefully grasp the head of the power cord and gently pull it out of the back of the power supply. If your system has dual power supplies, remove the cords from both power supplies.

3. Disconnect the cord from the power strip or wall outlet.

6-3 Installing Hard Drives

The SC418G supports a total of 24 hard disk drives, which are mounted in drive carriers and reside within the the hard drive bays. These drives are hot-swappable and can be removed or replaced without powering down the chassis. Enterprise SAS or SATA HDDs only are recommended.

With an additional optional backplane, it can support 48 drives.

Removing Hard Drives and their Carriers from the Hard Drive Bays

1. Press the release button on the drive carrier. This extends the drive carrier handle.

2. Use the handle to pull the drive and its carrier out of the chassis.
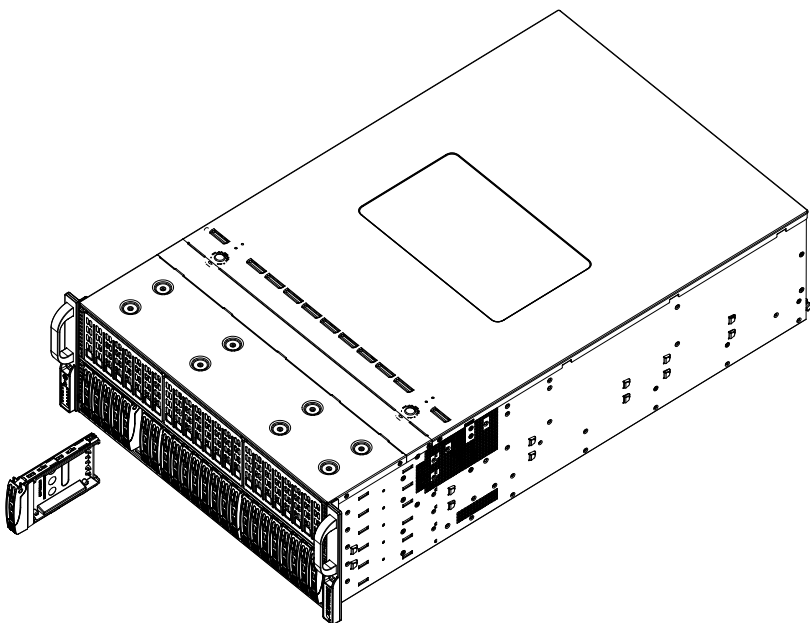
Figure 6-3. Removing a Hard Drive Carrier

Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf

Installing a Hard Drive into a Drive Carrier

1. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

2. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked "SATA" to aid in correct installation.

3. Secure the drive to the carrier with four screws as illustrated below.

4. Insert the drive carrier into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.

5. Push the handle in until it clicks into its locked position.
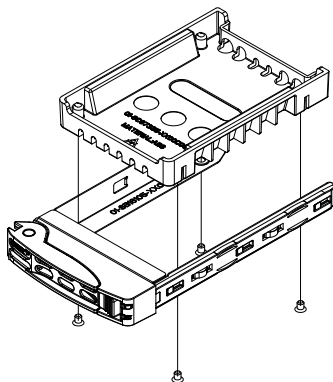
Figure 6-4. Removing a Dummy Drive from a Tray

6-4   Removing the Chassis Cover

You will need to access the inside of the system to complete certain procedures such as replacing fans.

Removing the Chassis Cover

If working with components such as memory, processors or heatsinks, start by shutting the system down and disconnecting the AC power cord.

1. Depress the two release buttons on both sides of the cover.

2. Slide the cover toward the rear of the chassis

3. Lift the cover off the chassis.
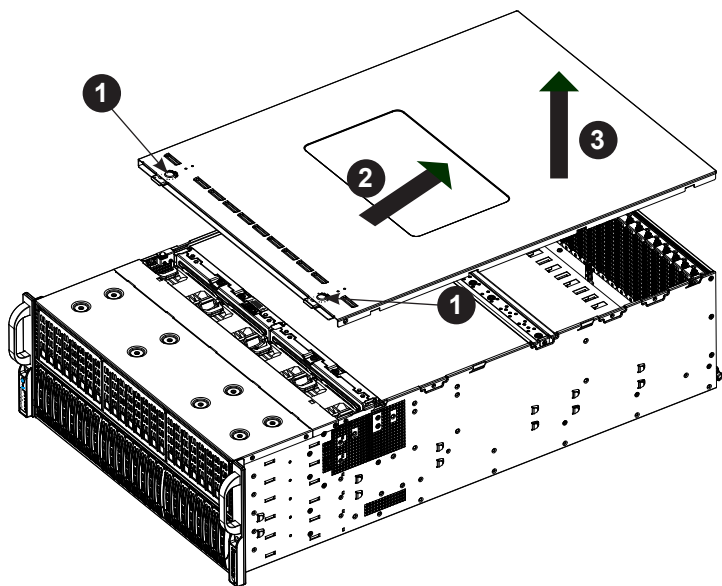
Figure 6-5. Accessing the Inside of the System

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.

6-5   Installing Expansion Cards

The system includes a daughter board for GPU/PCIe expansion capabilities. See Chapter 1, "PCI Expansion Slots" or Chapter 5, "Daughter Boards" for more information.

Installing Expansion Cards

1. Power down the system as described in Section 6-2, and open the chassis cover.

2. Remove the screw holding the chassis slot shield in place.

3. Insert the expansion card into the serverboard slot, while aligning the expansion card shield with the slot in the rear of the chassis.

4. Secure expansion card shield to the chassis using the screw previously removed.
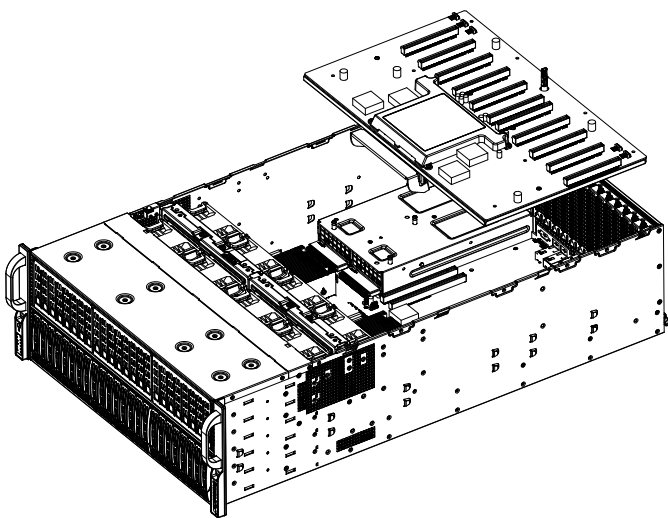
Figure 6-6. Daughter Board (X9DRG-O-PCIE shown)

6-6   Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency.

Installing the PCI-E Air Shroud

1. Remove the GPU retention bracket screw (located on the right side) and remove the GPU retention bracket.

2. Noting the front and rear sides of the air shroud, insert the sides of the air shroud between the chassis and GPU1 and GPU8. Insert the interior air shroud slots between GPU2/GPU3 and GPU6/GPU7. Finally, insert the center of the air shroud between GPU4 and GPU5.

3. Adjust the air shroud so that front edge is flush with the fan bracket.

4. Re-install the GPU retention bracket.

GPU retention
bracket screw
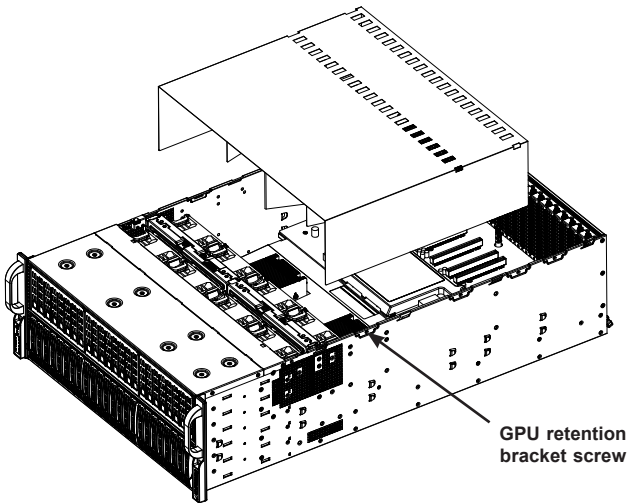
Figure 6-8. PCI Air Shroud Placement

6-7   Replacing Fans

The chassis contains eight 8-cm system fans that provide cooling for the system. All fans are hot-swappable, so there is no need to power down the system when switching fans.

Changing a System Fan

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

2. Press the fan housing lever to unlock the fan from the bracket.

3. While applying pressure to fan housing lever, gently push the fan upwards from underneath the fan housing to remove it.

4. Place the new fan into the vacant space in the housing. Apply pressure to the top of the new fan to lock it into the fan housing. The new fan should 'click' into place.

5. Confirm that the fan is working properly before replacing the chassis cover.
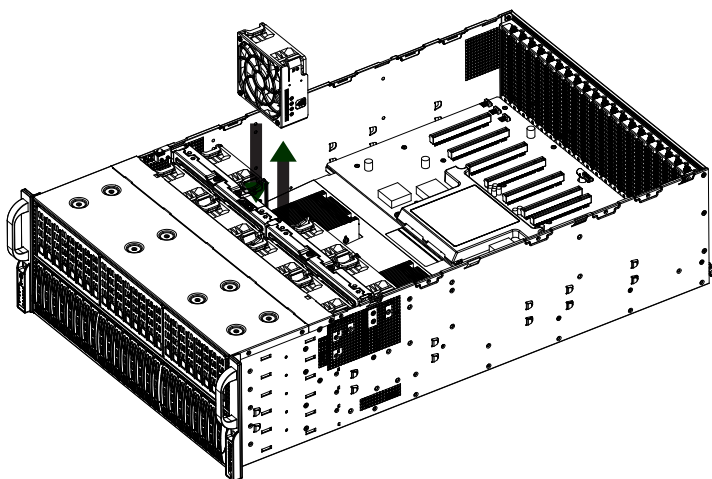
Figure 6-9. Replacing a System Fan

6-8   Power Supply

The system includes four hot-plug power modules. They automatically sense the input voltage between 100v to 240v, and operate at that voltage. Note that different input voltages will result in different maximum power output levels.

In the event of a power supply failure, the remaining power supply will automatically take over. The failed power module can be replaced without powering-down the system. Replace with the same model. Replacement modules can be ordered directly from Supermicro.

An amber light on the power supply is illuminated when the power is switched off. An green light indicates that the power supply is operating.

Replacing the Power Supply

1. Unplug the AC power cord from the failed power supply module.

2. Push and hold the release tab on the back of the power supply.

3. Grasp the handle of the power supply and pull it out of its bay.

4. Push the new power supply module into the power bay until it clicks into the locked position.

5. Plug the AC power cord back into the power supply module.

Release Tab

Handle
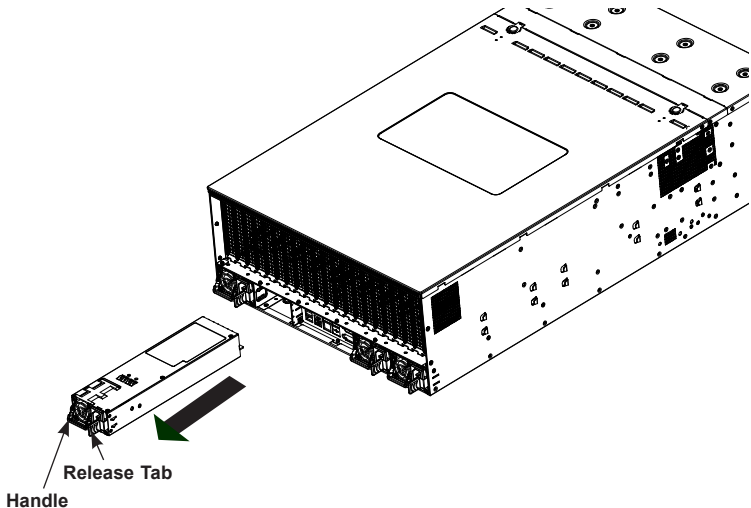
Figure 6-10. Replacing a Power Supply

Notes

Chapter 7

BIOS

7-1   Introduction

This chapter describes the AMI BIOS setup utility for the X10DRG-O(T)+. It also provides the instructions on how to navigate the AMI BIOS setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

Starting BIOS Setup Utility

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

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

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

Note: The AMI BIOS has default informational messages built in. The manufacturer retains the option to include, omit, or change any of these informational messages.

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

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

Note 2: <F3> is used to load optimal default settings. <F4> is used to save the settings and exit the setup utility.

How To Change the Configuration Data

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

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

Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <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.

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

7-2   Main Setup

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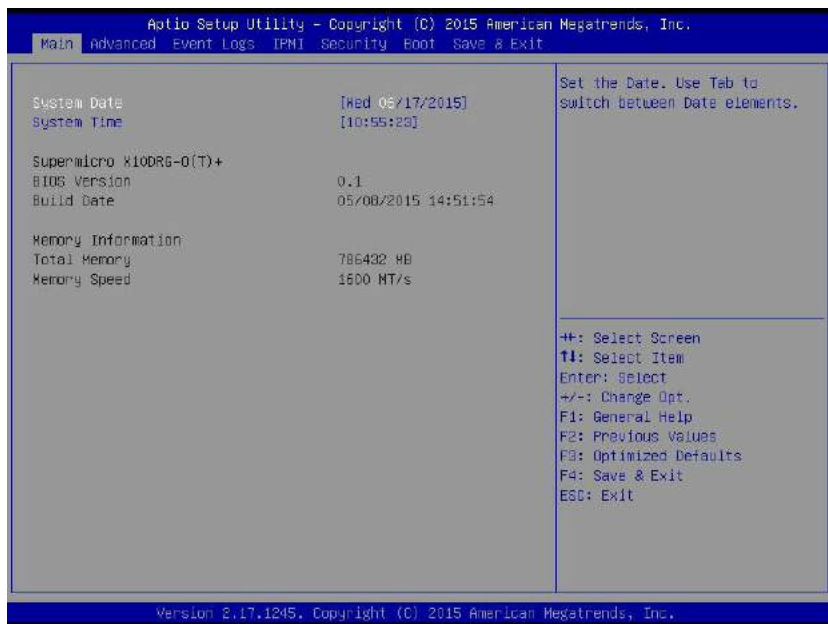
The AMI BIOS Main menu displays the following information:

System Date

Use this item to change the system date. Press the <Tab> key to move between fields. Enter new values through the keyboard and press <Enter>. The date must be entered in MM/DD/YYYY format.

System Time

Use this item to change the system time. Press the <Tab> key to move between fields. Enter new values through the keyboard and press <Enter>. The time is entered in HH:MM:SS format. The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

Supermicro X10DRG-O(T)+

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

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

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, a very high DRAM frequency, or an incorrect BIOS timing setting may cause the system to malfunction. When this occurs, restore the setting to the manufacturer's default setting.

▶Boot Feature

Quiet Boot

Use this feature to select the screen display between POST 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 Disabled and **Enabled**.

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

Wait For "F1" If Error

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

INT19 (Interrupt 19) Trap Response

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Immediate, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to these 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 and allow the drives attached to these adaptors to function as bootable devices at bootup. The options are **Immediate** and Postponed.

Re-try Boot

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

Power Configuration

Watch Dog Function

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

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 **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last 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 monitor and 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 Disable and **Enable**.

Cores Enabled

This feature allows the user to set the number of CPU cores to enable. Enter "0" to enable all cores. The default setting is **0**.

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

Select Enable for Execute Disable Bit Technology support, 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. This feature is used in conjunction with the items: "Clear MCA," "VMX," "Enable SMX," and "Lock Chipset" for Virtualization media support. The options are Disable and **Enable**. (Refer to Intel and Microsoft websites for more information.)

PPIN Control

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

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 **Enable** and Disable.

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 **Enable** and Disable.

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 **Enable** and Disable.

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 Disable, Enable, and **Auto**.

X2APIC (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 be expanded from 8 bits (X2) to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. 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. The options are **Disable** and Enable.

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 Disable and **Enable**.

▶Chipset Configuration

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

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

▶IIO0 Configuration

IOU2 (IOU PCIe Port1)

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

IOU0 (IOU PCIe Port2)

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

IOU1 (IOU PCIe Port3)

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

No PCIe Port Active ECO

This item provides a workaround solution when there is no PCIe port active. The options are **PCU Squelch exit ignore option** and Reset the SQ FLOP by CSR option.

▶Socket 0 PCIED00F0 - Port 0/DMI

This submenu allows the user to configure the settings for the following PCI-E ports: 0, 1A, 1B, 2A, 2B, 2C, 2D, 3A, 3B, 3C, and 3D.

Link Speed

Use this item to configure the link speed of a PCI-E device installed on the PCI-E slot specified by the user. The options are **Auto**, Gen 1 (2.5 GT/s), and Gen 2 (5 GT/s).

PCI-E Port DeEmphasis

DeEmphasis is used to decrease the magnitude of very high frequencies in relation to the magnitude of very low frequencies to improve the overall signal-to-noise ratio by reducing the level of all (signals) data bits transmitted except the first one, acting as a form of transmitter equalization to enhance signal transmission and audio performance. The options are **-6.0 dB** and -3.5 dB.

The following items will display:

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port L0s Exit Latency

Use this item to configure the exit latency of the PCI-E port L0s link state, measuring the length of time needed to transition from the L0s link state to L0. The available latency option is **4uS - 8uS**. (Note: "uS" stands for "microseconds.")

PCI-E Port L1 Exit Latency

Use this item to configure the exit latency of the PCI-E port L1 link state, measuring the length of time needed to transition from the L1 link state to L0. The latency options are <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS. (Note: "uS" stands for "microseconds.")

Fatal Err Over (Fatal Error Overwrite)

This item configures the option to overwrite fatal errors. The options are **Disable** and Enable.

Non-Fatal Err Over (Non-Fatal Error Overwrite)

This item configures the option to overwrite non-fatal errors. The options are **Disable** and Enable.

Corr Err Over (Correctable Error Overwrite)

This item configures the option to overwrite correctable errors for ECC memory. The options are **Disable** and Enable.

L0s Support

This item configures the option to enable support for the L0s PCI-E link state (non supported in this motherboard). The only available option is **Disable**.

▶Socket 0 PcieD00F0 - Port 1A/Port 2A/Port 3A

PCI-E Port

Select Enable to enable a PCI-E port specified by the user. Select Disable to de-activate a PCI-E port specified by the user. Select Auto for the BIOS ROM to automatically discard a PCI-E port specified by the user when there is no HP-compatible device connected to this port or when there is no error detected in this port. The options are **Auto**, Enable, and Disable.

Hot Plug Capable

Use this feature to enable or disable hot-plug support for a port specified by the user. The options are **Disable** and Enable.

PCI-E Port Link

Use this feature to disable the physical link connected to a PCI-E port specified by a user so that no training will take place on the component-level while the PCI-E configuration commands are still in full force. The options are **Enable** and Disable.

Link Speed

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

PCI-E Port DeEmphasis

This item configures the De-Emphasis Control (LANKCON2 [6]) setting for this computer. The options are **-6.0 dB** and -3.5 dB.

The following items will display:

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port L0s Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L0s to L0. The default setting is **4uS - 8uS**.

PCI-E Port L1 Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L1 to L0. The default setting is <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS.

Fatal Err (Error) Over

Select Enable to force fatal error propagation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force non-fatal error propagation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

Corr Err (Correctable Error) Over

Select Enable to force correctable error propagation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will not put its transmitter in the L0s state. The default setting is **Disable**.

PM ACPI Mode

Select Enable to generate an _HPGPE message on a PM ACPI event. Select Disable to generate an MSI message. The options are **Disable** and Enable.

Gen3 (Generation 3) Eq (Equalization) Mode

Use this item to set PCI-E Gen3 Adaptive Equalization mode. The options are **Auto**; Enable Phase 0,1,2,3; Disable Phase 0,1,2,3; Enable Phase 1 Only; Enable Phase 0,1 Only; Advanced; and Enable MMM Offset West.

Gen3 (Generation 3) Spec (Specifics) Mode

Use this item to set the Specifics mode for a PCI-E Gen. 3 device. The options are **Auto**, 0.70 July, 0.70 Sept, and 0.71 Sept.

Gen3 (Generation 3) Phase2 Mode

Use this feature to configure the Loop-count settings for PCI-E Gen3 Phase 2. The options are **Hardware Adaptive** and Manual.

Gen3 DN Tx Preset

This feature allows the user to select the preset setting for a downstream component transmitter. The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0/3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Gen3 DN Rx Preset Hint

This feature allows the user to select a preset setting for a downstream component receiver. The options are **Auto**, P0 (-6.0 dB), P1 (-7.0 dB), P2 (-8.0 dB), P3 (-9.0 dB), P4 (-10.0 dB), P5 (-11.0 dB), and P6 (-12.0 dB).

Gen3 UP Tx Preset

This feature allows the user to select the preset setting for a upstream component transmitter. The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0/3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Non-Transparent Bridge PCIe Port D (Port 3A only)

Select Transparent Bridge to configure the device installed on a PCI slot specified by the user as a transparent bridge (TB) device. Select NTB (Non-Transparent Bridge) to NTB to configure the device installed on a PCI slot specified by the user as a non-transparent bridge (TB) device used to connect to another TB device. The options are **Transparent Bridge**, NTB to NTB, and NTB to RP.

Hide Port?

Use this feature to hide the root port from the operating system. The options are **no** and yes.

▶IIO1 Configuration

IOU2 (IOU PCIe Port1)

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

IOU0 (IOU PCIe Port2)

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

IOU1 (IOU PCIe Port3)

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

No PCIe Port Active ECO

This item provides a workaround solution when there is no PCIe port active. The options are **PCU Squelch exit ignore option** and Reset the SQ FLOP by CSR option.

▶Socket 1 PCIED00F0 - Port 0/DMI / Port 1A / Port 2A / Port 3A

PCI-E Port

Select Enable to enable a PCI-E port specified by the user. Select Disable to de-activate a PCI-E port specified by the user. Select Auto for the BIOS ROM to automatically discard a PCI-E port specified by the user when there is no HP-compatible device connected to this port or when there is no error detected in this port. The options are **Auto**, Enable, and Disable.

Hot Plug Capable

Use this feature to enable or disable hot-plug support for a port specified by the user. The options are **Disable** and Enable.

PCI-E Port Link

Use this feature to disable the physical link connected to a PCI-E port specified by a user so that no training will take place on the component-level while the PCI-E configuration commands are still in full force. The options are **Enable** and Disable.

Link Speed

Use this item to configure the link speed of a PCI-E port specified by the user. The options are **Auto**, Gen 1 (Generation 1) (2.5 GT/s), and Gen 2 (Generation 2) (5 GT/s).

PCI-E Port DeEmphasis

This item configures the De-Emphasis Control (LANKCON2 [6]) setting for this computer. The options are **-6.0 dB** and -3.5 dB.

The following items will display:

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port L0s Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L0s to L0. The default setting is **4uS - 8uS**.

PCI-E Port L1 Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L1 to L0. The default setting is <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS.

Fatal Err (Error) Over

Select Enable to force fatal error propagation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force non-fatal error propagation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

Corr Err (Correctable Error) Over

Select Enable to force correctable error propagation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will not put its transmitter in the L0s state. The default setting is **Disable**.

PM ACPI Mode

Select Enable to generate an _HPGPE message on a PM ACPI event. Select Disable to generate an MSI message. The options are **Disable** and Enable.

Gen3 (Generation 3) Eq (Equalization) Mode

Use this item to set PCI-E Gen3 Adaptive Equalization mode. The options are **Auto**; Enable Phase 0,1,2,3; Disable Phase 0,1,2,3; Enable Phase 1 Only; Enable Phase 0,1 Only; Advanced; and Enable MMM Offset West.

Gen3 (Generation 3) Spec (Specifics) Mode

Use this item to set the Specifics mode for a PCI-E Gen. 3 device. The options are **Auto**, 0.70 July, 0.70 Sept, and 0.71 Sept.

Gen3 (Generation 3) Phase2 Mode

Use this feature to configure the Loop-count settings for PCI-E Gen3 Phase 2. The options are **Hardware Adaptive** and Manual.

Gen3 DN Tx Preset

This feature allows the user to select the preset setting for a downstream component transmitter. The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0/3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Gen3 DN Rx Preset Hint

This feature allows the user to select a preset setting for a downstream component receiver. The options are **Auto**, P0 (-6.0 dB), P1 (-7.0 dB), P2 (-8.0 dB), P3 (-9.0 dB), P4 (-10.0 dB), P5 (-11.0 dB), and P6 (-12.0 dB).

Gen3 UP Tx Preset

This feature allows the user to select the preset setting for a upstream component transmitter. The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0/3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Non-Transparent Bridge PCIe Port D (Port 3A only)

Select Transparent Bridge to configure the device installed on a PCI slot specified by the user as a transparent bridge (TB) device. Select NTB (Non-Transparent Bridge) to NTB to configure the device installed on a PCI slot specified by the user as a non-transparent bridge (TB) device used to connect to another TB device. The options are **Transparent Bridge**, NTB to NTB, and NTB to RP.

Hide Port?

Use this feature to hide the root port from the operating system. The options are **no** and yes.

▶IOAT (Intel® IO Acceleration) Configuration

Enable IOAT

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

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 earlier. The options are **Disable** and Enable.

▶ Intel VT for Directed I/O (VT-d)

Intel VT for Direct I/O (VT-d)

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

Interrupt Remapping

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

▶QPI (Quick Path Interconnect) Configuration

▶QPI 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. The options are Disable and **Enable**.

Link L1 Enable

Select Enable for Link L1 support. The options are Disable and **Enable**.

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

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

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 Disable, Enable, and **Auto**.

Isoc Mode

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

▶Memory Configuration

Enforce POR

Select Enable to enforce POR restrictions on memory 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, 2400, 2600, 2667, 2800, 2993, 3000, 3200. and Reserved. (Do not select Reserved.)

Data Scrambling

Select Enabled to enable data scrambling 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 Enabled.

DRAM RAPL (Running Average Power Limit) Baseline

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

Set Throttling Mode

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

Socket Interleave Below 4GB

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

A7 Mode

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

▶DIMM Information

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

P1-DIMMA1/A2/A3, P1-DIMMB1/B2/B3, P1-DIMMC1/C2/C3, P1-DIMMD1/D2/D3, P2-DIMME1/E2/E3, P2-DIMMF1/F2/F3, P2-DIMMG1/G2/G3, and P2-DIMMH1/H2/H3.

▶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 PCH (Platform Control 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 PCH will be scrubbed every day. The options are Disable and **Enable**.

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 Disable and **Enable**.

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 Disable to have all USB devices available for EFI applications only. The options are **Enabled,** Disabled, and Auto.

XHCI (Extensible Host Controller Interface) 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 (Enhanced Host Controller Interface) Hand-Off

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

Port 60/64 Emulation

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

USB 3.0 Support

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

▶SATA Configuration

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

SATA Controller

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

Configure SATA as

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

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

Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when

the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are Disabled and **Enabled**.

SATA Port 0-Port 5

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

- Model number of drive and capacity

- Software Preserve Support

Port 0-Port 5 Hot Plug

Select Enabled to support Hot-plugging for the selected SATA port which will allow the user to replace a device without shutting down the system. The options are Disabled and **Enabled**.

Port 0-Port 5 Spin Up Device

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

Port 0-Port 5 SATA Device Type

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

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

SATA Port 0-Port 5

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

- Model number of drive and capacity

- Software Preserve Support

Port 0-Port 5 SATA Device Type (Available when a SATA port is detected)

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

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

Support Aggressive Link Power Management

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

SATA RAID Option ROM/UEFI Driver

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

SATA/sSATA RAID Boot Select

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

Serial ATA Port 0-Port 5

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

- Model number of drive and capacity

- Software Preserve Support

Port 0-Port 5 Hot Plug

Select Enabled to support Hot-plugging for the selected SATA port which will allow the user to replace a device without shutting down the system. The options are Disabled and **Enabled**.

Port 0-Port 5 Spin Up Device

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

Port 0-Port 5 SATA Device Type

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

▶**sSATA Configuration**

When this submenu is selected, the 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 Disabled and **Enabled**.

sSATA Port 0-Port 3

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

• Model number of drive and capacity

• Software preserve support

Port 0-Port 3 Hot Plug

Select Enabled to support Hot-plugging for the selected SATA port which will allow the user to replace a device without shutting down the system. The options are Disabled and **Enabled**.

sSATA Port 0-Port 3 Spin Up Device

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

Port 0-Port 3 sSATA Device Type

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

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

sSATA Port 0-Port 3

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

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

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

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

Support Aggressive Link Power Management

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

sSATA RAID Option ROM/UEFI Driver

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

SATA/sSATA RAID Boot Select

Select SATA Controller to use a device supported by the SATA connector for system boot. Select sSATA Controller to use a device supported by the sSATA connector for system boot. The options are None, SATA Controller, **sSATA Controller**, and Both.

sSATA Port 0 ~ Port 3

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

- Model number of drive and capacity
- Software preserve support

Port 0-Port 3 Hot Plug

Select Enabled to support Hot-plugging for the selected SATA port which will allow the user to replace a device without shutting down the system. The options are Disabled and **Enabled**.

sSATA Port 0-Port 3 Spin Up Device

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

Port 0-Port 3 sSATA Device Type

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

▶Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

- Operational Firmware Version

- Recovery Firmware Version

- ME Firmware Features

- ME Firmware Status #1

- ME Firmware Status #2

    - Current State

    - Error Code

Altitude

This feature indicates the altitude of the platform this machine is located above the sea level. The value is shown in meters. If the value is unknown, enter the number "80000000."

MCTP (Management Component Transport Protocol) Bus Owner

This feature indicates the location of the MCTP Bus owner. Enter 0s to all fields to disable the MCTP Bus owner.

▶PCIe/PCI/PnP Configuration

PCI Devices Common Settings

PCI Latency Timer

Select Enabled to set the latency timer for PCI. The options are **32 PCI Bus Clocks**, 64 PCI Bus Clocks, 96 PCI Bus Clocks, 128 PCI Bus Clocks, 160 PCI Bus Clocks, 192 PCI Bus Clocks, 224 PCI Bus Clocks, and 248 PCI Bus Clocks.

PERR# Generation

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

SERR# Generation

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

PCI PERR/SERR Support

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

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 Disabled and **Enabled**.

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

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

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 base memory size according to memory-address mapping for the PCH. The base memory size must be between 4032G to 4078G. The options are 56T, 48T, 24T, **2T**, 512G, and 256G.

MMIO High Size

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

PCI Device Option ROM Setting

CPU2 Slot 1 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 1. The options are Disabled, **Legacy**, and EFI.

CPU2 Slot 2 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 2. The options are Disabled, **Legacy**, and EFI.

CPU2 Slot 3 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 3. The options are Disabled, **Legacy**, and EFI.

CPU2 Slot 4 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 4. The options are Disabled, **Legacy**, and EFI.

CPU2 Slot 5 PCI-E x8 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

CPU1 Slot 6 PCI-E x8 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

CPU1 Slot 7 PCI-E x4 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

CPU1 Slot 8 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

CPU1 Slot 9 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

CPU1 Slot 10 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

CPU1 Slot 11 PCI-E x16 OPROM (Option ROM)

Select Enabled to enable Option ROM support to boot the computer using a device installed on slot 5. The options are Disabled, **Legacy**, and EFI.

Onboard Video OPROM (Option ROM)

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.

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.

Onboard LAN Option ROM Type

Select Legacy to boot the computer using a Legacy device installed on the motherboard. The options are **Legacy** and EFI.

Onboard LAN1 Option ROM/Onboard LAN2 Option ROM

Use this option to select the type of device installed in LAN Port1, LAN Port2 or the onboard video device used for system boot. The options for LAN1 Option ROM are **PXE**, iSCSI, and Disabled, and the options for LAN2 Option ROM are PXE and **Disabled**.

Network Stack

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

▶**Super IO Configuration**

Super IO Chip AST2400

▶**Serial Port 1 Configuration/Serial Port 2 Configuration**

Serial Port

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

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, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12).

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

Serial Port 2 Attribute

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

▶**Serial Port Console Redirection**

COM 1

COM 1 Console Redirection

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

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

▶COM1 Console Redirection Settings

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

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

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. When the option BootLoader is selected, legacy Console Redirection is disabled before booting the OS. When Always Enable is selected, legacy Console Redirection remains enabled upon OS bootup. The options are **Always Enable** and BootLoader.

SOL/COM2 Console Redirection

SOL/COM2 Console Redirection

Select Enabled to use the SOL/COM2 port for Console Redirection. The options are Disabled and **Enabled**.

If the item above is 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 VT100, **VT100+**, VT-UTF8, and ANSI.

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 Disabled and **Enabled**.

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.

▶**Legacy Console Redirection Settings**

Legacy Serial Redirection Port

Use this item to configure redirection for legacy serial ports. The options are **COM1** and SOL/COM2.

▶**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.

Console Redirection

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

*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 SOL (Console Redirection)/COM2.

Terminal Type

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

Bits per second

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

Flow Control

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

The setting for each of the following features is displayed:

Data Bits, Parity, Stop Bits

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

Configuration

Security Device Support

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

TPM State

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

Pending Operation

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

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

Current Status Information

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

▶ACPI Settings

WHEA Support

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

High Precision Timer

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

to replace the 8254 Programmable Interval Timer. The options are Disabled and **Enabled**.

NUMA (Available when the OS supports this feature)

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

▶iSCSI Configuration

This item displays iSCSI configuration information:

iSCSI Initiator Name

This item displays the name of the iSCSI Initiator, which is a unique name used in the world. The name must use the IQN format. The following actions can also be performed:

▶Add an Attempt

▶Delete Attempts

▶Change Attempt Order

7-4   Event Logs

Use this feature to configure Event Log settings.

▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

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

Runtime Error Logging Support

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

Erasing Settings

Erase Event Log

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

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

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

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

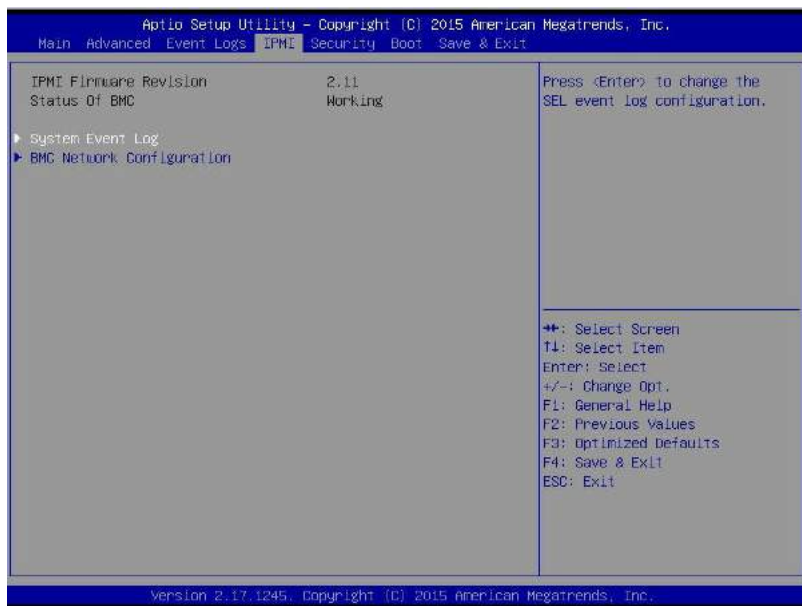## ▶View SMBIOS Event Log

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

Date/Time/Error Code/Severity

7-5   IPMI

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

IPMI Firmware Revision

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

Status of BMC

This item indicates the status of the onboard BMC (Baseboard Management Controller).

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

This feature allows the user to 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.

Custom EFI Logging Options

Log EFI Status Codes

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

▶BMC Network Configuration

The following items will be displayed:

Update IPMI LAN Configuration

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

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 Static and **DHCP**.

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 (e.g., 192.168.10.253).

7-6   Security Settings

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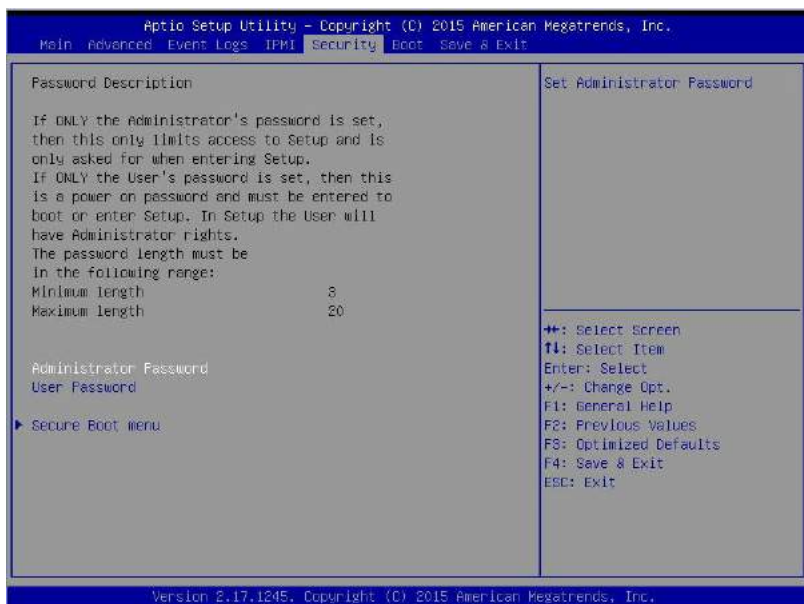
Administrator Password

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

User Password

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

▶Secure Boot Menu

Secure Boot

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

▶**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 (PK)

▶**Delete PK**

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

▶**Set New PK**

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).
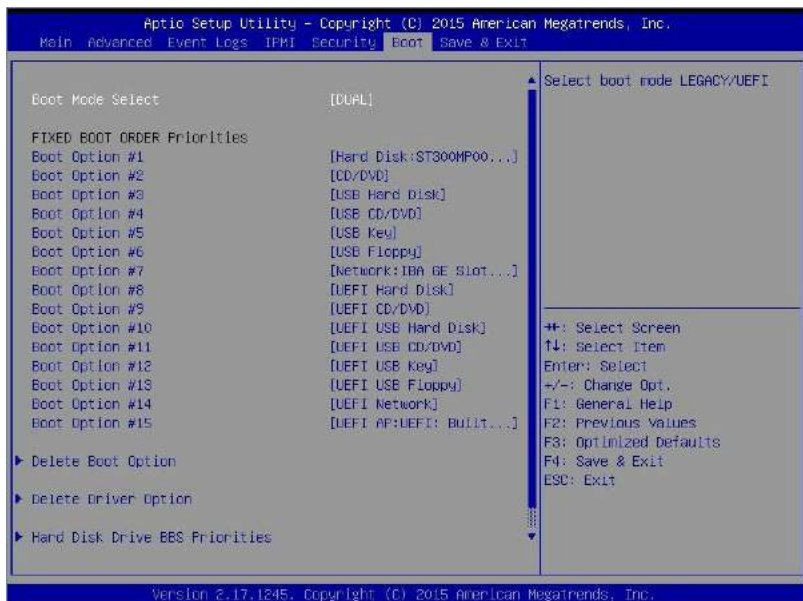
▶**Set New DBX**

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

Use this feature to configure Boot settings:

Boot Configuration

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.

- Dual Boot Order #1

- Dual Boot Order #2

- Dual Boot Order #3

- Dual Boot Order #4

- Dual Boot Order #5

- Dual Boot Order #6

- Dual Boot Order #7

- Dual Boot Order #8

- Dual Boot Order #9

- Dual Boot Order #10

- Dual Boot Order #11

- Dual Boot Order #12

- Dual Boot Order #13

- Dual Boot Order #14

- Dual Boot Order #15

▶**Add New Boot Option**

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

Add Boot Option

Select the target boot device to add to the boot priority list.

Path for Boot Option

Select the device path (-the file system) for the new boot device to use.

Create

After selecting a boot device to add and the path for this new device, choose this feature and click OK to add the new device 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.

▶**Delete Driver Option**

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

Delete Driver Option

Select the target driver to delete.

▶**Hard Disk Drive BBS Priorities**

- Boot Option #1

- Boot Order #2

- Boot Order #3

- Boot Order #4

- Boot Order #5

- Boot Order #6

- Boot Order #7

- Boot Order #8

- Boot Order #9

- Boot Order #10

- Boot Order #11

- Boot Order #12

- Boot Order #13

- Boot Order #14

- Boot Order #15

- Boot Order #16

▶**Network Drive BBS Priorities**

- Boot Option #1

▶**UEFI Application Boot Priorities**

- UEFI Boot Option #1

7-8   Save & Exit

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

Discard Changes and Exit

Select this option to quit the BIOS setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

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

Save Options

Save Changes

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

Discard Changes

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

Restore Optimized Defaults

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

Save as User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were previously saved.

Boot Override

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

Notes

Appendix A

BIOS Error Beep Codes

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

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

Fatal errors will not allow the system to continue with bootup procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

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: USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL Con-Out: Video Controller, PCI or Serial Console Redirection, IPMI SOL
X10 IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors

Two Intel E5-2600 v3/v4 series processors in Socket R LGA 2011 type sockets

Note: please refer to our website for details on supported processors.

Chipset

PCH C612 chipset

BIOS

128 MB SPI Flash EEPROM with AMI® BIOS

Memory Capacity

Twenty four DIMM slots supporting up to 3 TB of LRDIMM, 768 GB of RDIMM, or 128 GB of ECC/non-ECC UDIMM, DDR4 2400/2133/1866/1600 MHz memory.

Note: Refer to Section 5-5 for details on installation. Check the Supermicro website (www.supermicro.com) for the latest memory support information.

SATA Drive Bays

Twenty-four hot-swap drive bays to house 2.5" SATA drives.

GPUs (Graphics Processing Units)

A total of eight GPUs are supported (true PCI-E 3.0 x16 signal)

PCI Expansion

Eight PCI Express 3.0 x16 slots, two PCI Express x8 slots (in x16 slots) and one PCI Express 2.0 x4 (in a x16 slot) slot

Motherboard

X10DRG-O(T)+-CPU (proprietary form factor)

Dimensions: 17 x 19 in. (43.2 x 48.3 mm)

Chassis

SC418GTS-R3200BP or SC418GTS-R4000P (4U rackmount)

Dimensions: (WxHxD) 7 x 17.2 x 29 in. (178 x 437 x 737 mm)

Weight

Net (Bare Bone): 80 lbs. (36 kg.)
Gross: 135 lbs. (61 kg.)

System Cooling

Eight 9-cm hot-swappable cooling fans, two air shrouds, two passive CPU heat sinks

System Input Requirements

AC Input Voltage: 100-240VAC auto-range

Rated Input Current: 1000W: 100-127V/12.9A, 1600W: 200-240V/9.5A

Rated Input Frequency: 50 to 60 Hz

Power Supplies

PWS-1K66P-1R (4028GR-TR[T]), 80PLUS level Platinum
Rated Output Power: 1000/1600 watts
Rated Output Voltages: 12V+ 82/132 amps

PWS-2K05A-1R (4028GR-TR[T]2), 80PLUS level Titanium
Rated Output Power: 1000/1800/1890/2000 watts
Rated Output Voltages: 12V+ 83.3/150/165/167 amps

Operating Environment

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

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

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

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

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

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

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

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

Notes

(continued from front)

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

Appendix C

Safety Warnings, Traditional Chinese Version

限用物質含有情況標示聲明書

Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱：伺服器，　　型號（型式）：418-20　（系列型號: 418-16 ,SYS-4028GR-TRT2,SYS-4028GR-TR2)
Equipment name　　　Type designation (Type)

SYS-4028GR-TRT,SYS-4028GR-TR

單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
機殼 (Chassis)	○	○	○	○	○	○
機殼風扇 (Chassis Fan)	－	○	○	○	○	○
線材 (Cable)	○	○	○	○	○	○
主機板 (Motherboard)	－	○	○	○	○	○
電源供應器 (Power Supply)	－	○	○	○	○	○
硬碟 (Hard Disk)	－	○	○	○	○	○
電源背板 (PDB)	－	○	○	○	○	○

備考1.〝超出0.1 wt %〞及〝超出0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1："Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2："○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3.〝－〞係指該項限用物質為排除項目。
Note 3：The "–" indicates that the restricted substance corresponds to the exemption.