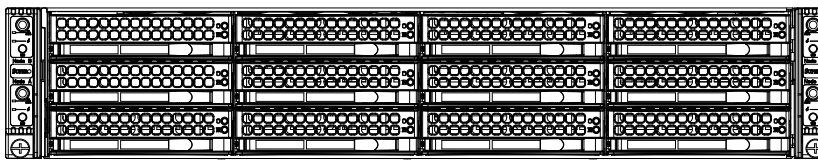
SUPERSERVER®

5028TK-HTR
5028TK-HTTR



User's Manual

Revision 1.0a

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5028TK-HTR/HTTR. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5028TK-HTR/HTTR is a high-end server based on the SC827HQ+-R2K04BP2 2U rackmount chassis and the single processor K1SPi/K1SPi-T serverboard. All models have four serverboard nodes with three hot-swap Hard Disk Drives (HDD) for each per node.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the K1SPi/K1SPi-T serverboard and the SC827HQ+-R2K04BP2 chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5028TK-HTR/HTTR into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: Standardized Safety Warnings

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5028TK-HTR/HTTR.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the K1SPi/K1SPi-T serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC827HQ+-R2K04BP2 server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring hard drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: System Specifications

Appendix B: UEFI BIOS Recovery

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Chapter 1

Introduction

1-1 Overview

The SuperServer 5028TK-HTR/HTTR is a high-end server comprised of two main subsystems: the SC827HQ+-R2K04BP2 2U server chassis and the K1SPi/K1SPi-T serverboard, which resides in four hot-swap nodes. Please refer to our website for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the SuperServer 5028TK-HTR/HTTR server, as listed below:

- Four 1U passive CPU heatsinks (SNK-P0060P)
- Four mylar air shrouds (MCP-310-21704-0B)
- Four 8-cm cooling fans (FAN-0162L4)
- SATA/SAS Backplane
  Four HD backplanes (BPN-ADP-6SATA3)
  One SAS backplane HDD (BPN-SAS3-827HQ)
  Twelve hot-swap 3.5" HDD trays (MCP-220-00075-0B)
- Eight riser cards (4x RSC-R1UTP-E16R and 4x RSC-P-6)
- One rackmount rail kit (MCP-290-00053-0N)

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

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

1-2 Serverboard Features

At the heart of the SuperServer 5028TK-HTR/HTTR lies the K1SPi/K1SPi-T, a single processor serverboard based on the Intel® PCH C612 chipset and designed to provide maximum performance. Four of these serverboards can be mounted in the SC827HQ+-R2K04BP2 chassis.

The sections below cover the main features of the K1SPi/K1SPi-T serverboard (see Figure 1-1 for a block diagram of the chipset).

Processors

The K1SPi/K1SPi-T supports a single Intel® Xeon Phi™ x200 processor. Refer to the serverboard description pages on our website for a complete listing of supported processors (www.supermicro.com).

Memory

The K1SPi/K1SPi-T has six DIMM slots supporting up to 384 GB of RDIMM (Registered DIMM) DDR4-2400 ECC memory. See Chapter 5 for details.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

SATA

The 5028TK-HTR uses a controller integrated into the PCH C612 chipset to support eight SAS3 hard drives per node. (RAID 0, 1 and 10 supported). The SATA drives are hot-swappable units.

PCI Expansion Slots

The 5028TK-HTR/HTTR can support two PCI-E 3.0 expansion cards in each node (eight total for the system). Expansion cards are mounted on riser cards. The RSC-R1UTP-E16R riser supports a single PCI-E 3.0 x16 card on the right side of the system (when viewed from the rear) and the RSC-P-6 riser supports one PCI-E 3.0 x16 card on the left side of the chassis.

I/O Ports

Each of the four K1SPi/K1SPi-T serverboards in the system include two USB 3.0 ports, an IPMI LAN port and a VGA port.

Note: For IPMI configuration instructions, please refer to the Embedded BMC Configuration User's Guide available at http://www.supermicro.com/support/manuals/.

Graphics Controller

The K1SPi/K1SPi-T features an integrated ASpeed 2400 BMC with an integrated VGA/2D graphics controller.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC827HQ+ server chassis.

System Power

The SC827HQ+ chassis includes a redundant, high-efficiency 80-plus Platinum certified power supply rated at 2000 Watts (one active and one backup power supply module). In the event your power supply fails, replacement is simple and can be accomplished without tools.

Front Control Panel

The SC827HQ+-R2K04BP2 chassis includes four front panels on the handles of the chassis which control each of the nodes. Each control panel on the SuperServer 5028TK-HTR/HTTR provides you with system monitoring and control for one server node. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included.

Cooling System

The SC827HQ+ chassis includes four 8-cm system fans, which are powered from the backplane.

Air Shrouds

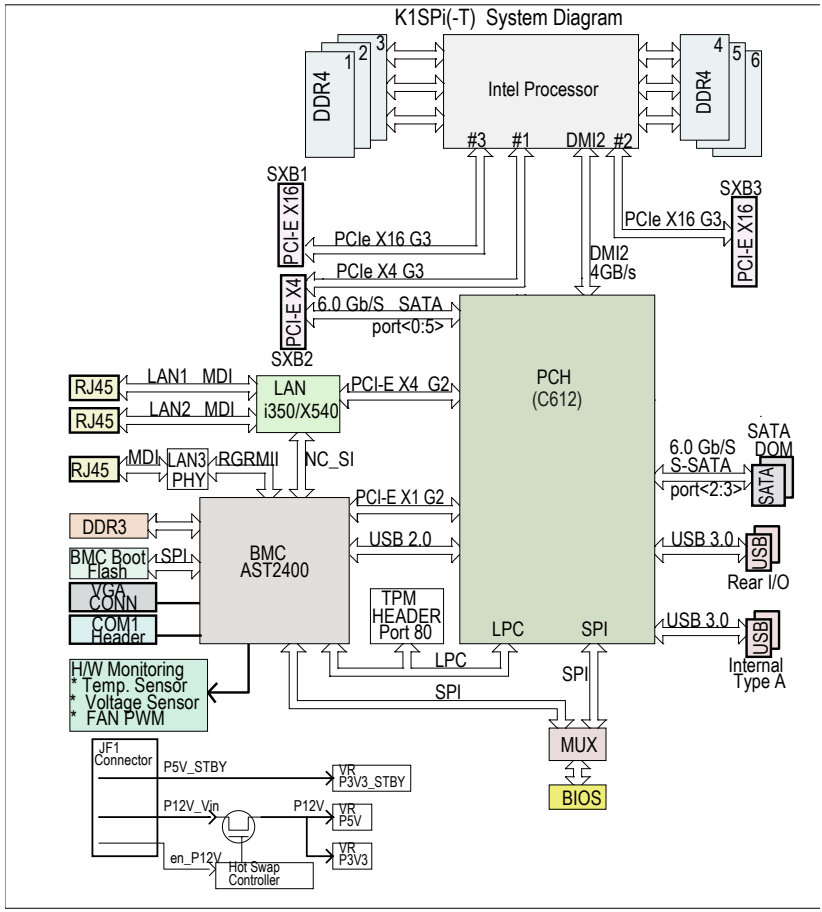
Each node in the SC827HQ+ chassis includes one mylar air shroud per node that directs the airflow where cooling is needed on each serverboard. Always use the air shroud included with each serverboard.

Mounting Rails

The SC827HQ+ includes a set of quick-release rails, and can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in Chapter 2.

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

Note: This is a general block diagram and may not exactly represent the features on your serverboard. See the previous pages for the actual specifications of your serverboard. This block diagram is intended for your reference only.



1-4 Contacting Supermicro

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

1-5 2U Twin²: System Notes

As a 2U Twin² configuration, the SuperServer 5028TK-HTR/HTTR is a unique server system. With four system boards incorporated into a single chassis acting as four separate nodes, there are several points you should keep in mind.

Nodes

Each of the four serverboards act as a separate node in the system. As independent nodes, each may be powered off and on without affecting the others. In addition, each node is a hot-swappable unit that may be removed from the rear of the chassis. The nodes are connected to the server backplane by means of an adapter card.

Note: A guide pin is located between the upper and lower nodes on the inner chassis wall. This guide pin also acts as a "stop" when a node is fully installed. If too much force is used when inserting a node this pin may break off. Take care to slowly slide a node in until you hear the "click" of the locking tab seating itself.

System Power

Dual 2000 Watt power supplies are used to provide the power for all four serverboards. Each serverboard however, can be shut down independently of the other with the power button on its own control panel.

Hard Drive Backplane/Drives

As a system, the SuperServer 5028TK-HTR/HTTR supports the use of 12 hard drives. A single backplane works to apply system-based control for power and fan speed functions, yet at the same time logically connects a set of three hard drives to each of the four nodes. Consequently, RAID setup is limited to a three-drive scheme (RAID cannot be spread across all 12 drives). See the Drive Bay Installation/ Removal section in Chapter 6 for the logical hard drive and node configuration.

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5028TK-HTR/HTTR up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 5028TK-HTR/HTTR was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 5028TK-HTR/HTTR. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 5028TK-HTR/HTTR was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

2-4 Warnings and Precautions

Choosing a Setup Location

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

Rack Precautions

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

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow any hot plug drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

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

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

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

Reliable Ground

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

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

2-5 Installing the System into a Rack

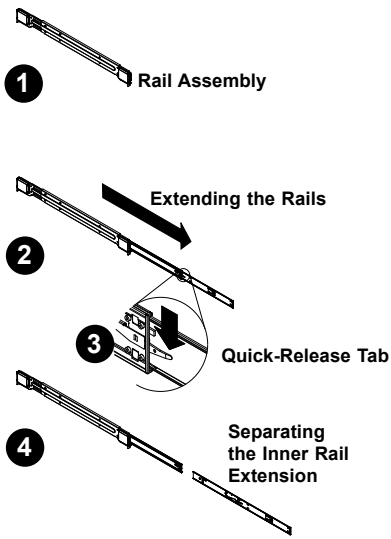
This section provides information on installing the SC827HQ+ chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

NOTE: This rail will fit a rack between 26" and 33.5" deep.

Separating the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself (Figure 2-1).

Figure 2-1. Separating the Rack Rails



Separating the Inner and Outer Rails

1. Locate the rail assembly in the chassis packaging.
2. Extend the rail assembly by pulling it outward.
3. Press the quick-release tab.
4. Separate the inner rail extension from the outer rail assembly.

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

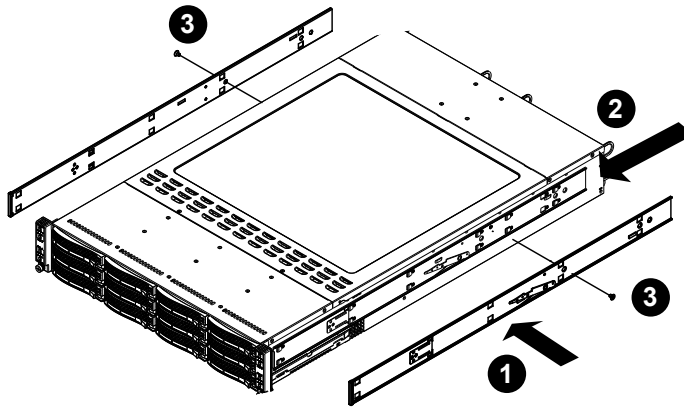
Installing the Inner Rail Extension

The SC827HQ+ chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached to the chassis, and do not interfere with normal use of the chassis if you decide not to use a server rack. The inner rail extension is attached to the inner rail to mount the chassis in the rack.

Installing the Inner Rails (Figure 2-2)

1. Place the inner rail extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.
2. Slide the extension toward the front of the chassis.
3. Secure the chassis with 2 screws as illustrated. Repeat steps for the other inner rail extension.

Figure 2-2. Installing the Inner Rail Extensions



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

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

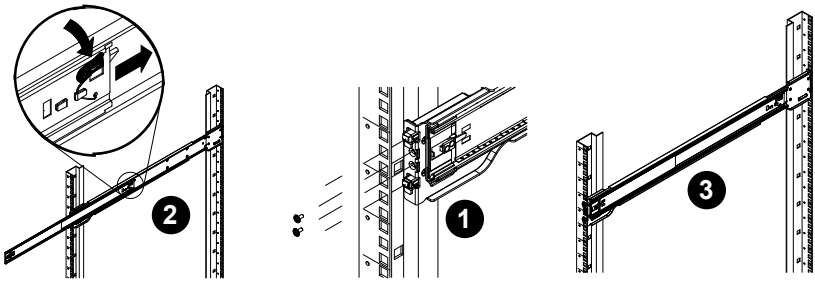
Outer Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the SC827HQ+ chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack (Figure 2-3)

1. Secure the back end of the outer rail to the rack, using the screws provided.
2. Press the button where the two outer rails are joined to retract the smaller outer rail.
3. Hang the hooks of the rails onto the rack holes and if desired, use screws to secure the front of the outer rail onto the rack.
4. Repeat steps 1-3 for the remaining outer rail.

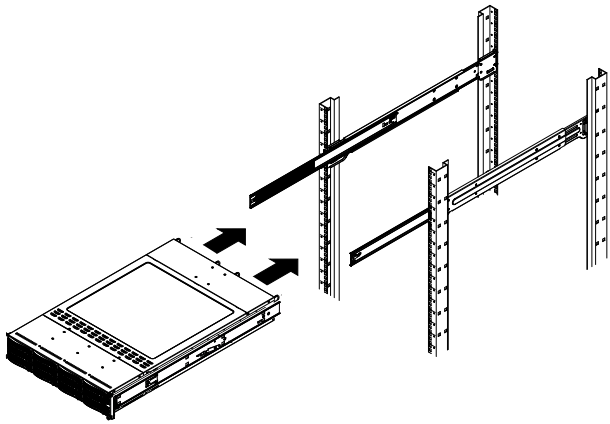
Figure 2-3. Assembling the Outer Rails



Installing the Chassis into a Rack (Figure 2-4)

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

Figure 2-4. Installing the Rack Rails



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

Notes

Chapter 3

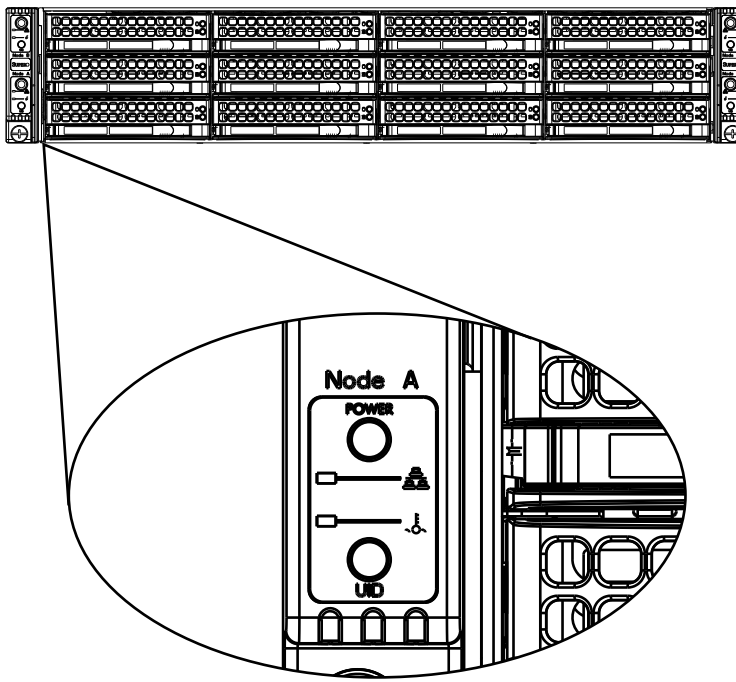
System Interface

3-1 Overview

There are several LEDs on the control panel and on the drive carriers to keep you constantly informed of the overall status of the system. SC827HQ+ models include four front panels on the handles of the chassis which control each of the systems.

This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

Figure 3-1. Control Panel



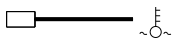
3-2 Control Panel Button

Power

The main power button on each of the four control panels is used to apply or remove power from the power supply to each of the four systems in the chassis. Turning off system power with this button removes the main power, but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

3-3 Control Panel LEDs

The four control panels are located on the front handle of the SC827HQ+ chassis. Each control panel has three LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



Overheat

This LED is illuminated when an overheat condition occurs.

A solid red LED indicates an overheat condition in the system.

A flashing red LED which flashes in one second intervals indicates a fan failure.

A flashing red LED which flashes in four second interfals indicates a power failure.

Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers and air shrouds are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the temperature is too high or a fan does not function properly.

NIC1

Indicates network activity on GLAN1 when flashing.

3-4 Drive Carrier LEDs

The server chassis uses SATA drives.

SATA Drives

Each SATA drive carrier has two LEDs.

- Blue: Each Serial ATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SATA drive carrier) indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.
- Red: The red LED to indicate an SATA drive failure. If one of the SATA drives fail, you should be notified by your system management software.

SAS Drives

This server system does not support SAS drives.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

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

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

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

Warning Definition

Warning!

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

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

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

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

안전을 위한 주의사항

경고!

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

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

Warning!

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

.יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

Warning!

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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 מפני ניתוק חשמלי

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 للأمان

경고!

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

Waarschuwing

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

Battery Handling

Warning!

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies

Warning!

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

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

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

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

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

경고!

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

Waarschuwing

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

Backplane Voltage

Warning!

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

バックプレーンの電圧

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

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

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

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes

Warning!

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

地方および国の電気規格に準拠
機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

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

תיאום חוקי החשמל הארצי

אזהרה !

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

Product Disposal

Warning!

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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

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

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

경고!

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

Waarschuwing

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

Hot Swap Fan Warning

Warning!

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

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告

当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

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

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

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

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

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

من الممكن أن المراوح لا تزال تدورعند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

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

Power Cable and AC Adapter

Warning!

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

電源コードとACアダプター

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

警告

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

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

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

¡Advertencia!

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

Attention

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

חשמליים ומתאמי AC

אזהרה !

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

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

경고!

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

Waarschuwing

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

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to connect data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

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

Unpacking

The serverboard 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

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back.

If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables.

5-3 Rear I/O Ports

See Figure 5-1 below for the and locations of the various rear I/O ports and the UID switch.

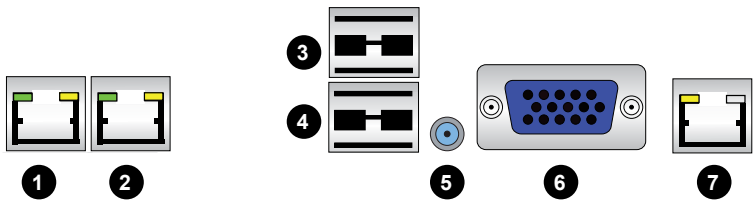


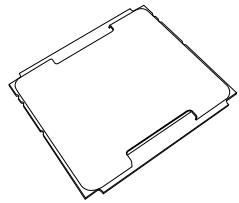
Figure 5-1. Rear I/O Ports

Rear I/O Ports	
1	GLAN Port 1 (K1SPi) / 10G LAN Port 1 (K1SPi-T)
2	GLAN Port 2 (K1SPi) / 10G LAN Port 2 (K1SPi-T)
3	USB 3.0 Port 1
4	USB 3.0 Port 0
5	UID Switch
6	VGA Port
7	Dedicated IPMI LAN Port

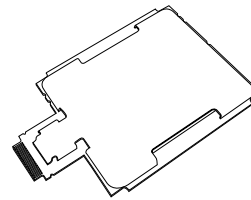
5-4 Processor and Heatsink

The 5028TK-HTR/HTTR is sold as complete systems with the processor and heatsink assembly factory installed. These components are not user serviceable and the user should not attempt to remove or modify these components other than for adjustments specifically outlined in this manual. Making other adjustments to these components risks damaging the system and voiding the system warranty.

If you believe there is a hardware problem with one of these components, please contact Supermicro's technical support team or your service contact if you have purchased a service package for this system.



Intel® Xeon Phi™ x200



Intel® Xeon Phi™ x200 with Integrated Fabric

Figure 5-2. Intel Xeon Phi x200 Processors

5-5 Installing Memory

Installing Memory

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see Figure 5-3).
2. Starting with slot DIMMA1, gently press down on the memory module until it snaps into place.
3. See the tables that follow for details on populating the DIMM slots.

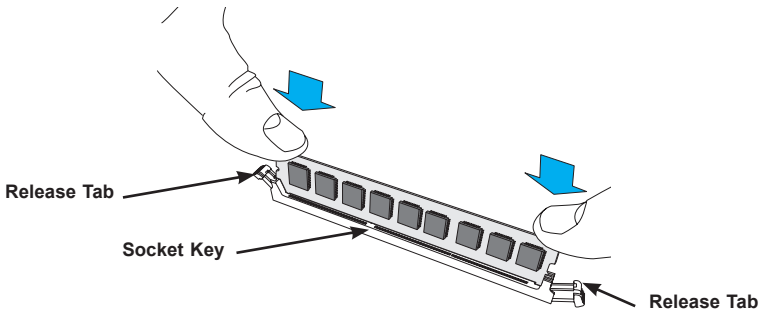
Note: It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Refer to our website for memory that has been tested on the K1SPi/K1SPi-T serverboard. For best performance, use memory modules of the same type and speed in the same bank.

Memory Support

The K1SPi/K1SPi-T has six DIMM slots to support up to 384 GB of RDIMM (Registered DIMM) DDR4-2400 ECC memory.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

Figure 5-3. DIMM Installation



Processor & Memory Module Population Configuration

For memory to work properly, follow the table below for memory installation

Memory Module Population for Optimal Performance	
DIMMs per Channel	**Memory Installation Sequence**
Populating 1 DPC	DIMM-A1/B1/C1, DIMM-D1/E1/F1 (*All 6 DIMMs are needed)

Note: For optimal memory performance, install DIMMs in all slots.

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

5-6 Adding PCI Expansion Cards

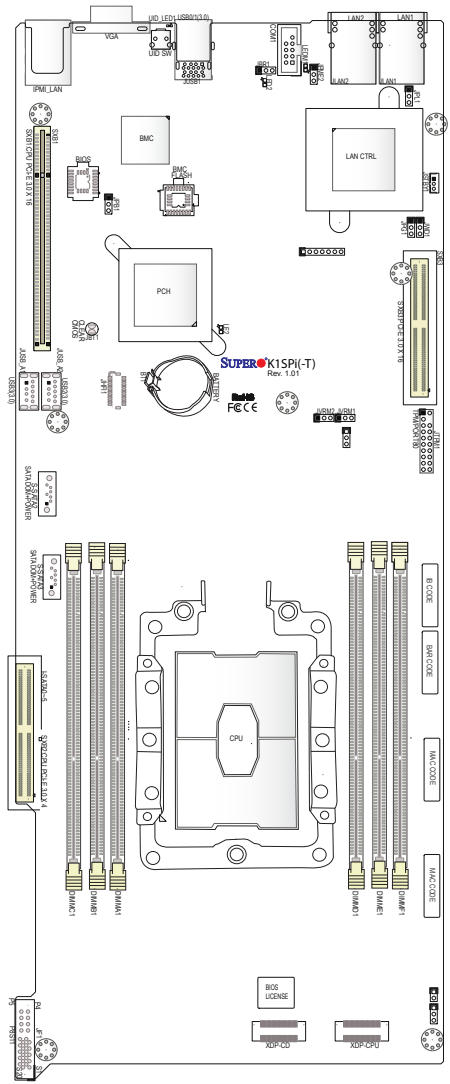
The 5028TK-HTR/HTTR includes one preinstalled riser card per node, designed specifically for use in the SC827HQ+-R2K04BP2 2U rackmount chassis. The RSCR1UTP- E16R riser supports a single PCI-E 3.0 x16 card on the right side of the system (when viewed from the rear).

Installing an Expansion Card

1. After powering down the system, remove the PCI slot shield.
2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card.
3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shield protects the serverboard and its components from EMI and aid in proper ventilation, so make sure it is always in place.

5-7 Serverboard Details

Figure 5-4. K1SPi/K1SPi-T Serverboard Layout
(not drawn to scale)



Notes

- "■" indicates the location of Pin 1.
- Jumpers/LEDs not indicated are for testing purposes only.

K1SPi/K1SPi-T Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS/Reset BIOS Configuration	See Section 5-9
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1 (K1SPi)	GLAN1/GLAN2 Enable/Disable	Pins 1-2 (Enabled)
JPL1 (K1SPi-T)	10G LAN1/10G LAN2 Enable/Disable	Pins 1-2 (Enabled)
JPME2	Manufacture Mode (ME) Select	Pins 1-2 (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)

Connector/Port	Description
COM1	Serial Port Header
JF1	Proprietary PMBus Connector
JHFI1	Host Fabric Interface (HFI) Sideband Connection Header
JPTM1	TPM (Trusted Platform Module)/Port 80
JSTBY1	P5V (+5V) Standby Power Connector
LAN1/LAN2	Gigabit (GLAN) Ethernet Port (K1SPi) 10G LAN (TLAN) Ethernet Port (K1SPi-T)
(IPMI) LAN	Dedicated IPMI LAN Port
SXB1	CPU PCI-E 3.0 x16 Slot for S-SATA0/1 support (with proprietary riser card only)
SXB2	CPU PCI-E 3.0 x4 Slot for I-SATA0-5 support (with proprietary riser card only)
SXB3	PCI-E 3.0 x16
S-SATA2/3	Powered SATA DOM Connectors
USB0/1	Backpanel USB 3.0 Ports
USB2	Type A USB 3.0 Connector
USB3	Type A USB 3.0 Connector
UID SW	Unit Identifier Switch
VGA	Backpanel VGA Port

LED	Description	State
UID_LED1	UID (Unit Identifier) LED	Blue: (On/Blinking) Unit Identified
LEDM1	BMC Heartbeat LED	Green (Blinking): BMC Normal

5-8 Connector Definitions

Add-on Card Connector (JF1)

The JF1 add-on card header provides front access to the power supply and the front panel control connections for the K1SPi/K1SPi-T motherboard. Insert an add-on card into this connector for the support of PMBus, LED signals, button signals, fan speed, fan PWM, 5V standby power, and 12V power. This connector is designed specifically for a Supermicro-proprietary add-on card. Refer to the layout below for the location of JF1.

Add-on Card Connector Pin Definitions (JF1)

Pin #	Definition	Pin #	Definition
S1	FP_PWRBTN_N	S20	LINK_ACT_N
S2	FP_PWR_LED_N	S19	UID_SW_FP_N
S3	PS_ON_N	S18	UID_BMC_N
S4	P12V_ENABLED	S17	PWM1_HWM
S5	No Connection	S16	TACHO_A1
S6	PMBCLK_PS	S15	TACHO_A2
S7	PMBDAT_PS	S14	RED_LED_ON_N
S8	PS_PWRFAIL_N	S13	P5V_STBY
S9	No Connection	S12	P5V_STBY
S10	No Connection	S11	No Connection

Add-on Card Connector Pin Definitions (JF1)

Pin #	Definition	Pin #	Definition
P1	P12V_IN	P8	Ground
P2	P12V_IN	P7	Ground
P3	P12V_IN	P6	Ground
P4	P12V_IN	P5	Ground

Ethernet Port/IPMI LAN

Two Ethernet ports (LAN1/LAN2) are located on the rear I/O panel. These LAN ports provide Gigabit (GbE) LAN support on the K1SPi and 10-Gigabit (10GbE) LAN support on the K1SPi-T. In addition, a dedicated IPMI LAN port is located next to the VGA port to provide KVM support for IPMI 2.0. These NIC ports accept RJ45-type cables. Please refer to the LED Indicator section for LAN LED information.

Universal Serial Bus (USB)

Two USB 3.0 ports (USB 0/1) are located on the rear I/O panel and two Type-A 3.0 USB headers (USB2, USB3) are located on the motherboard. Connect appropriate cables to these USB connections for USB support. (Cables are not included.) See the table on the right for pin definitions.

USB Pin Definitions

Pin#	Definition	Pin#	Definition
1	+5V	6	RX+
2	D-	7	Ground
3	D+	8	TX-
4	Ground	9	TX+
5	RX-		

Video Port

A Video (VGA) port is located on the rear I/O panel. The VGA port is supported by the ASpeed BMC and is used to provide video and CRT display.

COM Port Header

A COM port header is located on the serverboard for a serial connection.

Unit Identifier Switch

A Unit Identifier (UID) switch is located next to the VGA port on the I/O backpanel, and a rear UID LED (UID_LED1) is located at next to the UID switch on the motherboard. When the user presses the UID switch, the UID LED will be turned on. Press the UID switch again to turn off the UID LED. The UID indicator provides easy identification of a system unit that may be in need of service.

TPM Header/Port 80

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

TPM/Port 80 Header Pin Definitions

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

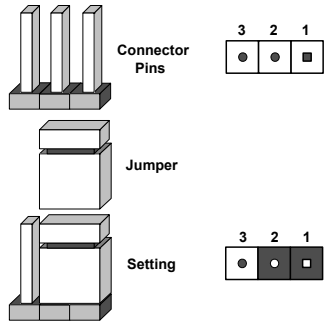
Standby Power Header

The P5V (+5V) Standby Power header is located at JSTBY1 on the motherboard. See the table on the right for pin definitions. (You must also have a card with a standby power connector and a cable to use this feature.)

Standby PWR Pin Definitions

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

5-9 Jumper Settings



Explanation of Jumpers

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

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


JBT1 contact pads

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). It is also recommended that you remove the onboard battery from the serverboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

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

VGA Enable

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

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

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate non-maskable interrupt signals for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings

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

BMC Enable

Jumper JPB1 allows you to enable the onboard BMC (Baseboard Management Controller) to provide IPMI 2.0/KVM support on the serverboard. Be sure to remove the power cord before closing pins 2-3 to disable the BMC. See the table on the right for jumper settings.

BMC Enable Jumper Settings

Jumper Setting	Definition
Pins 1-2	BMC Enabled
Pins 2-3	BMC Disabled

Manufacturer Mode Select

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

ME Mode Select Jumper Settings

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

LAN Port Enable/Disable

JPL1 is used to enable or disable the LAN1/LAN2 ports on the motherboard. The default setting is Enabled. See the tables on the right for link speed support and jumper settings.

LAN Port Enable Jumper Settings

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

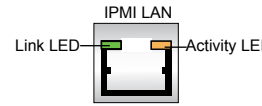
LAN Speed Support

Motherboard	LAN Speed
K1SPi	GbE LAN
K1SPi-T	10 GbE LAN

5-10 Onboard Indicators

IPMI Dedicated LAN Port LEDs

A dedicated IPMI LAN port is located on the rear I/O panel. The amber LED on the right side of the port indicates activity, while the link LED on the left indicates the speed of the connection. See the table at right for more information.



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

LAN LEDs

The onboard LAN1/LAN2 ports are located on the IO backpanel. Each Ethernet LAN port has two LEDs. The green LED on the right indicates activity. The Link LED on the left may be green, amber, or off to indicate the speed of the connection. See the tables below for more information.

LAN Speed LED (K1SPi)	
Color	Definition
Off	NC or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

LAN Speed LED (K1SPi-T)	
Color	Definition
Off	NC, 10 or 100 Mbps
Green	10 Gbps
Amber	1 Gbps

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDM1. When this LED is blinking, BMC is functioning normally. See the table at right for more information.

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

Rear UID LED

The rear UID LED is located on the rear of the motherboard. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service.

UID LED Status		
Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

5-11 PCI-Express Slots and SATA Ports

PCI-Express 3.0 x16 Slots (SXB1/SXB)

Two PCI-Express 3.0 x16 slots (SXB1/SXB3) are located on the motherboard. Refer to the motherboard layout for the locations.

PCI-Express 3.0 x4 Slot w/Support of I-SATA 0-5 (SXB2)

A PCI-Express 3.0 x4 slot for support of I-SATA 0-5 connections is located at SXB2 on the motherboard. This PCI-E slot is supported by the CPU. Refer to the motherboard layout for the locations.

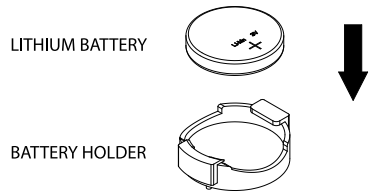
S-SATA 2/3 (Super DOM) Connectors

S-SATA2 and S-SATA3, supported by Intel PCH S-SATA controller, provide SATA 3.0 connections. These yellow connectors have power pins built in and can be used with Supermicro SuperDOM (Disk-on-Module) devices. Supermicro SuperDOMs are backward-compatible with regular, non-Supermicro SATA HDDs and SATA DOMs that require external power supplies.

5-12 Onboard Battery

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

Figure 5-5. Installing the Onboard Battery



Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC827HQ+-R2K04BP2 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

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

6-1 Static-Sensitive Devices

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

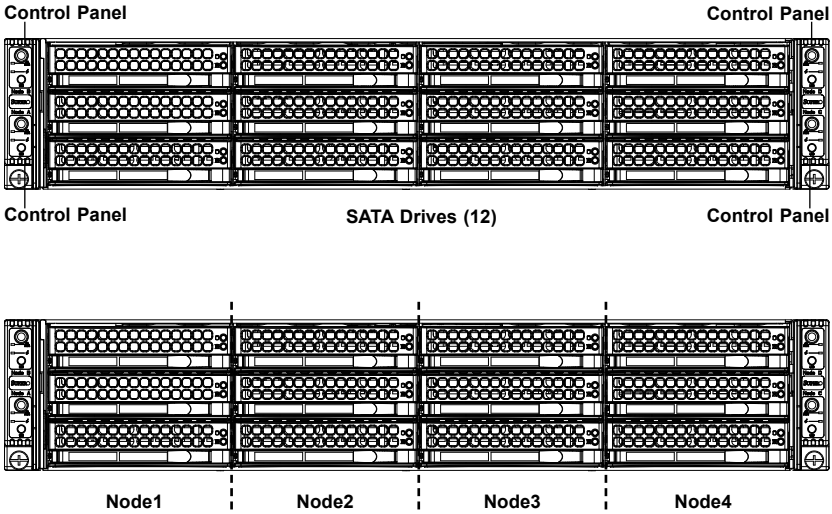
Precautions

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

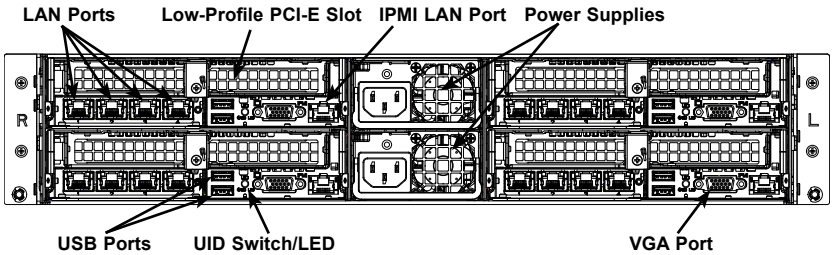
Unpacking

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

Figure 6-1. Front and Rear Chassis Views



Note: also see Figure 6-13.



6-2 Control Panel

The control panel is located on the front of the chassis. The LEDs inform you of system status.

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

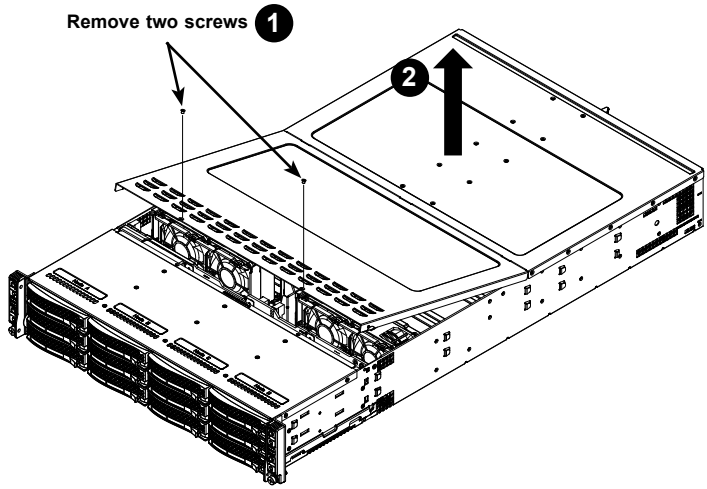
6-3 Chassis Cover

Before operating the SC827HQ+ chassis for the first time, it is important to remove the protective film covering the top of the chassis, in order to allow for proper ventilation and cooling.

Removing the Chassis Cover and Protective Film (Figure 6-2)

1. Remove the two screws which secure the top cover onto the chassis as shown above.
2. Lift the top cover up and off the chassis.

Figure 6-2. Removing the Chassis Cover



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

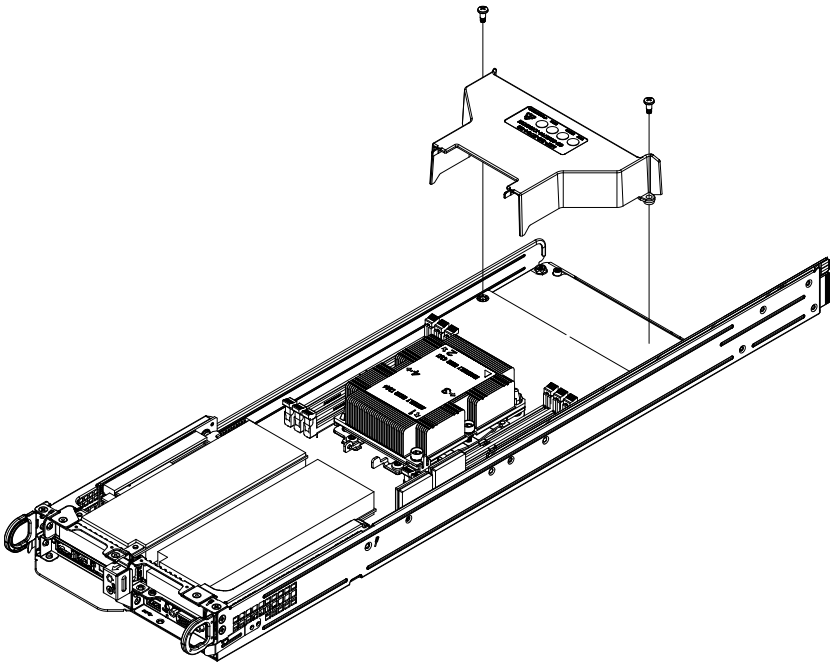
6-4 Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. The SC827HQ+ chassis air shroud does not require screws to set up. The 5028TK-HTR/HTTR requires four identical air shrouds, one in each serverboard drawer (p/n MCP-310-21704-0B). See the illustration below.

Installing an Air Shroud

1. Confirm that all four fans are in place and are working properly
2. Place the first air shroud into the serverboard drawer. The air shroud sits behind the system fans and goes over the top of the serverboard and its components.
3. Repeat the procedure for the remaining three serverboard drawers.

Figure 6-3: Installing the Air Shroud



6-5 Checking the Airflow

Checking Airflow

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.
2. Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.
3. Make sure no wires or foreign objects obstruct airflow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.
4. The control panel LEDs inform you of system status. See “Chapter 3: System Interface” for details on the LEDs and the control panel buttons.

6-6 System Fans

Four fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis internal temperature. The SC827HQ+ system fans are hot-swappable. There is no need to power down the system when replacing fans and new tools are required for installation.

Optional Fan Configurations

The SC827HQ+ model chassis is designed so that the default configuration of the system is for each serverboard to control two fans (Figure 6-4). The fans are hot-swappable. Each serverboard node in the chassis is connected to the backplane through the adapter card, mounted in the serverboard drawer. In the event that one of the serverboard drawers is removed, then the remaining serverboard will operate both fans.

Fan Configurations Options
SC827HQ+ Hot-Swappable Default Configuration
Fan A connected to backplane, backplane connected to Node A by adapter card
Fan B connected to backplane, backplane connected to Node B by adapter card
Fan C connected to backplane, backplane connected to Node C by adapter card
Fan D connected to backplane, backplane connected to Node D by adapter card

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. Remove the failed fan's power cord from the backplane.
3. Lift the fan housing up and out of the chassis.
4. Push the fan up from the bottom and out of the top of the housing.
5. Place the replacement fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Put the fan back into the chassis and reconnect the cable (see Figure 6-4 and Figure 6-5 for details).
7. Confirm that the fan is working properly before replacing the chassis cover.

Figure 6-4. System Fan Placement

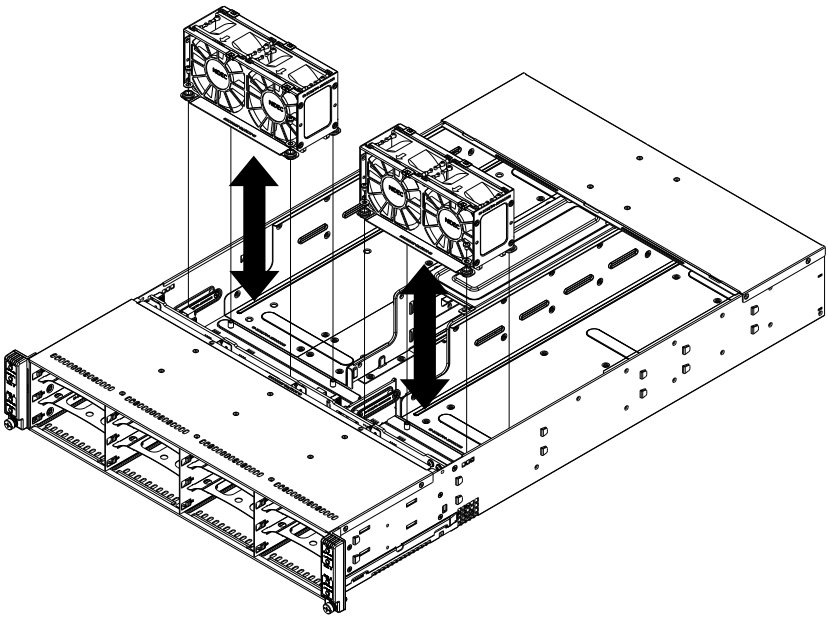
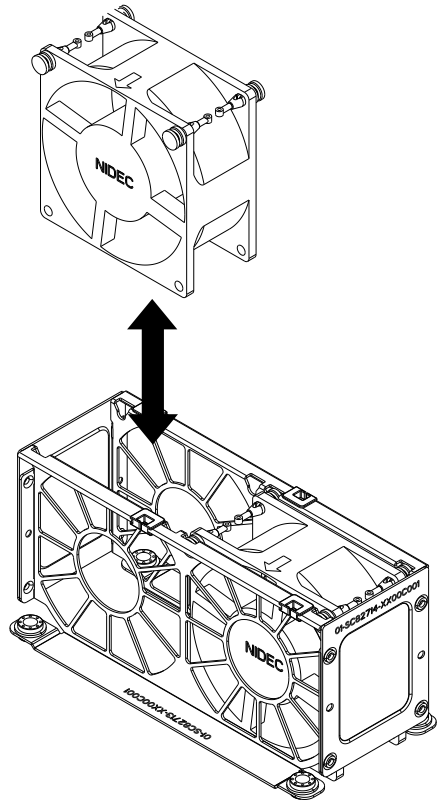


Figure 6-5. Replacing a System Fan in the Fan Housing



6-7 Removing and Installing the Backplane

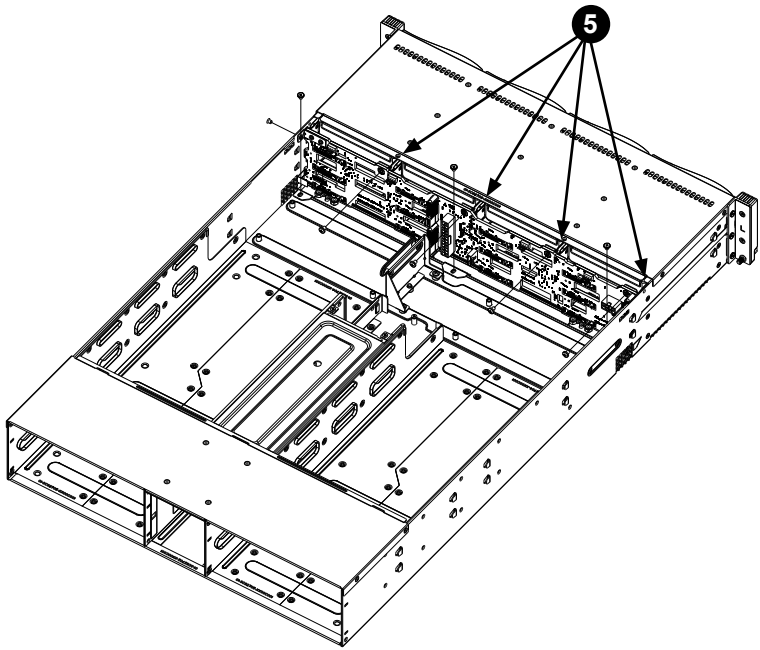
The SC827HQ+ chassis backplane is located behind the hard drives and in front of the front system fans. In order to change jumper settings on the backplane, it may be necessary to remove the backplane from the chassis.

Removing the Backplane

Removing the Backplane from the Chassis

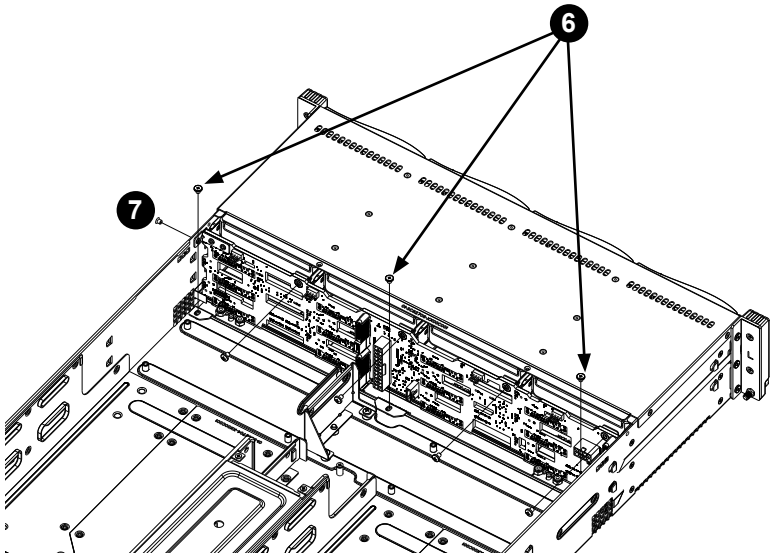
1. Power down and unplug the system from any power source.
2. Remove the chassis cover.
3. Disconnect the cabling to the backplane.
4. Remove all of the hard drive trays from the front of the chassis.
5. Remove the four upper screws at the top of the backplane, indicated by the arrows below.
6. Loosen the three screws in the spring bar, located on the floor of the chassis, indicated by the arrows below (Figure 6-6).

Figure 6-6. Removing the Screws at the Top of the Backplane



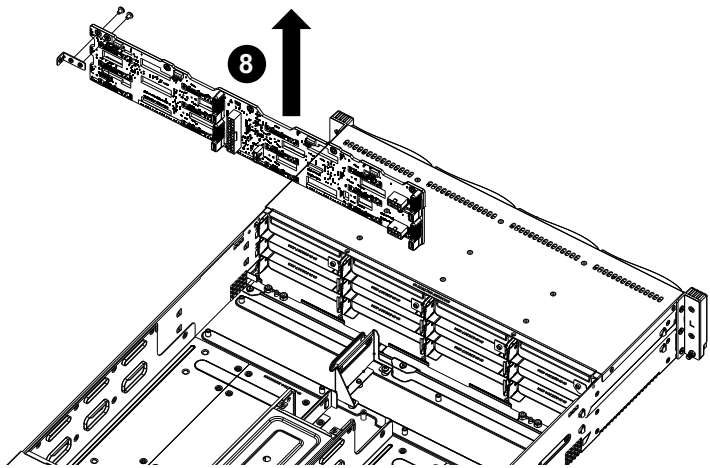
7. Remove the side screw from the side of the chassis (Figure 6-7).

Figure 6-7. Loosening the Spring Bar Screws in the Floor of the Chassis



8. Gently ease the backplane up and out of the chassis (Figure 6-8).

Figure 6-8. Removing the Backplane from the Chassis

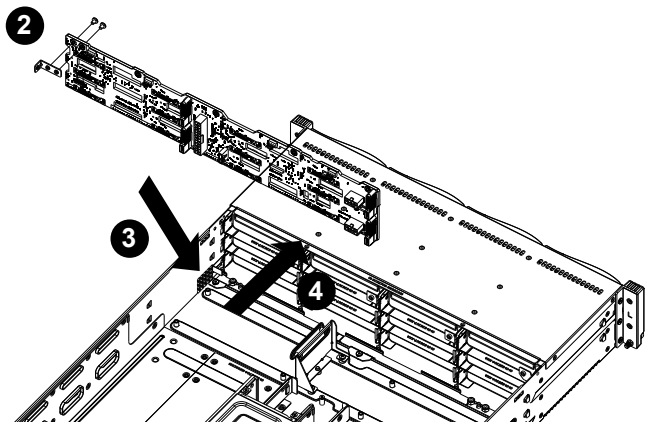


Installing the Backplane

Installing the Backplane into the Chassis (Figure 6-9)

1. Ensure that all of the hard drive trays have been removed from the bays in the front of the chassis and that the spring bar has been loosened as directed in the previous section.
2. Secure the side mounting bracket to the backplane with the two screws provided.
3. Slide the backplane into the chassis at a slight angle, pushing it up against the side of the chassis.
4. Ease the backplane forward, against the front of the chassis. This will aid in the alignment of the mounting holes.
5. Align the mounting holes in the backplane with the holes in the chassis. Replace the four screws at the top of the backplane and the screw on the side of the chassis.
6. Adjust the spring bar, then tighten the spring bar screws in the floor of the chassis.
7. Replace the side screw in the side of the chassis
8. Reconnect all cables and return the hard drive trays to their bays in the front of the chassis.

Figure 6-9. Installing the Backplane



6-8 Installing the Serverboard

I/O Shield

The I/O shield holds the serverboard ports in place. The I/O shield does not require installation.

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the serverboard and the chassis surface. The SC827HQ+ chassis includes permanent standoffs in locations used by the serverboards. These standoffs accept the rounded Phillips head screws included in the SC827HQ+ accessories packaging.

Some serverboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are used for these serverboards.

To use an optional standoff, you must place a hexagon screw through the bottom the chassis and secure the screw with the hexagonal nut (rounded side up).

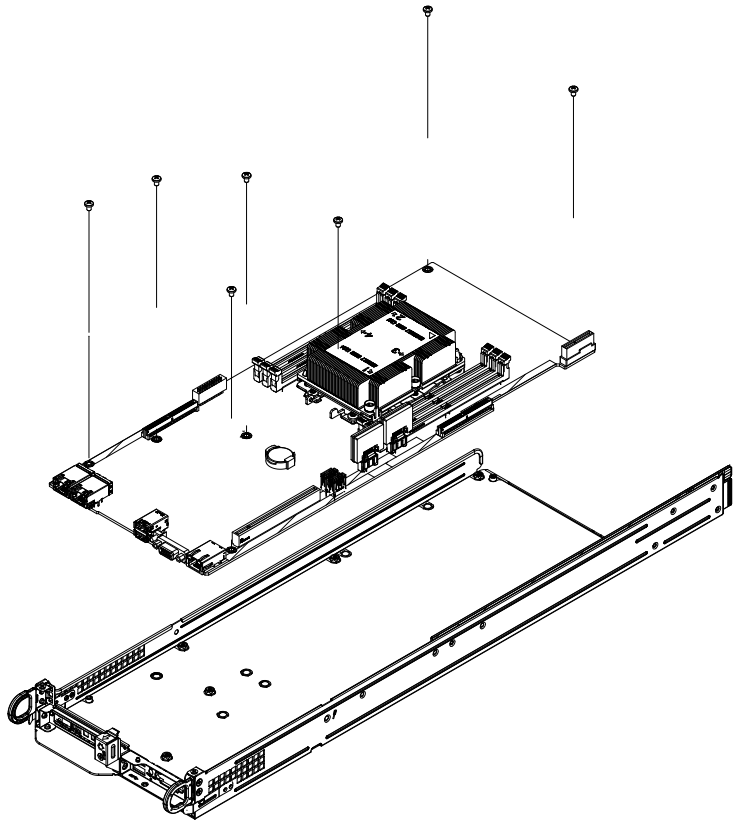
Depending upon the configuration of the serverboard being used, it is also possible that some of the optional standoffs which are pre-installed in the chassis, may need to be removed.

Installing the Serverboard (Figure 6-10)

1. Review the documentation that came with your serverboard. Become familiar with component placement, requirements, precautions, and cable connections.
2. Pull the serverboard drawer out of the back of the chassis.
3. Remove the add-on card brackets:
   a. Remove screw securing the add-on card bracket to the back of the drawer.
   b. Lift the bracket out of the drawer.
   c. Repeat this process for the second riser card.
4. Lay the first serverboard in the drawer aligning the standoffs with the serverboard.
5. Secure the serverboard to the drawer using the rounded, Phillips head screws included for this purpose.
6. Repeat steps 3 - 5 for the remaining drawers.
7. Secure the CPU(s), heatsinks, and other components to the serverboard as described in the serverboard documentation.

8. Connect the cables between the serverboard, backplane, chassis, front panel, and power supply, as needed. Also, fans may be temporarily removed to allow access to the backplane ports.
9. Replace the add-on card bracket and secure the bracket with a screw.

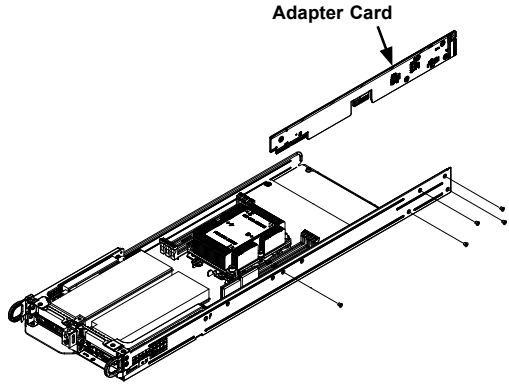
Figure 6-10. Installing the Serverboard in the Serverboard Node Drawer



6-9 Adapter Card Replacement

Each serverboard drawer comes equipped with an adapter card which plugs into the backplane. In the unlikely event that the adapter card needs to be replaced, installation requires only a Phillips head screwdriver.

Figure 6-11. Adapter Card Installation



Removing the Adapter Card (Figure 6-11)

1. Disconnect the wiring connecting the adapter card to the serverboard.
2. Remove the serverboard drawer from the chassis.
3. Remove the serverboard from the serverboard drawer by removing the screws securing it to the drawer. Set the screws aside for later use.
4. Remove the five screws securing the adapter card to the drawer and set them aside for later use.
5. Remove the adapter card from the serverboard drawer.

Installing the Adapter Card (Figure 6-11)

1. Place the adapter card in the serverboard drawer, aligning the holes in the adapter card with the holes in the serverboard drawer.
2. Secure the adapter card to the serverboard drawer, using the five screws which were previously set aside.
3. Reconnect the wiring from the serverboard to the adapter card.
4. Return the serverboard drawer to the closed position in the chassis.

Installing an Add-on Card

The SC827HQ+ chassis includes I/O slots for PCI add-on cards. Each side supports one low profile/half length add-on card for a total of four per chassis, one per drawer.

Installing Add-on Cards (Figure 6-12)

1. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. Pull open the add-on card slot clip in the rear of the chassis.
3. Slide the temporary PCI slot shield toward the slot clip and remove the temporary shield from the chassis.
4. Connect the add-on card to the riser card.
5. Secure the riser card to the serverboard tray using the riser card screw.
6. Slide the add-on card bracket into the rear add-on card slot and secure with the add-on card bracket screws.
7. Close the add-on card slot clip.

Note: Under normal circumstances, the riser card and add-on card bracket are not separated.

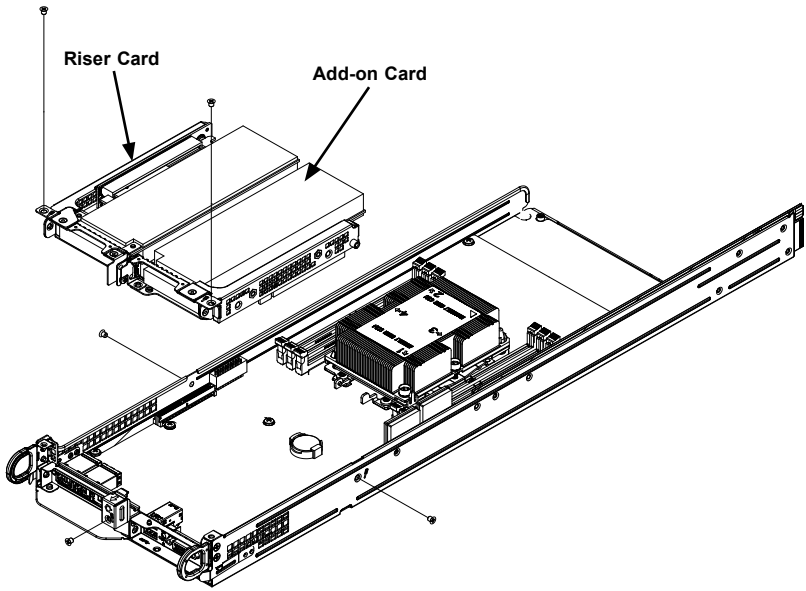


Figure 6-12. Installing a Low Profile Add-On Card

6-10 Drive Bay Installation/Removal

Accessing the Drive Bays

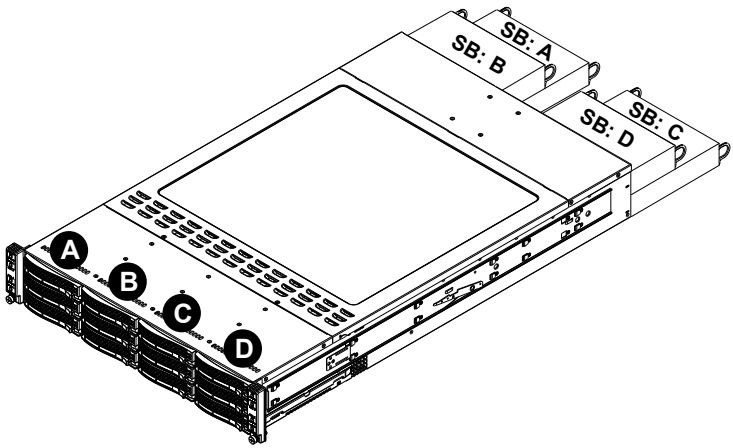
SATA Drives: You do not need to access the inside of the chassis or remove power to replace or swap SATA drives. Proceed to the next step for instructions. You must use standard 1" high, SATA drives in the system.

Note: Refer to Supermicro's web site for setup guidelines: <http://www.supermicro.com/support/manuals/>.

The SC827HQ+ chassis contains four individual serverboards in separate node drawers (Figure 6-13). Each serverboard node controls a set of three hard drives. Note that if a serverboard node drawer is pulled out of the chassis, the hard drives associated with that node will power down as well.

Serverboard Drawer Locations in the Chassis	
Serverboard B Controls HDDs B1, B2 and B3	Serverboard D Controls HDDs D1, D2 and D3
Serverboard A Controls HDDs A1, A2 and A3	Serverboard C Controls HDDs C1, C2 and C3

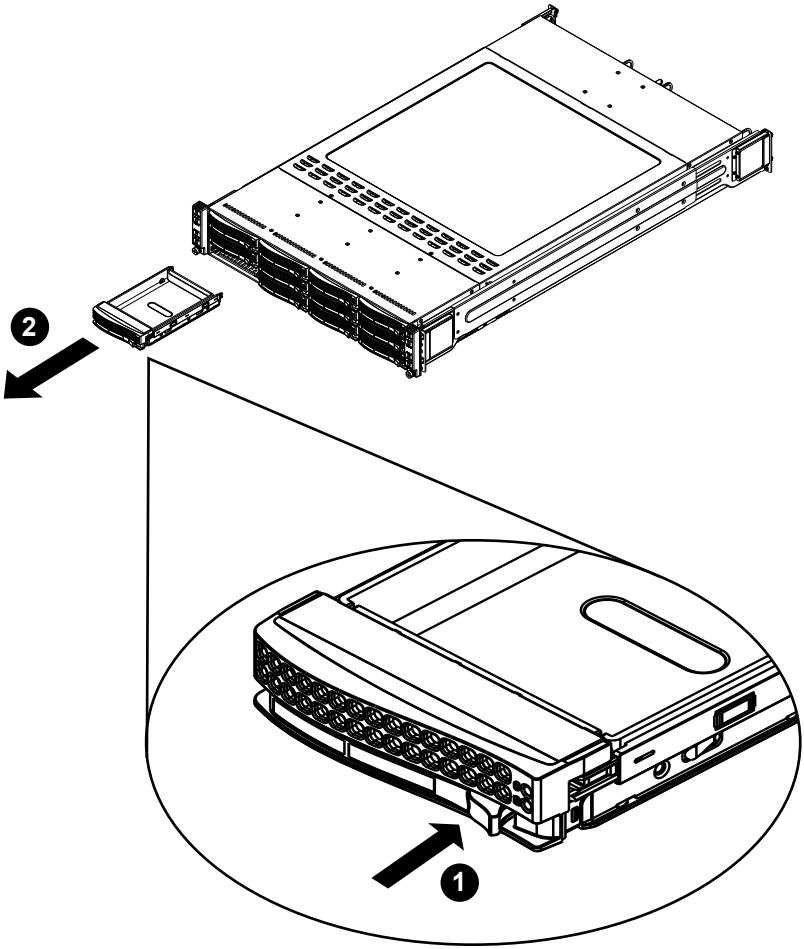
Figure 6-13. Hard Drives and their Corresponding Serverboard Nodes



Removing Hard Drive Trays from the Chassis (Figure 6-14)

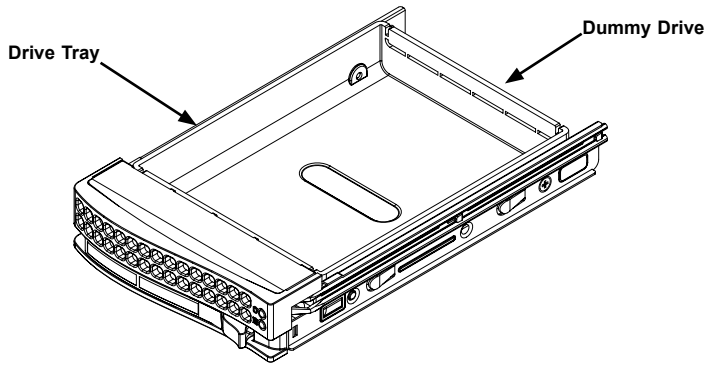
1. Press the release button on the drive tray. This extends the drive bay handle.
2. Use the handle to pull the drive out of the chassis.

Figure 6-14. Removing Hard Drive



The drives are mounted in drive carriers to simplify their installation and removal from the chassis (Figure 6-15). These carriers also help promote proper airflow for the drive bays.

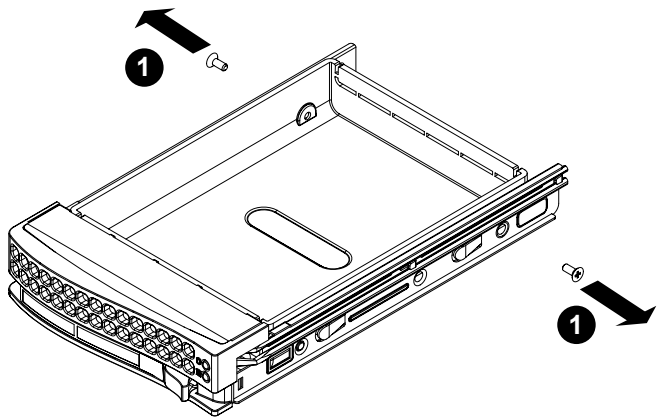
Figure 6-15. Chassis Drive Tray



Installing a Drive into the Hard Drive Tray

1. Remove the screws holding connecting the drive tray the carrier (Figure 6-16).
2. Remove the tray from the carrier.

Figure 6-16. Removing Dummy Drive from Tray

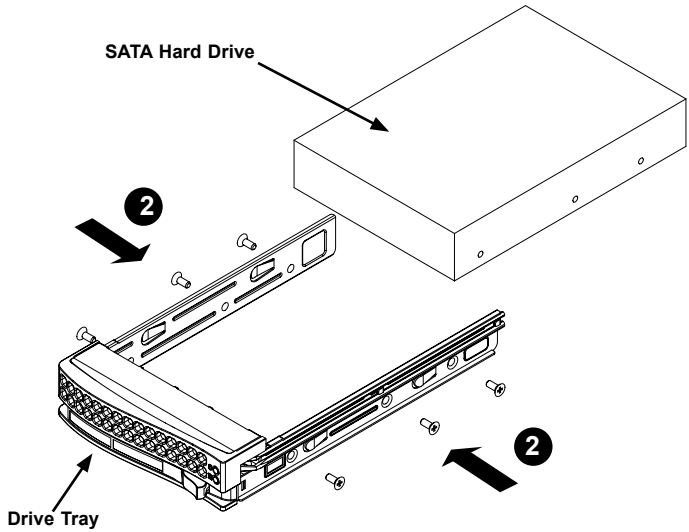


Caution: Except for short periods of time while swapping hard drives, do not operate the server with the hard drives empty.

Installing the Hard Drive (Figure 6-17)

1. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.
2. Secure the hard drive by tightening all six (6) screws.
3. Use the open handle to replace the drive tray into the chassis. Make sure the close the drive tray handle.

Figure 6-17. Installing the Hard Drive



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

6-11 Power Supply

The SC827HQ+ chassis utilizes redundant, hot-plug 2000 Watt power supplies. The power supplies are auto-switching capable. This enables them to automatically sense and operate at a 100v to 240v input voltage.

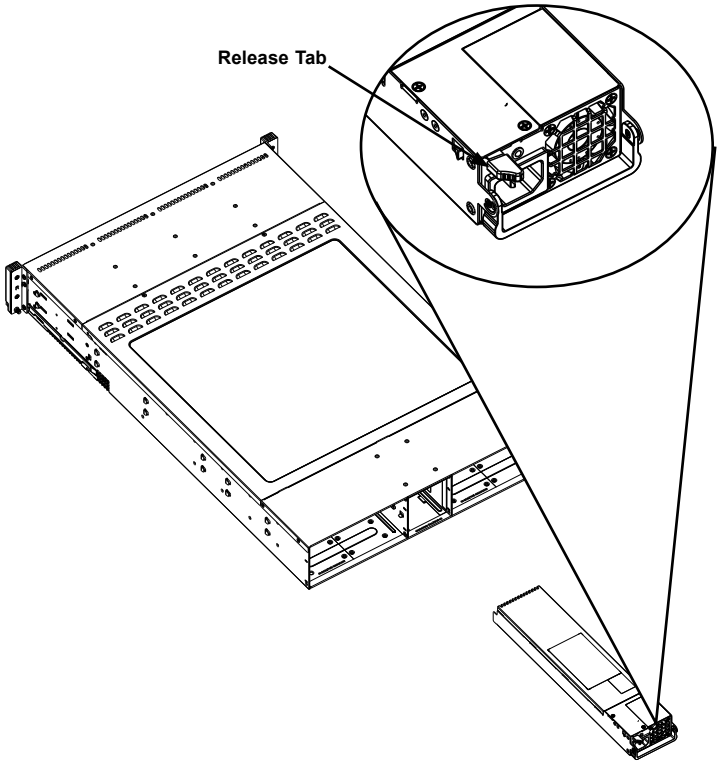
Power Supply Replacement

The SC827HQ+ chassis utilizes two redundant power supplies. In the unlikely event that the power supply unit needs to be replaced, one power supply can be removed, without powering down the system. Replacement units can be ordered directly from Supermicro (See the contact information in the Preface of this manual).

Changing the Power Supply (Figure 6-18)

1. Power down all four nodes and unplug the power cord.
2. Push the release tab (on the back of the power supply) as illustrated.
3. Pull the power supply out using the handle provided.
4. Push the new power supply module into the power bay until you hear a click.
5. Plug the AC power cord back into the module and power up the nodes.

Figure 6-18. Changing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS setup utility for the K1SPi/K1SPi-T. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS setup utility screens.

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

Starting BIOS Setup Utility

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

> **Note**: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

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

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

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

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

How To Change the Configuration Data

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

How to Start the Setup Utility

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

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages

arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

7-2 Main Setup

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

The following Main menu items will be displayed:

System Date/System Time

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

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

Supermicro K1SPi(-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.

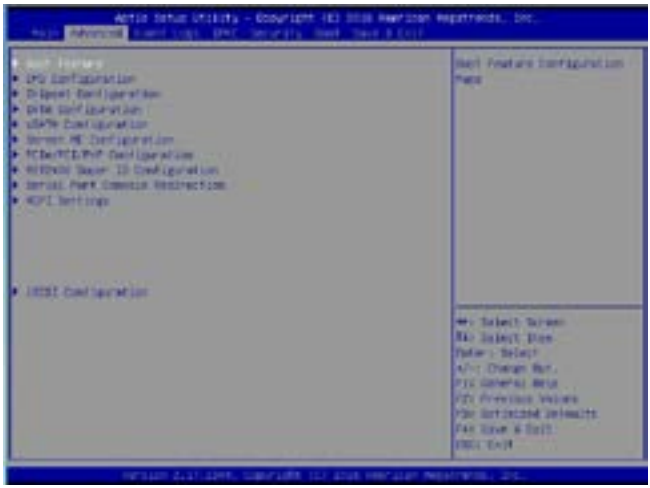
CPLD Version: This item displays the version of CPLD (Complex Programmable Logic Device) firmware used in the system.

Memory Information

Total Memory: This item displays the total size of memory available 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, DRAM frequency or BIOS timing setting may cause the system to malfunction. When this occurs, restore the setting to the manufacture 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 **Enabled** and Disabled.

AddOn ROM Display Mode

Use this item to set the display mode for the AddOn ROM messages. Select Keep Current to use the current AddOn ROM Messages display setting. Select Force BIOS to use the AddOn ROM Messages 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 Off and **On**.

Wait For 'F1' If Error

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

INT19 (Interrupt 19) Trap Response

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

Power Button Function

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

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.

▶Per-Socket Configuration

- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor 0 Version

Intel® Hyper-Threading Technology

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

Monitor/Mwait

Select Enable to use address-range monitor and advanced power management which will require the use of monitor instructions to enhance processor performance. The options are **Enable** and Disable.

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 **Enable** and Disable. (Refer to Intel and Microsoft websites for more information.)

VMX (Available when supported by the CPU and the OS)

Select Enable for CPU-related Virtualization support. This feature is used in conjunction with the items: "Clear MCA," "Enable SMX," and "Lock Chipset" for Virtualization media support. The options are **Enable** and Disable.

PPIN Control

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

L2 Prefetcher (Available when supported by the CPU)

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

L1 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 L1 cache to improve CPU performance. The options are Disable and **Enable**.

X2APIC (Advanced Programmable Interrupt Controller) (Available when supported by the CPU)

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

AES-NI

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

APIC Physical Mode (Available when supported by the CPU and the OS)

Select Enable to enable the physical destination mode in the Advanced Programmable Interrupt Controller (APIC). The options are **Disable** and Enable.

Down Stream PECI (Platform Environment Control Interface)

Select Enable to allow the client server to interact with the host server directly to achieve better host-client communication in the PECI platform, which will result in power saving and energy efficiency. The options are **Disable** and Enable.

Targeted SMI

Select Enable to enable specific (targeted) features in the Scalable Memory Interconnect (SMI) controller. The options are Disable and **Enable**.

▶ Advanced Power Management Configuration (Available when supported by your system)

Advanced Power Management Configuration

CPU PM (Power Management) Tuning

If this feature is set to Auto, CPU power management tuning will be performed automatically, and all bits in the MRS 1F0h table will maintain the value of P0. The options are **Auto** and Manual.

EIST (P-states)

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

Config TDP (Configuring Thermal Design Power)

Select Enable to configure TDP power settings to enhance thermal management. The options are Enable and **Disable**. If this item is set to Enable, the following items will display:

Config TDP Level (Available when Config TDP above is set to Enable)

Use this item to set TDP configuration level to enhance thermal management. The options are **Nominal**, Level 1, and Level 2.

▶ CPU P State Control

P-state Domain

Use this feature to select the domain type for the P-state (Power-Performance State). If Per Package is selected, all processors on the motherboard will be marked as in the same domain and in the package. The options are **Per Package** and Per Logical.

ESIT PSD Function

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

SPD (Serial Presence Detect)

Select Enable for SPD support, which will allow the BIOS to access and use memory information that is stored in an EEPROM (electrically erasable programmable read-only memory) chip to properly configure memory modules upon bootup to maximize system memory performance. The options are Enable and **Disable**.

PL2_SAFETY_NET_ENABLE

Select Enable to enable PL2_SAFETY_NET to enhance memory performance. The options are Disable and **Enable**.

Energy Efficient P-State

Select Enable to use Energy Efficient P-State for CPU energy efficiency enhancement. P-state is also known as "SpeedStep" for Intel processors. The options are Disable and **Enable**

Turbo Mode

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

▶ CPU C State Control

CPU C State

Select Enable to enable CPU C-State support to enhance CPU power management. Please reboot the system for the change of the setting to take effect. The options are Disable and **Enable**.

Package C State limit

Use this item to set the limit on the C-State package register. The options are C0/1 state, C2 state, C6 (non-Retention) state, and **C6 (Retention) state**.

▶ CPU T State Control

ACPI (Advanced Configuration Power Interface) 3.0 T-States

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

▶ CPU Thermal Management State Control

Bi-directional PROCHOT#

Select Enable to allow an external agent to trigger CPU-throttling in an attempt to cool down the processor when it is too hot. The options are **Enable** and Disable.

PROCHOT# Response

This feature allows the CPU to throttle to a lower power state by asserting a PROCHOT# (Number). Select Pn Clamping for maximum efficiency frequency. Select PM Clamping for minimum efficiency frequency. The options are **Pm Clamping** and Pn Clamping.

VR (Voltage Regulator) Thermal Alert

Select Enabled to enable VR thermal alert when the system is in overclocking mode. The options are **Enable** and Disable.

▶Socket RAPL (Running Average Power Limit) Configuration

FAST_RAPL_NSTRICE_PL2_DUBY_CYCLE

Use this feature to set the fast running average power limit between 25 (10%) to 64 (25%). The default setting is **64**.

Turbo Pwr (Power) Limit MSR Lock

Select Enable to set the power use limit for the MRS locking when it is running in the turbo mode. The options are **Disable** and Enable.

Long Term Pwr (Power) Limit Ovrd (Override)

Select Enable to support long-term power limit override. If this feature is set to Disabled, BIOS will set the default value. The options are **Enable** and Disable.

Long Duration Pwr (Power) Limit

Select Enable to set the power limit during which the TDP (Thermal Design Power) value should be maintained. The default setting is **0**.

Long Duration Time Window

Select Enable to set the time window during which the TDP value (between 0 to 56 in seconds) should be maintained. The default setting is **1**.

Pkg Clmp Lim1 (Paclage Clamping Limit 1)

Use this item to set the limit on power performance states for the runtime processor, with P0 being the state with the highest frequency (clock speed) and power (consumption), and P1, a step lower in performance than P0, with its frequency and voltage scaled back a notch. The options are Between P1/P0 and **Below P1**.

Short Duration Power Limit

This item displays the time period during which short duration power is maintained. The default setting is **0**.

Pkg Clmp Lim2 (Package Clamping Limit2)

Use this item to set the limit on power performance states for the processor operating in turbo mode, with P0 being the state with the highest frequency (clock speed) and power (consumption), and P1, a step lower in performance than P0, with its frequency and voltage scaled back a notch. The options are Between P1/P0 and **Below P1**.

▶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 Intel North Bridge settings.

▶IIO Configuration

PCIe Train by BIOS

Select Yes to enable this feature to maximize the reliability of the A-0 Silicon when the IIO is strapped for "Wait-for-BIOS". The options are **Yes** and No.

EV DFX (Device Function On-Hide) Features

When this feature is set to Enable, 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 (II0 PCIe Port 1)

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

IOU0 (II0 PCIe Port 2)

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

IOU1 (II0 PCIe Port 3)

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

▶Socket 0 PCIeD00F0 - Port 0/DIM

This section allows the user to configure the settings for Socket 0 PCIeD00F0-Port 0/DMI

Link Speed

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

PCI-E Port DeEmphasis

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

The following items will be 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 options are: <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS.

Fatal Err (Error) Over

Select Enable to force a fatal error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force a non-fatal error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

Corr Err (Correctable Error) Over

Select Enable to force a correctable error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. 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 options are **Disable** and Enable.

▶IOAT (Intel® IO Acceleration) Configuration

Relaxed Ordering

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

▶IIO Generation Configuration

IIO ACPI (Advanced Configuration Power Interface)

Select Enable to enable Advanced Configuration Power Interface (ACPI) support for the IO device specified by the user. The options are **Enable** and Disable.

▶ Intel VT for Directed I/O (VT-d)

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

PCI Express Global Options

The section allows the user to configure the following PCI-E global options:

WA 4167453

Select Enable for WA 4167453 support. The options are **Disable** and Enable.

NoSnoop (No Snoop) Config. (Configuration)

Use this item to configure the no-snoop mode setting for each PCI-E device. The options are **VC0/VCP/VC1** and VC1.

Halt On DMI Degradation

Select Enable to put the system on hold during DMI width/link degradation. The options are **Disable** and Enable.

Power Down Unused Ports

Select Disable to power down the ports that are not being used. The options are Disable and **Disable Unused Ports (No IIO Clock Gating)**.

SLD WA Revision

This item allows the user to determine how SLD WA revision is to be done. The default setting is **Auto**.

Rx Clock WA

Select Enable to use Rx Clock WA revision. The options are **Disable** and Enable.

PCI-E ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are Disable and **L1 Only.**

PCI-E Stop & Scream Support

Select Enable for PCI-E Stop & Scream support. The options are Enable and **Disable**.

Snoop Response Hold Off

This feature sets the Snoop Response Hold Off value. The default setting is **256 Cycle.**

Intel® VT for Directed I/O (VT-d)

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

ACS Control

This item determines how to use the Access Control Service (ACS) in the system. ACS control provides an easy way of authenticating and authorizing for the user to gain access to web applications and services. Select Enable to achieve ACS Control via software programming. Select Disable to obtain ACS control by managing PCI-E bridge connections. The options are **Enable** and Disable.

Interrupt Remapping

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

Coherency Support (Non-Isoch)

Select Enable for the Non-Iscoh VT-d engine to pass through DMA (Direct Memory Access) to enhance system performance. The options are **Enable** and Disable.

▶Uncore Configuration

Use this feature to configure the settings for the Muliti-Channel DRAMs (MCDRAMs) that reside in the KL series processor. The MCDRAM is a high-bandwidth, high-frequency DRAM and can be configured for multi-functional use. Each KL processor contains up to eight MCDRAMs in the processor package, and each MCDRAM works in conjunction with an OPIO (On-Package IO), which acts as a controller for the MCDRAM.

▶Uncore Status

Cluster Mode

This feature allows the user to decide how to arrange all MCDRAMs that reside in the processor into clusters. The options are **All2All**, SNC-2, SNC-4, Hemisphere, Quadrant, and Auto.

Memory Mode

Use this feature to set the memory mode for the MCDRAMs (MCDRAMs) in the processor. Select Flat to configure MCDRAMs for regular use. Select Cache to configure MCDRAMs as (L3) cache. Select Hybrid to configure MCDRAMs for regular use and for cache use. Select Auto to allow the BIOS automatically configure the MCDRAMs for the function specified by the BIOS. The options are **Flat**, Cache, Hybrid, and Auto.

Treat MCDRAM as Hot-Pluggable Memory (Available when the Memory Mode above is set to Flat or Hybrid)

If this feature is set to Yes, the MCDRAM will be treated as a Hot-Pluggable device which can be changed or re-configured without powering down the system. The options are **No** and Yes.

OPIO Parallel Training

Select Enable to allow multiple OPIOs (On-Package IO) that work in conjunction with different MCDRAMs in the processor to be trained simultaneously to enhance system performance. The options are **Enable** and Disable.

OPIO Parallel Channel Count (Available when the item- OPIO Parallel Training is set to Enable)

Use this feature to determine the number of OPIOs to be trained simultaneously. The options are 2, 4, 6, and **8**.

MCDRAM Repair

Select Enable to allow the BIOS or the OS to attempt to repair the MCDRAM when an error occurs. If the repair fails, the faulty MCDRM(s) will be taken out

from system configuration. This operation will increase system boot time. The options are Enable and **Disable**.

MCDRAM Diagnostics

Select Enable to allow the BIOS or the OS to do a diagnosis to determine if a repair is needed for an MCDRAM. During the process of diagnosis, the MCDRAM will not be taken out from system configuration. This operation will increase system boot time. The options are Disable and **Enable**.

MCDRAM Data in NVRAM

If this feature is set to Disable, there will not data transfer between the MCDRAM and the NVRAM (Non-Volatile RAM). If this feature is set to Store, data that is currently stored in the MCDRAM will be transferred to and stored in the NVRAM. If this feature is set to Use, data that is currently stored in the NVRAM will be transferred to MCDRAM for its use. If this feature is set to UseStore, data that is currently stored in the NVRAM will be transferred to MCDRAM for its use and new data that is in MCDRAM will be sent to NVRAM for data updates. The options are Diable, **Store**, Use, and UseStorre

EDC Demand Scrub

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

EDC Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on the EDC and send the correction to the requestor (the original source). When this item is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Enable** and Disable.

▶Memory Configuration

Enforce POR

Select Enforce POR to enforce the onboard memory DIMM modules to operate and run at the frequency and voltage as specified by the Intel POR specifications. The options are **Enforce POR**, Disabled and Enforce Stretch Goals.

Memory Frequency

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

Attempt Fast Cold Boot

Select Enabled to skip a portion of memory reference codes whenever possible in an attempt to increase bootup speed. The options are Enabled and **Disabled**.

Data Scrambling

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

▶Memory Information

This item displays the information of a DIMM module as detected by the AMI BIOS. The following items will display:

- DIMMA1
- DIMMB1
- DIMMC1
- DIMMD1
- DIMME1
- DIMMF1

▶Memory Map

▶Memory Map

Channel Interleaving

Use this item to set DIMM channel interleaving mood to enhance memory performance. The options are 1-Way Interleave and 6-Way Interleave.

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Auto**, Enable and Disable.

Patrol Scrub Interval

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

Demand Scrub

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

▶South Bridge

The following South Bridge information will display:

▶USB Configuration

- USB Module Version
- USB Controllers
- USB Devices

Legacy USB Support

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

XHCI Hand-Off

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

EHCI Hand-Off

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

Port 60/64 Emulation

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

▶SATA Configuration

When this submenu is selected, AMI BIOS automatically detects the SATA devices installed in the system and displays the following items:

SATA Controller

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

Configure SATA as

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

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

Aggressive Link Power Management

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

SATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

Port 0~ Port 5

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

(Port 0~ Port 5) Hot Plug

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

(Port 0~ Port 5) Spin Up Device

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

(Port 0~ Port 5) SATA Device Type

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

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

Aggressive Link Power Management

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

SATA Port 0~ Port 5

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

- 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:*

SATA RSTe Boot Info

Select Enabled to provide full int13h support for the SATA controller that is attached to a device specified by the user. Please set the CMS Storage OPROM policy to Legacy for this feature to be effective. The options are Disabled and **Enabled**.

Aggressive Link Power Management

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

(Port 0~ Port 5) Hot Plug

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

(Port 0~ Port 5) Spin Up Device

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

(Port 0~ Port 5) SATA Device Type

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

▶sSATA Configuration

When this submenu is selected, AMI BIOS automatically detects the sSATA devices installed in the system and displays the following items:

sSATA Controller

This item enables or disables the onboard 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:*

Aggressive Link Power Management

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

sSATA Port 0~ Port 5

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

- Model number of drive and capacity

- Software Preserve Support

Port 0~ Port 5

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

(Port 0~ Port 5) Hot Plug

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

(Port 0~ Port 5) Configure as eSATA

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

(Port 0~ Port 5) Spin Up Device

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

(Port 0~ Port 5) 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:*

Aggressive Link Power Management

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

sSATA Port 0~ Port 5

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

- Model number of drive and capacity

- Software Preserve Support

(Port 0~ Port 5) sSATA Device Type (Available when an sSATA port is detected)

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

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

Aggressive Link Power Management

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

s SATAPort 0~ Port 5

This item displays the information detected on the sSATA drive connected to the particular sSATA port specified by the user.

- Model number of drive and capacity
- Software Preserve Support

sSATA Port 0~ Port 5

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

(Port 0 ~ Port 5) Hot Plug

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

(Port 0 ~ Port 5) Spin Up Device

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

(Port 0 ~ Port 5) sSATA Device Type

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

▶Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

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

▶PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

- PCI Bus Driver Version
- PCI Device Common Settings

PCI Latency Timer

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

PCI-X Latency Timer

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

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

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

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

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

ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are Force L0s, Auto, and **Disabled.**

Maximum Payload

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

MMIOHBase

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

SXB1 PCI-E x16 OPROM/SXB2 PCI-E x4 OPROM/SXB3 PCI-E x16 OPROM

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

Onboard LAN Option ROM Type OPROM

Use this feature to configure the type of device for the LAN port specified by the user to be used for system boot. 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 and LAN Port2 for system boot. The default setting for LAN1 Option ROM is **PXE**, for LAN2 Option ROM is **Disabled**.

Network Stack

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

Ipv4 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv4 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv4 PXE boot option will not be supported. The options are **Enabled** and Disabled.

Ipv6 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv6 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv4 PXE boot option will not be supported. The options are Enabled and **Disabled.**

Onboard Video Option ROM Type

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

▶AST2400 Super IO Configuration

Super IO Chip AST2400

▶Serial Port 1 Configuration/Serial Port 2 Configuration

Serial Port 1/Serial Port 2

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

Device Settings

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

Change Port 1 Settings/Change Port 2 Settings

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

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

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

Serial Port 2 Attribute

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

▶Serial Port Console Redirection

COM 1

COM 1 Console Redirection

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

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

▶COM 1 Console Redirection Settings

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS Post

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

SOL/COM2

SOL/COM2 Console Redirection

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

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

▶SOL/COM2 Console Redirection Settings

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

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS Post

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

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

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

(EMS) Console Redirection

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

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

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

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

Out-of-Band Management Port

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

Terminal Type

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

Bits Per Second

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

Flow Control

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

The following settings will be displayed:

Data Bits, Parity, Stop Bits

▶Enabling TPM in the BIOS

The steps below describe the proper procedure on how to enable the TPM in the BIOS. This process is necessary to activate support in the system before you can start using the TPM.

1. Enter the BIOS setup screen. You may do this either from the IPMI remote console or from the server directly using KVM. Reboot the system and press the <Del> key as the system boots until you reach the BIOS screen.

2. You will be presented with the BIOS setup main screen. Using the arrow keys, navigate to the Advanced tab. From there, navigate down and select the "CPU Configuration" option as shown below. Press <Enter>.

3. You will be taken to the CPU Configuration page. Using the arrow keys, navigate down to the "Intel Virtualization Technology" option and press <Enter>. Select "Enable" and press <Enter>.

4. Once you have enabled Virtualization support, press your <Esc> key until you are back to the Advanced tab. Navigate down to the "Trusted Computing" option and press <Enter>.

5. The Trusted Computing window will appear. Select "TPM State" and press <Enter>.

6. From the window that pops up, select "Enabled" and press <Enter>.

7. You must save your changes and reset for the changes to take effect. Scroll to the Save & Exit tab and select "Save Changes and Reset."

▶ACPI Settings

WHEA Support

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

High Precision Event Timer

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

▶iSCSI Configuration

This item displays iSCSI configuration information:

iSCSI Initiator Name

Use this item to enter the name of the iSCSI Initiator, which is a unique name used in the world. The name must in the IQN format. The following submenu will be available for configuration:

▶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 **Enabled** and Disabled.

Runtime Error Logging Support

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

Erasing Settings

Erase Event Log

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

When Log is Full

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

SMBIOS Event Log Standard Settings

Log System Boot Event

Select Enabled to log system boot events. The options are 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) the multiple event counter should wait before generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

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

Custom Options

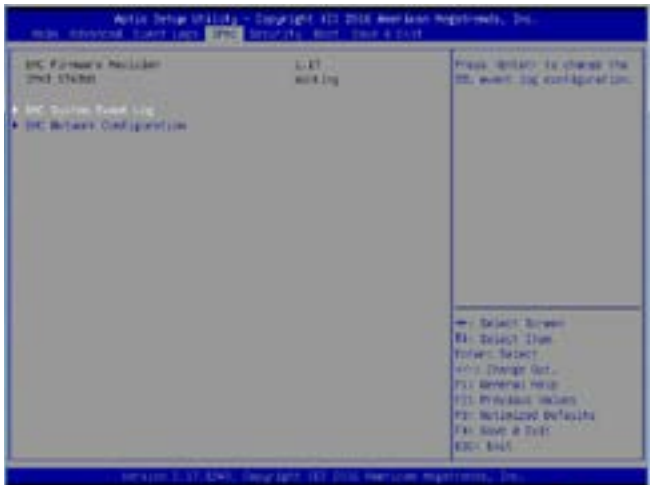
▶View SMBIOS Event Log

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.



BMC (BaseBoard Management Controller) Firmware Revision

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

IPMI Status

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

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

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

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

▶BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

Update IPMI LAN Configuration

Select Yes for the system BIOS to automatically reset the following IPMI settings at next system boot. The options are Yes and **No**. When this option is set to Enabled, the following item will display.)

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

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

Station IP Address

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

Subnet Mask

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

Station MAC Address

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

Gateway IP Address

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

VLAN

Select Enabled to enable IPMI VLAN function support. The options are **Enabled** and Disabled.

7-6 Security Settings

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

Password Check

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

Administrator Password

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

User Password

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

▶Secure Boot Menu

The following items will display:

- System Mode
- Secure Boot
- Vendor Keys

Secure Boot Control

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

Secure Boot Mode

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

▶Key Management

Provision Factory Default Keys

Select Enable to install all manufacturer default keys for the following system security settings. The options are **Disabled** and Enabled.

▶Enroll All Factor Default Keys)

Select Enable to install all manufacturer defaults for the following system security settings. The options are **Yes** and No.

▶Save All Secure Boot Variables

This feature allows the user to set and save the following Secure Boot Variable settings:

▶Platform Key (PK)

This feature allows the user to configure and save platform key settings.

▶Key Exchange Key

This feature allows the user to configure and save Key-Exchange-Key settings.

▶Authorized Signatures

This feature allows the user to set and save authorized signatures and grant access to those whose names appear on the list.

▶Forbidden Signatures

This feature allows the user to set and save the forbidden signatures and deny the access to those whose names appear on the list.

▶Authorized TimeStamps

This feature allows the user to set and save the timestamps for authorized signatures to indicate when these signatures were entered into the system.

▶OsRecovery Signatures

This feature allows the user to set and save the authorized signatures used for OS recovery.

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 a bootable device from which the system will boot. Press <Enter> on each entry from top to bottom to select devices.

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

- Dual Boot Order #1 - Boot Order #15

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

- Legacy Boot Order #1 - Boot Order #7

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

- UEFI Boot Order #1 - Boot Order #8

▶Add New Driver Option

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

Add Driver Option

Use this feature to select the target driver to add to the boot priority list.

Path for Driver Option

Use this feature to create a new driver path for boot option.

Driver Option File Path

Use this feature to set a new driver file path for boot option.

Create

Use this feature to create a new boot option for the new driver.

▶Delete Driver Option

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

Delete Drive Option

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

▶Hard Disk Drive BBS Priorities

- Legacy Boot Order #1

▶Network Drive BBS Priorities

- Legacy Boot Order #1 - # 8

▶USB Key Drive BBS Priorities

- Legacy Boot Order #1

▶UEFI USB Key Drive BBS Priorities

- UEFI Boot Order #1

7-8 Save & Exit

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

Discard Changes and Exit

Select this option to quit the BIOS setup without making any permanent changes to the system configuration, and exit from the BIOS setup utility.

Save Changes and Reset

After you have made all changes on the BIOS settings, select this option to save the changes you've made and then reboot the computer for the new system configuration changes to take effect.

Save Options

Save Changes

After you have made all changes on the BIOS settings, 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 you've made and return to the AMI BIOS setup utility.

Restore Optimized Defaults

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

Save As User Defaults

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

Restore User Defaults

Select this item and press <Enter> to retrieve user-defined settings that were previously saved for future use.

Boot Override

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

Appendix A

System Specifications

Note: Unless noted, specifications apply to a complete system (all four nodes).

Processors

One Intel® Xeon Phi™ x200 processor per node

Chipset

PCH C612 chipset

BIOS

16 MB AMI BIOS® Flash EEPROM per node

Memory Capacity

Each node has six DIMM slots supporting up to 384 GB of RDIMM (Registered DIMM) DDR4-2400 ECC memory

Note: refer to Section 5-5 for details on installation and the Supermicro website for the latest memory support information.

SATA Drive Bays

Twelve hot-swap drive bays to house 3.5" SATA drives

PCI Expansion

Each node in the system can accommodate two PCI-E 3.0 x16 expansion cards.

Serverboard

K1SPi/K1SPi-T serverboard (proprietary form factor)

Dimensions: (LxW) 6.8 x 16.64 in. (172.72 x 422.66 mm)

Chassis

SC827HQ+-R2K04BP2 (2U rackmount)

Dimensions: (WxHxD) 17.25 x 3.47 x 28.5 in. (438 x 88 x 724 mm)

Weight

Gross (Bare Bone): 88 lbs. (40 kg.)

System Cooling

The system has four 8-cm PWM cooling fans

System Input Requirements

AC Input Voltage: 100-240V AC auto-range
Rated Input Current: 16-12A (110-140V), 12.5-9.5A (180-240V)
Rated Input Frequency: 50 to 60 Hz
Efficiency: 80+ (Platinum Level)

Power Supply

Rated Output Power: 2000W (Part# PWS-2K04A-1R) (redundant, hot-plug)
Rated Output Voltages: +12V (167A), +5Vsb (1A)

Operating Environment

Operating Temperature: 0º to 30º C (32º to 86º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 20% to 95% (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 B

UEFI BIOS Recovery Instructions

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

B-1 Overview to UEFI BIOS

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

B-2 Recovering the UEFI BIOS Image (Main BIOS Block)

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

Note: Follow the BIOS recovery instructions below when the main BIOS boot crashes.

B-3 Recovering the UEFI BIOS with a USB Device

This feature allows the user to recover a BIOS image using a USB device without the need of additional utilities. A device such as a USB flash drive or a USB CD/DVD ROM/RW can be used. A USB hard disk drive cannot be used for BIOS recovery at this time.

To perform UEFI BIOS recovery using an attached device, follow the instructions below.

1. Using a different system, copy the "Super.ROM" binary image file into the disc Root "\" directory of a USB device or a writeable CD/DVD.

Note: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS image to a USB flash device and rename it "Super ROM".

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system

3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your keyboard until your hear two short beeps. This may take from a few seconds to one minute.

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

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

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

Note: *Do not interrupt* the BIOS flashing until it has completed.

6. After the process has completed, press any key to reboot the system.

7. Using a different system, extract the BIOS package into a bootable USB flash drive.

8. When the DOS prompt appears, enter AMI.BAT BIOSname.###.

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

9. After receiving the message that the BIOS update is complete, unplug the AC power cable from the power supply to clear CMOS, then plug the AC power cable in the power supply again to power on the system.

10. Press <Del> continuously to enter the BIOS Setup utility.

11. Press <F3> to load the default settings.

12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.