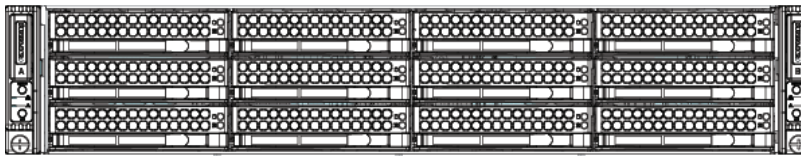
SUPERMICRO®

SUPERSERVER

6027TR-D71RF
6027TR-D71QRF
6027TR-D71FRF



SUPERSERVER

Revision 1.0

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

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"

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Manual Revision 1.0
Release Date: November 8, 2012

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 6027TR-D71RF/D71QRF/D71FRF. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 6027TR-D71RF/D71QRF/D71FRF is a high-end server based on the SC827HD-R1K28B 2U rackmount chassis and the dual processor X9DRT-HF/HIBQF/HIBFF serverboard. All models have an IPMI LAN port and two serverboard nodes with six hot-swap Hard Disk Drives (HDD) each per node.

Each of the various models of the SuperServer 6027TR-D71RF/D71QRF/D71FRF servers and their associated serverboards for each of their unique options are listed in the table below:

SUPERSERVER 6027TR-D71RF/D71QRF/D71FRF Model Variations			
Server Model	**X9DRT Serverboard**	**InfiniBand QDR**	**InfiniBand FDR**
6027TR-D71QRF	X9DRT-HIBQF	YES	
6027TR-D71FRF	X9DRT-HIBFF		YES
6027TR-D71RF	X9DRT-HF		

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 X9DRT-HF/HIBQF/HIBFF serverboard and the SC827HD-R1K28B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6027TR-D71RF/D71QRF/D71FRF 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: System Safety

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 6027TR-D71RF/D71QRF/D71FRF.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X9DRT-HF/HIBQF/HIBFF 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 SC827HD-R1K28B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA/SAS or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

Notes

Table of Contents

Chapter 6 Advanced Chassis Setup

Notes

Chapter 1

Introduction

1-1 Overview

The SuperServer 6027TR-D71RF/D71QRF/D71FRF is a high-end server comprised of two main subsystems: the SC827HD-R1K28B 2U server chassis and the X9DRT-HF/HIBQF/HIBFF dual processor serverboard in two hot-swap nodes. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the 6027TR-D71RF/D71QRF/D71FRF server, as listed below:

- Heat Sinks
  Two (2) 2U Passive CPU heat sinks w/ square ILM (SNK-P0048PW)
  Two (2) 2U Passive CPU heat sinks w/narrow ILM (SNK-P0048PS)
- Two (2) Plastic air shroud (MCP-310-82717-0B)
- Four (4) 80x80x38mm cooling fans (FAN-0129L4)
- SATA/SAS Backplane
  Two (2) SAS2 LSI2108 HD backplanes (BPN-ADP-SAS2-H6IR-O-P)
  One (1) SAS Backplane for 12 3.5" HDD (BPN-SAS-827HD)
  Twelve (12) hot-swap 3.5" HDD trays (MCP-220-00075-0B)
- Two (2) Riser cards (RSC-R2UT-3E8R-O-P)
- One (1) Rails set (MCP-290-00053-0N)

Note: a complete list of safety warnings is provided on the Supermicro web site at http://www.supermicro.com/about/policies/safety_information.cfm

1-2 Serverboard Features

At the heart of the 6027TR-D71RF/D71QRF/D71FRF server lies the X9DRT-HF/HIBQF/HIBFF, a dual processor serverboard based on the Intel® C602 chipset and designed to provide maximum performance. Two of these serverboards can be mounted in the SC827HD-R1K28B chassis.

The sections below cover the main features of the X9DRT-HF/HIBQF/HIBFF serverboard (see Figure 1-1 for a block diagram of the chipset).

Processors

The X9DRT-HF/HIBQF/HIBFF supports single or dual Intel® Xeon® E5-2600 series processors (Socket R LGA 2011). Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X9DRT-HF/HIBQF/HIBFF has eight (8) DIMM slots supporting up to 256 GB of DDR3-1600/1333/1066/800 MHz speed registered ECC SDRAM or 64 GB of UDIMM in up to 512 MB, 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB sizes at 1.35V or 1.5V voltages. See Chapter 5 for details.

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

Serial ATA

A Serial ATA controller is integrated into the C602 to provide up to a seven-port 6 Gb/s SATA subsystem, (two SATA 3 (6 Gb/s) and five SATA 2 (3 Gb/s), which support RAID 0, 1, 5 and 10. The SATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hotswap capability and RAID function of the SATA drives.

PCI Expansion Slots

The X9DRT-HF/HIBQF/HIBFF serverboard has the following expansion slots:

- One (1) PCI Express 3.0 x16 slot (Slot 1)
- One (1) PCI Express 3.0 x8 slot for rear I/O riser card (SXB1)
- One (1) PCI Express 3.0 x8 slot for SMC proprietary daughter (add-on) card (SXB2)

Onboard Controllers/Ports

One Fast UART 16550 serial port, one 9-pin RS-232 port and a Mellanox Connect-X3 InfiniBand (on 6027TR-D71QRF and 6027TR-D71FRF servers only) supporting a single QSFP connector are located on the serverboard. The color-coded I/O ports include one COM port, a VGA (monitor) port, two USB 2.0 ports (additional one internal USB headers are included on the serverboard), an IPMI dedicated LAN port and two Ethernet ports.

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

Graphics Controller

The X9DRT-HF/HIBQF/HIBFF features an integrated Matrox G200eW Video Controller.

InfiniBand

The 6027TR-D71QRF server include a QDR (quad data rate) speed InfiniBand QSFP connector. The 6027TR-D71FRF server includes a FDR (fourteen data rate) speed InfiniBand QSFP connector. InfiniBand is a scalable serial communications link intended for connecting processors with high-speed peripherals.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection, node manager software and BIOS rescue.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC827 server chassis.

System Power

Each SC827 chassis model includes a high-efficiency 80-plus Platinum certified power supply, rated at 1280 Watts plus one redundant backup power supply. In the unlikely event your power supply fails, replacement is simple and can be accomplished without tools.

SATA Subsystem

The SC827 supports up to twelve (12) 3.5" hot-swap SATA drives in trays (6 for each node). These drives are hot-swappable units and are connected to a backplane that provides power and control.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the drives.

Front Control Panel

SC827HD-R1K28B chassis includes two front panels on the handles of the chassis which control each of the systems. Each control panel on the SuperServer 6027TR-D71RF/D71QRF/D71FRF 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.

I/O Ports

The SC827 is an propriertary form factor chassis designed to be used in a 2U rackmount configuration. The SC827 chassis provides one low-profile and two full height add-on card slots, a COM port, a VGA port, two USB 2.0 ports, one IPMI Ethernet port and two Ethernet ports per node.

Cooling System

The SC827 chassis accepts four system fans powered from either backpane or the serverboards. If not powered from the backpane, the SC827HD-R1K28B model chassis powers four fans from two motherboards, so that when one of the motherboard drawers is removed, the other motherboards will continue running all fans.

Air Shrouds

The SC827 chassis includes two mylar air shrouds that direct the airflow where cooling is needed on each serverboard. Always use the air shroud included with your chassis on each serverboard.

Mounting Rails

The SC827 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 this manual.

1-4 Advanced Power Management

Intel® Intelligent Power Node Manager (NM)

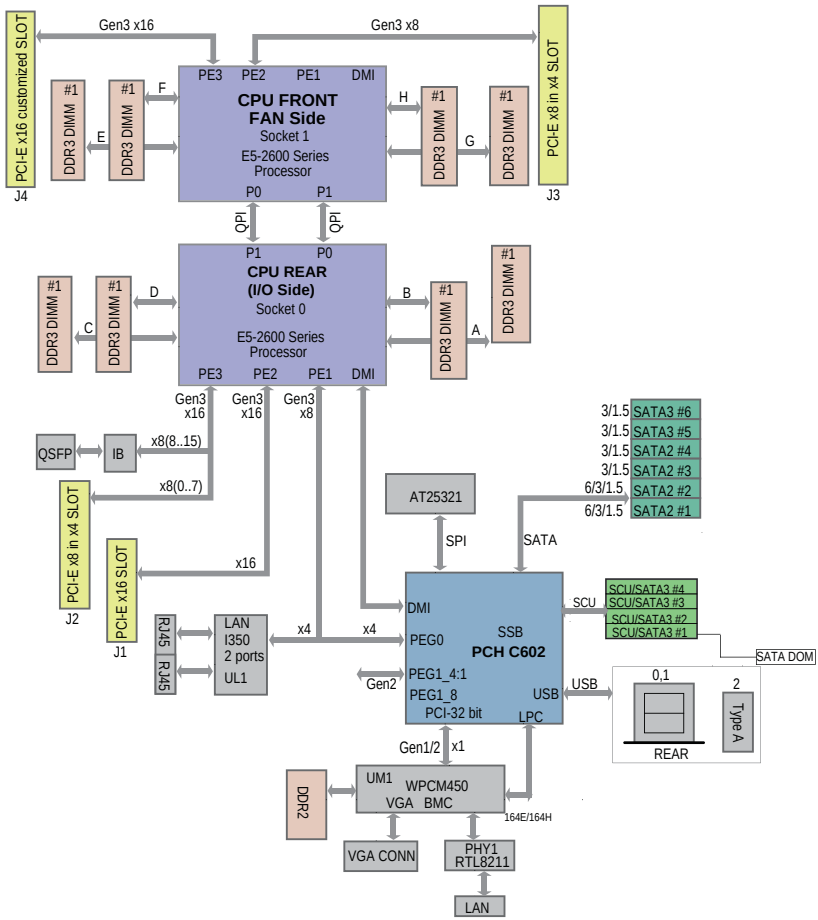
The Intel® Intelligent Power Node Manager (IPNM) provides your system with real-time thermal control and power management for maximum energy efficiency. Although IPNM Specification Version 1.5 is supported by the BMC (Baseboard Management Controller), your system must also have IPNM-compatible Manageability Engine (ME) firmware installed to use this feature.

Manageability Engine (ME)

The Manageability Engine, which is an ARC controller embedded in the IOH (I/O Hub), provides Server Platform Services (SPS) to your system. The services provided by SPS are different from those proveded by the ME on client platforms.

Figure 1-1. AMD C602 Chipset: System Block Diagram

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



1-5 Contacting Supermicro

Headquarters

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

Europe

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

Asia-Pacific

Address: Super Micro Computer, Inc.
4F, No. 232-1, Liancheng Rd
New Taipei City 235
Taiwan
Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: +886-(2)-8226-3990

1-6 2U Twin: System Notes

As a 2U Twin configuration, the SuperServer 6027TR-D71RF/D71QRF/D71FRF is a unique server system. With two system boards incorporated into a single chassis acting as two separate nodes, there are several points you should keep in mind.

Nodes

Each of the two serverboards act as a separate node in the system. As independant 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 1280 Watt power supply is used to provide the power for all serverboards. Each serverboard however, can be shut down independently of the other with the power button on its own control panel. As an option, you may add an additional 1280 Watt power supply module for power redundancy.

SATA/SAS Backplane/Drives

As a system, the SuperServer 6027TR-D71RF/D71QRF/D71FRF supports the use of twelve SATA/SAS drives. A single SATA/SAS backplane works to apply system-based control for power and fan speed functions, yet at the same time logically connects a set of six SATA/SAS drives to each serverboard. Consequently, RAID setup is limited to a six-drive scheme (RAID cannot be spread across all twelve drives). See the Drive Bay Installation/Removal section in Chapter 6 for the logical hard drive and node configuration.

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 6027TR-D71RF/D71QRF/D71FRF 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 6027TR-D71RF/D71QRF/D71FRF 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 6027TR-D71RF/D71QRF/D71FRF. 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 6027TR-D71RF/D71QRF/D71FRF was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

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

2-4 Cautions!

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

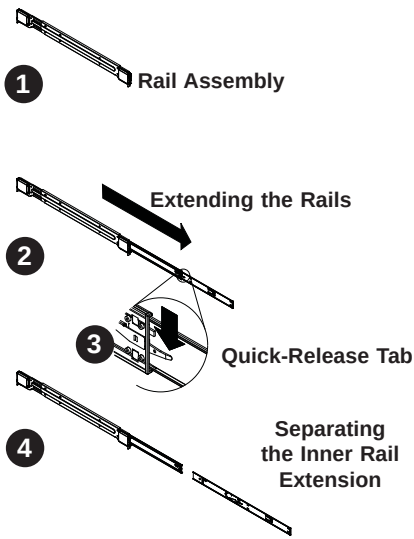
This section provides information on installing the SC827 chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with 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.

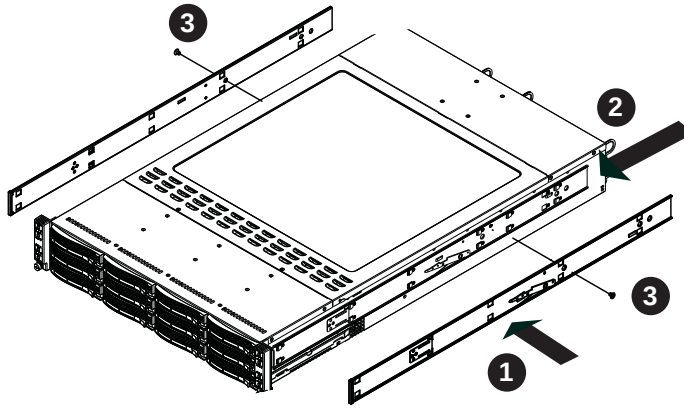
Figure 2-1: Separating the Rack Rails



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.

Figure 2-2: Installing the Inner Rail Extensions



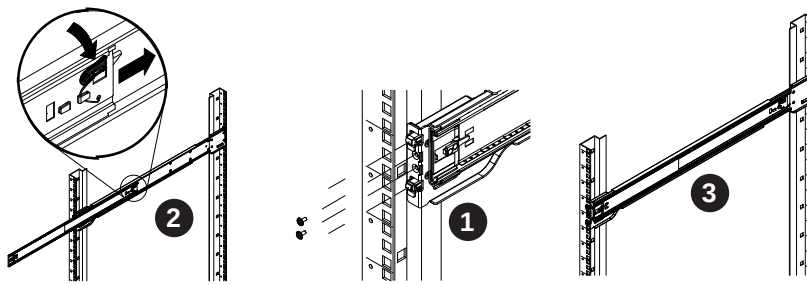
Installing the Inner Rail Extension

The SC827 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached to the chassis, and do not interfere with normal use of the chassis if you decide not to use a server rack. The inner rail extension is attached to the inner rail to mount the chassis in the rack.

Installing the Inner Rails

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

Figure 2-3. Assembling the Outer Rails



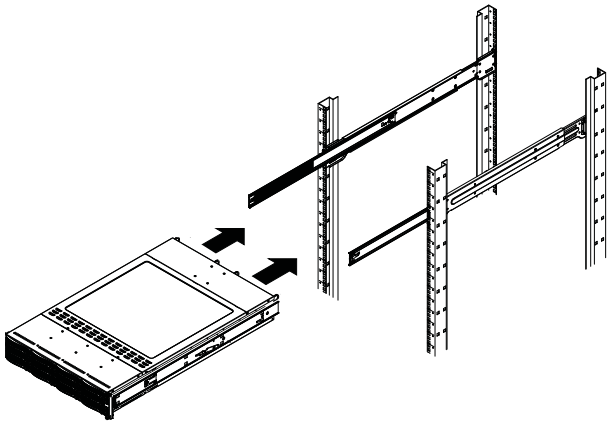
Outer Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the SC827 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack

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

Figure 2-4: Installing the Rack Rails



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

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

Installing the Chassis into a Rack

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.

2-6 Checking the Serverboard Setup

After you install the SUPERSERVER 6027TR-D71RF/D71QRF/D71FRF in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

Accessing the inside of the System

Before operating the server 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.

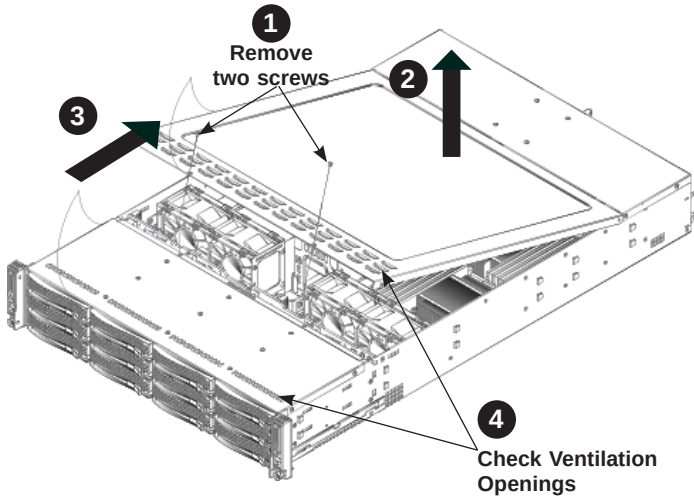
Removing the Chassis Cover and Protective Film

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.
3. Peel off the protective film covering the top cover and the top of the chassis
4. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

Checking the Components and Setup

1. You may have one or two processors already installed into the serverboard. Each processor needs its own heat sink. See Chapter 5 for instructions on processor and heat sink installation.
2. Your SUPERSERVER 6027TR-D71RF/D71QRF/D71FRF server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.
3. If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.
4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans. See Chapter 5 for details on cable connections.

Figure 2-5. Accessing the Inside of the System



2-7 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA/SAS drives have been properly installed and all connections have been made.

Checking the Drives

1. All drives are accessable from the front of the server. A hard drive can be installed and removed from the front of the chassis without removing the top chassis cover.
2. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by four hot-swappable 8-cm chassis cooling fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.
2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing Power

1. Plug the power cord(s) from the power supply unit(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).
2. Depress the power on button on the front of the chassis.

Chapter 3

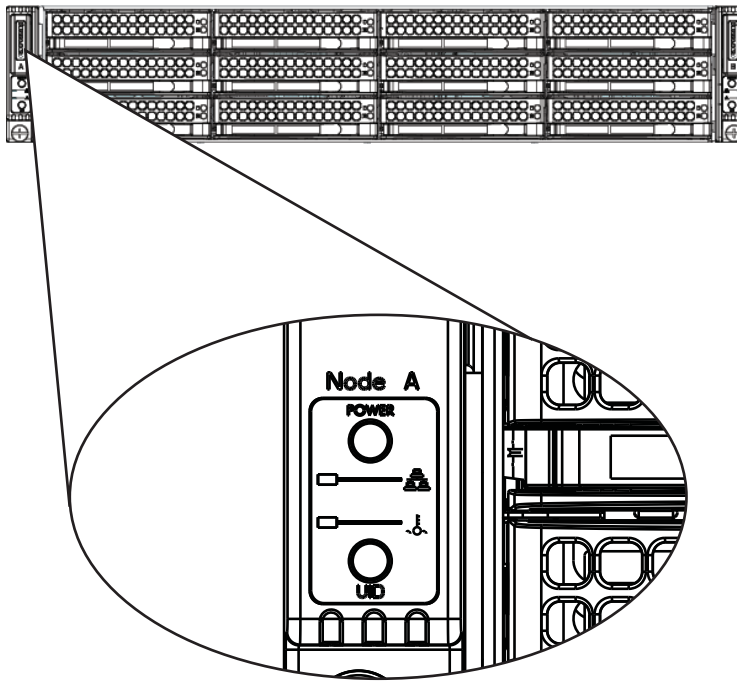
System Interface

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. SC827 models include two 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

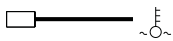


3-2 Control Panel Button

- Power: The main power button on each of the two control panels is used to apply or remove power from the power supply to each of the two 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 two control panels are located on the front handle of the SC827 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/SAS drives.

SATA/SAS Drives

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

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。

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

將系統與電源連接前，請先仔細閱讀安裝說明。

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250 V, 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。

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.

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.

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

אזהרה !

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

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

경고!

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

Waarschuwing

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

Equipment Installation

Warning!

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

機器の設置

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

警告

只有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

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

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

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

경고!

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

Waarschuwing

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

Battery Handling

Warning!

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

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。

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。

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。

直流电源终端可能会产生危险的电压或能量.终端不使用时,请务必盖上机盖.机盖盖上后,请确保导体未绝缘部分无法使用.

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

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

本產品廢棄處理應依照所有國家法律規定進行。

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

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

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

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !

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

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

경고!

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

Waarschuwing

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

Power Cable and AC Adapter

Warning!

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

電源コードとACアダプター

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

警告

安裝產品時，請使用隨附或指定的連接線、電線和AC變壓器。使用其他電線和變壓器可能會導致產品故障或發生火災。除了Supermicro所指定的產品，Electrical Applicance and Materical Saftety Law法律規定禁止任何其他電子裝置使用經過UL或CSA認證的電線(線纜上有UL或CSA的標示)。

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 סופרמיקרו בלבד.

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

경고!

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

Waarschuwing

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

Notes

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the X9DRT-HF/HIBQF/HIBFF motherboard into the chassis, connect the data and power cables and install add-on cards. All motherboard 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 motherboard to better cool and protect the system.

5-1 Handling the Motherboard

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

Precautions

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

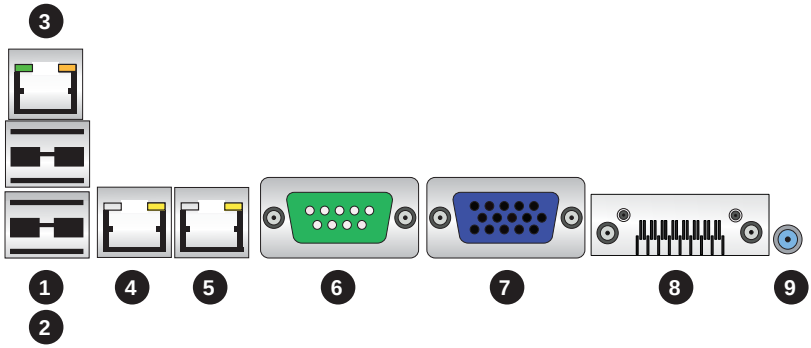
Unpacking

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

5-2 Rear I/O Ports

The rear I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-1 below for the colors and locations of the various I/O ports.

Figure 5-1. Rear I/O Ports



Back Panel I/O Port Locations and Definitions	
1.	Back Panel USB Port 0
2.	Back Panel USB Port 1
3.	IPMI_Dedicated LAN
4.	Gigabit LAN 1
5.	Gigabit LAN 2
6.	COM Port 1 (Turquoise)
7.	Back Panel VGA (Blue)
8.	InfiniBand Connector (For X9DRT-HIBQF/HIBFF)
9.	UID Switch

5-3 Processor and Heatsink Installation

Caution! When handling the processor package, avoid placing direct pressure on the label area.

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

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

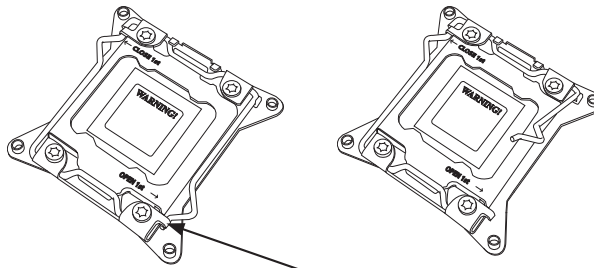
Make sure to install the system board into the chassis before you install the CPU heatsink.

When receiving a server board without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.

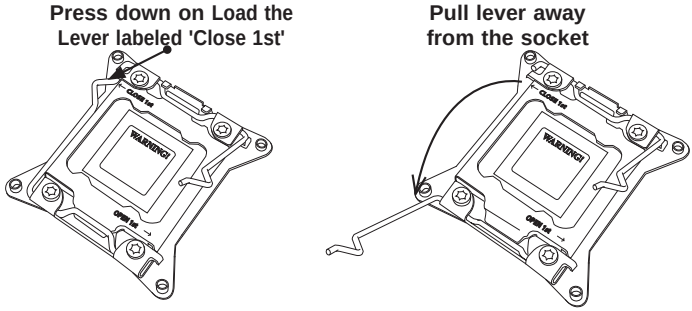
Refer to the Supermicro website for updates on CPU support.

Installing the LGA2011 Processor

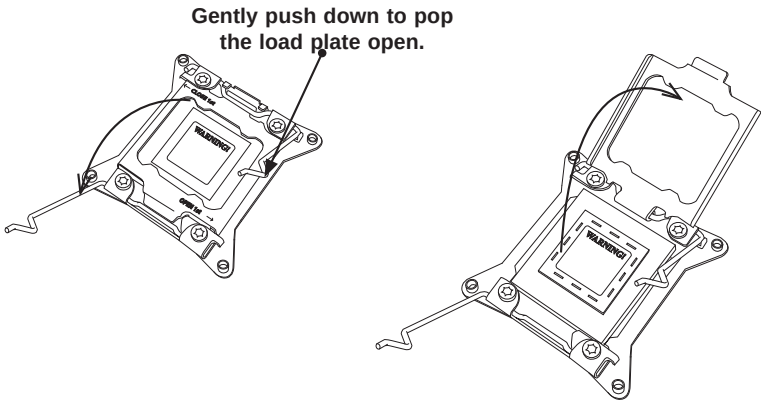
1. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.



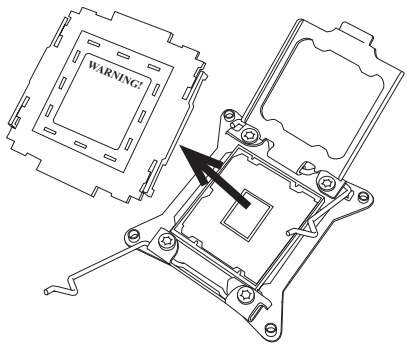
2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.



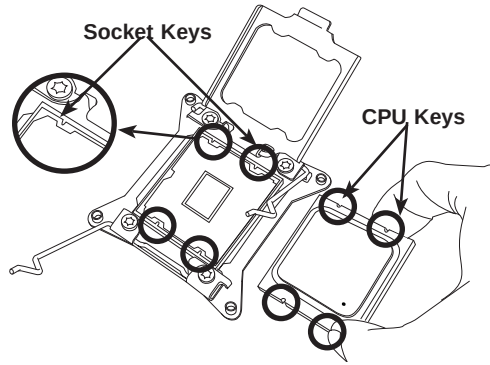
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.



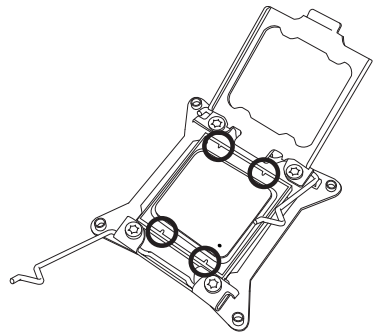
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.



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

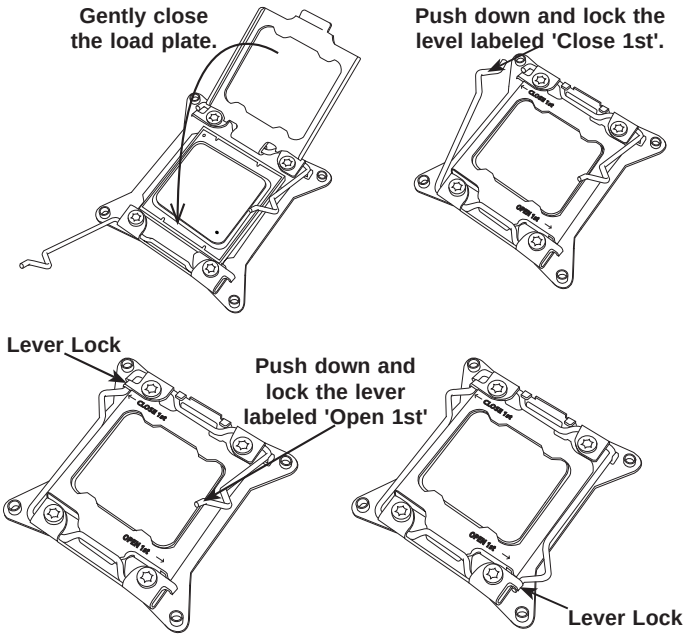


6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)



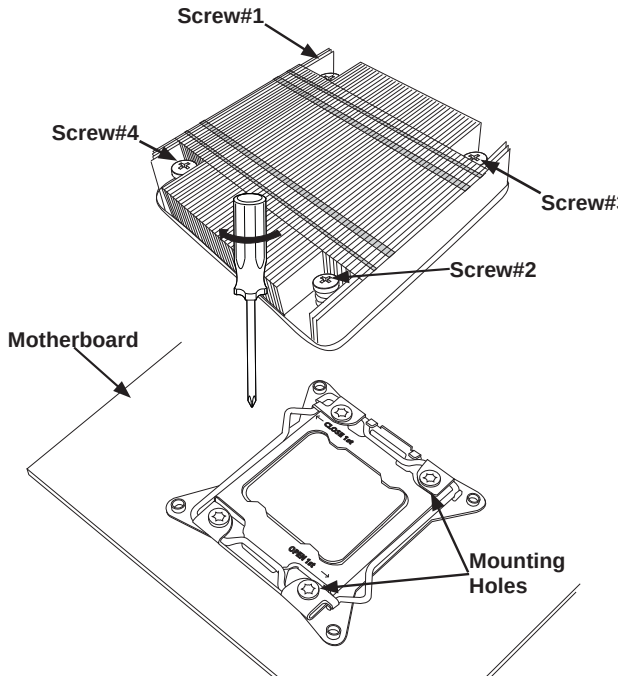
Caution: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU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

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.
8. Close the load plate with the CPU inside the socket. Lock the lever labeled 'Close 1st' first, then lock the lever labeled 'Open 1st' second. Use your thumb to gently push the load levers down to the lever locks.



Installing a Passive CPU Heatsink

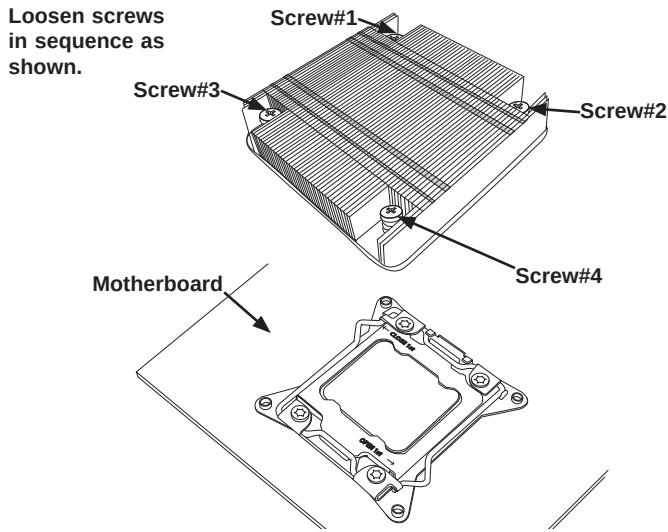
1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the Motherboard's and the Heatsink Bracket underneath.
3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)
4. Finish the installation by fully tightening all four screws.



Removing the Heatsink

Caution: We DO NOT recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

1. Unscrew the heatsink screws from the motherboard in the sequence as shown in the illustration below.
2. Gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)
3. Once the CPU is loosened, remove the CPU from the CPU socket.
4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the CPU and the heatsink.



5-4 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 5-2).
2. Install to slots P1/DIMM1A, P1/DIMM2A, etc.
3. Gently press down on the memory module until it snaps into place.
4. With two CPUs installed, repeat step 2 to populate the CPU2 DIMM slots.

Note: 512 MB, 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB size memory modules are supported. It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the X9DRT-HF/HIBQF/HIBFF serverboard.

Memory Support

The X9DRT-HF/HIBQF/HIBFF serverboard supports DDR3-1600/1333/1066/800 MHz speed registered ECC/Unbuffered ECC/non-ECC SDRAM. Populating two slots at a time with memory modules of the same size and type will result in interleaved (128-bit) memory, which is faster than non-interleaved (64-bit) memory."

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

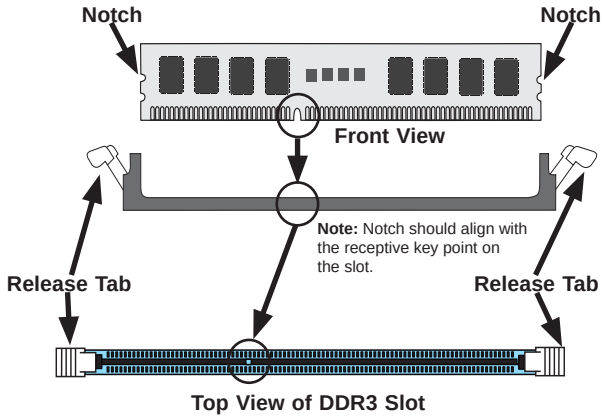
Maximum Memory

The X9DRT-HF/HIBQF/HIBFF serverboard supports up to 256 GB of ECC RDIMM memory or 64 GB of UDIMM memory in eight (8) DIMM slots.

Figure 5-2. Installing DIMM into Slot

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

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



Processors and their Corresponding Memory Modules				
CPU#	**Corresponding DIMM Modules**			
CPU 1	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	P1-DIMMD1
CPU2	P2-DIMME1	P2-DIMMF1	P2-DIMMG1	P2-DIMMH1

Processor and Memory Module Population	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table (*For memory to work proper, please install DIMMs in pairs)**
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1, P1-DIMMC1/P1-DIMMD1
2 CPUs & 8 DIMMs	CPU1/CPU P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1, P1-DIMMC1/P1-DIMMD1, P2-DIMMG1/P2-DIMMH1

DIMM Module Population Configuration

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

UDIMM Support on the E5-2600 Series Processor Platform			
DIMMs Populated per DDR Channel	**UDIMM Type (Unb. DIMM)**	**POR Speeds (in MHz)**	**Ranks per DIMM (Any Combination)**
1	ECC/Non-ECC DDR3	1066, 1333	SR, DR

RDIMM Support on the E5-2600 Series Processor Platform			
DIMMs Populated per DDR Channel	**RDIMM Type (Reg. DIMM)**	**POR Speeds (in MHz)**	**Ranks per DIMM (Any Combination)**
1	Reg. ECC DDR3	1066, 1333, 1600	SR, DR

LRDIMM Support on the E5-2600 Series Processor Platform			
DIMMs Populated per DDR Channel	**LRDIMM Type (Load Reduced DIMM)**	**POR Speeds (in MHz)**	**Ranks per DIMM (Any Combination)**
1	LR ECC DDR3	1066, 1333	QR

Note 1: For the memory modules to work properly, please install DIMM modules in pairs (w/even number of DIMMs installed).

Note 2: All channels in a system will run at the fastest common frequency.

Possible System Memory Allocation & Availability		
System Device	**Size**	**Physical Memory Available (4 GB Total System Memory)**
Firmware Hub flash memory (System BIOS)	1 MB	3.99 GB
Local APIC	4 KB	3.99 GB
Area Reserved for the chipset	2 MB	3.99 GB
I/O APIC (4 Kbytes)	4 KB	3.99 GB
PCI Enumeration Area 1	256 MB	3.76 GB
PCI Express (256 MB)	256 MB	3.51 GB
PCI Enumeration Area 2 (if needed) -Aligned on 256-M boundary-	512 MB	3.01 GB
VGA Memory	16 MB	2.85 GB
TSEG	1 MB	2.84 GB
Memory available for the OS & other applications		2.84 GB

5-5 Adding PCI Expansion Cards

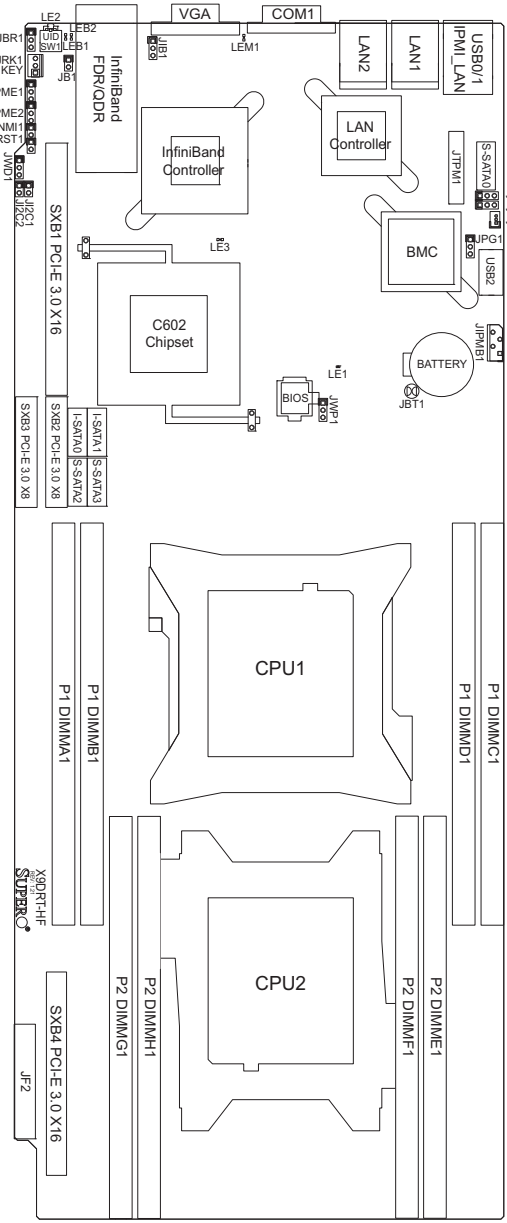
The 6027TR-D71RF/D71QRF/D71FRF includes two preinstalled riser cards designed specifically for use in the SC827HD-R1K28B 1U rackmount chassis. These riser cards support two full height and one low-profile PCI Express x8 cards to fit inside the chassis.

Installing an Expansion Card

1. After powering down the system, remove the PCI slot shield on the chassis.
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 motherboard and its components from EMI and aid in proper ventilation, so make sure it is always in place.

5-6 Motherboard Details

Figure 5-3. X9DRT-HF/HIBQF/HIBFF Motherboard Layout
(not drawn to scale)



Notes:

1. For the latest CPU/Memory updates, please refer to our website at **http://www.supermicro.com/products/motherboard/** for details.
2. Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.
3. Jumpers not indicated are for test purposes only.
4. All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

X9DRT-HF/HIBQF/HIBFF Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Chapter 3
JIB1I	InfiniBand Enable (X9DRT-HIBQF/X9DRT-HIBFF only)	Pins 1-2 (Enabled)
JI2C1/JI2C2	SMB to PCI-E Slots	Pins 2-3 (Normal)
JPB1	BMC Enabled	Pins 1-2 (Enabled)
JPG1	VGA Enabled	Pins 1-2 (Enabled)
JPL1	Ethernet GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

LED	Description	State	Status
LE1	Onboard PWR LED	On	Onboard PWR On
LE2	UID LED	Blue: On (Windows OS Blinking (Linux)	Unit Identified
LE3	HDD LED	Green: On	HDD/SATA Active
LEB1	InfiniBand Link LED	Green: On	IB Connected (X9DRT-HIBQF and X9DRT-HIBFF only)
LEB2	InfiniBand Activity LED	Yellow: On	IB Active (X9DRT-HIBQF and X9DRT-HIBFF only)
LEM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

Connector	Description
COM1	Backplane COM Port1
IB	InfiniBand Connector (X9DRT-HIBQF and X9DRT-HIBFF only)
I-SATA 0/1	Intel PCH SATA Connectors 0/1
JBAT1	Onboard Battery (See the warning on P. 1-6.)
JF2	SMC Proprietary Slot for Power, FP Control & I-SATA Connections
JNMI1	NMI (Non-Maskable Interrupt) Header
JIPMB1	4-pin External BMC I^2C Header (for an IPMI Card)
JRST1	Alarm Reset Header
JPTM1	TPM (Trusted Platform Module)/Port 80
JSD1	SATA DOM (Device_On_Module) Power Connector
LAN1/2	G-bit Ethernet Ports 1/2
(IPMI) LAN	IPMI_Dedicated LAN
SXB1	PCI-E 3.0 x16 Slot for Rear I/O Riser Card
SXB2	PCI-E 3.0 x8 Slot for SMC-Proprietary Daughter (Add-On) Card
SW1	UID (Unit Identifier) Switch
USB 0/1	Back Panel USB 0/1
USB 2	Type-A USB Connection
VGA	Backpanel VGA Port

.

5-7 Connector Definitions

Ethernet LAN Ports

Two Gigabit Ethernet ports (LAN1/2) are located on the I/O backplane on the motherboard. In addition, an IPMI Dedicated LAN is located above USB 0/1 ports on the backplane to provide KVM support for IPMI 2.0. All these ports accept RJ45 type cables.

Note: Please refer to the LED Indicator Section for LAN LED information.

LAN Ports (LAN1/2) Pin Definition

Pin#	Definition	Pin#	Definition
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Yellow, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	18	Ground

NC indicates no connection.

Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB 0/1) are located on the I/O back panel. In addition, a USB header, located next to S-SATA 0, provides on-board USB connections (USB 2/3). (Cables are not included.) See the tables on the right for pin definitions.

USB (2/3) Pin Definitions

USB 2 Pin#	Definition	USB 3 Pin#	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	NC	5	Key

NC indicates no connection.

Backplane USB (USB 0/1) Pin Definitions

Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

Serial Ports

The COM1 serial port is located beside the VGA port. Refer to the motherboard layout for the location of the COM2 header. See the table on the right for pin definitions.

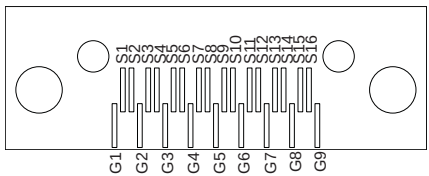
Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

NC indicates no connection.

InfiniBand Connection

Both the X9DRT-HIBQF and X9DRT-HIBFF **serverboards** have an onboard InfiniBand (IB) connector, which is located on the rear IO panel on the motherboard. The IB switch is primarily used for High-performance computing. See the table on the right for pin definitions.



InfiniBand (IB) Pin Definitions

Pin #	Definition	Pin #	Definition
S1	Input Pair0:Pos	S9	Output Pair3:Pos
S2	Input Pair0:Neg	S10	Output Pair3:Neg
S3	Input Pair1:Pos	S11	Output Pair2:Pos
S4	Input Pair1:Neg	S12	Output Pair2:Neg
S5	Input Pair2:Pos	S13	Output Pair1:Pos
S6	Input Pair2:Neg	S14	Output Pair1:Neg
S7	Input Pair3:Pos	S15	Output Pair0:Pos
S8	Input Pair3:Neg	S16	Output Pair0:Neg

InfiniBand Ground Pins (G1~G9) Pin Definitions

Pin#	Definitions
G1~G9	Ground

Video Connector

A Video (VGA) connector is located next to the COM Port on the IO backplane. This connector is used to provide video and CRT display. Refer to the board layout below for the location.

Unit Identifier Switches

Two Unit Identifier (UID) Switches and two LED Indicators are located on the motherboard. The Front Panel UID Switch is located at Pin 16 on JF2. The Rear UID Switch is located at SW1 next to the InfiniBand Connector. The Front Panel UID LED is located at Pin 17 of JF2, and the Rear UID LED is located at LE2. When the user presses a UID switch on the front panel or on the back panel, both Rear UID LED and Front Panel UID LED Indicators will be turned on. Press the UID switch again to turn off both LED Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service. See the table on the right for pin definitions.

Note: UID LED is supported by the physical switch or the BMC. When it is controlled by the physical switch, it will stay solid. When it is controlled by the BMC, it will blink.

UID Switch

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

UID Switches & LEDs

Description	Location
FP Switch	Pin 16 on JF2
Rear Switch	SW1
FP UID LED (Blue LED)	Pin 17 on JF2
Rear UID LED	LE2

NMI Header

The non-maskable interrupt header is located at JNMI1. Refer to the table on the right for pin definitions.

NMI Button (JNMI1) Pin Definitions

Pin#	Definition
1	Control
2	Ground

IPMB I2C SMB

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

SMB Header (JIPMB1) Pin Definitions

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

System Reset

A System Reset header is located at JRST1 on the motherboard. Connect a cable to this header for system reset. Refer to the layout below for the location.

System Reset (JRST1) Pin Definition

Pin Setting	Definition
Pin 1	Signal
Pin 2	Ground

DOM Power Connector

A power connector for SATA DOM (Disk_On_Module) devices is located at JSD1. Connect an appropriate cable here to provide power for your SATA DOM devices.

DOM PWR (JSD1) Pin Definitions

Pin#	Definition
1	+5V
2	Ground
3	Ground

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 (JTPM1) Pin Definitions

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

IPMB I2C SMB

A System Management Bus header for the IPMI slot is located at JIPMB1. Connect an appropriate cable here to use the IPMB I^2C connection on your system.

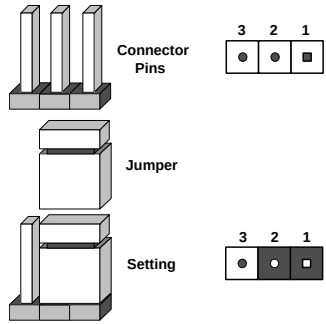
JTAG Scan (JPP0) Jumper Settings

Jumper Setting	Definition
Pins 1/2, 3/4	Including CPU2 in JTAG Scan
Pins 2/3 (Default)	JTAG Scan: CPU1 only

JTAG Scan (JPP1) Jumper Settings

Jumper Setting	Definition
Pins 1/2, 3/4	including CPU1 in JTAG Scan
Pins 2/3 (Default)	JTAG Scan: CPU2 only

5-8 Jumper Settings



Explanation of Jumpers

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

GLAN Enable/Disable

JPL1 enables or disables the GLAN 1/2 ports on the motherboard. See the table on the right for jumper settings. The default setting is Enabled.

GLAN Enable Jumper Settings

Jumper Setting	Definition
1-2	Enabled (default)
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 (JWD1) Jumper Settings

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

VGA Enable

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

VGA Enable (JPG1) Jumper Settings

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

BMC Enable

Jumper JPB1 allows you to enable the onboard BMC (Baseboard Management) Controller to provide IPMI 2.O/KVM support on the motherboard. See the table on the right for jumper settings.

BMC Enable (JPB1) Jumper Settings

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

InfiniBand (IB) Enable

Both the X9DRT-HIBQF and X9DRT-HIBFF **serverboards have** Jumper JIB1, which allows you to enable the onboard InfiniBand connector. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

InfiniBand Enable (JIB1) Jumper Settings

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

I2C Bus to PCI-Exp. Slots

Jumpers JI²C1 and JI²C2 allow you to connect the System Management Bus (I²C) to PCI-Express slots. The default setting is Open to disable the connection. See the table on the right for jumper settings.

I2C to PCI-E (JI2C1/JI2C2) Jumper Settings

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

5-9 Onboard Indicators

GLAN LEDs

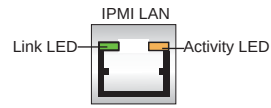
The Gigabit LAN ports are located on the IO Backplane on the motherboard. On each Gb LAN port, one LED blinks to indicate activity while the other may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED (Connection Speed Indicator)

LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

IPMI Dedicated LAN LEDs

In addition to the Gigabit Ethernet ports, an IPMI Dedicated LAN is also located above the Backplane USB ports 0/1 on the motherboard. The amber LED on the right of the IPMI LAN port indicates activity, while the green 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	Status	Definition
Green: Solid	Link (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

Onboard Power LED

An Onboard Power LED is located at LE1 on the motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator (LE1) LED Settings

LED Color	Status
Off	System Off (PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State
Green: Flashing Slowly	ACPI S3 (STR) State

BMC Heartbeat LED

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

BMC Heartbeat LED (LEM1) Status	
Color/State	Definition
Green: Blinking	BMC:Normal

InfiniBand LED Indicators

Both the X9DRT-HIBQF and X9DRT-HIBFF **serverboards have** two InfiniBand LED Indicators (LEB1/LEB2) that are located on the motherboard. The green LED (LEB1) is the InfiniBand Link LED. The yellow LED (LEB2) indicates activity. Refer to the table on the right for details. Also see the layout below for the LED locations.

InfiniBand Link LED (LEB1) Settings		
Color	Status	Definition
Green	Solid	InfiniBand Connected
Off	Off	No connection

InfiniBand Activity LED (LEB2) Settings		
Color	Status	Definition
Yellow	Solid	InfiniBand: Active
Yellow	Dim	InfiniBand: Connected, Activity: Idle
Off	Off	No connection

HDD/SATA LED (LE3)

An HDD/SATA LED Indicator is located at LE3 on the motherboard. This LED indicates the status of hard drive activities or SATA activities supported by the South Bridge. Also see the layout below for the LED locations.

HDD/SATA LED (LE3) Settings	
Status	Definition
On	HDD/SATA Connected
Off	No connection

Rear UID LED

The rear UID LED is located at LE2 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. Refer to UID Switch on Page 3-15 for more information.

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

5-10 PCI-Express and Serial ATA Connections

PCI-Express 3.0 x16 Slot

A PCI-Express 3.0 x16 slot (Slot 1) is located on the motherboard. Refer to the layout on page 5-14 for the locations.

PCI-Express 3.0 x8 Slots

Two PCI-Express 3.0 x8 slots (Slots SXB1/ SXB2) are on the motherboard. Slot SXB1 is used for a rear IO riser card; while Slot SXB2 supports the SMC-proprietary daughter card. Refer to the layout on page 5-14 for the locations.

Serial ATA (SATA) Connections

A Front Panel Add-On Card header is located at JF2 on the motherboard. This header provides onboard SATA support. Plug an add-on card in JF2 to use SATA connections. In addition, two SATA connections (I-SATA 0/1), located next to the Intel PCH chip also provide SATA connections.

SATA Port Pin Definitions (I-SATA0~I-SATA5)

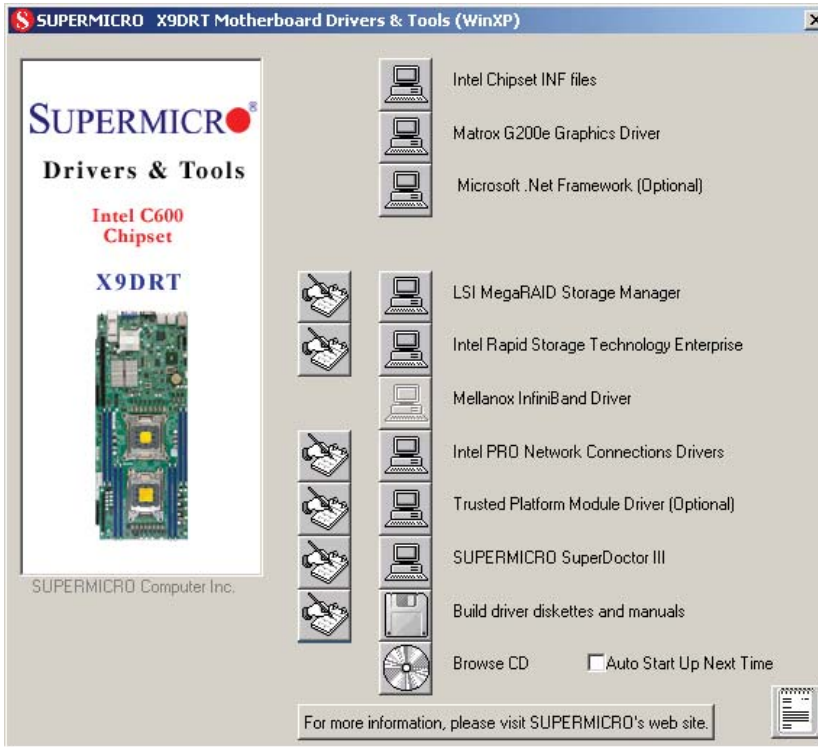
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5-11 Installing Drivers

The CD that came bundled with the system contains drivers, some of which must be installed, such as the chipset driver. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-4 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

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

Figure 5-4. Driver/Tool Installation Display Screen



Supero Doctor III

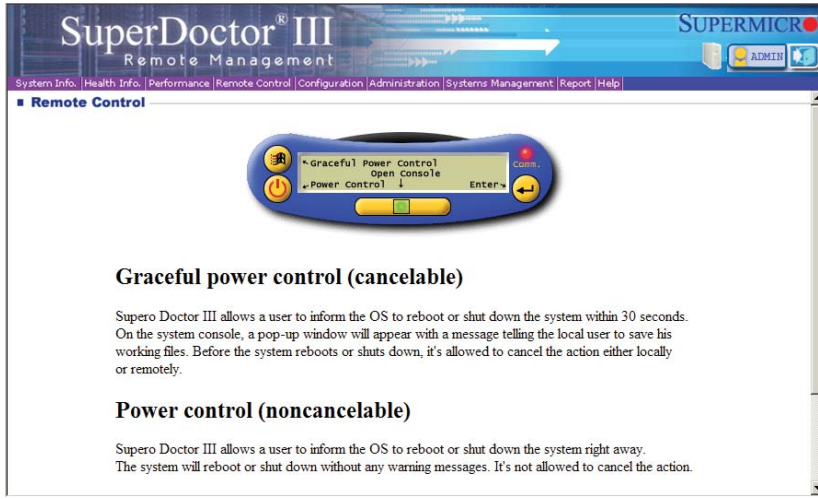
The SuperDoctor® III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program included on the CD-ROM that came with your motherboard allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the SuperDoctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor, as the SuperDoctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor.

Figure 5-5. Supero Doctor III Interface Display Screen (Health Information)

Figure 5-6. Supero Doctor III Interface Display Screen (Remote Control)

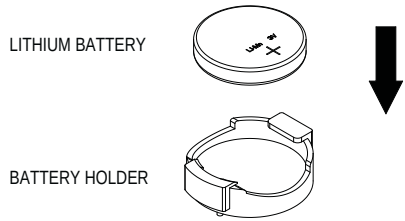


Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm.For Linux, we recommend that you use the SuperoDoctor II application instead.

5-12 Onboard Battery

Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 5-x). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Figure 5-7. Installing the 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.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC827HD-R1K28B 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. 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. Chassis Front View

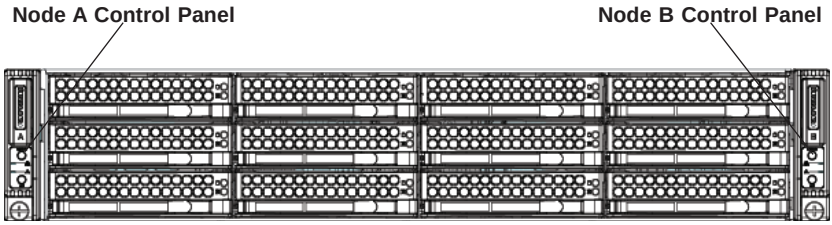
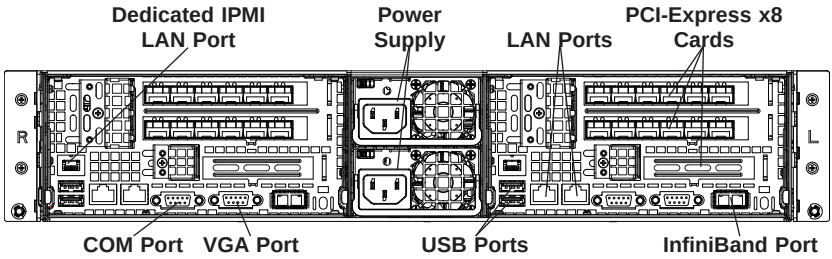


Figure 6-2. Chassis Rear View



6-2 Control Panel

Each control panel on the front of the chassis must be connected to the JF2 connector on its associated serverboard to provide you with system control buttons and status indicators.

The LEDs inform you of system status for the serverboard it is connected to. See Chapter 3 for details on the LEDs and the control panel buttons.

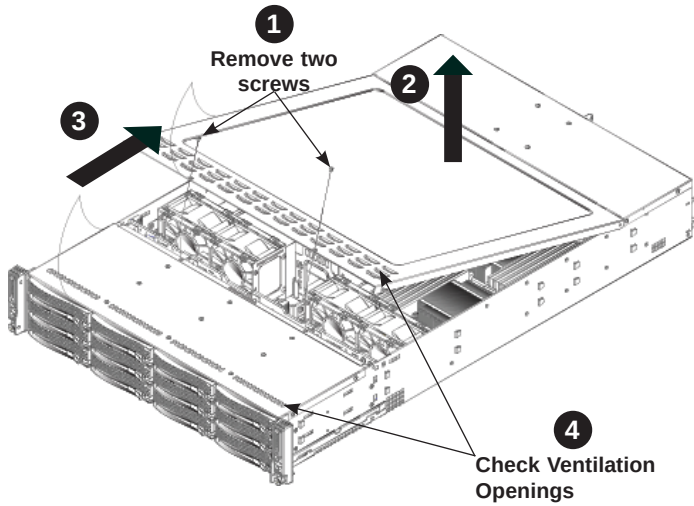
6-3 Chassis Cover

Before operating the SC827HD 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

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.
3. Peel off the protective film covering the top cover and the top of the chassis
4. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

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 Installing the Air Shrouds

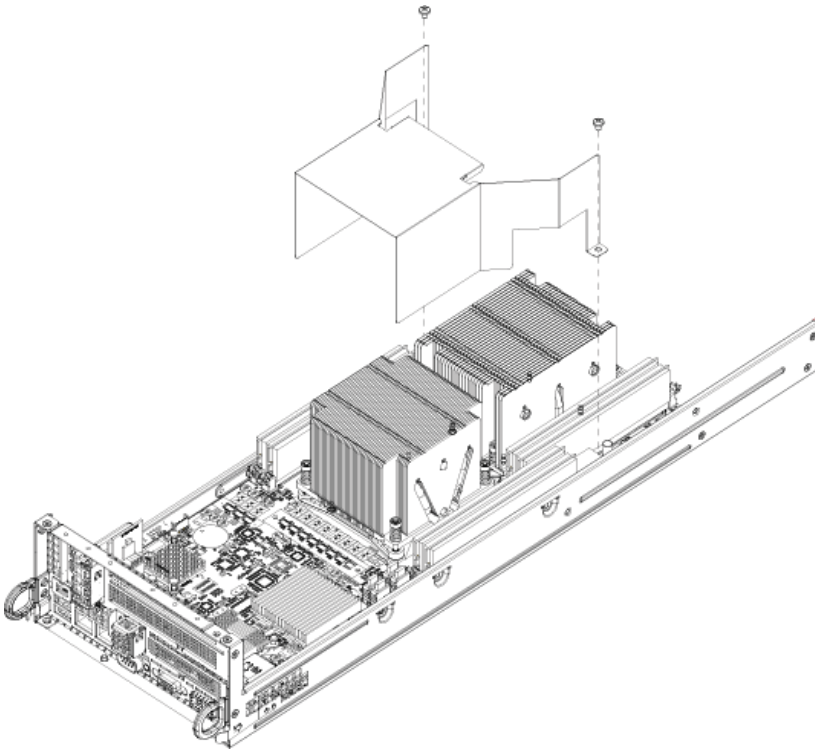
Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. The SC827HD chassis requires air shrouds for each motherboard node. Air shrouds vary depending upon the motherboard used. See the illustrations below.

Installing an Air Shroud

1. Make sure that the motherboard adapter card (if any) and all components are properly installed in each motherboard node.
2. Place the first air shroud over the motherboard, as shown below. The air shroud sits behind the system fans and goes over the top of the motherboard and its components.
3. Repeat the procedure for the remaining three motherboard nodes.

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 SC827HD system fans are easy to change modules. There is no need to uninstall any other parts inside the system when replacing fans, and no tools are required for installation.

Optional Fan Configurations

The SC827HD chassis is designed with a hot-swappable fan configuration. One fan is wired directly to each motherboard. In the event that one of the motherboard drawers is removed, then the fan associated with that motherboard will not function until the drawer is replaced. If multiple controls are desired in the SC827HD, an optional cable must be purchased separately to connect from the backplane to each motherboard node.

Fan Configurations
Hot-Swappable Fan Default Configuration
Fans A and B connected to backplane, backplane connected to Node A and B 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

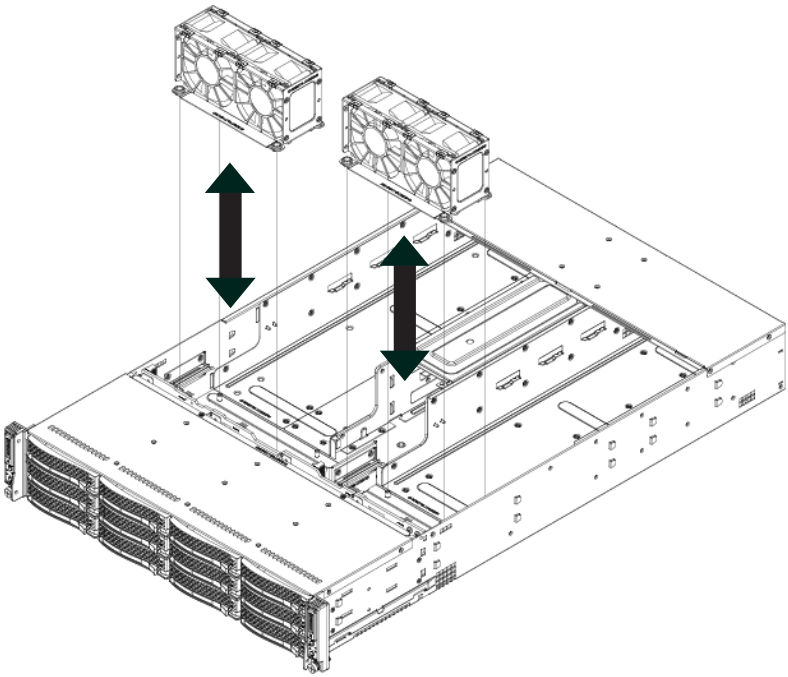
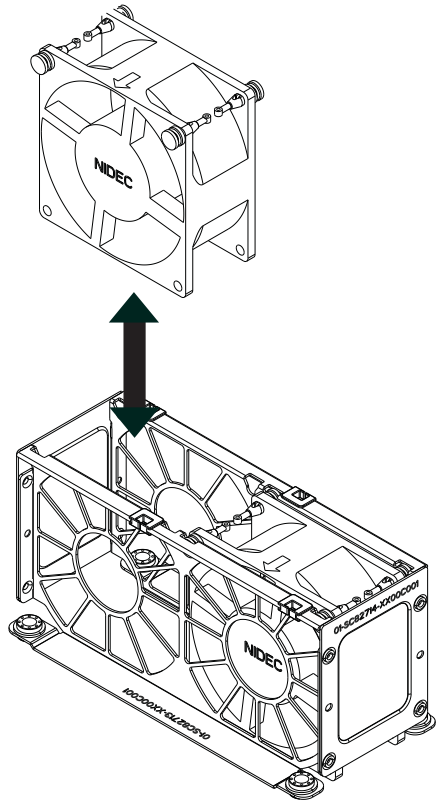


Figure 6-5. Replacing a System Fan in the Fan Housing



6-7 Removing and Installing the Backplane

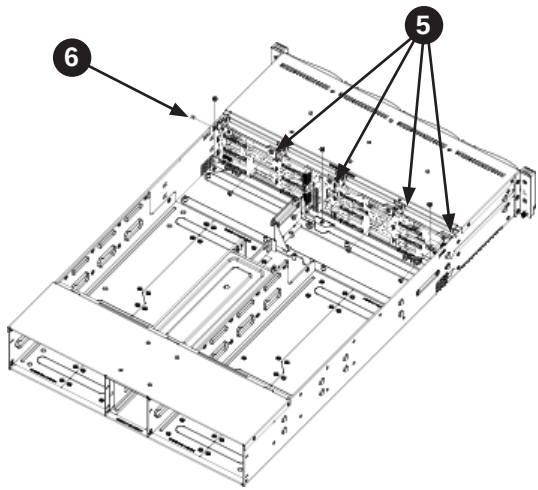
The SC827HD chassis backplane is located behind the hard drives and in front of the front system fans. If it is necessary to remove the backplane, follow the instructions below.

Removing the Backplane

Removing the Backplane from the Chassis

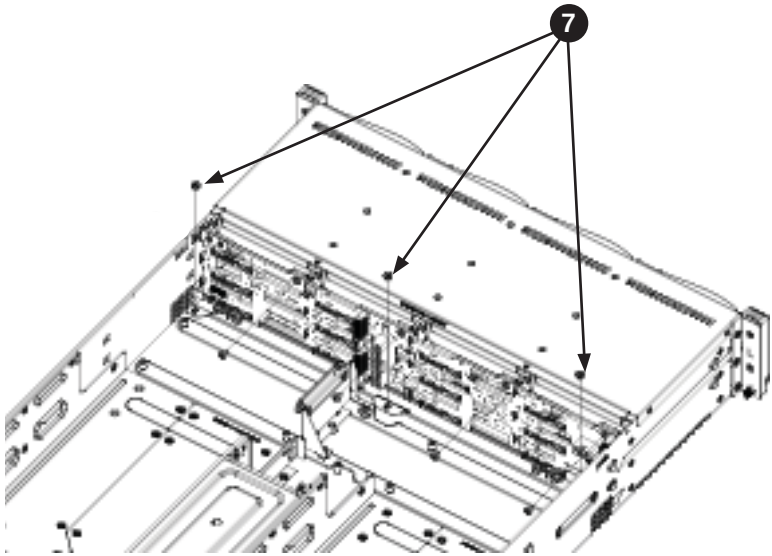
1. Power down and unplug the system from any power source.
2. Remove the chassis cover.
3. Disconnect the cabling to the backplane and the front panel.
4. Remove all of the hard drive trays from the front of the chassis.
5. Remove the four upper screws at the top of the backplane (Figure 6-6).
6. Remove the side screw from the side of the chassis, as indicated by the arrows below.

Figure 6-6: Removing the Screws at the Top and Side of the Backplane



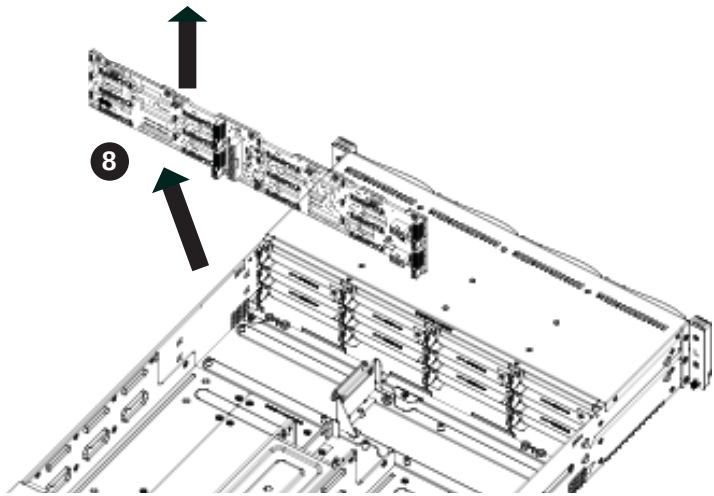
7. Loosen the three screws in the spring bar, located on the floor of the chassis, indicated by the arrows below (Figure 6-7).

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 at a slight angle (Figure 6-8).

Figure 6-8: Removing the Backplane from the Chassis

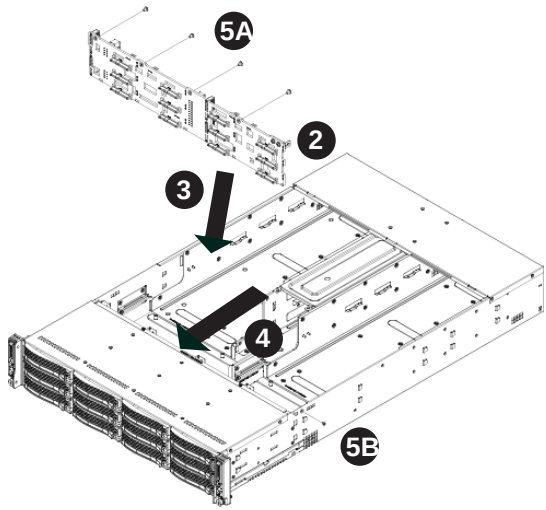


Installing the Backplane

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 (5A) and the screw on the side of the chassis (5B).
6. Adjust the spring bar, then tighten the spring bar screws in the floor of the chassis.
7. Reconnect all cables and return the hard drive trays to their bays in the front of the chassis.

Figure 6-9: Installing the Backplane

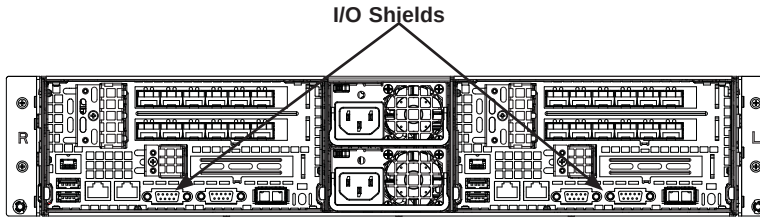


6-8 Installing the Motherboard

I/O Shield

The I/O shield (Figure 6-10) holds the motherboard ports in place. The I/O shield does not require installation.

Figure 6-10. I/O Shield Placement



Compatible Motherboards

Most Supermicro Twin series motherboards are compatible with the SC827HD chassis. For the most up-to-date information on compatible motherboards and other parts, visit the Supermicro Web site at www.supermicro.com.

Hot-swappable motherboards feature different adapter cards, depending upon the motherboard. Adapter cards are optional and are not included with the chassis. For information on ordering adapter cards, see the appendix of this manual or visit the Supermicro Web site at www.supermicro.com.

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC827HD chassis includes permanent standoffs in locations used by the motherboards. These standoffs accept the rounded Phillips head screws included in the SC827HD accessories packaging.

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

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

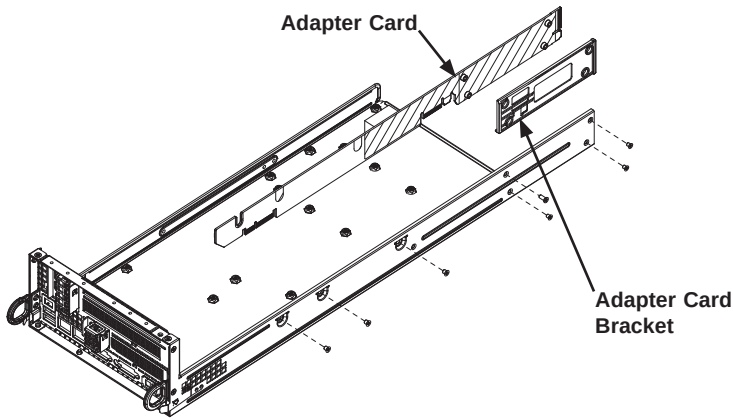
Installing the Motherboard (Figure 6-11)

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections.
2. Pull the motherboard node drawer out of the back of the chassis.
3. Remove the expander card brackets:

   a. Remove the screws securing the expander card bracket to the back of the node drawer.

   b. Lift the bracket out of the node drawer.
4. Lay the motherboard in the node drawer aligning the standoffs with the motherboard. Compare the holes in the motherboard to the standoffs in the drawer and add and remove standoffs as needed.
5. Secure the motherboard to the node drawer using the rounded, Phillips head screws included for this purpose. Do not exceed eight pounds of torque when tightening down the motherboard.
6. Install the adapter card associated with the motherboard. Refer to the next section for instructions on installing the adapter card
7. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.
8. Connect the cables between the motherboard, 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 expander card bracket and secure the bracket with a screw.
10. Repeat steps 3 - 5 for the remaining node.

Figure 6-11. Installing the Motherboard in the Motherboard Node Drawer



6-9 Node Installation/Removal

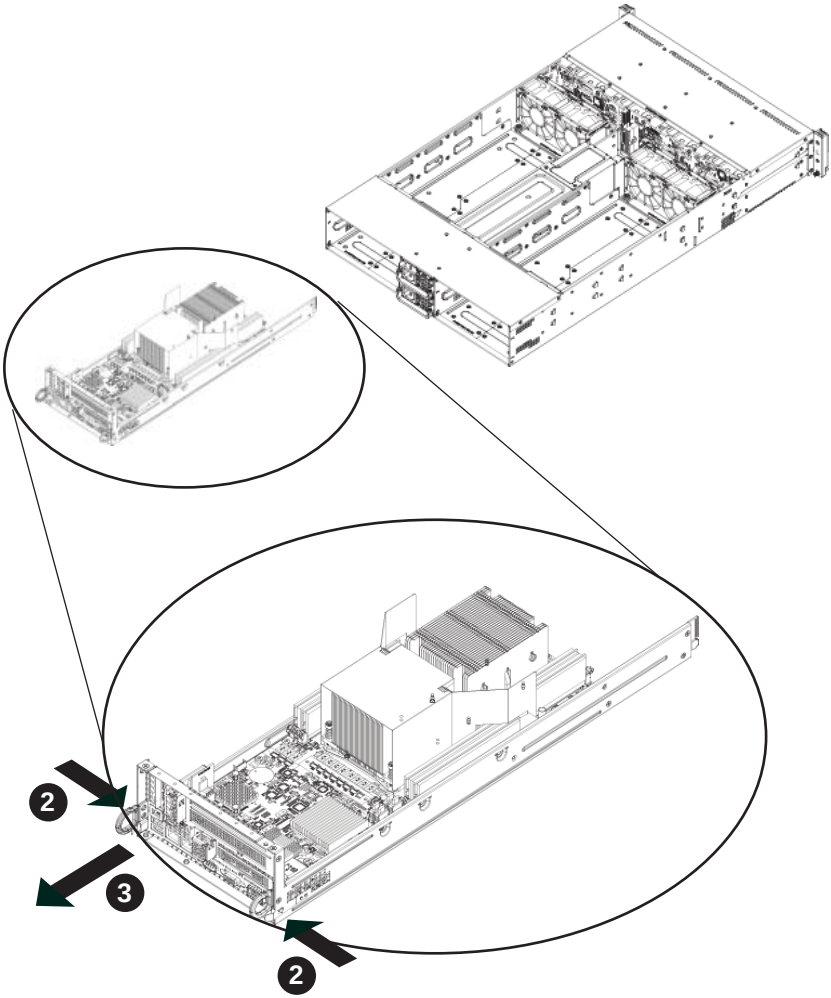
As with any server system, power must be removed from the serverboard when upgrading or installing memory or processors. In the 2U Twin server, the serverboards (nodes) are capable of being hot-swapped from the chassis, allowing one to be powered down for servicing while the other continues operating.

Caution! Removing a node from the server affects the airflow throughout the system. For this reason, nodes should be removed, serviced and replaced as quickly as possible. Also note that powering down a node will power down all the hard drives that are logically associated with it.

Removing a Node (Figure 6-12)

1. Depress the power button on the control panel to power down the node.
2. There are two latches located below the handles at the rear of the node tray. Push both of these inward.
3. While pushing the latches inward, grasp both handles and pull the node from the chassis.
4. Perform any service needed to the node in a timely manner.
5. Reinstall the node by pushing it into its bay until firmly seated.

Figure 6-12. Removing a System Node



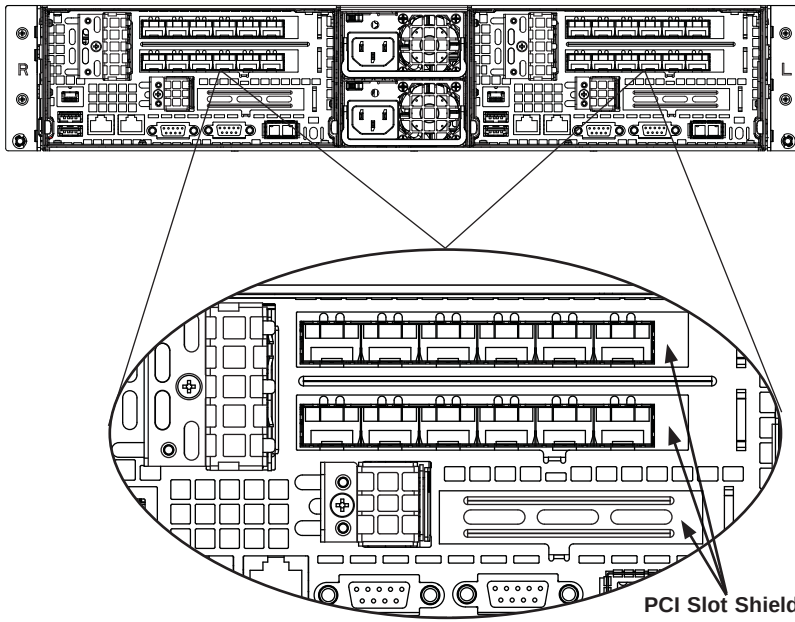
Note: The above illustration above represents a typical motherboard in the node drawer and its attached components. It is not meant to represent the specific motherboard found in your server.

6-10 Installing and Replacing the Adapter Card

Expansion Card/Expansion Slot Setup

The SC827HD chassis supports one low-profile PCI slot and two full height full length slots for each node, for a total of six slots in the chassis (Figure 6-14).

Figure 6-14: I/O Shield Configuration

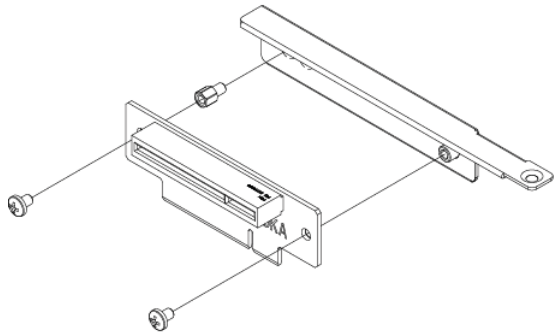


Installing the Riser Card onto the Riser Card Bracket

Installing the Riser Card onto the Riser Card Bracket (Figure 6-15)

1. Disconnect the power supply and lay the chassis on a flat surface.
2. Pull the motherboard node drawer from the chassis.
3. Remove the riser card bracket.
   3a. Remove the screw securing the riser card bracket to the back of the drawer.
   3b. Lift the bracket out of the motherboard node drawer.
4. Align the riser card mounting hole to the bracket standoff and secure the riser card to the bracket using the two screws included in the accessory box.

Figure 6-15: Installing the Riser Card

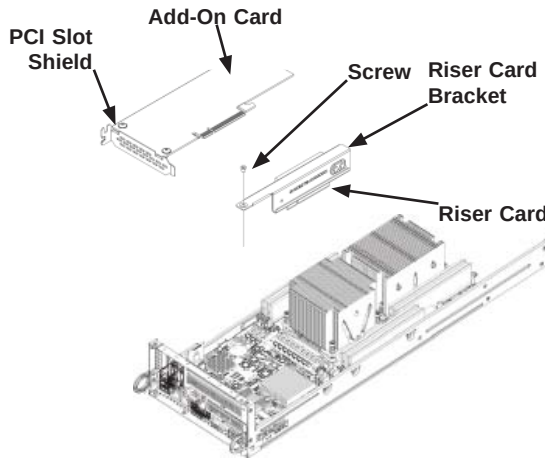


Installing Add-On and Riser Cards onto the Motherboard

Installing Expander and Riser Cards (Figure 6-16)

1. Disconnect the chassis from any power source.
2. Attach the riser card to the riser card bracket as described in the previous section.
3. Remove the PCI slot shield.
4. Insert the expander card into the riser card
5. Align the PCI slot shield with the opening in the rear of the motherboard node drawer and insert the riser card into the motherboard.
6. Close the PCI slot clip and secure the riser card bracket to the top of the motherboard node drawer using the screw provided.

Figure 6-16: Installing the Add-On Card

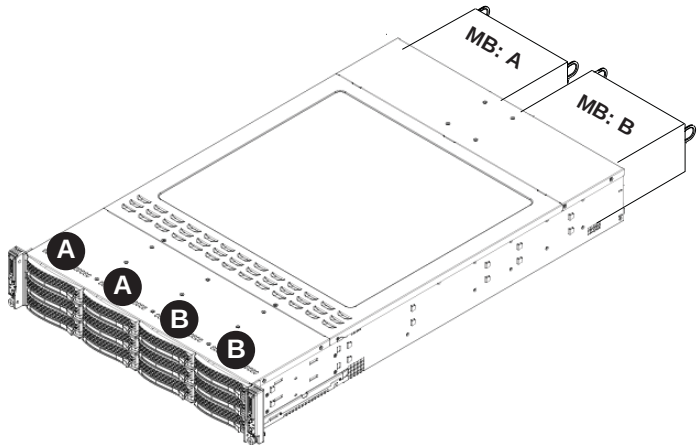


6-11 Installing and Removing Hard Drives

The SC827HD chassis contains two individual motherboards in separate node drawers. Each motherboard node controls a set of six hard drives. Note that if a motherboard node drawer is pulled out of the chassis, the hard drives associated with that node will power down as well. See the table below and Figure 6-17 for details..

Motherboard Drawer Locations in the Chassis	
Motherboard B Controls HDDs B1 - B6	Motherboard A Controls HDDs A1 - A6

Figure 6-17: Hard Drives and the Corresponding Motherboards



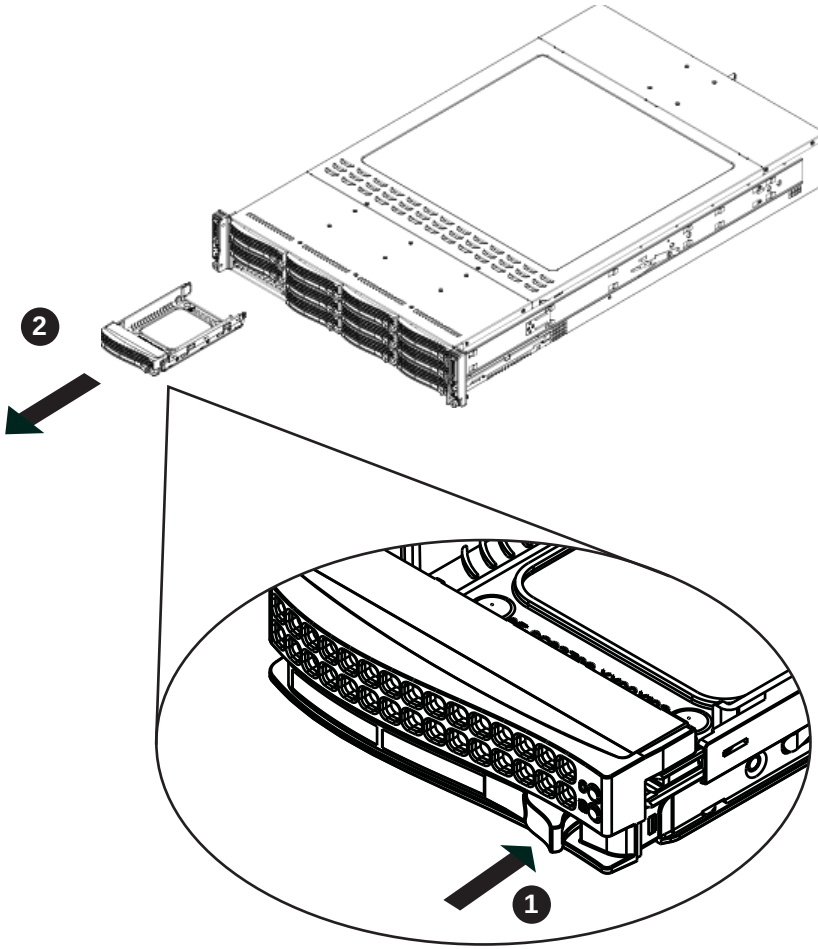
Caution: Use caution when working around the hard drive backplane. Do not touch the backplane with any metal objects and make sure no cables touch the backplane. Also, regardless of how many drives are installed, all twelve drive carriers must remain in the chassis to maintain proper airflow.

Caution: Be aware that powering down a node will power down all the hard drives that are logically associated with it (as shown in Figure 6-18).

Removing Hard Drive Carriers From the Chassis (Figure 6-18)

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

Figure 6-18: Removing a Hard Drive Carrier



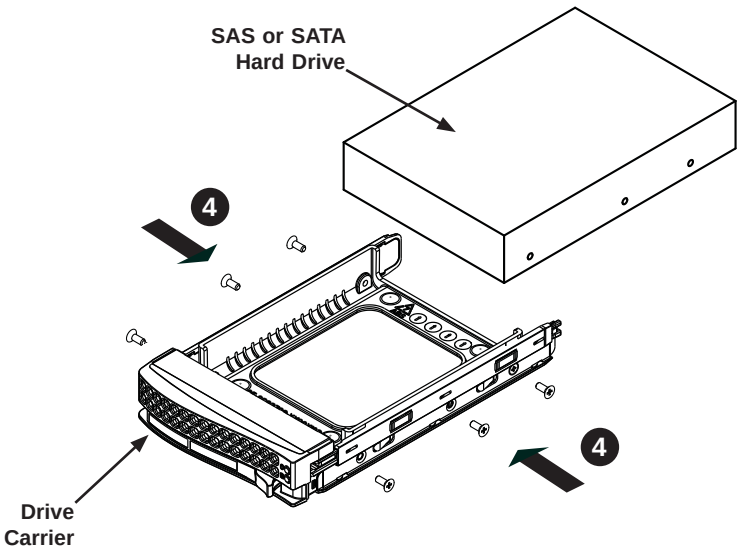
The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

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

Installing a Hard Drive into the Hard Drive Carrier (Figure 6-19)

1. Remove the screws which secure the dummy drive into the carrier.
2. Remove the drive from the tray.
3. Install a new drive into the tray with the printed circuit board side facing down so that the mounting holes in the drive align with those in the carrier.
4. Secure the hard drive by tightening all six (6) screws.
5. Use the open handle to replace the drive carrier into the chassis.
6. Close the drive carrier handle to lock the hard drive carrier into the chassis drive bay.

Figure 6-19: Installing the Hard Drive



6-12 Power Supply

Depending on your chassis model, the SC827HD chassis will include two 1280 Watt power supplies. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Replacement

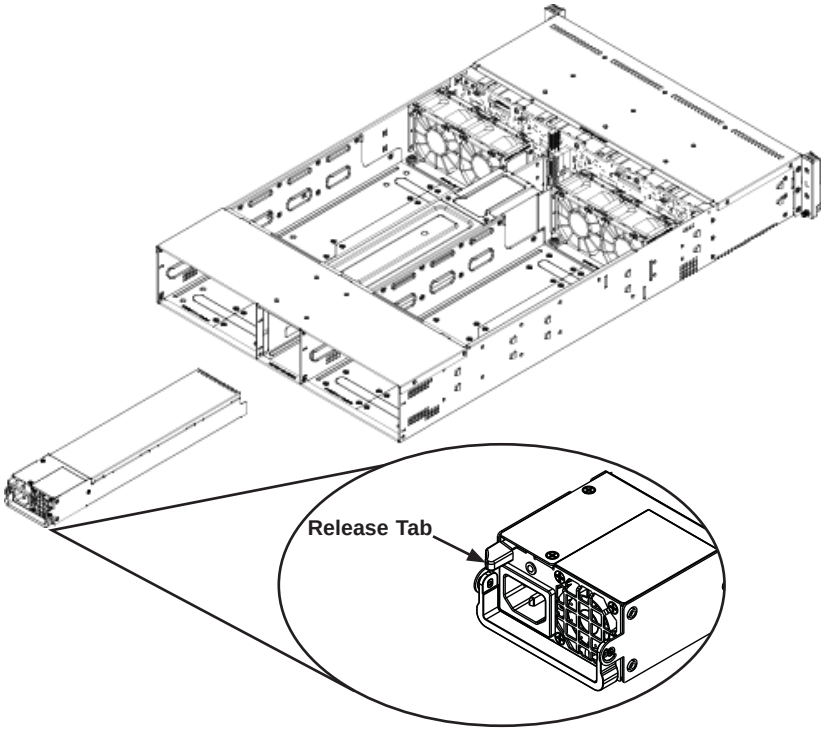
The SC827HD chassis utilizes two redundant power supplies. In the unlikely event that the power supply unit needs to be replaced, one power supply can be removed, without powering down the system. Replacement units can be ordered directly from Supermicro (See the contact information in the Preface of this manual).

Power Supply Replacement

Changing the Power Supply (Figure 6-20)

1. Power down all two nodes and unplug the power cord. (Not necessary with redundant power supplies)
2. Unplug the AC power cord from the failed power supply.
3. Push the release tab (on the back of the power supply) as illustrated.
4. Pull the power supply out using the handle provided.
5. Push the new power supply module into the power bay until you hear a click.
6. Plug the AC power cord back into the module and power up the nodes.

Figure 6-20: Changing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X9DRT-HF/HIBQF/HIBFF serverboard. The AMI 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 setup screens.

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 Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. 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>, <F10>, <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.

Starting the Setup Utility

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

Caution! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall 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. This is to avoid possible boot failure.

7-2 Advanced Settings Menu

▶ Boot Feature

Quiet Boot

This feature selects the bootup screen display between POST messages and the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Enabled and **Disabled**.

AddOn ROM Display Mode

This item sets the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM Display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

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

Wait For 'F1' If Error

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

Interrupt 19 Capture

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

Watch Dog Function

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

Power Button Function

If this feature is set to Instant_Off, the system will power off immediately as soon as the user presses the power button. If this feature is set to 4_Second_Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant_Off** and 4_Second_Override.

Restore on AC Power Loss

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

▶CPU Configuration

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

▶Socket 1 CPU Information/Socket 2 CPU Information

This submenu displays the following information regarding the CPU installed in Socket 1 and (or) Socket 2 as detected by the BIOS.

- Type of CPU
- CPU Signature
- Microcode Patch
- CPU Stepping
- Maximum CPU Speed
- Minimum CPU Speed
- Processor Cores
- Intel HT (Hyper-Threading) Technology
- Intel VT-x Technology
- Intel SMX Technology
- L1 Data Cache
- L1 Code Cache
- L2 Cache
- L3 Cache

CPU Speed

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

64-bit

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

Clock Spread Spectrum

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

Hyper-threading

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

Active Processor Cores

Set to Enabled to use a processor's second core and above. (Please refer to Intel's website for more information.) The options are **All,** 1, 2, 4, and 6.

Limit CPUID Maximum

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

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

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

Intel® AES-NI

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

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, 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 Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU prefetches the cache line for 64 bytes if this feature is set to Disabled. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to **Enabled**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enabled to enable the DCU (Data Cache Unit) Streamer Prefetcher which will stream and prefetch data and send it to the Level 1 data cache to improve data processing and system performance. The options are Disabled and **Enabled**.

DCU IP Prefetcher (Available when supported by the CPU)

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

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

Select Enabled to support Intel Virtualization Technology, which will allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

> **Note**: If a change is made to this setting, you will need to reboot the system for the change to take effect. Refer to Intel's website for detailed information.

▶ CPU Power Management Configuration

This section is used to configure the following CPU Power Management settings.

Power Technology

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

Factory Long Duration Power Limit

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

Long Duration Power Limit

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

Factory Long Duration Maintained

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

Long Duration Maintained

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

Recommended Short Duration Power

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

Short Duration Power Limit

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

▶Chipset Configuration

▶North Bridge

This feature allows the user to configure the following North Bridge settings.

▶Integrated IO Configuration

Intel VT-d

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

Intel I/OAT

The Intel I/OAT (I/O Acceleration Technology) significantly reduces CPU overhead by leveraging CPU architectural improvements, freeing up the system resource for other tasks. The options are Disabled and **Enabled**.

DCA Support

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

IIO 1 PCIe Port Bifuracation Control

This submenu allows the user to configure the following IO PCIe Port Bifurcation Control settings for IIO 1 PCIe port. These settings determine how to distribute the available PCI-Express lanes to the PCI-Exp. Root Ports.

IOU1-PCIe Port

This feature allows the user to set the PCI-Exp bus speed between IOU1/2 and PCIe port. The options are **x4x4** and x8.

Port 1A Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 1A. Select GEN2 to enable PCI-Exp Generation 2 support for Port 1A. Select GEN3 to enable PCI-Exp Generation 3 support for Port 1A. The options are GEN1, GEN2, and **GEN3**.

Port 1B Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 1B. Select GEN2 to enable PCI-Exp Generation 2 support for Port 1B. Select GEN3 to enable PCI-Exp Generation 3 support for Port 1B. The options are GEN1, **GEN2**, and GEN3.

IOU2-PCIe Port

If this feature allows the user to set the bus speed between the IOU2 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

Port 2A Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 2A. Select GEN2 to enable PCI-Exp Generation 2 support for Port 2A. Select GEN3 to enable PCI-Exp Generation 3 support for Port 2A. The options are GEN1, GEN2, and **GEN3**.

IOU3-PCIe Port

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

Port 3A Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 3A. Select GEN2 to enable PCI-Exp Generation 2 support for Port 3A. Select GEN3 to enable PCI-Exp Generation 3 support for Port 3A. The options are GEN1, GEN2, and **GEN3**.

Port 3C Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 3C. Select GEN2 to enable PCI-Exp Generation 2 support for Port 3C. Select GEN3 to enable PCI-Exp Generation 3 support for Port 3C. The options are GEN1, GEN2, and **GEN3**.

IIO 2 PCIe Port Bifuracation Control

This submenu allows the user to configure the following IO PCIe Port Bifurcation Control settings for IIO 2 PCIe port. These settings determine how to distribute the available PCI-Express lanes to the PCI-Exp. Root Ports.

IOU2-PCIe Port

If this feature allows the user to set the bus speed between the IOU2 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, and **x16**.

Port 2A Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 2A. Select GEN2 to enable PCI-Exp Generation 2 support for Port 2A. Select GEN3 to enable PCI-Exp Generation 3 support for Port 2A. The options are GEN1, GEN2, and **GEN3**.

IOU3-PCIe Port

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

Port 3A Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for Port 3A. Select GEN2 to enable PCI-Exp Generation 2 support for Port 3A. Select GEN3 to enable PCI-Exp Generation 3 support for Port 3A. The options are GEN1, GEN2, and **GEN3**.

▶QPI Configuration

Current QPI Link Speed

This item displays the speed of the QPI Link.

Isoc

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

Current QPI Frequency

This item displays the frequency of the QPI Link.

QPI (Quick Path Interconnect) Link Speed Mode

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

QPI Link Frequency Select

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

▶DIMM Configuration

This item displays the following information of a DIMM module specified by the user.

CPU Socket 1 DIMM Information

This item displays the memory type/speed of a memory module specified.

- P1-DIMMA1
- P1-DIMMB1
- P1-DIMMC1
- P1-DIMMD1

CPU Socket 2 DIMM Information

This item displays the memory type/speed of a memory module specified.

- P1-DIMME1
- P1-DIMMF1
- P1-DIMMG1
- P1-DIMMH1

Memory Mode

When Independent is selected, all DIMMs will be available to the operating system. When Mirroring is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel. The options are **Independent**, Mirroring, Lockstep and Sparing.

DRAM RAPL (Running Average Power Limit) Mode

This item sets the average power consumption limit on a DRAM module when it is in operation. The options are Disabled, DRAM RAPL Mode0, and **DRAM RAPL Mode1**.

DDR Speed

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

Channel Interleaving

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

Rank Interleaving

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

Patrol Scrub

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

Demand Scrub

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

Data Scrambling

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

Device Tagging

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

Thermal Throttling

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

▶South Bridge Configuration

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

PCH Information

This feature displays the following PCH information.

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

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

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

All USB Devices

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

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

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

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

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

Port 60/64 Emulation

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

EHCI Hand-Off

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

▶SATA Configuration

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

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

SATA Mode

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

IDE Mode

The following items are displayed when IDE Mode is selected:

Serial-ATA (SATA) Controller 0~1

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

AHCI Mode

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

Aggressive Link Power Management

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

Port 0~5 Hot Plug

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

Staggered Spin Up

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

RAID Mode

The following items are displayed when RAID Mode is selected:

PCH RAID CodeBase

Select Intel or LSI to specify the code base to be used for RAID support. The options are **Intel** and LSI.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for the particular port. The options are Enabled and **Disabled**.

▶SCU (Storage Controller Unit) Configuration

Storage Controller Unite

Select Enabled to support a PCH storage device. The options are Disabled and **Enabled**.

Onchip SCU Option ROM

Select Enabled to support the onboard SCU Option ROM to boot up the system via a SCU device. The options are Disabled and **Enabled**.

SCU Port 0~SCU Port 3: The AMI BIOS will automatically detect the presence of a SCU port and display the status of this port as detected.

▶PCIe/PCI/PnP Configuration

PCI ROM Priority

Use this feature to select the Option ROM to boot the system when there are multiple Option ROMs available in the system. The options are EFI Compatible ROM and **Legacy ROM**.

PCI Latency Timer

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

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**.

PERR# Generation

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

SERR# Generation

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

Maximum Payload

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

Maximum Read Request

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

ASPM Support

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

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

SXB1 PCI-E 3.0 x16 Option ROM

Select Enabled to enable CPU1 SXB1 PCI-E 3.0 x16 Option ROM to boot the system via a device installed on this slot. The options are Disabled and **Enabled**.

SXB3 PCI-E 3.0 x16 Option ROM

Select Enabled to enable CPU2 SXB3 PCI-E 3.0 x16 Option ROM to boot the system via a device installed on this slot. The options are Disabled and **Enabled**.

Onboard LAN Option ROM Select

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

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable Onboard LAN1 Option ROM or Onboard LAN2 Option ROM to boot the system via a device installed on the onboard LAN port as specified. The options are Enabled and **Disabled**.

VGA Priority

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

Network Stack

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

▶Super IO Configuration

Super IO Chip: This item displays the name of the super IO chip used in the system.

▶COM1 Configuration

Serial Port

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

Device Settings

This feature displays the serial port settings as specified.

Change Settings

Use this feature to set the settings of a serial port specified. The options are **Auto**, IO=3F8h; IRQ=4, IO=3F8h; IRQ=3, IO=2F8h; IRQ=3, IO=3E8h; IRQ=5, IO=2E8h; IRQ=7, IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12, IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12, IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12, and IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12.

Device Mode

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

Serial Port Attribute

Use this feature to select the attribute for a serial port specified. The options are **SOL** (Serial On LAN), and COM.

▶Serial Port Console Redirection

COM 1

This submenu allows the user to configure the following Console Redirection settings for a COM Port specified by the user.

Console Redirection

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

▶Console Redirection Settings

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

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

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

Console Redirection

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

▶Console Redirection Settings

This item determines how the host system exchanges data with the client computer.

Terminal Type

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

▶ACPI Setting

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

ACPI Sleep State

Use this feature to select the ACPI State when the system is in sleep mode. Select S1 (CPU_Stop_Clock) to erase all CPU caches and stop executing instructions. Power to the CPU(s) and RAM is maintained, but RAM is refreshed. Select Suspend to use power-reduced mode. Power will only be supplied to limited components (such as RAMs) to maintain the most critical functions of the system. The options are **S1 (CPU_Stop_Clock),** and Suspend Disabled.

NUMA Support

Select Enabled to enable Non-Uniform Memory Access support to improve CPU performance for a system that has an OS with NUMA support. The options are **Enabled**, and Disabled.

RTID

This feature indicates the total number of RTIDs for local and remote poots. The options are **Optimal** and Alternate.

High Precision Event Timer

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

▶ME (Management Engine) Subsystem Configuration

This feature displays the following ME Subsystem Configuration settings.

- **ME BIOS Interface Version**
- **ME Version**

iSCSI: This item displays the following iSCSI information:

iSCSI Initiation Name

This item displays the name of the iSCSI Initiator, which is a unique name used in the world.

Intel®1350 Gigabit Network Connection

This item displays the following iSCSI Internet Connection information.

▶NIC Configuration

Link Speed

Use this feature to change the link speed of network connection and to configure duplex mode for the port currently used. The options are **AutoNeg**, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, and 100 Mbps Full.

Wake on LAN

Enable this option to wake up the system via a LAN (NIC) device. The options are **Enabled**, and Disabled.

Blink LEDs (Range 0~15 seconds)

This item displays the blinking range of the NIC LED indicators.

Port Configuration Information

This section displays the following LAN Port settings.

- UEFI Drive
- Adapter PBA
- Chip Type
- PCI Device ID
- PCI Bus: Device: Function
- Link Status
- Factory MAC Address
- Alternate MAC Address

7-3 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 Enabled to support Runtime Error Logging. The options are **Enabled** and Disabled.

Memory Correctable Error Threshold

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

PCI Error Logging Support

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

Erasing Settings

Erase Event Log

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

When Log is Full

Select Erase Immediately to immediately erase SMBIOS error event logs that exceed the limit when the SMBIOS event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

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

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

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

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.

- Date
- Time
- Error Code
- Severity

7-4 IPMI

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

IPMI Firmware Revision

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

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 for all system event logging at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

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

When SEL is Full

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

Customize EFI Logging Options

Log EFI Status Codes

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

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

▶BMC Network Configuration

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

Update IPMI LAN Configuration

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

Configuration Address Source

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

Station IP Address

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

Subnet Mask

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

Station MAC Address

This item displays the Station MAC address of this computer.

Gateway IP Address

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

7-5 Boot

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

CSM Support

Select Enabled to enable UEFI Compatibility Support Module (CSM) to provide compatibility support to a traditional legacy BIOS which will allow an OS that requires CSM support to boot from a traditional option ROM. Select Auto to allow the BIOS to automatically enable or disable CSM support based on the OS installed in the system. The options are **Enabled**, Disabled, and Auto

Boot Option #1

Use this feature to select the first boot drive. Select a LAN device to boot the system from the network connection. Select UEFI to boot the system from the UEFI: Built-in EFI Shell. The options are **LAN Device**, UEFI: Built-in EFI Shell, and Disabled.

Boot Option #2

Use this item to select the first boot device. Select a LAN device to boot the system from the network connection. Select UEFI to boot the system from the UEFI: Built-in EFI Shell. The options are LAN Device, **UEFI: Built-in EFI Shell**, and Disabled.

Network Devices

▶Delete Boot Options

This feature allows the user to select a boot device to delete from the boot priority list. Select UEFI: Built-in EFI Shell to delete it from the boot priority list which will prevent system boot from the UEFI Shell. The options are Select One to Delete and **UEFI: Built-in EFI Shell**.

7-6 Security

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

Administrator Password

Use this feature to set the Administrator Password which is required to enter the BIOS setup utility. The length of the password should be from 3-character to 8-character long.

User Password

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

7-7 Save & Exit

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

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, click **Yes** to quit BIOS without saving the changes, or click No to quit the BIOS and save changes.

Save Changes and Reset

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

Save Changes

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

Discard Changes

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

Restore Optimized Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override

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

- LAN Device
- UEFI: Built-in EFI Shell

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

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

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short beeps and 1 long beep	Memory error	No memory detected in the system
5 long and 2 short beeps	Display memory read/write error	Video adapter missing or with faulty memory
1 beep per device	Refresh	1 beep for each USB Device
X9 IPMI Error Codes		
1 continuous beep	System overheat	System overheat

Notes

Appendix B

System Specifications

Note: Unless noted specifications apply to a complete system (all serverboards).

Processors

Two E5-2600 series processors per node in Socket R LGA 2011 type sockets

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

Chipset

One C602 chipset per node

BIOS

128 Mb AMI BIOS® Flash EEPROM per node

Memory Capacity

For each node up to eight (8) DIMM slots supporting up to 256 GB of DDR3-1600/1333/1066/800 MHz registered ECC SDRAM or 64 GB ECC UDIMM in 512 MB, 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB size sizes of 1.5V or 1.35V voltages.

Note: refer to Section 5-6 for details on installation.

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

SAS Drive Bays

The SuperServer 6027TR-D71RF/D71QRF/D71FRF contains twelve (12) 3.5 inch hot-swap drive bays to house twelve standard SAS drives

PCI Expansion

Each SuperServer 6027TR-D71RF/D71QRF/D71FRF has one PCI Express 3.0 x16 slot (Slot 1), one (1) PCI-E 3.0 x8 Slot for Rear I/O Riser Card (SXB1) and one (1) PCI-E 3.0 x8 Slot for SMC-Proprietary Daughter (Add-On) Card (SXB2).

Serverboard

X9DRT-HF/HIBQF/HIBFF serverboard (proprietary form factor)

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

Chassis

SC827HD-R1K28B (2U rackmount)
Dimensions: (WxHxD) 17.25 x 3.47 x 28.5 in. (438 x 88 x 724 mm)

Weight

Gross (Bare Bone): 85 lbs. (38.6 kg.)

System Cooling

The SuperServer 6027TR-D71RF/D71QRF/D71FRF has four (4) 8-cm PWM system cooling fans

System Input Requirements

AC Input Voltage: 85-264V AC auto-range
Rated Input Current: 13 - 5.5A
Rated Input Frequency: 47 to 63 Hz
Efficiency: 80+ (Platinum Level)

Power Supply

Rated Output Power: 1280 Watt (Part# PWS-1K28P-SQ)
Rated Output Voltages: +12V (106.7A@180-264V, 83A@85-140V), +5Vsb (6A)

Operating Environment

Operating Temperature: 0º to 35º C (32º to 95º F)
Non-operating Temperature: -10º to 60º C (-14º to 140º 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.