SUPER⦿®

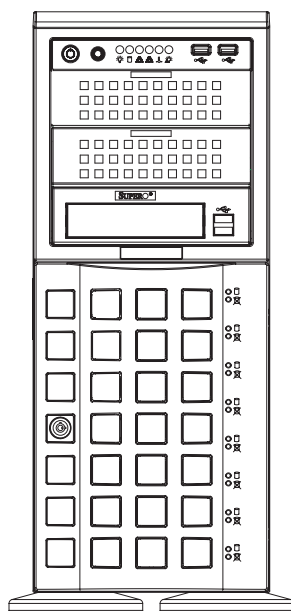## SC745 CHASSIS Series

SC745TQ-R1200B   SC745TQ-920B

SC745TQ-R800(B)   SC745S2-R800(B)

SC745TQ-800(B)   SC745S2-800(B)

USER'S MANUAL

1.0a

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.

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 1.0a
Release Date: December 1, 2010

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

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 SC745 4U chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC745 chassis series is optimized for the latest Intel® Xeon® processor 5500 series (Nehalem) and is also compatible with previous generation Intel and AMD dual processor-based motherboards. Utilizing redundant, high-efficiency power supplies (85% and up) with the Gold Level 1200W option, and eight hot-swappable 3.5" drive bays, this chassis offers reliable performance with problem-free maintenance. Designed with 100% cooling redundancy via a combination of high-performance fans and an adjustable air-shroud capable of fitting any generation of motherboard, the SC745 minimizes the probability of system downtime or performance degradation from thermal-related issues.

The SC745 features a ninety degree rotatable drive bay module, seven tool-less expansion slots, and 6-pin power connectors supporting high-end graphics cards and GPU cards. The SC745 is quick to configure and easy to operate.

For compatible backplane information, refer to the Supermicro Web site at www.supermicro.com. For information on SCSI backplanes, contact the technical support department of Supermicro computer.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features of the SC745 chassis. This chapter also includes contact information.

Chapter 2: System Safety

This chapter lists warnings, precautions, and system safety. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

Chapter 3: Chassis Components

Refer here for details on this chassis model including the fans, bays, airflow shields, and other components.

Chapter 4: System Interface

Refer to this chapter 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 5: Chassis Setup and Installation

Refer to this chapter for detailed information on this chassis. You should follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

Chapter 6: Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

Table of Contents

Chapter 5 Chassis Setup and Maintenance

Chapter 6 Rack Installation

Chapter 1

Introduction

1-1   Overview

Supermicro's SC745 4U chassis features a unique and highly-optimized design. The chassis is equipped with high efficiency power supply. High-performance fans provide ample optimized cooling for FB-DIMM memory modules and eight hot-swappable drive bays offer maximum storage capacity in a 4U form factor.

1-2   Chassis Models

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model http://www.supermicro.com/products/chassis/4U/?chs=745

SC745 Chassis				
Model	**CPU**	**HDD**	**I/O Slots**	**Power Supply**
SC745TQ-R1200B	DP/UP	8x SAS/SATA	7x FF	1200W Redundant (Gold Level)
SC745TQ-920B	DP/UP	8x SAS/SATA	7x FF	920W (Platinum)
SC745TQ-R800(B)	DP/UP	8x SAS/ SATA	7x FF	800W (Redundant)
SC745S2-R800(B)	DP/UP	8x U320 SCSI 2-Channel	7x FF	800W (Redundant)
SC745TQ-800(B)	DP/UP	8x SAS/ SATA	7x FF	800W
SC745S2-800(B)	DP/UP	8x U320 SCSI 2-Channel	7x FF	800W

1-3   Chassis Features

The SC745 4U high-performance chassis includes the following features:

CPU

The SC745 chassis supports a DP/UP (dual processor/single processor). Please refer to the motherboard specifications pages on our Web site for updates on supported processors.

Hard Drives

The SC745 chassis features eight slots for U320 SCSI or SAS/SATA drives. These drives are hot-swappable. Once set up correctly, these drives can be removed without powering down the server. In addition, these drives support SAF-TE (SCSI) and SES2 (SAS/SATA).

I/O Expansion slots

Each version of the SC745 chassis includes seven full I/O expansion card PCI slots.

Peripheral Drives

Each SC745 chassis provides three 5.25" peripheral drive bays for floppy drive, DVD-ROM/CD-ROM drive, or additional hard drives.

Other Features

Other onboard features are included to promote system health. These include cooling fans, a convenient power switch, reset button, and five LED indicators.

1-4 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.

                       Chung-Ho 235, Taipei County

                       Taiwan, R.O.C.

Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8226-1900

Notes

Chapter 2

System Safety

2-1   Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in the order given should enable you to have your chassis set up and operational within a minimal amount of time. This quick setup assumes that you are an experienced technician, familiar with common concepts and terminology.

2-2   Warnings and Precautions

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

Decide on a suitable location for the rack unit that will hold that chassis. 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 at least one grounded power outlet. When configured, the SC745 chassis includes one power supply. "R" models (for example the SC745TQ-R800B chassis) include a redundant power supply and require two grounded outlets.

2-3   Preparing for Setup

The SC745 chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

2-4   Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC745 from damage:

• Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

• Do not work alone when working with high-voltage components.

• Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM (not necessary for hot-swappable drives). When disconnecting power, you should first power-down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

• When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.

• Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

• Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

• The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

• Serverboard battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- 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.

- DVD-ROM laser: CAUTION - This server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5   General Safety Precautions

- Keep the area around the chassis clean and free of clutter.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6   System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

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

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

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

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

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

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

- Put the serverboard 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.

Chapter 3

Chassis Components

3-1   Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

3-2   Components

Chassis

Chassis may include the following three options:

- Eight hot-swappable 3.5" hard drives

- Up to three GPUs

- Seven expansion slots

For the latest shipping lists, visit our Web site at: http://www.supermicro.com.

This chassis accepts three hot-swappable system cooling fans and one (sometimes two) power supplies. SC745 models come in beige and black.

Backplane

Each SC745 chassis comes with a 4U backplane. Depending on your order, your backplane will support SAS/SATA or SCSI. For more information regarding compatible SAS/SATA backplanes, view the appendices found at the end of this manual. For SCSI backplane information, contact the Supermicro Technical Support department at http://www.supermicro.com/support/. Additional information can be found on our Web site at http://www.supermicro.com.

Fans

The SC745 chassis accepts three system fans and two rear exhaust fans. System fans for SC745 chassis are powered from the serverboard. These fans are 4U high and are powered by 4-pin connectors.

Mounting Rails (optional)

The SC745 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.

Power Supply

Each SC745 chassis model includes a high-efficiency (85% and higher) power supply with thermal control fan, with options rated at 800, 920 and 1200 Watts. In the unlikely event your power supply fails, replacement is simple and can be done without tools.

Air Shroud

Air shrouds are shields, usually plastic, that funnel air directly to where it is needed. Always use the air shroud included with your chassis.

3-3   Where to get Replacement Components

Though not frequently, you may need replacement parts for your system. To en-sure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors / System Integrators / Resellers. A list of Supermicro Authorized Distributors / System Integrators /Reseller can be found at: http://www.supermicro.com. Click the Where to Buy link.

Chapter 4

System Interface

4-1   Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system, as well as the activity and health of specific components. Most SC745 models have two buttons on the control panel, a reset button and an on/off switch. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.
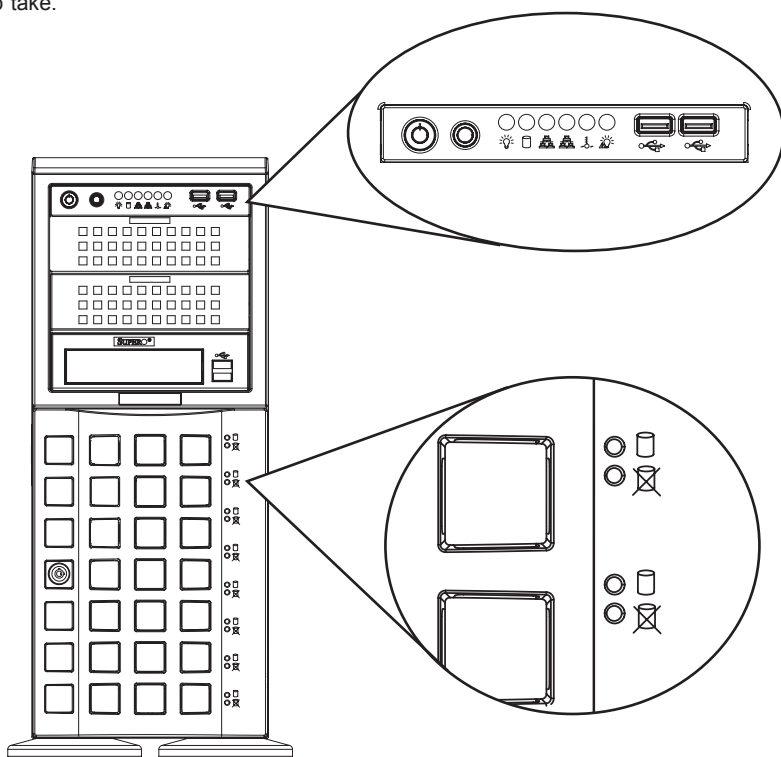

Figure 4-1: Front LEDs

4-2   Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are the power on/off button and the reset button.

- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off the system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.
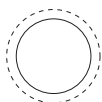
- **Reset:** The reset button is used to reboot the system.

4-3   Control Panel LEDs

The control panel is located on the front of the SC745 chassis and has five 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/Fan Fail:** When this LED flashes it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow within the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. Check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.

- **NIC2:** Indicates network activity on GLAN2 when flashing.

- **NIC1:** Indicates network activity on GLAN1 when flashing.

- **HDD:** Indicates IDE channel activity. SAS/SATA drive, SCSI drive, and/or DVD-ROM drive activity when flashing.

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

4-4   Drive Carrier LEDs

Your chassis uses SAS/SATA or SCSI drives, but not both.

SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- **Green:** Each SAS/SATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SAS/SATA drive carrier) indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED to indicate an SAS/SATA drive failure. If one of the SAS/SATA drives fail, you should be notified by your system management software.

SCSI Drives

Each SCSI drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The SAF-TE compliant backplane activates the red LED to indicate a drive failure. If one of the SCSI drives fail, you should be notified by your system management software.

Chapter 5

Chassis Setup and Maintenance

5-1   Overview

This chapter covers the steps required to install components and perform mainte-
nance on the chassis. The only tool you will need to install components and perform
maintenance is a Phillips screwdriver. Print this page to use as a reference while
setting up your chassis.

5-2   Installation Procedures

- Removing the Chassis Front and Side Coversr

- Configuring the Storage Module

- Installing Hard Drives

- Installing the Motherboard

- Installing the Air Shroud and Checking the Airflow

General Maintenance

General Maintenance: Systems Fans

General Maintenance: Power Supply

**Warning: 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.**

**Review the warnings and precautions listed in the manual be-
fore setting up or servicing this chassis. These include infor-
mation in Chapter 2: System Safety and the warning/precau-
tions listed in the setup instructions.**
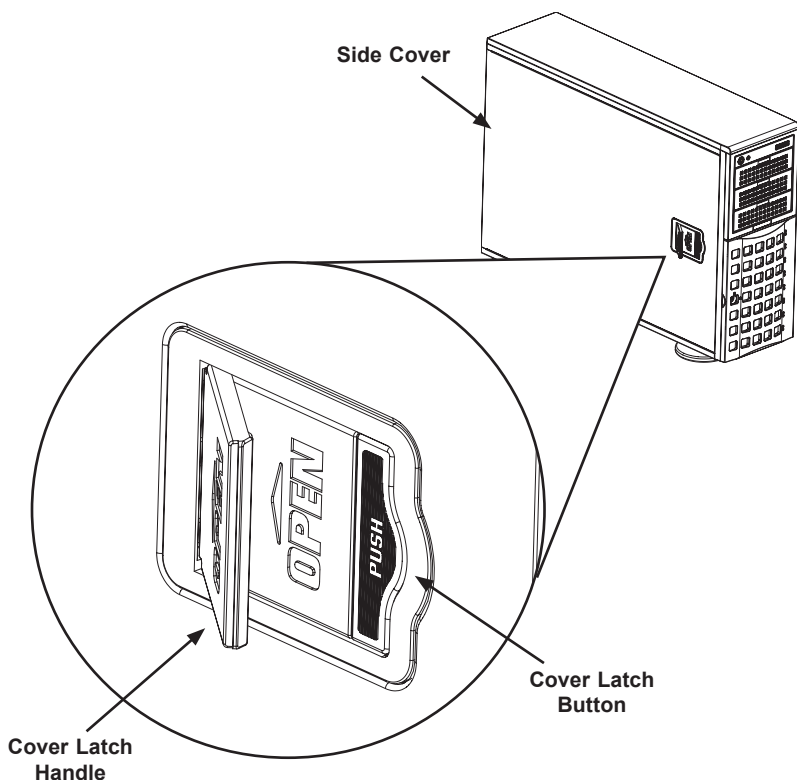
5-3   Removing the Chassis Front and Side Covers

Side Cover

Figure 5-1: Removing the Chassis Cover

Cover Latch Button

Cover Latch Handle

The Side Cover

Removing the Chassis Side Cover

1. Push the cover latch button to release the latch handle.

2. Pull the cover off the chassis using the latch handle.

Replacing the Chassis Side Cover

1. With the latch handle open slide the cover back onto the chassis.

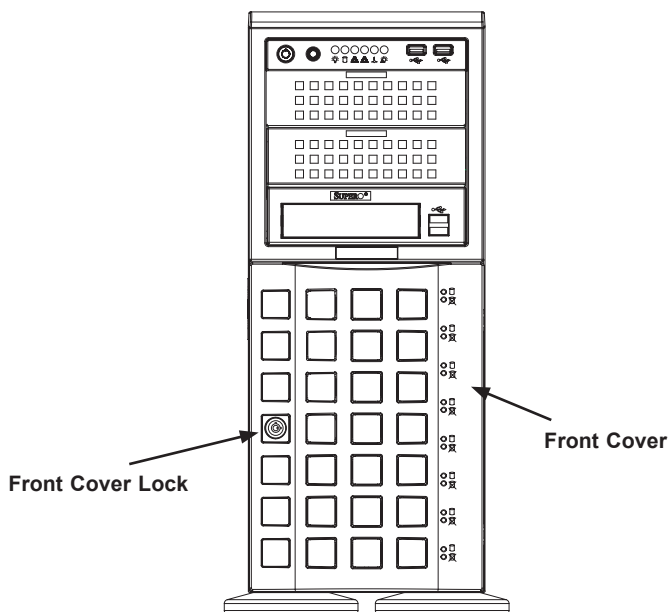2. Press the latch downward when the cover is in place.

Figure 5-2: Opening the Front Cover

The Front Cover

The front cover houses up to eight hot-swappable hard drives. The cover can be locked to prevent unauthorized access. The key to this lock is shipped with the system.

Removing the Front Cover

1. Unlock the front cover using the key shipped with the system.

2. Pull the cover open using the handle near the lock.
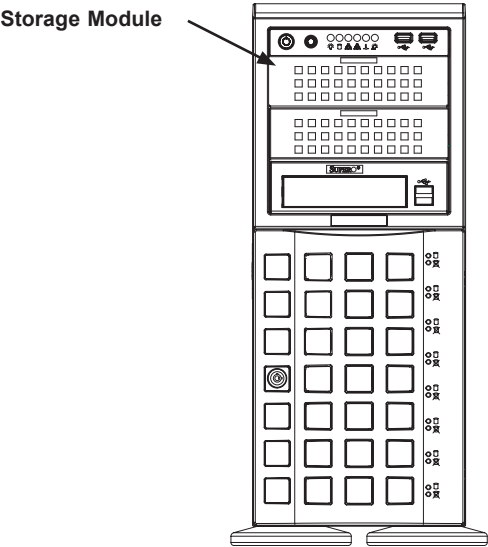
5-4   Configuring the Storage Module
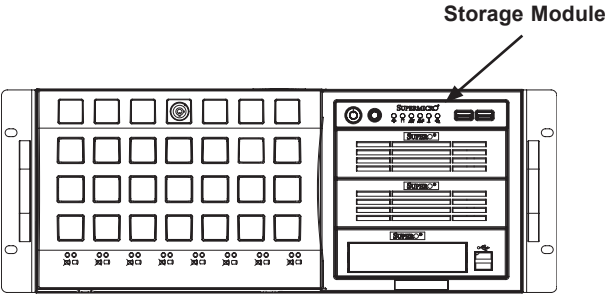

Figure 5-3: Chassis in Tower Mode

Figure 5-4: Chassis in Rack Mount Mode

Tower or Rack Configuration

The SC745 chassis is shipped in tower mode and can be immediately used as desktop server. If the chassis is to be used in a rack, you must turn the storage module ninety degrees. This can be done before, during, or after setup.
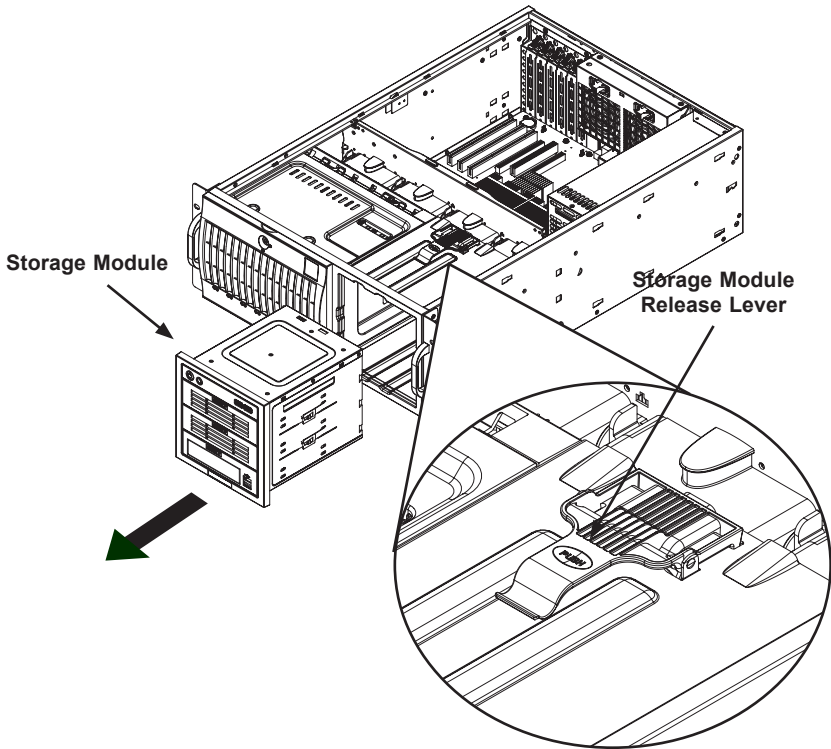
Figure 5-5: Remove the Storage Module

Rotating the Storage Module for Rack Mounting

1. Open the chassis cover.

2. Locate the storage module and disconnect any cables from the storage module to any component in the chassis.

3. Push the storage module release lever. This lever unlocks the storage module.

4. Grasp the external edges of the storage module and pull the unit from the chassis.

5. Turn the storage module ninety degrees (as illustrated).

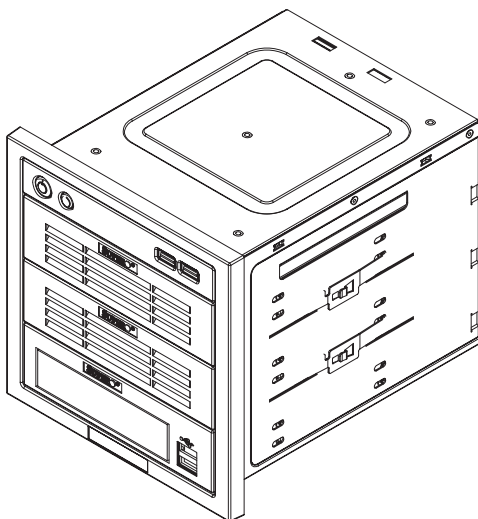6. Reinsert the module into the chassis and reconnect the cords.

Figure 5-6: Chassis Storage Module

Adding Drives to the Storage Module

The storage module includes three full-sized drive bays and the front LED panel.
The storage module can be set up one of three ways:
A. Add up to three extra hard drives to the drive trays.
B. Add up to three peripheral drives (CD-ROM, DVD-ROM, etc.) drive trays.
C. Add five hot swappable hard drives to the storage module. This configuration
requires a mobile rack. More information on mobile racks can be found at the
Supermicro Web site at www.supermicro.com
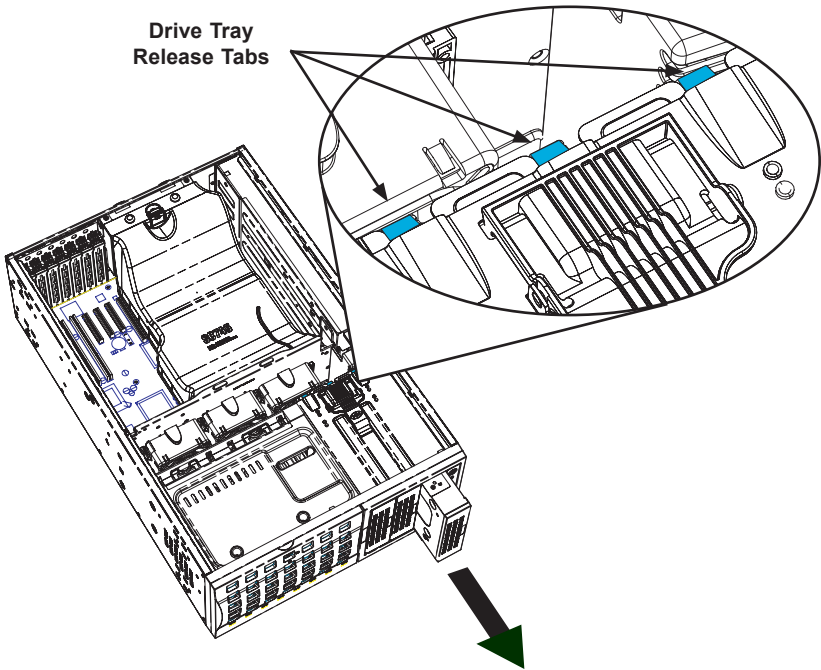
**Drive Tray
Release Tabs**

Figure 5-7: Remove Drive Tray

Adding up to Three Peripheral/Hard Drives to the Drive Trays

1. Open the chassis cover.

2. Locate the drive tray release tab for the slot you want to place the peripheral drive.

3. Push the drive tray toward the front of the chassis.
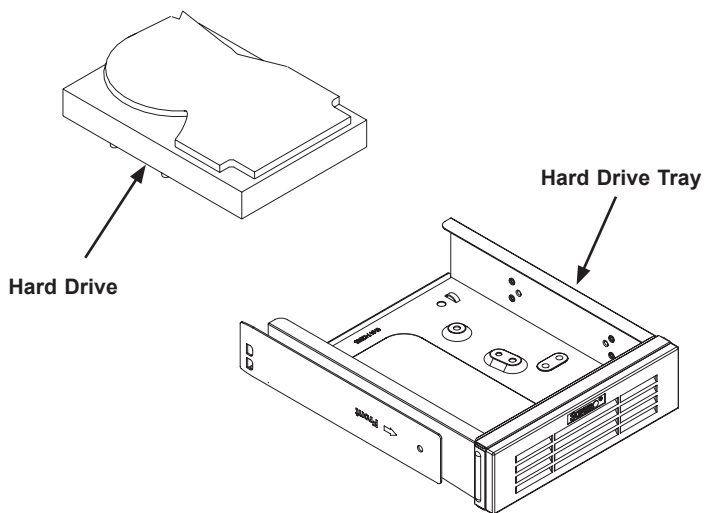
Figure 5-8: Add a Hard Drive to the Drive Tray

4. Place the hard drive into the hard drive tray. Make sure the type of hard drive (SAS/SATA or SCSI) is supported by the motherboard. The hard drive may not completely fill the tray.

5. Secure the hard drive to the tray with four screws from the bottom.

6. Slide the hard drive into the chassis until the tray clicks into place.

7. Repeat these steps for each hard drive tray.

**Drive Tray
Release Tabs**

Figure 5-9: Remove Drive Tray

Up to three peripheral drives (DVD-ROM, CD-ROM and others) may be added to the drive trays.

Adding up to Three Peripheral Drives to the Drive Trays

1. Open the chassis cover.

2. Locate the drive tray release tab for the slot you want to place the peripheral drive.
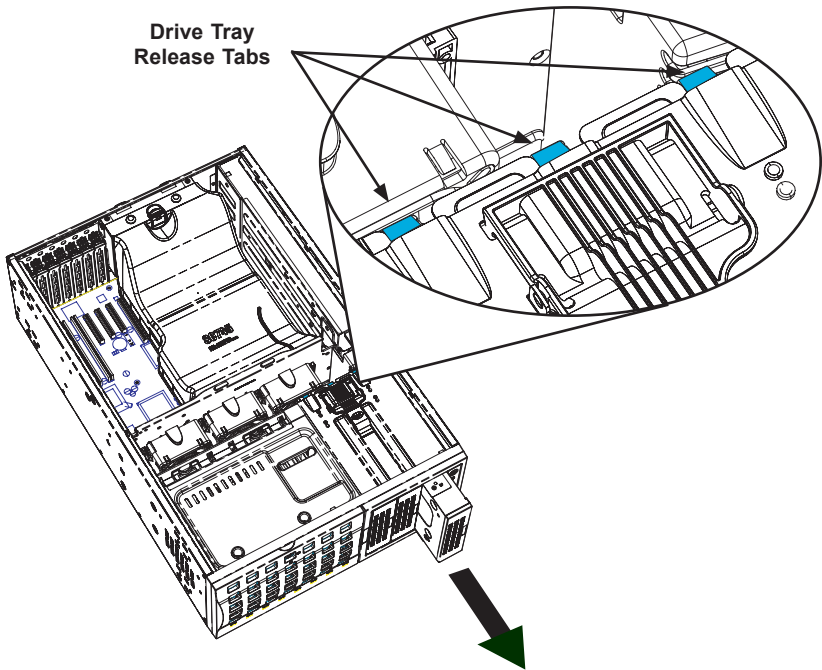
3. Push the drive tray toward the front of the chassis.

Hard Drive Tray

Hard Drive Rails

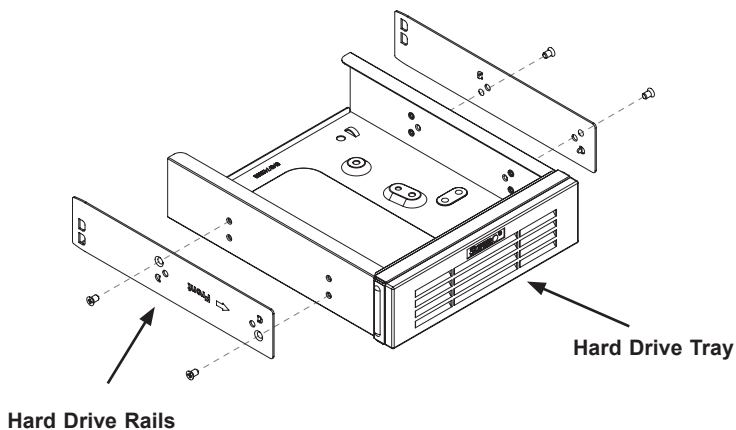**Figure 5-10: Add Hard Drive Rails to the DVD-ROM Drive**

4. Remove the hard drive tray rails from the hard drive tray. To do this, you must remove two screws from each side.

5. Attach the rails to a DVD-ROM, CD-ROM or other peripherals. The rails should fit any standard sized peripherals.

6. Slide the peripheral into the chassis until the tray clicks into place.

7. Repeat these steps for each hard drive tray.
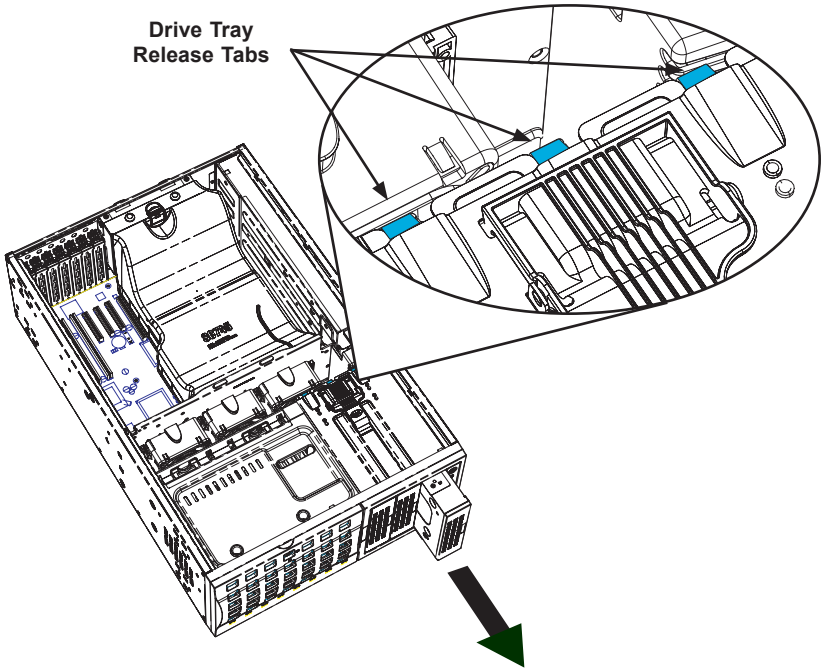
Figure 5-11: Remove Drive Tray

The SC745 chassis accepts an M35TQ or M35S (SCSI) mobile rack to install extra hot-swappable hard drives. The mobile rack goes into the storage module which goes into the chassis.

For more information on mobile racks, visit the Supermicro Web site at www. supermicro.com.

Adding Five Hard Drives Using A Supermicro Mobile Rack

1. Open the chassis cover.

2. Locate the drive release tabs.

3. Pull the first drive release tab and push the drive tray toward the front of the chassis. Repeat this for all three tabs.

Hard Drive Rails

Hard Drive Tray
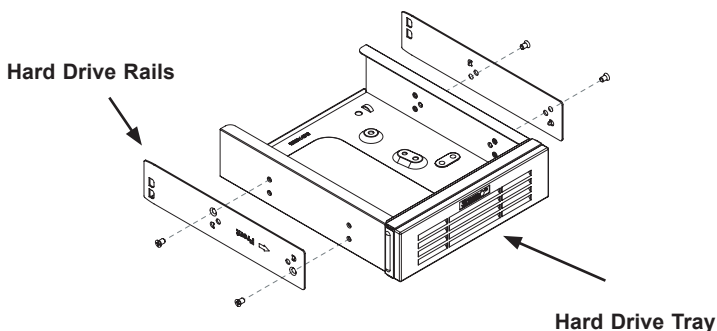
Figure 5-12: Remove the Hard Drive Rails

4. Remove the hard drive tray rails from the hard drive tray. To do this, you must remove two screws from each side. Do this for all three hard drive trays.

5. Attach the rails to a DVD-ROM, CD-ROM or other peripheral. The rails should fit any standard sized peripherals.
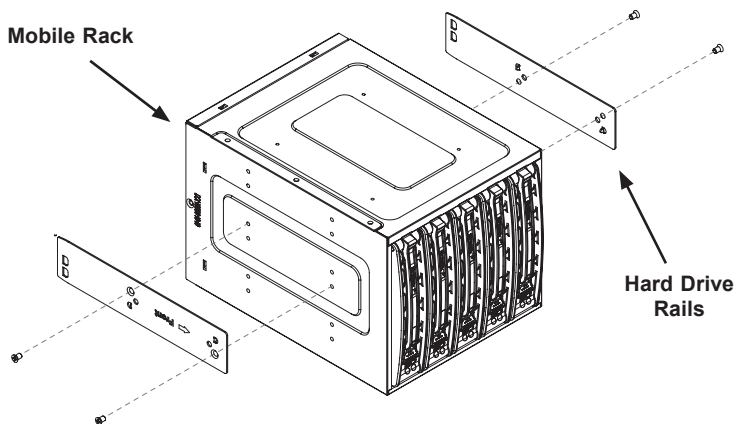
Mobile Rack

Hard Drive Rails

Figure 5-13: Add Hard Drive Rails to Storage Rack

6. Install all six hard drive rails to the mobile rack. Each individual rail requires two screws. Also, make sure the arrow on the rail points toward the front of the chassis.

7. Slide the mobile rack into the storage module and chassis.

5-5   Installing Hard Drives

Drive Tray Handle

Release Button
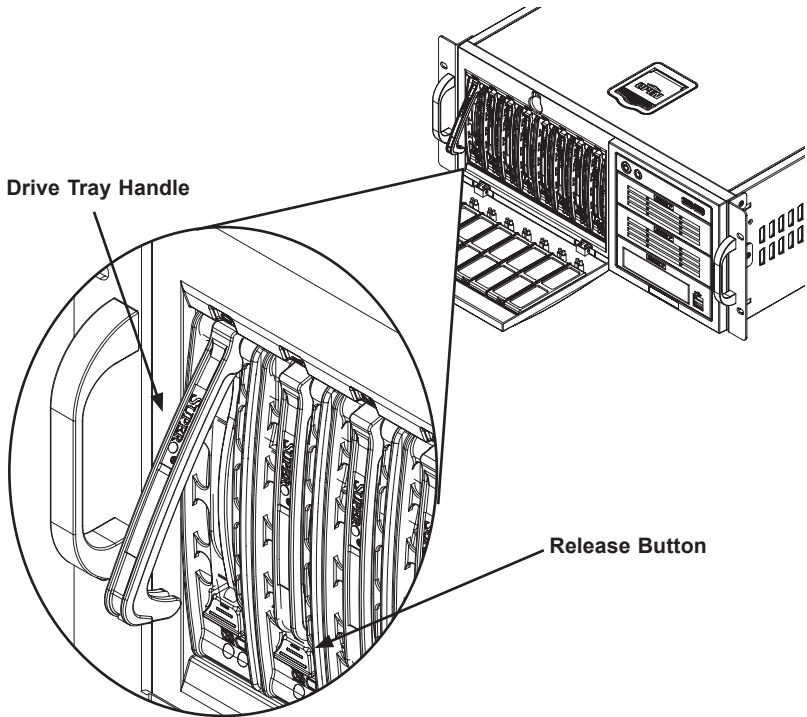
Figure 5-14: Install Hard Drives

The 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.

Installing Hard Drives to the Chassis

1. Unlock and open the chassis cover.

2. Press the release button to extend the drive tray handle.

3. Using the handle, pull the drive tray out by the handle. The drive is hot-swappable and there are no cables to disconnect.

Drive Tray

SAS/SATA or SCSI Hard Drive
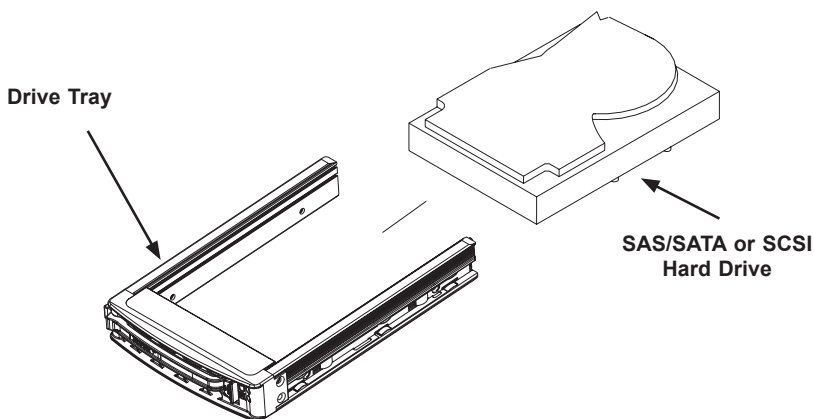
Figure 5-15: Remove Dummy Drive Tray

4. Remove the screws holding the drive tray to the dummy drive.

5. Place a hard drive in the drive tray.

Figure 5-16: Install Hard Drive

6. Secure the hard drive to the tray using four screws.

7. Insert the hard drive into the chassis using the following steps:
    7a. Press the hard drive release button to extend the drive tray handle.
    7b. Insert the hard drive into the chassis and close the handle to lock the hard drive into place.

5-6 Installing the Motherboard

I/O Shield

The I/O shield holds the motherboard ports in place. Install the I/O shield before you install the motherboard.
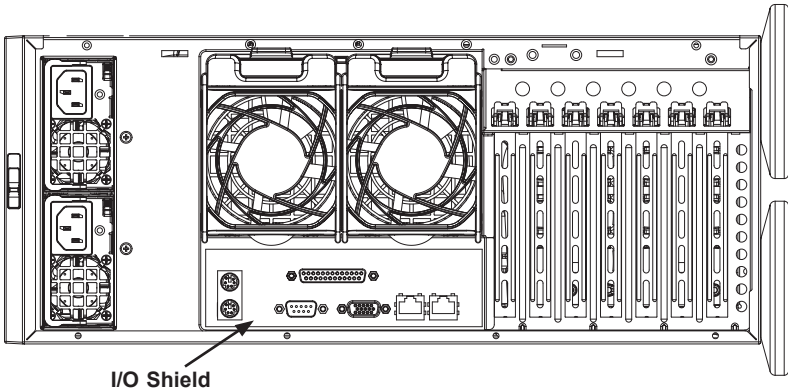
I/O Shield

Figure 5-17: SC745 Chassis I/O Shield

Installing the I/O Shield:

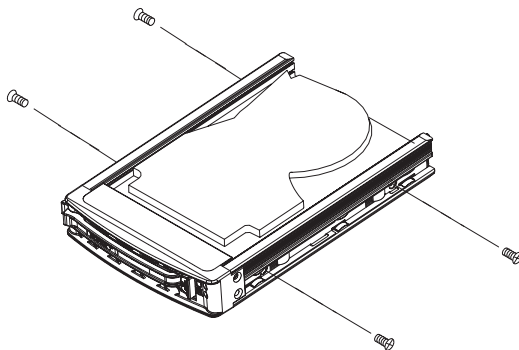1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.

2. Open the chassis cover.

3. Choose the proper I/O shield for the motherboard you are installing.

4. With the illustrations facing the outside of the chassis, place the shield into the space provided. Once installed, the motherboard ports will hold the I/O shield in place.

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC745 chassis packaging includes optional standoffs (hexagonal-shaped posts). These standoffs accept the rounded Phillips head screws which are also included in the SC745 accessories package.
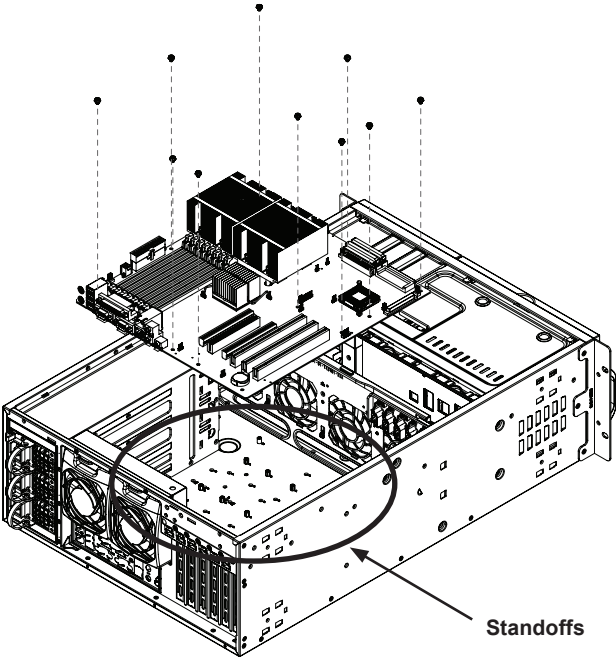
Standoffs

Figure 5-18: Chassis Standoffs

Installing the Motherboard

Motherboard Installation

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.

2. Disconnect the power supply and lay the chassis on a flat surface.

3. Open the chassis cover.

4. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff.

5. Lay the motherboard on the chassis aligning the permanent and optional standoffs. Compare the holes in the chassis to those in the motherboard and add or remove standoffs as needed.

6. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque when tightening down the motherboard.

7. Secure the CPU(s), heatsinks, and other components to the motherboard, chassis, and/or backplane as needed.

Power Supply Connections

Connect each of the following cables as required by your motherboard manufacturer. In some instances not all of these cables are required, and some cables may not be included with the motherboard.

Power Supply Cable			
Name	**No.**	**Connects to**	**Description**
20-pin or 24-pin power cable	1	motherboard	20-pin or 24-pin power cable provides electricity to the motherboard. Has 20 - 24 yellow, black, gray, red, orange, green and blue wires.
HDD (Hard Drive) power cable	2	backplane	Each cable has three connectors (two hard drive connectors and one floppy drive [FDD] connector). Attach the HDD connectors to the backplane. **If you are using a SuperMicro backplane, the FDD connector does not need to be attached.**
8-pin motherboard cable	1	motherboard	Provides power to the motherboard CPU. This cable has 2 black and 2 yellow wires.
4-pin motherboard cable	1	motherboard	Provides power to expansion card. This cable has two black and two yellow wires.
5-pin SMBus power cable (small)	1	motherboard	Allows the SM (System Management) bus to monitor power supply
2-pin INT cable	1	motherboard	Intrusion detection cable allows the system to log when the server chassis has been opened.

**Press the Middle
of the Release Tab**

**Lift the
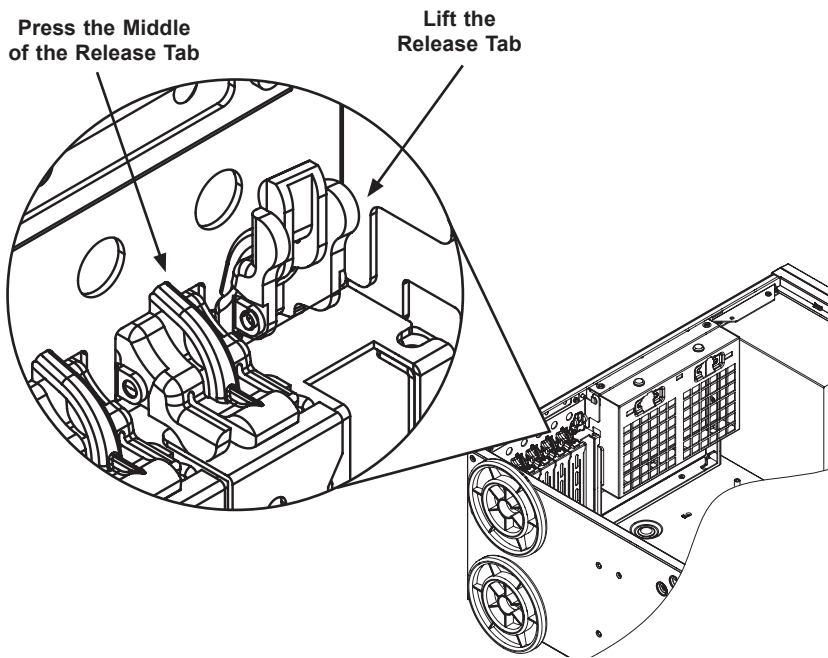Release Tab**

Figure 5-19: Add-on Card/Expansion Card Port

Expansion Card and PCI Slot Setup

After the motherboard has been installed, expansion cards may be installed.

Installing Expansion Cards

1. Locate the release tab on the top of the PCI slot bracket.

2. Gently apply pressure in the middle of the release tab to unlock the PCI slot bracket.

3. Pull the release tab upward.
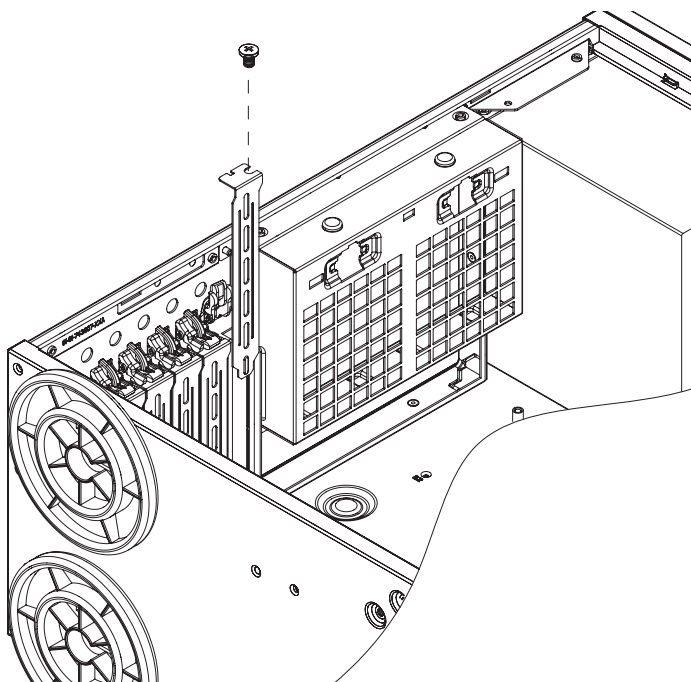
Figure 5-20: Remove PCI Card Slot Guard

4. Remove the screw holding the bracket in place and pull the bracket from the chassis.

5. Install your PCI card or other add-on card into the PCI slot bracket and moth-erboard. To do this, slide the PCI card (with "L" bracket) into the PCI slot and secure the card to the motherboard.

6. Push the PCI bracket release tab down until it locks into place with an audible "click".

7. Secure the PCI card with the screw previously removed from the chassis.

8. Repeat this process with each PCI card you want to install into the chassis.

5-7   Installing the Air Shroud

Removable Tabs
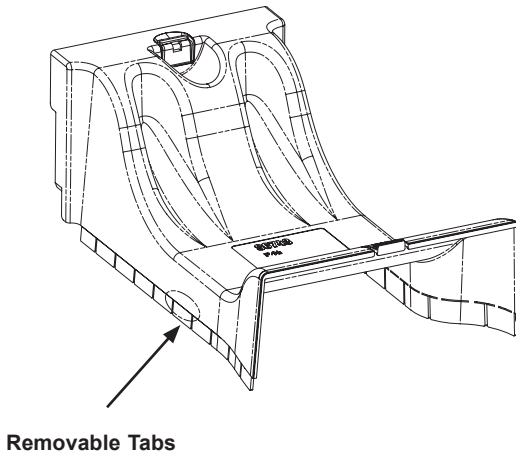
Figure 5-21: Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SC745 chassis air shroud does not require screws to set up.

NOTE: The air shroud includes tabs that can be removed if motherboard components prevent the air shroud from fitting securely. Remove tabs only if necessary.

Installing the Air Shroud

1. Remove the chassis cover.

2. Place air shroud in your chassis with the fan side touching the edge of the two fans closest to the power supply. The other side should cover both the rear fans.

3. Replace the chassis cover.

Air Shroud
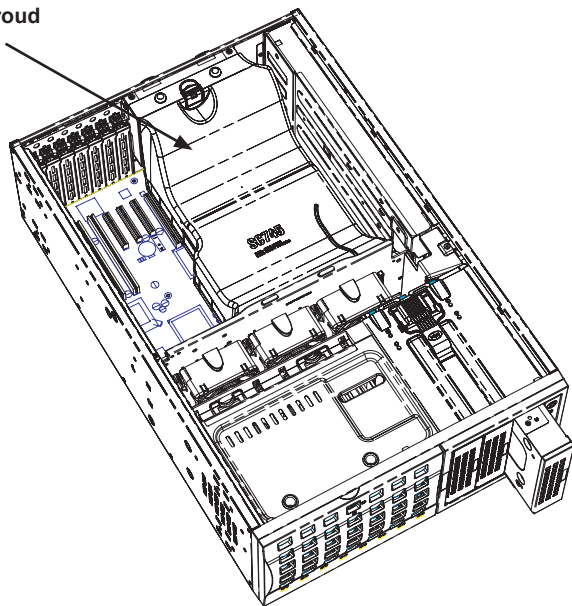
Figure 5-22: Air Shroud in Place

Checking the 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 the 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.

Installation Complete

In most cases, the chassis power supply and fans are pre-installed. If you need to install fans or a power supply, continue to the Systems Fan section of this chapter. If the chassis will be installed into a rack, continue to the next chapter for rack installation instructions.

5-8 System Fans

Five heavy-duty fans provide cooling for the chassis. Three fans are located in the front of the chassis with two fans in the rear. These fans circulate air through the chassis as a means of lowering the internal temperature of the chassis.

The fans come pre-installed to the chassis. Each fan is hot-swappable and can be replaced without removing any connections.
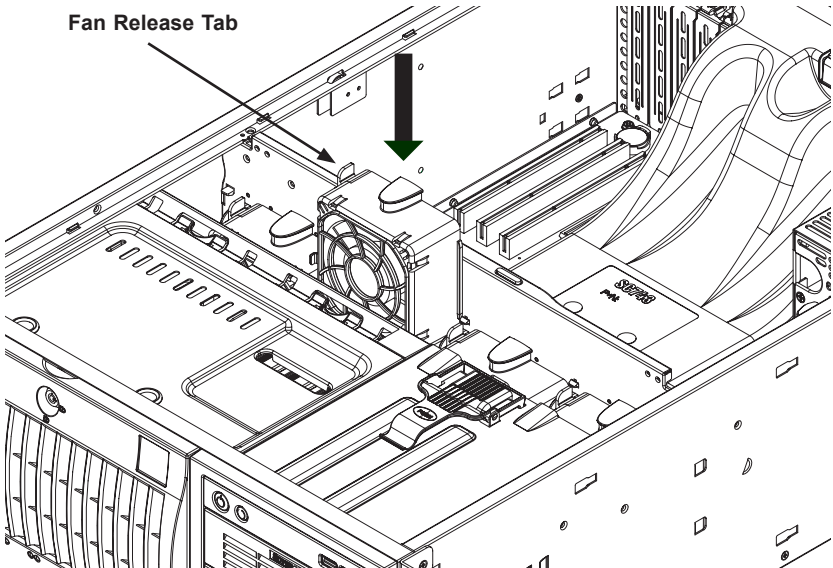
Figure 5-23: Front Chassis Fans

Replacing a System Fan

1. Open the chassis cover and determine which fan has failed. Because the fans are hot-swappable, the chassis does not have to be powered-down.

2. Press the fan release tab and lift the failed fan from the chassis. Front fans must be pulled straight up. Rear fans must be tilted forward and then pulled out of the housing.

3. Place the new 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. As soon as the fan is connected, it will begin working.

Rear Fan Release Tab

Figure 5-24: Rear Chassis Fans

Replacing a Rear Chassis Fan

1. Press the rear fan release tab.

2. Pull the fan from the chassis top first.

3. Place the new fan in the chassis bottom first.

4. Push the fan fully into the housing until the fan clicks into place.
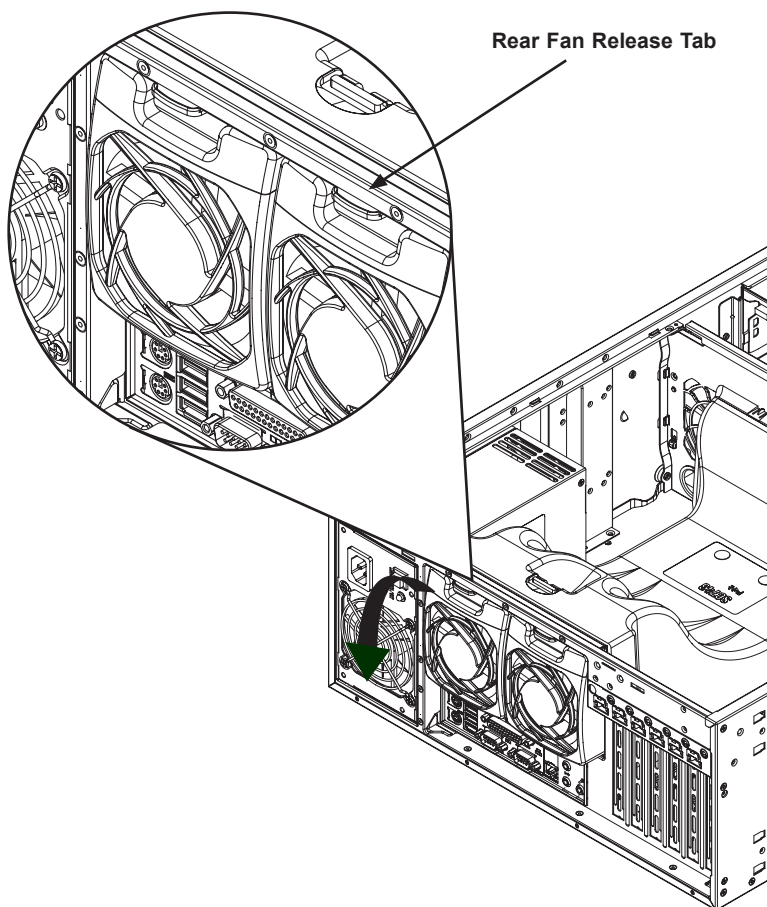
5-9   Power Supply

Depending on your chassis model, the SC745 chassis has an 800, 920 or 1200 Watt power supply. "R" model chassis feature a second redundant power supply. 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 Failure

In redundant power supply models, the system automatically switches to the second power supply when the first fails. If your system has only one power supply, the system shuts down in the unlikely event of a power failure.

Replacing the Power Supply

1. Power down the server and unplug the power cord. If your chassis includes a redundant power supply (at least two power modules), you can leave the server running and remove only one power supply.

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

3. Pull the power supply out using the handle provided.

4. Replace the failed power module with the same model.

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

6. Plug the AC power cord back into the module and power up the server.

Notes

Chapter 6

Rack Installation

6-1   Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time.

6-2   Unpacking the System

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

Decide on a suitable location for the rack unit that will hold your chassis. 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. Be sure to read the Rack and Server Precautions in the next section.

6-3   Preparing for Setup

The box your chassis 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. Please read this section in its entirety before beginning the installation procedures

Choosing a Setup Location

- Leave enough clearance in front of the rack to open the front door completely (25 inches).

- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is to be installed in a Restricted Access Location only, (dedicated equipment rooms, service closets and others).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.

- In single rack installation, stabilizers should be attached to the rack.

- In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a component from the rack.

- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.

- Determine the placement of each component in the rack *before* you install the rails.

- Install the heaviest server components on the bottom of the rack first, and then work 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 the hot plug hard drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

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.).

6-4   Rack Mounting Instructions

This section provides information on installing the SC745 chassis into a rack unit with the 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: The outer rail is adjustable from 26" to 38.25".

Removing the Top Cover and Feet

The SC745 chassis is shipped with the chassis cover and feet pre-installed. Both the feet and cover must be removed for before installing the rails.
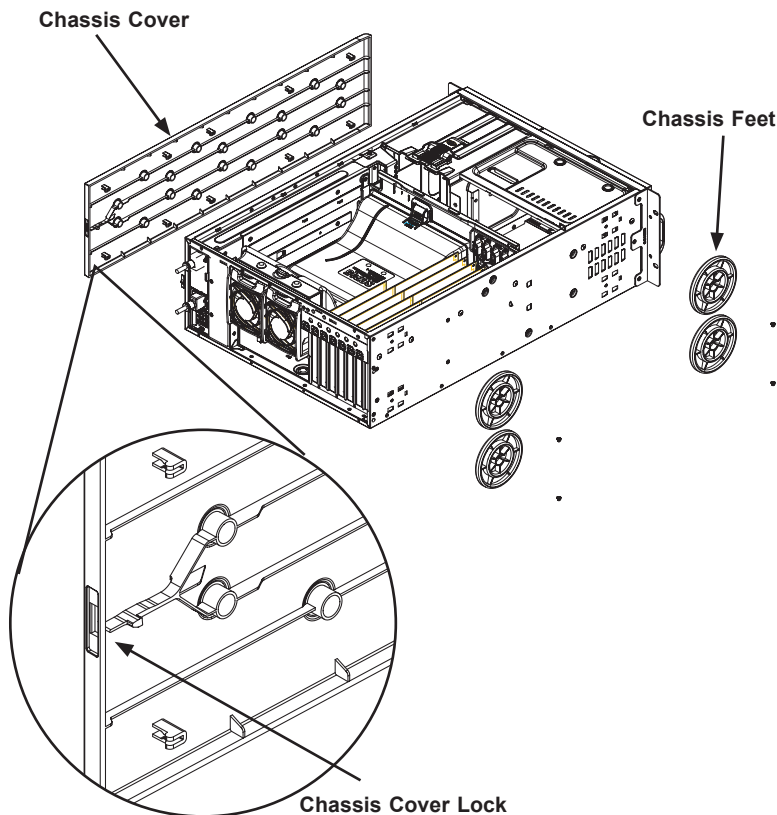
Chassis Cover

Chassis Feet

Chassis Cover Lock

Figure 6-1: Remove Feet and Chassis Top Cover

Removing the Top Cover

1. Locate the chassis cover lock (blue lever) at the rear of the chassis cover.

2. Slide the chassis cover lock to the right and push chassis cover forward.

3. Lift the chassis top cover off the chassis.

Removing the Chassis Feet

1. Place the chassis on its side with the chassis side cover facing upward.

2. Remove the screw holding the chassis foot in place.

3. The foot lock is a tab located in the center of the foot that prevents the foot from sliding. Using a flat head screwdriver, gently lift the foot lock upward and slide the foot toward the rear of the chassis.

4. Repeat steps 2 and 3 with each remaining foot.

Identifying the Sections of the Rack Rails

The chassis package includes two rack 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.
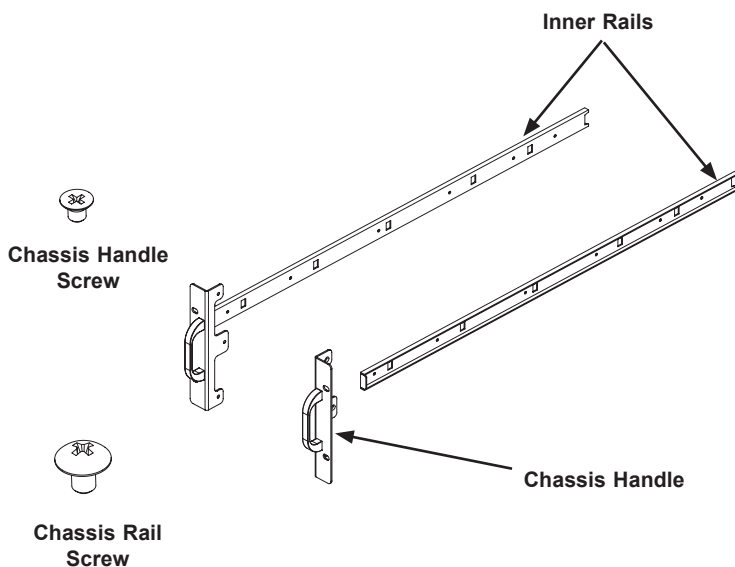

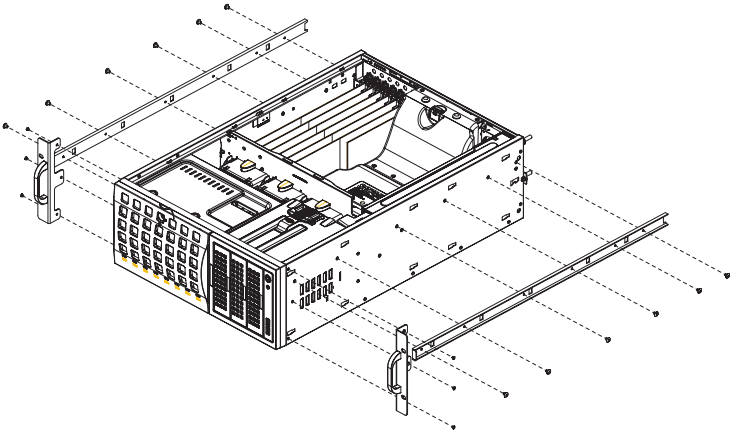**Figure 6-2: Identifying the Inner Rails and Chassis Handles**

Figure 6-3: Installing the Inner Rack Rails

Installing the Chassis Handles and Inner Rails

1. Locate the two chassis handles and six handle screws.

2. Align the chassis handle with the front of the chassis and secure with the three chassis handle screws.

3. Repeats steps 1 and 2 with the other handle.

4. Locate the two inner rails and twelve screws in the shipping package.

5. Align the inner rails against the chassis, as shown. Confirm that the rails are flushed against the edge of the chassis.

6. Tighten the screws. Do not over tighten.

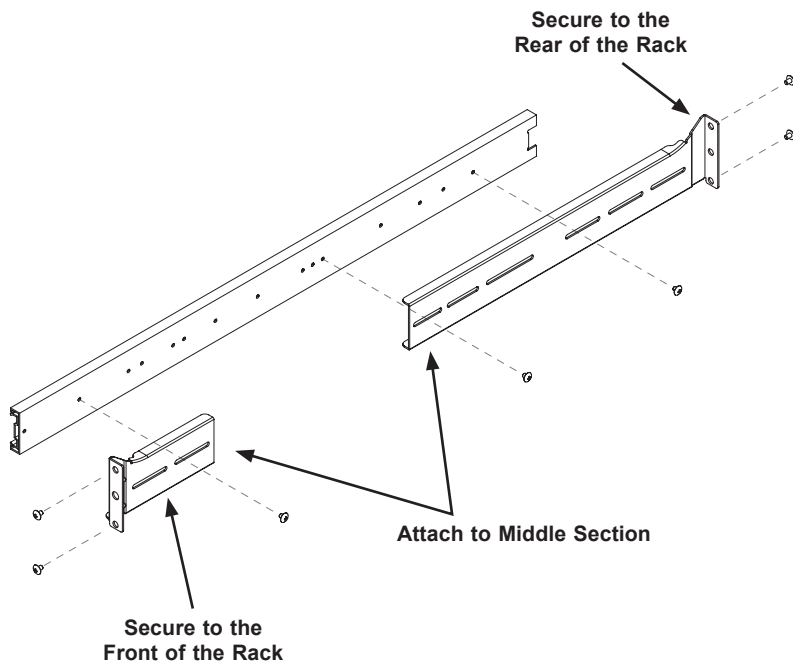7. Repeat steps 5 and 6 with the other inner rail.

**Secure to the
Rear of the Rack**

Attach to Middle Section

**Secure to the
Front of the Rack**

Figure 6-4: Assembling the Outer Rails

Installing the Outer Rails onto the Rack

1. Attach the front and rear short brackets to the outside of the long bracket. Both bracket ends must face the same direction.

2. Adjust both the brackets to the proper distance so that the rail fits snugly into the rack.

3. Secure the front side of the outer rail with two M5 screws and the rear side of the outer rail with three M5 screws. **NOTE:** The outer rail is adjustable from approximately 26" to 38.25".

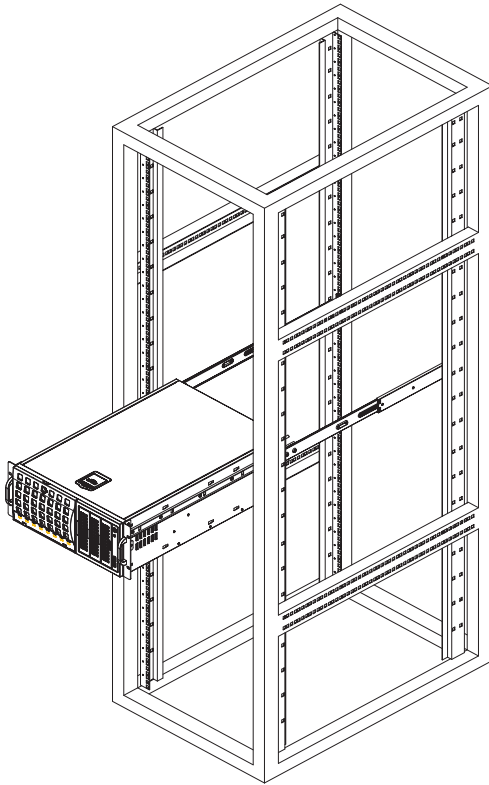4. Repeat steps 1-3 for the left outer rail.

Figure 6-5: Installing the Chassis into a Rack

Installing the Chassis into a Rack

1. Confirm that chassis includes the inner rails and the outer rails.

2. Line chassis rails with the front of the rack rails.

3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (it may be necessary to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click".

6-5   Tower Mounting Instructions

The SC745 chassis is shipped with the chassis cover and feet pre-installed. To use the chassis as a desktop server, no other installation is required.

Use the instructions in this section if you have converted the chassis for rack use and need to return the chassis to tower mounting.
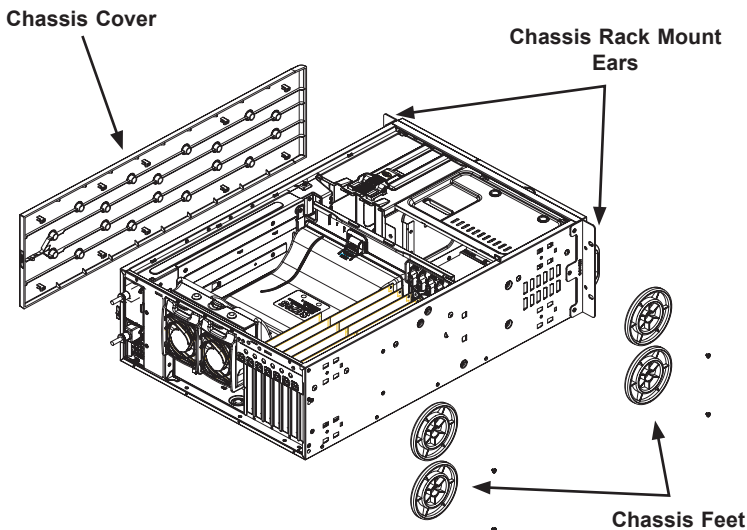

Figure 6-6: Adding Chassis Feet and Top Cover

Installing the Top Cover

1. Remove the rack mount ears.

2. Align the cover post with the corresponding holes on the top of the chassis and place the cover on top of the chassis. The cover should overhang approximately one-half inch over the front of the chassis.

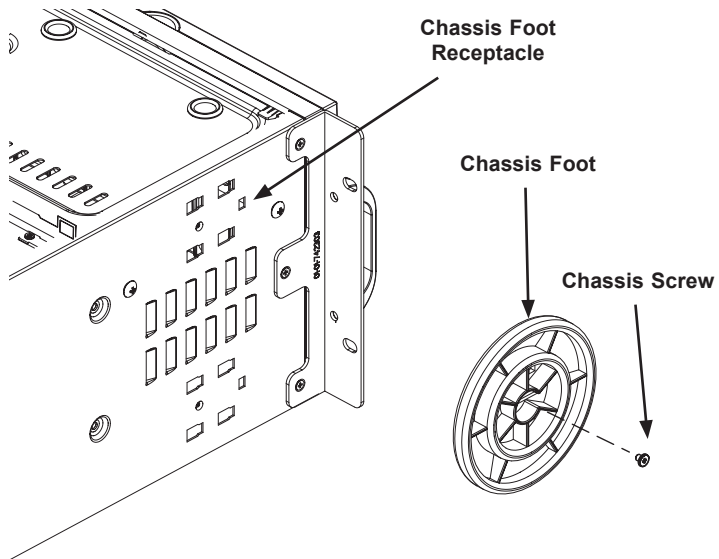3. Slide the chassis cover toward the rear of the chassis to lock the cover into place.

Figure 6-7: Placing Chassis Feet

Placing the Chassis Feet

1. Place the chassis foot in the foot receptacle and slide the foot toward the front of the chassis. The foot should lock into place.

2. Secure the foot to the chassis using one screw enclosed in the packaging.

3. Repeat steps 1 and 2 for the remaining three chassis feet.

Notes

Appendix A

SC745 Chassis Cables

A-1   Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2   Cables Included with SC745TQ Chassis (SAS/SATA)

SC745TQ-R800/800			
Part #	**Type**	**Length**	**Description**
CBL-0157L	Cable	40 cm	8-pin to 8-pin ribbon cable for SGPIO, PB free
CBL-0087	Ribbon, Round	20"	16-pin to 16-pin ribbon cable for control panel
CBL-0139L	Wire	50 cm	IDE 80-Wire cable for DVD ROM
CBL-0044L	Cable	24"	Serial ATA, Lead free
CBL-0216L	Cable	200 mm	4-pin to 4-pin fan power extension cable (3)
CBL-0180L-01	SATA	various	Set for 4 SATA Cables. Length varied to minimize airflow interference.
-	Cable	6'	Regional power cord (X2 for redundant power supply models)

A-3   Cables Included with SC745S Chassis (SCSI)

SC745S2-R800/800			
Part #	**Type**	**Length**	**Description**
CBL-033L-U320	Ribbon	9" (23 cm)	ULTRA 320, PB free
CBL-0087	Ribbon, Round	20"	16-pin to 16-pin ribbon cable for control panel
CBL-0063L	Cable	20"	Ultra 320 SCSI cable, lead free
CBL-0216L	Cable	200 mm	4-pin to 4-pin fan power extension-cable (3)
-	Cable	6'	Regional power cord (X2 for redundant power supply models)

A-4   Compatible Cables

The following cables are compatible with the SC745 chassis.

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS/SATA cables must share, use one of the following cables. These cables must be purchased separately.

Cable Name: SAS Cable   **Quantity:** 1

Part #: CBL-0175L
Alt. Name: "Big Four"

Description: This cable has one SFF-8484 (32-pin) connector on one end and four SAS connectors (seven pins each) at the other. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Cable Name: SAS Cable   **Quantity:** 1

Part #: CBL-0116
Alt. Name: iPass or "Small Four"

Description: This cable has one iPass (SFF-8087/Mini-SAS) connector (36-pin) at one end and four SAS connectors on the other end. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Extending Power Cables

Although Supermicro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	Cable Part #	Length
24-pin	CBL-0042L	7.9"(20 CM)
20-pin	CBL-0059L	7.9"(20 CM)
8-pin	CBL-0062L	7.9"(20 CM)
4-pin	CBL-0060L	7.9"(20 CM)

Front Panel to the Motherboard

The SC745 chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	Number of Pins (Motherboard)	Cable Part #
16-pin	16-pin	CBL-0049L
16-pin	20-pin	CBL-0048
20-pin	20-pin	CBL-0047L
16-pin	Various*	CBL-0068L
20-pin	Various*	CBL-0067

* Split cables: Use these cables if your motherboard requires several different connections from the front panel.

Notes

Appendix B

SC745 Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

800W (Redundant = X2)	
MFR Part #	PWS-801-1R
Rated AC Voltage	100 - 240V 50 - 60Hz 10 - 4 Amp
+5V standby	4 Amp
+12V	66 Amp
+5V	30 Amp
+3.3V	24 Amp
-12V	0.6 Amp

920W (Redundant = X2	
MFR Part #	PWS-920P-1R
AC Input	100-240 V 50-60 Hz 11-4.5 Amp
DC Output	4 Amp @ +5V standby 75 Amp @ +12V
With Power Distributor	+5V: 30 Amp +3.3V: 24 Amp -12V: 0.6 Amp

1200W (Redundant = X2)	
MFR Part #	PWS-1K21P-1R
Rated AC Voltage	100 - 140V, 50 - 60Hz, 8 - 11.5 Amp 180 - 240V, 50 - 60Hz, 5.5 - 8 Amp
DC Output +12V	1000W, 83 Amp @ 100-140V 1200W, 100 Amp @ 180-240V 5Vsb: 4A
DC Output with PDB	+5V: 50 Amp +3.3V: 30 Amp -12V: 0.6 Amp

Appendix C

SAS-743TQ Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1   ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

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

- Touch a grounded metal object before removing a component from the antistatic bag.

- Handle the backplane 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 card and peripherals back into their antistatic bags when not in use.

C-2   General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.

- Disconnect the power cable before installing or removing any cables from the backplane.

- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3   An Important Note to Users

- All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

C-4   Introduction to the SAS-743TQ Backplane

The SAS-743TQ backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS-743TQ Revision 3.00, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.
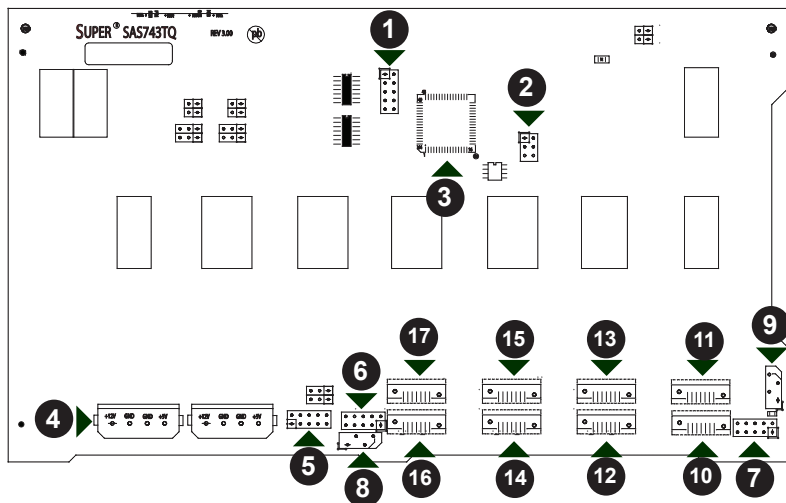
C-5   Front Connectors, Jumpers and LEDs

Figure C-1: Front Connectors

1. JTAG Connector: JP47

2. Upgrade Connector: JP46

3. Chip: MG9072

4. Power Connectors (4-pin): JP10, and JP13

5. ACT IN: JP26

6. Sideband Connector #2 JP52

7. Sideband Connector #1 JP51

8. I²C Connector #2 JP45

9. I²C Connector #1 JP44

10. SAS Port #0 J5

11. SAS Port #1 J6

12. SAS Port #2 J7

13. SAS Port #3 J8

14. SAS Port #4 J10

15. SAS Port #5 J12

16. SAS Port #6 J14

17. SAS Port #7 J16

C-6   Front Connector and Pin Definitions

#1. and 2. JTAG Connector and Upgrade Connectors

The JTAG and Upgrade connectors, designated JP47 and JP46, are used for diagnostic purposes. These connectors should be used by a certified and experienced technician.

#3. MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

#4. Backplane Main Power Connectors

The 4-pin connectors, designated JP10 and JP13, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector	
Pin# Definition	
1	+12V
2 and 3	Ground
4	+5V

#5. Activity LED Header

The activity LED header, designated JP26, is used to indicate the activity status of each SAS drive. The Activity LED Header is located on the front panel. For the Activity LED Header to work properly, connect using a 10-pin LED cable.

#6. and #7. Sideband Headers

The sideband headers are designated JP51 and JP52. For SES-2 to work properly, you must connect an 10-pin sideband cable. See the table to the right for pin definitions.

Sideband Headers			
Pin #	Definition	Pin #	Definition
2	Backplane Addressing (SB5)	1	Controller ID (SB6)
4	Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	SDA (SB1)
8	Backplane ID (SB7)	7	SCL (SB0)
10	No Connection	9	No Connection

#8. and #9. I²C Connectors

The I²C Connectors, designated JP44 and JP45, are used to monitor HDD activity and status. See the table on the right for pin definitions.

I²C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

#10. - #17. SAS Ports

The SAS ports are used to connect the SAS drive cables. The 8 ports are designated #0 - #7. Each port is also compatible with SATA drives. However, do NOT mix SAS and SATA drives in the same enclosure.
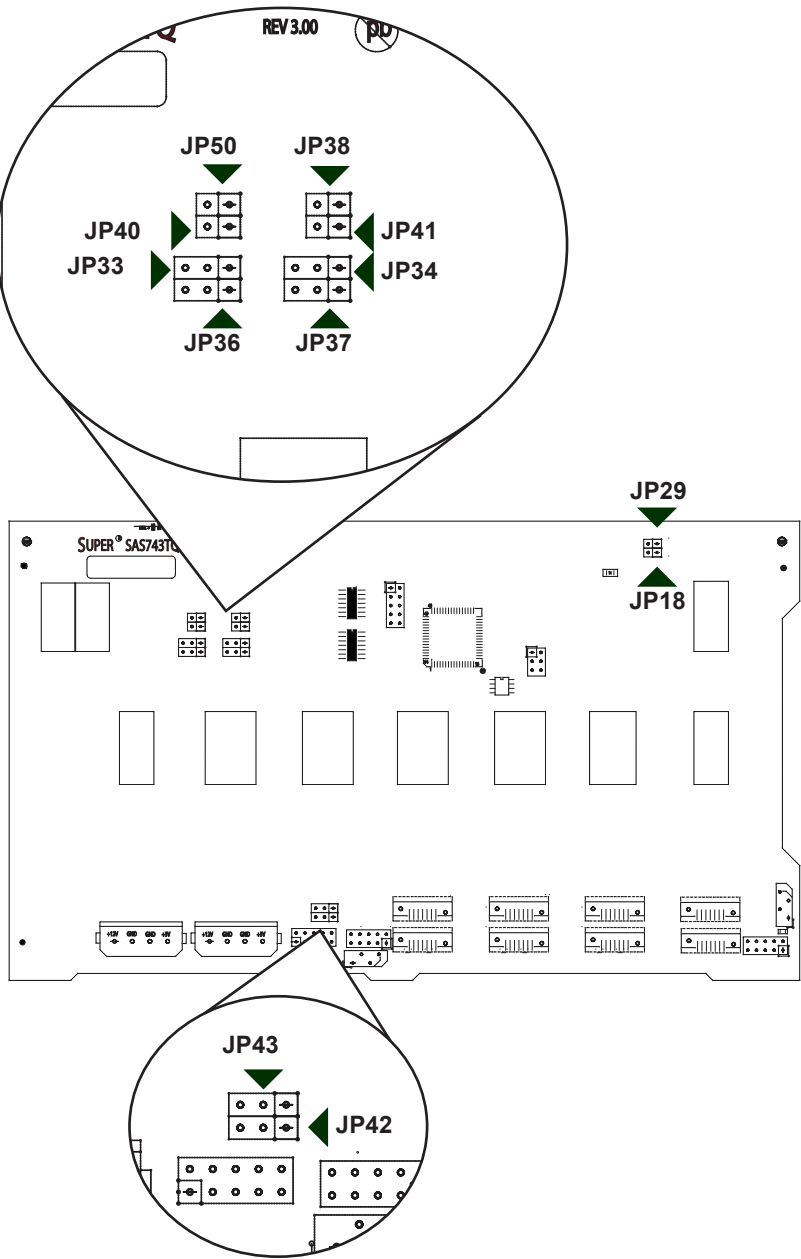
C-7   Front Jumper Locations and Pin Definitions

Figure C-2: Front Jumpers

Explanation of Jumpers

To modify the operation of the backplane, 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.

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

Connector Pins
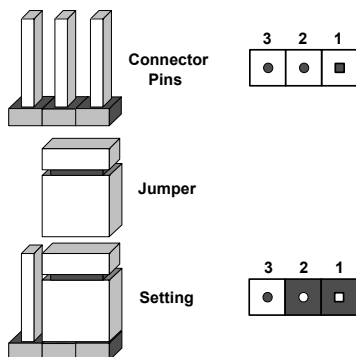
Jumper

Setting

Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP18	Open: Enabled Closed: Disabled	Buzzer Reset*
JP29	Open: Default Closed: Reset	MG9072 Chip Reset

*The buzzer sound indicates that a condition requiring immediate attention has occurred.

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure

2. Fan failure

3. System temperature over 45º Celsius.

I²C and SGPIO Mode Jumper Settings

This backplane can utilize I²C or SGPIO. I²C is the default mode and can be used without making changes to your jumpers. The following information details which jumpers must be configured to use SGPIO mode or restore your backplane to I²C mode.

I²C and SGPIO Settings			
Jumper	I²C Jumper Setting (Default)	SGPIO Jumper Setting	Note
JP33	2-3	1-2	Controller ID #1
JP34	1-2:ID#0	1-2	Backplane ID #1
JP36	2-3	1-2	Controller ID #2
JP37	2-3:ID#1	1-2	Backplane ID #2
JP38	Closed	Open	I²C Reset #2
JP40	Open	Closed	I²C Reset SDOUT #1
JP41	Open	Closed	I²C Reset SDOUT #2
JP42	2-3	1-2	Backplane ID SDIN #1
JP43	2-3	1-2	Backplane ID SDIN #2
JP50	Closed	Open	I²C Reset #1

SAS Port Connections in I²C and SGPIO Settings

Use the following chart when connecting this backplane. If you connect the SAS ports out of order, you will not able to easily identify drives using the LED function.

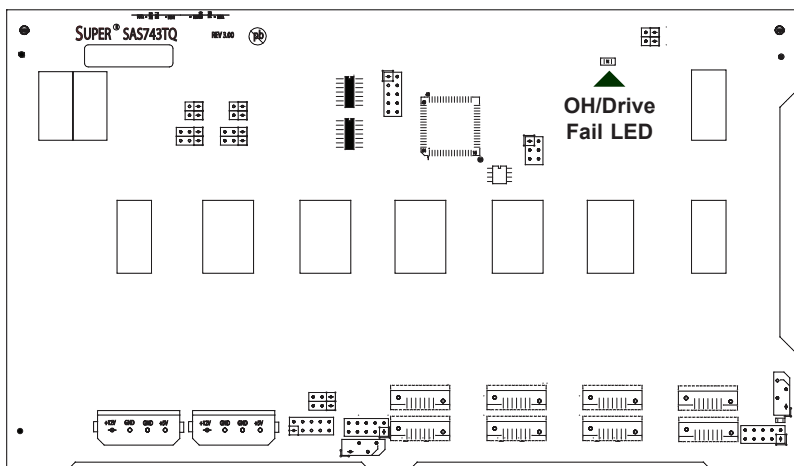| SAS Port Connections in I²C and SGPIO Settings		
Port #	I²C	SGPIO
# 0 - 3	I²C #1	Sideband #1
# 4 - 7	I²C #2	Sideband #2

Front LED Indicators

Figure C-3: Front LEDs

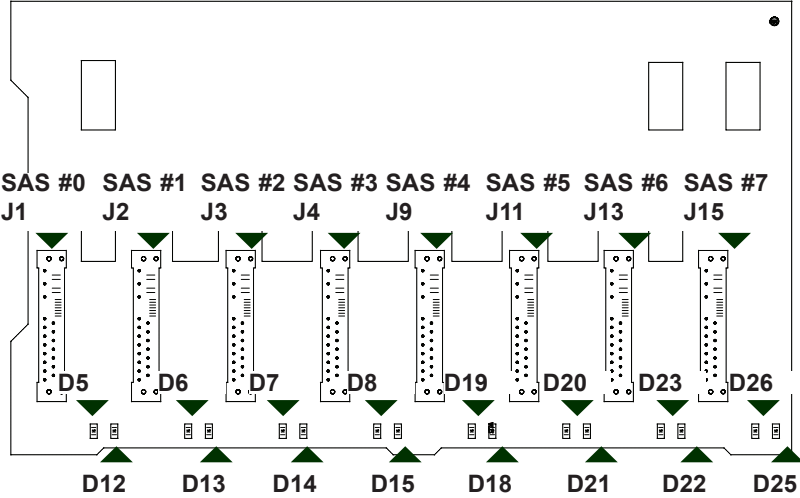| Front Panel LEDs		
LED	**State**	**Specification**
D3	ON	Overheat/drive failure LED indicator (Red light: flashing, Buzzer: On, if activated)

C-8   Rear Connectors and LED Indicators

Figure C-4: Rear Connectors

Rear SAS/SATA Connectors	
Rear Connector	**SAS Drive Number**
SAS #0	SAS/SATA HHD #0
SAS #1	SAS/SATA HHD #1
SAS #2	SAS/SATA HHD #2
SAS #3	SAS/SATA HHD #3
SAS #4	SAS/SATA HHD #4
SAS #5	SAS/SATA HHD #5
SAS #6	SAS/SATA HHD #6
SAS #7	SAS/SATA HHD #7

Rear LED Indicators		
Rear LED	**Hard Drive Activity**	**Failure LED**
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8
SAS #4	D18	D19
SAS #5	D21	D20
SAS #6	D22	D23
SAS #7	D25	D26

Notes

Disclaimer (cont.)

The products sold by Supermicro are not intended for and will not be used in life sup-
port systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices,
aircraft/emergency communication devices or other critical systems whose failure to per-
form 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.