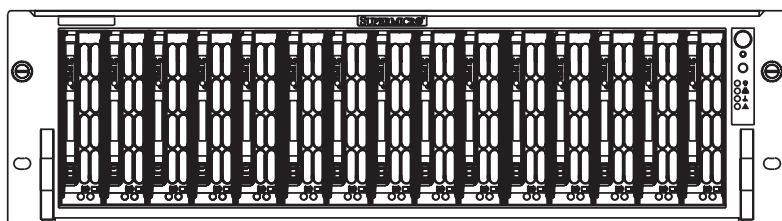


SUPERO[®]

SC933 Chassis Series



SC933S1-R760B

SC933S2-R760B

SC933T-R760B

SC933E1-R760B

SC933E2-R760B

USER'S MANUAL

2.0b

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 2.0b
Release Date: December 12 2011

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.

Copyright © 2011 by Super Micro Computer, Inc.
All rights reserved.

Printed in the United States of America

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 SC933 chassis. Installation and maintenance should be performed by experienced technicians only.

Supernova's SC933 chassis provides high-capacity storage in a 3U form factor. The design features fifteen hot-swappable 3.5" hard drive bays, with triple redundant power supplies and dual redundant cooling fans, while optimizing rack mounting space.

This document lists compatible parts available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.

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 SC933 chassis. This chapter also includes contact information.

Chapter 2 System Safety

This chapter lists warnings, precautions, and system safety. It recommended that you thoroughly familiarize yourself installing and servicing this chassis safety precautions.

Chapter 3 System Interface

Refer here for descriptions of the LEDs which provide information on system health and activity and the responses that you may need to take.

Chapter 4 Chassis Setup and Maintenance

Follow the procedures given in this chapter when installing and removing components, or reconfiguring your chassis.

Chapter 5 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.

Appendices

This section lists compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes are listed. Refer to our Web site for the latest compatible backplane information.

NOTE: Customers requiring support for SCSI backplanes may contact Supermicro's Technical Support department directly.

Table of Contents

Chapter 1 Introduction

1-1	Overview	1-1
1-2	Shipping List.....	1-1
	Part Numbers.....	1-1
1-3	Where to get Replacement Components.....	1-2
1-4	Contacting Supermicro.....	1-3
1-5	Returning Merchandise for Service.....	1-4

Chapter 2 System Safety

2-1	Overview	2-1
2-2	Warnings and Precautions	2-1
2-3	Preparing for Setup	2-1
2-4	Electrical Safety Precautions	2-2
2-5	General Safety Precautions	2-3
2-6	System Safety	2-3

Chapter 3 System Interface

3-1	Overview	3-1
3-2	Control Panel Buttons	3-2
3-3	Control Panel LEDs	3-2
3-4	Drive Carrier LEDs.....	3-4
	SAS Drives.....	3-4
	SCSI Drives.....	3-4

Chapter 4 Chassis Setup and Maintenance

4-1	Overview	4-1
	Installation Procedures.....	4-1
4-2	Removing the Chassis Cover	4-2
4-3	Installing Hard Drives.....	4-3
4-4	Installing the Motherboard	4-5
	I/O shield	4-5
	Permanent and Optional Standoffs.....	4-5
4-5	Installing the Air Shroud.....	4-7
4-6	Installing System Fans.....	4-9
4-7	Replacing the Power Supply	4-11
4-8	Changing the Power Distributor	4-13

Chapter 5 Rack Installation

5-1	Overview	5-1
5-2	Unpacking the System	5-1
5-3	Preparing for Setup	5-1
	Choosing a Setup Location	5-1
	Rack Precautions	5-2
	General Server Precautions	5-2
	Rack Mounting Considerations	5-3
	Ambient Operating Temperature	5-3
	Mechanical Loading	5-3
	Circuit Overloading	5-3
	Reliable Ground	5-3
5-4	Rack Mounting Instructions	5-4
	Identifying the Sections of the Rack Rails	5-4
	Inner Rail Extension	5-4

Appendix A Cables, Screws, and other Accessories**Appendix B SC933 Power Supply Specifications****Appendix C SAS-933EL Backplane Specifications****Appendix D SATA-933 Backplane Specifications**

Chapter 1

Introduction

1-1 Overview

Supermicro's SC933 chassis features a unique and highly-optimized design. The chassis is equipped with high-efficiency power supplies while high-performance fans provide ample optimized cooling for the system. Fifteen hot-swappable drive bays offer maximum storage capacity in a 3U form factor.

1-2 Shipping List

Part Numbers

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model <http://www.supermicro.com/>

SC933 Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC933E2-R760(B)	DP Xeon, UP P4	15x SAS Bays (+) 2x 28 Port SAS Expander	Six expansion slots	760W (Redundant)
SC933E1-R760(B)	DP Xeon, UP P4	15x SAS Bays (+) 1x 28 Port SAS Expander	Six expansion slots	760W (Redundant)
SC933S2-R760(B)	DP Xeon, UP P4	7+7 U320 SCSI	Six expansion slots	760W (Redundant)
SSC933S1-R760(B)	DP Xeon	14x U320 SCSI	Six expansion slots	760W (Redundant)
SC933T-R760(B)	DP Xeon, UP P4	15x SAS	Six expansion slots	760W (Redundant)

Legend:

DP = Dual Processor Support

FF = Full-height, Full-length

P4 = Pentium® 4 CPU

UP = Single Processor Support

1-3 Where to get Replacement Components

Although not frequently, you may need replacement parts for your system. To ensure 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.

NOTE: Customers requiring support for SCSI backplanes may contact Supermicro's Technical Support department directly.

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) 8226-5990

1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

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 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.

The chassis must be placed near at least one grounded power outlet. When configured, the SC933 chassis includes three redundant power supplies and requires three grounded outlets.

2-3 Preparing for Setup

The SC933 chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the system into the rack. Please read this manual in its entirety before beginning the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC933 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 motherboard, memory modules and the DVD-ROM and floppy drives (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.
- Motherboard 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.

- 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

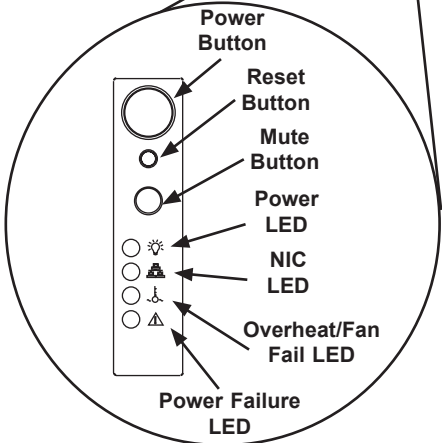
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient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

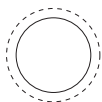
System Interface

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 SC933 models have three buttons on the chassis control panel: a power on/off button, a reset button and a mute button. This chapter explains the meanings of all buttons and LED indicators and the appropriate responses you may need to take.



3-2 Control Panel Buttons

There are three push-buttons located on the front of the chassis. These are, in order from top to bottom, a power on/off button, reset button and a mute button.



Power: The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. It is necessary to unplug the system before servicing.



Reset: The reset button is used to reboot the system.

Mute



Mute: The mute button allows the system alarm to be silenced quickly.

3-3 Control Panel LEDs

The control panel located on the front of the SC933 chassis 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.



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



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 in 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. You should also 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.



NIC1: Indicates network activity on GLAN1 when flashing.



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



Power Fail: Indicates a power failure to the system's power supply units.

3-4 Drive Carrier LEDs

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

SAS Drives

Each SAS drive carrier has two LEDs.

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

If your system supports more drives than are currently being utilized, the LEDs which are designated for unused drives will remain unlit.

Chapter 4

Chassis Setup and Maintenance

4-1 Overview

This chapter covers the steps required to install components and perform maintenance 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.

Installation Procedures

- Overview
- Removing the Chassis Cover
- Installing the TQ+ Backplane
- Installing Hard Drives
- Installing the Motherboard (I/O Shield, Standoffs, Add-on /Expansion Setup)
- Installing the Air Shroud
- Installing System Fans
- Replacing the Power Supply



Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

4-2 Removing the Chassis Cover

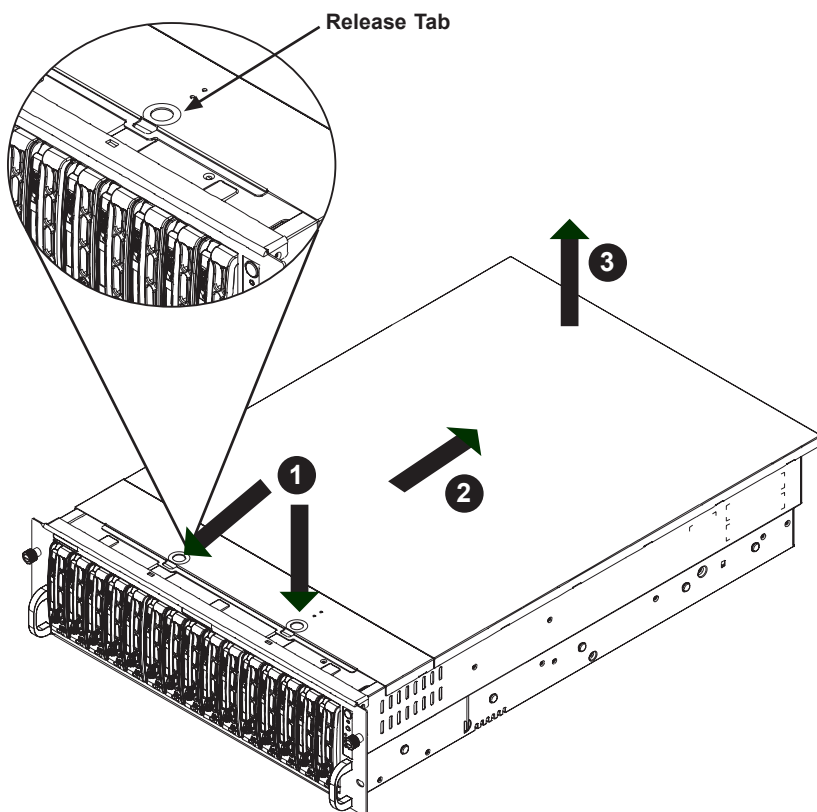


Figure 4-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Press both tabs simultaneously.
2. Slide the cover back toward the rear of the chassis.
3. Lift the cover off the chassis.



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.

4-3 Installing Hard Drives

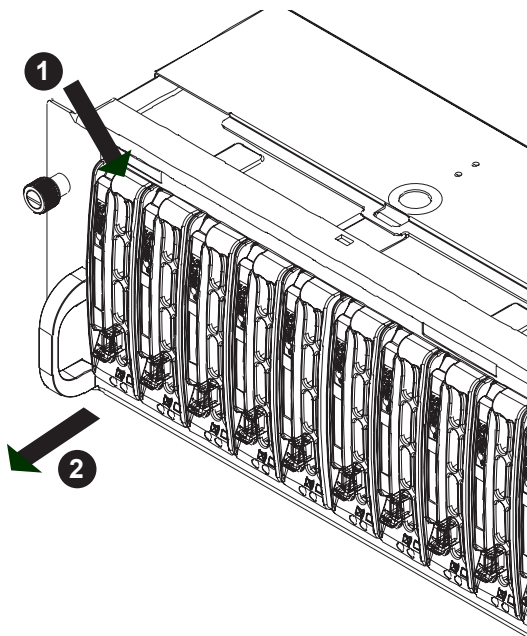


Figure 4-2: Removing Hard Drive Carriers

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

Removing Hard Drive Trays from the Chassis

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



Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drive bays empty.

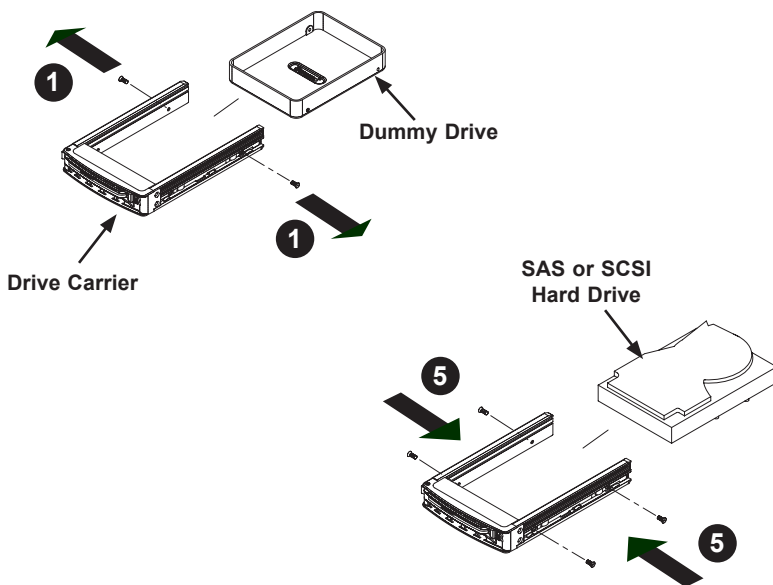


Figure 4-3: Removing Hard Drive

Installing a Hard Drive to the Hard Drive Tray

1. Remove the two screws securing the dummy drive to the drive tray and remove the dummy drive.
2. Place the hard drive tray on a flat surface such as a desk, table or work bench.
3. Slide the hard drive into the tray with the printed circuit board side facing down.
4. Carefully align the mounting holes in both the drive tray and the hard drive.
5. Secure the hard drive to the tray using four screws.
6. Replace the drive tray into the chassis. Make sure to close the drive tray handle to lock the drive tray into place.



Warning: Only enterprise level hard drives are recommended for use in Supermicro chassis.

4-4 Installing the Motherboard

The I/O shield holds the motherboard ports in place. Install the I/O shield before installing the motherboard.

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

Permanent and Optional Standoffs

Standoffs prevent short circuits by creating space between the motherboard and the chassis surface. The SC933 chassis includes permanent standoffs in locations used by most motherboards.

Installing Standoffs

1. Compare the mounting holes in the motherboard to those in the chassis.
2. Add or removed standoffs as needed. To do this:
 - A. Place a hexagonal standoff screw through the bottom the chassis.
 - B. Secure the screw with the hexagon nut (rounded side up).

Installing the Motherboard

3. Lay the motherboard on the chassis aligning the permanent and optional standoffs
4. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque when tightening down the motherboard.

5. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.
6. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply. The fans may be temporarily removed to allow access to the backplane ports.

Expansion Slot Setup

The SC933 chassis includes six full-height, full-length PCI slots for expansion cards.

Installing Expansion Cards

1. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. Remove the screw holding the cover in place for each PCI slot you want to use. Keep this screw for later use.
3. Secure each card to the chassis by sliding the card's L bracket into the PCI slot.
4. Insert the card into the motherboard.

4-5 Installing the Air Shroud

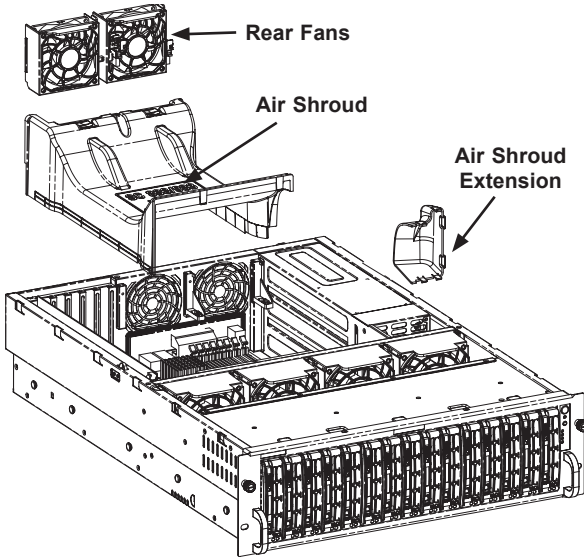


Figure 4-4: Air Shroud for SC933 Chassis

Air shrouds concentrate airflow to maximize fan efficiency. The SC933 chassis air shroud does not require tools to set it up.

Installing the Air Shroud

1. If necessary, remove the rear fans by pressing the fan release tab and pulling the fan from the chassis.
2. Move the cables from the power supply and power distributor to the bottom of the chassis. You may have to bind the cables together.
3. Slide the air shroud extension into the groove behind the fan closest to the power supply. The extension should almost touch the side of the chassis.
4. Slide the air shroud into the chassis. The air shroud connects to the air shroud extension, two of the front fans, and the two rear exhaust fans.
5. The air shroud includes perforations on the bottom. These perforations can be removed if motherboard components interfere with the air shroud placement. Do not remove more perforations than necessary.
6. Install the rear fans by sliding each fan into the fan housing on the chassis.

Checking the Server's Air Flow

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
5. In most cases, the chassis power supply and fans are pre-installed. If you need to install fans 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.

4-6 Installing System Fans

Six heavy duty fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis internal temperature.

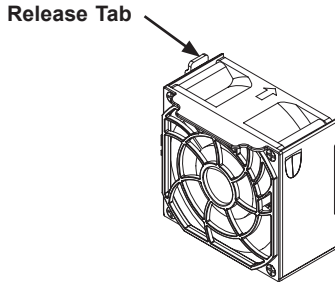


Figure 4-5: System Fan

Replacing 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 open.)
2. Turn off the power to the system and unplug the system from the outlet.
3. Remove the failed fan's power cord from the motherboard.
4. Press the fan release tab to lift the failed fan from the housing and pull it up and out the chassis.
5. 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.
6. Power up the system and check that the fan is working properly before replacing the chassis cover.

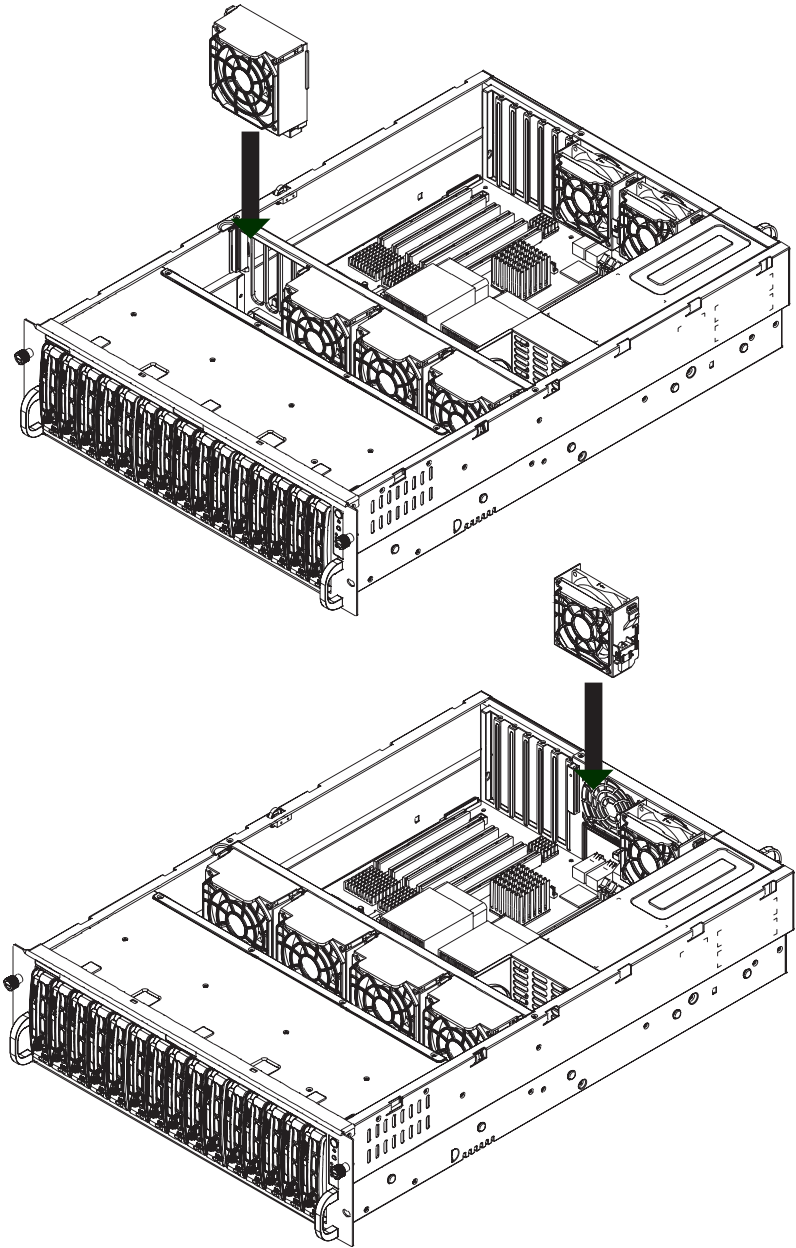
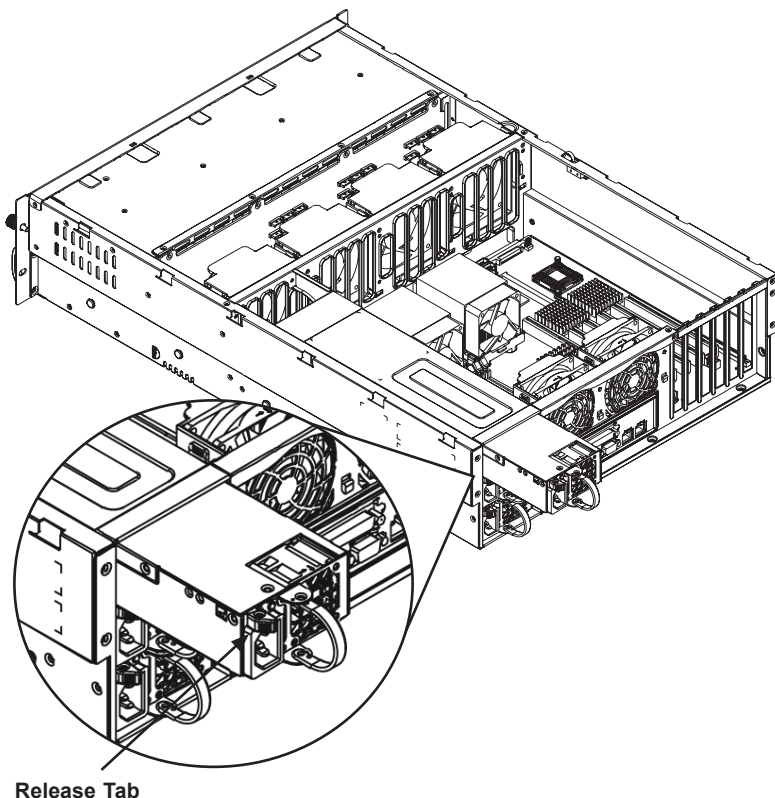


Figure 4-6: Replacing the System Fans

4-7 Replacing the Power Supply

The SC933 features auto-switching power supplies. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light illuminates on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

The SC933 chassis includes three redundant power supplies that can be changed without powering down the system. In the unlikely event of a power failure, a new unit can be ordered directly from Supermicro (see the contact information in the Preface).



Release Tab

Figure 4-7: Removing the Power Supply

Changing the Power Supply

1. This chassis includes triple redundant power supplies which allow the server to remain running while one or two power supplies are removed.
2. Push the release tab (on the back of the power supply), as illustrated.
3. Pull the power supply out using the handle provided.
4. Change the failed power module with the same model.
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 server.

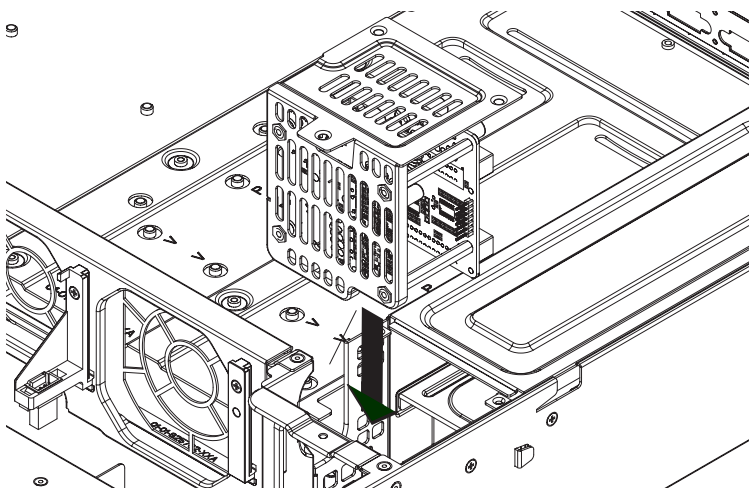


Figure 4-8: Changing the Power Distributor

4-8 Changing the Power Distributor

Server chassis that are 2U and higher require a power distributor. The power distributor provides failover and power supply redundancy. In the unlikely event you must change the power distributor, do following.

Changing the Power Distributor

1. Power-down the server and remove the plug from the wall socket or power strip.
2. Remove all cable connections to the power supply from the motherboard, backplane, and other components. Also, remove both power supplies.
3. Locate the power distributor between the power supply and the fan row.
4. Remove the three screws securing the power supply.
5. Gently pull the power distributor from the chassis. Gently guide all the cables through the power distributor housing.
6. Slide the new power distributor module into the power distributor housing. Make sure that you slide the cables through the bottom of the housing.
7. Reconnect all the power cables, replace the power supply, and insert the plug into the wall.

Notes

Chapter 5

Rack Installation

5-1 Overview

This chapter provides instructions for installing your chassis into a rack. Following these steps in the order given should enable you to have the chassis installed within a minimum amount of time.

5-2 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.

5-3 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 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).
- Leave 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 similar environments).



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 a 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-swappable hard drives and power supply modules to cool before touching them.

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

Rack Mounting Considerations

Ambient Operating Temperature

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

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.).

5-4 Rack Mounting Instructions

This section provides information on installing the SC933 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: This rail will fit a rack between 28" and 33.67" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies, a fixed inner rail that secures directly to the chassis and an outer rail that secures directly to the rack itself.

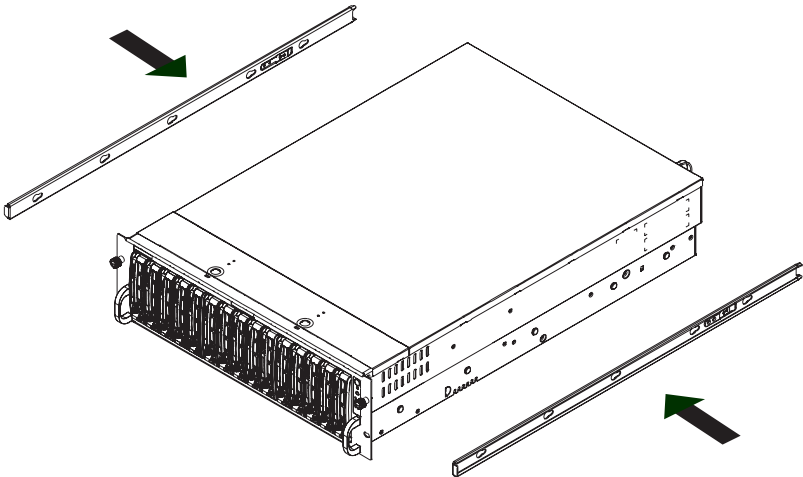


Figure 5-1: Identifying the Inner Rail Extensions

Inner Rail Extension

The SC933 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are preattached and do not interfere with normal use of the chassis if you decide not to use a server rack. Attach the inner rail extension to stabilize the chassis within the rack.

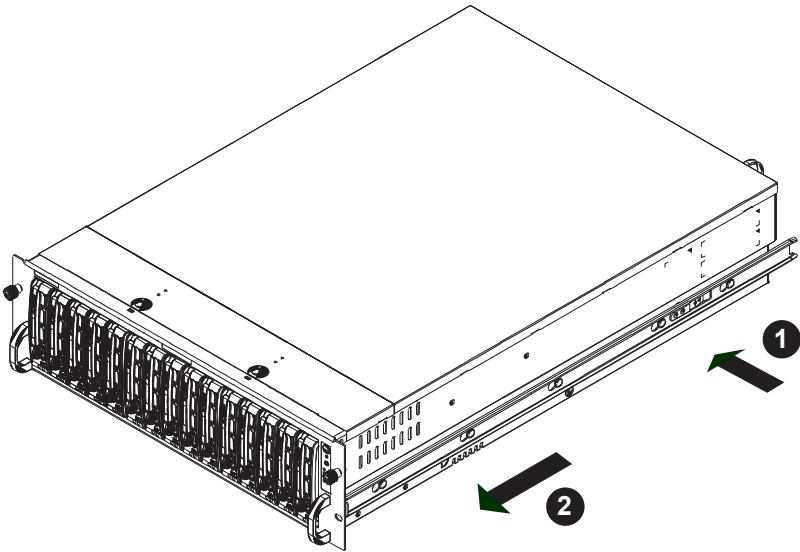


Figure 5-2: Installing the Inner Rails

Installing the Inner Rail Extensions

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 one screw.
4. Repeat steps 1-3 for the other inner rail extension.

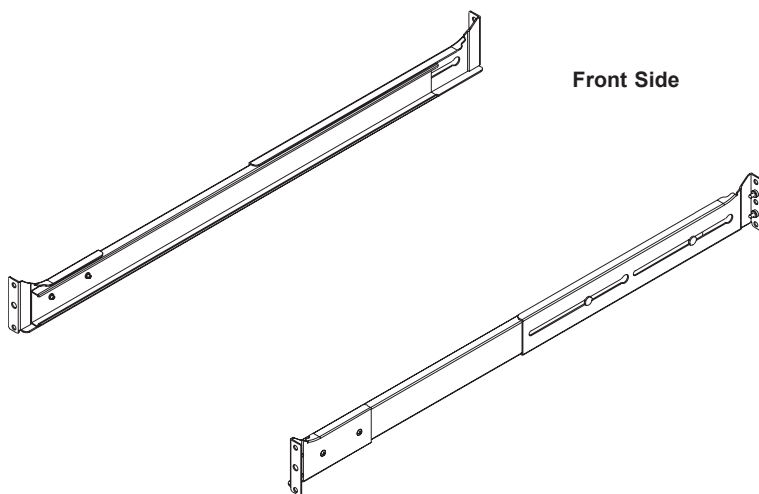


Figure 5-3: Assembling the Outer Rails

Installing the Outer Rails to the Rack

1. Attach the shorter outer rail bracket to the outside of the longer outer rail bracket. You must align the pins with the slides. Also, both bracket ends must face the same direction.
2. Adjust both the shorter and longer brackets to the proper distance so that the rail fits snugly into the rack.
3. Secure the long bracket to the front side of the outer rail with two M5 screws and the short bracket to the rear side of the outer rail with three M5 screws.
4. Repeat steps 1-3 for the remaining outer rail.

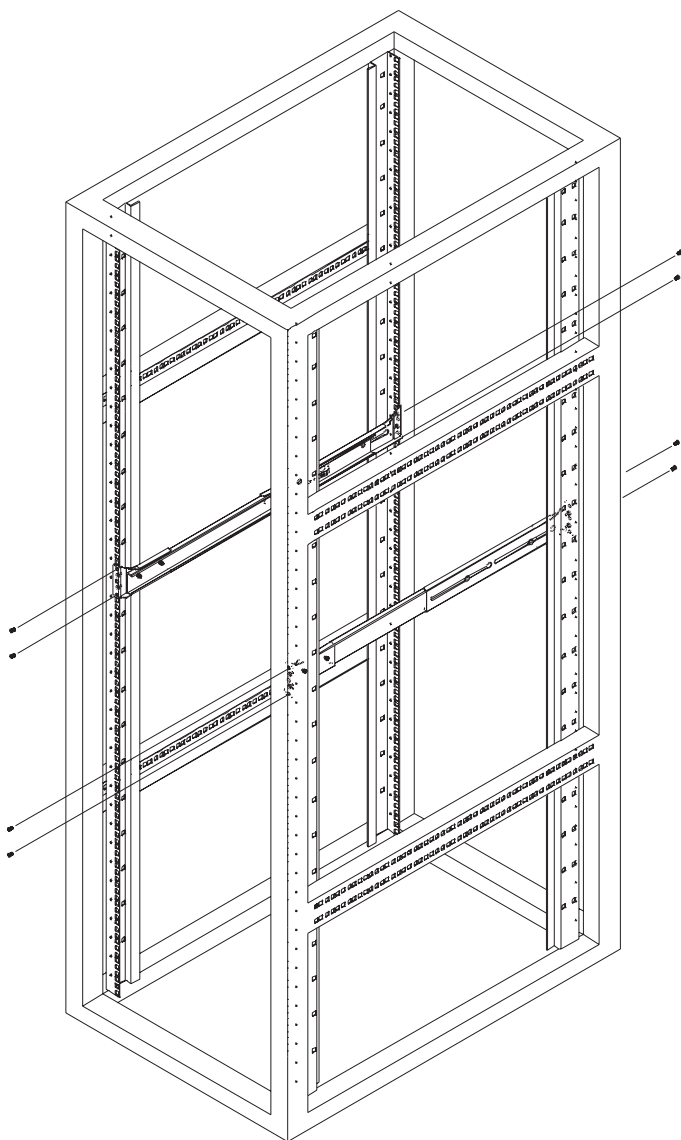


Figure 5-4: Installing the Outer Rails to the Server Rack

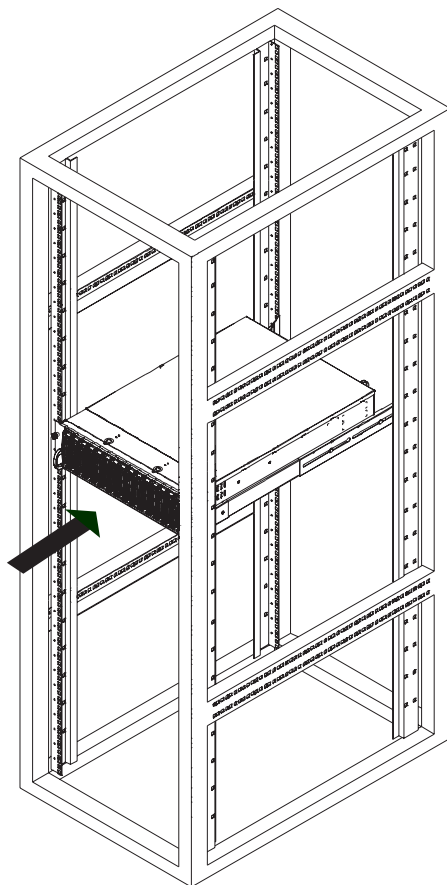


Figure 5-5: Installing the Chassis

Installing the Chassis into a Rack

1. Confirm that chassis inner rails and outer rails are installed on the rack.
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 (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, the locking tabs will click into the locked position.
4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

Appendix A

Cables, Screws, and other Accessories

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 SC933T Chassis (SAS)

SC933T-R760			
Part #	Type	Length	Description
CBL-0044L	Cable	2'	SATA cable
CBL-0209L	Cable	210 mm	4-pin to 3-pin fan power cable
-	Cable	6'	2 - Regional power cords

A-3 Cables Included with SC933S Chassis (SCSI)

SC933S1-R760			
Part #	Type	Length	Description
CBL-063L	Cable	30"	2-drop SCSI cable
CBL-0209L	Cable	210 mm	4-pin to 3-pin fan power cable
-	Cable	6'	Regional power cord

SC933S2-R760			
Part #	Type	Length	Description
CBL-028	Cable	30"	Ultra 320 SCSI cable
CBL-033L-U320	Ribbon	9" (23 cm)	ULTRA 320, PB FREE
CBL-0209L	Cable	210 mm	4-pin to 3-pin fan power cable
-	Cable	6'	Regional power cord

A-4 Cables Included with SC933E Series Chassis

SC933E1-R760 and SC933E2-R760			
Part #	Type	Length	Description
CBL-0180L-02	SAS	39 cm	iPass to iPass SAS cable
CBL-0209L	Cable	210 mm	4-pin to 3-pin fan power cable
-	Cable	6'	Two regional power cords

A-5 Compatible Cables

These cables are compatible with the SC933 Chassis.

Alternate SAS Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS 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 (7-pin) on 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. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Extending Power Cables

Although Super Micro 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-0042	7.9"(20 cm)
20-pin	CBL- 0059	7.9"(20 cm)
8-pin	CBL-0062	7.9"(20 cm)
4-pin	CBL-0060	7.9"(20 cm)

Front Panel to the Motherboard

The SC933 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-0049
16-pin	20-pin	CBL-0048
20-pin	20-pin	CBL-0047
16-pin	various*	CBL-0068
20-pin	various*	CBL-0067

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

A-6 Chassis Screws

The accessory box includes all the screws needed to setup your chassis. This section lists and describes the most common screws used. Your chassis may not require all the parts listed.

M/B



Pan head
6-32 x 5 mm
[0.197]

HARD DRIVE



Flat head
6-32 x 5 mm
[0.197]

DVD-ROM, CD-ROM, and FLOPPY DRIVE



Pan head
6-32 x 5 mm
[0.197]



Flat head
6-32 x 5 mm
[0.197]



Round head
M3 x 5 mm
[0.197]



Round head
M2.6 x 5 mm
[0.197]

RAIL



Flat head
M4 x 4 mm
[0.157]



Round head
M4 x 4 mm
[0.157]



Flat head
M5 x 12 mm[0.472]
Washer for M5



M/B STANDOFFS



M/B standoff
6-32 to 6-32



M/B (CPU)
standoff
M5 to 6-32



Thumb screw
6-32 x 5 mm
[0.197]



1/U M/B standoff
6-32 x 5 mm
[0.197]



Appendix B

SC933 Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

	760W Power Supply
MFR Part #	PWS-0065
AC Voltage	100 - 240V 50 - 60Hz 14 - 8 Amp
DC Ouput	5V + 3.3V ≤ 200W
+5V	36.0 Amp
+5V standby	3.5 Amp
+12V	50.0 Amp (combined)
-12V	1.0 AAmp
+3.3V	36.0 Amp

Notes

Appendix C

SAS-933EL 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 static 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-933EL Backplane

The SAS-933EL 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-933EL Revision 1.12 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 and Jumpers

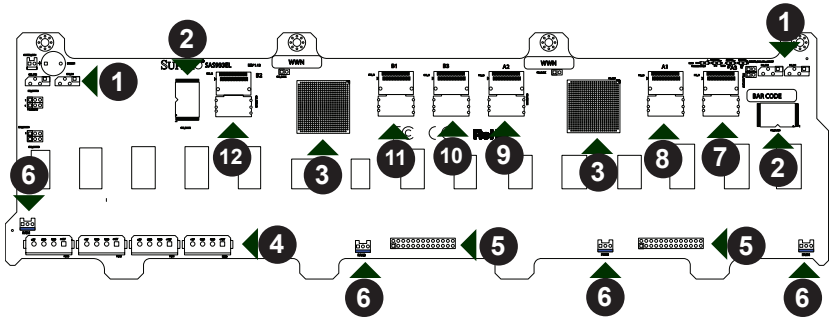


Figure C-1: SAS-933EL2 Backplane

Front Connectors

1. Primary and secondary I²C connectors (optional)
2. Primary and secondary flash chip
3. Primary and secondary expander chip
4. Power connectors: PWR0, PWR1, PWR2, and PWR3
5. EPP connectors: J15 and J16
6. Fan connectors: Fan1, Fan2, Fan3, and Fan4
7. SAS connectors: PRI_A3
8. SAS connectors: PRI_A1
9. SAS connectors: PRI_A2
10. SAS connectors: SEC_B3 (not available in EL1 single port backplane)
11. SAS connectors: SEC_B1 (not available in EL1 single port backplane)
12. SAS connectors: SEC_B2 (not available in EL1 single port backplane)

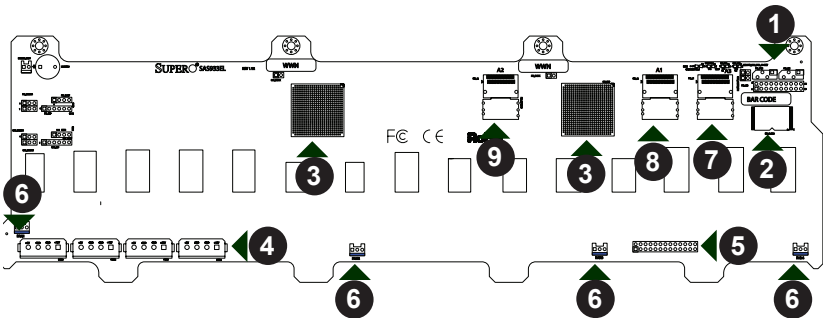


Figure C-2: SAS-933EL1 Backplane

C-6 Front Connector and Pin Definitions

1. Primary and Secondary I²C Connectors

The I²C connectors are used to monitor the power supply and to control the fans. See the table on the right for pin definitions. There are two connectors, one primary and one secondary.

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

These connectors are optional and should only be used by qualified technicians.

2. Primary and Secondary Flash Chips

The primary and secondary flash chips enhance the backplane memory.

3. Primary and Secondary Expander Chips

This primary and secondary expander chips allow the backplane to support dual ports, cascading, and failover.

4. Backplane Main Power Connectors

The 4-pin connectors, designated PWR0, PWR1, PWR2, and PWR3, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector (PWR0, PWR1, PWR2, and PWR3)	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

5. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

6. Fan Connectors

The 3-pin connectors, designated Fan1, Fan2, Fan3, and Fan4, provide power to the system fans. See the table on the right for pin definitions.

Fan Connectors (Fan1, Fan2, Fan3, and Fan4)	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer

7 - 12. SAS Ports

Note that the primary and secondary sets of SAS ports are in different order. From right to left the ports are Primary A3, A1, and A2 and Secondary B3, B1, and B2.

C-7 Front Jumper Locations and Pin Definitions

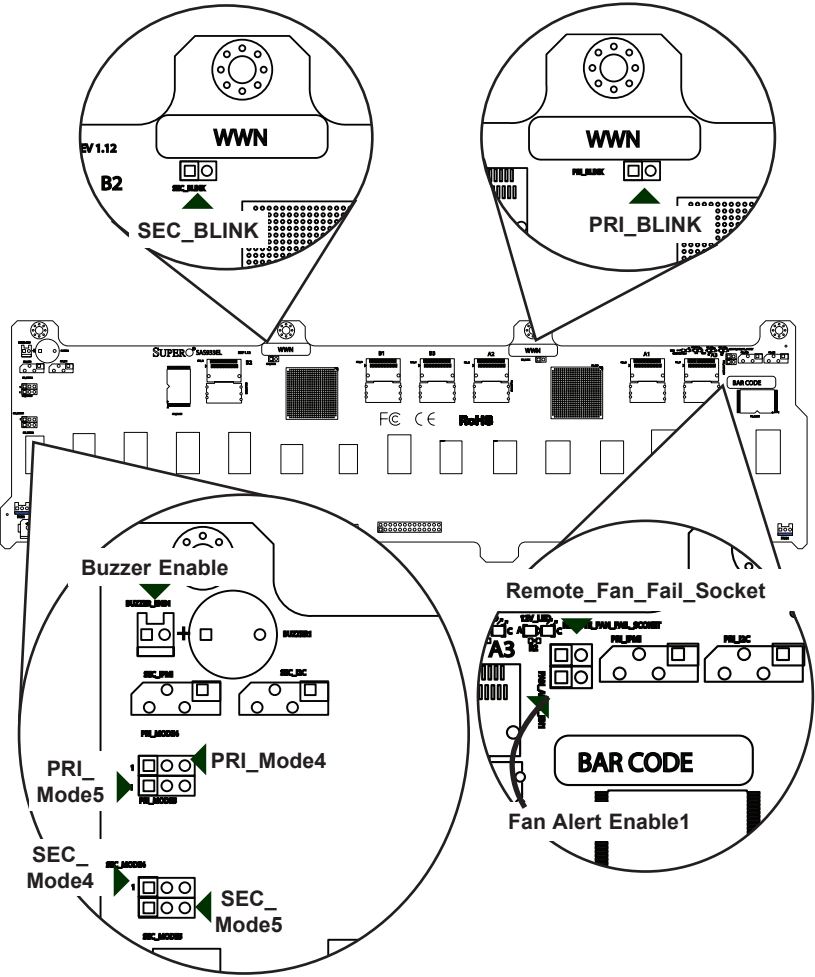


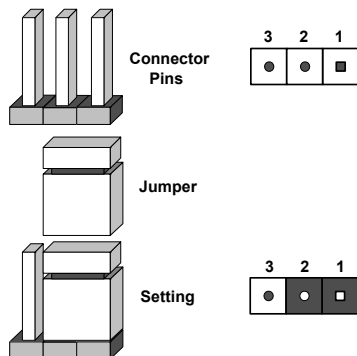
Figure C-3: Front Jumpers

Socket Settings		
Socket	Socket Setting	Notes
REMOTE_FAN_FAIL_SOCKET	Connected	Front panel fan fail indicator (Optional)

General Jumper Settings		
Jumper	Jumper Settings	Note
PRI_MODE4	1-2	Factory setting Do not change
PRI_MODE5	2-3	Factory setting Do not change
PRI_BLINK	Open	Factory setting Do not change
SEC_MODE4	1-2	Factory setting Do not change
SEC_MODE5	2-3	Factory setting Do not change
SEC_BLINK	Open	Factory setting Do not change
BUZZER_ENB	Open: Disable Closed: Enable	Buzzer enable*
FAN_ALERT_ENI	Open: Disable Closed: Enable	Fan alert enable

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.



*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 45° Celsius.

Front LED Indicators

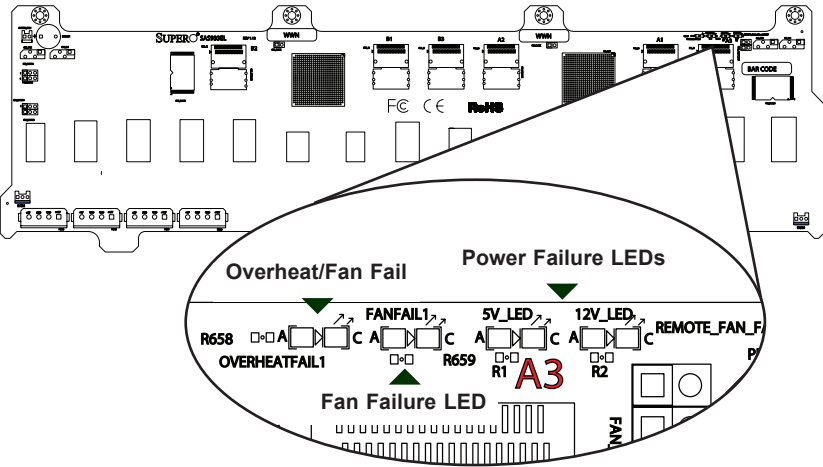


Figure C-4: Front LED Indicators

Backplane LEDs		
LED	State	Specification
OVERHEATFAIL1	On	Overheat or drive failure
FANFAIL1	On	Failure in system fans
5V	Off	Backplane power failure. Light is on during normal operation.
12V	Off	Backplane power failure. Light is on during normal operation.

C-8 Rear Connectors and LED Indicators

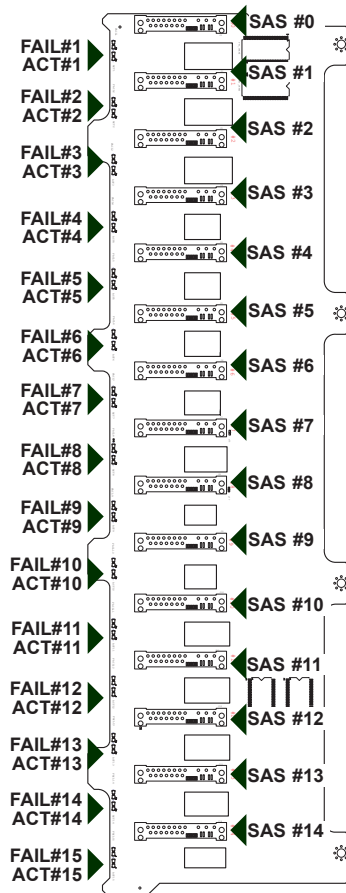


Figure C-5: Rear Connectors and LEDs

Rear SAS Connectors					
Connector	SAS Drive	Connector	SAS Drive	Connector	SAS Drive
SAS #0	SAS HDD #0	SAS #5	SAS HDD #5	SAS #10	SAS HDD #10
SAS #1	SAS HDD #1	SAS #6	SAS HDD #6	SAS #11	SAS HDD #11
SAS #2	SAS HDD #2	SAS #7	SAS HDD #7	SAS #12	SAS HDD #12
SAS #3	SAS HDD #3	SAS #8	SAS HDD #8	SAS #13	SAS HDD #13
SAS #4	SAS HDD #4	SAS #9	SAS HDD #9	SAS #14	SAS HDD #14

Rear LED Indicators		
Rear LED	Hard Drive Activity	Failure LED
SAS #0	ACT #1	FAIL #1
SAS #1	ACT #2	FAIL #2
SAS #2	ACT #3	FAIL #3
SAS #3	ACT #4	FAIL #4
SAS #4	ACT #5	FAIL #5
SAS #5	ACT #6	FAIL #6
SAS #6	ACT #7	FAIL #7
SAS #7	ACT #8	FAIL #8
SAS #8	ACT #9	FAIL #9
SAS #9	ACT #10	FAIL #10
SAS #10	ACT #11	FAIL #11
SAS #11	ACT #12	FAIL #12
SAS #12	ACT #13	FAIL #13
SAS #13	ACT #14	FAIL #14
SAS #14	ACT #15	FAIL #15

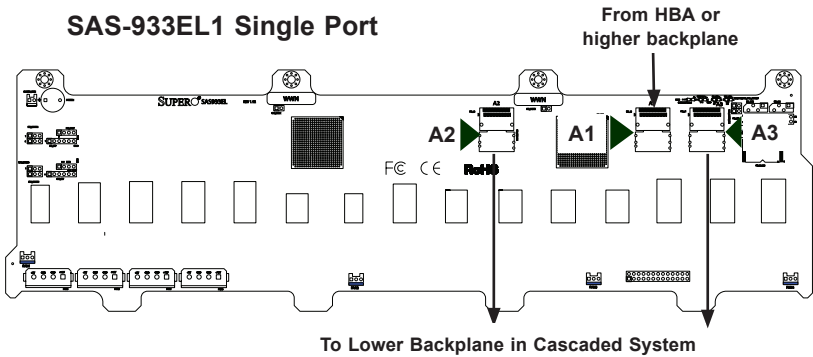
C-9 Single and Dual Port Expanders

Single Ports

SAS-933EL1 backplanes have a single port expander that access all fifteen drives and supports cascading.

Dual Ports

SAS-933EL2 backplanes have dual port expanders that access all fifteen drives. These dual port expanders support cascading, failover, and recovery.



SAS-933EL2 Dual Port Backplane

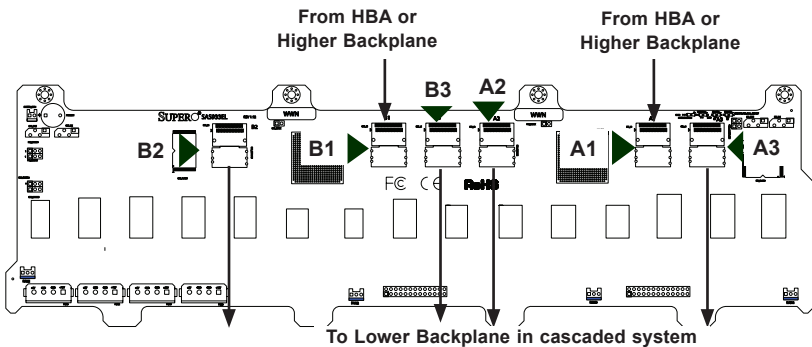


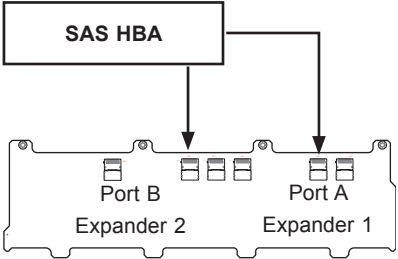
Figure C-6: Single and Dual Port Backplanes

C-10 Failover

The SAS-933EL2 backplane has two expanders which allow effective failover and recovery.

Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one Host Bus Adapter (HBA).



Single Host Bus Adapter Failover

If the expander or data path in Port A fails, the system will automatically switch over to Port B.

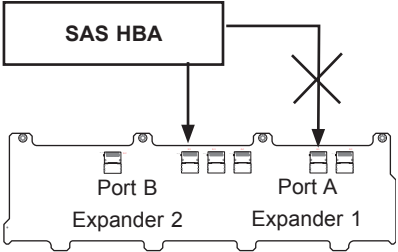


Figure C-7: Failover with a Single HBA

C-11 Failover with RAID Cards and Multiple HBAs

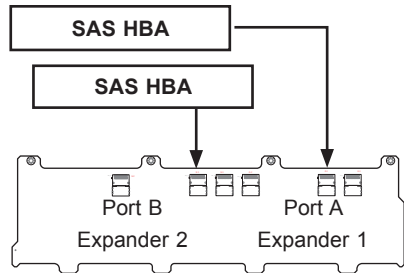
The SAS-933EL backplane may be configured for failover with multiple HBAs using either RAID controllers or HBAs to achieve failover protection.

RAID Controllers: If RAID controllers are used, then the failover is accomplished through port failover on the same RAID card.

HBAs: If multiple HBAs are used to achieve failover protection and load balancing, Linux MPIO software must be installed and correctly **configured to perform the load balancing and failover tasks.**

Dual Host Bus Adapter

In a dual host bus configuration, the backplane connects to two Host Bus Adapters.



Dual Host Bus Adapter Failover

If the expander or data path in Port A fails, the system will automatically fail over to Port B. This maintains a full connection to all drives.

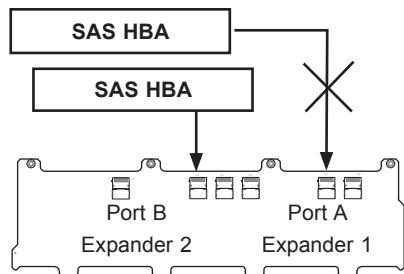


Figure C-8: Failover with Dual HBAs



IMPORTANT: For RAID controllers, redundancy is achieved through port failover. For multiple HBAs MPIO software is required to achieve failover protection.

C-12 Cables and Chassis Power Card

Chassis Power Card

In a cascaded configuration, the first chassis includes a motherboard and, at least one, HBA. Other servers in this enclosed system, include a power card. This section describes the supported power card for the SAS-933 backplane system.

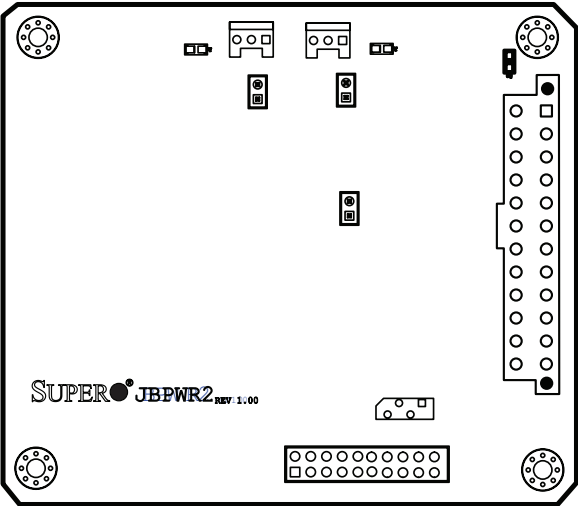
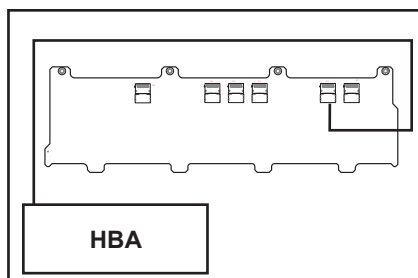


Figure C-9: Power Card

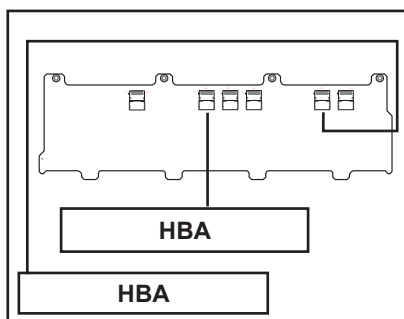
Power Card		
Part Number	Part Type	Where Used
CSE-PTJBOD-CB1	Power Card	Allows the chassis to be in a JBOD (Just a Bunch of Drives) system.

Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the HBA to the backplane.



Single Internal Host Bus Adapter



Dual Internal Host Bus Adapter

Figure C-10: Single and Dual HBAs

IMPORTANT: See Section C-11 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Supported Internal HBA to Backplane Cables

Use the following listed cables to create connections between the internal HBA and backplane. The cables required depend on the HBA connector.



Figure C-11: iPass to 4-lane Cable (CBL-0117)

Cable Name: iPass to 4-Lane

Part #: CBL-0117

Length: 46 cm (18 inches)

Description: This cable has one SFF-8484 (32-pin) connector on one end and iPass (SFF-8087/Mini-SAS) connector (36-pin) at the other. This cable connects from the HBA to the SAS-933EL backplane.



Figure C-12: iPass (Mini-SAS) to iPass (Mini-SAS) (CBL-0110L-2)

Cable Name: iPass (Mini-SAS) to iPass (Mini-SAS)

Part #: CBL-0108L-02

Length: 39 cm (15 inches)

Part #: CBL-0109L-02

Length: 22 cm (9 inches)

Part #: CBL-0110L-02

Length: 18 cm (7 inches)

Description: This cable has an iPass (SFF-8087/Mini-SAS) connector (36-pin) at each end. It connects from the HBA to the 933 EL backplane.

Connecting an External Host Bus Adapter to the Backplane

This backplane supports external Host Bus Adapters. In this configuration, the HBA and the backplane are in different physical chassis. This allows a JBOD (Just a Bunch Of Drives) configuration from an existing system.

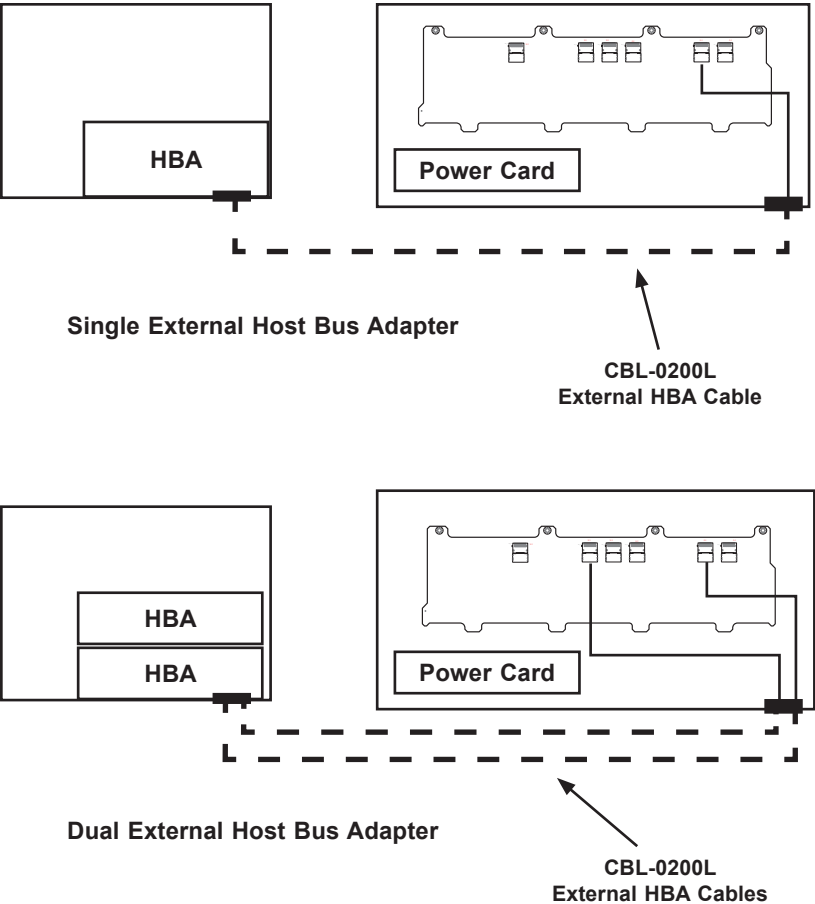


Figure C-13: Connecting an External HBA

IMPORTANT: See Section C-11 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Supported External HBA to Backplane Cable

Use the following cable if your external HBA has an InfiniBand connector.



Figure C-14: SAS InfiniBand to Mini-SAS (CBL-0200L)

Cable Name: SAS InfiniBand to Mini-SAS X4 1M cable, PBF

Part #: CBL-0200L

Length: 1 meter

Description: This cable has an InfiniBand connector (SFF-8470) on one end and an SFF-8088-1X (26-pins) at the other end.

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0167L internal cables and CBL-0166L external cables.

Single HBA Conguration

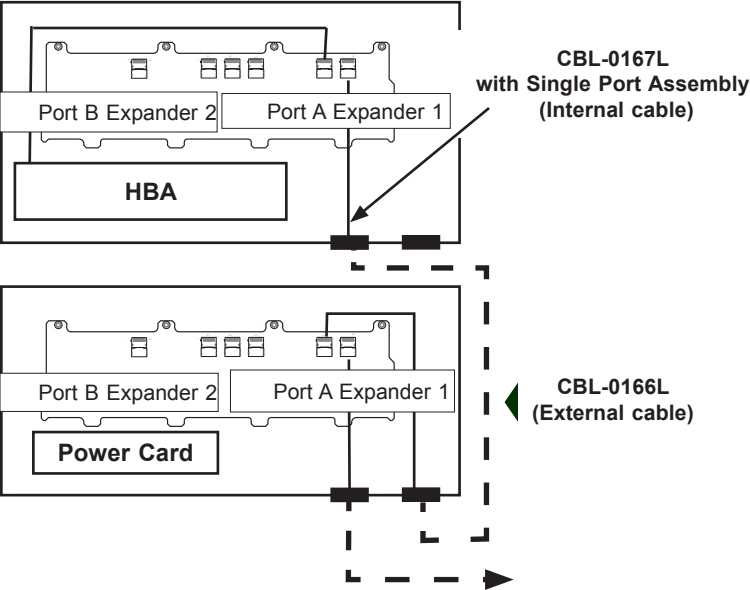
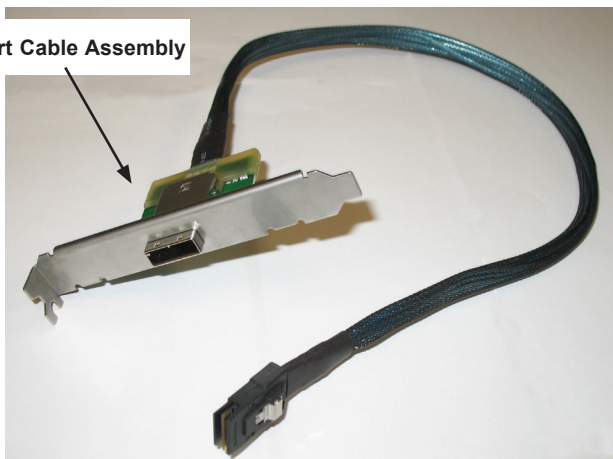


Figure C-15: Multiple Backplanes in a Single Channel Environment

Single HBA Configuration Cables

Single Port Cable Assembly



FigureC-16: SAS Internal Backplane Cable (CBL-0167L)

Cable Name: SAS EL2/EL1 Backplane Cable (Internal) w/ 2-port Cascading Cable, 68 cm

Part #: CBL-0167L (SFF-8087 to SFF-8088 x1)

Ports: Single

Placement: Internal cable

Description: Internal cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in single port environments.



Figure C-17: SAS Cascading Cable External (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68 cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)

Ports: Single or Dual

Placement: External cable

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Dual Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0168L internal cables and CBL-0166L external cables.

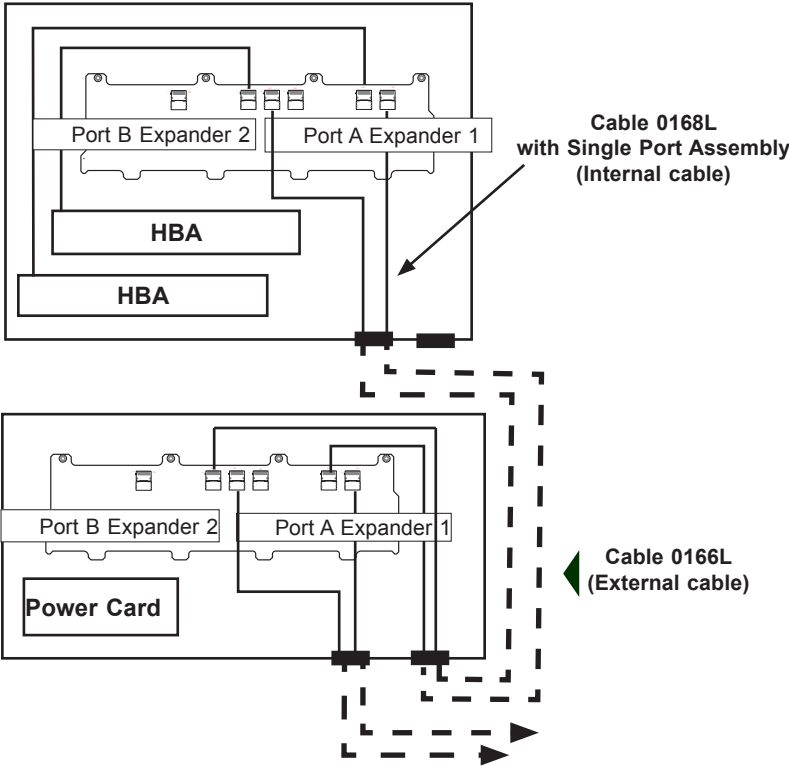


Figure C-18: Multiple Backplanes in a Dual Channel Environment

IMPORTANT: See Section C-11 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Dual HBA Conguration Cables

Dual Port Cable
Assembly



Figure C-19: SAS Cascading Cable Internal (CBL-0168L)

Cable Name: SAS Dual Port Cable Assembly, 68/76 cm

Part #: CBL-0168L

Placement: Internal cable

Ports: Dual

Description: Internal cascading cable. This cable connects the backplane to the HBA or external port. Used in dual port environments.



Figure C-20: SAS Cascading Cable External (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68 cm

Part #: CBL-0166L

Placement: External cable

Ports: Single or Dual

Description: External cascading cable. This cable connects ports between servers. Use one cable for single port connections and two cables for dual port connections.

C-13 Supported Cascading Configurations

Cascading allows the system to access data at a faster rate by allowing several backplanes to share resources to reduce latency time.

The first backplane in a cascaded system requires a motherboard and HBA. Other servers require a power control card, but not a motherboard and HBA together.

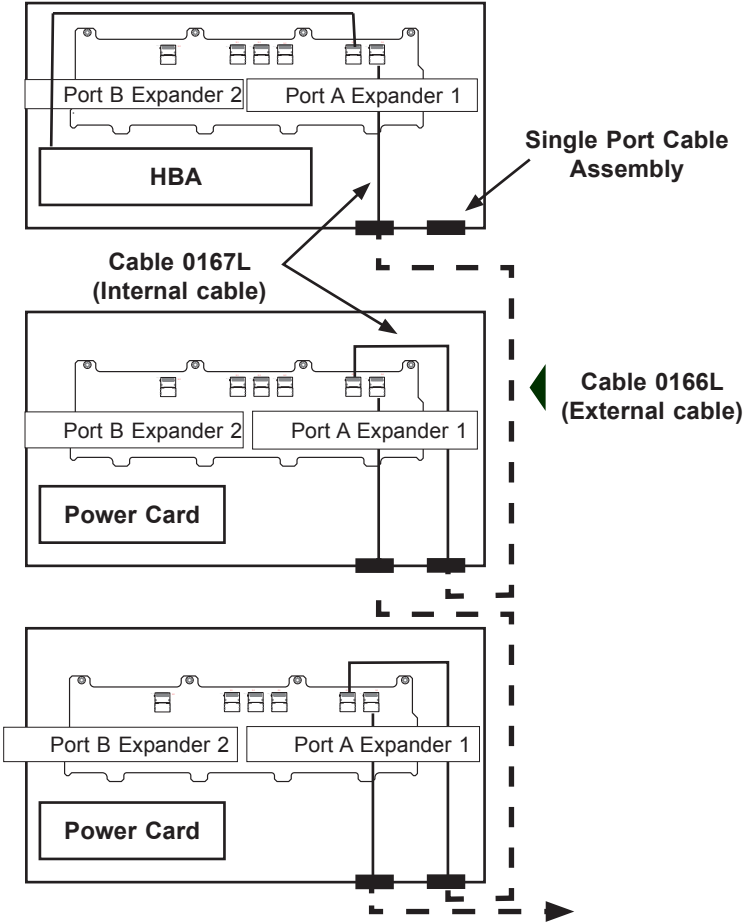


Figure C-21: Supported Cascading Configurations

Other Considerations:

- Cascading supports up to one hundred twenty-two hard drives
- Use the same cables for all single port configurations

Server System with Single SAS HBA

The expanders allow horizontal branching. This configuration also applies to dual ports.

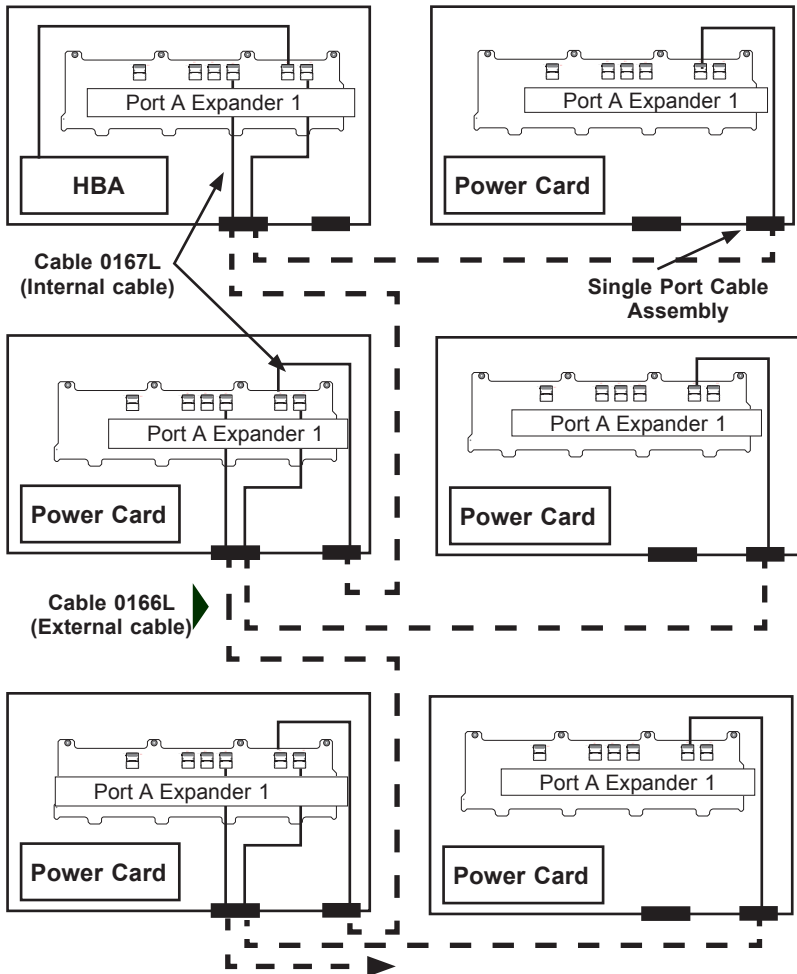


Figure C-22: Server System with Single SAS HBA

Server System with Dual SAS HBA and Cascading Configuration

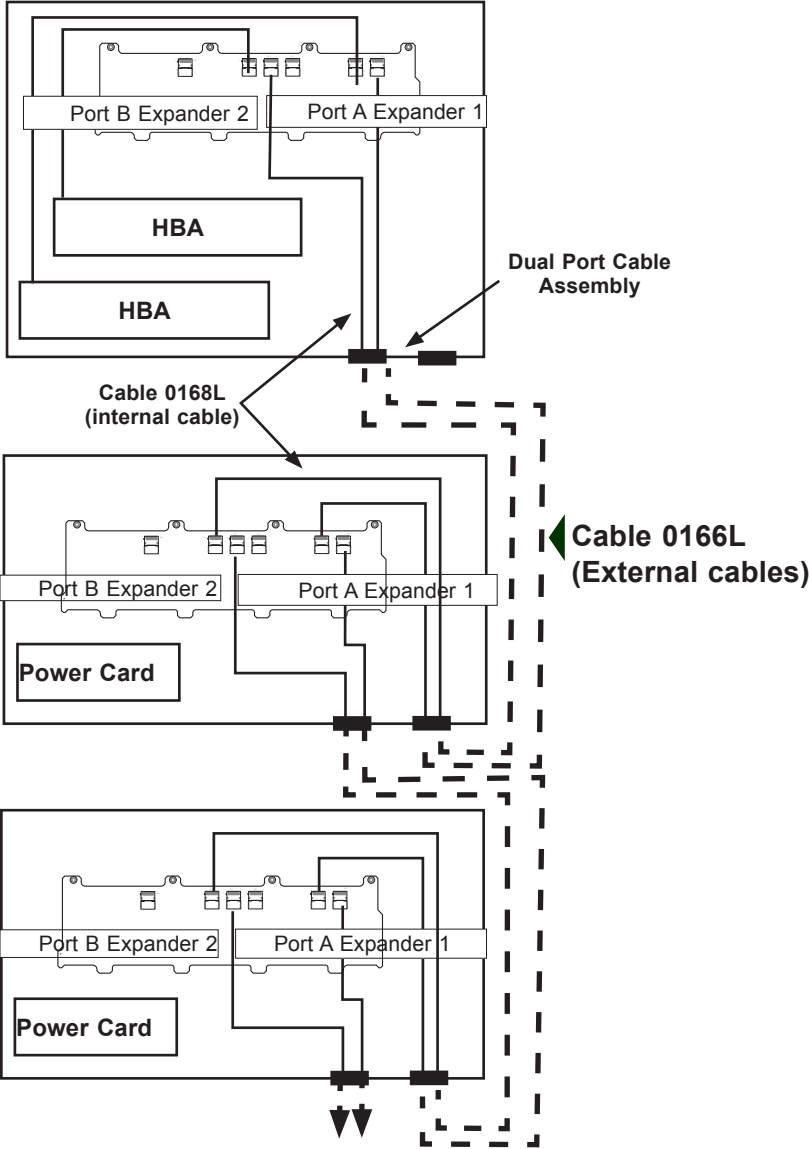
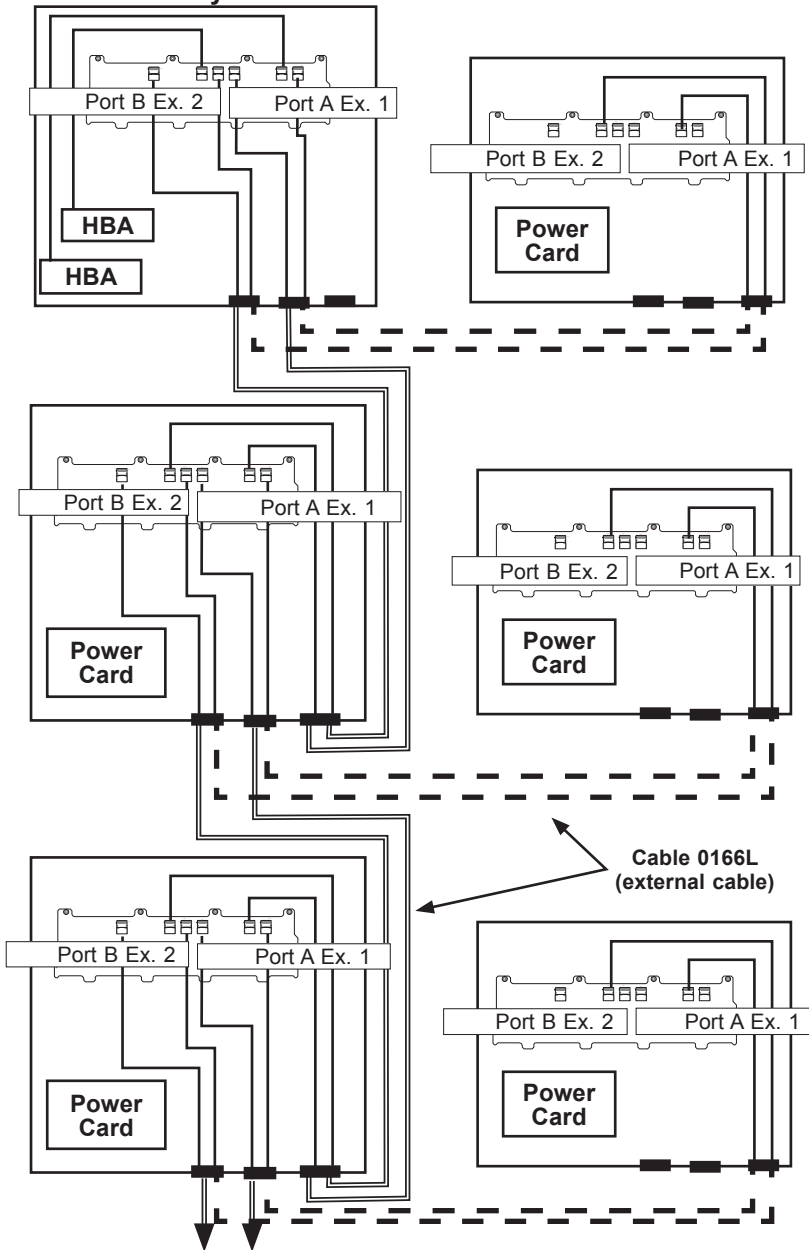


Figure C-23: Server System with Dual SAS HBA and Cascading Configuration

IMPORTANT: See Section C-11 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

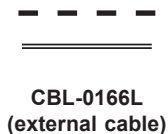
Server System with Dual SAS HBA**Figure C-24: Server System with Dual SAS HBA**

IMPORTANT: See Section C-11 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Dual Cable Routing

External Cables

In the previous diagrams external cables are represented with two different line patterns. These cables are both CBL-0166L external cables. Different lines help you determine the cable routing.



Appendix D

SATA-933 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.

D-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 static 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.

D-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.

D-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.

This manual reflects SATA-933 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.

D-4 Front Connectors and Jumpers

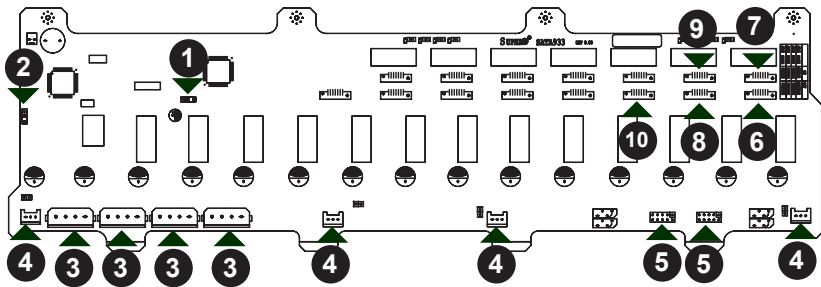


Figure D-1: Front Connectors and Jumpers

Front Connectors

1. OH#1: JP25
2. OH#2: JP45
3. Power Connectors (4-pin): JP10, JP13, JP46 and JP48
4. Fan Connectors: JP54, JP56, JP58 and JP60
5. ACT_IN#0-7: JP26 and ACT_IN#8-14: JP47
6. SATA Port #0: J5
7. SATA Port #1: J6
8. SATA Port #2: J7
9. SATA Port #3: J8
10. SATA Port #4: J10

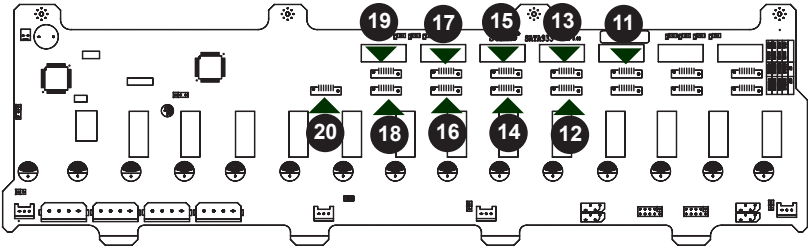


Figure D-2: SATA Ports

- 11. SATA Port #5: J12
- 12. SATA Port #6: J14
- 13. SATA Port #7: J16
- 14. SATA Port #8: J22
- 15. SATA Port #9: J23
- 16. SATA Port #10: J24
- 17. SATA Port #11: J25
- 18. SATA Port #12: J26
- 19. SATA Port #13: J29
- 20. SATA Port #14: J30

D-5 Front Connector and Pin Definitions

1. - 2. OH Temperature Connector

OH#1: JP25 and OH#2: JP45

Open: 45 degrees Celcius

1-2: 50 degrees Celcius

2-3: 55 degrees Celcius

3. Backplane Main Power Connectors

The 4-pin connectors designated JP10, JP13, JP46 and JP48 provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector (JP10, JP13, JP46 and JP48)	
Pin# Definition	
1	+12V
2 and 3	Ground
4	+5V

4. Fan Connectors

The 3-pin connectors, designated JP54, JP56, JP58 and JP60, provide power to the fans. See the table on the right for pin definitions.

Fan Connectors (JP54, JP56, JP58 and JP60)	
Pin# Definition	
1	Ground
2	+12V
3	Tachometer

5. Activity LED Connector

The activity LED connectors, designated JP26 and JP47 are used to indicate the activity status of each SAS drive. The Activity LED Connector is located on the front panel. For the Activity LED Header to work properly, connect to it using a 10-pin LED cable.

SAS Activity LED Header Pin Definitions (JP26 and JP47)			
Pin # Definition		Pin # Definition	
1	ACT IN#0	6	ACT IN#4
2	ACT IN#1	7	ACT IN#5
3	ACT IN#2	8	ACT IN#6
4	ACT IN#3	9	ACT IN#7
5	Ground	10	Empty

6. - 20. SATA Ports

The SAS ports are used to connect the SAS drive cables. The eight ports are designated #0 - #14. Each port is also compatible with SATA drives.

D-6 Front Jumper Locations and Pin Definitions

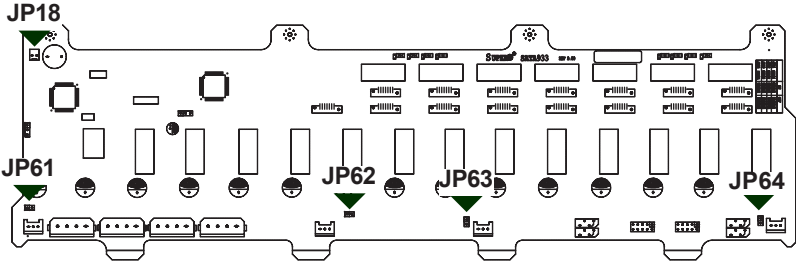


Figure D-3: Front Jumpers

Socket Settings		
Socket	Socket Setting	Note
JP18	Connected to front panel	Buzzer Reset Press once to disable buzzer; Press twice to enable buzzer

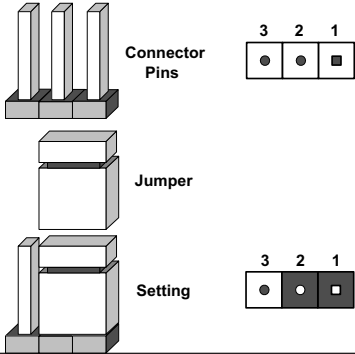
Fan Jumper Settings

This backplane supports up to four fans. To utilize each fan, you must configure **both jumpers** as instructed below.

Fan Jumper Settings		
Jumper	Jumper Settings	Fan Number
JP61	1-2 On: Enable 2-3 Off: Disable	FAN #1
JP62	1-2 On: Enable 2-3 Off: Disable	FAN #2
JP63	1-2 On: Enable 2-3 Off: Disable	FAN #3
JP64	1-2 On: Enable 2-3 Off: Disable	FAN #4

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.



Front LED Indicators

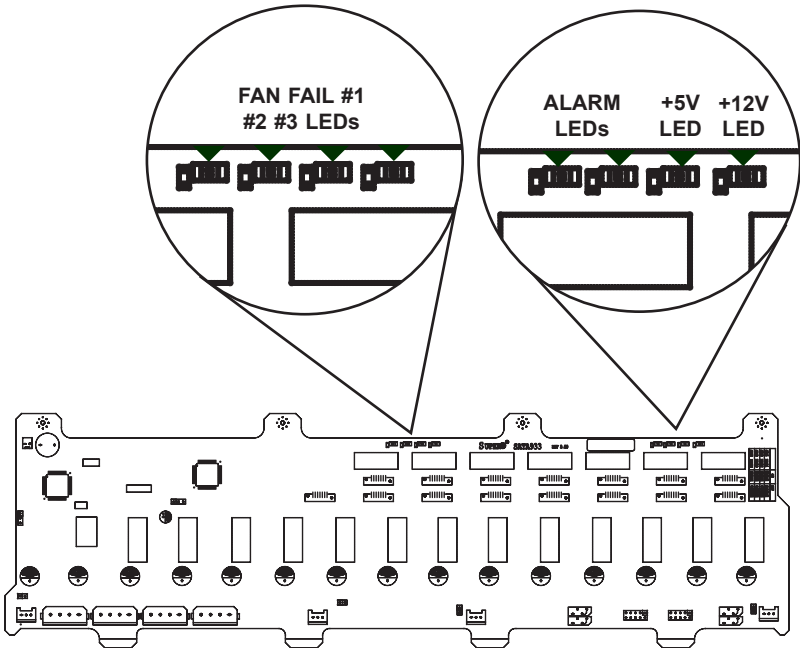


Figure D-4: Front Jumpers

Front Panel LEDs		
LED	Normal State	Specification
Fan #1 Fail	Off	Failure in Fan #1
Fan #2 Fail	Off	Failure in Fan #2
Fan #3 Fail	Off	Failure in Fan #3
Fan #4 Fail	Off	Failure in Fan #4
Alarm #1	Off	Overheat/Fan Failure
Alarm #2	Off	Overheat/Fan Failure
+5V	On	Backplane power failure. Light is on during normal operation.
+12V	On	Backplane power failure. Light is on during normal operation.

D-7 Rear Connectors and LED Indicators

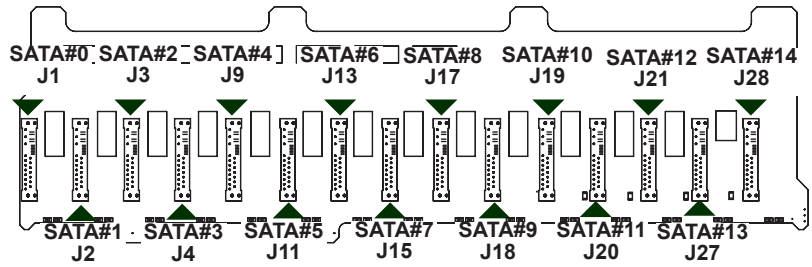


Figure D-5: Rear Connectors

Rear SATA Connectors	
Rear Connector	SATA Drive Number
SATA #0	SATA HDD #0
SATA #1	SATA HDD #1
SATA #2	SATA HDD #2
SATA #3	SATA HDD #3
SATA #4	SATA HDD #4
SATA #5	SATA HDD #5
SATA #6	SATA HDD #6
SATA #7	SATA HDD #7
SATA #8	SATA HDD #8
SATA #9	SATA HDD #9
SATA #10	SATA HDD #10
SATA #11	SATA HDD #11
SATA #12	SATA HDD #12
SATA #13	SATA HDD #13
SATA #14	SATA HDD #14

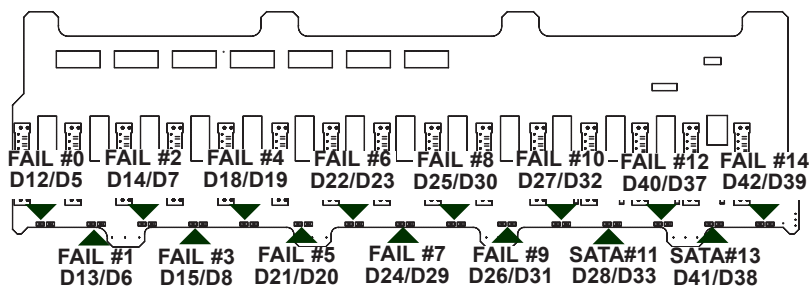


Figure D-6: Rear LEDs

Rear LED Indicators		
Rear LED	Hard Drive Activity	Failure LED
FAIL #0	D12	D5
FAIL #1	D13	D6
FAIL #2	D14	D7
FAIL #3	D15	D8
FAIL #4	D18	D19
FAIL #5	D21	D20
FAIL #6	D22	D23
FAIL #7	D24	D29
FAIL #8	D25	D30
FAIL #9	D26	D31
FAIL #10	D27	D32
FAIL #11	D28	D33
FAIL #12	D40	D37
FAIL #13	D41	D38
FAIL #14	D42	D39

Disclaimer (cont.)

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.