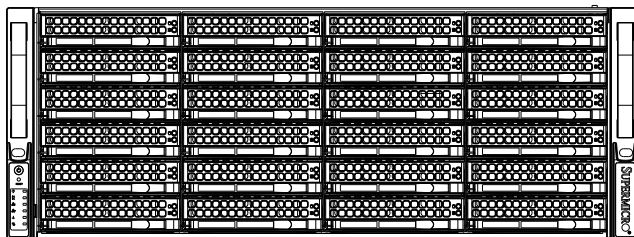


# SUPERO®

## DOUBLE-SIDED STORAGE SC847 CHASSIS SERIES



SC847A-R1400LPB	SC847A-R1400UB
SC847E1-R1400LPB	SC847E1-R1400UB
SC847E2-R1400LPB	SC847E2-R1400UB
SC847E16-R1400LPB	SC847E16-R1400UB
SC847E26-R1400LPB	SC847E26-R1400UB

## USER'S MANUAL

1.0b

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](http://www.supermicro.com).**

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**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.**

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Manual Revision 1.0b  
Release Date: April 23, 2010

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# Preface

## About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC847 chassis. Installation and maintenance should be performed by experienced technicians only.

This manual 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 SC847 chassis. This chapter also includes contact information.

### **Chapter 2: System Safety**

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

### **Chapter 3: Chassis Components**

Refer here for details on this chassis components including the fans, hard drives, air shrouds, 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 chassis control panel, as well as other LEDs located throughout the system.

### **Chapter 5: Chassis Setup and Maintenance**

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

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.

### **Appendix A: Hardware**

This section provides information on cabling, and other hardware which is compatible with your chassis. For complete information on supported cables and hardware, refer to the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com).

### **Appendix B: Power Supply Specifications**

This chapter lists the specifications of the power supply provided with your chassis. For additional information, refer to the Supermicro website at [www.supermicro.com](http://www.supermicro.com).

### **Appendix C: SAS-826A Backplane Specifications**

This section contains detailed specifications on the SC826A backplane. Additional information can be found on the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com).

### **Appendix D: SAS-846A Backplane Specifications**

This chapter contains information on the SC846A backplane. Additional information can be found on the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com).

### **Appendix E: SAS-826EL Backplane Specifications**

This section contains detailed specifications for the SC826EL backplane. Additional information can be found on the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com).

### **Appendix F: SAS-846EL Backplane Specifications**

This chapter contains specifications on the SC846EL backplane. Additional information can be found on the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com).

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***Appendix F SAS-846EL Backplane Specifications***



# Chapter 1

## Introduction

### 1-1 Overview

Optimized for enterprise-level heavy-capacity storage applications, Supermicro's SC847 chassis features 36x (24 front + 12 rear) 3.5" hot-swap HDD bays used as a server chassis. The SC847 design provides high-density storage in a 4U form factor, with high power efficiency, optimized HDD signal trace routing and improved HDD carrier design to dampen vibration and maximize performance. Equipped with a 1400W (Gold Level) high-efficiency redundant power supply and five hot-plug redundant cooling fans, the SC847 is a reliable, high-quality storage workhorse system.

### 1-2 Shipping List

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

SC847 Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC847A-R1400LPB	DP/UP	36x (Server) SAS/SATA	7x LP	1400W redundant (Gold Level)
SC847A-R1400UB	DP/UP	36x (Server) SAS/SATA	4x FF + 3 LP (UIO)	1400W redundant (Gold Level)
SC847E1-R1400LPB	DP/UP	36x (Server) SAS/SATA	7x LP	1400W redundant (Gold Level)
SC847E1-R1400UB	DP/UP	36x (Server) SAS/SATA	4x FF + 3 LP (UIO)	1400W redundant (Gold Level)
SC847E2-R1400LPB	DP/UP	36x (Server) SAS/SATA support	7x LP	1400W redundant (Gold Level)
SC847E2-R1400UB	DP/UP	36x (Server) SAS/SATA support	4x FF + 3 LP (UIO)	1400W redundant (Gold Level)
SC847E26-R1400LPB	DP/UP	36x (Server) SAS/SATA SAS2 support	7x LP	1400W redundant (Gold Level)
SC847E26-R1400UB	DP/UP	36x (Server) SAS/SATA SAS2 support	4x FF + 3 LP (UIO)	1400W redundant (Gold Level)

## **1-3 Where to get Replacement Components**

Though 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/Resellers can be found at: <http://www.supermicro.com>. Click the Where to Buy link.

## 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](mailto:marketing@supermicro.com) (General Information)  
[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)

Web Site: [www.supermicro.com](http://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](mailto:sales@supermicro.nl) (General Information)  
[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto: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](http://www.supermicro.com.tw)

Technical Support:

Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

Tel: 886-2-8226-1900

## 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.

You will also need the system placed near at least one grounded power outlet. When configured, the SC847 chassis includes one power supply. "R" models include a redundant power supply and require two grounded outlets.

### 2-3 Preparing for Setup

The SC847 chassis includes a set of rail assemblies which includes 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 SC847 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 (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.

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

## 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 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

## System Interface

### 3-1 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 SC847 models have two buttons on the chassis control panel: A reset button and a power on/off switch. This chapter explains the meanings of all LED indicators and the appropriate responses you may need to take.

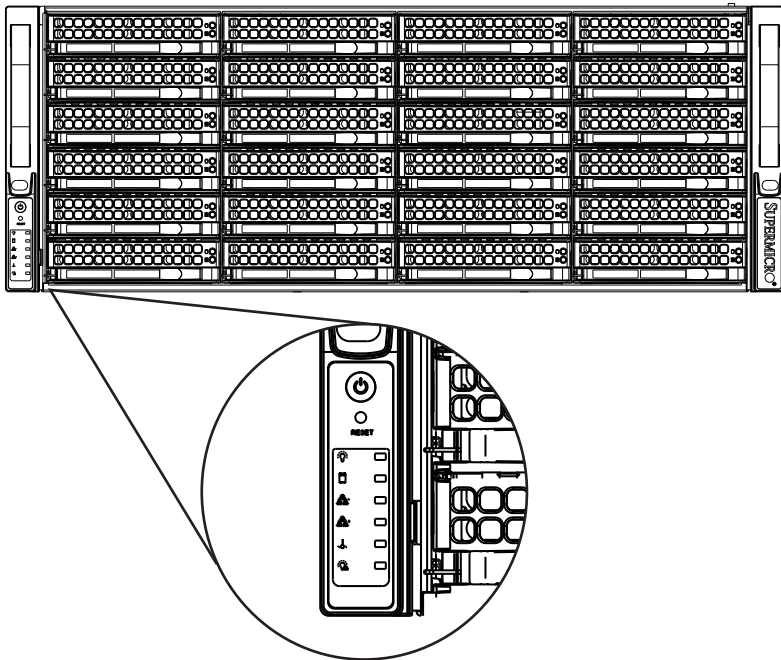


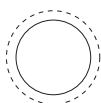
Figure 3-1: Control Panel

## 3-2 Control Panel Buttons

There are two push-buttons located on the left handle of the chassis. These are (in order from top to bottom) a power on/off button and a reset button.



**Power:** The main power button 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. Therefore, you must unplug system before servicing.



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

## 3-3 Control Panel LEDs

The control panel located on the left handle of the SC847 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.



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



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



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



**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.



**Power Failure:** When this LED flashes, it indicates a failure in the redundant power supply.

## 3-4 Drive Carrier LEDs

The SC847 chassis uses SAS or SATA drives.

### SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- **Blue:**

Solid on = Drive is present and available.

Blinking = Drive is actively being accessed.

Each Serial ATA drive carrier has a blue LED. When illuminated in a solid on state, this blue LED (on the front of the SAS/SATA drive carrier) indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:**

Solid on = Drive failure

Blinking = RAID activity

When the red LED is blinking, it indicates that the system is either building, initializing or rebuilding RAID.

### SCSI Drives

This chassis does not support SCSI drives at this time.

## 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 chapter to use as a reference while setting up your chassis.



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 warnings/precautions listed in the setup instructions.



**Safety Warning:** Before performing any chassis setup or maintenance, it is recommended that the chassis be removed from the rack and placed on a stable bench or table. For instructions on how to uninstall the chassis from the rack, refer to Chapter 5 Rack Installation in this manual.

## 4-2 Removing the Chassis Cover

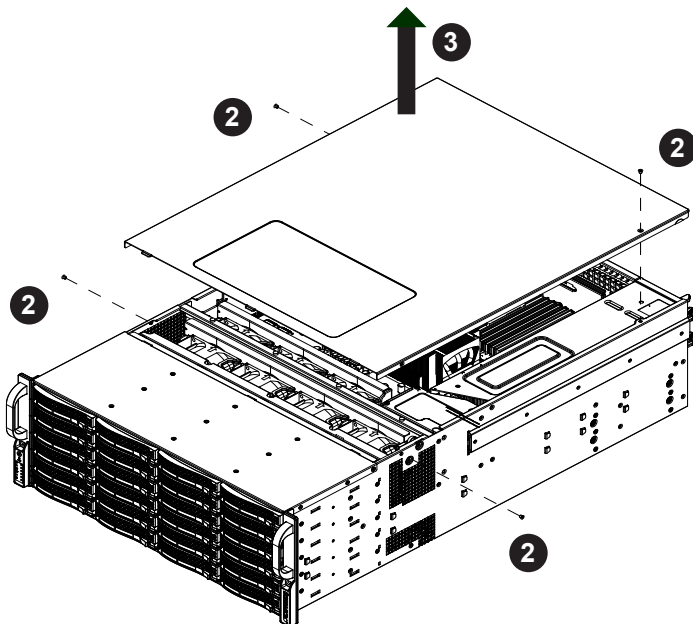


Figure 4-1: Removing the Chassis Cover

### *Removing the Chassis Cover*

1. Unplug the chassis from any power source
2. Remove the screws securing the cover to the chassis.
3. Lift the cover up and 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 Removable Hard Drives

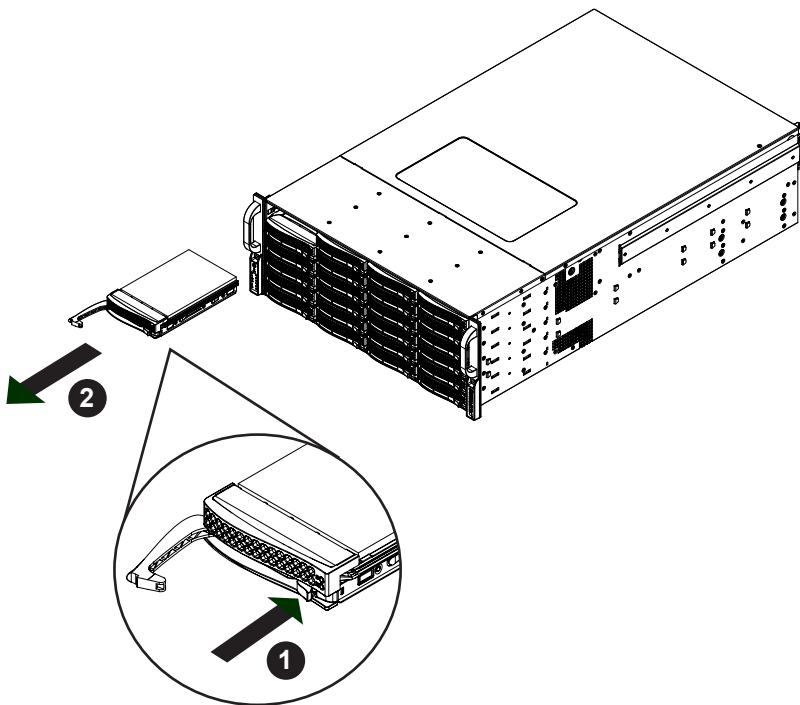
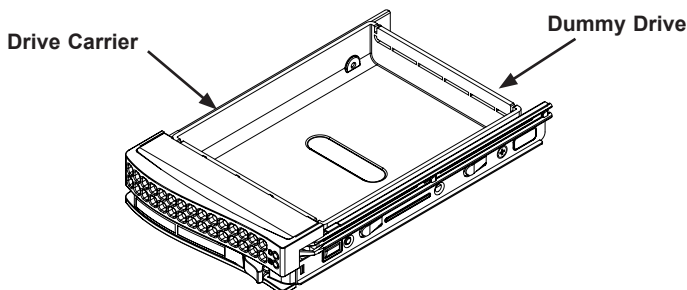


Figure 4-2: Removing Hard Drive

#### *Removing Hard Drive Carriers from the Chassis*

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

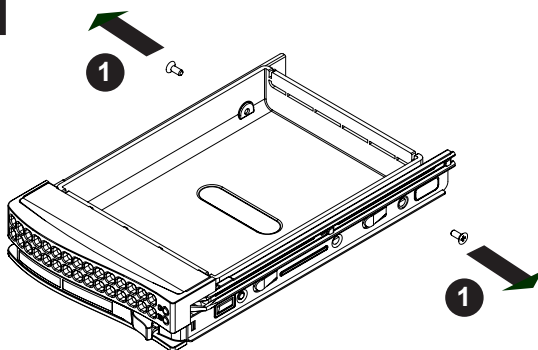


**Figure 4-3: Chassis Drive Carrier**

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



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



**Figure 4-4: Removing the Dummy Drive from the Carrier**

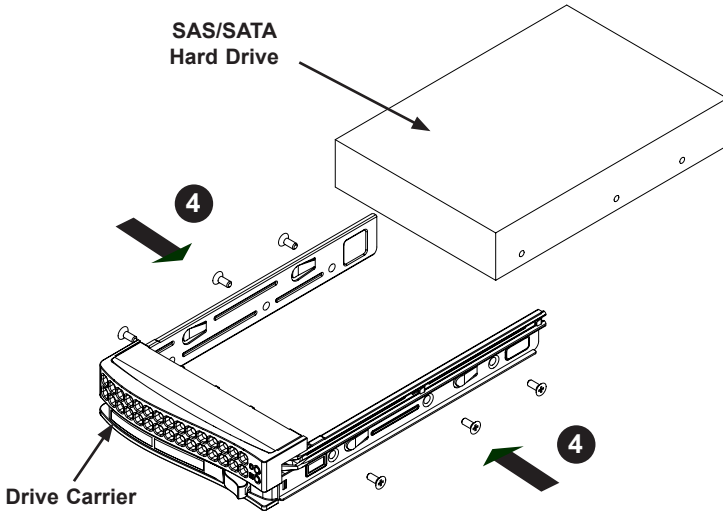


**Warning!** Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at <http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf>

#### ***Installing a Hard Drive to the Hard Drive Carrier***

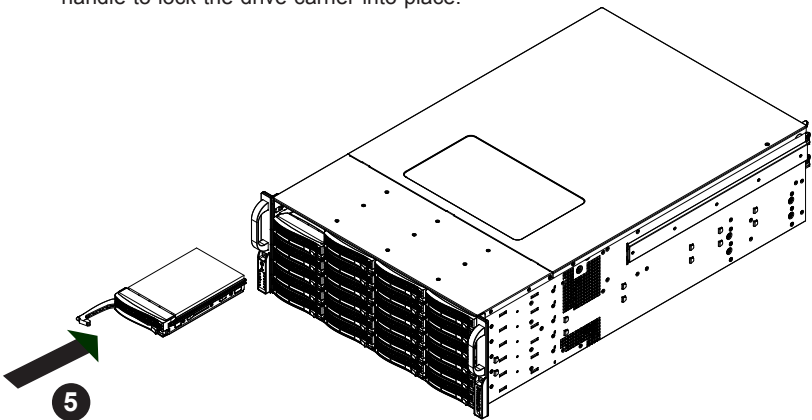
1. Remove the two screws securing the dummy drive to the drive carrier and remove the dummy drive. Place the hard drive carrier on a flat surface such as a desk, table or work bench.





**Figure 4-5: Installing the Hard Drive into the Carrier**

2. Slide the hard drive into the carrier with the printed circuit board side facing down.
3. Carefully align the mounting holes in both the drive carrier and the hard drive.
4. Secure the hard drive to the carrier using six screws.
5. Replace the drive tray into the chassis. Make sure to close the drive carrier handle to lock the drive carrier into place.



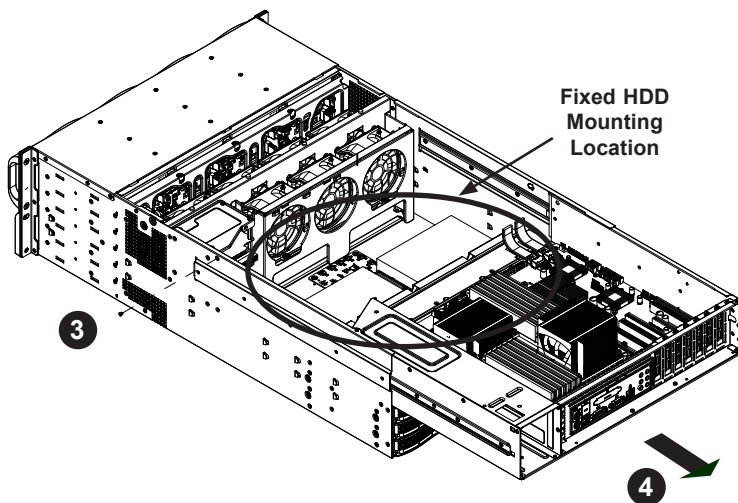
**Figure 4-6: Installing the Hard Drive**

## 4-4 Installing Optional Fixed Hard Drives

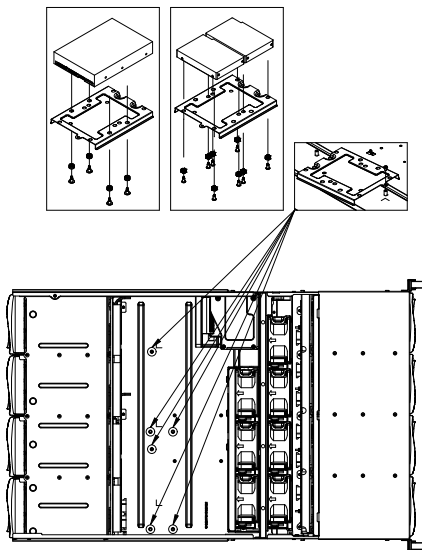
The SC847 chassis includes brackets for installing either one 3.5" fixed hard drive, or two 2.5" fixed hard drives within the chassis. Each chassis can accommodate up to two internal drive trays supporting up to two 3.5" hard drives or up to four 2.5" hard drives. The tray part number is MCP-220-84701-0N.

### *Installing Fixed HDDs into the SC847 Chassis*

1. Disconnect the chassis from any power source.
2. Remove the chassis cover as described in Section 4-2.
3. Remove the screw securing the motherboard node tray to the chassis.
4. Slide back the motherboard node tray to reveal the HDD mounting location on the floor of the chassis.



**Figure 4-7: Sliding Back the Motherboard Node Tray**



**Figure 4-8: Installing Single and Dual Hard Drives and the Bracket**

#### ***Installing a 3.5" Single Hard Drive into the Bracket***

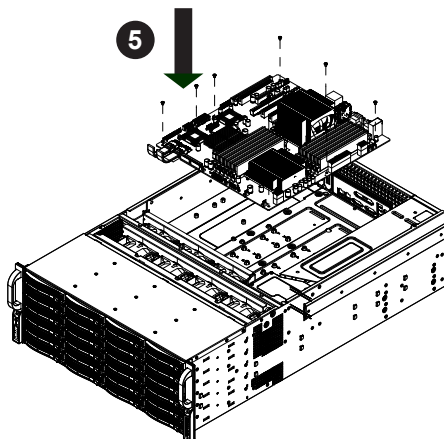
1. Align the four round washers and four screws with the holes in the hard drive and the holes in the bracket.
2. Secure the hard drive to the bracket using the screws and washers provided.
3. See the instructions below for installing the bracket onto the chassis.

#### ***Installing Dual 2.5" Hard Drives into the Bracket***

1. Align the eight external tooth washers and eight screws with the holes in the hard drive and the holes in the bracket.
2. Secure the hard drive to the bracket using the screws and washers provided.
3. See the instructions below for installing the bracket onto the chassis.

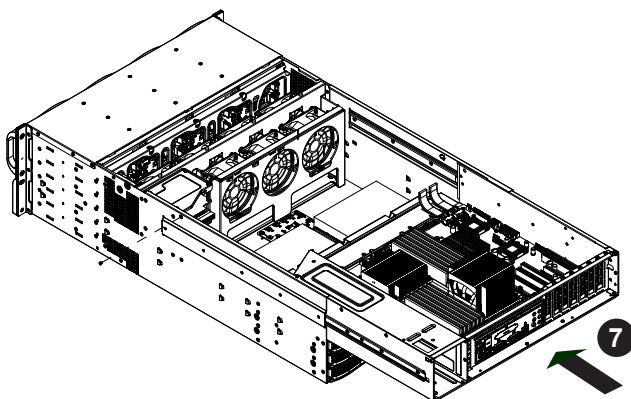
#### ***Installing the Bracket onto the Chassis***

1. Align the holes in the bracket with the chassis standoffs.
2. Secure the bracket using the screw provided as shown in Figure 4-10.



**Figure 4-9: Motherboard Installation**

4. Lay the motherboard on the chassis aligning the permanent and optional standoffs
5. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque per square inch when tightening down the motherboard.
6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.
7. Slide back the motherboard tray and connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed. The fans may be temporarily removed to allow access to the backplane ports.



**Figure 4-10: Slide Back the Motherboard Tray**

## 4-5 Installing the Motherboard

### Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC847 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC847 accessories packaging.

Some motherboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included to these motherboards. To use an optional standoff, you must place the hexagonal screw through the bottom the chassis and secure the screw with the hexagon nut (rounded side up).



M/B standoff  
6-32 to 6-32

**Figure 4-11: Chassis Standoffs**

#### *Installing the Motherboard*

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections.
2. Open the chassis cover and remove the chassis from any power source.
3. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff. 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).

## Add-on Card/Expansion Slot Setup

**SC847:** The chassis includes I/O slots for expansion cards. The number of cards used depends on your chassis model.

**SC847 LP Models:** Provides seven low-profile expansion card slots.

**SC847 UIO Models:** Provides three full-height/full-length slots, three low-profile slots and includes a universal expansion card.

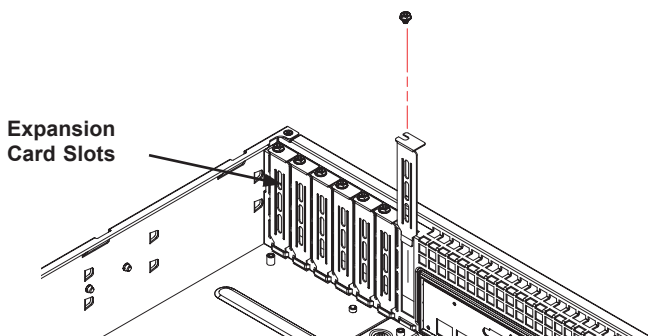


Figure 4-12: SC825 LP model

## Expansion Slot Setup in LP (Low Profile) Chassis

SC847 chassis include slots for expansion cards. The number of cards you can use depends on your chassis model and motherboard model.

### *Installing Expansion cards in SC847 LP (Low Profile) Chassis*

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 low profile expansion card slot you want to use. Keep this screw for later use.
3. Connect the expansion cards to the motherboard.
4. Secure each card to the chassis using the card's L-bracket and the screw previously removed.

## Expansion Slot Setup in U (Universal Output) Chassis

SC847 U model chassis accepts a slightly smaller "L" shaped motherboard to allow for a universal expansion card. This universal output card allows the systems to accept SAS, SCSI, IB, Ethernet, and other types of connections.

SC847 U chassis accepts three full-length, full-height add-on cards and the fourth slot is used for the UI/O card. It includes a bracket that extends from the fan row to the back of the chassis. This bracket provides support for the riser card.

### *Installing a Universal Input/Output Card in the SC847 U Model Chassis*

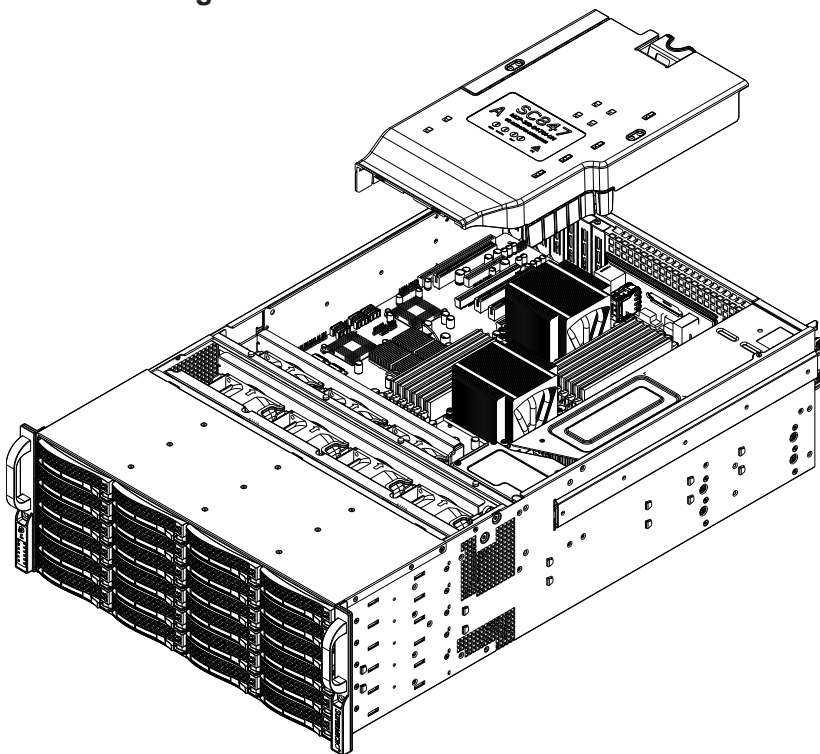
1. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. Connect the universal input/output to the motherboard using the slots provided on the motherboard and the back panel.
3. Secure the card to the chassis using the four screws provided in the chassis packaging.

The SC847 U model chassis includes three full-height/full-length slots and three low-profile slots.

### *Installing Expansion Cards in the SC847 U Chassis*

1. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. If you are using a universal input/output card, make sure it is installed before continuing.
3. If you installing low profile add-on cards, remove the chassis air shroud.
4. Secure the card to the chassis using the four screws provided with the chassis packaging.

## 4-6 Installing the Air Shroud



**Figure 4-13: Air Shroud for SC847LP Chassis**

Air shrouds concentrate airflow to maximize fan efficiency. The SC847 chassis air shroud does not require screws for its installation. The SC847 air shroud is designed with removeable break-away tabs that allow the air shroud to be adjusted to fit a variety of motherboards.

### ***Installing the Air Shroud***

1. Disconnect the chassis from any power source and remove the chassis cover.
2. Place the air shroud in the chassis. The air shroud fits behind the fans and beside to the power supply.
3. After checking the fit of the air shroud, remove any break-away tabs necessary to ensure a proper fit with the motherboard.



## 4-7 Checking the Server's Air Flow

### *Checking the Air Flow*

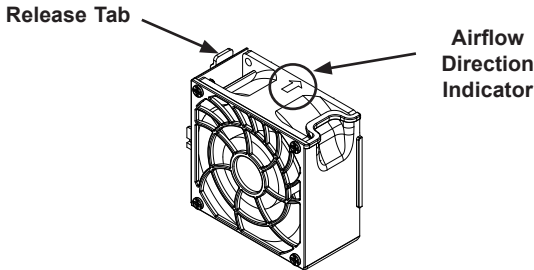
1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.
2. Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.
3. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

The control panel LEDs inform you of system status. See “Chapter 3: System Interface” for details on the LEDs and the control panel buttons.

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

## 4-8 System Fans

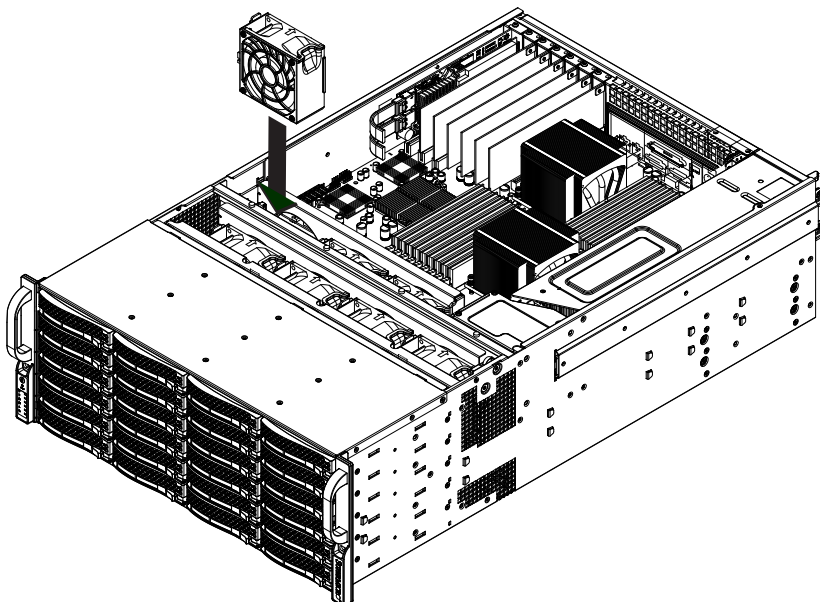
Seven hot-swappable, heavy-duty fans provide cooling for the chassis. These fans circulate air through the chassis thereby lowering the chassis internal temperature.



**Figure 4-14: System Fan**

### ***Replacing a System Fan***

1. Open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis cover open.)
2. Remove the failed fan's power cord from the serverboard.
3. Press the fan release tab to lift the failed fan from the chassis and pull it completely out of the chassis.
4. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating airflow direction) point in the same direction as the arrows on the other fans.
5. Check that the fan is working properly before replacing the chassis cover.

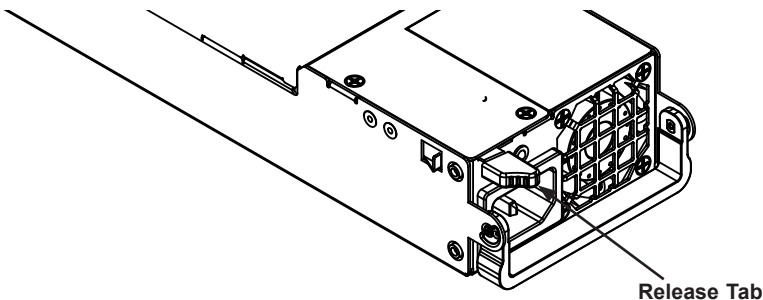


**Figure 4-15: Placing the System Fan**

## 4-9 Power Supply

The SC847 chassis has a 1400 Watt high-efficiency 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.

Redundant power supplies are hot-swappable, and can be changed without powering down the system. New units can be ordered directly from Supermicro (see contact information in the Preface).



**Figure 4-16: Power Supply Release Tab**

### ***Changing the Power Supply:***

1. 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. If your server has only one power supply, you must power down the server and unplug the power cord.
2. Push the release tab (on the back of the power supply) as illustrated.
3. Pull the power supply out using the handle provided.
4. Replace 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.

## Chapter 5

### Cascading Configurations

#### 5-1 Cascading Configuration Overview

The SC847 chassis backplanes can be configured in a variety of combinations for different applications. The following sections will provide connectivity configuration options specific to your system.

#### 5-2 Parallel Connectivity for Performance

The following configuration increases the SC847's performance capabilities by utilizing parallel connectivity with SAS or SATA hard drives and a single expander backplane.

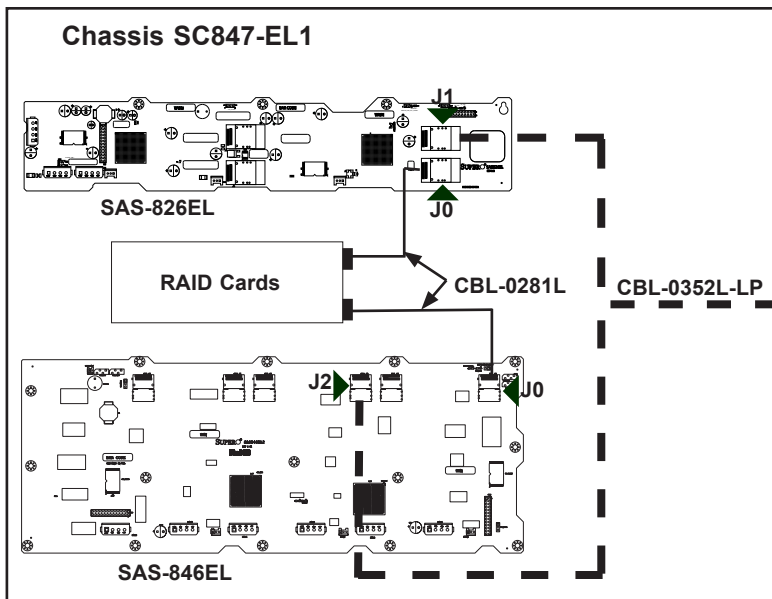


Figure 5-1: Parallel Connectivity for Increased Performance

### 5-3 Parallel Connectivity for Performance with Multiple PCI Buses

The following configuration increases the SC847's performance capabilities using multiple PCI buses. This configuration utilizes parallel connectivity with SAS or SATA hard drives and a single expander backplane.

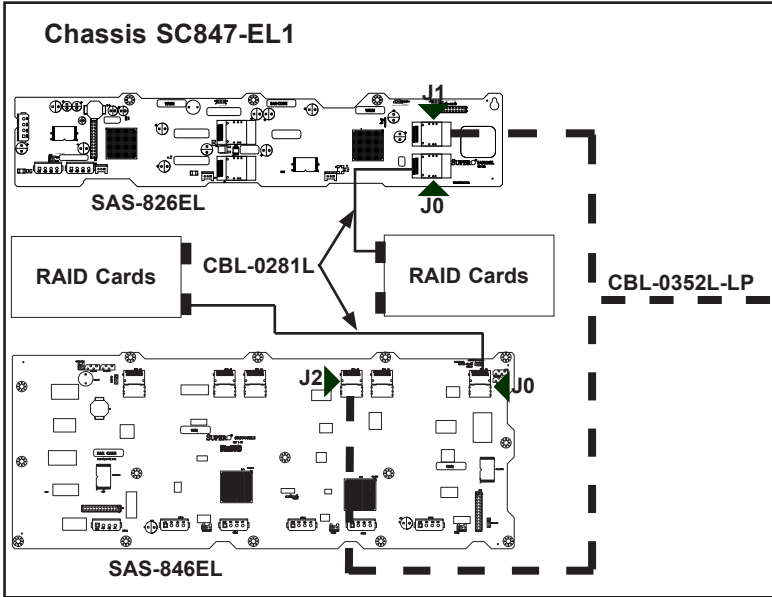


Figure 5-2: Parallel Connectivity Using Multiple PCI Buses

## 5-4 Serial Connectivity for Increased Capacity

The following configuration increases the SC847's capacity. This configuration utilizes SAS or SATA hard drives and a single expander backplane.

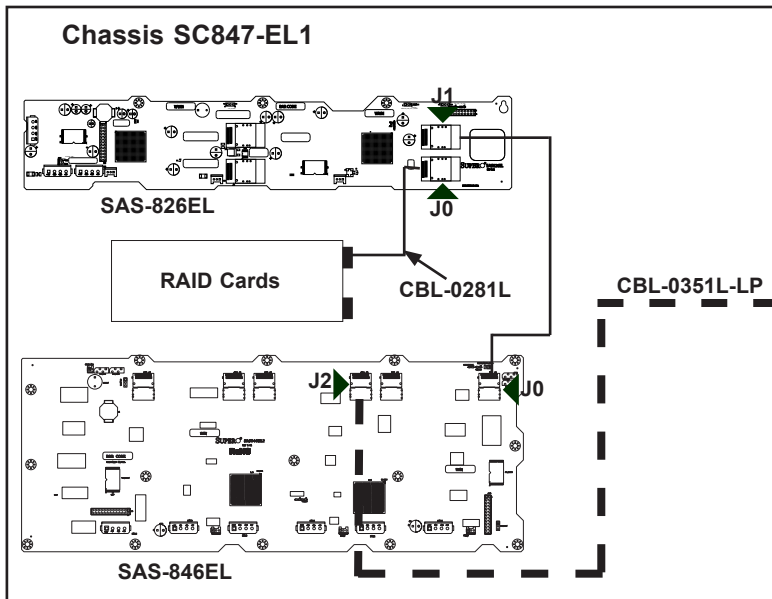


Figure 5-3: Serial Connectivity for Increased Capacity

## 5-5 Serial Connectivity for Increased Capacity

The following configuration increases the SC847's capacity. This configuration utilizes SAS or SATA hard drives and a single expander backplane.

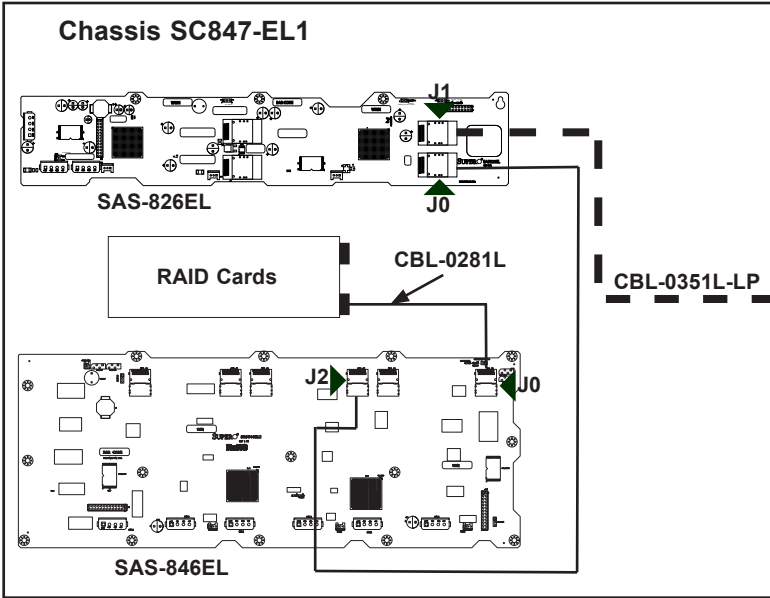


Figure 5-4: Serial Connectivity for Increased Capacity



## 5-6 Serial Connectivity for Redundancy

The following configuration provides redundancy for the SC847 system. This configuration utilizes SAS hard drives only, and a dual expander backplane.

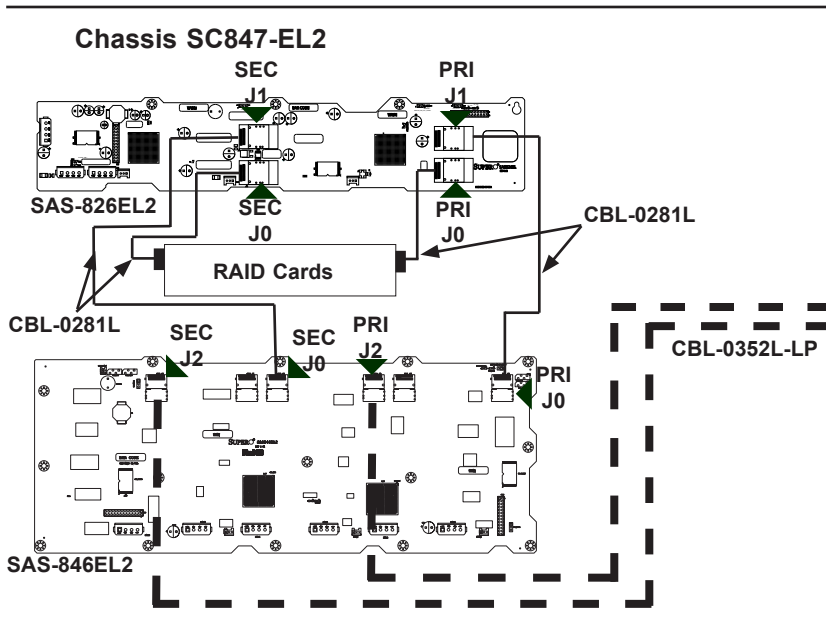


Figure 5-5: Serial Connectivity for Redundancy

## 5-6 Serial Connectivity for Redundancy and Performance with Multiple PCI Buses

The following configuration provides both redundancy and improved performance for the SC847 system. This configuration utilizes SAS hard drives only, and a dual expander backplane.

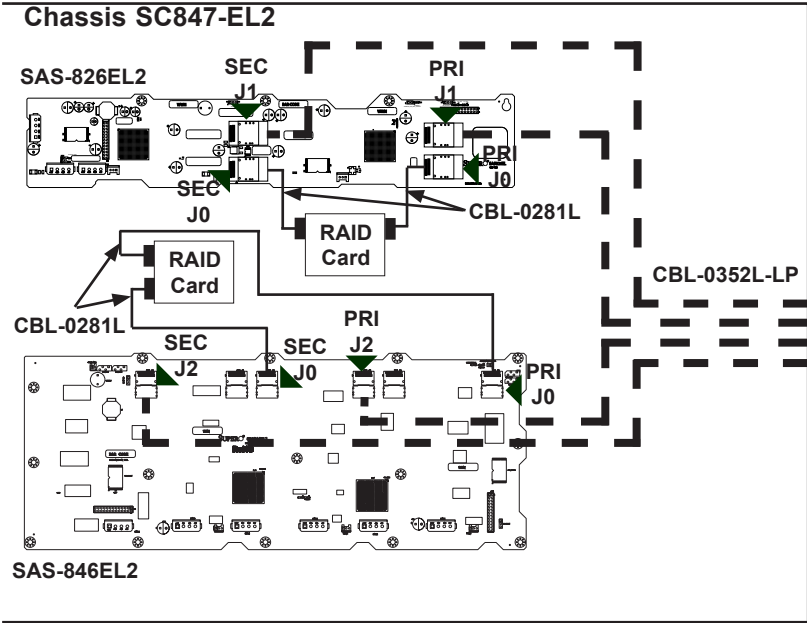


Figure 5-6: Serial Connectivity for Redundancy/Performance w/Multi-PCI Buses

## 5-6 Supported Cascading Configuration Cabling

Refer to the chart below for information on the cables utilized in the preceding cascading configurations.

<b>Backplane Connectivity Cables</b>		
<b>Part Number</b>	<b>Length</b>	<b>Description</b>
CBL-0281L	75cm	SFF 8087 to SFF 8087 internal backplane cable.
CBL-0351L-LP	85cm	SAS 826EL1 BP 1-Port Internal Cascading Cable
CBL-0352L-LP	85cm	SAS 826EL2 BP 2-Port Internal Cascading Cable

## 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 minimal amount of time.

### 6-2 Unpacking the System

You should inspect the box which 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. The system needs to be 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 and the mounting screws needed for installing the system into the rack. Also included is an optional square hole to round hole converter bracket, for use in racks with round mounting holes. *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).



**Warning!**



## 6-4 Warnings and Precautions

### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installations, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure that the rack is stable before extending a component from the rack.
- 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 upwards.
- 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.

## 6-5 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**

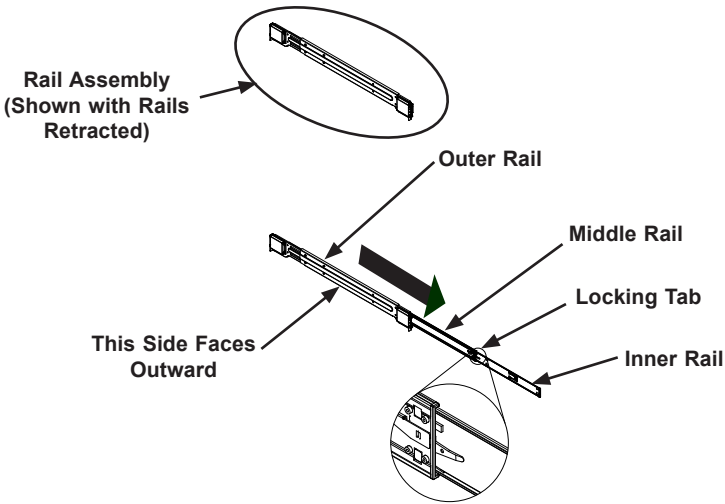
A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

## 6-6 Rack Mounting Instructions

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **NOTE:** This rail will fit a rack between 26.5" and 36.4" deep.

### Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of three sections: An inner chassis rail which secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.



**Figure 6-1: Identifying the Outer Rail, Middle Rail and Inner Rails (Left Rail Assembly Shown)**



## Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when the chassis is pulled out for servicing.

## Releasing the Inner Rail

### *Releasing Inner Rail from the Outer Rails*

1. Identify the left and right outer rail assemblies as described on page 5-4.
2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
3. Press the locking tab down to release the inner rail.
4. Pull the inner rail all the way out.
5. Repeat steps 1-3 for the second outer rail.

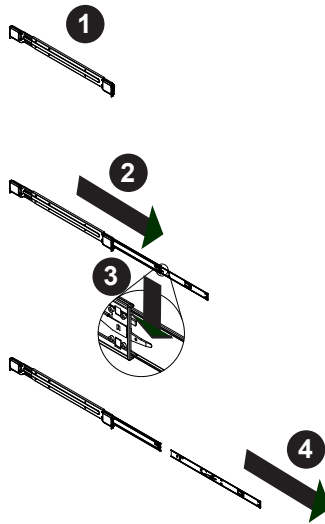


Figure 6-2: Extending and Releasing the Inner Rail

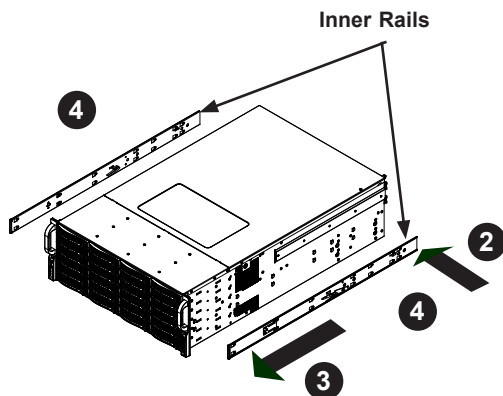


Figure 5-3: Installing the Inner Rails

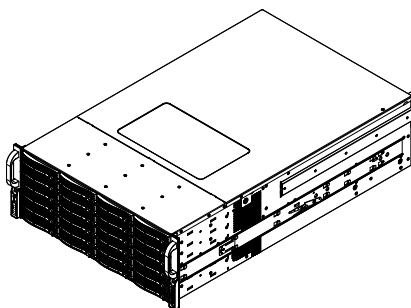
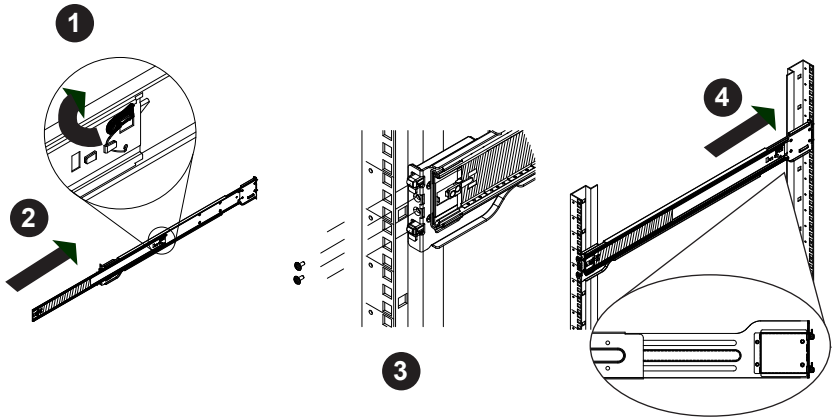


Figure 6-4: Inner Rails Installed on the Chassis

## Installing The Inner Rails on the Chassis

### *Installing the Inner Rails*

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.
4. Secure the inner rail to the chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.

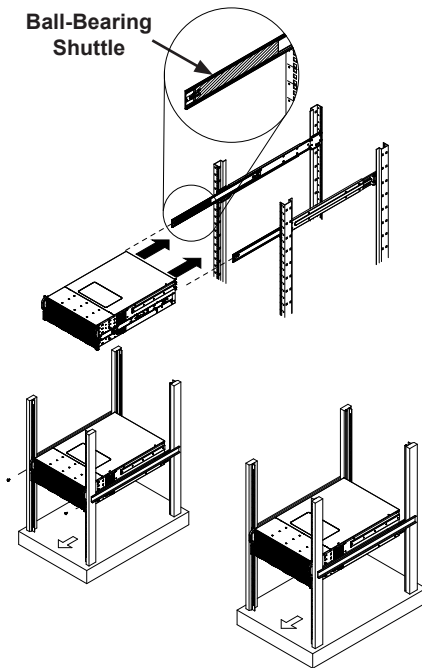


**Figure 6-5: Extending and Releasing the Outer Rails**

## Installing the Outer Rails on the Rack

### *Installing the Outer Rails*

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.



**Figure 6-6: Installing into a Rack**  
**Standard Chassis Installation**

***Installing the Chassis into a Rack***

1. Confirm that the inner rails are properly installed on the chassis.
2. Confirm that the outer rails are correctly installed on the rack.
3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
4. Align the chassis inner rails with the front of the middle rails.
5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

## **Optional Quick Installation Method**

The following quick installation method may be used to install the chassis onto a rack.

### ***Installing the Chassis into a Rack***

1. Install the whole rail assembly onto the rack as described on page 5-7.
2. Release the inner rail without retracting the middle rail.
3. Install the inner rails on the chassis as previously described on page 5-6.
4. Install the chassis onto the middle rail as described in the previous section.

## **Adapters for Round and Threaded Hole Racks**

The SC847 chassis includes adapter brackets for those customers using round hole racks or racks with threaded holes size M5 or larger.

### ***Installing the Adapter Bracket***

1. Place the hooks of the front of the outer rail into the square holes of one of the adapter brackets.
2. Place the hooks of the rear of the outer rail into the square holes of a second adapter bracket.
3. Adjust the length of the outer rail to fit within the rack uprights.
4. Secure the front adapter bracket to the front of the rack using the screws recommended by the rack manufacturer.
5. Secure the rear adapter bracket to the rear of the rack in the same manner.

## Appendix A

### SC847 Cables and Hardware

#### 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](http://www.supermicro.com).

#### A-2 Cables Included with SC847 Chassis (SAS/SATA)

SC847			
Part #	Type	Length	Description
CBL-0088L	Cable	9"	Seven each, 10.5", 4-pin middle fan power extension (PWM)
CBL-0087	Ribbon, Round	20"	16-pin to 16-pin ribbon cable for control panel
CBL-0160L-	Cable	6'	Two each, regional power cords
CBL-0217L	Cable	22cm	16-pin control panel converter cable

## A-3 Compatible Cables

These cables are compatible with the SC847 Chassis.

### Alternate SAS/SATA Cables

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 (7 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 one 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 motherboards. To do this, use the following chart as a guide.

<b>Power Cable Extenders</b>		
<b>Number of Pins</b>	<b>Cable Part #</b>	<b>Length</b>
24-pin	CBL-0042	7.9" (20cm)
20-pin	CBL-0059	7.9" (20cm)
8-pin	CBL-0062	7.9" (20cm)
4-pin	CBL-0060	7.9" (20cm)

## Front Panel to the Motherboard

The SC847 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.

<b>Front Panel to Motherboard Cable (Ribbon Cable)</b>		
<b>Number of Pins (Front Panel)</b>	<b>Number of Pins (Motherboard)</b>	<b>Cable Part #</b>
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-4 Chassis Screws

The accessory box includes all the screws needed to set up 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

### SC847 Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

<b>SC847</b>	
	<b>1400W</b>
<b>MFR Part #</b>	PWS-1K41P-1R
<b>AC Input</b>	1100W: 100 - 140V, 50 - 60Hz, 9.5 - 13.5A 1400W: 180 - 240V, 50 - 60Hz, 7.0 - 9.5A
<b>DC Output +5V Standby</b>	4A
<b>DC Output +12V</b>	92A @ 100-140V 116Ap @ 180-240V
<b>With Distributor:</b>	
<b>+5V</b>	30A
<b>+3.3V</b>	24A
<b>-12V</b>	0.6Ap

## Notes

## Appendix C

### SAS-826A 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 SAS-826A backplane.
- Disconnect the power cable before installing or removing any cables from the SAS-826A backplane.
- Make sure that the SAS-826A 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-826A Backplane**

The SAS-826A 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-826A Revision 1.00, the most current release available at the time of publication. Always refer to the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com) for the latest updates, compatible parts and supported configurations.

## C-5 Front Connectors and Jumpers

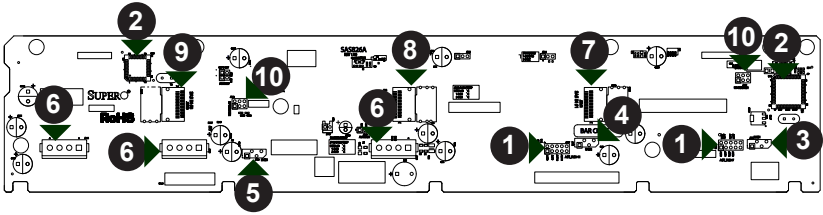


Figure C-1: Front Connectors

### Front Connectors

- |                                       |   |
|---------------------------------------|---|
| 1. ACT_IN: JP26 and JP47              | 6. Power Connectors (4-pin): JP10, JP13, and JP46 |
| 2. Chips: MG9071 and MG9072           | 7. iPass #1 JSM1                                  |
| 3. I <sup>2</sup> C Connector #1 JP37 | 8. iPass #2 JSM2                                  |
| 4. I <sup>2</sup> C Connector #2 JP95 | 9. iPass #3 JSM3                                  |
| 5. I <sup>2</sup> C Connector #3 JP52 | 10. Upgrade Connectors, JP69 and JP78             |

## C-6 Front Connector and Pin Definitions

### #1. Activity LED Headers

The activity LED headers, designated JP26 and JP47, are used to indicate the activity status of each SAS drive. The activity LED headers are located on the front panel. For the activity lead headers to work properly, connect to them using a 10-pin LED cable. This is only used when the activity LED is not supported by the hard drive.

SAS Activity LED Header Pin Definitions			
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

SAS Activity LED Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	ACT IN #8	6	ACT IN #12
2	ACT IN #9	7	ACT IN #13
3	ACT IN #10	8	ACT IN #14
4	ACT IN #11	9	ACT IN #15
5	Ground	10	Empty

### #2. MG9071 and MG9072 Chips

The MG9071 and MG9072 are enclosure management chips that support the SES-2 controller and SES-2 protocols.

### #3., #4., #5. I<sup>2</sup>C Connectors

The I<sup>2</sup>C connectors, designated JP37, JP52, and JP95, are used to communicate to HDD to support SES-2 protocol. See the table on the right for pin definitions.

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



**#6. Backplane Main Power Connectors**

The 4-pin connectors, designated JP10, JP13, and JP46 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

**#7., #8., #9. SAS Ports**

The SAS ports are used to connect the SAS drive cables. The 12 ports are designated #0 - #11. Each port is also compatible with SATA drives.

**10. Upgrade Connectors**

The upgrade connectors, designated JP69 and JP78, are used for manufacturer's diagnostic purposes only.

## C-7 Front Jumper Locations and Pin Definitions

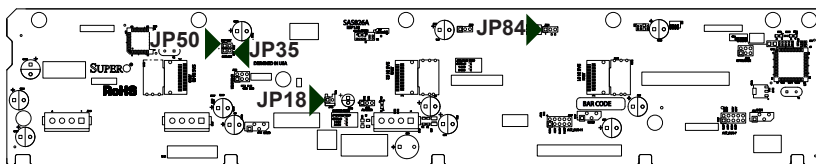
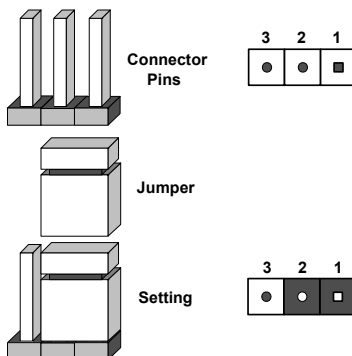


Figure C-2: Front Jumpers

### 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.



Jumper Settings		
Jumper	Jumper Settings	Note
JP35	Open: Default Closed: Reset	MG9072 Chip Reset #1
JP50	Open: Default Closed: Reset	MG9071 Chip Reset #2

## I<sup>2</sup>C and SGPIO Modes and Jumper Settings

This backplane can utilize I<sup>2</sup>C or SGPIO. SGPIO is the default mode and can be used without making changes to your jumpers. The following information details which jumper must be configured to use SGPIO mode or restore your backplane to I<sup>2</sup>C mode.

<b>Jumper Settings: SGPIO (Default) and I<sup>2</sup>C</b>		
<b>Jumper</b>	<b>SGPIO (Default) Setting</b>	<b>I<sup>2</sup>C Setting</b>
JP84	1-2: SGPIO mode enable	C-3: I <sup>2</sup> C mode enable

## Front LED Indicators

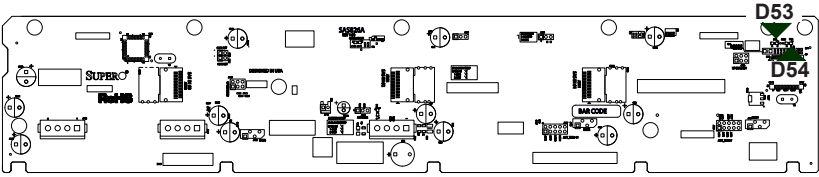


Figure C-3: Front LEDs

Front Panel LEDs		
LED	State	Specification
D53	On	Indicates +5V power. Light is on during normal operation.
D54	On	Indicates +12V power. Light is on during normal operation.

## C-8 Rear Connectors and LED Indicators

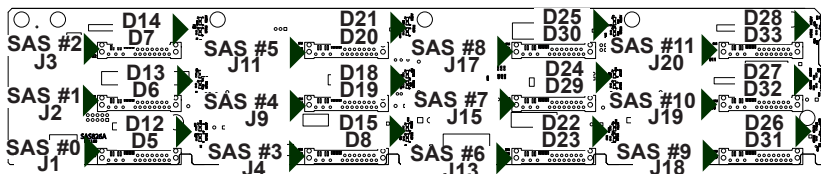


Figure C-4: Rear Connectors and LEDs

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

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	D24	D29
SAS #8	D25	D30
SAS #9	D26	D31
SAS #10	D27	D32
SAS #11	D28	D33

# Notes

## Appendix D

### SAS-846A 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 backplane 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 A 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.

## **D-4 Introduction to the SAS-846A Backplane**

The SAS-846A 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-846A Revision 1.00, the most current release available at the time of publication. Always refer to the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com) for the latest updates, compatible parts and supported configurations.



## D-5 Front Connectors and Components

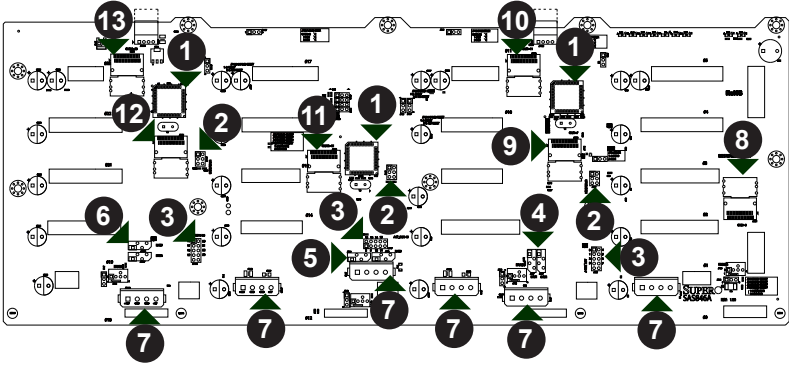


Figure D-1: Front Components

### Front Connectors and Components

1. Chip: MG9072
2. Upgrade Connectors: JP69, JP78 and JP115
3. ACT\_IN: JP26, JP47, and JP108
4. I<sup>2</sup>C Connector #1 (JP37) and #2 (JP95)
5. I<sup>2</sup>C Connector #3 (JP52) and #4 (JP96)
6. I<sup>2</sup>C Connector #5 (JP116) and #6 (JP117)
7. Power Connectors (4-pin): JP10, JP13, JP46, JP48, JP109, and JP110
8. iPass Connector CH# 0-3, JSM1
9. iPass Connector CH# 4-7, JSM2
10. iPass Connector CH# 8-11, JSM3
11. iPass Connector CH# 12-15, JSM4
12. iPass Connector CH# 16-19, JSM5
13. iPass Connector CH# 20-23, JSM6

## D-6 Front Connector and Pin Definitions

### 1. MG9072 Chip

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

### 2. Upgrade Connectors

The upgrade connectors are designated JP69, JP78, and JP115 and are used for manufacturer's diagnostic purposes only.

### 3. Activity LED Header

The activity LED header, designated JP26, JP47 and JP108, 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.

### 4., 5., 6. I<sup>2</sup>C Connectors

The I<sup>2</sup>C Connectors, designated JP37, JP95, JP52, JP96, JP116, and JP117, are used to communicate to HDD to support SES-2 protocol. See the table on the right for pin definitions.

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

### 7. Backplane Main Power Connectors

The 4-pin connectors, designated JP10, JP13, JP46, JP48, JP109, and JP110, 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

## D-7 Front Jumper Locations and Pin Definitions

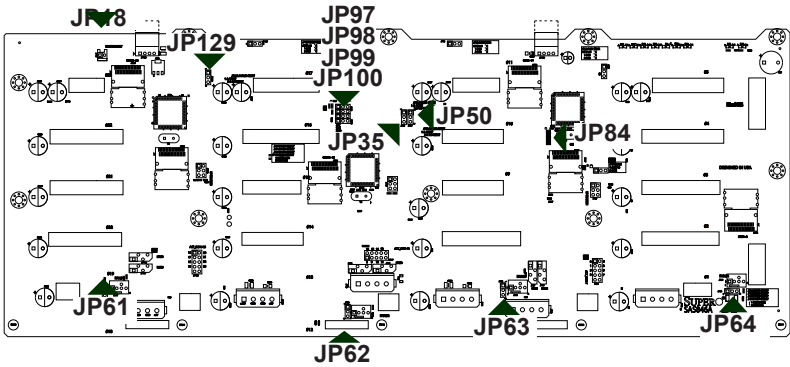
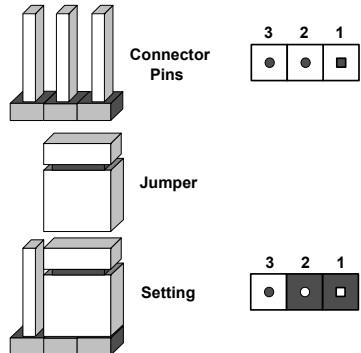


Figure D-2: Front Jumpers

### 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.



Jumper Settings		
Jumper	Jumper Setting	Notes
JP35	1-2: Reset 2-3: Normal (Default)	MG9072 Chip Reset #1
JP50	1-2: Reset 2-3: Normal (Default)	MG9072 Chip Reset #2
JP129	1-2: Reset 2-3: Normal (Default)	MG9072 Chip Reset #3

## Fan Jumper Settings

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

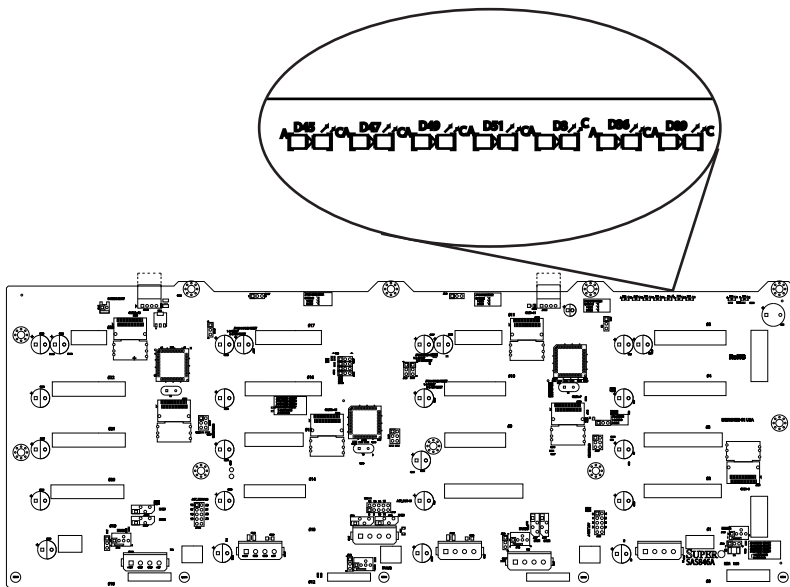
Fan Jumper Settings		
Jumper	Jumper Settings	Note
JP61	1-2: With Fan (Default) 2-3: No Fan	FAN#1
JP97	1-2: With Fan (Default) 2-3: No Fan	FAN#1
JP62	1-2: With Fan (Default) 2-3: No Fan	FAN#2
JP98	1-2: With Fan (Default) 2-3: No Fan	FAN#2
JP63	1-2: With Fan (Default) 2-3: No Fan	FAN#3
JP99	1-2: With Fan (Default) 2-3: No Fan	FAN#3
JP64	1-2: With Fan (Default) 2-3: No Fan	FAN#4
JP100	1-2: With Fan (Default) 2-3: No Fan	FAN#4

## I<sup>2</sup>C and SGPIO Modes and Jumper Settings

This backplane can utilize I<sup>2</sup>C or SGPIO. SGPIO is the default mode and can be used without making changes to your jumper. The following information details which jumper must be configured to use SGPIO mode or restore your backplane to I<sup>2</sup>C mode.

SGPIO Setting (Default)		
Jumper	SGPIO Jumper Setting (Default)	I <sup>2</sup> C Jumper Setting
JP84	1-2	2-3

## Front LED Indicators



**Figure D-3: Front LEDs**

Front Panel LEDs		
LED	State	Specification
D45	On	Failure in Fan #1
D47	On	Failure in Fan #2
D49	On	Failure in Fan #3
D51	On	Failure in Fan #4
D3	On	Alarm #1: Overheat/drive failure in Channel 1
D36	On	Alarm #2: Overheat/drive failure in Channel 2
D89	On	Alarm #3: Overheat/ in Channel 3
D53	Off	+5V : Backplane power failure. Light is on during normal operation.
D54	Off	+12V : Backplane power failure. Light is on during normal operation.

## D-8 Rear Connectors and LED Indicators

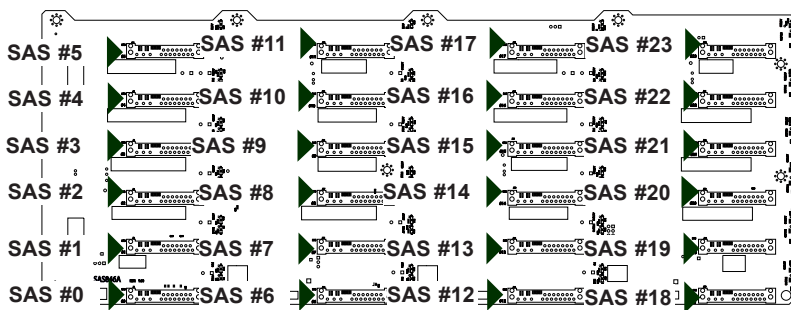
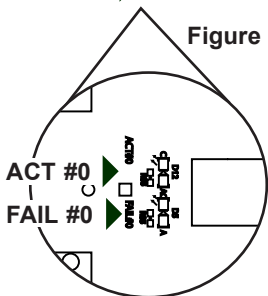


Figure D-4: Rear Connectors and LEDs



Rear SAS/SATA Connectors			
Rear Connector	SAS Drive Number	Rear Connector	SAS Drive Number
SAS #0	SAS/SATA HDD #1	SAS #12	SAS/SATA HDD #13
SAS #1	SAS/SATA HDD #2	SAS #13	SAS/SATA HDD #14
SAS #2	SAS/SATA HDD #3	SAS #14	SAS/SATA HDD #15
SAS #3	SAS/SATA HDD #4	SAS #15	SAS/SATA HDD #16
SAS #4	SAS/SATA HDD #5	SAS #16	SAS/SATA HDD #17
SAS #5	SAS/SATA HDD #6	SAS #17	SAS/SATA HDD #18
SAS #6	SAS/SATA HDD #7	SAS #18	SAS/SATA HDD #19
SAS #7	SAS/SATA HDD #8	SAS #19	SAS/SATA HDD #20
SAS #8	SAS/SATA HDD #9	SAS #20	SAS/SATA HDD #21
SAS #9	SAS/SATA HDD #10	SAS #21	SAS/SATA HDD #22
SAS #10	SAS/SATA HDD #11	SAS #22	SAS/SATA HDD #23
SAS #11	SAS/SATA HDD #12	SAS #23	SAS/SATA HDD #24

<b>Rear LED Indicators</b>		
<b>Rear LED</b>	<b>Hard Drive Activity</b>	<b>Failure LED</b>
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	D24	D29
SAS #8	D25	D30
SAS #9	D26	D31
SAS #10	D27	D32
SAS #11	D28	D33
SAS #12	D40	D37
SAS #13	D41	D38
SAS #14	D42	D39
SAS #15	D87	D88
SAS #16	D100	D103
SAS #17	D101	D105
SAS #18	D102	D107
SAS #19	D104	D108
SAS #20	D106	D109
SAS #21	D111	D110
SAS #22	D118	D119
SAS #23	D120	D121

## Notes



## Appendix E

### SAS-826EL 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.

#### E-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 backplane and peripherals back into their antistatic bags when not in use.

#### E-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the SAS-826EL series backplane.
- Make sure that the backplane is properly and securely on the motherboard to prevent damage to the system due to power outages.

## **E-3 An Important Note to Users**

All images and layouts shown in this user's guide are based upon the latest backplane 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.

## **E-4 Introduction to the SAS-826EL Backplane**

The SAS-826EL 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-826EL Revision 1.02, the most current release available at the time of publication. Always refer to the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com) for the latest updates, compatible parts and supported configurations.

## E-5 Front Connectors and Jumpers

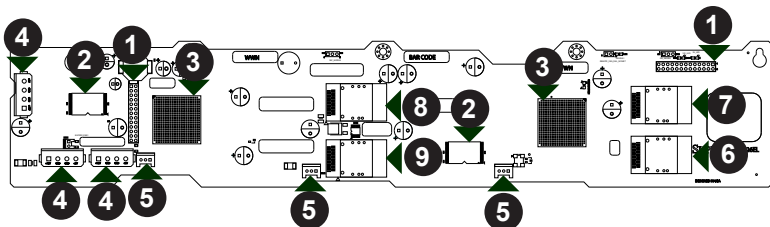


Figure E-1: SAS-826EL2 Connectors and Components

### Front Connectors

- |   |  |
|---|--|
| 1. EPP connectors: J16 and J17            | 6. Primary SAS connectors: PRI_J0  |
| 2. Primary and secondary flash chips      | 7. Primary SAS connectors: PRI_J1  |
| 3. Primary and secondary expander chips   | 8. Secondary SAS connectors: SEC_J0 (not available in EL1 single port backplane) |
| 4. Power connectors: PWR0, PWR1, and PWR3 | 9. Secondary SAS connectors: SEC_J1 (not available in EL1 single port backplane) |
| 5. Fan connectors: Fan1, Fan2, and Fan3   |  |

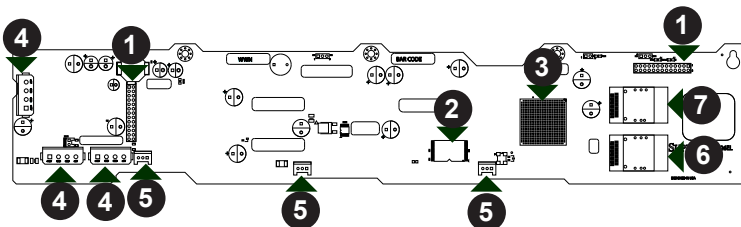


Figure E-2: SAS-826EL1 Connectors and Components

## E-6 Front Connector and Pin Definitions

### 1. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

### 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 port, cascading, and failover configurations.

### 4. Backplane Main Power Connectors

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

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

### 5. Fan Connectors

The 3-pin connectors, designated Fan1, Fan2, and Fan3, provide power to the fans.

See the table on the right for pin definitions.

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

### 6. - 9. SAS Ports

Primary and secondary SAS ports.

## E-7 Front Jumper Locations and Pin Definitions

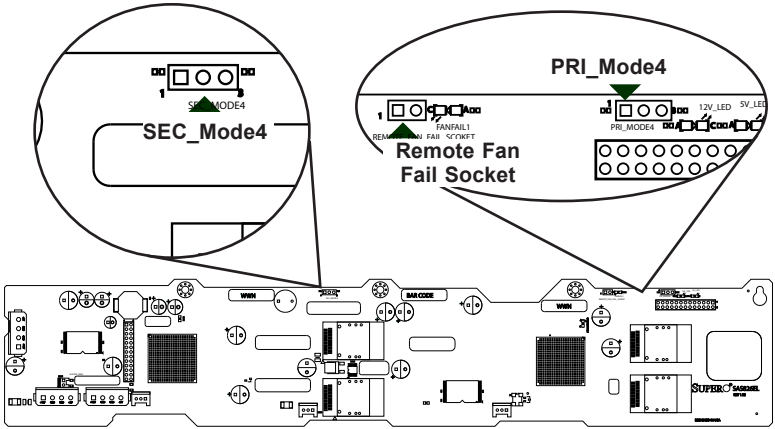
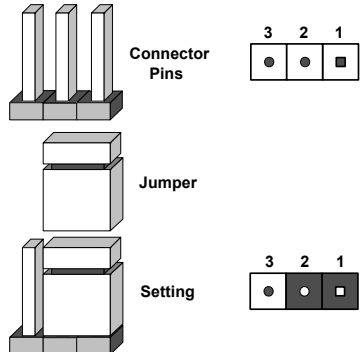


Figure E-3: Front Jumpers

### 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.



---

---

<b>General Jumper Settings</b>		
<b>Jumper</b>	<b>Jumper Settings</b>	<b>Note</b>
PRI_MODE4	1-2	Factory setting do not change
SEC_MODE4	1-2	Factory setting do not change

<b>Socket Settings</b>		
<b>Socket</b>	<b>Socket Setting</b>	<b>Note</b>
REMOTE_FAN_FAIL_ SOCKET	Open	Front panel fan fail indicator (optional)

## Front LED Indicators

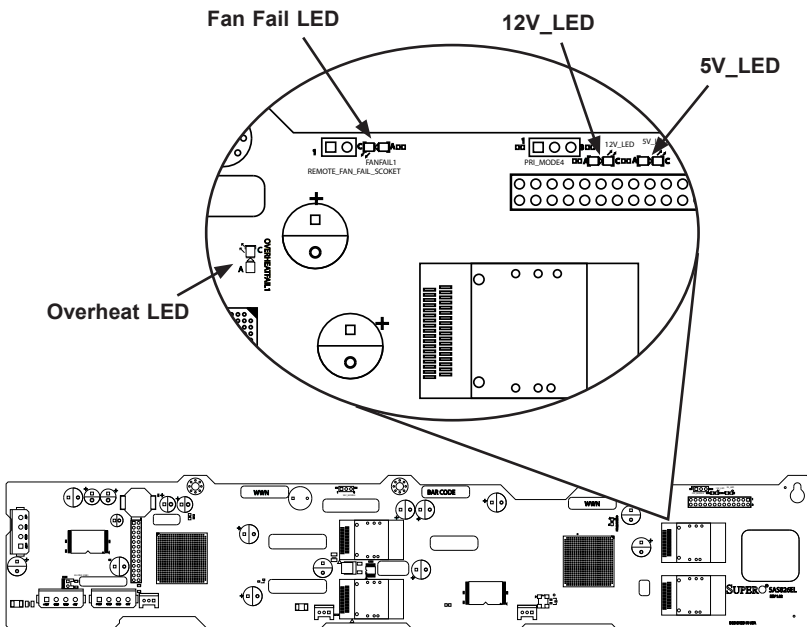


Figure E-4: Front LEDs

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

## E-8 Rear Connectors and LED Indicators

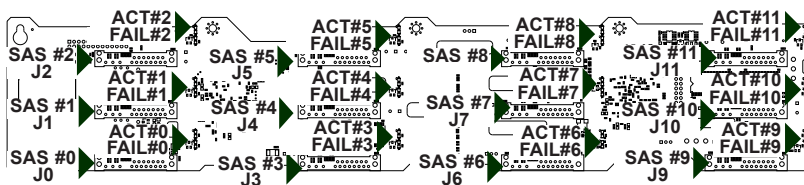


Figure E-5: Rear Connectors and LEDs

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

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



## E-9 Single and Dual Port Expanders

### Single Ports

SAS-826EL1 backplanes have a single-port expander that access all twelve drives and supports cascading.

### Dual Ports

SAS-826EL2 backplanes have dual-port expanders that access all twelve drives. These dual-port expanders support cascading, failover, and recovery.

Warning: The SAS 826EL2 backplane's J0 and J1 SAS ports are reversed in the Secondary Expander Port B with J0 on top and J1 on the bottom.

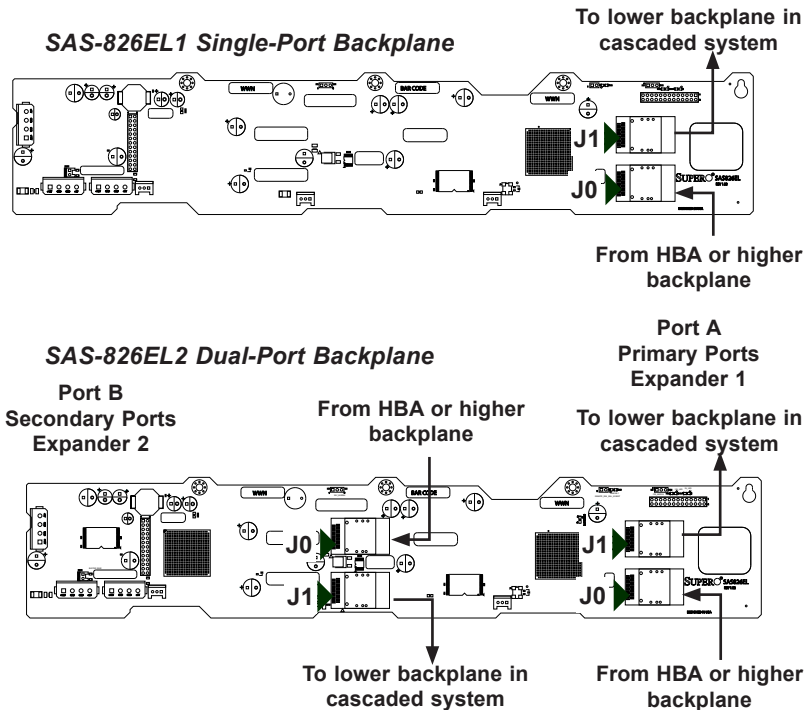


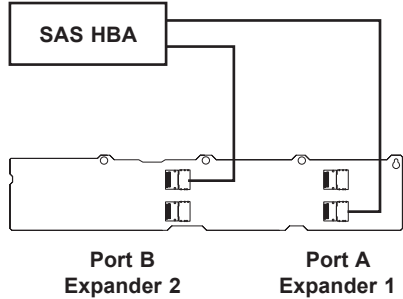
Figure E-6: Single and Dual Port Expanders

## E-10 Failover

The SAS-826EL2 Backplane has two expanders which allow effective failover and recovery.

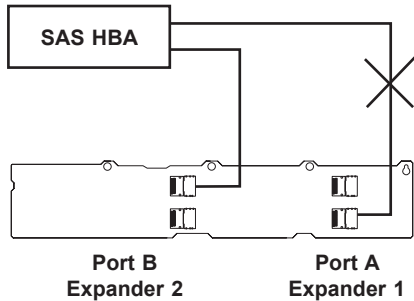
### Single Host Bus Adapter

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



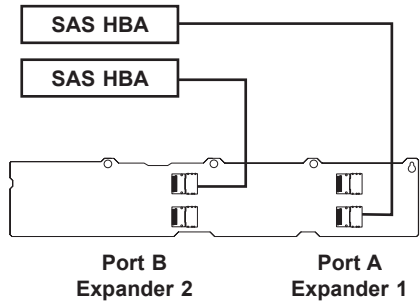
### Single Host Bus Adapter Failover

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



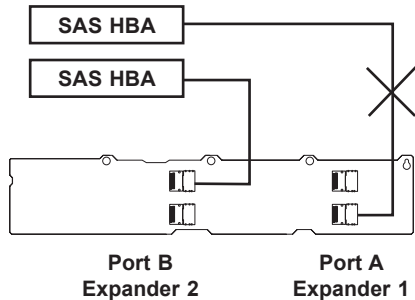
### Dual Host Bus Adapter

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.



## E-11 Cables and Chassis Power Card

### Chassis Power Card

In a cascaded configuration, the first chassis includes a motherboard and, at least one, host bus adapter. Other servers in this enclosed system include a power card. This section describes the supported power card for the 826 backplane system.

For more information, see the PCC-JBPWR2 power card manual. This manual can be found at the <http://www.supermicro.com> or as an appendix in the SC847 chassis manual.

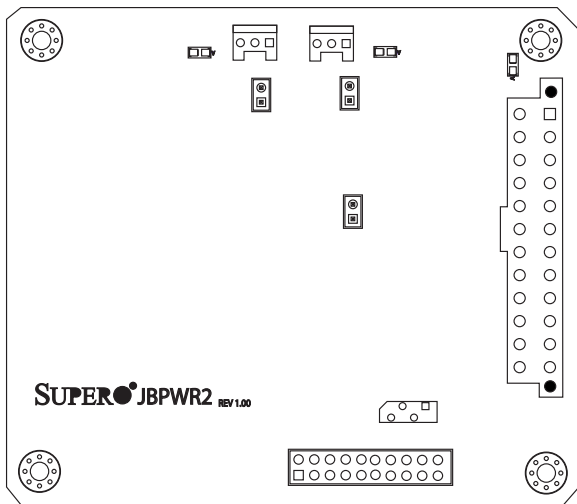


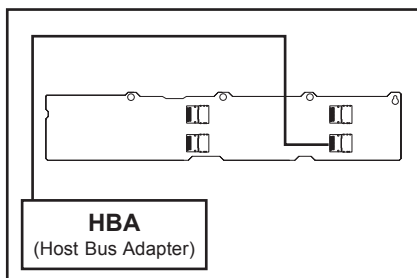
Figure E-7: The JBPWR2 Power Card

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) configuration.

## 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*

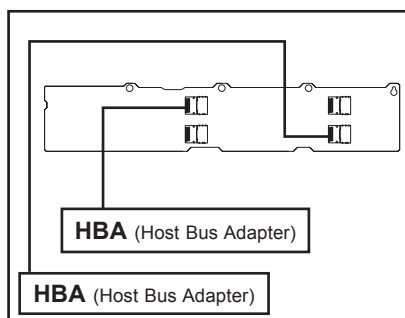


Figure E-8: Connecting to Single and Dual Internal HBAs

## 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.

**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 pins) at the other. This cable connects from the HBA to the SAS-826EL backplane.

**Cable Name:** SFF-8087 (Mini-SAS) TO SFF-8087 (mini SAS)

**Part #:** CBL-0108L-02

**Length:** 39 cm (15 inches)

**Part #:** CBL-0109L-02

**Length:** 22 cm (9 inches)

**Part #:** CBL-0110L-02

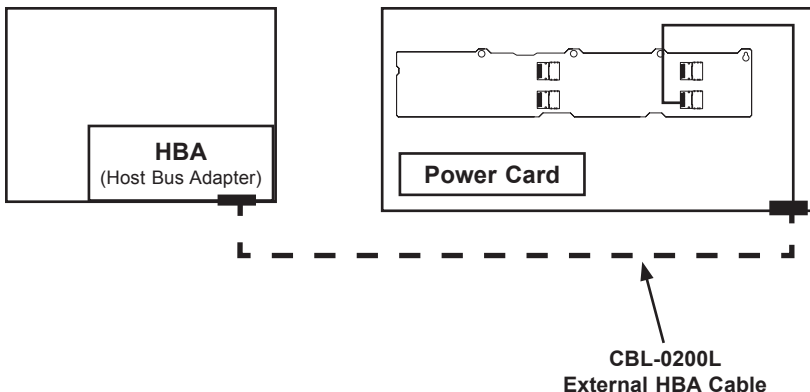
**Length:** 18 cm (7 inches)

**Description:** This cable has an iPass (SFF-8087/Mini-SAS) connector (36-pin) at each end. It connects from the HBA to the SAS-826EL backplane.

## Connecting an External Host Bus Adapter to the Backplane

This backplane supports external HBAs. 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.

### Single External Host Bus Adapter



### Dual External Host Bus Adapter

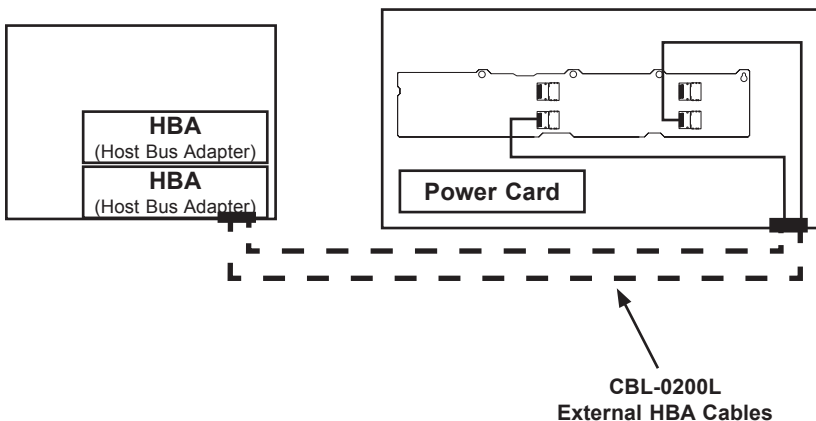


Figure E-9: Connecting Single and Dual External HBAs

## Supported External HBA to Backplane Cable

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



**Figure E-10: The CBL-0200L Cable**

**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 Configuration

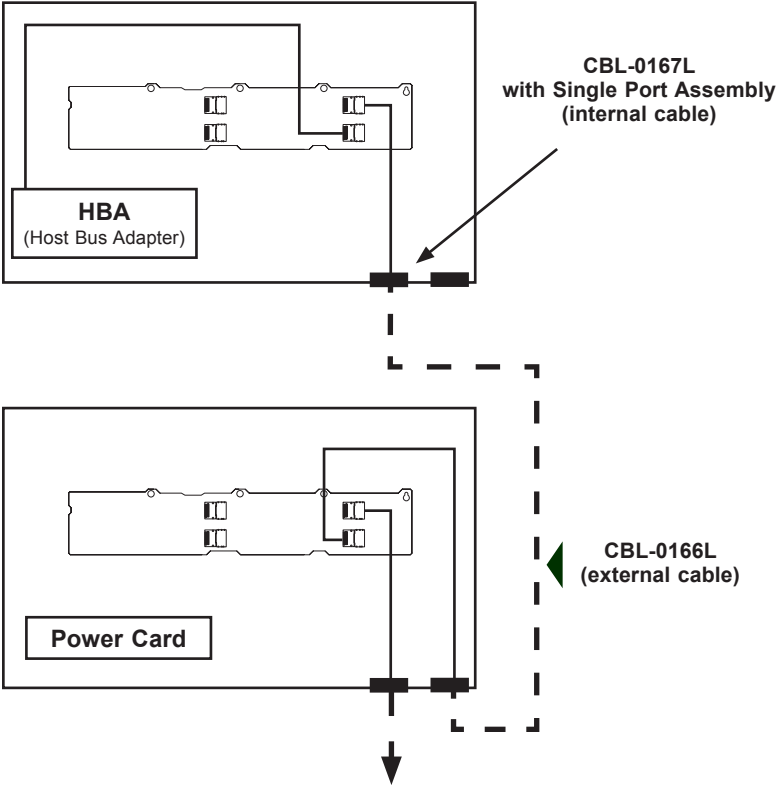


Figure E-11: Single HBA Configuration



## Single HBA Configuration Cables

### Single Port Cable Assembly

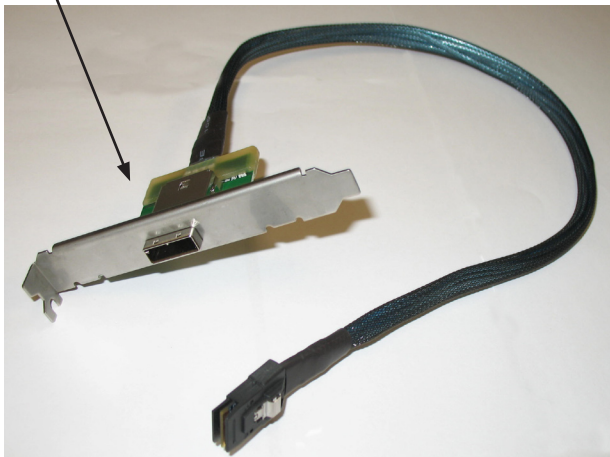


Figure E-12: The CBL-0167L Cable

**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 E-13: The CBL-0166L Cable

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

**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.

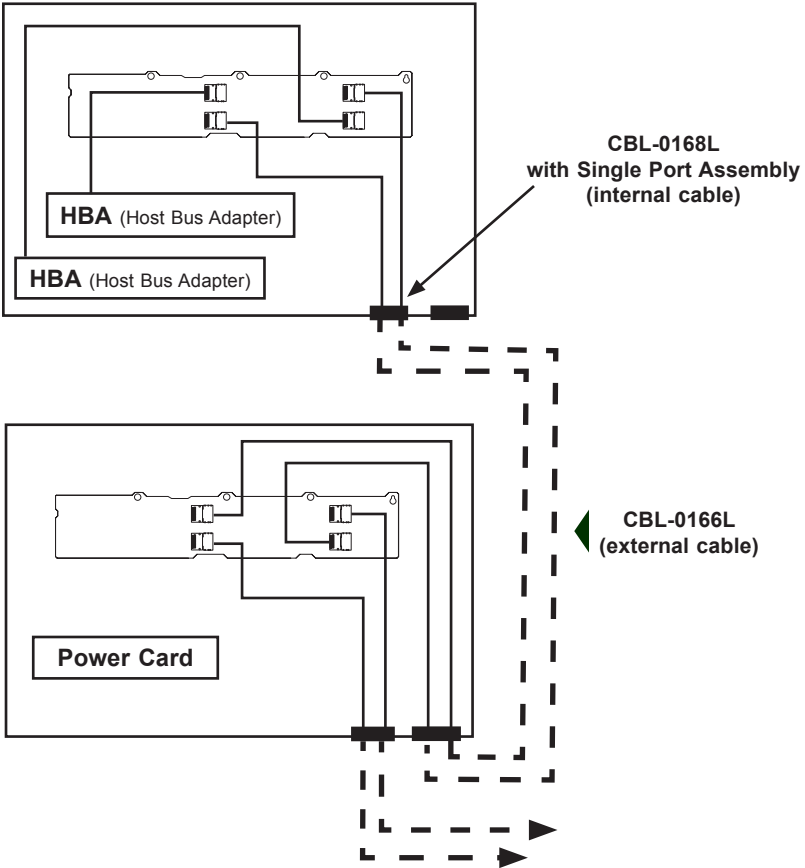


Figure E-14: Connecting Multiple Backplanes when using Dual Channels

## Dual HBA Configuration Cables

Dual Port Cable  
Assembly



Figure E-15: The CBL-0168L Cable

**Cable Name:** SAS Dual-port Cable Assembly, 68/76cm

**Part #:** CBL-0168L (SFF-8087 to SFF-8088 x2)

**Ports:** Dual

**Placement:** Internal cable

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



Figure E-16: The CBL-0166L Cable

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

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

**Ports:** Single or Dual

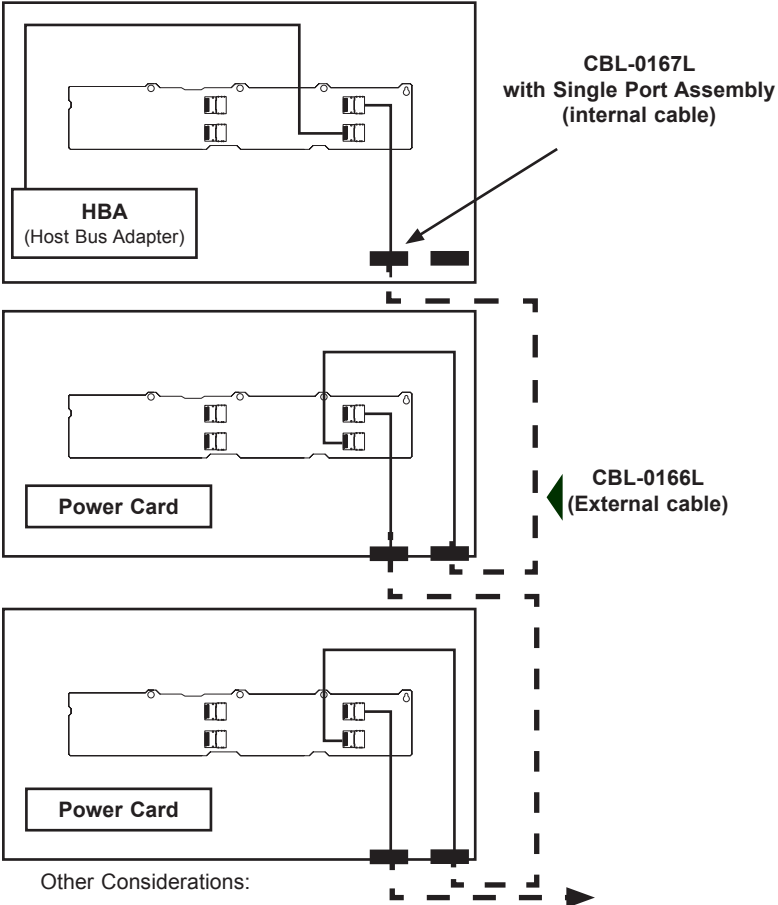
**Placement:** External cable

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

## E-12 Supported Cascading Configuration

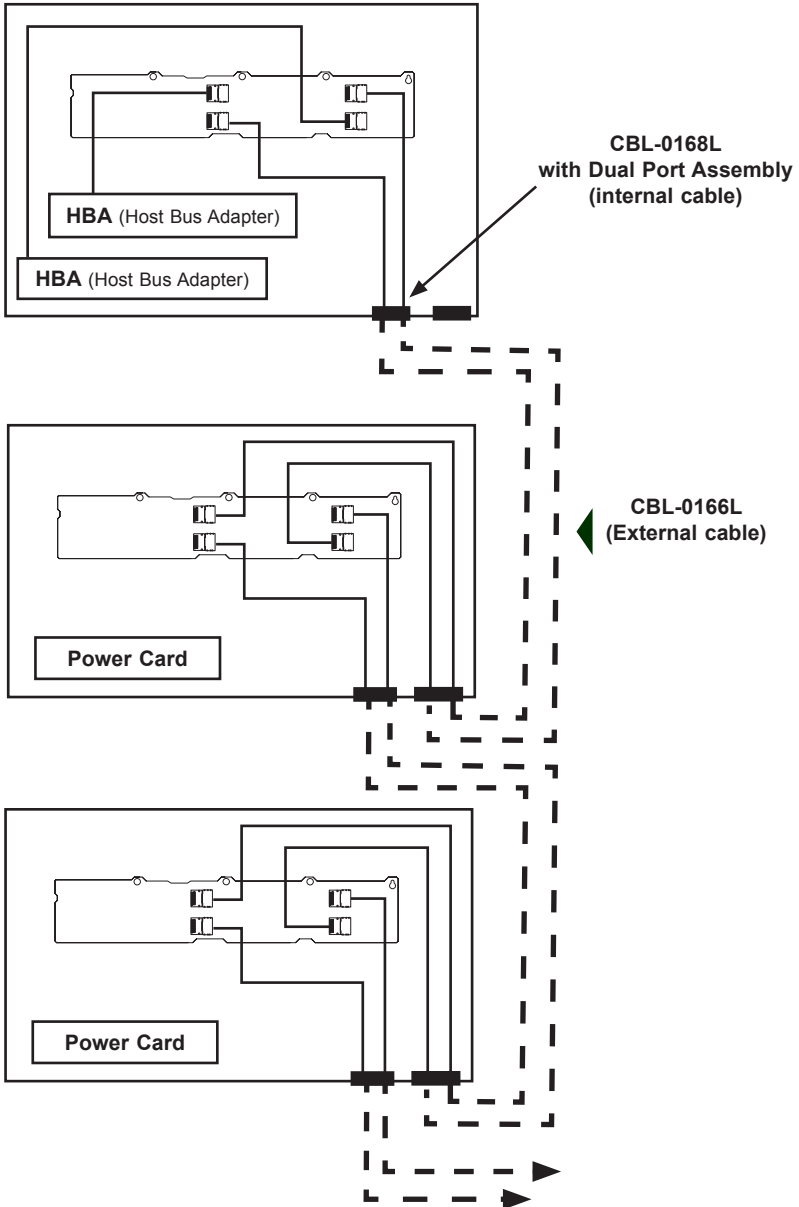
Cascading allows the system to access data at a faster rate by allowing several backplanes to share resources to reduce latency time.

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



- Cascading supports up to one hundred twenty two hard drives
- Use the same cables for all single port configurations
- See page E-12 if your HBA is external to your backplane.

## Server System with Dual SAS HBA and Cascading Configuration



## Notes

## Appendix F

### SAS-846EL 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.

#### F-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 backplane and peripherals back into their antistatic bags when not in use.

#### F-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.

### **F-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.

### **F-4 Introduction to the SAS-846EL Backplane**

The SAS-846EL 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-846EL Revision 1.10, the most current release available at the time of publication. Always refer to the Supermicro Web site at [www.supermicro.com](http://www.supermicro.com) for the latest updates, compatible parts and supported configurations.



## F-5 Front Connectors and Jumpers

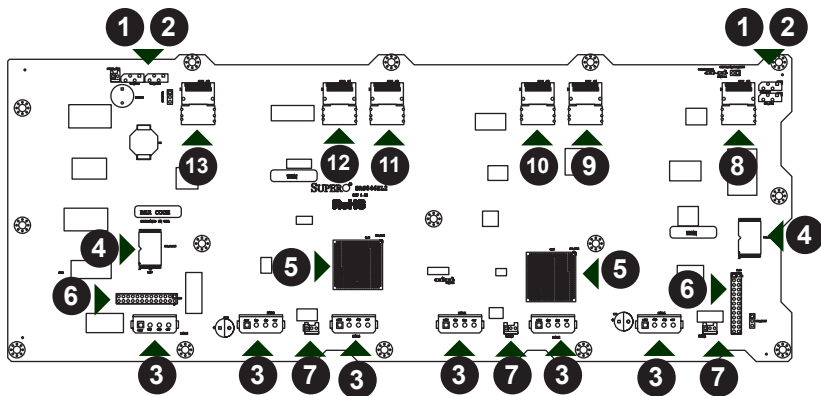


Figure F-1: Front Connectors

### Front Connectors

1. and 2. Primary and secondary I<sup>2</sup>C connectors (optional)
3. Power connectors: PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6
4. Primary and secondary flash chip
5. Primary and secondary expander chip
6. EPP connectors: J24 and J25
7. Fan connectors: Fan1, Fan2, and Fan3
8. SAS connector: PRI\_J0
9. SAS connector: PRI\_J1
10. SAS connector: PRI\_J2
11. SAS connectors SEC\_J0 (not available in EL1 single port backplane)
12. SAS connector: SEC\_J1 (not available in EL1 single port backplane)
13. SAS connector: SEC\_J2 (not available in EL1 single port backplane)

## F-6 Front Connector and Pin Definitions

### 1. and 2. Optional Primary and Secondary I<sup>2</sup>C Connectors

The optional I<sup>2</sup>C connectors are connected to the CSE-PTJBOD-CB2 board and are used to monitor the power supply status and to control the fans. See the table on the right for pin definitions.

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

### 3. Backplane Main Power Connectors

The 4-pin connectors, designated PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6, 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

### 4. Primary and Secondary Flash Chips

The primary and secondary flash chips enhance the backplane memory.

### 5. Primary and Secondary Expander Chips

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

### 6. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

## 7. Fan Connectors

The 3-pin connectors, designated FAN1, FAN2, and FAN3, provide power to the fans. See the table on the right for pin definitions.

Fan Connectors	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer

## 8 - 13. SAS Ports

The primary and secondary sets of SAS ports provide expander features including cascading and failover. From right to left the ports are primary 1/2/3 and secondary 1/2/3.

## F-7 Front Jumper Locations and Pin Definitions

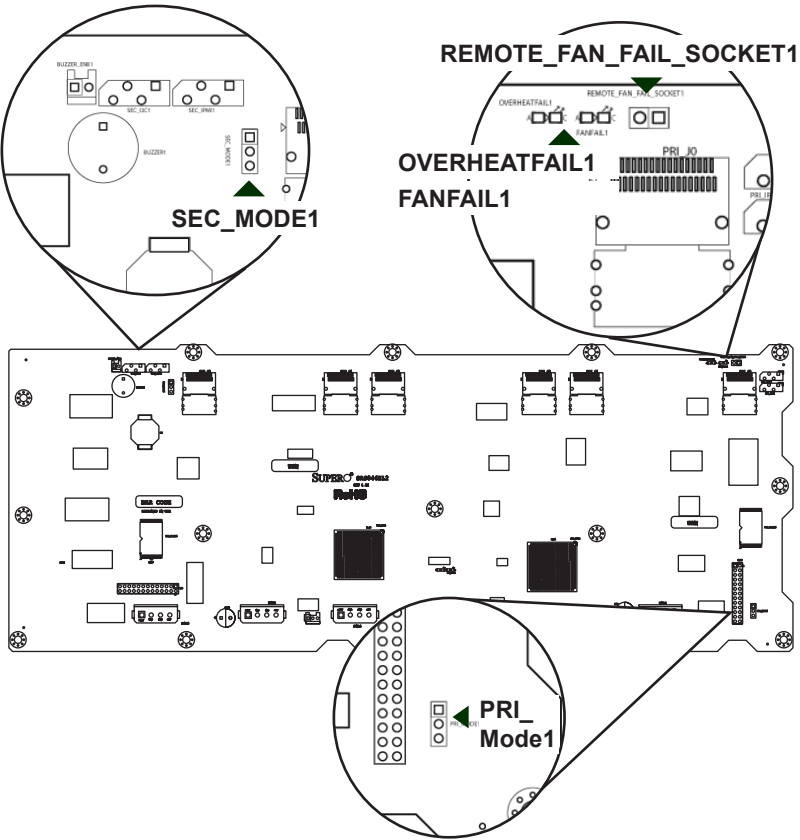
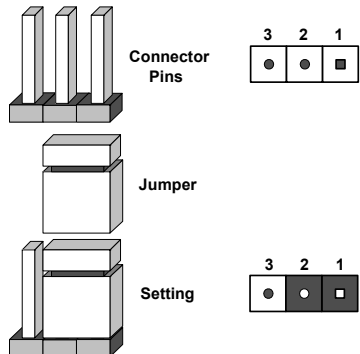


Figure F-2: Front Jumper Locations and Pin Definitions

### 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.



<b>General Jumper Settings</b>		
<b>Jumper</b>	<b>Jumper Settings</b>	<b>Note</b>
PRI_MODE1	1-2	Factory Setting Do not change
SEC_MODE1	1-2	Factory Setting Do not change

<b>Socket Settings</b>		
<b>Socket</b>	<b>Socket Setting</b>	<b>Note</b>
REMOTE_FAN_FAIL_SOCKET	Connected	Front Panel Fan Fail indicator (Optional)

<b>Front Panel LEDs</b>		
<b>LED</b>	<b>State</b>	<b>Specification</b>
OVERHEATFAIL1	ON	Overheat/Drive Failure LED Indicator (Red light: flashing)
FANFAIL1	ON	Failure in Fan #1

## F-8 Rear Connectors and LED Indicators

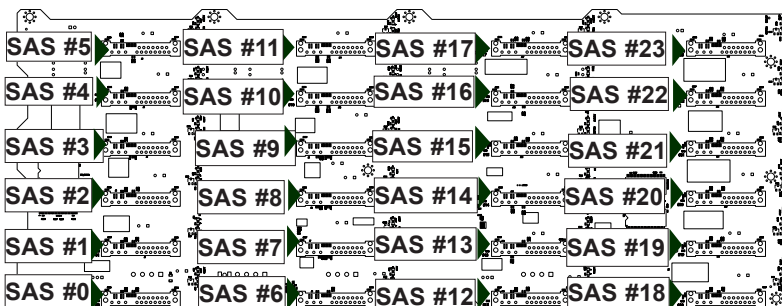


Figure F-3: Rear Connectors

Rear SAS/SATA Connectors			
Rear Connector	SAS Drive Number	Rear Connector	SAS Drive Number
SAS #0	SAS/SATA HDD #0	SAS #12	SAS/SATA HDD #12
SAS #1	SAS/SATA HDD #1	SAS #13	SAS/SATA HDD #13
SAS #2	SAS/SATA HDD #2	SAS #14	SAS/SATA HDD #14
SAS #3	SAS/SATA HDD #3	SAS #15	SAS/SATA HDD #15
SAS #4	SAS/SATA HDD #4	SAS #16	SAS/SATA HDD #16
SAS #5	SAS/SATA HDD #5	SAS #17	SAS/SATA HDD #17
SAS #6	SAS/SATA HDD #6	SAS #18	SAS/SATA HDD #18
SAS #7	SAS/SATA HDD #7	SAS #19	SAS/SATA HDD #19
SAS #8	SAS/SATA HDD #8	SAS #20	SAS/SATA HDD #20
SAS #9	SAS/SATA HDD #9	SAS #21	SAS/SATA HDD #21
SAS #10	SAS/SATA HDD #10	SAS #22	SAS/SATA HDD #22
SAS #11	SAS/SATA HDD #11	SAS #23	SAS/SATA HDD #23

<b>Rear LED Indicators</b>		
<b>Rear Connector</b>	<b>Hard Drive Activity LED</b>	<b>Failure LED</b>
SAS #0	ACT #0	FAIL #0
SAS #1	ACT #1	FAIL #1
SAS #2	ACT #2	FAIL #2
SAS #3	ACT #3	FAIL #3
SAS #4	ACT #4	FAIL #4
SAS #5	ACT #5	FAIL #5
SAS #6	ACT #6	FAIL #6
SAS #7	ACT #7	FAIL #7
SAS #8	ACT #8	FAIL #8
SAS #9	ACT #9	FAIL #9
SAS #10	ACT #10	FAIL #10
SAS #11	ACT #11	FAIL #11
SAS #12	ACT #12	FAIL #12
SAS #13	ACT #13	FAIL #13
SAS #14	ACT #14	FAIL #14
SAS #15	ACT #15	FAIL #15
SAS #16	ACT #16	FAIL #16
SAS #17	ACT #17	FAIL #17
SAS #18	ACT #18	FAIL #18
SAS #19	ACT #19	FAIL #19
SAS #20	ACT #20	FAIL #20
SAS #21	ACT #21	FAIL #21
SAS #22	ACT #22	FAIL #22
SAS #23	ACT #23	FAIL #23

## Dual Port and Cascading Configurations

### F-9 Single and Dual Port Expanders

#### Single Ports

SAS-846EL1 backplanes have a single-port expander that access all twenty-four drives and supports cascading.

#### Dual Ports

SAS-846EL2 backplanes have dual-port expanders that access all twenty-four drives. These dual-port expanders support cascading, failover, and multipath.

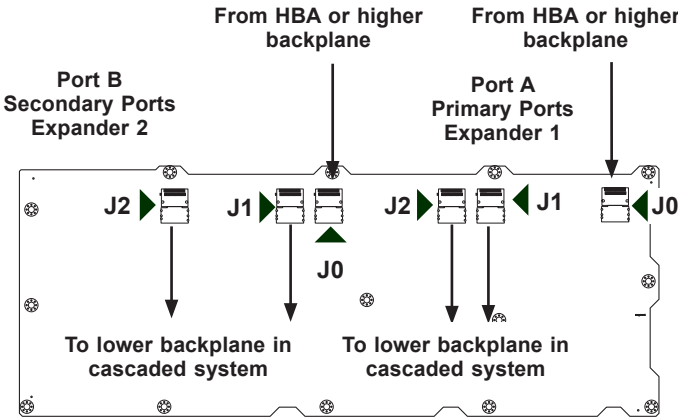


Figure F-4: SAS-846EL2 Dual Port Configuration

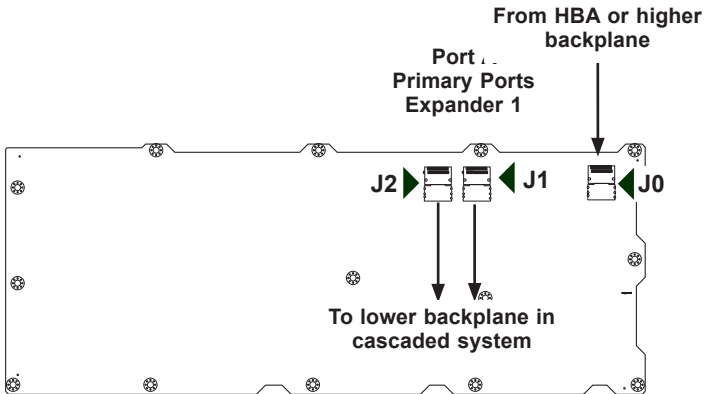


Figure F-5: SAS-846EL1 Single Port Configuration



## F-10 Failover

The SAS-846EL2 backplane has two expanders which allow effective failover.

### Single Host Bus Adapter

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

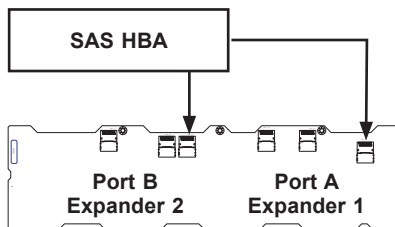


Figure F-6: Single HBA

### Single Host Bus Adapter Failover

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

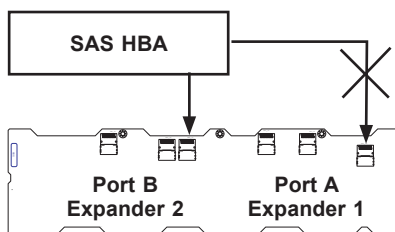


Figure F-7: Single HBA Failover

### Dual Host Bus Adapter

In a Dual Host Bus Configuration, the backplane connects to two Host Bus Adapters (HBA).

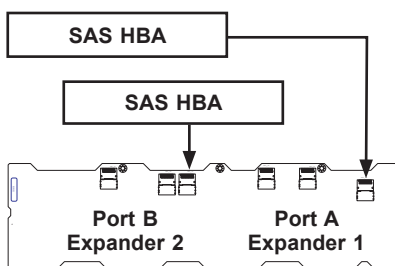


Figure F-8: Dual HBA

### Dual Host Bus Adapter Failover

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

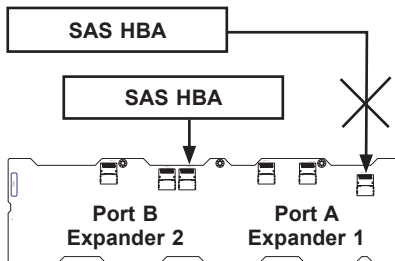


Figure F-9: Dual HBA Failover

## F-11 Chassis Power Card and Support Cables

### Chassis Power Card

In a cascaded configuration, the first chassis includes a motherboard and at least one Host Bus Adapter (HBA). Other servers in this enclosed system, include a power card. This section describes the supported power card for the SAS-846 series backplane.

For more information, see the PCC-JBPWR2 power card manual. This manual can be found at the <http://www.supermicro.com>.

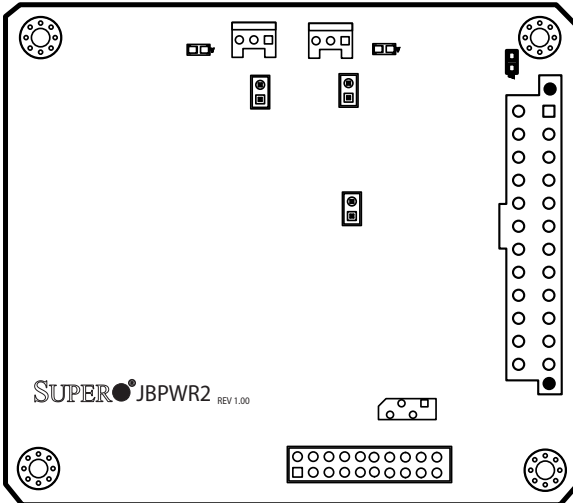


Figure F-10: Chassis Power Card (Sold Separately)

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) configuration.

## Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the Host Bus Adapter (HBA) to the backplane.

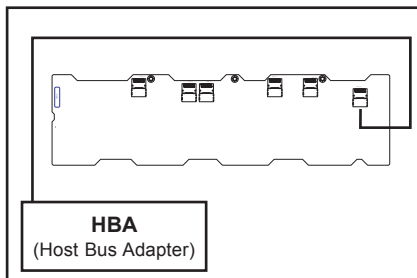


Figure F-11: Single Internal Host Bus Adapter

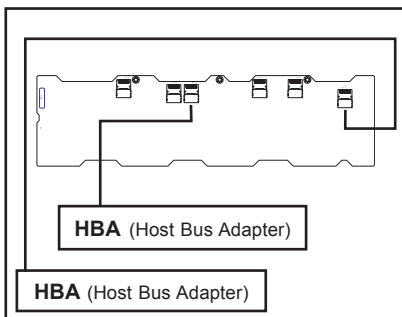


Figure F-12: Dual Internal Host Bus Adapter

## Supported Internal HBA Cables

Use the following listed cables to create connections between the internal HBA and SAS-846EL backplane. The cables required depend on the HBA connector.

**Cable Name:** iPass TO 4-lane

**Part #:** CBL-0117L

**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 pins) at the other. This cable connects from the HBA to the SAS-846EL backplane.

**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 pins) at each end. It connects from the HBA to the SAS-846EL 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 configuration system to connect to the other system that has a HBA.

### Single External Host Bus Adapter

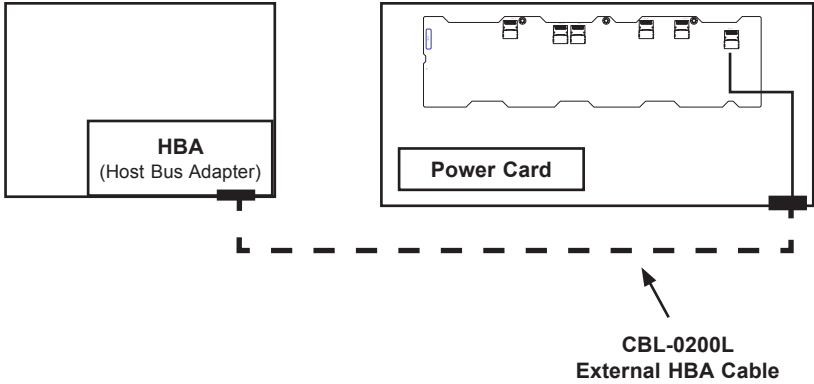


Figure F-13: Single External Host Adapter

### Dual External Host Bus Adapter

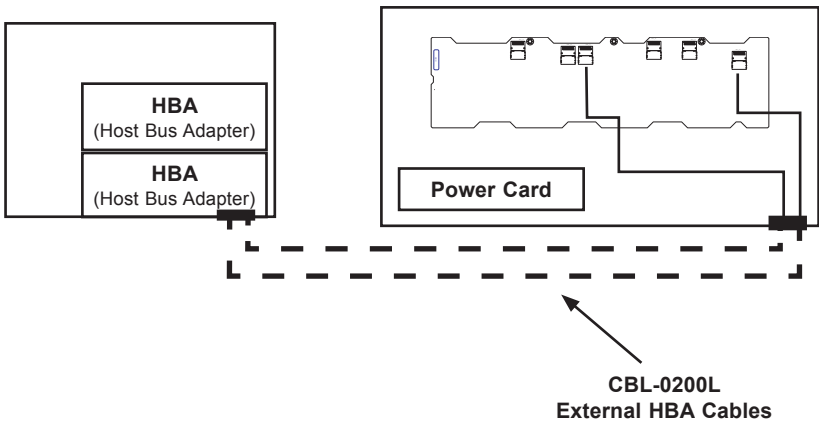


Figure F-14: Dual External Host Bus Adapter

## Supported External HBA to Backplane Cable

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



**Figure F-15: SAS InfiniBand Cable (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.

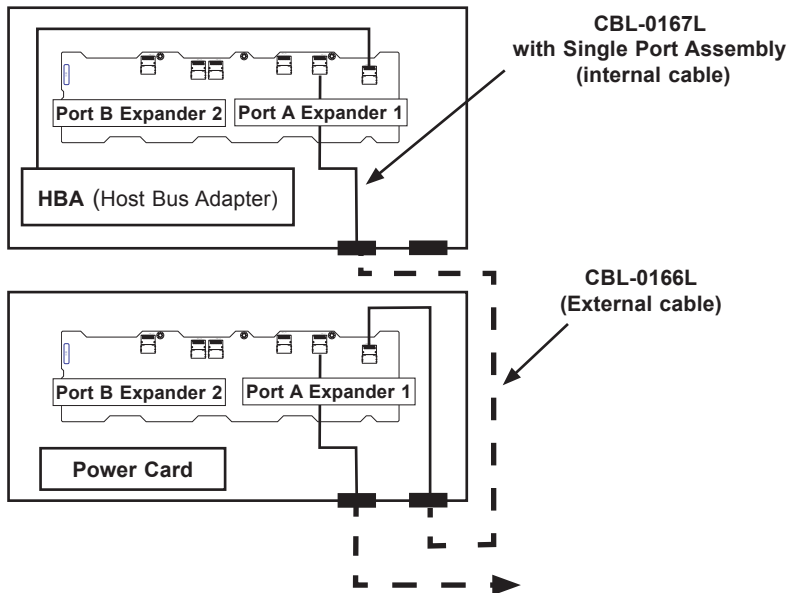
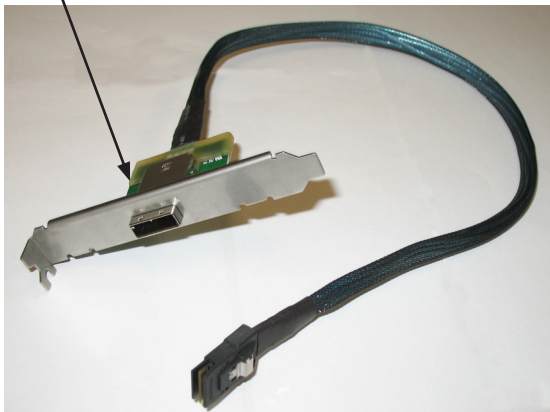


Figure F-16: Single HBA Configuration

## Single HBA Configuration Cables

### Single Port Cable Assembly



**Figure F-17: Single Port Internal Cable (CBL-0167L)**

**Cable Name:** SAS EL2/EL1 Backplane Cable (Internal) with 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 F-18: External Cable (CBL-0166L)**

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

**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 dual HBAs. These connections use CBL-0168L internal cables and CBL-0166L external cables.

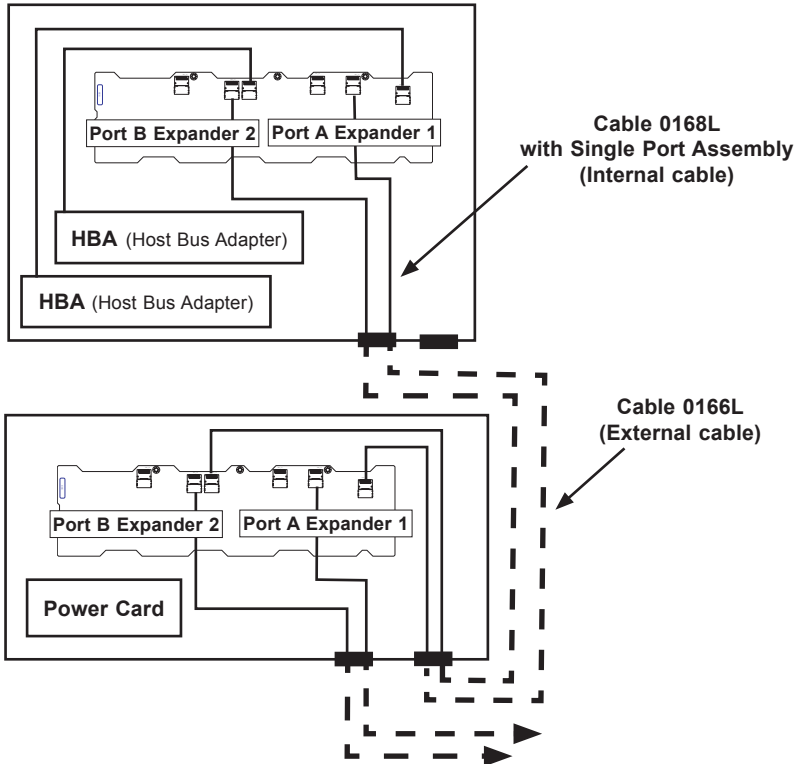


Figure F-19: Dual HBA Configuration

## Dual HBA Configuration Cables

Dual Port Cable  
Assembly



**Figure F-20: Dual Port Internal Cable (CBL-0168L)**

**Cable Name:** SAS Dual-port Cable Assembly, 68/76cm

**Part #:** CBL-0168L

**Placement:** Internal cable

**Ports:** Dual

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



**Figure F-21: External Cable (CBL-0166L)**

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

**Part #:** CBL-0166L

**Placement:** External cable

**Ports:** Single or Dual

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

## F-12 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 with no motherboard and no HBA. For more information, see the SC846 Chassis Manual available at [www.supermicro.com](http://www.supermicro.com).

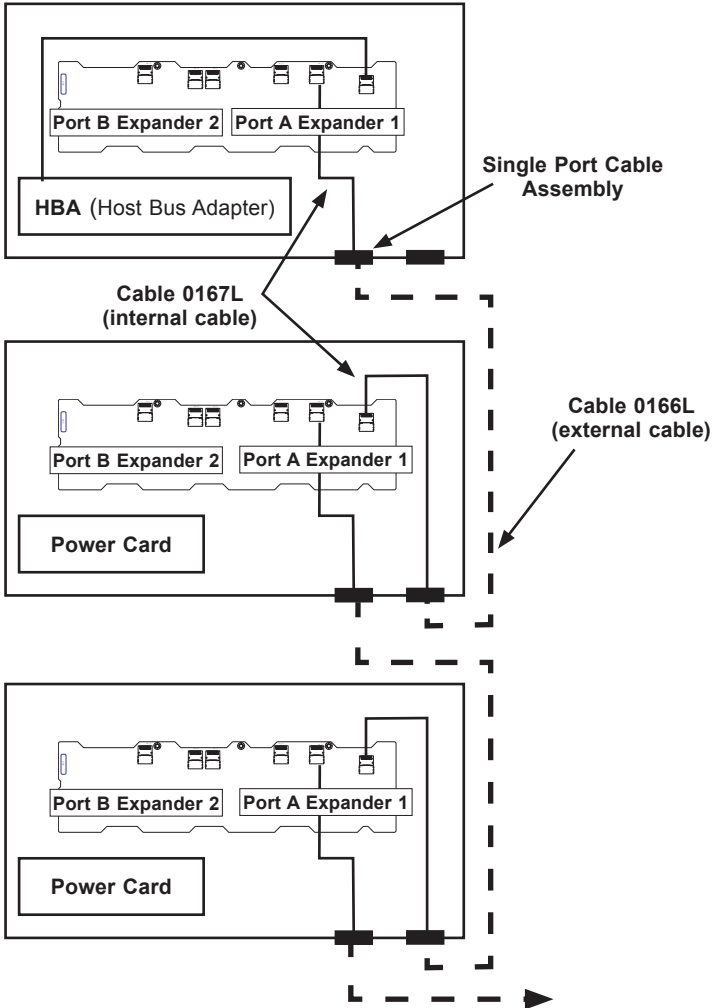


Figure F-22: Simple Cascaded Configuration

## Server System with Single SAS HBA

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

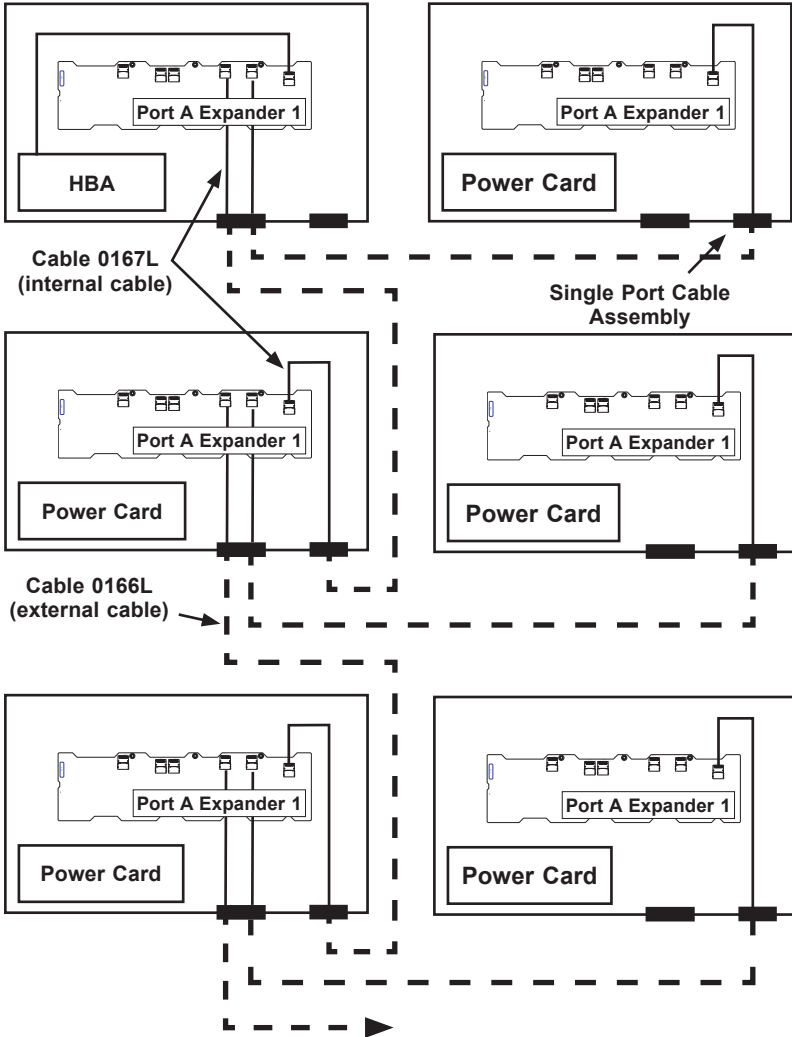


Figure F-23: Cascaded Configuration with Horizontal Branching

## Dual SAS HBA and Cascaded Configuration

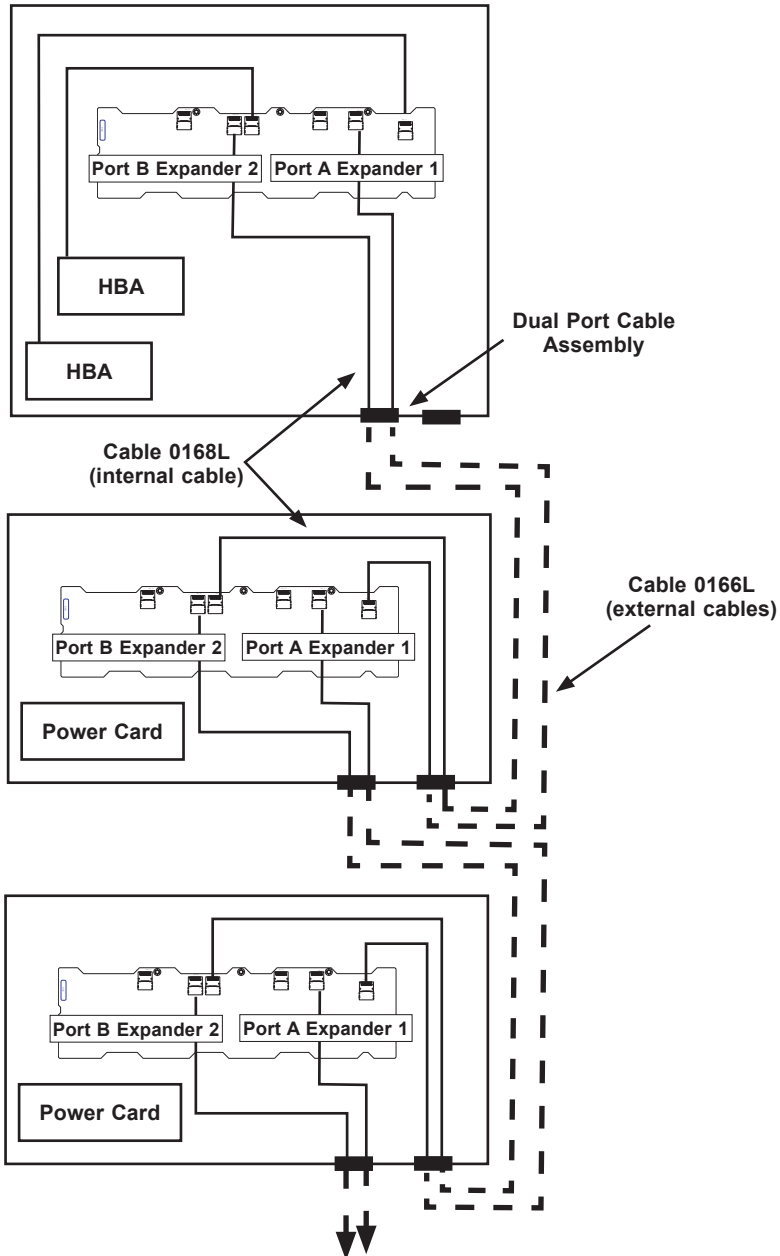


Figure F-24: Dual SAS HBA with Cascaded Configuration

### Dual SAS HBA and Cascaded Configuration with Branching

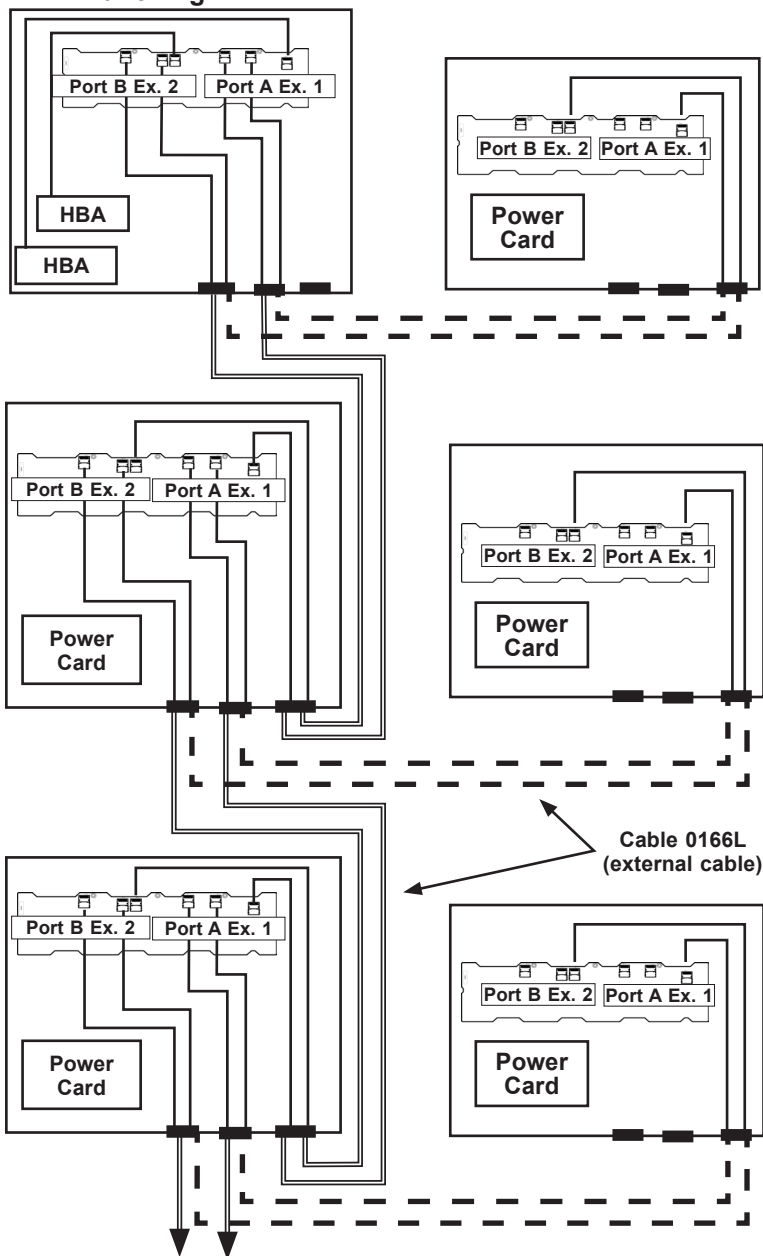


Figure F-25: Dual SAS HBA with Cascaded Configuration and Branching

## Notes

Disclaimer (cont.)

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