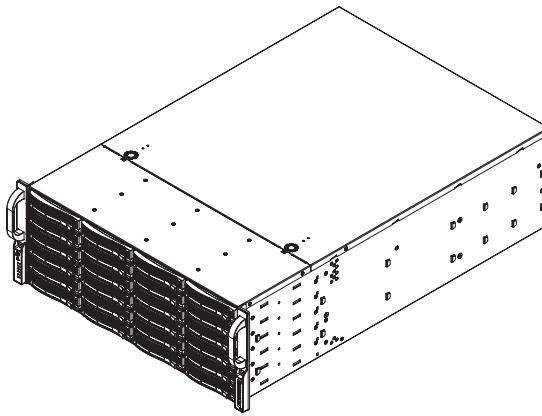
SC846 Chassis Series



SC846BE1C-R1K28B
SC846BE16-R1K28B
SC846BE16-R920B
SC846BA-R1K28B
SC846E16-R1200B
SC846A-R1200B
SC846TQ-R1200B

SC846BE2C-R1K28B
SC846BE26-R1K28B
SC846BE26-R920B
SC846BA-R920B
SC846E26-R1200B
SC846A-R900B
SC846TQ-R900B

USER'S MANUAL

Revision 2.1

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.**

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

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

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

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

Manual Revision 2.1
Release Date: May 29, 2015 mk

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

This document lists compatible parts available when this document was published. Refer to the Supermicor web site for updates on supported parts and configurations

This manual may be periodically updated without notice. Please check the Supermicro Web site for possible updates.

Warnings

Special attention should be given to the following symbols used in this manual.



Warning! Indicates important information given to prevent equipment/ property damage or personal injury.



Warning! Indicates high voltage may be encountered when performing a procedure.

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Notes

Chapter 1

Introduction

1-1 Overview

Optimized for enterprise-level high-capacity storage applications, Supermicro's SC846 chassis features 24 hot-swap 3.5" SAS/SATA hard drive trays and 2 fixed internal hard drive bays in a 4U form factor. The design offers maximum HDD per space ratio, high power efficiency, optimized HDD signal trace routing and improved HDD tray design to dampen HDD vibrations and maximize performance. Equipped high-efficiency redundant power supplies and five hot-swap redundant cooling fans the SC846 is a reliable and trouble-free storage system.

SC846 Chassis Models			
Model	**HDD**	**PCI Slots**	**Power Supply**
SC846BE1C-R1K28B	24x SAS3/SATA Up to 3 rear/internal	7x FF	1280 W Redundant Platinum level
SC846BE2C-R1K28B	24x SAS3/SATA Up to 3 rear/internall	7x FF	1280 W Redundant Platinum level
SC846BE16-R1K28B	24x SAS2/SATA Up to 3 rear/internal	7x FF	1280 W Redundant Platinum level
SC846BE26-R1K28B	24x SAS2/SATA Up to 3 rear/internal	7x FF	1280 W Redundant Platinum level
SC846BE16-R920B	24x SAS2/SATA Up to 3 rear/internal	7x FF	920 W Redundant Platinum level
SC846BE26-R920B	24x SAS2/SATA Up to 3 rear/internal	7x FF	920 W Redundant Platinum level
SC846BA-R1K28B	24x SAS/SATA Up to 3 rear/internal	7x FF	1280 W Redundant Platinum level
SC846BA-R920B	24x SAS/SATA Up to 3 rear/internal	7x FF	920 W Redundant Platinum level
SC846E16-R1200B	24x SAS2/SATA Up to 3 internal	7x FF	1200 W Redundant Gold level
SC846E26-R1200B	24x SAS2/SATA Up to 3 internal	7x FF	1200 W Redundant Gold level

SC846 Chassis Models			
Model	**HDD**	**PCI Slots**	**Power Supply**
SC846A-R1200B	24x SAS/SATA Up to 3 internall	7x FF	1200 W Redundant Gold level
SC846A-R900B	24x SAS/SATA Up to 3 internal	7x FF	900 W Redundant
SC846TQ-R1200B	24x SAS/SATA Up to 3 internal	7x FF	1200 W Redundant Gold level
SC846TQ-R900B	24x SAS/SATA Up to 3 internal	7x FF	900 W Redundant

FF is full-height, full-width expansion card

1-2 Shipping List

Refer to the Supermicro website for the latest shipping lists and part numbers for your particular chassis model: http://www.supermicro.com/.

1-3 Components

Drives

The chassis supports twenty-four hot-swap 3.5" SAS or SATA hard disk drives in the front. The drives are supported by a backplane.

In addition, some models offer the option to add up to two hot-swap 2.5" drives on the rear of the chassis, and one or two fixed internal drives.

Power Supply

The chassis features two redundant digital power supplies. The table in Section 1-1 lists the power rating and the 80-Plus efficiency certification level for each model.

Cooling

The chassis includes three 80 mm heavy-duty, hot-swap fans and two 80 mm exhaust fan. System fans are powered and controlled by 4-pin connectors.

An air shroud helps channel cooling air where needed.

Motherboard

The chassis supports serverboards up to 13.68" x 13", including E-ATX and ATX form factors, with single or dual Intel or AMD processors.

Expansion Slots

The chassis supports up to seven ful-height, full-length PCI-E expansion cards.

Mounting Rails

Rack mount rails allow you to mount the chassis in a rack. The rails feature snap-in installation and quick release, and support modern square hole racks. Round hole rack are supported with a conversion kit.

1-4 Where to get Replacement Components

If you need replacement parts for your system, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found at: http://www.supermicro.com. Click the "Where to Buy" link.

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.

1-6 Contacting Supermicro

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

Chapter 2

Standardized Warning Statements for AC Systems

About Standardized Warning Statements

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

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

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

Warning Definition



Warning!

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

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

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

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

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions



Warning!

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前,请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker



Warning!

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

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

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

Warnung

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

¡Advertencia!

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

Attention

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

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

هذا المنتج يعتمد على معدات الحماية من الدوائرالقصيرة التي تم تثبيتها في المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning



Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es

auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

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

אזהרה !

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

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

경고!

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

Waarschuwing

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

Equipment Installation



Warning!

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

機器の設置

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

警告
只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告
只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה !

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area



Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告
此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

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

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

경고!

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

Waarschuwing

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

Battery Handling



Warning!

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

電池の取り扱い

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

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

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies



Warning!

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告
此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告
此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

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

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

경고!

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

Waarschuwing

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

Backplane Voltage



Warning!

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

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

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

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes



Warning!

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

תיאום חוקי החשמל הארצי

אזהרה !
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

Product Disposal



Warning!

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

製品の廃棄

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

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

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

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

경고!

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

Waarschuwing

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

Hot Swap Fan Warning



Warning!

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

ファン・ホットスワップの警告

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

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

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

Power Cable and AC Adapter



Warning!

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

電源コードとACアダプター

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

חשמליים ומתאמי AC

אזהרה !

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

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

경고!

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

Waarschuwing

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

Notes

Chapter 3

System Interface

3-1 Overview

The server includes a control panel on the front that houses power buttons and status monitoring lights. The externally accessible hard drives display status lights. The power supply displays status lights visible from the back of the chassis.

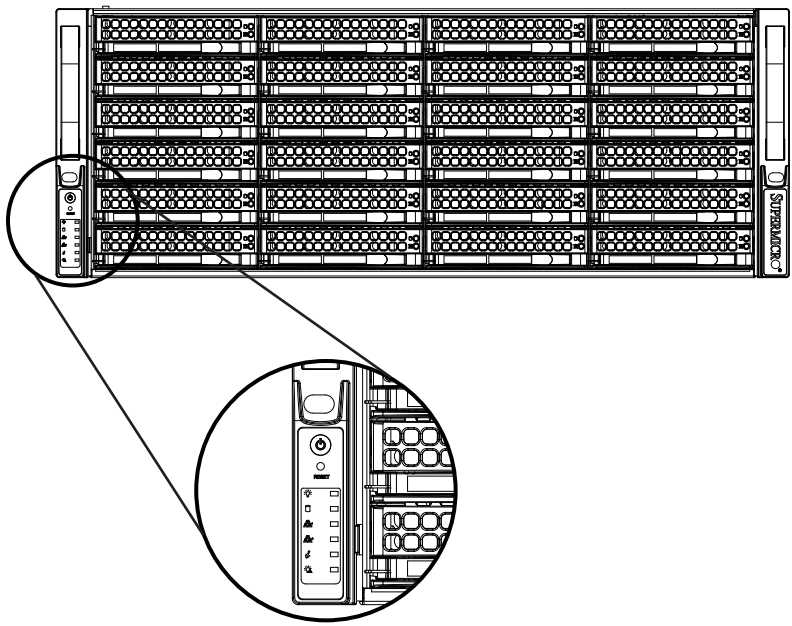


Figure 3-1. Front Control Panel

3-2 Control Panel Buttons

The chassis includes two push-buttons that control power to the system.



Power

The main power switch applies or removes primary power from the power supply to the server but maintains standby power. To perform most maintenance tasks, unplug the system to remove all power..



Reset

The reset button is used to reboot the system.

3-3 Control Panel LEDs

There are six LEDs that provide status information about the system.



Power

Indicates power is being supplied to the system power supply units. This LED is illuminated when the system is operating normally.



HDD

Indicates activity on the hard disk drive when flashing.



NIC2

Indicates network activity on GLAN2 when flashing.



NIC1

Indicates network activity on GLAN1 when flashing.



Information LED

Alerts operator to several states, as noted in the table below.

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occured. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue	Remote UID is on. Use this function to identify the server from a remote location.



Power Fail

Indicates a power supply module has failed.

Overheating

There are several possible responses if the system overheats.

Overheat Temperature Setting

Some backplanes allow the overheat temperature to be set at 45, 50, or 55 by changing a jumper setting. For more information, consult the backplane user manual at www.supermicro.com. (Click Support, then the Manuals link.)

Responses

If the server overheats:

1. Use the LEDs to determine the nature of the overheating condition.
2. Confirm that the chassis covers are installed properly.
3. Check the routing of the cables and make sure all fans are present and operating normally.
4. Verify that the heatsinks are installed properly.

3-4 Drive Carrier LEDs

The chassis includes externally accessible SAS/SATA drives. Each drive carrier displays two status LEDs on the front of the carrier.

	LED Color	Blinking Pattern	Behavior for Device
Activity LED	Blue	Solid On	SAS/NVMe drive installed
	Blue	Blinking	I/O activity
Status LED	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support

3-5 Power Supply LEDs

On the rear of the power supply module, an LED displays the status.

- **Solid Green**: When illuminated, indicates that the power supply is on.
- **Solid Amber**: When illuminated, indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.
- **Blinking Amber**: When blinking, this system power supply temperature has reached 63C. The system will automatically power-down when the power supply temperature reaches 70C and restart when the power supply temperature goes below 60C.

Notes

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 required is a Phillips screwdriver.

Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: *Warning Statements for AC Systems* and the warning/precautions listed in the setup instructions.

For SC846B model chassis, such as SC846BE1C-R1K28B allow the installation of optional hard drives accessable from the rear of the chassis.

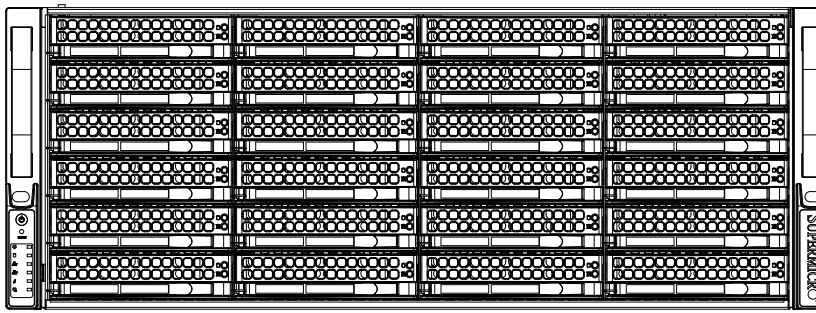


Figure 4-1. Front View

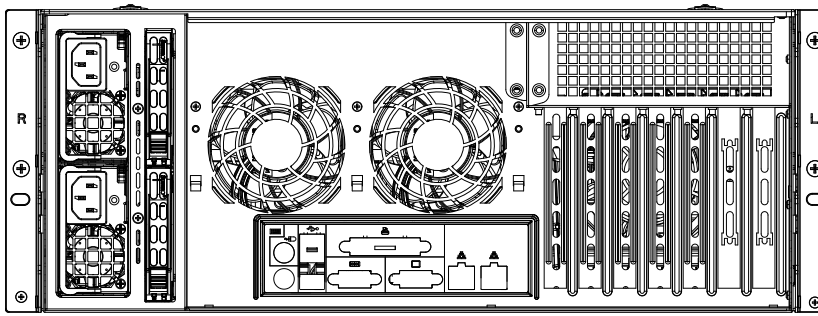


Figure 4-2. Rear View (SC846B Model shown)

4-2 Removing Power from the System

Before performing most setup or maintenance tasks, use the following procedure to ensure that power has been removed from the system.

1. Use the operating system to power down the system, following the on-screen prompts.

2. After the system has completely shut-down, carefully grasp the head of the power cord and gently pull it out of the back of the power supply. If your system has dual power supplies, remove the cords from both power supplies.

3. Disconnect the cord from the power strip or wall outlet.

4-3 Removing the Chassis Cover

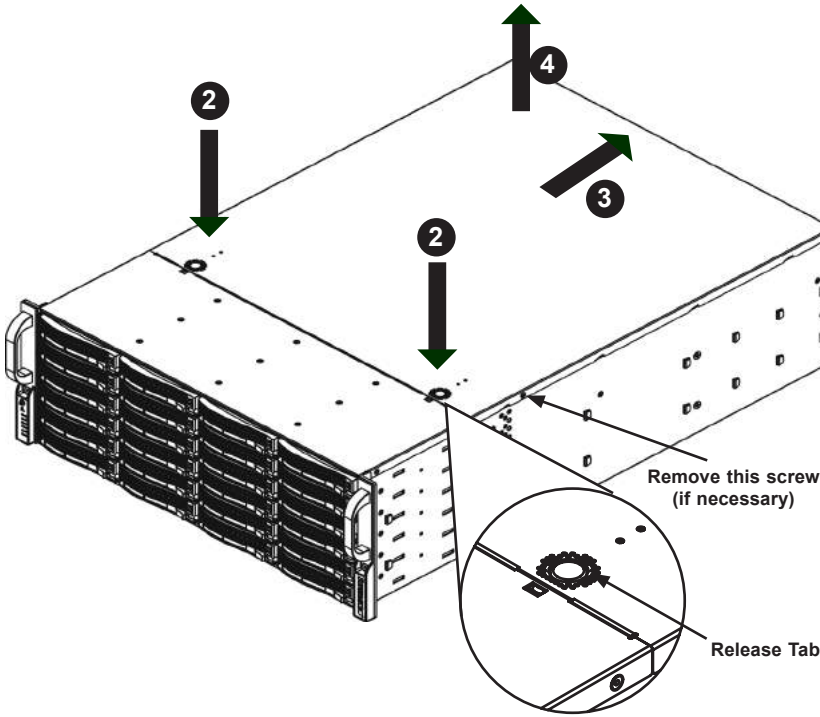


Figure 4-3. Removing the Chassis Cover

Removing the Chassis Cover

1. Power down the system and remove the power cords from the back of the power supplies.

2. Press the release tabs to remove the cover from the locked position. Press both tabs at the same time.

3. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis.

4. Lift the cover off the chassis.

Caution: Except for short periods of time, do not operate the server without the cover in place. The chassis cover provides proper airflow and prevents overheating.

4-4 Installing Front Hard Drives

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays. **Caution**: Except for short periods of time, such as swapping hard drives, do not operate the server with the hard drive bays empty.

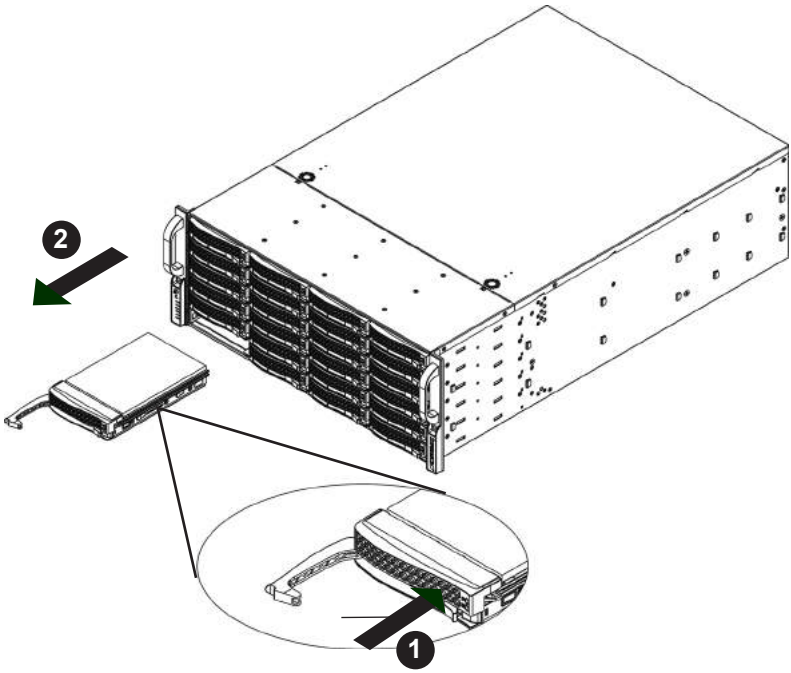


Figure 4-4. Removing a Hard Drive Carrier

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 out of the chassis.

Place the drive carrier on a flat surface such as a desk, table or work bench.

Note: For optional rear and internal drives, see section 4-12.

Installing a Hard Drive

1. Remove the two screws securing the dummy drive to the drive carrier and remove the dummy drive.

2. Slide the hard drive into the carrier with the printed circuit board side facing down.

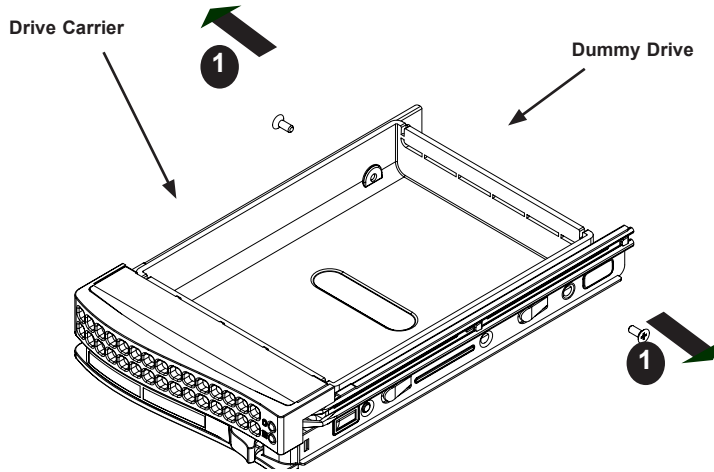


Figure 4-5. Removing a Dummy Drive from the Drive Carrier

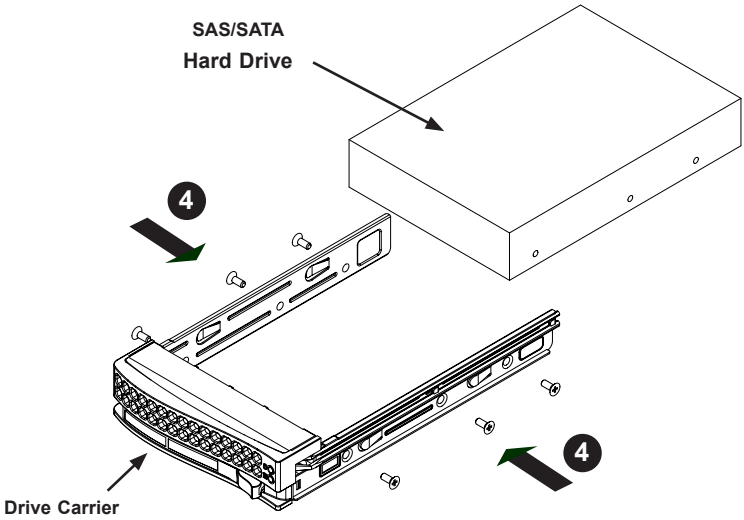


Figure 4-6. Installing the Hard Drive into the Drive Carrier

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 carrier into the chassis. Make sure to close the drive carrier handle to lock the drive carrier into place.

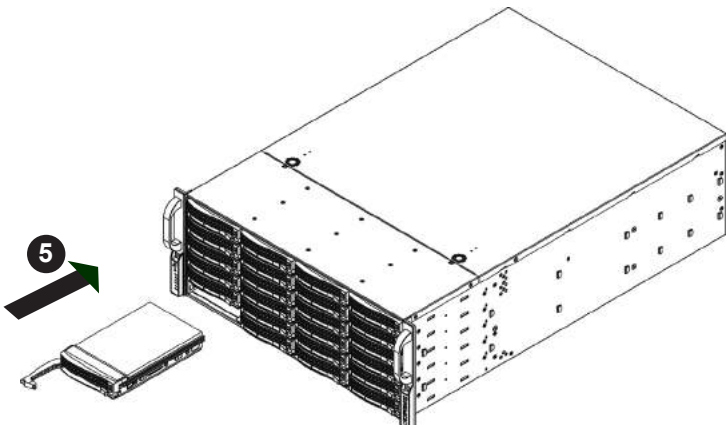


Figure 4-7. Installing the Hard Drive

4-5 Installing the Motherboard

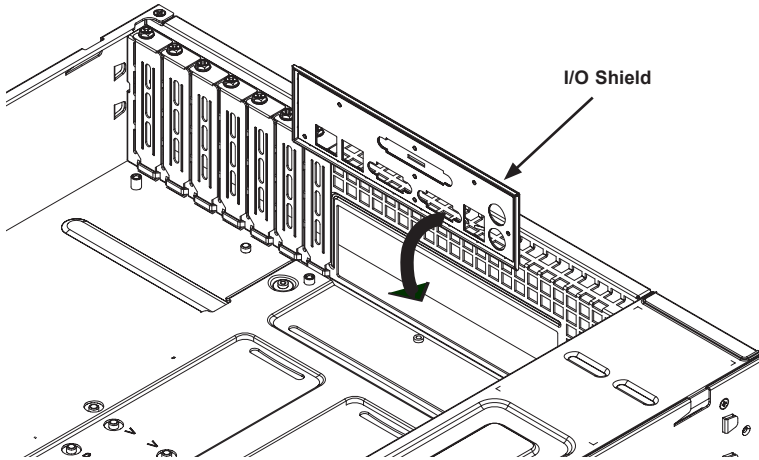


Figure 4-8. I/O Shield Placement

I/O Shield

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

Installing the I/O Shield

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

2. Power down the system as described in section 4-2, lay the chassis on a flat surface, and open the chassis cover.

3. With the illustrations facing the outside of the chassis, place the shield into the space provided.

4. Once installed, the motherboard will hold the I/O shield in place.

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC846 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC846 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 4-9. 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. Power down the system as described in section 4-2 and open the chassis cover as described in Section 4-1.

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).

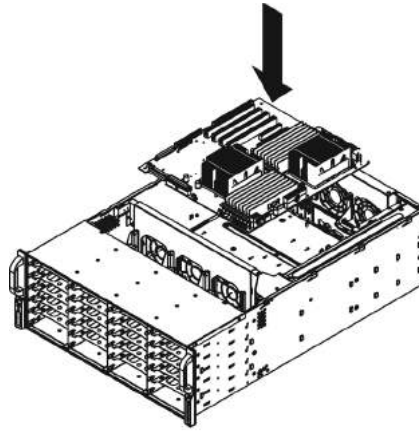


Figure 4-10. Motherboard Installation

4. Place the motherboard in 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 when tightening down the motherboard.

6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.

7. 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.

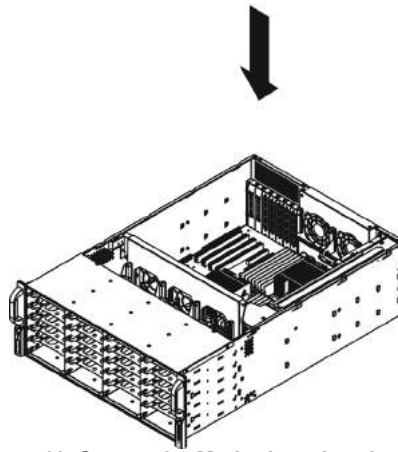


Figure 4-11. Secure the Motherboard to the Chassis

4-6 Expansion Card Setup

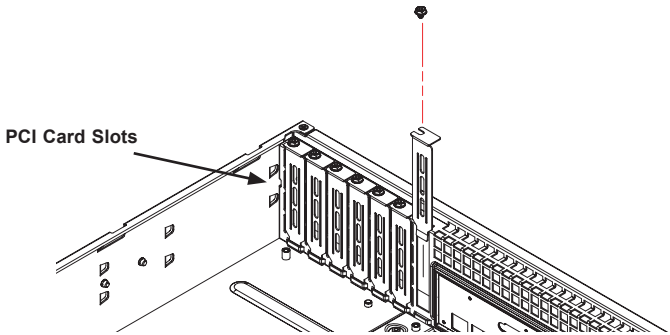


Figure 4-12. Installing Expansion Cards

The SC846 chassis includes PCI slots for expansion cards.

Installing Expansion Cards in the SC846 Chassis:

1. Power down the system as described in section 4-2, lay the chassis on a flat surface, and open the chassis cover.

2. Remove the screw holding the cover in place for each PCI slot you want to use. Keep this screw for later use.

3. Connect the expansion card to the mother board.

4. Secure each card to the chassis using the card's L bracket and the previously removed screw.

4-7 Installing the Air Shroud

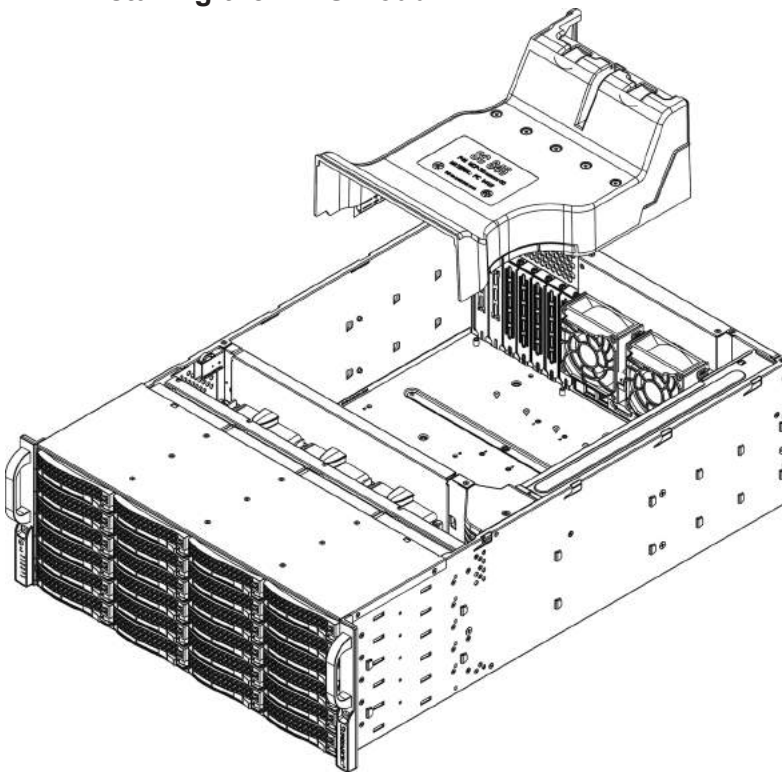


Figure 4-13. Air Shroud for SC846LP Chassis

Air shrouds concentrate airflow to maximize fan efficiency. The SC846 chassis air shroud does not require screws to set up.

Installing the Air Shroud

1. Power down the system as described in section 4-2 and remove the cover as described in Section 4-1.

2. Confirm that your air shroud matches your chassis model. Each shroud is labeled SC846LP, SC846RC, or SC846U.

3. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.

4. Place air shroud in the chassis. The air shroud fits behind the two fans closest to the power supply.

4-8 Checking the Airflow

Checking the Airflow

- Make sure there are no objects to obstruct airflow in and out of the server.
- Do not operate the server without drives or drive carriers in the drive bays. Use only recommended server parts.
- 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 System Fan section of this chapter. If the chassis will be installed into a rack, continue to the next chapter for rack installation instructions

4-9 System Fans

Five heavy-duty system fans (three front fans and two rear fans) provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis internal temperature.

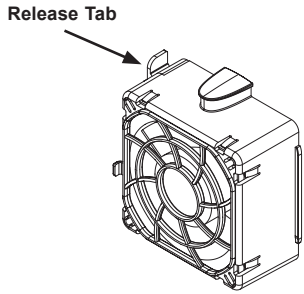


Figure 4-14. Front System Fan

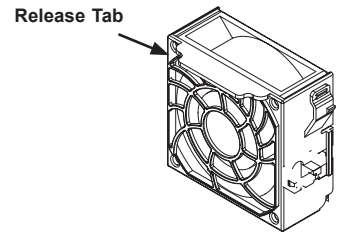


Figure 4-15. Rear System Fan

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis open.)
2. Power down the system as described in section 4-2, lay the chassis on a flat surface, and open the chassis cover.
3. Remove the failed fan's power cord from the serverboard.
4. Press the fan release tab to lift the failed fan from the chassis and pull it completely from the chassis.
5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Power up the system and check that the fan is working properly before replacing the chassis cover.

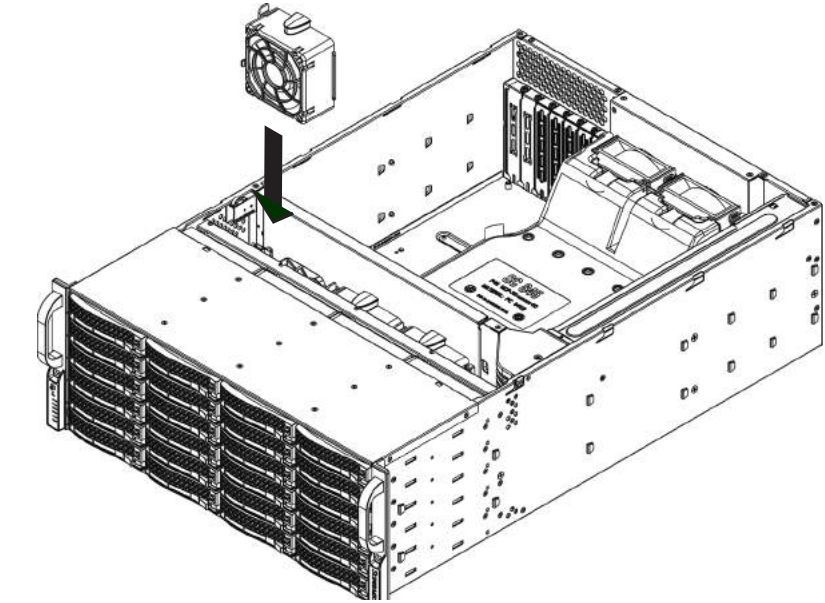


Figure 4-16. Placing the Front System Fan

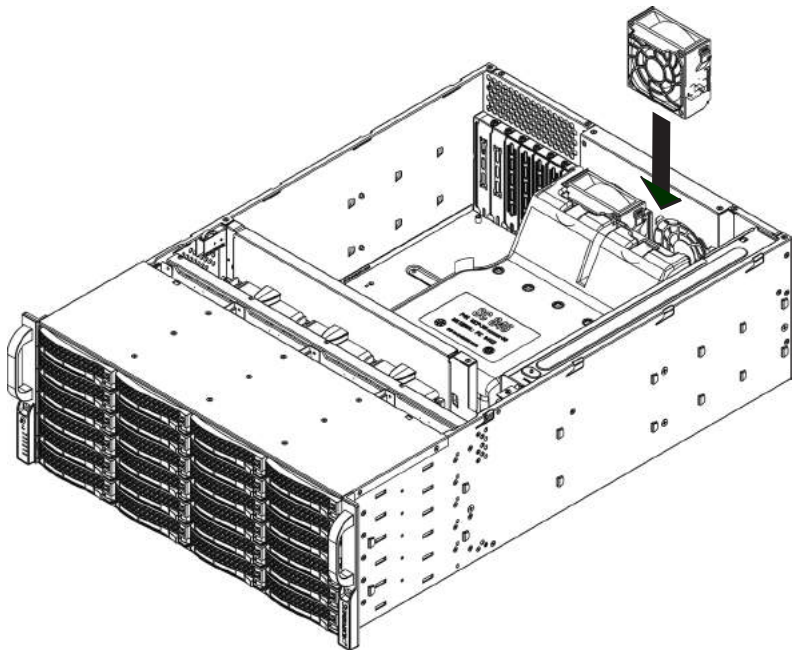


Figure 4-17. Placing the Rear System Fan

4-10 Power Supply

The chassis features redundant power supplies. They are hot-swappable, meaning they can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120v or 180-240v. 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.

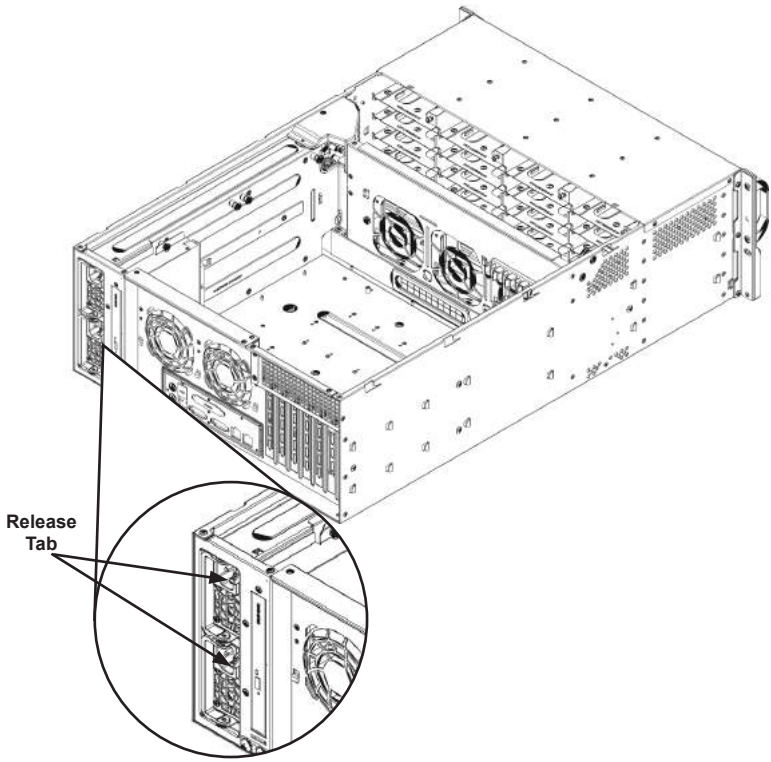


Figure 4-18. Power Supply Release Tab

Changing the Power Supply:

1. Unplug the AC cord from the module to be replaced.
2. Push the release tab on the back of the power supply as illustrated.

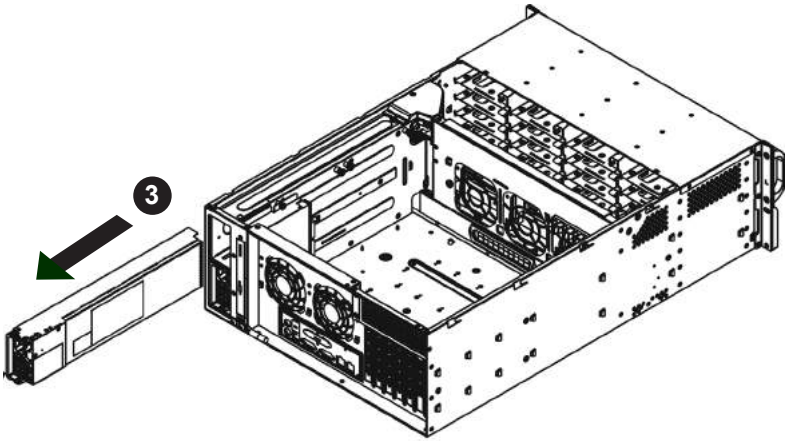


Figure 4-19. Removing the Power Supply

3. Pull the power supply out using the handle provided.
4. Replace the failed power module with another of the same model.
5. Push the new power supply module into the power bay until it clicks into the locked position.
6. Plug the AC power cord back into the module.

4-11 Changing the Power Distributor

The power distributor provides failover and power supply redundancy. In the unlikely event that you must change the power distributor, do following:

Changing the Power Distributor

Power down the system, disconnect the power cords from the back of the power supplies, lay the chassis on a flat surface, and open the chassis cover.

1. Remove all cable connections to the power supplies from the motherboard, backplane, and other components. Also, remove both power supplies.

2. Locate the power distributor between the power supply and the fan row.

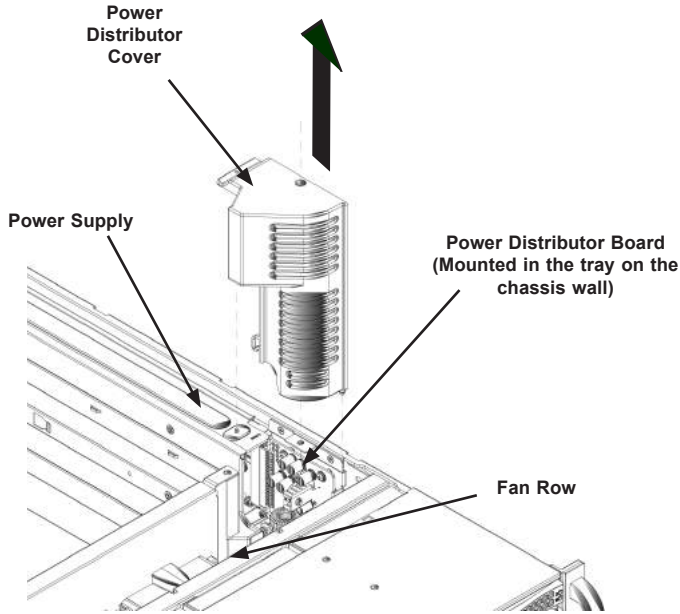


Figure 4-20. Removing the Power Distributor Cover

3. Remove the two screws securing the power distributor housing to the chassis wall.

4. Remove the three screws securing the power distributor to the housing.

5. Gently pull the power distributor and housing from the chassis. Carefully guide all the cables through the power distributor housing.

6. Remove the power distributor from the housing.

7. Slide the new power distributor module into the power distributor housing. Make sure that you slide the cables through the bottom of the housing.

8. Reconnect all the cables, replace the power supply modules, plug the power cords back into the power supplies and power up the system.

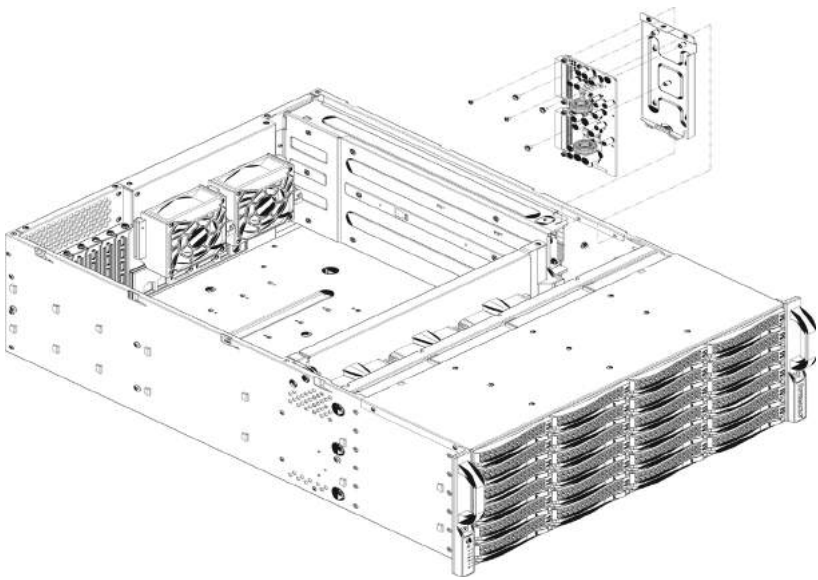


Figure 4-21. Removing the Power Distributor and Housing

4-12 Optional Drives

The SC846 chassis supports optional additional drives. For each Position A and B, the user may install one of the choices listed in the following table.

Position	SC846B Models	Non "B" Models
Position A	One fixed 3.5" HDD Two fixed 2.5" HDDs	One fixed 3.5" HDD Two fixed 2.5" HDDs
Position B	Two hot-swap 2.5" HDDs One fixed 2.5" HDD One DVD drive	One fixed 3.5" HDD One fixed 2.5" HDD One DVD drive

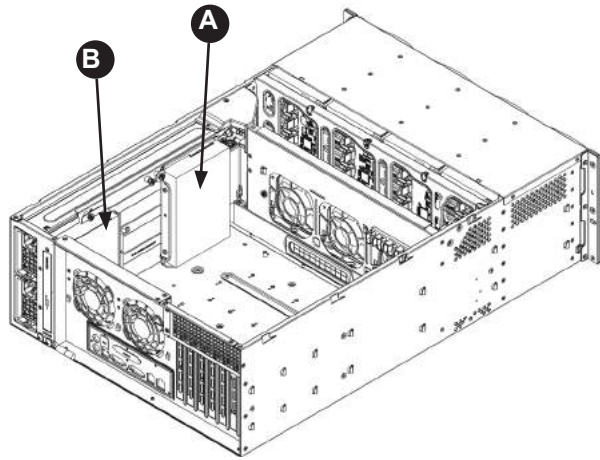


Figure 4-22. Drive Location Options

Fixed Internal Hard Drives

For 3.5" drives, use the mounting tray, MCP-220-84601-0N. For fixed 2.5" drives, use the mounting tray, MCP-220-00051-0N, and attach to MCP-220-84601-0N. **Note:** SC846B does not support 3.5" HDD tray in position B.

Installing the Fixed Hard Drive

1. Power down the system as described in section 4-2 and remove the chassis cover.

2. Install the fixed hard drive into the hard drive tray using four round head screws (6-32) and two Mylar washers.

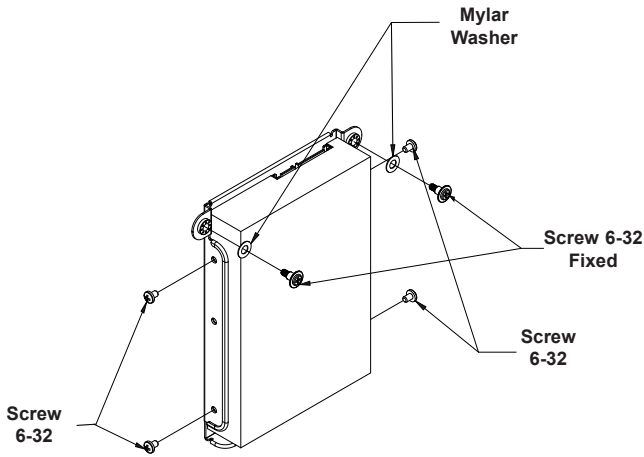


Figure 4-23. Securing the Fixed Hard Drive into the Tray

3. Lower the drive and tray into the chassis, carefully inserting the lower rubber-lined holes onto the pins at the base of the chassis and aligning the upper rubber holes with the holes in the chassis.

4. Use the two drive tray screws with Mylar washers to secure the hard drive and drive tray on the standoff power supply cage.

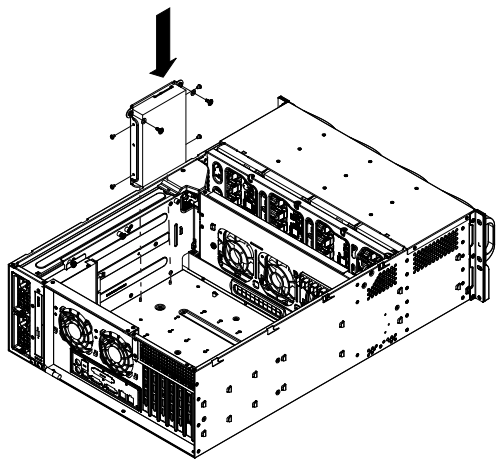


Figure 4-24. Installing the HDD and HDD Tray in the Chassis

5. Connect the power and data cables from the drive to other chassis components including the motherboard and power distributor board.

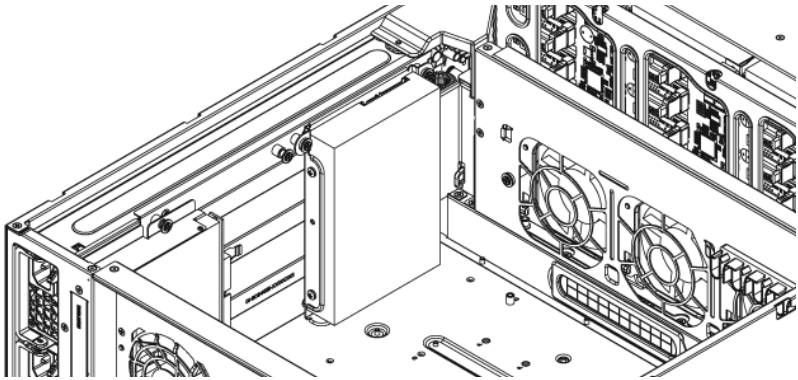


Figure 4-25. Hard Drive and Hard Drive Tray Installed in the Chassis

Installing a DVD Drive

A DVD drive can be installed into the rear peripheral bay of the chassis using the kit, part number MCP-220-84607-0N. Use the picture below to identify the components that are required.

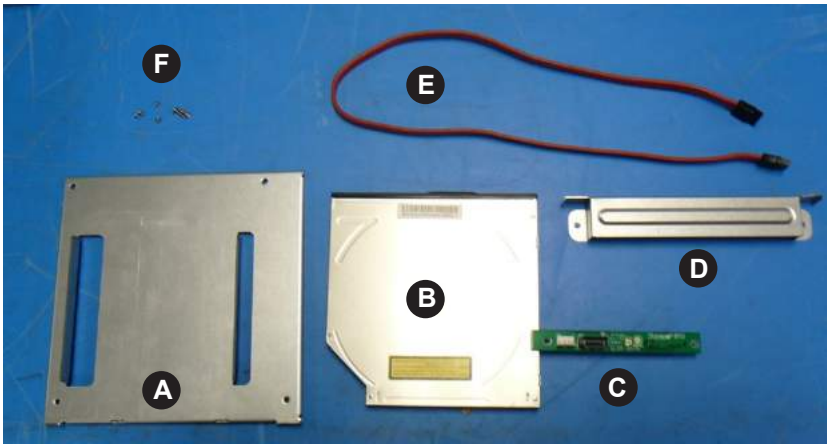


Figure 4-26. DVD Drive Components

DVD Drive Components

A. Lower bracket

B. DVD drive

C. DVD backplane

D. Upper bracket

E. SATA cable

F. Mounting screws

Installing a DVD Drive

1. Power down the system as described in section 4-2 and remove the chassis cover.

2. Remove the screws securing the dummy cover into the rear peripheral drive bay. This bay is located on the rear of the chassis beside the power supplies.

3. Lift the dummy cover up and out of the peripheral drive bay.

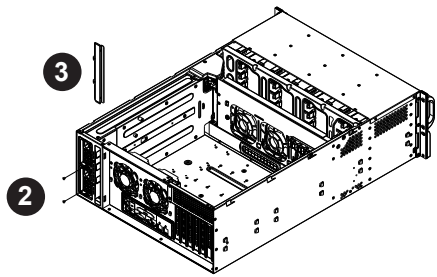


Figure 4-27. Removing the Dummy Cover from the Peripheral Drive Bay

4. Align the mounting holes in the DVD backplane with those in the rear of the DVD drive.

5. Secure the backplane to the rear of the DVD drive using two screws.

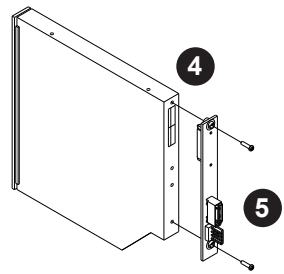


Figure 4-28. Securing the Backplane to the DVD Drive

6. Place the drive onto the lower bracket and align the mounting holes in the drive with those in the bracket.

7. Use four mounting screws to secure the lower bracket to the drive.

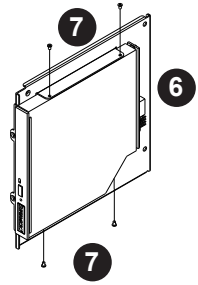


Figure 4-29. Installing the Lower Bracket onto the DVD Drive

8. Place the upper bracket onto the drive and align the mounting holes in the drive with the holes in the upper bracket.

9. Secure the upper bracket to the drive using two screws as shown below.

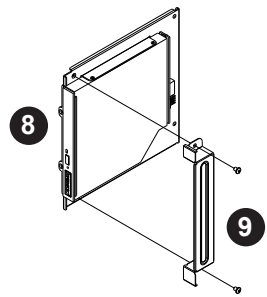


Figure 4-30 Installing the Upper Bracket on the DVD Drive

10. Place the DVD assembly into the chassis, positioning it so that the bottom bracket is against the interior wall of the power supply bay and the front of the DVD drive is accessible through the opening of the rear DVD bay.

11. Align the mounting holes in the DVD with those in the interior wall of the power supply bay and those on the exterior at the rear of the chassis between the DVD bay and the power supply bay. Secure the DVD assembly to the chassis using two screws on the interior wall, and two screws on the rear of the chassis

12. Connect the SATA cable to the SATA port on the backplane.

Installing the Hot-Swap Hard Drive Assembly

For the "B" models of the SC846 chassis, two hot-swap hard drives can be installed using the kit with part number MCP-220-84606-0N. Use the picture below to identify the components which are required.

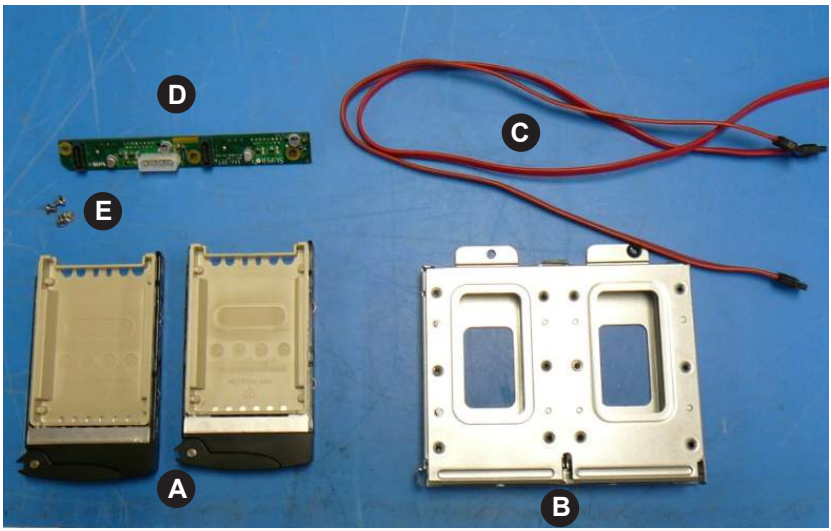


Figure 4-31 SC846B Hard Drive Assembly Components

Hard Drive Assembly Components

A. Two 2.5" hard drive carriers

B. Hard drive cage

C. Two SATA cables

D. Hard drive backplane

E. Mounting screws

Installing the Hard Drive Assembly

1. Disconnect the power from the chassis by unplugging the power cord.

2. Remove the screws securing the dummy cover into the rear peripheral drive bay. This bay is located on the rear of the chassis beside the power supplies.

3. Lift the dummy cover up and out of the peripheral drive bay.

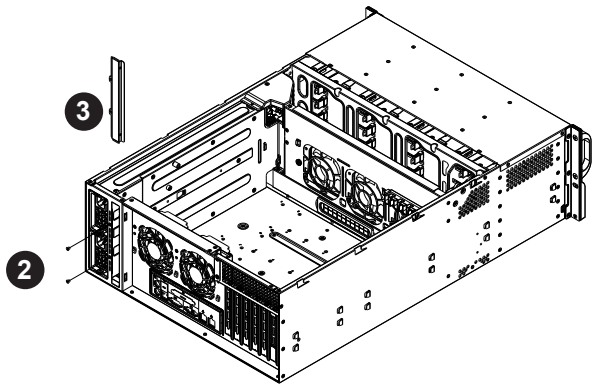


Figure 4-32. Removing the Dummy Cover from the Peripheral Drive Bay

4. Align the mounting holes in the hard drive backplane with those in the rear of the hard drive cage

5. Secure the backplane to the rear of the hard drive cage using two screws.

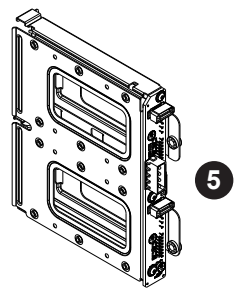


Figure 4-33. Installing the Backplane onto the Hard Drive Cage

6. Remove the dummy drives from the hard drive carriers.

7. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

8. Align the drive in the carrier so that the mounting holes of both are aligned. Note that there are holes in the carrier marked "SAS" or “SATA” to aid in correct installation.

9. Secure the drive to the carrier with four screws as illustrated above. Use the four M3 flat-head screws included in the HDD bag of your accessory box. Note that the screws used to secure the dummy drive to the carrier cannot be used to secure the hard drive.

10. Insert the hard drive and drive carrier into its bay vertically, keeping the carrier oriented so that the release button is on the bottom. When the carrier reaches the rear of the bay, the release handle will retract.

11. Using the thumb, push against the upper part of the hard drive handle. Push the hard drive into the hard drive bay as illustrated below, until the hard drive clicks into the locked position.

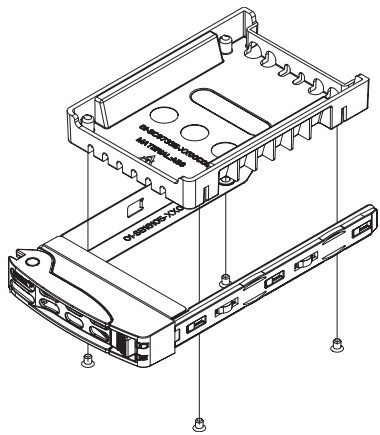


Figure 4-34. Installing a Hard Drive into the Hard Drive Carrier

12. Place the hard drive assembly into the chassis, positioning it so that the mounting holes in the front of the hard drive align with those in the front of the the chassis and the mounting holes in the interior wall of the power supply bay align with those on the hard drive cage.

13. Secure the hard drive assembly to the chassis using two screws on the interior wall, and two screws on the rear of the chassis

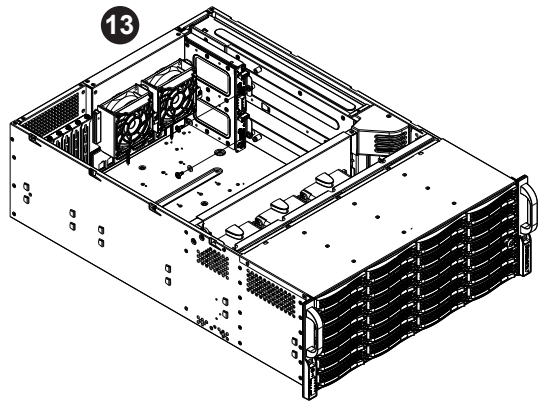


Figure 4-35. Installing the Hard Drive Assembly into the Chassis

14. Connect the SATA cable to the SATA port on the backplane

15. Connect the power cords to the power supplies and power-up the server.

4-13 Accessing the Backplane

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

Removing the Backplane

1. Power down the system, remove the power cords from the back of the power supplies and remove the chassis cover.

2. Disconnect the cabling to the backplane.

3. On the right side of the chassis, remove the two screws that secure the backplane bracket and set these aside for later use.

4. Remove the four upper screws securing backplane housing to the chassis and set these aside for later use.

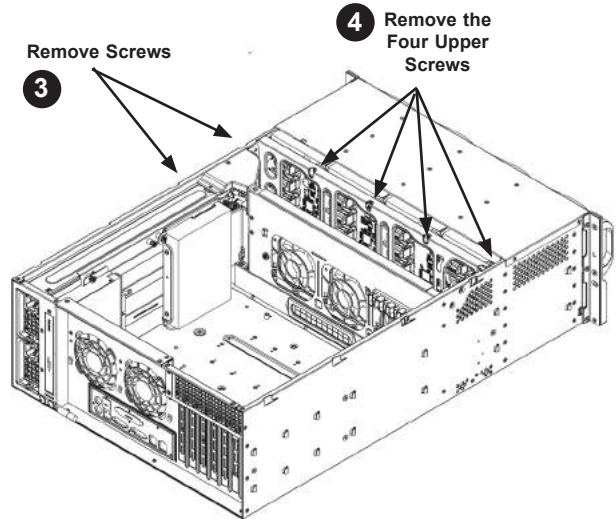


Figure 4-36. Removing the Upper Backplane Housing Screws

5. Remove the five lower screws securing the backplane housing to the chassis floor and set these aside for later use.

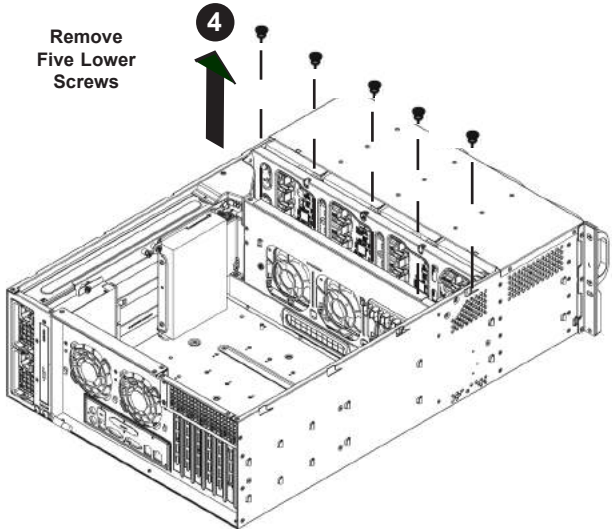


Figure 4-37. Removing the Lower Backplane Housing Screws

6. Gently ease the backplane up and out of the chassis.

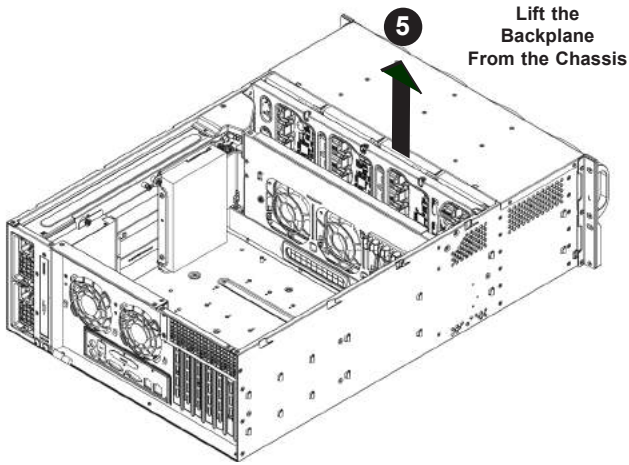


Figure 4-38. Removing the Backplane from the Chassis

Installing the Backplane

1. Gently slide the backplane and its housing back into position in the chassis.

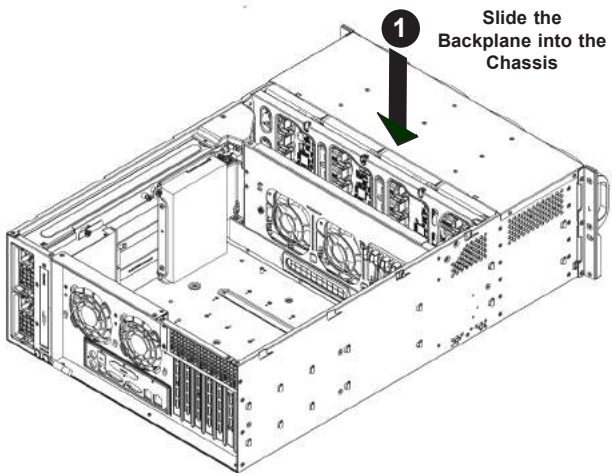


Figure 4-39. Slide the Backplane into the Chassis

2. Install the five lower screws which secure the backplane housing to the chassis floor.

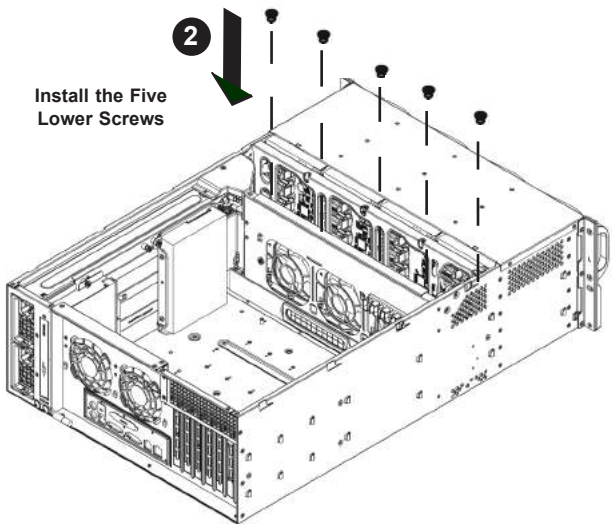


Figure 4-40. Installing the Lower Screws

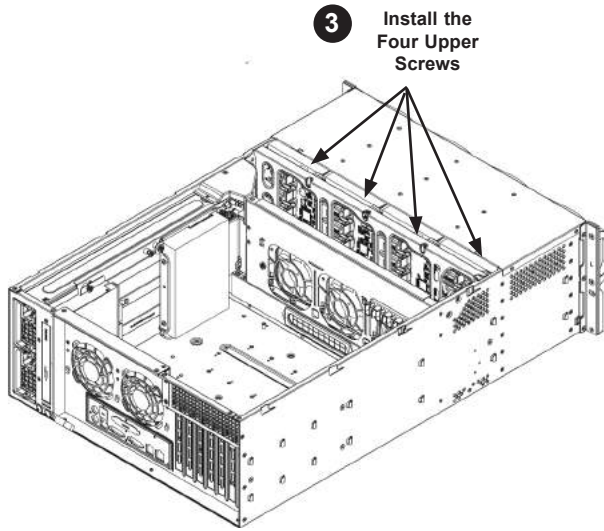


Figure 4-41. Installing the Upper Screws

3. Install the four upper screws which secure the backplane housing to the chassis.

4. Install the two screws on the right side of the chassis to secure the backplane bracket.

5. Reconnect the cabling to the backplane.

Notes

Chapter 5

Rack Installation

This chapter provides instructions for preparing and mounting your chassis in a rack.

5-1 Unpacking the System

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

5-2 Preparing for Setup

Decide on a suitable location for the rack unit that will hold your chassis. It should be a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. A nearby grounded power outlet. is required

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws to mount the system into the rack. Please read this chapter in its entirety before beginning the installation procedure.

Choosing a Setup Location

- Leave at least 25 inches clearance in front of the rack to open the front door completely.
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and access for servicing.
- It should be a restricted access location, such as a dedicated equipment room or a service closet.

5-3 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.
- Only one chassis should be extended from the rack at a time. Extending two or more chassis simultaneously may cause the rack to become unstable.
- When initially installing the server to a rack, test that the rail locking tabs engage to prevent the server from being overextended. Have a rack lift in place as a precaution in case the test fails.
- In any instance of pulling the system from the rack, always use a rack lift and follow all associated safety precautions.

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 upward.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot-swappable hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

Sufficient Airflow

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

Circuit Overloading

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

Reliable Ground

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



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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- Slide rail mounted equipment is not to be used as a shelf or a work space.

5-4 Procedure for Rack Mounting

This section provides information on installing a 4U chassis into a rack unit with the rails provided. There are a variety of rack units on the market, so the assembly procedure may differ slightly. Also refer to the installation instructions for your rack unit.

Note: This rail will fit a rack between 26.5"and 36.4" deep.

Identifying the Inner Rack Rails

The chassis package includes one pair of rack rail assemblies in the rack mounting kit. Each assembly consists of an inner rail that secures to the chassis and an outer rail that is attached directly to the rack. The inner rails are etched with "L" (Left side) and "R" (Right side).

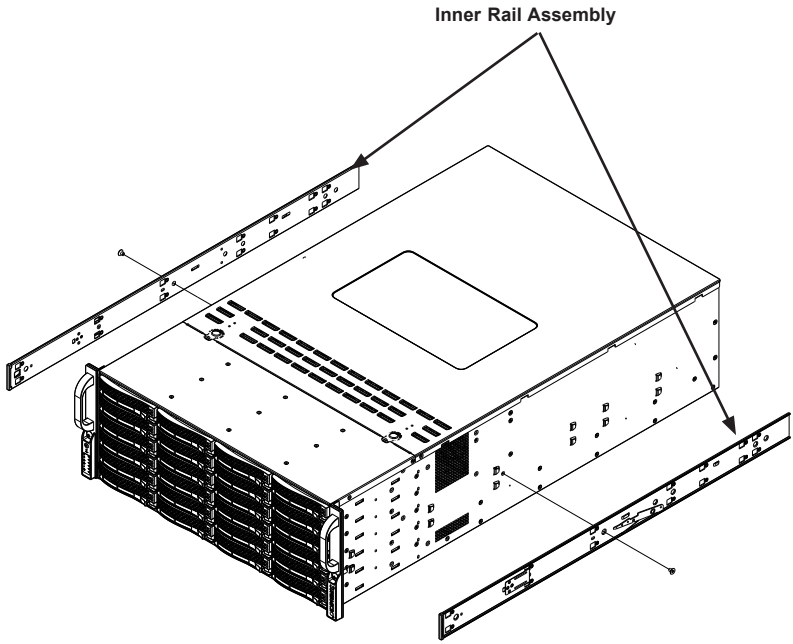


Figure 5-1. Identifying the Rack Rails

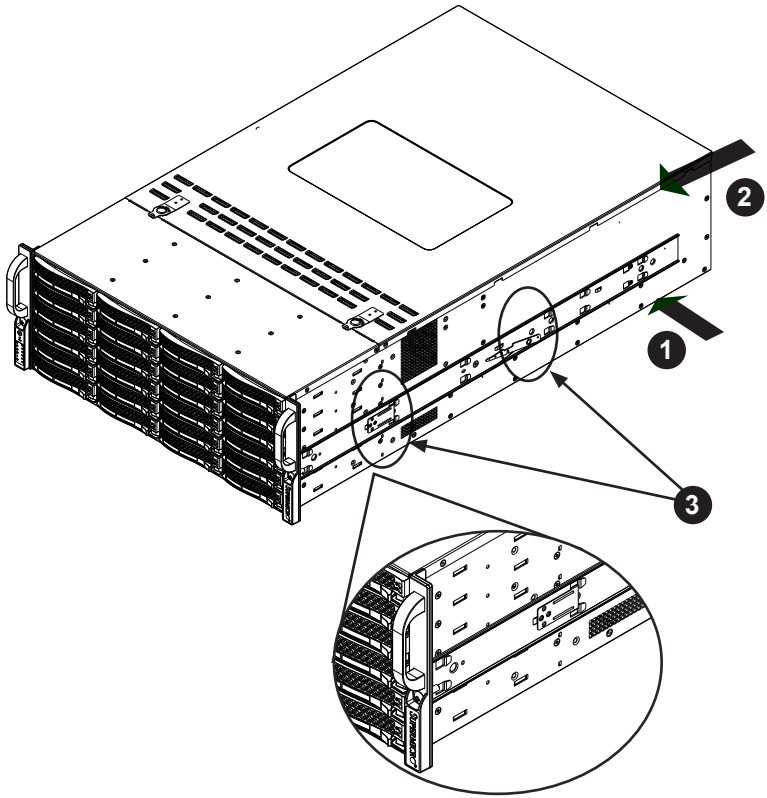


Figure 5-2. Installing the Inner Rails

Installing the Inner Rails on the Chassis

Installing the Inner Rails

1. Identify the left and right side inner rails. Place the correct inner rail on the side of the chassis, aligning the hooks of the chassis with the inner rail holes. Make sure the rail faces "outward" so that it will fit with the rack's mounting bracket.

2. Slide the rail toward the front of the chassis to hook the inner rail onto the side of the chassis.

3. If desired, secure the rail with two flat head M4 x 4mm screws as illustrated.

4. Repeat for the other inner rail.

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

Installing the Outer Rails onto 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 on the front of the outer rail onto the square holes on the front of the rack. If desired, use screws to secure the outer rails to the rack.
4. Pull out the rear of the outer rail, adjusting the length until it just fits within the posts of the rack.
5. Hang the hooks of the rear section of the outer rail onto the square holes on the rear of the rack. Take care that the proper holes are used so the rails are level. If desired, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat for the other outer rail.

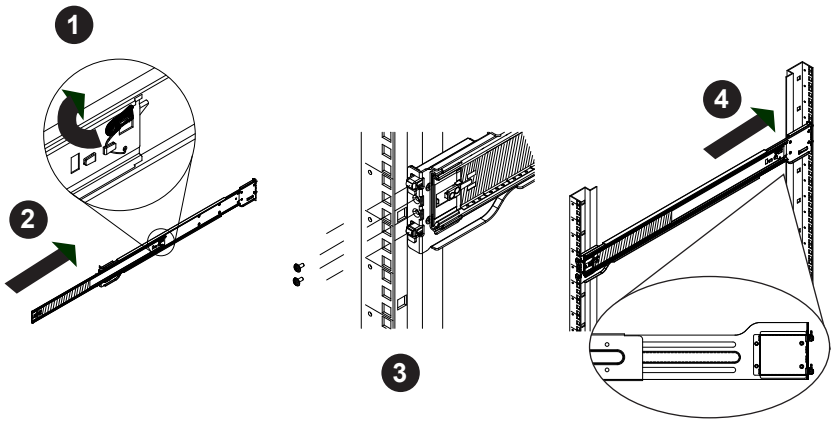


Figure 5-3. Extending and Mounting the Outer Rails

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

Do not use a two post "telco" type rack.

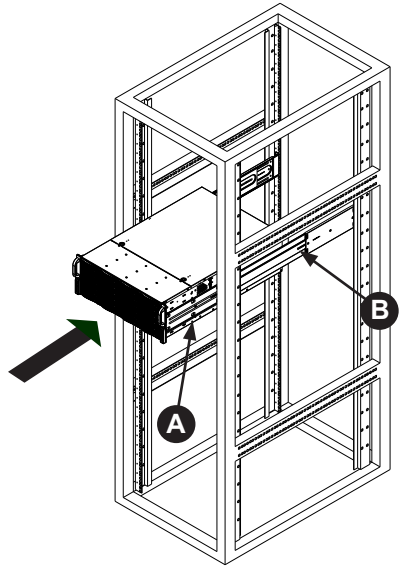


Figure 5-4. Installing the Chassis into a Rack

Note: Figures are for illustrative purposes only. Always install servers into racks from the bottom up.

Installing the Chassis into a Rack

Installing the Chassis into a Rack:

1. Align the chassis rails (A) with the front of the rack rails (B).

2. Slide the chassis rails into the rack rails, keeping the pressure even on both both sides. You may have to depress the locking tabs while inserting. When the server has been pushed completely into the rack, the locking tabs should "click" into the locked position.

3. If screws are used, tighten the screws on the front and rear of the outer rails.

4. (Optional) Insert and tighten the thumbscrews that hold the front of the server to the rack.

Removing the Chassis from the Rack

Caution! It is dangerous for a single person to off-load the heavy chassis from the rack without assistance. Be sure to have sufficient assistance supporting the chassis when removing it from the rack. Use a lift.

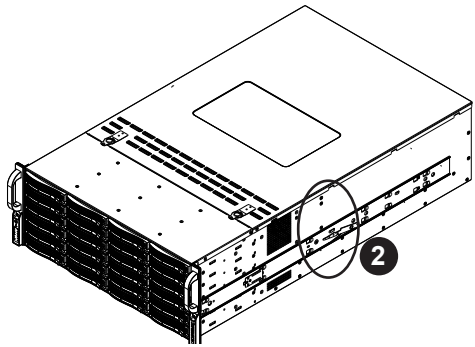


Figure 5-5. Removing the Chassis From the Rack

Removing the Chassis from the Rack

1. Pull the chassis forward out the front of the rack until it stops.

2. Press the release latches on each of the inner rails downward simultaneously and move the chassis forward in the rack.

Appendix A

Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

-R1K28	
	1280W
MFR Part #	PWS-1K28P-SQ
AC Input	1000W Output @ 100-140V, 8-12A, 50-60Hz 1280W Output @ 180-240V, 6-8A, 50-60Hz
DC Output	1000W: +12V/83A; +5Vsb/4A 1280W: +12V/106.7A, +5Vsb/4A

-R1200	
	1200W
MFR Part #	PWS-1K21P-1R
AC Input	1000W Output @ 100-140V, 11.5-8A, 50-60Hz 1200W Output @ 180-240V, 8-5.5A, 50-60Hz
DC Output	1000W: +12V/83A; +5Vsb/4A 1200W: +12V/100A; +5Vsb/4A with PDB: +5V: 50 Amp, +3.3V: 30 Amp, -12V: 0.6 Amp

-R920	
	920W
MFR Part #	PWS-920P-SQ
AC Input	100-240 V, 50-60 Hz, 11-4.5 Amp
DC Output	+12V/75A; +5Vsb/4A

-R900	
	900W
MFR Part #	PWS-902-1R
AC Input	100 - 240V, 60-50Hz, 11-4.5 Amp
DC Output	+12V/75A; +5Vsb/4A with PDB: +5V: 50 Amp, +3.3V: 30 Amp, -12V: 0.6 Amp

Notes

Appendix B

SAS-846TQ 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.

B-1 ESD Safety Guidelines

Electriostatic 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.

B-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.

B-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.

B-4 Introduction to the SAS-846TQ Backplane

The SAS-846TQ 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-846TQ Revision 1.00, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

B-4 Rear Connectors and Jumpers

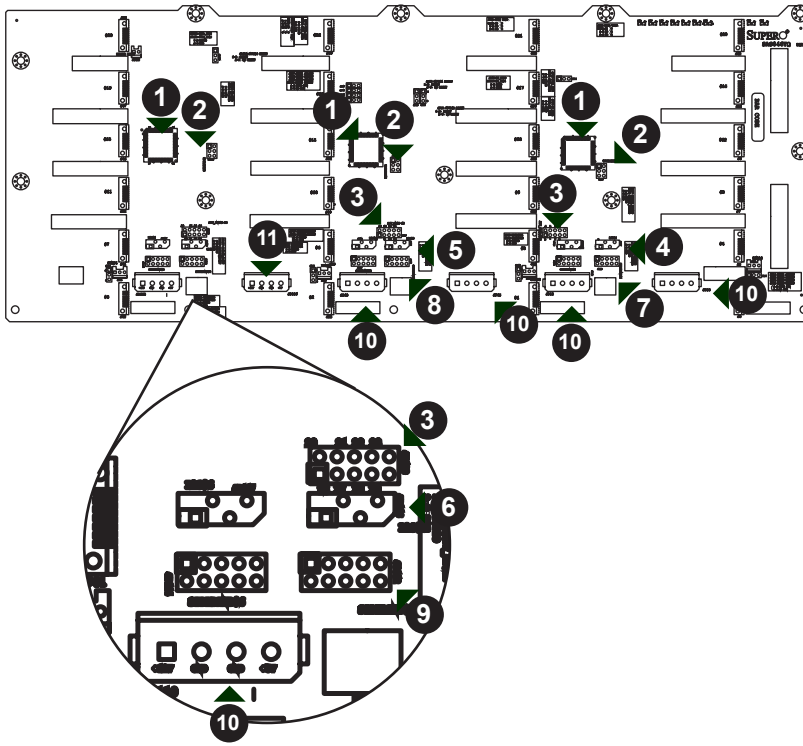


Figure B-1: Rear Connectors

Front Connectors

1. Chip: MG 9072
2. Upgrade Connectors: JP69, JP78 and JP115
3. ACT_IN: JP26, JP47, and JP108
4. I²C Connector #1 (JP37) and #2 (JP95)
5. I²C Connector #3 (JP52) and #4 (JP96)
6. I²C Connector #5 (JP116) and #6 (JP117)
7. Sideband Connector #1 (JP66) and #2 (JP68)
8. Sideband Connector #3 (JP75) and #4 (JP77)
9. Sideband Connector #5 (JP112) and #6 (JP114)
10. Power Connectors (4-pin): JP10, JP13, JP46, JP48, JP109, and JP110

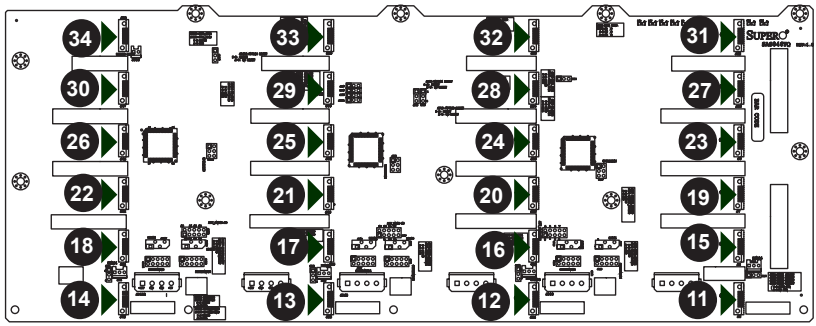


Figure B-2: SAS Ports

11. SAS Port #0 J5
12. SAS Port #1 J14
13. SAS Port #2 J26
14. SAS Port #3 J40
15. SAS Port #4 J6
16. SAS Port #5 J16
17. SAS Port #6 J29
18. SAS Port #7 J41
19. SAS Port #8 J7
20. SAS Port #9 J22
21. SAS Port #10 J30
22. SAS Port #11 J42
23. SAS Port #12 J8
24. SAS Port #13 J23
25. SAS Port #14 J32
26. SAS Port #15 J46
27. SAS Port #16 J10
28. SAS Port #17 J24
29. SAS Port #18 J38
30. SAS Port #19 J47
31. SAS Port #20 J12
32. SAS Port #21 J25
33. SAS Port #22 J39
34. SAS Port #23 J48

B-5 Rear 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. - 6. I²C Connectors

The I²C Connectors, designated JP37, JP95, JP52, JP96, JP116, and JP117, are used to monitor HDD activity and status. See the table on the right for pin definitions.

I²C Connector Pin Definitions

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

7. - 9. Sideband Headers

The sideband headers are designated JP66, JP68, JP75, JP77, JP112, and JP114. For SES-2 to work properly, you must connect an 8-pin sideband cable. See the table to the right for pin definitions.

NOTE: SGPIO is the default setting for this backplane.

Sideband Headers

Pin #	Definition	Pin #	Definition
2	**SGPIO:** SDIN **I²C:** Backplane Addressing (SB5)	1	Controller ID (SB6)
4	**SGPIO:** SDOUT **I²C:** Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	**SGPIO:** SLOAD **I²C:**SDA (SB1)
8	Backplane ID (SB7)	7	**SGPIO:** SCLOCK **I²C:**SCL (SB0)
10	No Connection	9	No Connection

10. 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

11 - 34. SAS Ports

The SAS ports are used to connect the SAS drive cables. The twenty-four ports are designated #0 - #23. Each port is also compatible with SATA drives.

B-6 Rear Jumper Locations and Pin Definitions

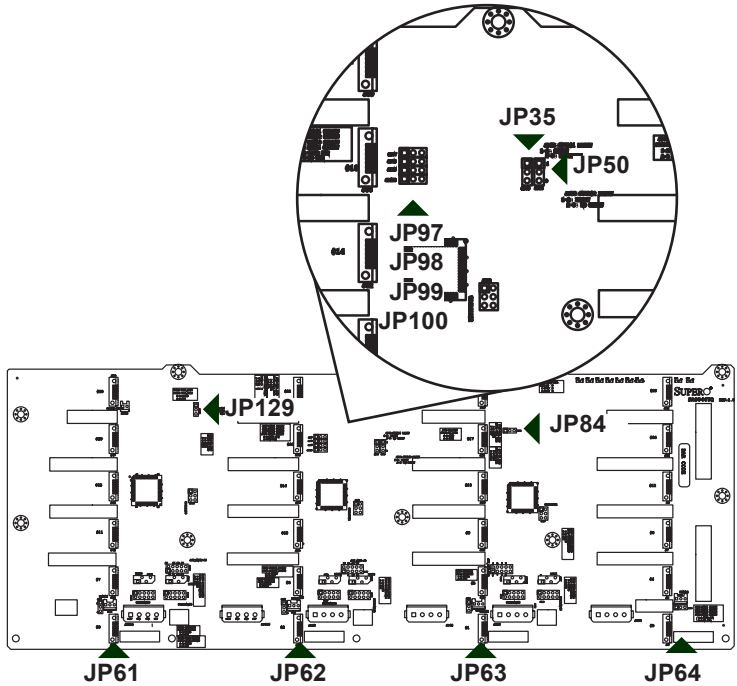
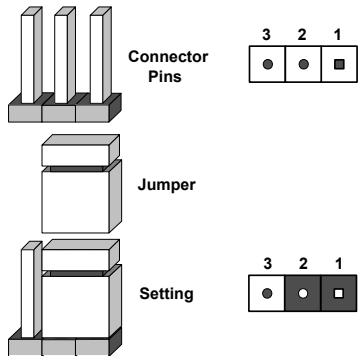


Figure B-3: Rear Jumpers

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	1-2: Reset 2-3: Default	MG 9072 chip reset #1
JP50	1-2: Reset 2-3: Default	MG 9072 chip reset #2
JP129	1-2: Reset 2-3: Default	MG 9072 chip reset #3

Fan Jumper Settings

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

I²C and SGPIO Modes and Jumper Settings

This backplane can utilize I²C 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 I²C mode.

SGPIO Setting (Default)		
Jumper	**Jumper Setting**	**Note**
JP84	1-2	SGPIO mode setting

I²C Setting		
Jumper	**Jumper Setting**	**Note**
JP84	2-3	I²C setting

Rear LED Indicators

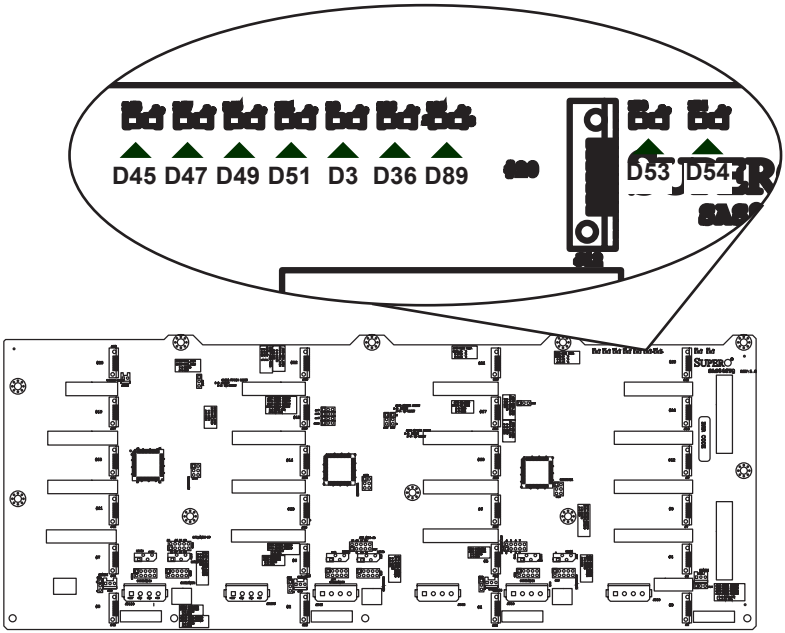


Figure B-4: Rear LEDs

Rear 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/drive failure 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.

B-7 Front Connectors and LED Indicators

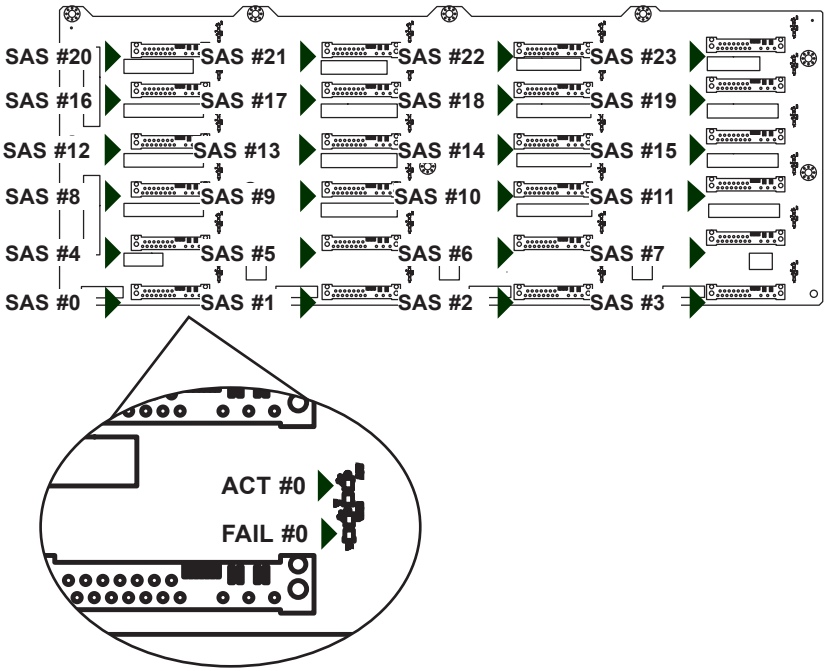


Figure B-5: Front Connectors and LEDs

Front SAS/SATA Connectors			
Front Connector	**SAS Drive Number**	**Front 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

Front LED Indicators		
Front LED	**Hard Drive Activity**	**Failure LED**
SAS #0	D12	D5
SAS #1	D22	D23
SAS #2	D40	D37
SAS #3	D102	D107
SAS #4	D13	D6
SAS #5	D24	D29
SAS #6	D41	D38
SAS #7	D104	D108
SAS #8	D14	D7
SAS #9	D25	D30
SAS #10	D42	D39
SAS #11	D106	D109
SAS #12	D15	D8
SAS #13	D26	D31
SAS #14	D87	D88
SAS #15	D111	D110
SAS #16	D18	D19
SAS #17	D27	D32
SAS #18	D100	D103
SAS #19	D118	D119
SAS #20	D21	D20
SAS #21	D28	D33
SAS #22	D101	D105
SAS #23	D120	D121

Appendix C

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.

C-1 ESD Safety Guidelines

Electrotatic 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.

C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3 An Important Note to Users

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

C-4 Introduction to the SAS-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 1.01, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

C-5 Rear Connectors and Jumpers

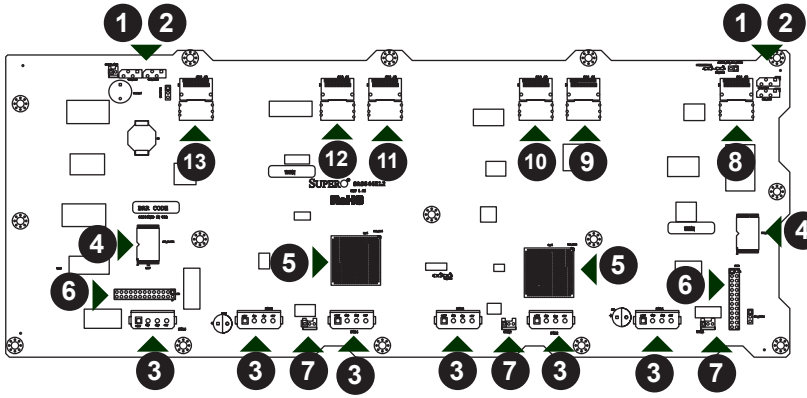


Figure C-1: Rear Connectors

Rear Connectors

1. and 2. Primary and secondary I^2C 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)

C-6 Rear Connector and Pin Definitions

1. and 2. Optional Primary and Secondary I²C Connectors

The optional I²C connectors are connected to the CSE-PTJBOC-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.

I²C 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.

C-7 Rear Jumper Locations and Pin Definitions

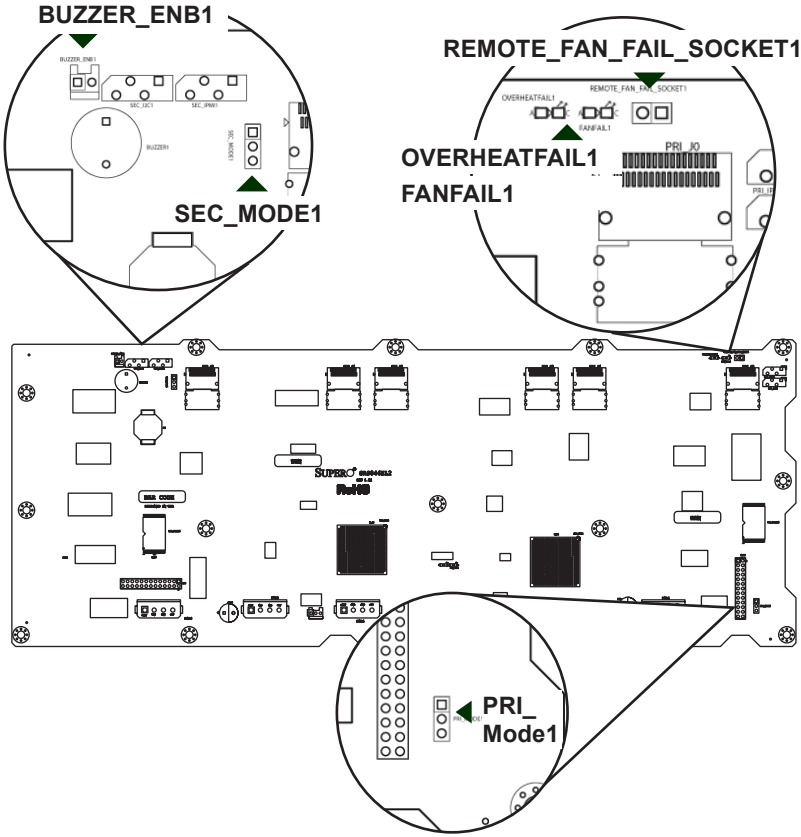
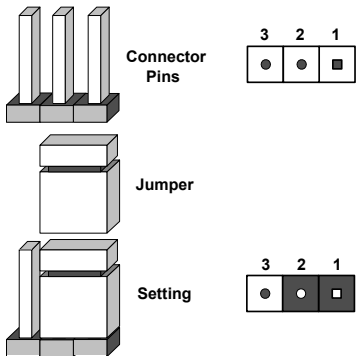


Figure C-2: Rear Jumper Locations and Pin Defimitions

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.



General Jumper Settings		
Jumper	**Jumper Settings**	**Note**
PRI_MODE1	1-2	Factory Setting Do not change
SEC_MODE1	1-2	Factory Setting Do not change
BUZZER_ENB1	Open: Disable Closed: Enable	Buzzer Enable*

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

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. Fan failure
3. System temperature over 45º Celsius.

Socket Settings		
Socket	**Socket Setting**	**Note**
REMOTE_FAN_FAIL_ SOCKET	Connected	Rear Panel Fan Fail indicator (Optional)

Rear Panel LEDs		
LED	**State**	**Specification**
OVERHEATFAIL1	On	Overheat/Drive Failure LED Indicator (Red light: flashing, Buzzer: On)
FANFAIL1	On	Fan #1 failure

C-8 Front Connectors and LED Indicators

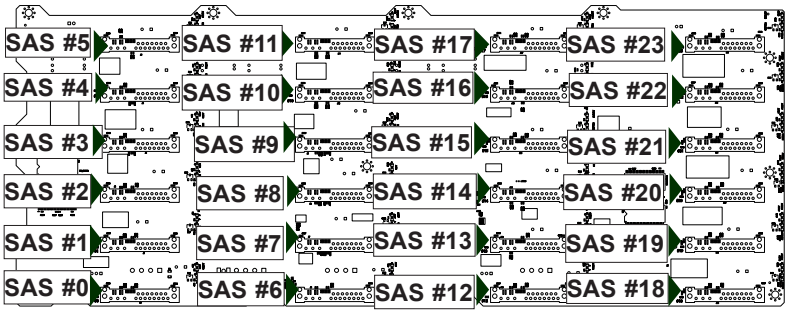


Figure C-3: Front Connectors

Front SAS/SATA Connectors			
Front Connector	**SAS Drive Number**	**Front 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

Front LED Indicators		
Front Connector	**Hard Drive Activity LED**	**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
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

C-9 Dual Port and Cascading Configurations

The following section contains cascading configurations for the SC846EL1 and SC846EL2 backplanes.

C-10 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.

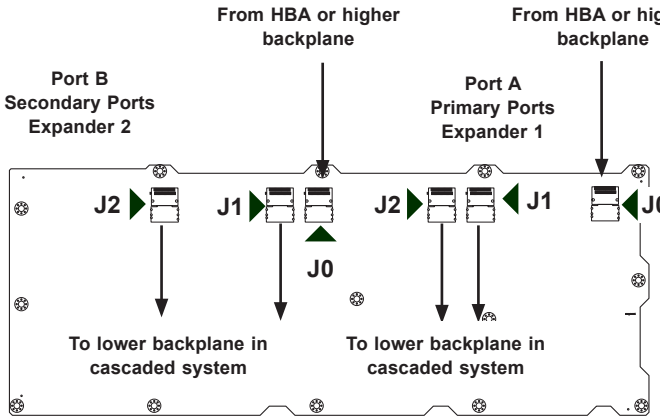


Figure C-4: SAS-846EL2 Dual Port Configuration

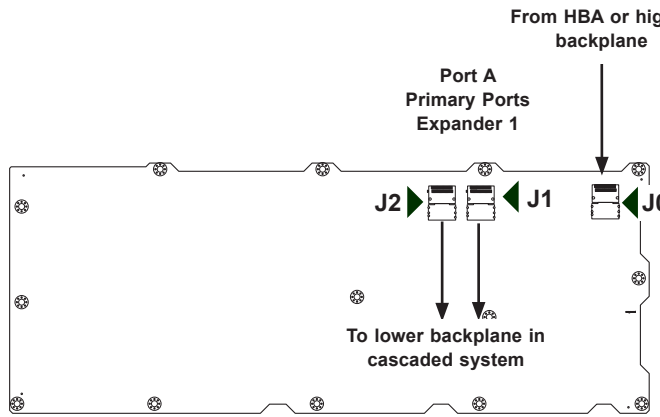


Figure C-5: SAS-846EL1 Single Port Configuration

C-11 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).

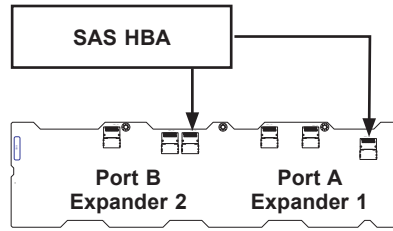


Figure C-6: Single HBA

Single Host Bus Adapter Failover

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

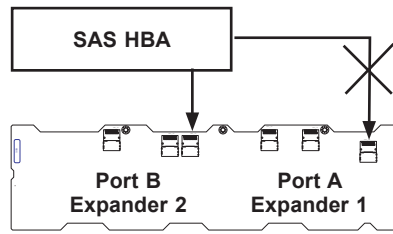


Figure C-7: Single HBA Failover

C-12 Failover with RAID Cards and Multiple HBAs

The SAS-836EL backplane may be configured for failover with multiple HBAs using either RAID controllers or HBAs to acheive failover protection.

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

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

Dual Host Bus Adapter

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

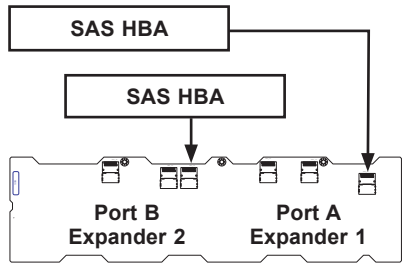


Figure C-8: Dual HBA

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.

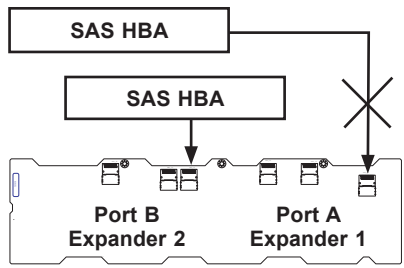


Figure C-9: Dual HBA Failover

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

C-13 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 or as an appendix in the SAS-846EL chassis manual.

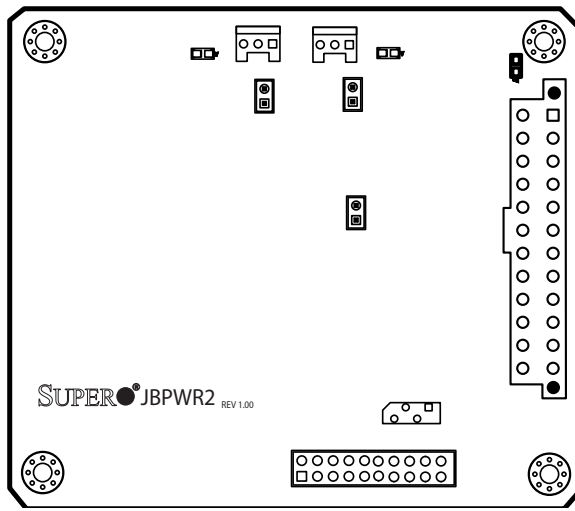


Figure C-10: Chassis Power Card (Sold Separately)

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

Connecting an Internal Host Bus Adapter to the Backplane

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

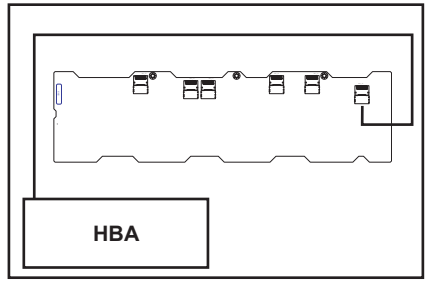


Figure C-11: Single Internal Host Bus Adapter

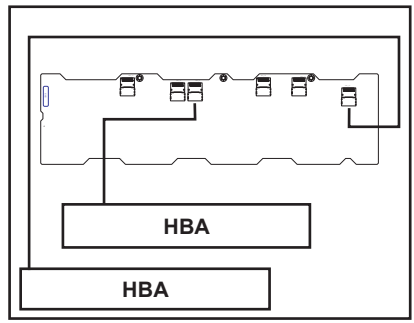


Figure C-12: Dual Internal Host Bus Adapter

IMPORTANT: See Section C-12 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

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-pin) 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-pin) 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

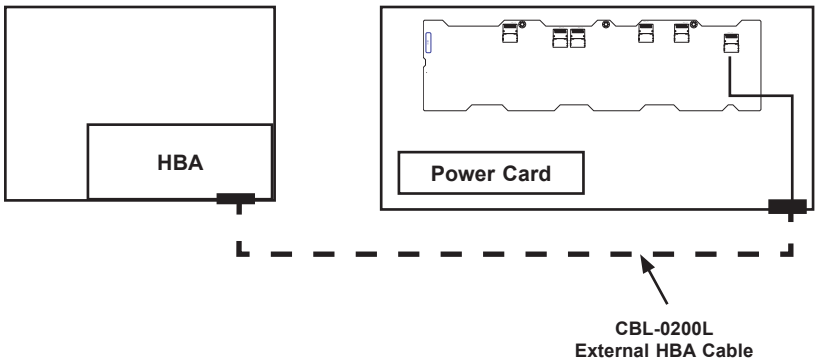


Figure C-13: Single External Host Adapter

Dual External Host Bus Adapter

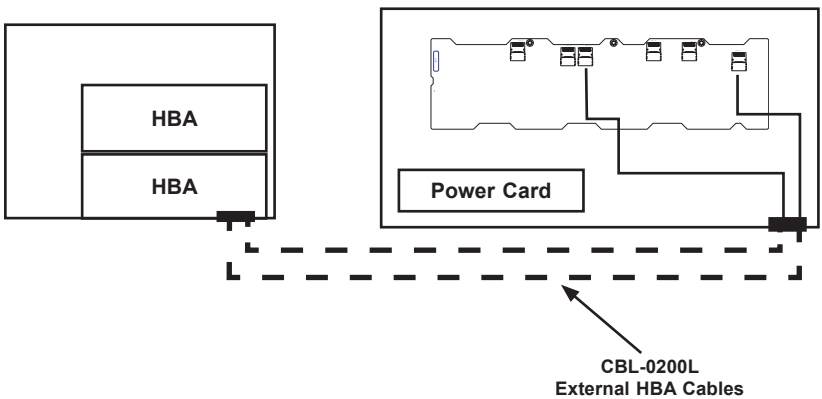


Figure C-14: Dual External Host Bus Adapter

IMPORTANT: See Section 3-3 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Supported External HBA to Backplane Cable

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



Figure C-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-pin) 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.

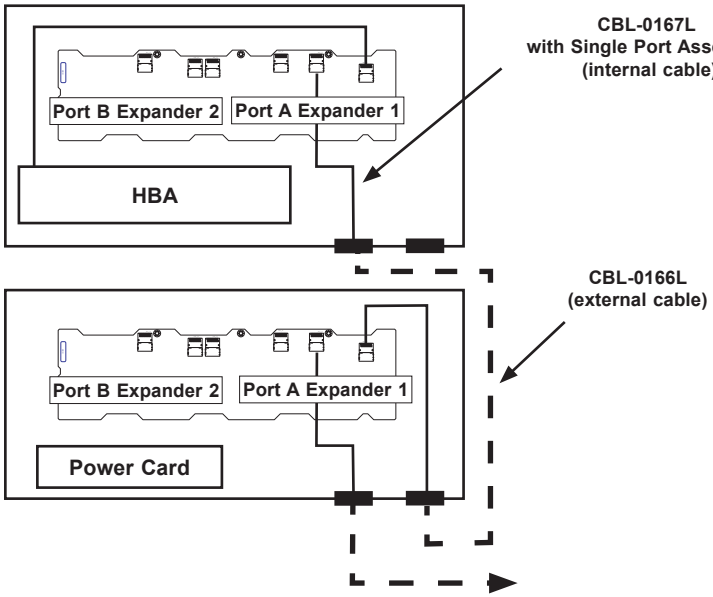


Figure C-16: Single HBA Configuration

Single HBA Configuration Cables

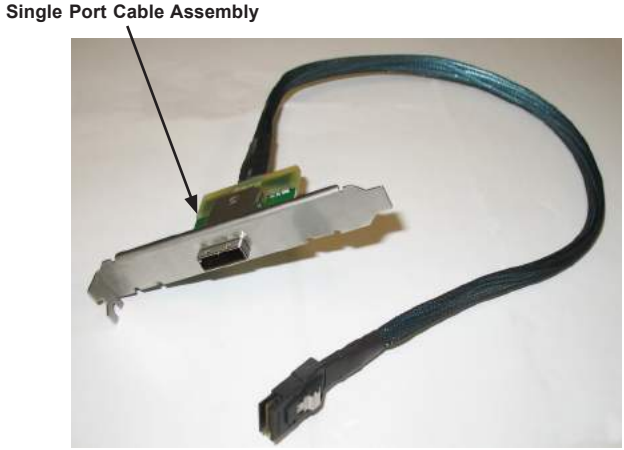


Figure C-17: Single Port Internal Cable (CBL-0167L)

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 C-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.

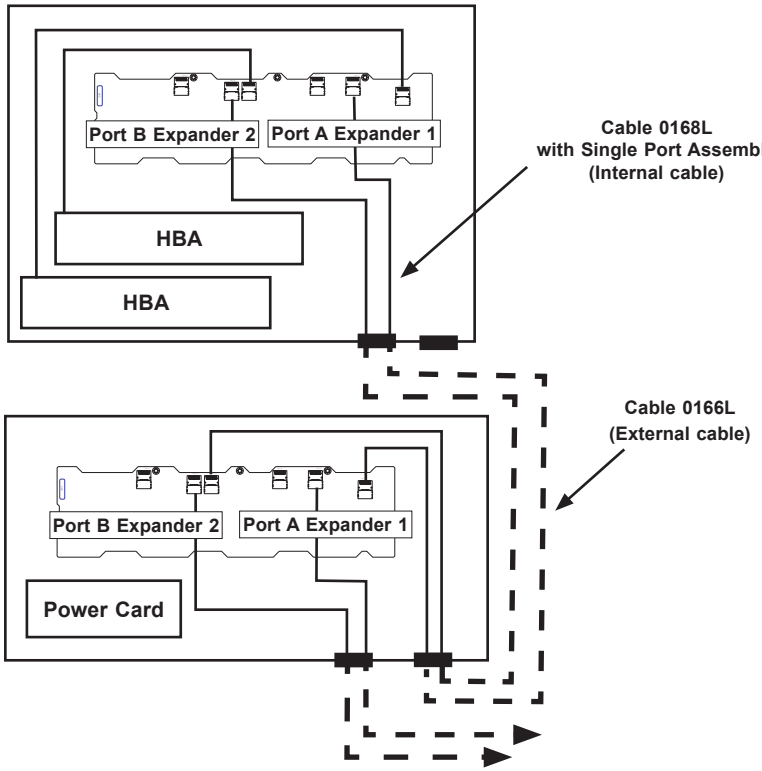


Figure C-19: Dual HBA Configuration

IMPORTANT: See Section C-12 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Dual HBA Configuration Cables



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

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

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 C-21: External Cable (CBL-0166L)

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

Part #: CBL-0166L **Placement:** External cable
Ports: Single or Dual

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

C-14 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.

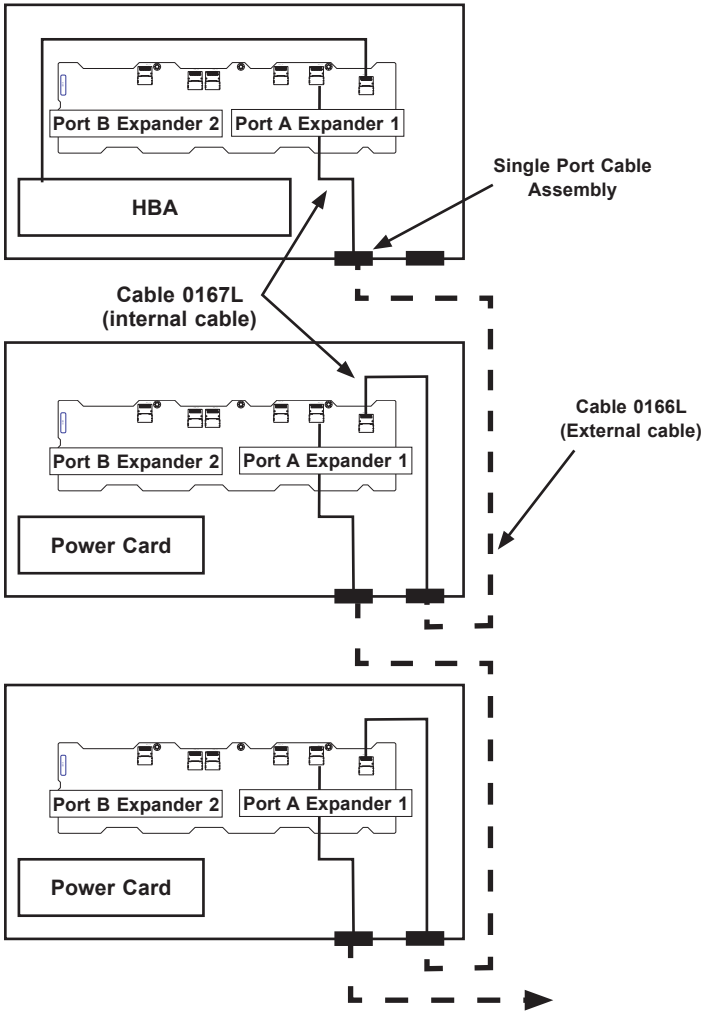


Figure C-22: Simple Cascaded Configuration

Server System with Single SAS HBA

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

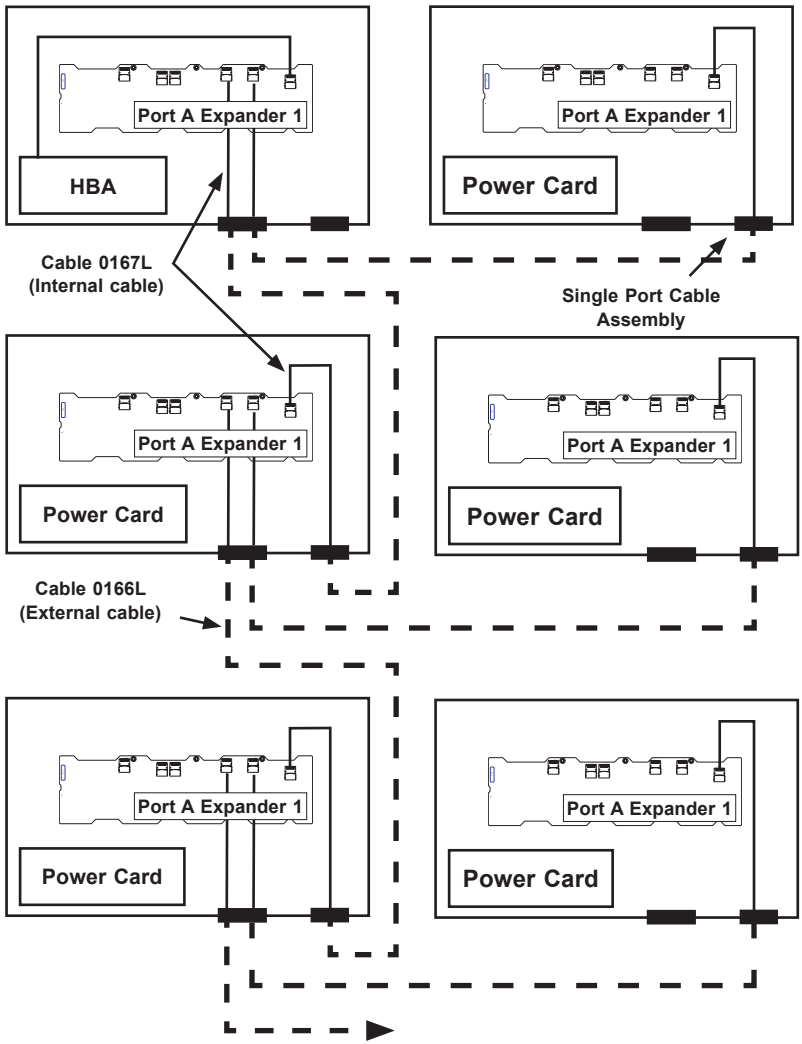


Figure C-23: Cascaded Configuration with Horizontal Branching

Dual SAS HBA and Cascaded Configuration

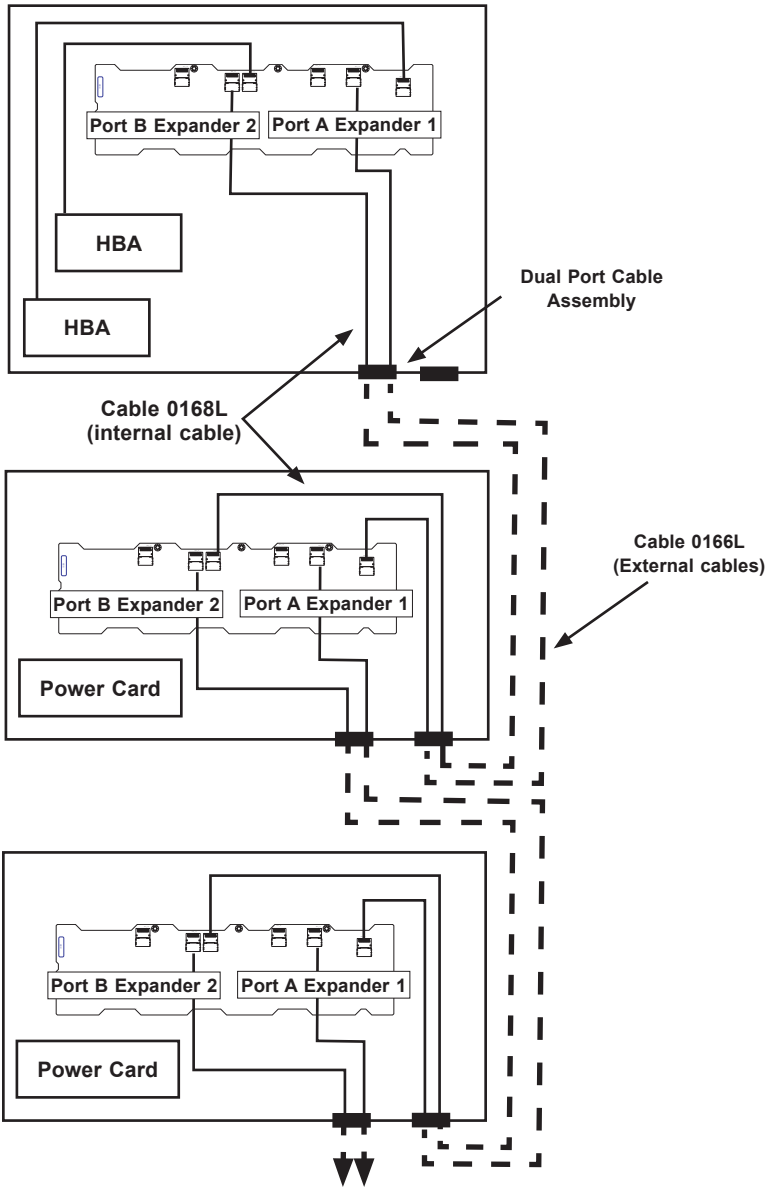


Figure C-24: Dual SAS HBA with Cascaded Configuration

IMPORTANT: See Section C-12 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Dual SAS HBA and Cascaded Configuration with Branching

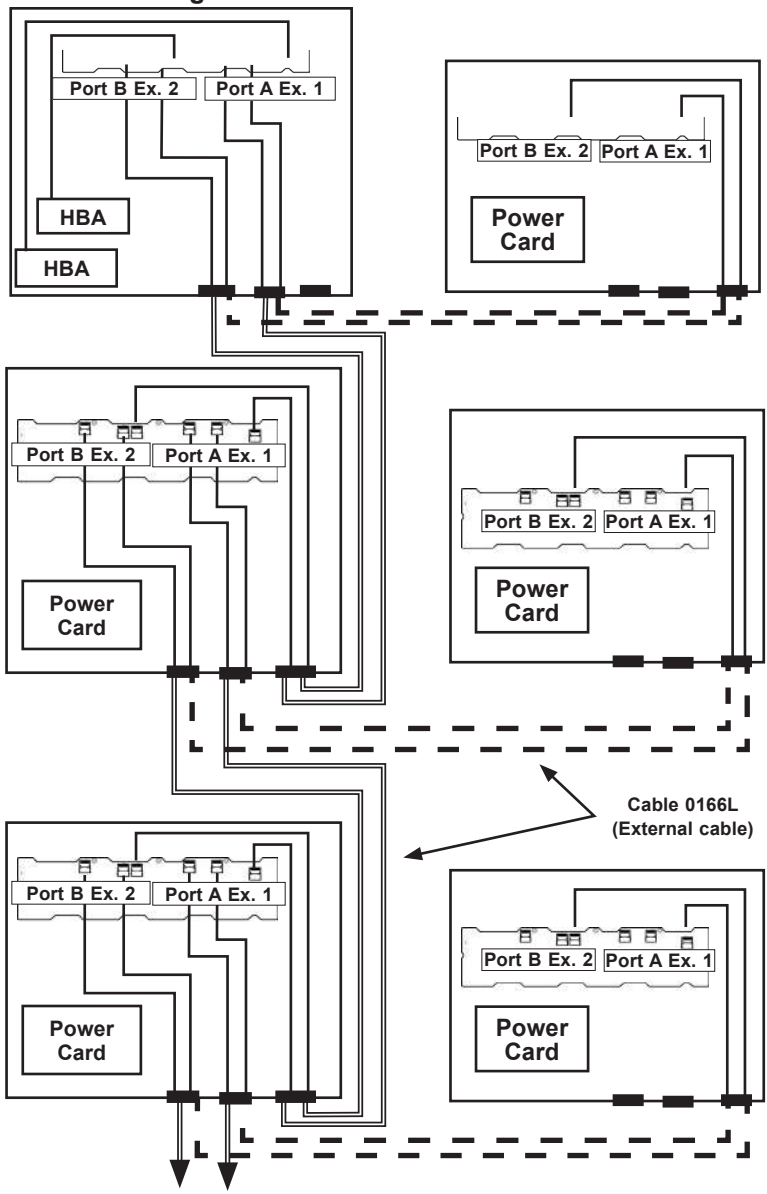


Figure C-25: Dual SAS HBA with Cascaded Configuration and Branching

IMPORTANT: See Section C-12 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Notes

Appendix D

SAS2-846EL 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.

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 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.

D-4 Introduction to the SAS2-846EL Backplane

The SAS2-846EL backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS2-846EL1 and SAS2-846EL2 PCB Revision 1.10, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

The SAS2-846EL1 backplane includes a primary expander chip and primary SAS connectors. The SAS2-846EL2 includes of both primary and secondary expander chips, as well as primary and secondary SAS connectors. The primary and secondary expanders are redundant, so that if one should fail, the other will take over.

D-5 Rear Connectors and Jumpers

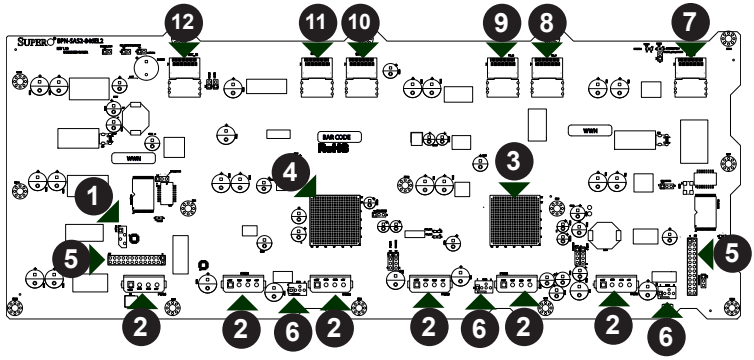


Figure D-1: Rear Connectors

Rear Connectors

1. Primary I²C connector: PRI_I2C
2. Power connectors: PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6
3. Primary expander chip
4. Secondary expander chip (Not available in EL1 backplane)
5. EPP connectors: J26 and J27
6. Fan connectors: FAN1, FAN2 and FAN3
7. Primaray SAS connector: PRI_J0
8. Primary SAS connector: PRI_J1
9. Primary SAS connector: PRI_J2
10. Secondary SAS connector: SEC_J0 (Not available in EL1 backplane)
11. Secondary SAS connector SEC_J1 (Not available in EL1 backplane)
12. Secondary SAS connector SEC_J2 (Not available in EL1 backplane)

D-6 Rear Connector and Pin Definitions

1. Primary I²C Connector

The I²C connector is used to monitor the power supply status and to control the fans. See the table on the right for pin definitions.

I²C Connector Pin Definitions

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

2. 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

3. and 4. Primary and Secondary Expander Chips

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

5. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

6. Fan Connectors

The 3-pin connectors, designated FAN1, through 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

7. - 13. SAS Connectors

The primary and secondary sets of SAS connectors provide expander features including cascading and failover. From right to left the ports are Primary 0, Primary 1 and Secondary 0, Secondary 1. Note that secondary SAS ports are not present on the SAS2-846EL1 backplane.

D-7 Rear Jumper Locations and Settings

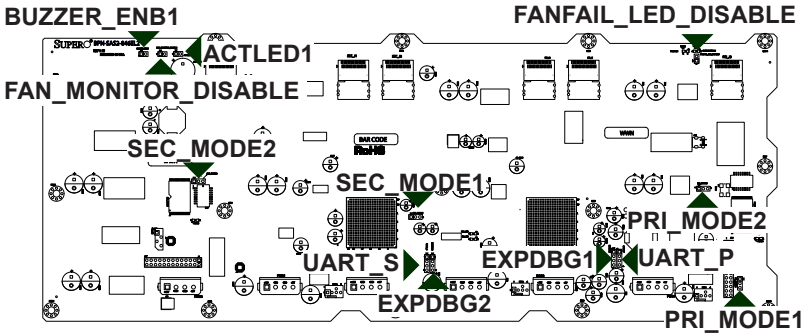
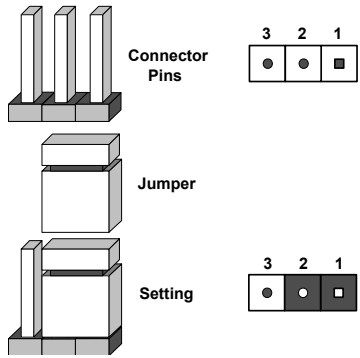


Figure D-2: Rear Jumper Locations and Settings

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.



General Jumper Settings		
Jumper	**Jumper Settings**	**Note**
PRI_MODE1 and 2	2-3	Factory Setting Do not change
SEC_MODE1 and 2	2-3	Factory Setting Do not change
EXPDBG1 and 2	No jumper required	Debug, SMC internal use only. (EXPDBG2 not present on SAS2-846EL2)
MDI01 and 02	No jumper required	SMC internal use only
UART_P1	No jumper required	Primary UART connector
UART_S1	No jumper required	Secondary UART connector (Not present on SAS2-847E2)
JP1	No jumper required	Buzzer connector
BUZZER_ENB1	Open: Disabled (Default) Closed: Enabled	Buzzer settings*
ACTLED1	Open: Disabled (Default) Closed: Enabled	Activity LED settings
FAN_MONITOR_DISABLE	Open: Disabled (Default) Closed: Enabled	Fan monitor LED settings

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

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. Fan failure
3. System temperature over 45º Celsius.

Rear LEDs		
LED	**State**	**Specification**
FANFAIL1	On	Fan failure
OVERHEATFAIL1	On	Overheat/Drive Failure LED Indicator (Red light: flashing, buzzer: on)

D-9 Front Connectors and LED Indicators

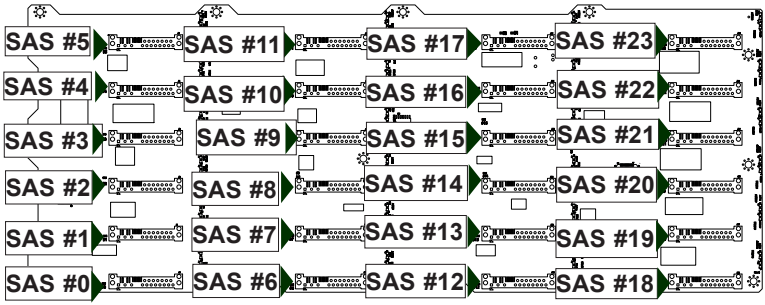


Figure D-3: Front Connectors

Front SAS/SATA Connectors			
Front Connector	**SAS Drive Number**	**Front 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

Front LED Indicators		
Front Connector	**Hard Drive Activity LED**	**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
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

D-10 Single and Dual Port Expanders

Single Ports

SAS2-846EL1 backplanes have a singlD-port expander that accesses all hard drives and supports cascading.

Dual Ports

SAS2-846EL2 backplanes have dual-port expanders that access all the hard drives. These dual-port expanders support cascading, failover, and multipath.

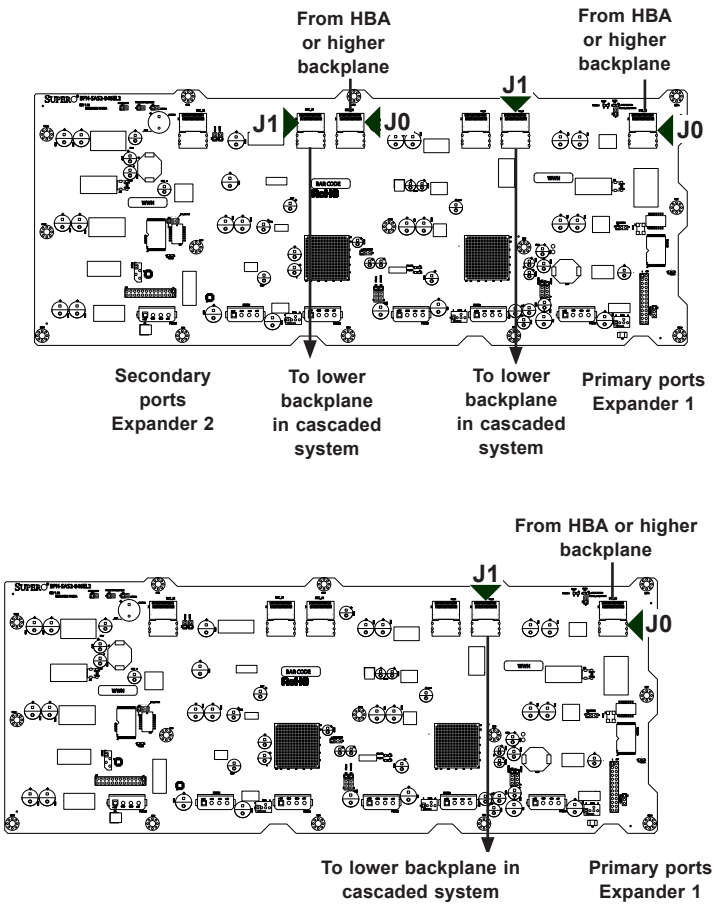


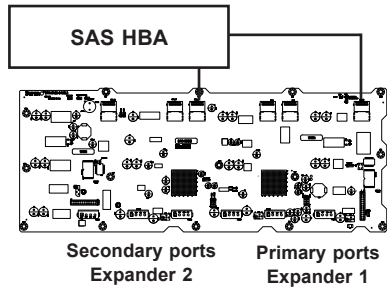
Figure D-4: Dual Port Cascading Configurations

D-11 Failover

The SAS2-846EL2 backplane has two expanders which allow effective failover.

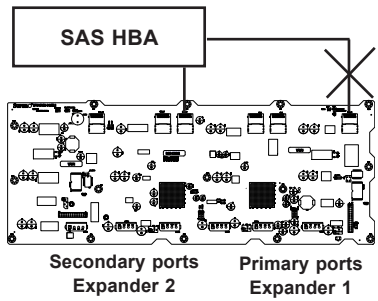
Single Host Bus Adapter

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



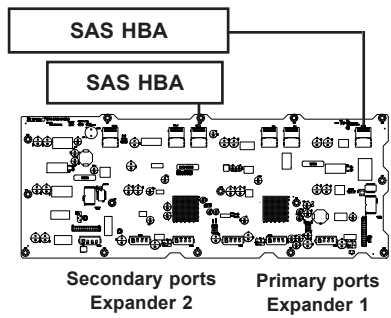
Single Host Bus Adapter Failover

If the expander or data path in the primary ports fails, the system automatically switches to secondary ports.



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 the primary ports fails, the system automatically switches to the secondary ports. This maintains a full connection to all drives.

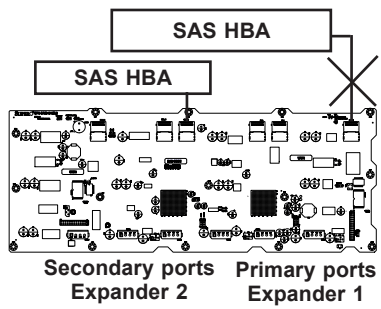


Figure D-5: Failover Configurations

D-12 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. Other servers in this enclosed system, include a power card. This section describes the supported power card for the SAS2-846EL series backplanes.

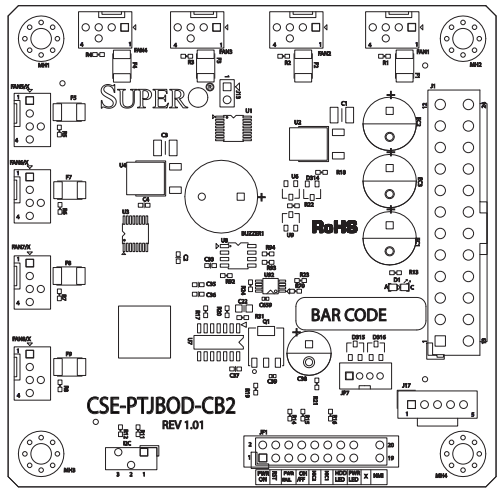


Figure D-6: Chassis Power Card (Sold Separately)

Power Card		
Part Number	**Part Type**	**Where Used**
CSD-PTJBOD-CB2	Power card	Allows the chassis to be in a JBOD (Just a Bunch of Drives) system.

Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the host bus adapter to the backplane.

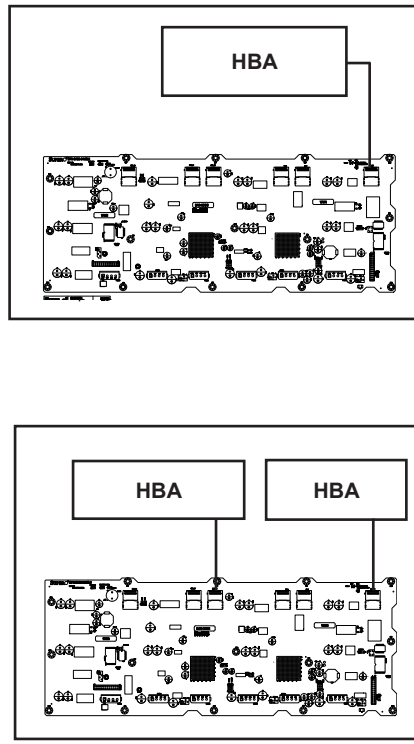


Figure D-7: Connecting an Internal HBA to the Backplane

Supported Internal HBA Cables

Use the following listed cables to create connections between the internal HBA and SAS2-846EL 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 SAS2-846EL 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-pin) at each end. It connects from the HBA to the SAS2-846EL backplane.

Supported External HBA to Backplane Cable

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



Figure D-8: The CBL-0200L Cable

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

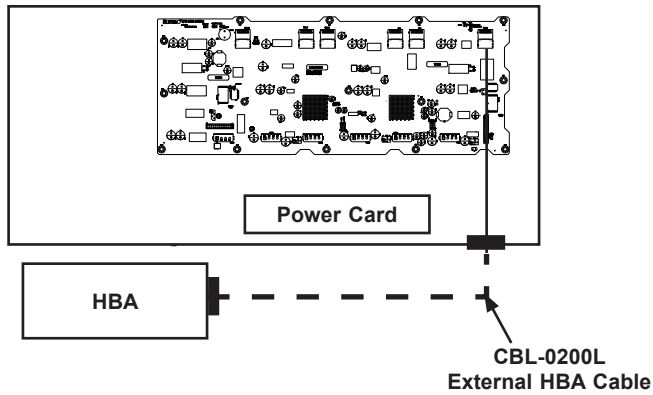
Part #: CBL-0200L **Length:** 1 meter

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

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



Dual External Host Bus Adapter

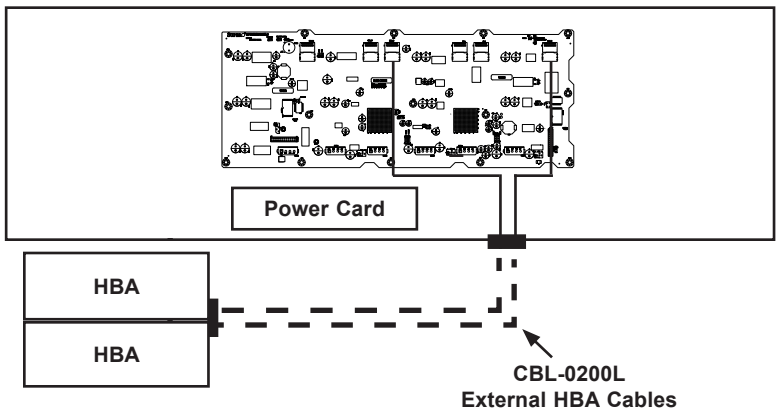


Figure D-9: Connecting Single and Dual HBAs to the Backplane

Supported External HBA to Backplane Cable

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



Figure D-10: External Cable (CBL-0166L)

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

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)
Ports: Single or Dual
Placement: External cable

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

Connecting Multiple Backplanes in a 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.

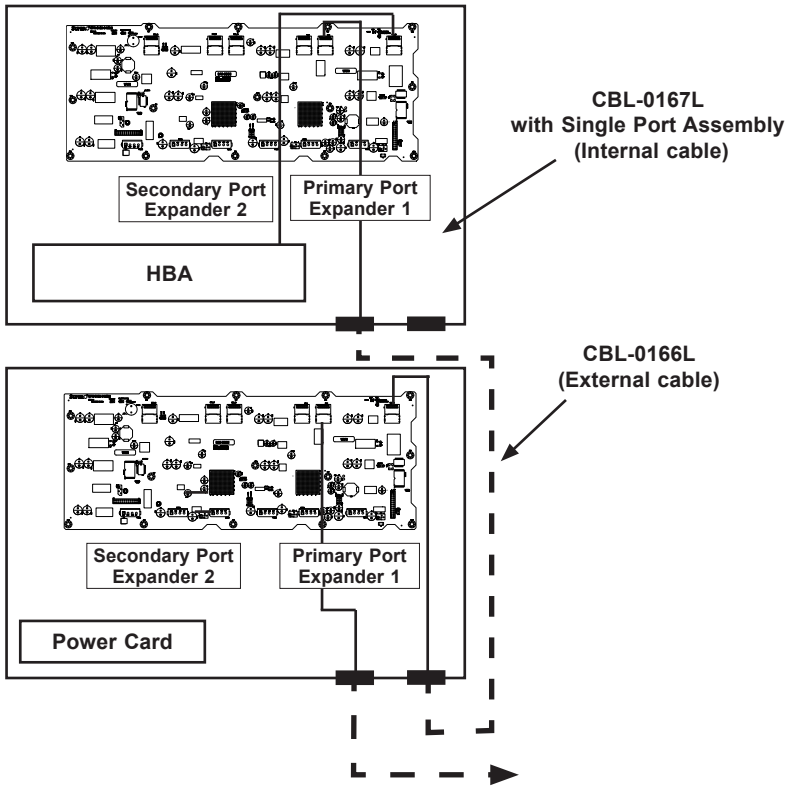


Figure D-11: Single HBA Configuration

Single HBA Configuration Cables

Single Port Cable Assembly

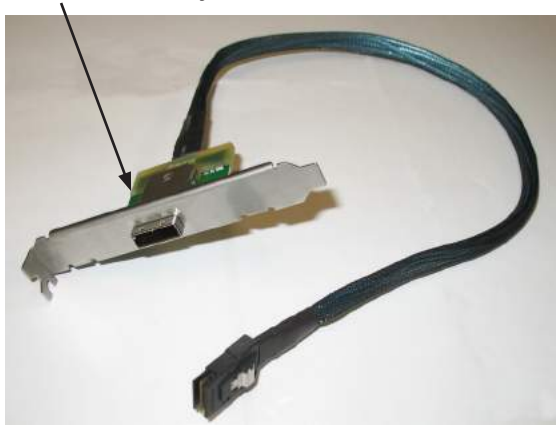


Figure D-12: Single Port Internal Cable (CBL-0167L)

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 D-13: 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.

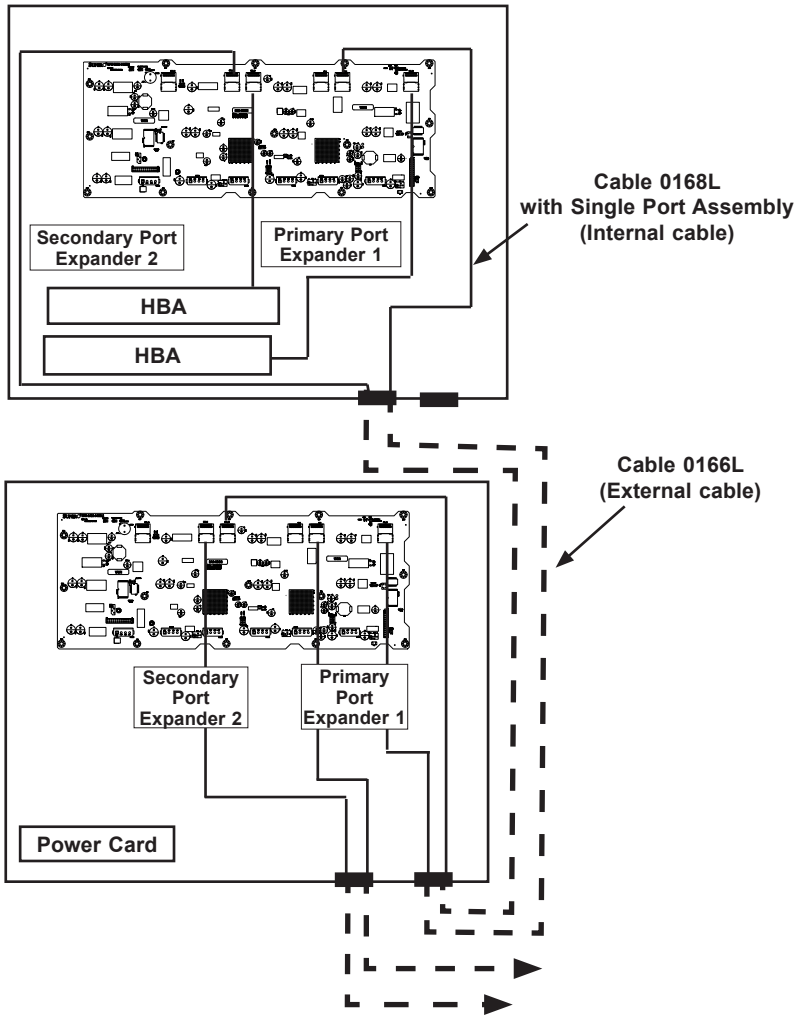


Figure D-14: Multiple Backplanes in a Dual Channel Environment

Dual HBA Configuration Cables



Figure D-15: Dual Port Internal Cable (CBL-0168L)

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

Part #: CBL-0168L **Placement:** Internal cable
Ports: Dual

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

D-13 Supported Cascading Configurations

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

The first backplane in a cascaded system requires a motherboard and an 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.

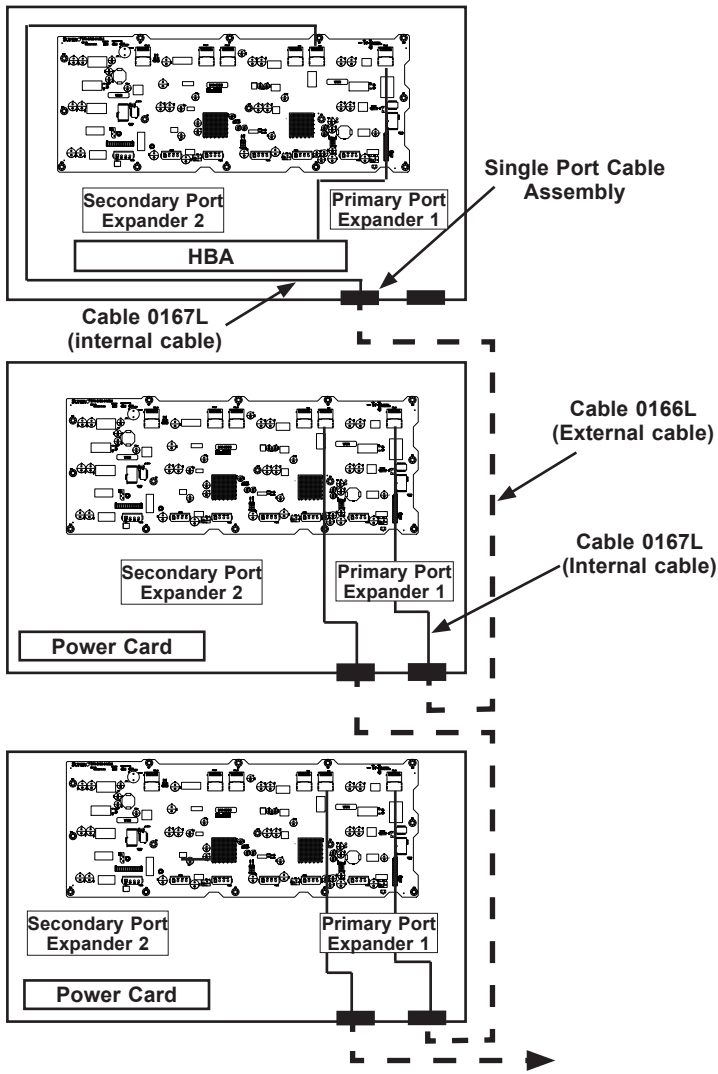


Figure D-16: Simple Cascaded Configurations

Dual SAS HBA and Cascaded Configuration

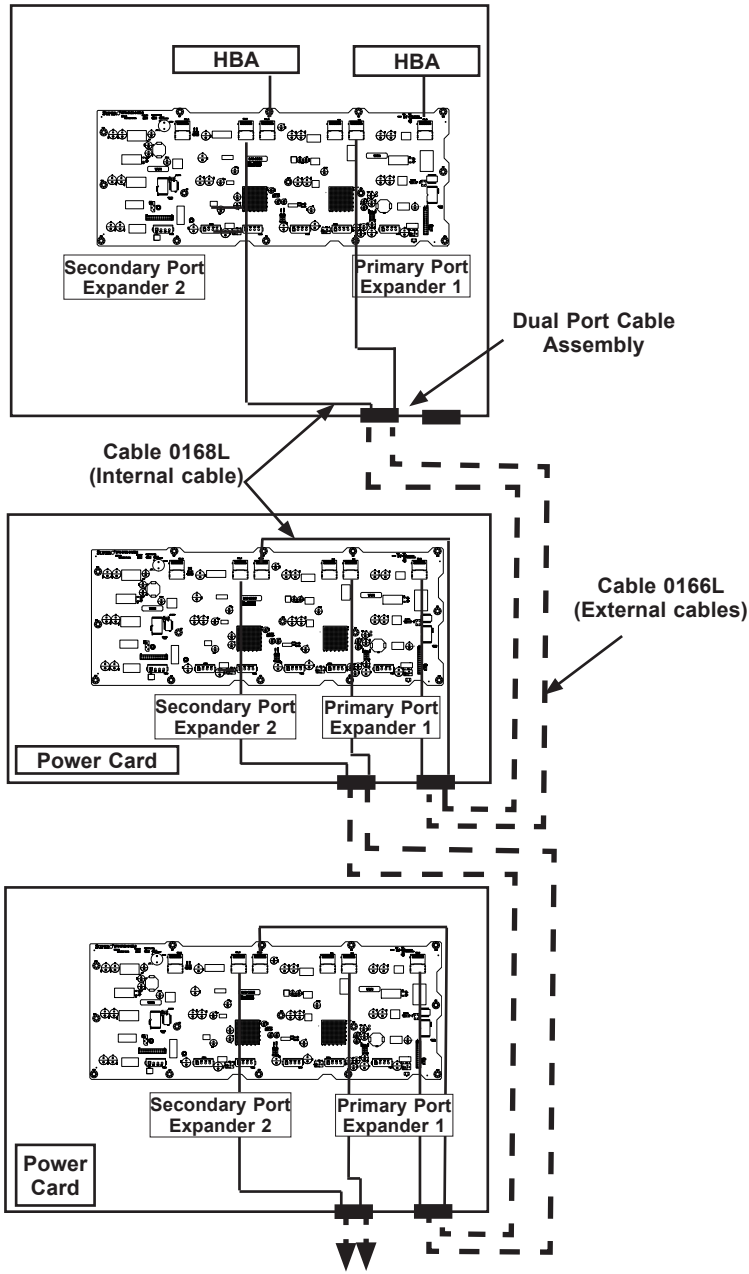


Figure D-17: Dual SAS HBA with Cascaded Configuration

Appendix E

BPN-SAS3-846EL 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.

E-1 Safety Guidelines

ESD Safety

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.

General Safety

- 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.

E-2 Version Information

The BPN-SAS3-846EL backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects BPN-SAS3-846EL Revision 1.01, the most current release available at the time of publication. All images and layouts shown in this guide are based upon the latest backplane revision available at the time of publishing. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

EL1 versus EL2

The BPN-SAS3-846EL1 and BPN-SAS3-846EL2 model backplanes are identical, except that the BPN-SAS3-846EL2 backplane has duplicate secondary components which are not found on the BPN-SAS3-846EL1. The BPN-SAS3-846EL2 is divided into a two sections, with the primary components on the right side of the board and the secondary components on the left. SAS3 backplanes are not compatible with legacy SAS (3 Gbps), SATA (1.5 Gbps) backplanes or lower.

E-3 Rear Connectors and Jumpers

The following connectors are on the side of the backplane that faces the rear of the chassis. They are marked by silkscreen labels.

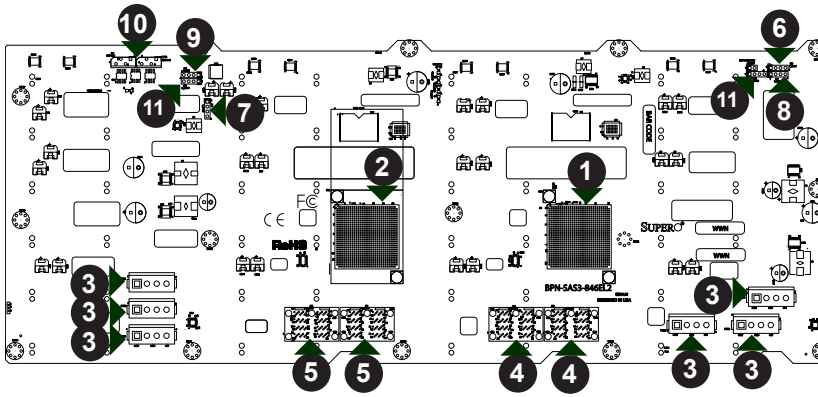


Figure E-1. Rear Connectors and Jumpers

Rear Connectors

1. Primary Expander Chip.
2. Secondary Expander Chip (not present on EL1 single port backplanes).
3. Backplane Power Connectors: PWR1 through PWR6.
4. Primary SAS Ports: J49, J50.
5. Secondary SAS Ports: J51, J52. (not present on EL1 single port backplanes).
6. Primary UART Connector: PRI-UART (J30) for manufacturer's use only.
7. Secondary UART Connector: SEE-UART(J24) for manufacturer's use only, not present on EL1 backplanes.
8. Primary SDB Connector: PRI-SDB (J31), for manufacturer's use only.
9. Secondary SDB Connector: SEE-SDB (J29), for manufacturer's use only, not present on EL1 backplanes.
10. I^2C Connector, EXP I2C0 (J48).
11. JP3 P_MDIO and JP4 P_MDIO: Primary and secondary management data in/out. For manufacturer's use only.

E-4 Rear Connector and Pin Definitions

1-2. Primary and Secondary Expander Chips

The primary and secondary expander chips allow the backplane to support dual port, cascading, and failover configurations.

3. Backplane Power Connectors

The 4-pin connectors, designated PWR1 to 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

4-5. Primary and Secondary SAS Ports

The primary SAS connectors are designated J49 and J50. The secondary SAS Ports are designated J51 through J52 and are not present on EL1 single port backplanes.

6-7. Primary and Secondary UART Connectors

For manufacturer's diagnostic purposes only. The primary UART connector is designated PRI-UART and J30. The secondary UART connector is designated SEE-UART and J24 and is not present on BPN-SAS3-846EL1.

8-9. SDB Connectors

These are debug connectors used for the manufacturer's diagnostic purposes only. The Primary SDB connector is designated PRI-SDB and J31. The secondary SDB connector is designated SEE-SDB and J29. (Not present on BPN-SAS3-846EL1 backplanes)

10. I^2C Connectors

The I^2C connector. is designated EXP I2C0 and J48.

11. Management Data Port

For manufacturer's use only. JP3 P_MDIO and JP4 P_MDIO are primary and secondary management data in and out.

E-5 Rear Jumper Locations and Pin Definitions

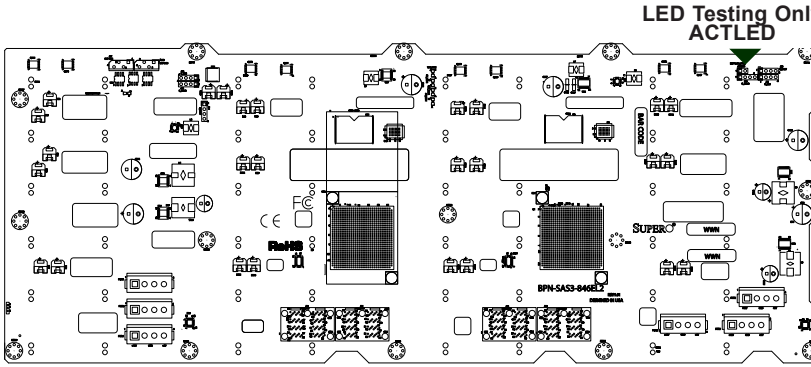
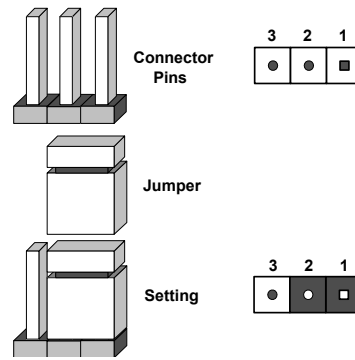


Figure E-2. Rear Jumpers

Jumper	Jumper Settings	Note
LED Testing Only ACTLED	Open: Disabled (Default) Closed: Enabled	Activity LED test.

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.



E-6 Rear LED Indicators

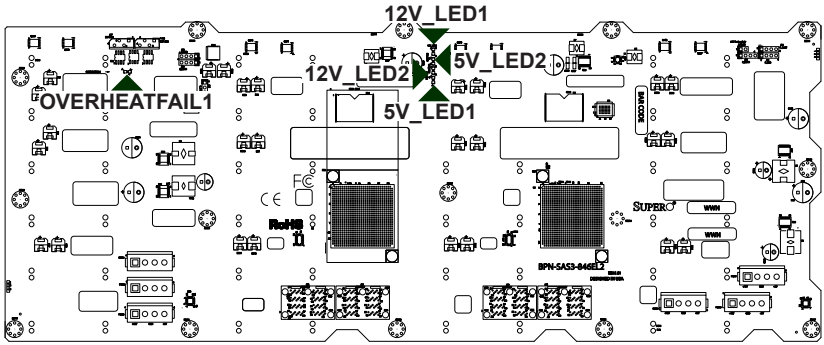


Figure E-3. Rear LEDs

Rear LEDs			
LED	**Normal State**	**Abnormal State**	**Specification**
12V_LED1	On	Off	12V power status.
12V_LED2	Blinking	Steady on, or off	Primary expander heartbeat indicator.
5V_LED1	On	Off	5V power status.
5V_LED2	Blinking	Steady on, or off	Secondary expander heartbeat indicator (not present on BPN-SAS3-846EL1 backplanes).
OVERHEATFAIL1	Off	On	System overheat/failure LED.

E-7 Front Components, Connectors and LED Indicators

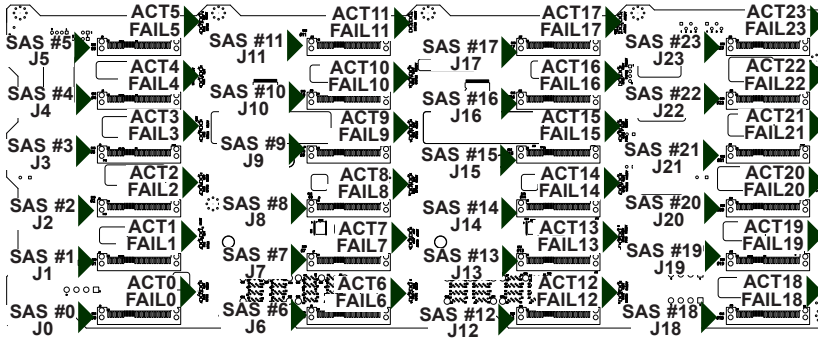


Figure E-4. Front Connectors

Front SAS/SATA Connectors and LED Indicators			
Drive Number	**Label**	**HDD Activity LED (blue)**	**Failure LED (red)**
SAS #0	J0	ACT0	FAIL0
SAS #1	J1	ACT1	FAIL1
SAS #2	J2	ACT 2	FAIL2
SAS #3	J3	ACT3	FAIL3
SAS #4	J4	ACT4	FAIL4
SAS #5	J5	ACT5	FAIL5
SAS #6	J6	ACT6	FAIL6
SAS #7	J7	ACT7	FAIL7
SAS #8	J8	ACT8	FAIL8
SAS #9	J9	ACT 9	FAIL9
SAS #10	J10	ACT10	FAIL10
SAS #11	J11	ACT11	FAIL11
SAS #12	J12	ACT12	FAIL12
SAS #13	J13	ACT13	FAIL13
SAS #14	J14	ACT14	FAIL14
SAS #15	J15	ACT15	FAIL15
SAS #16	J16	ACT16	FAIL16
SAS #17	J17	ACT17	FAIL17
SAS #18	J18	ACT18	FAIL18
SAS #19	J19	ACT19	FAIL19

Front SAS/SATA Connectors and LED Indicators			
Drive Number	**Label**	**HDD Activity LED (blue)**	**Failure LED (red)**
SAS #20	J20	ACT20	FAIL20
SAS #21	J21	ACT21	FAIL21
SAS #22	J22	ACT22	FAIL22
SAS #23	J23	ACT23	FAIL23

Dual Port and Cascading Configurations

E-8 Single and Dual Port Expanders

SAS primary connectors J49 to J50 and secondary connectors J51 to J52 are bidirectional and can be treated as input or output.

Single Ports

BPN-SAS3-846EL1 backplanes have a single port expander that accesses all of the drives and supports cascading.

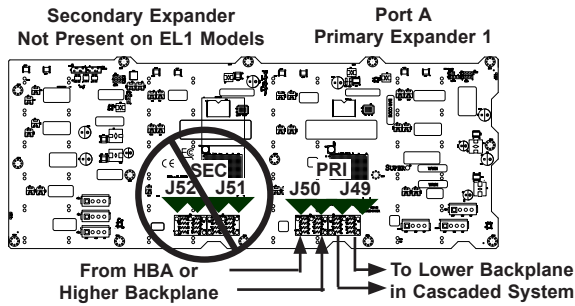


Figure E-5 BPN-SAS3-846EL1 Single Port Configuration

Dual Ports

BPN-SAS3-846EL2 model backplanes have dual-port expanders that access all of the hard drives. These dual-port expanders support cascading, failover, and recovery.

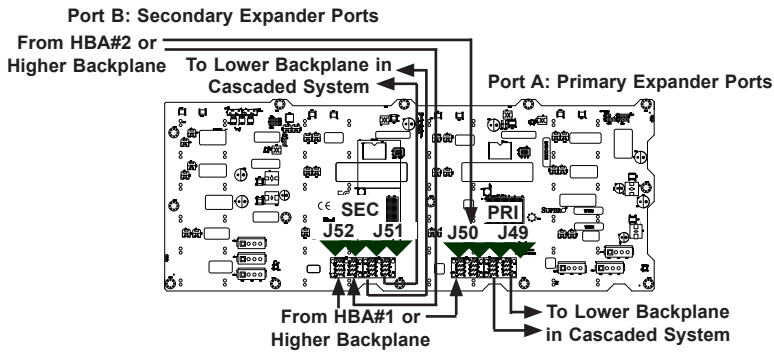


Figure E-6. BPN-SAS3-846EL2 Dual Port Configuration

E-9 Failover

The BPN-SAS3-846EL2 model backplane has two expanders which enable effective failover and recovery.

Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one host bus adapter.

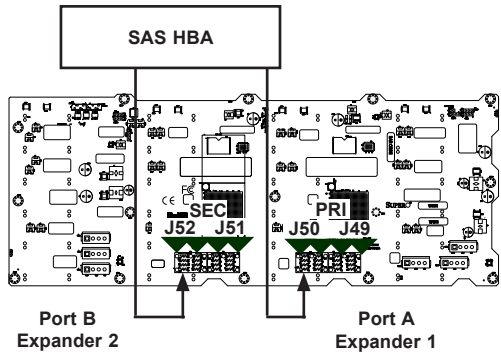


Figure E-7. Single HBA

Single Host Bus Adapter Failover

If the expander or data path in Port A fails, the system automatically switches to Port B with application software or failover support.

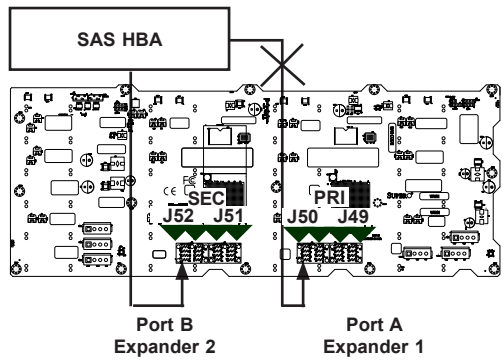


Figure E-8. Single HBA Failover

E-10 Failover with RAID Cards and Multiple HBAs

The BPN-SAS3-846EL backplane may be configured for failover with multiple HBAs using either RAID controllers or HBAs to acheive failover protection.

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

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

Dual Host Bus Adapter

In a dual host bus configuration, the backplane connects to two HBA's.

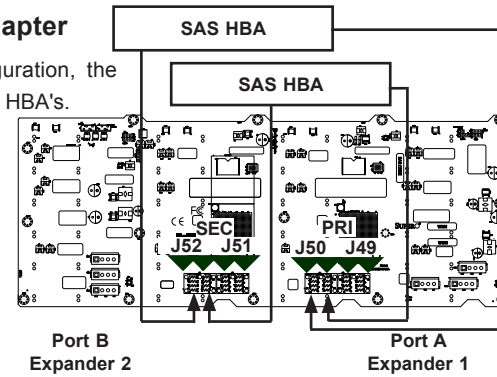


Figure E-9. Dual HBA

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.

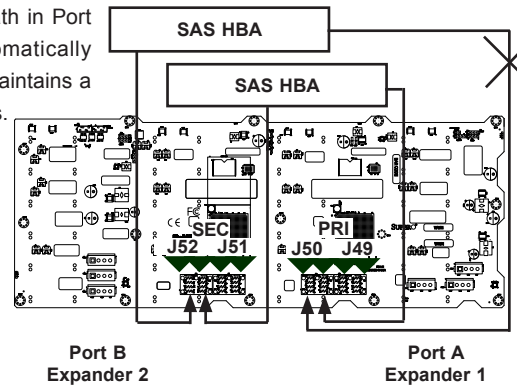


Figure E-10 Dual HBA Failover

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

E-11 Connecting HBAs to the Backplane

Connecting an Internal HBA to the Backplane

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

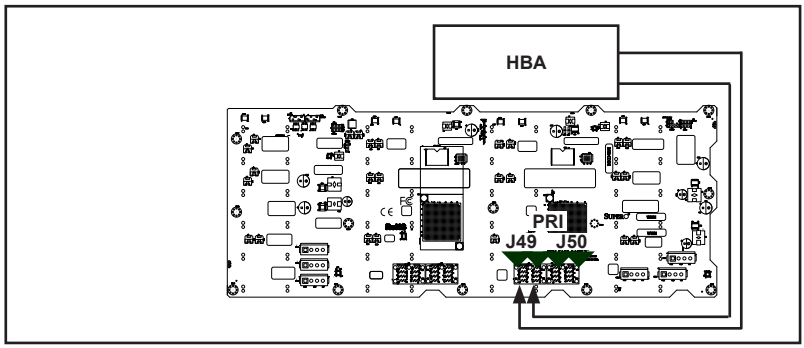


Figure E-11. Single Internal Host Bus Adapter

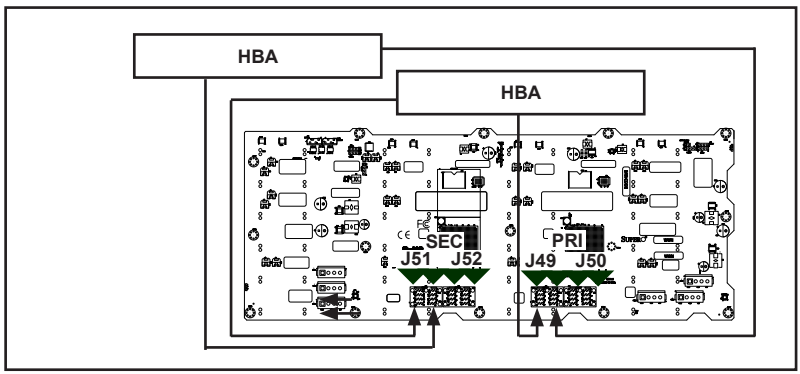


Figure E-12. Dual Internal Host Bus Adapter

Supported Internal HBA Cables

Use the following cables to create connections between the internal HBA and BPN-SAS3-846EL model backplane. The cables required depend upon the HBA connector.

IMPORTANT: See Section 3-3 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

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

Part #: CBL-SAST-0508-01 **Length:** 50 cm (19 inches)

Part #: CBL-SAST-0507-01 **Length:** 80 cm (31 inches)

Description: This cable has an iPass (SFF-8087/Mini-SAS) connector (36-pin) at one end and a Mini-SAS HD (SFF-8643) connector at the other end. It connects from the SAS2 HBA to the BPN-SAS3-846EL model backplane.

Cable name: Internal HD (Mini-SAS) to HD (Mini-SAS)

Part #: CBL-SAST-0568 **Length:** 35 cm (13 inches)

Part #: CBL-SAST-0593 **Length:** 60 cm (23 inches)

Part #: CBL-SAST-0531 **Length:** 80 cm (31 inches)

Description: This cable has a Mini-SAS HD (SFF-8643) connector at both ends. It connects from the SAS3 HBA to the BPN-SAS3-846EL model backplane.

Connecting an External HBA to the Backplane

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

Single External Host Bus Adapter

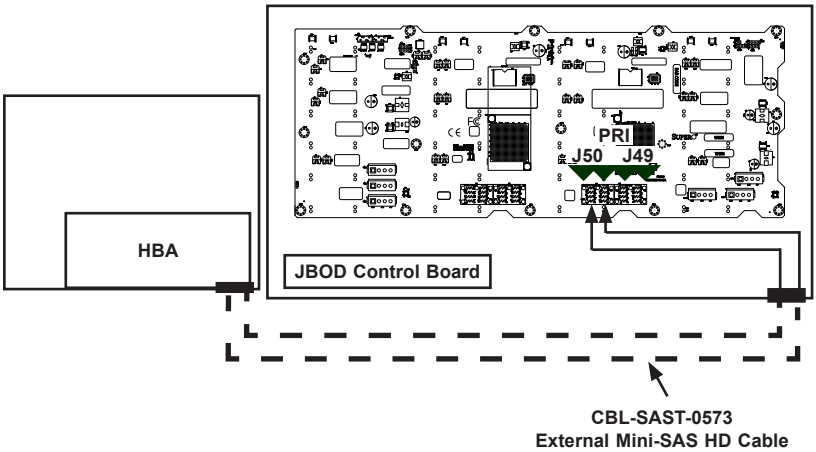


Figure E-13. Single External Host Adapter

Dual External Host Bus Adapter

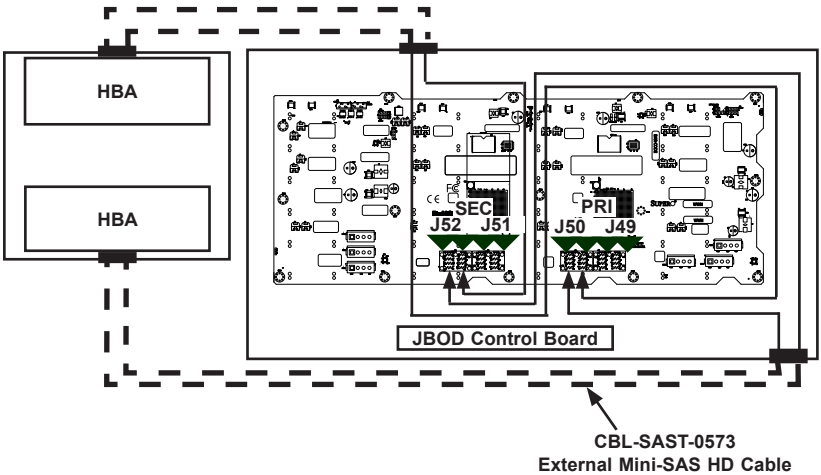


Figure E-14. Dual External Host Bus Adapter

IMPORTANT: See Section 3-3 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-SAST-0531 internal cables and CBL-SAST-0573 external cables.

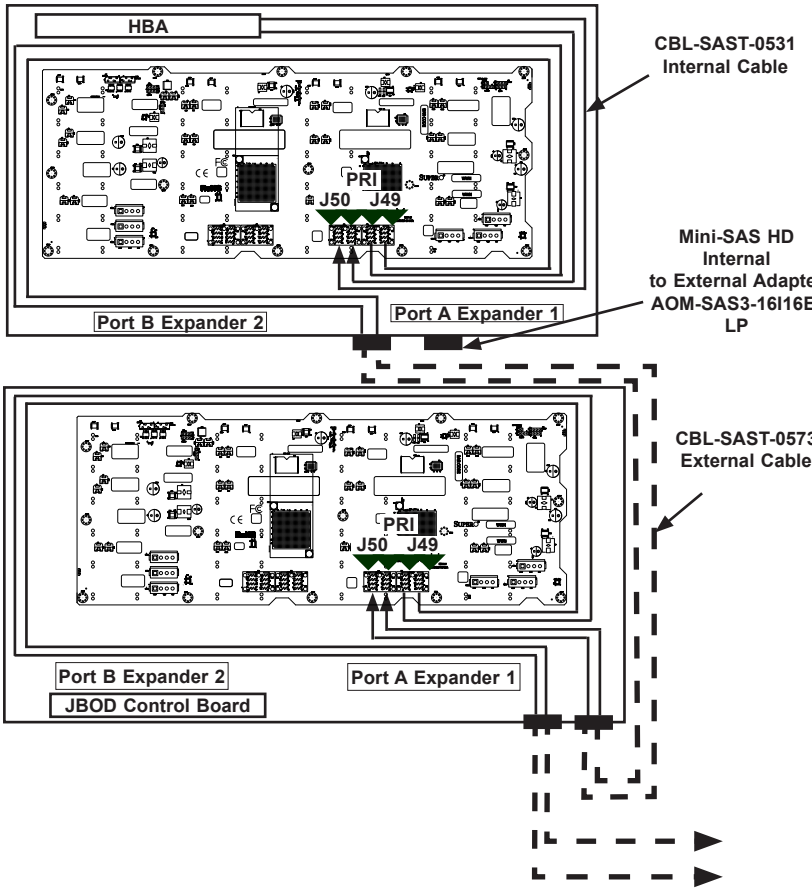


Figure E-15. Single HBA Configuration

Single HBA Configuration Cables



Figure E-16. External Mini-SAS HD to External Mini-SAS HD Cable

Cable Name: 1 Meter External Mini-SAS HD to External Mini-SAS HD Cable

Part #: CBL-SAST-0573
Ports: Single
Placement: External Cable
Description: External cascading cable, connects ports between servers and JBODs.



Figure E-17. Mini-SAS HD Internal to External Adapter

Cable Name: 16-port Mini-SAS HD Internal to External Cable Adapter

Part #: AOM-SAS3-16I16E
Ports: Four wide ports (sixteen ports total)
Placement: Internal cable with adapter
Description: Internal cable, connects the SAS3 backplane to external ports.

Connecting Multiple Backplanes in a Dual Channel Environment

This section describes the cables used when cascading from dual HBAs. These connections use CBL-SAST-0531 internal cables and CBL-SAST-0573 external cables.

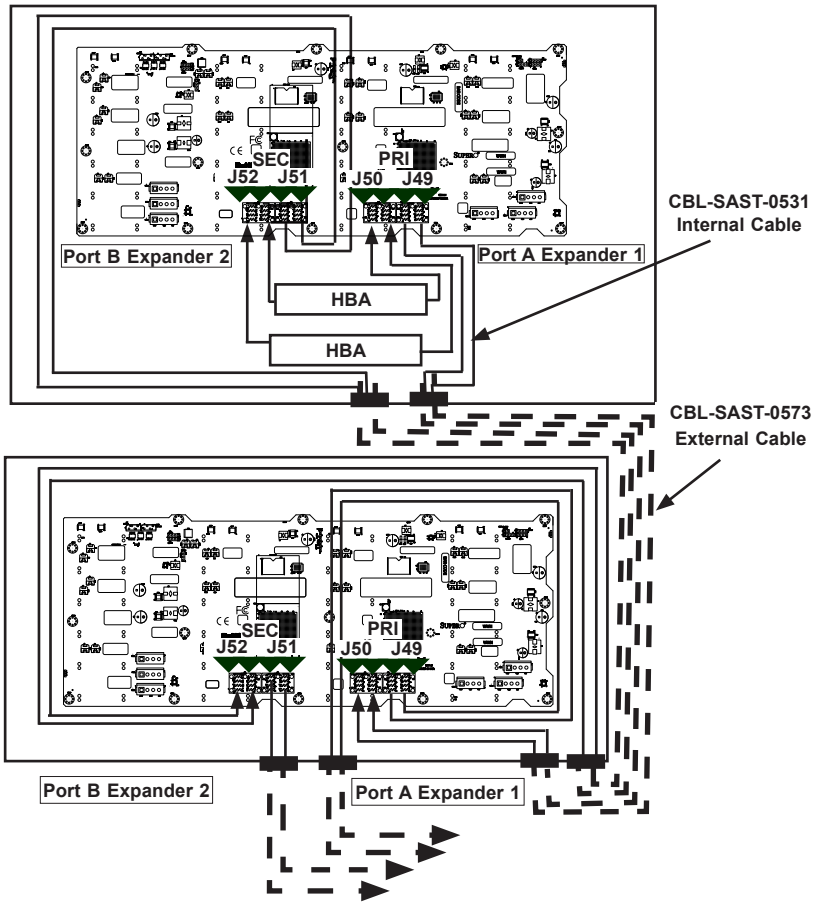


Figure E-18. Dual HBA Configuration

IMPORTANT: See Section 3-3 of this manual, *Failover with RAID Cards and Multiple HBAs* for important information on supported configurations.

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