StorEdge™ S1 AC100 and DC100 Installation and Maintenance Manual

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Declaration of Conformity

Compliance Model Number: CYT2A and CYT2D
Product Family Name: StorEdge^(tm) S1 AC100 and StorEdge^(tm) S1 DC100

EMC

European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

As Telecommunciation Network Equipment (TNE) in Telecom Centers Only:

EN300-386:2000   Required Limits (as applicable):

EN55022/CISPR22	Class A
EN300-386:2000	Subclause 6.2 (DC port Conducted Emissions 20 kHz - 30 MHz)
EN61000-3-2	Pass
EN61000-3-3	Pass
EN61000-4-2	Criteria B: 4 kV (Direct), 4 kV (Air)
	Criteria R: 8 kV (Direct), 15 kV(Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
EN61000-4-5	Criteria B: 1 kV AC Line-Gnd and Outdoor Signal Lines
	0.5 kV AC Line-Line and Indoor Signal Lines
	Criteria R: 1 kV AC Line-Line, 2 kV AC Line-Gnd,
	4 kV Outdoor Signal Lines as applicable
EN61000-4-6	3 V

As Information Technology Equipment (ITE) Class A per:

EN55022:1998/CISPR22:1997   Class A

EN55024:1998   Required Limits (as applicable):

EN61000-4-2	4 kV (Direct), 8 kV (Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
EN61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines
	2 kV AC Line-Gnd, 0.5 kV DC Power Lines
EN61000-4-6	3 V
EN61000-4-8	1 A/m
EN61000-4-11	Pass

EN61000-3-2:1995 + A1, A2, A14   Pass
EN61000-3-3:1995   Pass

Safety

This equipment complies with the following requirements of Low Voltage Directive 73/23/EEC:

EC Type Examination Certificates:

EN60950:1992, 2nd Edition, Amendments 1, 2, 3, 4, 11	TÜV Rheinland Certificate No. **S 9972359**
IEC 950:1991, 2nd Edition, Amendments 1, 2, 3, 4	CB Scheme Certificate No. **US/3368A/UL** (for CYT2A)
Evaluated to all CB Countries	**US/3637A/UL** (for CYT2D)

Supplementary Information: This product was tested and complies with all the requirements for the CE Mark.

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Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: 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 it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables to comply with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

> この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示 ⟦VCI⟧ があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

> この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance
label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻 干擾，在這種情況下，
使用者會被要求採取某些適當的對策。

Safety Agency Compliance Statements

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this book:

Caution – There is risk of personal injury and equipment damage. Follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

On – Applies AC power to the system.

Depending on the type of power switch your device has, one of the following symbols may be used:

Off - Removes AC power from the system.

Standby – The On/Standby switch is in the standby position.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product

Caution – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

Caution – The workplace-dependent noise level defined in DIN 45 635 Part 1000 must be 70Db(A) or less.

Caution – If the system is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may exceed the room ambient temperature. Ensure that the rack environment ambient temperature does not exceed the system's environmental specifications. See **"Environmental Specifications" on page -86**.

Caution – When mounting the equipment in a rack or cabinet, make sure that the system is securely mounted to the rack. If the weight of the system is distributed unevenly, it may cause a hazard to humans or equipment.

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Power Cord Connection

Caution – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

Caution – Your Sun AC product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

The following caution applies only to devices with a Standby power switch:

Caution – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

System Unit Cover

You must remove the cover of your Sun computer system unit to add cards, memory, or internal storage devices. Be sure to replace the top cover before powering on your computer system.

Caution – Do not operate Sun products without the top cover in place. Failure to take this precaution may result in personal injury and system damage.

Einhaltung sicherheitsbehördlicher Vorschriften

Auf dieser Seite werden Sicherheitsrichtlinien beschrieben, die bei der Installation von Sun-Produkten zu beachten sind.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsvorkehrungen, wenn Sie Ihr Gerät installieren:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie auf keinen Fall irgendwelche Gegenstände in Öffnungen in den Geräten. Leitfähige Gegenstände könnten aufgrund der möglicherweise vorliegenden gefährlichen Spannungen einen Kurzschluß verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.

Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:

Achtung – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen.

Achtung – Hohe Temperatur. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.

Achtung – Gefährliche Spannungen. Anweisungen befolgen, um Stromschläge und Verletzungen zu vermeiden.

Ein – Setzt das System unter Wechselstrom.

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole benutzt werden:

Aus – Unterbricht die Wechselstromzufuhr zum Gerät.

Wartezustand (Stand-by-Position) - Der Ein-/Wartezustand-Schalter steht auf Wartezustand. Änderungen an Sun-Geräten.

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, übernimmt bei einem Sun-Produkt, das geändert wurde, keine Verantwortung für die Einhaltung behördlicher Vorschriften

Aufstellung von Sun-Geräten

Achtung – Um den zuverlässigen Betrieb Ihres Sun-Geräts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder verdeckt werden. Sun-Produkte sollten niemals in der Nähe von Heizkörpern oder Heizluftklappen aufgestellt werden.

Achtung – Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70Db(A) oder weniger.

Achtung – Wenn das System in einem geschlossenen Gehäuse oder in einem Multi-Unit-Rack installiert ist, kann die Betriebstemperatur der Rack-Umgebung die Umgebungstemperatur des Raums übersteigen. Stellen Sie sicher, dass die Umgebungstemperatur des Racks nicht die Umgebungsspezifikationen des Systems übersteigt. Siehe Umgebungsspezifikationen auf Seite 86.

Achtung – Wenn die Geräte in einem Rack oder Schrank installiert wird, müssen Sie sicherstellen, dass das System fest im Rack montiert ist. Achten Sie darauf, dass das Gewicht des Systems gleichmäßig verteilt ist, da sonst das Personal oder die Geräte selbst geschädigt werden können.

Einhaltung der SELV-Richtlinien

Die Sicherung der I/O-Verbindungen entspricht den Anforderungen der SELV-Spezifikation.

Anschluß des Netzkabels

Achtung – Sun-Produkte sind für den Betrieb an Einphasen-Stromnetzen mit geerdetem Nulleiter vorgesehen. Um die Stromschlaggefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Stromquellen an. Ihr Betriebsleiter oder ein qualifizierter Elektriker kann Ihnen die Daten zur Stromversorgung in Ihrem Gebäude geben.

Achtung – Nicht alle Netzkabel haben die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastungsschutz und sind daher für Computersysteme nicht geeignet.

Achtung – Ihr Sun-Gerät wird mit einem dreiadrigen Netzkabel für geerdete Netzsteckdosen geliefert. Um die Gefahr eines Stromschlags zu reduzieren, schließen Sie das Kabel nur an eine fachgerecht verlegte, geerdete Steckdose an.

Die folgende Warnung gilt nur für Geräte mit Wartezustand-Netzschalter:

Achtung – Der Ein/Aus-Schalter dieses Geräts schaltet nur auf Wartezustand (Stand-By-Modus). Um die Stromzufuhr zum Gerät vollständig zu unterbrechen, müssen Sie das Netzkabel von der Steckdose abziehen. Schließen Sie den Stecker des Netzkabels an eine in der Nähe befindliche, frei zugängliche, geerdete Netzsteckdose an. Schließen Sie das Netzkabel nicht an, wenn das Netzteil aus der Systemeinheit entfernt wurde.

Gehäuseabdeckung

Sie müssen die obere Abdeckung Ihres Sun-Systems entfernen, um interne Komponenten wie Karten, Speicherchips oder Massenspeicher hinzuzufügen. Bringen Sie die obere Gehäuseabdeckung wieder an, bevor Sie Ihr System einschalten.

Achtung – Bei Betrieb des Systems ohne obere Abdeckung besteht die Gefahr von Stromschlag und Systemschäden.

Conformité aux normes de sécurité

Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

Mesures de sécurité

Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel :

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- Ne jamais introduire d'objets quels qu'ils soient dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés :

Attention: – risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.

Attention: – surface à température élevée. Evitez le contact. La température des surfaces est élevée et leur contact peut provoquer des blessures corporelles.

Attention: – présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.

MARCHE – Votre système est sous tension (courant alternatif).

Un des symboles suivants sera peut-être utilisé en fonction du type d'interrupteur de votre système:

ARRET - Votre système est hors tension (courant alternatif).

VEILLEUSE – L'interrupteur Marche ⁄ Veilleuse est en position « Veilleuse ».

Modification du matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

Positionnement d'un produit Sun

⚠️ **Attention:** – pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'une source de chaleur.

⚠️ **Attention:** – Le niveau de pression acoustique au poste de travail s'élève selon la norme DIN 45 635 section 1000, à 70 dB (A) ou moins.

⚠️ **Attention:** – si le système est installé dans une armoire fermée ou à plusieurs unités, il est possible que la température autour de l'armoire en fonctionnement dépasse la température ambiante de la pièce. Assurez-vous que la température ambiante de l'environnement de l'armoire ne dépasse pas les spécifications environnementales du système. Voir "Spécifications environnementales" page 86.

⚠️ **Attention:** – lors du montage de l'équipement dans une armoire, veillez à ce que le système soit correctement fixé. Une mauvaise répartition du poids du système représente un danger pour le personnel ou le matériel.

Conformité SELV

Sécurité : les raccordements E/S sont conformes aux normes SELV.

Connexion du cordon d'alimentation

⚠️ **Attention:** – les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.

Attention: – tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.

Attention: – votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils (avec prise de terre). Pour écarter tout risque d'électrocution, branchez toujours ce cordon dans une prise mise à la terre.

L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur VEILLEUSE:

Attention: – le commutateur d'alimentation de ce produit fonctionne comme un dispositif de mise en veille uniquement. C'est la prise d'alimentation qui sert à mettre le produit hors tension. Veillez donc à installer le produit à proximité d'une prise murale facilement accessible. Ne connectez pas la prise d'alimentation lorsque le châssis du système n'est plus alimenté.

Couvercle

Pour ajouter des cartes, de la mémoire, ou des unités de stockage internes, vous devrez démonter le couvercle de l'unité système Sun. Ne pas oublier de remettre ce couvercle en place avant de mettre le système sous tension.

Attention: – il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels.

Normativas de seguridad

El siguiente texto incluye las medidas de seguridad que se deben seguir cuando se instale algún producto de Sun Microsystems.

Precauciones de seguridad

Para su protección observe las siguientes medidas de seguridad cuando manipule su equipo:

- Siga todas los avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de la red eléctrica concuerdan con las descritas en las etiquetas de especificaciones eléctricas del equipo.
- No introduzca nunca objetos de ningún tipo a través de los orificios del equipo. Pueden haber voltajes peligrosos. Los objetos extraños conductores de la electricidad pueden producir cortocircuitos que provoquen un incendio, descargas eléctricas o daños en el equipo.

Símbolos

En este libro aparecen los siguientes símbolos:

Precaución – Existe el riesgo de lesiones personales y daños al equipo. Siga las instrucciones.

Precaución – Superficie caliente. Evite el contacto. Las superficies están calientes y pueden causar daños personales si se tocan.

Precaución – Voltaje peligroso presente. Para reducir el riesgo de descarga y daños para la salud siga las instrucciones.

Encendido – Aplica la alimentación de CA al sistema.

Según el tipo de interruptor de encendido que su equipo tenga, es posible que se utilice uno de los siguientes símbolos:

Apagado - Elimina la alimentación de CA del sistema.

En espera – El interruptor de Encendido/En espera se ha colocado en la posición de En espera.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico o eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de las normativas de seguridad en los equipos Sun modificados.

Ubicación de un producto Sun

⚠ **Precaución** – Para asegurar la fiabilidad de funcionamiento de su producto Sun y para protegerlo de sobrecalentamien-tos no deben obstruirse o taparse las rejillas del equipo. Los productos Sun nunca deben situarse cerca de radiadores o de fuentes de calor.

⚠ **Precaución** – De acuerdo con la norma DIN 45 635, Parte 1000, se admite un nivel de presión acústica para puestos de trabajo máximo de 70Db(A).

⚠ **Precaución** – Si el sistema se instala en un bastidor cerrado o de varias unidades, la temperatura ambiente del bastidor con las máquinas en funcionamiento puede superar la de la sala. Asegúrese de que la temperatura ambiente del bastidor no sobrepasa la temperatura indicada en las especificaciones ambientales del sistema. Consulte la sección "Especificaciones ambientales" en la página 86.

⚠ **Precaución** – Al montar el equipo en un bastidor o contenedor, compruebe que el sistema esté montado de una manera segura en el bastidor. Si el peso del sistema no se distribuye equilibradamente, puede resultar peligroso para las personas o para el equipo.

Cumplimiento de la normativa SELV

El estado de la seguridad de las conexiones de entrada/salida cumple los requisitos de la normativa SELV.

Conexión del cable de alimentación eléctrica

⚠ **Precaución** – Los productos Sun están diseñados para trabajar en una red eléctrica monofásica con toma de tierra. Para reducir el riesgo de descarga eléctrica, no conecte los productos Sun a otro tipo de sistema de alimentación eléctrica. Póngase en contacto con el responsable de mantenimiento o con un electricista cualificado si no está seguro del sistema de alimentación eléctrica del que se dispone en su edificio.

Precaución – No todos los cables de alimentación eléctrica tienen la misma capacidad. Los cables de tipo doméstico no están provistos de protecciones contra sobrecargas y por tanto no son apropiados para su uso con computadores. No utilice alargadores de tipo doméstico para conectar sus productos Sun.

Precaución – Con el producto Sun se proporciona un cable de alimentación con toma de tierra. Para reducir el riesgo de descargas eléctricas conéctelo siempre a un enchufe con toma de tierra.

La siguiente advertencia se aplica solamente a equipos con un interruptor de encendido que tenga una posición "En espera":

Precaución – El interruptor de encendido de este producto funciona exclusivamente como un dispositivo de puesta en espera. El enchufe de la fuente de alimentación está diseñado para ser el elemento primario de desconexión del equipo. El equipo debe instalarse cerca del enchufe de forma que este último pueda ser fácil y rápidamente accesible. No conecte el cable de alimentación cuando se ha retirado la fuente de alimentación del chasis del sistema.

Tapa de la unidad del sistema

Debe quitar la tapa del sistema cuando sea necesario añadir tarjetas, memoria o dispositivos de almacenamiento internos. Asegúrese de cerrar la tapa superior antes de volver a encender el equipo.

⚠️ **Precaución** – Es peligroso hacer funcionar los productos Sun sin la tapa superior colocada. El hecho de no tener en cuenta esta precaución puede ocasionar daños personales o perjudicar el funcionamiento del equipo.

GOST-R Certification Mark

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Figures

Tables

Preface

The *StorEdge S1 AC100 and DC100 Installation and Maintenance Manual* provides installation and configuration information and service procedures for the StorEdge™ S1 enclosure. These instructions are designed for an experienced system administrator.

How This Book Is Organized

Chapter 1 describes the StorEdge S1 storage enclosure.

Chapter 2 provides information on preparing for installation and assembling the DC input cables.

Chapter 3 provides instructions for installing the StorEdge S1 storage enclosure.

Chapter 4 provides procedures for removing, replacing, or adding disk drives to the StorEdge S1 storage enclosure.

Chapter 5 contains information about maintenance tasks for the StorEdge S1 storage enclosure.

Appendix A provides system specifications for the StorEdge S1 storage enclosure.

Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- AnswerBook2™ online documentation for the Solaris™ software environment
- Other software documentation that you received with your system.

Typographic Conventions

Typeface	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your .login file. Use ls -a to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% **su** Password:
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type rm *filename*.

Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Late-breaking information	*StorEdge S1 AC100 and DC100 Product Notes*	816-0081
Configuration information	*StorEdge S1 Storage Subsystem Manager 2.0 User's Guide*	806-5587
Sun Cluster information	*Sun Cluster 3.0 U1 Hardware Guide*	806-7070

Accessing Sun Documentation Online

A broad selection of Sun system documentation is located at:

`http://www.sun.com/products-n-solutions/hardware/docs`

A complete set of Solaris documentation and many other titles are located at:

`http://docs.sun.com`

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```
http://www.fatbrain.com/documentation/sun
```

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docfeedback@sun.com
```

Please include the part number (806-0080-10) of your document in the subject line of your email.

StorEdge S1 AC100 and DC100 Overview

This chapter describes the StorEdge S1 AC100 and DC100 hardware, except for the hard disk drives. For information on the drives, refer to the documents that you received with them. This chapter is organized as follows:

■ "StorEdge S1 AC100 and DC100 Overview" on page 2

■ "Features" on page 2

■ "Contents of the Ship Kit" on page 3

■ "Components at the Front of the Enclosure" on page 5

■ "Components at the Back of the Enclosure" on page 8

■ "Internal Components" on page 11

■ "StorEdge S1 Software Considerations" on page 15

StorEdge S1 AC100 and DC100 Overview

The StorEdge S1 disk unit is a Low Voltage Differential (LVD) Sun Ultra™ SCSI 2/3 unit that is 1.73 inches (or 1RU) in height. The thinness of the unit enables you to stack many units in a single rack. The StorEdge S1 storage enclosure has a single power supply (available in AC or DC versions) and up to three hot-swappable, LVD SCSI hard disk drives. Because the storage enclosure supports LVD SCSI, you can connect up to four enclosures to one LVD SCSI bus.

Note – The StorEdge S1 storage enclosure also supports single-ended hard drives. If single-ended hard drives are used, those drives default to single-ended speeds. The entire enclosure defaults to single-ended mode if connected to a single-ended SCSI bus or a single-ended host bus adapter.

FIGURE 1-1   The StorEdge S1 Storage Enclosure

Features

The StorEdge S1 disk unit has the following features:

- Complete backward compatibility with existing Netra st D130 storage enclosure and single-ended hosts
- 1 RU form factor, 19-inch rack-mountable, 18.6 inches deep
- Choice of AC or DC power supplies

    - Offers isolated ground option and dual input (for DC power model only)
- Three hot-swap SCSI drives
- Front and back power and status LEDs
- Rear SCSI ID base address selector and front LED binary indicators
- Single-channel, self-terminating SCSI-3 high density connections
- Dual SCSI connections for daisy-chaining or clustering
- Ultra 3 SCSI (160 Mbyte/sec) interface to the host (also compatible with Ultra SCSI and Ultra SCSI 2 interfaces)
- Telcordia NEBS level 3 certification
- Daisy-chaining of up to four StorEdge S1 in a SCSI chain
- Daisy-chaining of StorEdge S1 and Netra st D130 storage enclosures (up to two units per single-ended SCSI chain)
- The length of LVD (Ultra 3) SCSI bus is up to 12 meters
- StorEdge S1 Storage Subsystem Manager software
- Inbuilt SCSI LED information card

Note – A data transfer rate of 160 Mbyte/sec can be achieved only if the drivers installed on both the host operating system and the system's host bus adapter support 160 Mbyte/sec. Refer to your operating system documentation for more information.

Contents of the Ship Kit

The ship kit contains the following items:
- StorEdge S1 AC100 or DC100 storage enclosure with either two or three installed hard disk drives (depending on the configuration you have purchased)
- Power connectors

    - AC version: one AC power cord
    - DC version: DC connector kit

- 0.8-meter Cable SCSI-3 to SCSI-3 connector cable (X1134A)

- Storage Subsystem Manager 2.0 CD-ROM

- Rackmounting brackets and screws

- Documentation

    - *StorEdge S1 AC100 and DC100 Installation and Maintenance Manual*

- *StorEdge S1 AC100 and DC100 Product Notes*
- *StorEdge S1 Storage Subsystem Manager 2.0 User's Guide*
- Anti-static wrist strap

Optional Cables

TABLE 1-1 lists the optional cables you can order from your Sun supplier.

TABLE 1-1   Optional Cables (68 Pin)

Option	Part Number	Description
X3830A	530-2454-02	4-meter Cable SCSI-3 to VHDCI connectors
X9940A	530-2352-01	4.-meter Cable SCSI-3 to SCSI-3 connectors
X3831A	530-2455-02	10-meter Cable SCSI-3 to VHDCI connectors
X3832A	530-2453-02	2-meter Cable SCSI-3 to VHDCI connectors
X1139A	530-2384-01	2-meter Cable SCSI-3 to SCSI-3 connectors
X1132A	530-2452-02	0.8-meter Cable SCSI-3 to VHDCI connectors
X1134A	530-2383-01	0.8-meter Cable SCSI-3 to SCSI-3 connectors

Use SCSI-3 to SCSI-3 connectors to link one StorEdge S1 to another. If you are linking to a different device, you might need to use a SCSI-3 to VHDCI connector. VHDCI connectors are narrower and thinner than SCSI-3 connectors.

SCSI-3   VHDCI
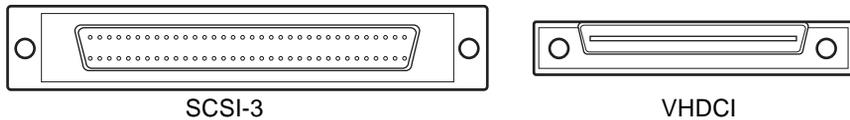
Optional Kits

The S1 Storage Enclosure does not ship with slide rail mounts for a 19" four-post rack. To install the S1 into a 19" four-post rack you must first contact your Sun supplier and order a 19" slide mount kit (quote X-Option number X6919A).

For instructions about installing the Enclosure into a 19" four-post rack, see "To Mount the Storage Enclosure in a Four-Post Rack" on page 30.

Components at the Front of the Enclosure

The front bezel contains a blank nameplate and five LEDs. You can use the nameplate to attach an identifying sticker or label to the system. If you want to remove the nameplate so that you can attach it to another system, see "To Remove the Nameplate on the Bezel" on page 7.

For information about the front panel LEDs, see "Front Panel LEDs" on page 67.

You can remove the front bezel to access the hard drives and to view the SCSI ID LEDs. For information about how to remove the bezel, see "Removing the Front Bezel to Access the Disk Drives" on page 58.

For more information about these LEDs, see "To Check the Binary SCSI ID LED Display" on page 69. Alternatively, a pull-out card attached to the system summarises the information they give.

The StorEdge S1 storage enclosure accepts up to three 1-inch high drives. For more information on the StorEdge S1 disk drives, see "Adding, Removing, and Replacing Drives" on page 57.
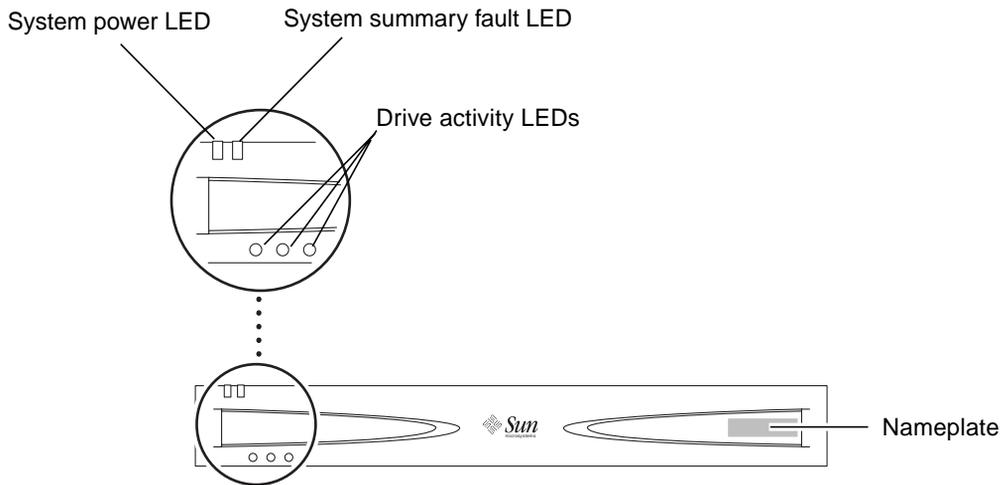
FIGURE 1-2   Front of StorEdge S1 Storage Enclosure With Bezel

Drive Activity
LEDs

Binary SCSI LEDs (4)

Binary SCSI LED card

HDD1   HDD2   HDD3
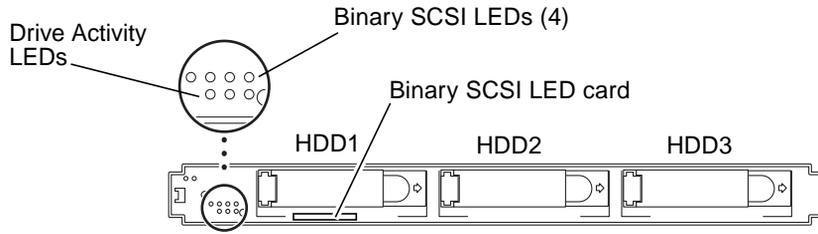
FIGURE 1-3   Front of StorEdge S1 Storage Enclosure With Bezel Removed

▼ To Remove the Nameplate on the Bezel

You can stick a label onto the front of the nameplate. This nameplate is removable to enable you easily to transfer it onto another system. If you want to do this, follow the instructions below:

1. **Press the left end of the nameplate towards the right (see** FIGURE 1-4**).**

   This releases the left retaining lug and causes the nameplate to swing out from the bezel.

FIGURE 1-4   Releasing the Left Retaining Lug to Make the Nameplate Swing Out

2. **Pull the right retaining lug away from the bezel so that the nameplate comes free of the bezel (see** FIGURE 1-5**).**
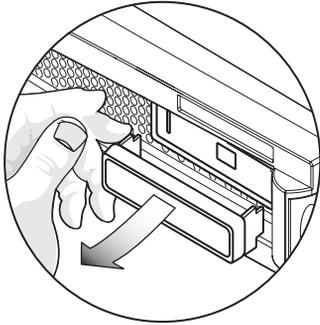
FIGURE 1-5   Pulling the Right Retaining Lug Away From the Bezel

▼ To Insert the Nameplate into the Bezel

● **Insert the nameplate's right retaining lug into the bezel, then gently push the left retaining lug home.**

Components at the Back of the Enclosure
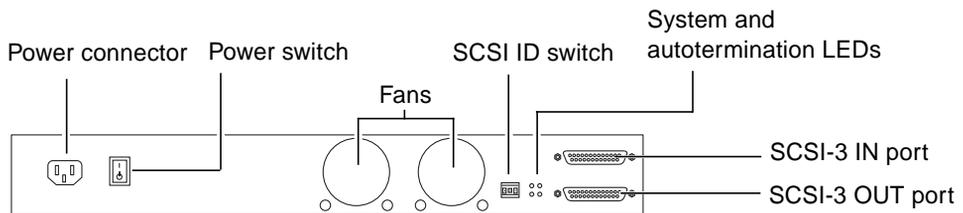
FIGURE 1-6   StorEdge S1, Rear View

Power Switch

The StorEdge S1 storage enclosure has one rocker power switch to control the power supply.

On
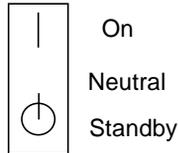
Neutral

Standby

FIGURE 1-7 Power Switch

- On: the power supply provides full power to the enclosure.
- Neutral: when the switch is released from the On position, the switch returns to the Neutral position and the power supply remains on.
- Standby: the power supply provides standby power to the enclosure.

Caution – Placing the power switch in the Standby position does not completely remove power going to the enclosure. AC or DC input continues to flow to the power supply until you disconnect the power cable from the electrical outlet.

Note – If you remove the power cable from the system with the power switch in the On position, full power will return to the system when you replace the cable.

SCSI ID Switch

The SCSI ID switch sets the SCSI IDs for the drives.

For more information on setting SCSI IDs, see "Setting the SCSI IDs" on page 39.
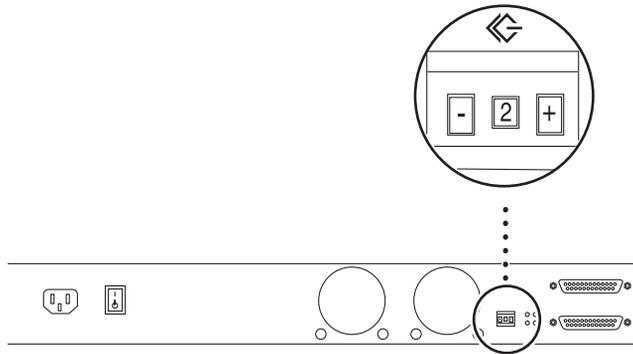
FIGURE 1-8 SCSI ID Switch

Back Panel LEDs

For more information on interpreting back panel LEDs, see "Back Panel LEDs" on page 72.
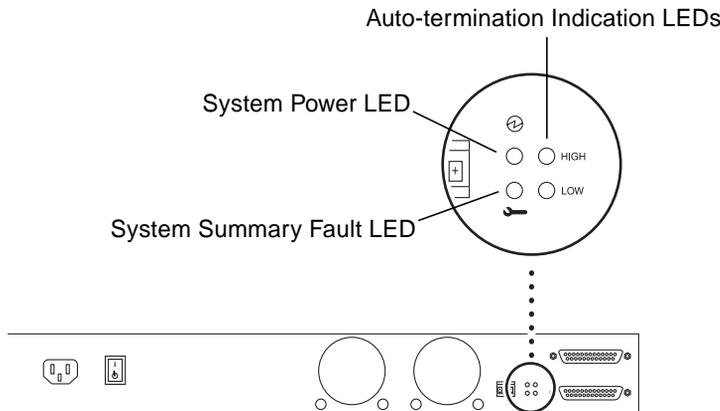
FIGURE 1-9 Back Panel LEDs

System Power and System Summary Fault LEDs

The System Power and System Summary Fault LEDs give the same diagnostic information as the System Power and System Summary Fault LEDs at the front of the enclosure. Refer to "Front Panel LEDs" on page 67 for more information.

Auto-termination Indication LEDs

The Auto Termination Indication LEDs indicate if the StorEdge S1 storage enclosure is part of an UltraSCSI, wide SCSI, or narrow SCSI daisy-chain. They also indicate the enclosure's position in the daisy-chain. See "Auto-termination Indication LEDs" on page 72 for more information.

Internal Components

Power Supply

The StorEdge S1 storage enclosure has a single power supply that provides power to the internal components. The power supply in your system is either AC- or DC-powered.

AC Version

The power supply on the AC version converts incoming AC voltage to outgoing DC voltages.
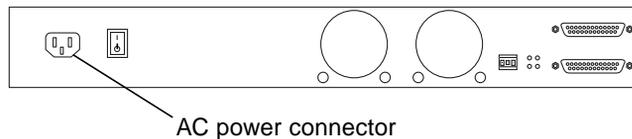
AC power connector

FIGURE 1-10 StorEdge S1 AC100 Rear View

DC Version

The power supply on the DC version converts incoming -48 VDC voltage to outgoing DC voltages. The DC version has two connectors so you can connect a single StorEdge S1 DC100 storage enclosure to two different -48V DC power sources. Each DC power source should have a 10-amp circuit breaker.

DC power connectors
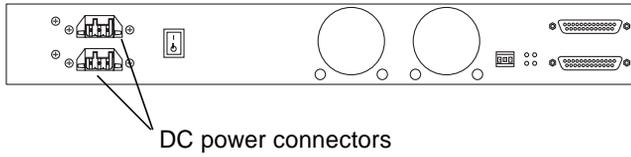
FIGURE 1-11 StorEdge S1 DC100 Rear View

Cooling System

The cooling functions as follows:

- Ensure adequate airflow through the system. The internal fans can achieve a maximum airflow of approximately 20 cfm in free air.
- The air is drawn through the front of the enclosure and expelled from the rear of the enclosure.

FIGURE 1-12 Airflow Requirements (Front and Rear)

- Airflow requirements differ for an open-rack system and a closed-rack system, as shown in the following illustrations.
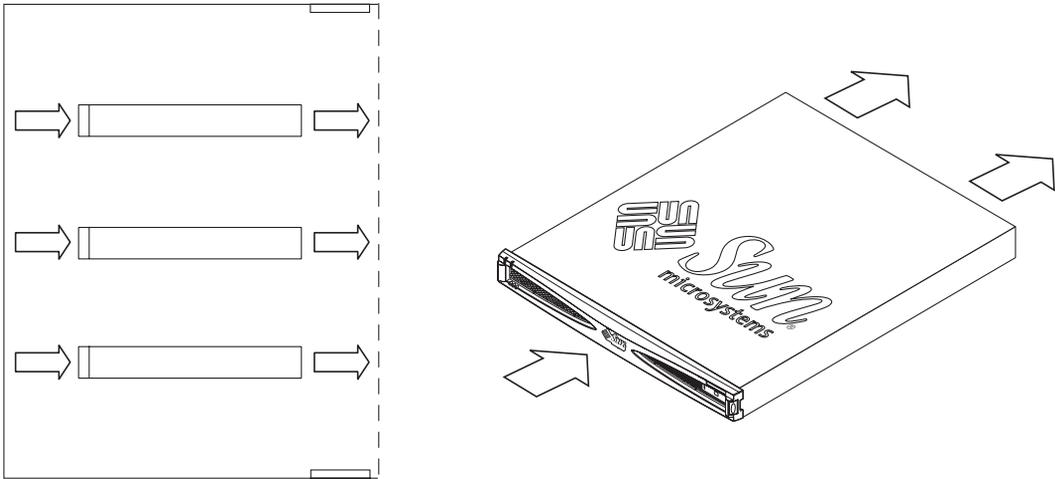
FIGURE 1-13 Airflow Requirements (Open Rack)
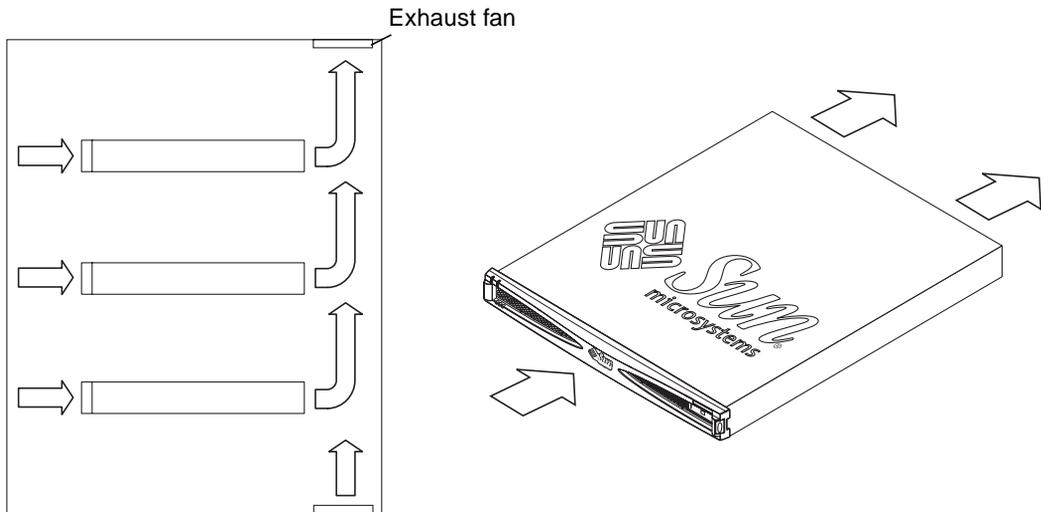
FIGURE 1-14 Airflow Requirements (Closed Rack)

!   **Caution –** If the StorEdge S1 storage enclosure is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might exceed the room ambient temperature. Ensure that the rack environment ambient temperature does not exceed the system's environmental specifications. For more details, see "Environmental Specifications" on page 86.

Hard Disk Drives

The disk drives in the StorEdge S1 storage enclosure are all hot-swappable. See the documentation that comes with your system for information about the drives installed in your system.
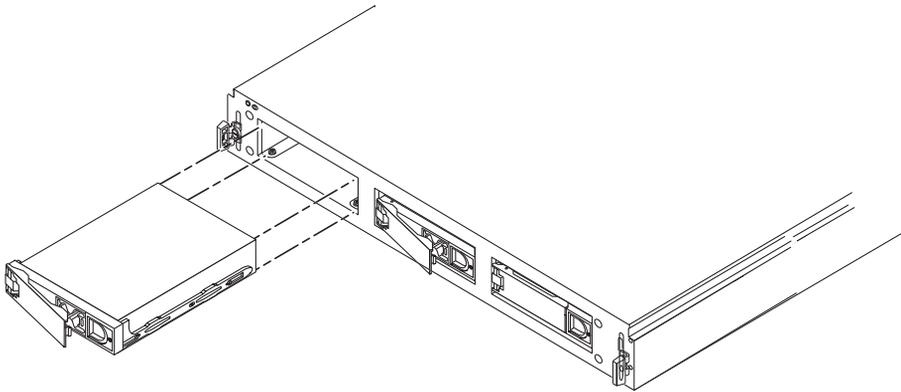
FIGURE 1-15 Hard drives in the StorEdge S1

The SCSI IDs for the disk drives in the StorEdge S1 storage enclosure are set using the SCSI ID switch at the rear of the enclosure. Refer to the drive LEDs on the front of the StorEdge S1 storage enclosure or the SCSI ID switch at the rear of the enclosure to determine the SCSI IDs that you have assigned to the drives in your enclosure. See "To Check the Binary SCSI ID LED Display" on page 69 for more information.

Foam Fillers

If you ordered a StorEdge S1 with fewer than three disk drives, foam fillers occupy the empty disk drive slots. The foam fillers are air baffles which enable the storage enclosure to maintain maximum cooling. If any slot does not contain a disk drive, you *must* fill the slot with a foam filler to ensure proper cooling.

Caution – If the StorEdge S1 storage enclosure is running and a drive slot does not contain a disk drive or foam filler, the StorEdge S1 storage enclosure does not cool properly and might overheat.

StorEdge S1 Software Considerations

The StorEdge S1 storage enclosure can be used as additional disk storage for an existing host system. Storage management support is provided by the StorEdge S1 Storage Subsystem Manager 2.0.

Preparing for Installation and Assembling the Cables

This chapter provides instructions on preparing the StorEdge S1 AC100 and DC100 for installation and assembling the DC input power cables for the StorEdge S1 DC100 enclosure.

This chapter is organized as follows:

Installation Overview

TABLE 2-1 shows the order of the main installation tasks for the StorEdge S1 storage enclosure.

TABLE 2-1 Installation Overview

Task	Section
Unpack the box	"Contents of the Ship Kit" on page 3
Prepare for installation	"Preparing for Installation" on page 18
Assemble DC input cables (if necessary)	"Mounting the StorEdge S1 Enclosure in a Rack" on page 30
Mount the StorEdge S1 in a rack	"Mounting the StorEdge S1 Enclosure in a Rack" on page 30
Set the SCSI IDs	"Setting the SCSI IDs" on page 39
Connect the cables	"Connecting the Cables" on page 47
Power on the storage enclosure and host system	"Powering On the Storage Enclosure" on page 54

Preparing for Installation

Before you can install the StorEdge S1 storage enclosure:

1. **Read the following subsections to make sure that you have the necessary hardware and equipment to install the StorEdge S1 storage enclosure.**

2. **Read any product notes for updated product information.**

3. **Prepare the site for installation, including determining site power and sizing requirements.**

   Refer to Appendix A for power, size, and weight statistics.

Hardware Requirements

You must have the following hardware at your site to successfully install your StorEdge S1 storage enclosure:

- A host system with either an LVD or a single-ended UltraSCSI on-board port, or
- A SCSI host adapter board installed in the host system.

For LVD (Ultra 2/3) SCSI functionality, the host or host adapter to which you connect your StorEdge S1 storage enclosure must be capable of LVD (Ultra 2/3) SCSI speeds. You can connect a StorEdge S1 storage enclosure to a wide or narrow SCSI-capable host adapter, but in such a case, the enclosure performs at a lower speed.

Tools and Equipment Needed

- An 8mm wrench (for assembling the rackmounting rails)
- A No. 2 Phillips screwdriver
- A small flat-head screwdriver (to install DC input cables, if necessary)
- An ESD pad and an antistatic wrist strap

Determining the Number of Units to Install

If the StorEdge S1 units are installed on a host system or host adapter LVD SCSI port, up to four StorEdge S1 units can be installed.

There are limitations to the number of StorEdge S1s that can be installed in the following situations:

- If the SCSI port is single-ended, you can install no more than two StorEdge S1 units on the SCSI chain.
- If there is a single-ended device already on the SCSI chain, or a single-ended device will be installed along with the StorEdge S1 unit, you can only install one StorEdge S1 storage enclosure on the chain along with the other peripheral.

For more information, see the following sections:

- "Single-Ended SCSI Installations" on page 42
- "LVD SCSI-3 Installations" on page 43
- "Mixed Single-Ended and LVD SCSI Devices" on page 45

Determining Cable Length

The total length of SCSI cable that can be used for a StorEdge S1 daisy chain depends on whether or not the host SCSI port or adapter is LVD SCSI or single-ended SCSI.

- If the SCSI port or adapter is LVD SCSI, the total LVD SCSI cable length cannot exceed 12 meters with the maximum number (16) of LVD SCSI devices.
- If the SCSI port or adapter is single-ended (SE) SCSI, the total SE SCSI cable length cannot exceed 3 meters.

Assembling the DC Input Power Cable

Follow these instructions to assemble the DC input power cable, which you use to connect the DC power supply in your StorEdge S1 storage enclosure to the DC power source.

Note – See "Electrical Site Requirements" on page 83 for information on electrical site requirements.

Required Connection Materials

The following DC connection materials are provided with every StorEdge S1 storage enclosure for connection to the -48V DC power source:

- Four WAGO DC connectors (two DC connectors for input cables and two spare DC connectors)
- Four WAGO DC strain relief housings (two strain relief housings for input cables and two spare strain relief housings)
- One cage clamp operating lever
- Four tie wraps

The following figures show the DC connector, strain relief housing, and cage clamp operating lever. You can order additional DC connection materials through Sun Microsystems Inc.™ (part number X949A).
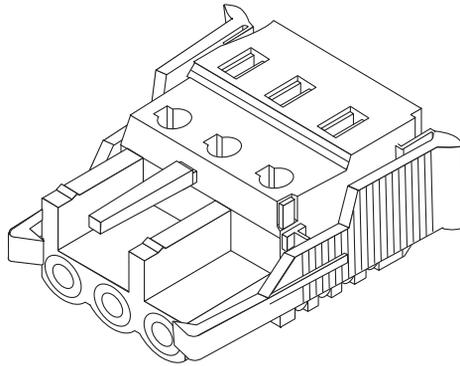
FIGURE 2-1 DC Connector

Bottom   Top
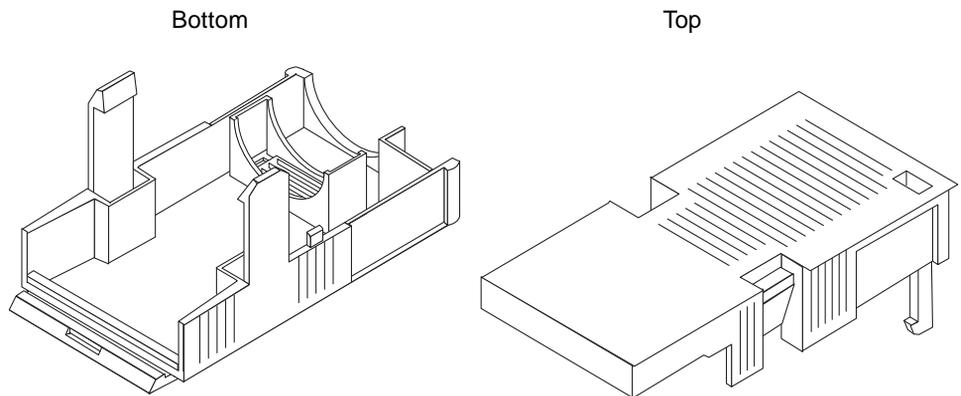
FIGURE 2-2 Strain Relief Housing
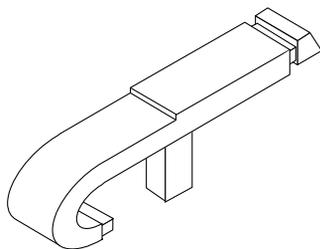
FIGURE 2-3 Cage Clamp Operating Lever

The following figure shows the power connector on the DC power supply.
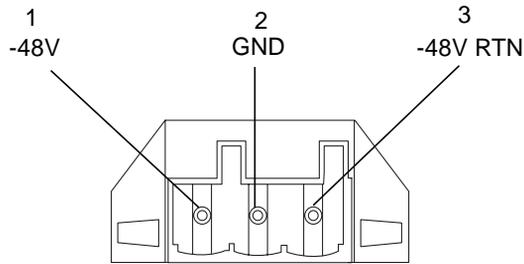
FIGURE 2-4 Power Connector on the DC Power Supply

▼ To Assemble the DC Input Power Cable

1. **Turn off power to the DC power source through the circuit breakers.**

Caution – Do *not* proceed with these instructions until you turn off the power to the DC power source through the circuit breakers.

2. **Get a DC connector from the ship kit.**

3. **Locate the three wires coming from the DC power source used in the connection to your unit:**

   - -48V
   - GND (Ground)
   - -48V Return

4. **Strip 5/16 of an inch (8 mm) of insulation from each of the wires coming from the DC power source.**

Caution – Do not strip more than 5/16 of an inch (8 mm) from each wire. Doing so will leave uninsulated wire exposed from the DC connector after the assembly is complete.

5/16 in. (8 mm)
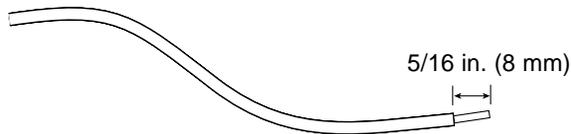
FIGURE 2-5 Stripping the Insulation From the Wire

5. **Insert the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire, and press down on the cage clamp operating lever.**

   The cage clamp opens for this section of the DC connector.

Top of connector
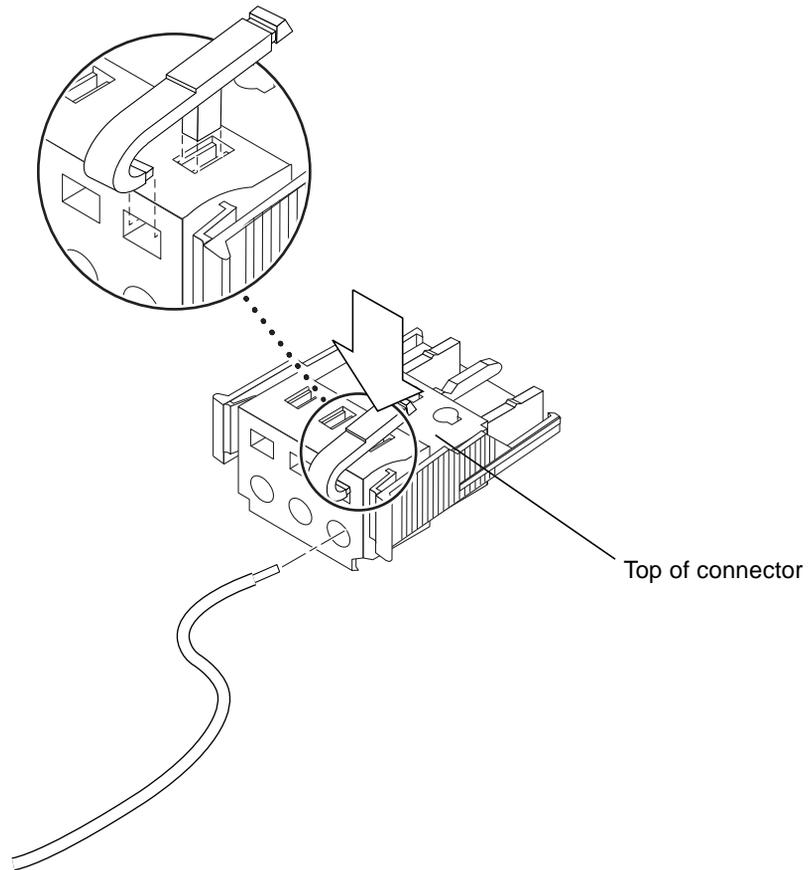
FIGURE 2-6   Opening the DC Connector Cage Clamp Using the Cage Clamp Operating Lever

You can also open the DC connector cage clamp by inserting a small flat-blade screwdriver into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire and pressing down on the screwdriver.
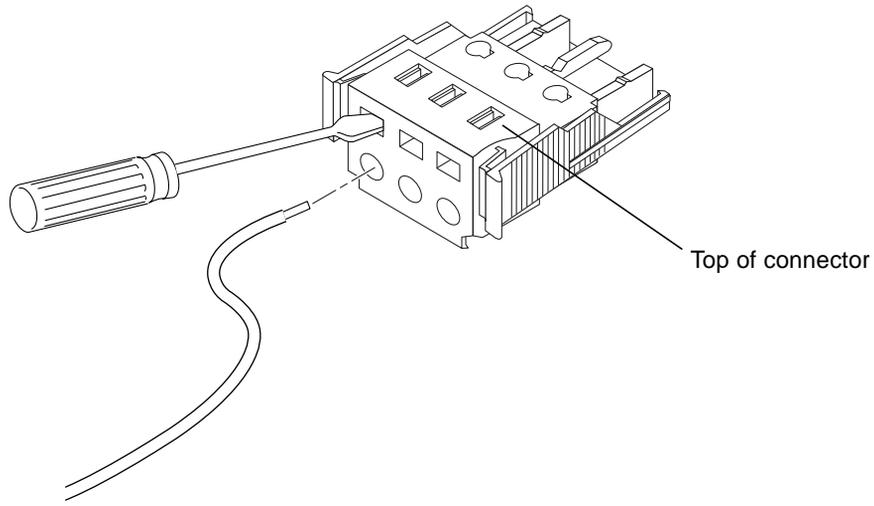
FIGURE 2-7   Opening the DC Connector Cage Clamp Using a Screwdriver

6. Feed the exposed section of the white wire into the appropriate hole in the DC connector.

FIGURE 2-8 shows which wires to insert into each hole in the DC connector.
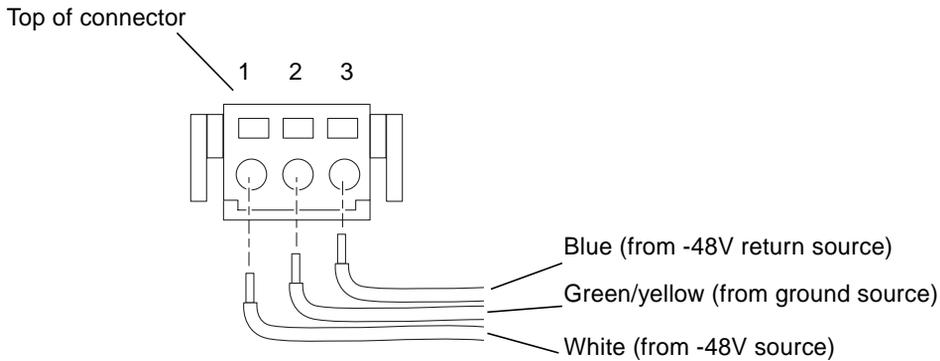
FIGURE 2-8   Assembling the DC Input Power Cable

7. Repeat Step 5 and Step 6 for the other two wires to complete the assembly of the DC input power cable.

8. **Repeat Step 3 through Step 7 to create a second DC input power cable.**

You connect the first DC input power cable to DC power source A and the second DC input power cable to DC power source B as described in "Connecting the Power Cables" on page 50.

To remove a wire from the DC connector, insert the cage clamp operating lever or a small screwdriver into the slot directly above the wire and press down (FIGURE 2-6 and FIGURE 2-7).

▼ To Install the Strain Relief Housing

1. **Insert the bottom portion of the strain relief housing into the notch on the DC connector until it snaps into place as shown in** FIGURE 2-9**.**

   Make sure the strain relief housing snaps into place on the DC connector; you cannot complete the assembly correctly if the strain relief housing is not secure.
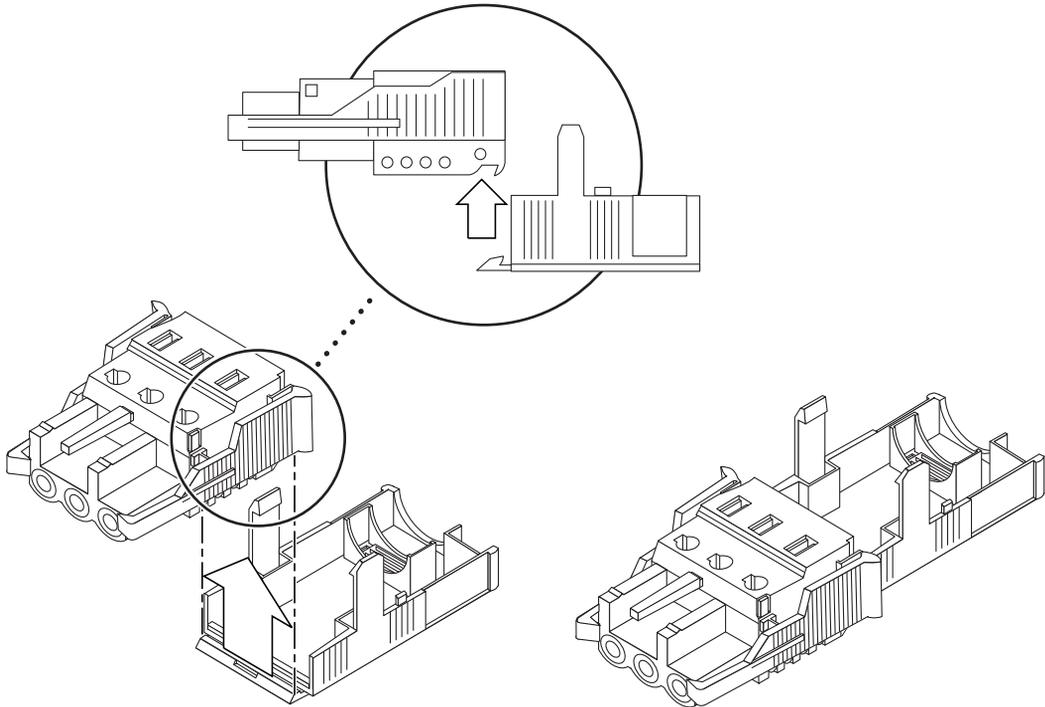
FIGURE 2-9 Inserting the Bottom Portion of the Strain Relief Housing

2. **Route the three wires coming from the DC power source through the opening at the end of the bottom portion of the strain relief housing as shown in** FIGURE 2-10**.**
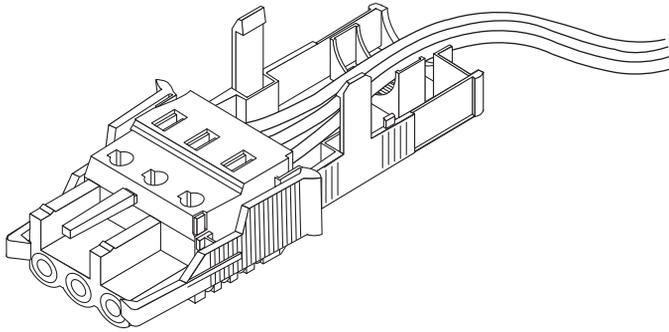
FIGURE 2-10 Routing the Wires Out of the Bottom Portion of the Strain Relief Housing

3. **Insert the tie wrap into the bottom portion of the strain relief housing as shown in** FIGURE 2-11**.**
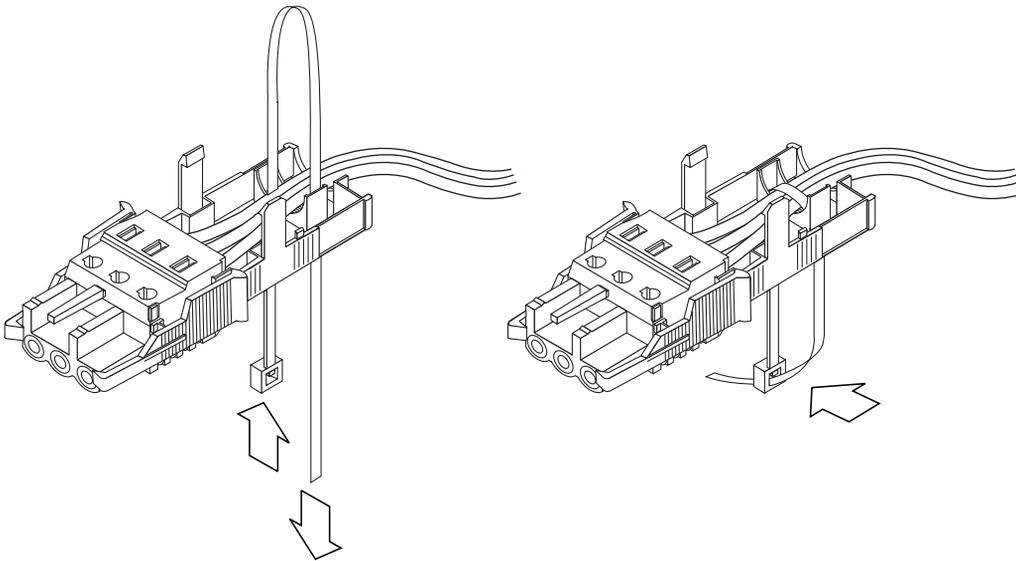
FIGURE 2-11 Securing the Wires to the Strain Relief Housing

4. **Loop the tie wrap over the wires and back out of the strain relief housing and tighten the tie wrap to secure the wires to the strain relief housing.**

5. **Lower the top portion of the strain relief housing (**FIGURE 2-12**) so that the three prongs on the top portion insert into the openings in the DC connector, and push the top and bottom portions of the strain relief housing together until they snap into place.**
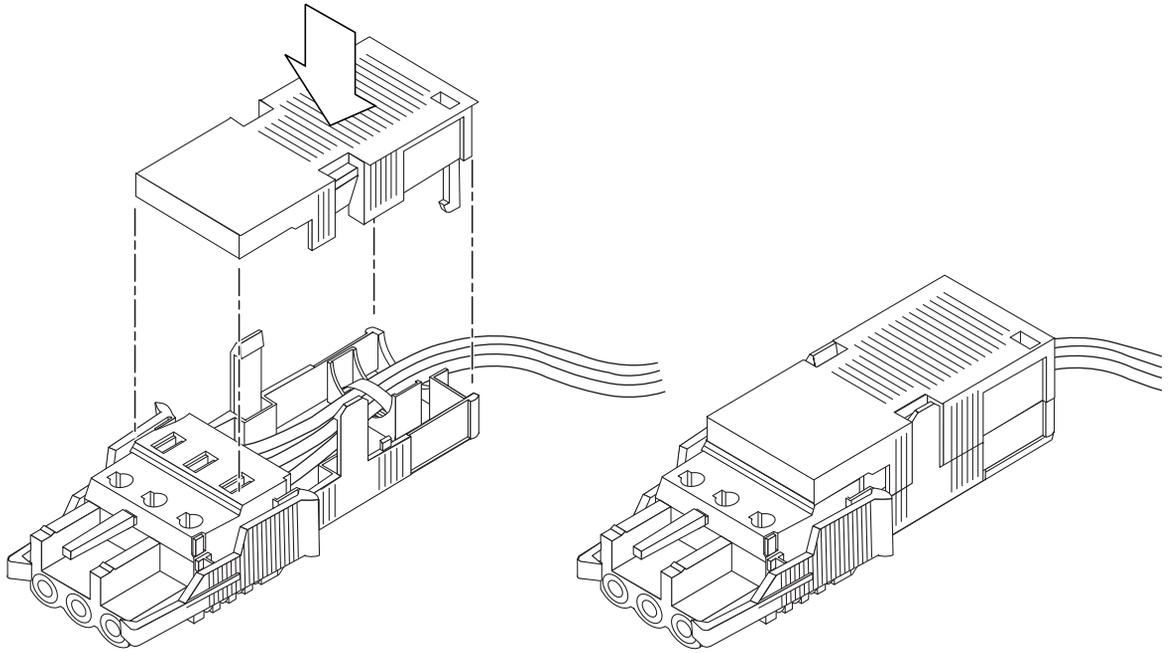
FIGURE 2-12 Assembling the Strain Relief Housing

Installing the StorEdge S1 Enclosure

This chapter provides instructions on preparing the area, connecting the cables, and powering on the storage enclosure.

This chapter is organized as follows:

Mounting the StorEdge S1 Enclosure in a Rack

The StorEdge S1 can be mounted into a two-post relay rack using the brackets supplied, or into a four-post rack using the optional slide mounts.

This section describes the following topics:

- "Rack Installation Precautions" on page 30
- "To Mount the Storage Enclosure in a Four-Post Rack" on page 30
- "To Mount the Storage Enclosure into a Two-Post Relay Rack" on page 37

Rack Installation Precautions

Follow these precautions to avoid injury to yourself and damage to your equipment:

- Install heavier systems toward the bottom of the rack to improve stability.
- Position your racks so that warm air exhaust from the back of one rack does not flow directly into the cool air intake area for another.
- Make sure that your racks are securely fastened to the floor.

Caution – Make sure that each system is grounded to the rack, and that each rack is connected to ground in the building.

▼ To Mount the Storage Enclosure in a Four-Post Rack

Note – To use a 19" four-post rack you must contact your Sun supplier and order a set of 19" slide mounts (quote X-Option number X6919A).

The following instructions can be used to install the StorEdge S1 into both a standard 19-inch wide telecom rack or a Sun StorEdge™ 72-inch tall (19-inch wide) rack.

1. **Position the two parts of the slide so that the double-angled ear (A) is in the correct position.**

   For a standard 19-inch wide rack, the double-angled end (A) must be at the front (see FIGURE 3-1).
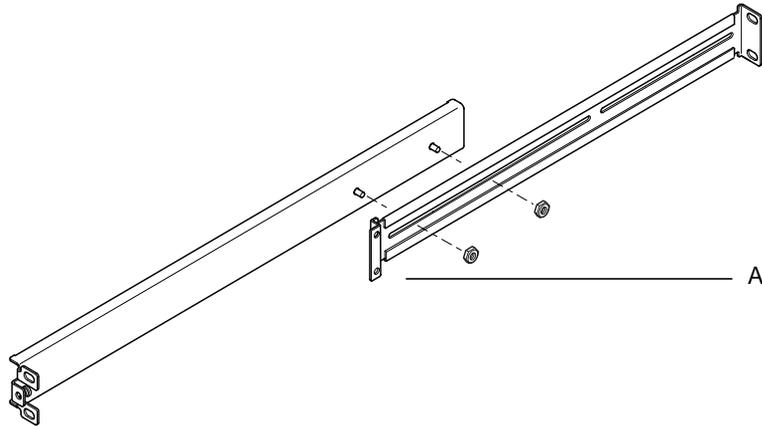
Slide Mounts for Standard 19-inch Expansion Rack

   For the Sun StorEdge 72-inch tall (19-inch wide) rack, the double-angled end (A) must be at the back (see FIGURE 3-2).
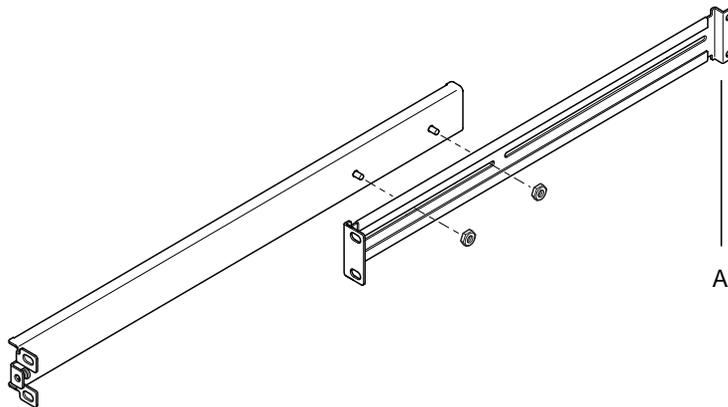
Slide Mounts for Sun 72-inch Expansion Rack

2. **Loosely secure the two parts together using the M4 nuts supplied.**

3. **Measure the distance between the front and back posts of your rack.**

4. **Adjust the slide mounts so that the distance between the front and the back mounting ears is approximately the distance between the front and back posts of the rack.**

5. **Align the slide mounts so that the end studs are in suitable post slots.**

6. **Tighten the M4 nuts, which hold the two halves of the slide mounts together.**

7. **Fasten the slide mounts to the rack using the screws supplied.**

   Leave the screws slightly loose to allow adjustment when the StorEdge S1 unit is inserted. Refer to FIGURE 3-3 for a standard 19-inch rack and FIGURE 3-4 for a Sun StorEdge 72-inch tall rack.
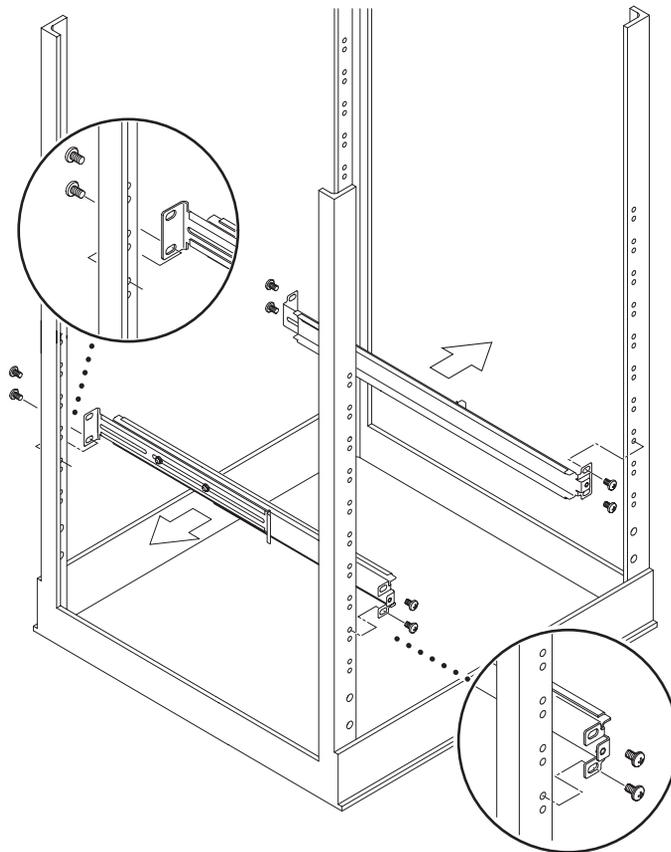
FIGURE 3-3   Fastening the Slide Mounts to the Standard 19-inch Rack
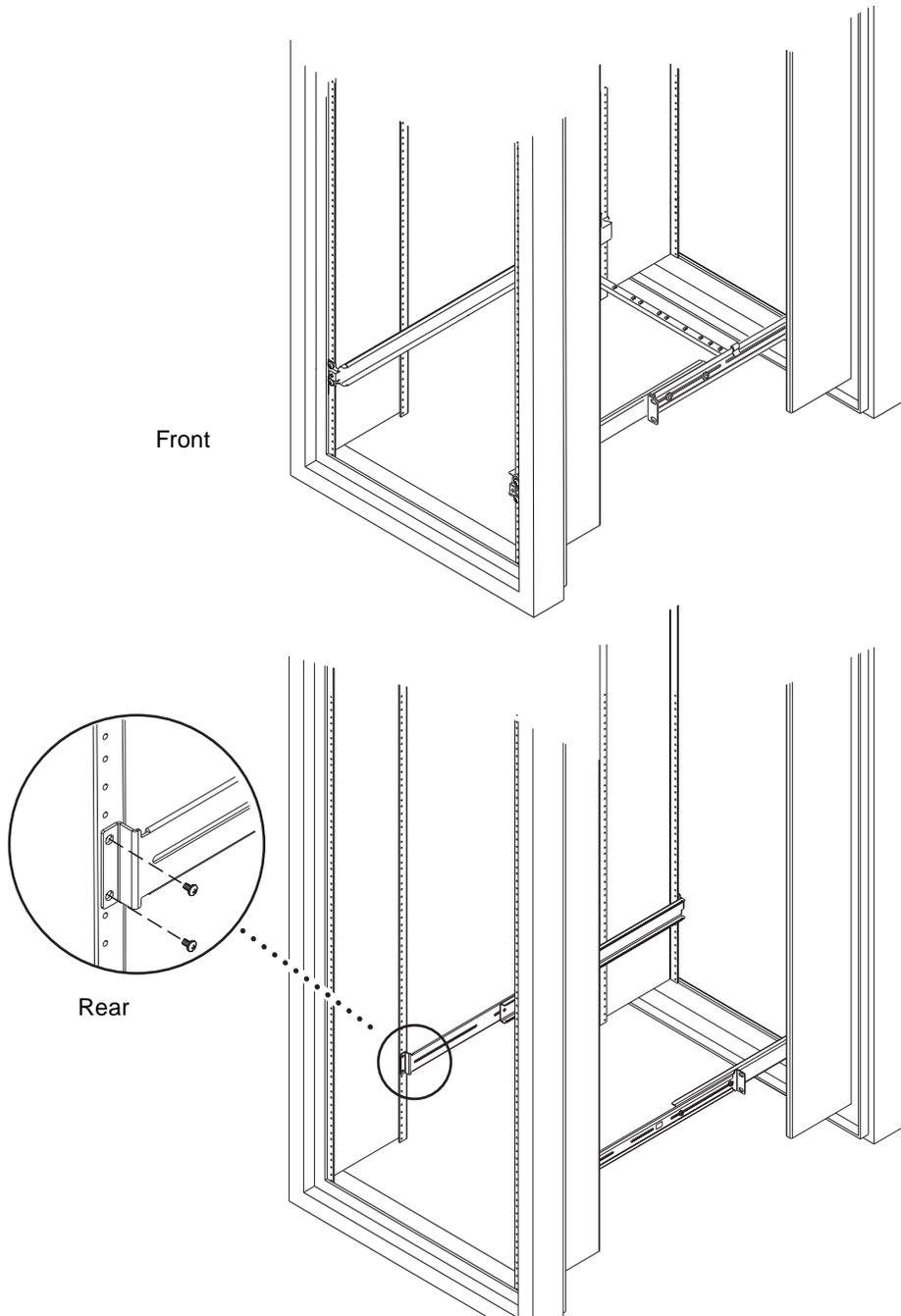
Front

Rear

FIGURE 3-4 Fastening the Slide Mounts in Sun StorEdge 72-inch Tall Rack – Front and Rear View (side panels removed for clarity)

8. Slide the StorEdge S1 unit into the rack (FIGURE 3-5**).**
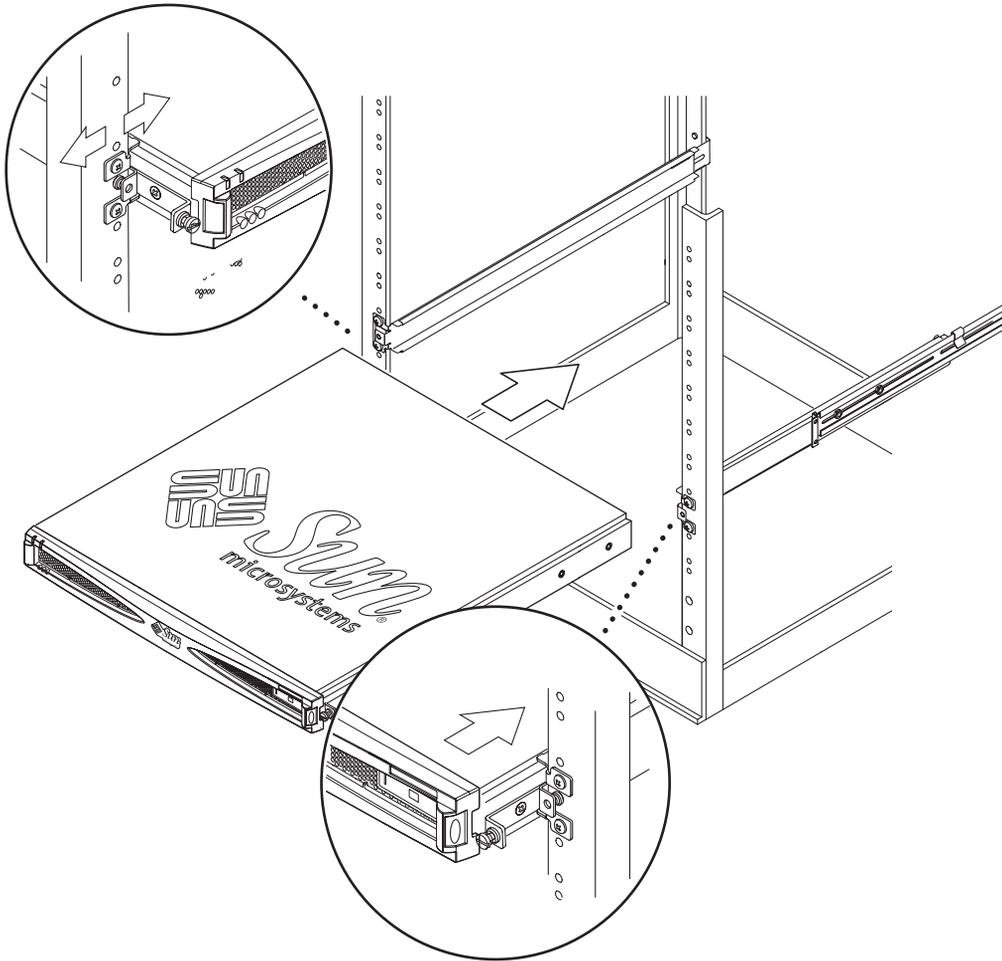
FIGURE 3-5   Sliding the StorEdge S1 Unit Into a Rack

9. Align the screws on the sides of the system with the slide mounts in the rack (FIGURE 3-6**).**

If necessary, readjust the slide mount rails to align the system properly. The thumbscrews need to be finger-tight.
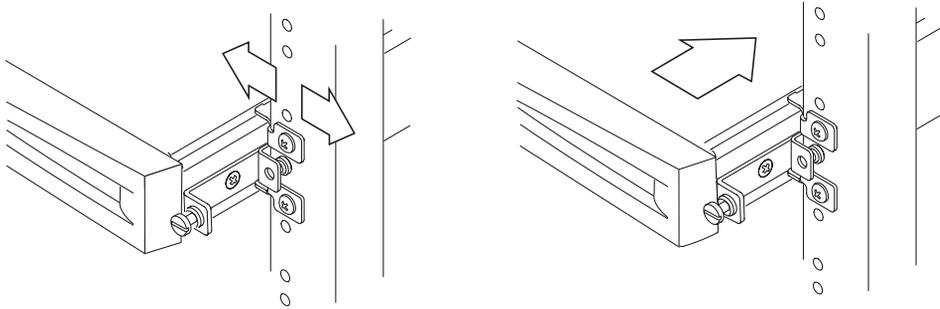
FIGURE 3-6   Adjusting the Mount and Tightening the Thumbscrew

10. **Tighten the slide mount rails in the rack if you have not fully secured them yet.**

11. **Use a screwdriver to tighten the thumbscrews at the front of the system.**

    The thumbscrews secure the system in the rackmounts.

12. **Hook the cable management bracket over the slide mounts at the rear of the system. See** FIGURE 3-7 **and** FIGURE 3-8**.**
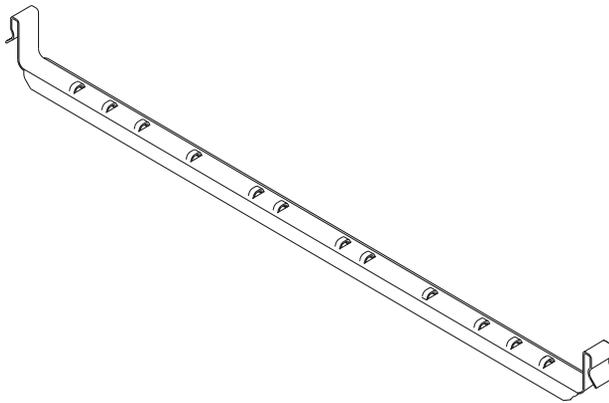
FIGURE 3-7   Cable Management Bracket

Cable management bracket
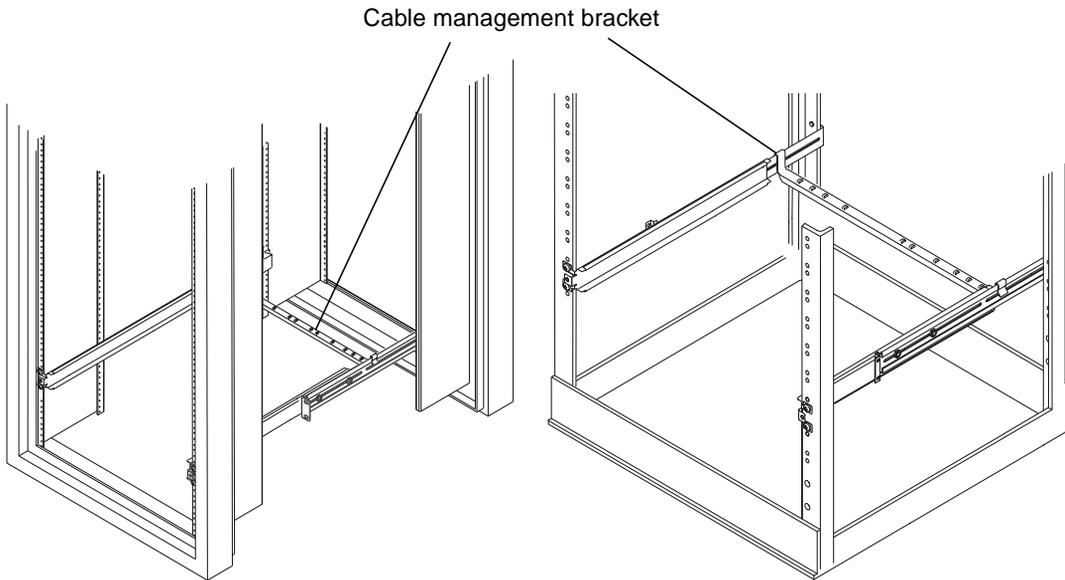
FIGURE 3-8   Cable Management Bracket Installed in Both Expansion Rack

13. Run cable ties through the holes in the cable management bracket.

14. When you attach the cables to the system, bundle them together and secure them with the cable ties.

For information on how to connect the cables see "Connecting the Cables" on page 47.

▼ To Mount the Storage Enclosure into a Two-Post Relay Rack

Use the following instructions to install the StorEdge S1 enclosure into a two-post relay rack.

1. **Attach the two fixed brackets either to the second and third tapped holes toward the front of the system (see** FIGURE 3-9**) or to the tapped holes towards the rear of the system (see** FIGURE 3-10**).**

   Use the Phillips head countersunk screws provided.
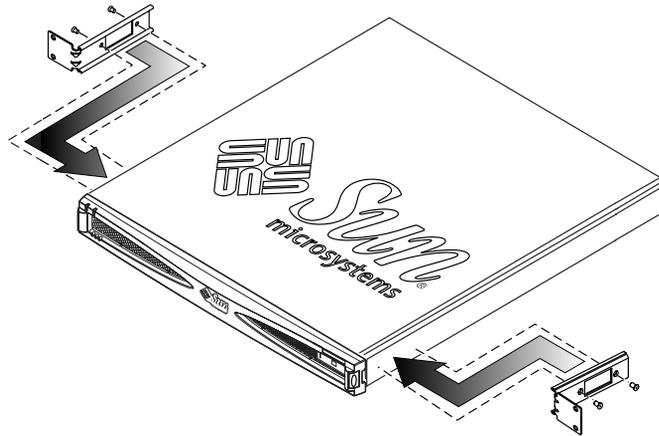
FIGURE 3-9   Attaching the Rackmount Bracket Towards the Front
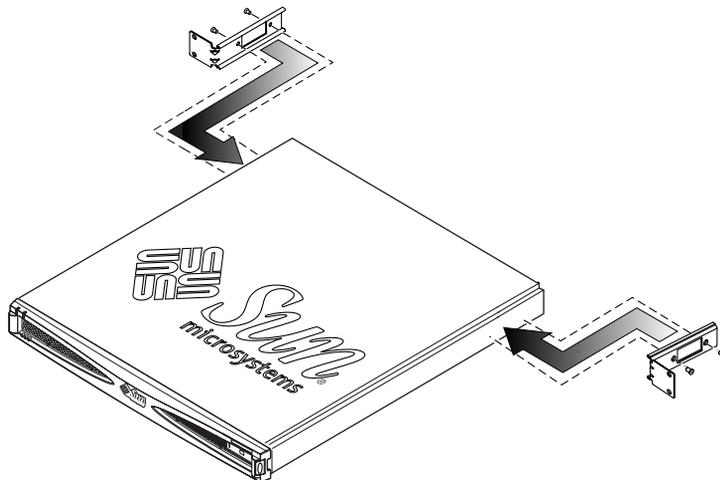
FIGURE 3-10 Attaching the Rackmount Bracket Towards the Rear

2. **Position the storage enclosure in the rack and tighten the screws (see** FIGURE 3-11 **and** FIGURE 3-11**).**
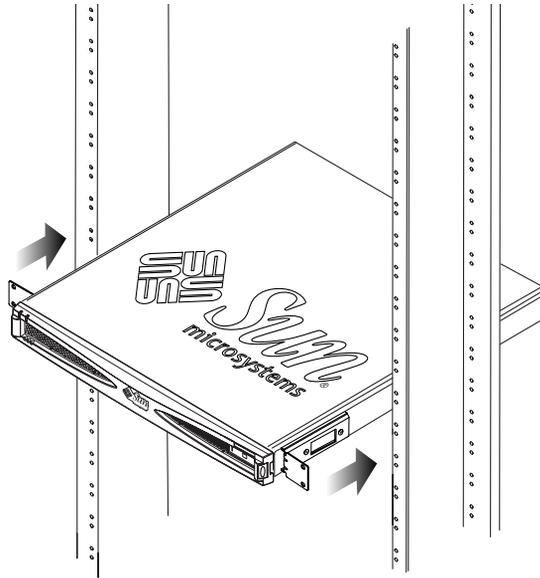
FIGURE 3-11 Installing Into a Two-Post Relay Rack with Brackets at Front
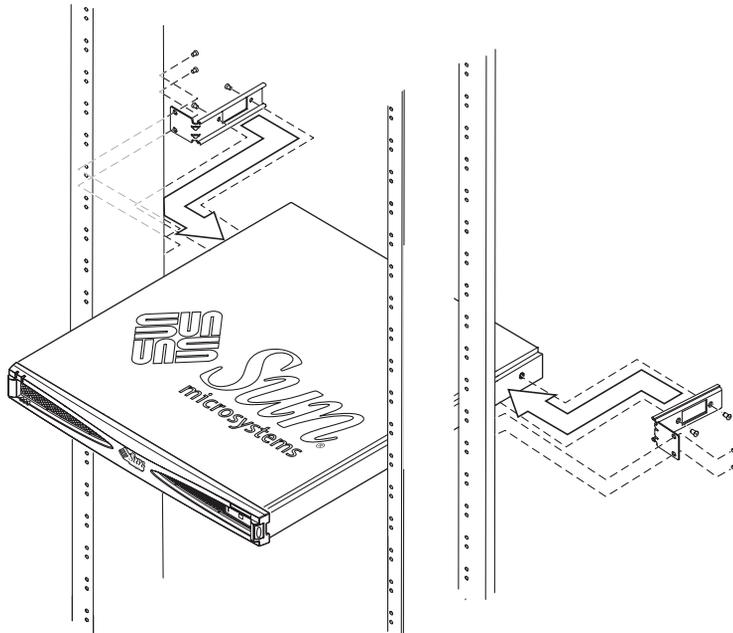
FIGURE 3-12 Installing Into a Two-Post Relay Rack With Brackets at Rear

Setting the SCSI IDs

To Determine the Available SCSI IDs

Refer to the *Solaris Handbook for Sun Peripherals* in the *Solaris AnswerBook2* online documentation for information on how to determine which SCSI target IDs are available for your system.

1. **Determine which SCSI IDs are not available to assign to StorEdge S1 drives.**

   - **Which SCSI IDs are being used by the host system?**

     Some host systems have dedicated SCSI devices on the system bus. For example, the Netra t1 Model 100/105 system reserves SCSI ID 7 for the SCSI controller and SCSI ID 0 and 1 for internal disks. When selecting a base SCSI ID for the StorEdge S1 storage enclosure, avoid these three reserved IDs. The Netra T1 AC200 and DC200 server has no such restrictions.

   - **Is there already an external SCSI device connected to the SCSI bus?**

     For example, is there an existing Netra st D130 storage enclosure or an external tape drive? If so, the Netra st D130 enclosures are assigned one or both of the following SCSI ID sequences:
     - SCSI ID base address 2 for drive IDs 2, 3, and 4
     - SCSI ID base address 10 (A) for drive IDs 10 (A), 11 (B), and 12 (C)

     See the Netra st D130 documentation for further information on setting SCSI ID addresses for the Netra st D130 storage enclosure.

   - **The default SCSI controller ID is SCSI ID 7. This ID cannot be assigned to a StorEdge S1 drive unless the controller ID has been modified from the default.**

2. **Determine which SCSI IDs you can assign to the StorEdge S1 units that you have to install.**

   All three drive bays of the StorEdge S1 unit have to be assigned to a SCSI ID number, whether or not a disk drive occupies the bay. SCSI IDs must be assigned to the StorEdge S1 unit in groups of three (see FIGURE 3-13). Each of the SCSI IDs in the series must be unassigned to the host system or other peripheral.

base	base + 1	base + 2
2	3	4
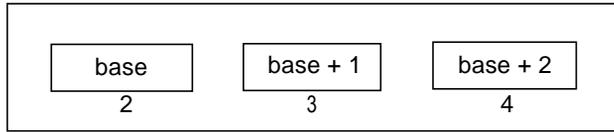
FIGURE 3-13 Example of SCSI ID Drive Assignment Sequence

For example, to assign a StorEdge S1 unit to SCSI IDs 2, 3, and 4, all SCSI IDs in the series (2, 3, and 4) must be available and not assigned to another peripheral or SCSI controller.

3. Determine the base address for the SCSI ID sequence that you plan to assign to the drives.

The base address is the first number in the sequence of SCSI ID numbers. For example, in the series of SCSI IDs 2, 3, and 4, the base SCSI ID address is 2.

▼ To Set the SCSI IDs for the Drives

1. **At the rear of the enclosure, locate the SCSI ID switch.**

Left switch
decrements
address

Right switch
increments
address

- 2 +
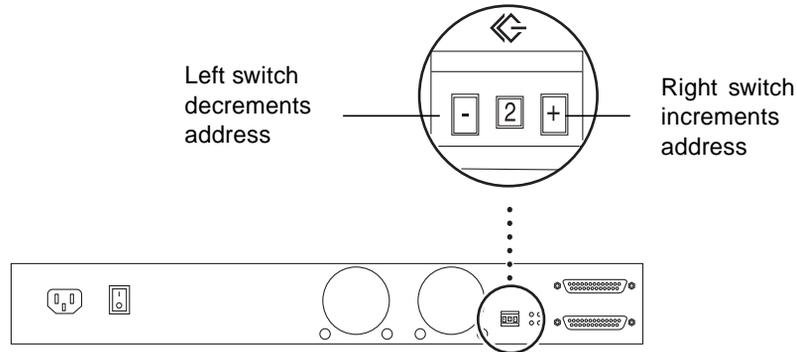
FIGURE 3-14 SCSI ID Switch on the Rear Panel

2. **Set the SCSI ID address for the base address (first address in a drive series) in the storage enclosure by pressing the square switch on either side of the number with a pointed object.**

Pressing the right switch increments the address; pressing the left switch decrements it. You might want to write this number on the module bay label for front viewing.

For example, to use SCSI ID addresses 2, 3, and 4 for the first StorEdge S1 unit, set the SCSI toggle switch to 2.

SCSI ID address switches

ID

- 2 +
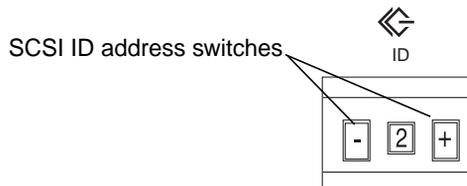
FIGURE 3-15 SCSI ID Address Switch on the Rear of the Storage Enclosure

3. **If the system power is on, cycle it off then on again.**

   This step is essential to transfer the updated data to the drives.

4. **Repeat Steps 2 and 3 for each StorEdge S1 enclosure that you are installing.**

Note – To get the correct SCSI data, the host server must be powered on *after* any attached SCSI devices, such as the StorEdge S1 AC100 and DC100.

The following sections give some example SCSI ID assignment configurations.

Single-Ended SCSI Installations

FIGURE 3-16 and TABLE 3-1 show an example with two StorEdge S1 units connected to a Netra t1 Model 100/105 system on-board SCSI port. Limitations of this configuration include:

■ The maximum number of StorEdge S1 units that can be used for this configuration is two because the Netra t1 server is a single-ended unit.

■ SCSI IDs 0 and 1 are used by the host system internal drives and SCSI ID 7 is used by the SCSI controller.

SCSI ID
assignment

Netra t1 100/105 host system

SCSI port

StorEdge S1 enclosure

2, 3, 4

SCSI IN port
SCSI OUT port

StorEdge S1 enclosure

8, 9, A

SCSI IN port
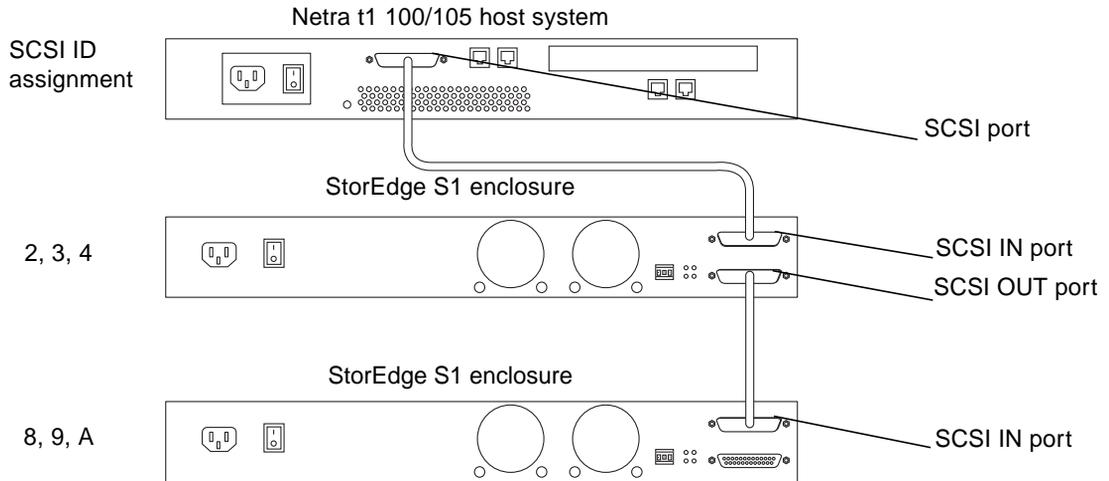
FIGURE 3-16 Two StorEdge S1 Enclosures on a Netra t1 Model 100/105 Host (Example)

TABLE 3-1   Two StorEdge S1 Enclosures on a Netra t1 Model 100/105 Host

SCSI ID Addresses	Possible Use for ID number	SCSI ID Addresses	Possible Use for ID number
SCSI ID 0	Drive on host	SCSI ID 8	Drive 1 of second StorEdge S1
SCSI ID 1	Drive on host	SCSI ID 9	Drive 2 of second StorEdge S1
SCSI ID 2	Drive 1 of first StorEdge S1	SCSI ID A	Drive 3 of second StorEdge S1
SCSI ID 3	Drive 2 of first StorEdge S1	SCSI ID B	
SCSI ID 4	Drive 3 of first StorEdge S1	SCSI ID C	
SCSI ID 5		SCSI ID D	
SCSI ID 6	CD-ROM drive on host	SCSI ID E	
SCSI ID 7	SCSI controller ID		

LVD SCSI-3 Installations

FIGURE 3-17 and TABLE 3-2 show an example of a host system with four StorEdge S1 units connected to its on-board LVD SCSI port such as that found on the Netra T1 AC200 and DC200 servers or Hardware Bus Adapter cards. This configuration has fewer limitations:

- The maximum number of StorEdge S1 units that can be used for this configuration is four, because the system supports LVD SCSI and no other peripherals are chained to this bus.

- SCSI ID 7 is being used by the LVD SCSI controller.
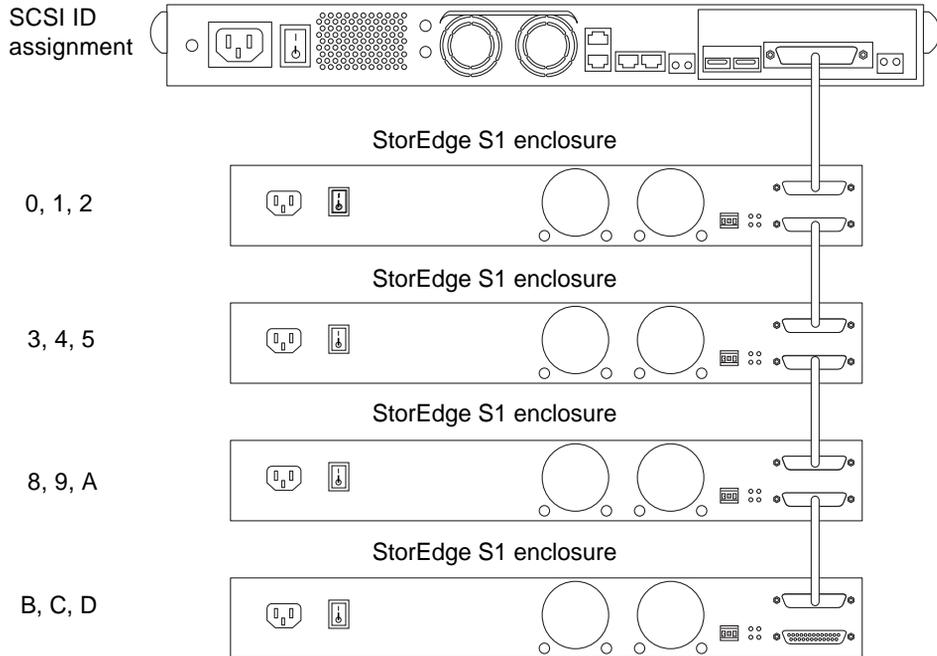
FIGURE 3-17 Four StorEdge S1 Enclosures on a Host System With LVD SCSI (Example)

TABLE 3-2 Four StorEdge S1 Enclosures on a Host System With LVD SCSI

SCSI ID Addresses	Possible Use for ID number	SCSI ID Addresses	Possible Use for ID number
SCSI ID 0	Drive 1 of first StorEdge S1	SCSI ID 8	Drive 1 of third StorEdge S1
SCSI ID 1	Drive 2 of first StorEdge S1	SCSI ID 9	Drive 2 of third StorEdge S1
SCSI ID 2	Drive 3 of first StorEdge S1	SCSI ID A	Drive 3 of third StorEdge S1
SCSI ID 3	Drive 1 of second StorEdge S1	SCSI ID B	Drive 1 of fourth StorEdge S1
SCSI ID 4	Drive 2 of second StorEdge S1	SCSI ID C	Drive 2 of fourth StorEdge S1
SCSI ID 5	Drive 3 of second h	SCSI ID D	Drive 3 of fourth StorEdge S1
SCSI ID 6	CD-ROM drive on host (if available)	SCSI ID E	
SCSI ID 7	SCSI controller ID		

Note – The Netra T1 AC200 and DC200 server supports a maximum of eight StorEdge S1 enclosures. A dual port Hardware Bus Adapter supports a maximum of 16 StorEdge S1 enclosures.

Mixed Single-Ended and LVD SCSI Devices

FIGURE 3-18 and TABLE 3-3 show an example of a host system with one single-ended Netra st D130 enclosure and one StorEdge S1 enclosure connected to its LVD SCSI PCI adapter. This configuration has many limitations:

- The maximum number of StorEdge S1 units that can be used for this configuration is one, because the Netra st D130 is a single-ended peripheral, which limits the number of peripherals connected to the bus to two.

- The Netra st D130 enclosure is using SCSI IDs 2, 3, and 4, and SCSI ID 7 is being used by the default SCSI controller.

- The overall SCSI bus speed is limited.

- The maximum SCSI cable length is three meters.
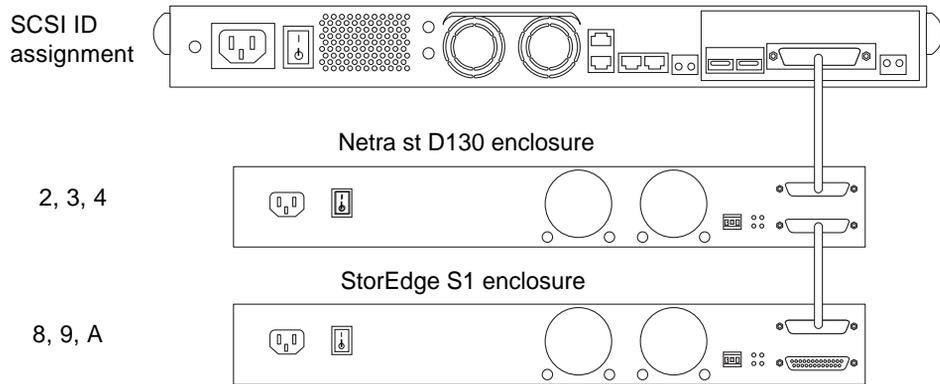
FIGURE 3-18 One StorEdge S1 Enclosure and One Netra st D130 Enclosure on a Host System With LVD SCSI (Example)

TABLE 3-3 One StorEdge S1 Enclosure and One Netra st D130 Enclosure on a Host System With LVD SCSI

SCSI ID Addresses	Possible Use for ID number	SCSI ID Addresses	Possible Use for ID number
SCSI ID 0		SCSI ID 8	Drive 1 of StorEdge S1
SCSI ID 1		SCSI ID 9	Drive 2 of StorEdge S1
SCSI ID 2	Drive 1 of Netra st D130	SCSI ID A	Drive 3 of StorEdge S1
SCSI ID 3	Drive 2 of Netra st D130	SCSI ID B	
SCSI ID 4	Drive 3 of Netra st D130	SCSI ID C	
SCSI ID 5		SCSI ID D	
SCSI ID 6		SCSI ID E	
SCSI ID 7	SCSI controller ID	SCSI ID F	

Connecting the Cables

This section contains instructions for connecting SCSI cables and power cables to the StorEdge S1 enclosure.

To Prepare the Host System

Before connecting the SCSI cables from the host system to the StorEdge S1 enclosure, you must prepare the host system.

Note – If your host system supports hot-swap attaching and detaching of external SCSI devices, do not power off your system. For example, if your host system is a Netra ct 400 or 800 server or similar, you should not power off the system. Start the host system preparation at Step 2.

---

1. **Halt operations and power off your host system.**

   Refer to your host system documentation for instructions on powering off the system.

2. **Install a host adapter card into your host system, if necessary.**

   Refer to the documentation that shipped with the adapter card for installation instructions.

3. **Have software documents (on the system CD) available during the installation.**

Connecting the SCSI Cables

▼ To Connect the SCSI Cables

If the host system has a VHDCI SCSI connector, you need to use the 0.8-meter VHDCI/SCSI-3 cable.

1. **Verify that the host system has been powered off.**

   Refer to "To Prepare the Host System" on page 47.

2. **Connect one end of the 0.8-meter SCSI cable to your host system.**

You can connect the SCSI cable to an UltraSCSI PCI host adapter or the on-board SCSI port, as long as it's an UltraSCSI port. Refer to the documentation that came with your host system for the location of the UltraSCSI port on the host system.

3. **Connect the other end of the SCSI cable to the SCSI IN port at the rear of the StorEdge S1 storage enclosure.**
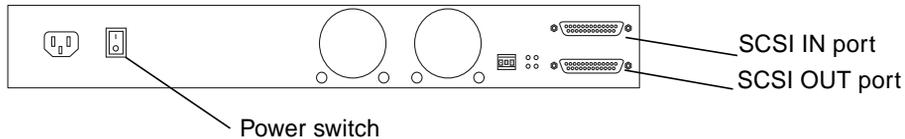
FIGURE 3-19 StorEdge S1 Rear View (AC Version)

4. **Determine if this StorEdge S1 storage enclosure is at the beginning or the end of the SCSI chain.**

- If this storage enclosure is at the *end* of the SCSI chain (you are not connecting any other peripherals to your host system), go to "Connecting the Power Cables" on page 50.
- If this storage enclosure is at the *beginning* of the SCSI chain (if you are going to daisy-chain other StorEdge S1 storage enclosures or peripherals off of this one), keep the following things in mind:
  - If you have an LVD SCSI connection, you cannot daisy-chain more than four StorEdge S1 storage enclosures together. If you have a single-ended SCSI connection, you cannot daisy-chain more than two StorEdge S1 storage enclosures together.
  - If you are adding a single-ended peripheral (such as the Netra st D130 enclosure) to the SCSI chain, you can only daisy-chain one StorEdge S1 along with the peripheral.

  See "To Determine the Available SCSI IDs" on page 39 for more information on assigning SCSI ID addresses.
- The overall SCSI bus length cannot exceed 12 meters for LVD SCSI and 3 meters for single-ended SCSI. The SCSI bus length for the cables inside the StorEdge S1 storage enclosure is 1 meter. If you are connecting another type of peripheral in this daisy-chain, refer to the documentation that you received with that peripheral for its internal SCSI bus length.

5. **Connect one end of the SCSI cable to the SCSI OUT port of the first StorEdge S1 storage enclosure.**

6. **Connect the other end of the SCSI cable to the SCSI IN port on the second StorEdge S1 storage enclosure or peripheral.**

7. **If you are installing three or more StorEdge S1 enclosures, repeat Step 5 and Step 6 until all enclosures are attached the SCSI chain.**

   See FIGURE 3-16 through FIGURE 3-18 in "To Determine the Available SCSI IDs" on page 39 for some examples of cabling configurations.

8. **Determine if you need to install an external terminator at the end of the SCSI daisy-chain.**

   - If the last device in the SCSI daisy-chain is a StorEdge S1 storage enclosure or some other type of *UltraSCSI* device, do not install an external terminator on the device. The on-board autoterminator in the device functions in UltraSCSI mode.

   - If the last device in the SCSI daisy-chain is a *wide* SCSI device, install an external terminator on the SCSI OUT port on that device if it requires one. Refer to the documentation that came with your wide SCSI device to determine if it needs an external terminator.

   Note – Wide SCSI Devices use a 16- or 32-bit bus and transmit twice as much data as a narrow SCSI device.

   - If the last device in the SCSI daisy-chain is a *narrow* SCSI device, install an external terminator on the SCSI OUT port on that device.

   See "Auto-termination Indication LEDs" on page 72 for a description of the autotermination LEDs.
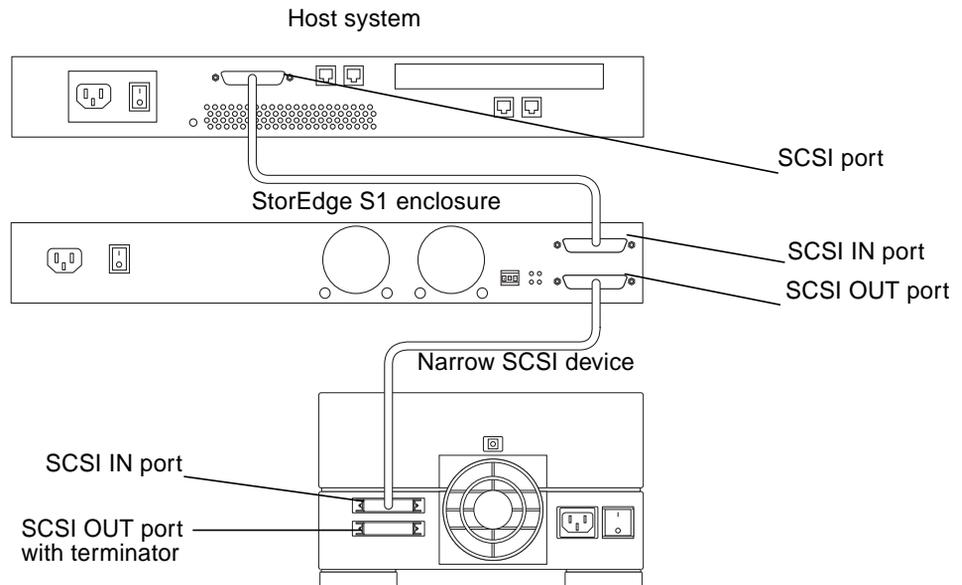
FIGURE 3-20 Daisy-Chaining a StorEdge S1 Storage Enclosure With a Narrow SCSI Device

Connecting the Power Cables

The procedures for connecting the power cable(s) vary depending on whether you have the AC or the DC version of the StorEdge S1 system:

- "To Connect the AC Power Cable" on page 50
- "To Connect the DC Power Cables" on page 51

Note – See "Electrical Site Requirements" on page 83 for information on electrical site requirements.

▼ To Connect the AC Power Cable

Caution – Ensure that the connection of multiple units to the supply circuit does not overload the supply overcurrent protection or supply wiring. Refer to the StorEdge S1 storage enclosure nameplate electrical ratings when determining the correct branch circuit rating for your installation.

1. **Connect the AC power cable to the AC power connector on the StorEdge S1 storage enclosure.**

2. **Connect the AC power cable to an AC power source.**

Power connector

FIGURE 3-21 Connecting the AC Power Cable

Note – As soon as the system is connected to a power source, it goes into Standby mode. The amber System Summary Fault LED comes on to reflect this; it does not indicate a fault.

▼ To Connect the DC Power Cables

1. **Get a DC grounding cable and two star washers.**

2. **Position and align the DC grounding cable against the two DC grounding lug nuts at the rear of the StorEdge S1 storage enclosure.**

DC connectors   DC grounding lug nuts
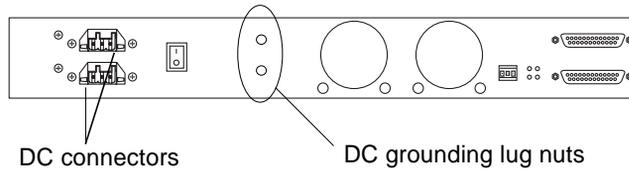
FIGURE 3-22 Connecting the DC Grounding Cable

3. **Place the star washers between the DC grounding cable and the two bolts that you are using to secure one end of the grounding cable to the two lug nuts.**

4. **Tighten the two bolts to secure the grounding cable to the two lug nuts.**

5. **Secure the other end of the grounding cable to the earth ground in the building.**

   If you are installing the StorEdge S1 storage enclosure in a rack, you can secure the grounding cable to a proper grounding point on the rack, as long as the rack is properly grounded to the earth ground in the building.

6. **Verify that the DC power source is off through the circuit breakers.**

   Caution – Do *not* proceed with these instructions until you have verified that the power is off to the DC power source through the circuit breakers.

7. **Assemble the DC input power cables, if necessary.**

   Refer to "Assembling the DC Input Power Cable" on page 20 if you have not already assembled the DC input cables.

8. **Connect the DC input power cables to the DC power source through the circuit breakers.**

   Connect the first DC input power cable to DC power source A, and the second DC input power cable to DC power source B.

9. **Connect one DC input power cable to a DC connector at the rear of the StorEdge S1 storage enclosure.**
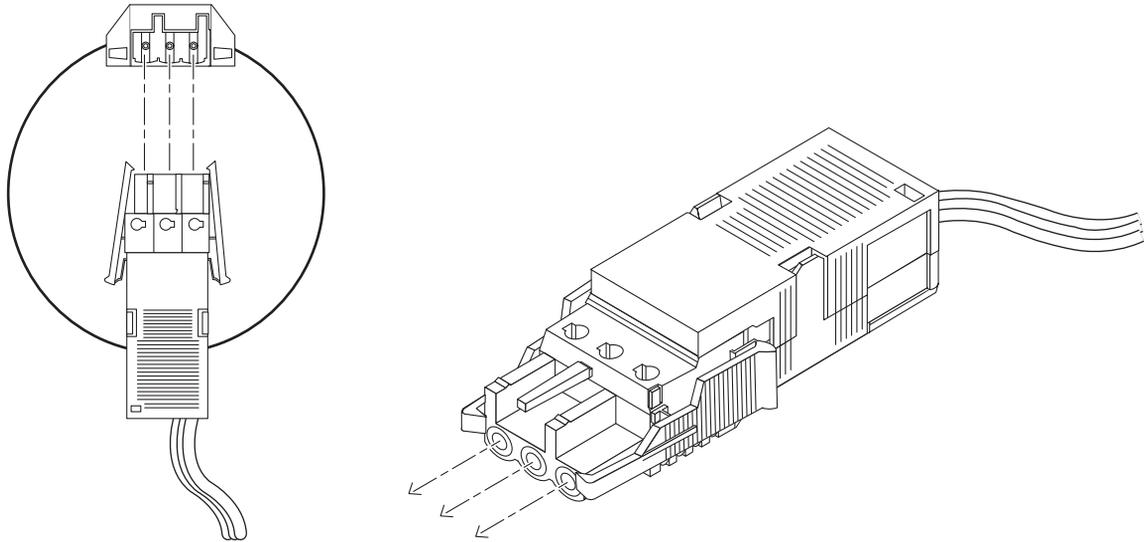
FIGURE 3-23 Connecting the DC Input Power Cable to the DC Connector

10. Repeat Step 9, connecting the second DC input power cable to the other DC connector at the rear of the enclosure.

Refer to FIGURE 3-22 for the locations of the DC connectors on the DC power supplies at the rear of the enclosure.

11. Turn on the circuit breakers to provide power to the enclosure.

To disconnect the DC input power cable from the DC connector, squeeze the two tabs on the sides of the DC input power cable and gently disconnect the DC input power cable from the DC power supply.
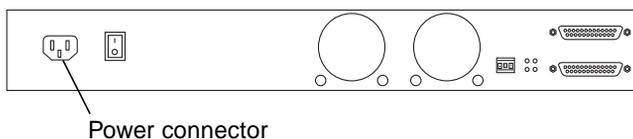

Note – As soon as the system is connected to a power source, it goes into Standby mode. The amber System Summary Fault LED comes on to reflect this; it does not indicate a fault.
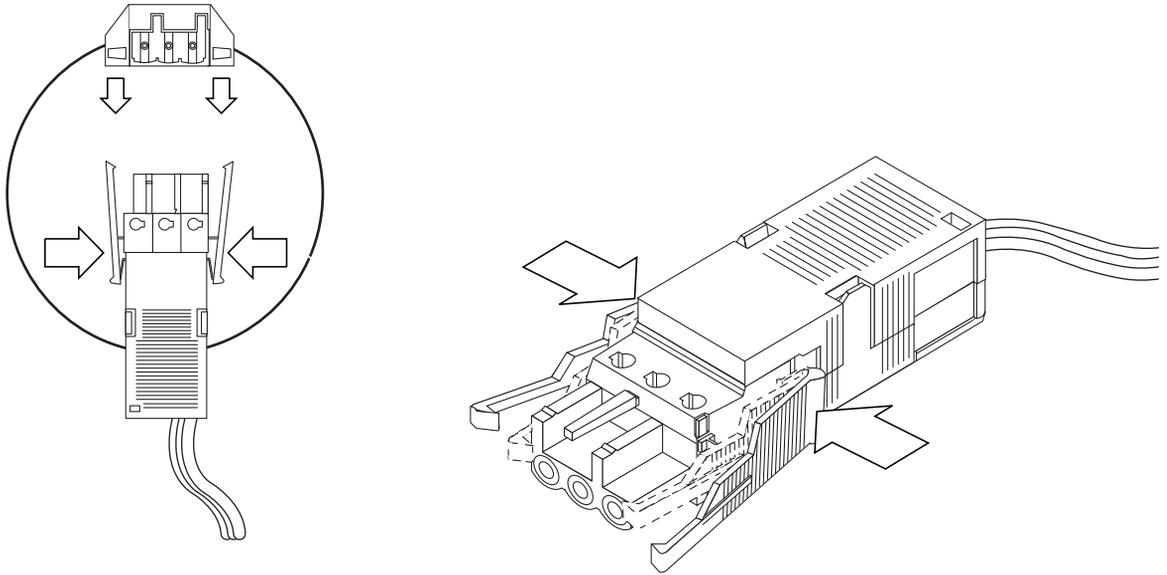
FIGURE 3-24 Disconnecting the DC Input Power Cable From the DC Connector

Isolating the Chassis Ground Connection (DC Version Only)

Every StorEdge S1 storage enclosure is shipped out of the factory with the chassis ground connected to the common output return through two screws on the power supply at the rear of the enclosure.

▼ To Isolate the Chassis Ground Connection

1. **Go to the rear of the StorEdge S1 storage enclosure and locate the two screws used to isolate the chassis ground connection.**
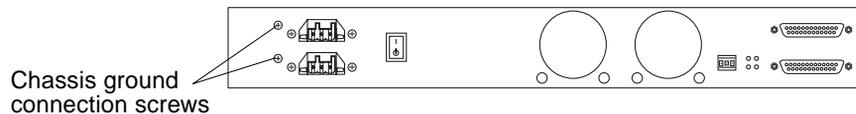
FIGURE 3-25 Locating the Chassis Ground Connection Screws

2. **Unscrew the two chassis ground connection screws.**

3. **Locate the two chassis ground isolation bushings in the ship kit.**

4. **Insert the two bushings and screws into the screw holes and tighten the screws.**
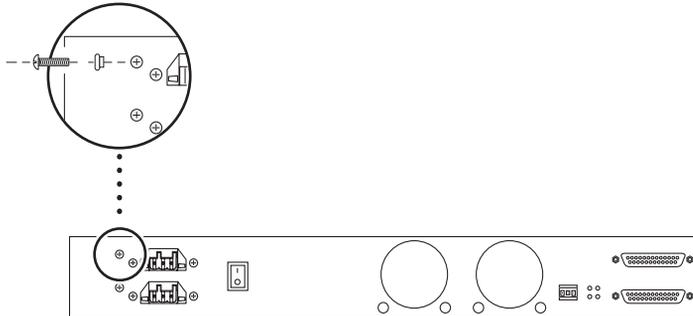
FIGURE 3-26 Securing the Chassis Ground Connection Screw

Powering On the Storage Enclosure

After all of the SCSI cables and power cables are attached to the StorEdge S1 storage enclosure, power on the enclosure as described in the following procedure.

▼ To Power on the Storage Enclosure

1. **Before turning the storage enclosure power on, check the binary SCSI LED display with the power in standby mode.**

   See "To Check the Binary SCSI ID LED Display" on page 69 for information on reading the binary LED display.

2. **Press the power switch at the rear of the storage enclosure to the On (|) position.**

   See FIGURE 3-19 for the location of the power switch. Note that when you release the power switch, it settles into the center (neutral) position, the power remains on, and the system summary fault LED on the front and rear panels turns from amber to green.

3. **Check the system power, system summary fault, hard drive, and autotermination LEDs to verify that the storage enclosure is running properly.**

   See "Front Panel LEDs" on page 67 and "Back Panel LEDs" on page 72 for descriptions of the LED operations.

4. **Power on the host system.**

   a. **Make sure that the StorEdge S1 enclosure and all other peripheral devices connected to the host system are powered on.**

   b. **If you have powered off the host system, power on the host system.**

      Refer to the host system documentation for the correct instructions.

   c. **Determine if the host system supports the hot-swap attachment of external SCSI devices.**

      For example, the Netra ct 400 and 800 servers support attaching SCSI devices in a hot-swap mode. Refer to your system documentation to see if your system supports hot swap.

      - If your system supports hot-swapping, follow the instructions in the system or SCSI adapter documentation for attaching external SCSI devices. Refer to the cfgadmin_scsi(1M) man page for additional information.

      - If your system does not support hot-swapping, follow the steps below to shut down and perform a reconfiguration boot on the host system.

      i. **As superuser, use the** shutdown **command to halt the host system and display the OpenBoot™ PROM** ok **prompt.**

      ```
      # shutdown -y -i0 -g0
      ```

      ii. **At the** ok **prompt, use the** boot -r **command to perform a reconfiguration boot on the system.**

         If you do not use the **-r** argument the system does not see the new device.

      ```
      ok boot -r
      ```

   d. **Verify that the StorEdge S1 enclosure has successfully connected to the host system.**

      Refer to the host system documentation for specific instructions.

Adding, Removing, and Replacing Drives

This chapter gives hardware and software instructions for adding, removing, and replacing disk drives in a StorEdge S1 storage enclosure.

This chapter is organized as follows:

Removing the Front Bezel to Access the Disk Drives

Before you can add or remove disk drives, you must remove the bezel from the front of the system. To remove the bezel, do the following:

● **Release the front bezel by pressing the latches on both ends and pulling the bezel away from the enclosure (see** FIGURE 4-1**).**

The bezel is tethered to the system, therefore it hangs from the front of the chassis while you remove the disk drive.

For information about detaching the tethers from the chassis, see "To Untether the Front Bezel and Clean the Bezel Screen" on page 75.
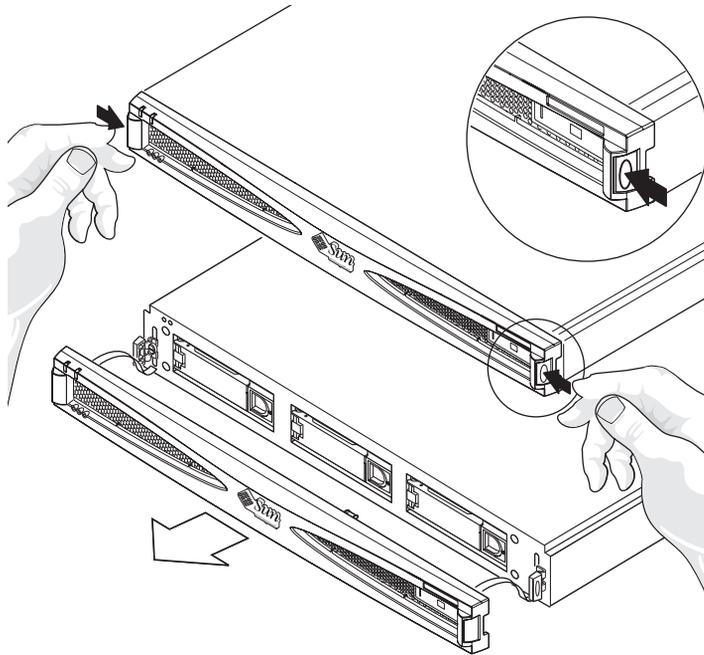
FIGURE 4-1   Removing the Front Bezel

Adding a Disk Drive

This section contains information on how to configure your storage enclosure when you add a disk drive while the power is on and the operating system is running. This is called hot-swapping.

The way you add a hard drive depends on the software application you are using. For each application, decide where to install the new disk drive, add the drive, and then re-configure the operating environment. Each application is different.

In all cases, you must select a slot, physically install the disk drive, and configure the Solaris operating environment to recognize the drive. You must then configure your application to accept the new disk drive.

Caution – These procedures should be performed only by a qualified system administrator. Performing hot-swap operations on an active disk drive can result in data loss or corruption.

Caution – Use the disposable antistatic wrist strap supplied with the system when you carry out the following procedures.

▼ To Add a Disk Drive

1. **Remove and untether the front bezel (see "Removing the Front Bezel to Access the Disk Drives" on page 58).**

2. **Select any available slot in the StorEdge S1 enclosure for the new disk drive.**

   Make a note of which slot you choose, to refer to when you configure the software environment.

3. **Remove the foam filler.**

4. **Store the foam filler in a safe place for future use. It acts as an air baffle and is needed for the system's internal cooling whenever a hard disk drive is absent from its slot.**

5. **Open the locking handle on the disk drive by sliding the latch in the direction marked on it.**
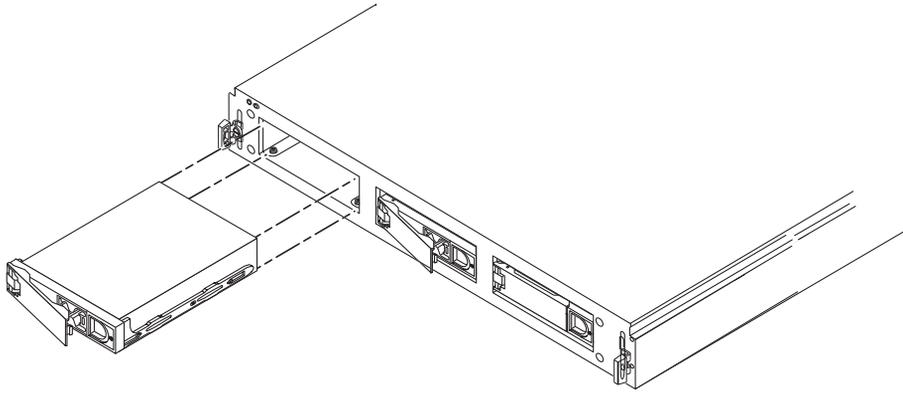
FIGURE 4-2 Adding a Disk Drive

6. **Slide the new drive into the vacant slot.**

7. **Apply equal pressure to both sides of the front of the drive, and firmly push it until the locking handle engages.**

   The drive should now be flush with the enclosure front.

8. **Close the locking handle fully.**

   When the drive is firmly installed, it spins up automatically.

9. **Determine the SCSI ID of the drive you added.**

   See "To Check the Binary SCSI ID LED Display" on page 69.

10. **Replace the front bezel.**

Performing the Software Configuration Procedures

When adding a disk drive, you must create a new device entry for the drive in the `/devices`, `/dev/dsk`, and `/dev/rdsk` hierarchies. The new drive is assigned a unique name associated with the slot into which it was installed.

▼ To Create a New Solaris Device Entry

The naming convention for disks attached to a host adapter is c*w*t*x*d*y*s*z*, where:

w corresponds to the controller in your system
x corresponds to the SCSI target of the disk
y is the logical unit for the disk drive (always 0)
z is the slice (or partition) on the disk

For example, if the StorEdge S1 storage enclosure is connected to a host adapter corresponding to controller c2, and a drive was added to the second slot in a StorEdge S1 storage enclosure with the SCSI ID switch in the left most position (which assigns SCSI IDs 2, 3, and 4 to the drives inside the enclosure), the new drive appears as /dev/dsk/c2t3d0s[0-7] and /dev/rdsk/c2t3d0s[0-7].

1. **As superuser, use the** drvconfig **and** disks **commands to add the new device:**

```
# drvconfig
# disks
```

2. **Verify that the new disk has been added:**

```
# ls -l /dev/dsk/c2t3d0s*
```

Where c2t3d0s* is the expected device name for the new drive in the third slot.

The new disk drive is now available for use as a block or character device. Refer to the sd(7) man pages for further details.

▼ To Configure a New Disk Drive Within Your Application

⚠ **Caution –** Only a qualified system administrator should perform these procedures. Performing hot-swap operations on an active disk drive can result in data loss or corruption.

Use the following procedure to configure a slice (single physical partition) on a disk to be used with a UNIX file system (UFS).

1. **Verify that the device label meets your requirements.**

You can use the prtvtoc command to inspect the label for your disk. To modify the label, use the format command. Refer to the prtvtoc(1M) and format(1M) man pages for more information.

2. **Once you have selected a disk slice for your UFS file system, create a file system on the slice.**

```
# newfs /dev/dsk/cwtxdysz
```

Refer to the newfs(1M) man page for more information.

3. **If necessary, create a mount point for the new file system:**

```
# mkdir mount-point
```

where *mount-point* is a fully qualified path name. Refer to the mount(1M) man page for more information.

4. **After the file system and mount point have been created, modify the** /etc/vfstab **file to reflect the new file system.**

See the vfstab(4) man page for more details.

5. **Mount the new file system using the** mount **command:**

```
# mount /dev/dsk/cwtxdysz mount-point
```

where *mount-point* is the directory you created.

The file system is now ready to be used.

Removing and Replacing a Hard Disk Drive

The StorEdge S1 storage enclosure comes configured with 1-inch high drives. The procedure for removing and replacing the drives differs only in the software you use to control the disks. In all cases the hard disks are hot-swappable.

▼ To Remove a Hard Disk Drive

⚠️ **Caution –** If the StorEdge S1 storage enclosure is running and a drive slot does not contain a hard disk drive or foam filler, the StorEdge S1 enclosure will not cool properly and might overheat. If you do not replace the hard drive, you *must* install a foam filler in the empty slot. The foam fillers are air baffles that allow the system to maintain maximum cooling. Verify that you have either a replacement drive or a foam filler before removing a disk drive from the enclosure.

1. **Ensure there is no activity to the drives.**

   If the Disk Drive LED for that disk drive is flashing green, the drive is still active. When the Disk Drive LED is lit solid green, then the drive is no longer active and it is safe to remove it.

   Note – The LED might remain unlit for a long period if the disk drive is under an unusually heavy load. In this case, you must not remove the disk drive. However, if the LED is unlit because the disk drive has failed, then of course it is safe to remove the drive. You will know if the disk drive has failed, because a message informing you of the failure will appear on the console screen.

   ---

2. **Prepare the software environment to remove the drive.**

   See the documentation that came with your software for application-specific instructions that you might need to perform before you can remove the disk drive.

3. **Release the front bezel by pressing the latches on both ends and pulling the bezel away from the enclosure (**FIGURE 4-1**).**

4. **Unlatch the drive bracket handle by sliding the latch in the direction indicated in** FIGURE 4-3**.**
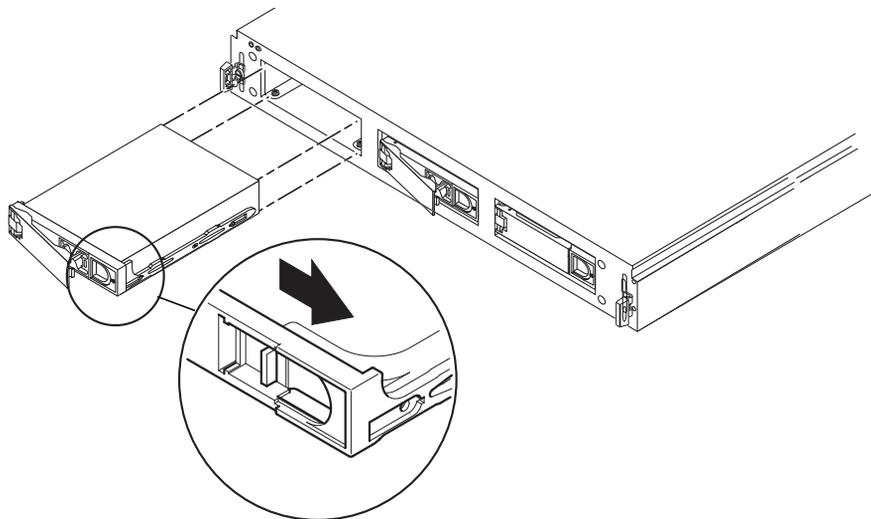

FIGURE 4-3   Removing and Replacing a Disk Drive

5. **Pull the bracket handle out and swing it open.**

6. **Continue to pivot the disk drive bracket handle against the chassis, applying mild pressure, until the drive disconnects.**

7. **Slide the drive out.**

8. **Determine whether you are going to replace the disk drive or not.**

   ■ If you are going to replace the disk drive, go to "To Replace a Hard Disk Drive" on page 64.

   ■ If you are not going to replace the disk drive and you are going to continue using the system, insert a foam filler in the empty drive slot.

   ■ If you are not going to replace the disk drive and you are returning a defective enclosure, leave the drive bays empty.

▼ To Replace a Hard Disk Drive

1. **If necessary, refer to the documentation that came with your VERITAS VxVM or Solstice DiskSuite software for any procedures that you might have to perform before you can replace the disk drive.**

2. **Open the locking handle on the disk drive.**

   Push in the direction of the arrow to release the latch.

3. **Slide the replacement disk drive into the vacant slot.**

4. **Firmly push the drive until the locking handle engages and the drive is flush with the enclosure front.**

5. **Close the locking handle fully.**

6. **Replace the front bezel.**

Maintenance Tasks

This chapter describes some of the maintenance tasks that you might need to perform periodically with the StorEdge S1 AC100 and DC100 storage enclosures.

This appendix is organized as follows:

Powering Off the Storage Enclosure

▼ To Power Off the Storage Enclosure

Caution – Before turning off the system power, exit from the operating system. Failure to do so might cause data loss.

1. **If necessary, notify users that the system is going to be shut down.**

2. **Back up system files and data, if necessary.**

3. **Halt the operating system.**

4. **Press the power system switch on the storage enclosure to the standby position.**

5. **Verify that the System Power LED is off.**

6. **Disconnect the power cable from the power connector at the rear of the storage enclosure.**

Caution – Even with the power switch in the standby position, power remains connected to the enclosure, and potentially dangerous voltage is present in the power supply. You must disconnect the power cable from the power source to completely remove power to the enclosure.

Caution – Be very careful when disconnecting the DC input power cable from the DC connector; the DC connector is very sensitive and could be damaged if you disconnect the DC input power cable without fully squeezing the tabs at the sides of the DC input power cable.

Troubleshooting

Check the LED displays on the StorEdge S1 periodically to make sure that the enclosure and disk drives are running properly.

Front Panel LEDs

The front panel LEDs indicate system power, system faults, hard drive activity, and SCSI ID assignments. FIGURE 5-1 and FIGURE 5-2 show the location of the front panel LEDs and TABLE 5-1 shows their meanings and gives corrective actions. There is also a quick-reference card attached to the system which explains what the SCSI ID LEDs mean.
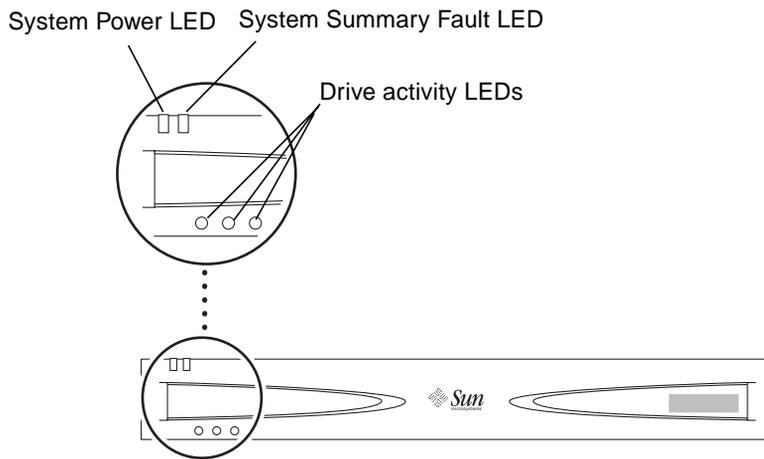

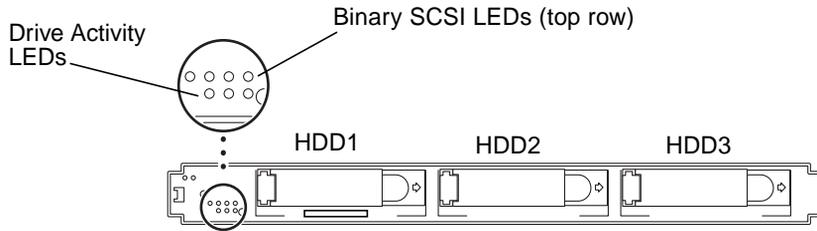**FIGURE 5-1**   Front Panel LEDs With Bezel

FIGURE 5-2 Front Panel LEDs With Bezel Removed

TABLE 5-1 Front Panel LEDs and Their Meanings

LED	Color	Meaning	Action
System Power	Green	The enclosure is powered on.	No action is necessary.
	Unlit	The enclosure is powered off.	No action is necessary.
System Summary Fault	Unlit	The enclosure is performing normally.	No action is necessary.
System Summary Fault	Amber	There are two possible causes: • The power is in standby mode *or* • A component other than a hard drive has failed, such as the power supply or a fan. The System Summary Fault LED does not indicate if a hard drive has failed. The hard drive LEDs provide some diagnostic information on the disk drives.	Follow these steps: 1. First, check to see if the power is in Standby mode. If so, turn on the power. See "Power Supply" on page 11. 2. If the power is on, it is a component failure. You must replace the entire StorEdge S1 storage enclosure. Remove all disk drives before returning the enclosure. See "Removing and Replacing a Hard Disk Drive" on page 62. Contact your local Sun service representative for more details.
Disk Drive	Solid green	A hard drive is present in that slot but is not active.	No action is necessary.

TABLE 5-1 Front Panel LEDs and Their Meanings *(Continued)*

LED	Color	Meaning	Action
	Flashing green	A hard drive is present in that slot and is active.	No action is necessary.
	Unlit	No hard drive is present in that slot, or the disk drive has failed.	If the power is on, a hard drive is present in that slot, and the hard drive LED is unlit, then you must replace the hard drive. See "Removing and Replacing a Hard Disk Drive" on page 62.
Binary SCSI LEDs	Solid green (in various combinations)	The position of the binary display indicates the base number (first number) of the three drive sequence. See the pull-out card or "To Check the Binary SCSI ID LED Display" on page 69.	No action is necessary.

Note – If a disk drive is under an unusually heavy load (for example, if the drive is being reformatted), the Disk Drive LED might be unlit for a long period of time, even though the drive has not failed. You should see a message in your console window telling you that the disk drive is offline if the disk drive has truly failed.

▼ To Check the Binary SCSI ID LED Display

Check the binary SCSI LED display to confirm that the SCSI IDs are set correctly or to determine which SCSI IDs are assigned to which disk drives.

1. **Remove the front bezel by pressing the latches on both ends and pulling the bezel away from the enclosure.**
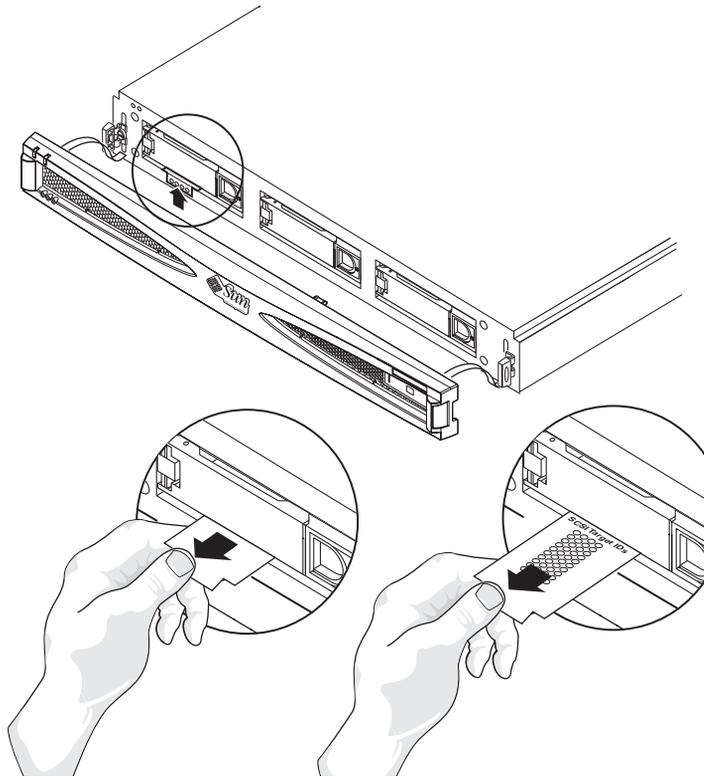
FIGURE 5-3   Checking the Binary SCSI LEDs

2. **Locate the binary SCSI LEDs (see** FIGURE 5-2**).**

3. **Use** TABLE 5-2 **or the pullout card attached to the system to determine which SCSI IDs are assigned to the drives in the storage enclosure.**

   The disk drive SCSI ID numbers are assigned in sequences of three numbers in a row. The first number in the sequence is the base address. The base address is the number used to set the SCSI toggle switch on the back of the storage enclosure and is represented in binary format on the top row of disk drive LEDs on the front of the storage enclosure. See "Connecting the Cables" on page 47 for more information on how to set the SCSI IDs.

   Note – The shaded rows of the table represent SCSI ID sequences that cannot be used because SCSI ID 7 is assigned to the SCSI controller. Some servers reserve SCSI ID 6 for use by CD drives and IDs 0 and 1 for internal drives.

TABLE 5-2   Binary SCSI ID LEDs

Base SCSI Target ID	Rear Hexadecimal SCSI ID Switch	Front Binary LED Display	SCSI Target IDs of Disk Drive Bays
0	0	○○○○	0, 1, 2
1	1	○○○●	1, 2, 3
2	2	○○●○	2, 3, 4
3	3	○○●●	3, 4, 5
4	4	○●○○	4, 5, 6
5	5	○●○●	5, 6, 7
6	6	○●●○	6, 7, 8
7	7	○●●●	7, 8, 9
8	8	●○○○	8, 9, A
9	9	●○○●	9, A, B
10	A	●○●○	A, B, C
11	B	●○●●	B, C, D
12	C	●●○○	C, D, E
13	D	●●○●	D, E, F
14	E	●●●○	E, F, 0
15	F	●●●●	F, 0, 1

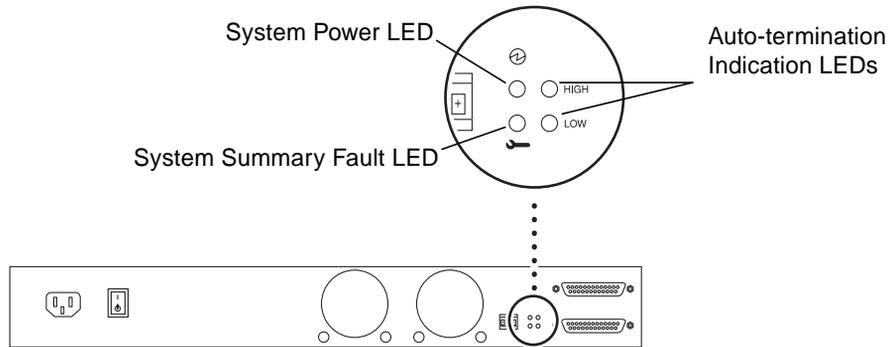**4. Replace the front bezel.**

Back Panel LEDs

FIGURE 5-4   Back Panel LEDs

System Power and System Summary Fault LEDs

The System Power and System Summary Fault LEDs give the same diagnostic information as the System Power and System Summary Fault LEDs at the front of the enclosure. Refer to TABLE 5-1 for more information.

Auto-termination Indication LEDs

The Auto-termination Indication LEDs indicate if the StorEdge S1 storage enclosure is part of an UltraSCSI, wide SCSI, or narrow SCSI daisy-chain. They also indicate the enclosure's position in the daisy-chain.

TABLE 5-3   Auto-termination Indication LEDs and Their Meanings

High	Low	Meaning
Off	Off	The StorEdge S1 enclosure is the first device in the UltraSCSI or wide SCSI daisy-chain; another device follows the StorEdge S1 enclosure.
On	On	The StorEdge S1 storage enclosure is the last or only device in the UltraSCSI or wide SCSI daisy-chain.
On	Off	A narrow SCSI device follows the StorEdge S1 storage enclosure in the daisy-chain.
Off	On	N/A

Note – UltraSCSI devices (such as the StorEdge S1 storage enclosure) at the end of a daisy-chain do not require a terminator, but some wide SCSI devices at the end of a daisy-chain do require a terminator. Refer to the documentation that came with your wide SCSI device to determine if it needs a terminator. Narrow SCSI devices at the end of a daisy-chain always require a terminator.
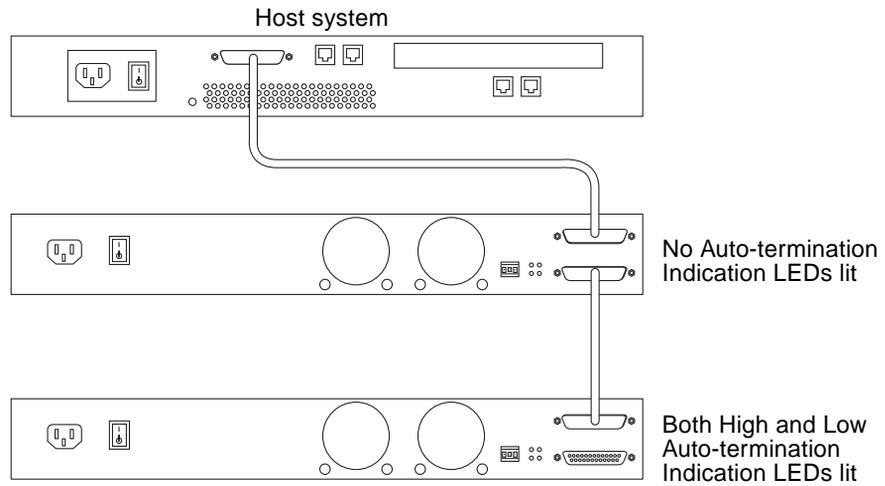

FIGURE 5-5   Auto-termination Indication LEDs in an UltraSCSI or Wide SCSI Daisy-Chain

Host system

StorEdge S1 enclosure

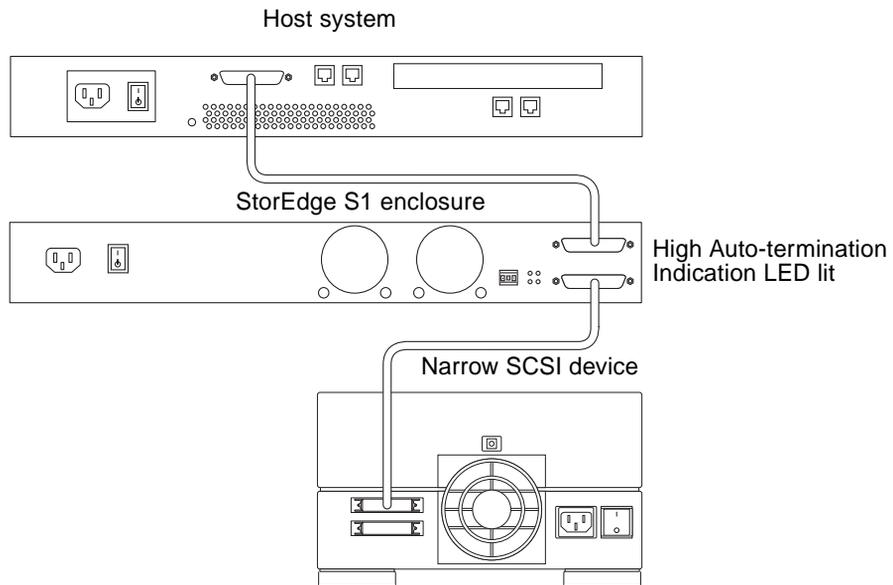High Auto-termination
Indication LED lit

Narrow SCSI device

FIGURE 5-6 Auto-termination Indication LEDs in a Narrow SCSI Daisy-Chain

Cleaning the StorEdge S1 Screens

To ensure optimum performance from your StorEdge S1 storage enclosure, clean the screens at the front and rear of the enclosure periodically.

▼ To Untether the Front Bezel and Clean the Bezel Screen

1. **Remove the front bezel by pressing the latches on both ends and pulling the bezel away from the enclosure (see** FIGURE 5-7**).**
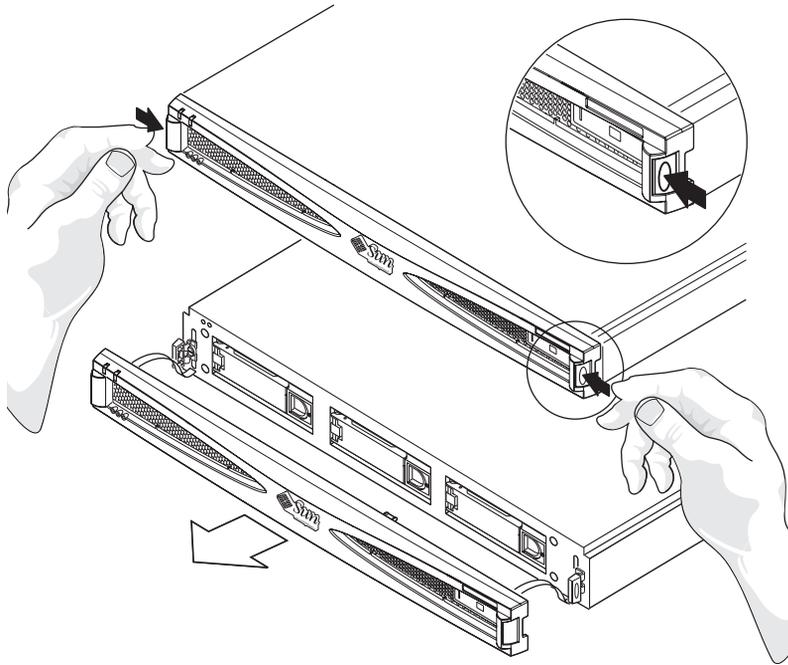

FIGURE 5-7   Removing the Front Bezel

2. **Pull one of the tethers towards you until the head of the tether stops it from coming out of the hole in the chassis (see** FIGURE 5-8**).**

FIGURE 5-8   Pulling One of the Tethers Until the Head Stops it From Coming Out

3. **Next push the tether to one side (see** FIGURE 5-9**) so that its head comes partially out of the hole in the chassis.**

FIGURE 5-9   Pushing the Tether to One Side So That the Head Comes Partially Out

4. Next push the same tether in the opposite direction (see FIGURE 5-10**).**

FIGURE 5-10 Pushing the Tether In the Opposite Direction

5. Now pull the head of the tether entirely out of the chassis (see FIGURE 5-11**).**

FIGURE 5-11 Pulling the Head of the Tether Entirely Out of the Chassis

6. Repeat Step 2 through Step 5 for the tether at the other end of the bezel.

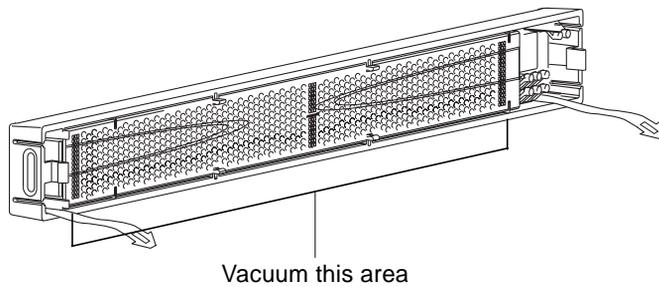**7. Use a vacuum cleaner to clean the dust from the screen at the rear of the bezel.**

Vacuum this area

FIGURE 5-12 Cleaning the Front Bezel Screen

▼ To Re-attach the Bezel's Tethers to the Chassis

1. **Position one of the tethers in front of its hole in the chassis and angle it so that half of its head enters the hole in the chassis.**

   You may need to push the tether's head in gently.

2. **With one half of the tether's head inside the hole in the chassis, change the angle so that you can work the head of the tether completely into its hole.**

   Again, you might need to push the tether's head gently home.

3. **Repeat Step 1 and Step 2 for the tether at the other end of the bezel.**

▼ To Clean the Rear Fan Screens

● **Go to the rear of the system and use a vacuum cleaner to clean all the dust and debris from the fan screens at the rear of the storage enclosure.**
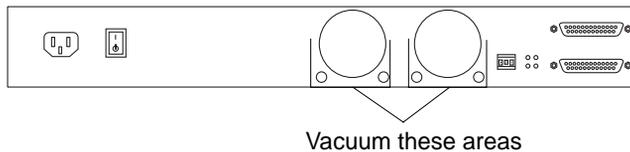

Vacuum these areas

FIGURE 5-13 Cleaning the Rear Fan Screens

Removing and Replacing a Netra st D130 or a StorEdge S1 Storage Enclosure

These instructions are for removing a Netra st D130 or a StorEdge S1 storage enclosure and replacing it with a StorEdge S1 storage enclosure. Refer to the *Netra st D130 Installation and Maintenance Manual*, 806-1489, for detailed information regarding removing the Netra st D130 storage enclosure.

Note – If your host system supports hot-swap attaching and detaching of external SCSI devices, do not power off your system. For example, if your host system is a Netra ct 400 or 800 or similar server, you should not power off the system. Start the removal of the server at Step 3.

1. **Make note of the SCSI ID addresses assigned to the hard drives in the storage enclosure that you are going to remove.**

2. **Power off the host system, if necessary.**

3. **Power off the storage enclosure. See "To Power Off the Storage Enclosure" on page 66.**

4. **Disconnect the SCSI and power cables for the enclosure that you are going to remove.**

5. **Remove the hard drives from the enclosure. See "Removing and Replacing a Hard Disk Drive" on page 62.**

6. **Remove the enclosure from the rack.**

7. **Install the new StorEdge S1 enclosure. See Chapter 3.**

System Specifications and Site Requirements

This appendix provides the following specifications for the StorEdge S1 storage enclosure:

- "Physical Specifications" on page 82
- "Electrical Site Requirements" on page 83
- "Environmental Specifications" on page 86
- "Acoustic Emissions" on page 86

Physical Specifications

TABLE A-1   Physical Specifications

Measure	English	Metric
Width	17.17 in.	43.6 cm
Depth	18.58 in.	47.2 cm
Height	1.73 in. 1 rack unit (1RU)	4.4 cm
Weight, without disk drives	13 lbs	5.9 kg
Weight, fully loaded	18 lbs	8.16 kg

Electrical Site Requirements

AC Power Requirements

TABLE A-2 AC Power Requirements

Electrical Element	Requirement
Voltage	100 VAC to 240 VAC (nominal)
Frequency	47–63 Hz
Input current	< 2.0 amps @ 100 VAC (150 W)
Max. surge current	• 20 amps peak on a cold start (after AC has been off for more than 200 ms) • 100 amps peak on a warm start (after AC has been off for less than 200 ms)

Overcurrent Protection Requirements

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

- Overcurrent protection devices must be provided as part of each host equipment rack.
- Circuit breakers are located between the AC source and the StorEdge S1 storage enclosure.
- Circuit breakers must not trip when presented with inrush current of 100 amps lasting 5ms.

Disconnecting the Power for Servicing

You can disconnect the power for servicing in any of the following ways:

- Disconnect the power cord from the connector on the AC power supply at the rear of the enclosure.
- Turn off the circuit breakers in the rack where the enclosure is mounted.
- Disconnect the main connector from the AC power source.

Ensure that all methods of disconnecting the power remain accessible after installation.

⚠ **Caution –** External filtering and surge suppression devices might be required on the power feeds where branch circuit electromagnetic characteristics are unknown.

DC Source Power Requirements

TABLE A-3   DC Power Requirements

Electrical Element	Requirement
Voltage	-48 VDC
Input current	< 4.0 amps @ -40 VDC (150 W)
Max. input surge current	• 20 amps peak on a cold start (after AC has been off for more than 200 ms) • 100 amps peak on a warm start (after AC has been off for less than 200 ms)

DC power must be:

■ Electrically isolated from any AC source

■ Reliably connected to earth (the battery room positive bus is connected to ground)

■ Capable of providing up to 200 watts of continuous power per feed pair

Note – The DC version of the StorEdge S1 storage enclosure must be installed in a *restricted access location*. Per the intent of the National Electrical Code, a restricted access location is an area intended for qualified or trained personnel only and has access controlled by some sort of locking mechanism, such as a key lock or an access card system.

Overcurrent Protection Requirements

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

■ Overcurrent protection devices must be provided as part of each host equipment rack.

- Circuit breakers must be located between the DC power source and the StorEdge S1 storage enclosure. You should use two 10-amp, double-pole, fast trip, DC-rated circuit breakers for each power supply.

DC Supply and Ground Conductor Requirements

- Copper is the only suitable conductor material
- Power supply connections through the input connector: 12 AWG (between the StorEdge S1 and the circuit breaker). There are three conductors:
  - -48V
  - Ground connection to the power supply
  - -48V Return
- System ground conductor: 6 AWG (to be connected to the chassis)
- Cable insulation rating: minimum of 75C, low smoke fume (LSF), flame retardant
- Cable type to be one of the following:
  - UL style 1028 or other UL 1581(VW-1) compliant equivalent
  - IEEE 383 compliant
  - IEEE 1202-1991 compliant
- Branch circuit cable insulation color: per applicable National Electrical Codes
- Grounding cable insulation color: green/yellow

Environmental Specifications

The StorEdge S1 storage enclosure is certified to Telcordia NEBS GR-63-CORE Level 3 (Earthquake Risk Zone 4).

TABLE A-4   Temperature Specifications

Status	Temperature Range
Operating	41˚F to 104˚F, (5˚C to 40˚C)
Short term* operating	23˚F to 131˚F, (-5˚C to 55˚C)
Nonoperating	-40˚F to 158˚F, (-40˚C to 70˚C)
* see Note below	

TABLE A-5   Humidity Specifications

Status	Relative Humidity (non-condensing) Range
Operating	5% to 85% (but not to exceed 0.024 kg water/kg of dry air)
Short term* operating	5% to 90% (but not to exceed 0.024 kg water/kg of dry air)
Nonoperating	90%
* see Note below	

Note – NEBS Level 3 criteria state that *short term operating* conditions should be met for no more than 96 consecutive hours, for no more than 360 hours per year in total, and on no more than 15 separate occasions per year.

Acoustic Emissions

The StorEdge S1 storage enclosure emits less than 60 dBA (GR-63-CORE test method).

LVD SCSI Port Pin Descriptions

TABLE A-6   LVD SCSI Port Pin Descriptions

Signal Name	Connector Contact Number	Cable Conductor Number[1]	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(12)	1	1	2	35	-DB(12)
+DB(13)	2	3	4	36	-DB(13)
+DB(14)	3	5	6	37	-DB(14)
+DB(15)	4	7	8	38	-DB(15)
+DB(P1)	5	9	10	39	-DB(P1)
+DB(0)	6	11	12	40	-DB(0)
+DB(1)	7	13	14	41	-DB(1)
+DB(2)	8	15	16	42	-DB(2)
+DB(3)	9	17	18	43	-DB(3)
+DB(4)	10	19	20	44	-DB(4)
+DB(5)	11	21	22	45	-DB(5)
+DB(6)	12	23	24	46	-DB(6)
+DB(7)	13	25	26	47	-DB(7)
+P_CRCA	14	27	28	48	-P_CRCA
GROUND	15	29	30	49	GROUND
DIFFSENS	16	31	32	50	GROUND
TERMPWR	17	33	34	51	TERMPWR
TERMPWR	18	35	36	52	TERMPWR
RESERVED	19	37	38	53	RESERVED
GROUND	20	39	40	54	GROUND
+ATN	21	41	42	55	-ATN
GROUND	22	43	44	56	GROUND
+BSY	23	45	46	57	-BSY
+ACK	24	47	48	58	-ACK
+RST	25	49	50	59	-RST

TABLE A-6 LVD SCSI Port Pin Descriptions *(Continued)*

Signal Name	Connector Contact Number	Cable Conductor Number[1]	Cable Conductor Number	Connector Contact Number	Signal Name
+MSG	26	51	52	60	-MSG
+SEL	27	53	54	61	-SEL
+C/D	28	55	56	62	-C/D
+REQ	29	57	58	63	-REQ
+I/O	30	59	60	64	-I/O
+DB(8)	31	61	62	65	-DB(8)
+DB(9)	32	63	64	66	-DB(9)
+DB(10)	33	65	66	67	-DB(10)
+DB(11)	34	67	68	68	-DB(11)

1. The conductor number refers to the conductor position when using flat-ribbon cable.

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