Netra™ st A1000 and Netra st D1000 Installation and Maintenance Manual

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Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Department of Communications (DOC) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan

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 not installed and used in accordance with the instruction manual, 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 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.

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.

DOC Class A Notice - Avis DOC, Classe A

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

DOC Class B Notice - Avis DOC, Classe B

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI 基準について

第一種VCCI基準について

第一種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、第一種情報装置です。これらの製品には、下記の項目が該当します。

> この装置は、第一種情報装置(商工業地域において使用されるべき情報装置)で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI)基準に適合しております。したがって、本製品を、住宅地域または住宅地域に隣接した地域でご使用になりますと、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。
>
> 取り扱い説明書に従って正しくお取り扱いください。

第二種VCCI基準について

第二種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、第二種情報装置です。これらの製品には、下記の項目が該当します。

> この装置は、第二種情報装置(住宅地域または住宅地域に隣接した地域において使用されるべき情報装置)で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI)基準に適合しております。しかし、本製品を、ラジオ、テレビジョン受信機に近接してご使用になりますと、受信障害の原因となることがあります。
>
> 取り扱い説明書に従って正しくお取り扱いください。

Declaration of Conformity

Compliance ID: 50

Product Name: Netra st D1000, Netra st A1000

EMC

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

EN55022 / CISPR22 (1985)		Class A
EN50082-1	IEC801-2 (1991)	4 kV (Direct), 8 kV (Air)
	IEC801-3 (1984)	3 V/m
	IEC801-4 (1988)	1.0 kV Power Lines, 0.5 kV Signal Lines
EN61000-3-2/IEC1000-3-2(1994)		Pass

Safety

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

EC Type Examination Certificates:

    EN60950/IEC950

    EN60950 w/ Nordic Deviations

Bellcore NEBS   GR-1089 and CR-63   Level 2

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

_____/S/_____	_____/S/_____
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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 power to the system.

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

Off – Removes 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.

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 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.

Caution – In order to remove all power from this unit, disconnect all power cords.

Caution – Netra st units are designed to work with either AC or DC power, depending on the power pack included with the product. Units designed to work with DC power are shipped with a connector to be used with a customer supplied 48V power cord for the customer to connect to the DC power source. Always connect DC powered units to a DC power source only.

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.

Lithium Battery

⚠ **Caution** – On Sun CPU boards, there is a lithium battery molded into the real-time clock, SGS No. MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, or MK48T08. Batteries are not customer replaceable parts. They may explode if mishandled. Do not dispose of the battery in fire. Do not disassemble it or attempt to recharge it.

Battery Pack

⚠ **Caution** – There is a sealed lead acid battery in Netra st units. Portable Energy Products No. TLPO6V50-0356 (consisting of three TLCO2V50 packs). There is danger of explosion if the battery pack is mishandled or incorrectly replaced. Replace only with the same type of Sun Microsystems battery pack. Do not disassemble it or attempt to recharge it outside the system. Do not dispose of the battery in fire. Dispose of the battery properly in accordance with local regulations.

System Unit Cover

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

Laser Compliance Notice

Sun products that use laser technology comply with Class 1 laser requirements.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1
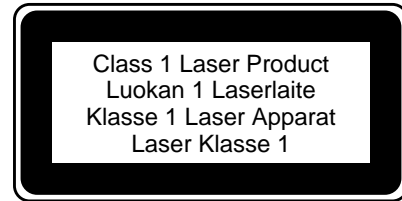
CD-ROM

⚠ **Caution** – Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

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.

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.

Achtung – Trennen Sie alle Stromkabel, um die gesamte Stromzufuhr zu diesem Gerät zu unterbrechen.

Achtung – Netra st-Einheiten wurden für die Stromversorgung mit Wechsel- oder Gleichstrom entwickelt. Die Stromversorgung hängt vom mitgeliefertem Netzteil ab. Die Einheiten, die mit Gleichstrom betrieben werden, werden mit einem 48V-Stecker geliefert, um dem Kunden den Anschluß an die Gleichstromquelle zu ermöglichen. Schließen Sie Gleichstromeinheiten ausschließlich an Gleichstromquellen 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.

Lithiumbatterie

⚠ **Achtung** – CPU-Karten von Sun verfügen über eine Echtzeituhr mit integrierter Lithiumbatterie (Teile-Nr. MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, oder MK48T08). Diese Batterie darf nur von einem qualifizierten Servicetechniker ausgewechselt werden, da sie bei falscher Handhabung explodieren kann. Werfen Sie die Batterie nicht ins Feuer. Versuchen Sie auf keinen Fall, die Batterie auszubauen oder wiederaufzuladen.

Batterien

⚠ **Achtung** – Netra st-Einheiten verfügen über einen versiegelten Bleiakku. Artikelnummer für tragbare Energieprodukte: TLPO6V50-0356 (umfaßt drei TLCO2V50-Pakete). Bei falscher Handhabung oder unsachgemäßem Austausch besteht Explosionsgefahr. Ersetzen Sie die Batterie ausschließlich durch denselben Typ von Sun Microsystems. Versuchen Sie auf keinen Fall, die Batterie auszubauen oder außerhalb des Systems wiederaufzuladen. Werfen Sie die Batterie nicht ins Feuer. Entsorgen Sie den Akku entsprechend der örtlichen Vorschriften.

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.

Einhaltung der Richtlinien für Laser

Sun-Produkte, die mit Laser-Technologie arbeiten, entsprechen den Anforderungen der Laser Klasse 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1
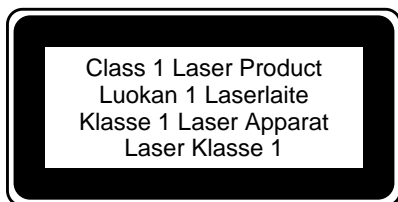
CD-ROM

⚠ **Warnung** – Die Verwendung von anderen Steuerungen und Einstellungen oder die Durchfhrung von Prozeduren, die von den hier beschriebenen abweichen, knnen gefhrliche Strahlungen zur Folge haben.

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.

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.

Attention : Pour mettre le système hors tension, il est impératif de débrancher tous les cordons d'alimentation.

Attention : les unités Netra st sont conçues pour fonctionner avec une alimentation en courant alternatif ou en courant continu, selon le bloc d'alimentation inclus avec le produit. Les unités conçues pour fonctionner en courant continu sont livrées avec un connecteur pour cordon d'alimentation 48 V (non fourni) que le client utilisera pour connecter l'unité à la source d'alimentation CC. Connectez toujours les unités alimentées en courant continu à une source d'alimentation CC, à l'exclusion de toute autre.

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.

Batterie au lithium

Attention : sur les cartes CPU Sun, une batterie au lithium (référence MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, ou MK48T08.) a été moulée dans l'horloge temps réel SGS. Les batteries ne sont pas des pièces remplaçables par le client. Elles risquent d'exploser en cas de mauvais traitement. Ne pas jeter la batterie au feu. Ne pas la démonter ni tenter de la recharger.

Bloc-batterie

⚠️ **Attention :** les unités Sun Netra st contiennent une batterie étanche au plomb (produits énergétiques portatifs n° TLPO6V50-0356, composés de trois modules TLCO2V50). Il existe un risque d'explosion si ce bloc-batterie est manipulé ou mis en place de façon erronée. Ne remplacez ce bloc que par un bloc-batterie Sun Microsystems du même type. Ne le démontez pas et n'essayez pas de le recharger hors du système. Ne faites pas brûler la batterie mais mettez-la au rebut conformément aux réglementations locales en vigueur.

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.

Conformité aux certifications Laser

Les produits Sun qui font appel aux technologies lasers sont conformes aux normes de la classe 1 en la matière.

```
Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1
```
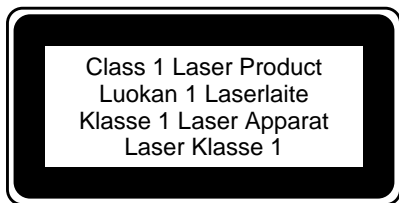
CD-ROM

⚠️ **Attention** – L'utilisation de contrôles, de réglages ou de performances de procédures autre que celle spécifiée dans le présent document peut provoquer une exposition à des radiations dangereuses.

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).

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.

Precaución – Para cortar el suministro eléctrico de esta unidad, desconecte todos los cables de alimentación.

Precaución – El diseño de las unidades Netra st permite su funcionamiento con alimentación de CA o CC, según el tipo de alimentación para el que esté preparado su producto. Las unidades destinadas a su funcionamiento con CC se entregan con un conector que debe usarse con un cable de alimentación de 48 V del cliente, a fin de que este último se pueda conectar a la fuente de alimentación de CC. Conecte siempre las unidades preparadas para CC únicamente a fuentes de alimentación de CC.

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.

Batería de litio

Precaución – En las placas de CPU Sun hay una batería de litio insertada en el reloj de tiempo real, tipo SGS Núm. MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, o MK48T08. Las baterías no son elementos reemplazables por el propio cliente. Pueden explotar si se manipulan de forma errónea. No arroje las baterías al fuego. No las abra o intente recargarlas.

Paquete de pilas

Precaución – Las unidades Netra st contienen una batería de plomo sellada (productos de energía portátiles nº TLPO6V50-0356, con tres paquetes TLC02V50). Existe riesgo de estallido si la batería se maneja sin cuidado o se sustituye de manera indebida. Las baterías sólo deben sustituirse por el mismo tipo de baterías de Sun Microsystems. No las desmonte ni intente recargarlas fuera del sistema. No arroje las baterías al fuego. Deséchelas siguiendo el método indicado por las disposiciones locales vigentes.

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.

Aviso de cumplimiento con requisitos de láser

Los productos Sun que utilizan la tecnología de láser cumplen con los requisitos de láser de Clase 1.

```
Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1
```
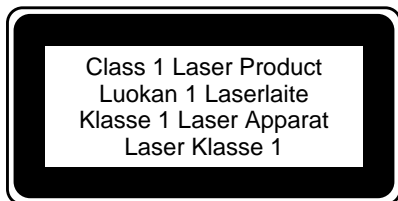
CD-ROM

⚠ **Precaución** – El manejo de los controles, los ajustes o la ejecución de procedimientos distintos a los aquí especificados pueden exponer al usuario a radiaciones peligrosas.

GOST-R Certification Mark
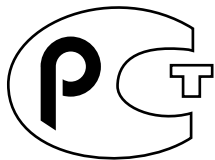
Nordic Lithium Battery Cautions

Norge

⚠ **A D V A R S E L** – Litiumbatteri — Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

Sverige

⚠ **VARNING** – Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Danmark

⚠ **ADVARSEL!** – Litiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Suomi

⚠ **VAROITUS** – Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Preface

The *Netra st A1000 and Netra st D1000 Installation and Maintenance Manual* provides installation and configuration information and service procedures for the Netra™ st A1000 and Netra st D1000 systems for customers and service personnel. These instructions are designed for an experienced system administrator.

How This Book Is Organized

Chapter 1 describes the Netra st system.

Chapter 2 gives electrical information for the Netra st system.

Chapter 3 gives instructions for preparing and installing the Netra st system.

Chapter 4 gives instructions for removing and replacing the components in the Netra st system.

Chapter 5 gives the hardware and software procedures for adding a disk drive in the Netra st system.

Chapter 6 gives instructions for troubleshooting the Netra st system.

Chapter 7 gives instructions for installing in the Netra st system in a rack.

Appendix A gives instructions for upgrading a Netra st D1000 system to a Netra st A1000 system.

Appendix B gives the system specifications for the Netra st system.

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*
- AnswerBook™ online documentation for the Solaris™ software environment
- Other software documentation that you received with your system

Typographic Conventions

TABLE P-1   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

TABLE P-2   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

TABLE P-3   Related Documentation

Application	Title	Part Number
Late-breaking information	*Netra st A1000 and Netra st D1000 Product Notes*	805-7148-11
RAID Installation	*RAID Manager 6.1.1 Installation and Support Guide for Solaris*	805-4058-10
RAID User Guide	*RAID Manager 6.1.1 User's Guide*	805-4057-10

Sun Documentation on the Web

The docs.sun.com[sm] web site enables you to access Sun technical documentation on the Web. You can browse the docs.sun.com archive or search for a specific book title or subject at:

```
http://docs.sun.com
```

Sun Welcomes Your Comments

We are interested in improving our documentation and welcome your comments and suggestions. You can email your comments to us at:

```
docfeedback@sun.com
```

Please include the part number of your document in the subject line of your email.

Product Overview

This chapter describes the system hardware, except the hard drives. For information on the drives, refer to the documents that you received with them.

System Hardware

The Netra st system is made up of a chassis, dual power supplies (available in AC or DC versions), dual cooling canisters, the controller board and from 4 to 12 hot-pluggable, UltraSCSI hard disk drives.

The system comes in four basic configurations:

- Netra st A1000-AC unit—Hardware RAID controller based configuration with AC power pack
- Netra st A1000-DC unit—Hardware RAID controller based configuration with DC power pack
- Netra st D1000-AC unit—"Just a Bunch of Disks" (JBOD) configuration with AC power pack
- Netra st D1000-DC unit—"Just a Bunch of Disks" (JBOD) configuration with DC power pack

The Netra st A1000 and the Netra st D1000 systems are described in detail in the following sections:

- *Netra st A1000 Hardware—page 2*
- *Netra st D1000 Hardware—page 10*

Netra st A1000 Hardware

The system chassis houses several removable modules, including:

- Netra st A1000 hardware RAID controller board
- Battery
- Dual power supplies (AC or DC)
- Dual cooling canisters
- Disk drives
- Foam filler drives

Components at the Front of the Unit
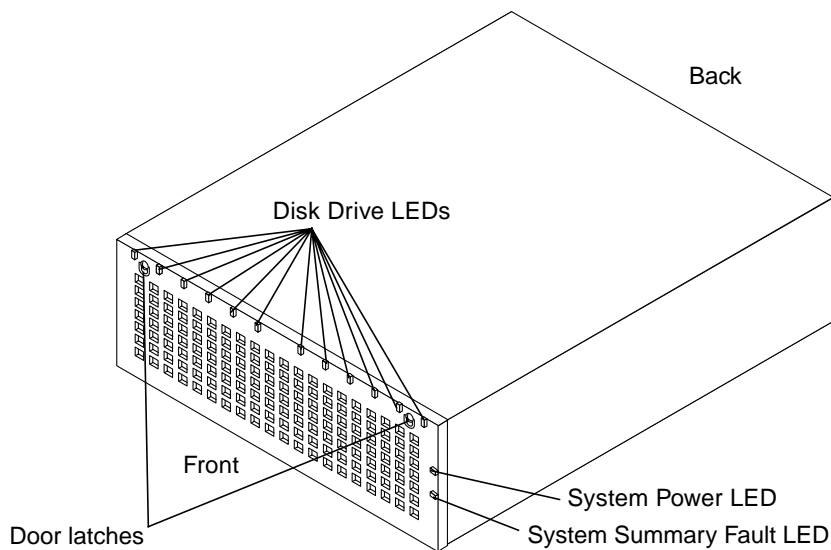
FIGURE 1-1   Netra st A1000 Front View

Front Door

The front door opens to allow access to the hard disk drives.

The system backplane for the hard disk drives can accept up to 12 one-inch drives.

LEDs on the Front

The LEDs located at the front of the Netra st A1000 system are illustrated in FIGURE 1-1 and described below. For a more detailed description of each LED and what action should be taken based on the color displayed on the LED, see Chapter 6.

- System Power LED—indicates if the system is powered on or off
- System Summary Fault LED—indicates if a system component needs servicing
- Disk Drive LED—gives activity and troubleshooting information for each disk drive

Components at the Back of the Unit
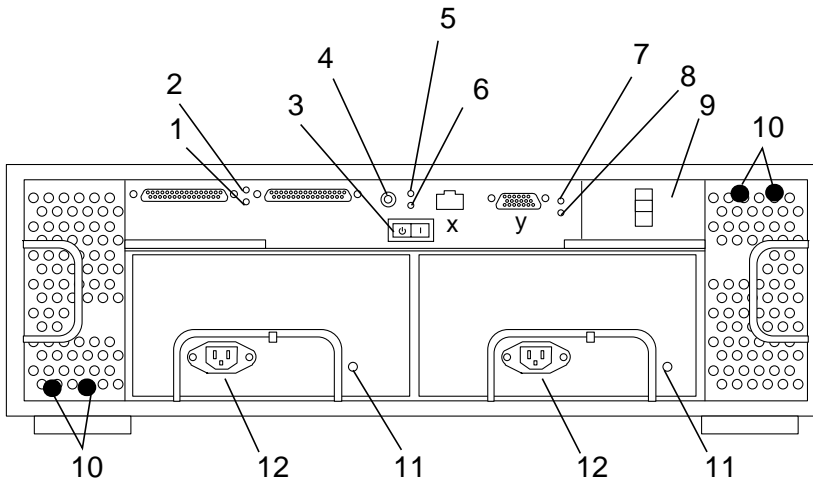
Note: x = 10BASE-T Ethernet (reserved for factory or future use)
y = RS-232-C port (reserved for factory or future use)

1. Controller Activity LED	5. Temperature Fault LED	9. Battery Canister
2. Controller Fault LED	6. Controller Power LED	10. Cooling Canister Status LEDs
3. Power Switch	7. Battery Fault LED	11. Power Supply Status LED
4. SCSI ID Switch	8. Battery Charge LED	12. Power Connector (AC)

FIGURE 1-2   Netra st A1000 Rear View (AC Version)

At the rear of the Netra st A1000 system are two power supplies, two cooling canisters with two blowers each, a battery, two 68-pin connectors for the host SCSI bus, a SCSI ID switch and a locking power switch.

Power Switch

The Netra st A1000 system has one rocker power switch to control both power supplies (FIGURE 1-2).

- Left — Standby Position (O), neither power supply provides power.
- Center — Neutral position, when the switch is released from the ON position, the switch settles into the Neutral position and the power supplies remain on.
- Right — ON position (|), either or both power supplies provide power to the system.

Caution – Turning the power switch to the Standby position does not completely cut off power to the system. AC or DC input to each power supply is still connected to the electrical outlet until the power cord is disconnected.

Standby   On

Neutral
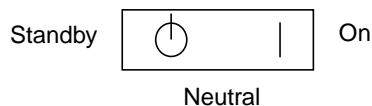
FIGURE 1-3   Power Switch

SCSI ID Switch

The Netra st A1000 configuration has one SCSI ID switch for selecting the controller SCSI target address, from 0 to 15.

Battery

The Netra st A1000 system has a data cache hold-up battery in the hardware RAID controller board. During a power outage, a properly charged battery will maintain electrical power to the controller data cache memory for up to three days. Thus, all data stored in data cache memory will be preserved as long as the battery can sustain power to the data cache memory. The battery is self-recharging with the power on and is replaceable, after a two-year life, without removing any other modules.

- The "Caution" label contains weight and length information for safe removal and installation purposes.
- The "Battery Support Information" label contains three areas where dates for maintenance purposes can be recorded.

LEDs on the Back

Following is a list of LEDs present at the rear of the Netra st A1000 system and a short description of each. For a more detailed description of each LED and what action should be taken based on the color displayed on the LED, see Chapter 6.

The Netra st A1000 controller has six single-color LEDS:

- Controller Activity LED—indicates if the controller board is active or inactive
- Controller Fault LED—indicates if the controller board is functioning normally or if a fault has been detected
- Temperature Fault LED—gives temperature readings for the controller board
- Controller Power LED—indicates if the controller board is powered on or off
- Battery Fault LED— indicates if the battery is functioning normally or if a fault has been detected
- Battery Charge LED—indicates the charging status for the battery

In addition to the controller LEDs, there are also several other LEDs at the rear of the Netra st A1000 system:

- Cooling Canister Status LED—indicates if the cooling canister is functioning normally or if a fault has been detected
- Power Supply Status LED—indicates if one or more of the power supplies are functioning normally or if a fault has been detected

Power Supplies

The Netra st A1000 system has two hot-pluggable and interchangeable power supplies that provide power to the internal components. These are redundant power supplies—one power supply will maintain electrical power to the system if the other power supply fails. Both power supplies are removable canisters that slide into one of two slots on the back of the system. Each canister has a locking handle, a power status LED, and a power cord connector.

The power supplies on the DC version convert incoming -48 VDC voltage to DC voltages. The DC version comes with one connecter per power supply to facilitate connecting to the DC power source. The DC power source should have a 20-amp circuit breaker. FIGURE 1-4 shows the DC version of the Netra st A1000 system.

The power supplies on the AC version convert incoming AC voltage to DC voltages. FIGURE 1-2 shows the AC version of the Netra st A1000 system.

DC feed through headers
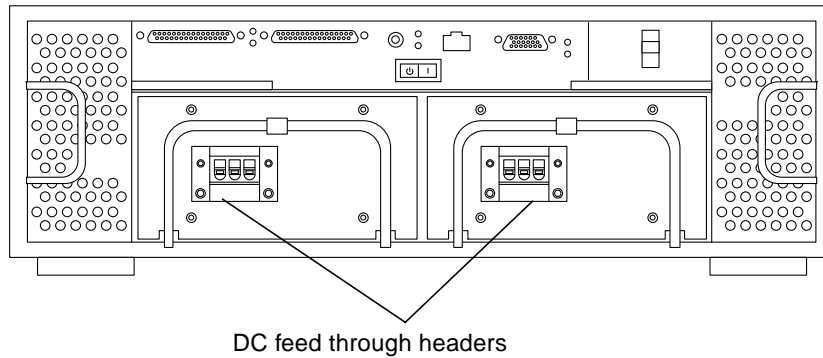
FIGURE 1-4   Netra st A1000 Rear View (DC Version)

Cooling System

The Netra st A1000 system has two cooling canisters. Each contains two blowers. The cooling canisters are hot-pluggable and interchangeable.

The Netra st A1000 system can operate fully cooled with three of the four blowers functioning. If two blowers fail, the remaining two can maintain the system in a 30˚ Cenvironment, but the reliability of the components may be affected.

The blower speeds are variable and increase their speed to counteract unusual cooling conditions, such as one failed blower or increased internal temperature.

Caution – Do not operate the system for extended periods with one or more redundant modules not installed. The cooling system will become inefficient.

The following are the cooling requirements:

1. Adequate airflow through the system must be ensured. The internal fans can achieve a maximum airflow of 150 cfm in free air.

2. The air is drawn through the front of the enclosure and expelled from the rear of the enclosure (FIGURE 1-5).

FIGURE 1-5   Airflow Requirements (Front and Rear)

3. To maintain adequate airflow, the air filters must be replaced when necessary or at least every six months. See "To Replace the Air Filter" on page 40 for instructions.

4. Airflow requirements differ for an open-rack system and a closed-rack system. FIGURE 1-6 shows the airflow requirements for an open-rack system and FIGURE 1-7 shows the airflow requirements for a closed-rack system.
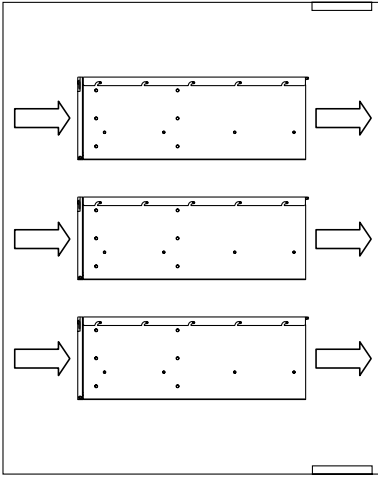
FIGURE 1-6   Airflow Requirements (Open Rack)
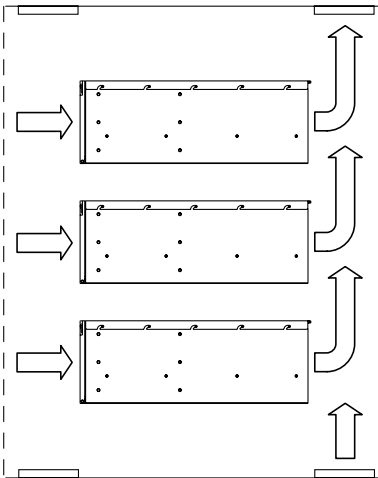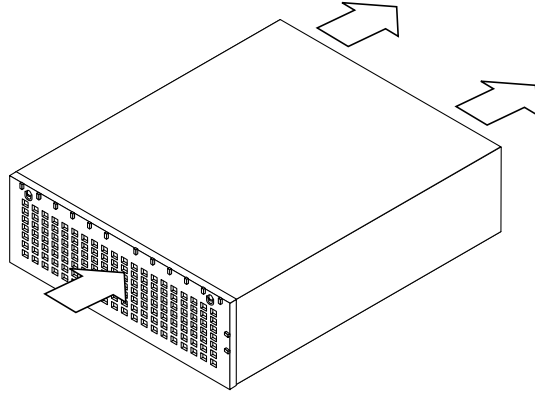
FIGURE 1-7   Airflow Requirements (Closed Rack)
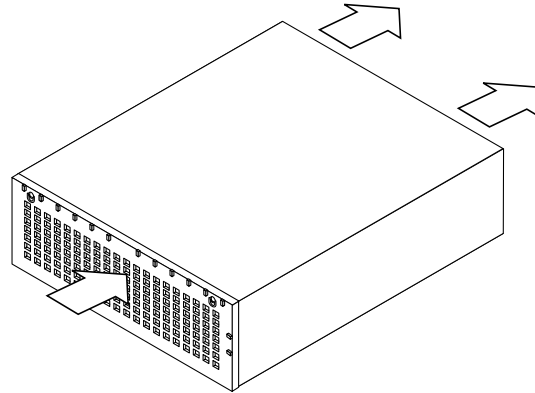
Disk Drives

For specific information about the drives installed in your system, see the separate drive documentation that comes with your system.

Disk Drive ID Assignments

Each drive bay is assigned a unique ID. In a Netra st A1000, the RAID Manager software identifies the drives as [*x,y*], where:

- *x* is the drive bank, either 1 (right drive bank) or 2 (left drive bank)
- *y* is the drive ID for the individual drive

In a 12-drive Netra st A1000 system, the drive banks and drive IDs for the drives are, from left-to-right:

[2,0] [2,1] [2,2] [2,3] [2,4] [2,5] and [1,0] [1,1] [1,2] [1,3] [1,4] [1,5]

Foam Filler Drives

If you ordered a system with fewer than 12 disk drives, foam filler drives fill the holes for the empty slots. The foam filler drives are air baffles; they allow the system to maintain maximum cooling. If any slot does not contain a disk drive, you must fill the slot with a foam filler drive so the unit will cool properly.

Netra st A1000 Hardware RAID Controller Board

The Netra st A1000 hardware RAID controller board is a compact unit designed to provide high-performance disk array management services. The controller board supports dual SCSI hosts on a 16-bit SCSI-2 bus. There are two SCSI controllers inside the controller board that manage data distribution and storage for up to 12 disk drives. The controllers also perform system status and fault detection functions. RAID Manager 6.1.1 allows you to set up the unit in different RAID configurations.

The Netra st A1000 controller board comes with two 4-Mbyte Single Inline Memory Modules (SIMMs) for program memory, two 8-Mbyte SIMMs for data cache memory installed, and two UltraSCSI connectors (68-pin) for the host connection. *Data cache memory* is a memory buffer on the controller that supports the Write Cache feature of RAID Manager, the disk array management software.

The standard configuration contains 24 Mbytes of DRAM, upgradable to 80 Mbytes. See "Increasing Memory (Netra st A1000 Only)" on page 46.

Netra st A1000 Software

The firmware for your Netra st A1000 hardware RAID controller is installed at the factory. The RAID Manager 6.1.1 software is shipped with your system and runs on the host system. It allows you to configure the system for RAID functionality and set up hot spare drives in your system. Refer to the documentation that came with your RAID Manager 6.1.1 software for more information.

Netra st D1000 Hardware

The system chassis houses several removable devices, including:

- Netra st D1000 controller interface board, providing two independent UltraSCSI bus connections
- Dual power supplies (AC or DC)
- Dual cooling canisters
- Disk drives
- Foam filler drives

Components at the Front of the Unit
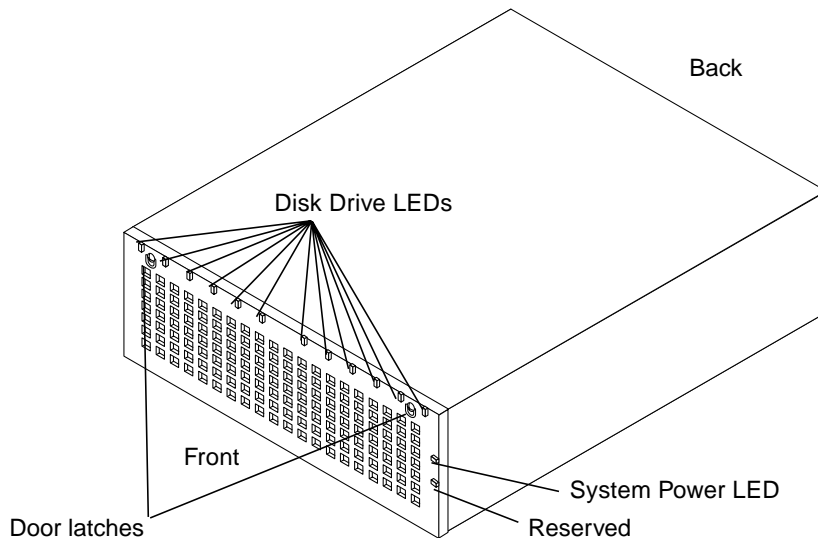
FIGURE 1-8   Netra st D1000 Front

Front Door

The front door opens to allow access to the hard disk drives.

The system backplane for the hard disk drives can accept up to 12 one-inch drives.

LEDs on the Front

The LEDs located at the front of the Netra st D1000 system are illustrated in FIGURE 1-8 and described below. For a more detailed description of each LED and what action should be taken based on the color displayed on the LED, see Chapter 6.

- System Power LED—indicates if the system is powered on or off
- Disk Drive LEDs—gives activity and troubleshooting information for each disk drive

Components at the Back of the Unit
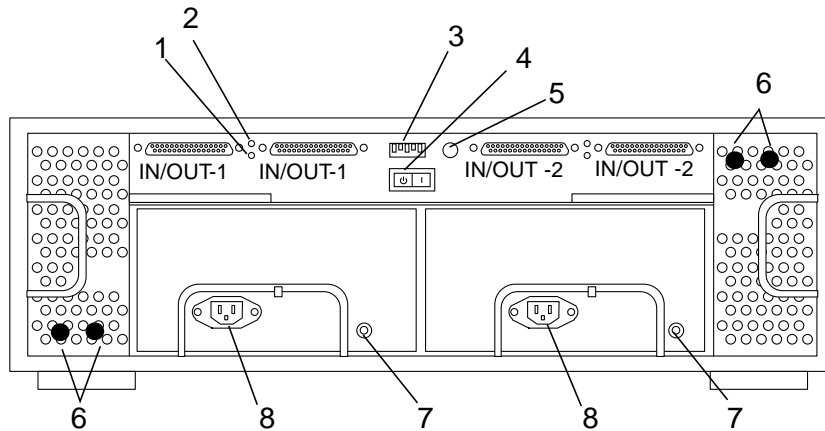
1. Controller Power LED	4. Power Switch	7. Power Supply Status LED
2. Temperature Fault LED	5. Reserved	8. Power Connector (AC)
3. Option Switch	6. Cooling Canister Status LEDs	

FIGURE 1-9   Netra st D1000 Rear View (AC Version)

At the rear of the Netra st D1000 system are two power supplies, two cooling canisters with two blowers each, four 68-pin connectors for the host SCSI buses, and a rocker power switch.

Power Switch

The Netra st D1000 system has one rocker power switch to control both power supplies (FIGURE 1-9).

- Left — Standby Position (O), neither power supply provides power.
- Center — Neutral position, when the switch is released from the ON position, the switch settles into the Neutral position and the power supplies remain on.
- Right — ON position (|), either or both power supplies provide power to the system

⚠ **Caution –** Turning the power switch to the Standby position does not completely cut off power to the system. AC or DC input to each power supply is still connected to the electrical outlet until the power cord is disconnected.

Standby   Momentary On

Neutral
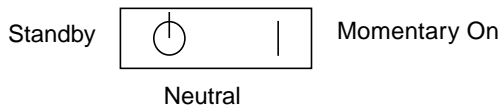
FIGURE 1-10 Power Switch

Option Switch

1. SCSI IDs for left bank disk drives
   - Up: 0–5 (factory default)
   - Down: 8–13

2. SCSI IDs for right bank disk drives
   - Up: 0–5
   - Down: 8–13 (factory default)

3. Drives Remote Start
   - Up: wait for SCSI command (factory default)
   - Down: check switch 4

4. Drives Delayed Start

   ■ Up: start with (12 x SCSI device ID number) seconds delay (factory default)

   ■ Down: start at power-on

5. Reserved (No function)

LEDs on the Back

Following is a list of LEDs present at the rear of the Netra st D1000 system and a short description of each. For a more detailed description of each LED and what action should be taken based on the color displayed on the LED, see Chapter 6.

The Netra st D1000 controller has two single-color LEDS:

■ Controller Power LED—indicates if the controller board is powered on or off
■ Temperature Fault LED—gives temperature readings for the controller board

In addition to the controller LEDs, there are also several other LEDs at the rear of the Netra st A1000 system:

■ Cooling Canister Status LED—indicates if the cooling canister is functioning normally or if a fault has been detected

■ Power Supply Status LED—indicates if one or more of the power supplies are functioning normally or if a fault has been detected

Power Supplies

The Netra st D1000 system has two hot-pluggable and interchangeable power supplies that provide power to the internal components. These are redundant power supplies—one power supply will maintain electrical power to the system if the other power supply fails. Both power supplies are removable canisters that slide into one of two slots on the back of the system. Each canister has a locking handle, a power status LED, and a power cord connector.

The power supplies on the DC version convert incoming -48 VDC voltage to DC voltages. The DC version comes with one connecter per power supply to facilitate connecting to the DC power source. The DC power source should have a 20-amp circuit breaker. FIGURE 1-11 shows the DC version of the Netra st D1000 system.

The power supplies on the AC version convert incoming AC voltage to DC voltages. FIGURE 1-9 shows the AC version of the Netra st D1000 system.

DC feed through headers
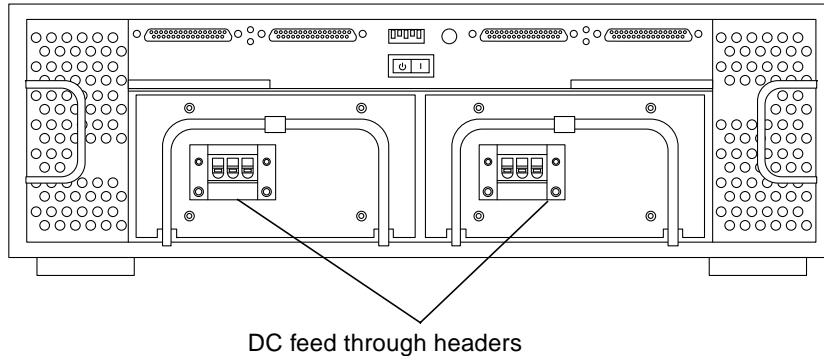
FIGURE 1-11 Netra st D1000 Rear View (DC Version)

Cooling System

The Netra st D1000 system has two cooling canisters. Each contains two blowers. The cooling canisters are hot-pluggable and interchangeable.

The Netra st D1000 system can operate fully cooled with three of the four blowers functioning. If two blowers fail, the remaining two can maintain the system in a 30˚ C environment, but the reliability of the components may be affected.

The blower speeds are variable and increase their speed to counteract unusual cooling conditions, such as one failed blower or increased internal temperature.

Caution – Do not operate the system for extended periods with one or more redundant modules not installed. The cooling system will become inefficient.

The following are the cooling requirements:

1. Adequate airflow through the system must be ensured. The internal fans can achieve a maximum airflow of 150 cfm in free air.

2. The air is drawn through the front of the enclosure and expelled from the rear of the enclosure (FIGURE 1-5).

3. To maintain adequate airflow, the air filters must be replaced when necessary or at least every six months. See "To Replace the Air Filter" on page 40 for instructions.

4. Airflow requirements differ for an open-rack system and a closed-rack system. FIGURE 1-6 shows the airflow requirements for an open-rack system and FIGURE 1-7 shows the airflow requirements for a closed-rack system.

Disk Drives

See the documentation that comes with your system for information about the drives installed in your system.

Disk Drive SCSI ID Assignments

Each drive bay is assigned a unique SCSI ID; however, the SCSI ID for the drive in each drive bay depends on the settings of option switches 1 and 2 (refer to "Option Switch" on page 12 for more information).

In a Netra st D1000, the UNIX File System software identifies the drives as follows:

■ 12-drive system (default switch setting), where `t` is the drive number:
  `cxt0d0sx, cxt1d0sx, cxt2d0sx, cxt3d0sx, cxt4d0sx, cxt5d0sx` and
  `cxt8d0sx, cxt9d0sx, cxt10d0sx, cxt11d0sx, cxt12d0sx,`
  `cxt13d0sx`

Foam Filler Drives

If you ordered a system with fewer than 12 disk drives, foam filler drives fill the holes for the empty slots. The foam filler drives are air baffles. They allow the system to maintain maximum cooling. If any slot does not contain a disk drive, you must fill the slot with a foam filler drive so the unit will cool properly.

Netra st D1000 Software Considerations

The Netra st D1000 may be used as simply additional disk storage for an existing host system; it may be used in conjunction with Veritas VxVm in a RAID based system. See the Veritas software user's guide on your system CD. A Veritas VxVm license can be obtained from Sun.

Single-Box and Split-Box Configurations

You have two configurations to choose from when setting up your Netra st D1000 system:

■ Single-box configuration—A single box of disks connected to a single host (FIGURE 1-12)

■ Split-box configuration—A box of disks split between two hosts, where each host has access to half the disks inside the Netra st D1000 system (FIGURE 1-13)
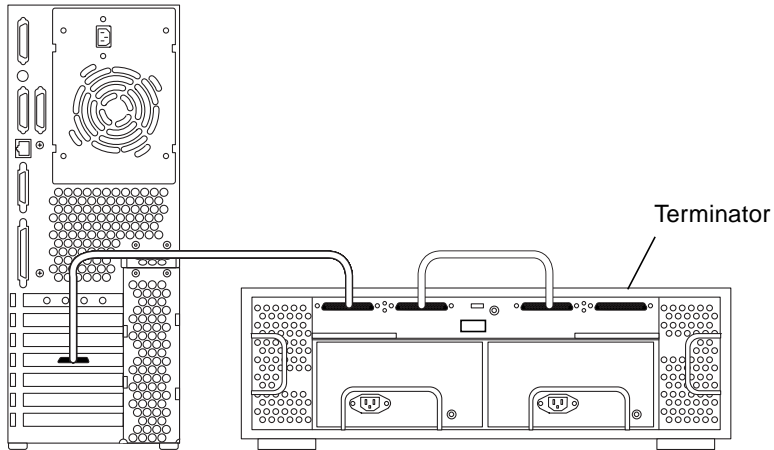
FIGURE 1-12 Netra st D1000 System in a Single-Box Configuration
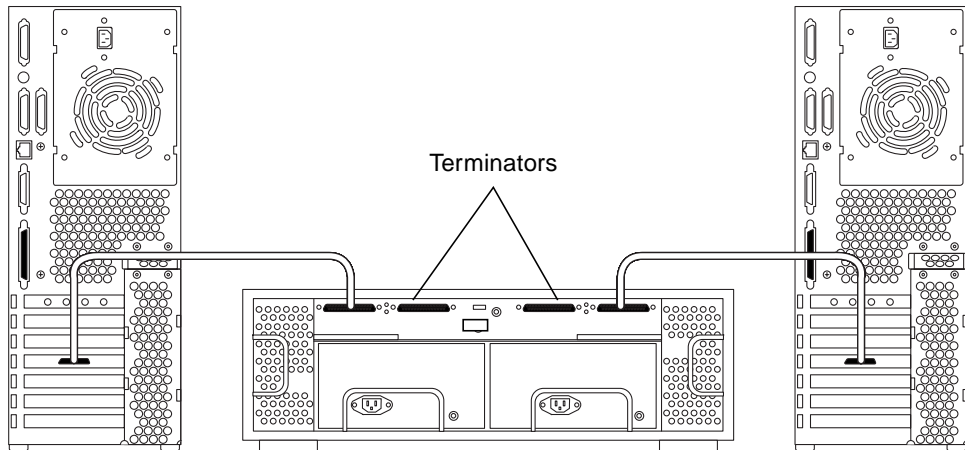
FIGURE 1-13 Netra st D1000 System in a Split-Box Configuration

Electrical Supply Installation

The Netra st A1000 and Netra st D1000 systems are available in AC or DC versions.

This chapter provides electrical information for both AC- and DC-powered systems along with instructions on how to connect the cables and power on the system.

AC Source Site Requirements

TABLE 2-1   AC Power Requirements

Electrical Element	Requirement
Voltage	100 VAC to 240 VAC (nominal)
Frequency	47 –63Hz
Max. Operating current	5.0 amps
Max. Surge current	22 amp peaks

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

■ Circuit breakers are located between the AC source and the Netra st system.

■ Circuit breakers must not trip when presented with inrush current of 20 amps lasting 200 ms.

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

The power can be disconnected for servicing in any of the following ways:

- Disconnect the connector from the power module at the rear of the system.
- Turn off the circuit breakers in the rack where the system is mounted.
- Disconnect the main plug from the AC source.

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

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

DC Source Site Requirements

TABLE 2-2 DC Power Requirements[1]

Electrical Element	Requirement
Voltage	-48 VDC
Max. Operating current	11 amps
Max. Input Surge current	22 amps peaks

1. The DC power supply range is -40 VDC to -75 VDC, 13 amps max. operating current.

- Electrically isolated from any AC source
- Reliably connected to earth (that is, the battery room positive bus is connected to the grounding electrode)
- Capable of providing up to 600 watts of continuous power per feed pair

Note – The DC version of the Netra st system must be installed in a *restricted access location*. A restricted access location is an area that is controlled by some sort of locking mechanism, such as a key lock or an access card lock.

Overcurrent Protection Requirements

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

- Circuit breakers must be located between the DC power source and the Netra st system.

  - Option 1—Two 20-amp double-pole fast trip DC-rated circuit breakers for each power supply. This is the preferred option.

  - Option 2—Two 20-amp single-pole fast trip DC-rated circuit breakers for each power supply.

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

DC Supply and Ground Conductor

The requirements are:

- Suitable conductor material: copper only

- Power supply connections through the input connecter: 12 AWG (between the Netra st and the circuit breaker)[1]. There are three conductors:

  - -48V
  - -48V Return
  - Ground connection to the power supply

- System ground conductor: 8 AWG (to be connected to the system chassis)

- Cable insulation rating: minimum of 75 C, 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

---

1. The input *connecters* are provided with every Netra st system; however, the input *conductors* are not provided with the system.

Required Connection Materials

DC branch circuits:

- Four POWER-COMBICON plug connecters with screw flanges from Phoenix Contact are supplied in the ship kit with each system for proper connection to the -48V DC power source (two plug connecters for input cables and two spare plug connecters).

Feed Through Header on the DC Power Supply

FIGURE 2-1 shows the feed through header on the DC power supply.
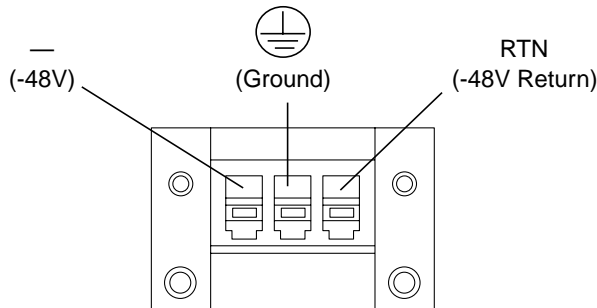
FIGURE 2-1   Feed Through Header on the DC Power Supply

▼ 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 have turned off the power to the DC power source through the circuit breakers.

2. Get two DC plug connecters from the Netra st ship kit (FIGURE 2-2**).**

Top of connecter

To -48V pin

To Ground pin

To -48V Return pin
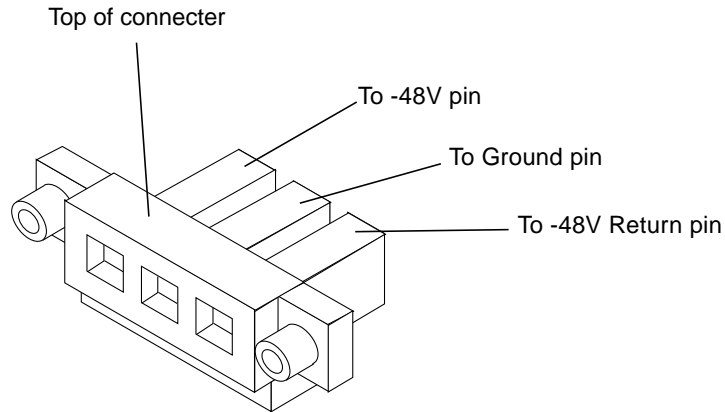
FIGURE 2-2   DC Plug Connecter

3. **Locate the three wires coming from the DC power source that will be used in the connection to the Netra st system:**

   ■ -48V
   ■ Ground
   ■ -48V Return

4. **Strip .27 inches of insulation from each of the wires coming from the DC power source (**FIGURE 2-3**).**

   Do not strip more than .27 inches from each wire. Doing so will leave uninsulated wire exposed from the DC plug after the assembly is complete.

   |←→| 0.27"
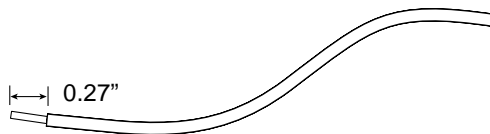
FIGURE 2-3   Striping the Insulation from the Cable

5. **Feed the exposed section of each wire into the appropriate hole in the DC plug connecter (**FIGURE 2-4**).**

To -48V pin

Three captive screws at bottom of connecter

To Ground pin

To -48V Return pin

Black (from -48V source)

Green/yellow (from earth ground)

Red (from -48V Return source)
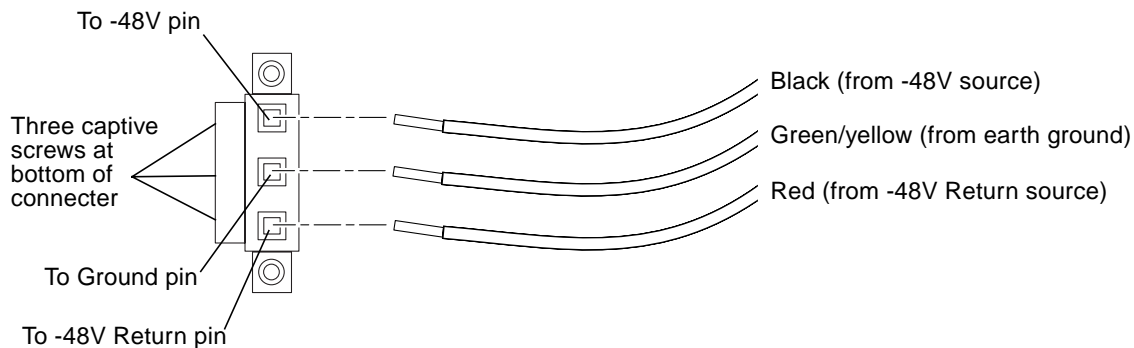
FIGURE 2-4 Assembling the DC Power Cable

6. Use a screwdriver to tighten the three captive screws at the bottom of the DC plug connecter to secure each wire in place (FIGURE 2-5**).**

The tightening torque must be 5-7 lb-in.

Red (from -48V Return source)

Green/yellow (from earth ground)

To -48V Return pin

To Ground pin

To -48V pin

Black (from -48V source)
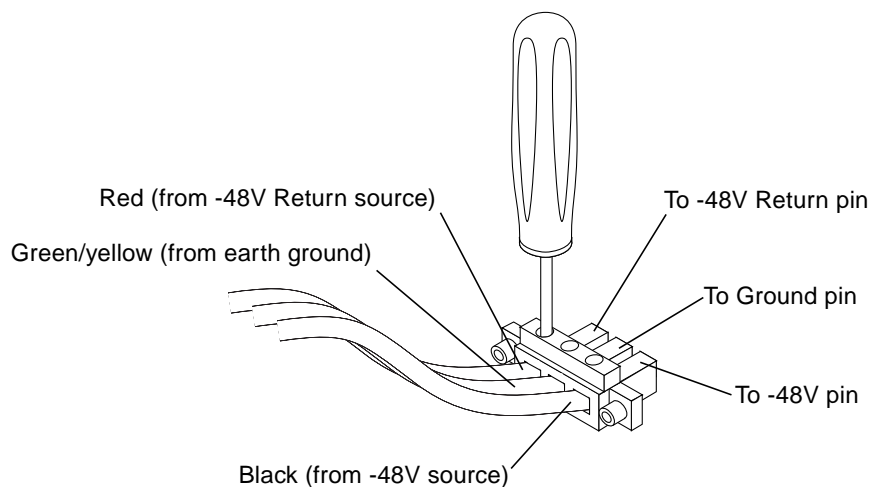
FIGURE 2-5 Tightening the Captive Screws at Bottom of DC Connecter

7. Repeat Step 3 through Step 6 to create a second DC input power cable using the second power connecter.

Note that you will want to have the first set of wires connected to DC power source A and the second set of wires connected to DC power source B.

Installing the System

This chapter provides instructions on how to prepare the area, connect the cables, and power on the system.

Minimum Hardware Requirements

The following pieces of hardware come standard with every Netra st system:

- UltraSCSI cables
- Passive terminator(s)
- Appropriate power connections, depending on the type of system:
    - For AC systems, one AC power cord is provided
    - For DC systems, four plug connecters are provided to form input cables for connecting to DC sources with a 20-amp breaker for each source (two plug connecters for input cables and two spare plug connecters)

You must also have the following pieces of hardware at your site to successfully install your Netra st system:

- A host system
- One of two host adapter boards installed in the host system. The host adapter board(s) can be either PCI-based or SBus-based:
    - For PCI based hosts — PCI to dual differential UltraSCSI adapter, Model X6541A
    - For SBus based hosts — SBus to differential UltraSCSI adapter, UDWIS/S Model X1065A

Before You Begin

▼ To Prepare for Installation

1. **Read the Product Notes, if any, for updated product information.**

   Information contained in the Product Notes may affect your installation.

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

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

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

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

4. **Install either an SBus wide intelligent UltraSCSI differential (UDWIS/S) or a PCI adapter card into your host system.**

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

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

Applying the Netra st Drive Bay Labels

The Netra st system comes with two drive bay labels that show the ID settings for each drive installed in the Netra st system. The drive bay labels differ for the Netra st A1000 system and the Netra st D1000 system.

Netra st A1000 Drive Bay Labels

The drive bay labels for the Netra st A1000 system identifies the drives as [x,y], where:

- x is the drive bank, either 1 (right drive bank) or 2 (left drive bank)
- y is the drive ID for the individual drive

FIGURE 3-1 shows the two drive bay labels for the Netra st A1000 system.

Left Bank

| [2,0] | [2,1] | [2,2] | [2,3] | [2,4] | [2,5] |

Right Bank

| [1,0] | [1,1] | [1,2] | [1,3] | [1,4] | [1,5] |
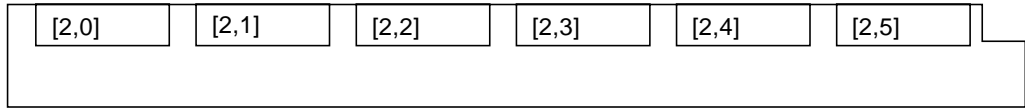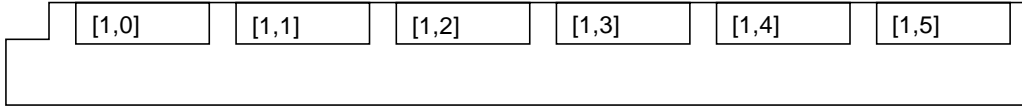
FIGURE 3-1   Netra st A1000 Drive Bay Labels

Netra st D1000 Drive Bay Labels

The drive bay labels on your Netra st D1000 unit are color-coded.

- The drives in the left bank are controlled by option switch 1, and the left bank colors are yellow and blue. The numbers in the yellow correspond with option switch 1 in the upper setting. For example, 0, 1, 2, 3, 4 and 5 correspond to the upper, or default, setting for option switch 1.

- The drives in the right bank are controlled by option switch 2, and the right bank colors are purple and white. The numbers in the white correspond with the option switch 2 in the lower setting. For example, 8, 9, 10, 11, 12 and 13 correspond the lower, or default, setting for option switch 2.

FIGURE 3-2 shows the two drive bay labels for the Netra st D1000 system

Left Bank

| 0/8 | 1/9 | 2/10 | 3/11 | 4/12 | 5/13 |

Configuration Options   5 4 3 2 1   ☐ Default Setting

Right Bank

| 8/0 | 9/1 | 10/2 | 11/3 | 12/4 | 13/5 |

Configuration Options   5 4 3 2 1   ☐ Default Setting
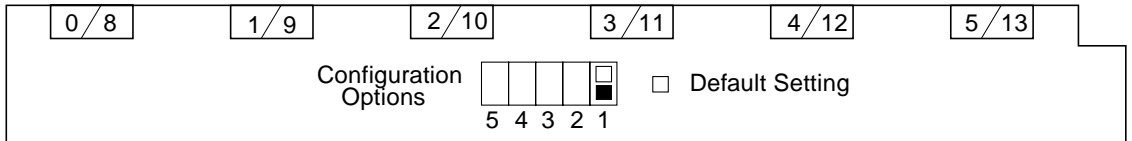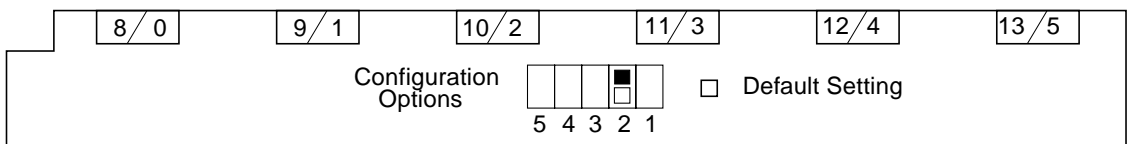
FIGURE 3-2   Netra st D1000 Drive Bay Labels

▼ To Apply the Drive Bay Labels

1. Locate the two door latches at the front of the Netra st system (FIGURE 3-3**).**
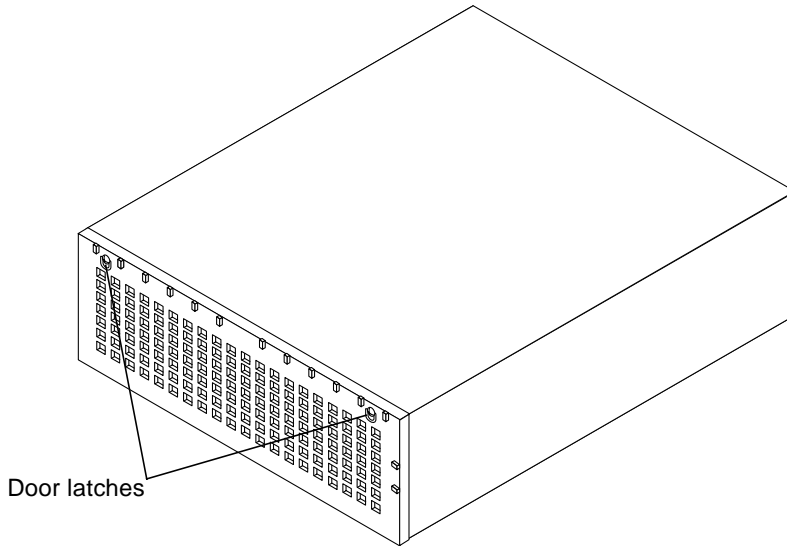
Door latches

FIGURE 3-3   Opening the Front Door

2. Press the door latches at the front of the Netra st system and turn them a quarter-turn to open the front door.

3. Remove the adhesive backing from each of the drive bay labels in turn.

4. Apply the left drive bay label to the chassis in front of the drives on the left bank and the right drive bay label to the chassis in front of the drives on the right bank (FIGURE 3-4**).**

The notch at the right side of the left label and at the left side of the right label fit the center of the drive bay.
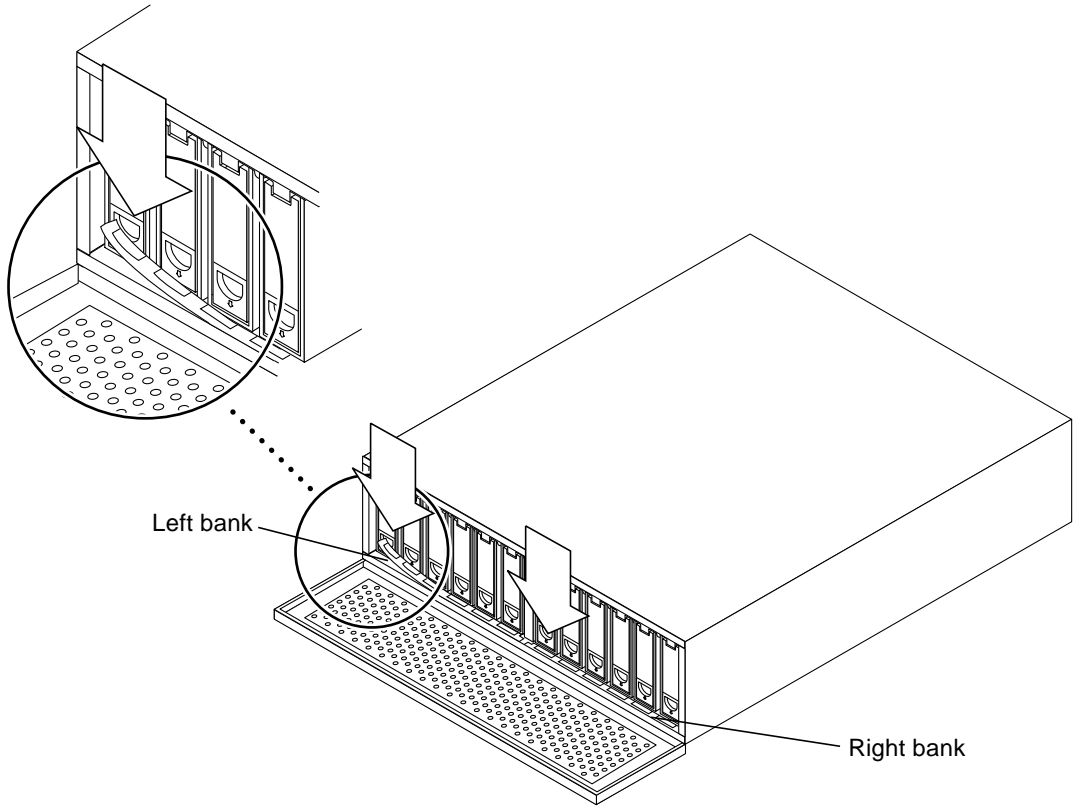
FIGURE 3-4 Applying the Drive Bay Labels

Setting the Drive IDs for the Netra st Systems

The settings for the drive IDs will vary depending on whether you have a Netra st A1000 system or a Netra st D1000 system.

▼ To Set the Drive IDs for a Netra st A1000 System

The ID settings for the drives in the Netra st A1000 system are preset, depending on the location of the drive in the drive bay (refer to "Netra st A1000 Drive Bay Labels" on page 24 for more information). However, you must set the SCSI ID for the Netra st A1000 system as a whole before you can use the system.

1. Determine which SCSI target addresses are available on your host system.

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

2. At the rear of the Netra st A1000 system, locate the SCSI ID switch (FIGURE 3-5**).**
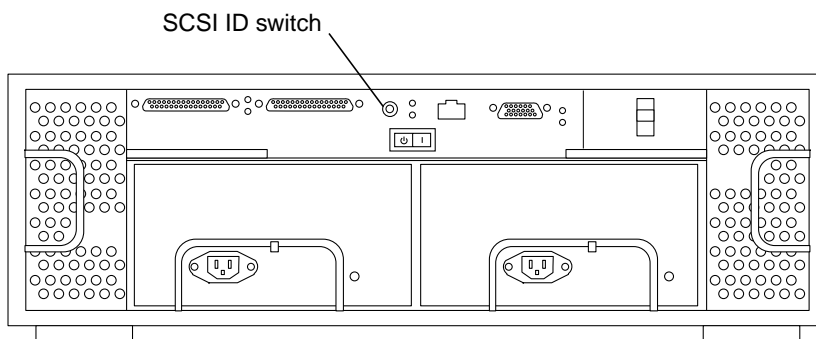
FIGURE 3-5   Netra st A1000 Rear View

3. Using a small flat-head screwdriver, turn the SCSI ID switch to the SCSI ID that you want to use for this system.

The range of SCSI target addresses on the SCSI ID switch goes from 0 to 15.

Caution – Do not assign SCSI ID numbers 14 or 15 to the Netra st system. Both SCSI ID 14 and 15 are reserved for the GEM chips (SCSI enclosure sensing chips) on the controller board.

▼ To Set the Drive IDs for a Netra st D1000 System

1. Determine which SCSI target addresses are available on your host system.

Refer to the *Solaris Handbook for SMCC Peripherals* available on the *Solaris AnswerBook* online documentation for information on how to determine which SCSI target IDs.

2. At the rear of the Netra st D1000 system, locate the option switch (FIGURE 3-6**).**
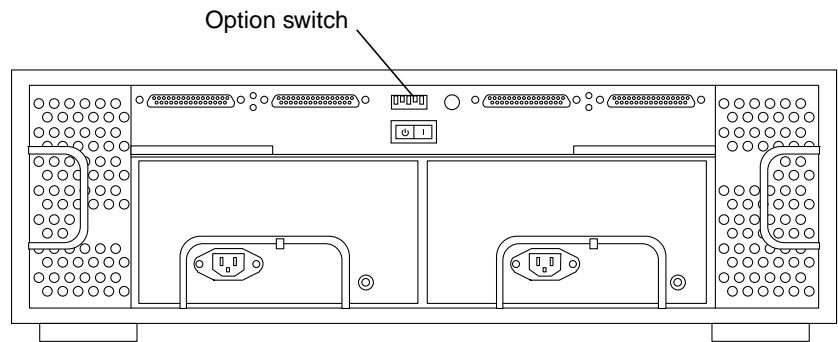
Option switch

FIGURE 3-6   Netra st D1000 Rear View

3. Set the IDs for the drives in the Netra st D1000 system using option switches 1 and 2.

Option switch 1 controls the ID settings for the drives in the left bank, and option switch 2 controls the ID settings for the drives in the right bank. TABLE 3-1 lists the ID settings for option switches 1 and 2.

TABLE 3-1   ID Settings for Option Switches 1 and 2

	Left bank, left-to-right	Right bank, left-to-right
Option switch 1		
Up (default)	0 - 5	—
Down	8 - 13	—
Option switch 2		
Up	—	0 - 5
Down (default)	—	8 - 13

- The left bank colors are yellow and blue. The numbers in the yellow correspond with the upper switch setting. For example, 0, 1, 2, 3, 4, and 5 correspond to the upper, or default, setting.

- The right bank colors are purple and white. The numbers in the white correspond with the lower switch setting. For example, 8, 9, 10, 11, 12, and 13 correspond the lower, or default, setting.

Note – Do not set both option switches to the same setting (for example, setting both switches set to the up position, using IDs 8 - 13) unless you are going to set up the Netra st D1000 system in a split-box configuration (see "Single-Box and Split-Box Configurations" on page 15 for descriptions of the split-box and single-box configurations). Setting both option switches to the same setting for a single-box configuration will create SCSI address conflicts.

Installing the Netra st System

Caution – The Netra st system, when fully loaded, can weight up to 73 pounds. Hence, assistance may be needed if you are installing a fully-loaded unit.

▼ To Install the System

1. **Mount the Netra st system in your rack, if necessary.**

   See Chapter 7 for more information.

2. **Connect one end of the SCSI cables to your host system and the other end to the left-most SCSI port at the rear of the Netra st system.**

   Refer to the documentation that came with your host system for the location of the SCSI port on the host system. FIGURE 3-7 shows the location of the SCSI ports on the Netra st A1000, and FIGURE 3-8 shows the location of the SCSI ports on the Netra st D1000.

   For the Netra st D1000 system, keep in mind that you can have either a single-box or a split-box configuration (refer to "Single-Box and Split-Box Configurations" on page 15 for more information):

   - If you are setting up your Netra st D1000 system as a *single-box* configuration, you must connect another SCSI cable to the middle two SCSI ports at the rear of the Netra st D1000 system.

   - If you are setting up your Netra st D1000 system as a *split-box* configuration, you must connect a second SCSI cable to the right-most SCSI port at the rear of the Netra st D1000 system.
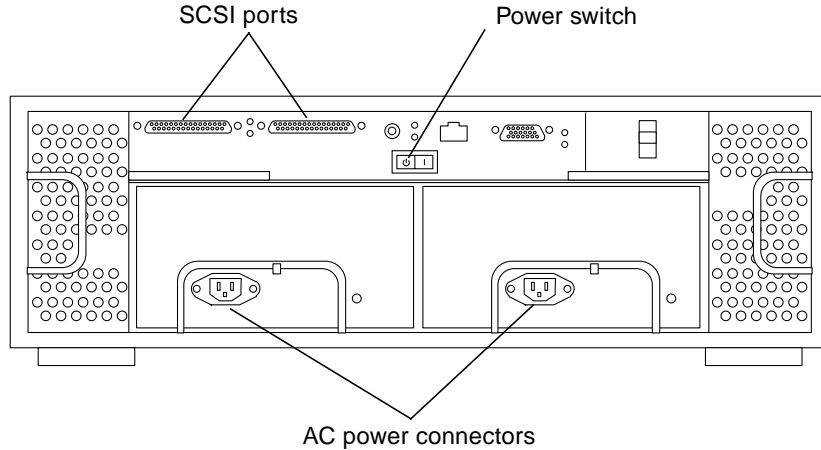
FIGURE 3-7 Netra st A1000 Rear View (AC Version)
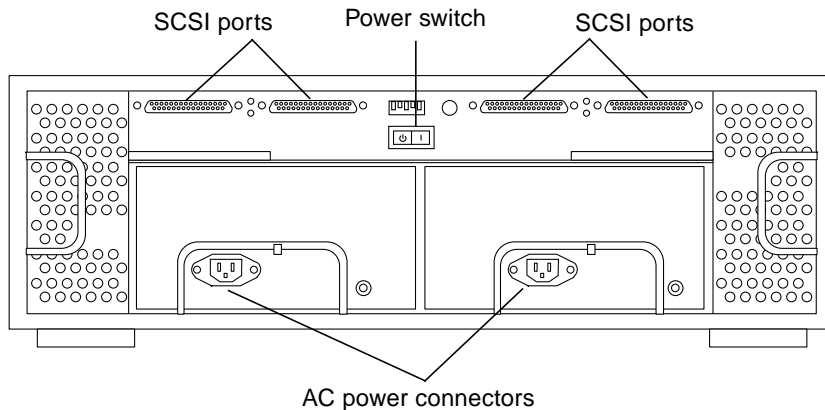
FIGURE 3-8 Netra st D1000 Rear View (AC Version)

3. **Install the terminator(s) on the appropriate ports.**

   - If you have a Netra st D1000 system, install the terminator(s) on the open SCSI ports at the rear of your Netra st system.

   - If you have a Netra st A1000 system, determine if your system is at the end of the SCSI daisy-chain.

     - If you are connecting another disk unit to your Netra st A1000 system, connect the SCSI cables from the other disk unit to the open SCSI port at the rear of your Netra st system and install the terminator at the end of the SCSI chain.

     - If you are not connecting any other disk units to your Netra st A1000 system, install the terminator on the open SCSI port at the rear of your system.

4. **If you are installing the DC version of the Netra st system, make the proper connections for the DC grounding:**

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

   b. **Position and align the DC grounding cable against the two DC grounding lug nuts at the rear of the Netra st system.**

   FIGURE 3-9 shows the location of the two lug nuts at the rear of the Netra st D1000 system; the two lug nuts are located in the same position at the rear of the Netra st A1000 system.

   DC grounding lug nuts
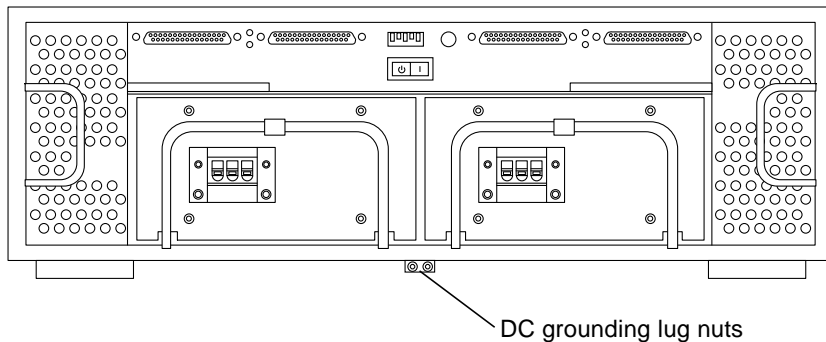
   FIGURE 3-9   Connecting the DC Grounding Cable

   c. **Place the star washers between the DC grounding cable and the two bolts that you will use to secure one end of the grounding cable to the two lug nuts.**

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

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

   If you are installing the Netra st system in a rack, you can secure the grounding cable to a a proper grounding point on the rack, as long as the rack is properly grounded to the earth ground in the building.

5. **Connect the power cables to the power connectors at the rear of the Netra st system.**

   ■ If you are installing the AC version of the Netra st system, connect the AC power cables to the AC power connectors. Refer to FIGURE 3-7 or FIGURE 3-8 for the location of the power connectors for the AC versions of the Netra st system.

   ■ If you are installing the DC version of the Netra st system:

   a. **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.

b. **Verify that the DC input power cables are connected to the DC power source through the circuit breakers.**

The first DC input power cable should be connected to DC power source A and the second DC input power cable should be connected to DC power source B.

c. **Connect the first DC input power cable to the DC feed through header on the first DC power supply at the rear of the Netra st system.**

FIGURE 3-10 shows how the DC input power cable should be connected to the DC feed through header.
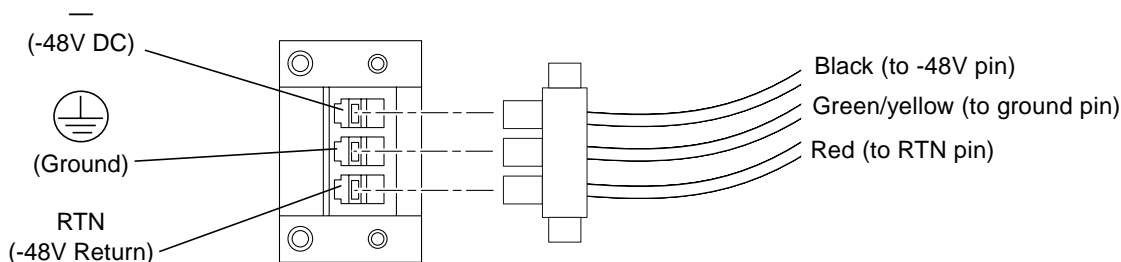
FIGURE 3-10 Connecting the DC Power Cable to the DC Feed Through Header

d. **Use a screwdriver to tighten the two captive screws at the sides of the DC plug connecter to secure the DC plug connecter to the DC feed through header.**

The tightening torque must be 5-7 lb-in.

e. **Repeat Step c and Step d, connecting the second DC input power cable to the DC feed through header on the second DC power supply at the rear of the Netra st system.**

Refer to FIGURE 1-4 and FIGURE 1-11 for the locations of the DC feed through headers on the DC power supplies at the rear of the Netra st A1000 and Netra st D1000 systems, respectively.

f. **Turn on the circuit breakers to provide power to the system.**

6. **Press the right side of the power switch (|) at the rear of the Netra st system to turn the power on for the system.**

FIGURE 3-7 shows the location of the power switch for the Netra st A1000 system, and FIGURE 3-8 shows the location of the power switch for the Netra st D1000 system. Note that when you release the power switch, the rocker switch will settle into the neutral, or center, position and the power will remain on.

7. **After you turn on the Netra st system, run** `boot -r` **on your host system to see the Netra st system.**

8. **If you have a Netra st A1000 system, install the RAID Manager 6.1.1 software on your host system and use that software to administer the disks in the Netra st A1000 system.**

   Refer to the manuals that came with RAID Manager 6.1.1 for more information.

▼ To Power Off the System

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

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

2. **Back up system files and data.**

3. **Halt the operating system.**

4. **Press the power system switch to the standby (O) position.**

5. **Verify that the power LED is off.**

6. **Disconnect the power connector from the rear of the system.**

Caution – Even with the power switch turned off, power remains connected to the system, and potentially dangerous voltages are always present in the power supply.

Removing and Replacing Components

The Netra st A1000 and Netra st D1000 systems contain easy access components, some of which are hot-pluggable and some of which must be replaced with the power off.

Hot-Pluggable Parts

- *Hard Disk Drives—page 36*
- *Cooling Canisters—page 37*
- *Power Supplies—page 38*
- *Air Filter—page 40*

Replaceable With Power Off

- *Controller Board—page 42*
- *Battery (Netra st A1000 Only)—page 44*
- *Increasing Memory (Netra st A1000 Only)—page 46*

Replacing Hot-Pluggable Parts

Hard Disk Drives

The Netra st A1000 or Netra st D1000 system you ordered comes configured with one-inch 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-pluggable.

▼ To Remove a Disk Drive

1. **Be sure there is no activity to the drives and prepare the software environment.**

   See the documentation that came with your software. Instructions for hot plugging or unplugging a disk in the Netra st A1000 system are in RAID Manager 6.1.1 documentation.

2. **Open the door at the front of the chassis.**

   Release the two front panel catches by turning a quarter turn, then pull the door downwards (FIGURE 4-1).
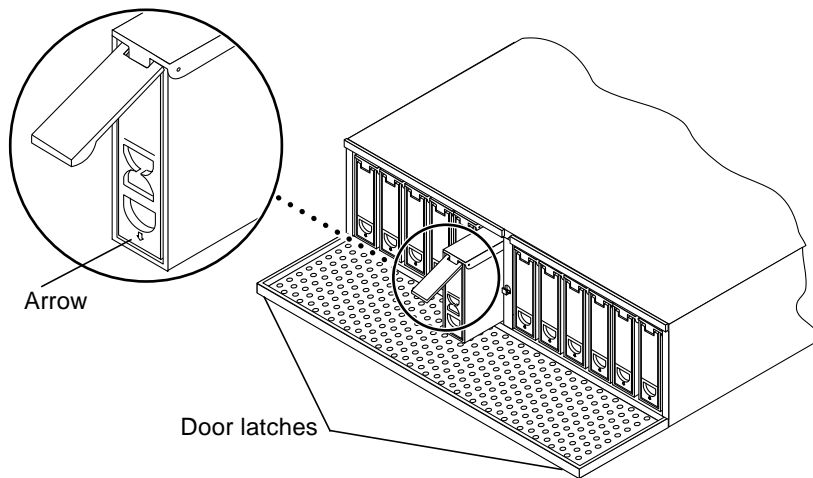

Arrow

Door latches

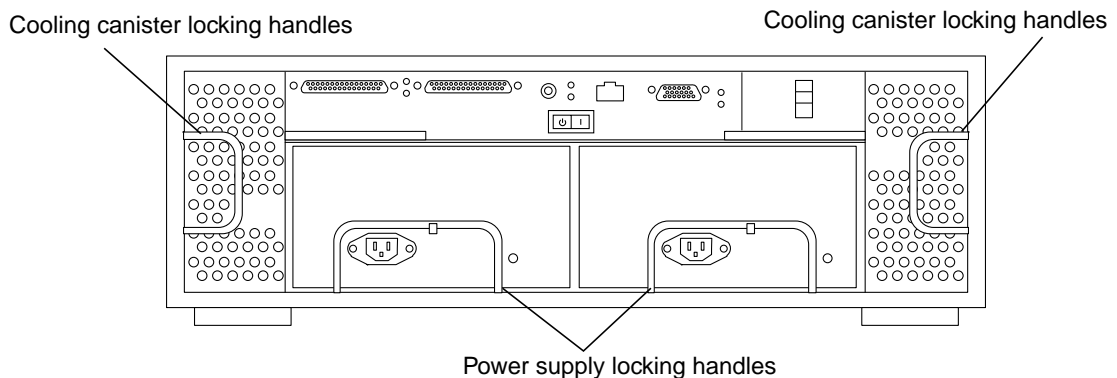**FIGURE 4-1** Removing and Replacing a Disk Drive

3. **Unlatch the drive bracket handle to release it (**FIGURE 4-1**).**

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

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

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

6. **Slide the drive out.**

▼ To Replace a Disk Drive

1. **Hold the locking handle on the disk drive open (**FIGURE 4-1**).**

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

3. **Gently push the drive until the locking handle engages.**

4. **Close the locking handle completely, using gentle downward pressure.**

Cooling Canisters

The Netra st A1000 or Netra st D1000 comes with two cooling canisters, each of which contains two blowers. If any of the blowers fail, the LED on the back of the system lights amber, indicating which blower has failed. In this case, you must replace the entire canister.

Cooling canister locking handles   Cooling canister locking handles

Power supply locking handles

FIGURE 4-2   Rear of Netra st A1000 System

▼ To Replace a Cooling Canister

1. **Release the locking handle and pull the cooling canister out (**FIGURE 4-2 **and** FIGURE 4-3**).**
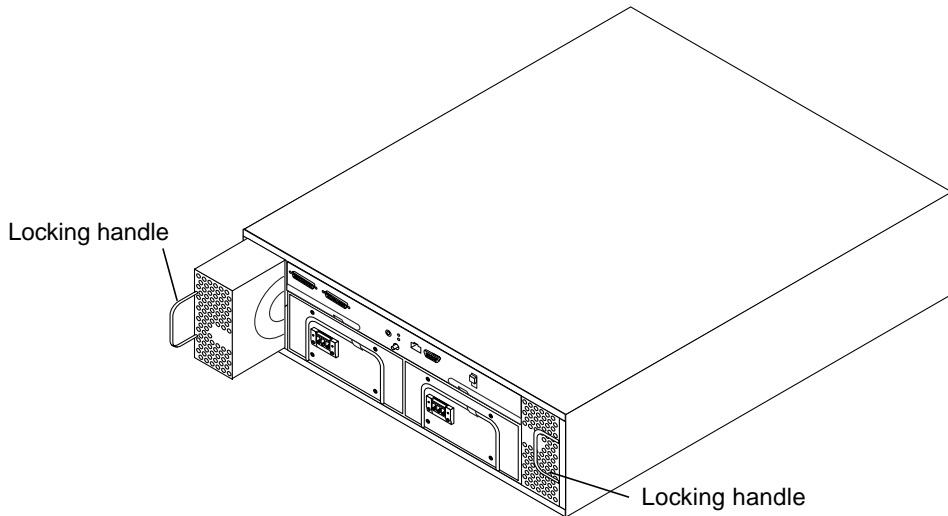
FIGURE 4-3   Removing and Replacing a Cooling Canister

2. **Orient the new cooling canister so that the round intake holes face inward and the locking handle is on the outside edge of the canister on each side.**

   The locking handle should face inward when it is closed.

3. **Slide the new cooling canister into the slot and push in until it engages.**

   The LEDs for the cooling canister light green when the connector is properly engaged.

4. **Close the locking handle.**

Power Supplies

The Netra st A1000 or Netra st D1000 enclosure comes with two power supplies. The LED on the power supply lights amber when the power supply fails. Although the system can run well with only one power supply, the faulty one should be replaced in case the good one goes bad. You can replace a failed or failing power supply without turning the system off; however, for the DC power supplies, you must switch off the circuit breaker for the power supply that you are replacing. You do not have to switch off the circuit breaker to the remaining power supply.

▼ To Replace a Power Supply

1. **If you are replacing a power supply for the DC version of the Netra st system, verify that the DC power source is off through the circuit breakers for the power supply that you are going to replace.**

> **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.

2. **Disconnect the power cord from the power supply you intend to replace.**
   - If you are replacing an AC power supply, disconnect the AC power cord from the power supply (FIGURE 1-2).
   - If you are replacing a DC power supply, disconnect the DC input power cable from the power supply (FIGURE 1-4).

   You cannot remove the power supply without first disconnecting the power cord.
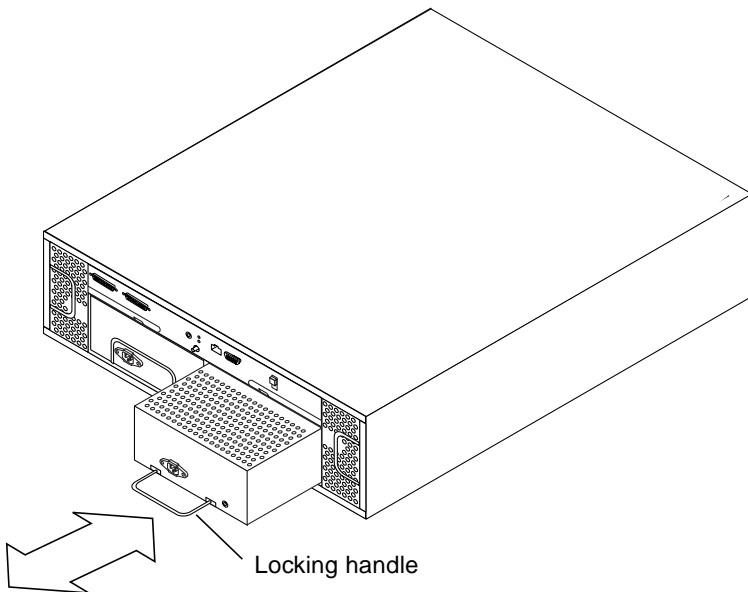
Locking handle

FIGURE 4-4   Removing and Replacing a Power Supply

3. **Pull the locking handle down and slide the power supply out of the bay (**FIGURE 4-4**).**

⚠	**Caution –** Take care when performing the next step. You can damage the pins at the rear of the power supply if you slide the power supply into the bay roughly.

4. Gently slide the new power supply into the bay.

Small rails on the power supply base fit into cut-outs in the chassis.

5. Push firmly until the power supply connector engages.

6. With the locking handle in the closed (up) position, connect the power cord.

- If you are replacing an AC power supply, connect the AC power cord to the power supply (FIGURE 1-2).
- If you are replacing a DC power supply, connect the DC input power cable to the power supply (FIGURE 1-4).

7. If you are replacing a power supply for the DC version of the Netra st system, turn on the circuit breakers to provide power to the system.

The LED for the power supply should light green.

Air Filter

All Netra st systems are equipped with an air filter that resides inside the front door. To maintain adequate air flow, you should replace the air filter every six months. You can order a replacement air filter through Sun Microsystems (Part No. X994A).

▼ To Replace the Air Filter

1. Open the door at the front of the chassis.

Release the two front panel catches by turning a quarter turn, then pull the door downwards (FIGURE 4-5).

Air filter

Door latches
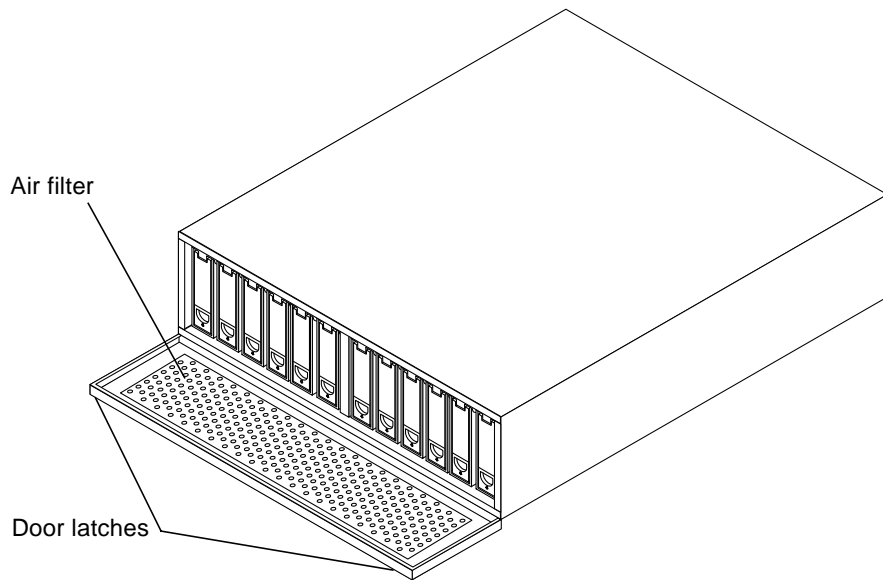
FIGURE 4-5 Removing and Replacing the Air Filter

2. **Gently pull on the ring at the corner of the EMI shield to remove the shield from the front door.**

3. **Remove the old air filter from the front door.**

4. **Insert the new air filter into the front door.**

   Ensure that the edges of the air filter are tucked into the retaining flanges on the front door.

Note – You must replace both the air filter and the EMI shield. Do not try to put a new air filter into an old EMI shield.

---

5. **Insert the new EMI shield into the front door and press it firmly into place.**

6. **Close the front door of the system.**

Replacing Parts With the Power Off

Controller Board

You must turn off the power to replace the controller board in either the Netra st A1000 or Netra st D1000 versions of the system.

▼ To Remove the Controller Board

1. **Stop the software communication with the Netra st A1000 or Netra st D1000 system.**

   See the documentation that came with your software.

2. **Turn off the power to the system.**

   Push the power switch to the standby position. Press the left side of the switch.

3. **Remove the SCSI cables and terminators on the controller board.**

4. **Attach an antistatic wrist strap to the exposed metal part of the chassis at the center post between the power supply bays.**

5. **Slide the controller board canister out and set it on an antistatic mat (**FIGURE 4-6**).**

   a. **Use the levers at each side to release the controller board.**

   b. **Pull the levers to slide the controller board out.**
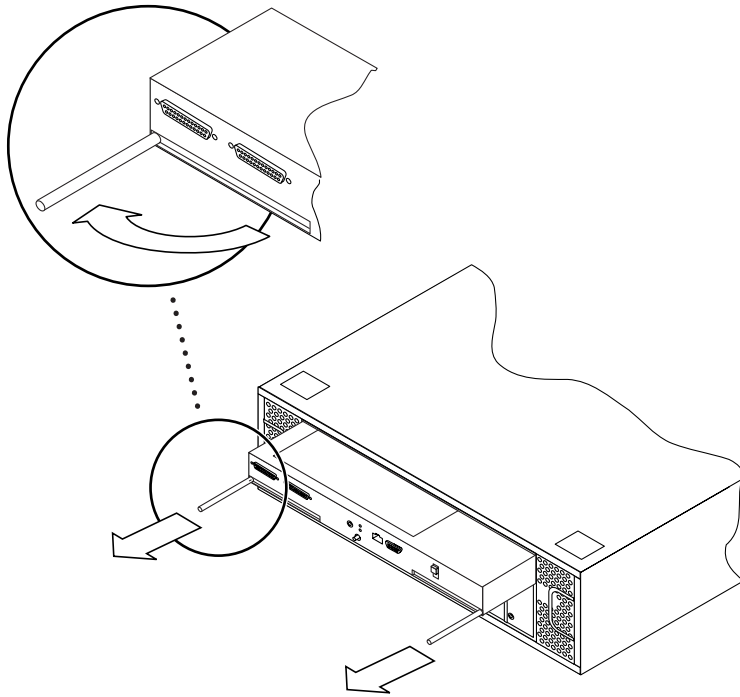
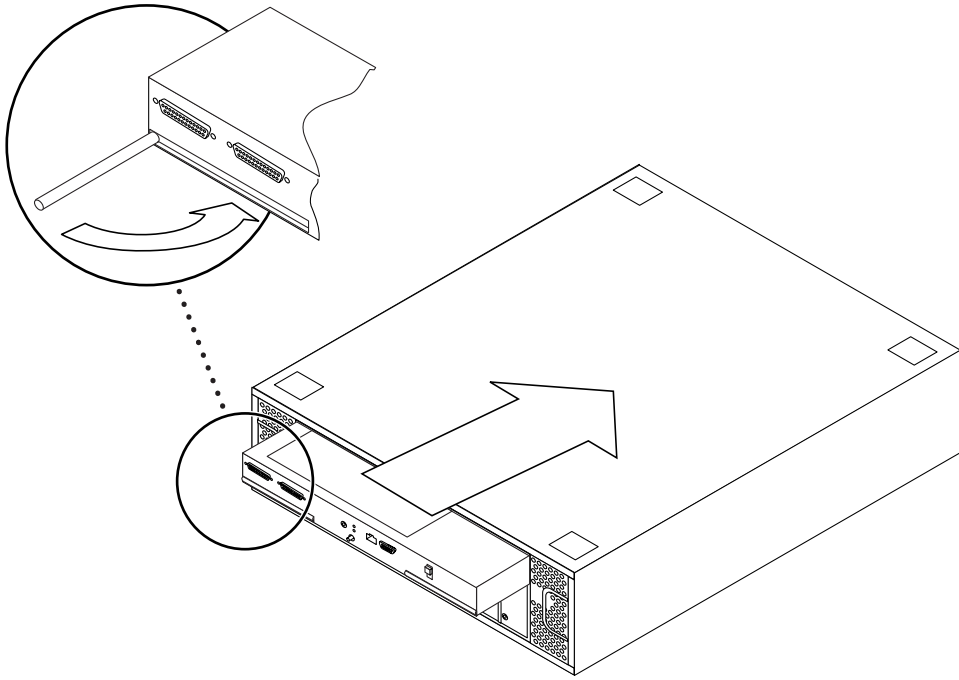**FIGURE 4-6**   Removing the Controller Board With the Levers

▼ To Replace the Controller Board

1. Slide the replacement controller board into the slot in the chassis (FIGURE 4-7**).**

The top of the controller board has rails that fit into guide hooks in the chassis.

Note – Be sure to hold the controller board level when you insert it so that the connectors mate properly.

FIGURE 4-7   Installing the Controller Board

2. Push firmly until the controller board connector engages.

3. Push both handles inward until they are flush with the controller board (FIGURE 4-7**).**

4. Connect all power cables, SCSI cables, and terminators, if necessary.

5. Remove the antistatic strap.

6. Turn the power on.

Push the power switch to the momentary on position (right side) and then release it.

Battery (Netra st A1000 Only)

You must turn off the power to replace the battery. Note all the cautions and warnings in this chapter and the safety information at the front of the book.

▼ To Replace the Battery

Replace the battery only with the same type of Sun Microsystems battery.

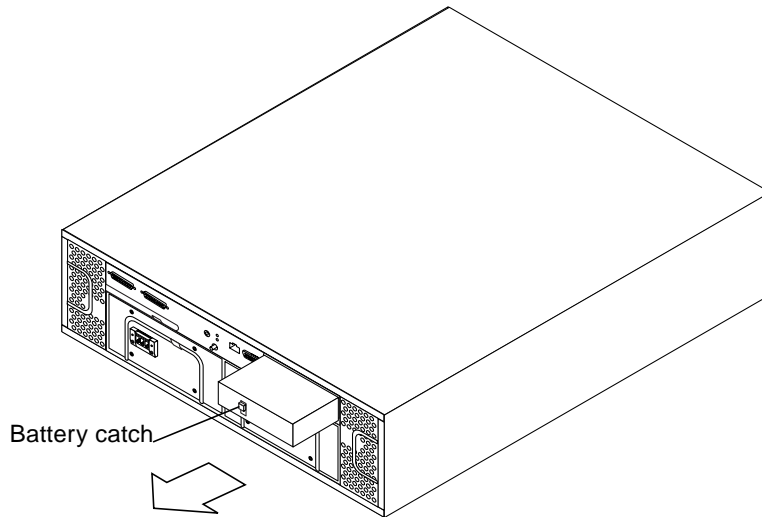1. **Locate the battery on the back of the unit (**FIGURE 4-8**).**

FIGURE 4-8   Removing the Battery

2. **Push down the catch on the outside of the battery (**FIGURE 4-8**).**

3. **Pull the battery out.**

Caution – There is a sealed lead acid battery in a Netra st A1000 unit. There is danger of explosion if the battery pack is mishandled or incorrectly replaced. Replace only with the same type of Sun Microsystems battery pack.
Dispose of the battery properly in accordance with local regulations. Do not mishandle it, disassemble it, or attempt to recharge it outside the system. Do not dispose of the battery in fire.
If the used battery is physically damaged and is leaking electrolyte gel, do not process it for recycling. Manage damaged batteries according to your local regulations, which may include management as a hazardous waste.

4. **After properly disposing of the spent battery, slide the new one into the battery port in the controller board.**

Be sure the battery is firmly seated.

Increasing Memory (Netra st A1000 Only)

The following procedure provides instructions for increasing the memory in the Netra st A1000 system from the factory configured 24 Mbytes to 80 Mbytes.
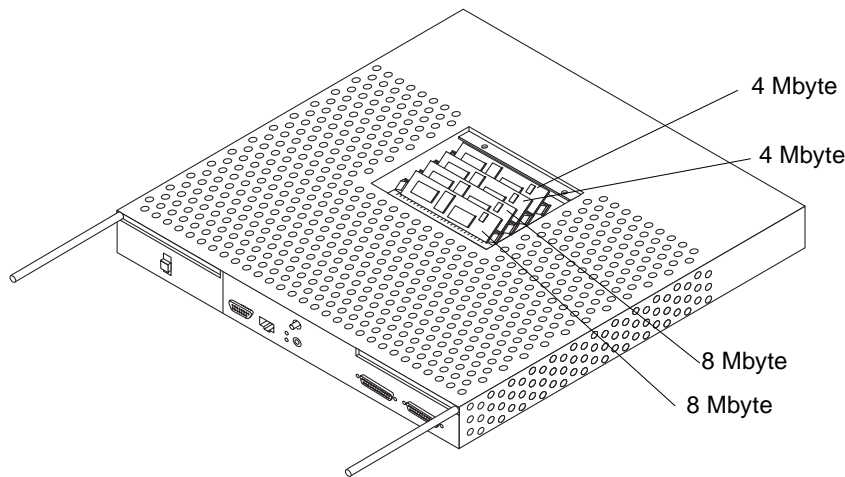

Caution – Be sure to have an antistatic wrist strap and mat ready for the SIMMs and the controller board.


▼ To Increase Memory in a Netra st A1000 System

1. **Follow the procedure for removing the controller board from the system. See "To Remove the Controller Board" on page 42.**

FIGURE 4-9   Netra st A1000 Controller—Fully Populated With 8-Mbyte and 4-Mbyte SIMMs (Factory Configuration)

2. **Flip the controller canister over so you can see the SIMM cover.**

   See the orientation of the SCSI ports.

3. **Remove the two screws that hold the SIMM cover to the center of the controller canister and remove the cover.**

   This exposes the SIMMs (FIGURE 4-9).

4. **Attach the antistatic wrist strap to your wrist and an unpainted metal part of the chassis.**
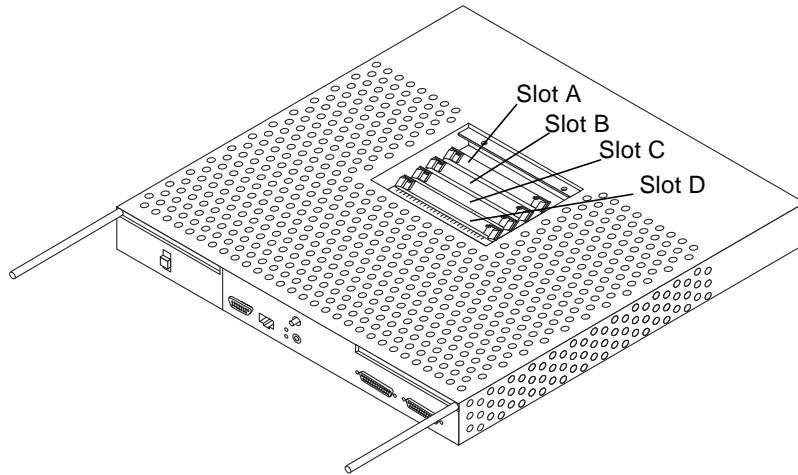
**FIGURE 4-10** Netra st A1000 Controller—Empty SIMM Slots

5. **Remove the SIMMs from front to back and set them on an antistatic mat.**

   Press the small latch on each side of the SIMM that releases it from the slot (FIGURE 4-11).

   a. **Remove first two SIMMs from slot D and slot C (**FIGURE 4-11**) and set them aside.**
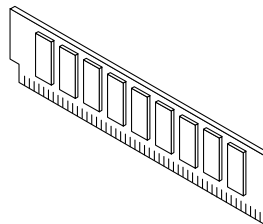
      These are 8-Mbyte SIMMs. You will use these SIMMs later.

   b. **Remove the SIMMs from slot B and slot A (**FIGURE 4-10**).**

      These are the 4-Mbyte SIMMs which you can save for use in other hardware.
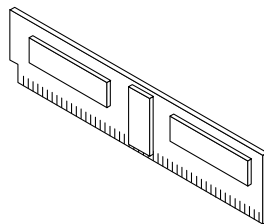
4-Mbyte SIMM (ICs on front side only)
8-Mbyte SIMM (ICs on both sides)

32-Mbyte SIMM (upgrade only)

FIGURE 4-11 SIMMs

6. **Replace the 8-Mbyte SIMMs into slot A and slot B (**<small>FIGURE</small> 4-10**).**

   The SIMM is keyed and will fit only one way (notch in lower left corner) (<small>FIGURE</small> 4-11).

7. **Remove the two 32-Mbyte SIMMs from the antistatic packaging. Install them into slot C and slot D (**<small>FIGURE</small> 4-10**).**

8. **Place the part number label supplied with the upgrade kit over the barcode label near the SIMM access door.**

   The new part number label correctly identifies your controller upgrade.

9. **Remove the antistatic strap and replace the lid to the canister.**

   Secure the screws.

10. **Replace the canister into the Netra st A1000 unit. See "To Replace the Controller Board" on page 43.**

Adding a Disk Drive

This chapter contains information on how to configure your system when you add a disk drive while the power is on and the operating system is running.

The way you add a disk drive depends on the application you are using. Each application requires that you decide where to install the new disk drive, add the drive, and then reconfigure the operating environment. Each application is different.

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

Installing a Disk Drive

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

▼ To Select a Slot for the New Disk Drive

Select any available slot in the Netra st system for the new disk drive. Make a note of which slot you chose for reference when you configure the software environment.

▼ To Add a Disk Drive

1. **Unlock and open the door at the front of the chassis.**

   Release the two front panel catches by turning them a quarter turn, then pull the door downwards. (FIGURE 5-1).
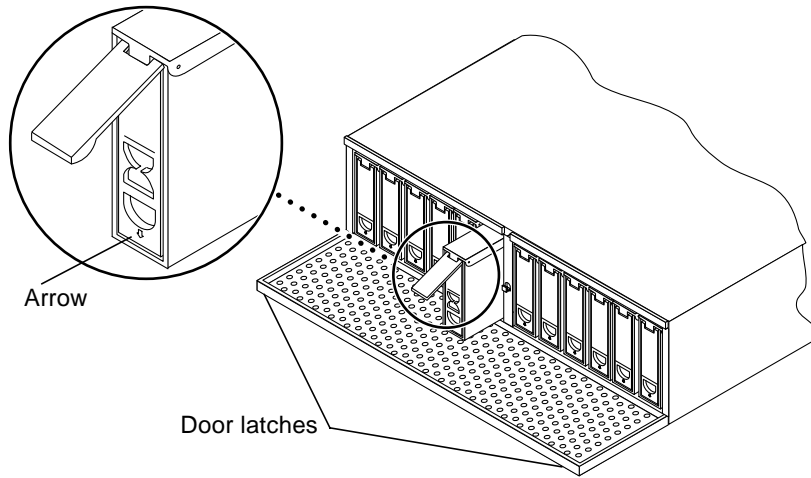

FIGURE 5-1   Adding or Replacing a Disk Drive

2. **Remove the foam filler drive.**

   Store the foam filler drive in a safe place for future use.

3. **Hold the locking handle open on the disk drive.**

   Push down in the direction of the arrow to release the latch (FIGURE 5-1).

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

5. **Gently push the drive until the locking handle engages.**

6. **Close the locking handle completely, using gentle downward pressure.**

   Note – When the drive is firmly installed, it will spin up automatically.

   See Chapter 1 for drive ID assignment details.

Performing the Software Configuration Procedures

The software configuration procedures that you must perform after installing a disk drive in your system differs between the Netra st A1000 and the Netra st D1000 systems.

Netra st A1000 System

Use the RAID Manager 6.1.1 software to configure and administer the disk drives in your Netra st A1000 system. Refer to the documentation that came with the RAID Manager 6.1.1 software for those instructions.

Netra st D1000 System

Configuring the Solaris Environment

A new device entry needs to be created for the drive in the `/devices` and `/dev/dsk` and `/dev/rdsk` hierarchy. The new drive is assigned a name associated with the slot in the Netra st D1000 system into which the drive was installed.

▼ To Add the Disk Drive

The naming convention for disks attached to a differential SCSI host adapter is *cwtxdysz*, where:

w corresponds to the controller in your system
x corresponds to the Netra st D1000 disk slot
y is the logical unit for the disk drive (always 0)
z is the slice (or partition) on the disk.

For example, if the Netra st D1000 system is connected to a differential SCSI host adapter corresponding to controller `c2` and a drive was added to the fifth slot in a Netra st D1000 system, the new drive appears as `/dev/dsk/c2t4d0s[0-7]` and `/dev/rdsk/c2t4d0s[0-7]`.

1. **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/c1t4d0s*
```

where: `c1t4d0s*` is the expected device name for the new drive in the fifth 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.

Configuring the New Disk Drive Within Your Application

Continue adding the disk with the instructions for your application.

- "To Configure a New Disk Drive for a UNIX File System" on page 52.
- "To Add a New Device to a Netra st D1000 Volume Manager Disk Group" on page 53.

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

▼ To Configure a New Disk Drive for a UNIX File System

Use the following procedure to configure a slice (single physical partition) on a disk to be used with a UNIX file system (UFS). For instructions about adding a file system to a VxVM disk, refer to the documentation that came with your application.

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/rdsk/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 pathname. 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 mount_point
```

where: *mount_point* is the directory you created.

The file system is ready to be used.

▼ To Add a New Device to a Netra st D1000 Volume Manager Disk Group

Use the following procedure to configure the new device to be used with a new or existing volume manager disk group (VxVM).

1. **Configure the VxVM to recognize the disk drive.**

```
# vxdctl enable
```

2. Add the new disk to a new or existing VxVM disk group:

```
# vxdiskadd cwtxdysz
```

where: *cwtxdysz* is the new disk.

Refer to the vxdiskadd(1M) man page for further details.

The disk is now ready for use with VxVM as part of a new volume, added to an existing volume as a plex, or to increase an existing volume.
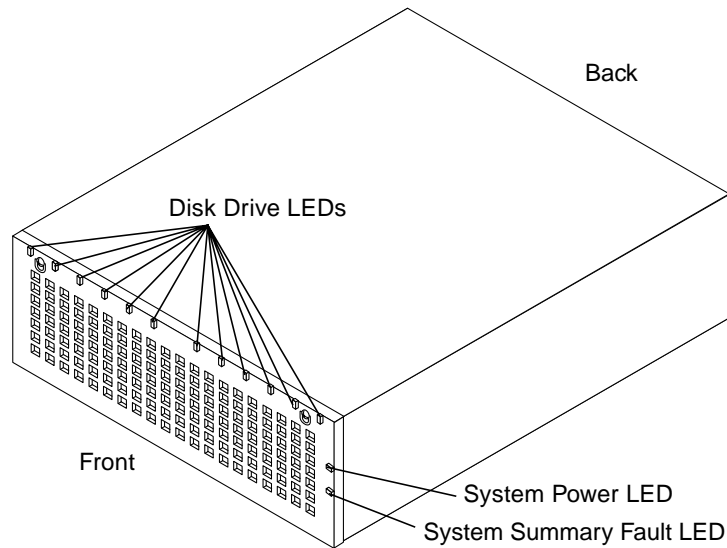
Troubleshooting

This chapter describes how to troubleshoot the Netra st A1000 and Netra st D1000 systems.

Troubleshooting the Netra st A1000

Troubleshooting Using the Front Panel LEDs

TABLE 6-1 Front Panel LEDs—Netra st A1000 System

LED	Color	Meaning	Action
System Power	Green	System is powered on	No action necessary.
	Unlit	System is powered off	No action necessary.
System Summary Fault	Amber	A system component (disk drive, cooling canister, or power supply) needs service or the temperature is too high	Check the following LEDs to find the system fault: • Disk Drive LEDs—TABLE 6-1 • Cooling Canister Status LEDs—TABLE 6-2 • Power Supply Status LEDs—TABLE 6-2 • Temperature Fault LED—TABLE 6-2

TABLE 6-1 Front Panel LEDs—Netra st A1000 System *(Continued)*

LED	Color	Meaning	Action
Disk Drives	Unlit	No disk drive present in the slot	No action necessary.
	Green, solid	Disk drive present but not active	No action necessary.
	Green, flashing	Disk drive present and active	No action necessary.
	Amber	Disk drive has failed	Replace the disk drive. See "Hard Disk Drives" on page 36.

Troubleshooting Using the Rear Panel LEDs

1. Controller Activity	4. Controller Power	7. Cooling Canister Status
2. Controller Fault	5. Battery Fault	8. Power Supply Status
3. Temperature Fault	6. Battery Charge	

FIGURE 6-2 Locating the Rear LEDs (Netra st A1000 System)

TABLE 6-2   Rear Panel LEDs—Netra st A1000

LED	Color	Meaning	Action
1. Controller Activity	Green	Controller is active	No action necessary.
	Unlit	Controller is inactive	No action necessary.
2. Controller Fault	Amber	A controller fault has been detected	Replace the controller. See "Controller Board" on page 42.
	Unlit	Controller is functioning normally	No action necessary.
3. Temperature Fault	Amber	Temperature for the controller board has exceeded 40° C	If the temperature is 50° C or higher, you must lower the temperature within 96 hours or system failure may result. If the temperature is between 40° C and 50° C, then no action is necessary.
	Unlit	Temperature for the controller board is below 40° C	No action necessary.
4. Controller Power	Green	Controller board is powered on	No action necessary.
	Unlit	Controller power is powered off	No action necessary.
5. Battery Fault	Amber	There is no battery present or a battery fault has been detected	Insert or replace the battery. See "Battery (Netra st A1000 Only)" on page 44.
	Unlit	Battery is fully charged and functioning normally	No action necessary.
6. Battery Charge	Green, solid	Battery is fast charging	No action necessary.
	Green, flashing	Battery is in the precharging phase	No action necessary.
	Unlit	Battery is not charging	No action necessary.
7. Cooling Canister Status (two blowers per canister, one LED for each blower)	Green	Individual blower is functioning normally	No action necessary.
	Amber	Individual blower has failed	Replace the entire cooling canister. See "Cooling Canisters" on page 37.
	Unlit	Cooling canister is not inserted	Insert a new cooling canister. See "Cooling Canisters" on page 37.

TABLE 6-2 Rear Panel LEDs—Netra st A1000 *(Continued)*

LED	Color	Meaning	Action
8. Power Supply Status	Green	Power supply is functioning normally	No action necessary.
	Amber	Power cord to individual power supply is disconnected or individual power supply has failed, but remaining power supply is still functioning normally	Connect the power cord to the individual power supply or replace the failed power supply. See "Power Supplies" on page 38.
	Unlit	Power cords to both power supplies are disconnected or both power supplies have failed	Connect the power cords to both power supplies or replace both failed power supples. See "Power Supplies" on page 38.

Troubleshooting the Netra st D1000

Troubleshooting Using the Front Panel LEDs
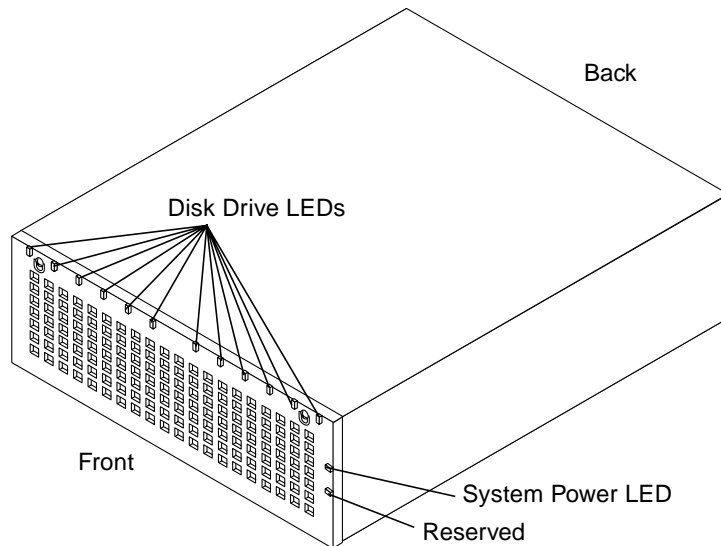
FIGURE 6-3 Locating the Front LEDs (Netra st D1000 System)

		TABLE 6-3	Front Panel LEDs—Netra st D1000 System	

LED	Color	Meaning	Action
System Power	Green	System is powered on	No action necessary.
	Unlit	System is powered off	No action necessary.
Disk Drives	Unlit	No disk drive present in the slot	No action necessary.
	Green, solid	Disk drive present but not active	No action necessary.
	Green, flashing	Disk drive present and active	No action necessary.
	Amber	Disk drive has failed	Replace the disk drive. See "Hard Disk Drives" on page 36.

Troubleshooting Using the Rear Panel LEDs
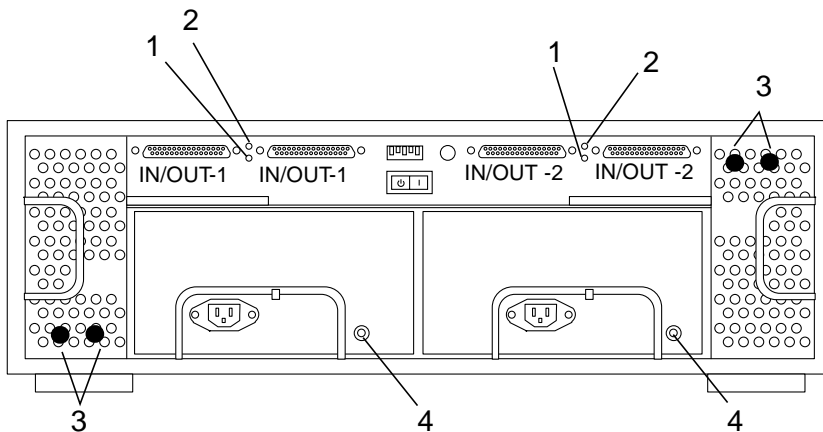
1. Controller Power   3. Cooling Canister Status

2. Temperature Fault   4. Power Supply Status

FIGURE 6-4   Locating the Rear LEDs (Netra st D1000 System)

TABLE 6-4   Rear Panel LEDs—Netra st D1000 System

LED	Color	Meaning	Action
1. Controller Power	Green	Controller board is powered on	No action necessary.
	Unlit	Controller power is powered off	No action necessary.
2. Temperature Fault	Amber	Temperature for the controller board has exceeded 40˚ C	If the temperature is 50˚ C or higher, you must lower the temperature within 96 hours or system failure may result. If the temperature is between 40˚ C and 50˚ C, then no action is necessary.
	Unlit	Temperature for the controller board is below 40˚ C	No action necessary.
3. Cooling Canister Status (two blowers per canister, one LED for each blower)	Green	Individual blower is functioning normally	No action necessary.
	Amber	Individual blower has failed	Replace the entire cooling canister. Refer to "Cooling Canisters" on page 37 for those instructions.
	Unlit	Cooling canister is not inserted	Insert a new cooling canister. See "Cooling Canisters" on page 37.
4. Power Supply Status	Green	Power supply is functioning normally	No action necessary.
	Amber	Power cord to individual power supply is disconnected or individual power supply has failed, but remaining power supply is still functioning normally	Connect the power cord to the individual power supply or replace the failed power supply. See "Power Supplies" on page 38.
	Unlit	Power cords to both power supplies are disconnected or both power supplies have failed	Connect the power cords to both power supplies or replace both failed power supples. See "Power Supplies" on page 38.

Mounting the Netra st System in a Rack

This chapter provides instructions for installing the rail mounting kit for the Netra st system into a 19-inch storage rack.

The rail mounting kit supplied with your Netra st system contains:

■ Side mounting brackets (2)
■ Screws

The Netra st chassis is shipped with the two mounting brackets designed to fit in a 19-inch rack. It can also be mounted in 23-inch, 24-inch, and 600-mm racks using separate kits, which can be ordered from Sun. TABLE 7-1 gives the part numbers for each of those x-option kits.

TABLE 7-1   X-option Part Numbers for Rack Mount Kits

Rack size	X-option part number
23-inch or 24-inch	X6907A
600-mm	X6909A

The chassis must be secured within the rack frame using screws suitable for the equipment frame. They must be a minimum size of M6 depending on the frame requirement. All screws must be fitted. There are positions provided for a total of four screws (two per side). The suggested tightening torque value for M6 recess head screws is 4.0Nm (3.0lbf-ft).

▼ To Mount the Netra st System in a Rack

<table>
<tr><td>⚠</td><td>Caution – Install the Netra st systems into a rack starting from the floor up. Very tall racks can become top heavy and unstable.</td></tr>
</table>

1. Determine if you want to mount the Netra st system in the forward or the center position (FIGURE 7-1**).**

Forward position
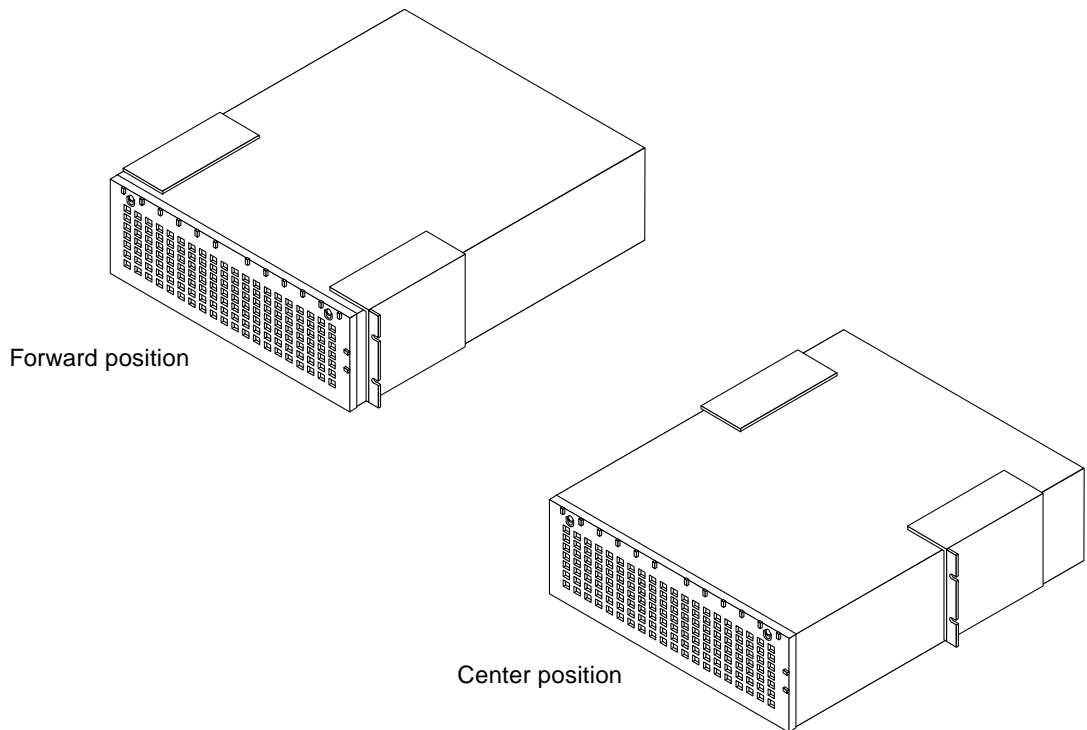
Center position

FIGURE 7-1   Adjusting the Mounting Brackets

The Netra st system is shipped out with the mounting brackets in the forward position. To move the brackets to the center position:

a. Unscrew the two screws that secure each mounting bracket to the bottom of the Netra st system.

b. Move each mounting bracket to the center position.

c. Secure each mounting bracket to the bottom of the Netra st system using the two screws.

2. Determine if you are going to install the Netra st system in a 19-inch, 23-inch, 24-inch or 600-mm rack.

If you are installing the Netra st system in a *19-inch* rack, you do not need to use an adaptor bracket. The mounting brackets shipped on the Netra st system have been designed for a 19-inch storage rack. Go to Step 3.

If you are installing the Netra st system in a *23-inch, 24-inch, or 600-mm rack*, you must use the adaptor bracket. Refer to TABLE 7-1 on page 63 for more information.

a. Get the adaptor bracket from the x-option ship kit (FIGURE 7-2**).**
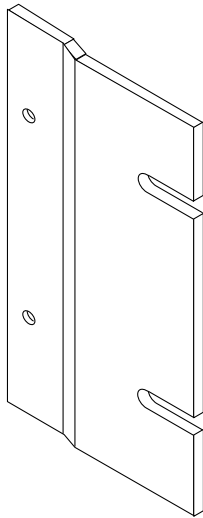
FIGURE 7-2 Mounting Adaptor Bracket

b. Line up the top and bottom two threaded holes on the adaptor bracket with the holes on the mounting bracket (FIGURE 7-3**).**
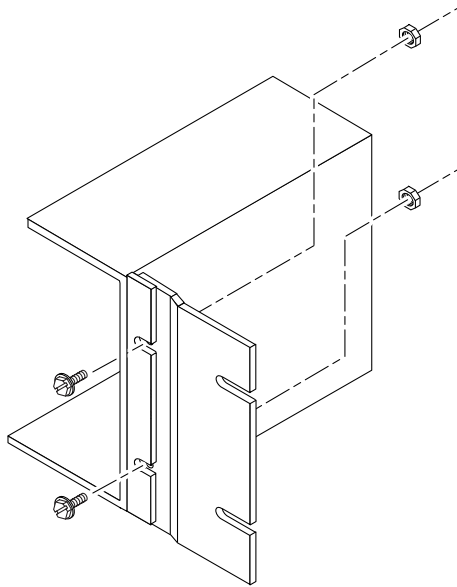
FIGURE 7-3   Securing the Adaptor Bracket

c. Secure the adaptor bracket to the mounting bracket using the two screws.

!　**Caution –** The Netra st system, when fully loaded, can weight up to 73 pounds. Hence, assistance may be needed for the next step if you are installing a fully-loaded unit.

3. **Lift the Netra st system into the proper position in the rack.**

4. **Secure the Netra st system to the rack using the four screws, using two screws for each bracket.**

Upgrading a Netra st D1000 to a Netra st A1000

This appendix provides installation and replacement procedures for the following items that are included in your Netra st A1000 upgrade kit:

- Netra st A1000 controller board
- Drive bay labels
- RAID Manager 6.1.1 software CD
- RAID Manager 6.1.1 Installation, User, and Release Notes documents

Upgrading to a Netra st A1000

▼ To Remove the Netra st D1000 Controller Board

1. **Back up the data on the hard disk drives in your Netra st D1000 unit.**

2. **Be sure the hard disk drives are not managed by an application such as Volume Manager or other database software.**

   Refer to the documentation that came with your application.

3. **Stop the software communication with the Netra st D1000 system.**

   See the documentation that came with your software.

4. **Turn off the power to the system.**

   Push the power switch to the standby position. Press the left side of the switch.

5. **Remove the SCSI cables and terminator on the controller board.**

6. **Attach an antistatic wrist strap to the exposed metal part of the chassis at the center post between the power supply bays.**

7. **Slide the controller board out and set it on an antistatic mat (**FIGURE A-1**).**

   a. **Use the levers at each side to release the controller board.**

   b. **Hold the levers to slide the controller board out.**
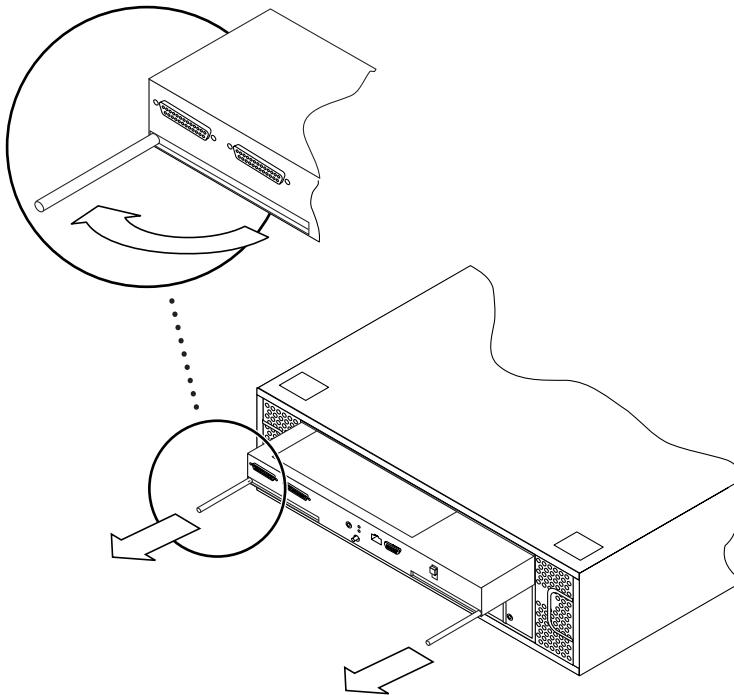
FIGURE A-1   Removing the Netra st D1000 Controller Board

▼ To Install the Netra st A1000 Controller Board

1. **Slide the Netra st A1000 controller board into the slot in the chassis (**FIGURE A-2**).**

   The top of the controller board has rails that fit into guide hooks in the chassis.

   Note – Be sure to hold the controller board level when you insert it so that the connectors mate properly.
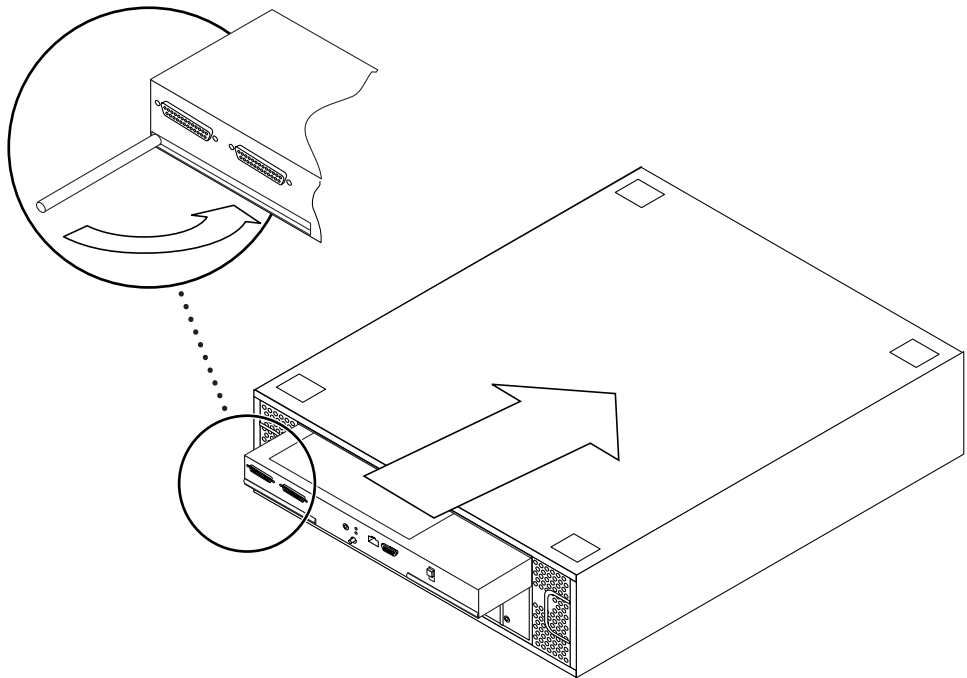
FIGURE A-2   Installing the Netra st A1000 Controller Board

2. **Push firmly until the controller board connector engages.**

3. **Push both handles inward until they are flush with the board (**FIGURE A-2**).**

4. **Connect all power cables, SCSI cables, and terminators, if necessary.**

   Note – If you had a split-box configuration for your Netra st D1000 system, you will have extra SCSI cables after you have completed the cabling procedures.

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5. **Remove the antistatic strap.**

▼ To Apply the Drive Bay Labels

Your Netra st A1000 requires different drive bay labels from those on the Netra st D1000. FIGURE A-3 shows the Netra st A1000 drive bay labels. See "Netra st A1000 Drive Bay Labels" on page 24 for a complete description of the Netra st A1000 labels.

Left Bank

| [2,0] | [2,1] | [2,2] | [2,3] | [2,4] | [2,5] |

Right Bank

| [1,0] | [1,1] | [1,2] | [1,3] | [1,4] | [1,5] |
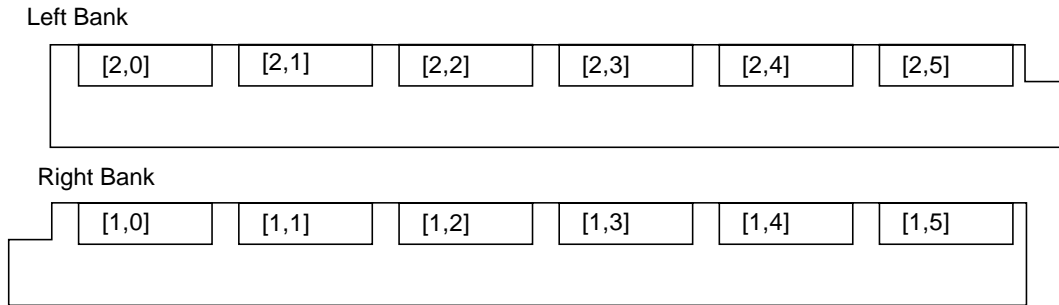
FIGURE A-3   Netra st A1000 Drive Bay Labels

● **Carefully paste the new labels over the old ones, matching the center notches (**FIGURE A-4**).**

The notch at the right side of the left label and the left side of the right label fit the center of the drive bay.
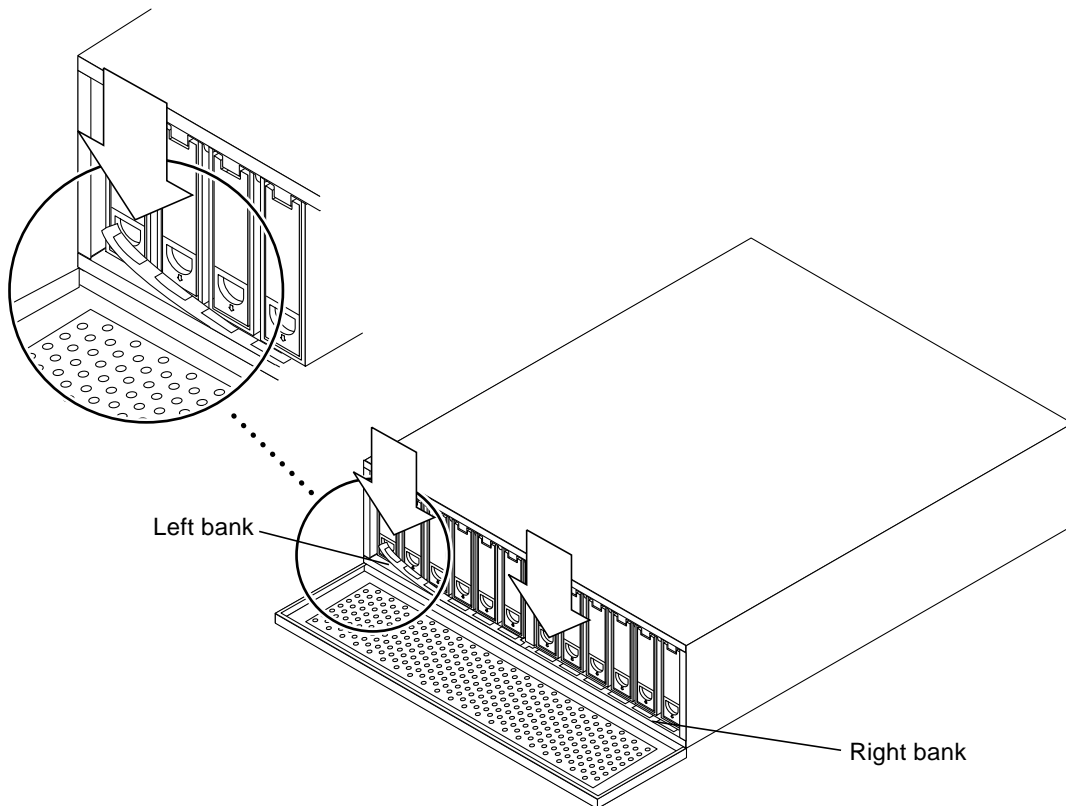
FIGURE A-4   Applying the Drive Bay Labels

▼ To Set the Drive IDs for a Netra st A1000 System

The ID settings for the drives in the Netra st A1000 system are preset, depending on the location of the drive in the drive bay. However, you must set the SCSI ID for the Netra st A1000 system as a whole before you can use the system.

1. **Determine which SCSI target addresses are available on your host system.**

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

2. **At the rear of the Netra st A1000 system, locate the SCSI ID switch (**FIGURE A-5**).**

3. **Using a small flat-head screwdriver, turn the SCSI ID switch to the SCSI ID that you want to use for this system.**

The range of SCSI target addresses on the SCSI ID switch goes from 0 to 15.

Caution – Do not assign SCSI ID numbers 14 or 15 to the Netra st system. Both SCSI ID 14 and 15 are reserved for the GEM chips (SCSI enclosure sensing chips) on the controller board.

SCSI ID switch
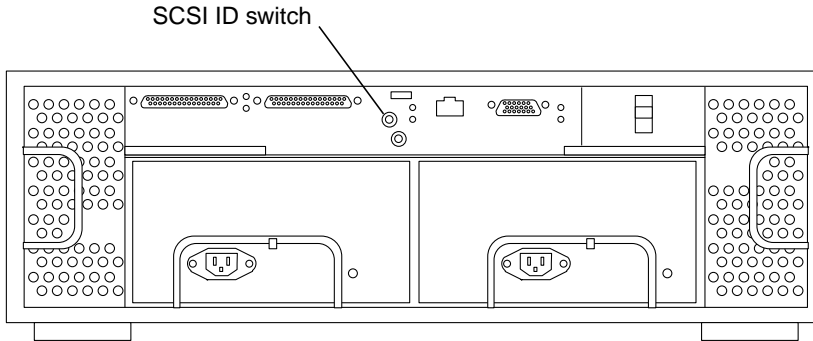
FIGURE A-5   Netra st A1000 Rear View

▼ To Install the RAID Manager Software

1. **If you have not already done so, install the RAID Manager 6.1.1 software on your host system.**

   Refer to the documentation that came with your software CD for installation and operation instructions.

   Note – If you have a version of RAID Manager 6 already installed, you must upgrade to the 6.1.1 release *before* you turn on the Netra st A1000.

2. **Turn on the Netra st A1000.**

   Push the power switch to the momentary on position (right side) and then release it.

3. **After you turn on the Netra st A1000, run** `boot -r` **on your host system to see the newly added Netra st A1000.**

System Specifications

Physical Specifications

The outside measurements of the chassis are as follows:

TABLE B-1   Physical Specifications

Width	44.94 cm	(17.6 in)			
Depth	53.25 cm	(21.0 in)			
Height	17.5 cm	(7.0 in)			
Weight	Netra st A1000	without disk drives	24.1 kg	(53 lbs)	
		fully loaded	33.2 kg	(73 lbs)	
	Netra st D1000	without disk drives	23.4 kg	(51.5 lbs)	
		fully loaded	32.3 kg	(71 lbs)	

The unit total weight depends on the number of components installed in the chassis.

Electrical Specifications

TABLE B-2 AC Power Requirements

Electrical Element	Requirement
Voltage	100 VAC to 240 VAC (nominal)
Frequency	47 –63Hz
Max. Operating current	5.0 amps
Max. Surge current	22 amp peaks

TABLE B-3 DC Power Requirements[1]

Electrical Element	Requirement
Voltage	-48 VDC
Max. Operating current	11 amps
Max. Input Surge current	22 amps peaks

1. The DC power supply range is -40 VDC to -75 VDC, 13 amps max. operating current.

Environmental Specifications

TABLE B-4 Environmental Specifications

Climate Control	Location	Minimum to Maximum Range
Temperature (dry bulb)	Operating	0˚C to 40˚C (32˚F to 104˚F)
	Storage	-25˚C to 65˚C (-13˚F to 149˚F)
	Transit	-25˚C to 65˚C (-13˚F to 149˚F)
Short Term (96 consecutive hrs)	Operating	-5˚C to 55˚C (23˚F to 131˚F)
	Non-operating	-40˚C to 70˚C (-40˚F to 158˚F)
Temperature Derating (max.)[1]	Operating	3.3˚C per 1000m (1.7˚F per 1000 ft.) above sea level
Relative Humidity (non-condensing)	Operating	5% to 85%
	Storage	5% to 95%
	Transit	5% to 95%
Short Term (96 consecutive hrs)	Operating	5% to 90%
	Non-operating	5% to 95%
Altitude (based on drives)	Operating	0m to 3000m (0 ft to 10,000 ft) above sea level
	Storage	0m to 12,000m (0 ft to 40,000 ft) above sea level
	Transit	0m to 12,000m (0 ft to 40,000 ft) above sea level
Heat Dissipation (maximum)	Operating	260 Watts, 1092 BTU per hour
Sound Power	Operating	6.6 B, in accordance with ISO 9296
Earthquake	Location	NEBS requirements for earthquake zone 4

1. If you plan to operate the controller module at altitudes between 1000m and 3000m (3280 ft and 9850 ft), you must lower the environmental temperature 3.3˚ C (1.7˚ F) for every 1000m (3280 ft) above sea level.

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