![Sun Microsystems logo]

# Sun StorEdge™ 3120 SCSI Array
# Quick Installation Guide

Sun Microsystems, Inc.
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# Contents

# Getting Started

This guide provides basic instructions on how to unpack and connect your Sun StorEdge™ 3120 SCSI array.



**FIGURE 1-1**    Sun StorEdge 3120 SCSI Array Front View

This chapter includes the following topics:

- "Refer to Your Release Notes" on page 1-2
- "Site Planning" on page 1-2
- "Unpacking the Array" on page 1-2
- "Rackmounting the Array" on page 1-3
- "Software and Documentation CDs" on page 1-3
- "What to Do Next" on page 1-4

# 1.1    Refer to Your Release Notes

Refer to the *Sun StorEdge 3120 SCSI Array Release Notes* for your array to see late-breaking information including required patches and supported hardware and software. The release notes and other documentation for this product are available online at:

```
http://www.sun.com/products-n-solutions/hardware/docs/
Network_Storage_Solutions/Workgroup/3120
```

and

```
http://docs.sun.com/db/coll/3120SCSIarray
```

# 1.2    Site Planning

Refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array to see detailed information about preinstallation site planning and a preinstallation worksheet to fill out before you unpack and set up your Sun StorEdge SCSI array.

# 1.3    Unpacking the Array

Follow these guidelines for unpacking the equipment.

**Caution –** Always use two people to remove the unit from its container, to avoid personal injury or damage to the equipment during installation. A fully loaded unit weighs approximately 30 pounds.

1. **Select a suitable area for unpacking.**

2. **Store all packing material and boxes for possible equipment returns.**

3. **Check the Contents Sheet in your product package.**

   The Contents Sheet summarizes the standard contents for your product. See "Software and Documentation CDs" on page 1-3.

4. **Compare the packing slip and the list of parts with the items you received.**

   If the list of parts on your packing slip does not match the items you received, or any items appear damaged, immediately notify your carrier agent and the supplier who prepared your shipment.

5. **Carefully examine the cables provided in the package.**

   If any cable appears to be damaged, contact the Technical Service department for an immediate replacement.

6. **Make sure you have the following cables which are required to complete the installation:**

   - Two 3-prong AC power cables if you have an AC-powered array.
   - One Ultra 320 SCSI cable per host to connect a host to a SCSI array; up to two host cables may be needed per array.

   To obtain qualified cables, consult your Sun sales representative.

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**Caution –** You must purchase or provide 320M-compliant SCSI cables for connecting the Sun StorEdge 3120 SCSI array to host servers.

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## 1.4 Rackmounting the Array

To rackmount the array in a rack or a cabinet, refer to the installation manual which is provided with the rack or refer to the *Sun StorEdge 3000 Family Rack Installation Guide for 1U Arrays* on the product website.

## 1.5 Software and Documentation CDs

Your Sun StorEdge 3120 SCSI array package contains the following software and documentation CDs.

- Sun StorEdge 3120 SCSI Array Professional Manager CD contains a software suite that includes:
  - Sun StorEdge Configuration Service, a management and monitoring program
  - Sun StorEdge Diagnostic Reporter software, a monitoring utility
  - Sun StorEdge CLI, a command-line interface to manage the array

■ Sun StorEdge 3000 Family Documentation CD contains the manuals listed below in both PDF and 508-compliant HTML formats. The book part number is used for the PDF filename and for the HTML directory name assigned to each book.

| Title | Part Number |
|---|---|
| *Sun StorEdge 3120 SCSI Array Release Notes* | 816-7955 |
| *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* | 816-7956 |
| *Sun StorEdge 3000 Family Configuration Service 1.5 User's Guide* | 817-3337 |
| *Sun StorEdge 3000 Family Diagnostic Reporter 1.5 User's Guide* | 817-3338 |
| *Sun StorEdge 3000 Family CLI 1.5 User's Guide* | 817-4951 |
| *Sun StorEdge 3000 Family Rack Installation Guide for 1U Arrays* | 816-7964 |
| *Sun StorEdge 3000 Family 1.5 Software Installation Manual* | 817-3764 |
| *Sun StorEdge 3000 Family Safety, Regulatory, and Compliance Manual* | 816-7930 |

# 1.6 What to Do Next

1. **For cabling with standard configurations, see "Connecting Your SCSI Array" on page 2-1.**

   For alternate configurations, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

2. **After cabling is complete, print and use the** *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* **for your array for first-time configuration and basic troubleshooting.**

3. **Optionally, install additional software from the Sun StorEdge 3000 Family Professional Manager CD and print the related manuals.**

# Connecting Your SCSI Array

This chapter provides procedures for cabling the Sun StorEdge 3120 SCSI array for single-bus or dual-bus configurations and for connecting the array to power and to network devices.

The topics covered in this chapter are as follows:

- "Connecting Chassis to an AC Power Outlet" on page 2-2
- "Connecting the Chassis to DC Power Outlets" on page 2-3
- "Powering On and Checking LEDs" on page 2-5
- "Bus and Cable Lengths" on page 2-6
- "Connecting Sun StorEdge 3120 SCSI Arrays to Hosts" on page 2-7
    - "Single-Bus (SB) Label" on page 2-8
    - "Fixed Drive IDs" on page 2-9
    - "Connecting Cables for a Single-Bus Configuration" on page 2-11
    - "A Single-Bus JBOD with One Host Connection" on page 2-11
    - "A Single-Bus, Multi-Initiator JBOD Configuration" on page 2-14
    - "A Dual-Bus, Single-Initiator JBOD Configuration" on page 2-15
    - "A Dual-Bus, Multi-Initiator JBOD Configuration" on page 2-18

Before you connect the Sun StorEdge 3120 SCSI array to the network, position the Sun StorEdge 3120 SCSI array in the rack or in the location where it will remain.

**Caution –** When positioning the array, do not block the air vents at the front or back of the unit. Follow all safety precautions specified in the *Sun StorEdge 3000 Family Safety, Regulatory, and Compliance Manual*.

**Caution –** When you power off the array, wait five seconds before you power it back on. If you power the array off and on too quickly, a race condition might occur.

## 2.1  Connecting Chassis to an AC Power Outlet

When you connect the AC power cords, you should install the provided two cord locks at the same time. To connect the AC power cords, perform the following procedure.

1. **Connect an appropriate AC power cable to the first power supply and to a power outlet.**

   The provided AC cord locks are used to securely fasten the AC cable connectors.

   **Caution –** For AC power: If the array is connected to AC power sources not within the designated 90–264 VAC range, damage might occur to the unit.

   **Note –** To ensure power redundancy, be sure to connect the two power supply modules to two separate circuits (for example, one commercial circuit and one UPS).

2. **Use a screwdriver to remove the screw from one of the two cord locks provided.**

3. **Turn the thumbscrew of the green ejector handle counterclockwise to release the handle.**

4. **Pull the green ejector handle of the first power supply forward, and slide the cord lock around the handle and around the AC power connector on the power supply.**

   The cord lock fits very snugly around the power cable connector.

5. **Slide the cord lock screw through the cord lock holes, and tighten the screw with a screwdriver.**

   Close the green ejector handle, and turn the thumbscrew clockwise to close the handle.

6. **Repeat steps 2 through 5 for the second cord lock and second power cable.**
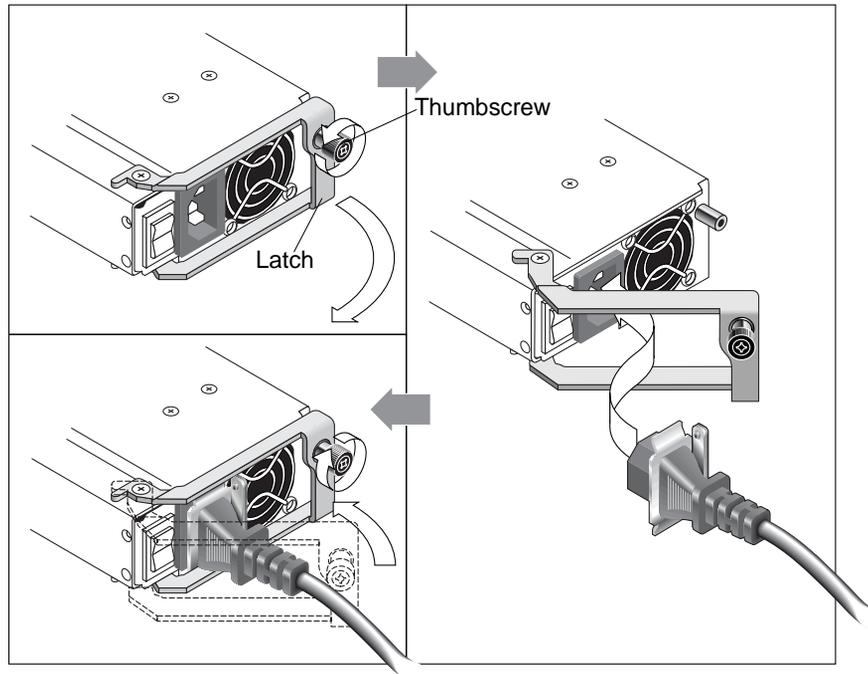
**FIGURE 2-1**   Cord Lock Operation

## 2.2   Connecting the Chassis to DC Power Outlets

Two DC power cords are packaged with each DC array. To connect the DC power cords, perform the following procedure.

1. **Connect a DC power cable to the first power supply and to a power outlet.**

   **Note –** Use only the DC power cables provided with the array.

2. **Check the DC cable part number and wire labels carefully before connecting the cable to the source.**

**TABLE 2-1**     DC Cable Wiring for Cable 35-00000148

| Pin Number | Voltage | Color |
|---|---|---|
| A3 | Return | Red |
| A2 | GND (Chassis Ground) | Green/Yellow |
| A1 | -48vdc | Black |

**TABLE 2-2**     DC Cable Wiring for Cable 35-00000156

| Pin Number | Voltage | Color |
|---|---|---|
| A3 | L+ | Red |
| A2 | GND (Chassis Ground) | Green/Yellow |
| A1 | L- | White |

**Caution –** If the Sun StorEdge 3120 SCSI array is connected to DC power sources not within the designated –48V DC (–36 VDC to –72 VDC) range, damage might occur to the unit.

**Note –** To ensure power redundancy, be sure to connect the two power supply modules to two separate circuits (for example, one commercial circuit and one UPS).

**Note –** To extend the length of the DC power cable as needed, strip the last 1/4 inch of the cable, insert the stripped end into a provided Panduit tube, and crimp the tube.

3. **Tighten the cable locking screws to attach the cable securely to the power supply power outlet.**

4. **Connect the second power cable to the second power supply and to a second power outlet. Tighten the cable locking screws.**

   If one power supply fails, the second power supply automatically takes the full load.

# 2.3 Powering On and Checking LEDs

Perform the initial check of the array according to the following procedure.

1. **Connect two AC (or DC) power cables to the power/fan modules on the rear of the array.**

2. **Power on the array by pressing the power switch. Make sure all front-panel LEDs turn solid green.**
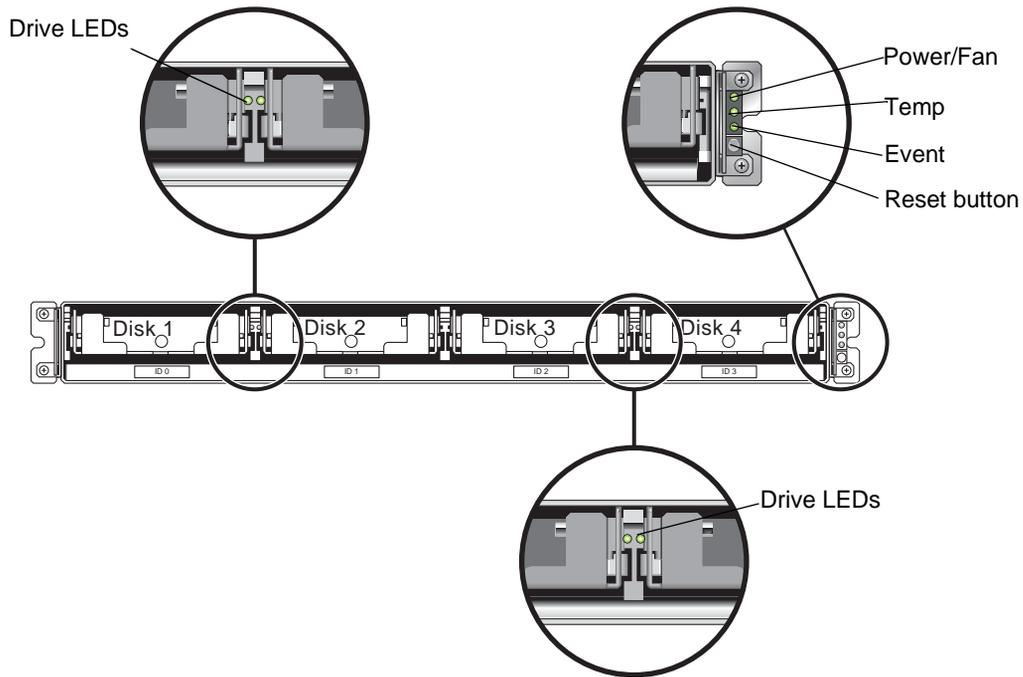


**FIGURE 2-2**   Front-Panel with LEDs Displayed

Refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array for more information about LEDs.

# 2.4 Bus and Cable Lengths

The SCSI specification states that the maximum bus length for Ultra320 SCSI is 12 meters for multidrop connections. The Sun StorEdge 3120 SCSI array uses a multidrop implementation. The ports on each channel are connected to the same physical SCSI bus.

Taking into account the internal bus length of .7 meters, and the internal SCSI bus length of the host, the maximum SCSI bus length for each channel is 12 meters when connected to an LVD host adapter.

You must ensure that the length of all cables to any connected nodes, as well as the internal bus length of .7 meters internal to the Sun StorEdge 3120 SCSI array and the internal bus length of the host, is less than 12 meters in total. Also include the jumper cable length of .3 meters if the JBOD is being used in a single-bus or multi-initiator configuration. In a dual-host, multi-initiator configuration, each host cable should be 5 meters or less.

The longest Ultra320 cable qualified by Sun is 10 meters in length.

When connected to single-ended host adapters, the longest supported bus length per channel is 1.5 meters.

**Note –** If you connect two hosts to the same channel, you must change the scsi-initiator-id of one host adapter as described in the host adapter documentation. When either of these hosts is subsequently booted, SCSI reset warnings are displayed on the other host.

## 2.5 Connecting Sun StorEdge 3120 SCSI Arrays to Hosts

You can connect a JBOD (Just a Bunch of Disks, no controller) array directly to a Sun host server using either single-bus or dual-bus configurations. With the Sun StorEdge 3120 SCSI array, you can configure the following:

- "A Single-Bus JBOD with One Host Connection" on page 2-11
- "A Single-Bus, Multi-Initiator JBOD Configuration" on page 2-14
- "A Dual-Bus, Single-Initiator JBOD Configuration" on page 2-15
- "A Dual-Bus, Multi-Initiator JBOD Configuration" on page 2-18

The array can be connected to a host by means of a 320 MB/second PCI Dual Ultra320 SCSI host adapter installed in a host.

Connect the array to one or two hosts with SCSI cables. The TERM LED is a solid green color when a drive is available for configuration. For details on the TERM LED, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array.

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**Note –** If you use multiple host servers, they must use the same operating system. The host server operating system release or version number can differ. For instance, host server A can run Solaris 8 while host server B runs Solaris 9.

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**Caution –** SCSI IDs are set based on the switch setting on the array when it is powered on. If you change the switch setting, the SCSI IDs will change after you power off, and then power on. For more details on switch settings, see "Fixed Drive IDs" on page 2-9.

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**Caution –** The I/O module is hot-serviceable which means that you can connect or disconnect its cables while the array is powered on but the SCSI host buses connected to the array must be inactive.

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## 2.5.1 Single-Bus (SB) Label

The drive-bus configuration determines how drives and drive IDs are assigned to drive channels.

On the rear panel of each unit, the SB icon indicates where to connect the SCSI jumper cable for a single-bus configuration. The SB icons are located next to the SCSI ports on the far right and on the far left.



⟨SB⟩  = Single-bus configuration
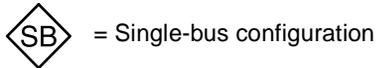
**FIGURE 2-3**  Single-Bus Icon



SB icon                                                                 SB icon
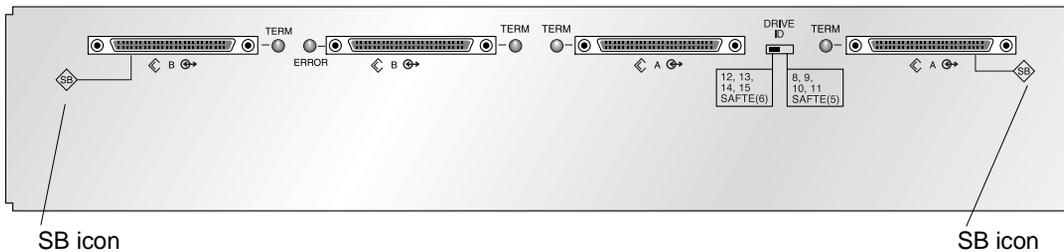
**FIGURE 2-4**  Single-Bus Icon as it appears on the rear of the JBOD

Since no SCSI jumper cable is required for a dual-bus configuration, there is no indicator icon.

**Note –** If a jumper cable is not attached to the JBOD, it is automatically a dual-bus configuration.

The SCSI IDs are also displayed on the lower inside-front edge of the chassis in front of each drive. These IDs are automatically assigned based on the switch setting. For more information on switch settings and drive IDs, see the following section, "Fixed Drive IDs" on page 2-9.

## 2.5.2 Fixed Drive IDs

Drive IDs are not dependent on the configuration type. Single-bus and dual-bus configurations use the same drive IDs. The IDs assigned for disks 1 through 4 depend on the switch settings on the JBOD array. IDs 5 and 6 are reserved for SAF-TE IDs. The fixed drive IDs for a 4-drive configuration are shown in FIGURE 2-5.



ID8        ID9        ID10        ID11

ID12        ID13        ID14        ID15

Right switch set
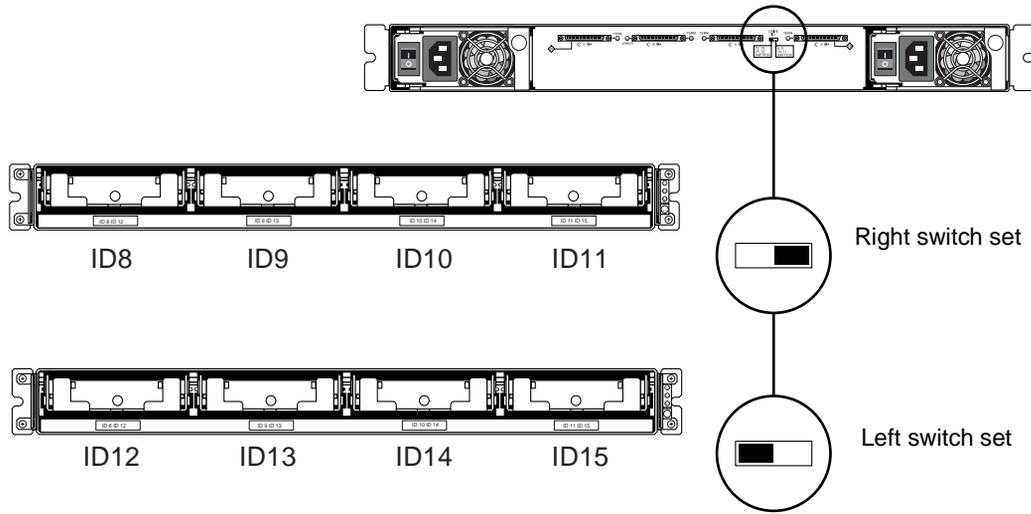
Left switch set

**FIGURE 2-5** Drive IDs for Single-Bus and Dual-Bus Configurations

**Caution –** SCSI IDs are set based on the switch setting on the array when it is powered on. If you change the switch setting, the SCSI IDs will change after you power off, and then power on.

FIGURE 2-5, shows the switches on the Sun StorEdge 3120. The following table shows the drive IDs that correspond with the switches in FIGURE 2-5.

**TABLE 2-3** Switch Settings and Drive IDs for Single-Bus and Dual-Bus Configurations

|  | Drive IDS | SAF-TE ID |
|---|---|---|
| Right Switch | 8, 9, 10, 11 | 5 |
| Left Switch | 12, 13, 14, 15 | 6 |

**Note –** Each device in your SCSI configuration must have a unique ID. For instance, if your HBA device uses ID 6, do not use the left-switch setting, which sets the SAF-TE ID to 6. Use the right-switch setting.

The IDs are also displayed on the lower inside-front edge of the chassis in front of each drive. These IDs are automatically assigned based on the switch setting as shown in FIGURE 2-5.

The following illustration shows the port names. The port names, A and B, are used for easy reference in the cabling procedures. In a single-bus configuration, the B Out and the A In ports are available for host connections. For more information, see "A Single-Bus JBOD with One Host Connection" on page 2-11 or "A Single-Bus, Multi-Initiator JBOD Configuration" on page 2-14. In a dual-bus configuration, see "A Dual-Bus, Single-Initiator JBOD Configuration" on page 2-15 or "A Dual-Bus, Multi-Initiator JBOD Configuration" on page 2-18.
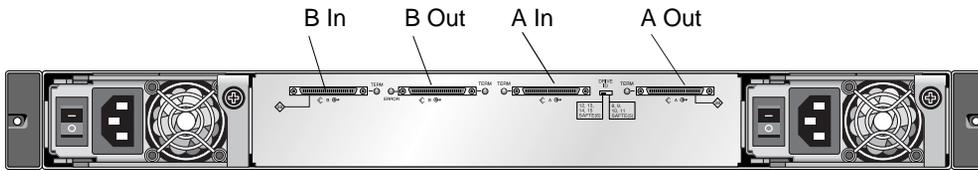


**FIGURE 2-6**   Sun StorEdge 3120 SCSI Array Port Names

## 2.5.3 Connecting Cables for a Single-Bus Configuration

A single-bus I/O configuration assigns all disk drive IDs in a chassis to one channel.

1. **To configure a JBOD unit as a single-bus configuration, connect the SCSI jumper cable between SCSI ports labeled with the SB icon, the B In and A Out ports as shown in** FIGURE 2-6. **Tighten the cable jack screws with six full clockwise turns to ensure proper connection and operation.**
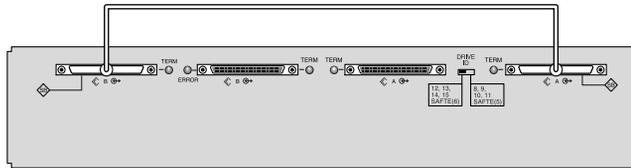


**FIGURE 2-7** Cabling for Single-Bus JBOD

2. **Connect your JBOD array to a host server with SCSI cables as shown in** FIGURE 2-8, FIGURE 2-9**, or** FIGURE 2-10**.**

**Caution –** When you connect the host cable in single-bus configuration, attach the host cable in a way that does not bend or damage the jumper cable.

## 2.5.4 A Single-Bus JBOD with One Host Connection

**Caution –** BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.

**Caution –** When you connect the host cable in single-bus configuration, attach the host cable in a way that does not bend or damage the jumper cable.

To connect a JBOD in a single-bus configuration to a single host, connect the following ports:
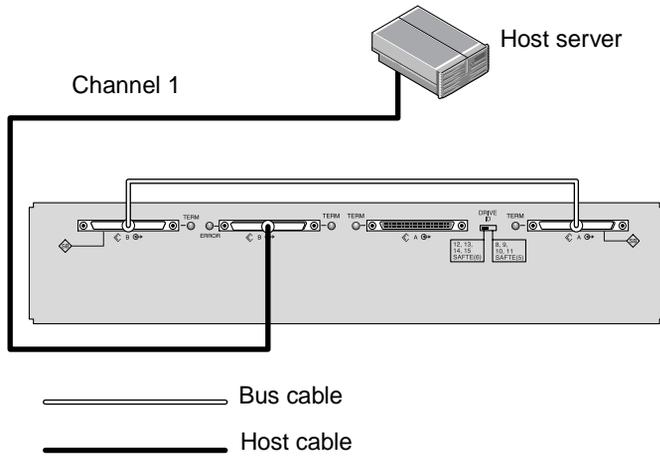
**FIGURE 2-8**   JBOD Directly Connected to a Host (Single-Bus)

In FIGURE 2-8, the host server is connected to port B Out. The following table shows the drive IDs for FIGURE 2-8.

**TABLE 2-4**   Example of Drive IDs for a Single Host, Single-Bus, Left-Switch Setting

| Channel | Switch | ID |
|---------|--------|------------------|
| 1       | Left   | 12, 13, 14, 15   |

To connect multiple JBODs in a single-bus configuration to a single host, connect the following ports:
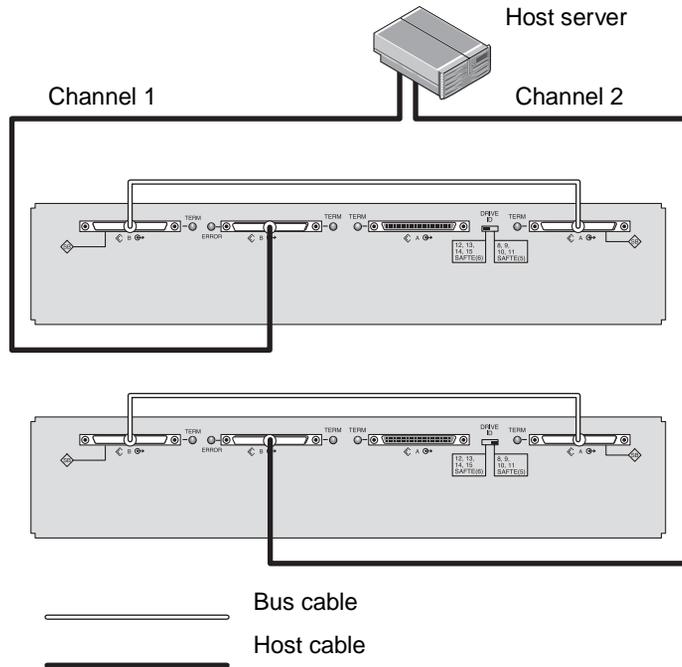


**FIGURE 2-9**   Multiple JBODs Directly Connected to a Host (Single-Bus)

In FIGURE 2-9, the host server is connected to port B Out. The following table shows the drive IDs for FIGURE 2-9.

**TABLE 2-5**   Example of Drive IDs for a Single Host, Single-Bus Switch Settings

| Channel | Switch | ID |
|---------|--------|--------------|
| 1 | Left | 12, 13, 14, 15 |
| 2 | Right | 8, 9, 10, 11 |

## 2.5.5   A Single-Bus, Multi-Initiator JBOD Configuration

A dual-host, single-bus multi-initiator configuration primarily works in conjunction with multi-initiator software such as Sun Cluster or Veritas Cluster. In this configuration, each host server is connected to each host channel. Without the multi-initiator software, the host servers can write to the same drive simultaneously which may overwrite data.

You can configure a non-cluster dual-host, single-bus environment, but you must ensure that the hosts write to different disks on the SCSI bus by setting up a special configuration. For instance, you can specifically configure which host writes to each disk to prevent data overwrites.

**Note –** Each device in your configuration must have a unique ID, including any HBA devices. For instance, if your HBA device uses ID 6, do not use the left-switch setting, which sets the SAF-TE ID to 6. For details on setting the HBA device ID, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array.

**Caution –** BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.

**Caution –** When you connect the host cable in single-bus configuration, attach the host cable in a way that does not bend or damage the jumper cable.

To connect a JBOD in a single-bus configuration to dual hosts, connect the following ports:
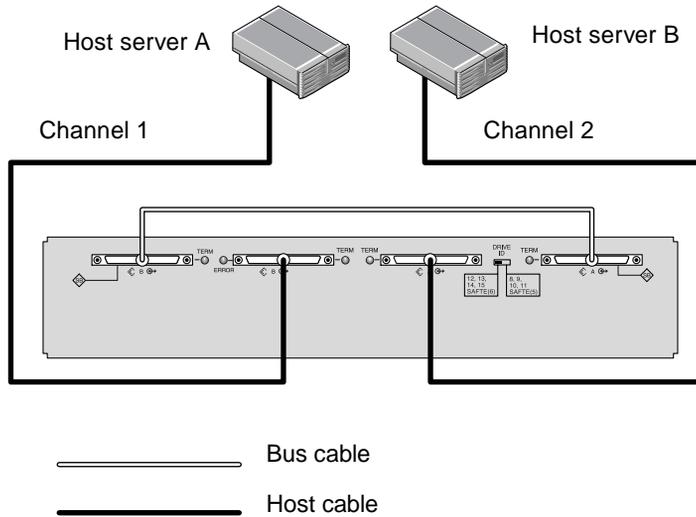
**FIGURE 2-10**  JBOD Directly Connected to Two Hosts (Single-Bus)

In FIGURE 2-10, Host A is connected to port B Out and Host B is connected to port A In. The following table shows the drive IDs for FIGURE 2-10.

**TABLE 2-6**  Example of Drive IDs for Dual Hosts, Single-Bus, Right-Switch Setting

| Server | Channel | Switch | ID |
|--------|---------|--------|-----------------|
| A | 1 | Right | 8, 9, 10, 11 |
| B | 2 | Right | 8, 9, 10, 11 |

## 2.5.6  A Dual-Bus, Single-Initiator JBOD Configuration

There are two important features to note with the dual-bus, single-initiator mode JBOD configuration:

- Connect one A and one B input port on the JBOD with an HBA host connection to the host. The I/O SCSI connectors are auto-terminated.
- In a dual-bus configuration, the SCSI ID numbers automatically change according to the switch settings. For more informations on switch settings, see "Fixed Drive IDs" on page 2-9.

Single-initiator mode is when there is only one host connection on a SCSI channel.

**Caution –** BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.

FIGURE 2-11 shows a dual-bus JBOD with two host connections, one host connection to each channel (single-initiator mode). This is an efficient way to provide mirroring capability for a single host.
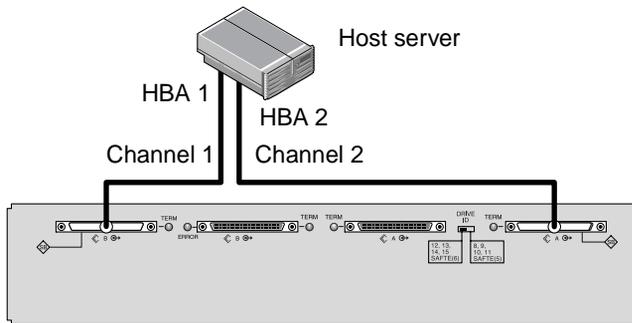
**FIGURE 2-11** JBOD Directly Connected to a Host (Dual-Bus)

In FIGURE 2-11, HBA 1 is connected to port B In and HBA 2 is connected to port A Out. The following table shows the drive IDs for FIGURE 2-11.

**TABLE 2-7** Example of Drive IDs for a Single Host, Dual-Bus, Left-Switch Setting

| HBA | Channel | Switch | ID |
|-----|---------|--------|--------|
| 1 | 1 | Left | 14, 15 |
| 2 | 2 | Left | 12, 13 |

FIGURE 2-12 shows multiple hosts with multiple JBODs in a dual-bus JBOD configuration with two host connections, one host connection to each channel (single-initiator mode). This is an efficient way to provide mirroring capability.
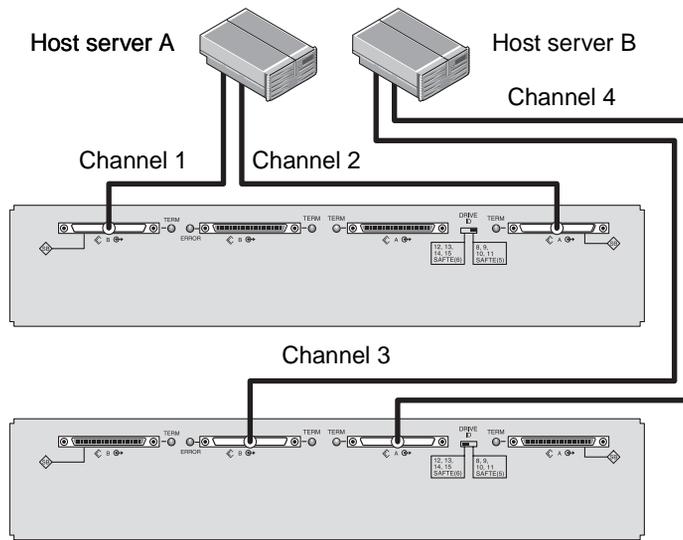
**FIGURE 2-12** JBODs Directly Connected to Hosts (Dual-Bus)

In FIGURE 2-12, Host A is connected to port B In and port A Out, and Host B is connected to port B Out and port A In. The following table shows the drive IDs for FIGURE 2-12.

**TABLE 2-8**  Example of Drive IDs for Multiple Hosts, Dual-Bus Switch Settings

| Server | Switch | Channel | ID |
|--------|--------|---------|--------|
| A | Right | 1 | 10, 11 |
| A | Right | 2 | 8, 9 |
| B | Left | 3 | 14, 15 |
| B | Left | 4 | 12, 13 |

To connect a dual-bus JBOD, perform the following steps.

1. **Connect each JBOD port to a host as shown in** FIGURE 2-12**.**

2. **Make inactive the host bus connections of any cable which will be installed or removed.**

3. **Use your host system disk management utilities to prepare the disks in the Sun StorEdge 3120 SCSI array for use.**

   Refer to your host system documentation for more information about disk management utilities available to you.

## 2.5.7 A Dual-Bus, Multi-Initiator JBOD Configuration

A dual-host, dual-bus quad-initiator configuration primarily works in conjunction with multi-initiator software such as Sun Cluster or Veritas Cluster. In this configuration, each host server is connected to each host channel. Without the multi-initiator software, the host servers can write to the same drive simultaneously which may overwrite data.

You can configure a non-cluster dual-host, dual-bus quad-initiator environment, but you must ensure that the hosts write to different disks on the SCSI bus by setting up a special configuration. For instance, you can specifically configure which host writes to each disk to prevent data overwrites.

⚠ **Caution –** BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.

To connect a JBOD in a dual-bus configuration to two hosts, connect the following ports:

Host server A

Host server B

Channel 1

Channel 3

Channel 2

Channel 4

Host cable
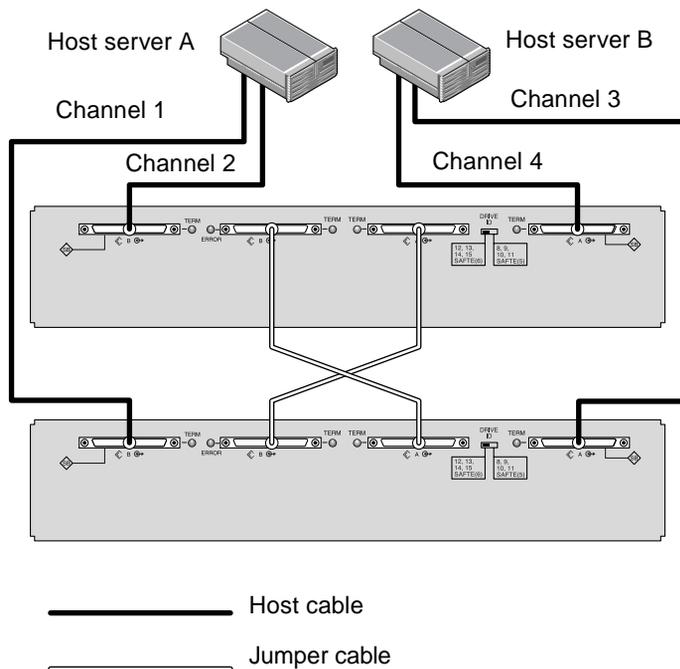
Jumper cable

**FIGURE 2-13** JBODs Directly Connected to Dual Hosts (Dual-Bus)

In FIGURE 2-13, Host A is connected to port B In on JBOD1 and to port B In on JBOD2. Host B is connected to port A Out on JBOD1 and to port A Out on JBOD2. A jumper cable connects the port B Out drive on JBOD1 to the port A In drive on JBOD2, which enables Host A to access the channels on Port A of JBOD2. A jumper cable connects the port A In drive on JBOD1 to the port B Out drive on JBOD2, which enables Host B to access the channels on Port B of JBOD2. This configuration is common for failover protection in a network cluster environment.

The following table shows the drive IDs for FIGURE 2-13.

**TABLE 2-9**   Example of Drive IDs for Multiple Hosts in a Multi-Initiator Configuration with a Right-Switch Setting

| Server | Switch | Channel | ID |
|--------|--------|---------|------------------|
| A | Right | 1 | 8, 9, 10, 11 |
| A | Right | 2 | 8, 9, 10, 11 |
| B | Right | 3 | 8, 9, 10, 11 |
| B | Right | 4 | 8, 9, 10, 11 |