

PSX-1000 Release Notes

This document summarizes the supported features and known issues for the **PSX-1000 Release 2.0.1** product. If the information in these release notes is different from your product documentation, use the information provided in these release notes. These release notes include the following sections:

- Release Summary
- Driver Configuration Settings
- What's New in this Release?
- Fixes
- CLI Updates
- Product Limitations / Known Issues
- Supported Arrays/Rules
- PSX-1000 Min/Max Values
- Service Contact Information

This document is intended for customers who have purchased the PSX-1000, and for Customer Service personnel responsible for installing and maintaining systems that include the PSX-1000.

Date Posted: 11/18/03

Date Updated: 11/18/03

Release Number: R02.00.01.145

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1. Release Summary

This release supports the following major features:

- Direct attached disk volumes
- Front-end and back-end switches
- Volume management (concatenation, partitioning, and striping)
- Volume extension
- Volume snapshots (copy-on-write)
- Multi-path and failover functionality
- Command Line Interface (CLI)
- Secure Virtual Storage Domains (SVSDs)
- Simple Network Management Protocol (SNMP)

For more information on these product features, see the documentation accompanying your PSX-1000, including: the *Installation and Hardware Guide*, *Command Reference Guide*, and the *Common Task Guide*.

If you are a customer who needs to upgrade to this software release, or if you need technical assistance, contact Sun Technical Support. (See “9. Service Contact Information” on page 23.)

2. Driver Configuration Settings

This section provides information on configuration settings that must be modified in order for the PSX-1000 to operate correctly with the Solaris operating system.

Software patches listed in this section can be downloaded from the Sun web site: <http://sunsolve.central.sun.com>.

2.1 To Enable Multipath Drivers

To enable multipath (MPXIO) SAN 4.1 (or higher) drivers on the Solaris operating system, you must modify the `/kernel/drv/scsi_vhci.conf` file. This will cause the driver to recognize volumes from the PSX-1000 as devices that need to be configured for multipathing.

NOTE: *Veritas DMP and Hitachi HDLM multipathing software are not currently supported with the PSX-1000.*

Add the following lines to the `/kernel/drv/scsi_vhci.conf` file for Solaris version 8 U4 and later:

```
device-type-scsi-options-list =
    "SUN    PSX1000    ", "symmetric-option";
symmetric-option = 0x1000000;
```

The values for the Vendor ID and Product ID on volumes should be:

```
Vendor ID = "SUN    " (String "SUN" followed by 5 spaces)
Product ID = "PSX1000    " (String "PSX1000" followed by 9 spaces)
```

2.2 Driver Settings

To set the Q-depth, timeouts, and retry counts, you must modify the following files for all Solaris versions:

NOTE: These changes do not apply to patch releases prior to those noted. The following modifications apply to the SAN 4.1 driver versions 6.1.2 through 6.2.6.

2.2.1 For Solaris 9 (with patch 112834-02 and 113277-08)

Add the following lines to the **/kernel/drv/ssd.conf** file:

```
ssd-config-list=
    "SUN   PSX1000      ", "ssd-pirus-data";
    ssd-pirus-data= 1,0x3B007,64,60,60,0,0,0,0,0,0,0,0,0,36,60,0,16,1,1;
```

NOTE: To determine if your system has the correct patch, type the **showrev -p | grep <patch number>** command.

2.2.2 For Solaris 8 (with patch 108528-21 and 108974-30)

Add the following lines to the **/kernel/drv/ssd.conf** file:

```
ssd-config-list=
    "SUN   PSX1000      ", "ssd-pirus-data";
    ssd-pirus-data= 1,0xFF,64,60,60,36,60,16,1,1;
```

NOTE: To determine if your system has the correct patch, type the **showrev -p | grep <patch number>** command.

3. What's New in this Release?

The following features are new in this release. Table 1 briefly describes each feature and lists the CLI commands (if necessary) to configure each feature.

Table 1 New Features in This Release

Feature	Description	CLI Commands
Automatic Fail Back of LUNs	This feature allows you to enable or disable the automatic failback of LUNs when failed storage processors (SPs) come back online. (For more information, see "auto-failback" on page 6)	auto-failback
Manual Fail Back of LUNs	This feature allows you to manually fail back (or redistribute) LUNs after SPs come back online. (For more information, see "redistribute now" on page 7)	redistribute now
Display the Current State for Automatic Fail Back	This feature allows you to view the current state (ENABLED or DISABLED) for automatic fail back. (For more information, see "show auto-failback" on page 7)	show auto-failback

4. Fixes

Table 2 describes the fixes in this release for reported issues.

Table 2 List of Fixes

Sun Issue #	Description of Fix
4952395	<p>Upgrading the PSX-1000 to the T3 Firmware version 3.1 causes problems with PSX-1000 operation.</p> <p>This issue was resolved by updating the firmware to handle the new T3 inquiry data format.</p>
4860448	<p>Rebooting a chassis that is passing heavy I/O causes the Management Interface Card (MIC) to halt processor 3/1 or 4/1.</p> <p>This issue was resolved by fixing synchronous event issues in the Fibre Channel (FC) driver stack.</p>
4807833	<p>T3 LUNs do not fail back to their storage processors (SPs) when a failed Storage Resource Card (SRC) path is restored.</p> <p>This issue was resolved by adding new PSX-1000 Command Line Interface (CLI) commands to support fail back of LUNs to original SPs.</p> <p>NOTE: See “5. CLI Updates” for information on new CLI commands.</p>
4850250	<p>During Switch Fabric Card (SFC) or Storage Resource Card (SRC) failovers, the PSX-1000 experiences LUN degradation or loss due to bus-level transaction (ABTS) timeouts. This issue also results in FC port login (PLOGI) transport errors.</p> <p>This issue was resolved by enforcing a restriction on the QLogic driver software to stop exhausting resources in the firmware.</p>
4852623	<p>When rebooting the PSX-1000 during a software upgrade, the chassis halts due to a Fibre Channel (FC) Extended Link Services (ELS) issue, thereby delaying the reboot.</p> <p>This issue was resolved by amending the software code to verify the data structure (or bus) prior to being used.</p>
4853760	<p>T3 LUNs do not failover or pause for up to three (3) minutes.</p> <p>This issue was resolved by modifying PSX-1000 internal retries to speed LUN failover times.</p>
4761229	<p>The PSX-1000 does not use the LUN primary controller when accessing T3/6320/6120/6020 LUNs.</p> <p>This issue was resolved by modifying the software code to access T3 LUNs through the LUN's primary controller, if available.</p>
4820632/ 4821697	<p>When creating a volume and specifying the maximum available disk space (-force option used), only the maximum contiguous available disk space is reserved for the volume, not the entire available disk space on the T3.</p> <p>This issue was resolved by removing the partition limit check for concatenated volumes.</p>

5. CLI Updates

There are three updated CLI commands in this release.

auto-failback

This command is used to enable or disable the automatic fail back of LUNs when failed storage processors (SPs) come back online. You can use the optional **-delay** interval to enter a time delay (in seconds) for fail back to occur. The minimum value for the delay interval is 60 seconds; the maximum value is 3600 seconds (1 hour). Use the **no** form of this command to disable automatic fail back of LUNs.

Syntax:

auto-failback [-delay <time>]

no auto-failback

Parameters:

-delay – Sets the delay interval for fail back to occur

time – Represents the time (in seconds) for the delay interval

Example:

To enable automatic fail back of LUNs, use the following command:

auto-failback

For example:

```
PSX-1000(config)# auto-failback
```

```
Auto-Failback is -- ENABLED
```

```
PSX-1000(config)#
```

To disable the automatic fail back of LUNs, use the following command:

no auto-failback

For example:

```
PSX-1000(config)# no auto-failback
```

```
Auto-Failback is -- DISABLED
```

```
PSX-1000(config)#
```

To specify a time interval for automatic fail back of LUNs to occur, use the following command:

auto-failback -delay <time>

For example:

```
PSX-1000(config)# auto-failback -delay 90
```

```
Auto-Failback delay interval is now 90 seconds
```

```
PSX-1000(config)#
```

redistribute now

This command is used to manually fail back (or redistribute) LUNs after storage processors (SPs) come back online. Issuing this command causes ALUs to rebalance among SPs. If the device has a primary access path, it will be used.

Syntax:

redistribute now

Example:

To manually fail back LUNs after SPs come back online, use the following command:

redistribute now

For example:

```
PSX-1000(config)# redistribute now
```

```
Are you sure you would like to redistribute LUNs now [N]? y
```

```
LUNs are being redistributed.
```

```
PSX-1000(config)#
```

show auto-failback

This command is used to show the current state (ENABLED or DISABLED) for automatic fail back and the delay interval for fail back to occur.

Syntax:

show auto-failback

Example:

To show the current state for automatic fail back, including the delay interval, use the following command:

show auto-failback

For example:

```
PSX-1000(config)# show auto-failback
```

```
Auto-Failback is ENABLED  
Delay interval is 90 seconds.
```

```
PSX-1000(config)#
```

6. Product Limitations / Known Issues

6.1 Product Limitations in This Release

- Installing four SRCs in one PSX-1000 chassis is not supported in this release.
- A configuration that allows a single PSX-1000 storage processor to access multiple controllers/initiators on the same array through a non-zoned switch is not supported in this release. Switches used with the PSX-1000 must be zoned. For more information on zoning switches, see “6.2.5 Fibre Channel (FC) Switch Zoning” on page 13.

6.2 Known Issues in This Release

6.2.1 Common Task Guide

- Chapter 3, page 9, “Selecting Devices for the Volume,” contains text that provides incorrect information. The note at the top of the page should read as follows:

NOTE: *Volumes can be created using any available attached storage device. Restricted access to a volume can be accomplished by assigning a volume to a specific SVSD. (If you do not assign the volume to a specific SVSD, it is assigned to SVSD "DEFAULT".) SVSDs control access to virtual volumes by ensuring the FC server instance (represented as <server name>/slot/port>) and the volume are allocated to the same SVSD. (FC server instances are assigned to an SVSD by adding the associated port to the SVSD.)*

6.2.2 Command Reference Guide

- The PSX-1000 hardware configuration for this release only contains the SIO 2GFC (SIO-8) 8-port card; however, there are references to both the SIO 4-port card and SIO 2GFC in the *Command Reference Guide*. The references for the SIO 4-port card are incorrect and will be removed in a future release of the documentation.

Workaround: Use only the information and instructions for the SIO 2GFC (8-port) card.

6.2.3 Volumes and Volume Snapshots

- Volumes may sporadically fail to come back online during an SRC reload (rebalancing) on the PSX-1000. Disks may be displayed as offline and blocked. This causes an application fault, as the LUNs are no longer accessible and the host fails the paths to the LUNs.

Workaround: You must reboot the PSX-1000 to correct this condition.

- The “show volume” command may display the incorrect snapshot pool size.
- The PSX-1000 may experience incompatibility problems with Windows NT and HP-UX device drivers. The system may require a longer boot time, and all LUNs may not be seen by the host system.
- Unmounting an uninitialized volume on the T3/T3B causes the PSX-1000 to fail the path to that volume. This condition causes this PSX-1000 to display an incorrect disk status (blocked or uninitialized).

Workaround: Reboot the T3/T3B to display the correct disk status on the PSX-1000.

- If you disconnect a cable from the PSX-1000, and then create a snapshot immediately afterwards, the client I/O activity fails. Eventually, the MIC will lose communication with the SFC (both primary and secondary) and the SRC. You may see the following watchdog message:

```
CPCM WDOG: watchdog on card:6  proc:0 FAILED!!
CPCM WDOG: processor is hung!!!
```

Workaround: No workaround is required. The system automatically recovers from this condition.

- T3 partner pairs may be displayed as separate disk trays when issuing the **show disks** command. This occurs when a T3/T3B is booted with MP-support set to something other than MPXIO.

Workaround: You must reboot the PSX-1000 to correct this condition.

- If you unmount a T3 volume (from the T3 console using the **vol unmount** command) that is currently in use by the PSX-1000, the I/O activity will fail. However, when you issue the **show volumes** command on the PSX-1000 console, the output displays all volumes and snapshots as "Intact" instead of displaying the state as "Broken."

Workaround: Remove the T3 volume from the PSX-1000 configuration before unmounting a T3 volume at the T3 level (from the T3 console).

- If you are creating a volume by forcing the system to use devices that are part of a partner pair or redundant path, the **show volumes** command displays the inactive path as “blocked.”

Workaround: You can ignore the “blocked” state because the system selects the first available path. After you map the volume, the output state displays as “mapped.”

NOTE: You cannot use the *-force* option to specify which T3 controller path to use. You can use the *-force* option when you want to force the system to include a specific device (or devices). For example, if you are creating a striped volume that spans 3 devices, you must force the system to include all 3 devices. Otherwise, the system will create the volume using the fewest possible devices to reach the specified volume size.

- If you create a volume, delete the volume, and then recreate the volume on the same disk as the original but with a different size, the original label may not be overwritten and the Solaris host creates the new volume with the same size as the old volume.

Workaround: Perform the following procedures on the Solaris host to re-label the device so that the correct volume size will be recognized. Repeat these procedures for other devices. For example:

```
# format
```

```
Searching for disks...done
```

```
AVAILABLE DISK SELECTIONS:
```

```
0. c0t0d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>
   /sbus@60,0/QLGC,isp@1,10000/sd@0,0
1. c0t3d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>
   /sbus@60,0/QLGC,isp@1,10000/sd@3,0
2. c1t8d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@8,0
3. c1t9d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@9,0
4. c1t10d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@a,0
5. c1t11d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@b,0
6. c1t12d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@c,0
7. c1t13d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@d,0
8. c1t14d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /sbus@64,0/QLGC,isp@0,10000/sd@e,0
9. c10t600015D000007E0000000000C00000221d0 <SUN-PSX1000-001 cyl 7678
alt 2 hd 32 sec 512>
   /scsi_vhci/ssd@g600015d000007e0000000000c00000221
10. c10t600015D000007E00000000000000221d0 <SUN-PSX1000-001 cyl 7678
alt 2 hd 32 sec 512>
   /scsi_vhci/ssd@g600015d000007e000000000000000221
```

Specify disk (enter its number): 9

selecting c10t600015D000007E000000000C00000221d0

[disk formatted]

FORMAT MENU:

disk	- select a disk
type	- select (define) a disk type
partition	- select (define) a partition table
current	- describe the current disk
format	- format and analyze the disk
repair	- repair a defective sector
label	- write label to the disk
analyze	- surface analysis
defect	- defect list management
backup	- search for backup labels
verify	- read and display labels
save	- save new disk/partition definitions
inquiry	- show vendor, product and revision
volname	- set 8-character volume name
!<cmd>	- execute <cmd>, then return
quit	

format> type

AVAILABLE DRIVE TYPES:

0. Auto configure
1. Quantum ProDrive 80S
2. Quantum ProDrive 105S
3. CDC Wren IV 94171-344
4. SUN0104
5. SUN0207
6. SUN0327
7. SUN0340
8. SUN0424
9. SUN0535
10. SUN0669
11. SUN1.0G
12. SUN1.05
13. SUN1.3G
14. SUN2.1G
15. SUN2.9G
16. Zip 100
17. Zip 250
18. SUN18G
19. SUN9.0G
20. SUN-PSX1000-001
21. SUN-PSX1000-001
22. SUN-PSX1000-001
23. SUN-PSX1000-001
24. other

```
Specify disk type (enter its number) [20]: 0
c10t600015D000007E000000000C00000221d0: configured with capacity of
59.98GB <SUN-PSX1000-001 cyl 7678 alt 2 hd 32 sec 512> selecting
c10t600015D000007E000000000C00000221d0
[disk formatted]
format> label
Ready to label disk, continue? y

format> verify

Primary label contents:

Volume name = <          >
ascii name  = <SUN-PSX1000-001 cyl 7678 alt 2 hd 32 sec 512>
pcyl        = 7680
ncyl        = 7678
acyl        = 2
nhead       = 32
nsect       = 512
Part      Tag   Flag   Cylinders      Size      Blocks
  0      root   wm      0 - 15      128.00MB   (16/0/0)  262144
  1      swap   wu      16 - 31      128.00MB   (16/0/0)  262144
  2    backup   wu      0 - 7677      59.98GB    (7678/0/0) 125796352
  3 unassigned  wm      0              0          (0/0/0)    0
  4 unassigned  wm      0              0          (0/0/0)    0
  5 unassigned  wm      0              0          (0/0/0)    0
  6      usr    wm     32 - 7677      59.73GB    (7646/0/0) 125272064
  7 unassigned  wm      0              0          (0/0/0)    0

format> quit
```

- The PSX-1000 administrator is responsible for ensuring that the data structures for all applications running on a disk are in a logically consistent state before taking a snapshot. This means the data blocks are written to the disk and there are no data blocks in host memory (cached). To do this for a standard UFS on Solaris, you must unmount the file system before taking the snapshot. To do this for a standard database, you must bring the system to an inactive or quiesced state before taking the snapshot.

6.2.4 Multi-Path / Failover Functionality

- If the SRC fails and you type the **show storage processor** and **show storage port** commands, the output incorrectly displays the storage processors and ports in an “Available” state.
- If you issue the **show chassis** command while reloading a card, the command output may incorrectly display the card state as “Normal.”

Workaround: Verify the card is completely restarted by monitoring the event log for the “restart complete” message.

6.2.5 Fibre Channel (FC) Switch Zoning

- In a non-zoned switch environment, with multiple connections from an FC switch to the PSX-1000, a port on the PSX-1000 will detect all other PSX-1000 ports connected to the same switch fabric. Therefore, FC switches must be zoned to ensure that one PSX-1000 port is not visible to another port and that each front-end/back-end port is presented to only one PSX-1000 port. By zoning the switch, (either by port or WWN), the PSX-1000 will correctly display attached FC servers and back-end storage. Figure 2 and Figure 3 provide simple examples of switch zoning when using the PSX-1000.

For example, Figure 2 provides an example configuration containing two front-end switches connected between the PSX-1000 and a Sun server, and a single back-end switch connected between the PSX-1000 and a T3 partner pair. Each switch contains 2 zones. Each zone on the front-end switches contains one port that is connected to a Sun Server HBA port and one port that is connected to a PSX-1000 port. Each zone on the back-end switch contains one port that is connected to a PSX-1000 port and one port that is connected to a T3 partner pair.

Figure 3 provides an example configuration containing two front-end switches connected between the PSX-1000 and a Sun server, and a single back-end switch connected between the PSX-1000 and two T3 partner pairs. Each switch contains 2 zones. Each zone on the front-end switches contains one port that is connected to a Sun server HBA port and one port that is connected to a PSX-1000 port. Each zone on the back-end switch contains one port that is connected to a PSX-1000 port and two ports that are connected to the T3 partner pairs. Through the switch, one port on the PSX-1000 is connected to the master controller port of each T3 partner pair, and the second port is connected to the alternate master controller port of each T3 partner pair.

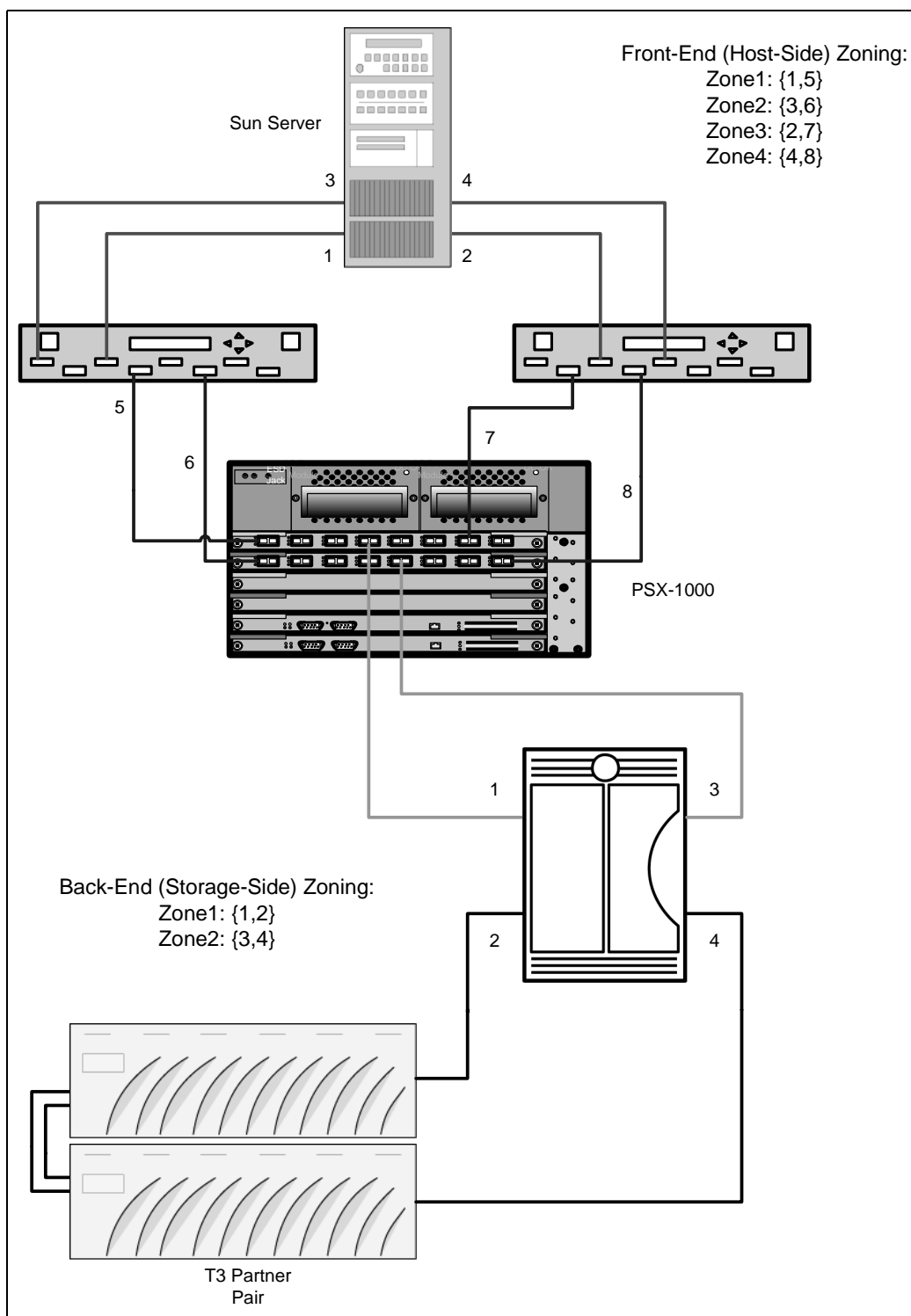


Figure 2 Fibre Channel (FC) Zoning Example 1

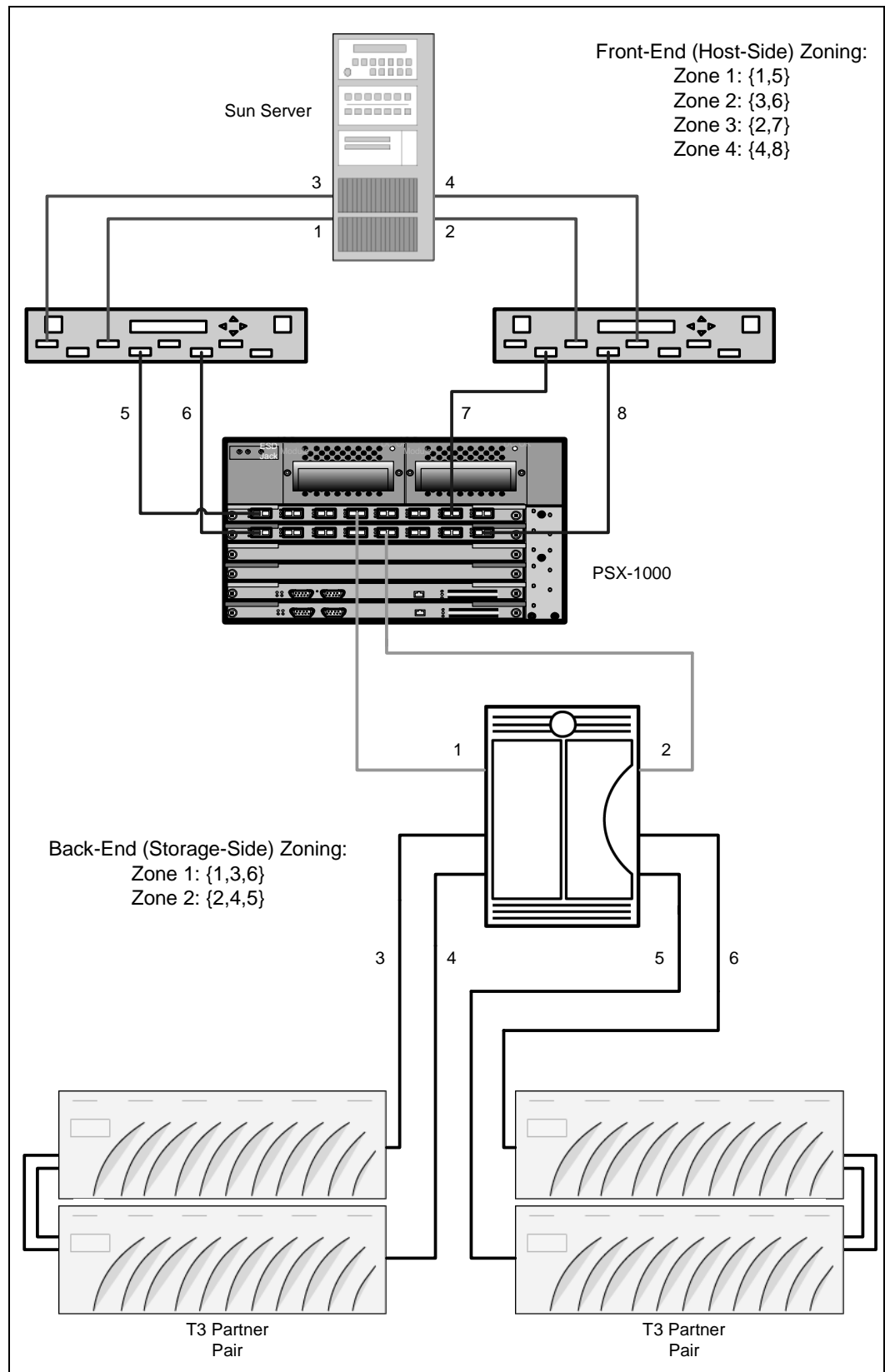


Figure 3 Fibre Channel (FC) Zoning Example 2

Switch Zoning Rules

The following rules are provided to assist you when setting up FC switches in your PSX-1000 configuration:

- Front-end switches must be zoned so that each zone contains an HBA port and a PSX-1000 port
- Back-end switches must be zoned so that master controllers are separated into individual zones along with their respective PSX-1000 port
- Unsupported storage on back-end switches must be in a different zone than both the PSX-1000 and the storage connected to the PSX-1000
- No inter-switch links are allowed on back-end switches

6.2.6 CLI Commands

- The “Protocol Operational” field in the **show interfaces fibrechannel** command output always displays “Fabric, SCSI,” even if the device is in loop mode. For example:

```
Protocol Operational: Fabric, SCSI
```

6.2.7 General Events and Messages

- You may see an “Need LUN ownership” message in the T3 syslog. For example:

```
Oct 06 14:00:00 [172.30.6.252.2.2] FCC0[2]: N: u2ctr (ITL 1 7F 0 TT 20 TID
9DB4 OP 25) Need LUN ownership
```

You can ignore this message. It is the result of the system sending a command to a controller that does not own the LUN (the LUN is currently owned by another controller).

- If the chassis is in a redundant configuration and you remove (pull out) the secondary (backup) SFC card, you may see an erroneous message that indicates a failover occurred. For example:

```
1/ 8/2002 08:17:47 LOG_CRIT      (SFC: 0/0) SFC FAILOVER to card:5
occurred - card is new SFC primary
```

You can ignore the message. The system did not generate a failover after the card was removed from the chassis.

- You may see an erroneous message when making changes to a snapshot. For example:

```
Lun (WWN=600015d0-00006900-00000001-000007f8) not found to quiesce or
unquiesce
```

You can ignore this message and continue configuring the snapshot.

- A pcrash.txt file may be generated on the secondary MIC PC card when you perform a rolling software upgrade.

You can ignore this pcrash.txt file, as this does not affect the normal operation of the PSX-1000.

- A halt may occur while the PSX-1000 is performing a system reboot. This causes the loss of both console ports and connectivity to the 10/100 port on the master MIC.

Workaround: You must disconnect and reconnect the power to the PSX-1000 to gain access to the system.

- Host I/O and/or the MIC may halt while performing an SFC (Switch Fabric Card) failover. This causes the application that is running I/O to fail and the volumes to become inaccessible.

Workaround: You must reboot the PSX-1000 to correct this condition.

7. Supported Arrays/Rules

This section provides a list of disk arrays that operate with the PSX-1000. Specific configuration requirements are provided to assist you when setting up the PSX-1000 in your configuration.

NOTE: *If you need Sun's StorEdge Traffic Manager (STMS) multipathing software for your supported array, you can download it from the Sun web site:*
<http://sunsolve.central.sun.com>.

7.1 Supported Arrays

The following disk arrays have been tested and are confirmed by Sun to operate with the PSX-1000:

7.1.1 Sun StorEdge 9910 and 9960

- On the StorEdge 9900 series storage arrays, host modes are defined depending on the operating system that will be accessing the LUNs. The host mode for ports connected to the PSX-1000 must be set to the "Solaris" host mode (mode 09). On the 9910 and 9960 arrays, the host mode is defined per port.

To change the host mode, the path from the host needs to be "offline" (no I/O activity), so you may need to shutdown the host before you change host mode. Host modes cause host reserves to be handled differently, to implement special host functions, or to support host commands differently. Because there is no way for the system to know what operations the host is performing when changing the host mode, you must perform the change host mode when the host is not accessing the LUNs.

For more information, see the SunSolve document “Sun StorEdge[™] 99x0:Info Doc: Host Modes” (Document ID# ID52101) posted at:
http://sunsolve.central.sun.com/cgi/retrieve.pl?doc=intinfodoc%2F52101&zone_32=mode

- The “fabric interface” mode is not supported when the array is directly attached to the PSX-1000. Setting the loop mode to fabric interface could cause the PSX-1000 to fail. You must set the loop mode to “private/public.”
- When a back-end switch is present, you must set the loop mode to “fabric interface” or “point-to-point.”
- Hitachi HDLM multipathing software is not supported. You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000.
- Sun StorEdge 99XO LongWave optical interface cards are not supported
- You must disable Oracle’s Hardware Assisted Resilient Data (HARD) data integrity functionality when using the PSX-1000

7.1.2 Sun StorEdge 9970 and 9980

- On the StorEdge 9900 series storage arrays, host modes are defined depending on the operating system that will be accessing the LUNs. The host mode for ports connected to the PSX-1000 must be set to the “Solaris” host mode (mode 09). For the 9970 and 9980s, the host mode is defined for each host group on the port.

To change the host mode, the path from the host needs to be “offline” (no I/O activity), so you may need to shutdown the host before you change host mode. Host modes cause host reserves to be handled differently, to implement special host functions, or to support host commands differently. Because there is no way for the system to know what operations the host is performing when changing the host mode, you must perform the change host mode when the host is not accessing the LUNs.

For more information, see the SunSolve document “Sun StorEdge[™] 99x0:Info Doc: Host Modes” (Document ID# ID52101) posted at:
http://sunsolve.central.sun.com/cgi/retrieve.pl?doc=intinfodoc%2F52101&zone_32=mode

- The “fabric interface” mode is not supported when the array is directly attached to the PSX-1000. Setting the loop mode to fabric interface could cause the PSX-1000 to fail. You must set the loop mode to “private/public.”
- When a back-end switch is present, you must set the loop mode to “fabric interface” or “point-to-point.”

- Hitachi HDLM multipathing software is not supported. You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000.
- Sun StorEdge 99XO LongWave optical interface cards are not supported
- You must disable Oracle's Hardware Assisted Resilient Data (HARD) data integrity functionality when using the PSX-1000

7.1.3 Sun StorEdge 6120

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000. You can use the "sys list" command to verify your settings.
- Volume slicing is on by default and cannot be disabled. Therefore, it is required that you create only one slice per volume. (Up to 2 volumes per tray are supported.)

NOTE: For more information on slices/volumes (volumes/pools) on the 6120, see the documentation accompanying your product.

7.1.4 Sun StorEdge 6320

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000. You can use the "sys list" command to verify your settings.
- Volume slicing is on by default and cannot be disabled. Therefore, it is required that you create only one slice per volume. (Up to 2 volumes per tray are supported.)

NOTE: For more information on slices/volumes (volumes/pools) on the 6320, see the documentation accompanying your product.

7.1.5 Sun StorEdge 3510

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000.

7.1.6 Sun StorEdge 3910/3910SL

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000. To verify your settings, see the "Service Process" procedures in your StorEdge 3910 documentation.

- You must ensure that the al_pa targetID is NOT set to 3. TargetID 3 is reserved for the PSX-1000. (This requirement only applies to the “auto” and “loop” FC topology modes.)
- Volume slicing is off by default. If you want to enable volume slicing, it is required that you create one slice per volume.

7.1.7 Sun StorEdge 3960/3960SL

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000. To verify your settings, see the “Service Process” procedures in your StorEdge 3960 documentation.
- You must ensure that the al_pa targetID is NOT set to 3. TargetID 3 is reserved for the PSX-1000. (This requirement only applies to the “auto” and “loop” FC topology modes.)
- Volume slicing is off by default. If you want to enable volume slicing, it is required that you create one slice per volume.
- Since the 3960 array provides volume virtualization, it is required that you create one volume per brick/enclosure to present to the PSX-1000

7.1.8 Sun StorEdge T3A

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000. You can use the “sys list” command to verify your settings.
- You must ensure that the al_pa targetID is NOT set to 3. TargetID 3 is reserved for the PSX-1000.

7.1.9 Sun StorEdge T3B

- You must use StorEdge Traffic Manager software to enable multipath (MPXIO) support. Traffic manager must have a minimum of 2 channel paths to the SAN/PSX-1000. You can use the “sys list” command to verify your settings.
- You must ensure that the al_pa targetID is NOT set to 3. TargetID 3 is reserved for the PSX-1000. (This requirement only applies to the “auto” and “loop” FC topology modes.)
- Volume slicing is off by default. If you want to enable volume slicing, it is required that you create one slice per volume.

8. PSX-1000 Min/Max Values

Table 4 lists the minimum and maximum values associated with a variety of PSX-1000 features.

Table 4 PSX-1000 Minimums & Maximums

Feature	Value	Minimum	Maximum
CLI	Aliases <i>An alias for a CLI command cannot exceed 1024 bytes of total buffer space.</i>	0	32
Events	History Buffer <i>By default, the buffer holds 500 lines.</i>	100	1000
	Logging Alarm (# of alarms)	1	6
	Logging Facility (# of facilities)	0	7
	Remote Syslog Hosts	0	2
Passwords	Encrypted (# of characters)	16	16
	Password (# of characters)	1	16
Special Files on the PC Card	Crontab Entry File (pcron.txt) Number of entries <i>You can schedule up to 50 jobs (exec scripts) in the "pcron.txt" file.</i>	1	50
SVSDs	Description Text String (# of characters) ¹	0	64
	Name (# of characters)	1	16
	Storage Ports per SVSD	0	All
	User created SVSDs allowed on the PSX-1000 <i>By default, there are also two pre-configured SVSDs on the PSX-1000: DEFAULT and MANAGEMENT.</i>	0	12
System (Host) Name	Name (# of characters) <i>The host name is truncated when displayed in the CLI prompt.</i>	1	255
Telnet	Telnet Sessions (# allowed)	1	16
Users	Description Text String (# of characters) ¹	0	255
	Name (# of characters)	1	16

Table 4 PSX-1000 Minimums & Maximums

Feature	Value	Minimum	Maximum
Volumes	# of volumes per chassis ^{2/5}	1	256
	# of LUNs mapped to an FC server ³	1	256
	# of FC targets (storage devices)	1	256
	# of LUNs per FC target (storage device)	1	256
	# FC servers (initiators) ⁴	0	128
	# of snapshots per volume ⁵	0	8
	Members (# in a concatenated volume)	1	16
	Members (# in a striped volume)	2	16
	Size of volume ⁶	10 MB	2 TB -1B
	Chunk size of a volume ⁷	128 K	16 MB
	Partitions (# of partitions per ALU)	1	32
	FC server name (# of characters)	1	15
	FC server description (# of characters) ¹	0	64
	FC target name (# of characters)	1	24
	FC target description (# of characters) ¹	0	64
	Volume name (# of characters)	1	16
	Volume description (# of characters) ¹	0	64

Volume Min/Max Limit Notes:

¹ The description is not a required field.

² You can have up to 256 volumes where the total number of devices used in the volumes cannot exceed 768.

³ The available numbers for LUNs are 0-255, but you can create up to 256 LUNs.

⁴ The maximum number of FC servers is 128, but tested configurations included only a maximum of 27 FC servers.

⁵ A snapshot is a volume. You can create up to 8 snapshots per volume. (The total number of volumes (256) includes both parent volumes and snapshot volumes.)

⁶ The maximum size is 2 TB -1 Byte.

⁷ The valid chunk sizes are 128K, 512K, 1 MB, 4 MB, 8 MB, and 16 MB.

9. Service Contact Information

If you need help installing or using this product, call 1-800-USA-4SUN, or go to:

<http://www.sun.com/service/contacting/index.html>

