

# StorageWorks by Compaq

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## Addendum - Heterogeneous Open SAN Design Reference Guide - Director Fabric

Part Number: AA-RQ6NC-TE

### **Third Edition (April 2002)**

This document describes the configuration rules for 1 Gbps StorageWorks SAN Director 64 and McDATA ED-5000 Director switches, and the ES-3016 and ES-3032 edge switches, in a heterogeneous open SAN. This document extends the second edition by describing support for additional software products and operating systems. This document supplements the Heterogeneous Open SAN Design Reference Guide, 3rd edition (AA-RMPND-TE).

Obtain the latest version of the *Heterogeneous Open SAN Design Reference Guide* through this link:  
<http://www.compaq.com/products/storageworks/san/documentation.html>

For the latest version of this Addendum and other heterogeneous open SAN documentation, visit the Compaq storage website at:

<http://www.compaq.com/san>

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## Intended Audience

This document is intended for customers who have purchased the Compaq StorageWorks SAN Director 64 or the McDATA ED-5000, ES-3016, or ES-3032 and who wish to incorporate them into a heterogeneous open SAN.

## Overview

The Compaq StorageWorks SAN Director 64 provides high performance Fibre Channel switching suitable for use in SAN fabrics where high port count and high reliability are required. The SAN Director 64 is compatible with the McDATA Enterprise Director 5000 and the McDATA ES-3016 and ES-3032 edge switches.

Compaq supports the SAN Director 64, McDATA ED-5000, and the ES-3016 and ES-3032 edge switches in configurations with up to eight switches. An eight switch SAN Director 64 configuration may have up to 496 user ports, depending on the interconnection topology.

## SNIA SSF Configurations

The Storage Networking Industry Association (SNIA) sponsors the Supported Solutions Forum (SSF). SSF is a storage industry program that improves the interoperability of Fibre Channel products. Compaq is a member of SNIA and SSF.

Compaq supports the SAN Director 64 and the McDATA ED-5000 in SAN configurations that are compliant with the guidelines defined by the SNIA Supported Solution Forum.

SSF has defined two configurations with heterogeneous servers and heterogeneous storage systems. One configuration uses a Fibre Channel fabric made of Brocade switches, and the other configuration uses a fabric of McDATA switches.

- Compaq supports both configurations. For additional information on this program, refer to <http://www.snia.org/ssf/>
- For information on Compaq Open SAN Supported Solutions and a summary table of included vendors refer to: <http://www.compaq.com/products/storageworks/announcements/06-04-2001.html>

## StorageWorks SAN Director 64

### Product Description

The StorageWorks SAN Director 64 is a highly reliable Fibre Channel SAN switch designed to accommodate today's storage protocols and emerging SAN protocols. It provides non-blocking switching between 64 ports, each operating at a 1 Gbps signaling speed.

### Product Features

The SAN Director 64 supports connections to application servers running Microsoft Windows, Compaq OpenVMS, Compaq Tru64 UNIX, Sun Solaris, HP-UX, IBM AIX, and Linux operating systems. It supports connections to the StorageWorks HSG and HSV110 families of disk array storage systems.

The SAN Director 64 offers features that improve switch availability. All field-replaceable units are hot-swappable for uninterrupted operation. New firmware images can be downloaded while the unit is online, and the new firmware can be activated while frames are in flight with no disruption to the traffic flow.

The SAN Director 64 supports remote campuses up to 100 km away with long wave transceivers and use of repeaters. The supported distance depends on the use of various different cables and repeaters:

- Shortwave: Up to 500 m (1,600 ft.)
- Longwave: Up to 20 km (12 mi)
- With Repeaters: Up to 100 km (63 mi)

Fibre Channel loop devices are not supported.

## Zoning Features

The SAN Director 64, ED-5000, ES-3016, and ES-3032 switches support Fibre Channel zoning functions that prevent specific N\_Ports connected to the switch from communicating with one another. This feature provides a level of security against accidental erroneous traffic that might cause server failure or other SAN problems.

Soft zoning is supported (this is also known as WWID zoning.) Soft zoning is managed fabric-wide and is compatible with the zone feature implementation found in all switch models. All zone configurations are maintained on the SDCM server through the Fabric Manager application; however, a copy of the active zone configuration is maintained in the non-volatile memory of each switch.

Soft zoning is a mechanism for managing the connections between attached devices by utilizing the Name Server information. Essentially, the attached devices are provided only with the information about the other devices in a common zone.

The Name Server hides information about N\_Ports that are not in a common zone with the requesting N\_Port; thus, a Name Server “zone” is simply a set of N\_Ports that are visible to each other. A “zone set” is a set of zones that may be active on the switch at a given time. The functional details of zoning are as follows:

- An N\_Port belonging to a soft “zone” is permitted to query the Name Server and learn about all other N\_Ports in a common zone, but not about N\_Ports outside of its zones.
- The active zone and zone set are configurable and stored in nonvolatile memory on the switch. Changes to the active configuration will not take affect until the configuration is explicitly enabled, or an initial machine load (IML) reset is performed on the switch.
- An implicit “default soft zone” exists containing all N\_Ports that do not explicitly belong to any active zone. The default zone can be disabled, but is enabled by default.
- An N\_Port can belong to multiple Name Server zones.
- Soft zone members may be specified by the worldwide name of the attached port.
- All N\_Ports that have registered to receive Registered State Change Notifications (RSCN) from the switch receive only RSCNs for N\_Ports that are in a common zone. When the membership of an active zone changes due to a zone configuration change, RSCNs are sent to all registered N\_Ports.

Fabrics may be connected together to make larger fabrics. The zone definitions used in the two fabrics will usually be different. When the two fabrics are merged, each fabric should acquire the other’s zoning data. If the zone definitions are unique, or if there are identical zone names in each fabric and these zones have identical members, then you do not have conflicts between the zone definitions and the two fabrics may be merged together. This process occurs automatically when the fabrics are connected, and does not disrupt fabric traffic.

If the zone definitions in the two fabrics have conflicting information, then the fabrics cannot be merged automatically. The switches do not have the ability to automatically resolve the zone definition conflicts. In this case, the two fabrics will not connect together, and the result is a segmented fabric.

In the event of zoning conflicts (and the resulting fabric segmentation), you should insure no duplicate zone names exist between the two fabrics unless the zone members are identical. If duplicate names exist and the zone members are not identical, you can rename one of the zones using the SDCM utility. Once the duplicate zone names are changed, you can merge the fabrics.

## Zoning Rules

Compaq supports fabric configurations where each type of operating system is located in a separate zone.

## SAN Director 64 Connectivity Manager

The SAN Director 64 is managed using the SAN Director Connectivity Manager (SDCM) utility. This application provides a user-friendly interface with graphical displays and real time interactive displays of operational status and performance statistics.

The management tool runs on the SDCM server, a notebook computer. The SDCM server and the switches are connected to a 10/100 Mbps Ethernet LAN for management communication.

The SAN Director 64 provides four management access methods:

- SANworks Director Connectivity Manager (SDCM) using the notebook PC server.
- SAN Director 64 web interface on the enterprise LAN.
- Simple Network Management Protocol (SNMP).
- Command line interface. (See Compaq Director Switch User Guide.)

SDCM provides full management capabilities for ED-5000, ES-3032, and ES-3016 switches participating in the same SAN.

## SDCM Server

SDCM contains the SAN Director 64 Product Manager as well as additional McDATA product managers. The SDCM server (or network access to the switch's embedded web server application) is required to install, configure, and manage the switch. Although the switch operates normally without an SDCM server, the server is required to monitor switch operation, log events and configuration changes, and report failures via Compaq's Proactive Service application. SDCM implements an in-band management agent that is addressed via the well-known hexadecimal address FF FF FA.

The SDCM server provides a central point of control for up to 48 LAN-connected switches. The server is mounted in a slide-out drawer in the SAN Director 64 cabinet. The SDCM server is dedicated to SDCM tasks.

## Embedded Web Server

An Embedded Web Server (EWS) provides browser access to the switch via the Ethernet interface. EWS supports both the Netscape and IE browsers. The enterprise LAN connection allows the SAN Director 64 web browser interface to be viewed by any computer on the LAN. Password protection is provided to maintain management security. The web server provides a subset of the functionality provided by the SDCM utility.

The web interface provides the following basic user administration functions for the SAN Director 64.

- Switch View: The switch view provides basic operational information about the switch, its FRU modules, and its ports.
- Monitor: The Monitor panel provides information and statistics about each port.

- **Configure / Operations:** The Configure and Operations panels provide the ability to set or modify the operational characteristics of the switch.

The web server provides access to statistics on demand. These statistics are provided as a snapshot of the operation and do not reflect activity relative to time.

## SNMP Agent

An SNMP agent embedded in the switch is a secondary management interface that is connected via the Ethernet interface. All of the management interfaces coexist in the switch; however, SNMP defaults to read-only and must be configured to allow updating of MIB variables (for example, read-write mode). The SNMP agent within the switch supports the SNMPv1 protocol and data formats as defined in RFCs 1157 and 1155, respectively.

MIB variables managed by the SNMP agent are accessible to management stations belonging to SNMP communities known to the switch. The SNMP agent signals operational state changes and failure conditions in an unsolicited manner by sending SNMP Trap messages to one or more management stations as configured through the SDCM utility.

## Maintenance Port

The SAN Director 64 has an RS232 maintenance port that can be connected to a standard PC running an ASCII terminal emulator program. This interface provides command line access to switch maintenance operations. All online maintenance port functionality is password protected to prevent unauthorized use. Use of the maintenance port is restricted to the following user domains:

- **Manufacturing:** Used for factory download of the switch firmware, for running offline diagnostics, and for initializing FRU and system vital product data.
- **Service:** Used for running offline diagnostics. In addition, commands are provided to configure the physical address, IP address and subnet mask of the SD-64 Ethernet port.
- **Engineering:** Used for monitoring internal switch operations, debugging operational software, and analyzing problems.
- **Test:** Used for fault injection, automated test scripts, and other testing techniques.

## Command Line Interface

The command line interface (CLI) allows users to access certain SDC Manager and SD-64 Product Manager application functions by entering commands through a telnet session. The CLI is not an interactive interface; a user prompt does not display to guide users through tasks. The primary purpose of the CLI is to automate management of a large number of directors using scripts. For information, refer to the *StorageWorks by Compaq SAN Director CLI Guide (AA-RQ7AA-TE)*.

## Security

The SAN Director 64 provides a high level of data security. Access to management functions is controlled by passwords, and unauthorized attempts to change device parameters are prevented by the configuration management tools.

Since the communication between the management tools and the SAN Director 64 is by an Ethernet LAN connection, security issues that may exist on an existing LAN must be reviewed to insure the integrity of the configuration management interface. For example, the SAN Director 64 management interface should not be connected to a LAN that has unrestricted access by Internet users.

Maximize the configuration security of the SAN Director 64 by using a dedicated LAN for communicating between the management station and the switches.

## McDATA Enterprise Director 5000

### Product Description

The ED-5000 provides 32-port switched connectivity between Fibre Channel servers and devices in a storage area network (SAN) environment. The ED-5000 implements Fibre Channel technology that provides scalable bandwidth (1 Gbps), redundant switched data paths, high availability, fault detection and isolation, and continuous uptime.

### Product Support Method

Compaq supports but does not sell the ED-5000. McDATA provides service and support of ED-5000 switches. A bilateral Customer Support Agreement (CSA) between Compaq and McDATA has been formalized to reduce the time needed to resolve customer issues.

### Supported ED-5000 Configurations

Support for the ED-5000 switch in Compaq SAN environments is limited to the server platforms, operating systems, and layered products shown in Table 3

## McDATA ES-3016 and ES-3032 Edge Switches

### Product Description

By providing building blocks of different port counts, the ES-3016 and ES-3032 edge switches provide additional flexibility to extend SAN benefits to the departmental level. Both switches incorporate high availability features including:

- Hot-plug redundant power supplies
- Redundant fans
- Hot-plug optics
- On-line diagnostics
- On-line non-disruptive firmware load
- Activation and fault isolation tools

With the addition of the optional Product Manager (PM) software license, these switches can be managed using SDCM. SDCM is licensed separately under part number 254514-B21.

### Product Support Method

Compaq supports and markets McDATA edge switches under the following part numbers. Contact Compaq Special Services (CSS) for additional details:

Part Number	Description
2T-M3016-AA	16 Port Switch ES-3016
2T-M3032-AA	32 Port Switch ES-3032
2T-M3016-AB	16 Port Switch ES-3016 plus PM software license
2T-M3032-AB	32 Port Switch ES-3032 plus PM software license



## Supported ES-3016 and ES-3032 Configurations

Support for the ES-3016 and ES-3032 edge switches in Compaq SAN environments is limited to the server platforms, operating systems, and layered products shown in Table 3.

## McDATA ED-5000, ES-3016, ES-3032 and SAN Director 64 Configurations

The McDATA ED-5000, ES-3016, ES-3032, and the Compaq StorageWorks SAN Director 64 may be used in the same SAN. The configuration rules in the following sections must be followed.

### Software Configurations

Refer to Table 2 and Table 3 for information on supported operating system versions, driver versions, host bus adapter firmware versions, switch firmware versions, and array controller versions.

### Hardware Configurations

The following platforms and storage systems are supported:

- Compaq Proliant servers with a Microsoft Windows operating system
- Compaq Proliant servers with the Linux operating system
- Compaq servers with the OpenVMS operating system
- Compaq servers with the Tru64 UNIX operating system
- Sun Microsystems servers with the Solaris operating system
- Hewlett-Packard servers with the HP-UX operating system
- IBM servers with the AIX operating system
- StorageWorks HSG storage systems
- StorageWorks HSV110 storage systems

The following fabric and storage configurations are supported:

- Up to eight switches in each fabric, with any combination of Compaq StorageWorks SAN Director 64 switches, McDATA ED-5000 switches, and the ES-3016 and ES-3032 edge switches
- Only soft WWID zoning is supported
- Servers must be in zones so that each operating system type is in its own zone
- All logical units must be selectively presented to the host servers using SSP
- A maximum of three hops is allowed per fabric

### Supported Combinations of Switches

Permissible switches include the StorageWorks SAN Director 64, the McDATA ED-5000, the ES-3016 and ES-3032 edge switches, and the EMC Connectrix. The firmware version specified in the *Supplemental Tables* must be used in all cases. Refer to <http://www.compaq.com/products/storageworks/san/documentation.html> for the latest version of the Supplemental Tables, which contain information on supported operating system drivers, host adapters, and microcode versions. At the same URL, see the *Heterogeneous Open SAN Design Reference Guide*.

## Cabling Rules

The SAN Director 64 provides industry standard “LC” connectors for the Fibre Channel optical connections. Note that these are smaller than the “SC” connectors used in previous Compaq optical Fibre Channel storage products. The ED-5000 provides “SC” connectors.

Cables are available with SC connectors on one end and LC connectors on the other end. Adapters are also available. Refer to the SAN Director 64 QuickSpecs document for additional information.

## Multi-fabric SANs

To maximize data availability, Compaq recommends that two or more independent fabrics be used in all Compaq SAN designs. This approach provides a redundant communication path between servers and storage systems, which protects against the failure of a host adapter, a fabric, or an array controller port. In order to maintain independence, you cannot have an ISL connection between the fabrics. Refer to Chapters 1 and 2 on SAN topologies, and Chapter 9 on best practices, in the Heterogeneous Open SAN Design Reference Guide for additional information on multi-fabric SAN design issues.

The two fabrics should be similar in size and topology. Because the application server failover software does not recognize the concept of “primary” and “secondary” ports, you cannot balance the load between two dissimilar fabrics.

Figure 1 shows a dual fabric SAN, each with one SAN Director 64. Notice that there is no Fibre Channel connection between the two fabrics.

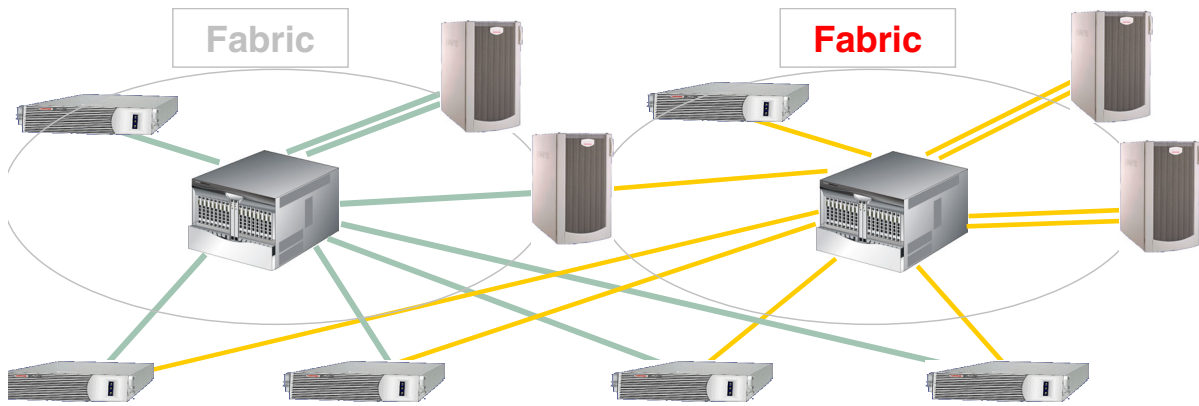


Figure 1: Dual Fabric SAN

## Topology Limits

Compaq supports any combination of up to eight SAN Director 64 or McDATA ED-5000, ES-3016 and ES-3032 switches in a single Fibre Channel fabric.

Use no more than a maximum of three hops (ISLs that must be used to get from any given port to any other given port) in a fabric.

There is no restriction on fabric topology: The fabric may be a ring, a cascade, or a mesh. Refer to Chapters 1, 2, and 9 of the Heterogeneous Open SAN Design Guide for additional information on SAN topologies.

Compaq does not support interconnection between the SAN Director 64 and the SAN Switch family of switches (SAN Switch 8, 8-EL, 16, and 16-EL). The ED-5000, ES-3016, ES-3032, and SAN Director 64 may be used in any combination that meets the other restrictions described here.

Each SAN Director 64 has up to 64 Fibre Channel ports. Of these, up to 32 ports may be used for connections to ISLs. Any combination of ports may be used for ISL connections. Up to four ports per connection to any one switch on an ED-5000 may be used for ISLs.

## EBS, DRM, EVM, and Cluster Support

Compaq supports certain SANworks software products in SANs using the McDATA ED-5000 or the SAN Director 64. Table 1 shows the currently supported configurations. Refer to the product documentation for additional configuration restrictions or limitations.

**Table 1: Supported SANworks Software Applications**

SANworks Software Product	Support
<b>DRM</b>	Not Supported
<b>EVM</b>	Fully Supported
<b>NetWork View</b>	Supported; see the application note: <i>Managing Compaq StorageWorks SAN Director 64 Switch in Network View Version 2.0</i>
<b>Clustering</b>	Refer to Table 2 for Specific Operating System
<b>EBS</b>	<b>MDR Firmware:</b> V1185 <b>Tape Libraries:</b> ESL9326 ESL9198 MSL5026 TL895 <b>Backup Applications:</b> Veritas Netbackup Veritas Backup Exec Legato NetWorker CA Arcserve

## Supplemental Information

The following tables contain revision information for operating systems and hardware supported in a McDATA SAN.

Table 2 shows the required switch firmware versions and the required versions for the SDCM management software.

**Table 2: Switch Firmware**

Switch	Switch Firmware Version	Management Software Version
McDATA ED-5000	04.00.00 Build 11	SANworks Director Connectivity Manager (SDCM) 04.02.00 Build 40
SAN Director 64, ES-3016, and ES-3032	01.04.00 Build 2	SANworks Director Connectivity Manager (SDCM) 04.02.00 Build 40

Table 3 shows the required software versions for the supported operating systems and storage systems.

**Table 3: Platform/Storage System SAN Attachment Summary with HBA Drivers and Firmware Revisions for ACS 8.6, VCS 1.02 for SAN Director 64 and McDATA ED-5000 Installations**

Platform or Operating System	Platform HBA SAN Attachment	HBA Driver & Firmware Revision (Minimum)	Multi-Path Support	Enterprise Virtual Array SAN Attachment	MA6000, MA8000, RA8000, EMA12000/16000, ESA12000 SAN Attachment
Compaq OpenVMS 7.2-1H1 w/ TIMA (ACS 8.6) 7.2-2 TIMA DEC-AXPVMS-VMS722_FIBRE_SCSI-V01004 (ACS 8.6) 7.3 TIMA DEC-AXPVMS-VMS73_FIBRE_SCSI-V02004 (ACS 8.6) 7.2-2 TIMA VMS722_FIBRE_SCSI-V0200 (VCS 1.02) 7.3 TIMA VMS73_FIBRE_SCSI-V0200 (VCS 1.02) 7.2-1H1 w/TIMA v300 (VCS 1.02) Clusters	F_Port KGPSA-BC 380574-001	Native FW v3.20x7	Native	F-Port Operating System Parameter: OPENVMS Unit Identifier Required	F_Port using FABRIC Topology Multiple-Bus Failover Mode SCSI-3 Mode Connection name OS parameter type: VMS Unit Identifier Required
	F_Port KGPSA-CA 168794-B21	Native FW 3.81a4			
Tru64 UNIX V4.0F/G Patch Kit 7 TruCluster Software Products Version 1.6 (ACS 8.6)	F-Port KGPSA-BC 380574-001	v1.29 FW v3.20x7	N/A	N/A	F_Port using FABRIC technology Transparent or Multiple-Bus Failover SCSI-2 Mode Command Console LUN Enabled or Disabled SCSI-3 Mode Connection name OS parameter: TRU64_UNIX
	F-Port KGPSA-CA 168794-B21	v1.29 FW: v3.81a4			

**Table 3: Platform/Storage System SAN Attachment Summary with HBA Drivers and Firmware Revisions for ACS 8.6, VCS 1.02 for SAN Director 64 and McDATA ED-5000 Installations**

Platform or Operating System	Platform HBA SAN Attachment	HBA Driver & Firmware Revision (Minimum)	Multi-Path Support	Enterprise Virtual Array SAN Attachment	MA6000, MA8000, RA8000, EMA12000/16000, ESA12000 SAN Attachment
Tru64 UNIX 5.1 (ACS 8.6) 5.1 Patch Kit 4, 5.1A Patch Kit 1 (VCS 1.02, ACS 8.6) TruCluster Server Version 5.1, 5.1A (VCS 1.02, ACS 8.6)	F-Port KGPSA-BC 380574-001	v2.01 FW v3.20x7	Native	F-Port Operating System Parameter: TRU64	F_Port using FABRIC technology Transparent or Multiple-Bus Failover SCSI-2 Mode Command Console LUN Enabled or Disabled SCSI-3 Mode Connection name OS parameter: TRU64_UNIX
	F-Port KGPSA-CA 168794-B21	v2.01 FW: v3.81a4			
HP-UX 11.0	HP A5158A	B.11.00.06 PHKL_21834	Secure Path v3.0	N/A	F-Port using FABRIC topology Transparent or Multiple-Bus Failover SCSI-2 Mode Command Console LUN enabled/disabled or SCSI-3 Mode (Multi-bus Only) Connection name O/S parameter: HP
	HP A6685A	B.11.00.00 PHKL_21834			
HP-UX 11i	HP A5158A	FibreChan-00 B.11.11.08 PHKL_23626	N/A	N/A	F-Port using FABRIC topology Transparent Failover SCSI-2 Mode Command Console LUN enabled/disabled or Connection name O/S parameter: HP
	HP A6685A	FibreChan-00 B.11.11.08 PHKL_23626			
IBM AIX 4.3.3, 5.1 (ACS 8.6)	F-Port: 197819-B21 SWIA1-PD	v1.5.15.1	Secure- Path 2.0a	N/A	F-Port using FABRIC topology Multiple-Bus Failover SCSI-2 Mode Command Console LUN enabled/disabled SCSI-3 Mode Connection name O/S parameter: WINNT

**Table 3: Platform/Storage System SAN Attachment Summary with HBA Drivers and Firmware Revisions for ACS 8.6, VCS 1.02 for SAN Director 64 and McDATA ED-5000 Installations**

Platform or Operating System	Platform HBA SAN Attachment	HBA Driver & Firmware Revision (Minimum)	Multi-Path Support	Enterprise Virtual Array SAN Attachment	MA6000, MA8000, RA8000, EMA12000/16000, ESA12000 SAN Attachment
Caldera Linux 2.3.1 Intel (ACS 8.6)	167433-B21	v4.28c.3b FW: v2.01.27	N/A	N/A	F-Port using FABRIC topology Transparent Failover or Multiple-Bus Failover SCSI-2 Mode Command Console LUN enabled/disabled SCSI-3 Mode Connection name O/S parameter: WINNT
Red Hat Linux Intel 7.1 Alpha/Intel (ACS 8.6)					
SuSE Linux Intel6.3 Alpha/Intel (ACS 8.6)					
Microsoft Windows 2000 SP2 (VCS 1.02, ACS 8.6) Microsoft Windows NT 4.0 SP6A (VCS 1.02, ACS 8.6) MSCS	F_Port KGPSA-CB	<b>W2K:</b> v5-4.53a7 <b>NT:</b> v4-4.53a7 <b>FW:</b> v3.82a1 Boot Bios: 1.60a4	Secure Path v3.1a SP2 (VCS) v3.1a SP1 (ACS)	F-Port Operating System Parameter: WINDOWS	F_Port using FABRIC Topology Transparent or Multiple-Bus Failover SCSI-2 Mode Command Console LUN Disabled SCSI-3 Mode Connection name OS parameter: WINNT
Sun Solaris 2.6 (32-bit) (ACS 8.6) Sun Solaris 7, 8 (32/64-bit) (ACS 8.6, VCS 1.02) SUN Clusters v2.2 w/ 2.6, 7, 8 (ACS 8.6) Veritas Clusters 1.2.1 (ACS 8.6) Veritas Clusters 1.3 (VCS 1.02)	F-Port 380575-001 (32-bit Sbus)	v2.5.9.03 FW: v13.3.7	Secure Path v2.1d (VCS)	F-Port Operating System Parameter: SOLARIS	F_Port using FABRIC Topology Transparent or Multiple-Bus Failover SCSI-2 Mode Command Console LUN Disabled SCSI-3 Mode Connection name OS parameter: SUN
	F-Port 123503-001 (64-bit Sbus)	v2.5.9.03 FW: v13.3.7	v3.0 (ACS)		
	F-Port 380576-001 (32-bit PCI)	v2.5.9.03 FW: v3.03			
	F-Port 254457-B21 (64-bit cPCI)	v3.18 FCODE: v1.18.5 FW: 2.1.38	N/A	N/A	