

release notes

hp StorageWorks SAN switch 2/32

Product Version: 4.0.2b

Second Edition (February 2003)

Part Number: AV-RTT4B-TE

This document summarizes late-breaking and supplemental information for hp StorageWorks SAN Switch 2/32 products. In the event of conflicting information between these Release Notes and other documents contained in this product release, the Release Note content takes precedence.

For the latest version of these Release Notes and other product documentation, visit the HP Storage website at: <http://www.hp.com/country/us/eng/prodserv/storage.html>



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SAN switch 2/32 Version 4.0.2b Release Notes
Second Edition (February 2003)
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About this Document

This section describes the content reflected in this document, including:

- [Intended Audience](#), page 4
- [Related Documentation](#), page 4
- [Software CD](#), page 5
- [Features Summary](#), page 6
- [Optional Upgrades and Software](#), page 7
- [Obtaining Software License Keys](#), page 8
- [Orderable Hardware](#), page 8
- [Hardware Updates](#), page 9
- [HP Recommendations](#), page 10
- [Firmware Overview](#), page 10
- [Prerequisites for Upgrading or Restoring Firmware](#), page 11
- [Firmware Upgrade Procedures](#), page 12
- [Firmware Enhancements](#), page 16
- [Fabric OS Commands](#), page 21
- [Updating the Core Switch PID Format](#), page 48
- [Additional CLI commands](#), page 50
- [Adding the SAN Switch 2/32 to an Existing Fabric](#), page 51
- [Java Runtime Environment for HP-UX](#), page 53
- [Compatibility](#), page 54
- [Standards Compliance](#), page 56
- [Known Issues](#), page 57
- [Documentation Anomalies](#), page 62

Intended Audience

This document is intended for HP technicians and customers who purchased the SAN Switch 2/32.

Related Documentation

The SAN Switch 2/32 kit includes the following documents:

Note: The *SAN Switch 2/32 Installation Guide* and both sets of Release Notes ship in hard copy format with the switch. With the exception of the Release Notes, all listed documents are provided in soft copy on the *hp StorageWorks SAN Switch Software v4.0.2b CD*, part number AG-RTQXB-BE.

- *hp StorageWorks SAN Switch 2/32 Version 4.0.x Installation Guide*, part number AA-RTQVB-TE
- *hp StorageWorks SAN Switch 2/32 Version 4.0.2b Release Notes*, part number AV-RTT4B-TE (this document)
- *hp StorageWorks Common Software and Switch Options Version 3.0.x/4.0.x Release Notes*, part number AV-RTQUB-TE
- *hp StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide*, part number AA-RS24B-TE
- *hp StorageWorks Fabric OS Procedures Version 3.0.x/4.0.x User Guide*, part number AA-RS23B-TE
- *hp StorageWorks Diagnostics and System Error Messages Version 3.0.x/4.0.x Reference Guide*, part number AA-RS22B-TE
- *hp StorageWorks Web Tools Version 3.0.x/4.0.x User Guide*, part number AA-RS25B-TE
- *hp StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide*, part number AA-RTS4B-TE
- *hp StorageWorks ISL Trunking Version 3.0.x/4.0.x User Guide*, part number AA-RTSAB-TE
- *hp StorageWorks Extended Fabric Version 3.0.x/4.0.x User Guide*, part number AA-RTSDB-TE

- *hp StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide*, part number AA-RTSGB-TE
- *hp StorageWorks Zoning Version 3.0.x/4.0.x User Guide*, part number AA-RS26B-TE
- *hp StorageWorks Remote Switch Version 3.0.x/4.0.x User Guide*, part number AA-RTS7B-TE

Soft copy of the *hp StorageWorks Core Switch 2/64 Version 4.0.x Installation Guide*, part number AA-RS2WB-TE, is also provided on the CD, which is shared with 2/64 Core Switch products.

Hardcopy of the *hp StorageWorks SAN Switch Universal Rack Mount Kit Installation Addendum*, part number AV-RU6YA-TE, is supplied with the hp StorageWorks SAN Switch Universal Rack Mount Kit, now included with your switch.

For the latest supported configurations, please refer to the *hp StorageWorks SAN Design Reference Guide*, part number AA-RMPNF-TE, available at:

<http://h18006.www1.hp.com/storage/saninfrastructure.html>

For reference data on MIB files, refer to the *hp StorageWorks mib reference version 3.0/4.0*, available from the HP website at:

<http://h200005.www2.hp.com/bc/docs/support/SupportManual/lpg29296/lpg29296.pdf>

Additional documentation, including white papers and best practices documents, are available via the HP website at:

<http://welcome.hp.com/country/us/eng/prodserv/storage.html>

Software CD

HP StorageWorks SAN Switch 2/32 products ship with the latest version of the firmware installed. A copy of the latest version of the firmware, v4.0.2b, is also contained on the *hp StorageWorks SAN Switch Software v4.0.2b CD*, part number AG-RTQXB-BE. The v4.0.2b firmware and future upgrades are also available on the HP website at:

<http://h18006.www1.hp.com/products/storageworks/fcsanswitch232/index.html>

Configuration File

HP supplies the following configuration file, included on the CD:

```
DSGGE\firmware\FW232.TXT
```

The FW232.TXT configuration file is used with the SAN Switch 2/32. This file includes switch and Fabric Watch default parameters. All parameters (except the Fabric Watch default parameters) can be downloaded to a switch when logged on as the “admin” user.

Note: Performing a configdownload with these files only appends or changes those parameters within this file. It will not change any other parameter on the switch which may have been changed at the customer site. Remember that all switches in a fabric must have the same configuration settings.

Features Summary

The following section summarizes the management features available with SAN Switch 2/32 products.

SAN Switch 2/32

The SAN Switch 2/32 ships with the following features enabled, and ready to use:

- Full Fabric—Provides Full Fabric OS.
- Web Tools—Provides a graphical user interface (GUI) to monitor and manage the entire fabric.
- Zoning—Allows partitioning of the SAN into logical groupings of devices that access each other.

SAN Switch 2/32 Power Pak

The SAN Switch 2/32 Power Pak ships with the following features enabled, and ready to use:

- Full Fabric—Provides Full Fabric OS.
- Web Tools—Provides a graphical user interface (GUI) to monitor and manage the entire fabric.
- Zoning—Allows partitioning of the SAN into logical groupings of devices that access each other.
- Fabric Watch—Monitors the performance and status of HP StorageWorks SAN Switches, and alerts network managers as problems arise.

- ISL Trunking—Using ISL trunking, high speed links ensure that server-to-storage performance is efficient.
- Advanced Performance Monitoring—Provides a comprehensive tool for monitoring the performance of storage devices within the network.

The following features are built into the switch firmware, but not enabled.

- Extended Fabric—Creates a fabric interconnected at distances greater than 5 km for 2 Gbps interswitch links. To enable, use the Web Tools Extended Fabrics Tab, or use the telnet `portCfgLongDistance` command.
- Remote Switch—Enables a switch to work with a separately purchased network bridge, in order to interconnect fabrics. To enable, use the Web Tools Extended Fabrics Tab. See the *hp StorageWorks Common Software and Switch Options Version 3.0.x/v4.0.x Release Notes* for Remote Switch limitations.

Optional Upgrades and Software

The following optional upgrades and software are also available for SAN Switch 2/32 products.

Note: Options purchased separately require you to obtain a license. See the next section, [Obtaining Software License Keys](#), page 8, for more details.

Power Pak Upgrade Bundle

The SAN Switch 2/32 Power Pak Upgrade Bundle is available as a separate option for the SAN Switch 2/32, and includes licenses for Fabric Watch, ISL Trunking, Advanced Performance Monitoring, Extended Fabric and Remote Switch options.

Fabric Manager

Fabric Manager is a separately purchased product that provides a graphical interface, allowing the administrator to monitor and manage an entire fabric from a standard workstation. Fabric Manager can be used to manage fabrics containing integrated fabrics, in addition to individual switches.

Obtaining Software License Keys

If you've purchased optional software, or need to reinstall software features due to a motherboard replacement in your switch, you will need to retrieve the software license keys from the HP Authorization Center.

Obtain software license keys as follows:

- If you have your HP Registration Number, (located on your software entitlement certificate) go to:
 - <http://webkey.external.hp.com/welcome.asp>
- If your HP Registration Number is unavailable, contact the Authorization Center directly:
 - Canada and United States, (Monday through Friday 6:00 am to 6:00 pm, (801) 431-1451 or (800) 861-2979.
 - Asia, (Monday through Friday 9:00 am to 5:00 pm MST), +81-03-3227-5289 or +81-3-3227-5289.
 - Europe, Middle East, Africa and Netherlands (Monday through Friday 9:00 am to 6:00 pm), +31-555-384-210.

Orderable Hardware

Table 1 lists HP hardware accessory options for SAN Switch 2/32 products

Table 1: SAN Switch 2/32 Orderable Hardware

Accessory	Part Number
Short wavelength SFP	A6515A* or 300834-B21**
Long wavelength SFP, 10 km	A6516A* or 300835-B21**
Long wavelength SFP, 35km	300836-B21**
2m LC-to-LC Fibre Channel (fc) cable	C7524A*
2m LC-to-LC multi-mode fc cable	221692-B21**
16m LC-to-LC fc cable	C7525A*
5m LC-to-LC multi-mode fc cable	221692-B22**
50m LC-to-LC fc cable	C7526A*
15m LC-to-LC multi-mode fc cable	221692-B23**
200m LC-to-LC fc cable	C7527A*

Table 1: SAN Switch 2/32 Orderable Hardware

Accessory	Part Number
30m LC-to-LC multi-mode fc cable	221692-B26**
50m LC-to-LC multi-mode fc cable	221692-B27**
2m LC-to-SC fc cable	C7529A*
2m LC-to-SC multi-mode fc cable	221691-B21**
16m LC-to-SC fc cable	C7530A*
5m LC-to-SC multi-mode fc cable	221691-B21**
15m LC-to-SC multi-mode fc cable	221691-B23**
30m LC-to-SC multi-mode fc cable	221691-B26**
50m LC-to-SC multi-mode fc cable	221691-B27**
SC female to SC female adapter	C7534A*
2m LC male to SC male adapter kit	C7534A*
Universal Rack Mount Kit	331148-B21

* premerger HP part number

** premerger Compaq part number

Hardware Updates

The following section lists hardware updates for the SAN Switch 2/32.

Important Information Regarding Rack Mounting Hardware

The hp StorageWorks SAN Switch Universal Rack Mount Kit is included with your switch. See the *hp StorageWorks SAN Switch Universal Rack Mount Kit Installation Addendum*, part number AV-RU6YA-TE, supplied with the rack mount kit for installation instructions.

Note: HP highly recommends installing the switch in racks with only the hardware supplied with your switch. Using longer than recommended screws to install your switch into a rack will result in physical damage to the switch motherboard.

HP Recommendations

HP always recommends redundant fabrics and multi-pathing software for uptime-sensitive environments. Examples of scenarios protected by redundant fabrics include, but are not limited to:

- Add / Move / Change operations for devices or switches
- Changing the core PID format
- Changing any other fabric-wide parameters (for example, ED_TOV)
- Erroneous zoning changes / user error
- Major upgrades / changes to fabric architecture
- Physical disasters, for example, water pipe breaks above “fabric A” rack

HP recommends strongly against using drivers that bind by PID. There are several routine maintenance procedures which may result in a device receiving a new PID; the core PID format update is just one example of such a procedure. Examples include, but are not limited to:

- Changing “Compatibility Mode” settings
- Changing switch domain IDs
- Merging fabrics
- Relocating devices to new ports or new switches (that is, for Add, Move, Change type operations)
- Updating the core PID format
- Using hot spare switch ports to deal with failures

Firmware Overview

Firmware v4.0.2b works with HP StorageWorks 2 Gbps switch models only. The firmware will not work if loaded onto HP StorageWorks 1 Gbps switch models.

HP recommends that all switches supported by the 4.0.x code stream be updated to Version 4.0.2b together, so all supported switches operate with the same version code.

Firmware Version 4.0.2b contains the fully supported Web Tools Graphical User Interface (GUI). Instructions for downloading the firmware are contained on the Software CD.

Note: SAN Switch 2/32 products require firmware Version 4.0.2b or higher.

Version 4.0.2b firmware and future upgrades are available on the HP website at:

<http://h18006.www1.hp.com/products/storageworks/fcsanswitch232/index.html>

Prerequisites for Upgrading or Restoring Firmware

Read this section before upgrading/restoring switch firmware.

Verify that a Windows NT or 2000 FTP Server is Installed

An FTP server must be installed and running when performing the telnet command `configUpload` on a Windows NT or 2000 system. If you do not have a Microsoft Windows NT or 2000 FTP service previously installed on your system, you need to install it.

Use the following steps to install and configure a Windows NT or 2000 FTP server.

1. Create a folder for the switch firmware and configuration files.
2. Install the Windows NT or 2000 FTP server on your system from your Windows installation CD.

Note: If you only use the FTP server for the firmware and configuration loads, you can specify the folder created in step 1 as the FTP Publish Directory.

3. Open the Internet Service Manager Tool.
4. Issue the `configUpload` command. Save the configuration.

Firmware Upgrade Procedures

UNIX environments

Use the following procedure to upgrade the SAN Switch 2/32 to firmware Version 4.0.2b in UNIX environments:

1. Download the firmware from the hp website into a Windows or UNIX machine.
2. Unzip the *firmware zip* file. It will create several files and folders.
3. Verify that the FTP service is running on the UNIX or Windows machine.
4. Determine which CP card is the standby CP card by establishing a telnet connection to a switch IP address and issuing the `haShow` command.
5. Login to the “standby” CP card as the “admin” user.
6. Issue the `firmwareDownload` command, as follows:

```
ter1_127:admin> firmwaredownload
Server Name or IP Address: xxx.xxx.xxx.xxx
User Name:
File Name: /pub/Beta1/release.plist Password:
Overwrite the whole firmware [Y]: y
Do Auto-Commit after Reboot [Y]: y
Reboot system after download [N]: y
```

Note: Rebooting the CP card causes the telnet session to disconnect from the standby CP card. If Auto-Commit is selected as “n”, the old firmware version can be restored using the `firmwareRestore` command. This may be applicable during testing of the SAN.

7. Reissue the haShow command from the switch IP session, as follows:

```
ter1_127:admin> haShow
Local CP (Slot 6, CP0): Active.
Remote CP (Slot 5, CP1): Non-Redundant ?This says the standby CP
is still rebooting.
ter1_127:admin> haShow
Local CP (Slot 6, CP0): Active
Remote CP (Slot 5, CP1): Standby <- Standby CP has completed
rebooting and ready to become the active CP.
HA Enabled, Heartbeat Up
```

8. From the switch IP address issue the haFailover command. This causes the active CP card to failover to the standby CP card. The standby CP card then becomes the active CP card, and the active CP card reboots and becomes the standby CP card.
9. It is necessary to re-telnet into the switch IP address due to the failover. The switch IP address is now controlled by the new active CP card.
10. Issue the haShow command and monitor the haShow command output, which should look similar to the following:

```
ter1_127:admin> haShow Local CP (Slot 6, CP1): Active <----- The
active CP is now CP1.
Remote CP (Slot 5, CP0): Non-Redundant <----- This says the
original CP is still rebooting.
ter1_127:admin> haShow
Local CP (Slot 6, CP1): Active
Remote CP (Slot 5, CP0): Standby <----- CP0 is now ready to do
firmwareDownload.
HA Enabled, Heartbeat Up
When the reboot is complete the haShow output should look as
follows:
ter1_127:admin> haShow
Local CP (Slot 6, CP1): Active
Remote CP (Slot 5, CP0): Standby <----- CP0 is now ready to do
firmwareDownload.
HA Enabled, Heartbeat Up
```

11. Telnet into the standby CP card (now CP0) and issue the firmwareDownload command. Make sure that both the reboot option and the firmwareCommit option are executed. It is NOT necessary to perform a

second `haFailover` command after doing the second `firmwareDownload`, since the two CP cards are equivalent, and it makes no difference which is active and which is standby.

OpenVMS Environments

Use the following procedure to upgrade the SAN Switch 2/32 to firmware Version 4.0.2b in OpenVMS environments:

Note: Do not use an OpenVMS machine as the FTP server without modifying the filenames and the script. OpenVMS uses periods for subdirectories instead of forward slash. OpenVMS uses underscore instead of periods for separating parts of filenames.

To create the new zip files, the original `release.plist` file needs to be edited and moved to all appropriate directories. In the `release.plist` file, the names of other files (such as `setup-1_3_4-9_ppc.rpm`) need to be changed so that there is only one “.” (period), and it appears before the file extension. For example, any entries in the file appearing as `setup-1.3.4-9.ppc.rpm` are changed to `setup-1_3_4-9_ppc.rpm`.

This file has been tested using the file `UNZIP-ALPHA.EXE`.

Here is the procedure we followed to utilize this file:

1. Copy `UNZIP-ALPHA.EXE` into `sys$common:[sysmgr]`
2. Set up symbol by entering the following at prompt:

```
>> unzip == "$sys$common:[sysmgr]unzip-alpha.exe"
```
3. Create a new directory for firmware v4.0.2b, as follows:

```
>> cre/dir [sys$common:[sysmgr.V4_0_2b]
```
4. Copy `V4_0_2b_VMS.zip` into `sys$common:[sysmgr.V4_0_2b]`
5. Set directory to where new file exists and unzip it.

```
>> set def sys$common:[sysmgr.V4_0_2b]
>> unzip V4_0_2b_VMS.zip
```

The file should extract itself into new directory, creating several subdirectories.

The kit is now ready to be installed, either through the browser or via a telnet session.

Through Telnet:

1. Telnet <IP address of switch>
2. Enter login name for switch.
cp0 login:
3. Enter password for switch.
password:
switchname >
4. Firmware Download
5. Enter IP Address of OpenVMS machine where V4_0_2b directory resides.
Server Name or IP Address:
6. Enter user name for that OpenVMS machine
User Name:
7. Enter file name:
>> V4_0_2b/release.plist
8. Enter password for OpenVMS user account
password:
9. Full Install (Otherwise upgrade only) [Y]:
>> Y
10. Do Auto-Commit after Reboot [Y]:
>> Y
Reboot System after download [N]:
- 11) Select whether or not you want switch to reboot immediately after download.
Start To install packages.....
Installation continues until Verification SUCCEEDED and Firmware download completes successfully are displayed on screen.

Through Browser:

1. Open browser.
2. In the space for the web address, type the IP for switch 0 and press Enter.
3. Screen showing entire fabric should appear.
4. Find the switch in the fabric which needs firmware to be upgraded.

5. Click on the small icon of a folder with a key inside of it.
6. A new window appears and you are prompted for the user name and password for the switch.
7. Enter the appropriate user name and password and the administrative menu will appear.
8. Click on the **Upload/Download** tab to bring up Firmware menu.
9. Select the button **Firmware Download** in the **Function** category.
10. Under **Host Details**, make sure the **Protocol** setting is set to **FTP**.
11. In the **User Name** field, enter the user name for the OpenVMS machine you are using.
12. In the **Host IP** field, enter the IP address of the OpenVMS machine you are using.
13. In the **Password** field, enter the password for the username specified in step 11.
14. In the **Filename** field, enter the following: `v4_0_2b/release.plist`
15. Click on the button labeled **Apply** and the window will begin to display its status.

Firmware Enhancements

The following sections list enhancements included with Fabric OS Version 4.0.2b firmware.

Note: Fabric OS Version 4.0.2b firmware works with HP StorageWorks SAN Switch 2/32 and HP StorageWorks Core Switch 2/64 products. This firmware will not work if loaded onto the HP StorageWorks SAN Switch 1 Gbps models, or HP StorageWorks SAN Switch 2/8 or 2/16 products.

Firmware Download Functionality

This section summarizes changes to the firmware download functionality. For more detailed information refer to the *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide*.

firmwaredownload

Use this admin level command to download a new firmware version to a switch.

firmwarecommit

Use this admin level command to commit a new firmware version to both partitions of flash memory. The SAN Switch 2/32 maintains a primary and secondary partition for firmware. The `firmwaredownload` command writes to the secondary partition only and automatically commits the firmware at the end of the download process, following a switch reboot.

If you wish to override the auto-commit setting, you must use the “-sn” option on the switch. See the help page for more details. HP recommends maintaining the same firmware version on each partition of a switch or CP card.

firmwarerestore

Use this admin level command to delete a new firmware version download from flash memory and restore the previous version of the firmware from the secondary partition. This can only be performed if the `firmwaredownload` was previously executed with the auto-commit flag disabled.

firmwaredownloadstatus

Use this admin level command to display the status of a firmware download. This command displays an event log that records the progress and status of the current `firmwaredownload` command. The event log is created by the current `firmwaredownload` command and is retained until another `firmwaredownload` command is issued. A timestamp is associated with each event.

firmwaredownloadshow

Use this user level command to display the firmware version information for the primary and secondary partitions of flash memory on a switch.

Error Log Enhancements

The Error Log subsystem now retains a maximum of 1,536 messages in RAM, that is, a total of 256 messages for each error message level (Panic, Critical, Error, Warning, Info, and Debug). In addition, important messages are stored in a separate persistent error log to guarantee that they are not lost in case of power outage or system reboot.

Note: The enhancement prevents messages of lesser severity from overwriting messages of greater severity. For example, *Warning* messages cannot overwrite *Error*, *Critical* or *Panic* messages.

Error log updates include:

- The error log subsystem supports persistent logging. Each switch integrates its own persistent log.
- The persistent log is preserved across power cycles and system reboots.
- The persistent log has a default capacity to store 1,024 error log entries.
- The persistent log can be resized at run time without having to reboot the switch or the system.
- The persistent log is configurable to a maximum of 2,048 entries. The persistent error log can be resized to between 1,024 and 2,048 entries.
- The persistent log is implemented as a circular buffer. When more than maximum entries are added to the persistent log, new entries overwrite old entries.
- All error messages of levels Panic and Critical are automatically saved in the persistent log as they are logged. This guarantees that critical or panic level messages are not lost in the event of unexpected system reboot or failover.
- A new command to control/filter error log messages. For example, the user may specify that all log messages marked *Warning* remain in the persistent error log.
- The commands `errdump` or `errshow` display a combination of the persistent log messages saved during previous system run time cycles, and the error log messages generated during the current run time cycle.

Note: Within Web Tools, the Fabric View Events ICON window does not separate persistent from RAM error messages. Please use the Events ICON located on the SAN Switch 2/32 for additional log details.

New Persistent Error Logging Commands

Three Fabric OS commands were modified and four new commands added for the persistent error logging functionality. For more information, refer to the *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide*.

The following commands were modified:

- `errdump`
- `errshow`
- `errclear`

Also, the following commands allow you to manage the persistent error log:

- `errsavelvlset`
- `errsavelvlshow`
- `errnvlogsize`
- `errnvlogsize`

Fabric OS Command Changes

New or modified commands added to the Fabric OS Version 4.0.2b include:

- `killtelnet`
- `loopporttest`
- `portcfgdelayflogi`
- `supportshow`
- `portcfglongdistance`
- `portcfgshow`
- `ifmodeset`

Note: For more information about these commands, refer to the *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide*.

portCfgLongDistance

Extended links in the same SAN are either 1 Gbps or 2 Gbps, but not both.

If you have 1 Gbps extended links in the SAN you can not add a 2 Gbps Extended Link to the same SAN.

Enhancement

A new parameter was added to this command. The new syntax is as follows:

```
portCfgLongDistance [slot/]port[, distance_level][, linkinitmode]
```

linkinitmode Operand

The linkinitmode operand applies to long distance setup only. It does not affect a normal link. It is added to ensure the long distance link initialization sequence.

The linkinitmode operand is not required for long distance, but may be useful when initiating L1 and L2 links.

linkinitmode Usage

Specify 1 to activate a long distance link initialization sequence. Specify 0 to deactivate this mode. The default value is 0 (disabled). This operand is optional. The following example is for a 100 km link on a port in a V4.0 switch with long distance link initialization protocol enabled:

```
switch:admin> portCfgLongDistance 2/3 L2 1  
done
```

SNMP Enhancements

SNMP security updates include:

- HP response to the CERT Coordination Center advisory notices VU#854306 and VU#107186.

These advisories occur when the CERT Coordination Center issues a broad based alert to the technology industry regarding potential security vulnerabilities identified in SNMP, ranging from unauthorized privileged access, denial of service attacks, or unstable behavior.

HP's Fabric OS Version 4.0.x is based on MontaVista's embedded Linux real-time operating system, and incorporates v15.2 of the SNMP agent from SNMP Research. In response to the advisory, HP has released Fabric OS

Version 4.0.2b. Fabric OS Version 4.0.2b and all subsequent versions include the most current patch level of v15.3.1.4 of the SNMP Research agent, which SNMP Research has indicated is not susceptible to the vulnerability described in notes VU#854306 and VU#107186.

- SNMP trap recipients have been linked to the Access Control List (ACL).

In order for an SNMP Management Station to receive a trap generated by the agent, the administrator must configure a trap recipient to correspond to the IP address of the Management Station using the `agtcfget` command. In addition, the trap recipient must be able to pass the ACL check.

The ACL check is as follows:

There are six ACLs to restrict SNMP get/set/trap operations to hosts under a host-subnet-area. Host-subnet-area is defined by comparing non-zero IP octets. For example, an ACL of `192.168.64.0` allows for access by any hosts that start with the specified octets. The connecting host is enabled to set each host-subnet-area to be read-write or read-only. Highest privilege matched out of six entries is given to the access.

The ACL check is turned off when all six entries contain `0.0.0.0`.

Fabric OS Commands

The following Fabric OS commands are included with this release of firmware.

ifModeShow and ifModeSet Commands

Changing the link mode is not supported for all network interfaces or for all Ethernet network interfaces. These commands are only functional for the “eth0” interface. For dual-CP systems, the `ifModeSet` command affects the CP that you are currently logged into. To set the link operating mode on the active CP you must issue this command on the active CP. To set the link operating mode on the standby CP you must issue this command on the standby CP. During failover the link operating mode is retained separately for each CP, since the physical links may be set to operate in different modes.

Note: Exercise care when using these commands. Forcing the link to an operating mode not supported by the network equipment to which it is attached may result in an inability to communicate with the system through its Ethernet interface.

Note: It is recommended that you only use these commands from the serial console port.

Example 1:

To advertise all modes of operation, follow this scenario for the `ifModeSet` command:

```
Are you sure you really want to do this? (yes, y, no, n): [no] y
Proceed with caution.
Auto-negotiate (yes, y, no, n): [no] y
Advertise 100 Mbps / Full Duplex (yes, y, no, n): [yes] y
Advertise 100 Mbps / Half Duplex (yes, y, no, n): [yes] y
Advertise 10 Mbps / Full Duplex (yes, y, no, n): [yes] y
Advertise 10 Mbps / Half Duplex (yes, y, no, n): [yes] y
Committing configuration...done.
cp0:admin>
cp0:admin> ifModeSet eth0
```

Example 2:

To force 10 Mbps Half Duplex, follow this scenario for the `ifModeSet` command:

```
cp0:admin> ifModeSet eth0
Are you sure you really want to do this? (yes, y, no, n): [no] y
Proceed with caution.
Auto-negotiate (yes, y, no, n): [no] n
Force 100 Mbps / Full Duplex (yes, y, no, n): [no]
Force 100 Mbps / Half Duplex (yes, y, no, n): [no]
Force 10 Mbps / Full Duplex (yes, y, no, n): [no]
Force 10 Mbps / Half Duplex (yes, y, no, n): [no] y
Committing configuration...done.
cp0:admin>
```

Fabric Watch Daemon Startup

During a switch startup or switch reboot, the Fabric Watch daemon is one of the last processes to become active. Depending on the size of the fabric, Fabric Watch may take several minutes to complete its start up sequence. Before Fabric Watch is completely active, it will not be able to monitor events occurring in the fabric. During this time, the `switchStatusPolicyShow` command will show the default settings instead of any custom settings.

SNMP Security

Security for the Simple Network Management Protocol (SNMP) functionality has been updated in two ways:

- Response to the CERT Coordination Center advisory notices VU#854306 and VU#107186.
- The CERT Coordination Center has issued a broad based alert to the technology industry regarding potential security vulnerabilities identified in SNMP, ranging from unauthorized privileged access, denial of service attacks, or unstable behavior.

Fabric OS Version 4.0.2b is based on MontaVista's embedded Linux real-time operating system, and incorporates V15.2 of the SNMP agent from SNMP Research. In response to the advisory, Fabric OS V4.0.2b includes the most current patch level of v15.3.1.4 of the SNMP Research agent, which SNMP Research has indicated is not susceptible to the vulnerability described in notes VU#854306 and VU#107186.

SNMP trap recipients have been linked to the Access Control List (ACL). In order for an SNMP Management Station to receive a trap generated by the agent, the administrator must configure a trap recipient to correspond to the IP address of the Management Station. In addition the trap recipient must be able to pass the ACL check.

The ACL check is as follows: There are six ACLs to restrict SNMP get/set/trap operations to hosts under a host-subnet-area. Host-subnet-area is defined by comparing non-zero IP octets. For example, an ACL of `192.168.64.0` allows for access by any hosts that start with the specified octets. The connecting host is enabled to set each host-subnet-area to be read-write or read-only. Highest privilege matched out of six entries is given to the access.

The ACL check is turned off when all six entries contain `0.0.0.0`.

SNMP Commands

The following SNMP commands are included with this release of firmware.

loopporttest Command

A new admin level command, `loopporttest`, has been added to this release. This command enables the administrator to perform a functional test of L_port M->M path on a loop.

Description

Use this command to verify the operation of the switch by sending frames from the port M transmitter, and looping the frames back through an external fiber cable, including all the devices on the loop, into the port M receiver. This exercises all the switch components from the main board to the SFP to the fibre cable to the SFPs (of the devices and the switch) and back to the main board.

The cables and SFPs connected should be of the same technology: meaning that a port with a short wavelength SFP is connected to another device with a short wavelength SFP using a short wavelength cable; and a long wavelength port is connected to a long wavelength port; and a copper port is connected to a copper port.

Only one frame is transmitted and received at any one time. The port LEDs flicker green rapidly while the test is running.

The test method is as follows:

1. Determine which ports are L_ports.
2. Enable ports for cabled loopback mode.
3. Create a frame F of data size (1,024 bytes).
4. Transmit frame F via port M, with D_ID to the FL port (ALPA = 0).
5. Pick up the frame from port M, the FL port.
6. Check if any of the 8 statistic error counters are non-zero: ENC_in, CRC_err, TruncFrm, FrmTooLong, BadEOF, Enc_out, BadOrdSet, DiscC3.
7. Check if the transmit, receive or class 3 receiver counters are stuck at some value.
8. Check if the number of frames transmitted is not equal to the number of frames received.
9. Repeat steps 3 through 8 for all ports present until the number of frames requested is reached, all ports are marked bad.

Note: You can specify a payload pattern to be used when executing this test. If the pattern is not specified, then at every 30 passes, a different data type is used to generate new pattern to create the frame. The data pattern will be generated base on each data type. Some data types may generate different data patterns on every pass. The data types are repeated every 210 pass.

Operands

This command has the following operands:

`nframes count`

Specify the number of times (or number of frames per port) to execute this test. The default value is 10.

`ports itemlist`

Specify a list of user ports to test. By default all the user ports in the current slot are tested. You can set the current slot by using the `setslot` command.

`seed pattern` Specify the seed pattern of the test packets. The data types are:

CSPAT: 0x7e, 0x7e, 0x7e, 0x7e,...

BYTE_LFSR: 0x69, 0x01, 0x02, 0x05,...

CHALF_SQ: 0x4a, 0x4a, 0x4a, 0x4a,...

QUAD_NOT: 0x00, 0xff, 0x00, 0xff,...

CQTR_SQ: 0x78, 0x78, 0x78, 0x78,...

CRPAT: 0xbc, 0xbc, 0x23, 0x47,...

RANDOM: 0x25, 0x7f, 0x6e, 0x9a,...

`width pattern_width`

Specify the width of the test pattern. Valid values include 1, 2, and 4 (which are byte, word, and quad).

Example

To perform a loopback port test:

```
switch:admin> loopporttest -ports 1/0-1/15
Running Loop Port Test .....
Test Complete: "loopporttest" Pass 10 of 10
Duration 0 hr, 0 min & 1 sec (0:0:0:127).
Passed
```

Diagnostics

The following are possible error messages if failures are detected:

DATA

INIT
PORT_DIED
EPI1_STATUS_ERR
ERR_STAT
ERR_STATS
ERR_STATS_2LONG
ERR_STATS_BADEOF
ERR_STATS_BADOS
ERR_STATS_C3DISC
ERR_STATS_CRC
ERR_STATS_ENCIN
ERR_STATS_ENCOUT
ERR_STATS_TRUNC
ERR_STAT_2LONG
ERR_STAT_BADEOF
ERR_STAT_BADOS
ERR_STAT_C3DISC
ERR_STAT_CRC
ERR_STAT_ENCIN
ERR_STAT_ENCOUT
ERR_STAT_TRUNC
FDET_PERR
FINISH_MSG_ERR
FTPRT_STATUS_ERR
LESSN_STATUS_ERR
MBUF_STATE_ERR
MBUF_STATUS_ERR
NO_SEGMENT
PORT_ABSENT
PORT_ENABLE

PORT_M2M
PORT_STOPPED
PORT_WRONG
RXQ_FRAME_ERR
RXQ_RAM_PERR
STATS
STATS_C3FRX
STATS_FRX
STATS_FTX
TIMEOUT
XMIT

See Also

camtest, centralmemorytest, cmemretentiontest, cmitest, itemlist, portloopbacktest, portregtest, setslot, spinsilk, sramretentiontest, crossporttest

killTelnet Command

A new admin level command, `killTelnet`, has been added to this release. This command enables the administrator to view a list of active CLI sessions (connected through telnet or serial port) and terminate a session.

Description

Use this command to terminate an open telnet session. The `killtelnet` command is an interactive menu driven command. Upon invocation, it lists all the current telnet and serial port login sessions. It lists information such as the session number, login name, the idle time, the IP address of the connection, and the time stamp of when the login session was opened. A prompt is then displayed where you can specify the session number of the connection you wish to terminate.

Example

To terminate an open telnet connection:

```
switch:admin> killtelnet
Collecting login information....Done
List of telnet sessions (5 found)
Session No  USER      TTY      IDLE      FROM      LOGIN@
   0      root      ttyS0    5days    -          8May02
   1      root      pts/0    23:40m    192.167.172.90  8May02
   2      root      pts/1    5days    192.167.172.90  8May02
   3      admin    pts/2    1.00s     192.167.132.56  5:19pm
   4      admin    pts/3    10.00s    192.167.133.83  5:23pm
Enter Session Number to terminate (q to quit) 4
Collecting process information... Done.
```

You have opted to terminate the telnet session:-

logged in as "admin ", from "192.168.133.83 "

since " 5:23pm" and has been inactive for "10.00s ", the current command executed being: "/bin/sh /fabos/". The device entry is: "pts/3 ".

This action will effectively kill these process(es):-

```
          USER      PID ACCESS COMMAND
/dev/pts/3      root  11404 f.... rbash
              root   11428 f.... chkdefaultpassw
              root   11717 f.... passwd
```

Please Ensure (Y/[N]): y

killing session.... Done!

```

Collecting login information....Done
List of telnet sessions (4 found)
Session No  USER      TTY      IDLE      FROM      LOGIN@
    0   root      ttyS0    5days    -          8May02
    1   root      pts/0    23:41m    192.167.172.90  8May02
    2   root      pts/1    5days    192.167.172.90  8May02
    3   admin    pts/2    12.00s    192.167.132.56  5:19pm
Enter Session Number to terminate (q to quit) q
switch:admin>

```

Note: The list of open sessions displayed with `killtelnet` includes the user's current session. Make sure you do not kill your own telnet session.

portCfgDelayFlogi Command

A new admin level command, `portCfgDelayFlogi`, has been added to this release. This command enables a user to configure a port, such that the FLOGI Accept for that port will not be sent out until all the routes are setup.

Description

Use this command to delay the FLOGI Accept for the port until routes are set up for the entire fabric. After a link disruption (caused by for example, `hafailover`), certain hosts do not query the Name Server before re-establishing communication with the targets. Those devices remember the port ID of the target with which they were communicating and transmit PLOGI to the targets soon after receiving the FLOGI Accept.

Since the device bypasses the Name Server, it is possible that the routes for remote targets are not set up at that time. If the host does not receive a response to its PLOGI, the I/Os that were in progress before the link disruption does not resume. By using this command, the user can specify the ports that have this behavior so that the switch will not send an FLOGI Accept until all routes are setup. That way after the link disruption, I/Os will resume. The configuration is saved in the non-volatile memory and is persistent across switch reboot or power cycle.

Operands

This command has the following operands:

- slot-Specify the slot number in a Core Switch. The slot number must be followed by a slash (/) and the port number. The Core Switch has a total of ten slots counted from 1 to 10. Slot number 5 and 6 are Control Processor cards, and slot 1 - 4 and 7 - 10 are switch cards. On each switch card, there are sixteen ports counted from the bottom 0 to 15. A particular port must be represented by both slot number (1 - 4 or 7 - 10) and port number (0 - 15).
- port-Specify a port number (0 - 15).
- mode-Specify a value of 1 to delay the FLOGI Accept for this port until route setup is complete. Specify a value of 0 to de-configure the delay of the FLOGI Accept for this port.

Example

To configure switch port 3 as a “delayed FLOGI” port:

```
switch:admin> portcfgdelayflogi 1/3, 1
done.
```

See Also

portShow, switchShow, configure, portCfgLport, haFailover

Command Enhancements

supportShow Command

The supportShow command with no additional parameters will now output information for all 64 ports within a single logical switch. The output from the following commands have been added to the output of the supportShow command:

```
fabStateShow
fabSwitchShow
chassisShow
fanShow
historyShow
```

portCfgLongDistance Command

A new parameter was added to this command. The new syntax is as follows:

```
portCfgLongDistance [slot/]port[, distance_level][, linkinitmode]
```

linkinitmode Operand

Only applies to long distance setup. It does not affect a normal link.

It is added to ensure the long distance link initialization sequence. It is not required for long distance, but may be useful when initiating L1 and L2 links.

linkinitmode Usage

Specify 1 to activate long distance link initialization sequence. Specify 0 to deactivate this mode. The default value is 0 (disabled). This operand is optional. The following example is for a 100km link on a port in a V4.0 switch with long distance link initialization protocol enabled:

```
switch:admin> portCfgLongDistance 2/3 L2 1
done.
```

portcfgshow Command

This command is enhanced by the addition of VC Link Init mode data. The setting of this option is shown as blank (..) when the long distance link initialization option is turned off and on. This value is set by the portCfgLongDistance command.

timeout Command

The syntax for this command is as follows: `timeout [interval]`

Use this command with no operands to display the current telnet time-out value.

Use this command with the interval operand to set the time-out value to the specified number of minutes. Using a time-out value of 0 will disable the time-out functionality so that login sessions are never be disconnected.

The default time-out value for CLI sessions (serial port and telnet) is 10 minutes.

firmwareCommit Command

Use this command to copy an updated firmware image on the primary partition to the secondary partition and commit both partitions of a CP to an updated\ version of the firmware. This must be done after each firmwaredownload, and after the switch has been rebooted and a sanity check is performed to make sure the new image is fine.

For switches which have flash memory set into two equal partitions, the primary partition is the where the system boots from, the secondary partition is where a copy of the firmware is stored, in case the primary partition is damaged. To maintain the integrity of the firmware image in the flash memory, the `firmwaredownload` command does update both partitions at once. You must download the new firmware to the secondary partition of a CP. When `firmwareDownload` completes successfully and the CP is rebooted, the system switches the primary partition (with the old firmware) to the secondary, and the secondary partition (with the new firmware) to the primary.

Note: Do not load the firmware into the primary (active) partition. The firmware **MUST** be loaded into the secondary partition and then the switch rebooted.

The default behavior of the `firmwaredownload` command automatically runs the `firmwarecommit` command after the reboot. For the cautious, the `firmwaredownload` command has an option to disable auto-commit of the new firmware. If you decide to disable the auto-commit option when running `firmwaredownload`, then, after the CP is rebooted, you must execute: the `firmwarecommit` command to copy the primary partition (with new firmware) to the secondary, and commit the new firmware to both partitions of the CP. Or, the `firmwarerestore` command to copy the secondary partition (with the old firmware) to the primary, and back out of the new firmware download.

The following example shows how to commit a new version of the firmware:

- Implemented as a circular buffer. When more than maximum entries are added to the persistent log, old entries are over-written by new entries.
- All error messages of levels Panic and Critical are automatically saved in the persistent log.
- Guarantees that critical or panic level messages are not lost in the event of unexpected system reboot or failover.

errdump and errShow Commands

The commands `errdump` or `errShow` display a superset of the persistent log messages saved during previous system run time cycles and the error log messages generated during the current run time cycle.

Options are provided to `errDump` command to display three options: all the errors (previous persistent log and the current run time log), only errors from the current run time cycle, or the errors from the persistent error log. Options are provided to clear the persistent error log. (`errClear -p`).

With the addition of a persistent log, the `errdump` and `errshow` commands display output of both the persistent error log and the volatile error log (RAM). However, the output shown by SNMP and Web Tools only displays the last 256 entries of the volatile log information.

Modified Error Log Commands

There are three modified, and four new Fabric OS commands implemented for the persistent error logging functionality. The following commands were modified:

errDump Command

Short Description: Display the error log, without page breaks.

Syntax

```
errDump [-s swinst] [-p] [-a]
```

Availability

```
admin
```

Description

Use this command to display the error log, showing entries in the log without any page breaks. It is identical to `errShow`, except that `errShow` prompts the user to type return between each log entry.

The output of the `errDump` command includes the display of errors/events history recorded in the persistent error log and error/events logged in the current run time cycle. This command also provides options to display **ONLY** those error/event messages that are saved in the persistent error log, or **ONLY** those messages generated during the current run time cycle.

All important error log messages, regardless of their message severity level, are stored in a persistent storage as they are logged. Both the persistent error log and the run time log are limited in space and managed as circular buffers. When either log overflows, old entries are replaced by new entries.

The persistent error log is saved across system reboots and power cycles and can be resized at run time.

When this command is executed from the Standby CP, the switch instance number operand is required.

The switch instance number is supplied by specifying the `<-s swinst>` operand.

This operand is not required when logged into the Active CP.

Operands

This command has the following operands:

`p` - Display messages from the persistent error log.

`a` - Display messages from the active error log. This displays error log messages logged during the current run time cycle that are present in the volatile memory (RAM).

`s swinst` - this is an optional parameter to specify a switch instance number. This parameter is required on the Standby CP. This parameter should not be used on the Active CP.

You must follow `-s` with the switch instance number where the command is to be executed. Valid values for switch instance are 0 (for the switch instance associated with slots 1 though 4) or 1 (for the switch instance associated with slots 6 though 10).

Example

To display the error log without page breaks:

```
switch:switch:admin> errDump
Error 03
0x2a5 (fabos): Jun 14 12:03:51
Switch: 0, Debug HAMKERNEL-IP_UP, 5, (session=3) Heartbeat from
Standby CP
Error 02
0x2a5 (fabos): Jun 14 12:03:50
Switch: 0, Info HAM-REDUNDANT_INFO, 4,
(Heartbeat Up) System in REDUNDANT state

Error 01
0x28b (fabos): Jun 14 12:01:27
Switch: 0, Error EM-CP_ERR, 2, CP in slot 5 set to faulty due to
CP ERROR
switch:switch:admin>
```

See Also

errShow, errSaveLvlSet, errSaveLvlShow, errNvLogSizeSet,

errNvLogSizeShow, errShow Command

New operands have been added to this command.

Short Description: Display the error log.

Syntax

```
errShow [-s swinst] [-a] [-p]
```

Availability

```
admin
```

Description

Use this command to display the error log, prompting the user to type return between each log entry. It is identical to `errDump`, except that `errDump` displays all entries without page breaks. The output of `errshow` command

includes the display of errors/ events recorded in the persistent error log during previous run time cycles and the display of error/event messages logged in the current run time cycle.

This command also provides options to display **ONLY** those error log messages that are saved in the persistent log and to display **ONLY** those messages that are logged during the current run time cycle. All important error log messages, regardless of their message severity level, are stored in a persistent storage as they are logged. Both the persistent error log and the run time log are limited in space and managed as circular buffers. When either log overflows, old entries are replaced by new entries.

The persistent error log is saved across system reboots and power cycles and can be resized at run time. When this command is executed from the Standby CP, the switch instance number operand is required. The switch instance number is supplied by specifying the `<-s swinst>` operand.

This operand is not required when logged into the Active CP.

Operands

This command has the following operands:

`p` - Display messages from the persistent error log.

`a` - Display messages from the active error log. This displays error log messages generated during the current run time cycle.

`s swinst` - this is an optional parameter to specify a switch instance number. This parameter is required on the Standby CP. This parameter should not be used on the Active CP.

You must follow `-s` with the switch instance number where the command is to be executed. Valid values for switchinstance are 0 (for the switch instance associated with slots 1 though 4) or 1 (for the switch instance associated with slots 6 though 10).

Example

To display the error log with page breaks:

```
switch:admin> errShow
Error 14
0x304 (fabos): Jun 14 11:57:52
Switch: 0, Warning FW-STATUS_SWITCH, 3, Switch status changed
from
HEALTHY/OK to Marginal/Warning
Type <CR> to continue, Q<CR> to stop:
```

See Also

errDump, errSaveLvlSet, errSaveLvlShow, errNvLogSizeSet, errNvLogSizeShow

errClear Command

New operands have been added to this command.

Short Description: Clear the switch error log.

Syntax

```
errClear [-s swinst] [-p]
```

Availability

```
admin
```

Description

Use this command to clear the error log for a particular switch instance.

If no operand is specified, this command clears the error log in RAM;

The persistent error log is not cleared. However, if -p option is specified, ONLY the persistent error log is cleared and the error log in RAM is not cleared.

When this command is executed from the Standby CP, the switch instance number operand is required. The switch instance number is supplied by specifying the <-s swinst> operand. This operand is not required when logged into the Active CP.

Operands

This command has the following operands:

s swinst - This is an optional parameter to specify a switch instance number.

This parameter is required on the Standby CP. This parameter is not used on the Active CP. You must follow -s with the switch instance number where the command is to be executed. Valid values for switch instance are 0 (for the switch instance associated with slots 1 through 4) or 1 (for the switch instance associated with slots 6 through 10).

p - Clear messages ONLY from the persistent error log.

Example

The following example shows how to clear the current run time error log on the Active CP:

```
switch:admin> errClear
```

The following example shows how to clear the persistent error log on the Active CP.

```
switch:admin> errClear -p
```

The following example shows how to clear the current run time error log on the Standby CP, for the switch instance 0.

```
switch:admin> errClear -s 0
```

The following example shows how to clear the persistent error log on the Standby CP, for the switch instance 0.

```
switch:admin>errClear -s 0 -p
```

See Also

errDump, errShow, errNvLogSizeSet, errNvLogSizeShow

errSaveLvlSet Command

Short Description: Set error save level of a switch. This command is new for Fabric OS V4.0.2b or higher.

Syntax

```
errSaveLvlSet [-s swinst] lvl
```

Availability

admin

Description

Use this command to control types of messages that are saved in the persistent error log. Message types are based on the message severity levels. By default, all messages of type Panic and Critical are saved in the persistent log. If you want to save messages of log levels less severe than Critical, use this command to specify a new message save level.

This new message save level is not persistent across a reboot. It is in effect only for that run time cycle.

When this command is executed from the Standby CP, the switch instance number operand is required. The switch instance number is supplied by specifying the `<-s swinst>` operand.

This operand is not required when logged into the Active CP.

Operands

This command has the following operands:

`s swinst` - This is an optional parameter. It shows switch instance number.

This parameter is required on the Standby CP. This parameter should not be used on the Active CP. You must follow `-s` with the switch instance number where the command is to be executed. Valid values for switch instance are 0 (for the switch instance associated with slots 1 through 4) or 1 (for the switch instance associated with slots 6 through 10).

`lvl` - Message severity level. Save those error log messages whose message severity level is less than (more severe) or equal to this level. The valid values are:

- Critical 1
- Error 2
- Warning 3
- Info 4

■ Debug 5

Example

The following example shows how to enable saving of Warning, Error, Critical and Panic messages in the persistent error log.

```
switch:admin> errSaveLvlSet 3
```

The following example shows how to enable saving of Warning, Error,

Critical and Panic messages in the persistent error log on the Standby

CP for the switch instance 0.

```
switch:admin> errSaveLvlSet -s 0 3
```

See Also

errDump, errSaveLvlSet, errSaveLvlShow, errNvLogSizeSet

errSaveLvlShow Command

Short Description: Show current error save level setting of a switch. This command is new for Fabric OS V4.0.2b or higher.

Syntax

```
errSaveLvlShow [-s swinst]
```

Availability

admin

Description

Use this command to find out the current value of the persistent error log save level for a given switch instance. When this command is executed from the Standby CP, the switch instance number operand is required. The switch instance number is supplied by specifying the `<-s swinst>` operand. This operand is not required when logged into the Active CP.

Operands

This command has the following operands:

`s swinst` - this is an optional parameter to specify a switch instance number. This parameter is required on the Standby CP. This parameter should not be used on the Active CP. You must follow `-s` with the switch instance number where the

command is to be executed. Valid values for switch instance are 0 (for the switch instance associated with slots 1 through 4) or 1 (for the switch instance associated with slots 6 through 10).

Example

Following example shows how to display current error log save level.

```
switch:admin> errSaveLvlShow
```

The following example shows how to display current error log save level on the Standby CP for switch 0.

```
switch:admin> errSaveLvlShow -s 0
```

See Also

errSaveLvlSet, errNvLogSizeSet, errNvLogSizeShow, errShow

errNvLogSizeSet Command

Short Description: Resize the persistent error log. This command is new for Fabric OS V4.0.2b or higher

Syntax

```
errNvLogSizeSet [-s swinst] number_of_entries
```

Availability

admin

Description

Use this command to resize the persistent error log of a switch to a new size specified by the operand `number_of_entries`. The persistent error log is resized immediately after the successful execution of this command.

When this command is executed from the Standby CP, the switch instance number operand is required. The switch instance number is supplied by specifying the `<-s swinst>` operand. This operand is not required when logged into the Active CP.

Operands

This command has the following operands:

`s swinst` - This is an optional parameter. It specifies a switch instance number.

This parameter is required on the Standby CP. This parameter should not be used on the Active CP. You must follow `-s` with the switch instance number where the command is to be executed. Valid values for switch instance are 0 (for the switch instance associated with slots 1 though 4) or 1 (for the switch instance associated with slots 6 though 10).

`number_of_entries`

Specify the new persistent error log size in unit of number of error log entries. Error log can be resized within specified limits. This command fails if an attempt is made to change the persistent error log beyond the range of valid values. Valid values are from 1024 to 2048.

Example

The following example shows how to resize the persistent error log to 1500 entries.

```
switch:admin> errNvLogSizeSet 1500
```

The following example shows how to resize persistent log to save 1500 error log entries on the Standby CP, for switch instance 0.

```
switch:admin> errNvLogSizeSet -s 0 1500
```

See Also

`errNvLogSizeShow`, `errSaveLvlShow`, `errShow`

errNvLogSizeShow Command

Short Description: Show the current persistent (non-volatile) error log configuration of a switch. This command is new for Fabric OS V4.0.2b or higher.

Syntax

```
errNvLogSizeShow [-s swinst]
```

Availability

admin

Description

Use this command to show the current maximum size of the persistent error log. When this command is executed from the Standby CP, the switch instance number operand is required. The switch instance number is supplied by specifying the `<-s swinst>` operand. This operand is not required when logged into the Active CP. The configuration of the persistent error log on the active CP is independent of the configuration on the standby CP.

Operands

This command has the following operands:

`s swinst` - This is an optional parameter. It specifies a switch instance number. This parameter is required on the Standby CP. This parameter should not be used on the Active CP.

You must follow `-s` with the switch instance number where the command is to be executed. Valid values for switch instance are 0 (for the switch instance associated with slots 1 though 4) or 1 (for the switch instance associated with slots 6 though 10).

Example

The following example shows how to display persistent error log configuration.

```
switch:admin> errNvLogSizeShow
```

Note: The Persistent Error Log stores up to 1024 entries.

The following example shows how to display persistent error log configuration on the Standby CP, for switch instance -0.

```
switch:admin> errNvLogSizeShow -s 0
```

See Also

```
errNvLogSizeSet, errSaveLvlShow, errShow
```

Error Log Messages

The following Error Log features are included with this release of firmware.

syslogd

The Fabric OS maintains an internal log of all error messages. The internal log buffers are limited in capacity; when the internal buffers are full, New messages overwrite old messages.

The switch can be configured to send error log messages to a UNIX host system that supports `syslogd`. This host system can be configured to receive error/event messages from the switch and store them in files on the computer hard drive. This enables the storage of switch error log messages on a host system and overcomes the size limitations of the internal log buffers on the switch.

The `syslogd` is a process that runs on UNIX or Linux systems that reads and logs messages to the system console, log files, other machines and users as specified by its configuration file. Refer to the manual pages and related documentation for your particular UNIX host system for more information on the `syslogd` process and its capabilities.

Note that the host system can be running UNIX, Linux or any other operating system as long as it supports standard `syslogd` functionality. The switch by itself does not assume any particular operating system to be running on the host system. The only requirement is that the host system must support standard `syslogd` to receive error log messages from the switch.

Error Message Format

An example of an error/event message received by the remote `syslogd` host from the switch.

```
Jun 4 18:53:59 sqab186 kernel: 0x299 (fabos): Switch: 0,  
Info HAMKERNEL-IP_UP, 4, (session=16) Heart-beatup from Standby  
CP
```

Example Summary

The first two items are the event's date and time (as known by the UNIX host machine where `syslogd` is running) and the machine name that generated the message (in this case it is the name of switch). The word “kernel” is the name of the `syslogd` facility used by the switch to send error log messages to the remote host.

The rest of the message is similar to the error log message output from the `errShow` command line interface on the switch.

The fields that are specific to the switch error log message are:

- ID of the task that generated the error (in the example this is 0x299)
- Name of the task that generated the error (in the example this is (fabos))
- Switch instance number (in the example this is Switch 0)
- Message severity level in word (in the example this is Info)

The error message identifier consists of the module name (in the example this is HAMKERNEL) and the message name (in the example this is IP_UP).

The numeric value of the message severity level is defined by the switch (in the example this is 4). A descriptive text string is also provided (in the example this is Heartbeat up from Standby CP).

Message Classification

syslogd messages are classified according to facility and priority (severity code). This enables a system administrator to take different actions depending on the error.

The switch supports 6 message severity levels for error log messages.

The following table provides a mapping between severity levels used by the switch and the syslogd severity levels supported by the UNIX system.

Message severity Levels/UNIX syslogd message severity levels:

- Numerical Value: Numerical Value
- Panic (0): Emergency (LOG_EMERG) (0)
- Critical (1): Alert (LOG_ALERT) (1)
- Error (2): Error (LOG_ERR) (3)
- Warning (3): Warning (LOG_WARNING) (4)
- Info (4): Info (LOG_INFO) (6)
- Debug (5): Debug (LOG_DEBUG) (7)

syslogd Configuration

This procedure explains how to configure the switch to dispatch error log messages to a remote syslogd host. To configure the switch to forward switch error log messages to a remote syslogd host the following steps must be performed:

1. Login to the switch as Admin user.
2. At the command line enter the syslogdipadd command as follows:

```
switch:admin>syslogdipadd "IP address of the remote syslogd host"
```
3. Verify the IP address was entered correctly using the syslogdipshow command.

This following example shows how to configure the switch to dispatch error log messages to a remote syslogd host whose IP address is 192.168.148.189

```
switch:admin> syslogdipadd 192.168.148.189
switch:admin> syslogdipshow
syslog.IP.address.1 192.168.148.189
```

To disable sending of error log messages to a previously enabled remote `syslogd` host do the following:

1. Login to the switch as Admin user.
2. At the command line enter the `syslogdipremove` command as follows:

```
switch:admin>syslogdipremove "IP address of the remote syslogd host"
```
3. Verify the IP address was deleted using the `syslogdipshow` command.

The following example shows how to disable sending of error log messages to a previously configured remote `syslogd` host whose IP address is 192.168.148.189:

```
switch:admin> syslogdipremove 192.168.148.189
```

syslogd Configuration on the Remote Host

The `syslogd` configuration on the UNIX host provides the `syslogd` daemon with instructions on how to process different messages it receives from the switch.

The following are example entries in the `syslog` configuration file, `/etc/syslog.conf`, on how to store switch error log messages received from the switch.

Note: Please refer to syslog related manual pages on your UNIX system for the full documentation of the syslog configuration file.

Example

The following entry in `/etc/syslog.conf` causes all messages (Debug, Info, Warning, Error, Critical, and Panic) from the switch stored in the file `/var/adm/silkworm`.

```
kern.debug /var/adm/silkworm
```

The `kern` prefix identifies that the switch uses “kernel” `syslogd` facility to dispatch error log messages to the `syslogd` daemon.

Syslogd CLI Commands

Below is a list of commands that are related to the `syslogd` configuration. Please refer to the help pages of these commands for more details.

Command Summary

- `syslogdipadd`—Add the IP address of the remote `syslogd` host to the switch.
- `syslogdipremove`—Remove the IP address of the remote `syslogd` daemon.
- `syslogdipshow`—Show the list of configured `syslogd` IP addresses.
- `errshow`—Display messages from the error log on the switch.

Updating the Core Switch PID Format

Updating the Core Switch PID Format is necessary when upgrading an existing SAN to support larger port-count switches. When a switch with more than sixteen ports is introduced into an existing fabric, this parameter needs to be set on all switches in the fabric.

Note: HP always recommends redundant fabrics and multi-pathing software for uptime-sensitive environments. If a redundant SAN architecture is in place, the Core PID update can take place without application downtime. To ensure maximum ease of administration, this parameter can and should be proactively set on a fabric before it ever enters production, whether or not an upgrade to larger switches is planned.

Updating Procedure

This process should be executed as part of either the online or offline update processes when updating an existing fabric. However, it may be implemented in a stand-alone manner on a non-production fabric, or a switch that has not yet joined a fabric.

Before executing this procedure, ensure that all switches in the fabric are running Fabric OS versions that support the new addressing mode. HP recommends the following:

- Version 2.6.0c or higher for 1 Gbps Switches
- Version 3.0.2c or higher for 2 Gbps SAN Switches
- Version 4.0.2b or higher for 2 Gbps Core Switches

Note: All switches running any version of Fabric OS 4.x are shipped with the Core Switch PID Format enabled, so it is not necessary to perform the PID format change on these switches.

The actual process of changing the PID format is quite simple. Telnet into each switch in the fabric, and disable the switch using the `switchDisable` command. Use the `configure` command to change the parameter as shown in the following example:

Example

```
switch:admin> switchdisable
switch:admin> configure
Configure...

Fabric parameters (yes, y, no, n): [no] yes
Domain: (1..239) [1]
R_A_TOV: (4000..120000) [10000]
E_D_TOV: (1000..5000) [2000]
Data field size: (256..2112) [2112]
Sequence Level Switching: (0..1) [0]
Disable Device Probing: (0..1) [0]
Suppress Class F Traffic: (0..1) [0]
SYNC IO mode: (0..1) [0]
VC Encoded Address Mode: (0..1) [0] 1
Core Switch PID Format: (0..1) [0] 1
Per-frame Route Priority: (0..1) [0]
Long Distance Fabric: (0..1) [0]
BB credit: (1..27) [16]
```

```
Virtual Channel parameters (yes, y, no, n): [no]
Switch Operating Mode (yes, y, no, n): [no]
Zoning Operation parameters (yes, y, no, n): [no]
RSCN Transmission Mode (yes, y, no, n): [no]
Arbitrated Loop parameters (yes, y, no, n): [no]
System services (yes, y, no, n): [no]
Portlog events enable (yes, y, no, n): [no]
Committing configuration...done.
switch:admin> switchenable
```

Use `cfgEnable [active_zoning_config]` on the switch to update zoning to use the new PID format. This does not change the definition of zones in the fabric, but causes the lowest level tables in the zoning database to be updated with the new PID format setting.

Example:

```
switch:admin> cfgEnable myZoningCfg
```

Finally, use the `switchEnable` command to re-enable the switch.

Once this is done on every switch in the fabric, all switches in the fabric will operate with the new addressing mode.

Note: For more information on upgrading to larger port count switches, refer to the HP SAN Design Guide and HP support services.

Additional CLI commands

portcfglongdistance

Extended links in the same SAN are either 1 Gbps or 2 Gbps, but not both. If you have 1 Gbps extended links in the SAN you can not add a 2 Gbps Extended Link to the same SAN.

Enhancement

A new parameter was added to this command. The new syntax is as follows:

```
portCfgLongDistance [slot/]port[, distance_level][,  
linkinitmode]
```

linkinitmode Operand

The linkinitmode operand applies to long distance setup only. It does not affect a normal link. It is added to ensure the long distance link initialization sequence.

The linkinitmode operand is not required for long distance, but may be useful when initiating L1 and L2 links.

linkinitmode Usage

Specify 1 to activate a long distance link initialization sequence. Specify 0 to deactivate this mode. The default value is 0 (disabled). This operand is optional. The following example is for a 100 km link on a port in a V4.0 switch with long distance link initialization protocol enabled:

```
switch:admin> portCfgLongDistance 2/3 L2 1  
done
```

Adding the SAN Switch 2/32 to an Existing Fabric

Read the following section for important information related to adding the switch to the fabric.

Merging a New Switch to a Fabric Containing an Active Zone Configuration

Use these steps to merge a new switch to a fabric with an active zone configuration database.

1. Log into the new switch.
2. Verify that a Zoning license is installed. Use the `licenseshow` command to view currently installed licenses.
3. Verify the Core Port Identifier (PID) Format is consistent with the existing fabric. Use the `configure` command to view current Core PID Format setting.

Note: The SAN Switch 2/32 is preconfigured with the Core PID format enabled. The existing fabric must also have this format enabled. The `configure` command is used to change the PID format on older switches. If the PID format is not consistent across the fabric, the fabric will segment. Refer to Appendix B in the *HP StorageWorks SAN Switch 2/32 Installation Guide* supplied with your switch for information on setting the Core PID format.

4. Verify that the available memory on the new switch is large enough for the existing zone configuration database. Use the `cfgsize` command to verify the maximum size of zone configuration database for the switch. For example,
 - a. A Fabric OS v2.6.0x switch can accommodate up to 96K of zone configuration database.
 - b. A Fabric OS v3.0.2x switch can accommodate up to 128K of zone configuration database.
 - c. A Fabric OS Version 4.0.2b switch can accommodate up to 128K of zone configuration database.
5. Verify that SAN Switch 2/32 interoperability mode is consistent with the pre-existing switches in the fabric. Use the `interopmode` command to view the interoperability mode of the switch.

Note: If the `interopmode` is inconsistent between the new switch and the fabric, the merge fails and fabric segments. If the switches use different `interopmode` settings, you must make them the same. Refer to the *HP StorageWorks Fabric OS Procedures Version 3.0.x/4.0.x User Guide* for detailed information on updating the `interopmode`.

6. Clear the switch of all zoning information by running the following set of commands:

```
cfgdisable
cfgclear
cfgsave
```
7. Connect the switch to the fabric through an ISL cable. Once the switch is connected to the fabric, the zone configuration information for the fabric will automatically copy to the switch.
8. Clear the Management server Platform Database from the switch with the `msPlClearDB` command.

Java Runtime Environment for HP-UX

Java runtime environment for HP-UX can be downloaded from:

<http://www.hp.com/products1/unix/java/java2/sdkrtel4/downloads/index.html>

Fill out the required information and press the finish button at the bottom of the page.

You will then be directed to a page with the following information.

```
hp-ux runtime environment,  
for the Java™ 2 platform  
version 1.4.0.02
```

The product will be installed under `/opt/java1.4/jre`. If you have a previous installation of 1.4, please uninstall it using `swremove` and move any personal files from your existing `/opt/java1.4/jre` directory before you begin the new installation. If you do not uninstall a previous installation, you may see messages such as “Error: You have specified more than one fileset selection.”

You need approximately 60 MB of disk space on your system to install the software.

Download the software into a location with adequate space. We'll use the directory `/tmp` in our example.

Note: Download works on both Workstations and Servers. Some browsers don't recognize the depot format and download the file as a text file. If this happens, download by pressing the shift key at the same time you press your mouse button.

```
download hp-ux runtime environment, for the Java 2 platform  
(checksum 2162272626 37683200)
```

To verify that the file downloaded correctly, at the UNIX prompt run the command `cksum <filename>`. If the file downloaded correctly, the checksum number for the file you downloaded should match the checksum number given above for that file.

Report any download problems to gojava@cup.hp.com.

The download file runs on both Workstations and Servers.

As root user, use the SD-UX `swinstall` command to install the software:

```
/usr/sbin/swinstall&
```

It will lead you through the installation. We recommend you select the **Reinstall filesets** and unselect the **Mount filesystems** option from the options menu. Change Source Depot Type to **Local Directory** and Source Depot Path to `/tmp/<filename>` (If you used a directory other than `/tmp` in step two, replace `/tmp` with that directory name.)

After completing the installation, remove `/tmp/<filename>` with:

```
rm -f /tmp/<filename>.
```

The HP-UX Runtime Environment, for the Java 2 Platform is installed by default in `/opt/java1.4/jre`. This directory contains the complete set of files you may place in your application. Be sure to read the `jre.os11.release.notes` in `/opt/java1.4/jre` for further information.

Compatibility

Note: Earlier versions of Core Switch 2/64 firmware (Version 4.0.0x) cannot be loaded onto a SAN Switch 2/32.

The SAN Switch 2/32 is compatible with the following switches in the fabric, running Fabric OS Version 3.0.2k or later:

- SAN Switch 2/8 EL
- SAN Switch 2/8 Power Pak
- SAN Switch 2/16
- SAN Switch 2/16 Power Pak

Note: For the Fabric OS Version 2.x switches or Fabric OS Version 3.x switches, the Core Switch PID Format must be enabled (set to 1) using the `configure` command before it can interconnect with the SAN Switch 2/32. For more information regarding the Core Switch PID Format, please refer to Appendix B in the *HP StorageWorks SAN Switch 2/32 Installation Guide*, "Updating the Core PID Format." A hardcopy version of the installation guide is supplied with your switch.

QuickLoop

QuickLoop, in either its original hub emulation mode or in Fabric Assist mode, is not supported on the SAN Switch 2/32. This means that direct attachment of private hosts to the SAN Switch 2/32 is not supported.

MIB Files

MIB files are used for SNMP applications such as HP OpenView and HP Insight Manager. The SAN Switch 2/32 supports the following MIB files:

- v4_0FA.mib (supports Fibre Alliance MIB v3.0)
- v4_0FE.mib (v4_0FE.mib is same as festd.smiv2 in v3.0 and refers to RFC 2837)
- v4_0SW.mib (Fibre Channel Switch MIB v4.0)
- v4_0TRP.mib (Fibre Channel Switch Trap MIB v4.0)

For more information, refer to the *hp StorageWorks mib reference version 3.0/4.0*, available from the HP website at:

<http://h200005.www2.hp.com/bc/docs/support/SupportManual/lpg29296/lpg29296.pdf>

Note: Verify that SNMP-FRAMEWORK-MIB and RFC1155-SMI are loaded before loading v4_0FE.mib.

Cascading

Cascading of switches is supported for up to 7 hops where a hop is defined as a connection from one switch to another. Connections should be made such that traffic from an NL_Port will not transverse more than the number of currently supported hops when traveling through the cascaded switches.

Cascading switches sequentially assign domain addresses to the switches prior to connecting them to other switches in a SAN. When connecting a powered down switch to a SAN that is running, the SAN will automatically assign a domain number to the new switch upon power up. If connecting a SAN with duplicate domain numbers to a switch, the switch will not join the SAN. Therefore, it is best to manually assign a domain number, when adding a new switch to a SAN.

Management Server

Management Server now uses Topology Discovery during the fabric topology discovery process.

The process involves two standards, FC-FS and FC-GS-3:

- **FC-FS**

RTIN/RNID queries: Request Node Identification Data and Request Topology Information are now supported.

- **FC-GS-3**

GATIN/GNID/GTIN: Get Attributes of Topology Information/Get Node Identification Data/ Get Topology Information are now supported.

Enterprise Virtual Array

The minimum supported firmware level for the StorageWorks Enterprise Virtual Array is VCS Version 2.002. Perform the Enterprise storage subsystem firmware upgrade before the upgrade of the switch firmware. Please consult the Enterprise Virtual Array documentation for specific information for upgrading VCS firmware.

Standards Compliance

Fabric OS Version 4.0.2b is compliant with the following Fibre Channel Standards:

- FC-AL ANSI X3.272: 1996
- FC-AL-2 NCIT S 332: 1999
- FC-FLA NCIT S TR-20: 1998
- FC-GS-3 NCITS 348-2000 Rev 7.01
- FC-FG ANSI X3.289: 1996
- FC-PH ANSI X3.230: 1994
- FC-PH-2 ANSI X3.297: 1997
- FC-PH-3 ANSI X3.303: 1998
- FC-PLDA NCIT S TR-19: 1998
- FC-SW-2 Rev 5.3

- FC-VI Rev 1.61
- FC-MI, Rev 1.92
- FC-SB-2 Rev 2.1 (FICON Support)
- FC-BB Rev 4.7
- FC-FS Rev 1.7 (Still in draft)
- FC-BB-2 Rev 5.3 (Still in draft)
- IPFC RFC 2625
- FCP ANSI X3.269: 1996
- FCP-2 Rev 7

Known Issues

Read the following section for a list of current Version 4.0.2b limitations and possible workarounds.

Ethernet Port Lockup

Switches running 4.0.2b code that are connected to the network may experience an ethernet port lockup, which disallows using telnet or web tools to manage the switch. This can be caused by auto-negotiation setting the port to full duplex. You can check this by using the `ifmodeshow` command.

```
admin> ifmodeshow "eth0"  
Link mode: negotiated 100baseTx-FD, link ok  
admin>
```

If you experience a port lockup, hard set the port to 100, half duplex.

```
admin> ifmodeset "eth0"
```

Encoding Out Error Count

Encoding Out Error Counts vary under the following conditions:

- When the switch port is set to auto-negotiation, and an N-port device is connected, the port synchronization takes longer to complete, and a larger error count displays.

- If a 1 Gbps signal is received and the speed negotiation is transmitting at 2 Gbps, a larger error count displays. If the portSpeed and N-port device are configured to 2 Gbps, encoding out errors are minimal. Similarly, if the portSpeed and N-port device are configured to 1 Gbps, encoding out errors are minimal.
- If auto-negotiation is set, the potential error count can be large and cause the link to take longer to initialize. The large error count does not cause data integrity problems since all errors that occur during link initialization are counted, but no data is allowed to be transferred by the switch port until after auto-negotiation is complete.

OpenVMS, Alpha and Fibre Channel Target Device

A problem has been reported when installing OpenVMS on certain Alpha Platforms if the target device is a Fibre Channel disk.

Scenario

When booting an Alpha Server through a DS-KGPSA-CA (3.82a1) Fibre Channel adapter that is connected to a SAN Switch 2/32 or Core Switch 2/64 with firmware V4.0.2b, the Fibre Channel target device may not be configured. This problem does not occur on all Alpha Servers.

Workaround

If the target device is not seen during the installation, exit Option 1 by typing <Ctrl>C. This will return you to the installation main menu, to allow you to perform step 2 through step 5.

1. Boot the OpenVMS installation CD from SRM console as described in the OpenVMS Alpha Version 7.x Upgrade and Installation Manual

```
>>> BOOT DQA0
```

2. Select option 7 from the installation menu. This will take you to the DCL prompt.

3. Issue the following command to configure the target device.

```
$$$ MCR SYSMAN IO AUTO /FULL
```

4. Verify the Fibre Channel target device is configured and available.

```
$$$ SHOW DEVICE DG
```

5. Logout from the DCL prompt. This will return you to the Installation Menu.

```
$$$ LOGOUT
```

Now select Option 1 from the installation menu to install/upgrade the operating system as you normally would.

OpenVMS Path Failback

In very specific configurations utilizing multiple OpenVMS hosts connected to multiple ports of an HP StorageWorks SAN Switch 2/32, it is possible that not all paths will re-establish to a switch after a failover/failback failure scenario. In all cases where a path failure occurs, initial path failover to an alternate path occurs as expected, with no loss of data. Once the initial failed path is repaired however, it is possible under certain rare conditions, for the failback sequence to the repaired path to be unsuccessful.

HP believes the likelihood of occurrence is extremely low and has only encountered this condition under extensive, multiple repeated failover/failback test sequences. This condition is expected to be corrected in a future release.

Note: HP strongly recommends that customers periodically monitor device status to verify access is available on all configured paths. HP further recommends that cabling for multiple paths follow the high availability cabling guidelines published in the *HP StorageWorks SAN Design Reference Guide*, which specifies to connect each path in a multi-path configuration to a different Fibre Channel switch.

Monitoring Status of Device Paths

Periodically use the `show dev/full` or `show dev/multi` command to display status of device paths. If a path is determined to be missing, follow the procedure below to restore the path.

Restoring Missing Device Paths

Restore device paths in one of two ways:

- By disabling/enabling the affected switch port, or
- By disconnecting/reconnecting the affected HBA cable at the HBA or at the switch port.

Disable/Enable the Switch Port

Use these steps to disable/enable the affected switch port.

1. Determine which path is missing using the `show dev/full` or `sho dev/multi` command.
2. After connecting to the switch via telnet, issue the command `portdisable xx` (where `xx` = the switch port number the HBA is plugged into) followed by `portenable xx`.

Disconnect/Reconnect the affected HBA cable

Use these steps to disconnect/reconnect the affected HBA cable.

1. Determine the affected HBA cable.
2. To disconnect/reconnect the HBA cable at the switch, issue the command per the following example:

```
set dev $1$dga601:/switch/path=PGA0.5000-1FE1-5000-2DED, set
dev $1$dga604:/switch/path=PGA0.5000-1FE1-5000-2DE8
```

Verify that Paths are Restored

Issue the `show dev/multi` command to verify the paths are restored, as follows:

```
VMS06>show dev /mul
$1SDGA601: (VMS06) Mounted      1 4/4 PGA0.5000-1FE1-5000-2DED
$1SDGA602: (VMS06) Mounted      0 4/4 PGB0.5000-1FE1-5000-2DEC
$1SDGA603: (VMS06) Mounted      0 4/4 PGB0.5000-1FE1-5000-2DE9
$1SDGA604: (VMS06) Mounted      1 4/4 PGA0.5000-1FE1-5000-2DE8
```

Routing

Regardless of how many E_Ports are connected between two switches, the maximum routing paths are currently limited to 16 E_Ports for the SAN Switch 2/32.

The `urouteshow` command may occasionally indicate the wrong routing paths of I/O traffic. This is a problem with the `urouteshow` command, as I/O traffic is still routed correctly.

configDownload Command

The `configdownload` command is designed to restore a backed-up configuration for a switch. Use caution when downloading configuration files from other switches. The following confirmation message now appears prior to completing the `configdownload` command on the SAN Switch 2/32:

```
This command is used to download a backed-up configuration for a
specific switch. If using a file from a different switch, this
file's configuration settings will override any current switch
settings. Downloading a configuration file which was uploaded
from a different type of switch, may cause this switch to fail.
```

```
Do you want to continue [y/n]: y
```

The `configupload` and `configdownload` commands do not work on the Microsoft FTP server if no password is specified.

The `configupload` and `configdownload` commands do not work if no password is specified.

MIB and SNMP

To reduce security exposures, the following functionality has been removed from the MIB:

- Firmware download
- Configuration file download
- Configuration file upload

This was accomplished by removing support for the following MIBs:

- `swFwUpgrade`
- `swCfUpload`
- `swCfDownload`

Note: Use the API or other management methods to access these functions.

Troubleshooting the I2C Time-out message

If an EM, `I2C_TIMEOUT` message displays, then either the I2C bus experienced a fault (usually transient) or there is a hardware problem.

Recommended Steps

Use these steps to determine if there is a hardware problem.

1. Determine which component is indicated. The message provides the information as follows:

```
<fru_type> <unit> I2C timed out: state <curr_state>
```
2. Check the LEDs on the related hardware component.
3. Enter the `switchstatusshow`, `chassisshow`, and `sensorshow` commands.
4. Take the appropriate action. If one of the components appears to be faulted, try reseating the component. If it still appears to be faulty, replace the component.

Note: If the LEDs and command printouts indicate that all components are healthy, then it was a transient I2C bus fault, and no action is required.

Documentation Anomalies

Feature/Option Configuration Callouts in Readme.txt

The `readme.txt` file included on your software CD does not correctly identify available SAN Switch 2/32 feature/option configurations. Refer to [Features Summary](#), page 6, of these Release Notes for current information.