hp StorageWorks

SAN switch 2/32, version 4.0.2b
release notes

Part Number: AV-RTT4A-TE

First Edition (October 2002)

These Release Notes contain late-breaking and supplemental information for the hp StorageWorks SAN switch 2/32, Version 4.0.2b. 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 StorageWorks website at:

http://www.compaq.com/storage/index.html

Welcome to the hp StorageWorks SAN Switch 2/32! Thank you for choosing our products. This file contains late-breaking changes that may not be included in the product documentation. It also provides information for computers that may not have the ability to use Acrobat to determine what is on the hp StorageWorks SAN Switch 2/32 Software v4.0.2b CD.

Release Notes Contents

These Release Notes cover the following major topics:

Firmware Version 4.0.2b Overview

The hp StorageWorks SAN Switch 2/32 ships with Version 4.0.2b firmware.

Firmware improvements per this release involve:

- link initialization
- API
- SNMP
- help
- firmware download
- web server security.

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.

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 Idntifier (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. 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 v4.0.2b switch can accommodate up to 128K of zone configuration database.

5. Verify that the SAN Switch 2/32's 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 Operating System 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.

SAN Switch 2/32 Hardware Updates

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

Important Information Regarding the HP System/e Rack Mounting Hardware

HP highly recommends installing the switch in the optional System/e Rack using only the hardware supplied with the rack.

For example, when installing the two inner rails on either side of the switch, you *must* use the six #8-32 x 5/16 Phillips pan-head screws, and #8 flat washers as specified in the *hp StorageWorks SAN Switch 2/32 Installation Guide*. The #8 flat washer shortens the #8-32 x 5/16 Phillips pan-head screw so that it does not interfere with the internal components of the switch.

IMPORTANT: Using longer than recommended screws to install your switch into the HP System/e Rack Kit will result in physical damage to the switch motherboard.

Documentation Updates

The *hp StorageWorks SAN Switch 2/32 Version 4.0.x Installation Guide* supplied with your switch lists the HP System/e Rail Kit as an option. This is not always true.

When ordering the SAN Switch 2/32, you may receive an HP System/e Rail Kit in addition to standard components with your order. Use the HP System/e components for mounting your switch in an HP System/e Rack, following the instructions provided in the *SAN Switch 2/32 Installation Guide*.

NOTE: The hardware that makes up the HP System/e Rail Kit are non-saleable components. You can identify this hardware per the following HP part numbers:
- A7340-87901 (Rail, qty 2)
- A7340-87902 (hardware, qty 1)

SAN Switch 2/32 Firmware Version 4.0.2b Updates

The following lists enhancements to Fabric OS Version 4.0.2b:

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

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 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.

firmwareshow

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.

IMPORTANT: 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 fail-over.

- 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
- errnvlogsizeset
- errnvlogsizeshow

Fabric OS Command Changes

The following lists new or modified commands added to the Fabric OS Version 4.0.2b:

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

NOTE: For more information about these commands, refer to the *hp StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Manual.*

`portcfglongdistance` Command Summary

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

It 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 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.

SNMP Enhancements

SNMP security updates include:

- HP 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.

    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 `agtcfgset` 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'.

Compatibility

The SAN Switch 2/32 is compatible with the following switches in the fabric:

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

- hp StorageWorks SAN Core Switch 2/64 running Fabric OS Version 4.0.2b or later

- hp StorageWorks SAN Switch 2/8EL, hp StorageWorks SAN Switch 2/16 EL, or hp StorageWorks SAN Switch 2/16 switches running Fabric OS Version 3.0.2c or later

- premerger hp or premerger Compaq switches running Fabric OS Version 2.6.0c or later

NOTE: For the Fabric OS Version 2.x switches or Fabric OS Version 3.x switches, the Core Switch PID Format must be enabled (that is, 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. However, fabric or loop targets attached to the SAN Switch 2/32 may be included in Fabric Assist Zones for private hosts attached to other switches in the fabric.

SFPs

The SAN Switch 2/32 supports the following SFP types:

- Finisar FTRJ-8519-3-2.5

- Finisar FTRJ-8519-7D-2.5, Compaq part number DS-DMSHT-AA, HP part number A6515A (Smart SFP)

- Finisar FTRJ-1319-3-2.5,Compaq part number DS-DMLNG-AA, HP part number A6516A

- IBM 42P21SNYAA10

- Agilent HFBR 5720l

MIB Files

MIB files are used for SNMP applications such as HP OpenView and HP Insite 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)

Refer to the *hp StorageWorks Version 3.0.x/4.0.x MIB Reference Guide* for more information.

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.

Information about Fibre Channel standards and the Fibre Channel industry in general can be found on the Fibre Channel Industry Association website: http://www.fibrechannel.com.

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

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

http://www.compaq.com/products/storageworks/san/documentation.html

hp StorageWorks SAN Switch 2/32 Software v4.0.2b CD

The hp StorageWorks SAN Switch 2/32 ships with the latest version of the firmware installed. A copy of the latest version of the firmware as of this date, Version 4.0.2b, is also contained on the CD. The V4.0.2b firmware is also available on the hp website at:

http://www.compaq.com/products/storageworks/hubs-and-bridges/firmwareupdate.html

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

CD Directory Structure

The hp StorageWorks SAN Switch 2/32 Software v4.0.2b CD contains the following files.

- DSGGD
    - Docs
        - README.TXT, includes late-breaking changes to documentation
        - AA-RTQVA-TE.pdf, hp StorageWorks SAN Switch 2/32 Version 4.0.x Installation Guide
        - AA-RS24A-TE.pdf, hp StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide
        - AA-RS23A-TE.pdf, hp StorageWorks Fabric OS Procedures Version 3.0.x/4.0.x User Guide
        - AA-RS22A-TE.pdf, hp StorageWorks Diagnostics and System Error Messages Version 3.0.x/4.0.x Reference Guide
        - AA-RS25A-TE.pdf, hp StorageWorks Web Tools Version 3.0.x/4.0.x User Guide
        - AA-RTS4A-TE.pdf, hp StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide
        - AA-RTSAA-TE.pdf, hp StorageWorks ISL Trunking Version 3.0.x/4.0.x User Guide
        - AA-RTSDA-TE.pdf, hp StorageWorks Extended Fabric Version 3.0.x/4.0.x User Guide
        - AA-RTSGA-TE.pdf, hp StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide
        - AA-RS26A-TE.pdf, hp StorageWorks Zoning Version 3.0.x/4.0.x User Guide
        - AA-RTS7A-TE.pdf, hp StorageWorks Remote Switch Version 3.0.x/4.0.x User Guide
    - Firmware (hp StorageWorks Fibre Channel Firmware and Updates)
        - firmwareupdate.txt, instructions for updating firmware
        - v4.0.2b, switch firmware
        - femib.smiv   2 2/15/01
        - festd.smiv2   2/27/01
        - 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)
        - j2re-1_3_1_01-win.exe (sun Java plug-in for windows self install for browser)
        - NTAlpha
            - Cat.exe (mover for upgrading firmware from an Alpha)
            - Rshd.exe (small server for upgrading firmware from an Alpha)
        - NTIntel
            - Cat.exe (mover for downloading firmware from a PC)
            - Rshd.exe (small server for upgrading firmware from PC)
    - Acrobat
        - rp505eng.exe (installer for Acrobat Reader plus search to enable viewing of pdf files)
- manuals.pdf (Home page for all PDF documentation included on the CD-ROM)

Related Documentation

HP provides customers with the following documents, in support of the SAN Switch 2/32. Access these documents at:

http://www.compaq.com/storage/saninfrastructure.html

HP StorageWorks SAN Switch 2/32 Version 4.0.x Installation Guide, part number AA-RTQVA-TE

HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide, part number AA-RS24A-TE

HP StorageWorks Fabric OS Procedures Version 3.0.x/4.0.x User Guide, part number AA-RS23A-TE

HP StorageWorks Diagnostics and System Error Messages Version 3.0.x/4.0.x Reference Guide, part number AA-RS22A-TE

HP StorageWorks Web Tools Version 3.0.x/4.0.x User Guide, part number AA-RS25A-TE

HP StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x, part number AA-RTS4A-TE

HP StorageWorks ISL Trunking Version 3.0.x/4.0.x User Guide, part number AA-RTSAA-TE

HP StorageWorks Extended Fabric Version 3.0.x/4.0.x User Guide, part number AA-RTSDA-TE

HP StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide, part number AA-RTSGA-TE

HP StorageWorks Zoning Version 3.0.x/4.0.x User Guide, part number AA-RS26A-TE

HP StorageWorks Remote Switch Version 3.0.x/4.0.x User Guide, part number AA-RTS7A-TE

In addition, HP provides the *hp StorageWorks SAN Design Guide*, part number AA-RMPNE-TE to help you with SAN design and potential interoperability issues. Access this document at:

http://www.compaq.com/products/storageworks/san/documentation.html

Web Tools Management Station Requirements

The workstation used to manage a fabric and configure a switch must meet the following requirements in order to install and run Web Tools. Web Tools is installed and runs on the switch, but is displayed in a web browser running on the workstation.

Operating Systems

The following operating systems are supported:

- Solaris 2.7 or later
- Windows 2000
- Windows NT 4.0 (SP6)

RAM (for Windows operating systems)

The following lists memory requirements.

- 128 MB or more of RAM for fabrics comprised of 10 switches or less
- 256 MB or more of RAM for fabrics comprised of 15 switches or less
- 512 MB or more of RAM for fabrics comprised of more than 15 switches

Disk Space

Free disk space of 5 MB or more is required to store the program. Free disk space of 256 MB is recommended to run the program efficiently.

Web Browsers

Web Tools supports the following browsers; however, each must be configured separately to work with the GUI.

NOTE: Netscape 6.x and Internet Explorer 6.x are not supported in this release.

• Netscape Communicator 4.77 on Solaris

• Internet Explorer 5.5

IMPORTANT: Due to decreasing customer demand, and an increasing number of significant technical incompatibilities, the Netscape browser running on the Windows operating system is no longer supported for use with Web Tools.

For complete details, refer to the *hp StorageWorks Web Tools User Guide*., located on the hp StorageWorks SAN Switch 2/32 Software v4.0.2b CD supplied with your switch.

Java Plug-in

The following Java Plug-ins must be installed on the workstation where you will run Web Tools:

• For Windows 2000 or Windows NT 4.0: Java Plug-in version 1.2.2_008 is recommended, but versions 1.2.2_005, 1.2.2_006, 1.2.2_007, and 1.3.1_04 are also compatible.

• For Solaris: Java Plug-in version 1.3.1_04 is recommended, but 1.2.2_02 is also compatible, including the Java Plug-in patch created by Sun Microsystems for Solaris.

At the time of this publication, obtain the required Java plug-in versions from

http://java.sun.com/products/archive/

Java Runtime Environment (JRE)

The following JRE must be installed on the workstation where you will run Web Tools:

JRE 1.2.2_07

Workstation Setup for Solaris

The Java Plug-in for Solaris enables users to deploy the java applet and other java related components in Netscape Communicator using Java Runtime Environment (JRE) instead of the Java run time bundled with Netscape.

The Java Plug-in may be shipped with the JRE or downloaded separately and installed. Netscape Communicator may come with its default Java Plug-in installed.

The default Java Plug-in path is "/usr/dt/appconfig/netscape/j2pi". For installing the specified Java Plug-in and JRE on Solaris, users should have basic knowledge of the Solaris system, and have super user access. For downloading the Java products, users should also have a SUN website access account (free for registration). Download the Java Plug-in compressed binary format, decompress it and, use "pkgadd" to install it into Solaris. After installing the Web Tools required Java Plug-in and JRE, you need to set the system environment variables "NPX_PLUGIN_PATH" and "NPX_JRE_PATH" to ".cshrc," ".profile," or ".login" files under the user's home directory.

These configuration changes enable Netscape Communicator to use the new installed Java Plug-in and JRE path. If you want to back out and use the Netscape Communicator default Java Plug-in path, remove the two environment variable definitions from the predefined file.

For detailed information, refer to the SUN website:

http://www.sun.com/software/solaris/netscape/jpis/userguide_java_plugin.html

Netscape, the Java Plug-in and the JRE are not HP products, their vendors may change their products and URL path locations. For more information, refer to the vendor website.

NOTE: Java Plug-in 1.2.2_02, known as "Java Plug-in 1.2, Solaris/SPARC", is displayed as "Version 1.2.1" in its software license during download. Ignore this during install, and accept the license.

Installing the Utilities to Access Web Tools on Solaris

Use these steps to set up the user environment to access Web Tools from Solaris.

1. Install the web browser. Netscape Communication 4.77 is required. The download is available at:

   http://www.netscape.com/download/archive/client_archive47x.html

   The recommended installation path is /usr/dt/bin. This installation path will be used for the MOZILLA_HOME environment variable.

2. Install the JRE. Java run time environment (JRE) 1.2.2_07 is required.

    Go to Java 2 Standard Edition (J2SE) Runtime Environment 1.2.2_07 Production Release for the Solaris Operating Environment. Select the Solaris SPARC Platform Edition: English.

    The recommended installation path is: `/usr/jre1.2.2_07/`. This installation path will be used for the NPX_JRE_PATH environment variable.

3. Install the Java Plug-in. Plug-in version 1.3.1_04 is recommended, but 1.2.2_02 is also supported.

4. Go to Download Java Plug-In 1.2 for Solaris: SPARC platform.

    a. Download the compressed file in the local directory.

    b. Decompress the downloaded bundle to "SUNWjpi". For example, "zcat <down_load file> | tar xf -".

    c. Type "su" at the prompt to become super user and input the user password.

    d. Go to the directory where the "SUNWjpi" is located. For example, "cd <directory>".

    e. Install the plug-in to the recommended installation path, `/usr/jre1.2.2_07/plugin/`.

    For example, pkgadd -d . -a none", opens an interactive session where you are prompted to enter the installation path or "pkgadd -d . SUNWjpi", using the default installation directory.

    f. Locate the file named javaplugin.so under the installation directory. This path will be used for the NPX_PLUGIN_PATH environment variable.

5. Install the required patches. The installation requires OS patch for Solaris 7 (download the patch from the JRE 1.2.2_07 download site). Reboot system after installing the OS patch.

NOTE: For more information about this installation process, refer to the installation guide for Netscape on Solaris at:

http://www.sun.com/solaris/netscape/jpis/usersguide_java_plugin.html

NOTE: Solaris 8 comes with the Java 1.2.2_02 plugin installed, as well as a Sun packaged Netscape version. These are all installed in the /usr/dt directory. Depending on version, Sun ships with /bin/java linked to /usr/java. /usr/java is then linked to either /usr/java1.1 or /usr/java1.2. The gunzip utility is needed to open the netscape downloaded file. This utility is available at the sunfreeware.com website.

Configuring the User Environment for Web Tools on Solaris

Use these steps to configure the Java Plug-in and JRE for Netscape on Solaris:

1. Set the user environment variables MOZILLA_HOME, NPX_PLUGIN_PATH, NPX_JRE_PATH. Note that these environment variables must be set up for each user accessing Web Tools. The paths listed below are recommendations; use the actual path name where these products are installed on your workstation.

2. Add the following environment variables to the `.cshrc` file:

   ```
   setenv MOZILLA_HOME /usr/dt/bin/

   setenv NPX_PLUGIN_PATH /usr/jre1.2.2_07/plugin

   setenv NPX_JRE_PATH /usr/jre1.2.2_07
   ```

   You must execute "source .cshrc" or re-login to active the new environment variables. You can also directly set these environment variables temporarily on a terminal window by typing above lines on a command line.

3. Verify the environment variables by "setenv|grep NPX".

   Bourne Shell:

4. Add the following environment variables to the **.profile** file in the user home directory:

   ```
   MOZILLA_HOME = /usr/dt/bin

   NPX_PLUGIN_PATH= /usr/jre1.2.2_07/plugin

   NPX_JRE_PATH= /usr/jre1.2.2_07

   export MOZILLA_HOME

   export NPX_PLUGIN_PATH

   export NPX_JRE_PATH
   ```

5. You must re-login to activate the new environment variables. You can also directly set these environment variables temporarily in a terminal window by entering:

```
set MOZILLA_HOME = /usr/dt/bin

set NPX_PLUGIN_PATH= /usr/jre1.2.2_07/plugin

set NPX_JRE_PATH= /usr/jre1.2.2_07

export MOZILLA_HOME

export NPX_PLUGIN_PATH

export NPX_JRE_PATH
```

6. Verify the environment variables by "set|grep NPX".

7. Launch ControlPanel from /java-plugin-path, and choose "Advanced" tabbed panel to verify correct plugin location.

8. Close all Netscape windows, and re-launch a new instance of Netscape.

9. Verify the Java Plugin version used in Netscape:

   — Click **Help** on the right corner of the browser

   — Select **About Plug-ins**

Using the Java Plug-In

The proper execution of the Web Tools application requires that the Java Plug-In is installed on your workstation. Web Management Tools version 2.1 requires the Java Plug-In based on Java 1.2 (also known as Java 2) to operate correctly. The Java Plug-In is similar to other plug-ins used on your browser, such as Real Audio, Adobe Acrobat, and Macromedia Director. Once the Java Plug-In is installed, its use is transparent. Microsoft Windows requires Java Plug-In 1.3.1, and Compaq Tru64 UNIX and Solaris require 1.2.

The Java Plug-In can be loaded from the HP CD ROM included with the switch. The plug-in is located in the FIRMWARE subdirectory. Double-click on the *JAVAPLUGIN.EXE* file to begin the installation procedure.

Licenses

Prior to replacing a switch or motherboard, display and record the current licenses that are active in the unit. Additional licenses could have been added to the switch after the installation. Licenses that are active can be viewed from a Telnet session using the licenseshow command, or they can be viewed from the Web Tools GUI.

Replacement units are shipped with all licenses enabled, with the exception of the license for the Fabric Manager option.

Optional software (for example, Fabric Manager) does not require a license key, just the license supplied at the time of purchase.

Zoning Licensing

HP provides Zoning as a standard feature on its SAN and Core Fibre Channel switches. This means that the Zoning license is factory installed on each of these switches. Therefore, references in the product documentation to installing the Zoning license or to Zoning being an optionally purchased product should be ignored.

Known Issues

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

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.

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 1dga601:/switch/path=PGA0.5000-1FE1-5000-2DED, set dev
    1dga604:/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
$1$DGA601:    (VMS06) Mounted        1  4/ 4  PGA0.5000-1FE1-5000-2DED
$1$DGA602:    (VMS06) Mounted        0  4/ 4  PGB0.5000-1FE1-5000-2DEC
$1$DGA603:    (VMS06) Mounted        0  4/ 4  PGB0.5000-1FE1-5000-2DE9
$1$DGA604:    (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.

Zoning

The following summarizes zoning limitations.

- If the zoneset members between two switches are not listed in the same order in both configurations, the configurations are considered a mismatch, resulting in the switches segmenting in the fabric.

  For example: `cfg1 = z1; z2` is different from `cfg1 = z2; z1`, even though members of the configuration are the same.

  Workaround: If zoneset members between two switches have the same name defined in the configuration, make sure zoneset members are listed in the same order. One simple approach to making sure that the zoneset members are in the same order is to keep the members in alphabetical order.

- The zone configuration file may not propagate because of size issues.

  Workaround: When merging a switch into an existing fabric, make sure the allotted zone database size of the joining switch is larger than the zone database size that is currently deployed in the fabric. The maximum storage size allocated for the zone database varies between switch models, so use the `cfgsize` command to verify that the actual configuration is less than the maximum allocated memory for the zoning database.

- When the "default access when zoning is not active" feature is set to "0", and no zoning configuration is in effect, the switch enforces a "dummy_zone" and a "null_zone" that appear in the configUpload files.

Workaround: These zones are removed by creating and enabling a user defined zoning configuration, or by setting this option to 1. This option must be set to 1 before merging into a fabric with a switch running Fabric OS v4.0.2b.

- Occasionally, after zoning creation activities, one of the F_Ports may move to status In_Sync. If the `portdisable`/`portenable` command is executed, the F_Port will log in as an L_Port. This is caused by memory buffers not being released, causing a PLOGI trap.

- If two zoning configuration update commands (such as `cfgenable`, `cfgdisable`, or `cfgsave`) are issued simultaneously, zoning inconsistencies across the fabric may occur. This can happen when one of these commands is run from two different switches at same time, or twice from a single switch without waiting for the first command to propagate throughout the fabric.

  To avoid this, wait a few minutes between running commands to allow the zone information to propagate throughout the fabric correctly.

  To recover if these inconsistencies occur, log into the switch with the incorrect zone configuration and clear the switch using the following commands:

  — `switchdisable`

  — `cfgclear, cfgdisable`

  — `switchenable`

  This series of commands will clear the incorrect zone configuration from the switch, and when the switch is enabled, the correct zone configuration will propagate to the switch from the fabric.

Web Tools

The following summarizes Web Tools limitations.

- On a Solaris OS v8.0 system, a telnet session cannot be launched using the Telnet button in Web Tools if the path of the "xterm" application is not included in the PATH environment variable.

  Workaround: This path varies from machine to machine, so contact your system administrator to find out the correct path of the "xterm" application and include this variable in the default environment setup file.

- When viewing Web Tools Fabric View, the browser may stop responding.

  Workaround: Restart the browser.

- When you have a large number of Web Tools pages open with a heavy workload, you may occasionally see remnants of other pages or incomplete graphics on the screen.

  Workaround: Refresh the Fabric View window.

- Occasionally, users may request reports, such as Fabric Events, Switch Report, Port Settings and others that may not display information or display partial information for a given switch believed to be in the fabric.

  Workaround: Refresh the page or close the specific web page and request it again.

- When using the Web Tools Fabric View or Switch View to open a telnet session from within Netscape, the telnet session is not automatically closed when exiting.

  Workaround: The telnet window must be closed manually.

- The recommended Java plug-in for Solaris does not allow drag and drop options in some of the windows where it should be supported.

- When a pop-up window requesting a user response is pushed into the background and refresh is requested, a fatal Internet Explorer error may occur.

- Following a switch enable or disable, it is necessary to wait at least 25–30 seconds for the fabric to reconfigure and for FSPF route calculations to complete before requesting routing information. If accessed too early, routing information will not be shown.

- Web Tools must be restarted when the Ethernet IP address is changed using the `NetworkConfig View` command. Web Tools will appear to freeze or hang if it is not restarted after this operation is executed.

- While doing an add, delete, or replace WWN from Web Tools zoning, in confirm window, if you select different single entries twice or more, the **Select All** button may stop functioning. This can be seen on both Java Plug-ins 1.2.2 and 1.3.1, but is fixed in Java Plug-in 1.4.x.

  Workaround: Click "deselect all" and then click "select all" again.

- If the user changes the Switch Name and Domain ID using the CLI after the Web Tools Switch Admin has started, the new Switch Name and Domain ID will not be updated on the header of Switch Admin. Clicking **Refresh** will not fix the problem.

  Workaround: Activate the Switch Information tab and the Switch Admin header will update.

- Intermittently, you will not see the "Lost connection to the switch" message on the Switch View even though the Ethernet connection has been lost. You may still be able to invoke various features from Switch View such as Status, Info, Fan Temp, Power and Beacon.

- In Web Tools under the Admin- Routing page, when viewing the details of the Routing Table in a pop up window, the open window locks out all other input on other views that are open for any switch.

  Workaround: If you are locked out of adding input to Web Tools windows, verify that you do not have a pop up window open. You must close this window using the windows "X" close icon.

- Occasionally, on a Solaris OS v8.0 system, the java console process may die and cause Web Tools features to lock up.

  Workaround: Close all windows and restart the web browser.

- Occasionally, on a Solaris OS v8.0 system, Netscape 4.75, Java Plug-in 1.3.1_04 when adding a license, the pop-up confirmation window does not display the complete message.

  Workaround: Resize the pop-up confirmation window to view the entire message.

Web Tools and Netscape on Solaris

The following summarizes Web Tools limitations, relating to Netscape on Solaris.

- When you use Netscape 4.77 and a network-attached printer, Web Tools may not print properly if the network was interrupted and the printer became unavailable after the browser was launched.

  Workaround: Once the network problem is identified, close the Netscape browser and attempt to print again. The browser must be shut down and restarted.

- There may occasionally be problems with Netscape 4.77 on Solaris 2.8 with plug-in 1.3.1_04 that Web Tools crashes after the browser is resized.

  Workaround: Restart Web Tools application.

- Occasionally, on a Solaris OS v8.0 system with Netscape 4.77, Java Plug-in 1.3.1_04, after the Web License has been added, the Fabric View may still show the Switch icon in the missing license state.

  Workaround: Refresh the Fabric View.

• When running firmware download under Web Tools on a Solaris/Netscape browser, the firmwaredownload completion pop-up window can be easily put into background. This can give the appearance of Web Tools sessions that are locked out.

Workaround: If a user is apparently locked out of other windows in the Solaris/Netscape environment, look for a pop-up window that needs to be dismissed before proceeding further.

Web Tools and the JRE

The following summarizes Web Tools limitations, relating to the JRE:

• Under some circumstances, users may see a rectangular black area corresponding to an applet ICON graphic.

Workaround: In the Solaris environment, this situation is sometimes traceable to a mismatch between the Java plug-in and the version of Netscape. Ensure the proper JRE has been installed and the correct version of Netscape is being executed.

• Older versions of the 1.2.2_02 and the 1.3.1 Java plug-in for Solaris do not support creation of the Fabric Event display.

Workaround: Ensure the correct JRE version that supplies the correct patch version of the Java plug-in is installed.

• The Refresh View button in Fabric View may start blinking 15 seconds after the fabric is refreshed, even though the fabric has not been changed.

Workaround: Ensure the correct JRE version that supplies the correct patch version of the Java plug-in is installed.

• When using Java plug-in v1.2.2_008, the jar_cache files can grow too large, and may make Web Tools not operate properly.

Workaround: When using Web Tools with plug-in 1.2.2_008, occasionally go into the Temp folder, in Windows 2000 or Windows NT, and delete the jar_cache files created by the browser to cache applet information. The location of the temp files vary depending on which platform, browser and plug-in is used. Discuss with your system administrator where to locate these temp files and delete them.

Web Tools and Firmware Download

Firmware download and activation involves multiple phases. When Web Tools reports that firmware download has completed successfully, this indicates that a basic sanity check, package retrieval, package unloading and verification was successful.

NOTE: Web Tools currently forces a full package install. To perform an incremental upgrade, use the CLI.

A reboot is required to activate the newly downloaded firmware. The reboot is done automatically from the Web Tools user perspective, and results in a loss of network connectivity with Web Tools. Web Tools screens continue to be visible during the reboot, but will not be available. Wait approximately 10 minutes to ensure all application windows are restored. If Web Tools fails to respond after 20 minutes, you may need to close all Web Tools applications windows and restart them, or contact the system administrator for network assistance. The SAN Switch 2/32 loss of network connectivity due to reboot is approximately 4 minutes if `diagpost` is disabled and 8 minutes if `diagpost` is enabled.

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:

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.

If one of the components appears to be faulted, try reseating the component. If it still appears to be faulty, replace the component.