hp StorageWorks common software and switch options version 3.0.x/4.0.x

This document contains last-minute and supplemental information about your common software and switch options. In the event of conflicting information between these Release Notes and other documents contained in this product release, the Release Notes contents take precedence.

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

About this Document

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

Release Notes Information

These Release Notes cover the following major topics:

Note: All of the switch options listed above are either a preconfigured feature or a saleable option, depending on the product configuration purchased.

Intended Audience

This document is intended for customers who purchased HP StorageWorks SAN or HP StorageWorks Core switches.

Other Common Software and Switch Options Documentation

The common software and switch options documentation includes the following documents:

- *HP StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide*, part number AA-RTS4B-TE

- *HP StorageWorks Common Software and Switch Options V3.0.x/V4.0.x Release Notes* (this document), part number AV-RTQUB-TE

- *HP StorageWorks Diagnostic and System Error Message Version 3.0.x/4.0.x Reference Guide*, part number AA-RS22B-TE

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

- *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide*, part number AA-RS24B-TE

- *HP StorageWorks Fabric Operating System Procedures Version 3.0.x/4.0.x User Guide*, part number AA-RS23B-TE

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

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

- *HP StorageWorks Quickloop Fabric Assist Version 3.0.x User Guide*, part number AA-RTS1A-TE

- *HP StorageWorks Remote Switch Version 3.0.x/4.0.x User Guide*, part number AA-RTS7B-TE

- *HP StorageWorks SAN Switch 2/32 Version 4.0.x Release Notes*, part number AV-RTT4B-TE

- *HP StorageWorks Web Tools Version 3.0.x/4.0.x User Guide*, part number AA-RS25B-TE

- *HP StorageWorks Zoning Version 3.0.x/4.0.x User Guide*, part number AA-RS26B-TE

Additional documentation, including white papers and best practices documents, are available via the HP website at: http://www.hp.com.

Common Software Descriptions

The descriptions included in this section apply to the software and information that ships with all HP StorageWorks switches that run Fabric OS. Common software products include:

- Diagnostics and Error Messages Overview
- Fabric OS Procedures Overview
- Fabric OS Reference Overview

Refer to the *HP StorageWorks SAN Switch 2/32 Version 4.0.x Release Notes* for late-breaking information relating to these products.

Diagnostics and Error Messages Overview

The *HP StorageWorks Diagnostic and System Error Message Version 3.0.x/4.0.x Reference Guide* supports Fabric OS V3.0.x and Fabric OS V4.0.x, including software error messages and hardware error messages.

Fabric OS Procedures Overview

The *HP StorageWorks Fabric Operating System Procedures Version 3.0.x/4.0.x User Guide* provides operating procedures for HP StorageWorks SAN and HP StorageWorks Core switches, including:

- Setting the initial configuration
- Basic configuration procedures
- Operating the HP StorageWorks Core Switch 2/64
- Working with the Management Server
- Diagnostics and Status

Fabric OS Reference Overview

The *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide* provides a detailed description of the commands in Fabric OS V3.0.x and V4.0.x. This guide also describes the Fabric OS commands for licensed products and provides a Fabric OS version comparison.

Switch Options Descriptions and Requirements

The descriptions and requirements in this section apply to the licensed options in Fabric OS, including:

- Advanced Performance Monitoring Overview
- Extended Fabric Overview and Configuration Support
- Fabric Watch Overview and Information
- ISL Trunking Overview and Requirements
- QuickLoop Fabric Assist Overview and Support
- Remote Switch Overview and Limitations
- Web Tools Overview
- Zoning Overview

Note: All of the switch options listed in this section are either a preconfigured feature or a saleable option, depending on the product configuration purchased.

Advanced Performance Monitoring Overview

Advanced Performance Monitoring is a comprehensive tool for monitoring the performance of networked storage resources. This tool helps reduce total cost of ownership and over-provisioning while enabling SAN performance tuning, reporting of service level agreements, and greater administrator productivity. Advanced Performance Monitoring is an optionally licensed product and is documented in the *HP StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide*.

Extended Fabric Overview and Configuration Support

Extended Fabric uses Fibre Channel technology to create a fabric interconnected at distances greater than 10 km for 1 Gb or 5 km for 2 Gb interswitch links. Extended Fabric is an optionally licensed product that runs on:

- HP StorageWorks 1 Gb SAN switch series with version 2.0.x installed,
- HP StorageWorks 2 Gb SAN switch series with version 3.0.x installed,
- HP StorageWorks SAN Switch 2/32 with version 4.0.2b or higher installed, or

■ HP StorageWorks Core Switch 2/64 (Core Switch 2/64) switches with version 4.0.x installed.

Extended Fabric requires the use of Long Wave GBIC or SFP transceivers to go beyond 500 meters for 1 Gb and 300 meters for 2 Gb links, respectively.

The maximum number of "HOPS" or interswitch links allowed in a fabric is seven and only one of these links can be a very long Extended Link (> 10 km). The maximum distance for a very long Extended Link 1 Gb Link is 100 km. Given these limits, the maximum of 160 km is possible with one 100-km link and six 10-lm links.

Extended Fabric Compatibility Support

HP has three series of switches, as listed above. These switches can be divided into two classes based on the internal ASIC technology used in the switch. The two classes are switches limited to 1 Gb and those that are 2 Gb capable.

An extended fabric link can only exist between two switches of the same technology, meaning:

■ An HP StorageWorks 1 Gb SAN series switch can only have an extended fabric link to another HP StorageWorks 1 Gb SAN series switch.

■ The HP StorageWorks 2 Gb SAN series switch can only have an extended fabric link to another HP StorageWorks 2 Gb SAN series or an HP StorageWorks Core Switch 2/64 switch.

■ An HP StorageWorks 2 Gb SAN series or an HP StorageWorks Core Switch 2/64 switch *cannot* a have an extended fabric link to an HP StorageWorks 1 Gb SAN series switch.

PortcfgLongDistance Setting

Extended Fabric optimizes the internal buffering algorithm for HP StorageWorks switches, which results in line speed performance of close to full Fibre Channel speed. The PortcfgLongDistance setting is used to configure the port with the appropriate amount of buffers based on the speed and distance of the extended link. The possible settings are:

■ L0: 1 Gbs links up to 10 km or 2 Gb links up to 5 km.
No Extended Fabric license required. Also referred to as an "E-Port."

■ LE: 2 Gb links between 5 and 10 km.
No Extended Fabric license required.

■ L1: Extended Links greater than 10 but not more than 50 km.
Extended Fabric license required.

■   L2: Extended Links greater than 50 km but not more than 100 km. Extended Fabric license required.

These port settings modify the number of buffer-to-buffer credits a particular port is allocated and there are limited numbers of these credits available. Buffer-to-buffer credits are allocated to a group of 4 ports, or what is referred to as a quad. A quad consists of ports 0 through 3, 4 through 7, 8 through 11, 12 through 15, and so on. The following table lists the configuration limits for a quad.

Speed	Port a	Port b	Port c	Port d
1 Gbps	L2	L1/L0	Fx/LE	X
1 Gbps	L2	Fx/LE	Fx/LE	Fx/LE
1 Gbps	L1/L0	L1/L0	L1/L0	L1/L0
1 Gbps	Fx/LE	Fx/LE	Fx/LE	Fx/LE
2 Gbps	L2	X	X	X
2 Gbps	L1	Fx/L0/LE/L1	X	X
2 Gbps	L1	L0/LE	L0/LE/Fx	X
2 Gbps	L1	Fx	Fx	Fx
2 Gbps	L0/LE/Fx	L0/LE/Fx	L0/LE/Fx	L0/LE/Fx
Legend: Fx = Fabric port		L0, LE, L1, L2 = Interswitch Links		

Fabric Long Distance Bit Setting

The Fabric Long Distance Bit needs to be set on all switches in the fabric when any pair of HP StorageWorks 1 Gb SAN series switches have an extended link greater than 10 km (PortcfgLongDistance = L1 or L2).

Whenever a pair or pairs of HP StorageWorks 2 Gb SAN series or HP StorageWorks Core Switch 2/64 switches have a port configured for LE, L1, or L2 the Fabric Long Distance Bit must be off.

You *cannot* have:

■   An extended link of greater than 10 km between a pair of HP StorageWorks 1 Gb SAN series switches.

■   An extended link greater than 5 km between a pair of HP StorageWorks 2 Gb SAN series or HP StorageWorks Core Switch 2/64 switches in the same fabric.

You *can* have:

■ Extended links of up to 10 km (PortcfgLongDistance = L0) between a pair of HP StorageWorks 1 Gb SAN series switches and any length extended link between a pair of HP StorageWorks 2 Gb SAN series or HP StorageWorks Core Switch 2/64 switches in the same fabric.

■ Likewise, you can have an extended link over 10 km between HP StorageWorks 1 Gb SAN series switches as long as there are no interswitch links greater than 5 km between a pair of HP StorageWorks 2 Gb SAN series or HP StorageWorks Core Switch 2/64 switches in the same fabric.

Fabric Watch Overview and Information

Fabric Watch software monitors the performance and status of HP StorageWorks SAN switches, and can alert storage area network (SAN) managers when problems arise. The real-time alerts from Fabric Watch software help SAN managers solve problems before they become costly failures. SAN managers can configure Fabric Watch software to monitor any of the following:

■ Fabric events (such as topology reconfigurations and zone changes)

■ Physical switch conditions (such as fans, power supplies, and temperature)

■ Port behavior (such as state changes, errors, and performance)

■ SFPs (for switches equipped with SMART SFPs)

Fabric Watch is documented in the *HP StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide*. Fabric Watch default settings can be found at the following HP website: http://www.compaq.com/storage/saninfrastructure.html.

Fabric Watch Profiles

The following Fabric Watch file is supported:

```
FW232.TXT                11/13/2002
```

Refer to the *HP StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide* for more information.

Fabric Watch Daemon

During switch startup or 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 cannot monitor events occurring in the fabric. During this time, the `switchstatuspolicyshow` command shows the default settings instead of any custom settings.

ISL Trunking Overview and Requirements

Interswitch Link (ISL) Trunking is an optionally licensed product available on the HP StorageWorks SAN switches running Fabric OS V3.0.x, and the HP StorageWorks SAN switches and HP StorageWorks Core switches running Fabric OS V4.0.x. ISL Trunking is managed using telnet commands or the Web Tools interface. ISL Trunking simplifies network design and reduces the cost of storage management by optimizing bandwidth use and enabling load sharing of traffic at the frame-level.

The ISL Trunking feature connects up to four ISLs, between two switches through an Expansion Port (E_Port), to merge logically into one link. With ISL Trunking, high speed links ensure that server-to-storage performance is efficient and shared under heavy network loads. When using ISL Trunking to aggregate bandwidth of up to four ports, the speed of the ISLs between switches in a fabric is quadrupled. For example, at 2 Gbps speeds, ISL Trunking delivers ISL throughput of up to 8 Gbps.

ISL Trunking is documented in the *HP StorageWorks ISL Trunking Version 3.0.x/4.0.x User Guide*.

Trunking Requirements

The following sections describe Trunking requirements.

Installation Requirements

There are no installation requirements as ISL Trunking is a built-in component of Fabric OS V3.0, Fabric OS V4.0, and later releases on all HP StorageWorks 2 Gbps switches based on third generation HP ASIC technology. Switches based on third generation HP ASIC technology include:

- HP StorageWorks 2 Gb SAN switches
- HP StorageWorks Core switch

Configuration Requirements

No software configuration is required to invoke ISL Trunking since it is enabled on any E_Port for which it is supported. To invoke Trunking, plug in ISLs and follow the following configuration guidelines:

- An ISL Trunking license is required for each switch that participates in a trunked connection.

- ISL trunks must be established in port groups driven by a common ISL Trunking hardware driver. Trunking hardware drivers are connected to contiguous 4-port groups such as 0-3, 4-7, 8-11, and 12-15.

- ISL trunk groups can be established by using two, three, or four ISLs between switches—which enables ISLs capable of 4, 6, or 8 Gbps of total throughput.

- Ports must be set to 2 Gbps or auto-negotiate (AN).

You can easily build meshed switch fabrics by connecting trunk groups to any number of adjacent switches.

Administration Requirements

You can administer ISL Trunking through Web Tools or through Fabric OS CLI.

Cable Length Requirements

The switches exchange a set of Extended Link Service to calibrate the latency of each link between them. In order to ensure optimal performance, the lengths of the shortest ISL in a trunk and longest should differ by no more than 30 meters; if they differ by more than 400 meters, they will not be included in the trunk.

Long Distance Trunking

Trunking is not supported with LE, L1, and L2 `portcfglongdistance` modes. Trunking is supported for normal E_Ports (referred to as L0 in `portcfglongdistance` command) with LWL media up to 5 km at the full speed permitted by the link. With LWL media, the throughput begins to fall off beyond 5 km, due to normal latency effects.

QuickLoop Fabric Assist Overview and Support

QuickLoop is an optionally licensed product that allows arbitrated loops to be attached to a fabric. Without modifying their drivers, private storage devices on the arbitrated loops can be accessed by public or private hosts elsewhere on the fabric.

With the Zoning license that is provided by default, the set of storage devices visible to specific hosts can be carefully administered. QuickLoop Fabric Assist mode is also enabled, which allows private hosts on an arbitrated loop port to access any public or private storage device within the fabric, provided that they are assigned to a Fabric Assist mode zone.

The QuickLoop and Zoning combination allows a private host to fully participate in a Storage Area Network (SAN).

QuickLoop Fabric Assist is documented in the *HP StorageWorks Quickloop Fabric Assist Version 3.0.x User Guide*.

QuickLoop is not Supported on Switches Running V4.0.x Firmware

The HP StorageWorks Core switch and the HP StorageWorks SAN Switch 2/32 do not support Quickloop, in either its original hub emulation mode, or its Fabric Assist mode. This means that direct attachment of private hosts to the HP StorageWorks Core switch or the HP StorageWorks SAN Switch 2/32 is not supported.

Remote Switch Overview and Limitations

The Remote Switch fabric functions with the aid of a "bridging device" or network-bridge. The network-bridge supports both a Fibre Channel physical interface, as well as a secondary non-Fibre Channel FCIP physical interface.

There are currently the following Remote Switch support limitations:

■ The network-bridge supports both a Fibre Channel physical interface, as well as a secondary non-Fibre Channel IP physical interface.

■ Remote Switch is currently supported with the CNT UltraNet Edge Model 1001 (firmware version 1.4) gateway device.

Note: Remote Switch is supported when used with HP StorageWorks Data Replication Manager (DRM) only.

Web Tools Overview

Web Tools provides a graphical interface that allows the administrator to monitor and manage entire fabrics and individual switches and ports from a standard workstation. It is a standard product that runs on all HP StorageWorks switches running the V3.0.x or 4.0.x firmware streams. Web Tools is documented in the *HP StorageWorks Web Tools Version 3.0.x/4.0.x User Guide*.

Workstation Requirements

Web Tools is installed and run on the switch, but displays in a web browser on the workstation. The workstation must meet the following requirements in order to successfully run Web Tools.

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

HP supports the following web browsers, however, each must be configured to work with Web Tools. For more information, refer to the *HP StorageWorks Web Tools Version 3.0.x/4.0.x User Guide*.

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

One of the following web browsers must be installed:

- Netscape Communicator 4.77 on Solaris
- Internet Explorer 5.5

> **Note:** 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.

Java Plug-in (JRE)

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, use Java Plug-in version 1.3.1_04.
- 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, the required Java plug-in versions are at http://java.sun.com/products/archive/.

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 runtime 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 Communicator 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 runtime 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

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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 HP 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.

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 telnet 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 not 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. Web Tools loss of network connectivity during a failover or reboot (initiated though firmwaredownload) varies as follows:

■ HP StorageWorks Core switch with dual CP card - loss of network connectivity due to failover is approximately 1 minute.

■ HP StorageWorks Core switch with single CP card - loss of network connectivity due to reboot is approximately 4 minutes if **diagpost** is disabled and up to 16 minutes if **diagpost** is enabled.

■ 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.

Web Tools Known Limitations

Listed below are the known limitations in Web Tools:

■ On a Sun Solaris 8 OS system, a telnet session can not 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 will vary 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 set up file.

■ For the HP StorageWorks Core switch neither CP card is displayed in the "Switch View" when switch 0 is being rebooted. The CP card data displayed on this screen is dependent on Switch 0, and that data is not available when Switch 0 is rebooting.

Workaround: Refresh or relaunch Switch View after either switch is rebooted.

■ When viewing an HP StorageWorks SAN switch, you may see messages in the wrong location. There is no workaround.

■ 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.

■ During a rare failover event, independent Web Tools clients operating on different machines may see slight differences in the management of those HP StorageWorks Core switches participating in the failover event. There is no workaround.

■ 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.

■ Occasionally, other switches that are not HP StorageWorks Core switches may display the port ICONs correctly, but, be missing one or more control button ICONS.

   Workaround: Close the Switch View of the 2000 or 3000 series switch and reopen it.

■ Under some circumstances where the 1 Gb SAN switches or 2 Gb SAN switches may be experiencing high memory usage, the HP StorageWorks Core switch Fabric View will display a fixed gray background area that says "Loading Java Applet...." This may also occur when a switch leaves the fabric simultaneously with a network problem. The period of loss of network connectivity for Web Tools varies for different configurations.

   Workaround: Ensure that the 1 Gb and 2 Gb SAN switches are upgraded with the recommended code versions to work optimally with the HP StorageWorks Core switches.

■ 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-in 1.2.2 and 1.3.1, but is fixed 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 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 the **Refresh** button will not fix the problem.

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

■   There is a problem that files created by Internet Explorer 5.5 with plug-in 1.3.1_04 may grow too large and cause Web Tools to not operate properly.

Workaround: On Windows 2000 or Windows NT, make sure to delete the browser temp files periodically. Note that the Temp folder may be in a different location. Contact your system administrator if you have problems locating temp internet files. In the temp internet file folder delete the TLBxxx files.

■   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. This problem may be seen in the HP StorageWorks Core switch, for example, when you see the `Lost connection to the switch` error for a single switch in the chassis, when a lost connection affects both logical switches.

■   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 Sun Solaris 8 OS 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 Sun Solaris 8 OS 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 Known Limitations

Listed below are the known limitations in Web Tools, 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 Sun Solaris 8 OS 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 Known Limitations

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.

Zoning Overview

Advanced Zoning allows partitioning of Storage Area Network (SAN) into logical groupings of devices that access each other. You can also arrange fabric-connected devices into logical groups, or zones, over the physical configuration of the fabric.

Zones can be configured dynamically and can vary in size depending on the number of fabric connected devices. Devices can also belong to more than one zone. Because zone members can access only other members of the same zone, a device not included in a zone is not available to members of that zone.

Zoning is documented in the *HP StorageWorks Zoning Version 3.0.x/4.0.x User Guide*.

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. You should ignore references in the product documentation to installing the Zoning license or to Zoning being an optionally purchased product.

Zoning Known Limitations

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.