user guide

hp StorageWorks
remote switch v3.0.x/v4.0.x

The document provides 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 IP physical interface.

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Remote Switch

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Introduction

Remote Switch is an optionally licensed product that runs on hp StorageWorks SAN Switches, version 3.0.x/4.0.x.

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.

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

The Remote Switch fabric environment functions as an E_Port. The network-bridge accepts Fibre Channel frames from one side of a Remote Switch fabric, tunnels them across the network, and then passes them to the other side of the Remote Switch fabric. Switches can be cascaded together to form a fabric that, from the viewpoint of the connected hosts and storage devices, interact the same as locally connected switches.

Remote Switch provides:

- Any-to-any connectivity - A host connected on the local or remote switch can communicate with storage devices at either location.

- Coordinated fabric services - The Remote Switch fabric configuration fully supports all fabric services, the same as a centralized fabric configuration. These services include Distributed Name Services, Registered State Change Notifications, and Alias Services.

■ Distributed management - Access to the management facilities (Advanced Web Tools, telnet, and SNMP) is available from either the local or the remote switch. Interconnect for switch management is routed through the Fibre Channel connection; no additional network connection is required between sites.

■ Ability to support multiple interswitch links (ISLs) - Sites requiring redundant configurations can connect multiple E_Ports to remote sites by using multiple gateways. Standard Fabric OS routing facilities automatically maximize throughput by using the E_Ports to load share traffic during normal operation, with automatic failover and failback during interruption on the WAN connection.

Installing Remote Switch

A Remote Switch fabric requires two switches that are hp StorageWorks SAN Switch 2Gb (version 3x) or (version 4x) or StorageWorks Core Switches, with the switches configured the same.

Installing a Remote Switch requires the installation of a separate license on each of the two switches. Licenses may have been installed on the switches at the factory. If not, contact your switch supplier to obtain a license key.

You can install a Remote Switch license either through telnet or through Advanced Web Tools.

Installing Remote Switch Using Telnet

To install a Remote Switch using telnet:

1. Login to the switch as the admin user.

2. To determine whether a Remote Switch license is already installed, type licenseShow on the telnet command line.

   A list displays of all the licenses currently installed on the switch.

Example:

```
switch:admin> licenseShow
cQebzbRdScRfcOiK:
Web license
Zoning license
AybbzQQ9edTzccOX:
Extended Fabric license
```

If a Remote Switch license is correctly listed, then that feature is installed and immediately available, skip steps 3 and 4.

3. Enter the following on the command line:

```
licenseAdd "key"
```

where "key" is the license key provided to you, enclosed in quotation marks. The license key is case sensitive and must be entered exactly as given.

4. Verify the license was added by entering the following on the command line:

```
licenseShow
```

If the Remote Switch license is listed, the feature is installed and immediately available. If the license is not listed, repeat step 3.

Installing Remote Switch Using Advanced Web Tools

To install Remote Switch using Webtools:

1. Launch the web browser.
2. Enter the switch name or FCIP address in the Location/Address field, and press Enter. Advanced Web Tools launches, displaying the Fabric View.
3. Click the Admin button on the relevant switch panel. The logon window displays.
4. Enter a logon name and password with administrative privileges and press Enter. The Administration View displays.
5. Select the License Admin tab.
6. Enter the license key in the License Key: field, and click Add License.

The Remote Switch feature is available as soon as the license key is added.

Using Remote Switch

You can configure switches for use with Remote Switch using either telnet commands or using Advanced Web Tools. For information about using Advanced Web Tools to configure a switch, refer to the *HP StorageWorks Web Tools Version 3.0.x/4.0.x User Guide.*

Overview

The Remote Switch feature operates in conjunction with a Fibre Channel to FCIP WAN gateway. This gateway provides both a Fibre Channel physical interface functioning as an E_Port and an FCIP WAN physical interface.

The gateway accepts Fibre Channel frames from one side of a Remote Switch fabric, transfers them across a WAN using an FCIP protocol, and passes them to the other side of the Remote Switch fabric.

In order to transfer frames across a WAN using an FCIP protocol, the Fibre Channel frames (from 256 to 2112 bytes) must be broken into pieces at the local end of the FCIP network. Once they are broken into smaller pieces, they are tunnelled and then transmitted across the network. At the remote end of the FCIP network, these pieces are reassembled back into complete Fibre Channel frames and transmitted through the remote Fibre Channel interface.

To accomplish this, the gateway provides an E_Port interface that links to the SilkWorm E_Port. Once the link between the two E_Ports is negotiated, the gateway E_Port moves to pass-through mode and passes Fibre Channel traffic from the SilkWorm E_Port to the FCIP network.

Configuring a Remote Switch Fabric

A Remote Switch fabric requires two StorageWorks SAN Switch 2Gb (version 3x) or (version 4x) or StorageWorks Core Switches with identical configurations.

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

A separate extended fabric license is not required to operate the switch at distances much greater than 100 kilometers. This can be achieved when the switch operates over an FCIP WAN connection.

In addition to normal switch configuration options, the following parameters may be configured depending on the gateway requirements:

```
R_A_TOV: Resource Allocation Timeout Value

E_D_TOV: Error Detect Timeout Value

dataFieldSize: Maximum FC data field reported by the fabric

BB_Credit: Number of Buffer-to-Buffer credits for Nx_Port
devices

NoClassF: Enable/Disable class F traffic
```

Accessing the Switch using Telnet

The telnet command configure is used to set the following:

- R_A_TOV and E_D_TOV values
- Data field size

The switch must be disabled prior to entering the configure telnet command.

In the example below, the default value was accepted for R_A_TOV.

Example:

```
switch:admin> configure
Configure. . .
Fabric parameters (yes, y, no, n): [no] y
Domain: (1..239) [200]
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]
VC Encoded Address Mode: (0..1) [0]
Core Switch PID Format: (1..1) [1]
Per-frame Route Priority: (0..1) [0]
BB credit: (1..16) [16]
```

Note: The switch must be disabled prior to entering the configure command.