

# HP Education Services Course Overview

HP StorageWorks B-Series (Brocade) CFP264 - 4 Gbit/sec Accelerated BCFP (U8670S)



This 3-day, instructor-led course provides students with the knowledge and skills that are needed to install and configure a Storage Area Network using B-Series (Brocade) SAN Fibre Channel Switches. This course offers a significant amount of hands-on experience and discussion that are needed in becoming proficient with the new features of B-Series (Brocade) firmware.

## Audience

- This course is for a field/systems engineer or network analyst who provides technical support to customers.
- Any user desiring detailed technical information about B-Series (Brocade) products, or looking to get certified will benefit.

## Prerequisites

- 9 hours of web-based training is included in this course bundle.
- Students are strongly advised to take the recommended web-based components to gain the most knowledge from the course.
- Six months of work experience associated with SCSI storage and Local Area Networks.

## Course Objective

Attendees will be able to:

- Describe hardware and software attributes of the Brocade product line.
- Describe FC concepts.
- Install, configure, and verify functionality of switches in a Brocade fabric using CLI, SSH, and Web Tools.
- Save switch configuration files and perform firmware maintenance tasks.
- Administer Brocade zones.
- Describe and evaluate multi-switch fabric routing and routing policies.
- Describe multi-switch fabric trunking and distance solutions.
- Describe management tools used to manage Brocade fabrics.
- Describe and utilize Brocade error messages, commands, and diagnostics.

## Why education services from HP?

- Comprehensive student materials
- Hands-on practice
- Online instructor-led and self-paced training at <http://www.hp.com/education>
- Focus on job-specific skills
- More than 80 training locations worldwide
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- State-of-the-art classroom facilities
- Online instructor-led and self-paced training at <http://www.hp.com/learn>
- Experienced and best-in-the-field HP instructors
- Customized on-site delivery

**Course Title:** HP StorageWorks B-Series (Brocade)  
CFP264 - 4 Gbit/sec Accelerated BCFP

**HP Product Number:** U8670S

**Category/Subcategory:** Storage

**Course Length:** 3 days

**Level:** Intermediate

**Delivery Language:** English

**To Order:** You can order this course online at <http://www.hp.com/learn>. At the site, select a country, then choose "registration" or "Book a course" and fill out the online registration form.

## Detailed Course Outline

### Hardware and Software Overview

- Brocade ASIC Technology
- Operating Systems
- Ports On Demand (POD)
- SilkWorm 3900 200E, 4100, 4900, 7500, 24000 and 48000 Overviews
- SilkWorm 48000 Ports – FC4-16, FC4-32, and FR4-18i
- SilkWorm 48000 Ports – FC4-32
- Director Blade Support
- Director Blade Support
- Fiber Optic Cable Specifications and Distances
- SFP Types
- Software features

### Fibre Channel Theory

- Fibre Channel Networking Model
- Fibre Channel Classes of Service
- Fibre Channel Frame Format
- Node WWN Name Format - NWWN
- Port WWN Name Format - PWWN
- NWWN and PWWN Dual Ported Disk
- Node Types and Port Types
- Fibre Channel Network Addressing
- SilkWorm 48000 Port Area Numbers (hex)
- Fabric Generic Services
- Fabric Login at FFFFFE
- Name Server at FFFFFC: Distributed Functional Model
- Name Server at FFFFFC: Port and Node Attributes
- Brocade Name Server Commands
- Fabric Controller at FFFFFD
- Brocade RSCN Delivery With Fabric OS v3.1/4.1 and Above
- Brocade RSCN Suppression portcfg rscnsupr
- Device Communication summary
- FICON Support
- N\_Port ID Virtualization (NPIV) - Overview
- NPIV Commands

### Installation and Setup

- "Out of the box" experience
- Steps For Configuring a New Switch
- Environmental Concerns
- SilkWorm Management Interfaces
- Command Line Interface Shortcuts
- Initial Configuration Log in Through the Serial Port
- Initial Configuration Set the IP Address
- Initial Configuration Log In Through the Ethernet Interface
- Initial Configuration Switch Login Accounts
- Initial Configuration Set the Fabric Wide Clock
- Initial Configuration Set Switch Time Zone
- Initial Configuration Set Login Banner
- Initial Configuration Activate Licensed Features
- Initial Configuration Set the Switch Name
- Initial Configuration Set syslog Server
- Initial Security Configuration Disable Telnet
- Initial Security Configuration Enable Web Tools Upfront Login
- Initial Security Configuration Set Command Line Session Timeout
- Initial Security Configuration Change Default Passwords
- Initial Security Configuration Set Password Rules
- Initial Security Configuration User-Defined Accounts
- Initial Security Configuration RADIUS Authentication
- Verify Switch Status View Switch Uptime
- Verify Switch Status Check Switch Status Commands
- Verify Switch Status switchstatuspolicysset
- Verify Switch Status Port Status
- Verify Switch Status Port Speeds
- Verify Switch Status Port Settings & Port Setting Commands
- Verify Switch Status Verifying Switch Operation

- Verify Switch Status Port Status LEDs
- Fabric Parameters Configuration Parameters
- Fabric Parameters Consistent Fabric Parameters
- Administrative Tasks Booting a Switch
- Administrative Tasks Join an Existing Brocade Fabric
- Administrative Tasks Attach Devices
- Administrative Tasks Verify Device Name Server Registration

### **Switch and Firmware Maintenance**

- Archiving Switch Configuration configupload
- Archiving Switch Configuration configupload ASCII Text File Contents
- Restoring Switch Configuration configdownload
- Secure File Copy Protocol (SCP)
- Firmware Maintenance
- Firmware Maintenance Firmware Download Considerations
- Firmware Maintenance Obtaining the Appropriate Release
- Firmware Scalability Support
- Firmware Maintenance Preparing for Download
- Firmware Maintenance VxWorks-based Switches
- Firmware Maintenance VxWorks Firmware Download Example
- Firmware Maintenance Linux-based Switches
- Brocade SilkWorm Hot Code Activation
- SilkWorm Single CP Switch Firmware Download Internal Process
- SilkWorm Single-CP Switch Current Firmware Status
- SilkWorm Single-CP Switch Issue firmwaredownload Command
- SilkWorm Single-CP Switch Firmware Downloaded to Secondary Partition
- SilkWorm Single-CP Switch Primary and Secondary Pointers are Swapped
- SilkWorm Single-CP Switch New Firmware Reboots

- SilkWorm Single-CP Switch New Firmware Commits
- SilkWorm Single-CP Switch Firmware Download is Complete
- Displaying Control Processor Status firmwareshow
- hashow
- SilkWorm Director Firmware Download Internal Process
- SilkWorm Director Current Firmware Status
- SilkWorm Director Download Firmware v5.1.0
- SilkWorm Director Active CP Instructs Standby CP to Perform Download
- SilkWorm Director Standby CP Notifies Active CP Download Successful
- SilkWorm Director Active CP Instructs Standby CP to Reboot
- SilkWorm Director Standby CP Synchronizes with Active CP
- SilkWorm Director Active CP Initiates Failover
- SilkWorm Director Standby CP and Active CP Exchange Roles
- SilkWorm Director Standby CP Synchronizes with Active CP
- SilkWorm Director Active CP Instructs Standby CP to Perform Download
- SilkWorm Director Standby CP Notifies Active CP Download Successful
- SilkWorm Director Active CP Instructs Standby CP to Reboot and Commit
- SilkWorm Director Standby CP Reboots
- SilkWorm Director Standby CP Commits Firmware
- SilkWorm Director Active CP Commits Firmware
- SilkWorm Director Firmware Download is Complete
- Displaying Firmware Download Events firmwaredownloadstatus
- Displaying Firmware firmwareshow
- Single-CP Download firmwaredownload -s
- Committing Firmware firmwarecommit
- Restoring Firmware firmwarerestore

- SilkWorm 7500 & FR4-18i
- SilkWorm 7500 & FR4-18i Firmware downloads
- SilkWorm 48000 with FR4-18i Blade firmwareshow

### **Brocade SilkWorm Zoning**

- Process to Implement Zoning
- Hierarchy of Objects
- Zone Management
- Zone Aliases
- Enabling Zoning
- Zone Object Commands
- Zoning Display Commands
- Default Zoning
- Web Tools – Zoning Administration
- Zoning Enforcement
- Implementation Considerations
- Zoning Best Practices
- Adding a New Switch to a Zoned Fabric
- Merging Two Zoned Fabrics Zoning Segmentation Errors
- Other Merge Fabric Considerations
- Fabric Manager Fabric Merge Check
- Fabric Selection
- Merging Check Results - Successful
- Other Zoning Tools
- SAN Health – Sample Zoning Spreadsheet

### **Routing**

- Routing Overview
- Fabric Terminology
- Principal Switch Path
- Principal Switch Commands
- Virtual Channels
- Routing Terminology
- Basics of the Over-subscription Ratio
- FSPF – Fabric Shortest Path First
- Routing Policies
- Port-Based Routing Policy
- Port Based Routing
- Exchange-based Routing
- Routing Policy Selection

- Display Routing Information Overview
- fcping Command
- pathinfo
- topologyshow v4.x, v5.x
- urouteshow Command
- Web Tools Switch Administration – Routing Panel
- Switch Admin Routing Panel

### **Trunking and Distance**

- What is Brocade ISL Trunking?
- Trunking Requirements
- Bloom - 2 Gbit/sec Without Trunking: Unpredictable Performance
- Bloom - 2 Gbit/sec With Trunking: Maximum Efficiency due to Frame Striping in Hardware
- Bloom - 2 Gbit/sec Trunk Masters
- GoldenEye 4 Gbit/sec Trunking Overview
- Port-based Routing over Trunks
- Exchange-based Routing over Trunks
- 2 & 4 Gbit/sec Trunking Differences
- trunkshow Command
- switchshow/islshow
- Long Distance Fabric Options Overview
- Extended Fabric Connections
- Extended Fabric Distance Levels
- Extended Fabric Configuration
- Extended Distance Trunking
- Extended Trunk Configurations
- ISL R\_RDY
- Long Distance Storage Area Networks
- Bloom ASIC Long Distance Port Matrix
- 4 Gbit/sec Switch Buffer Allocation
- portbuffershow

## **Additional Management Interfaces**

- Brocade Switch Management Tools
- Web Tools and Web Tools Requirements
- Fabric Watch Overview
- SNMP Overview
- Brocade Supported SNMP Versions
- SNMP Version Authentication
- SNMP Components
- SAN Monitoring with SNMP
- MIBs – How do I load MIBs on an NMS?  
Brocade SNMP MIB dependencies and advised installation order
- Brocade SNMP Fabric OS Commands
- SNMP Configuration - Web Tools SNMPv1 and SNMPv3 parameters
- Fabric Manager 5.1
- Fabric Manager Discovery
- Fabric Manager Change and Firmware Management
- Brocade SAN Health
- Documenting SAN Changes –SAN Health
- Documenting SAN Changes – Running SAN Health
- SMI-S Support

## **Troubleshooting and Diagnostics**

- Troubleshooting - Divide and Conquer
- Predictive SAN Problems Brocade Support Department's Problem Areas
- Generic SAN Problem Possible Causes
- Timeout/Sluggishness
- Missing Device
- Marginal Link
- SAN Troubleshooting Approach
- Start at the Switch... Divide and Conquer
- supportshow
- System Message Log (RASLog)

- RASLog View Commands
- Standard RASLog Message Format
- System Error Message Reference Manual
- Audit Log
- AUDIT Flag Message with Start and End Delimiters
- System Console Message Management
- Trace Dump Overview
- Trace Dump Implementation
- Automatic tracedump Captures
- supportftp
- Next-Level Support Information
- First Failure Data Capture (FFDC) Overview
- FFDC Configuration
- supportsave Implementation
- Hardware Diagnostics Overview
- Power-On Self Test (POST)
- Hardware Diagnostics Overview Manually Invoked Diagnostic Tests
- porttest Tests Loopback, F/L/E\_Ports
- spinfab Tests ISLs Validate performance with portperfshow

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