HP Education Services Course Overview

3PAR StoreServ Fast Track (H0DH4S)

This course provides a comprehensive understanding of everyday administration within an HP B-series SAN solution covering technologies and concepts. Students gain experience needed to tackle the challenges of working in enterprise class SAN environments. Additional study may be required for BCFA certification, please refer to the Brocade Study Guide for Exam.This course reviews HP 3PAR hardware and architecture along with providing administrators insight into the constructs within the HP 3PAR array family. Topics include Management Console (MC)and Command Line Interface (CLI), Common Provisioning Groups, Thin Provisioning, data encryption used by self-encrypting drives and Virtual Lock. Dynamic Optimization and Adaptive Optimization are also discussed. Virtual Copies and Physical Copies are addressed as well. Furthermore the course covers Remote Copy, System Reporter (External and On-node), HP 3PAR Priority Optimization and QoS (Quality of Service), Peer Motion, and EVA to HP 3PAR Online Migration. Best Practices and Performance Monitoring are also addressed. Hands-on lab exercises help to illustrate the concepts

Audience

- Technical professionals seeking a learning path that includes both conceptual knowledge of Fibre Channel SAN technologies and experience in HP B-series SAN environments
- HP 3PAR administrators who desire training on basic concepts and best practices needed to administer the array, introductory training on Remote Copy, System Reporter, Adaptive Optimization, and Storage Federation.

Prerequisites

- Recommended free web-based training at http://education.itrc.hp.com: SAN Fundamentals (U5527AAE)
- An understanding of general storage concepts including fibre channel technologies, RAID, and functional at an Operator level in a Windows environment. (Labs are performed on a Windows host and Command Line labs are cross-platform.)

Course title:	3PAR StoreServ Fast Track
HP product number:	H0DH4S
Category/Subcategory:	Storage
Course length:	5 days
Level:	Intermediate
Delivery language:	English
To order:	You can register your interest for this course online at **http://www.hp.com.au/education** . At the site, select the course under Storage portfolio and you will see dates for the course. Register your interest for the date of your choice.

Course objectives

At the conclusion of this course you should be able to:

- Describe features and functionality of the switch hardware
- List the steps for port initialization
- Recall different commands to display PWWN, NWWN, and PID addresses
- Perform an out of box initial configuration
- Perform common administrative tasks
- Identify exchange based routing
- Manage Inter Switch Link (ISL)
- Implement zoning using the CLI syntax
- Activate and deactivate a default zone
- Identify when a long distance license is required
- Backup and manage configuration files
- Create a diagram of a fabric using collected data
- Know the numbering schemes for the HP 3PAR hardware components
- Understand data flow and communication concepts in an HP 3PAR controller node
- Use Management Console GUI and CLI
- Set-up a Common Provisioning Group (CPG) and manage alerts
- Create a Thin Provisioned Virtual Volume (TPVV)
- Use Autonomic Groups (Host Sets and Volume Sets) to simplify provisioning storage
- Change volume RAID, availability, and service levels using Dynamic Optimization
- Work with Virtual Lock for Virtual Volumes and Snapshots
- Administer Virtual Volumes using the CLI and Management Console GUI to manage space
- Create a Virtual Copy Volume (Snapshot)
- Create, manage, and remove an Adaptive Optimization configuration
- Convert a Virtual Volume from fully-provisioned to thin-provisioned
- Use SmartStart to initialize a 7000 Series array
- Use HP 3PAR info to analyze luns presented to hosts
- Understand the difference between Synchronous, Periodic Asynchronous, and Synchronous Long Distance (SLD) modes
- Perform a failover of a Remote Copy Group (RCG)
- Use Management Console GUI and the CLI to manage Remote Copy
- Use the Fast Resync feature to move volumes from one volume group to another
- Use System Reporter quick reports, custom reports, and scheduled reports
- Configure email alerts in System Reporter
- Understand the advantages of Priority Optimization (PO) and Quality of Service (QoS)
- Setup Priority Optimization using Management Console
- Describe RAID impact on overall performance, cost, and availability
- Understand the HP 3PAR caching algorithms
- Use the CLI stat commands for troubleshooting HP 3PAR performance issues
- Use the System Tuner capabilities
- Administrate a Peer Motion configuration

Non-Objectives

The following topics are not included: installing and hands on with hardware, array installation, service processor, hands-on Peer Motion, On-line Import, VMware labs, and upgrades, symmetrical upgrades.

Why education services from HP?

- Award winning Virtual classrooms and Virtual Labs for a real hands-on experience
- Streamlined purchase and management of training with HP Care Pack Services for Education
- Global training with more than 90 training locations worldwide
- Recognized as an IDC MarketScape leader for IT education (IDC MarketScape: Worldwide IT Education and Training 2012 Vendor Analysis, doc #232870, February 2012)
- Training you need, when and where you need it with our Remotely Assisted Instructional Learning (RAIL)
- Comprehensive curriculum of job-specific training leading to vendor certification
- More than 30 years of Education Consulting
- Unmatched technical expertise and support for HP products and technologies

Detailed course outline *

Brocade Switches

- Brocade fibre channel switch family
- Features and functionality of the switch hardware
- Different Brocade FC HBAs
- Brocade CNAs
- Different types of fibre optic cable and SFPs

Fibre Channel Theory

- Fibre channel networking model
- Different class of service
- Frame structure
- WWN format
- Steps for port initialization
- Node and port types
- Fabric services well-known addresses
- Commands to display PWWN, NWWN, and PID addresses
- NPIV implementation and support

Installation and Configuration

- Out of box initial configuration
- Initial security configuration
- Checking switch status
- Important fabric parameters
- Common administrative tasks
- Supported interopmode functionality

Brocade FCP Routing

- Principle switch role
- Port-based routing
- Exchange-based routing
- Dynamic Load Sharing (DLS)
- In-Order Delivery (IOD)
- Inter Switch Link (ISL)
- Trunking benefits

Zoning

- Basic concepts associated with zoning
- Zoning using the CLI syntax
- How to check the maximum size of a zoning database
- Activate and deactivate a default zone
- Hardware and session enforcement differences
- Issues when adding a switch to an existing fabric with zoning enabled
- Best practices when implementing a zone

Long Distance Connectivity

- Use and effects of buffer credits on distance and speed
- Long distance modes, settings, and supported distances for Brocade switches using v6.3.0
- When a long distance license is required
- Use of long wave SFPs
- Limitations of long distance connection when using trunking
- Long distance commands

*there is no LAB exercises are provided for SAN switches

Administration - Firmware

- Interfaces and management tools to manage Brocade switches and fabrics
- Using DCFM, Web Tools, and Telnet/SSH/HTTP/SSL/SNMP
- Host Connectivity Manager (HCM) to manage Brocade HBAs
- Backup and manage configuration files
- Firmware upgrade steps

Basic Troubleshooting

- Troubleshooting techniques
- Data gathering process
- How to create a diagram of a fabric using collected data
- Common SAN problems
- Switch and Field Replaceable Units (FRU) status
- Useful Brocade documentation

HP 3PAR Solution Overview

- Current and legacy product line overviews
- Software suites and licensing overview
- Benefits and advantages of HP 3PAR technology vs. traditional arrays
- HP 3PAR hardware offerings(10000 Series and 7000 Series)
- Basic HP 3PAR high availability advantages
- Gen4 ASIC chip functionality
- Advantages of cache persistence and persistent ports
- Data flow and communication concepts in an HP 3PAR controller node
- Self-encrypting drives
- HP 3PAR component connectivity
- HP 3PAR remote support

Management Console (MC)and Command Line Interface (CLI) Introduction

- Installing MC and CLI
- Logging to the MC and CLI
- MC basic features and CLI basic commands
- MC and CLI benefits

7000 Series Hardware Overview

- HP 3PAR controller options basics
- Drive cage expandability options
- HP 3PAR hardware components basics
- HP 3PAR hardware components numbering schemes

7000 system installation using StartStart

- Installation and setup using SmartStart
- Locate the array serial number

10000 Series Hardware Overview

- HP 3PAR controller options basics
- Drive cage expandability options
- HP 3PAR hardware components basics
- HP 3PAR hardware components numbering schemes

Storage Concepts and Terminology

- HP 3PAR provisioning terminology
- HP 3PAR concept of a disk chunklet and Logical Disk (LD)
- HP 3PAR concept of a Common Provisioning Group (CPG)
- HP 3PAR Virtual Volumes (VV) types

Storage Configuration

- CPGs using Management Console and CLI
- Fully provisioned and thin provisioned VVs using Management Console and CLI

Host Connectivity and Storage Allocation

- Supported operating systems
- How to prepare a host to access an HP 3PAR storage array
- Creating hosts in an HP 3PAR storage array
- Adding FC ports to a host
- Export VVs to a host as VLUNs
- Unexport VVs/VLUNs from a host
- Using Management Console and CLI to work with hosts and storage
- Use Host Explorer to add hosts
- Use HP3PARInfo to gather information

Autonomic Groups and Virtual Lock

- Host and volume sets advantages
- Creating and maintaining host and volume sets
- Management Console and CLI to work with host and volume sets
- Host and volume sets guidelines and rules
- Understand the Virtual Lock feature

Dynamic Optimization

- Dynamic Optimization (DO) benefits
- Changing VV RAID level
- Changing VV setsize and availability level
- Changing VV service level
- Changing VV user data and copy space

Adaptive Optimization

- Benefits of Adaptive Optimization
- Difference between Adaptive Optimization and Dynamic Optimization
- Describe how drive types fit into Adaptive Optimization tiered storage solution
- Work with Adaptive Optimization using the MC and CLI
- Generate and interpret Adaptive Optimization reports

Thin Technologies

- Benefits of the Zero Detection/Thin Persistence feature
- Administering Virtual Volumes using the MC and CLI to manage space
- Perform an online Thick to Thin online conversion

Virtual and Physical Copy

- Virtual and Physical Copy benefits
- Creating, exporting, unexporting, and deleting a Virtual Copy volume
- Rules of Virtual Copy relationships
- Restore from a Virtual copy
- Resynchronize a PC to a base volume
- Promote a PC to a base volume
- Use the MC and CLI to manage physical and virtual copies

Remote Copy (RC)

- Describe the key features, benefits, and advantages of Remote Copy (RC)
- Explain different types of RC implementations
- Understand the difference between Synchronous, Periodic Asynchronous, and Synchronous Long Distance (SLD) modes
- Discuss different failure scenarios
- Perform a failover of a Remote Copy Group (RCG)
- Use Management Console GUI and the CLI to manage Remote Copy

System Reporter

- System Reporter overview and components
- Quick, custom, and scheduled reports

- Configuring email alerts
- Using the database sizing spreadsheet
- Use On-Node system reporters
- CLI on-node system reporter commands and interpretation

QoS and Priority Optimization

- Priority Optimization benefits and architecture
- Priority Optimization best practices and performance implications
- Working with PO using Management Console and the CLI

Data Migration: Peer Motion and EVA to HP 3PAR Online Import

- Peer Motion purpose and benefits
- Configuration rules
- Administering a Peer Motion configuration
- Understand the Peer Motion Command Line Interface (PMCLI)
- Discuss how Online Windows Cluster Migration works
- Discuss how EVA to HP 3PAR Online import works

Tools for Performance and Troubleshooting and Balancing a 3PAR Array

- Local read and write vs. remote read and write
- Individual component performance
- HP 3PAR caching algorithms
- CLI stat commands for troubleshooting HP 3PAR performance issues
- Use the System Tuner capabilities
- Understand how and when to use the compactcpg command

For more information

To locate country contact information and to learn more about education services, please visit our worldwide web site at **http://www.hp.com.au/education** .

Note: If using HF383E / HF383A1 for U3987X 3PAR StoreServ fasttrack course, then the dollar value of the course will be redeemed rather than the number of days.