HP Education Services
Managing HP 3PAR StoreServ I (HK902S_00775288)

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. The course is approximately 50 percent lecture and 50 percent hands-on labs using HP 3PAR arrays. Note: hosts used are MS Windows.

Audience
- HP 3PAR administrators who desire training on basic concepts and best practices needed to administer the array.

Prerequisites
- An understanding of general storage concepts including fibre channel technologies, and RAID.
- Operator level functionality in a Windows environment. (Labs are performed on a Windows host.)

Course objectives
At the conclusion of this course you should be able to:
- 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 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 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
- Understand how to use SmartStart to initialize a 7000 Series array

To order: To review course schedules and to register for a course, visit www.hp.com/learn/storage and select your country from the drop down menu.
• Use HP 3PAR info to analyze luns presented to hosts

**Non-Objectives**
The following topics are not included in this course:
• Hands-on hardware installation
• Hands on with hardware
• Array installation
• Service processor
• Hands-on Peer Motion
• On-line Import
• VMware labs
• Upgrades

**Benefits to you**
• Gain the knowledge necessary to perform day-to-day administration functions on an HP 3PAR array

**Certification(s) and Exam(s)**
HP ASE - Storage Solutions Integrator V1
HP0-J70  -  Implementing HP 3PAR StoreServ Solutions

**Why education services from HP?**
• Recognized as an IDC MarketScape leader for IT education (IDC MarketScape: Worldwide IT Education and Training 2012 Vendor Analysis, doc #232870, February 2012)
• Unmatched technical expertise and support for HP products and technologies
• Comprehensive curriculum of job-specific training leading to vendor certification
• Training you need, when and where you need it with our Remotely Assisted Instructional Learning (RAIL)
• More than 30 years of Education Consulting
• Global training with more than 90 training locations worldwide

**Next steps**
• Managing HP 3PAR StoreServ II (HK904S)

**Detailed course outline**

**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 SmartStart**
• 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

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• 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

**For more information**
To review course schedules and to register for a course, visit [www.hp.com/learn/storage](http://www.hp.com/learn/storage) and select your country from the drop down menu.