



Managing HPE 3PAR StoreServ III: Performance and health management H9P97S

HPE course number	H9P97S
Course length	3 days
Delivery mode	ILT, vILT
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This 3-day training covers advanced topics that a storage administrator will encounter after performing the tasks covered in the HPE 3PAR basic courses (HK902S and HK904S). Topics included are: Space Explained, Performance, Alerts, Troubleshooting, Upgrading, Adaptive Flash Cache (AFC) and Configuration Rebalancing. The course is 50% lecture with 50% hands-on labs. Additional Scenario Labs compliment the Module Labs. These Lifecycle Labs include Adaptive optimization, Quality of Service and Adaptive Flash.

Audience

A storage administrator who has been managing HPE 3PAR StoreServ arrays on a daily basis for at least a year. This training is not for an individual who has no experience managing a HPE 3PAR array.

Prerequisites

Students must have attended HK902S and HK904S

Course Objectives

At the conclusion of this course, the student should be able to:

- Explain how space is allocated and mapped
- Identify data reduction

- Understand performance
- Discuss best practices
- Explain HPE 3PAR events and alerts and how to get notifications about them
- Use CLI and GUI to troubleshoot your storage system
- Perform rebalancing
- Use Adaptive Flash Cache to increase performance
- Upgrade your hardware and software of your storage system
- Employ tools that can be used to troubleshoot and respond to HPE 3PAR performance issues.

Detailed Course Outline

Module 1: Overview	<ul style="list-style-type: none"> • Course Introduction • Course Agenda 	<ul style="list-style-type: none"> • Lab roadmap
Module 2: Space Explained	<ul style="list-style-type: none"> • Understand space utilization • Volume space • Large volumes • Logical disk space • CPG space • Overprovisioning • Distributed sparing 	<ul style="list-style-type: none"> • Adaptive sparing • Adaptive data reduction • Thin deduplication • Space reclamation • Mapping space • SR Space forecasting
Module 3: Performance	<ul style="list-style-type: none"> • Understanding performance bottleneck • Servicing I/O • Express layout • RAID • Initiators • Front end vs back end • CPU • Cache • Adaptive Flash Cache • WriteBack single node 	<ul style="list-style-type: none"> • SSD Performance • Unbalanced systems • Express writes • Benchmarks • Hardware FC Links • I/O Queueing • Interactive response law • CLI Counters • Troubleshooting discussion
Module 4: Lifecycle Discussion	<ul style="list-style-type: none"> • Lifecycle of a System • Introduction Lab 	<ul style="list-style-type: none"> • Introduction to the Ninja Stars output • Roadmap
Module 5: Alerts	<ul style="list-style-type: none"> • View, interpret, and manage system events and alerts • Alert tiering, Internationalization, • Spare Part Notification • Single Click Locate • Use the checkhealth command for troubleshooting • Alert notifications for System Reporter • Alerts threshold criteria editing 	<ul style="list-style-type: none"> • SR Alert space metrics • SSMC email notifications • Event log monitoring and management • SNMP settings and capabilities • Syslog support • SMI-S standard, WBEM Initiative, and 3PAR CIM Support
Module 6: Rebalancing	<ul style="list-style-type: none"> • Balanced HPE 3PAR array definition • Large volumes rebalancing • Phases and options of the tunesys command • Express Layout: Active-Active PDs • New options • Limitations 	<ul style="list-style-type: none"> • System tuning and related tasks from the HPE 3PAR SSMC and the CLI • Tunesys and tunevv options and limitations • New options • Tuning operations troubleshooting • Tuning scenarios
Module 7: Adaptive Flash Cache	<ul style="list-style-type: none"> • AFC benefits • What can/cannot be moved into AFC • Different LRU (Least Recently Used) queues description and the concept of LRU queue demotion • CLI commands to setup, enable, disable, remove, and monitor AFC 	<ul style="list-style-type: none"> • Guidelines and rules regarding AFC • Improvements • Working with AFC using SSMC • Monitoring AFC using the statcache and srstatcache commands
Module 8: Upgrading HPE 3PAR	<ul style="list-style-type: none"> • Servicing options for your HPE 3PAR 7000/8000 components • Repair/replace procedures of CSR components • Customer Self Repair • Combo cards • Hardware Schematics • Safe to Remove • Storage system disks upgrade • Express Layout: Active-Active PDs 	<ul style="list-style-type: none"> • Best practices when upgrading • Contact Management • HPE 3PAR OS update operation • Customer Self-Upgrade • Remote Support • SP Upgrade • HPE 3PAR Service Console

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