



Managing HPE Nimble Storage HJ7C4S

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| HPE course ID | HJ7C4S |
| Course length | 3 days |
| Format | ILT/VILT |
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Using hands-on labs, this course teaches students how to perform common management tasks, including array installation, volume creation, and data protection/recovery using snapshots. This course also covers system monitoring basics using HPE InfoSight.

This course also provides additional knowledge of the advanced capabilities of HPE Nimble Storage arrays, including multi-array groups and pools, replication, disaster recovery, VMware® vVols, configuration of syslog and SNMP trap forwarding, and audit logs and event logs. Using extensive hands-on lab exercises, you gain a practical understanding of HPE Nimble Storage integration with Microsoft Windows, Linux, VMware, and Veeam®.

This course is the combination of:

- HJ7C5S: HPE Nimble I: Management and Local Replication
- HJ7C6S: HPE Nimble II: Remote Replication and Integrations

Audience

This course is ideal for customers, administrators and channel partner sales or technical sales. Also, storage administrators who desire additional training on the advanced features of HPE Nimble Storage benefit from this course.

Course objectives

After completing this course, you should be able to:

- Perform initial configuration of a new array with NSM and GUI
- Perform post-installation tests
- Create volumes and zero-copy clones
- Attach and verify volumes/clones to Windows
- Create and modify data protection policies for volumes
- Restore volumes and individual files from a snapshot
- Use the HPE Nimble GUI to monitor array capacity/performance
- Review HPE Nimble Storage topics
- Discuss and understand disaster terminology
- Describe, configure, and perform replication between groups for both planned and unplanned disaster recovery scenarios
- Discuss peer persistence
- Discuss and perform advanced administration features, including volume performance settings, SNMP, deduplication, encryption, and more
- Configure and manage multi-member groups, storage pools and discuss scale-up and scale-out guidelines and requirements
- Configure and perform volume moves between pools, and volume striping in a multi-member pool
- Discuss network considerations, networking best practices and scenarios for HPE Nimble Storage
- Describe integrations with Windows, Linux, VMware, and Veeam

Detailed course outline

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| HJ7C5S: HPE Nimble I: Management and Local Replication | <ul style="list-style-type: none"> • Agenda • Documentation | <ul style="list-style-type: none"> • Capacity units |
| Module 1: Course Introduction and Overview | | |
| Module 2: AF and HF-Series Hardware | <ul style="list-style-type: none"> • Portfolio overview • AF-Series controllers and enclosures | <ul style="list-style-type: none"> • HF-Series controllers and enclosures • Memory driven flash (SCM) |
| Module 3: Array Initialization and Setup | <ul style="list-style-type: none"> • HPE Welcome Center • Networking overview • HPE Nimble Setup Manager • Initialization | <ul style="list-style-type: none"> • Setup • Post-setup test • Firewall configuration • Data Services Cloud Console |
| Module 4: HPE Nimble Storage OS WebUI Introduction | <ul style="list-style-type: none"> • How to access • WebUI tour • User management • Basic monitoring | <ul style="list-style-type: none"> • Updating HPE Nimble Storage OS • Data Services Cloud Console Data Ops Manager OS upgrade |
| Module 5: Working with HPE Nimble Storage Volumes | <ul style="list-style-type: none"> • Volume Concepts • Provisioning and performance policies • Protection templates overview • Volume collections | <ul style="list-style-type: none"> • Create volumes using the WebUI • HPE Smart SAN • HPE Storage Toolkit for Windows • Connection Manager for Windows |
| Module 6: HPE Nimble OS Advanced Features Overview | <ul style="list-style-type: none"> • Deduplication • Compression • HF-Series volume pinning | <ul style="list-style-type: none"> • Quality of service (QOS) • SmartSecure encryption |
| Module 7: Snapshots and Clones | <ul style="list-style-type: none"> • Understanding Snapshots • Taking Snapshots • Volume collections and scheduled snapshots | <ul style="list-style-type: none"> • Manual snapshot creation • Zero-copy clones |
| Module 8: Introduction to HPE Nimble Storage Replication and Peer Persistence | <ul style="list-style-type: none"> • Basic replication concepts • Replication use cases | <ul style="list-style-type: none"> • How asynchronous replication works • Peer persistence overview |
| Module 9: Introduction to Scaling with HPE Nimble Storage | <ul style="list-style-type: none"> • Scale-to-fit options overview <ul style="list-style-type: none"> – Scale-up – Scale-out | |
| Module 10: Introduction HPE InfoSight | <ul style="list-style-type: none"> • Concepts • Architecture | <ul style="list-style-type: none"> • Benefits |

Detailed lab outline

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| Lab 1: HPE vLabs Access | <ul style="list-style-type: none"> • Agenda | <ul style="list-style-type: none"> • Course topics review |
| Lab 2: Installing HPE Nimble Windows Toolkit | <ul style="list-style-type: none"> • Background | <ul style="list-style-type: none"> • Task 1: Launch NWT installer |
| Lab 3: Initialize an Array | <ul style="list-style-type: none"> • Background • Lab topology | <ul style="list-style-type: none"> • Task 1: Launch HPE Nimble Setup Manager • Task 2: Finishing configuration |
| Lab 5-1: Basic Volume Creation | <ul style="list-style-type: none"> • Task 1: Create a volume • Task 2: Create a volume collection | <ul style="list-style-type: none"> • Task 3: Create an initiator and an initiator group |
| Lab 5-2: Windows Host SetUp using the HPE Nimble Connection Manager (NCM) Utility | <ul style="list-style-type: none"> • Background • Task 1: Launch NCM and connect to a volume • Task 2: Examine the newly connected volume | <ul style="list-style-type: none"> • Task 3: Return to the Windows host to prepare and mount the volume |
| Lab 7: Snapshots and Data Recovery | <ul style="list-style-type: none"> • Background • Task 1: Create data • Task 2: Simulate a data loss event and a recovery | <ul style="list-style-type: none"> • Task 3: Disconnect and delete the volume and the clone |
| Lab 10: HPE InfoSight | | |

Detailed course outline

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| HJ7C6S: HPE Nimble II: Remote Replication and Integrations | <ul style="list-style-type: none"> • Agenda | <ul style="list-style-type: none"> • Access to array documentation |
| Module 1: Course Introduction | <ul style="list-style-type: none"> • Course topics review | |
| Module 2: Architecture and Advanced Features | <ul style="list-style-type: none"> • AF-Series read and write operations • HF-Series read and write operations • Triple+Parity RAID • Integrated spare rebuild operations • Quick Raid Rebuild | <ul style="list-style-type: none"> • Data reduction • Quality of service (QOS) • Volume pinning • Encryption • Data Services Cloud Console |
| Module 3: Scale-out, Multi-Array Groups and Pools | <ul style="list-style-type: none"> • Scale-to-fit review • Scale-out introduction • Scale-out technology • Overview of group/pool operations | <ul style="list-style-type: none"> • Nondisruptive data migrations • Host operation in pools • Scale-out – managing hosts & paths |

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| Module 4: HPE Nimble Storage Replication and Peer Persistence | <ul style="list-style-type: none"> • Replication introduction • Replication components • Replication considerations • SmartReplicate disaster recovery | <ul style="list-style-type: none"> • Replication in WebUI • Peer persistence architecture and operations • Automatic switchover scenarios |
| Module 5: Windows Integration | <ul style="list-style-type: none"> • HPE Storage Toolkit and HPE Storage Connection Manager review • Microsoft Volume Shadow-Copy Service (VSS) overview • VSS components | <ul style="list-style-type: none"> • VSS in use on HPE Nimble • Powershell CMDlets • Diagnostics utility • Space reclamation |
| Module 6: Linux Integration, Oracle, and Docker Integration | <ul style="list-style-type: none"> • HPE Nimble Storage Linux Toolkit (NLT) • HPE Nimble Storage Connection Manager (NCM) for Linux • HPE Nimble Storage Oracle Application Data Manager | <ul style="list-style-type: none"> • HPE Nimble Host Tuning Utility (Nimbletune) • Linux space reclamation |
| Module 7: VMware Integration | <ul style="list-style-type: none"> • VMware integration features • HPE Nimble Storage Connection Manager (NCM) for VMware • VMware vCenter® integration • vStorage APIs and space reclamation | <ul style="list-style-type: none"> • Synchronized snapshots • vSphere Virtual Volumes (vVols) • SRM integration • HPE Nimble Storage dHCI introduction |
| Module 8: Backup Solution Integration | <ul style="list-style-type: none"> • HPE Recovery Manager Central (RMC) overview and basic architecture | <ul style="list-style-type: none"> • Veeam Backup and Replication overview and basic architecture |

Detailed lab outline

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| Lab 0: vLabs Access | <ul style="list-style-type: none"> • Objectives | <ul style="list-style-type: none"> • Accessing the vLabs |
| Lab 1: Environment Preparation | <ul style="list-style-type: none"> • Task 1: launch NWT installer • Task 2: Create an initiator and an initiator group | <ul style="list-style-type: none"> • Task 3: Launch NCM and connect to the production HPE Nimble Storage array |
| Lab 2: Using and Understanding Advanced Volume Features | <ul style="list-style-type: none"> • Task 1: Initial preparation for recovery array data access • Task 2: Working with Volume Pinning – volume performance attribute • Task 3: Create volumes using volume performance attribute | <ul style="list-style-type: none"> • Task 4: Connect the server to the FSserver10 and FSserver11 volume • Task 5: Working with deduplication • Task 6: Working with encryption |

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| Lab 3: Replication and Disaster Recovery | <ul style="list-style-type: none">Task 1: Configure the upstream arrayTask 2: Configure the downstream arrayTask 3: Creating and managing replication collections | <ul style="list-style-type: none">Task 4: Failover to the remote siteTask 5: Recovery after the source system is back onlineTask 6: Clean-up |
| Lab 4: Multi-Array Groups and Pools | <ul style="list-style-type: none">Task 1: Review current pool statusTask 2: Adding an array to the default poolTask 3: Observing capacity and volume behaviorTask 4: Connect the server to the HPE Nimble Storage volume | <ul style="list-style-type: none">Task 5: Understanding how new volumes and data placement is managed |
| Lab 6: Working with Linux Integrations | <ul style="list-style-type: none">Task 1: Configure Linux iSCSI initiatorTask 2: Create an initiator group for the Linux hostTask 3: Create a volume for the Linux host | <ul style="list-style-type: none">Task 4: Perform iSCSI discovery, work with multipathing, and configure the disk device |
| Lab 7: Working with VMware Integrations | <ul style="list-style-type: none">Task 1: HPE Storage Connection Manager for VMwareTask 2: Setting up vVols on HPE NimbleTask 3: Using the HPE Storage vCenter pluginTask 4: Creating a vVol container on an HPE Nimble array and vVol datastore | <ul style="list-style-type: none">Task 5: Working with policy-based storage provisioningTask 6: Deploying and working with a vVol-based VM |
| Lab 8: Working with Veeam Integrations | <ul style="list-style-type: none">Task 1: Initial Veeam and Nimble PreparationTask 2: Creating Backups Using Veeam and Nimble | <ul style="list-style-type: none">Task 3: Instant Virtual Machine Recovery with Nimble |

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