Implementing VMware vSphere on Data ONTAP

IMPVMVS; 3 Days, Instructor-led

Course Description

Implementing VMware vSphere on Data ONTAP (IMPVMVS) is a 3-day instructor led course where you will learn how to protect the virtual infrastructure in SAN and NAS environments as well learning how to manage storage at the virtual-machine level.

Course Objectives

- Describe the VMware vSphere 6.0 virtualization solution
- Articulate the NetApp value proposition for integrating clustered Data ONTAP with vSphere 6.0
- Configure physical and virtual infrastructures
- Use the clustered Data ONTAP operating system to provision virtual infrastructure
- Create, migrate, and clone virtual machines
- Describe the Virtual Volumes datastore-management process
- Protect virtual infrastructure
- Monitor and optimize virtual infrastructure
- Describe best practice for connectivity, provisioning, data layout, and multipathing
- Describe how deduplication, compression, and thin provisioning provide storage savings in a virtual environment

Audience

NetApp employees, channel partners, and customers.

Prerequisites

- Clustered Data ONTAP 8.3 Administration (D8CADM)
- NetApp Data Protection Administration (DATAPROT)
- Data ONTAP SAN Implementation (SANIMP)
- VMware vSphere: Install, Configure, Manage (Version 6.0) (VICM)

Course Outline

Module 1: Overview of VMware vSphere
- VMware Hypervisor architecture
- Datastores
- vSphere components
- NetApp virtualization components
- Data storage virtual machines
- Data LIFs

Module 2: Introduction to the Virtual Storage Console Plug-In

- vCenter Installation components and options
- vCenter server deployment architecture 6.0
- Virtual Storage Console (VSC) overview
- VSC installation
- VMware vSphere APE for Storage Awareness (VASA) overview
- VASA installation guidelines

Module 3: NAS (NFS) Considerations

- VMware vSphere networking concepts
- Clustered Data ONTAP networking
- Networking best practices and recommendations
- NAS (NFS) datastores
- Export policies and best practices
- NAS LIF best practices
- VAAI Plug-in
- NFSv3 and NFSv4 differences

Module 4: SAN Considerations

- SAN storage virtualization – FC and iSCSI
- vSphere SAN network modeling
- ESX network design for IP storage
- Clustered Data ONTAP SAN implementation
- Configure FC in vSphere
- VM Kernel pluggable storage architecture
- Configure iSCSI in vSphere
- iSCSI implementation
- SAN datastores
- Clustered Data ONTAP LUN implementation

Module 5: Configuration of vCenter and VSC

- VSC role-based access-control
- VSC datastore-provisioning functionality
- Migrating virtual machines
- vCenter converter
• Cloning virtual machines
• Datastores cloning
• Virtualized environment alignment issues

Module 6: Configuration of vSphere Virtual Volumes Datastores

• Virtual volumes framework
• VVol advantages and concepts
• Protocol endpoints
• VASA provider overview and implementation
• Virtual machine storage policies
• VVol management
• Data ONTAP 8.3 on-demand functionality

Module 7: Advanced Storage Technologies

• VMFS datastore optimization: deduplication and thin-provisioning
• VMFS optimization best practice
• NFS datastore optimization and best practices
• VM optimization
• Storage QoS
• Storage I/O control
• VMware storage distributed resource scheduler

Module 8: vSphere Data Protection

• Virtual machine backup and restore
• SnapMirror disaster recovery for virtual machines
• VMware vCenter site recovery manager
• SnapCenter integration
• Snap creator framework
• MetroCluster

Module 9: Virtualization management in cloud environments

• NetApp Alta Vault cloud integrated storage
• OnCommand WFA 3.0
• OnCommand Shift overview
• OnCommand Shift deployment

Labs:

• Create a vSphere datacenter
• Add ESXi hosts to the datacenter
• Install VSC on a Windows Server
• Deploy the NetApp VASA Provider in an ESXi host
• Register the NetApp VASA Provider with VSC
• Set virtual machine (VM) start-up and shutdown options for the NetApp VASA Provider
• Create a virtual machine (VM) kernel port group in vSphere for IP storage access
• Configure a storage virtual machine (SVM) to support ESXi host datastores
• Configure the iSCSI service on a storage virtual machine (SVM)
• Create two virtual machine (VM) kernel port groups in vSphere, for iSCSI storage access
• Configure iSCSI on an ESXi host
• Use the NetApp Virtual Storage Console software client plug-in (VSC) to provision storage for a SAN Datashare
• Add a virtual machine (VM) to a datastore
• Use VSC to resize a datastore
• Import a VM into a datastore
• Create Storage Capability Profiles (SCPs)
• Use the datastore provisioning wizard to create a NAS-backed Virtual Volumes datastore
• Use the datastore provisioning wizard to create a SAN-backed Virtual Volumes datastore
• Verify deduplication on a datastore
• Isolate a virtual machine (VM) workload (LUN) by associating the workload with a Storage QoS policy group
• Isolate a virtual machine (VM) workload (.vmdk file) by associating the workload with a Storage QoS policy group
• Use VSC to create a backup job for a datastore
• Use VSC to restore a VM
• Delete a backup
• Configure OnCommand Shift server
• Migrate a VM from vSphere to Hyper-V
• Migrate a VM from Hyper-V to vSphere
• (Optional) Install and configure OnCommand Shift