VMware vSphere on NetApp (VVNA)

Course Summary

Description
Managing a vSphere storage virtualization environment requires knowledge of the features that exist between VMware and NetApp to handle large data workloads. The VMware vSphere on NetApp training provides in-depth use of best practices to improve storage resource utilization, simplify operating system maintenance irrespective of the storage topology, data center operations simplification, and optimal use of your NetApp storage. The course covers the management of any cloud infrastructure using Clustered Data ONTAP 8.3 and the VMware vSphere 6.0 virtualization and management suite. This hands-on 5-day class with hands-on labs immerses you into the virtual machine management and storage operations spanning NetApp Data ONTAP, VMware ESXi with vCenter management. You will get a hands-on experience using the vCenter NetApp plug-in, the Virtual Storage Console (VSC), configuring and monitoring the VMware host settings, performing backups, restoration, and virtual machine cloning operations.

Objectives
At the end of this course, students will be able to:

- Deploy a virtualized infrastructure using NetApp storage based on the feature integration that exists with VMware vSphere and NetApp ONTAP
- Show a firm and practical knowledge of VMware services, protocols and connectivity options
- Utilize NetApp vCenter plug-ins to ensure proper functionality and performance for virtual machines
- Utilize NetApp Virtual Storage Console (VSC) to automate the backup, provisioning, machine cloning and host optimization configuration
- Optimize NetApp Storage system connectivity, performance and reliability using Fibre Channel Protocol (FCP), FCoE, iSCSI, and NFS protocols.
- Implement multi-tenancy through the use of vFilers or Vservers
- Configure storage from the vSphere CLI or GUI in either NetApp clustered ONTAP or 7-mode
- Install and configure NetApp vSphere plug-ins and utilize the features
- Perform data storage networking for both iSCSI and NFS datastores
- Manage virtual machine snapshots at both the virtualization and storage layers
- Implement high availability and disaster recovery features

Topics

- NetApp Introduction
- VMware vSphere Overview
- NetApp VMware Integration
- NetApp Datastore Networking with IP Storage Protocols
- VM Datastore Networking FC/FCoE
- VM Data
- Multitenancy
- High Availability
- Disaster Recovery and Backup
- Monitoring, Performance and Troubleshooting
Course Outline

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Course Summary (cont’d)

Audience

- Data Center Operations Professionals
- Cloud Infrastructure Architects
- Cloud Administrators
- Cloud Engineers
- Storage Administrators
- Deploy a virtualized infrastructure using NetApp storage based on the feature integration that exists with VMware vSphere and NetApp ONTAP
- Show a firm and practical knowledge of VMware services, protocols and connectivity options
- Utilize NetApp vCenter plug-ins to ensure proper functionality and performance for virtual machines
- Utilize NetApp Virtual Storage Console (VSC) to automate the backup, provisioning, machine cloning and host optimization configuration
- Optimize NetApp Storage system connectivity, performance and reliability using Fibre Channel Protocol (FCP), FCoE, iSCSI, and NFS protocols.
- Implement multi-tenancy through the use of vFilers or Vservers
- Configure storage from the vSphere CLI or GUI in either NetApp clustered ONTAP or 7-mode
- Install and configure NetApp vSphere plug-ins and utilize the features
- Perform data storage networking for both iSCSI and NFS datastores
- Manage virtual machine snapshots at both the virtualization and storage layers
- Implement high availability and disaster recovery features

Prerequisites

- System administration experience managing either the Linux or Microsoft Windows operating system
- Completion of the VMware vSphere: Install, Configure, Manage [V6.7] (VSICM67) or equivalent experience
- Completion of the ONTAP 9.3 Cluster Administration (ONTAP9ADM) or equivalent experience

Duration

Five days
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Course Outline

I. NetApp Introduction
   A. Networked Storage
   B. Unified Storage and NetApp Cloud ONTAP
   C. Clustered Data ONTAP

II. VMware vSphere Overview
   A. ESXi 6.0
   B. vCenter 6.0
   C. What’s New in vSphere 6.0 Platform
   D. ESXi 5.x/vCenter 5.x/vSphere 5.x

III. NetApp VMware Integration
   A. Software Defined Datacenter
   B. Virtual Storage Console
   C. VAAI
   D. VASA

IV. NetApp Datastore Networking with IP Storage Protocols
   A. Storage Protocol Selection
   B. IP SAN Architecture
   C. VMFS Datastores
   D. iSCSI
   E. FC/FCoE

V. VM Datastore Networking FC/FCoE
   A. Ethernet Best Practices
   B. Common Best Practices
   C. iSCSI Best Practices
   D. 5.4 NFS4.1 datatores

VI. VM Data
   A. VMFS Alignment
   B. VSC Non-Disruptive VM Alignment
   C. VMware Converter
   D. User/Application Data
   E. RDMs vs VMFS Disks
   F. Storage Efficiency with Deduplication & Cloning
   G. FT new features

VII. Multitenancy
   A. Principles of Multitenancy and Cloud Computing
   B. Availability
   C. Security
   D. Performance
   E. Management Separation

VIII. High Availability
   A. Planned Events
   B. 8.2 vMotion
   C. Storage vMotion
   D. Non-disruptive Volume and LIF Migrations
   E. Unplanned Events
   F. VMware HA
   G. VMware FT
   H. NetApp HA
   I. MetroCluster

IX. Disaster Recovery and Backup
   A. Planning Service Levels
   B. VMware Snapshots
   C. NetApp Snapshots
   D. SnapManager for Virtual Infrastructure
   E. Site Recovery Manager
   F. SnapCreator Framework

X. Monitoring, Performance and Troubleshooting
   A. Performance Factors
   B. Networking Performance
   C. ESXi Host Performance
   D. VM and Guest OS Considerations
   E. VM to virtualized storage performance

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Course Outline (cont’d)

Labs

- Initial Tour of Your Lab Environment
- NetApp Clustered Storage Environment
- VMware vSphere Environment
- NetApp-VMware Integration
- NFS Datastores
- Storage Capability (SCP)
- iSCSI Storage Configuration
- VMware iSCSI Configuration
- Rapid Cloning
- Disk Alignment
- Multitenant Admin Access
- Quality of Service
- Proactive Movement of Volume
- High Availability
- Proactive Movement of a LIF
- SnapMirror
- Backup with VSC
- Restore with VSC
- Alerts and Monitoring