VMware vSAN: Install, Configure, Manage [V8]

Course Duration: 32 Hours **Course code: VMware vSAN**

1. Course Overview

During this four-day course, you will gain the knowledge, skills, and tools to plan and deploy a VMware vSAN™ cluster. You will learn about managing and operating vSAN. This course focuses on building the required skills for common Day-2 vSAN administrator tasks such as vSAN node management, cluster maintenance, security operations, troubleshooting, and advanced vSAN cluster operations. You will learn these skills through the completion of instructor-led activities and hands-on lab exercises.

2. What you'll learn?

By the end of the course, you should be able to meet the following objectives:

- Describe vSAN concepts
- Detail the underlying vSAN architecture and components
- Explain the key features and use cases for vSAN
- Identify requirements and planning considerations for vSAN clusters
- Explain the importance of vSAN node hardware compatibility
- Describe the different vSAN deployment options
- Explain how to configure vSAN fault domains
- Detail how to define and create a VM storage policy
- Discuss the impact of vSAN storage policy changes
- Detail vSAN resilience and data availability
- Describe vSAN storage space efficiency
- Explain how vSAN encryption works
- Detail VMware HCI Mesh™ technology and architecture
- Detail vSAN File Service architecture and configuration
- Describe how to set up a stretched and a two-node vSAN cluster
- Describe vSAN maintenance mode and data evacuation options
- Define the steps to shut down a vSAN cluster for maintenance

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- Explain how to use proactive tests to check the integrity of a vSAN cluster
- Use VMware Skyline Health™ for monitoring vSAN health
- Use VMware Skyline Health to investigate and help determine failure conditions
- Discuss vSAN troubleshooting best practices
- Describe vSAN Express Storage Architecture™ concepts

3. Target Audience

Storage and virtual infrastructure consultants, solution architects, and administrators who are responsible for production support and administration of VMware vSAN 8.

4. Pre-Requisites

Completion of the following course is required:

VMware vSphere: Install, Configure, Manage or equivalent knowledge

5. Course content

1. Course Introduction

- Introductions and course logistics
- Course objectives

2. Introduction to vSAN

- Describe vSAN architecture
- Describe the vSAN software components: CLOM, DOM, LSOM, CMMDS, and RDT
- Identify vSAN objects and components
- Describe the advantages of object-based storage
- Compare All-Flash and Hybrid vSAN architectures
- Explain the key features and use cases for vSAN
- Discuss vSAN integration and compatibility with other VMware technologies

3. Planning a vSAN Cluster

- Identify requirements and planning considerations for vSAN clusters
- Apply vSAN cluster planning and deployment best practices
- Plan for storage consumption by data growth and failure tolerance
- Design vSAN hosts for operational needs
- Identify vSAN networking features and requirements
- Describe ways of controlling traffic in a vSAN environment
- Recognize best practices for vSAN network configurations

4. Deploying a vSAN Cluster

- Recognize the importance of hardware compatibility
- Ensure compatibility of driver and firmware versioning
- Use tools to automate driver validation and installation
- Apply host hardware settings for optimum performance
- Use VMware vSphere® Lifecycle Manager™ for upgrades
- Deploy and configure a vSAN cluster using Cluster QuickStart wizard
- Manually configure a vSAN cluster using vSphere Client
- Explain and configure vSAN fault domains
- Use VMware vSphere® High Availability with vSAN
- Understand vSAN cluster maintenance capabilities
- Differentiate between implicit and explicit fault domains
- Create explicit fault domains

5. vSAN Storage Policies

- Describe a vSAN object
- Describe how objects are split into components
- Explain the purpose of witness components
- Explain how vSAN stores large objects
- View object and component placement on the vSAN datastore
- Explain how storage policies work with vSAN
- Define and create a VM storage policy

- Apply and modify VM storage policies
- Change VM storage policies dynamically

Identify VM storage policy compliance status

6. vSAN Resilience and Data Availability

- Describe and configure the Object Repair Timer advanced option
- Plan disk replacement in a vSAN cluster
- Plan maintenance tasks to avoid vSAN object failures
- Recognize the importance of managing snapshot utilization in vSAN clusters

7. Managing vSAN Storage Space Efficiency

- Discuss deduplication and compression techniques
- Understand deduplication and compression overhead
- Explore compression-only mode
- Configure erasure coding
- Configure swap object thin provisioning
- Reclaim storage space with SCSI UNMAP
- Configure TRIM/UNMAP

8. vSAN Security Operations

- Differentiate between VM encryption and vSAN encryption
- Perform ongoing operations to maintain data security
- Describe the workflow of data-in-transit encryption
- Identify steps to replace a Key Management Server (KMS)

9. vSAN HCI Mesh

- Understand the purpose of vSAN HCI Mesh
- Detail vSAN HCI Mesh technology and architecture
- Perform mount and unmount operations on remote datastores

10. vSAN File Service and iSCSI Target Service

- Understand the purpose of vSAN File Services

- Detail vSAN File Services architecture
- Configure vSAN File Shares
- Describe vSAN iSCSI Target Service

11. vSAN Stretched and Two-Node Clusters

- Describe the architecture and use cases for stretched clusters
- Detail deployment and replacement of a vSAN witness node
- Describe the architecture and use cases for two-node clusters
- Explain storage policies for vSAN stretched clusters

12. vSAN Cluster Maintenance

- Perform typical vSAN maintenance operations
- Describe vSAN maintenance modes and data evacuation options
- Assess the impact on cluster objects when entering maintenance mode
- Determine actions required after exiting maintenance mode
- Define steps to shut down and reboot hosts and vSAN clusters
- Apply best practices for boot devices
- Replace vSAN nodes

13. vSAN Cluster Monitoring

- Describe the Customer Experience Improvement Program (CEIP)
- Use VMware Skyline Health for monitoring vSAN cluster health
- Manage alerts, alarms, and notifications in vSphere Client
- Create and configure custom alarms for vSAN health issues
- Use IOInsight metrics to monitor vSAN performance
- Use vSAN proactive tests to detect and diagnose issues

14. vSAN Troubleshooting

- Apply a structured approach to solving configuration and operational issues
- Use troubleshooting methodology for logical fault diagnosis
- Use VMware Skyline Health to investigate and determine failures
- Identify useful log files for vSAN troubleshooting

15. vSAN Express Storage Architecture (ESA)

- Understand the purpose of vSAN Express Storage Architecture
- Describe vSAN ESA components
- Identify storage policy differences
- Understand compression and encryption operation differences

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