VMware vSphere: Skills for Storage Administrators [V4.1]

Duration: 2 Days

Course Description
This course enables storage administrators to better plan and manage their storage systems to support a VMware vSphere™ environment. Through lecture, hands-on labs, and case studies, you will learn about vSphere interaction and operation with storage rather than learning vSphere administration skills.

Audience
Storage administrators who support vSphere environments

Prerequisites
- Storage administration experience
- User-level experience with Windows or UNIX/Linux systems
- No prior vSphere knowledge or experience is needed

Course Outline

1. Course Introduction
- Introductions and course logistics
- Course objectives

2. Introduction to VMware Virtualization
- Hypervisors (the VMkernel) and virtual machines
- Benefits of server virtualization
- Shared storage and the VMware features that depend on it
- Supported storage configurations
- Storage maximums
- VMware storage virtualization stack

3. VMware Storage Virtualization
- Create a VMFS datastore
- Using extents and Volume Grow to enlarge a VMFS volume
- Strategies for avoiding SCSI reservation conflicts
- Importance of VMFS alignment
- Trade-offs between VMFS and RDM
- Options for creating virtual machine disks and the trade-offs of each option
- VMware vStorage Thin Provisioning and its effect on storage
- Effects of using vStorage Thin Provisioning with storage array thin provisioning

4. Storage Performance and Troubleshooting
- Storage configuration and its effect on performance
- vSphere utilities to monitor storage latency, capacity, and consumption

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- Troubleshooting storage performance problems

5. SAN Design Considerations

- Storage device names in vSphere
- Importance of configuring consistent host LUN ID numbering
- Calculating I/O operations per second (IOPS) and megabytes per second (MBps) to properly configure LUNs
- Using esxtop or resxtop to determine IOPS and MBps
- Storage network topologies, zoning, and access control in Fibre Channel, iSCSI, and NAS
- Strategies for virtual disk placement
- Interswitch linking and trunking considerations
- Using esxcli to mask LUNs
- Implementing flow control and jumbo frames in IP storage configurations
- Configuring VMware vStorage adaptive queuing
- Manual configuration of storage queues
- VMware ESX™/ESXi boot from SAN

6. Multipathing Configuration and Management

- Fibre Channel, iSCSI, and NAS multipathing
- Managing multipathing algorithms available in vSphere
- Integrating virtual port and target port group support and asymmetric logical unit access arrays into a vSphere environment
- Configuring active-active and active-passive arrays with vSphere

7. VMware vStorage VMFS and Virtual Machine Snapshots

- LUN replication in a vSphere environment
- Identifying a snapshot LUN in vSphere
- Controlling how the VMkernel handles replicated LUNs
- Using replicated LUNs for backup and disaster recovery
- VMware APIs for Data Protection
- Impact of virtual machine snapshot use on storage architecture

8. VMware vStorage APIs for Array Integration

- Hardware-accelerated locking
- Hardware-accelerated zeroing
- Hardware-accelerated copy
- Enable and disable hardware acceleration
- New performance metrics added to esxtop and resxtop

Labs:

You will spend approximately 20% of this course in hands-on labs.