

VMware vSphere: Skills for Storage Administrators

Delivery Methods

- Instructor-led training
- Live-online
- Onsite training

Course Duration

- Two days of instructor-led training
- 50% lecture, 20% hands-on lab, 30% case studies

Target Audience

- Storage administrators who support vSphere environments

Prerequisites

This course does not require prior vSphere knowledge or experience.

This course assumes that you have:

- Storage administration experience
- User-level experience with Windows or UNIX/Linux systems

Pricing

Contact your VMware representative or a VMware Authorized Training Center for pricing information.

More Information

Courses are conveniently scheduled around the world. Go to www.vmware.com/education to find the class that is right for you.

Onsite training is available for customers who prefer to bring a VMware Certified Instructor to their own facilities. For more information about onsite classes, including facility requirements, go to www.vmware.com/education.

Course Overview

This course enables storage administrators to better plan and manage their storage systems to support a VMware vSphere™ environment. The course uses lecture, hands-on labs, and case studies to demonstrate vSphere interaction and operation with storage rather than to teach vSphere administration skills.

Students who want to learn more about vSphere administration should go to www.vmware.com/education for other course options.

Course Objectives

By the end of the course, you should understand storage functionality in vSphere and be able to:

- Explain basic concepts related to virtual computing, including vSphere server and storage virtualization
- Be a cooperative partner with vSphere administrators to design, configure, manage, and troubleshoot storage in a vSphere environment
- Describe the trade-offs between storage design decisions
- Plan a storage architecture that scales to the demands of a virtualized environment
- Use the VMware vSphere Client, `esxtop`, `resxtop`, and `vscsiStats` to monitor storage configuration end to end from a virtual machine disk to a specific VMware® vStorage VMFS datastore

Course Modules

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
- Introduce VMware storage virtualization stack

3 VMware S storage Virtualization

- Describe and create a VMFS datastore
- Using extents and Volume Grow to enlarge a VMFS volume
- Introduce strategies for avoiding SCSI reservation conflicts
- Describe the importance of VMFS alignment
- Describe 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
- Explore the effects of using 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
- 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
- Discuss 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 queueing
- Manual configuration of storage queues
- Discuss 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 vS storage 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
- Introduce VMware APIs for Data Protection
- Describe the impact of virtual machine snapshot use on storage architecture

8 VMware vS storage APIs for Array Integration

- Describe hardware-accelerated locking
- Describe hardware-accelerated zoning
- Describe hardware-accelerated copy
- Enable and disable hardware acceleration
- Introduce new performance metrics added to `esxtop` and `resxtop`



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