

## VMware vSphere: Install, Configure, Manage [V6.5]

### Overview:

This five-day course features intensive hands-on training that focuses on installing, configuring, and managing VMware vSphere® 6.5, which includes VMware ESXi™ 6.5 and VMware vCenter Server® 6.5. This course prepares you to administer a vSphere infrastructure for an organization of any size. It is the foundation for most other VMware technologies in the software-defined data center.

### Product Alignment

- ESXi 6.5
- vCenter Server 6.5

### Objectives:

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

- Describe the software-defined data center
- Explain the vSphere components and their function in the infrastructure
- Deploy an ESXi host
- Deploy VMware vCenter® Server Appliance™
- Use a local content library as an ISO store and deploy a virtual machine
- Describe vCenter Server architecture
- Use vCenter Server to manage an ESXi host
- Configure and manage vSphere infrastructure with VMware vSphere® Client™ and VMware vSphere® Web Client
- Describe virtual networks with vSphere standard switches
- Configure standard switch policies
- Use vCenter Server to manage various types of host storage: VMware vSphere® VMFS, NFS, virtual SAN, Fibre Channel, and VMware Virtual SAN™
- Manage virtual machines, templates, clones, and snapshots
- Create, clone, and export a vApp
- Describe and use the content library
- Migrate virtual machines with VMware vSphere® vMotion®
- Use VMware vSphere® Storage vMotion® to migrate virtual machine storage
- Monitor resource usage and manage resource pools
- Use esxtop to identify and solve performance issues
- Discuss the VMware vSphere® High Availability cluster architecture
- Configure vSphere HA
- Manage vSphere HA and VMware vSphere® Fault Tolerance
- Use VMware vSphere® Replication™ and VMware vSphere® Data Protection™ to replicate virtual machines and perform data recovery
- Use VMware vSphere® Distributed Resource Scheduler™ clusters to improve host scalability
- Use VMware vSphere® Update Manager™ to apply patches and perform basic troubleshooting of ESX hosts, virtual machines, and vCenter Server operations

### Certifications

This course prepares you for the following certification:

- VMware Certified Professional 6 – Data Center Virtualization (VCP6-DCV)

**Intended Audience:**

- System administrators
- System engineer

**Prerequisites:**

This course requires the following prerequisites:

- System administration experience on Microsoft Windows or Linux operating systems

**Outline:**

1. Course Introduction

- Introductions and course logistics
- Course objectives
- Describe the content of this course
- Gain a complete picture of the VMware certification system
- Familiarize yourself with the benefits of the VMware Education Learning Zone
- Identify additional resources

2. Introduction to vSphere and the Software-Defined Data Center

- Describe the topology of a physical data center
- Explain the vSphere virtual infrastructure
- Define the files and components of virtual machines
- Describe the benefits of using virtual machines
- Explain the similarities and differences between physical architectures and virtual architectures
- Define the purpose of ESXi
- Define the purpose of vCenter Server
- Explain the software-defined data center
- Describe private, public, and hybrid clouds

3. Creating Virtual Machines

- Introduce virtual machines, virtual machine hardware, and virtual machine files
- Identify the files that make up a virtual machine
- Discuss the latest virtual machine hardware and its features
- Describe virtual machine CPU, memory, disk, and network resource usage
- Explain the importance of VMware Tools™
- Discuss PCI pass-through, Direct I/O, remote direct memory access, and NVMe
- Deploy and configure virtual machines and templates
- Identify the virtual machine disk format

4. vCenter Server

- Introduce the vCenter Server architecture
- Deploy and configure vCenter Server Appliance

- Use vSphere Web Client
  - Backup and restore vCenter Server
  - Examine vCenter Server permissions and roles
  - Explain the vSphere HA architectures and features
  - Examine the new vSphere authentication proxy
  - Manage vCenter Server inventory objects and licenses
  - Access and navigate the new vSphere clients
5. Configuring and Managing Virtual Networks
- Describe, create, and manage standard switches
  - Configure virtual switch security and load-balancing policies
  - Contrast and compare vSphere distributed switches and standard switches
  - Describe the virtual switch connection types
  - Describe the new TCP/IP stack architecture
  - Use VLANs with standard switches
6. Configuring and Managing Virtual Storage
- Introduce storage protocols and storage device types
  - Discuss ESXi hosts using iSCSI, NFS, and Fibre Channel storage
  - Create and manage VMFS and NFS datastores
  - Describe the new features of VMFS 6.5
  - Introduce Virtual SAN
  - Describe guest file encryption
7. Virtual Machine Management
- Use templates and cloning to deploy new virtual machines
  - Modify and manage virtual machines
  - Clone a virtual machine
  - Upgrade virtual machine hardware to version 12
  - Remove virtual machines from the vCenter Server inventory and datastore
  - Customize a new virtual machine using customization specification files
  - Perform vSphere vMotion and vSphere Storage vMotion migrations
  - Create and manage virtual machine snapshots
  - Create, clone, and export vApps
  - Introduce the types of content libraries and how to deploy and use them
8. Resource Management and Monitoring
- Introduce virtual CPU and memory concepts
  - Explain virtual memory reclamation techniques
  - Describe virtual machine overcommitment and resource competition
  - Configure and manage resource pools
  - Describe methods for optimizing CPU and memory usage
  - Use various tools to monitor resource usage
  - Create and use alarms to report certain conditions or events
  - Describe and deploy resource pools
  - Set reservations, limits, and shares

- Describe expandable reservations
- Schedule changes to resource settings
- Create, clone, and export vApps
- Use vCenter Server performance charts and esxtop to analyze vSphere performance

#### 9. vSphere HA and vSphere Fault Tolerance

- Explain the vSphere HA architecture
- Configure and manage a vSphere HA cluster
- Use vSphere HA advanced parameters
- Define clusterwide restart ordering capabilities
- Enforce infrastructural or intra-app dependencies during failover
- Describe vSphere HA heartbeat networks and datastore heartbeats
- Introduce vSphere Fault Tolerance
- Enable vSphere Fault Tolerance on virtual machines
- Support vSphere Fault Tolerance interoperability with Virtual SAN
- Examine enhanced consolidation of vSphere Fault Tolerance virtual machines
- Introduce vSphere Replication
- Use vSphere Data Protection to back up and restore data

#### 10. Host Scalability

- Describe the functions and benefits of a vSphere DRS cluster
- Configure and manage a vSphere DRS cluster
- Work with affinity and anti-affinity rules
- Describe the new capabilities for what-if analysis and proactive vSphere DRS
- Highlight the evolution of vSphere DRS using predictive data from VMware vRealize® Operations Manager™
- Perform preemptive actions to prepare for CPU or memory changes
- Describe the vCenter Server embedded vSphere Update Manager, VMware vSphere® ESXi™ Image Builder CLI, and VMware vSphere® Auto Deploy capabilities
- Use vSphere HA and vSphere DRS together for business continuity

#### 11. vSphere Update Manager and Host Maintenance

- Describe the new vSphere Update Manager architecture, components, and capabilities
- Use vSphere Update Manager to manage ESXi, virtual machine and vApp patching
- Install vSphere Update Manager and the vSphere Update Manager plug-in
- Create patch baselines
- Use host profiles to manage host configuration compliance
- Scan and remediate hosts