**Course Outline VMware vSphere: Install, Configure, Manage [V6.5]**

**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
* Back up 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 vSAN
* 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, vSphere Fault Tolerance, and Protecting Data**

* 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 vSAN
* Examine enhanced consolidation of vSphere Fault Tolerance virtual machines
* Introduce vSphere Replication
* Use vSphere Data Protection to back up and restore data

**10. vSphere DRS**

* 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**

* 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