

VMware Certified Professional Exam (VCP5)

Exam Code: VCP510



Introduction

It is recommended that candidates have the knowledge and skills necessary to install, configure and administer a vSphere 5 environment before taking the VCP510 exam. It is also recommended that the candidate complete the course requirement prior to attempting the exam. It is not required that the course is completed prior to the exam, but the course requirement must be completed in order to obtain the VCP certification.

Exam Objectives

Prior to taking this exam, candidates should understand each of the following objectives. Each objective is listed below; along with related tools the candidate should have experience with, and related documentation that contains information relevant to the objective. All objectives may also be referenced in other product documentation not specifically highlighted below. The candidate should be familiar with all relevant product documentation or have an equivalent skill set.

Section 1 – Plan, Install, Configure and Upgrade vCenter Server and VMware ESXi

Objective 1.1 -- Install and Configure vCenter Server

Knowledge

- Identify available vCenter Server editions
- Deploy the vCenter Appliance
- Install vCenter Server into a virtual machine
- Size the vCenter Server database
- Install additional vCenter Server components
- Install/Remove vSphere Client plug-ins
- Enable/Disable vSphere Client plug-ins
- License vCenter Server
- Determine availability requirements for a vCenter Server in a given vSphere implementation
- Determine use case for vSphere Client and Web Client

Tools

- [VMware vSphere Basics guide](#)
- [vSphere Installation and Setup guide](#)
- [vCenter Server and Host Management guide](#)
- [VMware Virtualization Toolkit](#)
- vSphere Client

Objective 1.2 – Install and Configure VMware ESXi

Knowledge

- Perform an interactive installation of ESXi
- Deploy an ESXi host using Auto Deploy
- Configure NTP on an ESXi Host
- Configure DNS and Routing on an ESXi Host
- Enable/Configure/Disable hyperthreading
- Enable/Size/Disable memory compression cache
- License an ESXi host

Tools

- [VMware vSphere Basics guide](#)
- [vSphere Installation and Setup guide](#)
- [vCenter Server and Host Management guide](#)
- vSphere PowerCLI
- vSphere Client

Objective 1.3 – Plan and Perform Upgrades of vCenter Server and VMware ESXi

Knowledge

- Identify upgrade requirements for ESXi hosts
- Identify steps required to upgrade a vSphere implementation
- Upgrade a vNetwork Distributed Switch
- Upgrade from VMFS3 to VMFS5
- Upgrade VMware Tools
- Upgrade Virtual Machine hardware
- Upgrade an ESXi Host using vCenter Update Manager
- Determine whether an in-place upgrade is appropriate in a given upgrade scenario

Tools

- [VMware vSphere Basics guide](#)
- [vSphere Installation and Setup guide](#)
- [vSphere Upgrade guide](#)
- [VMware vSphere Examples and Scenarios guide](#)
- [Installing and Administering VMware vSphere Update Manager](#)

Objective 1.4 –Secure vCenter Server and ESXi

Knowledge

- Identify common vCenter Server privileges and roles
- Describe how permissions are applied and inherited in vCenter Server
- Configure and administer the ESXi firewall
- Enable/Configure/Disable services in the ESXi firewall
- Enable Lockdown Mode
- Configure network security policies
- View/Sort/Export user and group lists
- Add/Modify/Remove permissions for users and groups on vCenter Server inventory objects
- Create/Clone/Edit vCenter Server Roles
- Add an ESXi Host to a directory service
- Apply permissions to ESXi Hosts using Host Profiles
- Determine the appropriate set of privileges for common tasks in vCenter Server

Tools

- [vSphere Installation and Setup guide](#)
- [vCenter Server and Host Management guide](#)
- [VMware vSphere Examples and Scenarios guide](#)
- [vSphere Security guide](#)

Objective 1.5 – Identify vSphere Architecture and Solutions

Knowledge

- Identify available vSphere editions and features
- Explain ESXi and vCenter Server architectures
- Explain Private/Public/Hybrid cloud concepts
- Determine appropriate vSphere edition based on customer requirements

Tools

- [VMware vSphere Basics guide](#)
- [VMware vCloud: Requirements for a Cloud](#)
- [VMware vCloud: Service Definition for a Public Cloud](#)
- [VMware vCloud: Service Definition for a Private Cloud](#)
- [vSphere 5.0 Licensing, Pricing and Packaging Whitepaper](#)

Section 2 – Plan and Configure vSphere Networking

Objective 2.1 – Configure vNetwork Standard Switches

Knowledge

- Identify vNetwork Standard Switch (vSS) capabilities
- Create/Delete a vNetwork Standard Switch
- Add/Configure/Remove vmnics on a vNetwork Standard Switch
- Configure vmkernel ports for network services
- Add/Edit/Remove port groups on a vNetwork Standard Switch
- Determine use case for a vNetwork Standard Switch

Tools

- [vSphere Installation and Setup guide](#)
- [vSphere Networking guide](#)
- vSphere Client

Objective 2.2 – Configure vNetwork Distributed Switches

Knowledge

- Identify vNetwork Distributed Switch (vDS) capabilities
- Create/Delete a vNetwork Distributed Switch
- Add/Remove ESXi hosts from a vNetwork Distributed Switch
- Add/Configure/Remove dvPort groups
- Add/Remove uplink adapters to dvUplink groups
- Create/Configure/Remove virtual adapters
- Migrate virtual adapters to/from a vNetwork Standard Switch
- Migrate virtual machines to/from a vNetwork Distributed Switch
- Determine use case for a vNetwork Distributed Switch

Tools

- [vSphere Installation and Setup guide](#)
- [vSphere Networking guide](#)
- vSphere Client

Objective 2.3 – Configure vSS and vDS Policies

Knowledge

- Identify common vSS and vDS policies
- Configure dvPort group blocking policies
- Configure load balancing and failover policies
- Configure VLAN settings
- Configure traffic shaping policies
- Enable TCP Segmentation Offload support for a virtual machine
- Enable Jumbo Frames support on appropriate components
- Determine appropriate VLAN configuration for a vSphere implementation

Tools

- [vSphere Installation and Setup guide](#)
- [vSphere Networking guide](#)
- vSphere Client

Section 3 – Plan and Configure vSphere Storage

Objective 3.1 – Configure Shared Storage for vSphere

Knowledge

- Identify storage adapters and devices
- Identify storage naming conventions
- Identify hardware/dependent hardware/software iSCSI initiator requirements
- Compare and contrast array thin provisioning and virtual disk thin provisioning
- Describe zoning and LUN masking practices
- Scan/Rescan storage
- Identify use cases for FCoE
- Create an NFS share for use with vSphere
- Connect to a NAS device
- Enable/Configure/Disable vCenter Server storage filters
- Configure/Edit hardware/dependent hardware initiators
- Enable/Disable software iSCSI initiator
- Configure/Edit software iSCSI initiator settings
- Configure iSCSI port binding
- Enable/Configure/Disable iSCSI CHAP
- Determine use case for hardware/dependent hardware/software iSCSI initiator
- Determine use case for and configure array thin provisioning

Tools

- [vSphere Installation and Setup guide](#)
- [vSphere Storage guide](#)
- [VMware vSphere Examples and Scenarios guide](#)
- vSphere Client

Objective 3.2 – Configure the Storage Virtual Appliance for vSphere

Knowledge

- Define Storage Virtual Appliance (SVA) architecture
- Configure ESXi hosts as SVA hosts
- Configure the storage network for the SVA
- Deploy/Configure the SVA Manager
- Administer SVA storage resources
- Determine use case for deploying the SVA
- Determine appropriate ESXi host resources for the SVA

Tools

- [VMware vSphere Storage Appliance Installation and Configuration guide](#)
- [VMware vSphere Storage Appliance Administration guide](#)
- VSA Manager

Objective 3.3 – Create and Configure VMFS and NFS Datastores

Knowledge

- Identify VMFS and NFS Datastore properties
- Identify VMFS5 capabilities
- Create/Rename/Delete/Unmount a VMFS Datastore
- Mount/Unmount an NFS Datastore
- Extend/Expand VMFS Datastores
- Upgrade a VMFS3 Datastore to VMFS5
- Place a VMFS Datastore in Maintenance Mode
- Select the Preferred Path for a VMFS Datastore
- Disable a path to a VMFS Datastore
- Determine use case for multiple VMFS/NFS Datastores
- Determine appropriate Path Selection Policy for a given VMFS Datastore

Tools

- [vSphere Installation and Setup guide](#)
- [vSphere Storage guide](#)
- vSphere Client

Section 4 – Deploy and Administer Virtual Machines and vApps

Objective 4.1 – Create and Deploy Virtual Machines

Knowledge

- Identify capabilities of virtual machine hardware versions
- Identify VMware Tools device drivers
- Identify methods to access and use a virtual machine console
- Identify virtual machine storage resources
- Place virtual machines in selected ESXi hosts/Clusters/Resource Pools
- Configure and deploy a Guest OS into a new virtual machine
- Configure/Modify disk controller for virtual disks
- Configure appropriate virtual disk type for a virtual machine
- Create/Convert thin/thick provisioned virtual disks

- Configure disk shares
- Install/Upgrade/Update VMware Tools
- Configure virtual machine time synchronization
- Convert a physical machine using VMware Converter
- Import a supported virtual machine source using VMware Converter
- Modify virtual hardware settings using VMware Converter
- Configure/Modify virtual CPU and Memory resources according to OS and application requirements
- Configure/Modify virtual NIC adapter and connect virtual machines to appropriate network resources
- Determine appropriate datastore locations for virtual machines based on application workloads

Tools

- [vSphere Virtual Machine Administration guide](#)
- [Installing and Configuring VMware Tools Guide](#)
- vSphere Client / vSphere Web Client

Objective 4.2 – Create and Deploy vApps

Knowledge

- Identify vApp settings
- Create/Clone/Export a vApp
- Add objects to an existing vApp
- Edit vApp settings
- Configure IP pools
- Suspend/Resume a vApp
- Determine when a tiered application should be deployed as a vApp

Tools

- [vSphere Virtual Machine Administration guide](#)
- vSphere Client / vSphere Web Client

Objective 4.3 – Manage Virtual Machine Clones and Templates

Knowledge

- Identify the vCenter Server managed ESXi hosts and Virtual Machine maximums
- Identify Cloning and Template options
- Clone an existing virtual machine
- Create a template from an existing virtual machine
- Deploy a virtual machine from a template

- Update existing virtual machine templates
- Deploy virtual appliances and/or vApps from an OVF template
- Import and/or Export an OVF template
- Determine the appropriate deployment methodology for a given virtual machine application

Tools

- [vSphere Virtual Machine Administration guide](#)
- [VMware vSphere Examples and Scenarios guide](#)
- VMware Open Virtualization Format Tool
- [OVF Tool User Guide](#)
- vSphere Client / vSphere Web Client

Objective 4.4 – Administer Virtual Machines and vApps

Knowledge

- Identify files used by virtual machines
- Identify locations for virtual machine configuration files and virtual disks
- Identify common practices for securing virtual machines
- Hot Extend a virtual disk
- Configure virtual machine options
- Configure virtual machine power settings
- Configure virtual machine boot options
- Configure virtual machine troubleshooting options
- Assign a Storage Policy to a virtual machine
- Verify Storage Policy compliance for virtual machines
- Determine when an advanced virtual machine parameter is required
- Adjust virtual machine resources (shares, limits and reservations) based on virtual machine workloads

Tools

- [vSphere Virtual Machine Administration guide](#)
- vSphere Client / vSphere Web Client

Section 5 – Establish and Maintain Service Levels

Objective 5.1 – Create and Configure VMware Clusters

Knowledge

- Describe DRS virtual machine entitlement
- Create/Delete a DRS/HA Cluster
- Add/Remove ESXi Hosts from a DRS/HA Cluster
- Add/Remove virtual machines from a DRS/HA Cluster
- Configure Storage DRS
- Configure Enhanced vMotion Compatibility
- Monitor a DRS/HA Cluster
- Configure migration thresholds for DRS and virtual machines
- Configure automation levels for DRS and virtual machines
- Create VM-Host and VM-VM affinity rules
- Enable/Disable Host Monitoring
- Enable/Configure/Disable virtual machine and application monitoring
- Configure admission control for HA and virtual machines
- Determine appropriate failover methodology and required resources for an HA implementation

Tools

- [vCenter Server and Host Management guide](#)
- [vSphere Availability guide](#)
- [vSphere Resource Management guide](#)
- vSphere Client

Objective 5.2 – Plan and Implement VMware Fault Tolerance

Knowledge

- Identify VMware Fault Tolerance requirements
- Configure VMware Fault Tolerance networking
- Enable/Disable VMware Fault Tolerance on a virtual machine
- Test an FT configuration
- Determine use case for enabling VMware Fault Tolerance on a virtual machine

Tools

- [vSphere Availability guide](#)
- vSphere Client

Objective 5.3 – Create and Administer Resource Pools

Knowledge

- Describe the Resource Pool hierarchy
- Define the Expandable Reservation parameter
- Create/Remove a Resource Pool
- Configure Resource Pool attributes
- Add/Remove virtual machines from a Resource Pool
- Determine Resource Pool requirements for a given vSphere implementation
- Evaluate appropriate shares, reservations and limits for a Resource Pool based on virtual machine workloads
- Clone a vApp

Tools

- [vSphere Resource Management guide](#)
- [vSphere Virtual Machine Administration guide](#)
- vSphere Client / vSphere Web Client

Objective 5.4 – Migrate Virtual Machines

Knowledge

- Identify ESXi host and virtual machine requirements for vMotion and Storage vMotion
- Identify Enhanced vMotion Compatibility CPU requirements
- Identify snapshot requirements for vMotion/Storage vMotion migration
- Migrate virtual machines using vMotion/Storage vMotion
- Configure virtual machine swap file location
- Migrate a powered-off or suspended virtual machine
- Utilize Storage vMotion techniques (changing virtual disk type, renaming virtual machines, etc.)

Tools

- [vSphere Resource Management guide](#)
- [vSphere Virtual Machine Administration guide](#)
- [VMware vSphere Examples and Scenarios guide](#)
- vSphere Client / vSphere Web Client

Objective 5.5 – Backup and Restore Virtual Machines

Knowledge

- Identify snapshot requirements
- Create/Delete/Consolidate virtual machine snapshots
- Install and Configure VMware Data Recovery
- Create a backup job with VMware Data Recovery
- Perform a test and live full/file-level restore with VMware Data Recovery
- Determine appropriate backup solution for a given vSphere implementation

Tools

- [vSphere Virtual Machine Administration guide](#)
- [VMware Data Recovery Administration guide](#)

Objective 5.6 – Patch and Update ESXi and Virtual Machines

Knowledge

- Identify patching requirements for ESXi hosts and virtual machine hardware/tools
- Create/Edit/Remove a Host Profile from an ESXi host
- Attach/Apply a Host Profile to an ESXi host or cluster
- Perform compliance scanning and remediation of an ESXi host using Host Profiles
- Install and Configure vCenter Update Manager
- Configure patch download options
- Create/Edit/Delete an Update Manager baseline
- Attach an Update Manager baseline to an ESXi host or cluster
- Scan and remediate ESXi hosts and virtual machine hardware/tools using Update Manager
- Stage ESXi host updates

Tools

- [vSphere Host Profiles guide](#)
- [Installing and Administering VMware vSphere Update Manager guide](#)
- [Reconfiguring VMware vSphere Update Manager](#)
- [VMware vSphere Examples and Scenarios guide](#)
- vSphere Update Manager Utility
- vSphere Client

Section 6 – Perform Basic Troubleshooting

Objective 6.1 – Perform Basic Troubleshooting for ESXi Hosts

Knowledge

- Identify general ESXi host troubleshooting guidelines
- Troubleshoot common installation issues
- Monitor ESXi system health
- Export diagnostic information

Tools

- [vCenter Server and Host Management guide](#)
- [vSphere Monitoring and Performance guide](#)
- [vSphere Troubleshooting guide](#)
- vSphere Client

Objective 6.2 – Perform Basic vSphere Network Troubleshooting

Knowledge

- Verify network configuration
- Verify a given virtual machine is configured with the correct network resources
- Troubleshoot virtual switch and port group configuration issues
- Troubleshoot physical network adapter configuration issues
- Identify the root cause of a network issue based on troubleshooting information

Tools

- [vSphere Networking guide](#)
- [vSphere Troubleshooting guide](#)
- vSphere Client

Objective 6.3 – Perform Basic vSphere Storage Troubleshooting

Knowledge

- Verify storage configuration
- Troubleshoot storage contention issues
- Troubleshoot storage over-commitment issues
- Troubleshoot iSCSI software initiator configuration issues
- Troubleshoot Storage Reports and Storage Maps
- Identify the root cause of a storage issue based on troubleshooting information

Tools

- [vSphere Storage guide](#)
- [vSphere Troubleshooting guide](#)
- vSphere Client

Objective 6.4 – Perform Basic Troubleshooting for HA/DRS Clusters and vMotion/Storage vMotion

Knowledge

- Identify HA/DRS and vMotion requirements
- Verify vMotion/Storage vMotion configuration
- Verify HA network configuration
- Verify HA/DRS cluster configuration
- Troubleshoot HA capacity issues
- Troubleshoot HA redundancy issues
- Interpret the DRS Resource Distribution Graph and Target/Current Host Load Deviation
- Troubleshoot DRS load imbalance issues
- Troubleshoot vMotion/Storage vMotion migration issues
- Interpret vMotion Resource Maps
- Identify the root cause of a DRS/HA cluster or migration issue based on troubleshooting information

Tools

- [vSphere Availability guide](#)
- [vSphere Resource Management guide](#)
- [vSphere Monitoring and Performance guide](#)
- [vSphere Troubleshooting guide](#)
- vSphere Client

Section 7 – Monitor a vSphere Implementation and Manage vCenter Server Alarms

Objective 7.1 – Monitor ESXi, vCenter Server and Virtual Machines

Knowledge

- Describe how Tasks and Events are viewed in vCenter Server
- Identify critical performance metrics
- Explain common memory metrics
- Explain common CPU metrics
- Explain common network metrics
- Explain common storage metrics
- Compare and contrast Overview and Advanced Charts
- Configure SNMP for vCenter Server

- Configure Active Directory and SMTP settings for vCenter Server
- Configure vCenter Server logging options
- Create a log bundle
- Create/Edit/Delete a Scheduled Task
- Configure/View/Print/Export resource maps
- Start/Stop/Verify vCenter Server service status
- Start/Stop/Verify ESXi host agent status
- Configure vCenter Server timeout settings
- Monitor/Administer vCenter Server connections
- Create an Advanced Chart
- Determine host performance using resxtop and guest Perfmon
- Given performance data, identify the affected vSphere resource

Tools

- [vCenter Server and Host Management guide](#)
- [vSphere Resource Management guide](#)
- [vSphere Monitoring and Performance guide](#)
- vSphere Client

Objective 7.2 – Create and Administer vCenter Server Alarms

Knowledge

- List vCenter default utilization alarms
- List vCenter default connectivity alarms
- List possible actions for utilization and connectivity alarms
- Create a vCenter utilization alarm
- Create a vCenter connectivity alarm
- Configure alarm triggers
- Configure alarm actions
- For a given alarm, identify the affected resource in a vSphere implementation

Tools

- [vCenter Server and Host Management guide](#)
- [vSphere Resource Management guide](#)
- [vSphere Monitoring and Performance guide](#)
- [VMware vSphere Examples and Scenarios guide](#)
- vSphere Client