VMware vSphere Administration Training

Course Content

Course Duration : **20 Days**

Class Duration : **3 hours per day (**Including LAB Practical**)**

Fast Track Course Duration : **10 Days Class Duration : 8 hours per day**

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Module 1: VMware vSphere Introduction

- What is Virtualization?
- VMware History
- vSphere 6.x Editions and licensing
- Understand the concept of virtualization
- Identify the benefits of using a virtual machine
- Describe vSphere components

Module 2: ESXi Installation

- Hardware Prerequisites
- ESXi Host Maximums
- Understanding ESXi Partitions
- Installing ESXi-6.5
- Login ESXi-6.5 Host Console After Install

Module 3: vCenter Server Installation

- Hardware and Software Prerequisites
- vCenter Server Components Overview
- Installing vCenter Server on Windows
  - Installing Embedded Platform Services Controller
  - Installing External Platform Services Controller
- Deploying vCenter Server Appliance

Module 4: ESXi Host Client & vCenter Configuration

- ESXi Host Client Overview
- configure vCenter Server Appliance
- Use vSphere Web Client
- Back up and restore vCenter Server
- vSphere HA architectures and features
- vSphere authentication proxy
- Manage vCenter Server inventory objects
- Add Host to vCenter
- vCenter Server Services /
- ESXi host and vCenter Server Backend Communication
- vCenter Administration Settings
  - Global Permissions
  - SSO user & groups Management
  - SSO Policies
  - Domain Integration
  - Firewall Rules
  - Service Nodes Management
- System Configuration Nodes and Services

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Module 5: Network Administration

- Comparison of Physical & Virtual Networking
- Understanding Standard Switch
- Virtual Switch “vSwitch Maximums”
- **Adding & Configuring vSphere Standard Switch**
  - Adding & Configuring vSwitch
  - Network Connections – Enable / Disable IPv6
  - Virtual Switch Property: Ports
  - Virtual Switch Property: Network Adapters
  - Port Group Property: VLANs
  - Virtual Switch and Port Group Policies
  - Security Policy, Traffic-Shaping Policy, NIC Teaming Policy
  - Adding & Configuring NIC Teaming
  - Migrate VM's to New Network
  - Design “Load-Balancing – Redundancy”
  - Detecting and Handling Network Failure
  - Configuring TCP/IP Stacks
  - Enabling Services: “vMotion - Virtual SAN - Provisioning - FT - Management - Replication & NFC”

Module 6: Storage Administration

- vSphere Storage Overview
- VMFS Storage Maximums
- new features of VMFS 6.5
- Storage Policies
- Adding & Configuring Datastore Volumes
  - Add VMFS Volume
  - Making SAN Storage Available to ESX Host
  - How iSCSI is used with ESX Host
  - How iSCSI Storage Authenticates the ESX Host
  - iSCSI Software and Hardware Initiators
  - Adding Virtual Volumes Datastore
- Designing & Managing VMFS Volumes
  - Multiple Paths Overview
  - Volume Grow / Hot VMDK Extend
  - How NAS/NFS is used with ESX Host
  - iSCSI Storage
  - VMFS Data store
  - Extend a VMFS
  - Manage Multiple Paths

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Module 7: Virtual Machine Administration

- Virtual Machine Overview
- Virtual Machine Maximums
- Upgrade VM hardware version 12
- **Creating & Managing Virtual Machines**
  - VM File types / VM Virtual Hardware
  - Creating VM using typical / custom mode
  - Virtual Machine Console settings
  - Configuring VM Hardware & Options
  - Install Guest OS into a Virtual Machine
  - Managing VM / Upgrading VM Hardware
  - VMware Tools Components, Configuration Options, and Security Requirements
  - Remove / Add VM's from the vCenter Server inventory and datastore
- **Design & Optimize Virtual Machine**
  - Move VM Between ESX Hosts: Cold Migration
  - Create and manage virtual machine snapshots
  - Virtual Machine Encryption
  - Allow Virtual Machine Access to a Raw LUN
  - Accessing Virtual Machines in vCenter

Module 8: VM Cloning & Templates

- What is mean by Clone?
- What is mean by Template?
- Clone VM to VM
- Clone or Convert VM to Template
- the VM to Template
- Deploy a Virtual Machine from Template
- Customize a new virtual machine using customization specification files
- Hot & Cold Cloning
- Clone | Export | import | deploy VM from content libraries
- Guest Operating System Customization

Module 9: VMware Converter Standalone

- Converter Standalone Components
- Installing and Uninstalling Converter Standalone
- Convert a Physical or Virtual Machine
- Configure Virtual Machines
- Manage Conversion and Configuration Jobs and Tasks

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Module 10: vSphere Cluster Administration

- Overview of VMware Clustering
- VMware Cluster Components & Prerequisites
- Prepare the ESXi hosts for clustering
- Overview Enhanced vMotion Compatibility (EVC)
- Configure a VM Swapfile Location for a Cluster

Module 11: vSphere HA Administration

- HA Cluster Overview / HA Cluster Maximums
- Creating vSwitch and Portgroup Network for HA
- Creating a vCenter High Availability (HA) Cluster
- Adding Hosts to HA enabled Cluster
- Enable or Disable & Reconfigure vSphere HA
- Configure VMware HA Options
- vSphere HA heartbeat networks and datastore heartbeats
- Customize HA for Virtual Machines
- vSphere High Availability
  - Checking vSphere HA agent status
  - Checking HA network failovers
  - Checking HA VM failovers

Module 12: DRS Cluster Administration

- What a DRS Cluster Is
- Create a DRS Cluster
- Enable or Disable VMware DRS
- Configure Advanced Options
- Configure the DRS Automation Level
- Using Affinity Rules
- Managing DRS Groups
- Customize DRS for Virtual Machines
- Move VM Between ESX Hosts: VMotion Migration
- How VMotion Works
- Virtual Machine Requirements for VMotion
- Host Requirements for VMotion
- Set Cluster Power Management Options
- Monitor Cluster Usage
- Planned Downtime: Maintenance Mode
- Migrate Virtual Machines Using vMotion
- Checking Resource balancing
- VMware vCenter DPM/IPMI
- Enabling IPMI
- Enabling Power Management in a Cluster

Module 13: Host Profiles Administration

- Host Profile Overview
- Host Profile Maximums
- Creating a Host Profile | Editing a Host Profile
- Attaching the Profile to ESX hosts
- Associating & Applying a Host Profile
- Checking for Host Profile compliance
- Applying a Host Profiles | Exporting/Importing Host Profiles

Module 14: Fault Tolerance Administration

- Fault Tolerance Overview
- FT Configuration Requirements
- Preparing Cluster, Hosts and VM for FT
- Turning On FT for Virtual Machines
- Failing Primary FT Virtual Machine
- Failing Secondary FT Virtual Machine
- Checking Secondary FT VM to become Primary FT VM
- Troubleshooting Fault Tolerance

Module 15: Storage DRS

- Creating a Datastore Cluster vSphere Web Client
  - Initial Placement and Ongoing Balancing
  - Storage Migration Recommendations
  - Enable and Disable Storage DRS in the vSphere Web Client
  - Set the Automation Level in the vSphere Web Client
  - Setting the Aggressiveness Level for Storage DRS
  - Datastore Cluster Requirements
  - Adding and Removing Datastores from a Datastore Cluster
- Using Datastore Clusters to Manage Storage Resourcs
  - Using Storage DRS Maintenance Mode
  - Applying Storage DRS Recommendations
  - Change Storage DRS Automation Level for a Virtual Machine
  - Storage DRS Anti-Affinity Rules
  - Clear Storage DRS Statistics in the vSphere Web Client
  - Storage vMotion Compatibility with Datastore

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Module 16: Resource Pool Administration

- Resource Pool Overview
- Creating Standalone Resource Pool
- Resource Pools in a DRS Cluster
- Managing resource allocations
- Manage CPU Reservation & Limitation allocations
- Manage RAM Reservation & Limitation allocations
- Manage Storage Reservation & Limitation allocations
- Using NUMA Systems with ESXi
- Advanced Attributes / Fault Definitions
- virtual memory reclamation techniques
- View Graphics Information

Module 17: vApp Administration

- vApp Overview
- Create a vApp
- Edit vApp Settings
- Configuring IP Pools for vApp
- Power On / Off a vApp
- Export vApp into OVF & OVA formats
- Export and deploy vApp

Module 18: Performance Monitoring Administration

- Systems for Optimizing VM Resource Use
- Monitoring VM Performance
- Performance-Tuning Methodology
- Monitoring VM Resource Use with Performance Graphs
- Host-Based and VM-Based Performance Alarms
- Hardware Status Monitoring
- ESXi Hardware Status Information
- esxtop to analyze vSphere performance
- Available diagnostic data

Module 19: Events & Logs Administration

- Generating ESXi Log bundles for VMware Support
- Generating vSphere vCenter Server Log Bundle
- Generating vSphere Client Server Log Bundle
- Changing vCenter Server log generation Options
- Clearing Events & Logs from Database

Module 20: vCenter Server Management

- vCenter Schedules Administration
  - Creating Schedules
  - Executing & Managing Schedules
- Alarms Administration
  - vSphere Alarms Overview
  - Configuring Alarms in vCenter level, Datacenter, Host & Cluster level, Networking level
  - Data store & VM level, Configuring Alarms actions
- Security Administration
  - **Security Profile Administration**
    - Enable & Disable the ESX Services
  - **Firewall Security Administration**
    - Port Enabling & Disabling for ESX Services
    - Allow & Deny incoming & outgoing network traffic
  - Access Control Administration
    - Creating Roles in VC Connection
    - Creating Roles and checking dependencies
    - Assigning Roles to Users and Groups
    - User sessions Administration
    - Configuring session authentication timeout

Module 21: Host Management

- Configuring Authentication Services
- Join ESX host to Domain
- Select trusted domain if required
- Configuring licensing features
- Date & Time configuration
- DNS & Routing Configuration
- Advanced Settings (VM-Direct Path I/O)
- VM Startup / Shutdown
- VM Swap File Configuration

Module 22: Data Protection Administration

- Understanding vSphere Data Protection
- Deploy the OVF Template - Configure and Install the VDP Appliance
- Creating or Editing Backup Jobs | Setting the Retention Policy
- Managing Backup Jobs - Editing a Backup Job - Cloning a Backup Job
- Enabling or Disabling a Backup Job - Locking and Unlocking a Backup
- Restoring Backups / Deleting a Backup

❑ Module 23: vSwitch Command Line Administration

- **Creating & Removing vSS Switch and port groups from ESXi command-line**
- **Adding & Configuring vSphere Standard Switch**
  - Adding & Configuring vSwitch Through SC
  - Network uplink Connections
  - Virtual Switch Property: Ports
  - Virtual Switch Property: Network Adapters
  - Port Group Property: VLANs

Design and Manage vSphere Standard Switch

- Adding & Configuring NIC Teaming for vSwitch & portgroups
- Configuring vSwitch, Service Console and VMkernel using these commands
- Design "Load-Balancing – Redundancy" Networks
- Detecting and Handling Network Failure
- Specifying MAC Addresses ranges

❑ Module 24: vSphere Distributed Switch (DvSwitch, vDS)

- Understanding vDS & Maximums
- **Adding & Configuring**
  - Creating DvSwitch and DvPortGroups
  - Configuring dvPort Groups & Configure VLANs
  - Adding ESX hosts to DvSwitch
  - Add & Manage Physical & virtual adapters
  - Migrating vSS VMkernels to DvSwitch
  - Migrating VMs from DvSwitch PortGroups to Standard vSwitch
- **Managing Network Resources**
  - vSphere Network I/O Control
  - TCP Segmentation Offload and Jumbo Frames
  - NetQueue and Networking Performance
  - Single Root I/O Virtualization (SR-IOV)
- **Managing Networking Policies Administration**
  - Load Balancing and Failover Policy
  - Security | Traffic Shaping Policy
  - Resource Allocation Policy
  - Monitoring Policy | Port Blocking Policies

Module 26: Update Manager Administration

- vCenter Server embedded vSphere Update Manager
- Configuring update manager patch downloads
- Configuring update manager Settings
- Importing Host Upgrade Release Files
- Creating Baselines and Baseline Groups
- Attaching Baselines and Baseline Groups
- Scanning Selected vSphere Objects / Remediating Selected hosts

❖ VMware vSphere ESXi Image Builder CLI

❖ VMware vSphere Auto Deploy capabilities