

# VMware vSphere 4.1 Ultimate Bootcamp

## Course Overview

VMware Ultimate Bootcamp vSphere 4.1 teaches advanced virtualization concepts and explores the VMware vSphere 4.1 product suite. This comprehensive class prepares the student to become a certified professional virtualization expert. The course objective is to instill the knowledge required for the student to do their job efficiently and effectively, starting from installation of the product to real-world troubleshooting issues. The course focus is not limited only to learning and harnessing the power of VMware but the entire concept of virtualization, and other 3rd party tools and technologies that will enhance VMware capabilities and increase the student's virtualization expertise.

## Course Outline

|                                                                |            |
|----------------------------------------------------------------|------------|
| <b><u>Course Introduction</u></b>                              | <b>5m</b>  |
| Course Introduction                                            |            |
| <br>                                                           |            |
| <b><u>Chapter 01 - Course Introduction and Methodology</u></b> | <b>5m</b>  |
| <b>Learn IT! Do IT! Know IT!</b>                               |            |
| Certified Virtualization Expert (CVE) Certification            |            |
| VMTraining's Physical Setup                                    |            |
| VMTraining's Setup Student to Datacenter                       |            |
| VMTraining's Network IP Setup                                  |            |
| Chapter 01 Review                                              |            |
| <br>                                                           |            |
| <b><u>Chapter 02 - Virtualization Overview</u></b>             | <b>47m</b> |
| <b>Why Virtualize?</b>                                         |            |
| Why Virtualize? - Cost Savings                                 |            |
| VMware ROI TCO Calculator v2.0                                 |            |
| Why Virtualize? - Simplified Management!                       |            |
| What is Virtual Infrastructure?                                |            |
| What is a Virtual Machine (VM)?                                |            |
| Type 1 and Type 2 Hypervisors                                  |            |
| Cloud Computing                                                |            |
| VMware vCloud                                                  |            |
| VMware Virtualization Products                                 |            |
| VMware Go                                                      |            |
| VMware Server 2.0                                              |            |
| VMware Infrastructure 3 (VI3)                                  |            |
| vSphere 4                                                      |            |
| vSphere 4.1 - New Features                                     |            |
| vSphere 4.1 Update 1 (2011/02/10) - New Features               |            |
| VMware vCenter Server                                          |            |
| VMware vCenter Orchestrator                                    |            |
| VMware View 4.5 (Virtual Desktop Infrastructure)               |            |
| VMware Workstation 7.1.2                                       |            |
| VMware ACE 2.7                                                 |            |
| VMware Fusion 3.1.1                                            |            |

VMware Player 3.1.2  
Windows/Microsoft Virtual PC 2007  
Microsoft Virtual Server 2005 R2 SP1  
Windows Server Virtualization Hyper-V R2 (Windows Server 2008 R2)  
Hyper-V Screenshot  
System Center Virtual Machine Manager 2008 R2  
SCVMM 2008 R2  
XenServer Enterprise v5.6  
XenDesktop & Essentials for XenServer  
Virtualization Platforms  
Chapter 02 Review

### **Chapter 03 - Planning and Installing ESX/ESXi**

**1hr 11m**

#### **Topic 1: Planning the ESX/ESXi Deployment**

Physical Hardware Requirements  
Linux, Windows & ESX/ESXi  
VMware ESX/ESXi 4.1 Update 1  
ESX Service Console (SC or COS)  
Service Console Resources  
Default and Suggested Partition Scheme ESX 4.1  
vSphere Hypervisor 4.1 Update 1 (VMware ESXi)  
Booting ESX/ESXi from a SAN LUN (Fibre Channel or iSCSI)  
Booting ESX/ESXi from a SAN LUN

#### **Topic 2: vSphere 4.1 Deployment Guidelines**

Overview of Deployment Planning  
ESX/ESXi Compatibility Guides  
Determining ESX/ESXi Physical Host Size  
VMware Capacity Planner  
Guided Consolidation  
Storage: Capacity and Performance  
Memory Overcommitment

#### **Topic 3: vSphere Hypervisor (ESXi) Installation**

vSphere Hypervisor 4.1 Update 1 Installable  
Demo: Installation of ESXi 4.1 U1  
Local Configuration of ESXi 4.1 Using DCUI

#### **Topic 4: ESX Installation**

ESX Installation  
ESX 4.1 Installation  
UDA 2.0 Script ESX/ESXi Installation  
Demo - ESXi Host Install

#### **Topic 5: Configuring Hostname Resolution and NTP**

Hostname Resolution in ESX/ESXi  
Configuring DNS Settings  
Time Synchronization  
Troubleshooting NTP  
Demo - ESXi NTP Information

#### **Topic 6: Troubleshooting ESX/ESXi**

esx.conf Settings  
ESX/ESXi Server Health Check  
ESXi Host Boot Process

ESX Host Boot Process  
ESX Host Hardware Changes Cause Reboot  
ESX Boot Procedure - GRUB Boot Menu Choices  
Troubleshooting ESX Boot Process  
Resetting root Password ESX  
Resetting root Password ESXi 4.1  
Troubleshooting: vmware-hostd  
Troubleshooting ESXi CIM Management Agents  
Purple Screen of Death (PSOD)  
Chapter 03 Review

## **Chapter 04 - Using Tools to Administer a VMware**

42m

### **Topic 1: Overview of 3rd Party Tools**

Veeam (veeam.com)  
Veeam nworks 5.5  
Veeam - FastSCP 3.0.3  
WinSCP  
Datastore Browser  
ISO Programs  
Novell - PlateSpin Migrate  
Novell - PlateSpin Orchestrate  
Vizioncore Tools (Quest Software)  
PowerGUI (Quest)  
PHD Virtual (phdvirtual.com)  
VKERNEL (vkernel.com)

### **Topic 2: ESX/ESXi Management**

ESX/ESXi Host Management Overview  
Physical Server Console  
Managing ESX/ESXi with the vSphere Client (VIC)  
Demo - vSphere Client  
The Management User Interface (MUI) (ESX/ESXi/vCenter)  
Managing VMs with the Web Client  
PowerCLI 4.1  
SSH Access: PuTTY, SecureCRT, FastSCP, etc.  
Demo - PuTTY Session  
Troubleshooting Options: ESXi 4.1  
Configuration of TSM in ESXi 4.1  
vSphere Hypervisor (ESXi) Only Features  
Sample ESX/ESXi Commands  
vSphere Command Line Interface (vCLI)  
vCLI Commands  
Managing ESX/ESXi with the vSphere CLI (vCLI)  
vCLI Command Syntax  
vSphere SDK for Perl  
vSphere Management Assistant (vMA 4.1)

### **Topic 3: Linux Command Review**

Windows Commands vs. Linux Commands  
Service Console Linux Commands  
Common Command Line Interface (CLI) Options  
Demo - VI Editor

Text Editors  
VMkernel System Information Viewing  
**Topic 4: Troubleshooting the vSphere Client (VIC)**  
vSphere Client Logs  
Cannot Login Using vSphere Client  
Multiple vSphere Client Error  
Chapter 04 Review

## **Chapter 05 - Configuring Networking**

59m

### **Topic 1: Creating & Modifying Virtual Networks**

Networking Terms  
vSphere 4.x Virtual Switch Types  
Network Connections  
Add Network Wizard  
Virtual Switches  
Virtual Switch and Connection Type Identification  
VMware Assigned MAC Addresses  
Virtual Switch Physical NIC Configurations  
Ports Used by VMkernel  
NIC Teaming  
Cisco Discovery Protocol  
Modifying vSwitch Properties (Ports Tab)  
Modifying vSwitch Properties (Network Adapters Tab)  
VLAN Overview  
Standard vSwitch VLAN Configuration  
VLAN Planning  
Standard vSwitch Protection and VLANs  
Standard vSwitch and Port Group Policy Exceptions: Security  
Standard vSwitch and Port Group Policy Exceptions: Traffic Shaping  
Standard vSwitch and Port Group Policy Exceptions: NIC Teaming  
Network Failure and NIC Teaming Options  
Load Balancing Method: Route Based on the Originating Virtual Port ID (Default)  
Load Balancing Method: Route Based on IP Hash (Source + Destination)  
Load Balancing Method: Route Based on Source MAC Hash  
Port Group: Override vSwitch Failover Order  
Multiple Policies Applied to a Single Team  
Physical Switch Configuration  
Networking Review

### **Topic 2: Creating & Modifying Virtual Networks Using CLI**

Physical NIC Commands  
Configure Physical NICs  
Virtual Switch Commands  
Configure Virtual Switches  
VMkernel Port Commands  
Configure the VMkernel Port  
Service Console (vswif) Commands  
Additional Service Console (vswif) Commands  
Adding a Second Service Console  
Demo - Network Configuration  
Chapter 05 Review

## **Chapter 06 - Configuring Storage**

2h

### **Topic 1: Storage Concepts**

Storage Terms

SAN vs NAS in vSphere

Path and Device Naming

Multipathing

Pluggable Storage Architecture (PSA)

Path Selection Considerations

Viewing Multipathing

Storage I/O Control (SIOC)

vSphere API for Array Integration (VAAD)

Multipathing Commands

PSA Commands

Multipathing Command Examples

### **Topic 2: iSCSI Storage (GUI & Command Line)**

Internet Small Computers Systems Interface (iSCSI) Overview

iSCSI Terms for ESX/ESXi

ESX/ESXi and iSCSI SAN Environment and Addressing

Hardware vs Software Initiators

Multipathing with iSCSI

iSCSI Software Initiator Networking

Configuring iSCSI

Configure Software Initiator

Bind VMkernel Ports to Storage Adapter

Discovering iSCSI Targets

Jumbo Frames

Configure Software Initiator: CHAP Authentication

iSCSI Firewall Access - ESX 3.5

iSCSI Firewall Settings (CLI) ESX 3.5

Software iSCSI Configuration Options (CLI)

Software iSCSI Adapter Enable/Disable/Scan

iSCSI Configuration Options (CLI)

View and Configure iSCSI Adapter (CLI)

iSCSI Software Initiator Troubleshooting

iSCSI Vendors and Products

Demo - Storage Setup

### **Topic 3: Fibre Channel Storage**

What is Fibre Channel?

Fibre Channel Terms for ESX/ESXi

ESX/ESXi and Fibre Channel SAN Environment and Addressing

Scanning Fibre Channel LUNs

Multipathing with Fibre Channel

Fibre Channel Vendors and Products

Network/Storage Architecture Review

### **Topic 4: VMFS Datastores (GUI & Command Line)**

Virtual Machine File System (VMFS-3)

Viewing and Creating a VMFS Datastore

Expanding Your VMFS Datastore Using Extents

Add an Extent to Existing VMFS

Expand an ESX/ESXi 4.1 VMFS Volume  
Demo - Creating a VMFS Datastore  
LUN Identification Using esxcfg-scsidevs  
Partition Alignment Using fdisk  
Disk Defragmentation  
VMFS Operations - vmkfstools  
Displaying Disk Usage Detail (ESX vdf -h ESXi df -h)  
**Topic 5: NAS Storage and NFS Datastores (GUI & Command Line)**  
Network Attached Storage (NAS) and ESX/ESXi  
NFS Components, Addressing and Access Control with NFS on Linux  
NFS Target on Windows 2003 R2  
Mount an NFS Datastore to Host  
NFS Configuration Options (CLI)  
NFS Configuration Options (CLI) Examples  
Demo - NFS Creating  
**Topic 6: Raw Device Mapping (RDM)**  
Raw Device Mapping (RDM)  
Raw Device Mapping Benefits  
RDM Compatibility Modes  
RDM CLI Commands

## **Chapter 07 - vCenter Server 4.1 and Licensing**

**1hr 34m**

### **Topic 1: Licensing**

vCenter Server and ESX/ESXi Host Licensing Model  
Manage vSphere Licenses  
VI3 License Types and Pricing (per 2 Sockets)  
vSphere Essentials 4.1 for Small Business  
vSphere 4.1 License Types and Pricing (per 1 Socket)  
Windows Licensing Calculator 1  
Windows Licensing Calculator 2  
Microsoft Server Virtualization Validation Program  
Novell SUSE Linux Enterprise Server 11 SP1 - Free

### **Topic 2: vCenter Server Installation**

vCenter Server 4.1 Summary  
Managing Multiple Enterprise Locations  
vCenter Server 4.1 Specifications  
vCenter Server Architecture  
ESX/ESXi Host and vCenter Server 4.1 Functionality  
Order of vCenter Installation  
vCenter Server Database Overview

### **Topic 3: vCenter Server Inventory**

vCenter Server Home Page  
Hosts and Clusters: Datacenters  
Hosts and Clusters: Folders and Clusters  
VMs and Templates: Subfolders  
vCenter Inventory: VMs Tab  
Datastores: Folders and Datastores  
Networks: Portgroups & Distributed Switches (vDS)  
Demo - vCenter Install

### **Topic 4: Managing vCenter Server**

Scheduled Tasks

Events  
Sessions  
System Logs  
Guided Consolidation  
Client Settings

**Topic 5: Planning vCenter Server Deployment**

vCenter Database Sizing VC 2.5 & 4.x  
vCenter Server 4.x Database Sizing  
Backup Strategy for vCenter Server  
vCenter Server Heartbeat 6.3

**Topic 6: Troubleshooting vCenter Server and Database**

Refreshing vCenter Server  
ESX Host Agent Hangs  
vCenter Server Installation Logs  
vCenter Server Log Files  
SQL Recovery Models  
vCenter Server Service (vpxd) Errors  
vCenter Server Standalone Mode  
Reinitializing the vCenter Server Database  
vSphere Client Session Errors  
Chapter 07 Review

**Chapter 08 - VM Creation, Configuration, and Snapshots**

2hr 27m

**Topic 1: Create a VM**

VM Virtual Hardware  
Types of Virtual NICs (vNIC)  
Virtual Machine Files  
Virtual Disk  
Virtual SCSI Controller Type  
VMDirectPath  
Virtual Machine Access to Storage  
Install Guest OS into VM  
VM Console & Menus  
VMware Tools  
VMware Tools Configurable Features  
Demo - Creating a VM

**Topic 2: Create Multiple VMs, Templates, & Clones**

Clones & Templates  
Deploy VM from Template  
Customizing the OS in a Virtual Machine  
Customization Specification Manager  
Deploying Across Datacenters

**Topic 3: Virtual Appliances**

Virtual Appliances  
Import Virtual Appliances  
Export VM to OVF Format  
Demo - Template Provisioning

**Topic 4: VMware Converter (P2V - V2V)**

VMware Converter 4.3  
VMware Converter Sources - Standalone and Integrated

VMware vCenter Converter 4.3 Versions Comparison

Pre Conversion Tasks

Hot/Cold Cloning - 4 Step Process

Post Conversion Steps

VMware vCenter Converter 4.3 Standalone

Enterprise Converter 4.2 Usage

Troubleshooting VMware Converter

### **Topic 5: Manage VMs**

Hot and Cold VM Migrations

Hot Add Memory and CPUs

VM Properties - Hardware Tab

VM Properties - Options Tab

Resize a Virtual Disk

Extend VMDK

Extend Partitions Using gparted

Renaming a Virtual Machine

vmware-cmd

### **Topic 6: Virtual Machine Startup/Shutdown**

Startup/Shutdown of VMs

Enabling VM Startup/Shutdown

VM Startup/Shutdown Override

Demo - VM Startup/Shutdown

### **Topic 7: Virtual Machine Snapshots**

Virtual Machine Snapshots

Files Used by Snapshots

Taking Snapshots

Snapshot Manager

Reverting to a Snapshot

Deleting Snapshots

Demo - Snapshots

### **Topic 8: Web Access**

Web Access Management

Enable Web Access in ESX 4.x

Log in to Web Access

Web Access Tasks

Generate Virtual Machine Shortcut

Demo - Web Access

### **Topic 9: Virtual Machine Troubleshooting & Best Practices**

Troubleshooting VM Problems

Differences Between VMs and Physical Servers (Best Practices)

Chapter 08 Review

## **Chapter 09 - Security and Permissions**

**1hr 26m**

### **Topic 1: Controlling User Access and Passwords**

Types of Users

vCenter/ESX/ESXi Host Security Model

Permissions

Roles

Privileges Explained

ESX/ESXi Host Permissions



vCenter Permissions

Multiple Group Permissions: No Conflicts - Groups Only

Multiple Group Permissions: No Conflicts - Users and Groups

Multiple Group Permissions: Conflicting Permissions

Multiple Group Permissions: User Overrides and Unions

Multiple User Permissions: Explicit vs. Inherited

Multiple User Permissions: Explicit vs. Inherited #2

ESX/Linux User and Group Management Tools

ESX/ESXi/Linux User Authentication

Configuring ESX Authentication

ESX Authentication Settings

Reusing Passwords in ESX

Configuring Password Complexity in ESX

Demo - vSphere Client Access

## **Topic 2: ESX/ESXi Active Directory (AD) Integration**

UNIX Authentication Model

UNIX Authentication Flow

AD-ESX/ESXi 4.0 Authentication Integration

AD-ESX/ESXi 4.1 Authentication Services

Assign ESX/ESXi 4.1 Permissions Directly to AD Users

Demo - Active Directory Integration

## **Topic 3: Managing Firewalls**

TCP & UDP Ports

Certificates and Data Encryption

Default Security - ESX Service Console

ESX Service Console Firewall Configuration via vSphere Client

ESX Service Console Firewall Commands

ESX Service Console Security Levels

ESX Service Console Firewall

## **Topic 4: SSH Access**

Secure Shell (SSH)

Controlling SSH Access

SSH/Console Banner Message

Monitoring Service Console Access

last Command

fuser Command

## **Topic 5: Running Elevated Commands (su, sudo, setuid/setgid)**

root Logon

Restricting substitute user (su)

Configure the Wheel Group (ESX Only)

sudo

sudo Usage

For More Security Information

## **Topic 6: VMsafe and vShield Zones**

VMsafe Overview

Current VMsafe Partners

vShield Zones Overview

vShield VM Wall Features

vShield VM Flow Features

Chapter 09 Review

## **Chapter 10 - Server and VM Monitoring**

1hr 23m

### **Topic 1: Optimizing Resources**

Transparent Memory Page Sharing  
Balloon-Driver: vmmemctl  
VMkernel Swap - Defined  
VMkernel Swap vm-name.vswp  
Memory Compression  
Virtual CPUs (vCPUs)  
VMkernel CPU Load Balancing  
VMs' CPU & Memory Resource Setting Terms  
CPU Resource Settings  
Memory Resource Settings  
Memory Overhead  
ESX/ESXi 4 Resource Allocation per VM  
Resource Shares  
Monitoring - Hardware Status  
Demo - Hardware Status

### **Topic 2: Performance Monitoring**

Performance Monitoring - Overview  
Customize Performance Chart  
Troubleshooting Performance  
Problem: High CPU Utilization  
Problem: High Memory Utilization  
Problem: High Disk Utilization  
Problem: High Network Utilization  
Veeam Monitor  
Veeam Monitor Demo  
Vizioncore vFoglight  
VKERNEL CapacityVIEW  
Demo - vMotion

### **Topic 3: Configuring Alarms**

vCenter Alarms  
Alarm Settings  
Default Alarms in vCenter  
Configure vCenter Notifications

### **Topic 4: ESXi/ESX and vCenter Logs**

Using esxtop  
Performance Snapshots from CLI  
ESX Log File Locations  
ESX/ESXi Log Files  
ESX/ESXi Log Rotation & vCenter Log Files  
Collecting vCenter Log Files  
Collecting Diagnostics Data  
Configuring Syslog on ESXi  
Sending Logs to a Syslog Server  
ESXi Log File Locations  
Chapter 10 Review

## **Chapter 11 - Advanced ESX/ESXi and vCenter Management**

2hr 14m

### **Topic 1: Storage Views & Topology Maps**

vCenter Storage Views

Storage Views - Reports

Storage Views - Maps

vCenter Topology Maps

Cluster Map View

### **Topic 2: Storage vMotion**

Storage vMotion Migration

Requirements for Storage vMotion

Storage vMotion in vSphere 4

Storage vMotion - Command-Line Interface

(vCLI/RCLI) Non-interactive Mode: SvMotion Examples

Demo - Storage vMotion

### **Topic 3: Configuring vMotion**

vMotion Migration

How vMotion Works

vMotion: ESX/ESXi Host Requirements

Identifying CPU Characteristics

Enable or Disable Nx/xD

vMotion Errors and Warnings

VM Map View

Advanced vMotion Errors

Demo - vMotion

### **Topic 4: Distributed Resource Scheduler (DRS) Cluster**

Distributed Resource Scheduler (DRS) Overview

DRS Cluster in the vCenter Inventory

vCenter Cluster

Configure Automation Level

Initial Placement

Dynamic Balancing/History

Virtual Machine Rules

Virtual Machine to Host Rules

Virtual Machine Options

Distributed Power Management (DPM)

Enhanced vMotion Compatibility (EVC)

VM Swapfile Location

Demo - Creating a Cluster

### **Topic 5: Resource Pools and Monitoring**

Resource Pools

Expandable Reservations

Resource Pool Example Summary

Resource Pool Example: CPU Limits

Troubleshooting Memory Resources

Retaining Host Resource Pools

Best Practices for VM Resources

Monitoring the DRS Cluster - Resource Allocation

Monitoring the DRS Cluster - DRS Resource Distribution Graph

Monitor Cluster Usage

Demo - DRS Usage

## **Topic 6: vNetwork Distributed Virtual Switches**

vNetwork Distributed vSwitch (vDS) Overview  
Creating a Distributed Virtual Switch  
Edit dvSwitch Settings  
Edit dvSwitch Uplink Policy Settings  
Edit dvSwitch Port Group Settings  
Port Binding Methods  
Private VLANs  
Private VLAN (PVLAN) Tagging  
Migrating Service Console Port or VMkernel Port to vDS  
Network I/O Control (NIOC)  
Network I/O Control (NIOC) Best Practices  
Cisco Nexus 1000v Virtual Switch  
Nexus 1000v Architecture

## **Topic 7: Host Profiles**

Host Profiles Overview  
Create Host Profile  
Edit Host Profile  
Attach Host Profile  
Check Compliance with Host Profile  
Apply Host Profile  
Export a Host Profile  
Demo - Host Profiles

## **Topic 8: Linked Mode Group of vCenter Servers**

Linked vCenter Servers Overview  
Linked Mode Group Prerequisites  
Create a Linked Mode Group  
Manage Multiple vCenters  
Chapter 11 Review

## **Chapter 12 - Patching and Upgrading ESX**

51m

### **Topic 1: Patching ESX/ESXi Standalone Hosts**

Planned Downtime: Maintenance Mode  
Patch Installation: esxupdate  
Patch Installation: vihostupdate  
vSphere Host Update Utility: ESXi Patching

### **Topic 2: Patching with Update Manager**

Update Manager Overview  
Update Manager Terms  
Update Manager vSphere Client Plugin  
Update Manager Baselines  
Update Manager Tab  
Update Manager Remediation Defaults and Configuration Options  
Update Manager Downloads  
Update Manager Download Service  
Remediation

Update Manager Events

Update Manager Notifications

### **Topic 3: Upgrades and Migrations**

Upgrade Methodology

Upgrade VirtualCenter/vCenter to a New Version  
ESX/ESXi Migration to New Hardware 3.x to Any Version  
ESX/ESXi Migration to New Hardware - ESX/ESXi Enterprise Plus  
ESX/ESXi Upgrade Using Update Manager  
vSphere Host Update Utility: ESX/ESXi Upgrade  
Overview of Scripted Upgrade  
ESX Post Upgrade Considerations  
Upgrade the Virtual Machines  
Use the vSphere Client to Upgrade the VMware Tools  
Use vSphere Client to Upgrade Virtual Machine Hardware  
Use Update Manager to Upgrade Virtual Machines  
Chapter 12 Review

## **Chapter 13 - Disaster Recovery and Backup**

**1h 20m**

### **Topic 1: Site Recovery Manager (SRM)**

VMware Site Recovery Manager (SRM) V4.1  
SRM Architecture Overview  
SRM - Site Recovery Infrastructure  
SRM - Create Recovery Plans  
SRM - Test Recovery Plans  
SRM - Automate Failover  
SRM Summary

### **Topic 2: High Availability (HA)**

VMware High Availability  
VMware HA in Action  
Configure HA Cluster  
VMware HA: Virtual Machine Options  
Host Isolation  
Guidelines for Isolation Response Setting  
HA VM Monitoring  
Viewing your HA Cluster  
Troubleshooting VMware HA  
Demo - High Availability

### **Topic 3: VM Fault Tolerance**

Fault Tolerance Overview  
Fault Tolerance Requirements  
Configure VMkernel NIC  
Turn on Host Certificate Checking  
Turn on Fault Tolerance

### **Topic 4: Microsoft Clustering**

Virtualizing Microsoft Clusters  
Microsoft Cluster Services  
Microsoft Cluster Services Requirements

### **Topic 5: Backup Strategies**

Backup Strategies for VMs

### **Topic 6: Using VCB Command Line Utilities**

VMware Consolidated Backup (VCB) Features  
VCB Components  
Using VCB Command-Line Utilities  
Files that Make Up a Full VM Backup

Back Up and Restore Individual Virtual Disks from Service Console

**Topic 7: VMware Data Recovery**

Data Recovery 1.2 Overview

Demo - Data Recovery Setup

Data Recovery Installation & Features

Configure Network Settings

Configure VMs to Backup

Configure Data Recovery Appliance and Setup Backup Job

Demo - Data Recovery

**Topic 8: Third Party Backups**

PHD Virtual Backup for VMware 5.1

PHD Virtual Backup v5.1 - vCenter Plugin

Quest vRanger 5 (formerly Vizioncore)

vRanger Pro - Screenshots

Veeam Backup & Replication v5 with vPower

Veeam Backup - Screenshot

Chapter 13 Review

Course Closure

**Total Duration: 17hrs 4m**