

# VMware vSphere 4.x/5.x to vSphere 5.5 Upgrade and New Technology Ultimate Bootcamp

## Course Overview

This course provides students with the knowledge and skills to upgrade from VMware 4.x/5.x to VMware's new vSphere 5.5 product.

<b><u>Course Introduction</u></b>	2m
Course Introduction	
<b><u>Chapter 01 - Course Introduction and Methodology</u></b>	5m
Introduction	
Course Flip Book Site	
Certified Virtualization Expert (CVE) Certification	
VMTraining's Physical Setup	
VMTraining's Setup - Student to Datacenter	
VMTraining's Network IP Setup	
Lab Terms Used	
Lab Conventions Used	
Chapter 01 Review	
<b><u>Chapter 02 - Overview of vSphere 5.1 &amp; 5.5</u></b>	54m
Topic 1: vSphere 5.x New Technology Overview	
The Software-Defined Datacenter (SDDC)	
vCloud Suite 5.5	
vCloud Suite 5.5 – Add-ons	
VMware vSphere 5.5	
vSphere 5.x New Technology Overview	
vSphere 5.5 – Hypervisor Enhancements	
vSphere 5.5 – Virtual Machine Enhancements	
vSphere 5.5 – vCenter Server Enhancements	
vSphere 5.5 – Storage Enhancements	
vSphere 5.5 – Networking Enhancements	
Type 1 and Type 2 Hypervisors	
VMware ROI TCO Calculator V 4.0	
VMware TCO Comparison Calculator	
Topic 2: Licensing	
vCenter Server 5.x & ESXi Host Licensing Model	
vSphere Essentials 5.5 for Small Business	
vSphere 5.5 License Types and Pricing	
New Features per vSphere 5.1 License Type	
Windows Licensing Calculator	
VMware and Microsoft License Purchase Deal	
Topic 3: vSphere 5 Requirements	
ESXi Hardware Requirements	
vSphere Hypervisor 5.5 (VMware ESXi)	
VMware ESXi 5.x	
vCenter Server 5.x Summary	
vCenter Server 5.1 Update 1c	
vCenter Server 5.5/5.5a/5.5b & 5.5 Update 1	
vCenter Server 5.x Specifications	
Managing Multiple Enterprise Locations	

vCenter Server 5.1/5.5 SSO  
vCenter Server 5.1/5.5 Connection through SSO  
SSO 5.5 Interoperability  
vCenter Server 5.5 Architecture  
vCenter Server Database Overview  
vCenter Server 5 Database Sizing  
SQL Server vCenter Database Setup  
vCenter 5.5 Installation Options  
Order of vCenter 5.5 Manual Installation Method  
Install Single Sign On Service (SSO) 5.5  
vCenter Server 5.5 Simple Install (Windows)  
vCenter Server 5.5 Post Install  
Chapter 02 Review

### **Chapter 03 - Upgrade or Migrate to vSphere 5.5**

27m

Topic 1: Upgrades and Migrations  
Upgrade to 5.5 Methodology  
Upgrade vCenter to 5.0 Steps  
Upgrade - All on 1 Server  
Upgrade vCenter to 5.5 – Separate Servers (Med-Lg Org)  
Upgrade of Multiple vSphere Products to Use vCenter 5.5  
Install vSphere Web Client 5.5  
Install vSphere 5.5 Inventory Service  
Upgrade Inventory Service 5.0 to 5.1/5.5  
Upgrade vCenter 4.1 to 5.5  
Upgrade Update Manager 4.1 to 5.5  
Upgrade Host to ESXi 5.5 Using Media  
ESX/ESXi Upgrade Using Update Manager (5.0 or 5.1 or 5.5)  
ESX/ESXi Migration to New Hardware  
Upgrade Distributed Switch to 5.5  
Upgrade the Virtual Machines  
Use the vSphere Client to Upgrade the VMware Tools  
Use vSphere Client to Upgrade Virtual Machine Hardware V10  
Use Update Manager to Upgrade Virtual Machines  
Chapter 03 Review

### **Chapter 04 - Virtual Machine Enhancements**

1h 6m

Topic 1: VM Details  
VM Virtual Hardware  
VM Properties HW v9 via vSphere Web Client  
vSphere 5.5 – Virtual Machine Enhancements  
VM Graphics HW v10 via vSphere Web Client  
Types of Virtual NICs (vNIC)  
Virtual Machine Files  
VMDK Stub File Creation  
VM Swap Files  
VMDK Disk Provisioning  
Virtual Disk  
Larger 62 TB Virtual Disks  
AHCI SATA Controller  
Install Guest OS into VM  
Hot Add Memory and CPUs  
VM Properties - Hardware Tab  
Adding USB Devices to VM  
VM Properties - Options Tab  
Renaming a Virtual Machine

vmware-cmd.pl (vCLI)  
Kill a VM with esxcli  
VM Console & Menus  
VMware Tools  
VMware Tools 5.0 & Earlier vs. 5.1/5.5  
Topic 2: Templates & Clones  
Clones & Templates  
Deploy VM from Template  
Customizing the OS in a Virtual Machine  
Customization Specification Manager  
Topic 3: VMware Converter 5.5  
VMware Converter 5.5  
VMware Converter Sources  
VMware Converter Standalone 5.5  
Post Conversion Steps  
VMware Converter Standalone 5.5 (Cont'd)  
Chapter 04 Review

## **Chapter 05 - Managing vSphere 5.x Administration**

1h 4m

Topic 1: Host Profiles  
Host Profiles Overview  
Per Host Answer Files  
Edit Host Profile  
Topic 2: Host Deployment Options  
vSphere 5.x ESXi Image Builder CLI  
vSphere 5.x Auto Deploy for ESXi PXE Boot  
vSphere 5 Auto Deploy Process  
vSphere 5 Auto Deploy Architecture  
Topic 3: ESXi 5.5 Management  
vCenter Server 5.0 & 5.x Host Functionality  
ESXi Host & vCenter Server Management Overview  
Direct Console User Interface (DCUI)  
Managing ESXi with the vSphere Client (VIC)  
The Management User Interface (MUI) (ESX/ESXi/vCenter)  
SSH Access: PuTTY, SecureCRT, FastSCP, etc.  
Troubleshooting Options: ESXi 5.x  
Configuration of Troubleshooting Options in ESXi 5.x  
CLI Commands Overview  
CLI Commands  
esxcli, vimsh, vim-cmd, "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 5.5)  
PowerCLI 5.5 Release 2  
Common Command Line Interface (CLI) Options  
ESXi 5.x Text Editor  
Topic 4: vCenter Server Appliance (vCSA)  
vCenter Server Virtual Appliance (vCSA) Specifications  
Topic 5: vSphere Web Client  
vSphere Web Client  
vSphere Web Client – Requirements  
Install vSphere Web Client 5.5  
Using vSphere Web Client 5.5

Topic 6: New Update Manager Features  
Update Manager 5.5 Patching  
Shavlik Protect (Standard & Advanced)  
Update Manager 5.5 Install (Windows)  
Update Manager vSphere Client Plugin  
Update Manager Baselines  
Update Manager Remediation Defaults and Configuration Options  
Update Manager Events  
Update Manager Notifications  
Patch Repository  
Update Manager Download Service  
Update Manager Sizing Estimator  
Update Manager Tab  
Remediation  
Topic 7: vCenter Server 5.x Management  
Collecting Windows vCenter Log Files  
Collecting vCSA Log Files  
Collecting vCenter Diagnostics Data  
Configuring Syslog on ESXi (GUI)  
Sending Logs to a Syslog Server (CLI)  
Syslog Servers  
vCenter Server 5.1 Shows Disabled Plug-ins  
Chapter 05 Review

## **Chapter 06 - Networking**

43m

Topic 1: Virtual Networks  
vSphere 5.x Virtual Switch Types  
Cisco Discovery Protocol  
Modifying vSwitch Properties (Ports Tab)  
Custom MAC Address  
Physical Switch Configuration  
Topic 2: vSphere Distributed Virtual Switches  
vSphere Distributed vSwitch (vDS) Overview  
vSphere Distributed Switch (vDS) New Features in vSphere 5.0  
vSphere Distributed Switch (vDS) New Features in vSphere 5.1  
vSphere Distributed Switch (vDS) New Features in vSphere 5.5  
Creating a vSphere Distributed 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  
Create NetFlow  
Using Port Mirroring  
vDS Health Check  
Create a LACP LAG  
Configure LAG Without Losing Connectivity  
Use Template Mode to Assign NICs to the LAG on Multiple Hosts  
Make the LAG Active to Finish Configuration  
Networking Review  
Topic 3: Creating & Modifying Virtual Networks using CLI  
Networking CLI Commands

Physical NIC Commands  
Configure Physical NICs  
Virtual Switch Commands  
Configure Virtual Switches  
VMkernel Port Commands  
Configure the VMkernel Port  
Chapter 06 Review

## **Chapter 07 - Storage**

51m

Topic 1: Storage Concepts  
vSphere's Family of Storage APIs  
Storage APIs - Array Integration  
Storage APIs - Multipathing  
Path Selection Considerations  
Viewing Multipathing  
All Paths Down (APD)  
Storage I/O Control (SIOC)  
SIOC Enhancements  
SIOC Monitoring  
Multipathing Commands  
Multipathing Commands (vCLI)  
Multipathing Command Examples  
Topic 2: iSCSI Storage (GUI & Command Line)  
Setup Steps - Multipathing with Software iSCSI  
iSCSI Software Initiator Networking  
Configuring iSCSI  
Configure Software Initiator  
Bind VMkernel ports to Storage Adapter (GUI)  
Bind VMkernel ports to Storage Adapter (CLI)  
Discovering iSCSI Targets  
Jumbo Frames  
iSCSI Session Options (CLI)  
Topic 3: Fibre Channel Storage  
What is Fibre Channel?  
ESX / ESXi and Fibre Channel SAN Environment and Addressing  
Scanning Fibre Channel LUNs  
Topic 4: VMFS Datastores  
Virtual Machine File System (VMFS-5)  
Virtual Machine File System (Updates in vSphere 5.5)  
Upgrade VMFS-3 to VMFS-5  
Viewing and Creating a VMFS-5 Datastore  
Advanced I/O Management  
Topic 5: NAS Storage and NFS Datastores  
Network Attached Storage (NAS) and ESX/ESXi  
Mount an NFS Datastore to Host  
NFS Configuration Options (CLI)  
Topic 6: Profile Driven Storage, Datastore Clusters & Storage DRS (SDRS)  
Profile-Driven Storage  
vSphere Storage API for Storage Awareness (VASA)  
Manage Storage Capabilities  
Enable VM Storage Profiles  
Expert Tip: Known Port Conflict  
Create VM Storage Profiles  
Apply VM Storage Profiles to VMs  
Datastore Clusters  
Storage DRS (SDRS)

Create a Datastore Cluster for SDRS  
Datastore Cluster Information  
Edit a Datastore Cluster  
Topic 7: Solid State Disks (SSD)  
Solid State Disks (SSD)  
Host Cache Configuration  
When ESXi Fails to Identify Solid State Disks  
Using SMART with SSD  
Topic 8: vSphere Storage Appliance (VSA)  
vSphere Storage Appliance (VSA) – Overview (v5.1.1, replaced 5.1)  
vSphere Storage Appliance (VSA) - Components  
vSphere Storage Appliance (VSA) – New Features in 5.1/5.1.1  
vSphere Storage Appliance (VSA) - Architecture  
Topic 9: vSphere Flash Read Cache (vFRC)  
vSphere Virtual Flash  
Configure a Virtual Flash Resource  
Configure Virtual Flash Host Swap  
Virtual Flash Read Cache  
Topic 10: VMware Virtual SAN (VSAN)  
VSAN Overview  
VSAN Device Configuration  
VSAN Cluster Configuration  
VSAN Architecture  
Chapter 07 Review

## **Chapter 08 - Availability**

45m

Topic 1: vSphere Data Protection 5.5.5 (vDP)  
vSphere Data Protection 5.5.5  
vSphere Data Protection 5.5.5 Installation & Features  
vSphere Data Protection 5.5.5 – What's New  
vSphere Data Protection Advanced 5.5.5  
vDP 5.5.5 - Configure Settings  
Using VDP to Backup a VM  
Using VDP to Restore a VM  
File Level Restore (FLR)  
Replication to/from Avamar  
Direct-to-Host Restore  
Topic 2: vSphere Replication 5.5  
vSphere Replication v5.5  
vSphere Replication v5.5 – New Features  
VR v5.5 Setup  
VR v5.5 Configure Replication  
VR v5.5 Recovery  
Topic 3: Site Recovery Manager 5.5 (SRM)  
VMware Site Recovery Manager (SRM) V5.5  
VMware Site Recovery Manager (SRM) V5.5 – Features  
VMware Site Recovery Manager (SRM) V5.5 – What's New  
SRM Architecture Overview  
SRM – Site Recovery Processes  
Topic 4: High Availability (HA)  
New vSphere 5 HA Features  
New vSphere 5.1 HA Features  
New vSphere 5.5 HA Features  
vSphere 5 HA in Action  
Configure HA Cluster  
VMware HA: Virtual Machine Options

Host Isolation  
Guidelines for Isolation Response Setting  
HA VM Monitoring  
App HA – Application High Availability  
App HA – Policies  
App HA - Architecture  
HA Datastore Heartbeating  
Viewing your HA Cluster  
Troubleshooting VMware HA  
Chapter 08 Review

**Chapter 09 - Security Enhancements**

14m

Topic 1: Managing Firewalls  
ESXi 5.x Firewall  
TCP & UDP Ports  
Data Encryption  
Security Certificates  
ESXi Firewall Configuration via vSphere Client  
ESXi Host Firewall Commands  
Topic 2: ESXi Active Directory (AD) Integration  
AD-ESX/ESXi 4.1/5 Authentication Services  
Assign ESXi 4.1/5 Permissions Directly to AD Users  
Topic 3: vShield Family  
vCloud Networking & Security  
VMsafe Components  
vShield Product Family Overview  
vShield App  
vShield Edge  
vShield Endpoint  
For More Security Information  
Chapter 09 Review  
Course Closure

**Total Duration: 6h 11m**