

VMware vSphere 5.5 Ultimate Bootcamp

Course Overview

VMware Ultimate Bootcamp vSphere 5.5 teaches advanced virtualization concepts and explores the VMware vSphere 5.5 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.

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Chapter 03 - Planning and Installing ESXi

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Topic 2: vSphere 5.x Deployment Guidelines
Overview of Deployment Planning
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Topic 3: vSphere Hypervisor (ESXi) Installation
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Local Configuration of ESXi 5.5 using DCUI
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vSphere 5.x Auto Deploy Architecture
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Topic 5: Troubleshooting ESXi
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ESXi Host Boot Process
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Foglight for Virtualization - Free Edition (Dell Software)
RVTools v 3.6
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The Management User Interface (MUI) (ESX/ESXi/vCenter)
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Chapter 05 - vCenter Server 5.5 and Licensing

1h 46m

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vSphere Essentials 5.5 for Small Business
vSphere 5.5 License Types and Pricing
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Windows Licensing Calculator
Novell SUSE Linux Enterprise Server 11 SP1 - Free
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vCenter Server 5.0 (and earlier) Host Functionality
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vCenter Server 5.1/5.5 SSO
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vCenter Server Service (vpxd) Errors
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Chapter 05 Review

Chapter 06 - Configuring Networking

1h 53m

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Add Network Wizard
Standard Virtual Switches - ESXi
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Cisco Discovery Protocol
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VLAN Implementations
Standard vSwitch VLAN Configuration
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Standard vSwitch and Port Group Policy Exceptions: Security
Standard vSwitch and Port Group Policy Exceptions: Traffic Shaping
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Network Failure and NIC Teaming Options
Load Balancing Method: Route Based on the Originating Virtual Port ID (Default)
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vSphere Distributed Switch (vDS) New Features in vSphere 5.0
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Creating a vSphere Distributed Switch
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Migrating VMkernel Port to vDS (or Service Console Port)
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Network I/O Control (NIOC) - Best Practices
Create NetFlow
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vDS Health Check
Traffic Filtering and Marking
Configure LACP on vDS 5.5
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
Cisco Nexus 1000v Virtual Switch
Nexus 1000v Editions Compared
Nexus 1000v Architecture
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Demo - Creating vSphere Distributed Switches
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Physical NIC Commands
Configure Physical NICs
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Chapter 06 Review

Chapter 07 - Configuring Storage

2h 16m

Topic 1: Storage Concepts
Storage Terms
SAN vs NAS in vSphere
Device and Path Naming
vSphere's Family of Storage APIs
Storage APIs - Array Integration
Multipathing
Storage APIs - Multipathing
Path Selection Considerations
Viewing Multipathing
Multipathing Commands
Multipathing Commands (vCLI)
Multipathing Command Examples
Example of 3rd Party Multipathing Plugin Installation (NMP)
All Paths Down (APD)
Storage I/O Control (SIOC)
SIOC Enhancements
SIOC Monitoring
Scanning LUNs - iSCSI/Fibre Channel
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
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
Configure Software Initiator: CHAP Authentication
iSCSI Session Options (CLI)
iSCSI Software Initiator Troubleshooting
iSCSI Vendors and Products
Demo - Configure iSCSI via GUI
Demo - Verify iSCSI via CLI
Topic 3: Fibre Channel Storage
What is Fibre Channel?
Fibre Channel Terms for ESXi
ESX / ESXi and Fibre Channel SAN Environment and Addressing
Multipathing with Fibre Channel
Fibre Channel Vendors and Products
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Topic 4: VMFS Datastores (GUI & Command Line)
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
Extending Your VMFS Datastore Using Extents
Add an Extent to Existing VMFS
Expand an ESXi 5.x VMFS Volume
Demo - Create VMFS Datastore
Demo - Extend a VMFS Datastore
Partition Alignment
Disk Defragmentation
VMFS Operations - vmkfstools
Displaying Disk Usage Detail (ESXi df -h, ESX vdf -h)
Advanced I/O Management
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 and Later
Mount an NFS Datastore to Host
NFS Configuration Options (CLI)
Demo - Create NFS Datastore
Demo - Create and Install a VM using vCenter
Topic 6: Raw Device Mapping (RDM)
Raw Device Mapping (RDM)

RDM Compatibility Modes
Raw Device Mapping Benefits
RDM CLI Commands
Raw Device Mapping
Topic 7: Solid State Disks (SSD)
Solid State Disks (SSD)
When ESXi Fails to Identify Solid State Disks
Using SMART with SSD
Host Cache Configuration
vSphere Virtual Flash
Configure a Virtual Flash Resource
Configure Virtual Flash Host Swap
Virtual Flash Read Cache
Topic 8: Storage & Management Solutions
vFoglight Storage – Dell/Quest
vOptimizer Pro (vOPS Storage Optimizer) – Dell/Quest/VKernel
Chapter 07 Review

Chapter 08 - VM Creation, Configuration, and Snapshots

3h 40m

Topic 1: Create a VM
VM Virtual Hardware
vSphere 5.5 – Virtual Machine Enhancements
Types of Virtual NICs (vNIC)
Virtual Machine Files
VMDK Stub File Creation
VMDK Disk Provisioning
Virtual Disk
Larger 62 TB Virtual Disks
AHCI SATA Controller
Virtual SCSI Controller Type
DirectPath I/O (VMDirectPath)
Install Guest OS into VM
VM Console & Menus
VMware Tools
VMware Tools 5.0 & Earlier vs. 5.1/5.5
Demo - Configure a VM for Optimal Performance
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 - Work with vCenter's Template Provisioning
Demo - Work with Virtual Appliance OVF
Topic 4: Configuration and Use of vApps
vApp Overview

Creating and Using vApps

Topic 5: VMware Converter (P2V – V2V)

VMware Converter 5.5

VMware Converter Sources

VMware vCenter Converter 5.5

Pre Conversion Tasks

Hot Cloning – 4 Step Process

Post Conversion Steps

VMware vCenter Converter 5.5 Standalone

Troubleshooting VMware Converter

NetIQ - PlateSpin Migrate 9.3

Demo - Using VMware Converter

Topic 6: Manage VMs

Hot and Cold VM Migrations

Hot Add Memory and CPUs

VM Properties - Hardware Tab

VM Properties HW v9 via vSphere Web Client

VM Properties HW v10 via vSphere Web Client

Adding USB Devices to VM

VM Properties - Options Tab

Resize a Virtual Disk

Extend VMDK

Dell's extpart – NO REBOOT

Extend Partitions Using gparted

vOptimizer Pro

Thin Provisioned Disk Reclamation

SDelete – Zero Free Space in VM

VMware GuestReclaim Fling

Raxco PerfectStorage

Renaming a Virtual Machine

vmware-cmd.pl (vCLI)

Kill a VM with esxcli

Demo - Extending VMDK Files

Demo - Rename Virtual Machine Files

Topic 7: Virtual Machine Startup/Shutdown

Startup/Shutdown of VMs

Enabling VM Startup/Shutdown

VM Startup/Shutdown Override

Demo - VM Startup/Shutdown

Topic 8: Virtual Machine Snapshots

Virtual Machine Snapshots

Files Used by Snapshots

Taking Snapshots

Snapshot Manager

Reverting to a Snapshot

Deleting Snapshots

Consolidating Snapshots

Demo - Snapshots

Topic 9: Virtual Machine Troubleshooting & Best Practices

Troubleshooting VM Problems

Differences Between VMs and Physical Servers (Best Practices)
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Demo - Using vSphere Distributed Switches and VLANs
Demo - vSphere Distributed Switches User Defined Resource Pools
Chapter 08 Review

Chapter 09 - Security and Permissions

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Topic 1: Controlling User Access and Passwords

Types of Users

Lockdown Mode

vCenter/ESXi Host Security Model

Permissions

Roles

Privileges Explained

ESXi Host Permissions

Windows vCenter Permissions

vCSA 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

Demo - Control Administrative Access to vCenter

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

Demo - AD Integration

Topic 3: Managing Firewalls & Certificates

ESXi 5.x Firewall

TCP & UDP Ports

ESXi Firewall Configuration via vSphere Client

ESXi Host Firewall Commands

Data Encryption

Security Certificates

Demo - Implementing ESXi 5.1 Firewall

Topic 4: vCloud VMsafe and vShield

vCloud Networking & Security

VMsafe Components

vShield Product Family Overview

vShield App

vShield Edge

vShield Endpoint

For More Security Information

Chapter 09 Review

Chapter 10 - Server and VM Monitoring

2h 26m

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Transparent Memory Page Sharing
Memory Overcommitment
Balloon-Driver: vmmemctl
VMkernel Swap
VM Swap Files
VMkernel Swap Location
Memory Compression
Host System Swap File
Memory Usage
Virtual CPUs (vCPUs)
VMkernel CPU Load Balancing
VMs' CPU & Memory Resource Setting Terms
CPU Resource Settings
Memory Resource Settings
Memory Overhead
ESXi 5.x Resource Allocation per VM
Resource Shares
Topic 2: Resource Pools
Resource Pools Overview
Resource Pool Configuration
Expandable Reservations
Troubleshooting Memory Resources
Resource Pool Example Summary
Resource Pool Example: CPU Limits
Best Practices for VM Resources
Topic 3: Latency Sensitive Applications
Deploying Extremely Latency-Sensitive Applications
Latency-Sensitive Feature
Best Practices for Extremely Latency-Sensitive Applications
Topic 4: Performance Monitoring
Performance Monitoring - Overview
Performance Monitoring - Advanced
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
Veeam ONE for VMware 6.5
Veeam Management (formerly nworks)
Dell/Quest Software vFoglight
vFoglight
Dell/Quest/VKERNEL vOPS Server
Solarwinds Virtualization Manager
PHD Virtual Monitor
Demo - Monitoring CPU, Disk & Memory on a VM

Topic 5: Configuring Alarms
vCenter Alarms
Default Alarms in vCenter
Alarm Settings
Configure vCenter Notifications
Demo - Create Alarms in vCenter
Topic 6: ESXi & vCenter Logs
ESXi 5.x Log Files from DCUI
esxstop
Performance Snapshots from CLI
ESXi 5.x Log File Locations
ESXi 5.x Log Files
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
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Demo - Troubleshooting - Diagnostic Data Collection
Chapter 10 Review

Chapter 11 - Advanced ESXi and vCenter Server Management

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vCenter Storage Views - Maps
vCenter Topology Maps
Cluster Map View
Topic 2: Storage vMotion
Storage vMotion Migration
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Storage vMotion in vSphere 5
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Storage vMotion - Command-Line Interface
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Identifying CPU Characteristics
Execution Disable Flag (NX/XD)
vMotion Errors and Warnings
VM Map View
Advanced vMotion Errors
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Enhanced vMotion Migration
Demo - vMotion & Enhanced vMotion Migration of a VM
Topic 5: Distributed Resource Scheduler (DRS) Cluster

vCenter Host Cluster
Distributed Resource Scheduler (DRS) Overview
DRS Cluster in the vCenter Inventory
Retaining Host Resource Pools
Configure Automation Level
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Virtual Machine Rules
Virtual Machine to Host Rules
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Distributed Power Management (DPM)
Enhanced vMotion Compatibility (EVC)
VM Swapfile Location
Planned Downtime: Maintenance Mode
Demo - Create a DRS Cluster
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
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vSphere Storage Appliance (VSA) - Components
vSphere Storage Appliance (VSA) - New Features in 5.1/5.1.1
vSphere Storage Appliance (VSA) - Architecture
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Chapter 11 Review

Chapter 12 - Patching and Upgrading ESXi

57m

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Standalone Patch Installation
Topic 2: Patching the vCenter Environment
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Shavlik Protect (Standard & Advanced)
Update Manager Terms
Update Manager 5.5 Install (Windows)
Update Manager vSphere Client Plug-in
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Update Manager Remediation Defaults and Configuration Options
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Patch Repository
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Demo - Using Update Manager through vCenter
Topic 3: Upgrades and Migrations
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Upgrade Host to ESXi 5.5 Using Media
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Chapter 12 Review

Chapter 13 - Disaster Recovery and Backup

1h 45m

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What's New in vSphere Replication v5.5 (vR)

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Topic 2: Site Recovery Manager (SRM)

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VMware Site Recovery Manager (SRM) V5.5 – Features

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Topic 3: High Availability (HA)

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App HA – Policies

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Fault Tolerance Requirements

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Topic 6: Backup Strategies

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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 (vDPA)

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Dell/Quest vRanger (Pro) 6.1
vRanger Pro - Screenshots
Veeam Backup & Replication v7
Veeam Backup and Recovery v7
Veeam Backup - Screenshots
VeeamZip and Veeam Backup Free Edition
VeeamZip - Screenshots
Symantec NetBackup v 7.5
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Course Closure

Total Duration: 20h 25m