

Course Catalog
2012-2013

vmware®

VMware® View™
Bootcamp Series

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CSLIT

.....Connecting Technology

VMware vSphere with ESX and vCenter

This class is a 48 hours intense introduction to virtualization using VMware's immensely popular vSphere™ suite including VMware ESX™ and vCenter™. Assuming no prior virtualization experience, this class starts with the basics and rapidly progresses to more advanced topics. More than 40% of class time is devoted to labs so concepts and skills are reinforced.

Initial labs focus on installation and configuration of stand-alone ESX servers. As the class progresses, shared storage, networking and centralized management are introduced. The class then continues on to more advanced topics including resource balancing, high availability, backup and recovery, troubleshooting and more. Disaster recovery, rapid deployment, hot migration and workload consolidation are also covered.

Course Objectives:

By the end of the class, attendees will have learned the benefits, skills, mechanics and best practices of virtualization. Attendees will be able to design, implement, deploy, configure, monitor, manage, troubleshoot and secure VMware vSphere.

Who Should Attend

Experienced system administrators, system integrators, and system engineers willing to participate in a demanding, high-intensity, and fast-paced training experience that requires minimal time away from the office

Prerequisites

Attendees should have user, operator or administrator experience on common operating systems such as Microsoft Windows®, Linux™, UNIX™ or other platforms. Experience installing, configuring and managing operating systems, storage systems and or networks is useful but not required. We assume that all attendees have a basic familiarity with PC server hardware, disk partitioning, IP addressing, O/S installation, etc.

No Linux command line skills are assumed or required.

Course Duration

48 Hours, 12 Classes, 4 Hours per Class

Course Details

Lesson 1 - Virtualization Infrastructure

- Virtualization explained
- How VMware virtualization compares to traditional PC deployments
- Common pain points of physical deployments
- How virtualization effectively addresses issues and brings new
- VMware vSphere software products

Lesson 2 - Stand Alone ESX Server Installation

- Understanding ESXi and full ESX
- Selecting, validating and preparing your server
- Sizing Service Console and VMkernel resources
- Storage controllers, disks and partitions
- Software installation and licensing
- Installation recommendations and best practices
- First look at the VMware vSphere Client

Lesson 3 - Virtual and Physical Networking

- vNetwork standard and distributed virtual Switches
- Virtual Switches, Ports and Port Groups
- Service Console and VMkernel ports
- Creating, sizing Virtual Switches

Lesson 4 - NAS Shared Storage

- Benefits Shared Storage offer to Virtual Infrastructure
- Shared Storage options
- NFS Overview
- Configuring ESX to use NFS Shares
- Troubleshooting NFS connections

Lesson 5 - Virtual Hardware and Virtual Machines

- VM virtual hardware, options and limits
- Sizing and creating a new VM
- Assigning, modifying and removing Virtual Hardware
- Working with a VM's BIOS
- VMware remote console applications
- Installing an OS into a VM
- Driver installation and customization
- VM best practices for monitoring and scalability
- Understanding what should and should not be virtualized

Lesson 6 – vCenter

- vCenter architectural and feature overview
- vCenter components
- VMware Licensing

Course Details

Lesson 7 - vCenter Inventory

- vCenter's views into Virtual Infrastructure
- Role of the datacenter
- Using folders to impart political, geographic or technical boundaries
- Importing ESX hosts into vCenter management
- Troubleshooting vCenter

Lesson 8 - VM Rapid Deployment using Templates, Clones

- Templates - Virtual Machine Golden Master images
- Creating, modifying, updating and working with Templates
- Patching, and refreshing Templates
- Cloning, one time copies of VMs
- Best practices for cloning and templating
- Performance considerations

Lesson 9 - ESX and vCenter Permission Model

- VMware Security model
- Configuring local users and groups
- Managing local permissions
- vCenter security model
- Local, Domain and Active Directory users and groups
- How permissions are applied

Lesson 10 - Advanced Virtual Networking

- Uplinking Virtual and Physical Network segments using NICs
- Distributed virtual switches and distributed Port Groups
- NIC teaming for redundancy and Performance
- Connecting to vLANs
- Enhanced Network Security
- Virtual routers and firewalls
- Assigning physical NICs to VMs

Lesson 11 - Using Fibre and iSCSI Shared Storage

- Fibre SAN overview
- Identifying and using Fibre Host Bus Adapters
- Scanning and Rescanning Fibre SANs
- Partitioning and formatting Fibre SAN Storage
- Performance and redundancy considerations and best practices
- iSCSI overview
- Virtual and physical iSCSI adapters
- Creating virtual iSCSI adapters
- Connecting to iSCSI storage
- Scanning and rescanning iSCSI SANS
- Performance and redundancy considerations and best practices

Course Details

Lesson 12 - VMware File System (VMFS)

- VMFS Overview
- Unique file system properties of VMFS
- Managing shared Volumes
- Creating new VMFS partitions
- Managing VMFS capacity with LUN spanning
- Native and 3rd party Multipathing with Fibre and iSCSI SANs
- VMFS performance considerations

Lesson 13 - Resource Management and Resource Pools

- How ESX delivers resources to VMs
- Shares, Reservations and Limits
- CPU resource scheduling
- Memory resource scheduling
- Disk I/O bandwidth management
- Network bandwidth management
- Resource Pools

Lesson 14 - VM Hot and Cold Migration, Storage VMotion

- Moving Virtual Machines
- Cold Migrations to new ESX hosts, datastores
- Hot Migrations with VMotion
- VMotion requirements and dependencies
- How VMotion works – detailed explanation
- Troubleshooting VMotion
- Storage VMotion for hot VM disk migrations

Lesson 15 – Load Balancing w. Distributed Resource Scheduler

- Delegated resource management with Resource Pools
- Resource balanced clusters with VMware Distributed Resource Scheduler
- DRS Cluster configuration and tuning
- Isolation response and per-VM policy overrides

Lesson 16 – Failure Recover with High Availability Clusters

- High Availability options
- Manually take ownership of a VM from a failed server
- VMware High Availability clusters
- VMware Fault Tolerance

Lesson 17 – Back Up, Recovery and ESX Updates

- Pro's and Con's of traditional back up strategies
- Backup and recovery with VMware Data Recovery
- Third party back up solutions
- Backing up the ESX Service Console

Course Details

Lesson 18 – Guided Consolidation

- Using Guided Consolidation to identify physical PCs and servers
- Selecting Domains and Workgroups
- Selecting PCs and Servers for monitoring
- Generating recommendations for physical to virtual migrations

Lesson 19 - Consolidation with vCenter Converter

- vCenter Converter overview
- Converting physical machines, virtual machines and OS Images
- Cold migrations of physical machines to virtual machines
- Hot migrations of physical machines to virtual machines
- Performing physical to virtual conversions from Guided Consolidation

Lesson 20 – Effective Performance Monitoring

- VMkernel CPU and memory resource management mechanisms
- Identifying and resolving resource contention
- Monitoring VM and ESX host performance
- Configuring and customizing resource based alarms
- Performance and capacity planning strategies

Lesson 21 – ESX and vCenter Alarms

- VMware Capacity Planner overview
- Finding and monitoring physical workloads
- Reviewing physical server performance data

