VMware vSphere 4.1 Boot Camp

Course Summary

Description

This class is an intensive introduction to VMware's vSphere™ including VMware ESXi™ 4 and vCenter™ 4.1. It is delivered in boot camp format of 5, 10 hour extended training days. This class is intended for experienced Windows and Linux administrators who need to take charge of their VMware implementation/operation and then drive it to the max. No prior virtualization experience is assumed, but a willingness to work hard is required! This class starts with the basics and rapidly progresses to advanced topics. More than 40% of class time is devoted to labs so concepts, skills and best practices are reinforced.

All key aspects of VMware vSphere are covered – from installation of ESXi and vCenter through to resource & power management, back up & recovery, monitoring and alarms, load balancing, service availability, and much more. Each topic is presented from the perspective of delivering key business and/or economic value – not just the technical or mechanical aspects of the software. Advanced topics address both vSphere and Virtual Machine scalability, performance, reliability, availability and security.By the end of the class; attendees will have learned the benefits, skills, and best practices of virtualization. Attendees will be able to design, implement, deploy, configure, monitor, manage and troubleshoot VMware vSphere 4.1.

Objectives

At the end of this course, students will be able to:

- Explain the many significant benefits of virtualization
- Install ESXi Server according to best practices
- Configure and manage local storage
- Create virtual, distributed virtual, and virtual to physical LAN segments
- Connect to, and use NAS datastores
- Create virtual machines, install operating systems and applications
- Hotplug virtual hardware including CPUs, RAM, NICs, Disks and USB
- Install, configure and administer VMware vCenter
- Rapidly deployment of VMs using golden-master templates
- Create clones - one-time copies of virtual machine
- Use VMware vNetwork Distributed vSwitches to deliver consistent network configurations
- Understand and use shared SAN storage including Fibre and iSCSI SANs
- Perform VM cold migrations, hot migrations and Storage VMotion
- Use VMware Consolidated Back Up to back up and restore running VMs
- Use VMware Data Recovery to back up and recover VMs and files
- Configure, manage, monitor and secure users and groups
- Create and manage Distributed Resource Schedule load balanced clusters
- Understand and use Distributed Power Management
- Create and manage VMware High Availability clusters to protect against VM service loss caused by ESXi server failures
- Use Fault Tolerance to eliminate unplanned VM down time
- Monitor and tune both ESXi and virtual machine performance
- Patch management using vCenter Update Manager
- Understand how VMware and third party products, including operating systems, are impacted by virtualization
- Create and run distributed applications using VMware vApp

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Course Summary (cont'd)

- Create and enforce server configuration with Host Profiles
- Troubleshoot common problems

Topics

- Class Introduction
- Virtualization Infrastructure
- Installing ESXi 4.1
- Virtual and Physical Networking
- NAS Shared Storage
- Virtual Hardware and Virtual Machines
- vCenter
- VM Rapid Deployment using Templates, Clones
- ESX and vCenter Permission Model
- Advanced Virtual Networking
- Using Fibre and iSCSI Shared Storage
- VMware File System (VMFS)
- Resource Management and Resource Pools
- Guided Consolidation
- VM Hot and Cold Migration, Storage VMotion
- Load Balancing w. Distributed Resource Scheduler
- Failure Recover with High Availability Clusters
- VM Back Up, Recovery
- Consolidation with vCenter Converter
- ESX and vCenter Alarms
- Patch Management with VMware Update Manager
- Managing Scalability and Performance
- vCenter Linked Mode
- VMware Fault Tolerance
- ESXi Host Profiles
- VMware vApp
- Final Thoughts

Audience

- System architects or others who need to design virtual infrastructure
- Senior administrators responsible for technical design and implementation of new Virtual Infrastructure projects
- Security specialists responsible for monitor, managing, securing and administering Virtual Infrastructure
- Operators responsible for day-to-day operation of Virtual Infrastructure
- Performance and capacity analysts who need to understand, provision, monitor and performance tune Virtual Infrastructure
- Backup Administrators who need to understand the impact of existing and new back up strategies in a virtual environment
- Business Continuity specialists responsible for disaster recovery and high availability
- Storage administrators who need to understand how Virtual Infrastructure sees and uses Fibre SAN and iSCSI SAN volumes and NAS datastores
- Managers who need an unbiased understanding of virtualization before committing their organization to a virtual infrastructure deployment.

Duration

Five days

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... to Your Success!"

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Course Outline

I. Class Introduction
- A. Virtualization concepts
- B. Class overview

II. Virtualization Infrastructure
- A. Virtualization explained
- B. How VMware virtualization compares to traditional PC deployments
- C. Common pain points of physical deployments
- D. How virtualization effectively addresses issues and brings new
- E. VMware vSphere software products

III. Installing ESXi 4.1
- A. Understanding ESXi
- B. Selecting, validating and preparing your server
- C. Join ESXi to an Active Directory Domain
- D. Set ESXI power policies to balance performance and power consumption

IV. Virtual and Physical Networking
- A. vNetwork standard and distributed virtual Switches
- B. Virtual Switches, Ports and Port Groups
- C. Creating VMkernel ports
- D. Creating, sizing Virtual Switches
- E. Enabling and using Cisco Discovery Protocol
- F. Testing for and implementing Jumbo Frame support

V. NAS Shared Storage
- A. Benefits Shared Storage offer to Virtual Infrastructure
- B. Shared Storage options
- C. NFS Overview
- D. Configuring ESXi to use NFS Shares
- E. Troubleshooting NFS connections

VI. Virtual Hardware and Virtual Machines
- A. VM virtual hardware, options and limits
- B. Creating a new VM
- C. Assigning, modifying and removing Virtual Hardware
- D. Installing an OS into a VM
- E. Customizing virtual hardware

VII. vCenter
- A. vCenter feature overview and components
- B. VMware Licensing
- C. Organizing vCenter's inventory views
- D. Importing ESX hosts into vCenter management

VIII. VM Rapid Deployment using Templates, Clones
- A. Templates - Virtual Machine Golden Master images
- B. Creating, modifying, updating and working with Templates
- C. Patching, and refreshing Templates
- D. Cloning, one time copies of VMs
- E. Best practices for cloning and templating
- F. Hot-plug virtual CPU, Memory
- G. Manage VM virtual disk capacity, including Basic and System disks

IX. ESX and vCenter Permission Model
- A. VMware Security model
- B. Configuring local users and groups
- C. Managing local permissions
- D. vCenter security model
- E. Local, Domain and Active Directory users and groups
- F. How permissions are applied

X. Advanced Virtual Networking
- A. Uplinking Virtual and Physical Network segments using NICs
- B. Distributed virtual switches and distributed Port Groups
- C. NIC teaming for redundancy and Performance
- D. Connecting to vLANs
- E. Enhanced Network Security
- F. Virtual routers and firewalls

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Course Outline (cont'd)

XI. Using Fibre and iSCSI Shared Storage
- A. Fibre SAN overview
- B. Identifying and using Fibre Host Bus Adapters
- C. Scanning and Rescanning Fibre SANs
- D. iSCSI overview
- E. Virtual and physical iSCSI adapters
- F. Connecting to iSCSI storage
- G. Scanning and rescanning iSCSI SANS
- H. Performance and redundancy considerations and best practices
- I. Configuring Software iSCSI for optimal performance and redundancy

XII. VMware File System (VMFS)
- A. Unique file system properties of VMFS
- B. Managing shared Volumes
- C. Creating new VMFS partitions
- D. Managing VMFS capacity with LUN spanning and LUN expansion
- E. Native and 3rd party Multipathing with Fibre and iSCSI SANs
- F. VMFS performance considerations

XIII. Resource Management and Resource Pools
- A. How ESX delivers resources to VMs
- B. Shares, Reservations and Limits
- C. CPU resource scheduling
- D. Memory resource scheduling
- E. Resource Pools

XIV. Guided Consolidation
- A. Use Guided Consolidation to discover, Domains, Workgroups and servers
- B. Extract hardware profiles from select servers
- C. Monitor physical server resource consumption
- D. Select and convert physical servers to VMs

XV. VM Hot and Cold Migration, Storage VMotion
- A. Cold Migrations to new ESX hosts, datastores
- B. Hot Migrations with VMotion
- C. VMotion requirements and dependencies
- D. How VMotion works – detailed explanation
- E. Troubleshooting VMotion
- F. Storage VMotion for hot VM disk migrations

XVI. Load Balancing w. Distributed Resource Scheduler
- A. Delegated resource management with Resource Pools
- B. Resource balanced clusters with VMware Distributed Resource Scheduler
- C. DRS Cluster configuration and tuning
- D. Per-VM cluster policy overrides

XVII. Failure Recover with High Availability Clusters
- A. High Availability options to minimize unplanned VM down time
- B. Setting HA Cluster Admission Control policies
- C. Understanding HA clusters Isolation Response policies

XVIII. VM Back Up, Recovery
- A. Pro's and Con's of traditional back up strategies
- B. Backing up VMs with VMware Data Recovery
- C. Backing and restoring your ESXi server configuration
- D. Third party VM back up solutions

XIX. Consolidation with vCenter Converter
- A. vCenter Converter overview
- B. Converting physical machines, virtual machines and OS Images
- C. Cold migrations of physical machines to virtual machines
- D. Hot migrations of physical machines to virtual machines

XX. ESX and vCenter Alarms
- A. Alarm categories and definitions
- B. Creating custom alarms and actions
- C. Reviewing alarms and acknowledging them

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Course Outline (cont'd)

XXI. Patch Management with VMware Update Manager

A. Configure and enable VMware Update Manager
B. Establishing a patch baseline
C. Verifying compliance and patching Windows VMs

XXII. Managing Scalability and Performance

A. VMkernel CPU and memory resource management mechanisms
B. Tuning VM storage I/O performance
C. Identifying and resolving resource contention
D. Monitoring VM and ESX host performance
E. Performance and capacity planning strategies

XXIII. vCenter Linked Mode

A. Using vCenter Linked Mode to provide vCenter management redundancy
B. Adding a Linked Mode vCenter server to a Stand Alone vCenter server
C. Administering inventory through Linked Mode peers

XXIV. VMware Fault Tolerance

A. Overview of VMware Fault Tolerance
B. Creating and monitoring a Fault Tolerant VM
C. Use cases for VMware Fault Tolerance

XXV. ESXi Host Profiles

A. Create and refine a new Host Profile template
B. Verify host configuration compliance using Host Profiles
C. Enforce configuration standards on non-compliant ESXi hosts

XXVI. VMware vApp

A. VMware vApp overview
B. Creating and working with vApps
C. Adding VMs to a vApp
D. Setting vApp properties such as start up/shutdown sequence
E. Administering, customizing vApps

XXVII. Final Thoughts

A. Consolidation guidelines for VMs and Storage
B. Determining which workloads to consolidate
C. Other considerations

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