VMware vSphere 4.1: Install, Configure, and Advanced Management

This four-day training course teaches beginning and intermediate students how to install, configure, and manage VMware vSphere 4.0. With over 70% of the class time devoted to working within a live lab environment, students will receive the hands-on time they need to master the technology. Upon course completion, students will depart with comprehensive knowledge of ESX Server, vCenter and Virtual Machine Architecture, as well as advanced management techniques.

Course Objectives:

- Build and secure an ESX Server.
- Create Virtual Machine clones.
- Migrate a physical computer to a Virtual Machine.
- Utilize a wide variety of third party tools.
- Install vCenter and initiate vMotion.
- Configure a cluster.

Audience: System Administrators, Engineers, and Operators responsible for setup support, and troubleshooting of ESX Server and/or VirtualCenter.

Prerequisites: System administration experience on Microsoft Windows and Linux operation systems.

Number of Days: 4 days

1. Introduction - Why do we Virtualize?
- What is Virtualization?
- A Brief History of Virtualization
- Virtualization
- X86 Virtualization
- Server Virtualization with VMware
- Why do We Virtualize?
- Save Money
- Improve Agility
- Implement Initiatives
- What's New in vSphere

2. Terms and Concepts
- Host
- Virtual Machine
- Encapsulation and Portability
- P2V – Physical to Virtual
- Isolation
- Idealized Hardware
- Virtualization Layer
- Hypervisor (Virtual Machine Monitor)
- vmnic
- VMnet / vSwitch
- VMkernel
- VMXNET
- Hardware-assisted Memory Virtualization
- VMware Paravirtualized SCSI (PVSCSI)
- VMFS – Virtual Machine File System
- Swap Space
- Root /
- Jumbo Frames
- Virtual Infrastructure Client
- Service Console
- Compliance
- Remediation

3. Installing ESX Server 4
- ESX Server 4 Hardware Requirements
- VMFS File System Limits
- ESX Server Maximums
- ESX Server Disk Partitioning
- Keeping a Server Build Document

ESX Install Methods
The ESX 4 Installation Process
Post-Installation Tasks
Troubleshooting

4. **Building and Configuring Virtual Machines**
Virtual Machine Basics
Virtual Machine Resources
Installing the Virtual Infrastructure Client
Creating a Virtual Machine
Select a Datastore
Choose a Guest Operating System
Virtual Machine Remote Console
Virtual Machine Files
Independent Disk Mode
Virtual Machine Resource Utilization
Shares and Reservations
Processor Affinity

5. **Virtual Networking**
Virtual Switches
Viewing Virtual Switches
Virtual Switch Properties
Physical Adapters
Physical Adapter Properties
Port Groups
Port Group Properties
Security and Traffic Shaping
MAC Addresses
Service Console Tools

6. **Physical to Virtual Migrations (P2V)**
P2V Terminology
Four Common P2V Methods
Linux Command Line P2V
Ghost with Bart's Preinstalled Environment
VMware Converter
Platespin Migrate

7. **Server Consolidation**
Server Consolidation and Virtualization Defined
Adoption and Support of Server Virtualization
Business Case and Technical Requirements
Technology Strategy: Technology Refresh and Aging
Infrastructure
Cost Performance
Service Agility
Simplifying the Environment
Compliance and Risk Reduction
High-Level Requirements
Classification and Estimated Work Hours
The Financial Model
Developing Your Project Methodology
Establishing the Project
Best Practices
Addressing Typical Challenges
Gathering Data and Application/Server Inventory
Structured Interviews
Application Inventory
Process Documentation
Application Repository
Buy In and Collation
Assessment
Application Readiness
Rationalization
Technical Leadership to Provide Guidance and Structure
Assessing Processes, Roles, and Responsibilities Technology Design
Testing and Validating
Capacity Planning

8. **Tools for a Virtual Infrastructure**
Veeam Tools
Veeam Configurator
Veeam Backup and Fast SCP
Putty
WinSCP
Disk Images
Win ISO
Win Image
Adding Disk Images Files to Virtual Machines
New SID
Gparted
Wireshark

SysPrep
Platespin
Vizioncore
VMware Lab Manager

9. Installing and Supporting vCenter

vCenter enables Services
vCenter Components
Virtual Infrastructure Client
vCenter Agent
vCenter Server
Virtual Infrastructure Web Access
vCenter Database
License Server
vCenter Supported Databases
vCenter Minimum Requirements
vCenter Installation
Logging in to vCenter
Adding Datacenters and Hosts
vCenter Permissions and Roles
vCenter Default Roles
vCenter Custom Permissions
vCenter Customization Specification (Sysprep)
Customization Specification Wizard
vCenter Cloning
vCenter Cone Wizard
vCenter Templates
vCenter Performance Charts
vCenter Tasks and Events
vCenter Alarms
vCenter Topology Maps
vCenter Guided Consolidation
vCenter Updated Manager
vCenter VMotion
VMotion Requirements
vCenter VMotion in Action
Storage VMotion
vCenter Clustering
vCenter Cluster Requirements
vCenter Distributes Resource Scheduling (DRS) Cluster Settings
vCenter High Availability (DAS) Cluster Settings
vCenter Distributed Power Management (DPM) Cluster Settings
vCenter Cluster Options
vCenter Resource Pools

10. Best Practices

ESX Server Hardware Best Practices
ESX Server Software Best Practices
Common Problems and "Gotchas"

11. Backup Techniques for a Virtual Infrastructure

Backup Terms
Backup Approaches
Backing up ESX Server
Backing up Virtual Machines
VMware Consolidated Backup (Backup Environment)
VCB Usage Models
VCB Requirements
VCB Workflow
Install and use Veeam Backup

12. Inside ESX, Critical Files and Folders

Viewing the File systems
ESX Server Configuration Files
ESX Server Boot Process
Run Levels
ESX Server Services

13. Using the CLI

CLI Shortcuts
Copy and Moving Files
Finding Files and Searching
Using VI
Managing Users on ESX
Directory and File Ownership
Archiving Files with tar
Mounting and Unmounting
Managing Processes
Starting and Stopping Services
VMware Commands
Working with VMFS
Managing Virtual Machines

14. Appendix A – VMware Licensing for ESX 3.5 and vCenter 2.5

vCenter and ESX Server Licensing Model
License Key Functionality
Per-Feature Licensing

Server-Based Licensing
License Server Availability
ESX Server License Types
The License File