VMware - vSphere

Mastering VMware vSphere with ESX and vCenter

INTRODUCTION   V4.0.1

The vSphere suite of products consisting of: ESX Server 4.0, vCenter 4.0 and VMware Consolidated Backup, is both exceptionally powerful and comprehensive. Our advanced course is intended for students with significant production experience in the vSphere product suite. It is our intention to take your existing knowledge base and expand upon that.

CLASSROOM SETUP

Each student will have a Windows Server 2003 workstation. Our classroom lab will share a cluster of ESX Servers, a variety of different Storage solutions (SAN, NAS, ISCSI, local, etc..) as needed, a vCenter Server, VCB proxy server, Lab Manager server, Backup Server, VDM Connection Server, access to many already pre-configured VM's (Microsoft, Novell, Red Hat, Ubuntu …etc). Students will also be given a CD containing many valuable tools for supporting, troubleshooting and administrating a virtual infrastructure. At the end of the course students will have the option to take the VC-MIA (Master Infrastructure Architect) Exam thus reinforcing concepts learned.

PREREQUISITES

- ESX Server familiarity
- vCenter or vSphere usage
- vCenter or vSphere administration
- Excellent familiarity with Windows
- Some familiarity with Linux

SECTION 1 – BUILDING THE INFRASTRUCTURE

MODULE 1 – CREATING ENTERPRISE ESX SERVERS

- Understanding VMFS
- VMFS Limits
- ESX Server Memory
- Required Partitions
- Optional Partitions
- ESX Installation
- Post-installation tasks
- Scripted Installations

MODULE 2 – CONFIGURING ESX SERVERS FOR THE FIRST TIME

- Download and install vSphere client
- Log in to ESX Server
- Configure VMKernel Port Group
- Make changes to ESX Firewall
- Create VMFS volume(s)
- Configure NTP services
- Verify ESX server security

MODULE 3 – VIRTUAL NETWORKING AND ESX SERVER SECURITY ARCHITECTURE

- Understanding ESX Server Security

- The Virtualization Layer

- Service Console Security

- Virtual Networking

    - Virtual Switch Security

    - Virtual Switch Isolation

    - VLAN's

- Security Recommendations

MODULE 4 – HARDENING THE ESX SERVER

- The ESX Server Firewall
    - XML Configuration for Port Access
    - CLI Configuration

MODULE 5 – ESX STORAGE ARCHITECTURE

- ESX Storage Architecture
- ESX Storage Systems
- Local Storage
- NAS
- iSCSI
- SAN Overview
- SAN Components
- SAN Reliability
- ESX Storage Comparison

MODULE 6 – CONNECTING TO iSCSI SAN

- Create VMkernel Connection Type
- Enable ISCSI and configure targets
- Attach ESX Servers to iSCSI

MODULE 7 – ADVANCED vCENTER CONFIGURATION AND CLUSTERING

- Cluster Types
- DRS
- Distributed Power Management
- VMware High Availability
- HA Advanced Options
- Cluster Strategy
- VMotion
- Storage VMotion

SECTION 2 – ADMINISTRATING THE INFRASTRUCTURE

MODULE 8 – INFRASTRUCTURE UPGRADE TO vSPHERE

- Review Phases of upgrade
- Upgrading Virtual Center
- Upgrading VIC
- Use of Update Manager for upgrade
- Upgrading vCenter Plugins
- Upgrading VMware tools

MODULE 9 – VIRTUAL MACHINES AND APPLIANCES

- Virtual Appliances
- Exporting Virtual Machines
- Importing Virtual Machines
- OVF - Open Virtualization Format
- 3rd Party Tools
- Summary

MODULE 10 – ADVANCED 3RD PARTY TOOLS

- vCenter Plug-ins
- VM Disk Partitioning Tools
- Diagnostic Tools
- Performance Monitoring Tools
- Reporting Tools
- Backup, DR and HA
- USB and Dongle Support Tools
- PDA/Smart Phone Tools

MODULE 11 – VMWARE CONSOLIDATED BACKUP

- VCB at a Glance
- Architecture
- Installation
- Configuration
- Integration

MODULE 12 – UPGRADING AND PATCHING ESX HOSTS

- Command line Patches
- Patch Manager

SECTION 3 – ADVANCE ADMINISTRATION AND DIAGNOSTICS

MODULE 13 - vDS

- Create vNetwork Distibuted Switch (vDS)
- vDS Achitecture
- Add ports
- Add Hosts
- Migrate VM's
- Connect vNics

MODULE 14 – HOST PROFILES

- Host Profiles Usage Model
- Access Host Profiles View
- Creating a Host Profile
- Edit a Host Profile
- Associate with Additional Hosts/Cluster
- Checking Compliance
- Benefits

MODULE 15 – LINKING vCENTER SERVERS

- Defining Linking Mode
- Liked Mode Prerequisites
- Joining a Linked Mode Group during and after Installation
- vCenter Maximums

MODULE 16 – VM – FAULT TOLERANCE

- Fault Tolerance and Virtualization
- Fault Tolerance in the Physical World
- Benefits of VMware Fault Tolerance
- Implementing FT

MODULE 17 – LOG FILE ANALYSIS AND SESSION MANAGEMENT

- ESX Server Log Files
- vCenter Server Log Files
- Virtual Machine Log Files
- Session Management

MODULE 18 – COMMAND LINE TOOLS

- ESX CLI Commands
    - esxcfg commands
    - vmkfstools command
    - vmkping
    - vmware-cmd
    - top
    - esxtop
    - vm-support
    - esxupdate
- ISO and FLP Images
- VMware Remote CLI

MODULE 19 – CRITICAL ESX AND VIRTUAL MACHINE FILES

- Critical ESX Files
- Virtual Machine Files
    - Resilient
    - Non-Resilient

MODULE 20 – RUNLEVELS AND SERVICES

- Runlevels defined
- ESX Runlevels
- The inittab file
- Services available on ESX
- ESX specific services
- /etc/rcX.d
- Summary

MODULE 21 – DISASTER RECOVERY

- Virtual Infrastructure Architecture
- Planning for DR
- Asynchronous Mirroring Defined
- DR Models
- DR Components
- Redundancy and Rebuilding

APENDIX

Appendix A – VMware Licensing for ESX Server and vCenter
Appendix B – ESX Server Command Line Tools
Appendix C – Design and Planning Tools
Appendix D – Microsoft Clustering
Appendix E – DR and Site Recovery Manager and Left Hand SAN