Virtualization Fundamentals

Instructor Led Live Virtual Class

Duration: 5 Day (10-20 hours) | Course Number: LF-Virtualization-200

Intended Audience

System administrators, systems engineers, and Network Engineers responsible for Virtualization and Cloud Architecture, Deployment and Testing

Course Description

This hands-on training course explores installation, configuration, and management of virtual servers and desktops. Course content also consists of monitoring, scaling, and protecting virtual computer networks. Students will learn the business and technical perspectives of virtualization. The course primarily uses VMware vSphere, vCenter, and ESX/ESXi technologies to present the material. Students who complete the course are prepared to sit for the VMware Certified Professional (VCP) Exam for which this class meets the prerequisite

Learning Outcomes

The intention is for the student to be able to

1. Identify the benefits and drawbacks of virtualization
2. Compare the benefits of several different virtualization technologies
3. Deploy, manage, and migrate virtual machines
4. Manage user access to the VMware infrastructure
5. Manage ESX and ESXi hosts and their virtual machines using the capabilities of VMware vCenter Server
6. Ability to install and configure ESX and ESXi
7. Ability to install and configure vCenter server components
8. Use vCenter Server to monitor resource usage, increase scalability, manage data protection and high availability
9. Determine the requirements for a virtualized environment.
10. Plan and design a virtual client and server infrastructure.

A. **Understanding Virtualization**
   1. Virtualization Concepts
   2. Moore's Law
   3. Type I and Type II Hypervisors (Xen, ESXI, KVM)
   4. Popek and Goldberg's Virtualization Theory
   5. Benefits of Virtualizing Server Environments and ROI
   6. Application Virtualization

B. **Installing Virtual Machines**
   1. VMWare Workstation and Workstation Player
   2. Oracle Virtualbox
   3. Microsoft Hypervisor (Server and Workstation Environments)
   4. ESX/VSphere
   5. Virtualizing Physical Machines

C. **VMWare VSphere and ESXI**
   1. Introduction to VMware Vsphere
      ▪

D. **Software-Defined Data Center**
   1. Introduction to the Software-Defined Data Center
   2. vSphere Client
   3. Overview of ESXI
      ▪ Lab 1: Using the VMware Vsphere Web Client
      ▪ Lab 2: Configuring VMware vCenter Server Appliance
      ▪ Lab 3: Configuring VMware ESXi
      ▪ Lab 3b: Installing and Configuring KVM Hypervisor

E. **Creating Virtual Machines**
   1. Virtual Machine Concepts
   2. Creating a Virtual Machine
      ▪ Lab 4: Working with Virtual Machines

F. **VMware vCenter Server**
   1. vCenter Server Architecture
   2. Deploying the vCenter Server Appliance
   3. vSphere Web Client
   4. vCenter Single Sign-On
   5. Managing vCenter Server Inventory
      ▪ Lab 5: Access Control
      ▪ Lab 6: Creating Folders in VMware vCenter Server

G. **Configuring and Managing Virtual Networks**
   1. Introduction to vNetwork Standard Switches
   2. Configuring Standard Virtual Switch Policies
      ▪ Lab 7: Standard Switches

H. **Software-Defined Data Center**
   1. Storage Concepts
   2. Configuring iSCSI Storage
   3. Configuring NAS/NFS Storage
   4. Fibre Channel SAN Storage
   5. VMFS Datastores
   6. VMware Virtual SAN Datastores
      ▪ Lab 8: Accessing iSCSI Storage
      ▪ Lab 9: Accessing NFS Storage
      ▪ Lab 10: Managing VMware vSphere VMFS

I. **Virtual Machine Management**
   1. Creating templates and Clones
   2. Modifying Virtual Machines
   3. Migrating Virtual Machines
   4. Creating Virtual Machine Snapshots
   5. Creating a vApp
      ▪ Lab 11: Using Templates and Clones
      ▪ Lab 12: Modifying a Virtual Machine

- Lab 13: Migrating Virtual Machines
- Lab 14: Managing Virtual Machines
- Lab 15: Managing VMware vSphere vApps

J. Access and Authentication Control
1. Configuring ESXi Host Access and Authentication
2. Configuring Roles and Permissions
   - Lab 16: User Permissions

K. Resource Management and Monitoring
1. Virtual CPU and Memory Concepts
2. Resource Controls
3. Resource Pools
4. Monitoring Resource Usage
5. Using Alarms
6. vSphere and vCenter Operations Manager
   - Lab 17: Resource Pools
   - Lab 18: Monitoring Virtual Machine Performance
   - Lab 19: Using Alarms

L. High Availability and Fault Tolerance
1. Introduction to vSphere High Availability
2. Configuring vSphere HA
3. vSphere HA Architecture
4. Introduction to vSphere FT
5. Introduction to Replication
   - Lab 20: Using vSphere High Availability
   - Lab 21: VMware vSphere Distributed Resource Scheduler

M. Host Scalability
1. Host Scalability
2. Lab 22: Configuring VMware vSphere Fault Tolerance

N. Patch Management
1. Patch Management Video

O. Installing VMware vSphere Components
1. Installing ESXi
2. Installing vCenter Server

P. Cloud Computing
1. IAAS, PAAS, SAAS
2. OpenStack Primer