

VMware vSphere 6.7 with ESXi and vCenter



Length: 5 days

Format: Bootcamp

Time: Day



About This Course

This powerful 5-day, class is an intensive introduction to VMware vSphere including VMware ESXi 6.7 and vCenter. Assuming no prior virtualization experience, this class starts with the basics and rapidly progresses to advanced topics. With 50% of class time is devoted to labs, students learn the skills they need to become effective vSphere administrators.

Labs start with installation and configuration of stand-alone ESXi servers and progress to shared storage, networking and centralized management. The class continues to advanced topics including resource balancing, high availability, power management, backup and recovery, performance, vCenter redundancy, VM redundancy. Disaster recovery, rapid deployment, hot migration and workload consolidation are also covered.

By the end of the class, attendees will have developed in-depth vSphere knowledge, skills, and best practices. Attendees will be able to design, implement, configure, monitor, manage and troubleshoot vSphere 6.7.

Required Exams

Audience Profile

- * System architects or others who need to design virtual infrastructure
- * Security specialists responsible for administering, managing, securing
- * Virtual Infrastructure Operators responsible for day-to-day operation of Virtual Infrastructure
- * Performance analysts who need to understand, provision, monitor Virtual Infrastructure
- * Business Continuity specialists responsible for disaster recovery and high availability
- * Storage administrators who work with Fibre / iSCSI SAN volumes and NAS datastores
- * Managers who need an unbiased understanding of virtualization before committing their organization to a virtual infrastructure deployment

Course Objectives

At the end of the course, attendees 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 switches and use pNICs to uplink virtual to physical LAN segments
- * Understand and use advanced vSwitch settings like NIC Teaming and Security
- * Improve network performance with Jumbo Frames
- * Understand and use shared SAN storage including Fibre SAN, iSCSI SAN * Create and use Raw Device

Maps

- * Define and use file share (NAS) datastores
- * Install, configure and update the Platform Service Controller and vCenter Server Appliance
- * Create virtual machines, install operating systems and applications
- * Configure and use hotplug hardware including hot-add vCPUs and Memory
- * Add and grow virtual disks including system disks and secondary volumes
- * Rapidly deployment of VMs using golden-master templates
- * Create clones – one-time copies of virtual machine
- * Perform VM cold migrations, VMotion hot migrations and Storage VMotion datastore migrations
- * Configure, manage, monitor and secure users and groups
- * Understand the benefits and trade offs of network attached storage and Fibre, iSCSI SANs
- * Deploy and use VMware Replication to implement Virtual Machine disaster preparedness
- * Create and manage load balanced Distributed Resource Scheduling clusters
- * Enable, configure and use Distributed Power Management to reduce electrical power by soft powering off unneeded ESXi servers
- * Understand, create and manage high availability clusters to protect against VM service loss caused by ESXi server failures
- * Configure VMware Fault Tolerance to maintain VM availability in the event of an ESXi host failure
- * Monitor and tune both ESXi and virtual machine performance
- * Patch and update ESXi servers using vCenter Update Manager
- * Understand how VMware and third party products, including operating systems, are impacted by virtualization
- * Create and use Distributed Virtual Switches
- * Troubleshoot common problems

Outline

Chapter 1 - Virtualization Infrastructure Overview * Virtualization explained

- * How VMware virtualization compares to traditional PC deployments
- * Common pain points in PC Server management
- * How virtualization effectively addresses common IT issues
- * VMware vSphere software products
- * What's New and Improved in vSphere 6.7

Chapter 2 – How to Install, Configure ESXi 6.7 Update 2 * Understanding ESXi

- * Selecting, validating and preparing your server
- * Storage controllers, disks and partitions
- * Software installation and best practices
- * Joining ESXi to a Domain

- * Local User Management and Policies
- * First look at the VMware vSphere Client

Chapter 3 – Virtual and Physical Networking * vNetwork standard and distributed virtual Switches

- * Virtual Switches, Ports and Port Groups
- * Creating VMkernel ports
- * Creating, sizing and customizing Virtual Switches

Chapter 3.1 - Advanced Virtual Networking * Understand and use vSwitch Security

- * Five pNIC teaming strategies
- * Implementing Jumbo Frames

Chapter 4 – Connecting to NAS Shared Storage * Benefits Shared Storage offer to Virtual Infrastructure

- * Shared Storage options
- * NFS Overview
- * Configuring ESXi to use NFS Shares
- * Configuring NFS for performance and redundancy
- * NFS Use Cases
- * Troubleshooting NFS connections

Chapter 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

Chapter 6 – vCenter Server and Web Client * The need for Identity Source management

- * Installing the Platform Service Controller
- * Installing and configuring vCenter Server Appliance
- * Connecting Single Sign On (SSO) to Active Directory and other identity sources
- * vCenter feature overview and components
- * Organizing vCenter's inventory views
- * Importing ESXi hosts into vCenter management
- * Installing and Using the vSphere Next Generation Web Client

Chapter 7 – 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

- * Adding and resizing virtual disks

Chapter 8 – ESXi 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

Chapter 9 – Using Fibre and iSCSI Shared Storage * Fibre SAN overview

- * Identifying and using Fibre Host Bus Adapters
- * Scanning and Rescanning Fibre SANs
- * iSCSI overview
- * Virtual and physical iSCSI adapters
- * Connecting to iSCSI storage
- * Scanning and rescanning iSCSI SANS
- * Performance and redundancy considerations and best practices
- * Understanding the benefits of VMware VAAI compliant storage

Chapter 9.1 - Raw Device Maps * Connecting VMs directly to SAN LUNs

- * Physical vs. Virtual Raw Device Maps
- * Impact of VMotion, Storage VMotion on RDMs

Chapter 10 – VMware File System (VMFS) * Unique file system properties of VMFS

- * Managing shared Volumes
- * Creating new VMFS partitions
- * Managing VMFS capacity with LUN spanning and LUN expansion
- * Native and 3rd party Multipathing with Fibre and iSCSI SANs
- * VMFS performance considerations
- * VMFS scalability and reliability

Chapter 11 – ESXi and vCenter Alarms * Alarm categories and definitions

- * Creating custom alarms and actions
- * Reviewing alarms and acknowledging them

Chapter 12 – Resource Management and Resource Pools * How ESXi delivers resources to VMs

- * Shares, Reservations and Limits
- * CPU resource scheduling
- * Memory resource scheduling
- * Resource Pools

Chapter 13 – Consolidation with VMware 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

Chapter 14 – VMotion Migration, Cold Migration, Storage VMotion * Cold Migrations to new ESXi hosts, datastores

- * Hot Migrations with VMotion
- * VMotion requirements and dependencies
- * How VMotion works – detailed explanation
- * Troubleshooting VMotion
- * Storage VMotion for hot VM disk migrations

Chapter 15 – Distributed Resource Scheduling Clusters * Delegated resource management with Resource Pools

- * Resource balanced clusters with VMware Distributed Resource Scheduler
- * DRS Cluster configuration and tuning
- * Per-VM cluster policy overrides
- * Learn the features and benefits of DRS Power Management

Chapter 16 – Failure Recovery with High Availability Clusters * High Availability options to minimize unplanned down time

- * VMware High Availability clusters
- * VMware Fault Tolerance

Chapter 16.1 HA Fault Tolerance * Delivering zero unplanned VM down time with Fault Tolerance

- * Fault Tolerance Scalability improvements in vSphere 6.7
- * Fault Tolerance overview, features and limitations
- * VM FT configuration, monitoring and recovery
- * FT ESXi host and network compatibility requirements
- * Creating and administering FT compliant VMs

Chapter 17 – Disaster Preparedness with vSphere Replication * Explain vSphere Replication features and Use Cases

- * Import the vSphere Replication virtual appliance
- * Configure vSphere Replication including Recovery Point Objectives (RPOs)
- * Enable vSphere Replication on a VM
- * Recover a VM using vSphere Replication

Chapter 18 – Patch Management with VMware Update Manager * Configure and enable VMware Update Manager

- * Establishing a patch baseline
- * Verifying compliance and patching ESXi hosts

Chapter 19 – Managing Scalability and Performance * VMkernel CPU and memory resource management mechanisms

- * Tuning VM storage I/O performance
- * Identifying and resolving resource contention
- * Monitoring VM and ESXi host performance
- * Performance and capacity planning strategies

Chapter 20 - Distributed Virtual Switches * Understanding, creating and administering vNetwork Distributed Switches

- * Migrating Standard vSwitch configurations to dvSwitches
- * Adding ESXi hosts to dvSwitches