




VMware vSphere 5.5 Boot Camp

Course Name	VMware vSphere 5.5 Boot Camp  VMware vSphere 5.5 Boot Camp  VMware vSphere 5.5 Boot Camp  VMware vSphere 5.5 Sample Chapter
Format	5-day instructor led training
Course Books	760+ pg Study Guide fully annotated with slide notes 240+ pg Lab Guide with detailed steps for completing all labs
vSphere Version	Covers VMware vSphere 5.5 including ESXi 5.5, vCenter and related products
Delivery Options	Instructor Led On-site. Instructor Led Distance. Instructor Led Mixed On-Site & Remote Evening and/or weekend delivery
Remote Labs	Remote access to dedicated rack of servers with one enterprise class PC Server per student, an iSCSI SAN, etc.
Max Attendees	Limited by server availability. We currently have 140+ student servers available for rent
Requirements	Course can be run from any location that has a reliable Internet connection. Each attendee needs a PC that supports Microsoft Terminal Services
Lab Time	40+% of class time is devoted to hands-on labs
Availability	February, 2014
Certification	Prepares attendees to challenge the ESXLab Certified Virtualization Specialist exam One exam voucher included with this class
Suggested Price	\$3,495 USD

Overview

This powerful 5-day 10hr/day class is an intensive introduction to VMware vSphere™ including VMware ESX™ 5.5 and vCenter™. Assuming no prior virtualization experience, this class starts with the basics and rapidly progresses to advanced topics. 40+% of class time is devoted to labs so concepts, skills and best practices are developed and reinforced.

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, back up and recovery, performance, vCenter redundancy, VM redundancy. Disaster recovery, rapid deployment, hot migration and workload consolidation are also covered.

This class is unique in its approach; which is to identify and eliminate common IT pain points and then to use virtualization to delivers clear, tangible benefits. Each topic is presented from the perspective of delivering key business value; not just the technical or mechanical aspects of the software.

The 10hr/day format gives attendees the time to learn about and use advanced VMware topics and develop superior VMware management, deployment and troubleshooting skills.

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 5.5.

Objective

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, distributed virtual, and virtual to physical LAN segments
- Understand and use shared SAN storage including Fibre SAN, iSCSI SAN
- Define and use file share (NAS) datastores
- Install, configure and update the vCenter Server Appliance
- Create virtual machines, install operating systems and applications
- Understand and explain the technical, business, licensing risks of Virtual Desktop Infrastructure (VDI)
- 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, hot migrations and Storage VMotion
- 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 hot back up and recover critical Virtual Machines
- Create and manage load balanced 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 VMs for zero unplanned downtime by deploying vSphere Fault Tolerance
- Monitor and tune both ESXi and virtual machine performance
- Patch and update ESXi servers using vCenter Update Manager
- Use Host Profiles to set and enforce ESXi configuration rule sets
- Understand how VMware and third party products, including operating systems, are impacted by virtualization
- Create, administer, back up and recover vNetwork Distributed Switches
- Understand and use advanced vSwitch settings like NIC Teaming and Security
- Troubleshoot common problems

Prerequisites

Attendees should have user, operator or administrator experience on common operating systems such as Microsoft Windows®, Linux™, UNIX™, etc. Experience installing, configuring and managing operating systems, storage systems and or networks is useful but not required. We assume that all attendees have a basic familiarity with PC server hardware, disk partitioning, IP addressing, O/S installation, networking, etc.

Who Should Attend

This class is suitable for anyone who want to learn how to extract the maximum benefit from their investment in Virtual Infrastructure, including:

- **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 and capacity analysts** who need to understand, provision, monitor and performance tune Virtual Infrastructure
- **Business Continuity specialists** responsible for disaster recovery and high availability
- **Storage administrators** who work with 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.

Chapter List

Our class consists of the following 22 chapters:

1. Virtualization Infrastructure Overview
Virtual Desktop Infrastructure - Risks & Rewards
2. How to Install, Configure ESXi 5.5 Installable(HoL1)
3. Virtual and Physical Networking(HoL)
4. NAS Shared Storage(HoL)
5. Virtual Hardware and Virtual Machines(HoL)
6. Install and Deploy the vCenter Server Appliance(HoL)
7. VM Rapid Deployment using Templates, Clones(HoL)
Advanced Virtual Hardware - Hot Plug CPU/Memory(HoL)
8. ESXi and vCenter Permission Model(HoL)
9. Using Fibre and iSCSI Shared Storage(HoL)
Work with Raw Device Maps(HoL)
10. VMFS - The VMware Cluster File System(HoL)
11. ESX and vCenter Alarms(HoL)
12. Resource Management and Resource Pools(HoL)
13. Consolidation with vCenter Converter Standalone(HoL)
14. VM Hot and Cold Migration, Storage VMotion(HoL)
15. Load Balancing w. Distributed Resource Scheduler(HoL)
DRS Power Management - Configure and Test(HoL)
16. Failure Recovery with High Availability Clusters(HoL)
VM Fault Tolerance - Configure and Test(HoL)
17. Host Profiles(HoL)
18. Hot VM Protection with vSphere Replication (HoL)
19. Patch Management with VMware Update Manager(HoL)
20. Managing Scalability and Performance(HoL)
21. Distributed Virtual Switches - Configure, Back Up and Recover(HoL)
22. Final Thoughts

¹ HoL - Every attendee perform a **Hands on Lab** at the end of the chapter

Hands On Labs

Attendees will complete the following hands on labs during the class:

- Install of ESXi 5.5 and perform post-install configurations
- Create and update network Standard Virtual Switches
- Define, connect to and browse NFS file shares
- Create a Virtual Machine and install a guest OS into the VM. Install VMware Tools into the VM. Add 3rd party tools and utilities to the VM
- Manually Clone a VM (without vCenter)
- Install and configure the vCenter Server Appliance
- Configure Single Sign On (SSO) identity sources including Active Directory
- Configure vCenter's inventory views to organize inventory objects
- Install and configure the VMware Next Generation Web Client
- Work with Clones and Templates. Convert a VM into a template. Rapidly deploy new VMs from template. Copy VMs using cloning.
- Use guest OS customization to easily change the identity of a VM. Create, update and deploy VMs using Guest OS Customization Specifications
- Work with virtual disks. Hot add a secondary virtual disk. Grow a non-system volume. Grow a Windows system disk and increase it's partitions without the need for 3rd party tools
- Configure and test hotplug memory
- Create multi-core vCPUs
- Work with vCenter permissions. Use and customize Roles
- Create, update Network Standard vSwitches. Create NIC Teams for performance and redundancy
- iSCSI, Fibre Storage Area Networks. Connecting to shared storage
- Configure and add a Virtual Raw Device Map to a VM
- VMware VMFS - VMware's proprietary cluster file system. How to create, tune and grow VMFS volumes
- Resource management. Work with resource tuning settings. Create, manage and monitor Resource Pools
- VM migration including Cold Migration, Storage Migration and VMotion
- Automated VM resource load balancing with DRS clusters
- Create a DRS Power Managed DRS cluster. Test Power Management
- Use HA clusters to minimize VM down time due to server failures
- Configure a Fault Tolerant VM. Simulate a ESXi host failure to ensure no VM down time
- Back up and restore VMs using VMware Replication
- Using Converter Enterprise 5.5 to migrate physical machines to VMs
- vCenter alarms for monitoring key infrastructure objects. Send SNMP traps to a trap receiver on high VM resource consumption
- Set up VMware Update Manager to patch/update ESXi hosts
- Enable and test VMware Storage I/O control to implement share based disk I/O scheduling
- Create and test a Storage DRS LUN cluster
- Create a distributed virtual Switch. Back up and restore the vDS configuration
- Performance analysis and benchmarking storage and networking

Certification

Attendees have the option to earn ESXLab Certified Virtualization Specialist (ECVS) by challenging a certification exam at the end of the course.

Detailed Chapter List

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

Chapter 1.1 - Overview of Desktop Virtualization

- Virtual Desktop Infrastructure explained
- Benefits of VMware Horizon View over traditional VDI
- Risks and restrictions of licensing Microsoft Desktop Operating Systems in a VDI environment
- Risks and costs of Bring Your Own Device (BYOD)
- Strategy to sidestep desktop licensing costs and access restrictions

Chapter 2 - How to Install, Configure ESXi 5.5 Installable

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

- Benefits Shared Storage offer to Virtual Infrastructure
- Shared Storage options
- NFS Overview
- Configuring ESX 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 the Next Generation Web Client

- The need for Identity Source management
- 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 ESX 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 7.1 - Advanced Virtual Machines

- Enabling and using VM Hotplug in virtual hardware
- CPU and Memory hot plug
- Virtual NIC hot plug
- Customizing Virtual CPUs for optimal performance
- Enabling 3D hardware/software Video for desktop VMs
- How to create/deploy Virtual PC Graphics Workstations

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

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 - ESX 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 ESX delivers resources to VMs
- Shares, Reservations and Limits
- CPU resource scheduling
- Memory resource scheduling
- Resource Pools

Chapter 13 - Consolidation with VMware Converter Standalone

- 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 - VM Hot and Cold Migration, Storage VMotion

- Cold Migrations to new ESX 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

Chapter 15.1 - DRS Power Management

- Understanding the role of Power Management
- Configuring individual ESXi hosts to enable soft power-off
- Testing vCenter power-off/power-on of ESXi hosts
- DRS Power Management settings

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 downtime with Fault Tolerance
- Fault Tolerance overview, features and limitations
- Configuration, monitoring and recovery
- FT ESXi hosts and network compatibility requirements
- Creating and administering FT VMs

Chapter 17 - Host Profiles

- Using Host Profiles to capture an ESXi host configuration
- Perform configuration compliance scans
- Remediating out of compliance configuration issues
- Rapid ESXi host deployment/configuration with Host Profiles

Chapter 18 - Hot VM Protection 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 19 - Patch Management with VMware Update Manager

- Configure and enable VMware Update Manager
- Establishing a patch baseline
- Verifying compliance and patching ESXi hosts

Chapter 20 - Advanced Virtual Networking

- Understanding, creating and administering vNetwork Distributed Switches
- Migrating Standard vSwitch configurations to dvSwitches
- Backing up and recovering dvSwitches
- Troubleshooting and repairing dvSwitches
- vSwitch Security
- Traffic Shaping
- NIC Teaming strategies - Originating Port, MAC Hash, IP Hash, NIC Load and LACP

Chapter 21 - 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 ESX host performance
- Performance and capacity planning strategies

Chapter 22 - Final Thoughts

- Consolidation guidelines for VMs and Storage
- Determining which workloads to consolidate
- Other considerations

For More Information

This class can be customized to meet your unique training and delivery needs, including:

- On-site delivery at your facility
- Custom timetables including 3-day rapid delivery boot-camps
- Content and Lab customization to meet your unique training needs
- Distance training
- Mentoring, implementation planning and assistance

For more information or to check pricing and availability, please contact your authorized ESXLab.com training partner.