

VMware vSphere 6.5 Boot Camp

Course Name	VMware vSphere 6.5 Boot Camp  VMware vSphere 6.5 Boot Camp  VMware vSphere 6.5 Boot Camp
Format	5-day, 10 hour/day instructor led training
Course Books	724 pg Study Guide fully annotated with slide notes 243 pg Lab Guide with detailed steps for completing all labs 145 pg Boot Camp Supplement guide with 4 additional chapters and labs
vSphere Version	Based on VMware vSphere 6.5 released March 2017
Delivery Options	Instructor led On-site. Instructor Led Distance. Instructor led mixed On-Site & Remote. Self-paced video training with full lab access and support.
Remote Labs	Remote access to dedicated rack of servers with one enterprise class PC Server per student, an iSCSI SAN, etc.
Max Attendees	We generally recommend no more than 16 students per class We can provide concurrent lab access for 150+ students
Requirements	Course can be run from any location that has a reliable Internet connection. Each attendee needs a PC that supports Microsoft Terminal Services or a modern browser
Lab Time	40+% of class time is devoted to hands-on labs
Certification	Prepares attendees to challenge the Certified Virtualization Professional (CVP) exam http://cvpcertified.com
Recorded Lectures	Attendees receive lifetime access to video recordings of all of the lectures in this course
Suggested Price	\$4,395 USD per seat

Overview

This powerful 5-day, 10 hour per day extended hours class is an intensive introduction to VMware vSphere™ including VMware ESXi™ 6.5 and vCenter™ 6.5. This course has been completely rewritten to reflect the most recent changes introduced in vSphere 6.5. Our courseware and labs have been fully updated and now use Host Client and Web Client rather than legacy vSphere Client for both presentation material and lab procedures.

Assuming no prior virtualization experience, this class starts with the basics and rapidly progresses to advanced topics. With 40+% 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, back up and recovery, performance, vCenter redundancy, VM redundancy. Disaster preparedness, rapid deployment and VM cold, hot and storage migration.

This class is unique in its approach; which is to identify and eliminate common IT pain points using vSphere. Students learn how to deliver business value; not just the technical or mechanical aspects of the software.

By the end of the class, attendees will have the knowledge, skills, and best practices to design, implement, deploy, configure, monitor, manage and troubleshoot vSphere 6.5 installations.

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
- Upgrade and use Host Client to manage stand alone ESXi hosts
- Create virtual and virtual to physical network configurations
- Configure and manage local storage resources
- Use vSwitch policies to improve network security
- Explain and select the optimal pNIC teaming strategy for network availability and performance
- Implement Jumbo Frames to improve network throughput and reduce protocol overhead
- Define and use file share (NAS / NFS) datastores
- Create virtual machines, install operating systems and applications
- Install, configure and upgrade VMware Tools
- Install, configure and update the Platform Service Controller and vCenter Server Appliance
- Use rapid deployment to consistently and quickly deploy new virtual machines
- Create clones - one-time copies of virtual machine
- Use Guest OS customization to rapidly configure new VMs according to requirements
- Configure and use hotplug hardware including hot-add vCPUs and Memory
- Add and grow virtual disks including system disks and secondary volumes
- Configure and use roles. Add, manage, monitor and secure users and groups
- Understand the benefits and trade offs of network attached storage and Fibre, iSCSI SANs
- Configure and use shared SAN storage including Fibre SAN, iSCSI SAN
- Use Raw Device Maps to give VMs direct connectivity to SAN volumes
- Create VMFS 5 datastores. Extend VMFS datastores using LUN spanning and expansion
- Explain and use VMware's three multipathing policies for storage performance and availability
- Use vCenter alarms to monitor ESXi, VM, storage and network health, performance, state
- Use Resource Pools to delegate host / cluster pCPU, pRAM to meet Service Level Agreements
- Perform VM cold migrations, hot migrations and Storage VMotion
- Configure and manage server CPU and Memory capacity and maintain VM responsiveness with Distributed Resource Schedule load balanced clusters
- Use HA to minimize VM down time due to ESXi host failures, storage network failures or SAN failures
- Use VMware Fault Tolerance to eliminate VM down time due to host, network or storage failures
- Implement a disaster recovery strategy using VMware Replication
- Use vSphere Replication to hot replicate and recover business critical Virtual Machines
- Patch and update ESXi servers using vCenter Update Manager
- Monitor and tune ESXi hosts and virtual machine for best performance
- Build, configure, and use distributed virtual switches. Migrate hosts and networking to dvSwitches
- 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:

1. **System architects** or others who need to design virtual infrastructure
2. **Security specialists** responsible for administering, managing, securing Virtual Infrastructure
3. **Operators** responsible for day-to-day operation of Virtual Infrastructure
4. **Performance analysts** who need to understand, provision, monitor Virtual Infrastructure
5. **Business Continuity specialists** responsible for disaster recovery and high availability
6. **Storage administrators** who work with Fibre / iSCSI SAN volumes and NAS datastores
7. **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
2. How to Install, Configure ESXi 6.5 (HoL¹)
3. Virtual and Physical Networking (HoL)
4. Advanced Virtual Networking (HoL)
5. NAS Shared Storage (HoL)
6. Virtual Hardware and Virtual Machines (HoL)
7. Install and Deploy the vCenter Server Appliance (HoL)
8. VM Rapid Deployment using Templates, Clones (HoL)
Add and Grow virtual disks (HoL)
Advanced Virtual Hardware - Hot Plug CPU/Memory (HoL)
9. ESXi and vCenter Permission Model (HoL)
10. Using Fibre and iSCSI Shared Storage (HoL)
11. Direct VM to SAN Access with Raw Device Maps (HoL)
12. VMFS - The VMware Cluster File System (HoL)
13. ESXi and vCenter Alarms (HoL)
14. Resource Management and Resource Pools (HoL)
15. VM Hot VMotion, Cold Migration and Storage VMotion (HoL)
16. Load Balancing w. Distributed Resource Scheduler (HoL)
17. Failure Recovery with High Availability Clusters (HoL)
18. Configure Fault Tolerance and test a Fault Tolerance protected VM (HoL)
19. Disaster Preparedness with vSphere Replication (HoL)
20. Patch Management with VMware Update Manager (HoL)
21. Create, configure and migrate networking to a Distributed Virtual Switch (HoL)
22. Managing Scalability and Performance (HoL)
23. Final Thoughts

¹ HoL - Every attendee perform one or more **Hands on Labs** at the end of each chapter

Hands On Labs

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

- Install of ESXi 6.5 and perform post-install configurations
- Update ESXi 6.5 Host Client to improve stability and add features
- Create, update Network Standard vSwitches. Use NIC Teams for performance and redundancy
- Enable vSwitch Security policies. Upgrade a pNIC team for reliability
- Enable Jumbo Frames on pNICs and VMkernel ports for improved network throughput
- 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
- Export a VM in Open Virtual Machine Format (OVF) and then re-import it
- 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
- 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
- iSCSI, Fibre Storage Area Networks. Connecting to shared storage
- Create and use Raw Device Maps to give VMs direct SAN volume access
- VMware VMFS - VMware's cluster file system. How to create, tune and grow VMFS volumes
- Review and set the best Path Selection Policy for a VMFS volume
- Create, manage and monitor Resource Pools. Work with resource tuning settings.
- Create vCenter alarms for monitoring key infrastructure objects
- Trigger alarms and send SNMP traps to a trap receiver on high VM resource consumption
- VM migration including Cold Migration, Storage Migration and VMotion
- Automated VM resource load balancing with DRS clusters
- Use HA clusters to minimize VM down time due to server failures
- Configure and enable Fault Tolerance protected VMs to implement zero unplanned VM downtime
- Protect critical VMs from infrastructure failures using VMware Replication
- Set up VMware Update Manager to patch/update ESXi hosts
- Create, configure and use distributed Virtual Switches. Migrate standard network to dvSwitches
- Performance analysis and bench marking storage and networking

Certification

Attendees will acquire all of the knowledge and hands on skills they need to successfully challenge the [Certified Virtualization Professional](#) (CVP) exam at the end of the course.

Please check with your training provider to see if a CVP exam voucher are included in the price of this 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
- What's New and Improved in vSphere 6.5

Chapter 2 - How to Install, Configure ESXi 6.5

- 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 and VMware Host 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 Networking

- Use vSwitch Security policies to defend against malicious VM network activity
- Explain and implement all five physical NIC team policies
- Improve network health and fault detection by using Beacons
- How to enable and test Jumbo Frames

Chapter 4 - Connecting to and Using NAS Shared Storage

- Benefits Shared Storage offer to Virtual Infrastructure
- 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 Appliance and Web Client

- The need for Identity Source management
- Installing an external 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
- Administering vCenter Server with 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
- Hotplug VM virtual CPUs and Memory

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 and iSCSI SANs
- iSCSI overview
- Virtual and physical iSCSI adapters
- Connecting to iSCSI storage
- Performance and redundancy considerations and best practices
- Understanding the benefits of VMware VAAI compliant storage

Chapter 9.1 - Direct VM to SAN Access with Raw Device Maps

- Explain Physical and Virtual Raw Device Maps (RDMs)
- Use cases for Raw Device Maps
- How Raw Device Maps work with VM cold, VMotion and Storage VMotion migrations
- Using RDMs to implement Virtual and Virtual/Physical Microsoft Fail Over Clusters

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 - Infrastructure Monitoring with 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 - 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 14 - 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 15 - Failure Recovery with High Availability Clusters

- High Availability options to minimize unplanned down time
- VMware High Availability clusters
- VMware Fault Tolerance

Chapter 15.1 - Continuous VM Availability with Fault Tolerance

- How Fault Tolerance provides continuous VM availability during ESXi host, storage network and SAN storage failures
- How to configure ESXi hosts and networks to enable Fault Tolerance
- How to configure, enable and monitor Fault Tolerance on VMs
- Managing Fault Tolerance protected VMs
- Fault Tolerance scalability, performance and limitations

Chapter 16 - 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 17 - Patch Management with VMware Update Manager

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

Chapter 18 - 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 19 - Distributed Virtual Switches

- Features and benefits of dvSwitches vs. Standard vSwitches
- How to create a new dvSwitches
- Role of dvUplink ports and dvSwitch Port Groups
- Migrating physical NICs to dvSwitches
- Migrating VMs and VMkernel ports to dvSwitches

Chapter 20 - 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
- Virtual self-based video training
- Mentoring, implementation planning and assistance

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