

# VMware vSphere 8.0 Boot Camp

A 5-day Intensive Introductory Course on VMware vSphere 8.0

## Overview

This powerful 5-day extended hours class is an intensive introduction to VMware vSphere™ 8.0 including VMware ESXi™ 8.0 and vCenter™ 8.0. This course has been completely updated to reflect the most recent changes introduced in vSphere 8.0.

Assuming no prior virtualization experience, this class starts with the basics and rapidly progresses to advanced topics. 45+% of class time is devoted to labs so students get the skills they need to become effective vSphere administrators.

Students use dedicated labs that start with installation and configuration of stand-alone ESXi hosts and progress through shared storage, networking, building VMs and centralized management. The class continues with rapid VM deployment, hot-plug virtual hardware, permissions, alarms resource management, VM high availability clusters, VM load balanced clusters, VM cold, hot and storage migration, updating / upgrading ESXi hosts and performance. Our Boot Camp class add five additional chapters and labs covering Advanced Networking, Content Libraries, Raw Device Maps, Fault Tolerance Protected VMs and Distributed vSwitches.

This class is unique in that, by the end of the class, students will have built a complete vSphere 8.0 environment from scratch including installing and configuring ESXi 8.0 hosts and installing and configuring vCenter Server Appliance 8.0. We are the only major vSphere training provider where every student must install ESXi and vCenter to be successful.

By the end of the class, attendees will have acquired the knowledge, skills, and best practices needed to deploy, configure and administer VMware vSphere 8.0.

## Objectives

At the end of the course, attendees will be able to:

- Explain the many significant benefits of virtualization
- Install ESXi 8.0 according to best practices
- Use Host Client to manage standalone ESXi hosts
- Configure and manage local storage resources
- Create virtual and virtual to physical network configurations
- Use advanced networking features like Security, Jumbo Frames and Beacon Probing
- Explain the 5 pNIC teaming policies and select the correct one depending on your situation and needs
- Configure and use file share (NAS / NFS) datastores
- Create and customize virtual machines
- Install, configure and upgrade VMware Tools
- Install, configure and administer vCenter Server Appliance
- Perform rapid VM deployments using VM Clones and Templates
- Use Guest OS customization to rapidly and consistently configure new VMs
- Create and use Content Libraries to organize and distribute templates, media, scripts and more
- Configure and use hotplug virtual hardware to add VM hardware with zero downtime
- Add and grow VM virtual disks including system disks and secondary volumes
- Manually upgrade VM virtual hardware
- Use Permissions to enable and customize user and group access to vSphere
- Configure ESXi to connect to shared storage resources
- Provide direct VM to SAN LUN access using Raw Device Maps
- Create VMFS datastores
- Grow VMFS datastore capacity with LUN Spans and by Extending VMFS volumes and file systems
- Explain and use VMware's three different multipathing policies - Round Robin, Fixed and MRU
- Use vCenter alarms to monitor ESXi, VM, storage and network health, performance, state
- Use Resource Pools to bulk delegate compute resource to VMs and child Resource Pools
- Perform VM cold migrations, hot VMotion migrations and hot Storage VMotion migrations
- Create VM Load Balanced DRS Clusters to dynamically balance VMs to Hosts to ensure compute resource availability
- Minimize unplanned VM down time with VMware High Availability clusters
- Configure and enable VM Fault Tolerance to deliver VMs with zero unplanned down time
- Update and Upgrade ESXi hosts using VMware Lifecycle Manager
- Use VMware Lifecycle Manager to upgrade VMware Tools and Virtual Hardware in VMs
- Monitor and tune both ESXi and virtual machine for best performance
- Create and configure Distributed vSwitches and migrate VMs and VMkernel NICs to dvSwitches
- Troubleshoot common problems
- Use Best Practices to build a reliable, scalable and highly available vSphere environment

## Attendee Prerequisites

Attendees should have user, operator or administrator experience on common operating systems such as Microsoft Windows, Linux™, Mac OS/X, etc. Experience installing, configuring and managing operating systems, storage and / or networks is helpful 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 obtain the maximum benefit from their investment in VMware vSphere Virtual Infrastructure, including:

- **System architects** or others who need to understand / 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 volumes
- **Managers** who need an unbiased understanding of virtualization before committing their organization to a virtual infrastructure deployment

## Chapter List

This class includes the following chapters:

0. Course Introduction
1. Virtualization Infrastructure Overview
2. How to Install, Configure ESXi 8.0 (HoL<sup>1</sup>)
3. Virtual and Physical Networking (HoL)
4. Connecting to and Using NAS Shared Storage (HoL)
5. Virtual Hardware and Virtual Machines (HoL)
6. vCenter Server Appliance (HoL)
7. VM Rapid Deployment using Templates, Clones (HoL)
8. VM Hotplug Virtual Hardware (HoL)
9. Working with Shared Storage (HoL)
10. VMware File System (VMFS) (HoL)
11. ESXi and vCenter Permission Model (HoL)
12. Infrastructure Monitoring with vCenter Alarms (HoL)
13. Resource Management and Resource Pools (HoL)
14. VMotion Migration, Cold Migration, Storage VMotion (HoL)
15. Distributed Resource Scheduling Clusters (HoL)
16. VM Failure Recovery with High Availability Clusters (HoL)
17. VMware Lifecycle Manager (HoL)
18. Managing Scalability and Performance (HoL)
19. Final Thoughts

<sup>1</sup> **HoL** - These chapters include a **Hands-on Lab** that is completed at the end of the lecture

## Hands On Lab Tasks

Attendees complete 47 hands-on lab tasks during the class:

1. Connect to your dedicated Remote Lab environment
2. Install ESXi 8.0, and perform post-install configurations
3. Create, update Standard vSwitches. Use pNIC Teams for performance and redundancy
4. Create an Active / Stand-by pNIC team
5. Use Jumbo Frames to improve vNetwork throughput
6. Define, connect to and browse NFS based datastores
7. Create a Virtual Machine and install a guest OS into the VM
8. Install VMware Tools into a VM. Add 3<sup>rd</sup> party tools and utilities into a VM
9. Export a VM in Open Virtual Machine Format (OVF) and then re-import it back into ESXi
10. Install and configure the vCenter Server Appliance (vCSA)
11. Configure vCSA Single Sign On (SSO) identity sources including Active Directory
12. Configure vCenter's inventory views to organize inventory objects
13. Import ESXi hosts into vCenter management
14. Work with VM Clones and Templates. Convert a VM into a template
15. Rapidly deploy new VMs from template
16. Perform ad-hoc VMs rapid deployments using VM cloning
17. Rapidly deploy VMs using Guest OS Customization Specifications
18. Create a Content Library and upload a VM template into it
19. Deploy a new VM from a Content Library template
20. Work with hot-add virtual hardware
21. Hot add, and then grow, a secondary virtual disk
22. Grow a Windows system disk and partition with no downtime
23. Configure and test hotplug memory
24. Hotplug a new virtual CPU package into a running VM
25. Configure the Software iSCSI adapter. Scan for and review SAN based storage volumes
26. Configure direct VM to SAN LUN access using Raw Device Maps
27. VMware VMFS 6 - VMware's cluster file system
28. Grow VMFS volumes using LUN Spans. Growing volumes and their VMFS datastores
29. Review and update VMFS properties including Space Reclaim
30. Review and select the best VMFS multipath policy for optimal performance and reliability
31. Work with vCenter permissions using stock and custom Roles
32. Configure vCenter alarms to monitor select infrastructure objects
33. Configure Alarm actions to Send SNMP traps to a trap receiver on high VM compute resource use
34. Create and tune Resource Pools. Test Resource Pool compute resource delegations
35. Cold Migrate VMs from one ESXi host and storage volume to another
36. Hot VMotion migrate the running compute state of a VM from one ESXi host to another
37. Hot Storage migrate the running disk state of a VM from one datastore to another
38. Build and test an automated compute resource load balancing DRS cluster
39. Create and configure a VMware High Availability cluster
40. Manually fail a host and watch the cluster place and restart impacted VMs onto healthy hosts
41. Configure and demonstrate zero unplanned VM down time using Fault Tolerance
42. Set up VMware Lifecycle Manager to update/update ESXi hosts
43. Perform an ESXi host Compliance Scan, review host non-compliance
44. Use VLM to automatically upgrade an ESXi 7.0 host to ESXi 8.0
45. Use VLM to upgrade a VM's virtual hardware to ESXi 8.0 compatibility
46. Create and configure a vNetwork Distributed vSwitch
47. Migrate most Standard vSwitch networking over to your new dvSwitch

# Detailed Chapter List

## Chapter 0 - Course Introduction

- vSphere 8.0 overview
- Brief overview of the course and labs

## Chapter 1 - Virtualization Infrastructure Overview

- Virtualization explained
- How virtualization solves common issues with workload management
- Overview of VMware vSphere software components and features
- What's New in vSphere 8.0

## Chapter 2 - How to Install, Configure ESXi 8.0

- Understanding ESXi
- Selecting, validating and preparing your server
- Software installation and best practices
- Join ESXi to a Domain
- Local User Management and Policies
- Managing ESXi hosts with Host Client

## Chapter 3 - Virtual and Physical Networking

- vNetwork standard virtual Switches
- Virtual switch Ports and Port Groups
- Creating and configuring VMkernel NICs for ESXi networking
- vSwitch pNIC teaming for performance and reliability

## Chapter 4 - Advanced Virtual Networking

- vNetwork security policies Promiscuous Mode, MAC Address Changes and Forged Transmits
- The 5 pNIC teaming policies - their pros, cons, use cases and best practices
- Configure Jumbo Frames for higher vNetwork throughput

## Chapter 5 - Connecting to and Using NAS Shared Storage

- Shared Storage benefits
- NFS Overview
- Configuring ESXi to use NFS shares
- NFS Use Cases
- Troubleshooting NFS common problems

## Chapter 6 - Virtual Hardware and Virtual Machines

- VM virtual hardware, options and maximums
- Sizing and creating a new VM
- Assigning, modifying and removing Virtual Hardware
- VMware remote console applications
- Installing an OS into a VM
- Adding VMware Tools to a VM
- Saving and restoring a VM's state with snapshots

## Chapter 7 - vCenter Server Appliance

- vCenter overview and components
- Installing and configuring vCenter Server Appliance
- Complete post-install configuration tasks using vCSA's VAMI interface
- Connecting vCenter's base Linux Photon OS to Active Directory
- Updating Single Sign On's directory source database to query Active Directory
- Organizing vCenter's inventory views
- Importing ESX hosts into vCenter management
- Administering vCenter Server with HTML 5 based vSphere Client

## Chapter 8 - VM Rapid Deployment using Templates, Clones

- Virtual Machine Golden Master rapid deployment using templates
- Creating, updating and working with Templates
- Rapid ad-hoc VM duplication using Cloning
- Best practices for cloning and templating

## Chapter 9 - Content Libraries

- Create and configure a new Content Library
- Upload a VM template to a Content Library
- Deploy a new VM from a template in a Content Library
- Upload and use media and other files from a Content Library

## Chapter 10 - VM Hotplug Virtual Hardware

- Update VM vHardware with no downtime with hotplug virtual hardware
- Configuring VMs to support hotplug vCPUs and vRAM
- Hot-plugging vNICs and vDisks into a running VM
- Windows Guest OS experience when hot-plugging virtual hardware

## Chapter 11 - Working with Shared Storage

- Fibre SAN overview
- World Wide Names and LUN identifiers
- Fibre Soft Zoning and Hard Zoning
- iSCSI overview
- Virtual and physical iSCSI storage adapters
- Configuring ESXi's iSCSI software adaptor
- Scanning and rescanning for iSCSI volumes
- Performance and redundancy considerations
- Storage and storage network design and best practices
- Understanding the capabilities and benefits of VMware VAAI compliant storage

## Chapter 12 - Raw Device Maps

- Direct VM to SAN LUN access with Raw Device Maps
- Raw Device Maps benefits and use cases
- Using Raw Device Maps in Windows Fail Over Clusters
- The impact of VM Migration on VMs with Raw Device Maps

## Chapter 13 - VMware File System (VMFS)

- VMFS 6 features and benefits
- Creating new VMFS datastores
- Managing VMFS capacity with LUN spanning and LUN expansion
- Native and 3rd party Multipathing including policies, benefits and use cases
- VMFS performance, design and configuration tips

## Chapter 14 - ESXi and vCenter Permission Model

- The ESXi and vCenter Security model
- Configuring local users and groups
- Managing local permissions
- Granting access to local and Active Directory based users and groups
- How permissions are applied

## Chapter 15 - Infrastructure Monitoring with vCenter Alarms

- Alarm categories and definitions
- Creating custom alarms and setting alarm actions
- Configure vCenter so it can send E-mail and SNMP alerts
- Reviewing existing alarms and acknowledging them
- Identify the most useful alarms to review and enable

## Chapter 16 - Resource Management and Resource Pools

- Delegate compute resources in bulk with Resource Pools
- How ESXi delivers compute resources to VMs
- Compute resource tunes - Shares, Reservations and Limits
- Configure and test predictable compute resource delegations

## Chapter 17 - VMotion Migration, Cold Migration, Storage VMotion

- Cold VM migrations to new ESX hosts, datastores
- Hot VM compute state migrations between ESXi hosts with VMotion
- VMotion requirements and dependencies
- How VMotion works - detailed explanation
- How to test hosts and VMs for VMotion compatibility
- Hot VM disk state migrations between datastores with Storage VMotion

## Chapter 18 - Distributed Resource Scheduling Clusters

- Automatic CPU and Memory resource balancing clusters with VMware DRS
- DRS Cluster configuration and tuning
- Per-VM cluster policy overrides
- Features, benefits and use cases for Enhanced VMotion Compatibility (EVC)
- Configuring Per-VM EVC

## Chapter 19 - VM Failure Recovery with High Availability Clusters

- High Availability options to minimize unplanned VM down time due to infrastructure issues
- VMware HA policies to protect against ESXi host, storage network and SAN volume failures
- Admission Control for guaranteed compute resource availability after a host failure
- Heartbeat Datastores to quickly resolve host isolation vs. host failure situations

## Chapter 20 - Fault Tolerance

- Deliver zero VM unplanned down time with Fault Tolerance
- The features, benefits and limitations of Fault Tolerant protected VMs
- Build your Fault Tolerance logging network
- Enable and test Fault Tolerance operations including testing ESXi host failures

## Chapter 21 - VMware Lifecycle Manager

- Configure and enable VMware Lifecycle Manager
- Create an ESXi host upgrade baseline
- Checking ESXi host compliance with attached host upgrade baselines
- How to upgrade ESXi 7.0 hosts to ESXi 8.0 using VLM



## Chapter 22 - vNetwork Distributed Virtual Switches

- Create and Configure a vNetwork Distributed virtual switch
- Migrate VMkernel networking to your dvSwitch
- Migrate VM networking and unused pNICs to your dvSwitch
- Why Management Networking should remain on a Standard vSwitch

## Chapter 23 - Managing Scalability and Performance

- VMkernel CPU and memory resource management mechanisms
- Tuning VM storage I/O performance
- Identifying and resolving resource contention issues
- Monitoring VM and ESX host performance
- Performance and capacity planning strategies

## Chapter 24 - Final Thoughts

- What to virtualize and what not to virtualize
- VM guest OS security in a virtual environment
- How to protect VMs and their data from unauthorized copying
- Useful books, white papers and online resources

## 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
- Webinar distance 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](http://www.esxlab.com).