



Title: VMware® vSphere™ 6.0 / 6.5 Infrastructure Deployment Boot Camp

Summary: Class formats available:

- Live In-Classroom Training (LICT)
- Mixed class with Classroom and Online Instruction (OLL ICT mixed learning)
- Private / Onsite

Length: 5 Days (50 hours of instruction)

Overview: This fully-interactive, hands-on class places students directly in to a real VMware vSphere™ 6.0 / 6.5 datacenter, using real servers and Cloud Computing resources.

VMware® vSphere™ 6.0 / 6.5 is the first version of vSphere not to support any form of the traditional Windows (C#) client. We have rewritten all of our materials from the ground-up to

NEW in ESXi 6.0 U2 and ESXi 6.5:

- IPMI
- VMRC
- SSH
- HTML5 Host Client
- Web-based Virtual Appliance Management (VAMI)
- HTML5 vCenter Web Client (Experimental)
- Flash-based vSphere Web Client (production)



What makes our approach so unique is that every participant builds an **actual datacenter environment on real servers**, from beginning to end. Most importantly, we use the same procedures, in the same order, as they would be implemented **in your own datacenter!**

Our **VMware® vSphere™ 6.0 / 6.5 Infrastructure Deployment Boot Camp** features over 60 interactive Step-By-Step Labs (SBS LAB™), complete with detailed instructions and full-color screenshots of all steps. This is the most comprehensive class we offer. That means that our Step-by-Step Labs (SBS LABS™) are sure to become lasting reference materials and a clear, real-world roadmap for the design, implementation and management of VMware® vSphere™ 6 including:

- What's New in VMware® vSphere™ 6.0 / 6.5
- Planning and Design for VMware® vSphere™ 6.0 / 6.5
- Implementation with ESXi 6.0 / 6.5 and vCenter 6.0 / 6.5
- VMware® vSphere™ 6.0 / 6.5 Management
- Virtualize Business-Critical workloads with VMware® vSphere™ 6.0 / 6.5
- Cloud Control "Own your cloud and manage it too!"
- Backup and Remediation VMware® vSphere™ 6.0 / 6.5
- VMware® vSphere™ 6.0 / 6.5 Integrations, Tools and 3rd Party add-ons

Our class uses all of the latest management consoles and tools, **but is fully backward compatible to VMware vSphere 6.0.**



Objectives:

- Install and configure ESXi, vCenter Server, vStorage API and VMware Data Protection
- Manage ESXi hypervisor security, firewall, SSH access and vSphere Active Directory
- Create and manage Virtual Machines and Appliances
- Connect to SAN Storage, manage storage paths, create VMFS Volumes
- Manage virtual networking including multiple NICs, Load Balancing and Fail-over
- Create vNetwork Distributed Switches
- Configure Jumbo Frames the right way for iSCSI
- Configure Roles, Privileges and Permissions
- Monitor Tasks, Events and Alarms
- Configure Clusters for HA and DRS
- Use vMotion
- Implement Distributed Resource Scheduling (DRS)
- Implement High Availability
- Implement and use Distributed Power Management (DPM)
- Manage resources with Resource Pools
- Configure and use the VMware vCenter Update Manager (VUM) to patch ESXi 6.0 / 6.5 hosts and Virtual Machines
- Backup VMs using VMware the vStorage API for Data Protection (formerly VCB)
- Utilize and integrate 3rd Party Tools into the datacenter environment
- Command line management of vSphere
- Monitor performance using advanced tools and commands

Each objective will be reinforced with over 80 hands-on Step-by-Step Labs (SBS LABS)!

Who should attend?

Administrators who are responsible for a VMware vSphere™ 6.0 / 6.5 environment.

Prerequisites:

The VMware® vSphere™ 6.0 / 6.5 Infrastructure Deployment Boot Camp is intended for IT professionals **experienced with Windows Server and TCP/IP Networking** as well as some Windows or Linux Command Line use.

Outline:

- Module 1.** Introduction
 - 1.1. What you will find in this book
 - 1.2. Our equipment
- Module 2.** Grounds for Virtualization and Cloud Computing
 - 2.1. Public, Private and Hybrid Clouds
 - 2.2. Virtualization defined
 - 2.3. What's in it for me?
 - 2.4. What is a hypervisor?
 - 2.5. Hypervisor Classifications
 - 2.6. Comparison of production hypervisors
- Module 3.** VMware® vSphere™ 6.0 / 6.5
 - 3.1. What is VMware® vSphere™?
 - 3.2. VMware® vSphere™ Components
 - 3.3. What's new in VMware® vSphere™ 6.0 / 6.5
- Module 4.** Installing ESXi
 - 4.1. Where should I get the ESXi ISO
 - 4.2. Disk based or Diskless install?
 - 4.3. Intelligent Platform Management Interface (IPMI / iLO / iDRAC)
 - SBS LAB 1.** Accessing your server with IPMI Remote Console



- SBS LAB 2.** Installing ESXi 6.0 / 6.5
- SBS LAB 3.** Using ESXi 6.0 / 6.5 Diagnostic Consoles
- SBS LAB 4.** Initial configuration using the DCUI (Console)
- SBS LAB 5.** Disabling IPv6 when it is not required
- SBS LAB 6.** Accessing the ESXi *Embedded Host Client* (Replacement for the Windows Client)
- SBS LAB 7.** Connecting to a standalone ESXi Host
- Module 5.** Time in a vSphere Environment
 - 5.1.** NTP (Linux) Time
 - 5.2.** Windows Time
 - SBS LAB 8.** ESXi and NTP
- Module 6.** Active Directory and ESXi / vSphere
 - SBS LAB 9.** Joining ESXi to Active Directory
- Module 7.** Command Line Administration of ESXi
 - SBS LAB 10.** When is SSH appropriate – use cases
 - SBS LAB 11.** Remote command line with Putty and SSH
 - SBS LAB 12.** Validating ESXi Host configurations at the command line with SSH
 - SBS LAB 13.** Validating Time configuration on your ESXi Host
 - 7.2.** The ESXCLI Command Set
 - SBS LAB 14.** Run three commands with ESXCLI
 - 7.3.** The vim-cmd Command Set
 - SBS LAB 15.** Using vim-cmd
 - SBS LAB 16.** Command Line patching of ESXi host with: esxcli and vim-cmd
 - 7.4.** The vSphere Command Line Interface (vCLI)
 - SBS LAB 17.** Installing the via
 - SBS LAB 18.** Running commands with the via
 - 7.5.** SAN Jumpstart
 - SBS LAB 19.** SAN Jumpstart
 - 7.6.** Final Preparation of a diskless ESXi installation
 - SBS LAB 20.** Relocating ESXi log files to persistent storage
 - SBS LAB 21.** Advanced Logging Behavior
 - SBS LAB 22.** Redirecting the ESXi scratch partition
- Module 8.** Virtual Machines
 - 8.1.** The Virtual Machine Remote Console
 - 8.2.** Windows Desktop VMs
 - SBS LAB 23.** Building a Windows 7 VM
 - SBS LAB 24.** VMware Tools
 - 8.3.** Mission Critical VMs
 - SBS LAB 25.** Windows Server 2012
 - SBS LAB 26.** VMware tools for w2k12
 - 8.4.** Linux Virtual Machines
 - SBS LAB 27.** Linux from the ground up
 - SBS LAB 28.** Open-VM Tools
 - 8.5.** Virtual Appliances
 - SBS LAB 29.** Deploy Scientific Linux Virtual Appliance deployment
 - SBS LAB 30.** Export/Create Virtual Appliance from Linux VM
 - 8.6.** Virtual Machine File Types
 - SBS LAB 31.** Virtual machine Files and Folders
 - SBS LAB 32.** Files and Folders using Putty
 - 8.7.** Managing Virtual Machine Disks - vmkfstools command
 - SBS LAB 33.** Using vmkfstools
 - 8.8.** VM Configuration Parameters



- SBS LAB 34. Typematic Resolution
 - 8.9. Timekeeping in Virtual Machines
 - SBS LAB 35. Disable Timekeeping for Windows Server VM
 - 8.10. Understanding Snapshots
 - SBS LAB 36. Creating, Deleting, and Consolidating Snapshots
- Module 9.** vCenter Server
 - 9.1. vCenter Server Appliance (vCSA)
 - SBS LAB 37. Installing the vCSA
 - SBS LAB 38. Downloading log file bundles
 - SBS LAB 39. Connecting via SSH
 - SBS LAB 40. Backing up the Postgres database
 - 9.2. vCenter Consoles, Clients and connections
 - SBS LAB 41. SSH Connection to vCenter
 - SBS LAB 42. Virtual Appliance Management Interface (VAMI) Web console
 - SBS LAB 43. vCenter Server HTML5 Web Client – experimental
 - SBS LAB 44. vCenter Server Flash Web Client – supported for production use
- Module 10.** vSphere Management With vCenter Server
 - SBS LAB 45. Adding AD as LDAP ID Source
 - SBS LAB 46. Initial Global Permission assignment
 - SBS LAB 47. Adding ESXi server(s)
 - SBS LAB 48. Licensing
 - SBS LAB 49. Disabling SSH alarm
 - SBS LAB 50. Configuring vCenter to send and receive email
 - 10.2. Scheduled Tasks
 - SBS LAB 51. Scheduled Tasks
 - 10.3. Alarms
 - SBS LAB 52. Cresting an Alarm for one Inventory Item
 - SBS LAB 53. Creating an Alarm for the whole environment
- Module 11.** Virtual Networking
 - 11.1. 802.2 Networking Terms
 - 11.2. Virtual Switches
 - SBS LAB 54. Moving a VM between Standard switches
 - 11.3. VLANS
 - SBS LAB 55. Using VLANS
 - 11.4. Best Practices Network Configuration
 - SBS LAB 56. Add physical NICs and create redundancy
 - SBS LAB 57. Create separate network for non-management VMs (production)
 - 11.5. Standard vSwitch Properties
 - SBS LAB 58. Security policy
 - SBS LAB 59. Set Load Balancing
 - SBS LAB 60. Set Failover Policy
 - 11.6. vNetwork Distributed Switches (vDS)
 - SBS LAB 61. Create a vDS and Port Group
 - SBS LAB 62. Migrate VMs to vDS
 - SBS LAB 63. Add Port Group to vDS
 - SBS LAB 64. vDS Security, Traffic Shaping, and Load Balancing
 - SBS LAB 65. Remove vDS
- Module 12.** The VMkernel port group
 - 12.1. What is a VMkernel in reality?
 - 12.2. Properties of the VMkernel
 - SBS LAB 66. Create Redundant iSCSI Network Connections



SBS LAB 67. Set vSwitch Load Balancing for compliance with vSphere Port Binding requirements

Module 13. vSphere Storage

- 13.1. Terms
- 13.2. Redundant Array of Independent Disks (RAID)
- 13.3. Local Storage
- 13.4. Virtual SAN (HP VSA, VSA)
- 13.5. Network Attached Storage (NAS)
 - SBS LAB 68.** Add NFS Share
- 13.6. SAN Storage
- 13.7. Presenting Block Storage to vSphere
 - SBS LAB 69.** Add iSCSI SAN Storage Adapter
 - SBS LAB 70.** Set Port Binding for iSCSI
- 13.8. VMFS File System
 - SBS LAB 71.** Formatting a LUN as VMFS 5
 - SBS LAB 72.** Setting the Path Selection Policy (PSP) for one LUN (GUI)
 - SBS LAB 73.** Setting the default Path Selection Policy (PSP) for all LUNs (CLI)
 - SBS LAB 74.** Changing the Threshold for Round Robin (CLI)

Module 14. VMware HA and DRS Clusters

- 14.1. Reasons for clustering
- 14.2. DRS and DPM
- 14.3. High Availability (HA)
- 14.4. vMotion and Fault Tolerance (FT)
- 14.5. VMkernel interfaces
 - SBS LAB 75.** Create vmkernel interface for vMotion and FT
 - SBS LAB 76.** Join Class data center
 - SBS LAB 77.** Test vMotion
 - SBS LAB 78.** Create HA and DRS cluster
 - SBS LAB 79.** Advanced cluster parameters

Module 15. vSphere Fault Tolerance (FT)

- SBS LAB 80.** Enabling FT on a VM
- 15.2. Storage DRS
 - SBS LAB 81.** Create a Storage DRS luster
 - SBS LAB 82.** Demo Storage Distributed Resource Scheduler (sDRS)
- 15.3. Distributed Power Management (DPM)
 - SBS LAB 83.** Configure DPM
- 15.4. vMotion Troubleshooting
- 15.5. Diagnose vMotion Network Errors
- 15.6. HA Troubleshooting
- 15.7. HA Slot Calculations

Module 16. Advanced vSphere Permissions, Cloud Computing and Resource Pools

- 16.1. Understanding vSphere Roles and Privileges
 - SBS LAB 84.** Create a vSphere Role for users/groups
- 16.2. Understanding Resource Pools
 - SBS LAB 85.** Create Resource Pool(s)
- 16.3. Understanding vSphere Permissions
 - SBS LAB 86.** Apply vSphere user-defined Role to a Resource Pool
 - SBS LAB 87.** Apply vSphere user-defined Role to a vNetwork (Port Group)
 - SBS LAB 88.** Apply vSphere user-defined Role to a Storage Volume

Module 17. Virtual Machine Deployment Techniques

- 17.1. Templates and Clones
 - SBS LAB 89.** Create a vCenter Clone



- SBS LAB 90. Use vSphere Customization Specification (Sysprep)
 - SBS LAB 91. Convert to template
 - SBS LAB 92. Deploy a new VM from Template
 - 17.2. Preparing VMs for production use
 - SBS LAB 93. Extending a VM disk live
 - SBS LAB 94. Adding a disk to a mission critical Server
 - SBS LAB 95. Static IP and domain join
 - SBS LAB 96. Creating proper service account
- Module 18. vSphere Health and Continuity
 - SBS LAB 97. ESXi Host backup
 - SBS LAB 98. Gather health info with RVTools
- Module 19. Resource Management
 - 19.1. Memory Conservation Techniques
 - 19.2. Transparent Page Sharing
 - 19.3. Memory Ballooning
 - 19.4. ESXi Memory Swapping
 - 19.5. CPU Management
 - 19.6. CPU Scheduling Affinity
 - 19.7. Shares, Reservations, and Limits
 - SBS LAB 99. Test Shares, Reservations and limits using CPU Busy
- Module 20. Performance Charts and Monitoring
 - 20.1. Metrics and Thresholds
 - 20.2. Using Performance Charts
- Module 21. Resource Pools
 - SBS LAB 100. Create Resource Pool(s)
 - SBS LAB 101. Advanced Permissions for a Resource Pool
- Module 22. Backup Techniques for a Virtualized Data Center
 - 22.1. Third Party Backup in vSphere
 - SBS LAB 102. Configure a Windows server as vSphere
 - SBS LAB 103. Installing Veeam Backup & Replication
 - SBS LAB 104. Configure Veeam
 - SBS LAB 105. Configuring a backup job
 - SBS LAB 106. Restoring from a backup
- Module 23. Appendix A – Useful Tools
 - 23.1. Notepad++
 - SBS LAB 107. SBS LAB – Installing Notepad++
 - 23.2. PuTTY
 - 23.3. WinSCP
 - SBS LAB 108. SBS LAB – Installing WinSCP
 - 23.4. Gparted
 - SBS LAB 109. SBS LAB – Using Gparted
 - 23.5. RVTools
 - SBS LAB 110. SBS LAB – Installing RVTools
 - 23.6. Classic Shell
 - SBS LAB 111. SBS LAB – Classic Shell
 - 23.7. IOmeter
 - SBS LAB 112. SBS LAB – Using IOmeter to Analyze SAN Performance
 - 23.8. Wireshark
 - SBS LAB 113. SBS LAB – Analyzing the Network With Wireshark
 - SBS LAB 114. SBS LAB –Using Wireshark to Determine Traffic Origin/Destination
- Module 24. Appendix B – Terms
- Module 25. vCenter Server for Windows



- SBS LAB 115.** MSSQL 2k12 for VMware
- SBS LAB 116.** Database creation for vCenter Server
- SBS LAB 117.** ODBC DSN
- SBS LAB 118.** Installing vCenter Server
- Module 26.** Appendix E – VI Cheat Sheet
- Module 27.** Appendix F – List of Available Command Structures
- Module 28.** Complete List of ESX CLI Options
- Module 29.** Appendix G – VMware High Availability Advanced Options
- Module 30.** Appendix H – VMware DRS Advanced Options
- Module 31.** Appendix I – Joining the vCenter Server Appliance to an AD Domain
- Module 32.** Appendix J – Shortcuts to Microsoft Console Commands
- Module 33.** Appendix K – Valid NTP Servers
- Module 34.** Appendix L – esxtop
 - 34.1.** esxtop Metrics and Thresholds
 - 34.2.** Options for Running esxtop
 - SBS LAB 119.** SBS LAB – Using esxtop to Watch and diagnose CPU Metrics
 - SBS LAB 120.** SBS LAB – Using esxtop to Watch and diagnose Memory Metrics
 - SBS LAB 121.** SBS LAB – Running esxtop in Batch Mode to Capture Results
 - SBS LAB 122.** SBS LAB – Viewing esxtop Captures in Perfmon
- Module 35.** Appendix M – Virtual Routing
 - SBS LAB 123.** Installing pfSense