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www.vmsources.com
1-866-644-7764

VMware® vSphere™ 5 ACCELERATED BOOT CAMP

In our **VMware® vSphere™ 5 *Accelerated* Boot Camp** we present Cloud Computing (A.K.A. "virtualization") in a logical, easy-to-absorb format. Each participant builds and manages ***their own*** complete VMware® vSphere™ 5 environment including ESXi 5, vCenter 5, SAN Storage, Virtual Machines, Virtual Appliances, Backup and more.

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***! 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™ 5 including:

- What's New in VMware® vSphere™ 5
- Planning and Design for VMware® vSphere™ 5
- Implementation with ESXi 5 and vCenter 5
- VMware® vSphere™ 5 Management
- Virtualize Business-Critical workloads with VMware® vSphere™ 5
- Cloud Control - "Own your cloud and manage it too!"
- Backup and Remediation VMware® vSphere™ - 5
- VMware® vSphere™ 5 Integrations, Tools and 3rd. Party

Our ***VMware® vSphere™ 5 Accelerated* Boot Camp** is the most comprehensive class we offer. In 50-hours of classroom instruction, each participant will gain a comprehensive understanding of ***Public, Private, and Hybrid Cloud Computing*** with VMware® vSphere™ 5. This course covers all the bases plus advanced management and emphasizes ***real world*** and Best Practice techniques and integrations for maintaining a production VMware® vSphere™ environment. This class is fully compatible with both vSphere 4 and vSphere 5!

All Labs will be done using our state-of-the-art VMware Hardware Compatibility List servers. Participants will learn not only vSphere management, but also ***real-world integrations*** and datacenter management scenarios which go far beyond the scope of other training programs.

The **VMware® vSphere™ 5 *Accelerated* Boot Camp** features over 60 interactive Step-By-Step Labs (SBS LAB ™), complete with detailed instructions, full-color documentation and screenshots of all steps. The book alone is sure to become one of the most valued reference materials in your library.

GOALS:

Participants will complete the ***VMware® vSphere™ 5 Accelerated* Boot Camp** with a comprehensive real world skill-set pertaining directly to Cloud Computing with VMware® vSphere™ 5. Each participant will have installed, managed, hardened and backed-up a

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VMware® vSphere™ 5 environment following industry-standard Best Practice techniques and using procedures which will translate directly to their professional environment.

COURSE OBJECTIVES:

- Install and configure ESXi, vCenter Server, vStorage API and VMware Data Protection
- Manage ESXi hypervisor security, firewall, SSH access and Active Directory
- Create and manage Virtual Machines and Appliances
- Connect to SAN Storage, manage storage paths, create VMFS Volumes
- Manage virtual networking including multiple NIC's, Load Balancing and Fail-over
- Configure Jumbo Frames the right way for iSCSI
- Use vNetwork Distributed Switches
- Configure Roles, Privileges and Permissions
- Use Host Profiles
- Monitor Tasks, Events and Alarms
- Perform migrations (P2V, V2V, V2P) both “hot” and “cold”
- Configure ESX Server Clusters
- Implement vMotion and Distributed Resource Scheduling
- Implement High Availability
- Implement and use Distributed Power Management
- Manage resources with Resource Pools
- Install and use the VMware vCenter Update Manager (VUM) to patch ESXi 5 hosts and Virtual Machines
- Backup VM's using VMware the vStorage API
- Utilize and integrate 3rd Party Tools into the datacenter environment
- Command line management of ESXi Servers using the Technical Support Mode and Remote Command Line interfaces
- Install and use the vSphere Management Assistant (vMA)
- Monitor performance using advanced tools and commands

PREREQUISITES:

The **VMware® vSphere™ 5 *Accelerated* 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.

CERTIFICATIONS

Participants may choose to take the Certified Virtualized Datacenter eXpert (CVDX ™) exam at no additional charge. The Certified Virtualized Datacenter eXpert (CVDX ™) certification is a ***100% hands-on practical exam***.

- The CVDX™ is the ***only*** practical certification and real-world proof of skills available for VMware vSphere
- Certifies real skills, not memorization!
- Candidates complete goals, it doesn't matter how, only the results matter

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- Real IaaS Cloud Technology used for Certification
- Certification, proof of certification, and post-certification resources provided

Qualifying candidates will receive their (CVDX ™) certificate and access to other resources within 2 weeks of qualification.

COURSE OUTLINE

I. Introduction and Overview
   i. SBS LAB - Connecting to your classroom resources

II. Cloud Computing and Virtualization
   1. Public, Private and Hybrid Clouds
   2. Virtualization defined
   3. What's in it for me?
   4. What is a hypervisor?
      i. Hypervisor Classifications
      ii. Comparison of production hypervisors

III. VMware® vSphere™
   1. What is VMware® vSphere™ ?
   2. VMware® vSphere™ Components
   3. What's new in VMware® vSphere™ 5

IV. Preparing to deploy VMware® vSphere™
   1. Server Hardware Configuration

V. Install ESXi (VMware® vSphere™ Hypervisor)
   i. SBS LAB - ESX Server Installation process
   ii. SBS LAB – View install logs
   iii. SBS LAB – Downloading files from ESX Server

VI. ESX hypervisor security, user authentication
   1. User accounts
      i. SBS LAB - Enabling remote access via SSH - "Technical Support Mode"
      ii. SBS LAB - Putty
      iii. SBS LAB - Log in via SSH
   2. The VMware® vSphere™ Client
      i. SBS LAB - Install VMware® vSphere™ Client
      ii. SBS LAB - Logging in to your ESX Server the first time

VII. Time In a VMware® vSphere™ Environment
   i. SBS LAB - Configure NTP on ESX with an External Stratum 1 time source

VIII. ESXi and Active Directory
   1. Directory-based authentication, Default user Groups
      i. SBS LAB - Join ESXi to Active Directory domain

IX. Virtual Machines
   1. Virtual Machine Concepts
      i. SBS LAB - Configuring a New Virtual Machine
      ii. SBS LAB - ISO Media location and connection

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iii. SBS LAB - Choosing a storage driver
iv. SBS LAB - Installing Server 2008

2. Student's choice VM
   i. SBS LAB - Build the VM of your choice (any supported OS!)
3. Virtual Machine Files
   i. SBS LAB - Virtual Machine Files and Extensions
4. Modifying Virtual Machines, Prepare VM for Production
   i. SBS LAB - VMware Tools
   ii. SBS LAB - Improving graphics performance by choosing WDDM video driver
   iii. SBS LAB – Editing Virtual Machine properties with the wizard
   iv. SBS LAB - Editing advanced Virtual Machine properties in the *.vmx file
   v. SBS LAB - using vmkfstools to Create Command Line Clones
   vi. SBS LAB - Add command line clone to Inventory

X. Virtual Machine Resource Allocation
1. Memory Management, Transparent Page Sharing, and Memory Ballooning
2. ESX Memory Swapping
   i. SBS LAB - Shares, Reservations and Limits
   ii. SBS LAB - Virtual Machine Performance charts
   iii. SBS LAB - Test virtual machine Resource Allocation with cpubusy script

XI. Virtual Networking
1. Standard vSwitch Properties
   i. General / Number of ports
   ii. Security Policy Exceptions
   iii. Traffic Shaping
   iv. NIC Teaming, Load Balancing, and Failover Detection
2. Port Groups (Connection Types)
3. VLAN's
4. Uplinks (Physical NIC's)
   i. Physical NIC Considerations
5. Super vSwitch Concept
6. Network Diagnostics and Recovery
   i. SBS LAB – Command Line Network Management
   ii. SBS LAB - Replacing a physical NIC on the fly using Technical Support Mode

XII. ESX Server SAN Storage and Multipathing
1. The VMFS filesystem
2. iSCSI SAN
   i. SBS LAB - Create a Jumbo Frames vmkernel connection
   ii. SBS LAB - iSCSI Port Binding
3. VMFS 3 and VMFS 5
   i. SBS LAB - Connecting to SAN
   ii. SBS LAB - Create a VMFS Volume
   iii. SBS LAB – Manage Storage Paths

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XIII. Operating System Migration (P2V, V2V, V2P, P2P)
1. Migration Methods, Techniques and Tools
   i. SBS LAB – Cold migration / Block-level migration
   ii. SBS LAB – Migration using VMware Converter

XIV. vCenter Server
1. vCenter Server Services
2. vCenter Requirements
3. vCenter Required Components
4. vCenter Required Ports
5. Preparing for a vCenter Server Installation
6. The vCenter Database
   i. SBS LAB – A "Best Practice" build of MS SQL for VMware
   ii. SBS LAB - vCenter Server Installation

XV. vCenter Management
1. Initial Configuration
   i. SBS LAB - Connecting to the vCenter Server
   ii. SBS LAB - Adding ESX Server(s) to vCenter
2. Tasks Events and Alarms
   i. SBS LAB - Tasks and Events
   ii. SBS LAB – Using Scheduled Tasks
   iii. SBS LAB - Create an alarm
3. Host Profiles
   i. SBS LAB – Create a Host Profile
   ii. SBS LAB – Working with Host Profiles
   iii. SBS LAB – Apply a Host Profile
4. vCenter Permissions
   i. SBS LAB - Create a vCenter Permission
   ii. SBS LAB – Apply a vCenter Permission
5. Templates and Clones
   i. SBS LAB - Enable Customization Specification
   ii. SBS LAB - Create a vCenter Clone
   iii. SBS LAB - Convert to Template
   iv. SBS LAB - Convert to Virtual Machine
   v. SBS LAB - Clone to Template

XVI. The VMware Update Manager
   i. SBS LAB – Installing and configuring VMware Update Manager (VUM)
   ii. SBS LAB – Creating an Update Baseline
   iii. SBS LAB – Update ESX Servers to most current build
   iv. SBS LAB – Create a Virtual Machine Baseline
   v. SBS LAB – Use VUM to update VMware Tools automatically

XVII. Performance Charts and Monitoring
1. Charts, Options and Counters

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- i. SBS LAB - Setting up Statistics
- 2. Using vCenter Performance Charts
  - i. SBS LAB - Demonstrate CPU Saturation
  - ii. SBS LAB - Examine Memory Utilization
  - iii. SBS LAB - Examine Network Utilization

XVIII. vMotion and Storage vMotion
- 1. vMotion requirements
  - i. SBS LAB - Storage vMotion in action
  - ii. SBS LAB - vMotion in Action

XIX. vCenter Clustering
- 1. Reasons for Clustering
- 2. Types of VMware® vSphere™ Clusters
  - i. VMware Distributed Resource Scheduler (DRS)
  - ii. VMware Distributed Power Management (DPM)
- 3. Resource Pools
  - i. Usage Scenarios for Resource Pools
  - ii. SBS LAB - Create Resource Pool
- 4. VMware High Availability
  - i. Here's how HA works
  - ii. SBS LAB - Configuring Clusters for DRS and HA
  - iii. HA Considerations
  - iv. SBS LAB - HA Options

XX. Distributed Power Management (DPM)
- 1. DPM Requirements and Considerations
  - i. SBS LAB - Configuring DPM

XXI. Backup Techniques for a Virtualized Datacenter
- 1. VMware vStorage API
  - i. SBS LAB - Configure Windows optimally for backups with the vStorage API
  - ii. SBS LAB - The vStorage API and Veeam Backup
  - iii. SBS LAB - VMware Data Recovery Appliance (a complete backup solution included with vSphere!

XXII. Tools and Integrations for a Virtualized Datacenter
- 1. Disk Partitioning
  - i. SBS LAB – Tools for expanding a System Disk
- 2. Management Monitoring and Reporting Tools
  - i. SBS LAB – Automating the creation of Reports
  - ii. SBS LAB – Advanced Management and Performance Monitoring

XXIII. Using the Remote Command Line to manage ESXi
- 1. A summary of Remote Commands
- 2. Considerations for Remote Command Line management
  - i. SBS LAB – Deploy the vMA
  - ii. SBS LAB – Configure The vMA
  - iii. SBS LAB – Run a sample script on the vMA

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iv. SBS LAB - vmkfstools
v. SBS LAB – The 'esxcfg' family of commands
vi. SBS LAB – Using 'esxtop' for performance monitoring
vii. SBS LAB – Using 'vmware-cmd' to capture performance data
XXIV. vNetwork Distributed Switch
1. Versions and use cases
i. SBS LAB - Migrate Networking to a vNetwork Distributed Switch

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