Course Title: VMware vSphere: Optimize & Scale

Course Description:
For experienced VMware vSphere® personnel, teaches advanced skills for configuring and maintaining a highly available and scalable virtual infrastructure.

Course Prerequisite(s):
VMware vSphere: Install, Configure, Manage

Course Objectives:
By the end of the course, you should be able to do the following:
- Configure and manage ESXi networking and storage for a large and sophisticated enterprise
- Manage changes to the vSphere environment
- Optimize the performance of all vSphere components
- Troubleshoot operational faults and identify their root causes
- Use VMware vSphere® ESXi™ Shell and VMware vSphere® Management Assistant to manage vSphere
- Use VMware vSphere® Auto Deploy™ to provision ESXi hosts

Certification Notes:
Prepares the student for the VMware Certified Advanced Professional – Datacenter Administration [V6] certification (VCAP6-DCA). Completion of this course also satisfies the prerequisite for taking the VMware Certified Professional 6 exam.

Textbook: (provided)
VMware vSphere: Optimize and Scale [V6] – English Kit

Lesson Plan – by week or session
Session 1:
VMware Management Resources
- Deploy and configure vSphere Management Assistant
- Configure ESXi technical support mode and SSH access
- Use the esxcli, vicfg, and vmware-cmd commands
- Review ESXi and vCenter Server log files

Performance in a Virtualized Environment
- Review the vSphere performance troubleshooting methodology
- Explain software and hardware virtualization techniques and their effects on performance
- Use vSphere performance monitoring tools

Session 2:
Network Scalability
- Create, configure, and manage vSphere distributed switches
- Migrate virtual machines from standard switches to distributed switches
- Explain distributed switch features such as private VLANs, VMware vSphere® Network I/O Control, port mirroring, LACP, QoS tagging, and NetFlow

**Network Optimization**
- Explain the performance features of network adapters
- Explain the performance features of vSphere networking
- Monitor key network performance metrics
- Use vSphere Management Assistant to manage virtual network configurations
- Troubleshoot common network performance problems

Session 3: **Storage Scalability**
- Explain vSphere storage APIs for array integration and storage awareness
- Configure and assign virtual machine storage policies
- Configure VMware vSphere® Storage DRS™ and VMware vSphere® Storage I/O Control

**Storage Optimization**
- Diagnose storage access problems
- Explain how storage protocols, VMware vSphere® VMFS configuration, load balancing, and queuing affect performance
- Configure vSphere® Flash Read Cache™
- Monitor key storage performance metrics
- Use vSphere Management Assistant to manage virtual storage
- Troubleshoot common storage performance problems

Session 4 **CPU Optimization**
- Explain the CPU scheduler operation, NUMA support, and other features that affect CPU performance
- Monitor key CPU performance metrics
- Troubleshoot common CPU performance problems

**Memory Optimization**
- Explain ballooning, memory compression, and host swapping techniques for memory reclamation when memory is overcommitted
- Monitor key memory performance metrics
- Troubleshoot common memory performance problems

Session 5: **Virtual Machine and Cluster Optimization**
- Describe performance guidelines for virtual machines, resource allocation settings, VMware vSphere® Distributed Resource Scheduler™ clusters, resource pools, and VMware vSphere® High Availability admission control policies
- Troubleshoot virtual machine power-on failures
- Troubleshoot vSphere cluster problems

**Host and Management Scalability**
- Explain VMware vSphere® Distributed Power Management™
- Use Host Profiles to manage ESXi configuration compliance
- Use VMware vSphere® PowerCLI™ to perform vSphere administrative tasks
- Use Image Builder to create an ESXi installation image
• Use vSphere Auto Deploy to provision ESXi hosts