CTI 240: VIRTUALIZATION ADMINISTRATION I

COURSE DESCRIPTION:

Prerequisites: None
Corequisites: None

This course covers datacenter virtualization concepts. Topics include data storage, virtual network configuration, virtual machine and virtual application deployment. Upon completion, students should be able to perform tasks related to virtual machine and hypervisor installation and configuration.
Course Hours per Week: Class, 1. Lab, 4. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

A. Install virtual machines in a datacenter/hypervisor environment.
    1. Install hypervisor management clients.
    2. Create virtual machines, and install a guest OS and management tools.
    3. Manage and modify virtual machines.
    4. Clone a VM, create a VM template, and deploy VMs from a template including import and export from an OVF.
B. Configure virtual machines in a datacenter/hypervisor environment.
    1. Deploy hypervisors.
    2. Demonstrate an understanding of hypervisor compatibility and configuration.
    3. Demonstrate an understanding of shared storage, including SANs and NAS.
    4. Identify the components of virtual networking. Create virtual switches. Create and manage NIC teaming, VLANs, and private VLANs.
C. Manage virtual machines in a datacenter/hypervisor environment.
    1. Install and configure a hypervisor manager database and server.
    2. Demonstrate an acceptable usage of hypervisor management features.
    3. Configure storage at the hypervisor and VM layer.
    4. Describe different types of clustering and high availability functionality.
    5. Demonstrate an understanding of different components of business continuity.

OUTLINE OF INSTRUCTION:

I. Introduction to vSphere: Install, Configure, Manage
    A. ESXi hosts and vCenter Server
    B. Managing ESXi hosts and virtual machines with vCenter

II. Software-Defined Data Center
    A. Introduction to Software-Defined Data Center

B. vSphere Client
C. Overview of ESXi

III. Creating Virtual Machines
A. Virtual Machine Concepts
B. Creating a Virtual Machine

IV. vCenter Server
A. vCenter Server Architecture
B. Deploying vCenter Server Appliance
C. vSphere Web Client
D. Managing the vCenter Server Inventory

V. Configuring and Managing Virtual Networks
A. Introduction to vSphere Standard Switches
B. Configuring Standard Switch Policies
C. Introduction to vSphere Distributed Switches

VI. Configuring and Managing Virtual Storage
A. Storage Concepts
B. iSCSI Storage
C. NFS Datastores
D. VMFS Datastores
E. Virtual SAN Datastores
F. Virtual Volumes

VII. Virtual Machine Management
A. Creating Templates and Clones
B. Modifying Virtual Machines
C. Creating Virtual Machine Snapshots
D. Creating vApps
E. Working with Content Libraries

VIII. Resource Management and Monitoring
A. Virtual CPU and Memory Concepts
B. Resource Controls and Resource Pools
C. Monitoring Resource Use
D. Using Alarms
E. vRealize Operations Manager

IX. High Availability and Fault Tolerance
A. Introduction to vSphere HA
B. vSphere HA Architecture
C. Configuring vSphere HA
D. Introduction to vSphere Fault Tolerance

E. vSphere Replication and vSphere Data Protection

X. Host Scalability
   A. Describe functions of Distributed Resource Scheduler cluster
   B. Create vSphere DRS cluster
   C. View information about a DRS cluster
   D. Remove a host from a cluster

XI. Updates and Host Maintenance
   A. Introduction to vSphere Update Manager and Patch Management
   B. Host Profiles

XII. Installing vSphere Components
   A. Installing ESXi
   B. Installing vCenter Server