

## Description:

This fast-paced, high energy, hands-on course provides not only the foundation needed for a top performing software-defined data center, it also provides the latest in virtualization and cloud technologies which gives the engineer or administrator the knowledge and skills needed to design and manage the datacenter for tomorrow's needs.



This course will cover everything from design, installation, configuration, best practices, performance monitoring, and just about everything in between!



**Annual Salary Potential \$76,000 AVG/year**

### Key Course Information

**Live Class Duration:** 4 Days

**CEUs:** 32

**Language:** English

**Class Formats Available:**

Instructor Led

Self-Study

Live Virtual Training

**Suggested Prerequisites:**

- Mile 2 C)HT and C)OST or equivalent knowledge

OR

- 24 months experience with Microsoft or Linux servers

### Modules/Lessons

**Module 1** - Software Defined Datacenter

**Module 2** - Installing and Managing ESXi

**Module 3** - Installing and Managing vCenter

**Module 4** - Configuring and Managing a vSwitch

**Module 5** - Configuring and Managing Storage

**Module 6** - Configuring and Managing Virtual Machines

**Module 7** - Configuring and Managing Distributed Switches

**Module 8** - vSphere Management

**Module 9** - Backup and Disaster Recovery Implementation and Management

**Module 10 – 12:** See Detailed Outline below

### Hands-On Labs

**Lab 1** – Installing the Hypervisor

**Lab 2** – ESXi Management

**Lab 3** – Managing ESXi with vSphere

**Lab 4** – SSH Access

**Lab 5** – Syslog Settings

**Lab 6** – Controlling User Access

**Lab 7** – Active Directory Integration

**Lab 8** – Managing ESXi Firewall

**Lab 9** – Attach ESXi to host via vSphere

**Lab 10** – Getting around the vSphere Web Client

**Lab 11** – Setting NTP on ESXi Host

**Lab 12** – Setup vCenter Appliance

**Lab 13** – Create Virtual Switches

**Lab 14– 39:** See Detailed Outline Below

## Upon Completion

Upon completion, students will have learned the pros, cons, best practices, and skills of virtualization. They will be able to design, secure, deploy, and manage virtual machines and be prepared to take the C)VE Exam.

## Who Should Attend

- Virtualization and Cloud Administrators and Engineers
- Systems Administrators
- Cloud Security Engineers
- Systems Engineers

## Accreditations



## Exam Information

The Certified Virtualization Engineer exam is taken online through Mile2's Learning Management System and is accessible on your Mile2.com account. The exam will take approximately 2 hours and consist of 100 multiple choice questions.

A minimum grade of 70% is required for certification.

## Re-Certification Requirements

All Mile2 certifications will be awarded a 3-year expiration date.

There are two requirements to maintain Mile2 certification:

- 1) Pass the most current version of the exam for your respective existing certification
- 2) Earn and submit 20 CEUs per year in your Mile2 account.

## Course FAQ's

**Question:** Do I have to purchase a course to buy a certification exam?

Answer: No

**Question:** Do all Mile2 courses map to a role-based career path?

Answer: Yes. You can find the career path and other courses associated with it at [www.mile2.com](http://www.mile2.com).

**Question:** Are all courses available as self-study courses?

Answer: Yes. There is however 1 exception. The Red Team vs Blue Team course is only available as a live class.

**Question:** Are Mile2 courses transferable/shareable?

Answer: No. The course materials, videos, and exams are not meant to be shared or transferred.

## Course and Certification Learning Options



## Detailed Outline:

### Chapter 1 – Software Defined Datacenter

1. Overview of Virtualization
2. Overview of Public and Private Cloud
3. How it all fits together
  - a. Designing the Datacenter for today and tomorrow
  - b. Key technologies for a virtual and private cloud datacenter

### Chapter 2 – Installing and Managing ESXi

1. Planning for the Installation
  - a. Installation Options
  - b. Auto Deploy
2. Installing ESXi (Hands On Lab (HOL))
  - a. Using the DCUI (HOL)
  - b. ESXi Configuration Settings (HOL)
    - i. Hostname Resolution (HOL)
    - ii. NTP (HOL)
    - iii. IP Address (HOL)
    - iv. Syslog (HOL)
3. Accessing ESXi
  - a. vSphere Client (HOL)
    - i. !! THE NEW ONE !!
    - ii. Configuration Settings
  - b. Management User Interface (MUI) (HOL)
  - c. SSH Access (HOL)
4. Managing ESXi
  - a. esxcli and its many uses
  - b. Controlling User Access (HOL)
  - c. Active Directory Integration (HOL)
  - d. Managing the Firewall (HOL)
  - e. Troubleshooting

### Chapter 3 – Installing and Managing vCenter

1. vSphere/vCloud Licensing
2. vCenter Requirements
  - a. Minimum Specifications
  - b. Database Requirements
3. vCenter Architecture
4. Planning vCenter Installation (HOL)
  - a. Embedded Platform Services Controller
  - b. External Platform Services Controller

5. vCenter Single Sign-On (HOL)
6. vSphere Web Client (HOL)
7. Certificate Authority (HOL)
  - a. Certificate Store
8. vCenter Overview of Capabilities (HOL)
  - a. Inventories
    - i. Inventory Lists
    - ii. Hosts and Clusters
    - iii. VMs and Templates
      1. VM Templates in Folders
    - iv. Storage
    - v. Networking
    - vi. Hybrid Cloud
    - vii. vCenter Orchestrator
  - b. Monitoring
    - i. Task Console
    - ii. Event Console
    - iii. vCenter Operations Manager
    - iv. Host Profiles
    - v. VM Storage Policies
    - vi. Customization Specification Manager
    - vii. VM Placement Policies
  - c. Administration
    - i. Roles
    - ii. System Configuration
    - iii. Licensing
  - d. Policies and Profiles
  - e. Virtual Datacenters
  - f. Content Libraries
9. Managing vCenter related to general tasks (HOL)
10. Troubleshooting vCenter Server and Database
11. vCenter Appliance (HOL)
  - a. Migrating to the vCenter Appliance
  - b. Requirement
  - c. New Features

## Chapter 4 – Configuring and Managing a vSwitch

1. Virtual Switch Types, Connections and Identification
2. Physical NIC configuration
3. vSwitch Features (HOL)
  - a. Port Types (HOL)

- b. Cisco Discovery Protocol
- c. VLAN's (HOL)
- d. Security Settings (HOL)
- e. Traffic Shaping
- f. NIC Teaming (HOL)
- g. Load Balancing Best Practices
4. Physical Switch Configuration
5. Using the CLI to create and manage vSwitches (HOL)

## Chapter 5 – Configuring and Managing Storage

1. Storage Overview
  - a. iSCSI, Fiber Channel and NAS
2. vStorage API's
3. Storage Multipathing (HOL)
4. Storage Configuration
  - a. iSCSI, FC and NAS (HOL)
5. Monitoring Storage (HOL)
6. Storage CLI Commands (HOL)
7. Troubleshooting Software iSCSI
8. Virtual Machine File System (HOL)
9. vVols
10. Raw Device Mapping (HOL)
11. Solid State Disks
12. Storage Views (HOL)

## Chapter 6 – Configuring and Managing Virtual Machines

1. Overview of VM Hardware
  - a. VMware® Tools (HOL)
2. Creating a VM (HOL)
3. Clones (HOL)
4. Templates (HOL)
5. Virtual Appliances (HOL)
6. VMware® Converter (HOL)
7. Managing the VM (HOL)
8. Snapshots (HOL)
9. Troubleshooting the VM

## Chapter 7 – Configuring and Managing Distributed Switches

1. DvSwitch Design Concepts
2. Physical Switch Configuration

3. DvSwitch Features
  - a. Standard features (HOL)
    - i. Port Types
    - ii. Port Groups (HOL)
      1. Port Binding
    - iii. Discovery Protocols (HOL)
    - iv. VLAN's (HOL)
    - v. Security Settings (HOL)
    - vi. Traffic Shaping
    - vii. NIC Teaming (HOL)
    - viii. Load Balancing
  - b. Advanced features
    - i. Network I/O Control (HOL)
    - ii. Port Mirroring
    - iii. NetFlow
    - iv. LACP Support
    - v. Private VLANs (HOL)
    - vi. Traffic Filtering and Tagging (HOL)
  - c. Uplink Settings
4. Migrating from vSwitch's to a DvSwitch (HOL)
5. Using the CLI to create and manage a DvSwitch

## Chapter 8 – vSphere Management

1. vMotion (HOL)
2. Storage vMotion (HOL)
3. vCenter Host Cluster (HOL)
  - a. Covers all Cluster Features
4. Distributed Resource Scheduler (HOL)
5. Using vApps (HOL)

## Chapter 9 – Backup and Disaster Recovery Implementation and Management

1. High Availability (HOL)
  - a. Fault Domain Manager
2. Virtual Machine Fault Tolerance
3. Microsoft Clustering
  - a. How it works
  - b. Its uses in a vSphere Infrastructure
4. Backup Solutions
  - a. vSphere Data Protection (HOL)
  - b. Third Party Solutions

5. Disaster Recovery Solutions
  - a. vCenter Site Recovery Manager
  - b. Third Party Solutions

## **Chapter 10 – vSphere Upgrading and Patch Management**

1. Why do we worry about patching and upgrading?
2. Patching the ESXi host (HOL)
  - a. Stand Alone
  - b. Using Update Manager (HOL)
3. Patching Virtual Appliances
4. Patching Virtual Machines
5. Planning the Upgrade
6. Performing the Upgrade

## **Chapter 11 – vSphere Monitoring and Performance (Availability Constraints)**

1. Configuring ESXi resources for best performance (HOL)
  - a. Understanding the resources such as CPU, Memory and Disk
2. Configuring the VM for best performance (HOL)
3. Monitoring the vSphere and vCloud Infrastructure (HOL)
  - a. vCenter Performance Tab (HOL)
  - b. esxtop (HOL)
4. Configuring Alarms (HOL)
5. Using Resource Pools properly (HOL)
6. Troubleshooting performance issues
7. vSphere Logs (HOL)

## **Chapter 12 – vSphere Native Security for Admins**

1. ESXi Native Controls
  - a. Active Directory Integration (HOL)
  - b. Managing the Firewall (HOL)
  - c. Logging
  - d. Lock Down Mode
  - e. Acceptance Level
2. vCenter Native Controls
  - a. Encrypted vMotion
3. VM Native Controls
  - a. Security out of the Box

## Detailed Lab Outline:

- Lab 1** – Installing the Hypervisor
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- Lab 13** – Create Virtual Switches
- Lab 14** – Create Virtual Switch from the CLI
- Lab 15** – Configuring storage via the GUI
- Lab 16** – iSCSI Storage Verification using CLI
- Lab 17** – configuring the NFS Datastore
- Lab 18** – Working with VMFS
- Lab 19** – Setting up and Installing a VM
- Lab 20** – Working with Virtual Appliance OVF
- Lab 21** – Working with Cloning and Templates
- Lab 22** – Extending a vmdk
- Lab 23** – Rename Virtual Machine Files
- Lab 24** – Using Snapshots
- Lab 25** – Setup an RDM
- Lab 26** – VMware converter
- Lab 27** – Create Virtual Distributed Switch
- Lab 28** – Configuring Network I/O Control
- Lab 29** – Configuring PVLAN
- Lab 30** – Migrating from a vSwitch to a vDSwitch
- Lab 31** – Using vMotion
- Lab 32** – Using vMotion to Migrate VMs
- Lab 33** – Using Advanced vMotion
- Lab 34** – Create a DRS Cluster
- Lab 35** – Monitoring Performances



**Lab 36** – Creating Alarms

**Lab 37** – High Availability

**Lab 38** – Setting up and using vDP

**Lab 39** – Update Manager