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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Intermediate

Course Duration: 5 Days

Understanding Cisco Data Center Foundations v1.0 (DCFNDU)

About this course:

In this 5-day course, Understanding Cisco Data Center Foundations (DCFNDU) v1.0, students will gain the foundational knowledge and skills needed to configure Cisco data center technologies including: networking, virtualization, storage area networking, and unified computing.

Students will be introduced to Cisco Application Centric Infrastructure (Cisco ACI), automation, and cloud computing. You will get hands-on experience with configuring features on Cisco Nexus Operating System (Cisco NX-OS) and Cisco Unified Computing System (Cisco UCS).

This course will help students:

- Prepare for entry-level job roles in the high-demand area of data center environments
- Prepare for courses that support the Cisco Certified Network Professional Data Center certification exams
- Gain knowledge and hands-on skills through Cisco’s unique combination of lessons and hands-on practice using enterprise-grade Cisco learning technologies, data center equipment, and software

Course Objective:

Upon completing this course, the learner will be able to meet these overall objectives:

- Describe the foundations of data center networking
- Describe Cisco Nexus products and explain the basic Cisco NX-OS functionalities and tools
- Describe Layer 3 first-hop redundancy
- Describe Cisco Fabric Extender (FEX) connectivity
- Describe Ethernet port channels and virtual port channel (VPCs)
- Introduce switch virtualization, machine virtualization, and network virtualization
- Compare storage connectivity options in the data center
- Describe Fibre Channel communication between the initiator server and the target storage
- Describe Fibre Channel zone types and their uses
- Describe N-Port Virtualization (NPV) and N-Port Identifier Virtualization (NPIV)
- Describe data center Ethernet enhancements that provide a lossless fabric
- Describe Fibre Channel over Ethernet FCoE
- Describe data center server connectivity
- Describe Cisco UCS Manager
- Describe the purpose and advantages of APIs
- Describe Cisco ACI
- Describe the basic concepts of cloud computing

Audience:

The primary audience for this course is as follows:

- Data center administrators
- Data center engineers
- Systems engineers
- Server administrators

- Network managers
- Cisco integrators and partners

Prerequisite:

The knowledge and skills that the learner should have before attending this course are as follows:

- Good understanding of networking protocols
- Good understanding of the VMware environment
- Basic knowledge of Microsoft Windows operating systems

Course Outline:

Module 1: Describing the Data Center Network Architectures

- Cisco Data Center Architecture Overview
- Three-Tier Network: Core, Aggregation, and Access
- Spine-and-Leaf Network
- Two-Tier Storage Network

Module 2: Describing the Cisco Nexus Family and Cisco NX-OS Software

- Cisco Nexus Data Center Product Overview
- Cisco NX-OS Software Architecture
- Cisco NX-OS Software CLI Tools
- Cisco NX-OS Virtual Routing and Forwarding

Module 3: Describing Layer 3 First-Hop Redundancy

- Default Gateway Redundancy
- Hot Standby Router Protocol
- Virtual Router Redundancy Protocol
- Gateway Load Balancing Protocol

Module 4: Describing Cisco FEX

- Server Deployment Models
- Cisco FEX Technology
- Cisco FEX Traffic Forwarding
- Cisco Adapter FEX

Module 5: Describing Port Channels and VPCs

- Ethernet Port Channels
- Virtual Port Channels
- Supported VPC Topologies

Module 6: Describing Switch Virtualization

- Cisco Nexus Switch Basic Components
- Virtual Routing and Forwarding
- Cisco Nexus 7000 Virtual Device Contexts (VDCs)
- VDC Types
- VDC Resource Allocation
- VDC Management

Module 7: Describing Machine Virtualization

- Virtual Machines
- Hypervisor
- VM Manager

Module 8: Describing Network Virtualization

- Overlay Network Protocols
- Virtual Extensible LAN (VXLAN) Overlay
- VXLAN Border Gateway Protocol (BGP) Ethernet VPN (EVPN) Control Plane
- VXLAN Data Plane
- Cisco Nexus 1000VE Series Virtual Switch
- VMware vSphere Virtual Switches

Module 9: Introducing Basic Data Center Storage Concepts

- Storage Connectivity Options in the Data Center
- Fibre Channel Storage Networking
- Virtual Storage Area Network (VSAN) Configuration and Verification

Module 10: Describing Fibre Channel Communication Between the Initiator Server and the Target Storage

- Fibre Channel Layered Model
- Fabric Login (FLOGI) Process
- Fibre Channel Flow Control

Module 11: Describing Fibre Channel Zone Types and Their Uses

- Fibre Channel Zoning
- Zoning Configuration
- Zoning Management

Module 12: Describing Cisco NPV Mode and NPIV

- Cisco NPV Mode
- NPIV Mode

Module 13: Describing Data Center Ethernet Enhancements

- Institute of Electrical and Electronic Engineers (IEEE) Data Center Bridging

- Priority Flow Control
- Enhanced Transmission Selection
- Data Center Bridging Exchange (DCBX) Protocol
- Congestion Notification

Module 14: Describing FCoE

- Cisco Unified Fabric
- FCoE Architecture
- FCoE Initialization Protocol
- FCoE Adapters

Module 15: Describing Cisco UCS Components

- Physical Cisco UCS Components
- Cisco Fabric Interconnect Product Overview
- Cisco I/O Module (IOM) Product Overview
- Cisco UCS Mini
- Cisco Integrated Management Controller (IMC) Supervisor
- Cisco Intersight™

Module 16: Describing Cisco UCS Manager

- Cisco UCS Manager Overview
- Identity and Resource Pools for Hardware Abstraction
- Service Profiles and Service Profile Templates
- Cisco UCS Central Overview
- Cisco HyperFlex™ Overview

Module 17: Using APIs

- Common Programmability Protocols and Methods
- How to Choose Models and Processes

Module 18: Describing Cisco ACI

- Cisco ACI Overview
- Multitier Applications in Cisco ACI
- Cisco ACI Features
- VXLAN in Cisco ACI
- Unicast Traffic in Cisco ACI
- Multicast Traffic in Cisco ACI
- Cisco ACI Programmability
- Common Programming Tools and Orchestration Options

Module 19: Describing Cloud Computing

- Cloud Computing Overview
- Cloud Deployment Models
- Cloud Computing Services

Lab Outline:

- Explore the Cisco NX-OS CLI
- Explore Topology Discovery
- Configure Hot Standby Router Protocol (HSRP)
- Configure the Cisco Nexus 2000 FEX
- Configure VPCs
- Configure VPCs with Cisco FEX
- Configure Virtual Routing and Forwarding (VRF)
- Explore the Virtual Device Contexts (VDC) Elements
- Install VMware Elastic Sky X Integrated (ESXi) and vCenter
- Configure VSANs
- Validate FLOGI and FCNS
- Configure Zoning
- Configure Unified Ports on a Cisco Nexus Switch and Implement FCoE
- Explore the Cisco UCS Server Environment
- Configure a Cisco UCS Server Profile
- Configure Cisco NX-OS with APIs
- Explore the Cisco UCS Manager XML API Management Information Tree

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