Course Outline

Understanding Cisco Data Center Foundations (DCFNDU)

Course Summary

Description

The Understanding Cisco Data Center Foundations (DCFNDU) v1.0 course helps you prepare for entry-level data center roles. In this course, you will learn the foundational knowledge and skills you need to configure Cisco data center technologies including networking, virtualization, storage area networking, and unified computing. You will get an introduction 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).

Objectives

By the end of the course, students will be able to:

- 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 FEX connectivity
- Describe Ethernet port channels and vPCs
- Introduce switch virtualization, machine virtualization, and describe 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 NPV and NPIV
- Describe data center Ethernet enhancements that provide a lossless fabric
- Describe 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

Topics

- Describing the Data Center Network Architectures
- Describing the Cisco Nexus Family and Cisco NX-OS Software
- Describing Layer 3 First-Hop Redundancy
- Describing Cisco FEX
- Describing Port Channels and vPCs
- Describing Switch Virtualization
- Describing Machine Virtualization
- Describing Network Virtualization
- Introducing Basic Data Center Storage Concepts
- Describing Fibre Channel Communication between the Initiator Server and the Target Storage
- Describing Fibre Channel Zone Types and Their Uses
- Describing Cisco NPV Mode and NPIV
- Describing Data Center Ethernet Enhancements
- Describing FCoE
- Describing Cisco UCS Components
- Describing Cisco UCS Manager
- Describing Cisco ACI
- Describing Cloud Computing

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Course Summary (cont.)

Audience

This course is designed for:

- Data center administrators
- Data center engineers
- Systems engineers
- Server administrators
- Network managers
- Cisco integrators and partners

Prerequisite

To fully benefit from this course, you should have the following knowledge and skills:

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

These are the recommended Cisco courses that may help you meet these prerequisites:

- Implementing and Administering Cisco Solutions (CCNA)
- Introducing Cisco Data Center Networking (DCICN)
- Introducing Cisco Data Center Technologies (DCICT)

Duration

Five Days

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I. *Describing the Data Center Network Architectures*
- A. Cisco Data Center Architecture Overview
- B. Three-Tier Network: Core, Aggregation, and Access
- C. Spine-and-Leaf Network
- D. Two-Tier Storage Network

II. *Describing the Cisco Nexus Family and Cisco NX-OS Software*
- A. Cisco Nexus Data Center Product Overview
- B. Cisco NX-OS Software Architecture
- C. Cisco NX-OS Software CLI Tools
- D. Cisco NX-OS Virtual Routing and Forwarding

III. *Describing Layer 3 First-Hop Redundancy*
- A. Default Gateway Redundancy
- B. Hot Standby Router Protocol
- C. Virtual Router Redundancy Protocol
- D. Gateway Load Balancing Protocol

IV. *Describing Cisco FEX*
- A. Server Deployment Models
- B. Cisco FEX Technology
- C. Cisco FEX Traffic Forwarding
- D. Cisco Adapter FEX

V. *Describing Port Channels and vPCs*
- A. Ethernet Port Channels
- B. Virtual Port Channels
- C. Supported vPC Topologies

VI. *Describing Switch Virtualization*
- A. Cisco Nexus Switch Basic Components
- B. Virtual Routing and Forwarding
- C. Cisco Nexus 7000 VDCs
- D. VDC Types
- E. VDC Resource Allocation
- F. VDC Management

VII. *Describing Machine Virtualization*
- A. Virtual Machines
- B. Hypervisor
- C. VM Manager

VIII. *Describing Network Virtualization*
- A. Overlay Network Protocols
- B. VXLAN Overlay
- C. VXLAN BGP EVPN Control Plane
- D. VXLAN Data Plane
- E. Cisco Nexus 1000VE Series Virtual Switch
- F. VMware vSphere Virtual Switches

IX. *Introducing Basic Data Center Storage Concepts*
- A. Storage Connectivity Options in the Data Center
- B. Fibre Channel Storage Networking
- C. VSAN Configuration and Verification

X. *Describing Fibre Channel Communication between the Initiator Server and the Target Storage*
- A. Fibre Channel Layered Model
- B. FLOGI Process
- C. Fibre Channel Flow Control

XI. *Describing Fibre Channel Zone Types and Their Uses*
- A. Fibre Channel Zoning
- B. Zoning Configuration
- C. Zoning Management

XII. *Describing Cisco NPV Mode and NPIV*
- A. Cisco NPV Mode
- B. NPIV Mode

XIII. *Describing Data Center Ethernet Enhancements*
- A. IEEE Data Center Bridging
- B. Priority Flow Control
- C. Enhanced Transmission Selection
- D. DCBX Protocol
- E. Congestion Notification

XIV. *Describing FCoE*
- A. Cisco Unified Fabric
- B. FCoE Architecture
- C. FCoE Initialization Protocol
- D. FCoE Adapters

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Course Outline (cont.)

XV. *Describing Cisco UCS Components*
- A. Physical Cisco UCS Components
- B. Cisco Fabric Interconnect Product Overview
- C. Cisco IOM Product Overview
- D. Cisco UCS Mini
- E. Cisco IMC Supervisor
- F. Cisco Intersight

XVI. *Describing Cisco UCS Manager*
- A. Cisco UCS Manager Overview
- B. Identity and Resource Pools for Hardware Abstraction
- C. Service Profiles and Service Profile Templates
- D. Cisco UCS Central Overview
- E. Cisco HyperFlex Overview
- F. Using APIs
- G. Common Programmability Protocols and Methods
- H. How to Choose Models and Processes

XVII. *Describing Cisco ACI*
- A. Cisco ACI Overview
- B. Multitier Applications in Cisco ACI
- C. Cisco ACI Features
- D. VXLAN in Cisco ACI
- E. Unicast Traffic in Cisco ACI
- F. Multicast Traffic in Cisco ACI
- G. Cisco ACI Programmability
- H. Common Programming Tools and Orchestration Options

XVIII. *Describing Cloud Computing*
- A. Cloud Computing Overview
- B. Cloud Deployment Models
- C. Cloud Computing Services

- **Lab Outline**
  - Explore the Cisco NX-OS CLI
  - Explore Topology Discovery
  - Configure HSRP
  - Configure the Cisco Nexus 2000 FEX
  - Configure vPCs
  - Configure vPCs with Cisco FEX
  - Configure VRF
  - Explore the VDC Elements
  - Install VMware 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