

DCUFD



Length:
5 Days

Format:
Lecture/Lab

Course Version:
4.0

Product Version:
Nexus 5000
5.1.3 and
Nexus 7000
6.0



www.fireflycom.net
sales@fireflycom.net

ATLANTA
LONDON
SINGAPORE

Course Description

In this course, you will learn how to design a data center unified network by utilizing Cisco's high-end switching portfolio, architectural components of Cisco Nexus and Cisco Catalyst switching lines, and Cisco IOS and NX-OS software architecture. You will also gain experience in management from a network design perspective. You will discover how to design a data center network architecture as an Ethernet-only data center or as a data center using unified fabric. You'll also review the features of these data center class platforms ranging from continuous operation, resiliency, and virtualization to power efficiency and management.

Who Should Attend

This course is intended for network designers and architects, data center network administrators, system engineers, data center network managers, and network engineers.

Prerequisites

You will gain the most from this course if you have completed the Designing for Cisco Internetwork Solutions course (DESGN) and CCDA certification.

Learning Objectives

- Describe data center network architecture design basics, challenges, and environmental requirements
- Discuss Cisco data center network equipment
- Describe virtualization principles used in data center networks
- Describe server virtualization concepts
- Describe data center services and security design
- Describe data center standards, trends, and sizing guidelines

Module 1: Data Center Design Fundamentals

Lesson 1: Data Center Overview

- Business Objectives
- Drivers
- High Availability
- Environmental Characteristics
- Evolution Drivers
- Architecture Business Objectives

Lesson 2: Cisco Data Center Business Advantage

- Data Center Environmental Objectives
- Data Center Thermal Control Model
- Physical Device Positioning within the Data Center
- Benefits of Condensed Computing Environments
- Green Data Center Characteristics
- Green Data Center Efficient Resource Utilization
- Network Design Models Overview
- Data Center and Campus Networks

Lesson 3: Designing Data Center Solutions

- High-Level Design Steps
- Design Process Deliverables
- Data Center Design and Operational Challenges

Module 2: Data Center Network Infrastructure

Lesson 1: Cisco Catalyst Series Switches

- Cisco Catalyst 6500 Series Switches
- Cisco Catalyst 6500 Virtual Switching System
- Cisco Catalyst 4948, 4948E, and 4900M Switches
- Cisco Catalyst 4500 Series Switches for Data Center
- Cisco Catalyst Blade Switches
- Data Center Cabling Technologies
- Cisco Optical Equipment
- Data Center Design Challenges

Lesson 2: Cisco Nexus Series Switches

- Cisco Nexus 7000 Series Switches
- Cisco Nexus 5000 and 5500 Series Switches
- Cisco Nexus 4000 Series Blade Switches
- Cisco Nexus 3000 Series Switch
- Cisco Nexus 2000 Series Fabric Extenders
- Cisco Nexus 1000V Virtual Switch and Cisco Nexus 1010 Switch
- Data Center Cabling Technologies
- Data Center Design Challenges

Lesson 3: Cisco Data Center Security Products

- Cisco Adaptive Security Appliances
- Cisco Catalyst 6500 Series Security Service Modules
- Intrusion Detection Systems and Intrusion Prevention Systems
- Virtual Security Devices
- Data Center Design Challenges

Lesson 4: Cisco Data Center Application Services Products

- Cisco ACE Products
- Cisco WAAS
- Data Center Design Challenges

Lesson 5: Cisco SAN Products

- Cisco MDS Switches
- Cisco MDS Blade Switches
- Data Center Design Challenges

Lesson 6: Cisco Computing, Desktop, and Solution Products

- Cisco UCS B-Series Blade Servers and Cisco C-Series Servers
- Cisco VXi
- Data Center Design Challenges

Lesson 7: Cisco Data Center Network Management

- Network Management Tools
- Cisco NAM
- Cisco Nexus 1010 NAM Virtual Service Blade
- NetFlow
- Data Center Design Challenges

Lesson 2: Network Virtualization

- EHV Concepts
- VN-Link and VN-Tag Concepts
- Use Case Examples for Link Virtualization

Lesson 3: Fabric Virtualization

- Storage Access Methods Comparison
- Fibre Channel Concepts
- FCoE Initialization Protocol
- FCoE and FIP Hardware
- NPV and NPIV

Lesson 4: Data Center Standards and Trends

- Data Center Trends
- Unified Fabric and Lossless Ethernet
- Layer 2 Multipathing Protocols
- Main Cisco Components for Data Center Networks

Module 4: Design Data Center Topologies

Lesson 1: Designing Data Center Topologies

- About Data Center Topologies
- Core Layer
- Aggregation and Collapsed Core Layer
- Access Layer

Lesson 2: Designing Data Center Topologies using FEX

- Data Center Access and Aggregation Layer Design using FEXs
- Server Connectivity Redundancy
- FEX Attachment Options
- Unified Fabric Connectivity

Lesson 3: Designing Data Center Interconnects (DCIs)

- Drivers
- OTV
- Using Dark Fiber
- Using MPLS Technology
- Using Tunneling Technologies

Module 5: Design Data Center Services and Security

Lesson 1: Designing Data Center IP Services

- Design of the Data Center IP Layer
- Routing Protocol Design
- Highly Available Designs
- Route Health Injection
- IP Services using FHRP
- Multi-Tenancy Solutions

Lesson 2: Designing Data Center Application Services

- Multiple-Tier Application Design
- Placement
- Using Cisco ACE and Cisco ACE GSS

Lesson 3: Designing Data Center Security

- Network Infrastructure Security Implementation
- Network Infrastructure Security Policy

Module 6: Data Center Standards

Lesson 1: Data Center Sizing

Lab 1: Cisco Nexus 7010 Configuration Baseline

Lab 2: Cisco Nexus 7000 Hardware Platform

Lab 3: Managing System Configurations

Lab 4: Configuring Routing Protocols

Lab 5: Configuring the Switch for Administrative Access

Lab 6: Configuring the Cisco Nexus 5000 for FCoE Connectivity

Lab 7: Configuring the Nexus 2000 as a Remote Line Card

Lab 8: Configuring Nexus 2000 with vPC

Lab 9: Configuring OTV

Lab 10: First-Hop Redundancy Protocols