Module Title   :   Course DCUFD : Designing Cisco Data Center Unified Fabric v3.0
Duration   :   5 days

Course Description

The Designing Cisco Unified Fabric (DCUFD v3.0) course is replacing the DCNID v2.0 with several major updates. Lab exercises have been added to expose you to the Nexus product line in a solution level Data Center Architecture. The Unified Fabric approach to the Data Center is the primary focus, but DCUFD v3.0 also discusses the Ethernet based Data Center. FCoE and Fiber Channels considerations are covered in the context of the evolving UCS, Nexus, MDS, and CAT6K product updates. You will experience the concepts first-hand with labs such as Data Center High Availability and OTV (overlay transfer protocol). The DCUFD course is a five-day instructor-led course aimed at providing you with the knowledge and skills needed to identify customer requirements across the entire Cisco data center products and solutions portfolio. You will be able to design secure, stable, and highly-available data center networks consisting of access, aggregation, and core layers with a focus on data center switching platforms and their associated application components.

Prerequisites

CCDA

Course Objectives

Upon completing this course, you will be able to:

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

Who should attend

- Data Center Architects
- Data Center System Engineers
- Cisco Channel Reseller System Engineers
- Customers interested in Cisco Data Center Architectures

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Course Outline :: DCUFI ::

Course Content

Designing Cisco Data Center Unified Fabric (DCUFD) v3.0 is a five-day course that teaches you how to design a data center unified network. The DCUFD course is part of the curriculum path leading to the Cisco Data Center Networking Infrastructure Design Specialist certification.

DCUFD covers the Cisco high-end switching portfolio, architectural components of Cisco Nexus and Cisco Catalyst switching lines, Cisco IOS and NX-OS software architecture, as well as management from the network design perspective.

The course describes how to design a data center network architecture using the above equipment either as an Ethernet-only data center, or as a data center using unified fabric. Also described are the features of these data center class platforms ranging from continuous operation, resiliency, and virtualization to power efficiency and management.

Included in DCUFD v3.0 are also various service modules and line cards for Cisco Catalyst 6500 Series Switches and Cisco ASA 5500 Adaptive Security Appliances. Additionally, this course introduces the Cisco Application Networking Services (ANS) portfolio, including ACE module and ACE appliance.

Course Outline

Module 1: Data Center Design Fundamentals

Describe the data center network architecture design basics, challenges, and environmental requirements.

- Lesson 1: Introducing the Data Center
  - Data Center Business Objectives
  - Data Center Drivers
  - Data Center High Availability
  - Data Center Environmental Characteristics
  - Data Center Evolution Drivers
  - Data Center Architecture Business Objectives
- Lesson 2: Identifying the Cisco Data Center Business Advantage
  - Data Center Environmental Objectives
  - Data Center Thermal Control Model
  - Physical Device Positioning Within the Data Center
  - 2011 Cisco Systems, Inc. Course Administration Guide 15
  - 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

Describe the Cisco data center network equipment.

- Lesson 1: Introducing 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: Introducing 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 VSM VSA

  - Data Center Cabling Technologies

  - Data Center Design Challenges

- Lesson 3: Introducing 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: Introducing Cisco Data Center Application Services Products
  - Cisco ACE
  - Additional Cisco ACE Products
  - Cisco WAAS
  - Data Center Design Challenges
- Lesson 5: Introducing Cisco SAN Products
  - Cisco MDS Switches
  - Cisco MDS Blade Switches
  - Data Center Design Challenges
- Lesson 6: Introducing Cisco Computing, Desktop, and Solution Products
  - Cisco Unified Computing System B-Series Blade Servers and Cisco C-Series Servers
  - **Cisco VXI**
  - Data Center Design Challenges
- Lesson 7: Introducing Cisco Data Center Network Management
  - Network Management Tools
  - Cisco NAM
  - Cisco Nexus 1010 NAM Virtual Service Blade
  - NetFlow
  - Data Center Design Challenges
  - Lab The module includes this lab:
  - Lab 2-1: Discover Network Infrastructure Topology (Instructor Demonstration)

Module 3: Data Center Network Virtualization Principles

Explain virtualization principles used in data center networks.

- Lesson 1: Introducing Device Virtualization
  - Network Device Virtualization
  - Virtualization using VSS
  - Virtualization using VDCs
  - Device Virtualization using Contexts
  - Link Bundling and Virtualization Mechanisms
- Lesson 2: Introducing Network Virtualization
  - Understanding EHV
  - Understanding VN-Link and VN-Tag

- Use Case Examples for Link Virtualization
- Lesson 3: Introducing Fabric Virtualization
  - Storage Access Methods Comparison
  - Fibre Channel Networks
  - Fibre Channel over Ethernet
  - FCoE Initialization Protocol
  - FCoE and FIP Hardware
  - SAN Virtualization NPV and NPIV
- Lesson 4: Identifying Data Center Standards and Trends
  - Data Center Trends
  - Unified Fabric and Lossless Ethernet
  - Layer 2 Multipathing Protocols
  - Data Center Network Components
  - Lab The module includes these labs:
  - Lab 3-1: Explore Cisco Nexus 7000 Series Switch VDC
  - Lab 3-2: Explore Fabric Virtualization

Module 4: Data Center Topologies

Explain data center topologies.

- Lesson 1: Designing Data Center Topologies
  - Data Center Topologies
  - Data Center Core Layer
  - Data Center Aggregation and Collapsed Core Layers
  - Data Center 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 Interconnect Solutions
  - DCI Drivers
  - DCI with OTV
  - DCI Using Dark Fiber
  - DCI Using MPLS Technology

- DCI Using Tunneling Technologies
- Lab The module includes these labs:
- Lab 4-1: Design Data Center Topology with vPC and FEX (Instructor Demonstration)
- Lab 4-2: Design DCI with OTV

Module 5: Data Center Services and Security

Design data center services and security.

- Lesson 1: Designing Data Center IP Services
  - Data Center IP Layer Design
  - Routing Protocol Design
  - Highly Available Designs
  - Route Health Injection
  - IP Services Using FHRP
  - Multitenancy Solutions
- Lesson 2: Designing Data Center Application Services
  - Multitier Application Design
  - Application Services Placement
  - Application Services Using Cisco ACE and Cisco ACE GSS
- Lesson 3: Designing Data Center Security
  - Network Infrastructure Security Implementation
  - Network Infrastructure Security Policy
  - Lab The module includes this lab:
  - Lab 5-1: Design Layer 3 High Availability

Module 6: Data Center Standards

List data center standards, trends, and sizing guidelines.

- Lesson 1: Sizing the Data Center
  - Data Center Sizing Examples