Cisco Data Center Unified Fabric Implementation (DCUFI)

Cisco® Data Center Unified Fabric Implementation v4.0 is a 5-day ILT training program designed for systems and field engineers, consulting systems engineers, technical solutions architects, and Cisco integrators and partners who install and implement the Cisco Nexus® 7000 and 5000 switches and the Cisco Nexus 2000 Fabric Extender. The course covers the key components and procedures needed to install, configure, manage, and troubleshoot the Cisco Nexus 7000 and 5000 in the network and SAN environment.

The goal of DCUFI v4.0 is to develop the skills necessary to implement a data center unified fabric that consolidates LAN and SAN traffic based on Cisco Nexus technology.

Duration
Five days.

Target Audience
The primary audience for this course includes:

- Data network engineers, systems engineers, consulting systems engineers, technical solutions architects, and Cisco integrators and partners who sell, implement, and maintain Cisco Nexus products in the data center

The secondary audience for this course is as follows:

- Network designers, network administrators, and network managers responsible for identifying and managing Cisco Nexus products in the data center

Course Objectives
Upon completion of this course, you should be able to:

- Identify the Cisco Nexus product family, specifically the Cisco Nexus 7000 Switch chassis and components, the Cisco Nexus 5000 Switch, and the Cisco Nexus 2000 Fabric Extender
- Install the Cisco Nexus products in a Cisco Data Center Business Advantage environment
- Given a requirement, identify how to plan and implement virtual device contexts into the solution
- Evaluate the security features available on the Cisco Nexus 7000 Switch to identify which features should be implemented into a solution
- Evaluate and configure the Connectivity Management Processor on the Cisco Nexus 7000 Switch and identify the management options available
- Evaluate the service-level and network-level high availability of the Cisco Nexus switches and how to use the Cisco IOS® Software In-Service Software Upgrade feature
- Discuss the Fibre Channel protocol, including Fibre Channel addressing, flow control, and zoning
- Translate a given design into an implementation plan for configuring Fibre Channel over Ethernet on the Cisco Nexus switch
- Understand the processes, tools, and resources for troubleshooting the data center infrastructure, interconnectivity, and operations

Course Prerequisites

Following are the prerequisites for this course:

- Good understanding of networking protocols
- Recommended CCNA® certification
- Good understanding of the Fibre Channel protocol and the SAN environment
- Recommended attendance of a Fibre Channel protocol class or equivalent experience
- Recommended attendance of the Implementing Cisco Storage Network Solutions (ICSNS) class or equivalent experience

To locate Cisco courses that cover the listed prerequisites, refer to [www.cisco.com/go/ase](http://www.cisco.com/go/ase).

Course Outline

The course outline is as follows:

Module 1: Cisco Nexus Product Overview

- Lesson 1: Identifying the Cisco Data Center Business Advantage Architecture
  - Cisco Data Center Business Advantage
  - Components of the architecture
  - Aggregation and core components
  - Unified fabric overview
  - Placement of products
  - Positioning of product families in the architecture

- Lesson 2: Identifying Cisco Nexus Products
  - The Cisco Nexus product family
  - Key features and benefits of the Cisco Nexus line modules
  - Key scalability features of the Cisco Nexus switches
  - Power and cooling requirements of the Cisco Nexus switches

- Lesson 3: Identifying the Cisco Unified Fabric Solution
  - Cisco Unified Fabric pillars
  - Cisco Unified Fabric convergence
Cisco Unified Fabric scalability
Cisco Unified Fabric intelligence
Cisco Unified Fabric portfolio

- **Lesson 4: Integrating Services**
  Identify how to integrate services into the infrastructure

**Module 2: Cisco Nexus Switch Feature Configuration**

- **Lesson 1: Configuring Virtual Device Contexts**
  How VDCs can be used to consolidate the physical infrastructure
  Identify the architecture of VDCs, their use of resources on the physical switch, and how the Cisco NX-OS Software supports VDCs
  Configuring VDCs on the Cisco Nexus 7000 Switch
  Configuring VDC resource templates
  Configuring management settings for VDCs
  Identify the troubleshooting processes and tools that would be used to troubleshoot issues relating to VDCs
  Identify common VDC issues and the steps that would be taken to resolve the problem

- **Lesson 2: Configuring Layer 2 Switching Features**
  Configuring basic interface parameters
  Comparison of the Cisco Nexus 7000 and Cisco Nexus 5000 Switch features
  Configuring Layer 2 interfaces
  Configuring VLANs
  Configuring private VLANs
  Configuring rapid PVST+
  Configuring MST
  Configuring STP extensions
  Identify potential Layer 2 issues and the tools to use to resolve the problem

- **Lesson 3: Configuring Port Channels**
  Using port channels and vPCs in data centers
  Evaluate the use of port channels in the design
  Configuring port channels
  Evaluate the use of vPCs in the design
  Identify vPC architecture and components
  Configuring vPCs
  Configuring the fabric extender
  Identify potential vPC issues and the tools to use to resolve the problem

- **Lesson 4: Configuring Layer 3 Switching Features**
  Routing protocol overview
  Configure bidirectional forwarding detection
  Layer 3 virtualization overview
  Managing the unicast RIB and FIB
Route Policy Manager overview
Policy-based routing overview
IPv6
Identify potential Layer 3 issues and the tools to use to resolve the problem
• Lesson 5: Configuring IP Multicast
  Identifying components and architecture of IP multicasting
  Configuring IGMP
  Configuring PIM
  Configuring IGMP snooping
  Configuring MSDP
  Troubleshooting multicast issues
Module 3: Cisco Nexus Switch Advanced Feature Configuration
• Lesson 1: Configuring Security Features
  Identify and position the security features in the data center
  Access control list configuration
  Port security configuration
  DHCP snooping configuration
  Dynamic ARP configuration
  IP Source Guard configuration
  uRPF configuration
  Configuring traffic storm control
  Configuring Control Plane Policing
  Understand how to use Cisco TrustSec
• Lesson 2: Understanding Overlay Transport Virtualization
  Overview of OTV
  Positioning OTV in the Cisco Data Center Business Advantage network architecture
  Configure basic OTV features
  Configure advanced OTV features
  Troubleshooting OTV issues
• Lesson 3: Implementing Quality of Service
  Explain the purpose of QoS
  Understand how QoS is implemented on the Cisco Nexus switches and the default behaviors
  Positioning QoS in a Cisco Data Center Business Advantage network architecture
  Using the modular QoS command-line interface
  Configuring classification
  Configuring mutation mapping
  Configuring QoS policy maps
  Configuring QoS service policy
Monitoring QoS statistics

Module 4: Cisco Nexus Series Switch Management

- Lesson 1: Using the Connectivity Management Processor
  - Evaluate the use of the CMP
  - Configure available CMP options
  - Verify the CMP configuration
  - Upgrade the CMP image
  - Using the CMP to monitor and manage the control plan of the Cisco Nexus 7000 Series Switch

- Lesson 2: Configuring User Management
  - Identify the user management features available on the Cisco Nexus switches
  - Configure authentication, authorization, and accounting (AAA)
  - Configure SSH
  - Configure user accounts and roles

- Lesson 3: Understanding System Management
  - Identify the system management features available on the Cisco Nexus switches
  - Configuring Cisco Fabric Services
  - Configuring NTP
  - Configuring Cisco Discovery Protocol
  - Configuring system message logging
  - Configuring Smart Call Home
  - Configuring the Scheduler
  - Configuring SNMP
  - Using the XML interface to manage the Cisco Nexus switches
  - Implement Cisco DCM to monitor the Cisco Nexus switches
  - How to apply and manage licensing

Module 5: Redundancy on Cisco Nexus Switches

- Lesson 1: Understanding High Availability and Redundancy
  - Network-level high availability
  - System-level high availability
  - In-Service Software Upgrades
  - Upgrading the firmware and EPLDs

- Lesson 2: Implementing Cisco FabricPath
  - Implementing Cisco FabricPath
  - Troubleshooting Cisco FabricPath
  - Identify recommended diagnostic tools to use when troubleshooting Cisco FabricPath
  - Explain how Cisco FabricPath uses TRILL to provide maximum path forwarding

Module 6: Fibre Channel over Ethernet

- Lesson 1: Understanding Fibre Channel Protocol
The SCSI protocol
The Fibre Channel Protocol frame structure
Fabric login
Fibre Channel addressing schemes
The Fabric Shortest Path First (FSPF) protocol
VSANs and zoning
N_Port Virtualization (NPV) mode
N_Port ID Virtualization (NPIV) mode
• Lesson 2: Understanding FCoE Protocol
  Unified fabric I/O consolidation use and benefits
  FCoE adapters
  FCoE architecture
  FCoE end-node (ENode) addressing
  FIP
  Multihop FCoE
  • Lesson 3: Identifying Data Center Bridging Ethernet Enhancements
    Identify the purpose of DCB
    Identify the purpose of priority flow control (PFC)
    Identify the purpose of Enhanced Transmission Selection
    Identify the purpose of the DCB Exchange (DCBX) protocol

Module 7: Fibre Channel over Ethernet Configuration
• Lesson 1: Implementing FCoE
  Configure FCoE
  Configure FCoE VLANs and virtual interfaces
  Troubleshooting FCoE
• Lesson 2: Configuring SAN Switching Features
  Configuring Fibre Channel interfaces
  Configuring domain parameters
  Configure and manage VSANs
  Configure VSAN trunking
  Configure SAN port channels
  Manage the FLOGI and FCNS databases
• Lesson 3: Configuring NPV Mode
  NPV overview
  Configuring NPV mode on the Cisco Nexus 5000 and 5500 Switches
  NPIV overview
  Configuring NPIV on the Cisco Nexus 5000 and 5500 Switches
  Troubleshooting NPV and NPIV
• Lesson 4: Using SAN Management Tools
Cisco Fabric Manager
Cisco Device Manager

Module 8: Troubleshooting on Cisco Nexus Switches

- Lesson 1: Troubleshooting the Data Center Infrastructure
  - The troubleshooting process
  - Using the system messages
  - Using logs to troubleshoot
  - Troubleshooting modules
- Lesson 2: Troubleshooting Tools and Resources
  - Identify the troubleshooting features on the Cisco Nexus switches
  - Using and configuring remote monitoring
  - Using and configuring online diagnostics
  - Using and configuring the Embedded Event Manager
  - Using and configuring the Onboard Failure Logging feature
  - Using Ethalyzer for packet analysis
  - Using and configuring SPAN
  - Using and configuring NetFlow

Lab Outline

The lab outline is as follows:

- Lab 2-1: Configuring Layer 2 Switching
- Lab 2-2: Configuring vPCs
- Lab 2-3: Configuring Layer 3 Switching
- Lab 3-1: Configuring Security Features
- Lab 3-2: Configuring OTV
- Lab 3-3: Configuring QoS
- Lab 4-1: Configuring System Management
- Lab 4-2: Implementing Cisco DCNM
- Lab 7-1: Configuring FCoE
- Lab 7-2: Configuring NPV

For more information about schedules and registration for this course, contact aeskt_registration@cisco.com.

For More Information

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