

ICNX5

Course Description

In this 3-day course, you will learn how to implement Access Layer infrastructures using next-generation Cisco Nexus 5000 switches and Nexus 2000 Fabric Extenders. This course provides a technical overview of the Nexus 5000 platform architecture, design guidelines, deployment and operations, including Fibre Channel over Ethernet, Layer 2, QoS, and security.

You will explore the features of NX-OS and the Nexus platform by performing hands-on labs using real Nexus 5000 and Nexus 2000 labs. Labs include basic FCoE configuration, NPV mode deployment, Virtual PortChannels, security in both Ethernet and FCoE environments, QoS, and troubleshooting.

Who Should Attend

This course is designed for experienced data center engineers who are familiar with Cisco Catalyst or MDS switching products

Recommended Prerequisites

You will gain the most from this course if you have a basic understanding of the following topics:

- Ability to configure advanced Layer 2 Ethernet services
- Basic working knowledge of Fibre Channel and Storage Networking
- Understanding of Cisco data center architecture

Learning Objectives

After completing this course, you will be able to:

- Describe the architecture of the Cisco Nexus Operating System (NX-OS)
- Describe access layer architecture
- Configure switch management features such as Call Home, AAA, and RBAC
- Configure Layer 2 services
- Configure Quality of Service
- Use SPAN and Ethalyzer to monitor traffic
- Describe how FCoE operates within SAN and LAN environments
- Describe the ASIC-level architecture of the Cisco Nexus 5000 switch and CNAs
- Configure the Cisco Nexus 5000 in switch mode and NPV mode
- Explain Virtual PortChannels (VPC)
- Describe the Cisco VN-Link architecture
- Explain VMware Hypervisor bypass using the Cisco Nexus 5000
- Configure the Cisco Nexus 2000 for Access Layer extension
- Describe Cisco Nexus 4000 blade switches



Implementing and Configuring Cisco Nexus 5000 Switches

Course Outline

Module 1: Introduction to the Cisco Nexus 5000

Lesson 1: Overview of the Cisco Nexus 5000

- Challenges in the Data Center
- I/O Consolidation
- Nexus 5000 Switch Products
- Nexus 4000 Blade Switch
- Nexus 2000 Fabric Extender
- Nexus 5000 Software Architecture
- Network Design
- FCoE Adapters and Software Stack
- Nexus 5000 Switch Management Tools

Lesson 2: Fibre Channel Primer

- Fibre Channel Layering and Services
- Fibre Channel Addressing
- Fibre Channel Frames
- Fibre Channel Flow Control
- Zoning Overview
- Fibre Channel Routing
- The Registered State Change Notification Process

Lesson 3: Ethernet Primer

- Exploring the Packet Delivery Process
- VLANs and Trunking
- Loop Prevention with Spanning Tree Protocol
- Understanding the TCP/IP Transport Layer

Lesson 4: Server Virtualization Primer

- Server Virtualization
- VMware Virtualization
- Virtual Networking with VMware
- Virtual Storage Networking with VMware
- Cisco Virtual Network Solutions

Lesson 5: Understanding the FCoE Protocol

- Current FCOE Architecture
- FCOE Enode MAC Addresses
- FCOE Initialization Protocol

Lesson 6: Data Center Architecture

- Access Layer Designs
- Cisco Nexus Data Center Design
- Cisco Nexus 5000 vPC

Module 1: Introduction to the Cisco Nexus 5000 (continued)

Lesson 7: Cisco Nexus 5000 System Architecture

- System Architecture
- Switch Fabric Data Path
- Traffic Forwarding
- Multicast

Lesson 8: Understanding Ethernet Enhancements

- Converged Enhanced Ethernet
- Priority Flow Control
- Bandwidth Management
- Data Center Bridging Exchange

Lesson 9: Future Direction

- FCoE Initialization Protocol
- Lossless Ethernet Bridging
- Network Interface Virtualization
- Congestion Management
- Layer 2 Multi-Pathing

Module 2: Implementation and Configuration

Lesson 1: Configuring FCoE Server Connectivity

- Converged Network Adapters
- Host-Based Failover
- QLogic CNAs
- Emulex CNAs
- Using the FCoE Protocol Stack

Lesson 2: Configuring the Cisco Nexus 5000 Switch in Switch Mode

- Configuring Basic Connectivity and Administrative Access
- Configuring Virtual Interfaces
- Configuring Ethernet Uplink Ports
- Configuring the FC Uplink Ports
- Configuring the Cisco Nexus 2000
- Verifying the Configuration
- Additional Configuration Components



Learning
Solutions



Implementing and Configuring Cisco Nexus 5000 Switches

Course Outline

Module 2 (continued)

Lesson 3: Managing Cisco Nexus 5000 Switches with GUI Tools

Monitoring a Cisco Nexus 5000 Switch with Cisco Device Manager
Monitoring an FCoE Network with Cisco Fabric Manager

Lesson 4: Configuring NPV Mode

N_Port Identifier Virtualization
Understanding NPV Mode
Configuring NPV Mode

Lesson 5: Managing Traffic Flow

Understanding QoS Policy Management
Configuring QoS Policy
Tuning the MTU Value
Configuring Priority Flow Control
Version 4.1(3)N1(1) QoS Enhancements
IGMP Snooping

Lesson 6: Configuring High Availability

High Availability in an FCoE Network
High Availability on a Cisco Nexus 5000 Switch
Configuring Server-Side High Availability
Understanding PortChannels
Configuring Ethernet PortChannels
Configuring Fibre Channel PortChannels

Lab 1: Analyzing FCoE Packet Traces

Lab 2: Configuring the Switch for Administrative Access

Lab 3: Configuring the Cisco Nexus 5000 Switch for FCoE Connectivity

Lab 4: Configuring the Cisco Nexus 5000 Switch in NPV Mode

Lab 5: Traffic Engineering

Lab 6: Configuring the Cisco Nexus 2000 as a Remote Line Card

Lab 7: Configuring Cisco Nexus 2000 with VPC

Lab 8: Configuring and Monitoring Security Features

Lab 9: Troubleshooting FCoE Issues on the Cisco Nexus 5000 Switch

Module 2 (continued)

Lesson 7: Securing the Switch

Understanding Private VLANs
Configuring Private VLANs
Understanding Access Control Lists
Configuring Access Control Lists
Port Security
Configuring Zoning

Lesson 8: Managing the Switch and Switch Software

Role-Based Access Control
SNMP and XML Support
GOLD and EEM
Smart Call Home
Managing NXOS

Lesson 9: Monitoring and Troubleshooting

Diagnostics and Monitoring
SPAN
Ethalyzer
Configuring SPAN
Troubleshooting Interface Errors
Troubleshooting Logical Interface Errors
Password Recovery
Corrupted Image Recovery



Learning Solutions