

# Implementing and Configuring Cisco Nexus 5000 Switches

# ICNX5

**Length:** 3 Days

Format: Lecture/Lab

### Course Version:

2.7

### Product Version: 5.2.1.N1.1



www.fireflycom.net sales@fireflycom.net

> A T L A N T A LONDON SINGAPORE



### Why Firefly

The course material is based on Release 5.2.1.N1.1 of NXOS for Nexus 5000, the labs use the latest 5.2.1.N1.1 with Nexus 5548UP and Cisco UCS servers with Virtual interface cards. Most other providers are still several releases behind.

### **Course Description**

In this three-day course, you will learn how to implement Access Layer infrastructures using next-generation Cisco Nexus 5000 and 5500 switches, the Nexus 4000, 3000, and Nexus 2000 Fabric Extenders. This course provides a technical overview of the Nexus 5000 platform features, design guidelines, deployment, and operations, including Fibre Channel over Ethernet, Layer 2, QoS, and security. You will explore the features of NX-OS up to release 5.2(1)N1.1 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, FEX and Virtual PortChannels, security in both Ethernet and FCoE environments, OoS, and troubleshooting.

### Who Should Attend

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

### 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**

- Introduce the course outline and objectives to the students
- Identify the benefits provided by Cisco Nexus 5000 Switches in the most common user situations, and explain how the switch works to provide these benefits
- Identify the benefits and features provided by the different models of the Cisco Nexus 2000 Fabric Extenders in the most common user situations, and explain how the switch works to provide these benefits
- Describe Fibre Channel networks, frames, flow control, and the various protocols used with Fibre Channel, and identify the standard fabric services and their well-known addresses
- Describe how FCoE operates within SAN and LAN environments; identify the hardware components of an FCoE implementation, and explain the options available
- Discuss the L2, L3 and Virtualization Networking Features and capabilities of the Nexus 5000 series switches
- Identify the configuration options provided on Cisco Nexus 5000 Switches and explain how to provision, move, add, and change Fibre Channel and Ethernet ports
- Describe network design and switch configuration options forminimizing latency and improving network performance for common applications
- Describe network design and switch configuration options for reducing network threats and preventing unauthorized changes in configuration
- Describe the key management features of Cisco NX-OS on the Cisco Nexus 5000 and upgrading/ downgrading system software
- Explain how to use FCoE and Ethernet features and management tools for identifying switch and network problems



# Implementing and Configuring Cisco Nexus 5000 Switches

### Lesson 1: Course Introduction

#### Lesson 2: Overview of the Cisco Nexus 5000

Cisco Nexus 5000 Switch Products Cisco Nexus 4000 Switch Products Cisco Nexus 3000 Series Cisco NX-OS Software Architecture FCoE Adapters and Software Stack Cisco Nexus 5000 Switch Management Tools

#### Lesson 3: Overview of the Cisco Nexus 2000

Cisco Nexus 2000 Fabric Extender Cisco Nexus 2000 Access Layer Designs Cisco Nexus 2000 Forwarding Configuring Cisco Nexus 2000

#### Lesson 4: Fibre Channel Overview

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 5: Understanding the FCoE Protocol

Benefits of IO Consolidation FCoE Architecture FCoE Protocol FCoE ENode MAC Addresses FCoE Initialization Protocol FIP Snooping VE Interfaces Converged Network Adapters FCoE Nexus Designs HA in a FCoE Network

# **Lesson 6:** Nexus 5000 L2, L3, and Virtualization Networking Features

IEEE Standard Features Cisco FabricPath Virtual Port Channel Nexus 5000 L3 Features Nexus 5000 Virtualization Features

# **Lesson 7:** Configuring the Cisco Nexus 5000 Switch

Switch Configuration Overview Configuring Basic Connectivity and Administrative Access Configuring Nexus 5000 Interfaces Configuring Ethernet Uplink Ports Configuring the FC Uplink Ports Verifying the Configuration N\_Port Identifier Virtualization Understanding NPV Mode Configuring NPV Mode Additional Configuration Components Configuring Adapter-FEX with FCoE

# Lesson 8: Managing Traffic Flow for the Cisco Nexus 5000

Understanding and Monitoring Traffic Flow on a Cisco Nexus 5000 Switch Understanding and Configuring Port Channels Configuring Virtual Port Channels Understanding QoS Policy Management Tuning the MTU Value Configuring Priority Flow Control Nexus 5000 QoS Configuration QoS with the Fabric Extender

# Lesson 9: Configuring Security on the Cisco Nexus 5000

Understanding Security Features of Nexus 5000 Understanding and Configuring Private VLANs Understanding and Configuring Access Control Lists Port Security Configuring Zoning Configuring AAA Other Security Features



# Implementing and Configuring Cisco Nexus 5000 Switches

# **Lesson 10:** Managing the Nexus 5000 Switch and Software

Role-Based Access Control SNMP and XML Support Understanding Smart Call Home Cisco Fabric Services Managing NXOS IEEE 1588 Precision Time Protocol Configuration and Support on the Nexus 5500

# Lesson 11: Monitoring and Troubleshooting

SPAN and ERSPAN Troubleshooting Interface Errors FIP Troubleshooting Configuration Rollback Password Recovery Lab 1: Configuring the Switch for Administrative Access

Lab 2: Installing Cisco Data Center Network Manager

Lab 3: Configuring the Cisco Nexus 5000 for FCoE Connectivity

Lab 4: Configuring the Cisco Nexus 5000 in NPV Mode

Lab 5: Configuring the Nexus 2000 as a Remote Line Card

Lab 6: Configuring Nexus 2000 with vPC

Lab 7: Configuring and Monitoring Security Features

Lab 8: Configuring Cisco Adapter-FEX

Lab 9: Configuring FabricPath on the Cisco Nexus 5000 Switch