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## Implementing & Configuring Cisco Nexus 5000 & 7000

**Duration: 5 Days**    **Course Code: ICNX5-7**

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### Overview:

In this 5-day course, you will learn how to implement an enterprise Data Center routing and switching infrastructure with the next-generation Cisco Nexus 5000 and Nexus 7000 platforms. This course provides a technical overview of the Nexus platform architecture, design guidelines, deployment and operations, including Fibre Channel over Ethernet, Virtual Device Contexts, Layer 2 and Layer 3 features, QoS, and security. The features of NX-OS and the Nexus platform are explored using hands-on labs which incorporate actual Nexus 7000 Switches as opposed to using NX-OS simulators.

**This course is delivered as part of the Global Knowledge and Firefly strategic alliance, providing delegates with the latest in Data Center technology.**

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### Target Audience:

This course is designed for experienced Network Field Engineers who are already capable of implementing Layer 2 and Layer 3 services using Cisco IOS and the Cisco Catalyst switching platform.

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### Objectives:

- **After you complete this course, you will be able to:**
  - Describe the features of the Nexus 7010 chassis, Supervisor Engine, and line cards
  - Describe the architecture of NX-OS
  - Describe the Connectivity Management Processor
  - Configure switch management features like Call Home, AAA, and RBAC
  - Use configuration checkpoints and rollbacks
  - Configure Virtual Device Contexts
  - Configure Layer 2 and Layer 3 services
  - Configure Process and Supervisor Recovery
  - Configure Quality of Service
  - Configure traffic integrity features and Control Plane Protection
  - Configure LinkSec encryption
  - Use SPAN and Ethalyzer to monitor traffic
  - Describe how FCoE operates within SAN and LAN environments
  - Describe the ASIC-level architecture of the Nexus 5000 switch and CNAs
  - Configure the Nexus 5000 in switch mode and NPV mode
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### Prerequisites:

**Delegates should meet the following prerequisites:**

- Ability to configure advanced Layer 2 Ethernet services
- Ability to configure Layer 3 routing services
- Basic working knowledge of Fibre Channel and Storage Networking
- Understanding of Cisco data center architecture

### Testing and Certification:

**Recommended preparation for exam(s):**

None applicable

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## Content:

### Module 1: Deploying the Nexus 7000

#### Overview of the Nexus 7000

- Cisco Nexus 7000 Series Chassis Overview
- Supervisor Engine and Line Cards
- Fabric Modules
- Virtual Output Queuing Overview
- VoQ Operation
- Power Supplies and Cooling
- Connectivity Management Processor

#### Overview of NX-OS

- Introducing NX-OS
- NX-OS Process Recovery
- NX-OS Supervisor Redundancy

#### Introduction to Virtual Device Contexts

- Introducing Virtualization
- VDC Configuration
- High Availability

#### Managing the Nexus 7000

- SNMP and XML
- Generic OnLine Diagnosis
- Embedded Event Manager
- SMART Call Home
- Data Center Network Manager
- System Message Logging
- AAA
- Role-Based Access Control
- Configuration Rollback

#### Layer 2 Protocols and Features

- Nexus 7000/NX-OS Layer 2 Overview
- VLANs and PVLANS
- Spanning-Tree Protocols
- PortChannels
- Virtual Port Channel (vPC)
- IGMP Snooping
- Unidirectional Link Detection

#### Layer 3 Protocols and Features

- Layer 3 Unicast Routing Overview
- First-Hop Routing Protocols
- Routing Virtualization
- Routing Protocols
- Policy Routing
- Tunnels
- Layer 3 Multicast

#### Quality of Service

- Nexus 7000 Series QoS Overview
- Port QoS
- Forwarding Engine QoS
- Modular QoS CLI Overview
- Class Map

### Module 2: Nexus 5000 Overview

#### Overview of the Nexus 5000

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

#### 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

#### Ethernet Primer

- The Challenges of Shared LANs
- Exploring the Packet Delivery Process
- Implementing VLANs and Trunks
- Spanning Tree Protocol
- Understanding the TCP/IP Transport Layer

#### Server Virtualization Primer

- Server Virtualization
- VMware Virtualization
- Virtual Networking with VMware
- Virtual Storage Networking with VMware
- Cisco Nexus 1000v Series Switch
- Cisco Nexus 5000 with VN-Link
- N\_Port Identifier Virtualization

#### Understanding the FCoE Protocol

- Current FCOE Architecture
- FCOE Enode MAC Addresses
- FCOE Initialization Protocol (FIP)

#### Nexus 5000 System Architecture

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

#### Ethernet Enhancements

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

### Configuring FCoE Server Connectivity

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

### Configuring a Nexus 5000 Switch in Switch Mode

- Switch Configuration Overview
- Configuring Administrative Access
- Configuring Virtual Interface Groups in NX-OS 4.0
- Configuring the Ethernet Uplink Ports
- Configuring the FC Uplink Ports
- Verifying the Configuration

### Managing Nexus 5000 Switches with Cisco Device Manager and Cisco Fabric Manager

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

### Configuring Nexus 5000 Switches in NPV Mode

- Understanding NPV Mode
- Configuring NPV Mode
- Verifying Switch Configuration in NPV Mode

### Managing Traffic Flow

- Understanding QoS Policy Management
- Configuring QoS Policy
- Tuning the MTU Value
- Configuring Priority Flow Control
- IGMP Snooping

### Configuring High Availability

- High Availability in an FCoE Network
- Configuring Server-Side High Availability
- Understanding PortChannels
- Configuring Ethernet PortChannels
- Configuring FC PortChannels

### Securing the Switch

- Understanding Private VLANs
- Configuring Private VLANs
- Understanding Access Control Lists
- Configuring Access Control Lists
- Configuring Zoning

### Monitoring and Troubleshooting

- Diagnostics and Monitoring
- SPAN

- Policy Map
- Service Policy

### Security

- Introduction to Nexus/NX-OS Security
- Traffic Integrity
- Control Plane Protection
- Access Control
- Admission Control
- Data Confidentiality

### Troubleshooting

- Ethalyzer (WireShark in NX-OS)
- SPAN and RSPAN

### Future Directions

- FCoE Initialization Protocol
- Lossless Ethernet Bridging
- Network Interface Virtualization
- Delayed Drop
- Congestion Management
- Ethernet Host Virtualizer

### **Module 3: Nexus 5000 Implementation and Configuration**

- Ethalyzer
- Configuring SPAN
- Troubleshooting Interface Errors
- Troubleshooting Logical Interface Errors
- Password Recovery

### Course Labs

- Lab 1: Nexus 7000: Managing System Configuration
- Lab 2: Nexus 7000: Layer 2 Switching
- Lab 3: Nexus 7000: First-Hop Redundancy Protocols
- Lab 4: Nexus 7000: Configuring Routing Protocols
- Lab 5: Nexus 7000: VDC and VRF Interoperation
- Lab 6: Nexus 7000: QoS on the Nexus7000
- Lab 7: Nexus 7000: Security
- Lab 8: Nexus 7000: Troubleshooting the Nexus Control Plane
- Lab 9: Nexus 5000: Analyzing FCoE Packet Traces
- Lab 10: Nexus 5000: Configuring the Switch for Administrative Access
- Lab 11: Nexus 5000: Configuring the Nexus 5000 for FCoE Connectivity
- Lab 12: Nexus 5000: Configuring the Nexus 5000 in NPV mode
- Lab 13: Nexus 5000: Tuning and Optimizing FCoE Switch and Network Performance
- Lab 14: Nexus 5000: Configuring a High Availability Environment
- Lab 15: Nexus 5000: Configuring and Monitoring Security Features
- Lab 16: Nexus 5000: Troubleshooting FCoE Issues on the Nexus 5000 Switch

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### Additional Information:

#### Related Training:

Implemented Cisco Storage Network Solutions (ICSNS)

Designing Cisco Storage Networking Solutions (DCSNS)

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### Further Information:

For More information, or to book your course, please call us on 353-1-814 8200

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