CNIOS - MANAGING CISCO NETWORK OPERATING SYSTEMS 1.0

Course Code: 860042

The **Managing Cisco Network Operating Systems (CNIOS)** course introduces the fundamental concepts of Cisco networking operating systems, including IOS XE, NX-OS, and IOS XR. This training is designed for individuals who are new to Cisco or networking professionals who want to deepen their understanding of Cisco operating systems used across various network devices. Upon completion of this training, you will be able to navigate the command-line interface (CLI), configure basic settings as well as advanced protocols, and understand the unique features and architectures of Cisco network operating systems.

This course is worth 37 Continuing Education (CE) credits toward recertification.

This training includes three free additional modules provided via Cisco U.

What You'll Learn

After completing this course, you should be able to:

- Navigate the CLIs of IOS XE, NX-OS, and IOSXR
- Perform initial setup, upgrades, and troubleshooting on various Cisco platforms
- Configure essential network features, such as vPCs, Fibre Channel, VXLAN, and router clustering
- Explore automation options and learn how to interact with Cisco TAC
- Gain proficiency in navigating Cisco documentation and securing network environments

Who Needs to Attend

Junior Network Engineers, NOC Engineers, IT Operations Engineers and Network Administrators

Prerequisites

Attendees should meet the following pre-requisites:

- Familiarity and basic understanding of core networking concepts
- Fundamental knowledge and understanding of Cisco network devices, such as routers and switches
- Basic understanding of network security concepts, including common threats,

firewalls, and how to harden a network
- The following courses help with obtaining the above-mentioned skills.

Recommended prerequisites:

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VIRTUAL CLASSROOM LIVE	$5,495 CAD	5 Day

Virtual Classroom Live Outline

Overview of Cisco Network Operating Systems

- Overview of Network Types
- Enterprise Networks and Platforms
- Data Center Networks and Platforms
- Service Provider Networks and Platforms

Comparison of Cisco IOS, IOS XE, NX-OS, and IOS XR

- Use Cases and Deployment Scenarios
- Architecture and Design
- Features and Capabilities

Introduction to Cisco Modeling Labs

- What is Cisco Modelling Labs
- Cisco Modelling Labs Requirements and Deployments
- GUI Walkthrough
- Node Definitions
- Image Definitions
- Introduction to Lab Toplogies

Common Protocols and Configurations

- Remote Access Configuration
- VLAN Configuration
- Layer 2 Interface Configuration
- Layer 3 Interface Configuration
- Viral Routing and Forwarding Configuration
- First Hop Redundancy Protocols Configuration
- Routing Protocols Configuration

Introduction to Cisco IOS XE

- Identifying Cisco IOS XE Routers
- Identifying Cisco IOS XE Switches
- Cisco IOS XE Software Architecture

Use of Cisco IOS XE CLI and Configuration Management

- Initial Access of Cisco IOS XE Device
- Cisco IOS XE Initial Configuration
- Cisco IOS XE CLI
- Cisco IOS XE Configuration Management
- Advanced Cisco IOS XE Configuration Management

Commonly Deployed Features and Protocols of Cisco IOS XE

- Routing Overview
- Static Routing Configuration on Cisco IOS XE
- Dynamic Routing Configuration on Cisco IOS XE
- Dynamic Network Address Translation on Cisco IOS XE Systems
- Cisco Catalyst StackWise Virtual Feature Overview

Cisco IOS XE Software Management and Upgrade Process

- Cisco IOS XE Upgrade Process
- Cisco IOS XE Downgrade Process
- Application Hosting on Cisco IOS XE
- Virtual Machine Hosting on Cisco IOS XE

Introduction to Cisco NX-OS

- Identifying Csco NX-OS Platforms
- Use Case of Cisco NX-OS Platforms
- Cisco NX-OS Architecture

Use of Cisco NX-OS CLI and Configuration Management

- Initial Access of Cisco NX-OS Switch
- Initial Cisco NX-OS Switch Configuration
- Cisco NX-OS Switch Power-On Auto Provisioning
- Cisco NX-OS CLI
- Cisco NX-OS Configuration Management

Commonly Deployed Features and Protocols of Cisco NX-OS

- Virtual Port Channel Overview
- Virtual Port Channel Configuration and Verification
- Fibre Channel Overview
- Fibre Channel Configuration on Cisco MDS Switches
- FCoE Overview
- FCoE Configuration on Cisco Nexus Switches
- Virtual Extensible LAN Overview
- MP-BGP EVPN VXLAN Control Plane Overview
- VXLAN Data Plane

Cisco NX-OS Software Management and Upgrade Process

- Cisco NX-OS Features
- Cisco NX-OS Systems Upgrades
- Cisco NX-OS Software Upgrade Prerequisites and Guidelines
- Cisco NX-OS System Upgrade Options
- Cisco NX-OS System Downgrades
- Third-Party Applications on Cisco NX-OS

Introduction to Cisco IOS XR

- Identifying Cisco IOS XR Platforms
- Use Cases for Cisco IOS XR Devices
- Cisco IOS XR Software Architecture

Use of Cisco IOS XR CLI and Configuration Managment

- Initial Access of Cisco IOS XR Device
- Cisco IOS XR User Login and Command Modes
- Cisco IOS XR Initial Configuration
- Cisco IOS XR CLI
- Cisco IOS XR Configuration Management

Commonly Deployed Features and Protcols of Cisco IOS XR

- Layer 3 VPN Overview
- Layer 3 VPN Configuration
- Routing Policy Language Overview
- Segment Routing Overview

Cisco IOS XR Software Management and Upgrade Process

- Cisco IOS XR Upgrade Process
- Cisco IOS XR Downgrade Process
- Application Hosting on Cisco IOS XR Platforms
- Golden ISO Image Overview

Automation and Programmability

- Evolution of Automation on Cisco Network Devices
- NETCONF Overview
- RESTCONF Overview
- Ansible Automation Tool Overview
- Terraform Automation Tool Overview

Monitoring Tools

- Monitoring Options Overview
- Simple Network Management Protocol Overview
- Configuring SNMP on Cisco Devices
- Model-Driven Telemetry Overview
- Configuring Telemetry Streaming on Cisco Devices
- System Message Logging on Cisco Devices
- Configuring Logging on Cisco Devices

Troubleshooting and Best Practices

- Common Troubleshooting Commands

- Configuration Verification Commands
- Packet Capturing Tools Overview
- Cisco Support Page Overview
- Working with Cisco Technical Assistance Center
- Cisco Bug Search Tool Overview

Security and Device Hardening

- Device Hardening Good Practices
- Securing Device Access
- Securing Data Transfer
- Authentication, Authorisation and Accounting Configuration
- Port Security on Cisco Switches
- Preventing ARP Spoofing Attacks in Cisco Networks
- Traffic Filtering on Cisco Devices
- Control Plane Policing Overview

Cisco Network Security Tools and Sites

- Cisco Security Advisories
- Cisco Software Checker Overview
- Cisco CLI Analyzer Overview

Cisco Network Automation Platforms

- Cisco Catalyst Center Overview
- Cisco Application Centric Infrastructure and Cisco Nexus Dashboard Overview
- Cisco IOS XR Management and Automation Solutions Overview

Virtual Classroom Live Labs

Labs:

- Discovery Lab 1: Create the First Lab Topology
- Discovery Lab 2: Enable Remote Access
- Discovery Lab 3: Configure Layer 2 Interfaces and VLANs
- Discovery Lab 4: Configure Layer 3 Interfaces and Routing
- Discovery Lab 5: Perform Basic Configuration on Cisco IOS XE Router
- Discovery Lab 6: Configure Static Routing on Cisco IOS XE Router
- Discovery Lab 7: Configure OSPF Routing Protocol on IOS XE Platform
- Discovery Lab 8: Configure Network Address Translaton on Cisco IOS XE Systems
- Discovery Lab 9: Perform an Upgrade of a Cisco IOS XE Router
- Discovery Lab 10: Deploy a Containerized Application on a Csico IOS XE Device
- Discovery Lab 11: Perform Initial Cisco NX-OS Switch Configuration
- Discovery Lab 12: Configure Virtual Port Channel
- Discovery Lab 13: Configure Fibre Channel on Cisco MDS Switches
- Discovery Lab 14: Configure VXLAN
- Discovery Lab 15: Upgrade Cisco Nexus Switches in vPC

- Discovery Lab 16: Discovery Lab 1: Install Third-Party Tool on Cisco Nexus Swicth
- Discovery Lab 17: Perform Initial Configuration on Cisco IOS XR Router
- Discovery Lab 18: Perform Basic Configuration of Cisco IOS XR Router
- Discovery Lab 19: Configure a Layer 3 VPN
- Discovery Lab 20: Create a Routing Policy
- Discovery Lab 21: Perform Upgrade of a Cisco IOS XR Router
- Discovery Lab 22: Deploy a Containerized Application on Cisco IOS XR Device
- Discovery Lab 23: Manage a Cisco Nexus Switch with NETCONF
- Discovery Lab 24: Manage Cisco Catalyst Router with RESTCONF
- Discovery Lab 25: Automate Cisco IOS XR Router with Ansible
- Discovery Lab 26: Automate Cisco Catalyst Switch with Terraform
- Discovery Lab 27: Configure SNMP, Logging, and Telemetry on Cisco Catalyst Router
- Discovery Lab 28: Troubleshoot Common Network Issues
- Discovery Lab 29: Capture Network Traffic and Identify the Issue
- Discovery Lab 30: Secure Console and Remote Access on Cisco Devices
- Discovery Lab 31; Implement Port Security
- Discovery Lab 32: Implement Access Lists on Cisco Devices
- Discovery Lab 33: Explore Configuration of Cisco Network Devices Using CLI Analyzer

Jan 5 - 9, 2026 | 9:00 AM - 5:00 PM EST

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ON-DEMAND	$1,170 CAD

On-Demand Outline

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Visit us at www.globalknowledge.com or call us at 1-866-716-6688.