IOSXRE - CISCO IOS XR SOFTWARE ESSENTIALS 1.0

Course Code: 860039

The **Cisco IOS XR Software Essentials (IOSXRE)** course introduces you to the essential features and functions of the Cisco IOS XR Software operating system that powers many Cisco products. Through a combination of lectures and hands-on lab exercises, you will gain an understanding of all major aspects of the operating system including the architecture, installation and upgrade, automatic provisioning, and using the software command-line interface (CLI).

You will also learn how to implement essential software services including system security, logging, timing and synchronization, AAA services, and how to use modular QoS. In addition, you will learn how to implement basic routing and forwarding using Multiprotocol Label Switching (MPLS).

Finally, you will learn how to implement and use programmability and monitoring features including Simple Network Management Protocol (SNMP), telemetry, process monitoring, and IOS XR programmability.

This course is worth 24 Continuing Education (CE) Credits

What You'll Learn

After completing this course, you should be able to:

- Describe Cisco IOS XR Software architecture
- Explain how to install Cisco IOS XR Software packages
- Describe how to provision network devices by using zero touch provisioning
- Describe how to perform initial configurations on a Cisco IOS XR router
- Recognize, implement, and manage system security features within Cisco IOS XR Software systems, ensuring the protection of network infrastructure and data
- Monitor device performance through CLI and logging services
- Describe the methods and protocols for establishing timing and synchronization on Cisco IOS XR router platforms
- Describe the operation of Cisco IOS XR AAA Software services, task-based security mechanisms and user security policies
- Configure, manage, and troubleshoot Cisco IOS XR Software AAA services in a network environment
- Recognize how to implement QoS in various scenarios and environments, including Cisco IOS XR Software and a service provider environment

- Define the Cisco IOS XR implementation requirements for deploying common routing protocols and managing the Routing Information Base, Route Policy, forwarding, and load balancing mechanisms
- Implement and configure MPLS and describe MPLS label propagation in service provider networks
- Configure SNMP in Cisco IOS XR Software environments for optimum performance and efficient management of network resources
- Describe the programmable features of Cisco IOS XR Software
- Comprehend and implement model-driven telemetry for enhanced network visibility and management
- Describe the application hosting architecture and how to deploy a third-party application on a Cisco IOS XR router
- Illustrate how to efficiently monitor processes using process monitoring concepts and tools such as employing the monitor processes command to track and manage system activities

Who Needs to Attend

Individuals looking to gain an understanding of all major aspects of the Cisco IOS XR operating system including the architecture, installation and upgrade, automatic provisioning, and the use of the software command-line interface (CLI).

Prerequisites

Attendees should meet the following pre-requisites:

- Experience working with CLI-based network devices
- Knowledge of general routing concepts

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VIRTUAL CLASSROOM LIVE	$4,695 CAD	4 Day

Virtual Classroom Live Outline

Cisco IOS XR Software Fundamentals

- Cisco IOS XR Software Evolution

Cisco IOS XR Software Installation and Upgrades

- Software Package Basics
- Common Installation Workflows
- Golden ISO
- Bug Fix RPMs
- FPD Upgrades

Automatic Provisioning

- Automatic Provisioning Overview

Cisco IOS XR Software CLI Basics

- Cisco IOS XR Configuration Operations
- Cisco IOS XR Initial Configuration
- Reviewing the Configuration

Cisco IOS XR Software System Security

- Implementing Management Plane Security
- Implementing Data Plane Security
- Components of Trustworthy Systems

Cisco IOS XR Software Logging Configuration

- Monitoring Hardware
- CLI-Based Monitoring
- Implementing Logging for Monitoring

Timing and Synchronization

- Timing and Synchronization
- Synchronous Ethernet Clock Synchronization
- Transparent PDH over Packet and Channelized SDH over Packet Networking

- Using the Precision Time Protocol
- External Timing Clock Interfaces and Sources
- Implementing NTP
- Global Navigation Satellite System

Cisco IOS XR Software AAA Service Fundamentals

- AAA Fundamentals
- Task-Based Security
- Configuring a User Security Policy
- Authentication with Remote Servers

Cisco IOS XR Software AAA Service Implementation

- Configuring the AAA Server
- Configuring Authentication
- TACACS+ Command Authorization
- Configuring Accounting
- AAA Troubleshooting

Cisco IOS XR Software Modular QoS

- Understanding QoS

Cisco IOS XR Software Routing Protocol Configuration

- Implementing IS-IS
- Troubleshooting IS-IS Operations
- Implementing OSPFv2 and OSPFv3
- Implementing IGP Flexible Algorithm in IP Networks
- Implementing Static Routes
- Implementing BGP
- Troubleshooting BGP
- Configuring and Monitoring the RIB
- Implementing Routing Policy
- Configuring, Forwarding and Load Balancing

Cisco IOS XR Software MPLS Operation and Implementation

- MPLS Architecture
- MPLS Configuration
- MPLS Monitoring
- MPLS Troubleshooting

Network Management with SNMP on Cisco IOS XR Software

- SNMP Overview
- Cisco IOS XR Software SNMP Best Practices

Cisco IOS XR Software Programmability

- Model-Driven Programmability Basics
- NETCONF Fundamentals
- gRPC Fundamentals
- Cisco IOS XR Software Service Layer
- On-Box Automation Scripts

Model-Driven Telemetry

- Examining Telemetry Fundamentals
- Model-Driven Telemetry
- Telemetry Encoding and Transport Methods
- gRPC Fundamentals
- Configuring Telemetry
- Telemetry Collectors

Application Hosting Overview

- Application Hosting Basics

Cisco IOS XR Software Process Monitoring

- Examining Processes and Threads
- Process Crashes
- Commands for Debugging Processes
- Restartability of Processes
- Process Monitoring Overview
- Identifying Memory Problems
- Memory Depletion

Virtual Classroom Live Labs

Labs:

- Discovery Lab 1: Cisco IOS XR Software Installation
- Discovery Lab 2: Cisco IOS XR7 Software Installation
- Discovery Lab 3: Configure and Verify ZTP
- Discovery Lab 4: Initial Configuration of a Cisco IOS XR Router
- Discovery Lab 5: Configuration Commit and Rollback
- Discovery Lab 6: Configure and Verify MPP
- Discovery Lab 7: Configure and Verify IPv4 and IPv6 Filtering
- Discovery Lab 8: Configure and Verify uRPF
- Discovery Lab 9: Configure and Verify Logging
- Discovery Lab 10: Configure and Verify NTP
- Discovery Lab 11: Configure and Verify User Security Policies
- Discovery Lab 12: Cisco IOS XR AAA Configuration
- Discovery Lab 13: Configure and Verify Modular QoS
- Discovery Lab 14: Configure and Verify IS-IS
- Discovery Lab 15: Configure and Verify OSPF
- Discovery Lab 16: Configure and Verify BGP
- Discovery Lab 17: Configure and Verify MPLS
- Discovery Lab 18: Configure and Verify SNMP
- Discovery Lab 19: Configure and Verify Devices by Using Model-Driven Programmability
- Discovery Lab 20: Configure and Verify Model-Driven Telemetry
- Discovery Lab 21: Configure and Verify Application Hosting Within a Docker

Container

Aug 17 - 20, 2026 | 9:00 AM - 5:00 PM EDT

Nov 16 - 19, 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.

Date created: 4/9/2026 10:05:02 AM