Implementing and Operating Cisco Service Provider Network Core Technologies (SPCOR) v1.0

What you'll learn in this course

The **Implementing and Operating Cisco Service Provider Network Core Technologies (SPCOR)** v1.0 course teaches you how to configure, verify, troubleshoot, and optimize next-generation, Service Provider IP network infrastructures. It provides a deep dive into Service Provider technologies including core architecture, services, networking, automation, quality of services, security, and network assurance.

This course also helps you prepare to take the **350-501 Implementing and Operating Cisco® Service Provider Network Core Technologies (SPCOR)** exam**,** which is part of the **CCNP® Service Provider** certification and the **Cisco Certified Specialist – Service Provider Core** certification. This course also earns you 64 Continuing Education (CE) credits towards recertification.

Course duration

- Instructor-led training: 5 days in the classroom with hands-on lab practice, plus the equivalent of 3 days of self-study material
- Virtual instructor-led training: 5 days of web-based classes with hands-on lab practice, plus the equivalent of 3 days of self-study material
- E-learning: Equivalent of 8 days of content with videos, practice, and challenges

How you'll benefit

This course will help you:

- Configure, verify, troubleshoot, and optimize next-generation, Service Provider IP network infrastructures
- Deepen your understanding of Service Provider technologies including core architecture, services, networking, automation, quality of services, security, and network assurance
- Prepare to take the **350-501 Implementing and Operating Cisco® Service Provider Network Core Technologies (SPCOR)** exam.
- Earn 64 CE credits toward recertification

Who should enroll

- Network administrators
- Network engineers
- Network managers
- System engineers
- Project managers
- Network designers

How to enroll

E-learning

- To buy a single e-learning license, visit the Cisco Learning Network Store.

- For more than one license, or a learning library subscription, contact us at learning-bdm@cisco.com.

Instructor-led training

- Find a class at the Cisco Learning Locator.

- Arrange training at your location through Cisco Private Group Training.

Technology areas

- Service provider networking

- Enterprise networking

Course details

Objectives

After taking this course, you should be able to:

- Describe the Service Provider network architectures, concepts, and transport technologies

- Describe the Cisco Internetwork Operating System (Cisco IOS®) software architectures, main IOS types, and their differences

- Implement Open Shortest Path First (OSPF) in the Service Provider network

- Implement Integrated Intermediate System-to-Intermediate System (IS-IS) in the Service Provider network

- Implement Border Gateway Protocol (BGP) routing in Service Provider environments

- Implement route maps and routing policy language

- Describe IPv6 transition mechanisms used in the Service Provider networks

- Implement high-availability mechanisms in Cisco IOS XR software

- Implement traffic engineering in modern Service Provider networks for optimal resource utilization

- Describe segment routing and segment routing traffic engineering concepts

- Describe the VPN technologies used in the Service Provider environment

- Configure and verify Multiprotocol Label Switching (MPLS) L2VPN in Service Provider environments

- Configure and verify MPLS L3VPN in Service Provider environments

- Implement IP multicast services

- Describe the Quality of Service (QoS) architecture and QoS benefits for SP networks

- Implement QoS in Service Provider environments

- Implement control plane security in Cisco devices

- Implement management plane security in Cisco devices

- Implement data plane security in Cisco devices

- Describe the Yet Another Next Generation (YANG) data modeling language

- Implement automation and assurance tools and protocols

- Describe the role of Cisco Network Services Orchestrator (NSO) in Service Provider environments

- Implement virtualization technologies in Service Provider environments

Prerequisites

- Intermediate knowledge of Cisco IOS or IOS XE
- Familiarity with Cisco IOS or IOS XE and Cisco IOS XR Software configuration
- Knowledge of IPv4 and IPv6 TCP/IP networking
- Intermediate knowledge of IP routing protocols
- Understanding of MPLS technologies
- Familiarity with VPN technologies

Outline

- Describing Service Provider Network Architectures
- Describing Cisco IOS Software Architectures
- Implementing OSPF
- Implementing IS-IS
- Implementing BGP
- Implementing Route Maps and Routing Protocol for LLN [Low-Power and Lossy Networks] (RPL)
- Transitioning to IPv6
- Implementing High Availability in Networking
- Implementing MPLS
- Implementing Cisco MPLS Traffic Engineering
- Describing Segment Routing
- Describing VPN Services
- Configuring L2VPN Services
- Configuring L3VPN Services
- Implementing Multicast
- Describing QoS Architecture
- Implementing QoS
- Implementing Control Plane Security
- Implementing Management Plane Security
- Implementing Data Plane Security
- Introducing Network Programmability
- Implementing Automation and Assurance
- Introducing Cisco NSO
- Implementing Virtualization in Service Provider Environments

Lab outline

- Deploy Cisco IOS XR and IOS XE Basic Device Configuration
- Implement OSPF Routing
- Implement Integrated IS-IS Routing
- Implement Basic BGP Routing
- Filter BGP Prefixes Using RPL
- Implement MPLS in the Service Provider Core
- Implement Cisco MPLS Traffic Engineering (TE)
- Implement Segment Routing
- Implement Ethernet over MPLS (EoMPLS)
- Implement MPLS L3VPN
- Implement BGP Security
- Implement Remotely Triggered Black Hole (RTBH) Filtering

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