Objetivos

After taking this course, you should be able to:

- Describe the main characteristics of routing protocols that are used in Service provider environments
- Implement advanced features of multiarea Open Shortest Path First (OSPFv2) running in Service Provider networks
- Implement advanced features of multilevel Intermediate System to Intermediate System (ISIS) running in Service Provider networks
- Configure route redistribution
- Configure Border Gateway Protocol (BGP) in order to successfully connect the Service Provider network to the customer or upstream Service Provider
- Configure BGP scalability in Service Provider networks
- Implement BGP security options
- Implement advanced features in order to improve convergence in BGP networks
- Troubleshoot OSPF, ISIS, and BGP
- Implement and verify MPLS
- Implement and troubleshoot MPLS traffic engineering
- Implement and verify segment routing technology within an interior gateway protocol
- Describe how traffic engineering is used in segment routing networks
- Implement IPv6 tunneling mechanisms
- Describe and compare core multicast concepts
- Implement and verifying the PIM-SM protocol
- Implement enhanced Protocol-Independent Multicast - Sparse Mode (PIM-SM) features
- Implement Multicast Source Discovery Protocol (MSDP) in the interdomain environment
- Implement mechanisms for dynamic Rendezvous Point (RP) distribution

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Pre-requisitos

Before taking this course, you should have the following knowledge and skills:

- Intermediate to advanced knowledge of Cisco Internetwork Operating System (Cisco IOS®) or IOS XE and Cisco IOS XR Software configuration
- Knowledge of IPv4 and IPv6 TCP/IP networking
- Intermediate knowledge of BGP, OSPF, and ISIS routing protocols
- Understanding of MPLS technologies
- Understanding of multicast technologies

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- Familiarity with segment routing

The following Cisco courses can help you gain the knowledge you need to prepare for this course:

- **Building Cisco Service Provider Next-Generation Networks Part 1 (SPNGN1)**

- **Building Cisco Service Provider Next-Generation Networks Part 2 (SPNGN2)**

- **Deploying Cisco Service Provider Network Routing (SPROUTE)**

- **Implementing and Administering Cisco Solutions (CCNA®)**

- **Understanding Cisco Service Provider Network Foundations (SPFNDU)**

- **Implementing and Operating Cisco Service Provider Network Core Technologies (SPCOR)**

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Contenido

- Implementing and Verifying Open Shortest Path First Multiarea Networks

- Implementing and Verifying Intermediate System to Intermediate System Multilevel Networks

- Introducing Routing Protocol Tools, Route Maps, and Routing Policy Language

- Implementing Route Redistribution

- Influencing Border Gateway Protocol Route Selection

- Scaling BGP in Service Provider Networks

- Securing BGP in Service Provider Networks

- Improving BGP Convergence and Implementing Advanced Operations

- Troubleshooting Routing Protocols

- Implementing and Verifying MPLS

- Implementing Cisco MPLS Traffic Engineering

- Implementing Segment Routing

- Describing Segment Routing Traffic Engineering (SR TE)

- Deploying IPv6 Tunneling Mechanisms

- Implementing IP Multicast Concepts and Technologies

- Implementing PIM-SM Protocol

- Implementing PIM-SM Enhancements

- Implementing Interdomain IP Multicast

- Implementing Distributed Rendezvous Point Solution in Multicast Network

Laboratorio

- Implement OSPF Special Area Types (IPv4 and IPv6)

- Implement Multiarea IS-IS

- Implement Route Redistribution

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- Influence BGP Route Selection
- Implement BGP Route Reflectors
- Implement BGP Security Options
- Troubleshoot Routing Protocols
- Implement MPLS in the Service Provider Core
- Implement Cisco MPLS TE
- Configure and Verify Interior Gateway Protocol (IGP) Segment Routing
- Implement Tunnels for IPv6
- Enable and Optimize PIM-SM
- Implement PIM-SM Enhancements
- Implement Rendezvous Point Distribution

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