

# Implementing Cisco Service Provider Advanced Routing Solutions (SPRI)

## Description

The **Implementing Cisco Service Provider Advanced Routing Solutions (SPRI)** training teaches you theories and practices to integrate advanced routing technologies including routing protocols, multicast routing, policy language, Multiprotocol Label Switching (MPLS), and segment routing, expanding your knowledge and skills in service provider core networks.

This training prepares you for the 300-510 SPRI v1.0 exam. If passed, you earn the Cisco Certified Specialist – Service Provider Advanced Routing Implementation certification and satisfy the concentration exam requirement for the Cisco Certified Network Professional (CCNP) Service Provider certification. This training also earns you 40 Continuing Education (CE) credits toward recertification.

## How you'll benefit

This training will help you:

- Gain the high-demand skills to maintain and operate advanced technologies related to Service Provider core networks
- Increase your knowledge and skills for implementing Service Provider core advanced technologies through hands-on application and practical instruction
- Prepare for the 300-510 SPRI v1.0 exam
- Earn 40 CE credits toward recertification

## Who should enroll

- Network Administrators
- System Engineers
- Project Managers
- Network Designers

## Technology areas

- Service Provider

## Objectives

- 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) 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 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

## Prerequisites

There are no prerequisites for this training. However, the knowledge and skills you are recommended to have before attending this training are:

- 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
- Familiarity with segment routing

These skills can be found in the following Cisco Learning Offerings:

- [Implementing and Administering Cisco Solutions \(CCNA\)](#)
- [Understanding Cisco Service Provider Network Foundations \(SPFNDU\)](#)
- [Implementing and Operating Cisco Service Provider Network Core Technologies \(SPCOR\)](#)

## Outline

- 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

## Lab Outline

- Implement OSPF Special Area Types (IPv4 and IPv6)
- Implement Multiarea IS-IS
- Implement Route Redistribution
- 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

## What to expect on the exam

Implementing Cisco Service Provider Advanced Routing Solutions (300-510 SPRI) v1.0 is a 90-minute exam associated with the Cisco Certified Specialist – Service Provider certification and satisfies the concentration exam requirement for the CCNP Service Provider certification.

This exam tests your knowledge of implementing service provider advanced routing technologies, including:

- Routing protocols
- Policy language
- MPLS
- Segment routing

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## Links

- [Cisco U. Learning Path](#)
- [Cisco Learning Network Store](#)
- [Cisco Learning Locator](#)