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# Implementing Cisco Service Provider Advanced Routing Solutions

DURATION: 5 DAYS

COURSE CODE: SPRI

FORMAT: LECTURE/LAB

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## COURSE DESCRIPTION

The Implementing Cisco Service Provider Advanced Routing Solutions (SPRI) course 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 course prepares you for the 300-510 Implementing Cisco® Service Provider Advanced Routing Solutions (SPRI) exam.

The 300-510 SPRI exam certifies your knowledge of implementing service provider advanced routing technologies including routing protocols, policy language, MPLS, and segment routing. After you pass 300-510 SPRI, you earn the Cisco Certified Specialist - Service Provider Advanced Routing Implementation certification, and you satisfy the concentration exam requirement for the CCNP Service Provider certification.

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## WHO SHOULD ATTEND

This course is for professionals who need knowledge about implementing various Service Provider core technologies and advanced routing technologies.

Network administrators

System engineers

Project managers

Network designers

## PREREQUISITES

- 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

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)

## LEARNING OBJECTIVES

This course 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 to take the 300-510 SPRI exam

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

## COURSE OUTLINE

1. Implementing and Verifying Open Shortest Path First Multiarea Networks
2. Implementing and Verifying Intermediate System to Intermediate System Multilevel Networks
3. Introducing Routing Protocol Tools, Route Maps, and Routing Policy Language
4. Implementing Route Redistribution
5. Influencing Border Gateway Protocol Route Selection
6. Scaling BGP in Service Provider Networks
7. Securing BGP in Service Provider Networks
8. Improving BGP Convergence and Implementing Advanced Operations
9. Troubleshooting Routing Protocols
10. Implementing and Verifying MPLS
11. Implementing Cisco MPLS Traffic Engineering
12. Implementing Segment Routing
13. Describing Segment Routing Traffic Engineering (SR TE)
14. Deploying IPv6 Tunneling Mechanisms
15. Implementing IP Multicast Concepts and Technologies
16. Implementing PIM-SM Protocol
17. Implementing PIM-SM Enhancements
18. Implementing Interdomain IP Multicast
19. Implementing Distributed Rendezvous Point Solution in Multicast Network

## DISCOVERY LABS

- 1: Implement OSPF Special Area Types (IPv4 and IPv6)
- 2: Implement Multiarea IS-IS
- 3: Implement Route Redistribution
- 4: Influence BGP Route Selection
- 5: Implement BGP Route Reflectors
- 6: Implement BGP Security Options
- 7: Troubleshoot Routing Protocols
- 8: Implement MPLS in the Service Provider Core
- 9: Implement Cisco MPLS TE
- 10: Configure and Verify Interior Gateway Protocol (IGP) Segment Routing
- 11: Implement Tunnels for IPv6
- 12: Enable and Optimize PIM-SM
- 13: Implement PIM-SM Enhancements
- 14: Implement Rendezvous Point Distribution