

Deploying Cisco Service Provider Network Routing

ID SPROUTE Preis 3.190,- € (exkl. MwSt.) Dauer 5 Tage

Zielgruppe

The primary audience for this course is as follows:

- Network administrators, network engineers, network managers, and systems engineers who would like to implement IP routing in service provider environments.

The secondary audience for this course is as follows:

- Network designers and project managers. The course is also recommended for all individuals preparing for CCNP Service Provider certification.

Voraussetzungen

The knowledge and skills that a learner must have before attending this course are as follows:

- Intermediate knowledge of Cisco IOS/IOS XE and Cisco IOS XR Software configuration
- Skills and knowledge that are equivalent to those learned in [Building Cisco Service Provider Next-Generation Networks, Part 1 \(SPNGN1\)](#)
- Skills and knowledge that are equivalent to those learned in [Building Cisco Service Provider Next Generation Networks, Part 2 \(SPNGN2\)](#)

Kursziele

Upon completing this course, the learner will be able to meet these overall objectives:

- Identify the typical routing requirements and list the routing protocols in service provider networks
- Describe steps needed to implement OSPF

in the service provider network

- Describe the importance of the Integrated IS-IS routing protocol for internal routing and list the steps in implementing Integrated IS-IS into the service provider network
- Implement BGP to connect an enterprise to a service provider, and a service provider to an upstream service provider
- Describe tools used for routing protocol manipulation, route redistribution, and BGP route selection

Kursinhalt

The Deploying Cisco Service Provider Network Routing (SPROUTE) v1.0 course is designed to help students prepare for Cisco CCNP® SP certification. The SPROUTE course is a component of the CCNP SP curriculum.

The SPROUTE course is designed to provide service provider professionals with information on the use of advanced routing in implementing scalability for Cisco routers that are connected to LANs and WANs. The goal is to train professionals to dramatically increase the number of routers and sites using these techniques instead of redesigning the network when additional sites or wiring configurations are added. The SPROUTE training reinforces the instruction by providing students with hands-on labs to ensure that they thoroughly understand how to implement advanced routing within their networks.

The course also includes classroom activities with remote labs that are useful to gain practical skills on deploying Cisco IOS/IOS XE and Cisco IOS XR features to operate and support a service provider network.

Detaillierter Kursinhalt

1: Service Provider Routing

Discover the main characteristics of routing protocols used in the service provider environment.

- **Understanding Service Provider Routing Protocols**
- Describe the characteristics and requirements for routing protocols in service provider environments
- Describe the characteristics of OSPF in service provider environments
- Describe the characteristics of IS-IS in service provider environments
- Describe the characteristics of BGP in service provider environments

2: Implement OSPF in the Service Provider Network

Build a scalable multiarea network with OSPF in the service provider environment.

- **Introducing OSPF Routing**
- Describe OSPF in the Cisco IP NGN, and describe the features of link-state routing protocols
- Describe the two-tier hierarchy structure of OSPF, including the characteristics of transit areas and regular areas, and the terminology that is used
- Describe how routers establish OSPF neighbor adjacencies, exchange LSAs, and calculate the best path
- Describe how to interpret content of the OSPF LSDB
- **Understanding OSPF Operation**
- Describe OSPF packet types and OSPF packet operation
- Describe OSPF neighbor adjacencies establishment, LSDB exchange, and synchronization
- Describe OSPF network types
- Describe implementation steps when enabling OSPF on point-to-point, point-to-multipoint, nonbroadcast multiaccess, and broadcast links
- **Implementing OSPF Routing**
- Describe how to implement OSPF in the service provider network, and describe the importance of the OSPF router ID

- Describe how OSPF cost is used to change routing, and explain why and where an OSPF virtual link may be used
- Describe how to implement OSPF authentication in the service provider network
- **LAB: Implement OSPF Routing**
- **Lesson 4: Implementing OSPF Special Area Types**
- Describe interarea and external OSPF route summarization
- List and describe different OSPF area types
- Describe OSPF stub area rules, and implement OSPF stub and totally stubby areas
- Describe OSPF NSSA rules, and implement OSPF NSSA and totally NSSA
- **LAB: Implement OSPF Special Area Types**

3: Implement Integrated IS-IS in the Service Provider Network

Learn how to configure Integrated IS-IS in the service provider network.

- **Introducing IS-IS Routing**
- Describe IS-IS and Integrated IS-IS routing, and compare Integrated IS-IS with OSPF
- Describe CLNS addressing as it is used in proper IS-IS deployment
- Describe IS-IS router types and the routing logic that is used in the IS-IS-enabled network
- Describe IS-IS packet structure and the importance of different TLVs
- Describe IS-IS network types, adjacency establishment, LSP exchange, and LSDB synchronization
- **Implementing Integrated IS-IS Routing**
- Describe the requirement for CLNS addressing, even when you are using IP in an IS-IS environment
- Describe the configuration process for Integrated IS-IS in an IP environment
- **LAB: Implement Integrated IS-IS Routing**

4: Implement BGP in the Service Provider Network

Become proficient in implementing and verifying BGP to connect a service provider with customers and other service providers.

- **Introducing BGP Routing**
- Describe connectivity between an enterprise network and a service provider that requires the use of BGP
- Describe how BGP routes between autonomous systems and uses path-vector functionality
- **Implementing Basic BGP Routing**
- Initiate basic BGP configuration in the IPv4- and IPv6-enabled network
- Describe BGP neighbor states
- Describe the importance of the BGP path attributes in the path selection
- **LAB: Implement Basic BGP Routing**

5: Routing Protocol Tools and Route Manipulation

Learn the tools, features, and implementation steps for routing protocol manipulation.

- **Introducing Routing Protocol Tools**
- Describe the characteristics and requirements for routing policies in service provider environments
- Describe the characteristics and usage scenarios for prefix lists
- Describe the characteristics and usage scenarios for AS path-based filtering in service provider environments
- Describe the characteristics and usage scenarios for route maps in service provider environments
- Describe the characteristics of RPL
- **Implementing Route Redistribution**
- Describe the need to use redistribution in the multiple IP routing protocol environment
- Describe the procedures that are necessary to configure route redistribution in networks that use Cisco IOS, IOS XE, and IOS XR Software
- **LAB: Implement Route Redistribution**

- **Influencing BGP Route Selection**
- Describe the use of BGP weights to influence the BGP route selection process
- Describe how the BGP local preference attribute influences BGP route selection
- Describe the function of AS path prepending and how you can use it to facilitate proper return path selection
- Describe how MED can be used to facilitate proper return path selection
- Describe how BGP communities facilitate proper return path selection
- **LAB: Influence BGP Route Selection**