

## Deploying Cisco Service Provider Network Routing (SPROUTE)

- **Formato do curso:** Presencial
- **Localidade:** Porto
- **Com certificação:** CCNP Service Provider
- **Data:** 07 Out. 2019 a 11 Out. 2019
- **Preço:** 2720€
- **Horário:** Laboral - das 09h00 às 17h00
- **Nível:** Avançado
- **Duração:** 35 horas

**Deploying Cisco Service Provider Network Routing** é uma formação oficial Cisco de 5 dias integrante da certificação Cisco Certified Service Provider (**CCNP Service Provider**). Está projetada para preparar engenheiros e técnicos de redes com o conhecimento e a experiência prática necessária para implementar técnicas avançadas de encaminhamento reduzindo a necessidade de redesenhar a rede quando novos sites (POP) forem adicionados à rede. O curso também inclui atividades de sala de aula com laboratórios remotos que são úteis para ganhar competências práticas para a utilização do software Cisco IOS / IOS XE e Cisco IOS XR para operar e suportar as infraestruturas.

### Destinatários

- Clientes e Parceiros Cisco
- Público em geral que pretenda construir carreira nas áreas de Segurança de Redes e de Sistemas de Informação.

### Pré-requisitos

- Conhecimentos de Cisco IOS/IOS XE e Cisco IOS XR
- Conhecimentos equivalentes ou frequência dos cursos Building Cisco Service Provider Next-Generation Networks, Part 1 (SPNGN1) v1.0 e Building Cisco Service Provider Next-Generation Networks, Part 2 (SPNGN2) v1.0
- Recomendada Certificação CCNA Service Provider

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## Objectivos

No final da ação de formação os participantes deverão estar aptos a:

- Identificar o pré requisitos e os protocolos de routing usados em redes service provider.
  - Descrever os passos necessários para implementar OSPF em uma rede service provider.
  - Descrever a importância de usar o protocolo de routing IS-IS em uma rede de service provider.
  - Descrever as ferramentas que são usadas para controlo e manipulação dos protocolos de routing, redistribuição e selecção de rotas com BGP.
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## Programa

### 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
- 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