

# Building Cisco Service Provider Next Generation Networks - Part 2

Learn via: **Classroom/Virtual**

Duration: **5 Days**

## **Overview**

**This design document is for the first version of the new Building Cisco Service Provider Next Generation Networks, Part 2 (SPNGN2) v1.0 course. provides network engineers and technicians with the knowledge and skills necessary to implement and support a service provider network. The course focuses on using Cisco switches and Cisco routers that are connected in LANs and WANs and are typically found in the service provider network. Upon completing this course delegates will be able to configure, verify, and troubleshoot the various Cisco networking devices.**

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 service provider network.

## **Certifications:**

- CCNA Service Provider (CCNA SP)

## **Prerequisites**

Recommended:

- Basic computer literacy
- Basic Microsoft Windows navigation skills
- Basic Internet usage skills
- Basic knowledge of networking concepts
- Basic knowledge of Cisco IOS/IOS XE and Cisco IOS XR software configuration
- Skills and knowledge equivalent to those learned in Building Cisco Service Provider Next-Generation Networks, Part 1 course

## **Who Should Attend**

The primary audience for this course is:

- Network administrators, network engineers, network managers and systems engineers working in the service provider environment.

The secondary audience for this course is:

- Network designers and project managers.

The tertiary audience for this course is program managers.

- The course is also recommended to all individuals preparing for CCNA SP certification.

## **What You Will Learn**

At the end of this course you will be able to:

- Describe the operation of IP and data network
- Describe IPv4 and IPv6 addressing schemes
- Configure switched network technologies
- Describe routed network technologies
- Configure IP services
- Configure Cisco operating systems and platforms
- Configure transport technologies
- Configure access and edge technologies
- Configure security in the network
- Describe MPLS
- Describe multicast

- Describe high availability
- Configure network management
- Describe VPN technologies

## **Outline**

### **Module 1: Service Provider Network Construction**

Present a unified view of a service provider network in relation to the Cisco IP NGN.

- Lesson 1: Introduction to Service Providers
- Lesson 2: Cisco IP NGN Architecture
- Lesson 3: Cisco Hardware Platform Placement

### **Module 2: Advanced LAN Switching**

Present advanced LAN features and technologies for ensuring stable and redundant LAN topology.

- Lesson 1: Implementing VLANs and Trunks
- Lesson 2: Spanning Tree Protocol Enhancements
- Lesson 3: Routing Between VLANs
- Lesson 4: First Hop Redundancy Protocols

### **Module 3: Internal Service Provider Traffic Forwarding**

Configure and verify Open Shortest Path First (OSPF) and Intermediate System-to-Intermediate System (IS-IS), and describe Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

- Lesson 1: Link-State Routing Protocols
- Lesson 2: Implementing OSPF
- Lesson 3: Implementing IS-IS
- Lesson 4: Implementing Route Redistribution
- Lesson 5: MPLS Basics

### **Module 4: External Service Provider Routing**

Configure, monitor, and troubleshoot basic Border Gateway Protocol (BGP) to enable interdomain routing in a network scenario with multiple domains.

- Lesson 1: Introducing BGP
- Lesson 2: Understanding BGP Path Attributes
- Lesson 3: Establishing BGP Sessions
- Lesson 4: Processing BGP Routes
- Lesson 5: Configuring Basic BGP

### **Module 5: ACLs and IP Address Translation**

Describe access control list (ACL) and IP address translation.

- Lesson 1: Applying Access Control Lists
- Lesson 2: Transitioning to IPv6

### **Module 6: Cisco IOS XE and Cisco IOS XR Software**

Describe Cisco IOS XE and Cisco IOS XR Software fundamentals.

- Lesson 1: Describing Cisco IOS XR Software Architecture and Features
- Lesson 2: Explaining Software Maintenance Operations on Cisco IOS XR and Cisco IOS XE
- Lesson 3: Explaining Configuration Management with Cisco IOS XR Software