Implementing Cisco MPLS (MPLS)

ID: CI-MPLS  Price: 2,000.- € (excl. tax)  Duration: 5 days

Who should attend

The target audience is Service Provider and Enterprise network engineers that design, deploy and maintain core IP routing network infrastructures.

Primary target audience:

- This course is intended primarily for network administrators, network engineers, network managers and systems engineers who would like to implement MPLS and MPLS Traffic Engineering.

Secondary target audience:

- Network designers and project managers.

Prerequisites

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

- Intermediate to advanced knowledge of Cisco IOS Software configuration
- Configuring and troubleshooting EIGRP, OSPF, IS-IS and BGP
- Skills and knowledge equivalent to those learned in:
  - Interconnecting Cisco Network Devices Part 1 (ICND1) and Interconnecting Cisco Network Devices Part 2 (ICND2), or Interconnecting Cisco Network Devices: Accelerated (CCNAX) or IFI-CCNAB
  - Implementing Cisco IP Routing (ROUTE)
  - Configuring BGP on Cisco Routers (BGP)
  - 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)
  - Deploying Cisco Service Provider Advanced Network Routing (SPADVROUTE)

Course Objectives

Learners will gain design, implementation, and verification skills for a MPLS VPN domain capable of multiple customer sites with managed central services and Internet access.

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

- Describe the features of MPLS
- Describe how MPLS labels are assigned and distributed
- Configure and troubleshoot frame-mode MPLS on Cisco IOS platforms
- Describe the MPLS peer-to-peer architecture and explain the routing and packet-forwarding model in this architecture
- Configure, monitor, and troubleshoot VPN operations
- Describe how the MPLS VPN model can be used to implement managed services and Internet access
- Describe the various Internet access implementations that are available and the benefits and drawbacks of each model
- Describe the tasks and commands that are necessary to implement MPLS Traffic Engineering

Detailed Course Outline

MPLS Concepts

- Introducing Basic MPLS Concepts
- Introducing MPLS Labels and Label Stack
- Identifying MPLS Applications

Label Assignment and Distribution

- Discovering LDP Neighbors
- Introducing Typical Label Distribution in Frame-Mode MPLS
- Introducing Convergence in Frame-mode MPLS

Frame-Mode MPLS Implementation on Cisco IOS Platforms

- Introducing Cisco Express Forwarding (CEF) Switching
- Configuring Frame-Mode MPLS on Cisco IOS Platforms
Implementing Cisco MPLS (MPLS)

- Monitoring Frame-Mode MPLS on Cisco IOS Platforms
- Troubleshooting Frame-Mode MPLS on Cisco IOS Platforms

MPLS VPN Technology

- Introducing Virtual Private Networks
- Introducing MPLS VPN Architecture
- Introducing the MPLS VPN Routing Model
- Forwarding MPLS VPN Packets

MPLS VPN Implementation

- Using MPLS VPN Mechanisms of Cisco IOS platforms
- Configuring an MP-BGP Session Between PE Routers
- Configuring VRF Tables
- Configuring Small-Scale Routing Protocols Between PE and CE routers
- Monitoring MPLS VPN Operations
- Configuring OSPF as the Routing Protocol Between PE and CE Routers
- Configuring BGP as the Routing Protocol between PE and CE Routers
- Troubleshooting MPLS VPNs

Complex MPLS VPNs

- Introducing Overlapping VPNs
- Introducing Central Services VPNs
- Introducing the Managed CE Routers Service

Internet Access and MPLS VPNs

- Combining Internet Access with MPLS VPNs
- Implementing Internet Access in the MPLS VPN Environment

MPLS Traffic Engineering Overview

- Introducing MPLS Traffic Engineering Components
- MPLS Traffic Engineering Operations
- Configuring MPLS Traffic Engineering on Cisco IOS Platforms
- Monitoring Basic MPLS TE on Cisco IOS Platforms