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Class Code: MPLS  
Number of Days: 5  
Format: Instructor-Led

## Implementing Cisco MPLS (MPLS) Version 2.2

**Course Description:** This five-day course enables students to gather information from the basics to advanced VPN configuration. The focus of the course is on VPN technology issues of MPLS from the Service Providers' perspective and how to configure some of those features and functions in an existing routing environment.

**Target Audience:** Implementing Cisco MPLS is recommended training for individuals seeking certification as a Cisco CCIP. The focus of this course is on MPLS technology issues as those issues apply to service providers and how to configure new features and functions in an existing routed environment.

**Prerequisites:** To fully benefit from this course, learners should have the following prerequisite skills and knowledge:

- CCNA certification or equivalent level of working knowledge
- Equivalent knowledge and skill that can be acquired by attending Cisco's training courses
- BSCI and BGP
- Practical experience deploying and operating networks based on Cisco network devices and Cisco IOS. The QoS course is highly recommended because QoS knowledge is assumed in several sections of the course

**Delivery Method:** Instructor led, group-paced, classroom-delivery learning model with structured hands-on activities.

**Course Objectives:** After completing DCNID (2.0) the student should be able to:

- Describe how the service provider infrastructure is attacked.
- Describe the features of MPLS.
- Describe how MPLS labels are assigned and distributed.
- Identify the Cisco IOS tasks and command syntax necessary to implement MPLS on frame-mode Cisco IOS platforms.
- Describe the MPLS peer-to-peer architecture and explain the routing and packet forwarding model in this architecture.
- Identify the Cisco IOS command syntax required to successfully configure, monitor, and troubleshoot VPN operations.
- Identify 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.
- Provide an overview of MPLS Traffic Engineering.

## Course Outline

- Introducing Basic MPLS concepts
- Introducing MPLS labels and label stack
- Identifying MPLS application
- Discovering LDP neighbors
- Establishing the Service Provider IGP Routing Environment
- Introducing Typical Label Distribution in Frame-Mode MPLS
- Introducing Convergence in Frame-Mode MPLS
- Introducing MPLS Label Allocation, Distribution, and Retention Modes
- Introducing CEF Switching
- Configuring Frame-Mode MPLS on Cisco IOS Platform
- Troubleshooting Frame-Mode MPLS on Cisco IOS Platforms
- Establishing the Core MPLS Environment
- Introducing Virtual Private Networks
- Introducing Overlay and Peer-to-Peer VPNs
- Categorizing VPNs
- Introducing MPLS VPN Architecture
- Introducing MPLS VPN Routing Model
- Forwarding MPLS VPN Packets
- Using MPLS VPN Mechanisms of Cisco IOS Platforms
- Configuring VRF Tables
- Configuring an MP-BGP Session Between PE Routers
- Configuring Small-Scale Routing Protocols Between PE and CE Routers
- Monitoring MPLS VPN Operations
- Initial MPLS VPN setup
- Running EIGRP Between PE and CE Routers
- Running OSPF Between PE and CE Routers
- Configuring BGP as the Routing Protocol Between PE and CE routers
- Troubleshooting MPLS VPNs
- Running BGP between PE and CE Routers