Course Outline

Implementing Cisco MPLS

Course MPLS: 5 days Instructor Led

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About this course

Implementing Cisco MPLS (MPLS) v3.0 is a 5-day training program is designed to introduce you to MPLS concepts, installation, migration, operation, inspection, and troubleshooting. You'll start with an overview of MPLS and its operation, after which you'll concentrate on MPLS Virtual Private Network (VPN) deployment. The MPLS fundamentals covered in this class will provide the theory and hands-on knowledge to implement, integrate, and deploy an MPLS infrastructure. The MPLS VPN lecture and labs will cover the models, diversity, implementation, troubleshooting, and flexibility of MPLS VPNs.

Audience profile

- Anyone responsible for designing, implementing, or troubleshooting MPLS networks or solutions based on MPLS technology
- Individuals working toward CCIP certification

At course completion

After completing this course, students will be able to:

- Label and tag distribution protocol
- MPLS VPNs/VPN deployment models
- Multiprotocol BGP
- MPLS VPN configurations, integration, and management

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Module 1: MPLS Concepts

- MPLS Labels and Label Stack
- MPLS Applications

Module 2: MPLS Label Assignment and Distribution

- Discovering LDP Neighbors
- Label Distribution in Frame-Mode MPLS
- Convergence in Frame-Mode MPLS
- MPLS Label Allocation, Distribution, and Retention Modes

Module 3: Frame-Mode MPLS Implementation on Cisco IOS Platforms

- CEF Switching
- Configuring Frame-Mode MPLS
- Monitoring Frame-Mode MPLS
- Troubleshooting Frame-Mode MPLS

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Module 4: MPLS Virtual Private Network (VPN) Technology

- VPN Categorization
- MPLS VPN Architecture
- MPLS VPN Routing Model
- MPLS VPN Packet Forwarding

Module 5: MPLS VPN Implementation

- MPLS VPN Mechanisms
- Configuring VRF Tables
- Configuring an MP-BGP Session Between PE Routers
- Configuring Routing Protocols Between PE and CE Routers
  - RIP
  - EIGRP
  - OSPF
  - BGP
- Monitoring MPLS VPN Operation
- Troubleshooting MPLS VPN

Module 6: Complex MPLS VPNs

- Central Services VPNs
- Managed CE Router Service
- MPLS Managed Services

Module 7: Integrated Internet Access with MPLS VPNs

- VPN Internet Access Topologies
- VPN Internet Access Implementation Methods
- Separating Internet Access from VPN Services
- Internet Access Backbone as a Separate VPN

Module 8: MPLS Traffic Engineering

- Traffic Engineering (TE) Concepts
- MPLS TE Components
- MPLS TE Operations
- Configuring MPLS TE on Cisco IOS Platforms
- Monitoring Basic MPLS TE on Cisco IOS

Course Outline

Lab Outline:

- Lab 1: Configure an IP Routed Network
- Lab 2: Enabling MPLS in the Core Environment
- Lab 3: Initial MPLS VPN Setup
- Lab 4: Running EIGRP Between the PE and CE Routers
- Lab 5: Running OSPF Between the PE and CE Routers
- Lab 6: Running BGP Between the PE and CE Routers
- Lab 7: Configuring Overlapping VPNs
- Lab 8: Merging Service Providers
- Lab 9: Enabling Common Services VPNs
- Lab 10: Configuring Central Site Internet Connectivity with an MPLS VPN
- Lab 11: Implementing Basic MPLS Traffic Engineering