

Learning Services

Implementing Cisco MPLS v3.0



Overview

The Implementing Cisco MPLS (MPLS) v3.0 Cisco® Training on Demand course is designed to introduce you to Multiprotocol Label Switching (MPLS) concepts, installation, migration, operation, inspection, and troubleshooting. You learn about VPN technology issues involving MPLS from the service provider perspective and how to configure some of those features and functions in an existing routed environment. In addition, you will be given a basic introduction to some of the more updated features and functions, such as traffic engineering, Fast Reroute, and Any Transport over MPLS (AToM).

You also gain knowledge of the MPLS high-performance method for forwarding packets through a network, which enables routers at the network edge to apply simple labels to packets, allowing the edge devices, asynchronous transfer mode (ATM) switches, or existing routers in the center of the service provider core to switch packets according to labels, with minimal lookup overhead. Finally, you learn how MPLS integrates the performance and traffic-management capabilities of data-link Layer 2 with the scalability and flexibility of network Layer 3 routing. When used together with other standard technologies, MPLS provides service providers the ability to support value-added features that are critical for their networks.

Duration

The MPLS v3.0 Training on Demand course is a self-paced course based on the 5-day instructor-led training version. It consists of 28 sections of instructor video and text, along with interactive activities, 17 hands-on lab exercises, content review questions, and challenge questions.

Target audience

The primary audience for this course is individuals who are responsible for designing, implementing, or troubleshooting MPLS networks or solutions based on MPLS technology. The course is also recommended for individuals seeking the Cisco CCNP® service provider certification.

Objective

After completing this course, you should be able to:

- Describe the basic features and benefits of MPLS
- Identify MPLS terms such as label switch router (LSR) and label switched path, and identify upstream path and downstream path by function
- Describe the architecture of an MPLS ingress edge LSR, intermediate LSR, and egress edge LSR

Course prerequisites

The knowledge and skills recommended before attending this course are:

- Configuring Border Gateway Protocol (BGP) on Cisco routers

Course outline

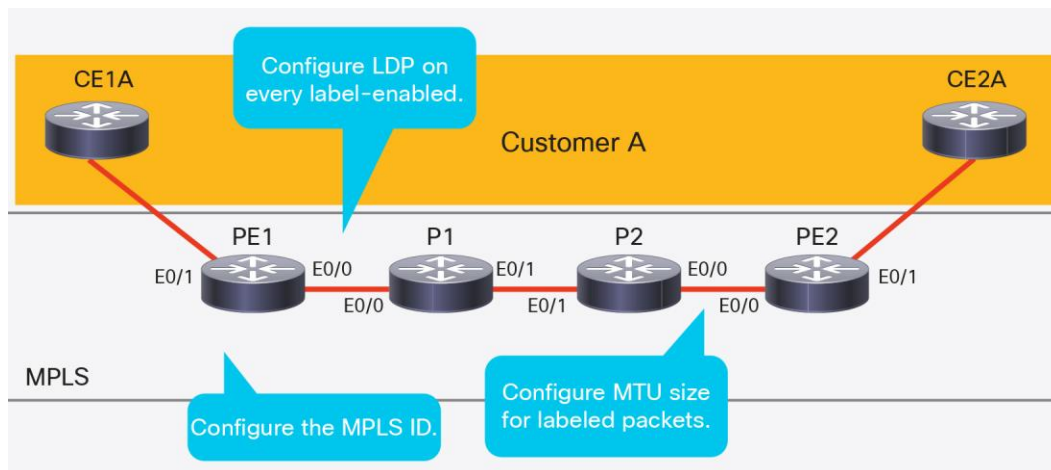
- Section 1: Introducing Basic MPLS Concepts
- Section 2: Introducing MPLS Labels and Label Stack
- Section 3: Identifying MPLS Applications
- Section 4: Discovering LDP Neighbors
- Section 5: Introducing Typical Label Distribution in Frame-Mode MPLS
- Section 6: Introducing Convergence in Frame-Mode MPLS
- Section 7: Summary Challenge: Implementing SP and Customer IP Addressing and IGP Routing
- Section 8: Implementing Frame-Mode MPLS on Cisco IOS® Platforms
- Section 9: Monitoring and Troubleshooting Frame-Mode MPLS on Cisco IOS Platforms
- Section 10: Summary Challenge: Establishing the Core MPLS Environment
- Section 11: Introducing Virtual Private Networks
- Section 12: Introducing MPLS VPN Architecture
- Section 13: Introducing the MPLS VPN Routing Model
- Section 14: Forwarding MPLS VPN Packets
- Section 15: Implementing an MP-BGP Session Between PE Routers
- Section 16: Configuring Small-Scale Routing Protocols Between PE and CE Routers
- Section 17: Summary Challenge: Establishing EIGRP-Based MPLS VPNs
- Section 18: Configuring OSPF as the Routing Protocol Between PE and CE Routers
- Section 19: Summary Challenge: Establishing an OSPF-based MPLS VPN
- Section 20: Configuring BGP as the Routing Protocol Between PE and CE Routers
- Section 21: Summary Challenge: Establishing BGP-Based MPLS VPNs
- Section 22: Troubleshooting MPLS VPN2
- Section 23: Complex MPLS VPNs

- Section 24: Internet Access and MPLS VPNs
- Section 25: Introducing MPLS TE Components
- Section 26: MPLS TE Operations
- Section 27: Configuring and Monitoring MPLS TE on Cisco IOS Platforms
- Section 28: Establishing MPLS Traffic Engineering

Labs outline

This course contains 17 hands-on lab exercises.

Representative topology for all labs in the course:



The labs included in this course are:

- Graded Lab 7.2: Establishing the SP IGP Routing
- Discovery Lab 8.7: Verify Cisco Express Forwarding Switching
- Discovery Lab 8.11: Enable MPLS
- Discovery Lab 8.13: Change IP TTL Propagation
- Graded Lab 10.2: Establishing the Core MPLS Environment
- Discovery Lab 15.14: Configure MP-IBGP
- Discovery Lab 15.18: Configure the VRF Instances
- Discovery Lab 16.6: Configure RIP as a PE-CE Routing Protocol
- Discovery Lab 16.8: Configure EIGRP as a PE-CE Routing Protocol
- Graded Lab 17.2: Establishing an EIGRP-Based MPLS VPNs
- Discovery Lab 18.12: Configure OSPF as a PE-CE Routing Protocol
- Graded Lab 19.2: Establishing an OSPF-Based MPLS VPN
- Discovery Lab 20.9: Configure BGP as a PE-CE Routing Protocol
- Graded Lab 21.2: Establishing BGP-Based MPLS VPNs
- Discovery Lab 23.10: Configure a Central Services VPN
- Discovery Lab 27.9: Configure MPLS TE
- Graded Lab 28.2: Establishing MPLS Traffic Engineering

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