MPLS

The **Implementing Cisco Multiprotocol Label Switching training** teaches you the high-performance method for forwarding packets through a network. MPLS enables routers at the edge of a network to apply simple labels to packets. This practice allows the edge devices to switch packets according to labels, with minimal lookup overhead. 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 in conjunction with other standard technologies, MPLS gives the ability to support value-added features.

How You'll Benefit

• Acquire the skill of implementing MPLS high-performance methods for forwarding packets in a network
• Learn to configure routers at the network edge to apply simple labels to packets
• Gain the knowledge to enable edge devices, ATM switches, or existing routers to switch packets based on labels within the service provider core
• Master the skill of minimizing lookup overhead in the packet-switching process
• Gain proficiency in integrating the performance and traffic-management capabilities of data-link Layer 2 using MPLS
• Acquire the skill of combining the scalability and flexibility of network Layer 3 routing through MPLS
• Learn to leverage MPLS with other standard technologies to implement value-added features for service providers' networks

Who Should Enroll

- Network administrators
- Network engineers
- Network managers
- Systems engineers (who would like to implement MPLS and MPLS Traffic Engineering)

Course Objectives

Upon completion of the course, students will have the knowledge and skills to:

- 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 Prerequisites

It is recommended, but not required, to have the following skills and knowledge before attending this course:

- Intermediate to advanced knowledge of Cisco IOS Software configuration
- Configuring and troubleshooting EIGRP, OSPF, IS-IS and BGP
- The following Cisco courses can help you gain the knowledge you need to prepare for this course:
- Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR)

Course Outline

- MPLS Features
- Label Assignment and Distribution
- Frame-Mode MPLS Implementation on Cisco IOS Platforms
- MPLS Virtual Private Network Technology
- MPLS VPN Implementation
- Complex MPLS VPNs
- Internet Access and MPLS VPNs
- MPLS Traffic Engineering Overview

Lab Outline

- Verifying CEF Switching
- Enabling MPLS
- Change IP TTL Propagation
- Configure MP-IBGP
- Configure the VRF Instances
- Configure RIP as a PE-CE Routing Protocol
- Configure EIGRP as a PE-CE Routing Protocol
- Configure OSPF as a PE-CE Routing Protocol
- Configure BGP as a PE-CE Routing Protocol
- Configure a Central Services VPN
- Configure MPLS Traffic Engineering
- Implement the Service Provider's and Customer's IP Addressing and IGP Routing
- Implement the Core MPLS Environment in the Service Provider Network
- Implement EIGRP Based VPNs
- Implement OSPF Based MPLS VPNs
- Implement BGP Based MPLS VPNs
- Implement MPLS Traffic Engineering