IMPLEMENTING CISCO MPLS (MPLS)

COURSE OVERVIEW:

Multiprotocol Label Switching integrates the performance and traffic-management capabilities of data link Layer 2 with the scalability and flexibility of network Layer 3 routing. So, when used in conjunction with other standard technologies, MPLS gives the ability to support value-added features and service offerings

Implementing Cisco MPLS (MPLS) v3.0 is a 5-day instructor-led class providing students with in-depth knowledge of MPLS and MPLS VPNs design, implementation and configuration skills for new features and functions in an existing routed environment. This class uses IoS (15.2)

WHO WILL BENEFIT FROM THIS COURSE?

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:
This course is intended for network designers and project managers. The course is also recommended to all individuals preparing for MPLS exam.

PREREQUISITES:

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

- Intermediate to advanced knowledge of Cisco IOS Software configuration
- Configuring and troubleshooting EIGRP, OSPF, IS-IS and BGP

COURSE OBJECTIVES:

After completion of this course, students will be able to...
- 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 TE

COURSE OUTLINE:

Module 1: MPLS Concepts

- Lesson 1: Introducing Basic MPLS Concepts
- Lesson 2: Introducing MPLS Labels and Label Stack
- Lesson 3: Identifying MPLS Applications
- Lesson 4: Module Summary
- Lesson 5: Module Self-Check

Module 2: Label Assignment and Distribution

- Lesson 1: Discovering LDP NeighborsLabel-Distributing Protocols
- Lesson 2: Introducing Typical Label Distribution in Frame-Mode MPLS
- Lesson 3: Introducing Convergence in Frame-Mode MPLS
- Lesson 4: Module Summary
- Lesson 5: Module Self-Check

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

- Lesson 1: Introducing CEF Switching
- Lesson 2: Configuring Frame-Mode MPLS on Cisco IOS Platforms
- Lesson 3: Monitoring Frame-Mode MPLS on Cisco IOS Platforms
- Lesson 4: Troubleshooting Frame-Mode MPLS on Cisco IOS Platforms
- Lesson 5: Module Summary
- Lesson 6: Module Self-Check

Module 4: MPLS Virtual Private Network Technology

- Lesson 1: Introducing Virtual Private Networks
- Lesson 2: Introducing MPLS VPN Architecture
- Lesson 3: Introducing the MPLS VPN Routing Model
- Lesson 4: Forwarding MPLS VPN Packets
- Lesson 5: Module Summary
- Lesson 6: Module Self-Check

Module 5: MPLS VPN Implementation

- Lesson 1: Using MPLS VPN Mechanisms of Cisco IOS Platforms
- Lesson 2: Configuring an MP-BGP Session Between PE Routers
- Lesson 3: Configuring VRF Tables
- Lesson 4: Configuring Small-Scale Routing Protocols Between PE and CE Routers
- Lesson 5: Monitoring MPLS VPN Operations
- Lesson 6: Configuring OSPF as the Routing Protocol Between PE and CE Routers
- Lesson 7: Configuring BGP as the Routing Protocol Between PE and CE Routers
- Lesson 8: Troubleshooting MPLS VPNs
- Lesson 9: Module Summary
- Lesson 10: Module Self-Check

Module 6: Complex MPLS VPNs

- Lesson 1: Introducing Overlapping VPNs
- Lesson 2: Introducing Central Services VPNs
- Lesson 3: Introducing the Managed CE Routers Service
- Lesson 4: Module Summary
- Lesson 5: Module Self-Check

Module 7: Internet Access and MPLS VPNs

- Lesson 1: Combining Internet Access with MPLS VPNs
- Lesson 2: Implementing Internet Access in the MPLS VPN Environment
- Lesson 3: Module Summary
- Lesson 4: Module Self-Check

Module 8: MPLS Traffic Engineering Overview

- Lesson 1: Introducing MPLS Traffic Engineering Components
- Lesson 2: MPLS Traffic Engineering Operations
- Lesson 3: Configuring MPLS Traffic Engineering on Cisco IOS Platforms
- Lesson 4: Monitoring Basic MPLS TE on Cisco IOS Platforms
- Lesson 5: Module Summary
- Lesson 6: Module Self-Check

LABS:

- Discovery 1: Verifying CEF Switching
- Discovery 2: Enabling MPLS
- Discovery 3: Change IP TTL Propagation
- Discovery 4: Configure MP-IBGP
- Discovery 5: Configure the VRF Instances
- Discovery 6: Configure RIP as a PE-CE Routing Protocol
- Discovery 7: Configure EIGRP as a PE-CE Routing Protocol
- Discovery 8: Configure OSPF as a PE-CE Routing Protocol
- Discovery 9: Configure BGP as a PE-CE Routing Protocol
- Discovery 10: Configure a Central Services VPN
- Discovery 11: Configure MPLS Traffic Engineering

- Challenge 1: Implement the Service Provider's and Customer's IP Addressing and IGP Routing
- Challenge 2: Implement the Core MPLS Environment in the Service Provider Network
- Challenge 3: Implement EIGRP Based VPNs
- Challenge 4: Implement OSPF Based MPLS VPNs
- Challenge 5: Implement BGP Based MPLS VPNs
- Challenge 6: Implement MPLS Traffic Engineering

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