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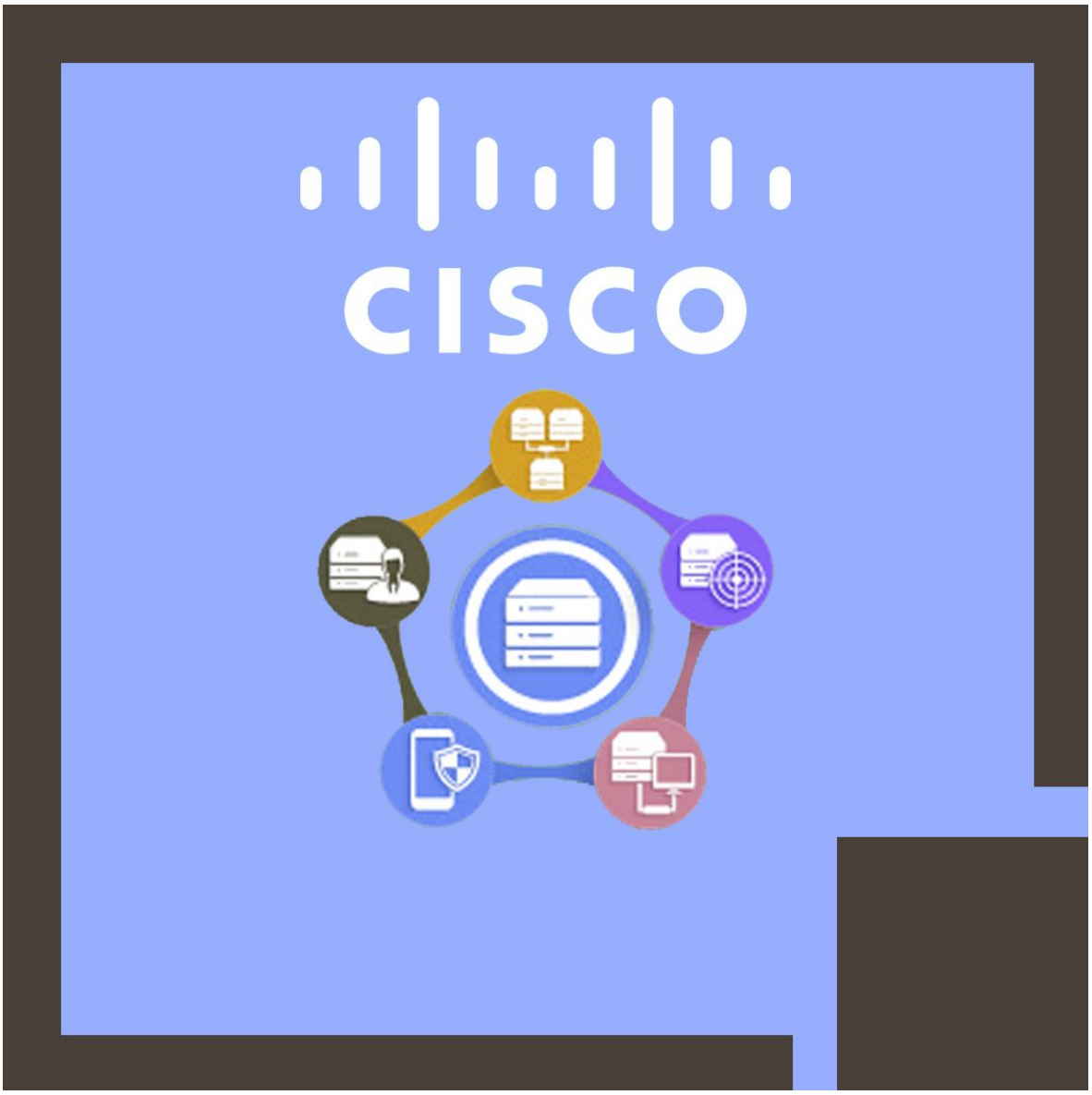
Learning Style: On Demand

Technology: Cisco

Difficulty: Intermediate

Course Duration: 40 Hours

Implementing Cisco MPLS - On Demand (MPLS 3.0)



About this course:

Implementing Cisco MPLS (MPLS) v3.0 is recommended (although not required) training for individuals seeking CCNP Service Provider certification. The focus of this course is on MPLS technology issues as those issues apply to service providers and on how to configure new features and functions in an existing routed environment.

Service providers (and enterprises acting as service providers) are faced with many challenges in terms of customer demand, including an ongoing need for value-added services. Conventional IP packet forwarding has several limitations, and more and more service providers realize that something else is needed. Not only must service providers be concerned with protecting their existing infrastructure, but they must also find ways to generate new services that are not currently supportable using existing technologies.

Multiprotocol Label Switching (MPLS) is a 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 - ATM switches or existing routers in the center of the service provider core 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 allows service providers the ability to support value-added features that are critical for their networks.

The average salary for Cisco Certified Network Engineer is **$77,484** per year.

Course Objectives:

After completing this course, students will be able to:

- Describe MPLS features and 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 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.

Audience:

This course is intended for:

- Network administrators
- Network and/or System engineers
- Network managers

- Systems engineers involved in implementation of MPLS and MPLS traffic engineering

Prerequisites:

- CI-BSCI
- Configuring BGP on Cisco Routers Version 3.2 (BGP)

Course Outline:

Module 1: MPLS Concepts

- Introducing basic MPLS concepts
- MPLS labels and label stack
- Identifying MPLS applications

Module 2: Label Assignment and Distribution

- Discovering LDP neighbors
- Introducing typical label distribution in Frame-Mode MPLS
- Convergence in Frame-Mode MPLS

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

- CEF switching
- Configuring frame-mode MPLS on Cisco IOS Platforms
- Monitoring frame-mode MPLS on Cisco IOS Platforms
- Troubleshooting frame-mode MPLS on Cisco IOS Platforms

Module 4: MPLS Virtual Private Network Technology

- Virtual Private Networks
- MPLS VPN Architecture
- MPLS Virtual routing model
- Forwarding MPLS VPN packets

Module 5: MPLS VPN Implementation

- Using MPLS VPN Mechanisms of Cisco IOS Platforms
- Configuring an MP-BGP session between PE routers
- Configuring VRF tables
- Configuring small-scale routing protocols between PE and CE routers
- Monitoring MPLS VPN operations
- Configuring OSPF as the routing protocol between PE and CE routers
- Configuring BGP as the routing protocol between PE and CE routers
- Troubleshooting MPLS VPNs

Module 6: Complex MPLS VPNs

- Overlapping VPNs

- Central Services VPNs
- Introducing Managed CE routers service

Module 7: Internet Access and MPLS VPNs

- Combining internet access with MPLS VPNs
- Implementing internet access in the MPLS VPN environment

Module 8: MPLS Traffic Engineering Overview

- MPLS traffic engineering components
- MPLS traffic engineering operations
- Configuring MPLS traffic engineering on Cisco IOS platforms
- Monitoring basic MPLS TE on Cisco IOS Platforms

Labs:

- 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

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