MPLS - IMPLEMENTING CISCO MPLS V3.0

Course Code: 3097

Learn to deploy MPLS and MPLS VPN infrastructures.

---

EXCLUSIVE TO GLOBAL KNOWLEDGE - Accelerate your Cisco learning experience with complimentary access to the IT Skills Video On-Demand Library, Introduction to Cybersecurity digital learning course, course recordings, IT Resource Library, and digital courseware.

Learn more

This course 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.

What You’ll Learn

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

Who Needs to Attend

• Anyone responsible for designing, implementing, or troubleshooting MPLS networks or solutions based on MPLS technology
MPLS - IMPLEMENTING CISCO MPLS V3.0

Course Code: 3097

Classroom Live Outline

1. MPLS Concepts
   • MPLS Labels and Label Stack
   • MPLS Applications

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

3. Frame-Mode MPLS Implementation on Cisco IOS Platforms
   • CEF Switching
   • Configuring Frame-Mode MPLS
   • Monitoring Frame-Mode MPLS
   • Troubleshooting Frame-Mode MPLS

4. MPLS Virtual Private Network (VPN) Technology
   • VPN Categorization
   • MPLS VPN Architecture
   • MPLS VPN Routing Model
   • MPLS VPN Packet Forwarding

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
6. Complex MPLS VPNs
   • Central Services VPNs
   • Managed CE Router Service
   • MPLS Managed Services

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

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

Classroom Live Labs

Lab 1: Configure an IP Routed Network
   • Establish the Service Provider IGP Routing Environment.

Lab 2: Enabling MPLS in the Core Environment
   • Perform initial configuration of MPLS on routers.

Lab 3: Initial MPLS VPN Setup
   • Configure and verify MP-BGP and VRFs tables.

Lab 4: Running EIGRP Between the PE and CE Routers
   • Turn on an EIGRP VPN.

Lab 5: Running OSPF Between the PE and CE Routers
   • Turn on an OSPF VPN.

Lab 6: Running BGP Between the PE and CE Routers
   • Turn on a BGP VPN. Configure the primary and backup BGP links.

Lab 7: Configuring Overlapping VPNs
   • Enable overlapping VPNs between multiple VPN clients.

Lab 8: Merging Service Providers
   • Enable MPLS with a central core device and migrate the MPLS core to IS-IS.
   Enable route reflectors in the core.
Lab 9: Enabling Common Services VPNs
• Configure a Network Management VPN and establish connectivity between the NMS VRF and other VRFs.

Lab 10: Configuring Central Site Internet Connectivity with an MPLS VPN
• Establish routing connectivity between the customer and Internet routers.

Lab 11: Implementing Basic MPLS Traffic Engineering
• Establish basic MPLS TE in an MPLS VPN network environment.
MPLS - IMPLEMENTING CISCO MPLS V3.0

Course Code: 3097

VIRTUAL CLASSROOM LIVE  $3,695 USD  5 days

Virtual Classroom Live Outline

1. MPLS Concepts
   • MPLS Labels and Label Stack
   • MPLS Applications

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

3. Frame-Mode MPLS Implementation on Cisco IOS Platforms
   • CEF Switching
   • Configuring Frame-Mode MPLS
   • Monitoring Frame-Mode MPLS
   • Troubleshooting Frame-Mode MPLS

4. MPLS Virtual Private Network (VPN) Technology
   • VPN Categorization
   • MPLS VPN Architecture
   • MPLS VPN Routing Model
   • MPLS VPN Packet Forwarding

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
6. Complex MPLS VPNs
   - Central Services VPNs
   - Managed CE Router Service
   - MPLS Managed Services

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

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

Virtual Classroom Live Labs

Lab 1: Configure an IP Routed Network
   - Establish the Service Provider IGP Routing Environment.

Lab 2: Enabling MPLS in the Core Environment
   - Perform initial configuration of MPLS on routers.

Lab 3: Initial MPLS VPN Setup
   - Configure and verify MP-BGP and VRFs tables.

Lab 4: Running EIGRP Between the PE and CE Routers
   - Turn on an EIGRP VPN.

Lab 5: Running OSPF Between the PE and CE Routers
   - Turn on an OSPF VPN.

Lab 6: Running BGP Between the PE and CE Routers
   - Turn on a BGP VPN. Configure the primary and backup BGP links.

Lab 7: Configuring Overlapping VPNs
   - Enable overlapping VPNs between multiple VPN clients.

Lab 8: Merging Service Providers
   - Enable MPLS with a central core device and migrate the MPLS core to IS-IS.
   - Enable route reflectors in the core.
Lab 9: Enabling Common Services VPNs
  • Configure a Network Management VPN and establish connectivity between the NMS VRF and other VRFs.

Lab 10: Configuring Central Site Internet Connectivity with an MPLS VPN
  • Establish routing connectivity between the customer and Internet routers.

Lab 11: Implementing Basic MPLS Traffic Engineering
  • Establish basic MPLS TE in an MPLS VPN network environment.

Apr 6 - 10, 2020 | 8:30 AM - 4:30 PM EST
May 4 - 8, 2020 | 8:30 AM - 4:30 PM EST
Jun 1 - 5, 2020 | 8:30 AM - 4:30 PM EST
Jul 6 - 10, 2020 | 8:30 AM - 4:30 PM EST
Aug 10 - 14, 2020 | 8:30 AM - 4:30 PM EST
On-Demand Outline

1. MPLS Concepts
   • MPLS Labels and Label Stack
   • MPLS Applications

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

3. Frame-Mode MPLS Implementation on Cisco IOS Platforms
   • CEF Switching
   • Configuring Frame-Mode MPLS
   • Monitoring Frame-Mode MPLS
   • Troubleshooting Frame-Mode MPLS

4. MPLS Virtual Private Network (VPN) Technology
   • VPN Categorization
   • MPLS VPN Architecture
   • MPLS VPN Routing Model
   • MPLS VPN Packet Forwarding

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

6. Complex MPLS VPNs
  • Central Services VPNs
  • Managed CE Router Service
  • MPLS Managed Services

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

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

On-Demand Labs

Lab 1: Configure an IP Routed Network
  • Establish the Service Provider IGP Routing Environment.

Lab 2: Enabling MPLS in the Core Environment
  • Perform initial configuration of MPLS on routers.

Lab 3: Initial MPLS VPN Setup
  • Configure and verify MP-BGP and VRFs tables.

Lab 4: Running EIGRP Between the PE and CE Routers
  • Turn on an EIGRP VPN.

Lab 5: Running OSPF Between the PE and CE Routers
  • Turn on an OSPF VPN.

Lab 6: Running BGP Between the PE and CE Routers
  • Turn on a BGP VPN. Configure the primary and backup BGP links.

Lab 7: Configuring Overlapping VPNs
  • Enable overlapping VPNs between multiple VPN clients.

Lab 8: Merging Service Providers
  • Enable MPLS with a central core device and migrate the MPLS core to IS-IS.
  • Enable route reflectors in the core.
Lab 9: Enabling Common Services VPNs
  • Configure a Network Management VPN and establish connectivity between the NMS VRF and other VRFs.

Lab 10: Configuring Central Site Internet Connectivity with an MPLS VPN
  • Establish routing connectivity between the customer and Internet routers.

Lab 11: Implementing Basic MPLS Traffic Engineering
  • Establish basic MPLS TE in an MPLS VPN network environment.
MPLS - IMPLEMENTING CISCO MPLS V3.0
Course Code: 3097

PRIVATE GROUP TRAINING 5 days

Visit us at www.globalknowledge.com or call us at 1-866-716-6688.

Date created: 3/30/2020 2:41:52 PM
Copyright © 2020 Global Knowledge Training LLC. All Rights Reserved.