Implementing Cisco MPLS (MPLS)

Cisco

Live Training (também disponível em presencial)

- **Localidade:** Porto
- **Data:** 18 Dec 2023
- **Preço:** 2695 € (Os valores apresentados não incluem IVA. Oferta de IVA a particulares e estudantes.)
- **Horário:** Laboral das 09h00 - 17h00
- **Nível:** Avançado
- **Duração:** 35h

Sobre o curso

Multiprotocol Label Switching (MPLS) is a high-performance method for forwarding packets through a network enabling 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.

This course covers both introductory and advanced MPLS and MPLS VPNs concepts. Configuration, implementation and troubleshooting skills are all included with a significnat focus on the use of labs to consolidate the learners knowledge. At the end of this course you should be able to design, implement and maintain core IP routing network infrastructures.

After you complete this course you 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 mode
- Describe the tasks and commands that are necessary to implement MPLS TE

Destinatários

- Service Provider and Enterprise network engineers that design, deploy and maintain core IP routing network infrastructures.

Pré-requisitos

Attendees should meet the following prerequisites:

- Delegates should hold a valid **CCNA** or equivalent knowledge
- Delegates should have attended **ROUTE or SPROUTE** or have equivalent knowledge
- Delegates should have attended **BGP** or **SPADVROUTE** or have equivalent knowledge

Programa

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

MPLS Concepts

- Introducing Basic MPLS Concepts
- Introducing MPLS Labels and Label Stack
- Identifying MPLS Applications

Label Assignment and Distribution

- Discovering LDP Neighbors
- Introducing Typical Label Distribution in Frame-Mode MPLS
- Introducing Convergence in Frame-mode MPLS

Frame-Mode MPLS Implementation on Cisco IOS Platforms

- Introducing Cisco Express Forwarding (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

MPLS VPN Technology

- Introducting Virtual Private Networks
- Introducing MPLS VPN Architecture
- Introducing the MPLS VPN Routing Model
- Forwarding MPLS VPN Packets

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

Complex MPLS VPNs

- Introducing Overlapping VPNs
- Introducing Central Services VPNs
- Introducing the Managed CE Routers Service

Internet Access and MPLS VPNs

- Combining Internet Access with MPLS VPNs
- Implementing Internet Access in the MPLS VPN Environment

MPLS Traffic Engineering Overview

- Introducing 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

- 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