



# Implementing Cisco Service Provider VPN Services (SPVI) v1.0

## Objetivos

After taking this course, you should be able to:

- Describe VPN concepts and operation in a Service Provider environment
- Implement Layer 3 MPLS VPN operations in a Service Provider environment
- Implement Layer 3 Inter-domain MPLS VPN services traversing multiple Service Providers
- Implement Layer 3 Multicast MPLS VPN operations in a Service Provider environment
- Troubleshoot typical issues in Layer 3 MPLS VPN environments
- Implement Layer 2 VPN operations in a Service Provider environment
- Troubleshoot Layer 2 VPN issues in a Service Provider network
- Implement MPLS VPN solutions for IPv6 environments
- Troubleshoot MPLS VPN solutions for IPv6 environments

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## Pre-requisitos

Before taking this course, you should have Service Provider knowledge at the professional level, equivalent to the material in the following Cisco courses:

- **Building Cisco Service Provider Next-Generation Networks Part 1 (SPNGN1) v1.2**
- **Building Cisco Service Provider Next-Generation Networks Part 2 (SPNGN2) v1.2**
- **Deploying Cisco Service Provider Network Routing (SPROUTE)**

In the new certification program, foundational material is covered in these courses:

- **Implementing and Administering Cisco Solutions (CCNA®)**
- **Understanding Cisco Service Provider Network Foundations (SPFNDU)**
- **Implementing and Operating Cisco Service Provider Network Core Technologies (SPCOR)**

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## Contenido

- Introducing VPN Services
  - VPN Fundamentals
  - MPLS VPN Control Plane Operation
- Troubleshooting MPLS VPN Underlay
  - Troubleshoot Core Interior Gateway Protocol (IGP)
  - Troubleshoot Border Gateway Protocol (BGP)
- Implementing Layer 3 MPLS VPNs
  - Multiprotocol BGP (MP-BGP) Routing Requirements in MPLS VPNs
  - Provider Edge to Customer Edge (PE-to-CE) Routing Requirements in Layer 3 MPLS VPNs



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- Implementing Layer 3 Interdomain MPLS VPNs
  - Inter-Autonomous System (AS) for Layer 3 MPLS VPNs
  - Content Security and Control (CSC) for Layer 3 MPLS VPNs
- Implementing Layer 3 Multicast MPLS VPNs
  - Multicast VPN (MVPN) Fundamentals
  - Implement Intranet MVPN
- Troubleshooting Intra-AS Layer 3 VPNs
  - Troubleshoot PE-CE Connectivity
  - Troubleshoot PE-to-Route Reflector
- Implementing Layer 2 VPNs
  - Layer 2 Service Architecture and Carrier Ethernet Services
  - Refresh on Traditional Ethernet LAN (E-LAN), E-Line, and E-Tree Solutions
- Troubleshooting Layer 2 VPNs
  - Troubleshoot Common Issues for Traditional E-Line, E-LAN, and E-Tree Ethernet Solutions
  - Troubleshoot Common Issues for Ethernet VPN (EVPN) Native, EVPN Virtual Private Wire Service (VPWS), and EVPN Integrated Routing and Bridging (IRB) Solutions
- Implementing Layer 3 IPv6 MPLS VPNs
  - Classical Solutions for Deploying IPv6 over IPv4 Environments
  - Using 6VPE to Deploy IPv6 Connectivity over MPLS Environment
- Troubleshooting Layer 3 IPv6 MPLS VPNs
  - Troubleshooting PE-to-PE Connectivity

## Laboratorio

- Verify the Service Provider Backbone Operation for MPLS VPN
- Work with VRF Instances
- Troubleshoot the MPLS VPN Backbone
- Configure MP-BGP as the PE-CE Routing Protocol
- Configure and Verify PE-to-CE Routing Requirements
- Enable Shared Services VPN
- Deploy Internet Access as a VPN Service
- Troubleshoot Layer 3 MPLS VPN End-Customer Connectivity
- Implement Different EVPN Solutions
- Troubleshoot EVPN VPWS
- Implement IPv6 VPN Provider Edge Router (6VPE)