



# Implementing Cisco Service Provider VPN Services (SPVI)

Course ID #: 7000-240-ZZ-Z

Hours: 35

## Course Content

### Course Description:

The **Implementing Cisco Service Provider VPN Services (SPVI)** course prepares you to manage end-customer Virtual Private Network (VPN) environments built over a common service provider Multiprotocol Label Switching (MPLS) backbone. You will complete hands-on labs to reinforce MPLS VPN fundamental concepts, benefits, and classification, MPLS components, MPLS control plane and data plane operations, MPLS VPN routing using Virtual Routing and Forwarding (VRF), Layer 2 and Layer 3 MPLS VPNs, IPv6 MPLS VPN implementations, IP Multicast VPNs, and shared services VPNs. The course also covers solutions for deploying MPLS VPN crossing multiple Service Provider domains that improve the use of network bandwidth.

### At Course Completion:

After completing this course, student will 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

### Prerequisites:

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)

### Target Student:

- Network administrators
- Network engineers
- Network supervisors
- Network managers



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- Network Operations Center (NOC) personnel
- Network designers
- Network architects
- Channel partners

## Topics:

### 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

### 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