



SPVI - IMPLEMENTING CISCO SERVICE PROVIDER VPN SERVICES V1.0

Course Code: 100509

This course prepares you to manage end-customer VPN environments built over a common service provider MPLS backbone.

The **Implementing Cisco Service Provider VPN Services (SPVI)** course prepares network professionals to implement and support Virtual Private Network (VPN) solutions on top of an MPLS network infrastructure. The goal is to prepare you to deploy, configure, monitor, operate, and troubleshoot end customer VPN environments built over a common Service Provider MPLS backbone. This training also includes labs to reinforce concepts including MPLS VPN fundamentals, benefits, classifications, components, control plane and data plane operations, VPN routing using Virtual Routing and Forwarding (VRF), Layer 3 MPLS VPNs, Layer 2 MPLS VPNs, IPv6 MPLS VPN implementations, IP Multicast VPNs, shared services VPNs, and solutions for deploying MPLS VPN traversing multiple service providers domains.

This training will also prepare you for the 300-515 SPVI v1.1 exam. If passed, you earn the Cisco Certified Specialist - Service Provider VPN Services Implementation certification and satisfy the concentration exam requirement for the Cisco Certified Network Professional (CCNP) Service Provider certification.

This course is eligible for 40 Continuing Education Credits (ILT & On Demand Modality).

What You'll Learn

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

Who Needs to Attend

This course is for network professionals who need to learn the techniques to implement, configure, monitor, and support Service Provider VPN solutions based on MPLS backbones.

- Network administrators
- Network engineers
- Network supervisors
- Network managers
- Network Operations Center (NOC) personnel
- Network designers
- Network architects
- Channel partners

Prerequisites

- The following courses are recommended as prerequisites:



SPVI - IMPLEMENTING CISCO SERVICE PROVIDER VPN SERVICES V1.0

Course Code: 100509

VIRTUAL CLASSROOM LIVE

\$5,595 CAD

5 Day

Virtual Classroom Live Outline

Section 1: Introducing VPN Services

- VPN Fundamentals
- Traditional Layer 3 (IP) Overlay VPN Types
- Peer-to-Peer MPLS VPNs
- MPLS VPN Control Plane Operation
- VRF and Routing in the MPLS VPN Control Plane

Section 2: Troubleshooting MPLS VPN Underlay

- Troubleshoot Core IGP
- Troubleshoot LSP and LDP
- Troubleshoot BGP
- Troubleshoot Route Summarization Issues

Section 3: Implementing Layer 3 MPLS VPNs

- MP-BGP Routing Requirements in MPLS VPNs
- PE-to-CE Routing Requirements in Layer 3 MPLS VPNs
- Implement Extranet and Shared Services in Layer 3 MPLS VPNs

Section 4: Implementing Layer 3 Interdomain MPLS VPNs

- Inter-AS for Layer 3 MPLS VPNs
- CSC for Layer 3 MPLS VPNs

Section 5: Implementing Layer 3 Multicast MPLS VPNs

- Multicast VPN Fundamentals
- Implement Intranet MVPN
- Implement Extranet MVPN
- Implement Multicast LDP for Layer 3 Multicast MPLS VPN

Section 6: Troubleshooting Intra-AS Layer 3 VPNs

- Troubleshoot PE-CE Connectivity
- Troubleshoot PE-PE Connectivity
- Troubleshoot PE-to-Route Reflector

Section 7: Implementing Layer 2 VPNs

- Layer 2 Service Architecture and Carrier Ethernet Services
- Refresh on Traditional E-LAN, E-Line, and E-Tree Solutions
- EVPN Model for Ethernet Services Delivery
- Implement Ethernet VPNs (EVPN)
- Implement Ethernet Operations, Administration, and Maintenance

Section 8: Troubleshooting Layer 2 VPNs

- Troubleshoot Common Issues for Traditional E-Line, E-LAN, and E-Tree Ethernet Solutions
- Troubleshoot Common Issues for EVPN Native, EVPN VPWS, and EVPN IRB Solutions

Section 9: Implementing Layer 3 IPv6 MPLS VPNs

- Classical Solutions to Deploy IPv6 over IPv4 Environments
- Basic Solutions to Deploy IPv6 over MPLS VPN Environments
- Use 6PE to Deploy IPv6 Connectivity over MPLS Environment
- Use 6VPE to Deploy IPv6 Connectivity over MPLS Environment
- Use GRE for IPv6 Connectivity in MPLS VPN Environments
- Routing Requirements for IPv6 Connectivity over MPLS VPNs

Section 10: Troubleshooting Layer 3 IPv6 MPLS VPNs

- Troubleshoot PE-to-PE Connectivity
- Troubleshoot PE-to-CE Connectivity

Virtual Classroom Live Labs

- Lab 1: Verify the Service Provider Backbone Operation for MPLS VPN
- Lab 2: Work with VRF Instances
- Lab 3: Troubleshoot the MPLS VPN backbone
- Lab 4: Configure MP-BGP as the PE-CE Routing Protocol
- Lab 5: Configure and Verify PE-to-CE Routing Requirements
- Lab 6: Enable Shared Services VPN
- Lab 7: Deploy Internet Access as a VPN Service
- Lab 8: Implement Multicast VPN with mLDP
- Lab 9: Troubleshoot Layer 3 MPLS VPN End-Customer Connectivity
- Lab 10: Implement Different EVPN Solutions
- Lab 11: Troubleshoot EVPN VPWS
- Lab 12: Implement 6VPE

Jun 8 - 12, 2026 | 8:30 AM - 4:30 PM EDT

Sep 14 - 18, 2026 | 8:30 AM - 4:30 PM EDT



SPVI - IMPLEMENTING CISCO SERVICE PROVIDER VPN SERVICES V1.0

Course Code: 100509

ON-DEMAND

\$1,300 CAD

On-Demand Outline

Section 1: Introducing VPN Services

- VPN Fundamentals
- Traditional Layer 3 (IP) Overlay VPN Types
- Peer-to-Peer MPLS VPNs
- MPLS VPN Control Plane Operation
- VRF and Routing in the MPLS VPN Control Plane

Section 2: Troubleshooting MPLS VPN Underlay

- Troubleshoot Core IGP
- Troubleshoot LSP and LDP
- Troubleshoot BGP
- Troubleshoot Route Summarization Issues

Section 3: Implementing Layer 3 MPLS VPNs

- MP-BGP Routing Requirements in MPLS VPNs
- PE-to-CE Routing Requirements in Layer 3 MPLS VPNs
- Implement Extranet and Shared Services in Layer 3 MPLS VPNs

Section 4: Implementing Layer 3 Interdomain MPLS VPNs

- Inter-AS for Layer 3 MPLS VPNs
- CSC for Layer 3 MPLS VPNs

Section 5: Implementing Layer 3 Multicast MPLS VPNs

- Multicast VPN Fundamentals
- Implement Intranet MVPN
- Implement Extranet MVPN
- Implement Multicast LDP for Layer 3 Multicast MPLS VPN

Section 6: Troubleshooting Intra-AS Layer 3 VPNs

- Troubleshoot PE-CE Connectivity
- Troubleshoot PE-PE Connectivity
- Troubleshoot PE-to-Route Reflector

Section 7: Implementing Layer 2 VPNs

- Layer 2 Service Architecture and Carrier Ethernet Services
- Refresh on Traditional E-LAN, E-Line, and E-Tree Solutions
- EVPN Model for Ethernet Services Delivery
- Implement Ethernet VPNs (EVPN)
- Implement Ethernet Operations, Administration, and Maintenance

Section 8: Troubleshooting Layer 2 VPNs

- Troubleshoot Common Issues for Traditional E-Line, E-LAN, and E-Tree Ethernet Solutions
- Troubleshoot Common Issues for EVPN Native, EVPN VPWS, and EVPN IRB Solutions

Section 9: Implementing Layer 3 IPv6 MPLS VPNs

- Classical Solutions to Deploy IPv6 over IPv4 Environments
- Basic Solutions to Deploy IPv6 over MPLS VPN Environments
- Use 6PE to Deploy IPv6 Connectivity over MPLS Environment
- Use 6VPE to Deploy IPv6 Connectivity over MPLS Environment
- Use GRE for IPv6 Connectivity in MPLS VPN Environments
- Routing Requirements for IPv6 Connectivity over MPLS VPNs

Section 10: Troubleshooting Layer 3 IPv6 MPLS VPNs

- Troubleshoot PE-to-PE Connectivity
- Troubleshoot PE-to-CE Connectivity

On-Demand Labs

- Lab 1: Verify the Service Provider Backbone Operation for MPLS VPN
- Lab 2: Work with VRF Instances
- Lab 3: Troubleshoot the MPLS VPN backbone
- Lab 4: Configure MP-BGP as the PE-CE Routing Protocol
- Lab 5: Configure and Verify PE-to-CE Routing Requirements
- Lab 6: Enable Shared Services VPN
- Lab 7: Deploy Internet Access as a VPN Service
- Lab 8: Implement Multicast VPN with mLDP
- Lab 9: Troubleshoot Layer 3 MPLS VPN End-Customer Connectivity
- Lab 10: Implement Different EVPN Solutions
- Lab 11: Troubleshoot EVPN VPWS
- Lab 12: Implement 6VPE

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

Date created: 2/1/2026 7:06:22 PM

Copyright © 2026 Global Knowledge Training LLC. All Rights Reserved.