Leveraging Cisco IOS XR VPN Services Training

Duration: **5 Day**

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The Leveraging IOS XR VPN Services (XRVPNS) training teaches you how to implement and troubleshoot Layer 2 and Layer 3 Virtual Private Network services in a service provider network operating on Cisco IOS XR software. Cisco IOS XR is the foundational operating system of most service provider networks and operates Cisco's service provider portfolio of network devices. You will learn how to implement a label switched network infrastructure for the enablement of VPN services using Multiprotocol Label Switching (MPLS) or Segment Routing (SR). You will also learn how to implement and troubleshoot both IPv4 and IPv6 Layer 3 VPN services and Multicast VPN services using IOS XR. In addition, you will learn how to implement Ethernet VPN (EVPN) services including EVPN Integrated Routing and Bridging (EVPN IRB) and EVPN-SR data center fabric. Finally, you will learn how to implement EVPN advanced features.

How You'll Benefit

This training will help you:

- Learn how to implement and troubleshoot Layer 2 and Layer 3 Virtual Private Network services in a service provider network operating on Cisco IOS XR software.
- Gain knowledge of protocols, solutions, and designs to acquire professional-level and expert-level networking roles.
- Earn 24 CE credits toward recertification.

Prerequisites

The knowledge and skills you are expected to have before attending this course are:

- Familiarity with service provider network operation
- Familiarity with Cisco IOS XR software configuration and operation
- Ability to implement and troubleshoot routing protocol including OSPF, IS-IS, and Border Gateway Protocol (BGP) in a service provider network

These skills can be found in the following Cisco Learning Offerings:

- Understanding Cisco Service Provider Network Foundations (SPFNDU)
- Fundamentals of Cisco IOS XR Software (IOSXRE)

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What You Will Learn

- mplement and configure MPLS and describe MPLS label propagation in service provider networks
- Describe the main factors leading to the development and deployment of segment routing, describe the various types of segments that are used in segment routing, describe the Segment Routing Global Block (SRGB), and configure and verify Intermediate System to Intermediate System (IS-IS) and Open Shortest Path First (OSPF) segment routing operation
- Implement and configure Segment Routing IPv6
- Describe the components and functionality of Layer 3 MPLS VPNs implementation in Cisco IOS XR Software deployments
- Identify the routing protocol and LDP information necessary for Layer 3 MPLS VPN troubleshooting
- Discuss Multicast LDP (MLDP) implementation and troubleshooting method for Layer 3 multicast MPLS VPN
- Implement MPLS VPN solutions for IPv6 environments
- Describe common issues and fixes for provider edge to provider edge (PE-PE) and provider edge to customer edge (PE-CE) connectivity in an IPv6 MPLS VPN environment
- Implement Layer 2 VPN operations in a service provider environment
- Explain how EVPN gets around the problems that regular Layer 2 VPNs have, what the model for EVPN delivery is, and how to implement and troubleshoot EVPN solutions
- Explain the advantages of EVPN IRB, how it is implemented, and how to troubleshoot problems when building EVPN IRB solutions
- Demonstrate how to configure EVPN-SR data center fabric solutions
- Explain advanced EVPN features to support network engineers in designing, implementing, and troubleshooting complex EVPN networks

Training Outline

- Cisco IOS XR Software MPLS Operation and Implementation
- Segment Routing Fundamentals
- Segment Routing IPv6
- Layer 3 MPLS VPN Implementation with Cisco IOS XR Software
- Layer 3 MPLS VPN Troubleshooting
- Layer 3 Multicast MPLS VPN Implementation
- Layer 3 IPv6 MPLS VPNs Implementation
- Layer 3 IPv6 MPLS VPN Troubleshooting
- Layer 2 VPNs and Ethernet Services Fundamentals
- Cisco IOS XR Software EVPN Operation and Implementation
- Cisco IOS XR Software EVPN IRB
- EVPN-SR Data Center Fabric
- EVPN Advanced Features