

JUNOS LAYER 2 VPNS (JL2V)

Course Code: 100553

Gain experience in configuring and monitoring the Junos OS and in device operations.

This three-day course is designed to provide students with the knowledge to configure and troubleshoot MPLS-based Layer 2 virtual private networks (VPN). The course includes an overview of MPLS Layer 2 VPN concepts, such as BGP Layer 2 VPNs, LDP Layer 2 circuits, forwarding equivalence class (FEC) 129, virtual private LAN service (VPLS), Ethernet VPN (EVPN), and Inter-AS MPLS VPNs.

This course also covers Junos OS-specific implementations of Layer 2 VPN instances, VPLS, and EVPNs. This course is based on the Junos OS Release 21.4R1.12.

What You'll Learn

After completing this course, the successful student should be able to:

- Describe some of the different kinds of VPNs, their mechanics, and their use cases.
- Describe the types of MPLS VPN that operate at layer 2.
- Describe the mechanics of BGP-signaled pseudowires, also known as L2VPNs.
- Configure BGP-signaled L2VPNs with Ethernet and Ethernet-VLAN encapsulations.
- Demonstrate how to troubleshoot some of the most common BGP-signaled L2VPN configuration problems.
- Describe how BGP-signaled L2VPNs use a block of labels to bring efficiency to hub-and-spoke advertisements.
- Configure advanced BGP-signaled L2VPN features, such as multihoming, VLAN normalization, and route target constraint.
- Describe the mechanics of LDP-signaled pseudowires, also known as Layer 2 Circuits.
- Describe the causes and solutions of some of the most common L2Circuit configuration problems.
- Configure advanced LDP-signaled L2Circuit features, such as multihoming and local switching.
- Explain how the FEC 129 pseudowire method combines BGP for autodiscovery and LDP for signaling.
- Describe the purpose and mechanics of a VPLS.
- Create a VPLS instance that is signaled using BGP and demonstrate the commands that verify its status.
- Create VPLS instances that are signaled using LDP and FEC 129 and

- demonstrate the commands available to verify their status.
- Describe how mismatched VLAN tags are handled in a default VPLS configuration.
 - Configure a VPLS to swap mismatched VLAN tags automatically, and to create multiple bridge domains inside a single VPLS instance.
 - Configure the most important VPLS traffic management features, including flood protection, MAC limiting, IRB interfaces, and automated Site IDs.
 - Configure hub-and-spoke VPLS topologies.
 - Configure multihomed sites in a VPLS.
 - Describe the features of Ethernet VPN, and the enhancements that EVPN brings over VPLS. Explain how EVPNs advertise MAC addresses, and how they request to receive flooded traffic within a bridge domain.
 - Configure and verify a single-homed VLAN-based EVPN instance.
 - Configure and verify a single-homed VLAN-aware bundle EVI.
 - Configure a multihomed EVPN and explain the purpose of the EVPN Type 4 route.
 - Describe the features provided by EVPN Type 1 routes.
 - Describe how to use MAC Mobility and IRB interfaces in an EVPN.
 - Explain how EVPNs can tightly integrate themselves into MPLS Layer 3 VPNs to provide highly efficient forwarding.
 - Describe and configure various solutions that create MPLS VPNs between service providers.
 - Describe the circuit-cross connect pseudowire method and explain how this old method can still have value in modern networks.
 - Describe how multisegment pseudowires can create layer 2 VPNs across autonomous system boundaries.

Who Needs to Attend

Benefits individuals responsible for configuring and monitoring devices running the Junos OS in a service provider environment, in MPLS-based data centers, and in larger enterprises

Prerequisites

Students should have intermediate-level networking knowledge and an understanding of OSPF, IS-IS, BGP, and Junos policy.

Students should have experience configuring MPLS label-switched paths using Junos. Students should also attend Introduction to the Junos Operating System (IJOS), Junos Routing Essentials (JRE), Junos Service Provider Switching (JSPX), Junos Intermediate Routing (JIR) and Junos MPLS Fundamentals (JMF) courses prior to attending this class.

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