Advanced Junos Enterprise Routing, Revision 26A

COURSE OVERVIEW

This five-day, advanced-level course provides students with the tools and methods required for implementing, monitoring, and troubleshooting Layer 3 components in an enterprise network. This course covers OSPF, BGP, multicast, and enterprise architecture. This course also covers Ethernet VPN–Virtual Extensible LAN (EVPN-VXLAN) in depth. The course exposes students to common troubleshooting commands and tools used to diagnose various intermediate to advanced issues.
Through demonstrations and hands-on labs, students will gain experience with features of each of these devices, Juniper Networks® vSRX Virtual Firewalls and Juniper Networks® vEX Virtual Switches. This course also includes a virtual nested environment for demonstrating EVPN-VXLAN operations. The course is based on Junos OS Release 25.2R1.9.

COURSE LEVEL

Advanced Junos Enterprise Routing is an advanced-level course.

AUDIENCE

This course benefits individuals responsible for configuring and monitoring devices running the Junos operating system (OS).

PREREQUISITES

- Familiarity with the Junos OS.
- Basic understanding of the OSI model.
- Knowledge of basic routing and switching principles.
- Experience in configuring and monitoring the TCP/IP protocol suite.
- Basic understanding of firewall filters.

RELATED JUNIPER PRODUCTS

SRX Series Firewalls, EX Series Switches

RELATED CERTIFICATION

Enterprise Routing and Switching, Professional (JNCIP-ENT)

RECOMMENDED NEXT COURSE

Advanced Junos Enterprise Switching

OBJECTIVES

- Describe OSPFv2 concepts.
- Describe OSPF operations.
- Describe and configure OSPF area types and operations.
- Configure OSPF areas through summarization and restrictions.
- Utilize commands to troubleshoot and verify OSPF operations.
- Identify the difference between OSPFv2 and OSPFv3.
- Analyze different OSPF issues.
- Describe BGP operations.
- Describe and configure the BGP route selection process.
- Explain the use of routing policies in BGP.
- Describe BGP attributes and their usages.
- Describe and configure BGP communities.
- Describe BGP troubleshooting.
- Explain how routing policies are used in an enterprise network.
- Identify problems related to routing policy structure and configuration.
- Understand commands for troubleshooting routing policy.

- Explain the fundamentals of multicast routing.
- Describe and configure Internet Group Management Protocol (IGMP).
- Describe Protocol Independent Multicast (PIM).
- Configure PIM.
- Describe and configure route reflection.
- Explain enterprise networking.
- Describe the key concepts of Evolved Campus Core and Layer 3–Based campus designs.
- Explain the benefits of VXLAN.
- Explain why you would use EVPN-VXLAN in a campus network.
- Describe and configure an Evolved Campus Core (ECC) network.
- Describe and configure a distribution and access network.
- Describe Ethernet VPN (EVPN) route types.
- Describe EVPN troubleshooting.

COURSE CONTENTS

DAY 1

Module 01: Examining OSPF

- Describe OSPFv2 operations
- Differentiate link-state advertisements

Module 02: Configuring OSPF

- Distinguish protocol operations
- Explain OSPF authentication
- Configure OSPFv3

Lab 01: Configuring and Monitoring OSPF Areas

Module 03: Identifying OSPF Areas

- Identify OSPF areas
- Describe stub area operations
- Add a stub area configuration

Module 04: Configuring OSPF Not-So-Stubby Areas

- Explain the NSSA operation
- Generate an NSSA configuration
- Examine route summarization

Lab 02: OSPF Route Summarization

Module 05: Advanced OSPF Options

- Construct OSPF multi-area adjacencies
- Create OSPF virtual links

Module 06: Advanced OSPF Case Studies

- Interpret external reachability case studies

Lab 03: Configuring Advanced OSPF Options

Module 07: Troubleshooting OSPF

- Perform troubleshooting and verification of OSPF adjacencies
- Execute troubleshooting and verification of OSPF consistencies

Module 08: Troubleshooting OSPF Routing Issues

- Conduct troubleshooting and verification of OSPF routing

Lab 04: Troubleshooting OSPF

DAY 2

Module 09: Defining BGP

- Explain BGP concepts
- Analyze BGP configuration options

Module 10: Configuring BGP Operations

- Explain BGP route operations
- Define BGP path selection

Lab 05: Implementing BGP

Module 11: BGP Attributes and Policy

- Explain BGP route processing
- Describe BGP attributes

Module 12: Common BGP Attributes

- Describe and configure common BGP attributes
- Explain BGP authentication

Lab 06: BGP Attributes

Module 13: BGP Communities

- Configure BGP communities
- Explain how to use regular expressions with BGP communities
- Examine a BGP community use case

Module 14: BGP Route Reflection

- Describe the operation of BGP route reflection
- Configure a route reflector

Lab 07: BGP Route Reflection

Module 15: Troubleshooting BGP

- Examine IBGP and EBGP troubleshooting

Module 16: BGP Troubleshooting Use Case

- Examine how to troubleshoot BGP neighbor issues

Lab 08: Troubleshooting BGP

DAY 3

Module 17: Enterprise Routing Policy Use Case

- Review an enterprise routing policy use case

Module 18: Enterprise Routing Policies for External Networks

- Examine an external enterprise network deployment

Lab 09: Implementing Enterprise Routing Policies

Module 19: Creating Troubleshooting Policies

- Examine the structure of a routing policy
- Describe regular expression matching with routing policies
- Review routing policy troubleshooting methods

Module 20: Using Commands to Troubleshoot Policies

- Examine the routing policy troubleshooting command
- Review a routing policy use case

Lab 10: Troubleshooting the Routing Policy

Module 21: Understanding How Multicast Works

- Describe IP multicast traffic flow and multicast components
- Illustrate multicast addressing
- Explain the need for RPF check in multicast networks
- Analyze multicast routing tables

Module 22: Configuring IGMP with Multicast

- Explain the role of IGMP
- Describe the different versions of IGMP
- Configure and monitor IGMP

DAY 4

Module 23: Protocol Independent Multicast Operations

- Describe PIM sparse mode operation

Module 24: Configuring PIM for Multicast Operations

- Configure and monitor the PIM sparse mode
- Configure and monitor RP discovery mechanisms

Lab 11: Implementing PIM SM

Module 25: Examining Traditional and New Enterprise Architectures

- Describe traditional enterprise networks
- Examine new enterprise networking methods

Module 26: Examining EVPN-VXLAN Enterprise Networks

- Examine EVPN-VXLAN enterprise networks
- Assess new enterprise networking methods

Module 27: VXLAN Overview

- Describe Layer 2 tunneling
- Explain VXLAN functionality
- Describe VXLAN gateways

DAY 5

Module 28: EVPN-VXLAN Architecture

- Describe EVPN features
- Review EVPN operations
- Describe EVPN with VXLAN for data plane encapsulation

Module 29: Configuring Evolved Campus Core Networks

- Examine a case study
- Configure an underlay network
- Configure an overlay network
- Verify an Evolved Campus Core network

Module 30: Building a Full Fabric EVPN-VXLAN Network

- Add leaf nodes to an Evolved Campus Core network
- Build a full IP fabric EVPN-VXLAN network

Lab 12: Configuring EVPN-VXLAN, Parts 1-5

Lab 13: Configuring EVPN-VXLAN, Parts 6-9

Lab 14: Configuring EVPN-VXLAN, Part 10

Module 31: Examining EVPN-VXLAN Route Types

- Explain EVPN route identification

Module 32: Troubleshooting EVPN-VXLAN Networks

- Explain EVPN troubleshooting commands

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