Junos IP Version 6

COURSE OVERVIEW

This two-day course provides a detailed coverage of IPv6 operations including neighbor discovery, ICMPv6, IPv6 protocol independent routing, OSPFv3, IS-IS, BGP, IPv6 multicast, transition methods, and troubleshooting methodology and commands supported by the Junos operating system (OS).

Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring Junos OS and in monitoring device and IPv6 protocol operations. This course uses Juniper Networks MX Series Routers for the hands-on component, but the lab environment does not preclude the course from being applicable to other Juniper hardware platforms running Junos OS. This course is based on Junos OS Release 22.2R1.9.

COURSE LEVEL

Intermediate

AUDIENCE

Individuals responsible for configuring and monitoring IPv6 in Junos OS

PREREQUISITES

- Intermediate-level networking knowledge
- Understanding of the OSI reference model and the TCP/IP protocol suite
- Copletion of the *Introduction to the Junos Operating System* (IJOS) and *Junos intermediate Routing* (JIR) courses, or equivalent prior to attending this class.

RELEVANT JUNIPER PRODUCT

- Juniper ATP Cloud
- Juniper Connected Security
- Junos PyEZ
- Junos Space Security Director
- Policy Enforcer
- SRX Series
- vSRX Series

OBJECTIVES

- Describe the similarities and differences between IPv4 and IPv6.
- Explain the different extension headers and their uses.
- Identify the different IPv6 address types.
- Explain the IPv6 neighbor discovery process.
- Describe the maximum transmission unit (MTU) discovery process.
- Configure and monitor the Virtual Router Redundancy Protocol (VRRP).
- Define the routing tables used for IPv6 routing.
- Explain and configure static, aggregated, and generated IPv6 routes.
- Identify and explain IPv6 firewall filters.
- Describe and implement OSPFv3 routing.
- Explain and configure IPv6 networks using IS-IS.
- Describe and implement BGP peering sessions using IPv6.
- Explain the multicast process
- Configure IPv6 multicast
- Identify the different transition methods.
- Explain concepts for using dual stack.
- Explain and identify the different methods for tunneling IPv6 traffic.
- Describe a basic troubleshooting method.
- Identify and explain common operational mode commands used for troubleshooting IPv6 problems.

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COURSE CONTENTS

DAY 1

1 Course Introduction

2 Introduction to IPv6 Addressing—What's New and Improved?

- Describe the IPv6 structure
- Explain the different extension headers and their uses
- Identify the different IPv6 address types

3 Introduction to IPv6 Addressing—How to Address IPv6

- Describe the IPv6 address types
- Describe subnetting IPv6 addresses
- Configure IPv6 interfaces

Lab 1: Configuring IPv6 Interfaces

4 IPv6 Protocol and Services—Part 1

- Explain the IPv6 neighbor discovery process
- Explain IPv6 optimization services

5 IPv6 Protocol and Services—Part 2

- Explain router advertisements
- Describe the MTU discovery process
- Describe the VRRP process
- Explain the DHCPv6 and DNS processes

Lab 2: Configuring IPv6 Services

6 Protocol Independent Routing and Filters

- Explain and configure static, aggregated, and generated IPv6 routes
- Identify and explain IPv6 firewall filters

Lab 3: Configuring Protocol Independent Routing

7 OSPFv3

- Describe OSPFv3 routing
- Configure OSPFv3 networks

Lab 4: Configuring OSPFv3

DAY 2

8 IS-IS

- Explain IS-IS using IPv6
- Configure IS-IS

Lab 5: Configuring IS-IS

9 BGP

- Explain the BGP process
- Configure IPv6 BGP

Lab 6: Configuring BGP

10 IPv6 Multicast

- Explain the multicast process
- Configure IPv6 multicast

Lab 7: Configuring IPv6 Multicast

11 Transition Methods

- Identify the different transition methods
- Explain the concepts for using dual stack
- Identify and explain the different methods for tunneling IPv6 traffic

Lab 8: Configuring GRE Tunneling

12 Troubleshooting

- Describe a basic troubleshooting method
- Identify and explain common operational mode commands used for troubleshooting IPv6 problems

Lab 9: Troubleshooting

A Appendix: Transitioning

- Explain dual-stack migration
- Define best practices

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