Junos Multicast Routing

COURSE OVERVIEW

This two-day course is designed to provide students with detailed coverage of multicast protocols including Internet Group Management Protocol (IGMP), Protocol Independent Multicast dense mode (PIM DM), Protocol Independent Multicast sparse mode (PIM SM), Bidirectional PIM, and Multicast Source Discovery Protocol (MSDP).

Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring Junos OS and device and protocol operations. The course uses the Juniper Networks vMX Series devices for the hands-on component, though the course may be applicable to other Juniper hardware platforms running Junos OS. This course is based on Junos OS release 21.4R1.12.

COURSE LEVEL

Advanced

AUDIENCE

Individuals responsible for implementing, monitoring, and troubleshooting multicast components in an enterprise network or service provider network

PREREQUISITES

- A strong understanding of the TCP/IP protocol stack and OSI model;
- A strong understanding of networking fundamentals;
- Experience and familiarity with Junos OS;
- Familiarity with the Junos CLI;
- A basic understanding of Juniper routing policies;
- Completion of the *Introduction to the Junos Operating System* course; and
- Completion of the *Junos Intermediate Routing* course

RELATED CERTIFICATION

JNCIP-SP

RELEVANT JUNIPER PRODUCT

- Junos OS
- MX Series
- PTX Series
- T Series

CONTACT YOUR REGIONAL EDUCATION SERVICES TEAM:

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OBJECTIVES

- Explain the fundamentals of multicast routing.
- Describe and configure IGMP.
- Describe multicast routing protocols.
- Describe PIM.
- Configure PIM.
- Describe and configure MSDP.
- Describe and configure source-specific multicast.
- Describe and configure multicast policy.
- Describe the IPv6 multicast fundamental concepts.

COURSE CONTENTS

DAY 1

1	**Course Introduction**

2	**Introduction to Multicast**
	- Describe IP multicast traffic flow and multicast components - Describe multicast addressing - Describe the need for RPF check in multicast networks - Describe multicast routing tables

3	**Introduction to IGMP**
	- Explain the role of IGMP - Describe the different versions of IGMP - Configure and monitor IGMP **Lab 1: Implementing a Baseline Network**

4	**Multicast Routing Protocols**
	- Identify common multicast routing protocols - Identify different message types used by PIM

5	**Protocol Independent Multicast Sparse Mode—Part 1**
	- Describe PIM sparse mode operation - Describe bidirectional PIM operation

COURSE CONTENTS (contd.)

DAY 1 (contd.)

6 **Protocol Independent Multicast Sparse Mode— Part 2**

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

Lab 2: PIM Sparse Mode and RP Discovery

DAY 2

7 **Multicast Source Discovery Protocol**

- Explain the purpose and operation of MSDP
- Configure and monitor MSDP
- Describe and configure anycast-RP

Lab 3: Implementing MSDP and Anycast-RP

8 **Source-Specific Multicast**

- Compare the ASM and SSM service models
- Illustrate the role of IGMPv3 and PIM SM in an SSM implementation
- Configure and monitor SSM

Lab 4: Source-Specific Multicast

9 **Multicast and Policy**

- Describe the default PIM SM information distribution
- Explain how routing policies control IGMP joins
- Explain how routing policies alter the PIM protocol message flow
- Identify the role of a policy in controlling MSDP message advertisement
- Explain how you can use a policy to scope multicast groups

Lab 5: Multicast and Policy

A **Appendix: IPv6 Multicast**

- Describe load balancing and auto scaling

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