Junos Multicast Routing

Duration: 2 Days Course Code: JMR Version: 16.a

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), and Multicast Source Discovery Protocol (MSDP).
Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the Junos operating system and monitoring device and protocol operations. This course uses Juniper Networks MX Series 3D Universal Edge Routers for the hands-on component, but the lab environment does not preclude the course from being applicable to other Juniper hardware platforms running the Junos OS.

The Juniper Networks vMX Series devices run Junos OS Release 16.2R1.6.

Target Audience:

This course benefits individuals responsible for implementing, monitoring, and troubleshooting multicast components in a service provider's network.

Objectives:

- **After successfully completing this course, you should be able to:**
- Describe IP multicast traffic flow .
- Identify the components of IP multicast.
- Explain how IP multicast addressing works.
- Describe the need for reverse path forwarding (RPF) in multicast.
- Explain the role of IGMP and describe the available IGMP versions.
- Configure and monitor IGMP.
- Identify common multicast routing protocols.
- Explain the differences between dense-mode and sparse-mode protocols.
- Describe rendezvous point (RP) discovery options.
- Configure and monitor PIM dense mode and PIM sparse mode.
- Configure and monitor rendezvous point discovery mechanisms.
- Explain the purpose and operation of MSDP.
- Describe the usage of MSDP within a single PIM domain with anycast-RP.
- Describe the usage of MSDP across multiple PIM domains.
- Configure and monitor MSDP.
- Compare the any-source multicast (ASM) and source-specific multicast (SSM) service models.
- Describe the basic requirements, benefits, and caveats of SSM.
- List the address ranges used for SSM.
- Illustrate the role of IGMPv3 and PIM-SM in an SSM implementation.
- Configure and monitor SSM.
- Describe the default PIM sparse mode information distribution.
- Explain how routing policies control IGMP joins.
- Explain how routing policies alter 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.
- Describe IPv6 multicast addresses.
- Describe IPv6 multicast scoping.
- Compare IPv6 Multicast Listener Discovery (MLD) versions with IPv4's IGMP protocol versions.
- Describe IPv6 SSM.

Prerequisites:

Students should have basic networking knowledge and an understanding of the Open Systems Interconnection (OSI) model and the TCP/IP protocol suite. Students should also have working knowledge of security policies.

Students should also attend the Introduction to the Junos Operating System (IJOS), Junos Routing Essentials (JRE), and Junos Intermediate Routing (JIR) courses prior to attending this class.

- IJOS - Introduction to the Junos Operating System
- JIR - Junos Intermediate Routing
- JRE - Junos Routing Essentials

Content:

Chapter 1: Course Introduction

Chapter 2: Introduction to Multicast

- Overview of Multicast
- Multicast Addresses
- Reverse Path Forwarding
- Internet Group Management Protocol
- Lab: Implementing a Baseline Network

Chapter 3: Multicast Routing Protocols

- Overview of Multicast Routing Protocols
- PIM Message Types

Chapter 4: PIM Sparse Mode

- PIM Sparse Mode Operation
- Bidirectional PIM Operation
- Configuring Sparse Mode
- Configuring Bidirectional PIM
- Monitoring Sparce Mode
- Lab: PIM Sparse Mode and RP Discovery

Chapter 5: MSDP

- MSDP
- Anycast-RP
- Lab: Implementing MSDP and Anycast-RP

Chapter 6: Source-Specific Multicast

- Overview of SSM Operation
- SSM Addresses
- IGMPv3 and SSM
- PIM-SM and SSM
- SSM Case Study
- Lab: Source-Specific Multicast

Chapter 7: Multicast and Policy

- Multicast and Policy Overview
- Controlling PIM Join and Register Messages
- Controlling BSR Messages
- Controlling MSDP SA Messages
- Implementing Multicast Scoping
- Lab: Multicast and Policy

Appendix A: PIM Dense Mode

- Monitoring Sparce Mode
- Configuring Dense Mode
- Monitoring Dense Mode
- Lab: PIM Dense Mode (Optional)

Appendix B: IPv6 Multicast

- IPv6 Multicast Addresses
- IPv6 MLD
- IPv6 ASM Options
- IPv6 SSM Addresses

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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