
Course Name: Advanced Junos Enterprise Routing

Course Code: EDU-JUN-AJER

Duration: Three Days

Introduction

This three-day course is designed to provide students with the tools required for implementing, monitoring, and troubleshooting Layer 3 components in an enterprise network. Detailed coverage of OSPF, BGP, class of service (CoS), and multicast is strongly emphasized. Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the Junos operating system and in monitoring device and protocol operations.

This course uses Juniper Networks SRX Series Services Gateways 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. This course is based on the Junos OS Release 12.1X46-D20.5.

Objective

After successfully completing this course, you should be able to:

- Describe the various OSPF link-state advertisement (LSA) types.
- Explain the flooding of LSAs in an OSPF network.
- Describe the shortest-path-first (SPF) algorithm.
- Describe OSPF area types and operations.
- Configure various OSPF area types.
- Summarize and restrict routes.
- Identify scenarios that require routing policy or specific configuration options.
- Use routing policy and specific configuration options to implement solutions for various scenarios.
- Describe basic BGP operation and common BGP attributes.
- Explain the route selection process for BGP.
- Describe how to alter the route selection process.
- Configure some advanced options for BGP peers.
- Describe various BGP attributes in detail and explain the operation of those attributes.
- Manipulate BGP attributes using routing policy.
- Describe common routing policies used in the enterprise environment.

- Explain how attribute modifications affect routing decisions.
- Implement a routing policy for inbound and outbound traffic using BGP.
- Identify environments that might require a modified CoS implementation.
- Describe the various CoS components and their respective functions.
- Explain the CoS processing along with CoS defaults on SRX Series Services Gateways.
- Describe situations when some CoS features are used in the enterprise.
- Implement some CoS features in an enterprise environment.
- 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 Internet Group Management Protocol (IGMP) and describe the available IGMP versions.
- Configure and monitor IGMP.
- Identify common multicast routing protocols.
- Describe rendezvous point (RP) discovery options.
- Configure and monitor Protocol Independent Multicast (PIM) sparse modes.
- Configure and monitor RP discovery mechanisms.
- Describe the basic requirements, benefits, and caveats of source-specific multicast (SSM).
- List the address ranges used for SSM.
- Illustrate the role of Internet Group Management Protocol version 3 (IGMPv3) and PIM sparse mode (PIM-SM) in an SSM implementation.
- Configure and monitor 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 experience with basic routing principles.

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.

Course Outline

Day 1	
Chapter 1	Course Introduction
Chapter 2	OSPF
Chapter 3	OSPF Areas
Chapter 4	OSPF Case Studies and Solutions
Day 2	
Chapter 5	BGP
Chapter 6	BGP Attributes and Policy
Chapter 7	Enterprise Routing Policies

Day 3	
Chapter 8	Introduction to Multicast
Chapter 9	Multicast Routing Protocols and SSM
Chapter 10	Class of Service
Appendix A: BGP Route Reflection	

 **Training Location**

Mideast Communication Systems
Juniper Authorized Training Center

