

Juniper Junos Intermediate Routing (JIR)

Course Summary

Description

This course benefits individuals responsible for configuring and monitoring devices running the Junos OS.

Objectives

By the end of this course, students will be able to:

- Describe typical uses of static, aggregate, and generated routes.
- Configure and monitor static, aggregate, and generated routes.
- Explain the purpose of Martian routes and add new entries to the default list.
- Describe typical uses of routing instances.
- Configure and share routes between routing instances.
- Describe load-balancing concepts and operations.
- Implement and monitor Layer 3 load balancing.
- Illustrate benefits of filter-based forwarding.
- Configure and monitor filter-based forwarding.
- Explain the operations of OSPF.
- Describe the role of the designated router.
- List and describe OSPF area types.
- Configure, monitor, and troubleshoot OSPF.
- Describe BGP and its basic operations.
- Name and describe common BGP attributes.
- List the steps in the BGP route selection algorithm.
- Describe BGP peering options and the default route advertisement rules.
- Configure and monitor BGP.
- Describe IP tunneling concepts and applications.
- Explain the basic operations of generic routing encapsulation (GRE) and IP over IP (IP-IP) tunnels.
- Configure and monitor GRE and IP-IP tunnels.
- Describe various high availability features supported by the Junos OS.
- Configure and monitor some of the highlighted high availability features.

Topics

- Course Introduction
- Protocol-Independent Routing
- Load Balancing and Filter-Based Forwarding
- Open Shortest Path First
- Border Gateway Protocol
- IP Tunneling
- High Availability

Audience

This course benefits individuals responsible for configuring and monitoring devices running the Junos OS.

Prerequisites

Before taking this course, students should have basic networking knowledge and an understanding of the Open Systems Interconnection (OSI) reference model and the TCP/IP protocol suite. Students should also attend the *Introduction to the Junos Operating System (IJOS)* and *Junos Routing Essentials (JRE)* courses prior to attending this class.

Duration

Two days

Juniper Junos Intermediate Routing (JIR)

Course Outline

I. Course Introduction

II. Protocol-Independent Routing

- A. Static Routes
- B. Aggregated Routes
- C. Generated Routes
- D. Martian Addresses
- E. Routing Instances

Lab: Protocol-Independent Routing

III. Load Balancing and Filter-Based Forwarding

- A. Overview of Load Balancing
- B. Configuring and Monitoring Load Balancing
- C. Overview of Filter-Based Forwarding
- D. Configuring and Monitoring Filter-Based Forwarding

Lab: Load Balancing and Filter-Based Forwarding

IV. Open Shortest Path First

- A. Overview of OSPF
- B. Adjacency Formation and the Designated Router Election
- C. OSPF Scalability
- D. Configuring and Monitoring OSPF
- E. Basic OSPF Troubleshooting

Lab: Open Shortest Path First

V. Border Gateway Protocol

- A. Overview of BGP
- B. BGP Attributes
- C. IBGP Versus EBGP
- D. Configuring and Monitoring BGP

Lab: Border Gateway Protocol

VI. IP Tunneling

- A. Overview of IP Tunneling
- B. GRE and IP-IP Tunnels
- C. Implementing GRE and IP-IP Tunnels

Lab: IP Tunneling

VII. High Availability

- A. Overview of High Availability Networks
- B. GR
- C. Graceful RE Switchover
- D. Nonstop Active Routing
- E. BFD
- F. VRRP

Lab: High Availability

VIII. Appendix A: IPv6

- A. Introduction to IPv6
- B. Routing Protocol Configuration Examples
- C. Tunneling IPv6 over IPv4

Lab (Optional): IPv6

IX. Appendix B: IS-IS

- A. Overview of IS-IS
- B. Overview of IS-IS PDUs
- C. Adjacency Formation and DIS Election
- D. Configuring and Monitoring IS-IS
- E. Basic IS-IS Troubleshooting

Lab (Optional): IS-IS

X. Appendix C: Routing Information Protocol

- A. Introduction to RIP
- B. RIP Configuration Examples
- C. Monitoring and Troubleshooting RIP