Junos Intermediate Routing

Course overview

This three-day, intermediate-level course provides students with intermediate routing knowledge and configuration examples. The course includes an overview of protocol-independent routing features, OSPF, IS-IS, BGP, routing policy, IP tunneling, load balancing, high availability (HA) features, Virtual Router Redundancy Protocol (VRRP), and IPv6.
Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring Junos OS and monitoring device operations. This course uses Juniper Networks vSRX 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 Junos OS. This course is based on Junos OS Release 25.2R1.

Course level

Intermediate

Audience

This course benefits individuals responsible for configuring and monitoring devices running the Junos operating system (OS).

Prerequisites

- Basic networking knowledge and an understanding of the OSI model and the TCP/IP protocol suite.
- Completion of the ***Introduction to the Junos Operating System*** course prior to attending this class.

Related products

SRX Series Firewalls

Related certification

Enterprise Routing and Switching, Specialist (JNCIS-ENT)
Service Provider Routing and Switching, Specialist (JNCIS-SP)

Recommended next course

Junos Service Provider Switching
Junos Enterprise Switching
Junos MPLS Fundamentals

Objectives

- Describe how routes enter a routing table, and how routers choose the best routes for forwarding traffic.
- Implement static routing within Junos OS.
- Describe OSPF within Junos OS.
- Describe how routing policies control what prefixes can enter the routing table and what prefixes can be advertised by protocols.
- Deploy OSPF within Junos OS.
- Implement IS-IS within Junos OS.
- Implement BGP within Junos OS.
- Deploy BGP within Junos OS.
- Describe some important advanced routing policy features and behaviors.
- Implement routing instances within Junos OS.
- Implement load balancing within Junos OS.
- Implement VRRP within Junos OS.
- Implement graceful routing and Bidirectional Forwarding Detection (BFD) within Junos OS.
- Implement high availability features—GRES, NSR, and unified ISSU—within Junos OS.
- Implement IP tunneling within Junos OS.
- Describe IPv6 within Junos OS.
- Implement filter-based forwarding (FBF) within Junos OS.

Course contents

Day 1

Module 01: Routing Fundamentals

- Explain the role of a router in a network
- Define the difference between directly connected, static, and dynamic routes
- Explain how route preference selects the best route to a destination
- Explain the process of longest prefix match lookups
- Demonstrate how to view and verify the inet.0 and inet6.0 routing tables

Module 02: Protocol Independent Routing

- Configure static routes
- Configure aggregate routes
- Configure generated routes
- Manage martian routes

Lab 01: Protocol Independent Routing

Module 03: Fundamentals of OSPF

- Describe OSPF
- Explain adjacency formation and the designated router election
- Explain OSPF scalability
- Explain basic OSPF configuration

Module 04: Routing Policy

- Explain how import and export policies can re-advertise prefixes between protocols
- Describe the CLI syntax of a routing policy
- Demonstrate how a routing policy can export static routes into OSPF

Module 05: Deploying OSPF

- Configure and monitor OSPF
- Troubleshoot OSPF

Lab 02: OSPF

Day 2

Module 06: IS-IS

- Explain IS-IS
- Describe IS-IS PDUs
- Define adjacency formation and DIS election
- Configure and monitor IS-IS
- Troubleshoot IS-IS

Lab 03: IS-IS

Module 07: Fundamentals of BGP

- Explain BGP
- Describe BGP attributes

Module 08: Deploying BGP

- Explain IBGP and EBGP
- Configure and monitor BGP
- Describe the BGP route reflection operation
- Examine the route reflection configuration

Lab 04: Border Gateway Protocol

Module 09: Advanced Routing Policy Features

- Describe advanced route-filter options
- Describe how to refer to a prefix list in a routing policy
- Explain route filters with mixed prefix lengths

Module 10: Routing Instances

- Describe routing instances
- Configure and share routes between routing instances

Lab 05: Routing Instances

Module 11: Load Balancing

- Describe the load-balancing concepts and operations
- Implement and monitor Layer 3 load balancing

Lab 06: Load Balancing

Day 3

Module 12: VRRP

- Describe, configure, and monitor VRRP

Module 13: Graceful Restart and Bidirectional Forwarding Detection

- Describe high availability
- Explain graceful restart
- Explain Bidirectional Forwarding Detection

Lab 07: High Availability

Module 14: GRES, NSR, and Unified ISSU

- Explain graceful Routing Engine switchover
- Explain nonstop active routing
- Explain unified ISSU

Module 15: IP Tunneling

- Describe IP tunneling
- Describe GRE and IP-IP tunnels
- Deploy GRE and IP-IP tunnels

Lab 08: IP Tunneling

Module 16: IPv6

- Explain IPv6 addressing
- Explain routing protocol configuration examples
- Describe tunneling IPv6 over IPv4

Lab 09: IPv6

Self-study modules

Module 17: Filter-Based Forwarding

- Illustrate the benefits of filter-based forwarding
- Configure and monitor filter-based forwarding

Lab 10: Filter-Based Forwarding

Module 18: Class of Service

- Describe the purpose and benefits of CoS
- Implement traffic classification within Junos
- Describe traffic queuing within Junos
- Configure traffic scheduling within Junos
- Implement CoS for a given use case

Lab 11: Class of Service

Resources

All access training pass
On-demand
Courses
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Learning paths
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Key contacts

Americas: networking.training.ams@hpe.com
Europe, Middle East, Africa: networking.training.emea@hpe.com
Asia Pacific & Japan: networking.training.apj@hpe.com

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