Junos Intermediate Routing (JIR)

COURSE OVERVIEW

This two-day course provides students with intermediate routing knowledge and configuration examples. The course includes an overview of protocol-independent routing features, load balancing and filter-based forwarding, OSPF, BGP, IP tunneling, and high availability (HA) features. Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the 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 the Junos OS. This course is based on Junos OS Release 21.1R1.11.

COURSE LEVEL

Intermediate

AUDIENCE

Benefits individuals responsible for configuring and monitoring devices running Junos OS

PREREQUISITES

- Basic networking knowledge
- An understanding of the Open Systems Interconnection (OSI) reference model, and the TCP/IP protocol suite
- Complete the *Introduction to the Junos Operating System* (IJOS) course prior to attending this class

ASSOCIATED CERTIFICATIONS

JNCIS-ENT
JNCIS-SP

RELEVANT JUNIPER PRODUCT

- Automation
- Junos OS
- M Series
- MX Series
- PTX Series
- QFX Series
- SRX Series
- T Series

RECOMMENDED NEXT COURSE

- *Advanced Junos Enterprise Switching* (AJEX)
- *Advanced Junos Enterprise Routing* (AJER)
- *Junos Multicast Routing* (JMR)
- *Junos Class of Service* (JCOS)
- *Advanced Junos Service Provider Routing* (AJSPR)
- *Junos Layer 3 VPNs* (JL3V)
- *Junos Layer 2 VPNs* (JL2V)

OBJECTIVES

- Implement static routing within Junos OS
- Implement routing instances within Junos OS
- Describe routing instances
- Configure and share routes between routing instances
- Implement load balancing within Junos OS
- Implement filter-based forwarding within Junos OS
- Implement OSPF within Junos OS
- Deploy OSPF within Junos OS
- Implement BGP within Junos OS
- Deploy BGP within Junos OS
- Implement IP tunneling within Junos OS
- Implement graceful routing and bidirectional forwarding detection within Junos OS
- Implement high availability features—GRES, NSR, and unified ISSU within Junos OS
- Implement VRRP within Junos OS
- Implement IPv6 within Junos
- Implement IS-IS within Junos OS

CONTACT INFORMATION

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Course content subject to change. See www.juniper.net/courses for the latest details.

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COURSE CONTENTS

DAY 1

| 1 | **Course Introduction** |

| 2 | **Protocol Independent Routing** |

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

| 3 | **Routing Instance** |

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

Lab 1: Protocol-Independent Routing and Routing Instance

| 4 | **Load Balancing** |

- Describe load-balancing concepts and operations
- Implement and monitor layer 3 load balancing

| 5 | **Filter-Based Forwarding** |

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

Lab 2: Load Balancing and Filter-Based Forwarding

| 6 | **Fundamentals of OSPF** |

- Overview of OSPF
- Adjacency formation and the designated router election
- OSPF scalability

| 7 | **Deploying OSPF** |

- Configure and monitor OSPF
- Troubleshooting OSPF

Lab 3: Deploying OSPF

DAY 2

| 8 | **Fundamentals of BGP** |

- Overview of BGP and BGP attributes

| 9 | **Deploying BGP** |

- IBGP versus EBGP
- Configuring and monitoring BGP

Lab 4: BGP

| 10 | **IP Tunneling** |

- Overview of IP tunneling, GRE and IP-IP tunnels
- Deploy GRE and IP-IP tunnels

Lab 5: IP Tunneling

| 11 | **GR and BFD** |

- Overview of high availability and graceful restart
- Bidirectional forwarding detection

Lab 6: GR and BFD

| 12 | **GRES, NSR, and Unified ISSU** |

- Graceful Routing Engine switchover
- Nonstop active routing
- Unified ISSU

| 13 | **VRRP** |

- Describe, configure, and monitor VRRP

| A | **IPv6 (Optional)** |

- Describe the differences between IPv4 and IPv6
- Explain the IPv6 address format and the different address types
- Explain how IPv6 stateless and stateful autoconfigurations work
- Configure and monitor IPv6 routing
- Implement IPv6-over-IPv4 tunnels

Lab 7: IPv6 (Optional)

| B | **IS-IS (Optional)** |

- Overview of IS-IS and IS-IS PDUs
- Adjacency formation and DIS election
- Configuring and monitoring IS-IS
- Basic IS-IS troubleshooting

Lab 8: IS-IS (Optional)

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