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## Junos Intermediate Routing

**Duration: 2 Days**    **Course Code: JIR**    **Version: 18a**

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### 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 18.2R1.9.

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### Target Audience:

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

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### Objectives:

- • 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
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### Prerequisites:

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) course prior to attending this class.

## Content:

Day 1 :

### 1.COURSE INTRODUCTION

### 2 .Protocol-Independent Routing

- Static Routes
- Aggregated Routes
- Generated Routes
- Martian Addresses
- Routing Instances

#### LAB 1: Protocol-Independent Routing

### 3 .Load Balancing and Filter-Based Forwarding

- Overview of Load Balancing
- Configuring and Monitoring Load Balancing
- Overview of Filter-Based Forwarding
- Configuring and Monitoring Filter-Based Forwarding

#### LAB 2: Load Balancing and Filter-Based Forwarding

- Overview of OSPF
- Adjacency Formation and the Designated Router Election
- OSPF Scalability
- Configuring and Monitoring OSPF
- Basic OSPF Troubleshooting

#### LAB 3: Open Shortest Path First

- Overview of BGP
- BGP Attributes
- IBGP Versus EBGP
- Configuring and Monitoring BGP

#### LAB 4: Border Gateway Protocol

- Overview of IP Tunneling
- GRE and IP-IP Tunnels
- Implementing GRE and IP-IP Tunnels

#### LAB 5: IP Tunneling

- Overview of High Availability Networks
- Graceful Restart
- Graceful RE Switchover
- Nonstop Active Routing
- BFD
- VRRP

#### LAB 6: High Availability

- Introduction to IPv6
- Routing Protocol Configuration Examples
- Tunneling IPv6 over IPv4

#### LAB 7 (Optional): IPv6

#### Appendix B: IS-IS:

- Overview of IS-IS
- Overview of IS-IS PDUs
- Adjacency Formation and DIS Election
- Configuring and Monitoring IS-IS
- Basic IS-IS Troubleshooting

#### LAB 8 (Optional): IS-IS

- Introduction to RIP
- RIP Configuration Examples
- Monitoring and Troubleshooting RIP

## Further Information:

For More information, or to book your course, please call us on Head Office Tel.: +974 40316639

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