

# ADVANCED JUNOS ENTERPRISE ROUTING (AJER)

Course Code: 7212

Learn detailed coverage of OSPF, BGP, multicast, class of service (CoS), and EVPN-VXLAN is covered in depth.

This five-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, multicast, class of service (CoS), and EVPN-VXLAN is covered in depth. The course also exposes students to common troubleshooting commands and tools used to troubleshoot various intermediate to advanced issues. 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.

## What You'll Learn

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 link metrics.
- Describe the various OSPF authentication methods.
- Explain the differences between OSPFv2 and OSPFv3.
- Describe OSPF area types and operations.
- Configure various OSPF area types.
- Summarize and restrict routes.
- Configure OSPF multi-area adjacencies.
- Configure OSPF virtual links.
- Explain OSPF external reachability.
- List useful commands that are used to troubleshoot and verify OSPF.
- Isolate different OSPF issues.
- Describe BGP operations.
- Configure various BGP options.
- Explain the route selection process for BGP.
- Describe how to alter the route selection process.
- Explain the use of routing policies in BGP.

- Explain how BGP routes are processed.
- Describe the various BGP attributes and their use.
- Manipulate common BGP attributes.
- Review common BGP troubleshooting procedures.
- List common BGP troubleshooting commands.
- Identify issues with BGP peering.
- Explain reasons to use BGP in the Enterprise.
- Explain how ISP policies can influence external connectivity.
- Describe three common routing policies for external connectivity in the enterprise.
- Identify common commands for troubleshooting routing policy.
- Describe basic multicast terminology.
- Describe the multicast address space.
- Describe how RPF is used in a multicast network.
- Describe the basic functionality of IGMP.
- Describe the multicast service models and modes.
- Describe PIM-SM operation and configuration when using the ASM model.
- Describe PIM-SM operation and configuration when using the SSM model.
- Verify and troubleshoot multicast.
- Identify environments that may 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 devices.
- Describe situations in which some CoS features are used in the enterprise.
- Describe the use of the Real-Time Performance Monitoring tool.
- Verify and troubleshoot CoS.
- Describe a traditional Campus network design.
- Understand the need for a new architectural design.
- Describe the five key concepts of the Evolved Core.
- Describe the benefits of a Layer 3-based Campus Networks.
- Describe Layer 2 tunneling.
- Explain VXLAN functionality
- Describe VXLAN gateways
- Describe EVPN features
- Describe EVPN operations.
- Describe EVPN with VXLAN for data plane encapsulation.
- Configuring a Spine Only EVPN-VXLAN network.
- Add IP Fabric nodes to the Spine Only architecture.
- Configure a new IP Fabric EVPN-VXLAN network.
- Understand EVPN route information.
- Review useful EVPN-VXLAN commands.

## Who Needs to Attend

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

## 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) and Junos Intermediate Routing (JIR) courses prior to attending this class.

# ADVANCED JUNOS ENTERPRISE ROUTING (AJER)

Course Code: 7212

CLASSROOM LIVE

\$4,750 USD

5 Day

## Classroom Live Outline

### Day 1

#### **Chapter 1: Course Introduction**

#### **Chapter 2: OSPF**

- OSPFv2 Review
- Link-State Advertisements
- Protocol Operations
- OSPF Authentication
- OSPFv3

#### **Chapter 3: OSPF Areas**

- Review of OSPF Areas
- Stub Area Operation
- Stub Area Configuration
- NSSA Operation
- NSSA Configuration
- Route Summarization

#### **Chapter 4: Advanced OSPF Options**

- OSPF Multi-Area Adjacencies
- Virtual Links
- External Reachability

### Day 2

#### **Chapter 5: Troubleshooting OSPF**

- Troubleshooting LSDB Consistency Issues
- Case Study: Adjacency Issues

## **Chapter 6: BGP**

- Review of BGP
- BGP Configuration Options
- BGP Operations
- BGP Path Selection and Options

## **Chapter 7: BGP Attributes and Policy**

- Policy and BGP
- BGP Attributes
- Details and Manipulation of Common BGP Path Attributes

## **Chapter 8: Troubleshooting BGP**

- BGP Troubleshooting
- BGP Case Study

## **Day 3**

## **Chapter 9: Enterprise Routing Policies**

- Enterprise BGP Core Network Design
- Enterprise External Network Deployment

## **Chapter 10: Troubleshooting Policies**

- Routing Policy Structure
- Using RegEx
- Routing Policy Troubleshooting
- Case Study

## **Chapter 11: Introduction to Multicast**

- Overview of Multicast
- Multicast Addressing
- RPF
- IGMP

## **Day 4**

## **Chapter 12: Multicast Routing Protocols and SSM**

- Overview of Multicast Routing Protocols
- PIM-SM Using the ASM Model
- PIM-SM Using the SSM Model

## **Chapter 13: Troubleshooting Multicast**

- Multicast Troubleshooting
- Multicast Case Study

## **Chapter 14: Class of Service**

- CoS Components Review and Case Study
- CoS Processing and CoS Defaults on the SRX Series Device
- Policing
- Virtual Channels
- Monitoring with Resource Performance Monitoring

## **Chapter 15: Troubleshooting Class of Service**

- CoS Troubleshooting
- CoS Case Study

### **Day 5**

## **Chapter 16: Enterprise Architectures**

- Traditional Enterprise Networks
- A New Architecture
- Key Concepts of the Evolved Core
- IP Fabric Campus Design

## **Chapter 17: VXLAN**

- Layer 2 Connectivity over a Layer 3 Network
- VXLAN Overview
- VXLAN Gateways

## **Chapter 18: EVPN-VXLAN**

- Overview of EVPN
- EVPN Operations
- EVPN and VXLAN

## **Chapter 19: Configuring EVPN-VXLAN**

- Configuring EVPN-VXLAN Spine Only network
- Add IP Fabric leaf nodes to a Spine Only design
- Configuring a new IP Fabric EVPN-VXLAN network

## **Chapter 20: Migrating to an IP Fabric**

- EVPN Routes
- Useful EVPN Commands

### **Appendix A: BGP Route Reflection**

- Route Reflection Operation
- Configuration and Routing Knowledge

### **Appendix B: Troubleshooting IS-IS**

- IS-IS Troubleshooting

### **Appendix C: Additional Troubleshooting**

- RIP Troubleshooting
- IGP Troubleshooting Case Studies
- IGP Support for IPv6

## **Classroom Live Labs**

Lab : Configuring and Monitoring OSPF

Lab : Configuring and Monitoring OSPF Areas and Route Summarization

Lab : Configuring and Monitoring Routing Policy and Advanced OSPF Options

Lab: Troubleshooting OSPF  
Lab: Implementing BGP  
Lab: BGP Attributes  
Lab: Troubleshooting BGP  
Lab: Troubleshooting Routing Policies  
Lab: PIM-SM  
Lab: Implementing PIM-SM  
Lab: Implementing SSM  
Lab : Implementing CoS Features in the Enterprise  
Lab: Troubleshooting Multicast  
Lab: Troubleshooting Class of Service  
Lab: BGP Route Reflection (Optional)  
Lab: Troubleshooting IS-IS and Mixed Environments  
Lab: BGP Case Study  
Lab: Implementing Enterprise Routing Policies

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VIRTUAL CLASSROOM LIVE

\$4,750 USD

5 Day

## Virtual Classroom Live Outline

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- OSPFv2 Review
- Link-State Advertisements
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- OSPF Authentication
- OSPFv3

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- Review of OSPF Areas
- Stub Area Operation
- Stub Area Configuration
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- NSSA Configuration
- Route Summarization

#### **Chapter 4: Advanced OSPF Options**

- OSPF Multi-Area Adjacencies
- Virtual Links
- External Reachability

### Day 2

#### **Chapter 5: Troubleshooting OSPF**

- Troubleshooting LSDB Consistency Issues
- Case Study: Adjacency Issues

## **Chapter 6: BGP**

- Review of BGP
- BGP Configuration Options
- BGP Operations
- BGP Path Selection and Options

## **Chapter 7: BGP Attributes and Policy**

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- BGP Attributes
- Details and Manipulation of Common BGP Path Attributes

## **Chapter 8: Troubleshooting BGP**

- BGP Troubleshooting
- BGP Case Study

## **Day 3**

## **Chapter 9: Enterprise Routing Policies**

- Enterprise BGP Core Network Design
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## **Chapter 10: Troubleshooting Policies**

- Routing Policy Structure
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### **Appendix A: BGP Route Reflection**

- Route Reflection Operation
- Configuration and Routing Knowledge

### **Appendix B: Troubleshooting IS-IS**

- IS-IS Troubleshooting

### **Appendix C: Additional Troubleshooting**

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Lab: Troubleshooting IS-IS and Mixed Environments  
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Lab: Implementing Enterprise Routing Policies



# ADVANCED JUNOS ENTERPRISE ROUTING (AJER)

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PRIVATE GROUP TRAINING

5 Day

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