



## TRAINING OFFERING

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# Advanced Junos Enterprise Routing (AJER)

CODE:	LENGTH:	PRICE:
JUN_AJER	5 days	£3,195.00

## Description

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.

This course uses Juniper Networks vSRX virtual firewall 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.

- Junos OS
- M Series
- MX Series

This course is based on Junos OS Release 19.3R1.8. Related Juniper Product: • SRX Series Course Level  
Advanced Junos Enterprise Routing (AJER) is an advanced-level course.

## Objectives

- 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.
- Describe EVPN route information.
- List useful EVPN-VXLAN commands.

## Audience

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.

## Programme

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

Day 1 Course Introduction OSPF • OSPFv3

LAB 1: Configuring and Monitoring OSPF OSPF Areas

- Review of OSPF Areas
- Stub Area Operation
- Stub Area Configuration
- NSSA Operation
- NSSA Configuration
- Route Summarization
- OSPF Multi-Area Adjacencies
- Virtual Links
- External Reachability

LAB 2: Configuring and Monitoring OSPF Areas and Route Summarization Advanced OSPF Options

LAB 3: Configuring and Monitoring Routing Policy and Advanced OSPF Options Day 2

- Troubleshooting OSPF Adjacency Issues
- Troubleshooting LSDB Consistency Issues

Troubleshooting OSPF • Case Study: Adjacency Issues

LAB: Troubleshooting OSPF BGP

- Review of BGP
- BGP Configuration Options
- BGP Operations
- BGP Path Selection and Options LAB: Implementing BGP BGP Attributes and Policy
- Policy and BGP
- BGP Attributes
- Details and Manipulation of Common BGP Attributes LAB: BGP Attributes Troubleshooting BGP • BGP Case Study

• BGP Troubleshooting

• Enterprise BGP Core Network Design

LAB: Troubleshooting BGP Day 3 Enterprise Routing Policies • Enterprise External Network Deployment

- Routing Policy Overview
- Routing Policy Structure
- Using RegEx
- Routing Policy Troubleshooting

LAB: Implementing Enterprise Routing Policies Troubleshooting Policies • Case Study

- Overview of Multicast
- Multicast Addressing
- RPF

LAB: Troubleshooting Routing Policies Introduction to Multicast • IGMP

Day 4

- Overview of Multicast Routing Protocols

- PIM-SM Using the ASM Model

LAB: Implementing PIM-SM

Multicast Routing Protocols and SSM • PIM-SM Using the SSM Model

LAB: Implementing SSM

- Multicast Troubleshooting

Troubleshooting Multicast • Multicast Case Study

LAB: Troubleshooting Multicast 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

LAB 9: Implementing CoS Features in the Enterprise

- Traditional Enterprise Networks
- A New Architecture
- Key Concepts of the Evolved Core

- CoS Troubleshooting

Troubleshooting Class of Service • CoS Case Study

Day 5 Enterprise Architectures • IP Fabric Campus Design

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

- Overview of EVPN
- EVPN Operations

VXLAN • VXLAN Gateways

EVPN-VXLAN • EVPN and VXLAN Configuring EVPN-VXLAN

- EVPN-VXLAN Spine Only Network
- IP Fabric Leaf Nodes in a Spine Only Design
- A New IP Fabric EVPN-VXLAN Network

- EVPN Routes

Migrating to an IP Fabric • Useful EVPN Commands

Please note that the following Appendices are not covered as standard during the training course unless requested by the customer, and agreed with Arrow, upon booking.

- Route Reflection Operation

Appendix A: BGP Route Reflection • Configuration and Routing Knowledge LAB: BGP Route Reflection (Optional)

Appendix B: Troubleshooting IS-IS • IS-IS Troubleshooting LAB: Troubleshooting IS-IS and Mixed Environments

Appendix C: Additional Troubleshooting

- RIP Troubleshooting
- IGP Troubleshooting Case Studies

## Follow on courses

Recommended Next Course: JNCIE-ENT Bootcamp

## Test and Certification

Associated Certification: JNCIP-ENT

## Session Dates

Date	Location	Time Zone	Language	Type	Guaranteed	PRICE
29 Nov 2021	Virtual Classroom	GMT	English	Instructor Led Online	Yes	£ <del>3,195.00</del> £2,715.75
07 Mar 2022	London - Dowgate Hill	GMT	English	Classroom		£3,195.00
07 Mar 2022	Virtual Classroom	GMT	English	Instructor Led Online		£3,195.00
16 May 2022	London - Dowgate Hill	BST	English	Classroom		£3,195.00
16 May 2022	Virtual Classroom	BST	English	Instructor Led Online		£3,195.00
25 Jul 2022	London - Dowgate Hill	BST	English	Classroom		£3,195.00
25 Jul 2022	Virtual Classroom	BST	English	Instructor Led Online		£3,195.00
03 Oct 2022	London - Dowgate Hill	BST	English	Classroom		£3,195.00
03 Oct 2022	Virtual Classroom	BST	English	Instructor Led Online		£3,195.00
12 Dec 2022	London - Dowgate Hill	GMT	English	Classroom		£3,195.00
12 Dec 2022	Virtual Classroom	GMT	English	Instructor Led Online		£3,195.00

## Additional Information

[This training is also available as onsite training. Please contact us to find out more.](#)