



## TRAINING OFFERING

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CODE:	LENGTH:	PRICE:
JUN_AJSPR	40 Hours (5 days)	£3,995.00

## Description

This five-day course is designed to provide students with detailed coverage of OSPF, IS-IS, BGP, and routing policy. Through examples, demonstrations, and hands-on labs, students will gain experience in configuring, monitoring, and troubleshooting the Junos operating system in monitoring device and protocol operations.

This course uses Juniper Networks vMX Series Routers 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 23.2.

### RELEVANT JUNIPER PRODUCT

- Junos OS
- JSA Series
- EX Series

### COURSE LEVEL

- Advanced
- MX Series
- Network Design

## Objectives

- Explain the flooding of LSAs in an OSPF network.
- Describe the shortest-path-first (SPF) algorithm.
- Explain OSPF link metrics.
- Describe the various OSPF authentication methods.
- Explain the key differences between OSPFv2 and OSPFv3.
- Describe OSPF area types and operations.
- Configure various OSPF area types.
- Summarize and restrict routes.
- Configure OSPF virtual links.
- Configure OSPF multiarea adjacencies.
- Explain OSPF external reachability.
- List useful commands that are used to troubleshoot and verify OSPF.
- Isolate different OSPF issues.
- Evaluate the OSPFv3 database and routers.
- Explain the concepts and operation of IS-IS.
- Describe various IS-IS link-state protocol data unit (LSP) types.
- List IS-IS adjacency rules and troubleshoot common adjacency issues.
- Configure and monitor IS-IS.
- Display and interpret the link-state database (LSDB).
- Perform advanced IS-IS configuration options.
- Implement IS-IS routing policies.
- Explain the default operation in multilevel IS-IS.
- Describe address summarization methods used in IS-IS.
- Configure and monitor a multilevel IS-IS network.
- List useful commands to troubleshoot and verify IS-IS problems.
- Troubleshoot and isolate different IS-IS issues.
- Describe basic BGP operations.
- List common BGP attributes.
- Explain the route selection process for BGP.
- Describe how to alter the route selection process.
- Configure advanced options for BGP peers.
- Explain how policies function in BGP.
- Describe BGP attributes and explain how these attributes can be used to manipulate traffic.

- Describe the BGP attributes origin, multiple exit discriminator (MED), and communities, and explain the operation of those attributes.
- Manipulate BGP attributes using routing policy.
- Describe the operation of BGP route reflection.
- Configure a route reflector.
- Describe the BGP virtual route reflector.
- Explain the operation of optimal route reflection.
- Describe the workings of a BGP confederation.
- Configure confederations.
- Describe peering relationships in a confederation.
- Identify what is route flap and route damping.
- Describe distributed denial of service (DDoS) mitigation techniques using damping parameters.
- Explain the default behavior of damping on links.
- Control damping using routing policy.
- Review common BGP troubleshooting procedures.
- List common BGP troubleshooting commands.
- Identify issues with BGP peering.
- Isolate problems on routing policy structure and configuration.
- Identify common commands for troubleshooting routing policy.
- Explain the causes for route instability.

## Audience

Individuals responsible for implementing, monitoring, and troubleshooting Layer 3 components of a service provider's network.

## Prerequisites

- Intermediate-level networking knowledge
- Understanding of the Open Systems Interconnection(OSI) model
- Understanding of TCP/IP protocol suite
- Introduction to the Junos Operating System and Junos Intermediate Routing courses, or equivalent knowledge

## Programme

		3 OSPF Areas	
		• Review OSPF areas	
		• Explain how stub areas operate	
		• Review stub area configuration	
		• Explain how NSSA operates	
		• Review NSSA configuration	
		• Describe route summarization	
<b>DAY 1</b>	1 Course Introduction	Lab 1: OSPF Multiarea Networks	Lab 2: OSPF Route Summarization
	4 OSPF Case Studies and Solutions		
	• Configure OSPF virtual links		
	• Configure OSPF multiarea adjacencies	5 OSPF Troubleshooting	
	• Explain OSPF external reachability	• Identify OSPF neighbors and routing issues	
	Lab 3: Advanced OSPF Options and Routing Policy	• Examine the OSPFv3 database and routers	
	6 IS-IS	<b>DAY 2</b> Lab 4: Troubleshooting OSPF	
	• Explain the concepts and operation of IS-IS	7 Advanced IS-IS Operations and Configuration Options	
	• Describe various IS-IS link-state PDU types	• Present and interpret the IS-IS LSDB	
	• List IS-IS adjacency rules and troubleshoot common adjacency issues	• Identify advanced IS-IS configurations	
	• Configure and monitor IS-IS	• Implement IS-IS routing policies	
	Lab 5: IS-IS Configuration and Monitoring	Lab 6: Advanced IS-IS Configuration Options and Routing Policies	<b>DAY 3</b>
	8 Multilevel IS-IS Networks		
	• Explain the default operation in a multilevel IS-IS network	9 Troubleshooting IS-IS	
	• Describe address summarization methods used in IS-IS	• Verify and isolate IS-IS problems	
	• Review a route leaking and summarization case study	• Analyze IS-IS issues by means of a case study	
	Lab 7: Configuring a Multilevel IS-IS Network	Lab 8: Troubleshooting IS-IS	
	10 Border Gateway Protocol	11 BGP Attributes and Policy—Part 1	
	• Provide an overview of BGP	• Describe BGP policy	
	• Identify how BGP operates	• Explain how the BGP next hop works	
	• Explain BGP path selection and options	• Evaluate the basics of origin and MED	
	• Describe BGP configuration options	• Review BGP AS path	
	Lab 9: BGP and BGP Attributes	<b>DAY 4</b> Lab 10: BGP Attributes—Next Hop, Origin, MED, and AS Path	

## 12 BGP Attributes and Policy—Part 2

- Describe the BGP attributes local preference
- Manipulate BGP attributes using routing policy

Lab 11: BGP Attributes – Local Preference and Communities Lab 12: Scaling BGP

## 14 BGP Route Damping

- Explain the purpose of route flap and damping
- Identify damping parameters
- Configure and monitor route damping

Lab 13: BGP Route Damping

## 16 Policy Troubleshooting

- Assess the basics of routing policy
- Review policy structure
- Evaluate the use of regular expressions
- Identify useful troubleshooting commands
- Review various case studies

Lab 15: Troubleshooting Routing Policy

## 13 Route Reflection and Confederations

- Describe the BGP route reflection operation
- Examine route reflection configuration
- Configure BGP confederations

**DAY 5**

## 15 BGP Troubleshooting

- Identify IBGP troubleshooting tasks
- Recognize different EBGP and BGP issues

Lab 14: Troubleshooting BGP

## Follow on courses

Junos Layer 3 VPNs (JL3VZ)

## Session Dates

Date	Location	Time Zone	Language	Type	Guaranteed	PRICE
09 Dec 2024	Virtual Training Class - TP	GMT	English	Instructor Led Online		£3,995.00
03 Mar 2025	Virtual Training Class - TP	GMT	English	Instructor Led Online		£3,995.00

## Additional Information

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