

# Junos IP version 6 (J-IPv6)

Engineering Simplicity

## COURSE LEVEL

J-IPv6 is an intermediate-level course.

## AUDIENCE

This course benefits individuals responsible for configuring and monitoring IPv6 in the Junos OS.

## PREREQUISITES

Students should have an intermediate-level of 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 (IJS)* and the *Junos Intermediate Routing (JIR)* courses prior to attending this class.

## ASSOCIATED CERTIFICATION

N/A

## RELEVANT JUNIPER PRODUCT

- Junos OS
- M Series
- MX Series
- SRX Series
- T Series

## RECOMMENDED NEXT COURSE

N/A

## CONTACT INFORMATION

[Contact Juniper Education Services](#)

## COURSE OVERVIEW

This two-day course provides detailed coverage of IP version 6 (IPv6) operations including Neighbor Discovery, ICMPv6, IPv6 protocol independent routing, OSPFv3, IS-IS, BGP, RIPng, transitions methods, and troubleshooting methodology and commands supported by the Junos operating system.

Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the Junos operating system and in monitoring device and IPv6 protocol operations. This course uses Juniper Networks SRX 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 19.2R1.8.

## OBJECTIVES

- Describe the similarities and differences between IP version 4 (IPv4) and IPv6.
- Explain the different extension headers and their uses.
- Identify the different IPv6 address types.
- Explain the IPv6 neighbor discovery process.
- Describe the maximum transmission unit (MTU) discovery process.
- Configure and monitor the Virtual Router Redundancy Protocol (VRRP).
- Define the routing tables used for IPv6 routing.
- Explain and configure static, aggregated, and generated IPv6 routes.
- Identify and explain IPv6 firewall filters.
- Describe and implement OSPFv3 routing.
- Explain and configure IPv6 networks using IS-IS.
- Describe and implement BGP peering sessions using IPv6.
- Identify the different transition methods.
- Explain concepts for using dual stack.
- Explain and identify the different methods for tunneling IPv6 traffic.
- Describe a basic troubleshooting method.
- Identify and explain common operational mode commands used for troubleshooting IPv6 problems.
- Explain protocol enhancements in Routing Information Protocol next generation (RIPng).
- Describe and configure RIPng.

## COURSE CONTENT

### Day 1

<b>1</b>	<b>COURSE INTRODUCTION</b>	<b>4</b>	<b>Protocol Independent Routing and Filters</b> <ul style="list-style-type: none"> <li>• IPv6 Routing Tables</li> <li>• Protocol Independent Routing</li> <li>• Firewall Filters</li> </ul> <b>LAB 3: Configuring Protocol Independent Routing</b>
<b>2</b>	<b>Introduction to IPv6 Addressing</b> <ul style="list-style-type: none"> <li>• Comparing IPv4 and IPv6</li> <li>• Extension Headers</li> <li>• IPv6 Address</li> <li>• Subnetting</li> <li>• Interface Configuration</li> </ul> <b>LAB 1: Configuring IPv6 Interfaces</b>	<b>5</b>	<b>OSPFv3</b> <ul style="list-style-type: none"> <li>• OSPFv3 Overview</li> <li>• OSPFv3 Configuration</li> </ul> <b>LAB 4: Configuring OSPFv3</b>
<b>3</b>	<b>IPv6 Protocol and Services</b> <ul style="list-style-type: none"> <li>• ICMPv6 Overview</li> <li>• Neighbor Discovery</li> <li>• MTU Discovery</li> <li>• VRRP</li> <li>• DHCPv6</li> <li>• DNS</li> </ul> <b>LAB 2: Configuring IPv6 Services</b>		

### Day 2

<b>6</b>	<b>IS-IS</b> <ul style="list-style-type: none"> <li>• IS-IS Overview</li> <li>• IS-IS Configuration</li> </ul> <b>LAB 5: Configuring IS-IS</b>	<b>8</b>	<b>Transition Methods</b> <ul style="list-style-type: none"> <li>• Transition Plans</li> <li>• Dual Stack</li> <li>• Tunneling</li> </ul> <b>LAB 7: Configuring GRE Tunneling</b>
<b>7</b>	<b>BGP</b> <ul style="list-style-type: none"> <li>• BGP Overview</li> <li>• BGP Configuration</li> </ul> <b>LAB 6: Configuring BGP</b>	<b>9</b>	<b>Troubleshooting</b> <ul style="list-style-type: none"> <li>• Basic Troubleshooting Guide</li> <li>• IPv6 Show Commands</li> </ul> <b>LAB 8: Troubleshooting</b>
	<b>Appendix A: RIPng</b> <ul style="list-style-type: none"> <li>• Introduction to RIPng</li> <li>• Configuring RIPng</li> </ul> <b>LAB 9: Configuring RIPng (Optional)</b>		