JUNIPER NETWORKS | **Education Services**

SERVICE PROVIDER ROUTING AND SWITCHING, PROFESSIONAL (JNCIP-SP)

Earn a professional-level certification that demonstrates a thorough understanding of networking technology and Juniper service provider routing and switching platforms.

One of four certifications in the Service Provider Routing and Switching track, the JNCIP-SP, Professional, is designed for networking professionals wanting to demonstrate their expertise in routing and switching implementations using the Junos® operating system. The written exam verifies your understanding and advanced knowledge of routing technologies, platform configurations, and troubleshooting skills.

Exam Preparation

We recommend the following resources to help you prepare for your exam. However, these resources aren't required, and using them doesn't guarantee you'll pass the exam.

Recommended Training

- Advanced Junos Service Provider Routing (AJSPR)
- Junos Layer 2 VPNs (JL2V)
- Junos Layer 3 VPNs (JL3V)

Exam Resources

- Industry/product knowledge
- Juniper TechLibrary

Additional Preparation

- Juniper Learning Portal

Exam Objectives

Here is a high-level view of the skillset required to successfully complete the JNCIP-SP certification exam.

OSPF

Describe the concepts, operation, or functionality of OSPFv2 and OSPFv3:

- OSPF area types and operations
- Link-state advertisement (LSA) flooding through an OSPF multi-area network
- Designated router/backup designated router operation
- Shortest-path-first (SPF) algorithm
- Metrics, including external metric types
- Summarize and restrict routes
- Virtual links
- OSPFv2 vs. OSPFv3

Given a scenario, demonstrate knowledge of how to configure or monitor single-area or multi-area OSPF:

- Implement OSPF routing policy

IS-IS

Describe the concepts, operation, or functionality of IS-IS:

- IS-IS areas/levels and operations
- Label-switched path (LSP) flooding through an IS-IS multi-area network
- Designated intermediate system (DIS) operation
- SPF algorithm
- Metrics, including wide metrics
- Route summarization and route leaking

Given a scenario, demonstrate knowledge of how to configure or monitor single-area or multi-area IS-IS:

- Implement IS-IS routing policy

BGP

Describe the concepts, operation, or functionality of BGP:

- BGP route selection process
- Next-hop resolution
- BGP attributes—concept and operation
- BGP communities
- Regular expressions
- Multipath
- Multihop
- Load balancing
- Advanced BGP options
- BGP route damping
- BGP flowspec
- Multiprotocol BGP

Describe the concepts, operation, or functionality of BGP scaling mechanisms:

- Route reflection

Given a scenario, demonstrate knowledge of how to configure or monitor BGP:

- Implement BGP routing policy

Class of Service (CoS)

Describe the concepts, operation, or functionality of Junos OS CoS:

- CoS processing on Junos OS devices
- CoS header fields
- Forwarding classes
- Classification
- Packet loss priority
- Policers
- Schedulers
- Drop profiles
- Rewrite rules

Given a scenario, demonstrate knowledge of how to configure or monitor CoS.

IP Multicast

Describe the concepts, operation, or functionality of IP multicast:

- Components of IP multicast, including multicast addressing
- IP multicast traffic flow
- Any-source multicast (ASM) versus source-specific multicast (SSM)
- Reverse path forwarding (RPF)—concept and operation
- Internet Group Management Protocol (IGMP)
- Physical Interface Module (PIM) dense mode and sparse mode
- Rendezvous point (RP)—concept, operation, discovery, election
- Source-specific multicast (SSM)—requirements, benefits, address ranges
- Anycast rendezvous point (RP)

Given a scenario, demonstrate knowledge of how to configure or monitor IGMP, PIM dense mode, or PIM sparse mode (including SSM):

- Implement IP multicast routing policy

Layer 3 VPNs

Describe the concepts, operation, or functionality of Layer 3 VPNs:

- Traffic flow—control and data planes
- Full mesh versus hub-and-spoke topology
- VPN-IPv4 addressing
- Route distinguishers
- Route targets
- Route distribution
- Site of origin
- Sham links
- Virtual routing and forwarding (VRF) table-label
- Next-generation multicast virtual private networks (MVPNs)
- Flow of control and data traffic in a MVPN
- Layer 3 VPN scaling
- IPv6 Layer 3 VPNs
- Layer 3 VPN Internet access options

Given a scenario, demonstrate knowledge of how to configure or monitor the components of Layer 3 VPNs.

Describe Junos OS support for carrier-of-carriers or inter-provider VPN models.

Layer 2 VPNs

Describe the concepts, operation, or functionality of BGP Layer 2 VPNs:

- Traffic flow—control and data planes
- Forwarding tables
- Connection mapping
- Layer 2 VPN network layer reachability information (NLRI)
- Route distinguishers
- Route targets
- Layer 2 VPN scaling

Describe the concepts, operation, or functionality of LDP Layer 2 circuits:

- Traffic flow—control and data planes
- Virtual circuit label
- Autodiscovery (AD)
- Layer 2 interworking

Describe the concepts, operation, or functionality of virtual private LAN service (VPLS):

- Traffic flow—control and data planes
- BGP VPLS label distribution
- LDP VPLS label distribution
- Route targets
- VPLS multihoming
- Site IDs

Describe the concepts, operation, or functionality of EVPN:

- Traffic flow—control and data planes
- Media access control (MAC) learning and distribution
- Ethernet VPN (EVPN) multihoming
- BGP EVPN label distribution

Given a scenario, demonstrate knowledge of how to configure, monitor, or troubleshoot Layer 2 VPNs:

- BGP Layer 2 VPNs
- LDP Layer 2 circuits
- EVPNs
- VPLS

Exam Details

Exam questions are derived from the recommended training and the exam resources listed above. Pass/fail status is available immediately after taking the exam. The exam is only provided in English.

Exam Code

JN0-664

Prerequisite Certification

JNCIS-SP

Delivered by

Pearson VUE

Exam Length

90 minutes

Exam Type

65 multiple-choice questions

Software Versions

Junos OS 22.3

Recertification

Juniper certifications are valid for three years. For more information, please see Recertification.

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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