JNCIP – ENT

Interior Gateway Protocols (IGPs)

IGP Concepts

Describe the concepts, operation, and functionality of Interior Gateway Protocols:

- Interior Gateway Protocol fundamentals
- Link-state routing principles
- Convergence behavior
- Scalability and design considerations

OSPF

- OSPFv2 concepts and operation
- OSPFv3 concepts and operation

Routing Policy

- Purpose and function of routing policy in IGP environments

IGP Configuration and Troubleshooting

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

- IGP configuration
- Neighbor and adjacency verification
- Routing table and LSDB monitoring
- Troubleshooting tools and techniques

Border Gateway Protocol (BGP)

BGP Concepts

Describe the concepts, operation, and functionality of BGP:

- BGP basic operation
- BGP session establishment
- Internal BGP (IBGP) and External BGP (EBGP)

BGP Route Selection

- BGP route selection process
- Next-hop resolution

BGP Attributes

Describe the concepts and operation of BGP attributes:

- Well-known mandatory and discretionary attributes
- Optional transitive and non-transitive attributes

BGP Communities

- Purpose and usage of BGP communities

BGP Load Balancing

- Multipath load balancing
- Multihop behavior
- Forwarding table considerations

NLRI Families

- IPv4 unicast (inet)
- IPv6 unicast (inet6)

Advanced BGP Options

- Advanced BGP features and tuning options

BGP Configuration and Troubleshooting

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

- Peer and group configuration
- Session troubleshooting
- Route advertisement and reception
- Monitoring and diagnostic tools

BGP Routing Policy

- Implement BGP routing policy

IP Multicast

IP Multicast Concepts

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

- Multicast fundamentals
- Multicast addressing

Multicast Traffic Flow

- IP multicast traffic forwarding behavior

Multicast Modes

- Any-Source Multicast (ASM)
- Source-Specific Multicast (SSM)

Reverse Path Forwarding (RPF)

- RPF concept and operation

Internet Group Management Protocol (IGMP)

- IGMP operation
- IGMP snooping

Protocol Independent Multicast (PIM)

- PIM sparse-mode (PIM-SM)

Rendezvous Point (RP)

Describe RP concepts and operation:

- RP functionality
- RP discovery mechanisms
- RP election
- Anycast RP

Multicast Source Discovery Protocol (MSDP)

- MSDP concepts and usage

Multicast Routing Policy

- Multicast scoping
- Routing policy considerations

Multicast Configuration and Troubleshooting

Given a scenario, demonstrate knowledge of how to configure, troubleshoot, or monitor IP multicast:

- IGMP configuration
- PIM-SM and SSM configuration
- Multicast routing policy implementation

Advanced Ethernet Switching and Spanning Tree

Advanced Ethernet Switching Concepts

Describe the concepts, operation, and functionality of advanced Ethernet switching:

- Filter-based VLANs
- Private VLANs
- Dynamic VLAN registration using MVRP
- Layer 2 traffic tunneling across Ethernet networks

Layer 2 Tunneling Technologies

- Q-in-Q
- Layer 2 Protocol Tunneling (L2PT)

Advanced Ethernet Switching Configuration

Given a scenario, demonstrate knowledge of how to configure, troubleshoot, or monitor advanced Ethernet switching:

- Filter-based VLANs
- MVRP
- Layer 2 tunneling
- Q-in-Q and L2PT

Advanced Spanning Tree Protocols

Describe the concepts, operation, and functionality of advanced spanning tree protocols:

- Multiple Spanning Tree Protocol (MSTP)
- VLAN Spanning Tree Protocol (VSTP)

Advanced Spanning Tree Configuration

Given a scenario, demonstrate knowledge of how to configure, troubleshoot, or monitor MSTP or VSTP.

Layer 2 Authentication and Access Control

Authentication and Access Control Concepts

Describe the operation of Layer 2 authentication and access control mechanisms:

- Authentication process flow

Authentication Methods

- IEEE 802.1X concepts and functionality

- MAC RADIUS authentication
- Captive portal authentication

Access Control Features

- Server fail fallback
- Guest VLAN

Design Considerations

- Considerations when using multiple authentication or access control methods

Authentication Configuration and Troubleshooting

Given a scenario, demonstrate knowledge of how to configure, troubleshoot, or monitor Layer 2 authentication or access control mechanisms.

IP Telephony Features

IP Telephony Concepts

Describe the concepts, operation, and functionality of features supporting IP telephony:

- Power over Ethernet (PoE)
- Link Layer Discovery Protocol (LLDP)
- LLDP-Media Endpoint Discovery (LLDP-MED)
- Voice VLAN

IP Telephony Configuration and Troubleshooting

Given a scenario, demonstrate knowledge of how to configure, troubleshoot, or monitor IP telephony support features.

Class of Service (CoS)

CoS Concepts

Describe the concepts, operation, and functionality of Junos Class of Service for Layer 2 and Layer 3 networks:

- CoS processing on Junos devices
- CoS header fields

Traffic Handling

- Forwarding classes
- Classification

- Packet loss priority

Traffic Control Mechanisms

- Policers
- Schedulers
- Drop profiles
- Traffic shaping
- Rewrite rules

CoS Configuration and Troubleshooting

Given a scenario, demonstrate knowledge of how to configure, troubleshoot, or monitor CoS for Layer 2 or Layer 3 networks.

EVPN (Ethernet VPN)

EVPN Concepts

Describe the concepts, operation, and functionality of Junos EVPN:

- EVPN architecture
- VXLAN fundamentals

EVPN Route Types

- Route Type 1
- Route Type 2
- Route Type 3

EVPN Multihoming

- Multihoming concepts
- Active-active multihoming
- EVPN route handling

EVPN Configuration and Troubleshooting

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