



**Exam : JN0-303**

**Title : Juniper Networks Certified Internet Specialist**

**Ver : 12.15.08**

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**QUESTION 1:**

Into which protocol are LDP hello messages encapsulated?

- A. IP
- B. TCP
- C. UDP
- D. MPLS

Answer: C

LDP Hello messages are sent on UDP port 646

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**QUESTION 2:**

Given the following LSP configuration, which statement is true?

```
label-switched-path lsp-xyz {  
  to 10.2000.1.1;  
  primary path1;  
  secondary path2;  
  secondary path3;  
  no-cspf;  
}  
path path1 {  
  10.200.10.1 strict;  
}  
path path2 {  
  10.200.20.1 strict;  
}  
path path3 {  
  10.200.30.1 loose;  
}
```

- A. The router will use path1 when it is available and stable.
- B. The router will use path3 when it is available and stable.
- C. The router will attempt to establish path2 only when path1 and path3 are down.
- D. The router will attempt to establish path1 only when path2 and path3 are down.

Answer: A

An LSP can have zero or one primary path applied. When it is configured the primary path must be used if it's available in the network.

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**QUESTION 3:**

What is the optimize timer on an RSVP-signaled Label-Switched Path (LSP)?

- A. the time it takes to identify the optimal path for the LSP
- B. the interval at which the ingress router recalculates the LSP's path
- C. the time the ingress router takes to establish the primary path
- D. the maximum number of times the ingress router tries to establish the primary path

Answer: B

Once an LSP has been established, topology or resources changes might, over time, make the path suboptimal. You can configure the ingress router to recompute paths periodically to determine whether a more optimal path has become available. The frequency of this calculation is set by the optimize timer command in JUNOS.

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#### **QUESTION 4:**

What are three RSVP messages? (Choose three.)

- A. PathErr: Path error
- B. ResvErr: Reservation error
- C. PathConf: Path confirmation
- D. ResvConf: Reservation confirmation

Answer: A, B, D

The PathErr message travels upstream to the ingress router and denotes an error along the established path. The ResvErr travels downstream to the egress router and denotes an error along the established path. The ResvConf message is a message sent to the egress router upon request confirming the Resv message was received.

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#### **QUESTION 5:**

Which is a step in the JUNOS software CSPF algorithm?

- A. Prune links that are bidirectional.
- B. Eliminate paths with insufficient MTU.
- C. Eliminate paths of more than 15 hops.
- D. Prune links that do not contain the included administrative group.

Answer: D

One aspect of traffic engineering is the ability to control what types of traffic use certain network links. One method for reaching this administrative goal is the use of administrative groups. When an LSP requires a network path that includes links belonging to an administrative group, the CSPF algorithm removes all links that don't contain the requested group value.

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**QUESTION 6:**

What is required to enable the use of metrics larger than 63 for traffic engineering in IS-IS?

- A. Nothing, wide metrics are used by default in IS-IS.
- B. Enable wide-metrics-only under protocol IS-IS.
- C. Enable traffic-engineering under protocols IS-IS.
- D. Disable TVL's 2 and 128 which carry the 6-bit metrics (0-63).

Answer: B

To properly advertise a metric value greater than 63, a router must enable the advertisement of "wide metrics" using the wide-metrics-only command within the appropriate IS-IS level. This command informs the local router to only send the wide metric TLVs (types 22 and 135).

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**QUESTION 7:**

In JUNOS software, which command is used to configure TED support for OSPF?

- A. set protocols rsvp cspf-enable
- B. set protocols mpls cspf-enable
- C. set protocols rsvp traffic-engineering
- D. set protocols ospf traffic-engineering

Answer: D

The OSPF protocol makes use of a type 10 Opaque LSA for advertising traffic engineering information in a network. Traffic engineering is enable with the command set traffic-engineering within the protocols/ospf configuration hierarchy.

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**QUESTION 8:**

An OSPF non-backbone area follows external routes to be flooded within the area. These external routes are propagated into other areas. However, external routes from other areas are not allowed to enter this area. Which type of OSPF area does this describe?

- A. stub area
- B. transit area
- C. border area
- D. not-so-stubby area

Answer: D

An OSPF not-so-stubby-area is created when an otherwise stub area has a need to connect to an external network through an ASBR. An NSSA allows for the injection of external routing knowledge by an ASBR using an NSSA external LSA, type code 7.

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**QUESTION 9:**

In JUNOS software, what is required to redistribute RIP routes into OSPF?

- A. Apply an export policy in RIP.
- B. Apply an import policy in RIP.
- C. Apply an export policy in OSPF.
- D. Apply an import policy in OSPF.

Answer: C

By default, the OSPF protocol will have no knowledge of routes from other routing protocols including RIP. On a Juniper router, routing policies are used to redistribute routes from one protocol to another. To advertise any routes to an OSPF neighbor, an export policy must be created under the OSPF configuration hierarchy.

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**QUESTION 10:**

In JUNOS software, what are two ways the router ID is chosen? (Choose two.)

- A. Choose the lowest primary address.
- B. If assigned, always choose address of fxp0.
- C. Choose numerically highest IP address of lo0.
- D. Choose numerically lowest IP address of fxp0.
- E. Choose the non-127.0.0.1 primary address on lo0.

Answer: C, E

For OSPF, the router uses the IP address configured on the loopback interface (lo0) as the router identifier. If no IP address is configured on the loopback interface, the router uses the highest IP address for the router identifier. The numerically highest address on an interface is always the primary address, so answer E is just another way of saying the primary address. Answer A is incorrect because the highest numerical address is used. Answers B and D are incorrect, because fxp0 should not participate in any routing protocols.

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**QUESTION 11:**

What is the correct virtual link configuration on an OSPF router?

- A. area 0.0.0.0 {  
linkneighbor-id 172.168.18.2 transit-area 0.0.2.1;
- B. area 0.0.0.0 {  
virtual-linkneighbor-id 172.168.18.2 transit-area 0.0.2.1;
- C. area 0.0.0.1 {  
virtual-linkneighbor-id 172.168.18.2 transit-area 0.0.2.1;  
}
- D. area 0.0.2.1 {  
virtual-linkneighbor-id 172.168.18.2 transit-area 0.0.0.0;  
}

Answer: B

A virtual link is configured on a router with the virtual-link command. The virtual link is configured in area 0 and specifies the other end of the virtual link with the neighbor-id keyword and also specifies the area that is being transitted with the transit-area option. Answer A is using the incorrect command, and answers C and D don't have the virtual link configured under area 0.0.0.0.

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### **QUESTION 12:**

Which three pre-conditions must be met before an OSPF router can perform graceful restart? (Choose three.)

- A. Router must be ABR.
- B. Router must contain one sham link.
- C. The network topology must be stable.
- D. Router must be able to forward packets.
- E. Neighbors must support graceful restart.

Answer: C, D, E

In order for a graceful restart to be performed, the network must be in a stable state, all neighbors that are established must support graceful restart, and the restarting router must be able to continuously forward traffic while a restart is occurring.

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### **QUESTION 13:**

Which two commands would change the default OSPF metric calculation for interface ge-0/3/0 in JUNOS software? (Choose two.)

- A. set interfaces ge-0/3/0 unit 0 metric 10
- B. set protocols ospf reference-bandwidth 10g
- C. set interfaces ge-0/3/0 unit bandwidth 10g
- D. set protocols ospf area 0 interface ge-0/3/0 metric 10
- E. set protocols ospf area 0 interface ge-0/3/0 bandwidth 10g

Answer: B, D

There are two ways to change the metric on an interface: by changing the global reference bandwidth used to calculate the metric, and by manually configuring a metric on an interface. To change the reference bandwidth, the command `set reference-bandwidth` is used under the ospf config hierarchy. To manually configure the metric, use the command `set metric` under the 'protocols ospf interface type' hierarchy. The reference bandwidth can be specified in bytes, megabits (m) or gigabits (g). The metric is an integer. A and D are not correct because the `set metric` command is applied under the interface config, not under ospf. C is incorrect because it is specifying a manual metric as 10g, and the metric is an integer.

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**QUESTION 14:**

You want to suppress advertisement of all routes within the 200.200.0.0/16 range to your OSPF neighbors in other areas. Which configuration accomplishes this goal?

- A. `[edit protocols ospf area area-id]  
area-range 200.200.0.0/16 discard;`
- B. `[edit protocols ospf area area-id]  
area-range 200.200.0.0/16 restrict;`
- C. `[edit protocols ospf area area-id]  
area-range 200.200.0.0/16 no-summary;`
- D. `[edit protocols ospf area area-id]  
area-range 200.200.0.0/16 suppress;`

Answer: B

The `restrict` option on the OSPF `area-range` command is used to restrict advertisement of this area range. `Discard`, `no-summary`, and `suppress` are not valid options.

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**QUESTION 15:**

Which LSA is the Type 10?

- A. Router LSA
- B. Opaque LSA
- C. AS attributes LSA
- D. ASBR summary LSA
- E. Network summary LSA

Answer: B

The type 10 LSA is an Opaque LSA (area-local scope)

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**QUESTION 16:**

Which three LSA types can be flooded within an OSPF stub area? (Choose three.)

- A. Type 1
- B. Type 2
- C. Type 3
- D. Type 5
- E. Type 7

Answer: A, B, C

A stub area restricts the advertisement of AS external (type 5) LSAs, including NSSA external (type 7) LSAs, while allowing router (type 1), network (type 2), and network summary (type 3) LSAs.

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**QUESTION 17:**

Which LSA is flooded across area boundaries?

- A. Type 1
- B. Type 2
- C. Type 3
- D. Type 5
- E. Type 7

Answer: D

Type 1 and type 2 LSAs are area-local LSAs generated by each router. Type 3 LSAs are area-local generated by an ABR. Type 7 LSAs are area-local generated by an ASBR within a NSSA. The only LSA that is propagated across area boundaries intact is the type 5 AS external LSA.

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**QUESTION 18:**

Which routers must be configured with the same authentication string when configuring OSPF authentication?

- A. all routers on a link
- B. all routers in an area
- C. all external OSPF peers
- D. all routers in an OSPF domain

Answer: A

All routers in an area must use the same authentication type, as it is defined within the



OSPF area configuration hierarchy. The authentication string, or password, however, is configured individually on each interface. As long as neighbors have identical passwords, an adjacency is formed.

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**QUESTION 19:**

Which routing table stores IPv6 routes?

- A. inet.0
- B. inet.2
- C. inet6.0
- D. inet.v6
- E. ip-net.0

Answer: C

IPv6 routes are stored in the inet6.0 routing table.

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**QUESTION 20:**

A router receives an IPv6 packet which is 2000 bytes in length. The MTU of the outgoing interface is 1500 bytes.

What action will the router take?

- A. forwards the packet
- B. fragments the packet
- C. drops the packet silently
- D. drops the packet and sends an ICMP message

Answer: D

It is expected that each node in an IPv6 network will determine the path MTU from itself to the destination. If the packet is larger than the path MTU, the source node fragments the data into multiple smaller packets. In an IPv6 network, fragmentation is accomplished only by the sending nodes. In the event that a router receives a packet with a larger MTU than it can support, it will drop the packet and send an ICMP notification to the sending host.

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**QUESTION 21:**

Which three steps are used to configure IPv6 in JUNOS software? (Choose three.)

- A. Assign 128-bit router ID.
- B. Enable a routing instance.
- C. Assign IPv6 addresses to interfaces.

D. Add IPv6 family support to interfaces.

Answer: A, C, D

To enable IPv6 on a router, an interface must be configured to support IPv6 with the family inet6 configuration command. An IPv6 address may then be assigned to the interface. An IPv6 router ID may be assigned manually or the router can automatically determine the router-id from the configured interfaces. A routing protocol does not need to be enabled or configured by default to enable IPv6 on a router.

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**QUESTION 22:**

Which default JUNOS software routing table contains IPv6 unicast routes?

- A. inet.6
- B. ipv6.0
- C. inet.0
- D. inet6.0

Answer: D

IPv6 unicast routes are stored in the inet6.0 routing table.

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**QUESTION 23:**

In BGP graceful restart, how does a peer router indicate the end of a route exchange?

- A. An open message with the E bit set.
- B. An update message with the E bit set.
- C. An open message with an end-of-RIB marker.
- D. An update message with an end-of-RIB marker.

Answer: D

After two restart-capable routers exchange their full routing tables with each other, a special Update message, called the end-of-RIB marker, is exchanged. This message contains no withdrawn routes and no advertised routes; it is empty Update message

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**QUESTION 24:**

Within a BGP confederation, how are routing loops avoided?

- A. Split horizon.
- B. AS confederation sequence.
- C. The BFP cluster ID attribute.

D. The BGP originator ID attribute.

Answer: B

Confederation BGP sessions are very similar to EBGP peering sessions. The AS Confederation Sequence is an ordered list of the number of AS networks through which a route has passed. It is operationally identical to an AS Sequence segment, including providing loop detection. Each router receiving a route checks the AS Confederation Sequence for its local AS number. If it is detected, a loop is assumed and the route advertisement is dropped.

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**QUESTION 25:**

Which two MBGP IPv4 sub-AFIs does the JUNOS software support? (Choose two.)

- A. unicast
- B. anycast
- C. multicast
- D. broadcast

Answer: A, C

MBGP Subsequent Address Family Identifiers (sub-AFI) supported by JUNOS software are:

- 1 - Unicast
  - 2 - Multicast
  - 4 - Labeled unicast
  - 128 - Labeled VPN unicast
  - 129 - Labeled VPN multicast
- 

**QUESTION 26:**

What is the maximum suppress time for a damped route, by default?

- A. 5 minutes
- B. 30 minutes
- C. 60 minutes
- D. 90 minutes
- E. 120 minutes

Answer: C

A route may be suppressed (damped) for a maximum time amount known as the max-suppress value. The JUNOS software uses a default value of 60 minutes for the max-suppress keyword, with possible ranges between 1 and 720 minutes.

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**QUESTION 27:**

Which JUNOS software show command allows you to view BGP attributes for a given route?

- A. show route bgp
- B. show bgp attribute
- C. show bgp neighbor
- D. show route extensive
- E. show bgp statistics

Answer: D

The extensive keyword on the show route command will show the value for attributes on a BGP route.

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**QUESTION 28:**

You want to configure a single EBGP peering session over parallel physical circuits. Which BGP feature enables load balancing in this scenario?

- A. multihop BGP
- B. multicast BGP
- C. route reflection
- D. multiprotocol BGP
- E. confederation BGP

Answer: A

External BGP peering sessions, by default, are established across a single physical hop. To configure a single BGP session across multiple physical connections, EBGP multihop is used. With multihop, BGP peering sessions are established between loopback addresses. This leads to a single route advertisement across the AS boundary and less overhead for the routing process. Network reachability between the loopback addresses is typically provided for by a static route that uses the two physical connections as next-hop values.

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**QUESTION 29:**

In JUNOS software, which is the only BGP attribute where a higher value is preferred?

- A. MED
- B. Origin
- C. Weight

- D. Preference
- E. Local preference

Answer: E

The second step in the BGP route selection algorithm checks the Local Preference value and prefers all advertisements with the highest value. This is the only step in the algorithm that prefers a higher value over a lower value.

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**QUESTION 30:**

Which two BGP attributes support route reflection? (Choose two.)

- A. Client ID
- B. Cluster list
- C. Originator ID
- D. Reflection community

Answer: B, C

The Originator ID attribute, type code 9, is an optional nontransitive attribute. It is used as a method of loop prevention in a BGP network using route reflection. The Cluster List attribute, type code 10, is also an optional nontransitive attribute. It is used in a route reflection network to prevent routing loops within the local AS.

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**QUESTION 31:**

Which mechanism does External BGP use to prevent the formation of routing loops?

- A. AS path
- B. Split horizon
- C. Poison reverse
- D. Unicast RPF check

Answer: A

When a route advertisement is received by a router, it checks the AS Path list the route has traversed. If the router's local AS is located in the AS Path list, there is assumed to be a routing loop and the advertisement is ignored by the router.

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**QUESTION 32:**

Which two multicast groups support Auto-RP mapping and discovery? (Choose two.)

- A. 224.0.0.39
- B. 224.0.1.39
- C. 224.0.0.40
- D. 224.0.1.40

Answer: B, D

Each router configured as an Auto-RP RP generates messages announcing its capabilities to the network. These Cisco-RP-Announce packets are flooded in a dense-mode fashion to the 224.0.1.39 multicast group address. Once the group-to-RP mappings have been made, the mapping agent advertises this decision to the network in a Cisco-RP-discovery message. This packet is also forwarded in a dense-mode fashion to the 224.0.1.40 group address.

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**QUESTION 33:**

What are two commands that can be used to configure MBGP for multicast?  
(Choose two.)

- A. Under the BGP group, configure family inet any
- B. Use the set protocol MBGP command to enable MBGP
- C. Under the BGP group, configure family inet multicast
- D. Use the set rib-group command to copy the multicast routes into inet.1

Answer: A, C

To enable support for multicast in MBGP, the MP-Reachable-NLRI BGP attribute is used for announcing information. This attribute is enabled through the family inet command in BGP. This command has three options: unicast, multicast, or any.

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**QUESTION 34:**

What prevents routing loops when MSDP is configured across multiple domains?

- A. PIM-SM
- B. Scoping
- C. Auto-RP
- D. MBGP

Answer: D

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**QUESTION 35:**

Which three RP election mechanisms are available in a PIM-SM domain? (Choose three.)

- A. Static
- B. Auto-RP
- C. Dynamic-RP
- D. Bootstrap router

Answer: A, B, D

A sparse-mode PIM domain requires the selection of a rendezvous point (RP) for each multicast group. The JUNOS software supports three methods for selecting an RP. In addition to statically configuring the group-to-RP mapping, the dynamic methods of Auto-RP and bootstrap routing can be used.

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**QUESTION 36:**

Which multicast mode does Auto-RP require?

- A. Link-mode
- B. Dense mode
- C. Sparse mode
- D. Sparse-dense mode

Answer: B

Each router configured as an Auto-RP RP generates messages announcing the capabilities to the network. These Cisco-RP-Announce packets are flooded in a dense-mode fashion to the 224.0.1.39/32 multicast group address.

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**QUESTION 37:**

In what PIM topology would you use MSDP within a single domain?

- A. Auto-RP
- B. Anycast RP
- C. Bootstrap router
- D. PIM sparse mode

Answer: B

The use of MSDP within a single PIM domain allows multiple physical routers to share the RP function. This creates a virtual RP for the domain and is commonly called anycast RP.

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**QUESTION 38:**

What is the administrative scoping address range associated with global scope?

- A. 224.0.0.0/24
- B. 239.128.0.0/10
- C. 239.192.0.0/14
- D. 224.0.1.0?38.255.255.255

Answer: D

From RFC 2365, the global scope portion of the administratively scoped multicast space is the range of addresses 224.0.1.0 - 238.255.255.255.

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**QUESTION 39:**

Which two are default preference values for both internal and external IS-IS Level 2 routes on a Juniper Networks router? (Choose two.)

- A. 10
- B. 15
- C. 18
- D. 150
- E. 160
- F. 165

Answer: C, F

Preferences for IS-IS routes in JUNOS are:

IS-IS Level 1 Internal: 15

IS-IS Level 2 Internal: 18

IS-IS Level 1 External: 160

IS-IS Level 2 External: 165

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**QUESTION 40:**

An IS-IS router is adjacent to and passing traffic with a neighbor. You perform a show isis interface detail command and notice that for some interfaces you have a circuit type of 3.

Which IS-IS level(s) is enabled on these interfaces?

- A. Level 1 only
- B. Level 2 only
- C. Level 1 and Level 2
- D. Level 3 only

Answer: C

Possible values for circuit type are 0,1,2, or 3. A value of 0 indicates that all operational IS-IS levels are currently in passive mode. A value of 1 indicates a level 1 only interface.



A value of 2 indicates a level 2 only interface. A value of 3 indicates that both level 1 and level 2 are operating on the interface

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**QUESTION 41:**

According to JUNOS software route selection algorithm, which IS-IS route type is most preferred?

- A. Level 1 internal routes
- B. Level 1 external routes
- C. Level 2 internal routes
- D. Level 2 external routes

Answer: A

Preferences for IS-IS routes in JUNOS are:

IS-IS Level 1 Internal: 15

IS-IS Level 2 Internal: 18

IS-IS Level 1 External: 160

IS-IS Level 2 External: 165

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**QUESTION 42:**

What is the maximum metric value that can be reported in a narrow metric TLV?

- A. 63
- B. 64
- C. 1023
- D. 1024
- E. 65535

Answer: A

The original IS-IS specification defines the IS reachability (2), IP internal reachability (128), and IP external reachability (130) TLVs as methods for advertising information into the network. Each method supports a maximum metric of 63 through the use of a 6-bit field in the TLV.

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**QUESTION 43:**

In IS-IS, how long will the restart helper keep the restarting router in the up state?

- A. The hello dead timer expires.
- B. The restart duration timer expires.
- C. The restarting router sets the down bit.

D. The restart helper sends out three CSNPs.

Answer: B

A restarting router sends out a graceful restart TLV (211) that includes a remaining time field describing the time remaining until the restart event is complete. The helper router(s) use this time as a restart duration timer to determine how much longer to keep the restarting router in an up state.

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**QUESTION 44:**

Which two statements about IS reachability TLV (TLV 2) and the extended IS reachability (TLV 22) are true? (Choose two.)

- A. TLV 22 supports wide metrics.
- B. TLV 2 is only used in Level 1 routers.
- C. TLV 22 displays the neighbor's extended areas.
- D. Only TLV 22 can support the inclusion of sub-TLVs.
- E. Only TLV 22 can be flooded across L1/L2 boundaries.

Answer: A, D

The extended IS reachability TLV (22) addresses shortcomings in the IS reachability TLV (2) by providing support larger (wide) metrics. It also provides support for traffic-engineering by using a construct of sub-TLVs to announce TE information into the network.

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**QUESTION 45:**

Which command at the [edit protocols isis] hierarchy level forces routed traffic to avoid this router?

- A. metric 64
- B. overload
- C. priority 0
- D. te-metric 32768

Answer: B

The IS-IS specifications define a bit in the LSP header called the overload bit. When a router sets this bit to the value 1, other routers in the network remove the overloaded router from the forwarding topology. The JUNOS software uses the overload command to set the overload bit.

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**QUESTION 46:**

Which two IS-IS hello values must match to form a Level 1 IS-IS adjacency?  
(Choose two.)

- A. AFI
- B. Area
- C. System ID
- D. N-Selector

Answer: A, B

For two Level 1 routers to form an adjacency, the area value on each router must be identical. The area field of an IS-IS address begins with the Authority and Format Indicator (AFI).

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**QUESTION 47:**

In the output of show isis adjacency, what are three valid items that can be displayed under the attributes header? (Choose three.)

- A. IS type
- B. attached
- C. overload
- D. area addresses

Answer: A, B, C

---

**QUESTION 48:**

In JUNOS software, how is route summarization at the L1/L2 border configured?

- A. By specifying the area-range statement.
- B. By creating aggregate routes and applying policies.
- C. By specifying the route-summarization statement.
- D. By specifying the area-range restrict statement.

Answer: B

The IS-IS protocol specifications do not reference an inherent method for summarization, which results in the lack of a syntax keyword for route summarization. In its place, the JUNOS software uses routing policies to summarize routes and announce them across the level boundary point. The summary route must be manually created using an aggregate route under [edit routing-options].

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**QUESTION 49:**

Which two statements are correct regarding IS-IS? (Choose two.)

- A. Routers maintain a single link-state database per area.
- B. Routers maintain a separate Level 1 link-state database.
- C. Routers maintain a separate Level 2 link-state database.
- D. Routers maintain a single Level 1 link-state database per area.

Answer: B, C

. Each router in the IS-IS network maintains a complete link-state database for each of its configured levels.

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**QUESTION 50:**

Which code causes only a Level 2 adjacency to be formed under the SONET interface so-2/2/2 with Frame Relay encapsulation?

- A.

```
so-2/2/2 {  
  unit0 {  
    disable  
    familyiso  
  }  
}
```
- B.

```
isis {  
  level1 disable;  
  interface so-2/2/2.0 {  
    disable  
  }  
  interface all;  
}
```
- C.

```
so-2/2/2 {  
  unit0 {  
    disable level 1;  
    familyiso  
  }  
}
```
- D.

```
isis {  
  level1 disable;  
  interface all;  
}
```

Answer: D

To configure an interface to support only Level 2 adjacencies, the command `level1 disable` is added under the [edit protocols isis interface type] configuration hierarchy.

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**QUESTION 51:**

Given the two AS path regular expressions:

"65000+ (65001|65002)"

"65000? (65001|65002){0,}"

Which AS path matches both expressions?

- A. 65000 65001 65002
- B. 65000 65002
- C. 65001 65000
- D. 65001 65002

Answer: B

A '+' matches one or more instances of the previous term. A '?' matches 0 or 1 instances of the previous term. A '|' between two terms matches one of the two terms similar to a logical OR. {0,} matches 0 or more of the term, similar to '\*'. Comparing the two expressions, 65000 must match one or more times in the first line and 0 or 1 times in the second. For both to be true, 65000 needs to appear exactly once. On the first expression, either 65001 or 65002 must appear once. With the second expression, either 65001 or 65002 can appear zero or more times. Therefore, for both expressions to be true, either 65001 or 65002 must appear exactly once. The as path that matches will be either 65000 65001 or 65000 65002.

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### **QUESTION 52:**

Given the output from a show route extensive command (some information removed):

10.10.0.0/16 (2 entries, 1 announced)

Communities: 64512:666 90:4070 5834:66

172.16.1.0/24 (1 entries, 1 announced)

Communities: 65000:1696 1234:666 50:7090

172.16.20.0/22 (1 entries, 1 announced)

Communities: 65544:1000 80:1001 8431:14952

192.168.33.64/26 (2 entries, 1 announced)

Communities: 10:4307 9231:1071 64512:999

Which two routes appear when a show route community 64512:\* command is executed? (Choose two.)

- A. 10.10.0.0/16
- B. 172.16.1.0/24
- C. 172.16.20.0/22
- D. 192.168.33.64/26

Answer: A, D

The regular expression 64512:\* indicates that the first section of the community must match 64512. The second part can be any value.

**QUESTION 53:**

A BGP router should use three export policies named add-communities, no-rfc1918-routes, and rejected-unwanted. Which export statement places the add-communities policy immediately before the default BGP policy?

- A. export [add-communities no-rfc1918-routes ejected-unwanted];
- B. export [no-rfc1918-routes add-communities rejected-unwanted];
- C. export [add-communities rejected-unwanted no-rfc1918-routes];
- D. export [no-rfc1918-routes rejected-unwanted add-communities]

Answer: D

The default policy is evaluated at the end of the policy chain after all explicitly configured policies are evaluated. The explicit policies are evaluated in the order they are called in the configuration statement, so for a specific policy to be evaluated immediately before the default policy, it needs to be the last policy explicitly listed in the policy chain.

---

**QUESTION 54:**

What action occurs when the static route 192.168.0.0/25 is evaluated by the policy main-policy?

```
[edit policy-options]
policy-statementmy-filter {
term-first {
from {
route-filter 192.168.0.0/16 orlonger accept;
route-filter 192.168.1.0/24 exact accept;
route-filter 192.168.2.0/24 exact;
}
then {
metric 10;
accept;
}
term second {
then {
metric 20;
accept;
}
}
policy-statementmain {
term change-attributes
from {
policy my-filter;
}
then accept;
```

```
}  
term default {  
then reject;  
}  
}  
[edit protocols]  
bgp {  
export main;  
}
```

- A. The route is not advertised into BGP.
- B. The route is advertised into BGP with metric 10.
- C. The route is advertised into BGP with metric 20.
- D. The route is advertised into BGP with default metric.

Answer: D

The policy "main" calls the sub-policy "my-filter". When 192.168.0.0/25 is evaluated by "my-filter", the longest match is "route-filter 192.168.0.0/16 or longer accept;". This returns a value from the sub-policy of true. Policy main then accepts the route based on this "true" result. There are no metrics set anywhere within the evaluation path, so the route is advertised with the default metric.

---

### **QUESTION 55:**

Which action occurs when the BGP route 20.1.0.0/16 is evaluated by the policy expression?

```
[edit policy-options]  
policy-statement reject_10 {  
from {  
route-filter 20.1.0.0/16 or longer M  
}  
then {  
community add 90-1;  
accept  
}}  
policy-statement accept_20 {  
from {  
route-filter 20.1.0.0/16 or longer M  
}  
then {  
community add 100-1;  
reject;  
}  
}  
community 100-1 members 100:1;
```

```
community90:1 members 90:1
[editprotocols]
  bgp{
    groupebgp-group {
      neighbor172.16.201.1 {
        export(reject-10 && accept-20);
      }
    }
  }
```

- A. The route is not announced.
- B. The route is announced with 90:1 added.
- C. The route is announced with 100:1 added.
- D. The route is announced with communities 90:1 and 100:1 added.

Answer: A

Because of the logical AND (&&), the route must return a value of true (accept) from both sub-routines. When the first sub-policy (reject-10) is evaluated, the route matches the route-filter and returns a true value. When the second sub-policy (accept-20) is evaluated, the route matches and returns a false (reject) value. Because both statements are not true, the route is not exported.

---

#### **QUESTION 56:**

A BGP router has the following configuration:

```
protocols{
  bgp{
    export[policy-1 policy-2 policy-3];
  }
  policy-options{
    policy-statementpolicy-2 {
      termget-statics{
        fromprotocol static;
        thenaccept;
      }
      termreject-all {
        thenreject;
      }
    }
    policy-statementpolicy-1 {
      termget-aggregate {
        fromprotocol aggregate;
        thenaccept;
      }
      termreject-all {
        thenreject;
      }
    }
  }
}
```



```
}  
policy-statement policy-3 {  
  term get-ospf {  
    from protocol ospf;  
    then accept;  
  }  
  term reject-all {  
    then reject;  
  }  
}  
}
```

Which policy term is evaluated first when exporting routes?

- A. get-ospf
- B. reject-all
- C. get-statics
- D. get-aggregate

Answer: D

When multiple policies are listed in a policy chain, they are evaluated in the order they appear in the configuration. In the example, 'policy-1' is evaluated first. The term evaluated by 'policy-1' is "get-aggregate".

---

**QUESTION 57:**

In JUNOS software, which type of VPN supports IPX and Appletalk?

- A. Martini based VPN's
- B. 2547bis based VPN's
- C. Sham link based VPN's
- D. Virtual Router based VPN's

Answer: A

---

**QUESTION 58:**

Which two steps are required for a Kompella Layer 2 VPN? (Choose two.)

- A. Configure a site ID for each CE.
- B. Configure a VPN label for each VPN.
- C. Configure a MP-BGP session to each PE.
- D. Configure an Extended LDP Session to each PE.

Answer: A, C

With a Kompella layer 2 VPN, PE routers use MBGP to advertise information between them concerning their connected customers. In addition, in a layer 2 VPN, the PE router advertisements don't contain an explicit VPN label for use by the remote PE router. Instead, each customer site connected to a PE router is assigned a site ID within the VPN using the site-identifier command. This allows the receiving PE router to automatically calculate the VPN label used to reach the remote site.

---

**QUESTION 59:**

When comparing CPE and provider-provisioned VPNs (PPVPN), which two statements are true? (Choose two.)

- A. CPE VPN's require dedicated VPN aware hardware at customer site, PPVPN does not.
- B. PPVPN's require dedicated VPN aware hardware at customer site, CPE VPN's does not.
- C. CPE VPN's scale better than PPVPN's as they do not require a per site configuration on the CPE.
- D. PPVPN's scale better than CPE VPN's as they do not require a per site configuration on the CPE.

Answer: A, D

---

**QUESTION 60:**

Which two mechanisms control route distribution between PE routers in a 2547bis VPN? (Choose two.)

- A. Site ID
- B. Policies
- C. Circuit ID
- D. Extended communities

Answer: B, D

PE routers in a 2547bis VPN exchange routing information using MP-IBGP. To control route distribution, routing policies and extended BGP communities may be used.

---

**QUESTION 61:**

PE1 has connections to VPN sites that are served by three remote PE routers. How many LSP's must be established to support 2547bis?

- A. an LSP for each local CE device

- B. an LSP for each remote PE device
- C. an LSP for each remote CE device
- D. an LSP for each CE facing interface

Answer: B

In a 2547bis VPN environment, if there are multiple attachments between a customer site and a PE router, all of the attachments are mapped to a single forwarding table to conserve PE router resources. In addition, PE routers do not maintain routes to remote CE routers, only to other PE routers.

---

**QUESTION 62:**

What are three examples of a provider-provisioned VPN supported by JUNOS software? (Choose three.)

- A. L2F
- B. PPTP
- C. Circuit cross-connect
- D. Draft-Martini-based VPNs
- E. Draft-Kompella-based VPNs

Answer: C, D, E

Circuit cross-connect, Martini, and Kompella VPNs are provider provisioned VPNs. L2F and PPTP are customer-provisioned VPN technologies.

---

**QUESTION 63:**

Which represents a correct PE-PE BGP configuration for an L3 VPN?

- A. [edit]  
lab@Amsterdam# show protocols bgp  
group int {  
  type internal;  
  local-address 192.168.24.1;  
  neighbor 192.168.16.1;  
}
- B. [edit]  
lab@Amsterdam# show protocols bgp  
group tint {  
  type internal;  
  local-address 192.168.24.1;  
  family inet {  
    any  
  }  
}

```
neighbor192.168.16.1;
}
C. [edit]
lab@Amsterdam# show protocols bgp
group int {
typeinternal;
local-address192.168.24.1;
family inet {
unicast
}
family inet-vpn {
unicast
}
neighbor192.168.16.1;
D. [edit]
lab@Amsterdam# show protocols bgp
group int {
type-internal
local-address192.168.24.1;
familyinet{
13-vpn;
}
neighbor192.168.16.1;
}
```

Answer: C

A layer 3 VPN uses a special format for representing customer routes within the provider's network. The advertisement of this specialized NLRI requires the establishment of MBGP sessions between PE routers. These sessions are established with the family inet-vpn unicast command at the global, group, or neighbor level within BGP.

---

#### **QUESTION 64:**

What is the Draft-Kompella control plane based on?

- A. IGP
- B. LDP
- C. BGP
- D. MPLS

Answer: C

One type of layer 2 VPN supported by JUNOS software is based on a draft specification by Kireeti Kompella. It uses BGP as the mechanism for PE routers to communicate with each other about their customer connections.

**QUESTION 65:**

In JUNOS software, which three are valid encapsulation types for CCC? (Choose three.)

- A. hdlc-ccc
- B. atm-cell-ccc
- C. cisco-hdlc-ccc
- D. ethernet-vlan-ccc
- E. ethernet-snap-ccc

Answer: B, C, D

Within the JUNOS software, the valid encapsulation types for CCC are: atm-ccc-cell-relay, atm-ccc-vc-mux, cisco-hdlc-ccc, ethernet-ccc, vlan-ccc, extended-vlan-ccc, frame-relay-ccc, extended-frame-relay-ccc, frame-relay-port-ccc, ppp-ccc

The answers that match these types are:

atm-cell-ccc = atm-ccc-cell-relay

cisco-hdlc-ccc = cisco-hdlc-ccc

Ethernet-vlan-ccc = vlan-ccc

---

**QUESTION 66:**

Which JUNOS software operational-mode command displays the status of a Draft-Martini VPN?

- A. show ldp neighbor
- B. show martini connections
- C. show l2circuit connections
- D. show l2vpn connections

Answer: C

A Draft-Martini VPN is also known as a layer2 circuit VPN. To display the status of these connections, use the command show l2circuit connections.

---

**QUESTION 67:**

A successful authentication attempt by a RADIUS server does not supply a username to the JUNOS software. Which username is used by default?

- A. root
- B. local
- C. radius

D. remote

Answer: D

By default, if an authentication server authenticates a user and does not provide a username mapping to a local user, the local user remote is used.

---

**QUESTION 68:**

Which three JUNOS software features allow for increased security on your network? (Choose three.)

- A. firewall filters
- B. data encryption
- C. routing protocol authentication
- D. support for BGP path mtu discovery
- E. automatic discovery for IPSEC neighbors

Answer: A, B, C

Security for a router can be provided by firewall filters, data encryption, and routing protocol authentication. BGP path mtu discovery and automatic IPSEC neighbor discovery are not security features.

---

**QUESTION 69:**

Firewall filters can perform which two actions? (Choose two.)

- A. Log packet.
- B. Count packet.
- C. Set packet metric.
- D. Decrement packet TTL.
- E. Change destination IP address.

Answer: A, B

Actions that can be performed by a firewall filter include: accept, reject, discard, counter incrementing, local logging, sampling, and syslogging.

---

**QUESTION 70:**

Firewall filter policers can perform which two actions? (Choose two.)

- A. Set the next hop.
- B. Discard packets.
- C. Set the loss priority.

D. Sample the packet content.

Answer: B, D

Implementing a firewall filter within the JUNOS software is a two-step process: You first define the firewall filter and then apply it to an interface. The filter definition uses various match conditions, including the incoming interface on the router, IP address fields, protocol types, port numbers, and other header bit fields. As a packet matches the specified conditions, actions are performed to accept, discard, log, count, or sample the packet

---

**QUESTION 71:**

Which two forwarding classes have bandwidth assigned when CoS is not explicitly configured in JUNOS software? (Choose two.)

- A. Best effort (BE)
- B. Network control (NC)
- C. Assured forwarding (AF)
- D. Expedited forwarding (EF)

Answer: A, B

The default class-of-service classifier on a Juniper interface is 'ipprec-compatibility'. This classifier uses two forwarding classes: best-effort and network-control.

---

**QUESTION 72:**

Which Behavior Aggregate (BA) is used to classify traffic arriving on an LSP?

- A. exp
- B. dscp
- C. 802.1P
- D. inet-precedence mode ipprec-default
- E. inet-precedence mode ipprec-compatability

Answer: A

---

**QUESTION 73:**

DRAG DROP

As an instructor at Certkiller.com you are required to place each queue into the order they are serviced given the priority and credit shown.

**Order**

Place here	First
Place here	Second
Place here	Third

**Queue**

Low.positive	Strict.positive	High.negative
--------------	-----------------	---------------

Answer:

As an instructor at Certkiller.com you are required to place each queue into the order they are serviced given the priority and credit shown.

**Order**

Strict.positive	First
Low.positive	Second
High.negative	Third

**Queue**

Explanation:

The queue weight ensures the queue is provided a given minimum amount of bandwidth which is proportional to the weight. As long as this minimum has not been served, the queue is said to have a "positive credit". Once this minimum amount is reached, the queue has a "negative credit".

A queue can have either a "high" or a "low" priority. A queue having a "high" priority will be served before any queue having a "low" priority.

---

**QUESTION 74:**

What are two functions associated with JUNOS software class of service? (Choose two.)



- A. Log incoming traffic.
- B. Manage ingress bandwidth.
- C. Mark packets for special handling.
- D. Manage congestion by intelligently dropping traffic.
- E. Classify Frame Relay QoS packets into an equivalent OP CoS environment.

Answer: C, D

QOS allows a network administrator to manage traffic flows through a network. One way it does is by allowing the marking packets for special treatment ;for instance giving voice traffic higher priority or routing higher priority traffic over less congested links. A second function of QOS is congestion management or avoidance. It does this by dropping lower priority packets when links hit configurable congestion limits.

---

**QUESTION 75:**

In JUNOS software, which type of queue priority can lead to starvation in other queues?

- A. high
- B. real-time
- C. strict low
- D. strict high

Answer: D

On M-series and T-series platforms, you can configure one queue per interface to have strict-high priority, which works the same as high priority, but provides unlimited transmission bandwidth. As long as the queue with strict-high priority has traffic to send, it receives precedence over all other queues, except queues with high priority. Queues with strict-high and high priority take turns transmitting packets until the strict-high queue is empty, the high priority queues are empty, or the high priority queues run out of bandwidth credit. Only then can lower priority queues send traffic.

---

**QUESTION 76:**

What setting in JUNOS software forces a bgp speaker to wait for a bgp neighbor to initiate a bgp session?

- A. wait
- B. hold
- C. passive
- D. authenticate

Answer: C

You can stop the initiation of a BGP session by configuring the passive option at the global, group, or neighbor level of the BGP configuration hierarchy. This command forces the local router to wait for the establishment of the TCP and BGP connections from its remote peer.

---

**QUESTION 77:**

Which statement would prevent the sending of redundant route advertisements when your route reflector cluster is fully meshed?

- A. set protocol bgp group mygroup path-selection cisco-non-deterministic;
- B. set protocol bgp group i-bgp no-aggregator-id;
- C. set protocol bgp group mygroup no-client-reflect;
- D. set protocol bgp group i-bgp damping;

Answer: C

The keyword no-client-reflect under the set protocol bgp group group-name command disables intracluster route redistribution by the system acting as the route reflector. Inclusion of this statement when the client cluster is fully meshed will prevent the sending of redundant route advertisements.

---

**QUESTION 78:**

Which BGP attribute is considered first as a tie-breaker in JUNOS software?

- A. MED
- B. origin
- C. weight
- D. as-path length
- E. local-preference

Answer: E

The order of BGP route selection:

1. The next hop must be reachable
  2. Highest local preference
  3. Shortest AS Path
  4. Smallest Origin attribute
  5. Smallest Multiple Exit Discriminator (MED)
  6. EGP routes preferred over IBGP routes
  7. Smallest IGP metric to advertised BGP next-hop
  8. Shortest cluster-list length if route reflection is used for IBGP
  9. Smallest numerical router ID
  10. Smallest numerical IP address of peer
-

**QUESTION 79:**

Which attribute can influence inbound traffic flows from a neighboring AS?

- A. Aggregator
- B. Local preference
- C. Atomic aggregate
- D. Multiple exit discriminator

Answer: D

The Multiple Exit Discriminator (MED) attribute, type code 4, is an optional nontransitive attribute. The MED is a form of a routing metric assigned to BGP routes. The function of the attribute is to influence route selection by a neighboring AS when it is sending traffic to the local AS. This assumes that multiple network links exist between the two neighboring systems.

---

**QUESTION 80:**

Which three are well-known mandatory BGP attributes? (Choose three)

- A. Origin
- B. As path
- C. Next hop
- D. Community
- E. Multiple exit discriminator

Answer: A, B, C

The well known BGP attributes are Origin, AS Path, Next Hop, Local Preference, and Atomic Aggregate. Of these, Origin, AS Path, and Next Hop are mandatory attributes. Local Preference and Atomic Aggregate are both discretionary attributes.

---

**QUESTION 81:**

Which command clears the history BGP damped routes?

- A. clear bgp damping
- B. clear bgp neighbor
- C. clear bgp neighbor damp
- D. clear protocol bgp damp

Answer: A

You have the option of manually clearing the figure of merit value and reusing the route immediately with the clear bgp damping command.

---

**QUESTION 82:**

Which three NRIs can MBGP carry? (Choose three)

- A. LDP routes
- B. IPv6 routes
- C. RSVP routes
- D. Layer 2 VPN routes
- E. Layer 3 VPN routes

Answer: B, D, E

MBGP NLRIs can advertise information on IPv4 routes, IPv6 routes, and layer2 VPN routes. Layer3 VPN routes can include IPv4 or IPv6 routes.

---

**QUESTION 83:**

Which action occurs when the policy main-policy evaluates the BGP route 10.0.55.2/32?

[edit policy-options]

policy-statement test {

from {

route-filter 10.0.0.0/16 or longer accept;

route-filter 10.0.67.0/24 or longer reject;

route-filter 10.0.0.0/8 or longer;

}

then {

metric 10;

community add no-advertise

accept;

}

}

policy-statement main-policy {

term only-want-certain-routes {

from {

policytest;

}

then {

community add harry-402;

accept;

}

}

}

community no-advertise members no-advertise;

```
communityharry-402 members 666:402;  
[edit protocols]  
bgp {  
  exportmain-policy;  
}
```

- A. The route is not advertised into BGP.
- B. The route is advertised into BGP with community harry-402.
- C. The route is advertised into BGP with community no-advertise.
- D. The route is advertised into BGP with community harry-402 and no-advertise.

Answer: B

The policy 'main' calls a sub-policy 'test'. Within 'test', the longest match for the route 10.0.55.2/32 is "route-filter 10.0.0.0/26 orlonger accept". The accept at the end of the route-filter line, ends evaluation of the policy and returns a value of true. Policy 'main' then adds community 'harry-402' to the route and accepts the route to be exported.

---

#### **QUESTION 84:**

By default, to which peers will a BGP router advertise routes learned from IBGP peers?

- A. all BGP peers
- B. all IBGP peers
- C. all EBGp peers
- D. all MBGP peers

Answer: C

Once an IBGP session is established, routes are exchanged between the peers. By default, only active routes learned from EBGp peers area advertised across and IBGP session. Once an EBGp session is established, all BGP learned routes area exchanged between the peers. This includes routes learned from both EBGp and IBGP.

---

#### **QUESTION 85:**

Which choice describes the JUNOS software default policy action for BGP routes?

A BGP router exports all active routes learned from an IBGP peer to all \_\_\_\_\_.

- A. IBGP peers
- B. EBGp peers
- C. Active BGP peers
- D. Established BGP peers

Answer: B

Once an IBGP session is established, routes are exchanged between the peers. By default, only active routes learned from EBGP peers are advertised across an IBGP session. Once an EBGP session is established, all BGP learned routes are exchanged between the peers. This includes routes learned from both EBGP and IBGP.

---

**QUESTION 86:**

Given the community:

community my-company members "^([1-3])\*7:666\$";

Which four communities does this expression match? (Choose four)

- A. 17:666
- B. 17:667
- C. 27:666
- D. 37:666
- E. 47:666
- F. 777:666
- G. 117:666

Answer: A, C, D, G

The first number in the AS must be a 1, 2, or 3 zero or more times. The last number in the AS must be a 7. The community value must equal 666. B is ruled out because the community is not 666. E is not correct because the first number is not 1-3. F is out because the first number is not 1-3 and 7 appears more than once.

---

**QUESTION 87:**

Given the regular expression:

65001+ (65002 | 65003) ?

Which is equivalent?

- A. 65001 {1,} (65002 | 65003) {1,}
- B. 65001 {0,} (65002 | 65003) {0,1}
- C. 65001 {0,1} (65002 | 65003) {1,}
- D. 65001 {1,} (65002 | 65003) {0,1}

Answer: D

'+' indicates to repeat the term 1 or more times which can also be written as {1,}. '?'

indicates to repeat the preceding term 0 or 1 times which can also be written as {0,1}. '|'

performs a logical or on the terms.

---

**QUESTION 88:**

When using OSPF as your IGP, which operational command must be enabled to populate the TED for CSPF calculations?

- A. cspf enable
- B. disable no-cspf
- C. traffic-engineering
- D. enable traffic-engineering-database

Answer: C

Traffic engineering extensions are enabled for OSPF by applying the traffic-engineering command at the global OSPF configuration level.

---

**QUESTION 89:**

Which configuration would allow for non-revertative LSP path failover?

```
A. mpls {  
  path -to-hastings {  
    14.1.1.1 strict;  
    13.1.1.1 strict;  
    12.1.1.1 strict;  
    11.1.1.1 strict;  
  }  
  path alt-hastings {  
    14.1.1.1 strict;  
    11.1.1.1 loose  
  }  
  label-switched-path hastings {  
    to 11.1.1.1;  
    hop-limit 32;  
    bandwidth 10m;  
    no-cspf  
  }  
}  
B. mpls {  
  path-to-hastings {  
    14.1.1.1 strict;  
    13.1.1.1 strict;  
    12.1.1.1 strict;  
    11.1.1.1 strict;  
  }  
  path alt-hastings {  
    14.1.1.1 strict;  
    11.1.1.1 loose  
  }  
}
```

```
label-switched-path hastings {
to11.1.1.1;
hop-limit32;
primaryto-hastings;
secondaryalt-hastings;
}
}
C. mpls {
path to-hastings {
14.1.1.1 strict;
13.1.1.1 strict;
12.1.1.1 strict;
11.1.1.1 strict;
}
path alt-hastings {
14.1.1.1 strict;
11.1.1.1 loose
}
label-switched-path hastings {
to11.1.1.1;
hop-limit32;
bandwidth10m;
no-cspf;
primaryto-hastings;
primaryalt-hastings;
}
}
D. mpls {
path to-hastings {
14.1.1.1 strict
13.1.1.1 strict
12.1.1.1 strict;
11.1.1.1 strict;
}
path alt-hastings {
14.1.1.1 strict;
11.1.1.1 loose
}
label-switched-path hastings {
to11.1.1.1;
hop-limit32;
bandwidth10m;
no-cspf;
secondaryto-hastings;
secondaryalt-hastings;
}
```



}

Answer: D

The use of a standby secondary path in conjunction with a primary path eases the failover of traffic between paths. The revertive nature of the primary path, however, means that the ingress will move traffic back to the primary after it is available again. While there is no mechanism to keep a primary path from reverting to active status, the JUNOS software allows configuration of multiple secondary paths on an LSP without defining a primary path. This will keep the path from reverting to a previously active path in the event it fails and comes back online.

---

**QUESTION 90:**

Which extension to the OSPFv2 protocol supports traffic engineering?

- A. LSA Type 8
- B. LSA Type 9
- C. LSA Type 10
- D. Transparent LSA

Answer: C

The OSPF protocol makes use of a Type 10 Opaque LSA for advertising traffic engineering information into a network.

---

**QUESTION 91:**

Which JUNOS software feature allows a user to define specific next-hop values for IP packets based on the source IP address of that packet?

- A. MPLS
- B. Load Balancing
- C. Class Based Forwarding
- D. Filter Based Forwarding

Answer: D

You can configure filters to classify packets based on source address and specify the forwarding path the packets take within the router by configuring a filter on the ingress interface using filter-based forwarding.

---

**QUESTION 92:**

You have a firewall filter containing two terms applied in an inbound direction on a customer interface. You would like this filter to protect your network from a

spoofed denial of service attack. What match criterion should be used in the first term of the filter?

- A. Source TCP port
- B. Source IP address
- C. Destination TCP port
- D. Destination IP address

Answer: B

Spoofing DOS attacks use a fake source IP address as part of the attack. To define a firewall filter to protect against spoofing, the first term should match the specific source IP address that is to be allowed inbound on the interface.

---

**QUESTION 93:**

What are three applications for firewall filters in JUNOS software? (Choose three)

- A. route filtering
- B. protect the routing engine
- C. securing the router control plane
- D. protect against hidden bridge loops
- E. protect against denial of service attacks

Answer: B, C, E

Firewall filters can be used to restrict access to network resources, control access to a router, protect the network against DOS attacks, prevent spoofing of IP addresses, and rate-limit traffic. Additionally, a firewall filter placed on the lo0 interface protects the Routing Engine from attacks. JUNOS also uses firewall filters to provide accounting information and enable features such as filter-based forwarding.

---

**QUESTION 94:**

Which two are valid IS-IS PDU types? (Choose two)

- A. broadcast hellos
- B. Level 1 LAN hellos
- C. Point-to-point hellos
- D. Level 2 point-to-point hellos

Answer: B, C

IS-IS PDU types are:

Level 1 LAN Hello (15)

Level 2 LAN Hello (16)

Point-to-Point Hello (17)

Level 1 link-state PDU (18)  
Level 2 link-state PDU (20)  
Level 1 Complete SNP (24)  
Level 2 Complete SNP (25)  
Level 1 Partial SNP (26)  
Level 2 Partial SNP (27)

---

**QUESTION 95:**

You have a Level 1-only router (Router A) in IS-IS area 49.0001. How does Router A learn how to get to IP prefixed in other areas?

- A. Router A must have a Level 2 adjacency with the Level 1/Level 2 router in area 49.0001.
- B. The Level 1/Level 2 router in area 49.0001 sets the "attached" bit in the Level 2 LSP it floods into area 49.0001.
- C. The Level 1/Level 2 router in area 49.0001 sets the "attached" bit in the Level 1 link-state PDU (LSP) it floods into area 49.0001.
- D. The Level 1/Level 2 router in area 49.0001 advertises these prefixed into area 49.0001 using a Level 2 LSP it floods into the area.

Answer: C

Each Level 1 router watches for an LSP with the Attached bit set to the value 1, which indicates that the originating L1/L2 router has knowledge of another Level 2 area.

---

**QUESTION 96:**

Which two statements about IS reachability TLV (TLV 2) and the extended IS reachability (TLV 22) are true? (Choose two)

- A. TLV 22 supports wide metrics.
- B. TLV 2 is only used in Level 1 routers.
- C. TLV 22 displays the neighbor's extended areas.
- D. Only TLV 22 can support the inclusion of sub-TLVs.
- E. Only TLV 22 can be flooded across L1/L2 boundaries.

Answer: A, D

The extended IS reachability TLV (22) addresses shortcomings in the IS reachability TLV (2) by providing support larger (wide) metrics. It also provides support for traffic-engineering by using a construct of sub-TLVs to announce TE information into the network.

---

**QUESTION 97:**

In IS-IS, how does the restarting router inform its helpers that a restart event occurred?

- A. Sending out a graceful restart PDU.
- B. Sending an LSP that contains no TLVs.
- C. Sending out a restarts TLV with the RR bit set.
- D. Reflooding its LSP with a maximum sequence number.

Answer: C

IS-IS routers use the graceful restart TLV (type code 211) to advertise graceful restart capabilities to their neighbors within the Hello PDU. The TLV contains flags to alert the peer routers as to what the current state of the router is. To indicate a restart event, the restart request (RR) bit is set in the TLV.

---

**QUESTION 98:**

Routers A and B are connected with a point-to-point OC-3 interface. Each router's OC-3 interface is configured for both Level 1 and Level 2. The routers are configured in different areas.

How many IS-IS adjacencies exist between the two routers?

- A. 0
- B. 1
- C. 2
- D. 3

Answer: B

Two routers forming adjacencies will form an adjacency at Level 1 and a separate adjacency at Level 2. However, for a Level 1 adjacency to form, the routers must be configured for the same area. In this case only a Level 2 adjacency will form since the two routers are in different areas.

---

**QUESTION 99:**

Which four components make up the Network Entity Title (NET) of an IS-IS router? (Choose four)

- A. AF
- B. AFI
- C. MAC
- D. Area
- E. SysID
- F. A-Selector

G. N-Selector  
H. IP-address

Answer: B, D, E, G

The IS-IS area values are encoded in the IS-IS address of the router called the Network Entity Title (NET). Let's now explore the details of IS-IS addressing. IS-IS uses the standard Network Service Access Point (NSAP) addressing as defined in ITU X.213. The size of the NSAP address varies from 8 to 20 bytes in length. There are three major parts to the address structure: area (D), system ID (E), and N-selector (G).

The first part of the address indicates the IS-IS area value. This field begins with the Authority and Format Indicator (AFI) (B), is followed by the Initial Domain Identifier, and finishes with the Domain-Specific Part (DSP). The AFI byte indicates the governing body that administers the address space and assigns addresses. Networks often use 0x49 as their AFI, which represents the private NSAP address space. The NSAP private addresses are analogous to the private IP address space defined in RFC 1918. Your network requires a registered address only when Connectionless Network Protocol (CLNP) routing is desired with another network. The JUNOS software default does not route CLNP packets, so using private NSAP area addresses is perfectly fine.

The field containing the system ID appears immediately after the Area field. The system ID uniquely identifies the router to the network. You can think of it as the host portion of the address. You are free to place any value in this field, but there are some common practices. The first is to use the Media Access Control (MAC) address of a broadcast interface as the system ID. This method guarantees uniqueness but carries with it the problem of user readability. A second method helps administrators more easily read the system ID. This approach uses an IP address assigned to the router (typically the router ID) to represent the ID value. You pad the address with leading zeros to provide 12 characters. As an example, assume our loopback address is 172.16.10.1 /32. We pad each dotted decimal value so that the address now reads 172.016.010.001 /32. The JUNOS software always uses a length of 6 bytes for the System ID field, which is also 12 characters long (in hexadecimal notation). Our padded IP address now fits neatly into the System ID field and provides us with an easy way to identify an IS-IS router in our network.

The last portion of the NET address is the N-selector (SEL) byte. The selector is used to distinguish different data services operating on the same router. A Juniper Networks router sends updates with a selector value of either 0x00 or some nonzero value. The 0x00 value is advertised in updates that represent the router itself, its links, and its neighbors. This type of update is always advertised into the network. A nonzero value is sent in updates for which the local router is acting as a pseudonode on a broadcast network. We discuss pseudonodes in the "Protocol Data Units" section later in this chapter. In following our analogy to IP addressing, the selector byte is similar to the function of the TCP/UDP port number in that it represents different logical processes.

---

#### **QUESTION 100:**

Which three authentication options does IS-IS support? (Choose three)

- A. MD5
- B. DES
- C. Kerberos
- D. Unauthenticated
- E. Simple password

Answer: A, D, E

IS-IS supports 3 types of authentication: none, simple (plain-text), and MD5

---

**QUESTION 101:**

What is a function of the OSPF Type 7 LSA?

- A. It describes the reachability of routes in stub areas.
- B. It describes the reachability of routes in totally-stubby areas.
- C. It describes the reachability of routes in not-so-stubby areas.
- D. It describes the reachability of routes in partially-stubby areas.

Answer: C

The type 7 LSA, is the NSSA external LS

- A. It is an area-local LSA generated by an ASBR in a not-so-stubby-area to describe routes external to the OSPF domain
- 

**QUESTION 102:**

In JUNOS software, which would prevent an OSPF router from importing the 10.0.0.4/30 summary route?

- A. Import policies are not allowed, so this is not possible.
- B. Export policies are not allowed, so this not possible.
- C. Apply a firewall filter matching 10.0.0./4/30 and reject the route.
- D. Apply an import policy matching 10.0.0.4/30 and reject the route.

Answer: A

Because the OSPF database is generated by router and network descriptor LSAs, incoming routes cannot be restricted from being imported into the OSPF database. If it is desired, a policy can be created to prevent those routes from being inserted into the routing table, but the route is still imported into the OSPF database.

---

**QUESTION 103:**

In which two ways can the router ID selection be controlled? (Choose two)

- A. Manually assign RID
- B. Configure local-address
- C. Enable the fxp0 interface
- D. Assign nonmartian address to lo0.

Answer: A, D

For OSPF, the router uses the IP address configured on the loopback interface (lo0) as the router identifier. If no IP address is configured on the loopback interface, the router uses the highest IP address for the router identifier. The RID can also be manually assigned under the 'routing-options' configuration hierarchy with the command router-id.

---

**QUESTION 104:**

Which LSA is used in JUNOS software when a OSPF router restarts?

- A. LSA Type 6
- B. LSA Type 9
- C. LSA Type 10
- D. LSA Type 11

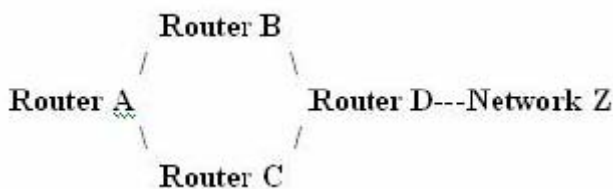
Answer: B

Restart messages are carried within a grace LSA which is an extension to the type 9 LSA.

---

**QUESTION 105:**

Given the topology displayed in the exhibit.



All links have an OSPF metric of 10.

The link between Router A and Router B is in area 0.0.0.0. All other links are in area 0.0.0.1

What does Router A do with packets destined for Network Z?

- A. Forwards them to Router B.
- B. Forwards them to Router C.
- C. Detects a routing loop and discards them.
- D. Forwards them to Router B and Router C alternately.

Answer: B

---

**QUESTION 106:**

You want to limit the number of Type 7 LSAs to be converted into Type 5 LSAs at an appropriate ARB. Which two commands should you use from the [edit] hierarchy level within the JUNOS software configuration mode? (Choose two)

- A. set protocols ospf area-range network/mask-length
- B. set protocols ospf area area-id nssa area-range network/mask-length
- C. set protocols ospf area area-id area-range network/mask-length restrict
- D. set protocols ospf area area-id nssa area-range network/mask-length restrict

Answer: B, D

To summarize routes at an NSSA ABR, the command:

set protocols ospf area area-id nssa area-range/mask-length

is used. To restrict a route from being advertised at an NSSA ABR, the command:

set protocols ospf area area-id nssa area-range/mask-length restrict

is used.

---

**QUESTION 107:**

Routers A and B have an OC12c and a GE link between them and are running OSPF over both of these links.

Which item is correct, assuming the default JUNOS software OSPF metric calculation?

- A. There are two equal cost paths between A and B.
- B. The GE link is the preferred path between A and B.
- C. The OC12c link is the preferred path between A and B.
- D. Manual metric assignment must be configured to determine the outcome.

Answer: A

The default reference bandwidth for OSPF is 100Mb. To figure the metric for an interface, calculate (reference bandwidth)/(interface bandwidth) and round up to the nearest integer. An OC12 bandwidth is 622 Mb/s which gives a calculation of 0.16 which is then rounded up to a metric of 1. A gigabit Ethernet interface results in a calculation of 0.1 rounded up to equal a metric of 1. This makes both metrics equal and gives two equal cost paths to the destination.

---

**QUESTION 108:**

Which three authentication options does OSPF support? (Choose three)



- A. DES
- B. MD5
- C. Kerberos
- D. Unauthenticated
- E. Simple password

Answer: B, D, E

All OSPFv2 protocol exchanges can be authenticated to guarantee that only trusted routers participate in the AS's routing. By default, OSPFv2 authentication is disabled. You can configure one of the following authentication methods. Each area must use the same method.

Simple authentication uses a text password that is included in the transmitted packet. The receiving router uses an authentication key (password) to verify the packet.

NOTE:OSPFv3 does not support authentication.

The MD5 algorithm creates an encoded checksum that is included in the transmitted packet. The receiving router uses an authentication key (password) to verify the packet. For MD5 authentication to work, both the receiving and transmitting routers must have the same MD5 key. Define an MD5 key for each interface. If MD5 is enabled on an interface, that interface accepts routing updates only if MD5 authentication succeeds; otherwise, updates are rejected. The key ID can be set to any value between 0 and 255, with a default value of 0. The router only accepts OSPFv2 packets sent using the same key ID that is defined for that interface.

---

#### **QUESTION 109:**

What is the function performed by LSA Type 1?

- A. Create virtual links.
- B. Advertise external prefixed.
- C. Summarize routes between areas.
- D. Advertise a router's interfaces and metrics.

Answer: D

A router LSA (type 1) is generated by an OSPF router to describe the status and cost of each of its interfaces.

---

#### **QUESTION 110:**

How is the cost of a virtual link in OSFP calculated?

- A. Takes the metric of the outgoing interface.
- B. Uses the metric that is assigned during configuration.
- C. Uses the path metric to reach the virtual neighbor.
- D. Uses a default of zero unless otherwise specified.

Answer: C

An endpoint router in a configured virtual link generates a type 1 router LSA within area 0. The cost of the interface that is advertised, is equal to the actual metric value used to reach the neighbor-id on the other end of the virtual link.

---

**QUESTION 111:**

Which condition must be met to allow a PE router to forward VPN traffic across a LSP in a Layer 3 VPN environment?

- A. The BGP next hop must be in inet.1.
- B. The BGP next hop must be in inet.3.
- C. Must have a bidirectional LSP configured.
- D. Must have a static route to allow an RP for connected interfaces.

Answer: B

A layer 3 VPN uses BGP to forward traffic between PEs. For a PE to forward traffic across an LSP, the BGP next hop must be found in the local inet.3 routing table.

---

**QUESTION 112:**

Which two statements are true when configuring a domain-id? (Choose two)

- A. The default OSPF domain-id is 127.0.0.1.
- B. In most cases, a domain-id must be configured.
- C. In most cases, you do not need to configure a domain-id.
- D. For a layer 3 VPN connecting multiple OSPF domains, configuring a domain-id can help control LSA translations.

Answer: C, D

The JUNOS software assigns a domain ID value to each routing instance running OSPF. By default, this 32-bit value is set to all zeroes (0.0.0.0). The domain ID allows the receiving PE router to advertise routes as either Type 3 or Type 5 LSAs.

---

**QUESTION 113:**

What is the correct configuration of a routing-instance in a Kompella Layer 2 VPN?

```
A.routing-instancevpna{
instance-type12vpn;
interfacefe-0/0/0;
vrf-targettarget:65009:200;
```

```
protocols{
  12vpn {
    encapsulation-type ethernet-vlan;
    sitece-1 {
      site-identifier 1;
      interface fe-0/0/0.0
    }
  }
}
B.routing-instance vpna {
  instance-type 12vpn;
  interface fe-0/0/0;
  vrf-import target:65009:200;
  protocols {
    12vpn {
      encapsulation-type ethernet-vlan;
      sitece-1 {
        site-identifier 1;
        interface fe-0/0/0.0 {
        }
      }
    }
  }
}
C.routing-instance vpna {
  instance-type kompella;
  interface fe-0/0/0;
  vrf-target target:65009:200;
  protocols {
    12vpn {
      encapsulation-type ethernet-vlan;
      sitece-1 {
        site-identifier 1;
        interface fe-0/0/0.0 {
        }
      }
    }
  }
}
D.routing-instance vpna {
  instance-type 12vpn;
  interface fe-0/0/0;
  vrf-export target:65009:200;
  protocols {
    12vpn {
```

```
encapsulation-type ethernet-vlan;  
sitece-1 {  
  site-identifier 1;  
  interface fe-0/0/0.0 {  
  }  
}  
}  
}  
}  
}
```

Answer: A

For a Kompella VPN, the instance-type is set to l2vpn. The command to set the vrf target is vrf-target. The only answer that meets these two requirements is answer A.

---

**QUESTION 114:**

What are three examples of a CPE-provisioned VPN? (Choose three)

- A. L2TP
- B. 2547bis
- C. L2F
- D. PPTP
- E. MPLS

Answer: A, C, D

L2TP, L2F, and PPTP are all CPE provisioned VPNs. 2547bis is a provider provisioned VPN. MPLS is a routing protocol used by a provider to carry VPN traffic.

---

**QUESTION 115:**

Which statement is true about Kompella-based and Martina-based VPNs?

- A. Both use LDP.
- B. Both use BGP.
- C. Both require additional hardware.
- D. Both use a two-label stack for forwarding.

Answer: D

Neither require any additional hardware. Kompella uses BGP, Martini uses LDP.

---

**QUESTION 116:**

Which three attributes are advertised to the remote PE and BGP-based VPNs?

(Choose three)

- A. Circuit ID
- B. VPN label
- C. Route target
- D. VPN number
- E. Route distinguisher

Answer: B, C, E

Reference: Sybex JNCIS book, Page 623

---

**QUESTION 117:**

What is the Draft-Martini control plane based on?

- A. IGP
- B. LDP
- C. BGP
- D. RSVP

Answer: B

Customer circuit information is advertised in a Layer 2 Circuit environment using the Label Distribution Protocol (LDP).

---

**QUESTION 118:**

Which three functions can CCC be used for? (Choose three)

- A. To interconnect VLANs
- B. To interconnect ATM VCs
- C. To interconnect MPLS LSPs
- D. To interconnect MPLS VPNs

Answer: A, B, C

CCC maps layer 2 circuits such as VLANs and ATM VCs into MPLS LSPs.

---

**QUESTION 119:**

In JUNOS software, which type of encapsulation is required on a PE router for the CE-facing interface in a Martini-based VPN?

- A. ATM
- B. CCC

- C. HDLC
- D. Ethernet

Answer: B

In a layer 2 VPN, Circuit Cross Connect (CCC) is used to map layer 2 circuits into an MPLS LSP

---

**QUESTION 120:**

Which method of dynamic RP election is non-proprietary?

- A. Auto-RP
- B. Static RP
- C. Bootstrap Protocol
- D. Pim Sparse-Dense mode

Answer: C

There are two methods for dynamic RP election. Auto-RP is a proprietary method developed by Cisco. Bootstrap router is a non-proprietary method.

---

**QUESTION 121:**

What is the correct configuration of Anycast RP on the loopback interface, assuming a shared anycast address of 10.1.1.1?

- A. [edit]  
interfaces {  
...  
lo0 [  
unit 0 {  
family inet {  
address 10.1.1.1/32  
primary  
address 169.144.10.1/32;  
B. [edit]  
interfaces {  
... {  
lo0{  
unit 0 {  
family inet {  
address 10.1.1.1/32  
preferred  
address 169.144.10.1/32;  
C. [edit]

```
interfaces {  
  ...  
  lo0 {  
    unit 0 {  
      family inet {  
        address 169.144.10.1/32  
        primary  
        address 10.1.1.1/32;  
      }  
    }  
  }  
  ...  
  lo0 {  
    unit 0 {  
      family inet {  
        address 169.144.10.1/32  
        preferred  
        address 10.1.1.1/32;  
      }  
    }  
  }  
}
```

Answer: C

To ensure that the anycast address is not used as the router-id for the router, the keyword primary should be configured on the "real" ip address for the loopback interface.

---

#### **QUESTION 122:**

How is a tie broken in Auto-RP?

- A. Lowest IP address
- B. Highest IP address
- C. Lowest MAC address
- D. Highest MAC address

Answer: B

When multiple routers advertise the same address range, the router with the highest IP address is selected as the RP.

---

#### **QUESTION 123:**

What is the use of MSDP across multiple PIM domains?

- A. It scopes multicast traffic.
- B. It prevents multicast routing loops.
- C. It advertises active multicast sources.
- D. It advertises RPs to all downstream routers.

Answer: C

MSDP allows an RP in one PIM domain to advertise knowledge of traffic sources to RP routers in the same or different domains.

---

**QUESTION 124:**

What methods are available to create separate multicast and unicast forwarding topologies on a Juniper Networks router? (Choose two)

- A. MBGP
- B. RIB groups
- C. Routing policy
- D. Firewall filters

Answer: A, B

A Juniper Networks router has the ability to use any operational routing table as the multicast RPF table. JUNOS has set aside the inet.2 routing table for RPF usage, it only needs to be populated with routing knowledge. One way to accomplish this is through a RIB-group. The rib-group specifies into which table the particular routing source should place its information. When using BGP, the routers must be configured for MBGP to achieve separate unicast and multicast forwarding tables.

---

**QUESTION 125:**

How many strict-high priority forwarding classes can be applied to a given interface?

- A. 1
- B. 2
- C. 3
- D. 4

Answer: A

On M-series and T-series platforms, you can configure one queue per interface to have strict-high priority, which works the same as high priority, but provides unlimited transmission bandwidth. As long as the queue with strict-high priority has traffic to send, it receives precedence over all other queues, except queues with high priority. Queues with strict-high and high priority take turns transmitting packets until the strict-high queue is empty, the high priority queues are empty, or the high priority queues run out of bandwidth credit. Only then can lower priority queues send traffic.

---

**QUESTION 126:**



What are three functions associated with JUNOS software class of service? (Choose three)

- A. Log incoming traffic.
- B. Classify incoming packets.
- C. Manage outbound bandwidth.
- D. Manage congestion by intelligently dropping traffic.
- E. Classify ATM QoS packets into a equivalent IP CoS environment.

Answer: B, C, D

Class of service is used to classify incoming traffic based on pre-defined criteria, manage outbound bandwidth by assigning priority and bandwidth to traffic queues, and gives the ability to drop packets to manage congestion.

---

**QUESTION 127:**

In which two ways can you influence how downstream LSRs treat MPLS traffic? (Choose two)

- A. Use an EXP rewrite table.
- B. Use a DSCP rewrite table.
- C. Statically assign a CoS value to an LDP-signaled LSP.
- D. Statically assign a CoS value to an RSVP-signaled LSP.

Answer: A, D

---

**QUESTION 128:**

What are two characteristics of multi-field classification? (Choose two)

- A. Implemented with firewall filters.
- B. Typically configured on core routers.
- C. Typically configured on customer facing routers.
- D. Implemented with Behavior Aggregate (BA) classification.

Answer: A, C

A multi-field classifier is a method for classifying traffic flows that has the ability to examine multiple fields in the packet for applying CoS settings. Within the JUNOS software a firewall filter is used to implement an MF classifier. MF classifiers are typically configured on customer facing routers to classify traffic as it is inserted into the network.

---

**QUESTION 129:**

In JUNOS software, what is the purpose of the eui-64 command?

- A. Automatically create the IS-IS NET ID.
- B. Dynamically create an MPLS router ID.
- C. Automatically assign the host number of an IPv6 address.
- D. Dynamically assign a MAC address to an Ethernet interface.

Answer: C

On interfaces configured for IPv6, the command eui-64 automatically generates the host portion of the interface address.

---

**QUESTION 130:**

In JUNOS software, which three routing protocols can be used to route IPv6?  
(Choose three)

- A. IS-IS
- B. Static
- C. RIPv2
- D. OSPFv2
- E. MP-BGP

Answer: A, B, E

Routing protocols available for IPv6 are static routing, RIPNG, IS-IS, OSPFv3, and MBGP.