



Vendor: Cisco

Exam Code: 350-501

Exam Name: Implementing and Operating Cisco Service
Provider Network Core Technologies (SPCOR)

Version: DEMO

QUESTION 1

When Cisco IOS XE REST API uses HTTP request methods what is the purpose of a PUT request?

- A. retrieves the specified resource or representation
- B. submits data to be processed to the specified resource
- C. updates the specified resource with new information
- D. creates a new resource

Answer: C

Explanation:

PUT	<p>Updates the specified resource with new information. The data that is included in the PUT operation replaces the previous data.</p> <ul style="list-style-type: none">• The PUT operation is used to replace or modify an existing resource. The PUT operation cannot be used to create a new resource.• The request body of a PUT operation must contain the complete representation of the mandatory attributes of the resource.
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QUESTION 2

Which action does the ingress VTEP perform on traffic between EVPN VXLAN overlays?

- A. routing and tunneling when doing symmetric IRB
- B. routing when doing asymmetric IRB
- C. routing and bridging when doing asymmetric IRB
- D. bridging when doing symmetric IRB

Answer: C

Explanation:

Asymmetric IRB	<p>With asymmetric IRB, the ingress VTEP performs both Layer-2 bridging and Layer-3 routing lookup, whereas the egress VTEP performs only Layer-2 bridging lookup.</p>
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<https://www.cisco.com/c/en/us/products/collateral/switches/nexus-9000-series-switches/guide-c07-734107.html>

QUESTION 3

How do intent APIs make it easier for network engineers to deploy and manage networks?

- A. They pull stored SNMP data from a single network location to multiple monitoring tools.
- B. They allow the engineer to use a single interface as the entry point for control access to the entire device.
- C. They streamline repetitive workflows and support more efficient implementation.
- D. They extend the Layer 2 infrastructure and reduce the necessary number of virtual connections to Layer 3 devices.

Answer: C

Explanation:

Intent APIs simplify the process of creating workflows that consolidate multiple network actions. Thus, intent APIs create a shift from doing repetitive tasks to creating value-added solutions.

QUESTION 4

Refer to Exhibit. A network engineer is trying to retrieve SNMP MIBs with RESTCONF on the Cisco switch but fails. End-to-end routing is in place. Which configuration must the engineer implement on the switch to complete?

```
username cisco privilege 15 password 0 cisco
!
ip http server
ip http authentication local
ip http secure-server
!
snmp-server community private RW
!
netconf-yang
netconf-yang cisco-ia snmp-community-string cisco
restconf
```

- A. netconf-yang cisco-ia snmp-community-string Public
- B. snmp-server community cosco RW
- C. snmp-server community public RO
- D. netconf-yang cisco-la snmp-community-string Private

Answer: D

Explanation:

```
3850-1# show running-config
```

```
snmp-server community <string> RW -----> SNMP gateway in DMI requires community public prior to 16.5.1. A configurable community is supported (
netconf-yang cisco-ia snmp-community-string <string> -----> Configure the same community string to enable SNMP MIB access for both NETCONF and RESTCONF.
```

<https://www.cisco.com/c/en/us/support/docs/storage-networking/management/200933-YANG-NETCONF-Configuration-Validation.html>

QUESTION 5

What occurs when a high bandwidth multicast stream is sent over an MVPN using Cisco hardware?

- A. The traffic uses the default MDT to transmit the data only if it is a (S, G) multicast route entry.
- B. A data MDT is created to if it is a (*, G) multicast route entries.
- C. A data and default MDT are created to flood the multicast stream out of all PIM-SM neighbors.
- D. A data MDT is created to allow for the best transmission through the core for (S, G) multicast route entries.

Answer: D

Explanation:

imc_cfg_mc_vpn.html#GUID-60B1EC78-3A10-447E-BEBE-9F076511FBCB Data MDTs are created only for (S, G) multicast route entries within the VRF multicast routing table. They are not created for (*, G) entries regardless of the value of the individual source data rate.

https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipmulti_mvpn/configuration/xr-3s/imc-mvpn-xr-3s-book/

QUESTION 6

Refer to the exhibit. Router BRDR-1 is configured to receive the 0.0.0.0/0 and 172.17.1.0/24 networks via BGP and advertise them into OSPF area 0. An engineer has noticed that the OSPF domain is receiving only the 172.17.1.0/24 route and default route 0.0.0.0/0 is still missing. Which configuration must an engineer apply to resolve the problem?

```
RP/0/0/CPU0:BRDR-1#show route ipv4 0.0.0.0
Routing entry for 0.0.0.0/0
  Known via "bgp 65001", distance 20, metric 0, candidate default path
  Tag 65002, type external
  Installed Jan 2 08:40:59.889 for 00:01:18
  Routing Descriptor Blocks
    100.65.19.1, from 100.65.19.1, BGP external
    Route metric is 0
  No advertising protos.

RP/0/0/CPU0:BRDR-1#show run router ospf
router ospf 1
  redistribute bgp 65001 route-policy BGP-TO-OSPF
  area 0
    mpls traffic-eng
    interface Loopback0
    interface GigabitEthernet0/0/0/0.92
    interface GigabitEthernet0/0/0/0.3132
  mpls traffic-eng router-id Loopback0

RP/0/0/CPU0:BRDR-1#show rpl route-policy BGP-TO-OSPF
route-policy BGP-TO-OSPF
  if destination in (0.0.0.0/0) then
    set metric-type type-1
  endif
  set metric-type type-2
  set ospf-metric 100
end-policy
```

- A. router ospf 1 redistribute bgp 65001 metric 100 route-policy BGP-TO-OSPF end
- B. router ospf 1 default-information originate end
- C. router ospf 1 default-metric 100 end
- D. router ospf 1 default-information originate always end

Answer: B

Explanation:

We receive default route via BGP. If we lose it we should stop to announce it into OSPF domain. But if you set "default-information originate always" the default route will remain. So the best choice is to use the "default-information originate".

QUESTION 7

The network-engineering team of a service provider is integrating several recently acquired networks into a more scalable common Unified MPLS architecture. The new network architecture will support end-to-end VPNv4 and VPNv6 services with these requirements:

- The IGP of the core layer is IS-IS In Area 0.
- The IGP of the aggregation layers is OSPF in Area 0.
- The LDP protocol is used to distribute label bindings within each IGP

domain.

Which task must the network engineer perform when implementing this new architecture?

- A. Configure BGP-LU between ABR routers of each IGP domain to carry MPLS label information in NLRI.
- B. Configure a BGP session between the ABR routers of each IGP domain to exchange VPNv4 or VPNv6 prefixes
- C. Configure the ABR in each IGP domain to preserve next-hop information on all VPNv4 and VPNv6 prefixes advertised by the PE.
- D. Configure mutual redistribution of each IGP domain's loopback prefix to provide end-to-end LDP LSP

Answer: A

Explanation:

In e-learning Cisco (section 9.11), we have: Redistribution of core IGP into aggregation IGPs and vice-versa is in principle not performed as it would defeat the purpose of the UMPLS scaling benefits. The only exception is the redistribution of the RR (ABR) loopbacks from core IGP into aggregation IGPs because the loopback prefix of the RRs must be known in the aggregation IGP also, so that BGP on the PE router can peer with the loopback of the RR. Other prefixes are never redistributed between the core and aggregation layers.

Route Reflectors are configured with the next-hop-self all feature to allow for RRs to change next hop to their own loopback IP even for the reflected prefixes. LDP operates normally inside the IGP islands, however ***BGP labeled unicast layer*** is responsible for the inter network segment label exchange.

<https://www.cisco.com/c/en/us/support/docs/multiprotocol-label-switching-mpls/mpls/118846-config-mpls-00.html>

QUESTION 8

Refer to the exhibit. An engineer has started to configure a router for secure remote access as shown. All users who require network access need to be authenticated by the SSH Protocol. Which two actions must the engineer implement to complete the SSH configuration? (Choose two.)

```
line vty 0 4
  access-class 100 in
  transport input ssh
  login local
line vty 5 15
  access-class 100 in
  transport input ssh
  login local
```

- A. Configure an IP domain name.
- B. Configure service password encryption.
- C. Configure crypto keys
- D. Configure ACL 100 to permit access to port 22.
- E. Configure a password under the vty lines.

Answer: AC

Explanation:

There are four steps required to enable SSH support on a Cisco IOS router:

- Configure the hostname command.
- Configure the DNS domain.
- Generate the SSH key to be used.
- Enable SSH transport support for the virtual type terminal (vtys).

<https://www.cisco.com/c/en/us/support/docs/security-vpn/secure-shell-ssh/4145-ssh.html>

QUESTION 9

A remote operation center is deploying a set of I-BGP and E-BGP connections for multiple IOS-XR platforms using the same template. The I-BGP sessions exchange prefixes with no apparent issues, but the E-BGP sessions do not exchange routes. What causes this issue?

- A. A PASS ALL policy has not been implemented for the I-BGP neighbors.
- B. The next-hop-self command is not implemented on both E-BGP neighbors.
- C. The E-BGP neighbors are not allowed to exchange information due to the customer platforms default policy.
- D. The I-BGP neighbors are mistyped and HELLO packets cannot be exchanged successfully between routers.

Answer: C

Explanation:

Routing Policy Enforcement

External BGP (eBGP) neighbors must have an inbound and outbound policy configured. If no policy is configured, no routes are accepted from the neighbor, nor are any routes advertised to it. This added security measure ensures that routes cannot accidentally be accepted or advertised in the case of a configuration omission error.

https://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k-r6-2/routing/configuration/guide/b-routing-cg-asr9000-62x/b-routing-cg-asr9000-62x_chapter_010.html

QUESTION 10

What is the role of NSO in network automation?

- A. It is GUI used to manage wireless devices in a campus infrastructure.
- B. It is a type of REST API used to configure an APIC.
- C. It is a tool that uses CLI only to configure virtual network devices.
- D. It is a tool used to bridge automation to the physical network infrastructure.

Answer: D

Explanation:

<https://www.cisco.com/c/en/us/products/collateral/cloud-systems-management/network-services-orchestrator/datasheet-c78-734576.html>

NSO provides a robust bridge linking network automation and orchestration tools with the underlying physical and virtual infrastructure.

QUESTION 11

Refer to the exhibit. An engineer is trying to implement BGP configuration on a router. Which configuration error prevents the ASBR from establishing a BGP neighborhood to a directly connected BGP speaker?

```
router bgp 100
  address-family ipv4 unicast
  address-family vpnv4 unicast
  !
  neighbor 10.19.20.20
    remote-as 1
    address-family ipv4 unicast
    !
  !
  !
  !
  !
  commit
  !
```

- A. The routing policy is absent for this Cisco IOS XR eBGP instance.
- B. The IPv4 address family configuration under neighbor configuration-mode must be removed.
- C. The VPNv4 address family interferes with the 8GP IPv4 address family negotiations.
- D. The TCP session parameters are not specified.

Answer: A

Explanation:

https://www.cisco.com/c/en/us/td/docs/routers/xr12000/software/xr12k_r41/routing/configuration/guide/routing_cg41xr12k_chapter1.html
bgp router-id comes under TCP session parameters

BGP Router Identifier

For BGP sessions between neighbors to be established, BGP must be assigned a router ID. The router ID is sent to BGP peers in the OPEN message when a BGP session is established.

BGP attempts to obtain a router ID in the following ways (in order of preference):

- By means of the address configured using the **bgp router-id** command in router configuration mode.
- By using the highest IPv4 address on a loopback interface in the system if the router is booted with saved loopback address configuration.
- By using the primary IPv4 address of the first loopback address that gets configured if there are not any in the saved configuration.

If none of these methods for obtaining a router ID succeeds, **BGP does not have a router ID and cannot establish any peering sessions with BGP neighbors**. In such an instance, an error message is entered in the system log, and the **show bgp summary** command displays a router ID of 0.0.0.0.

QUESTION 12

How is a telemetry session established for data analytics?

- A. A router initiates a session using the dial-out mode to a destination.
- B. A destination initiates a session to a router.
- C. The destination Initiates a session using the dial-out mode to the router.
- D. A router requests the data using Telnet.

Answer: A

Explanation:

In a dial-out mode, the router dials out to the receiver. This is the default mode of operation. The

router acts as a client and receiver acts as a server. In this mode, sensor-paths and destinations are configured and bound together into one or more subscriptions. The router continually attempts to establish a session with each destination in the subscription, and streams data to the receiver. The dial-out mode of subscriptions is persistent. When a session terminates, the router continually attempts to re-establish a new session with the receiver every 30 seconds.

[https://www.cisco.com/c/en/us/td/docs/routers/crs/software/crs-r6-](https://www.cisco.com/c/en/us/td/docs/routers/crs/software/crs-r6-7/telemetry/configuration/guide/b-telemetry-cg-crs-67x/core-components-of-telemetry.html)

[7/telemetry/configuration/guide/b-telemetry-cg-crs-67x/core-components-of-telemetry.html](https://www.cisco.com/c/en/us/td/docs/routers/crs/software/crs-r6-7/telemetry/configuration/guide/b-telemetry-cg-crs-67x/core-components-of-telemetry.html)

QUESTION 13

Which QoS model allows hosts to report their QoS needs to the network?

- A. DiffServ
- B. CB-WFQ
- C. IntServ
- D. MQC

Answer: C

Explanation:

IntServ follows the signaled-QoS model, where the end-hosts signal their QoS needs to the network.

https://www.cisco.com/en/US/technologies/tk543/tk766/technologies_white_paper09186a00800a3e2f.html

QUESTION 14

Refer to the exhibit. Which show command should be implemented to display per-interface statistics about uRPF drops and suppressed drops?

```
!
configure terminal
ip cef distributed

interface gigabitethernet 1/0
ip verify unicast reverse-path 12

!
```

- A. show ip traffic
- B. show ip interface
- C. show cef interface
- D. show ip interface brief

Answer: B

Explanation:

https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/sec_data_urpf/configuration/xr-3s/sec-data-urpf-xr-3s-book/cfg-unicast-rpf.html

Step 12	<code>show ip interface[type number]</code> Example: Device# show ip interface	Displays per-interface statistics about Unicast RPF drops and suppressed drops.
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QUESTION 15

Refer to the exhibit. What is the result of this configuration?

Router 1:

```
tacacs-server host 192.168.1.2 single-connection
tacacs-server key ciscotest
```

- A. Router 1 opens and closes a TCP connection to the TACACS+ server every time a user requires authorization.
- B. Router 1 and the TACACS+ server maintain one open connection between them only when network administrator is accessing the router with password ciscotest.
- C. Router 1 and the TACACS+ server maintain one open connection between them.
- D. Router 1 opens and closes a TCP connection to the TACACS+ server every time a user requires authentication.

Answer: C

Explanation:

Used to specify a single connection. Rather than have the router open and close a TCP connection to the daemon each time it must communicate, the single-connection option maintains a single open connection between the router and the daemon. This is more efficient because it allows the daemon to handle a higher number of TACACS operations.

<https://www.ccexpert.us/cisco-secure/configuring-tacacs-on-cisco-ios.html>

QUESTION 16

Refer to the exhibit. Which effect of this configuration is true?

```
R1
router isis
 net 49.0012.1111.1111.1111.00
 is-type level-1
 area-password cisco
R2
router isis
 net 49.0022.1111.1111.1112.00
 is-type level-1-2
 area-password cisco
```

- A. The two routers fail to form a neighbor relationship because their system IDs are different.

- B. The two routers successfully form a neighbor relationship
- C. The two routers fail to form a neighbor relationship because the authentication configuration is missing
- D. The two routers fail to form a neighbor relationship because they have different IS-IS area types.

Answer: D

Explanation:

R1 is level1 and R2 is level1-2 so they will not form any adjacency unless both as at the same area. R1 area is 49.0012 while R2 area is 49.0022.

QUESTION 17

Refer to the exhibit. An engineer is preparing to implement data plane security configuration. Which statement about this configuration is true?

```
Router 1:

ip route 192.168.1.0 255.255.255.0 null 0 tag 1

route-map ddos
  match tag 1
  set local preference 150
  set community no export

route-map ddos permit 20

router bgp 65513
  redistribute static route-map ddos

Router 2:

Interface gigabitethernet0/1
  ip verify unicast reverse-path
```

- A. Router 2 must configure a route to null 0 for network 192 168.1 0/24 for the RTBH implementation to be complete.
- B. Router 1 is the trigger router in a RTBH implementation.
- C. Router 1 must be configured with uRPF for the RTBH implementation to be effective.
- D. Router 2 is the router receiving the DDoS attack

Answer: B

Explanation:

Router one is acting like a black hole:

"RTBH filtering provides a method for quickly dropping undesirable traffic at the edge of the network, based on either source addresses or destination addresses by forwarding it to a null0 interface. Null0 is a pseudointerface that is always up and can never forward or receive traffic. Forwarding packets to null0 is a common way to filter packets to a specific destination."

https://www.cisco.com/c/dam/en/us/products/collateral/security/ios-network-foundation-protection-nfp/prod_white_paper0900aecd80313fac.pdf

QUESTION 18

Which two uses of the YANG data modeling language are true? (Choose two)

- A. It can be used to shape slats data of network elements
- B. It can be used to access a device by HTTP
- C. It can be used to model the configuration used by NETCONF operations
- D. It can be used to replace the OSI model for troubleshooting
- E. It can be used to replace RESTCONF as a mechanism to install and manipulate configuration

Answer: AC

Explanation:

YANG is primarily used to model the configuration and state data used by NETCONF operations. Cisco IOS XE supports the Yet Another Next Generation (YANG) data modeling language. YANG can be used with the Network Configuration Protocol (NETCONF) to provide the desired solution of automated and programmable network operations. NETCONF (RFC 6241) is an XML-based protocol that client applications use to request information from and make configuration changes to the device. YANG is primarily used to model the configuration and state data used by NETCONF operations.

QUESTION 19

Refer to the exhibit. If the NetFlow configuration is updated to version 9, which additional piece of information can be reported?

```
ip flow-export source loopback 0
ip flow-export destination 192.168.1.1
ip flow-export version 5 origin-as
```

- A. IPv6 flow information
- B. flow sequence numbers
- C. BGP AS information
- D. IPv4 flow information

Answer: C

Explanation:

BGP ASN information was added in Netflow export format 5. Also, it is already defined in the example - a useful hint.

QUESTION 20

You are testing the capabilities of MPLS OAM ping.
Which statement is true?

- A. MPLS OAM ping works solely with Cisco MPLS TE
- B. MPLS OAM ping works solely with P2P LSPs
- C. An LSP breakage results in the ingress MPLS router never receiving any reply
- D. An LSP is not required for the reply to reach the ingress MPLS router

Answer: D

Explanation:

An MPLS echo reply is sent in response to an MPLS echo request. The reply is sent as an IP packet and it is forwarded using IP, MPLS, or a combination of both types of switching. Head-end router will receive an echo-reply from the last router (before the broken binding), and that reply will be: 'U' - unreachable.

QUESTION 21

Refer to the exhibit. Which statement supports QPPB implementation?

```
route-policy qppb-as6000
if as-path in (ios-regex '61100, 61200, 61300') then
set qos-group 10

router bgp 100 bgp
table-policy qppb-as6000
```

- A. QoS policies are identified in the MPLS forwarding table
- B. QoS policies rely exclusively on BGP attributes to manipulate traffic
- C. QoS policies use BGP to gain full coverage on the network.
- D. QPPB policies affect only egress traffic

Answer: B

Explanation:

The QoS Policy Propagation via BGP feature allows you to classify packets by IP precedence based on the Border Gateway Protocol (BGP) Attributes like community lists, BGP autonomous system paths, and access lists.

QUESTION 22

You are creating new Cisco MPLS TE tunnels. Which type of RSVP message does the headend router send to reserve bandwidth on the path to the tunnel's router?

- A. error
- B. reservation
- C. path
- D. tear

Answer: C

Explanation:

Path= Headend - Tailend loads Label-request

RESV = Tailend - Headend loads label

<https://packetpushers.net/rsvp-te-protocol-deep-dive/>

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