

# 350-001

## Cisco

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**QUESTION: 1**

What is the first thing that happens when IPv6 is enabled on an interface on a host?

- A. A router solicitation is sent on that interface.
- B. There is a duplicate address detection on the host interface.
- C. The link local address is assigned on the host interface.
- D. A neighbor redirect message is sent on the host interface.

**Answer: B**

**Explanation:**

Duplicate address detection (DAD) is used to verify that an IPv6 home address is unique on the LAN before assigning the address to a physical interface (for example, QDIO). z/OS Communications Server responds to other nodes doing DAD for IP addresses assigned to the interface.

**Reference:**

<http://publib.boulder.ibm.com/infocenter/zos/v1r12/index.jsp?topic=%2Fcom.ibm.zos.r12.hale001%2Fipv6d0021002145.htm>

**QUESTION: 2**

Which command is used to enable Etherchannel hashing for layer 3 IP and Layer 4 Port-based CEF?

- A. mpls ip cef
- B. port-channel ip cef
- C. mpls ip port-channel cef
- D. port-channel load balance
- E. mpls ip load-balance
- F. ip cef etherchannel channel-id XOR L4
- G. ip cef connection exchange

**Answer: D**

**Reference:**

<http://www.firstdigest.com/2010/08/cisco-port-channel-load-balancing-explanation/>  
[http://www.experts-exchange.com/Networking/Misc/Q\\_20556086.html](http://www.experts-exchange.com/Networking/Misc/Q_20556086.html)

**QUESTION: 3**

When you are troubleshooting duplex mismatches, which two errors are typically seen on the full-duplex end? (Choose two)

- A. runts
- B. FCS errors
- C. interface resets
- D. late collisions

**Answer:** A, B

**Explanation:**

Understanding Data Link Errors Many performance issues with NICs can be related to data link errors. Excessive errors usually indicate a problem. When operating at a half-duplex setting, some data link errors such as FCS, alignment, runts, and collisions are normal. Generally, a one percent ratio of errors to total traffic is acceptable for half-duplex connections. If the ratio of errors to input packets is greater than two or three percent, performance degradation can be noticed. In half-duplex environments, it is possible for both the switch and the connected device to sense the wire and transmit at exactly the same time and result in a collision. Collisions can cause runts, FCS, and alignment errors, caused when the frame is not completely copied to the wire, which results in fragmented frames. When operating at full-duplex, FCS, cyclic redundancy checks (CRC), alignment errors, and runt counters are probably minimal. If the link operates at full-duplex, the collision counter is not active. If the FCS, CRC, alignment, or runt counters increment, check for a duplex mismatch. Duplex mismatch is a situation in which the switch operates at full-duplex and the connected device operates at half-duplex, or the other way around. The result of a duplex mismatch is extremely slow performance, intermittent connectivity, and loss of connection. Other possible causes of data link errors at full-duplex are bad cables, a faulty switch port, or NIC software or hardware issues. When you troubleshoot NIC performance issues, view the output of the show port mod/port command and the show mac mod/port command, and note the counter information.

Table 2—Explanation of CatOS show port Command Counters

Table 3—Possible Causes for Incrementing CatOS Counters

**Reference:**

[http://www.cisco.com/en/US/products/hw/switches/ps708/products\\_tech\\_note09186a00800a7af0.shtml](http://www.cisco.com/en/US/products/hw/switches/ps708/products_tech_note09186a00800a7af0.shtml)

**QUESTION: 4**

Refer to the exhibit.

```
Switch#show interface | include Vlan 10 is  
interface vlan 10 is down , line protocol is down
```

Clients in VLAN 10 complain that they cannot access network resources and the Internet. When you try to ping the default gateway from one of the affected clients, you get ping timeouts. What is the most likely cause of this issue?

- A. VLAN 10 is only enabled on trunk interfaces.
- B. VLAN 10 is not created in the switch database.
- C. STP is not running on the switch.
- D. IP routing is disabled on the switch.
- E. The switch CAM table is corrupted.

**Answer: B**

**Explanation:**

Troubleshooting the Autostate Feature on IOS Based Switches Perform these troubleshooting steps if the VLAN interface is down. This is the symptom of a VLAN interface being in up/down status. Corgon-6000#sh int vlan 151

```
Vlan151 is up, line protocol is down
```

```
!--- Line protocol on interface VLAN 151 is down.
```

```
!--- You need to investigate why this line protocol is not up
```

```
!--- (at least one L2 port exists, and there should be a
```

```
!--- link up on this VLAN).
```

Check to make sure that VLAN 151 exists in the VLAN database and is active. The command below shows that the VLAN exists and is active on the switch.

```
Corgon-6000#sh vlan 151 | i 151
151 VLAN151          active Gi4/10
151 enet 100151     1500 - - - - - 0 0
Corgon-6000#
```

!--- VLAN 151 exists in VLAN database and is active.

!--- L2 port Gig4/10 is assigned to VLAN 151.

Check the status of interface gig 4/10 assigned to VLAN 151.

```
Corgon-6000#sh int gig 4/10
```

GigabitEthernet4/10 is up, line protocol is down (notconnect)

```
Corgon-6000#sh run int gig 4/10
```

Building configuration...

Current configuration : 182 bytes

!

```
interface GigabitEthernet4/10
```

```
no ip address
```

```
logging event link-status
```

```
logging event bundle-status
```

```
switchport
```

```
switchport access vlan 151
```

```
switchport mode access end
```

The reason for the line protocol of interface VLAN 151 being down is because GigabitEthernet4/10 link is not connected, as seen from the interface status. It is possible that no device is connected to the interface or that the link has cabling or auto-negotiation issues preventing the link from being up.

Connect the device to GigabitEthernet4/10 to bring the interface link up.

```
Mar 11 12:10:52.340: %LINK-3-UPDOWN: Interface GigabitEthernet4/10,changed state to up
```

```
Mar 11 12:10:53.156: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet4/10,changed state to up
```

```
Corgon-6000# Corgon-6000#
```

```
Corgon-6000#sh int vlan 151
```

Vlan151 is up, line protocol is down

Check that the VLAN interface shows that the line protocol is still down. You need to investigate why this line protocol is not up. Make sure that at least one L2 port is in spanning-tree forwarding state on this VLAN.

```
Corgon-6000#sh spanning-tree vlan 151
```

```
VLAN0151
```

```
Spanning tree enabled protocol rstp
```

```
Root ID Priority 32768
```

```
Address 00d0.003f.8897
```

```
This bridge is the root
```

```

Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 32768
Address 00d0.003f.8897
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface Role Sts Cost Prio.Nbr Type
-----
----- Gi4/10 Desg LRN 4
128.202 P2p
Corgon-6000#
The Spanning-tree port status is LRN, which means learning state. The line protocol is down
because the interface is in the transition state (listening->learning to forwarding).
Corgon-6000#
Mar 11 12:11:23.406: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan151,
changed state to up
Note: Time stamp difference between logs when the line protocol on GigabitEthernet4/10
went up, and Interface Vlan151 is around 30 seconds, which represents 2xforwarding delay
in STP (listening-> learning->forwarding)
Corgon-6000#sh int vlan 151
Vlan151 is up, line protocol is up
The line protocol is up. You need to verify spanning-tree port status on the L2 port (should
be forwarding).
Corgon-6000#sh spanning-tree vlan 151
VLAN0151
Spanning tree enabled protocol rstp
Root ID Priority 32768
Address 00d0.003f.8897
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 32768
Address 00d0.003f.8897
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface Role Sts Cost Prio.Nbr Type
-----
----- Gi4/10 Desg FWD 4
128.202 P2p
!--- Verified spanning-tree port status on L2 port
!--- is FWN = forwarding.

```

**Reference:**

[http://www.cisco.com/en/US/products/hw/switches/ps708/products\\_tech\\_note09186a0080160b14.shtml](http://www.cisco.com/en/US/products/hw/switches/ps708/products_tech_note09186a0080160b14.shtml)

**QUESTION: 5**

What is the flooding scope of an OSPFv3 LSA, if the value of the S2 bit is set to 1 and the S1 bit is set to 0?

- A. link local
- B. area wide
- C. AS wide
- D. reserved

**Answer: C**

**Explanation:**

The Type 1 router LSA is now link local and the Type 2 Network LSA is AS Wide S2 and S1 indicate the LSA's flooding scope. Table 9-1 shows the possible values of these two bits and the associated flooding scopes. Table 9-1 S bits in the OSPFv3 LSA Link State Type field and their associated flooding scopes.

| S2 | S1 | Flooding Scope      |
|----|----|---------------------|
| 0  | 0  | Link-Local          |
| 0  | 1  | Area                |
| 1  | 0  | AS (Routing Domain) |
| 1  | 1  | Reserved            |

LSA Function Code, the last 13 bits of the LS Type field, corresponds to the OSPFv2 Type field. Table 9-2 shows the common LSA types used by OSPFv3 and the values of their corresponding LS Types. If you decode the hex values, you will see that the default U bit of all of them is 0. The S bits of all LSAs except two indicate area scope. Of the remaining two, AS External LSAs have an AS flooding scope and Link LSAs have a link-local flooding scope. Most of the OSPFv3 LSAs have functional counterparts in OSPFv2; these OSPFv2 LSAs and their types are also shown in Table 9-2.

Table 9-2 OSPFv3 LSA types and their OSPFv2 counterparts.

| OSPFv3 LSAs |                       | OSPFv2 LSAs |                                      |
|-------------|-----------------------|-------------|--------------------------------------|
| LS Type     | Name                  | Type        | Name                                 |
| 0x2001      | Router LSA            | 1           | Router LSA                           |
| 0x2002      | Network LSA           | 2           | Network LSA                          |
| 0x2003      | Inter-Area Prefix LSA | 3           | Network Summary LSA                  |
| 0x2004      | Inter-Area Router LSA | 4           | ASBR Summary LSA                     |
| 0x4005      | AS-External LSA       | 5           | AS-External LSA                      |
| 0x2006      | Group Membership LSA  | 6           | Group <a href="#">Membership</a> LSA |
| 0x2007      | Type-7 LSA            | 7           | NSSA External LSA                    |
| 0x0008      | Link LSA              |             | <i>No Corresponding LSA</i>          |
| 0x2009      | Intra-Area Prefix LSA |             | <i>No Corresponding LSA</i>          |

**Reference:**

<http://www.networkworld.com/subnets/cisco/050107-ch9-ospfv3.html?page=1>

**QUESTION: 6**

How will EIGRPv6 react if there is an IPv6 subnet mask mismatch between the Global Unicast addresses on a point-to-point link?

- A. EIGRPv6 will form a neighbor relationship.
- B. EIGRPv6 will not form a neighbor relationship.
- C. EIGRPv6 will form a neighbor relationship, but with the log MSG: "EIGRPv6 neighbor not on a common subnet."
- D. EIGRPv6 will form a neighbor relationship, but routes learned from that neighbor will not be installed in the routing table.

**Answer:** A

**Reference:**



<http://www.ietf.org/rfc/rfc3587.txt>

**QUESTION: 7**

Which two tunneling techniques support IPv6 multicasting? (Choose two)

- A. 6to4
- B. 6over4
- C. ISATAP
- D. 6PE
- E. GRE

**Answer:** B, E

**Explanation:**

When IPv6 multicast is supported (over a 6to4 tunnel), an IPv6 multicast routing protocol must be used. Restrictions for Implementing IPv6 Multicast

- IPv6 multicast for Cisco IOS software uses MLD version 2. This version of MLD is fully backward-compatible with MLD version 1 (described in RFC 2710). Hosts that support only MLD version 1 will interoperate with a router running MLD version 2. Mixed LANs with both MLD version 1 and MLD version 2 hosts are likewise supported.
- IPv6 multicast is supported only over IPv4 tunnels in Cisco IOS Release 12.3(2)T, Cisco IOS Release 12.2(18)S, and Cisco IOS Release 12.0(26)S.
- When the bidirectional (bidir) range is used in a network, all routers in that network must be able to understand the bidirectional range in the bootstrap message (BSM).
- IPv6 multicast routing is disabled by default when the ipv6 unicast-routing command is configured. On Cisco Catalyst 6500 and Cisco 7600 series routers, the ipv6 multicast-routing also must be enabled in order to use IPv6 unicast routing

**Reference:**

[http://www.cisco.com/web/about/ac123/ac147/ac174/ac197/about\\_cisco\\_ipj\\_archive\\_article09186a00800c830a.html](http://www.cisco.com/web/about/ac123/ac147/ac174/ac197/about_cisco_ipj_archive_article09186a00800c830a.html)  
<http://www.cisco.com/en/US/docs/ios/ipv6/configuration/guide/ip6-multicast.html>  
<https://supportforums.cisco.com/thread/183386>

**QUESTION: 8**

Which two OSPF LSA types are new in OSPF version 3? (Choose two)

- A. Link
- B. NSSA external
- C. Network link
- D. Intra-area prefix
- E. AS domain

**Answer:** A,

**Explanation:**

New LSA Types

OSPFv3 carries over the seven basic LSA types we're familiar with from OSPFv2. However, the type 1 and 2 LSAs have been re-purposed, as will be discussed in a bit. OSPFv3 also introduces two new LSA types: Link and Intra-area Prefix.

| OSPFv3                       | OSPFv2                 |
|------------------------------|------------------------|
| 0x2001 Router LSA            | 1 Router LSA           |
| 0x2002 Network LSA           | 2 Network LSA          |
| 0x2003 Inter-area Prefix LSA | 3 Network Summary LSA  |
| 0x2004 Inter-area Router LSA | 4 ASBR Summary LSA     |
| 0x4005 AS-External LSA       | 5 AS-External LSA      |
| 0x2006 Group Membership LSA  | 6 Group Membership LSA |
| 0x2007 Type-7 LSA            | 7 NSSA External LSA    |
| 0x0008 Link LSA              |                        |
| 0x2009 Intra-area Prefix LSA |                        |

**Reference:**

<http://packetlife.net/blog/2010/mar/2/ospfv2-versus-ospfv3/>

**QUESTION: 9**

Which three fields are optional in an OSPFv3 external LSA? (Choose three)

- A. Forwarding Address
- B. External Route Tag
- C. Reference Link-State ID
- D. Option
- E. Prefix Options

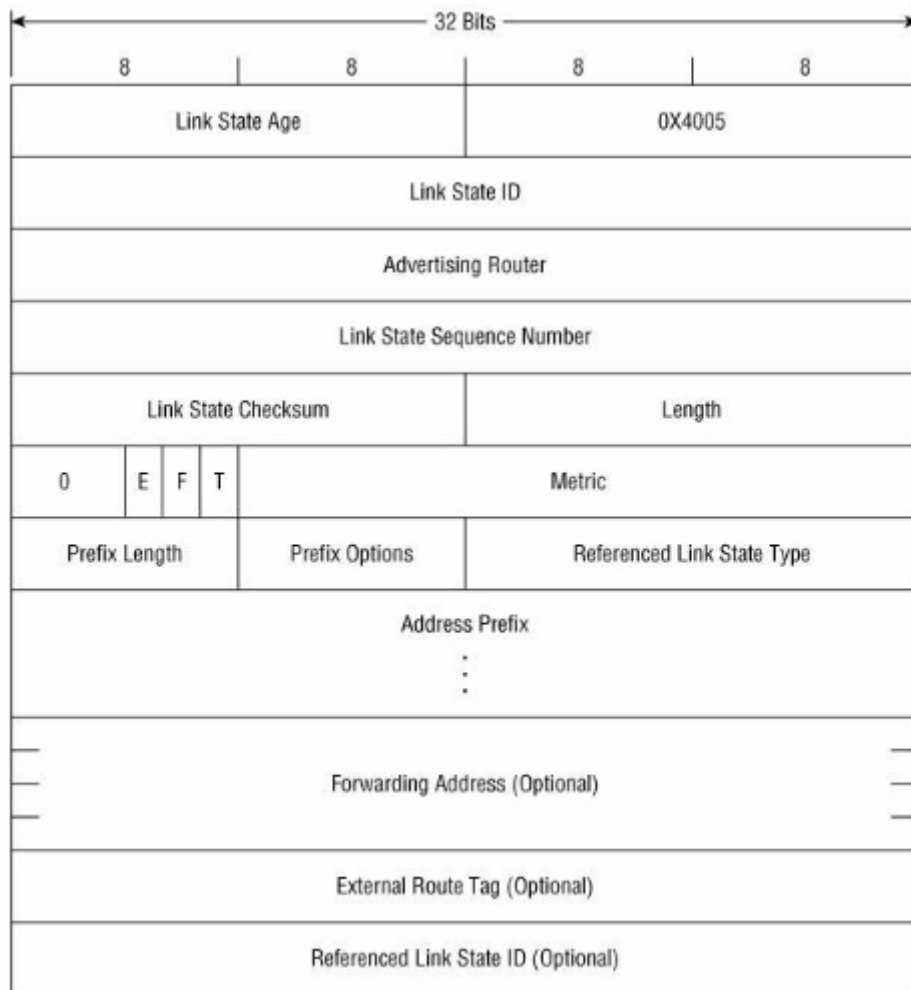
**Answer:** A, B, C

**Explanation:**

AS-External LSA

As with OSPFv2, the AS-External LSA advertises prefixes external to the OSPF routing domain; one LSA is required for each external prefix advertised. However, the format of the OSPFv3 AS-External LSA (Figure 9-10) is different from its OSPFv2 counterpart.

Figure 9-10. OSPFv3 AS-External LSA.

**Reference:**

[http://fengnet.com/book/CCIE%20Professional%20Development%20Routing%20TCPIP%20Volume%20I/images/09fig10\\_alt.jpg](http://fengnet.com/book/CCIE%20Professional%20Development%20Routing%20TCPIP%20Volume%20I/images/09fig10_alt.jpg)

**QUESTION: 10**

On a router, interface S0 is running EIGRPv6, and interface S1 is running OSPFv3. A redistribution command is issued under OSPFv3, redistribute EIGRP 1 metric 20 under ipv6 router ospf 1. What will happen after applying this redistribution command?

A. All routes showing up as D and D EX in the routing table will be redistributed into OSPFv3.

- B. All routes showing up as D, D EX, and C in the routing table will be redistributed into OSPFv3.
- C. All routes showing up as D and D EX in the routing table and the S0 interface will be redistributed into OSPFv3.
- D. All routes showing up as D in the routing table will be redistributed into OSPFv3.
- E. All routes showing up as D EX in the routing table will be redistributed into OSPFv3.

**Answer:** A

**Explanation:**

D are EIGRP Internal Routes and D EX are EIGRP external routes. Both Internal and External EIGRP routes will be redistributed with the configuration shown above

**QUESTION:** 11

In order to maintain security, with which hop count are IPv6 neighbor discovery packets sent?

- A. 0
- B. 1
- C. 255
- D. 256

**Answer:** C

**QUESTION:** 12

Which command will define a VRF with name 'CCIE' in IPv6?

- A. ip vrf CCIE
- B. ipv6 vrf CCIE
- C. vrf definition CCIE
- D. ipv6 vrf definition CCIE

**Answer:** C

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