



# 642-902<sup>Q&As</sup>

Implementing cisco ip routing

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### QUESTION 1

The administrator wants to verify the current state of the OSPF database loading process. Which show command should the administrator use?

- A. show ip ospf [process-id] interface
- B. show ip ospf neighbor
- C. show ip ospf [process-id]
- D. show ip ospf [process-id area-id] database

Correct Answer: B

The "show ip ospf neighbor" command can be used to view the current state of the OSPF database loading process. In the output below we can see router 2.2.2.2 is in 2way state, router 3.3.3.3 is elected as the BDR and router 4.4.4.4 is the BR.

```
R1# show ip ospf neighbor fa0/0
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	1	2WAY/DR0THER	00:00:35	10.1.1.2	Fast Ethernet0/0
3.3.3.3	1	FULL/BDR	00:00:38	10.1.1.3	Fast Ethernet0/0
4.4.4.4	1	FULL/BR	00:00:34	10.1.1.4	Fast Ethernet0/0

### QUESTION 2

Which command displays the IBGP and EBGP neighbors that are configured?

- A. show ip bgp
- B. show ip bgp paths
- C. show ip bgp peers
- D. show ip bgp summary

Correct Answer: D

The picture below shows the output of the show ip bgp summary

```
R1#show ip bgp summary
```

BGP router identifier 172.12.123.1, local AS number 100  
BGP table version is 1, main routing table version 1

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
3.3.3.3	4	300	0	0	0	0	0	never	Active

Notice that the "show ip bgp" command to display BGP topology database. Below is the output of the "show ip bgp" command:



```
RouterA# show ip bgp
BGP table version is 14, local router ID is 172.31.11.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal, r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
   Network          Next Hop          Metric LocPrf Weight Path
*> 10.1.0.0/24      0.0.0.0           0             32768 i
* i                10.1.0.2          0             100      0 i
*> 10.1.1.0/24      0.0.0.0           0             32768 i
*>i10.1.2.0/24      10.1.0.2          0             100      0 i
*> 10.97.97.0/24    172.31.1.3        0             0 64998 64997 i
*                  172.31.11.4       0             0 64999 64997 i
* i                172.31.11.4       0             100      0 64999 64997 i
*> 10.254.0.0/24    172.31.1.3        0             0 64998 i
*                  172.31.11.4       0             0 64999 64998 i
* i                172.31.1.3        0             100      0 64998 i
r> 172.31.1.0/24    172.31.1.3        0             0 64998 i
r                  172.31.11.4       0             0 64999 64998 i
r i                172.31.1.3        0             100      0 64998 i
*> 172.31.2.0/24    172.31.1.3        0             0 64998 i
<output omitted>
```

**QUESTION 3**

Above is the output from show ip bgp neighbors command.



```
BGP neighbor is 172.16.254.3, remote AS 150, internal link
1. BGP version 4, remote router ID 172.16.254.3
2. BGP state = Established, up for 19:24:07
3. Last read 00:00:06, hold time is 180, keepalive interval is 60 seconds
4. Neighbor capabilities:
5. Route refresh:advertised and received(new)
6. Address family IPv4 Unicast:advertised and received
7. Graceful Restart Capability:advertised and received
8. Remote Restart timer is 120 seconds
9. Address families preserved by peer
10. IPv4 Unicast
11. Received 4231 messages, 0 notifications, 0 in queue
12. Sent 4167 messages, 0 notifications, 0 in queue
13. Default minimum time between advertisement runs is 5 seconds
14. For address family:IPv4 Unicast
15. BGP table version 159559, neighbor version 159559
16. Index 90, Offset 11, Mask 0x4
17. Route refresh request:received 0, sent 0
18. 10031 accepted prefixes consume 441364 bytes
19. Prefix advertised 29403, suppressed 0, withdrawn 9801
20. Number of NLRI in the update sent:max 242, min 0
21. Connections established 2; dropped 1
22. Last reset 19:26:54, due to NSF peer closed the session
23. Connection state is ESTAB, I/O status:1, unread inout bytes:0
24. Local host:150.254.254.2, Local port:11005
25. Foreign host:172.16.254.3, Foreign port:179
```

What is line 21 stating about the BGP connection?

- A. the number of neighbors that the router has
- B. the number of times the router has established a TCP connection
- C. the number of consecutive TCP connections to the specified remote neighbor
- D. the number of total TCP connections that the router has

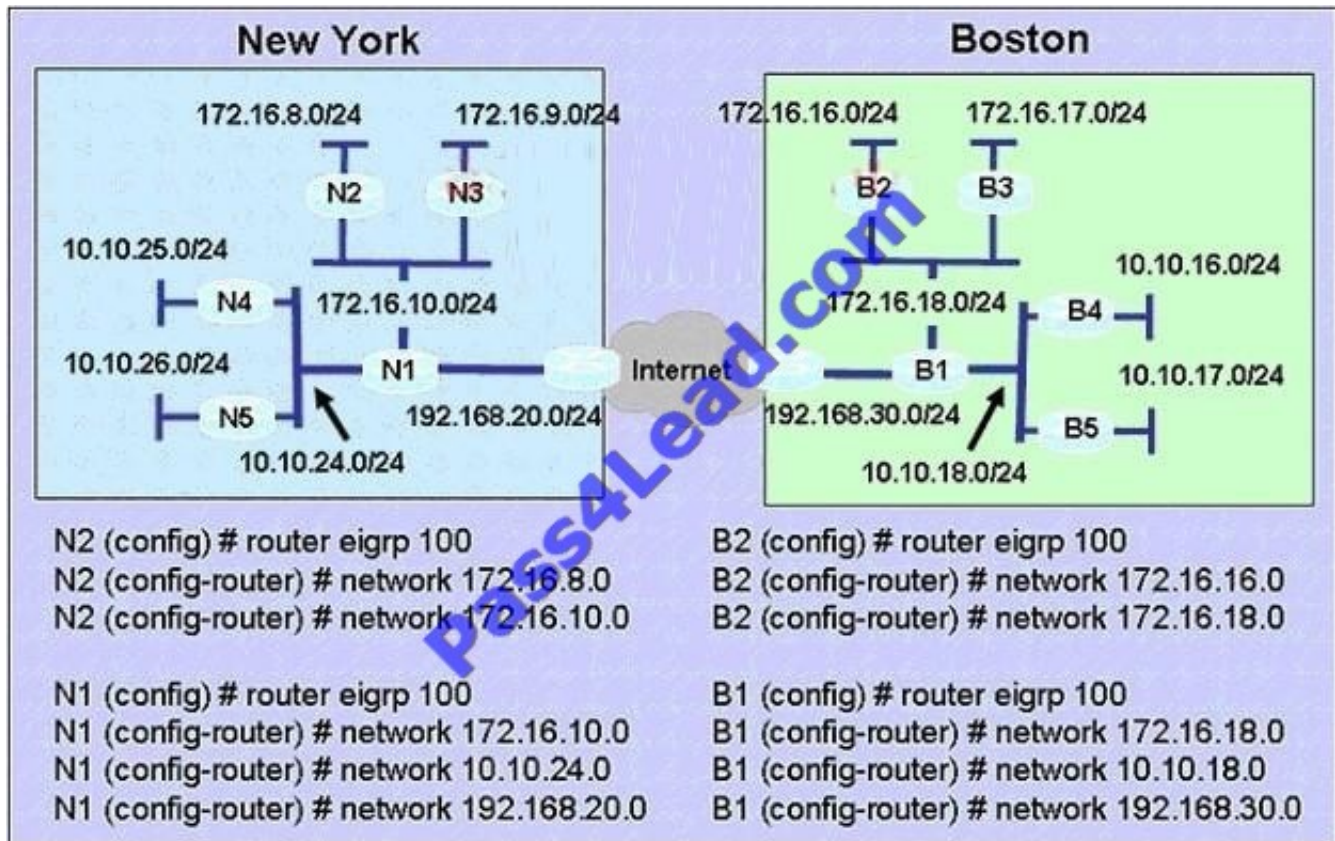
Correct Answer: B

According to [http://www.cisco.com/en/US/docs/ios/12\\_3/iproute/command/reference/ip2\\_s2g.html#wp104\\_0913](http://www.cisco.com/en/US/docs/ios/12_3/iproute/command/reference/ip2_s2g.html#wp104_0913), "Connections established" is the number of times a TCP and BGP connection have been successfully established while "dropped" is the number of times that a valid session has failed or been taken down.

#### QUESTION 4

Refer to the exhibit.





A Boston company bought the assets of a New York company and is trying to route traffic between the two data networks using EIGRP. The show command output shows that traffic will not flow between the networks. As a network consultant, you were asked to modify the configuration and certify the interoperability of the two networks. For traffic to flow from subnet 172.16.8.0/24 to the 172.16.16.0/24 subnet.

Which configuration change do you recommend?

- A. Turn off autosummarization on routers N1 and B1.
- B. Add IP summary addresses to the Internet-pointing interfaces of routers N1 and B1.
- C. Turn off auto summarization on routers N2 and B2.
- D. Add wildcard masks to the network commands on routers N2 and B2.

Correct Answer: A

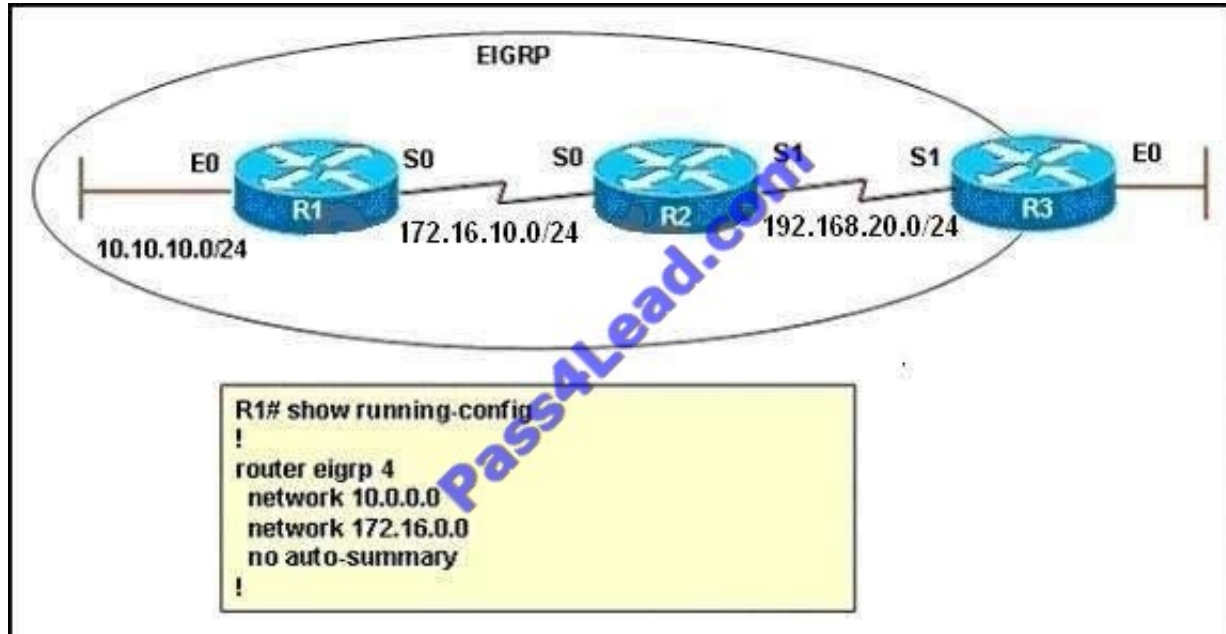
Basically auto route summarization happens at the classful network boundary...so that would make N1 and B1 the locations that summarization would occur for the 172.16.0.0/16 classful networks.

So if you left auto-summarization enabled on those 2 routers, you would have an issue with discontinuous networks being advertised by both routers N1 and B1 with their classful mask (172.16.0.0/16 and 10.0.0.0/8), which will cause you issues.

Turning off auto-summarization on N2 and B2 wouldn't make any difference, as their networks wouldn't be summarized due to the fact that they are not meeting a classful boundary on their perspective routers. N1 will receive the 172.16.8.0/24 network from N2 with auto-summarization enabled.

**QUESTION 5**

Refer to the exhibit. EIGRP is configured with the default configuration on all routers. Autosummarization is enabled on routers R2 and R3, but it is disabled on router R1. Which two EIGRP routes will be seen in the routing table of router R3? (Choose two.)



- A. 10.0.0.0/8
- B. 10.10.0.0/16
- C. 10.10.10.0/24
- D. 172.16.0.0/16
- E. 172.16.0.0/24
- F. 172.16.10.0/24

Correct Answer: CD

EIGRP performs an auto-summarization each time it crosses a border between two different major networks. In this case all different networks are in different major networks so EIGRP will perform auto-summarization when it exits an interface. But R1 has been configured with "no auto-summary" command so EIGRP will not summarize on S0 interface of R1. So the routing table of R2 will have the network 10.10.10.0/24 (not be summarized).

When exiting S1 interface of R2, EIGRP summarizes network 172.16.10.0/24 into the major 172.16.0.0/16 network but it does not summarize network 10.10.10.0/24 because it is not directly connected with this network. Therefore in the routing table of R3 there will have:

+

Network 10.10.10.0/24 ( not summarized)

+

Network 172.16.0.0/16 (summarized)



-> C and D are correct.

Note: I simulated this question on GNS3, you can see the final outputs of the "show ip route" commands on these routers (I connected these routers via FastEthernet, not Serial interfaces so the outputs are slightly different but the main points

are not changed).

```
R1#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    172.16.0.0/24 is subnetted, 1 subnets
C       172.16.10.0 is directly connected, FastEthernet0/0
D       192.168.20.0/24 [90/30720] via 172.16.10.2, 00:02:15, FastEthernet0/0
    10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, Loopback0
```

```
R2#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.10.0/24 is directly connected, FastEthernet0/0
D       172.16.0.0/16 is a summary, 00:02:33, Null0
C       192.168.20.0/24 is directly connected, FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
D       10.10.10.0 [90/156160] via 172.16.10.1, 00:02:36, FastEthernet0/0
```





```
R3#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

D   172.16.0.0/16 [90/30720] via 192.168.20.2, 00:03:38, FastEthernet0/0
C   192.168.20.0/24 is directly connected, FastEthernet0/0
    10.0.0.0/24 is subnetted, 1 subnets
D     10.10.10.0 [90/158720] via 192.168.20.2, 00:03:38, FastEthernet0/0
```

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