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CCNA

考试代号： 200-125

考试时间：英文 140 分钟

通过分数： 810

题库版本： V3.0

1 ACL-3

Question

A corporation wants to add security to its network. The requirements are:

- > Host C should be able to use a web browser(HTTP) to access the Finance Web Server.
 - > Other types of access from host C to the Finance Web Server should be blocked.
 - > All access from hosts in the Core or local LAN to the Finance Web Server should be blocked.
 - > All hosts in the Core and on local LAN should be able to access the Public Web Server.
- You have been tasked to create and apply a numbered access list to a single outbound interface. They can contain no more than three statements that meet these requirements.

Access to the router CLI can be gained by clicking on the appropriate host.

All passwords have been temporarily set to "cisco".

The Core connection uses an IP address of 198.18.196.65 ← Corp1 路由器的S 口的IP，考试时要show下IP对不对，不对就改

The computers in the Hosts LAN have been assigned addresses of 192.168.33.1 - 192.168.33.254

Host A 192.168.33.1

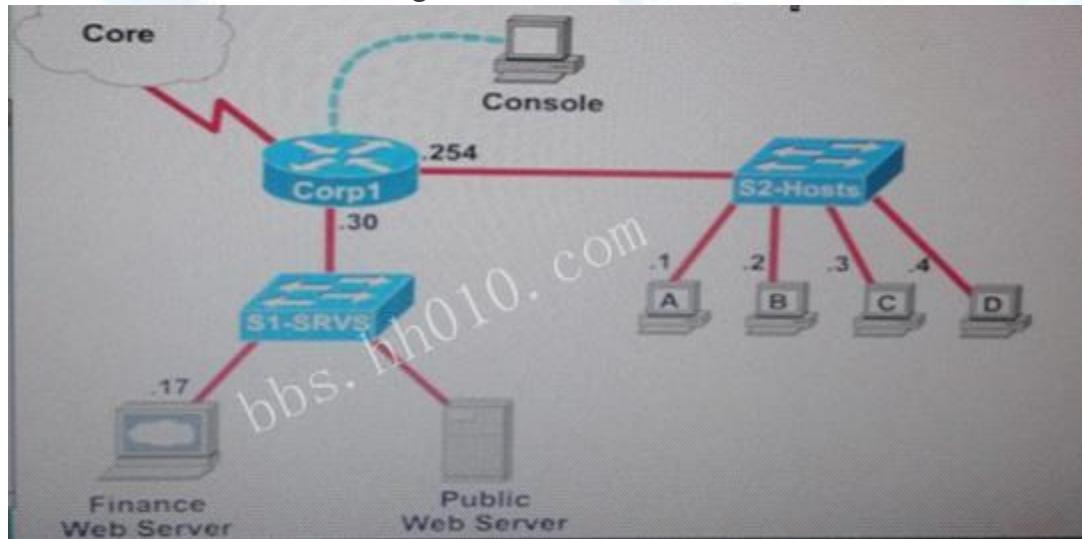
Host B 192.168.33.2

Host C 192.168.33.3

Host D 192.168.33.4

The servers in the Server LAN have been assigned addresses of 172.22.242.17 - 172.22.242.30

The Finance Web Server is assigned an IP address of 172.22.242.23.



Answer:

Corp1 路由器的S 口的IP，考试时要show下IP对不对，不对就改，修改IP命令
Corp1>enable

```
Corp1#configure terminal
```

```
Corp1(config)#int s1/0(具体端口号自己show run看一下)
```

```
Corp1(config-if)#ip add 198.18.196.65 255.255.255.252(ip改为题目给的，掩码用  
show run得到的原先错误IP的掩码)
```

```
Corp1(config-if)#end
```

这里可以不用删掉错误的IP地址，直接输入新的可以将旧IP覆盖，最后别忘记保存。

```
Corp1#show running-config
```

```
Corp1# show running-config
<output omitted>
!
interface FastEthernet0/0
 ip address 192.168.33.254 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.22.242.30 255.255.255.240
 duplex auto
 speed auto
!
<output omitted>
```

确定连接服务器的接口为F0/1

```
Corp1#configure terminal
```

```
Corp1(config)#access-list 100 permit tcp host 192.168.33.3 host 172.22.242.23 eq 80
```

```
Corp1(config)#access-list 100 deny ip any host 172.22.242.23
```

```
Corp1(config)#access-list 100 permit ip any any (如果拓扑中只有两个server，本  
条命令也可以使用视频讲解中的答案，两个答案都正确)
```

```
Corp1(config)#interface fa0/1
```

```
Corp1(config-if)#ip access-group 100 out
```

```
Corp1(config-if)#end
```

```
Corp1#copy running-config startup-config
```

命令解释：

1. Corp1(config)# access-list 100 permit tcp host 192.168.33.3 host 172.22.242.23 eq 80

创建一条扩展列表，允许TCP流量 从源主机为IP：192.168.33.3 到目的主机IP为：172.22.242.23 的80端口。eq 的意思是 等于端口号。

这里不必要纠结扩展列表使用的数字100还是128，只要是100-199范围内的都可以使用。

2. Corp1(config)#access-list 100 deny ip any host 172.22.242.23

创建一条扩展列表，禁止所有流量从所有源主机访问目的主机IP为：172.22.242.23。IP是指所有协议。

3. Corp1(config)#access-list 100 permit ip any any

创建一条扩展列表，允许IP流量从所有源主机到所有目的主机。

4. Corp1#show running-config

Show run 是为了找出 .30 的IP是在哪个接口，图里给出了 .30 只要show run 找出IP为 .30 的接口就OK了然后把 ACL 的列表应用到接口上。

5. Corp1(config)#interface fa0/1

Corp1(config-if)#ip access-group 100 out

最后就是这2条命令了，上面已经 Show run 找出来 .30 的IP为 172.22.242.30，是在 f0/1 口上。直接进入F0/1口

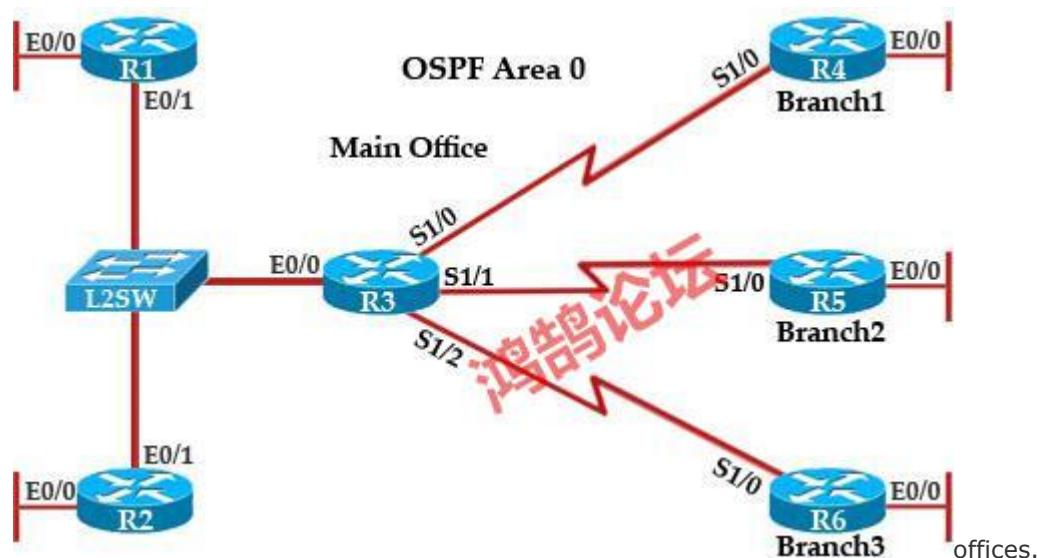
把创建的扩展列表应用进去，最后千万记得 Copy run Start。

考试的时候实验题会变的就是IP地址和主机，他可能会将主机C变为主机B，还有就是IP地址会变，考试涉及到的命令是不会变的。

2. OSPF Neighbor

Question

Refer to the topology. Your company has decided to connect the main office with three other remote branch offices using point-to-point serial links. You are required to troubleshoot and resolve OSPF neighbor adjacency issues between the main office and the routers located in the remote branch



Question 1

An OSPF neighbor adjacency is not formed between R3 in the main office and R4 in the Branch1 office. What is causing the problem?

- A. There is an area ID mismatch.
- B. There is a Layer 2 issue; an encapsulation mismatch on serial links.
- C. There is an OSPF hello and dead interval mismatch.
- D. The R3 router ID is configured on R4.

Answer: A

Explanation

R3 和 R4 不能建立邻居，通过 show run 命令来查看 R3 和 R4 的配置

```
R3#show running-config
<<output omitted>>
!
interface Serial1/0
    description **Connected to R4-Branch1 office**
    ip address 10.10.240.1 255.255.255.252
    encapsulation ppp
    ip ospf 3 area 0
!
<<output omitted>>
```

```
R4#show running-config
<<output omitted>>
!
interface Serial1/0
    description **Connected to R3-Main Branch office**
    ip address 10.10.240.2 255.255.255.252
    encapsulation ppp
    ip ospf 4 area 2
!
<<output omitted>>
```

通过信息可以看到区域 ID 不一样。R3 的 S1/0 在 area 0，但是 R4 的 S1/0 在 area 2。

Question 2

An OSPF neighbor adjacency is not formed between R3 in the main office and R5 in the Branch2 office. What is causing the problem?

- A. There is an area ID mismatch.
- B. There is a PPP authentication issue; a password mismatch.
- C. There is an OSPF hello and dead interval mismatch.
- D. There is a missing network command in the OSPF process on R5.

Answer: C

Explanation

```
R3#show running-config
<<output omitted>>
!
interface Serial1/1
    description **Connected to R5-Branch2 office**
    ip address 10.10.240.5 255.255.255.252
    encapsulation ppp
    ip ospf hello-interval 50
    ip ospf 3 area 0
!
<<output omitted>>
```

```
R5#show running-config
<<output omitted>>
!
interface Serial1/0
    description **Connected to R3-Main Branch office**
    ip address 10.10.240.6 255.255.255.252
    encapsulation ppp
    ip ospf 5 area 0
!
<<output omitted>>
```

通过 R3 R5 的 show run 信息可以看到 R3 配置了一个 ip ospf hello-interval 50，这个命令修改了默认的 hello 包发送间隔时间。R5 使用的是默认的 hello-interval 10 seconds。所以是 hello-interval 不匹配导致的问题。可以通过 show ip ospf interface <interface>"查看

```
R3#sh ip ospf int s1/1
Serial1/1 is up, line protocol is up
Internet Address 10.10.240.5/30, Area 0
Process ID 3, Router ID 192.168.3.3, Network Type POINT_TO_POINT, Cost: 64
Enabled by interface config, including secondary ip addresses
Transmit Delay is 1 sec, State POINT_TO_POINT,
Timer intervals configured, Hello 50, Dead 200, Wait 200, Retransmit 5
oob-resync timeout 200
Hello due in 00:00:28
```

```
Supports Link-local Signaling (LLS)
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 0, maximum is 0
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
```

R5#sh ip ospf int s1/0

```
Serial1/0 is up, line protocol is up
Internet Address 10.10.240.6/30, Area 0
Process ID 5, Router ID 10.10.240.6, Network Type POINT_TO_POINT, Cost: 64
Enabled by interface config, including secondary ip addresses
Transmit Delay is 1 sec, State POINT_TO_POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
oob-resync timeout 40
Hello due in 00:00:04
Supports Link-local Signaling (LLS)
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 0, maximum is 0
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
```

可以看到 hello 和 dead 都不一样，因为 dead time 一直是 hello 的 4 倍。

Question 3

R1 does not form an OSPF neighbor adjacency with R2. Which option would fix the issue?

- A. R1 ethernet0/1 is shutdown. Configure no shutdown command.
- B. R1 ethernet0/1 configured with a non-default OSPF hello interval of 25; configure no ip ospf hello-interval 25
- C. R2 ethernet0/1 and R3 ethernet0/0 are configured with a non-default OSPF hello interval of 25; configure no ip ospf hello-interval 25
- D. Enable OSPF for R1 ethernet0/1; configure ip ospf 1 area 0 command under ethernet0/1

Answer: B

Explanation

```
R1#show running-config
<<output omitted>>
```

```
!
interface Ethernet0/1
  description **Connected to L2SW**
  ip address 10.10.230.1 255.255.255.0
  ip ospf hello-interval 25
  ip ospf 1 area 0
!
<<output omitted>>
```

R2#show running-config

```
<<output omitted>>
!
interface Ethernet0/1
  description **Connected to L2SW**
  ip address 10.10.230.2 255.255.255.0
  ip ospf 2 area 0
!
<<output omitted>>
```

R1 设置了 ip ospf hello-interval 25 导致和 R2 的 hello 和 dead 时间不一样。所以需要再 R1 上配置 no ip ospf hello-interval 25，使用默认的 hello 时间。

Question 4

An OSPF neighbor adjacency is not formed between R3 in the main office and R6 in the Branch3 office. What is causing the problem?

- A. There is an area ID mismatch.
- B. There is a PPP authentication issue; the username is not configured on R3 and R6.
- C. There is an OSPF hello and dead interval mismatch.
- D. The R3 router ID is configured on R6.

Answer: D

Explanation

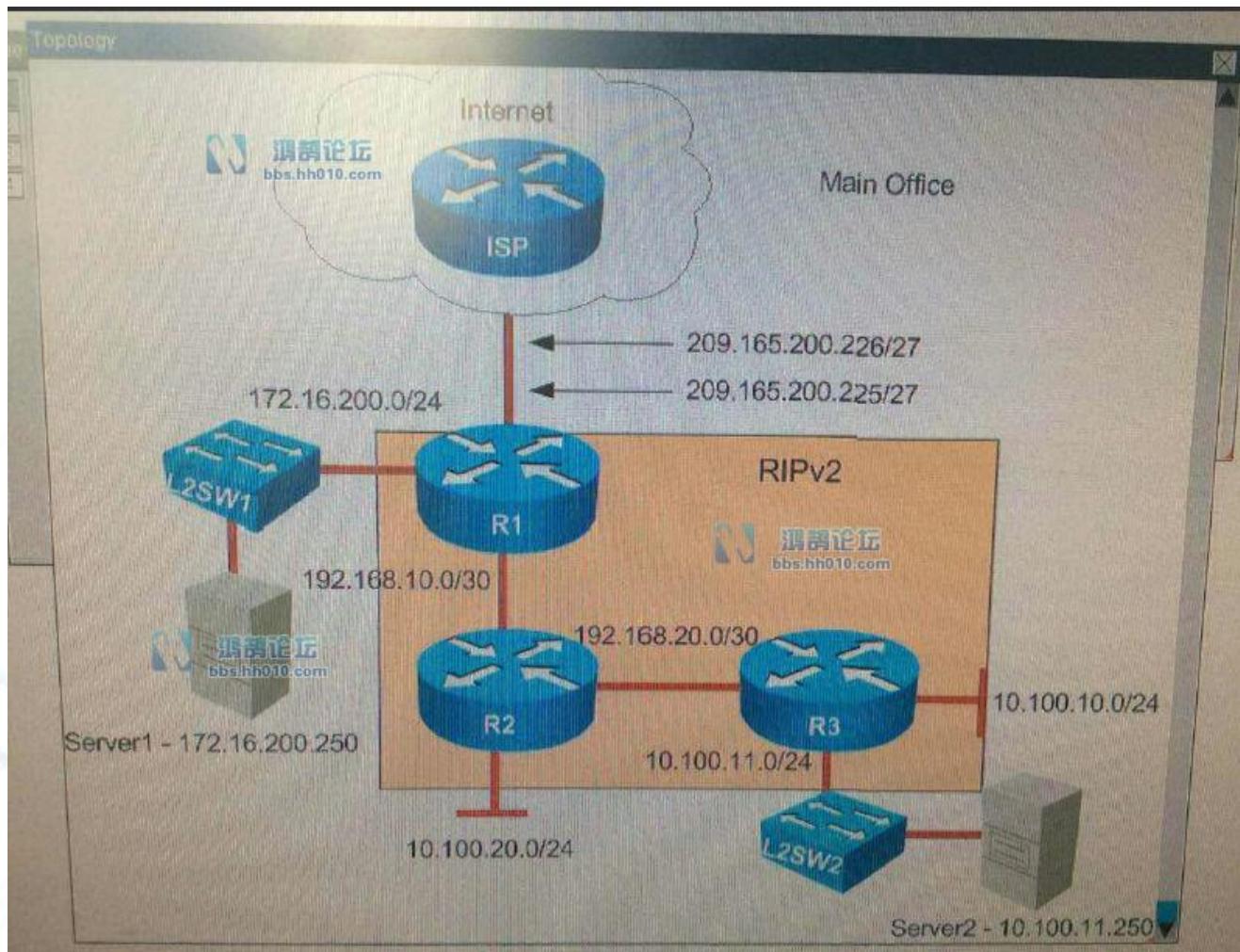
```
R3#show running-config
<<output omitted>>
username R6 password CISCO36
!
interface Serial1/2
  description **Connected to R6-Branch3 office**
  ip address 10.10.240.9 255.255.255.252
  encapsulation ppp
```

```
ip ospf 3 area 0
ppp authentication chap
!
<<output omitted>>
!
router ospf 3
  router-id 192.168.3.3
!
<<output omitted>>
```

```
R6#show running-config
<<output omitted>>
username R3 password CISCO36
!
interface Serial1/0
  description **Connected to R3-Main Branch office**
  ip address 10.10.240.10 255.255.255.252
  encapsulation ppp
  ip ospf 6 area 0
  ppp authentication chap
!
<<output omitted>>
!
router ospf 6
  router-id 192.168.3.3
!
<<output omitted>>
```

R6 使用了跟 R3 相同的 router-id 192.168.3.3，所以邻居不能建立。

3 DHCP



1. Examine the DHCP configuration between R2 and R3. R2 is configured as the DHCP server and R3 as the client. What is the reason R3 is not receiving the IP address via DHCP?
 - A. On R3, DHCP is not enabled on the interface that is connected to R2.
 - B. On R3, the interface that is connected to R2 is in shutdown condition.
 - C. On R2, the interface that is connected to R3 is in shutdown condition.
 - D. On R2, the network statement in the DHCP pool configuration is incorrectly configured

Answer: A

Explanation/show commands:

R2

```
no mmi pvc
mmi snmp-timeout 180
!
!
ip dhcp excluded-address
192.168.20.1
!
ip dhcp pool DHCPASSIGNR3
network 192.168.20.0 255.255.255.252
!
ip cef
no ipv6 cef
!
multilink bundle-name
authenticated
!
```



R3

```
!
!
interface Loopback0
ip address 192.168.250.3 255.255.255.255
!
interface Ethernet0/0
description ***Link to LAN***
ip address 10.100.10.1 255.255.255.0
!
interface Ethernet0/1
description ***Link to R2***
no ip address
!
interface Ethernet0/2
description ***Link to Server2 Segment***
ip address 10.100.11.1 255.255.255.0
!
interface Ethernet0/3
no ip address
```

2.R1 router clock is synchronized with ISP router. R2 is supposed to receive NTP updates from R1. But you observe that R2 clock is not synchronized with R1. What is the reason R2 is not receiving NTP updates from R1?

- A. R1 router Ethernet interface that is connected to R2 is placed in shutdown condition.
- B. R2 router Ethernet interface that is connected to R1 is placed in shutdown condition.
- C.The NTP server command not configured on R2 router.
- D.The IP address that is used in the NTP configuration on R2 router is incorrect.

Answer: D

Explanation/show commands:

```
R2
deny 172.16.200.0 0.0.0.255
permit any
!
!
!
control-plane
!
!
!
line con 0
logging synchronous
line aux 0
line vty 0 4
login
transport input all
!
ntp server 192.168.100.1
!
end
R2#
```



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```
R1
no ip address
shutdown
!
router rip
version 2
network 172.16.0.0
network 192.168.10.0
network 192.168.250.0
default-information originate
no auto-summary
!
ip forward-protocol nd
!
!
no ip http server
no nat inside source list LOCAL interface Ethernet0
ip route 0.0.0.0 0.0.0.0 209.165.200.226
!
ip access-list standard LOCAL
permit 10.0.0.0 0.255.255.255
permit 172.16.0.0 0.0.255.255
permit 192.168.0.0 0.0.255.255
!
```

3. Why applications that are installed on PCs in R2 LAN network 10.100.20.0/24 are unable to communicate with server1?

- A. A standard ACL statement that is configured on R1 is blocking the traffic sourced from R2 LAN network.
- B. A standard ACL statement that is configured on R1 is blocking the traffic sourced from Server1 network.
- C. A standard ACL statement that is configured on R2 is blocking the traffic sourced from Server1 network.
- D. A standard ACL statement that is configured on R2 is blocking the traffic sourced from R2 LAN network.

Answer: C

Explanation/show commands:

```
R2
!
ip access-list standard SERVER1BLOCK
deny 172.16.200.0 0.0.0.255
permit any
!
```



```
R2
!
!
!
interface Loopback0
ip address 192.168.250.2 255.255.255.255
!
interface Ethernet0/0
description ***Link to R3***
ip address 192.168.20.1 255.255.255.255
!
interface Ethernet0/1
no ip address
!
interface Ethernet0/2
description ***Link to R1***
ip address 192.168.10.2 255.255.255.252
ip access-group SERVER1BLOCK in
!
```

4. Users complain that they are unable to reach internet sites. You are troubleshooting internet connectivity problem at main office. Which statement correctly identifies the problem on Router R1?

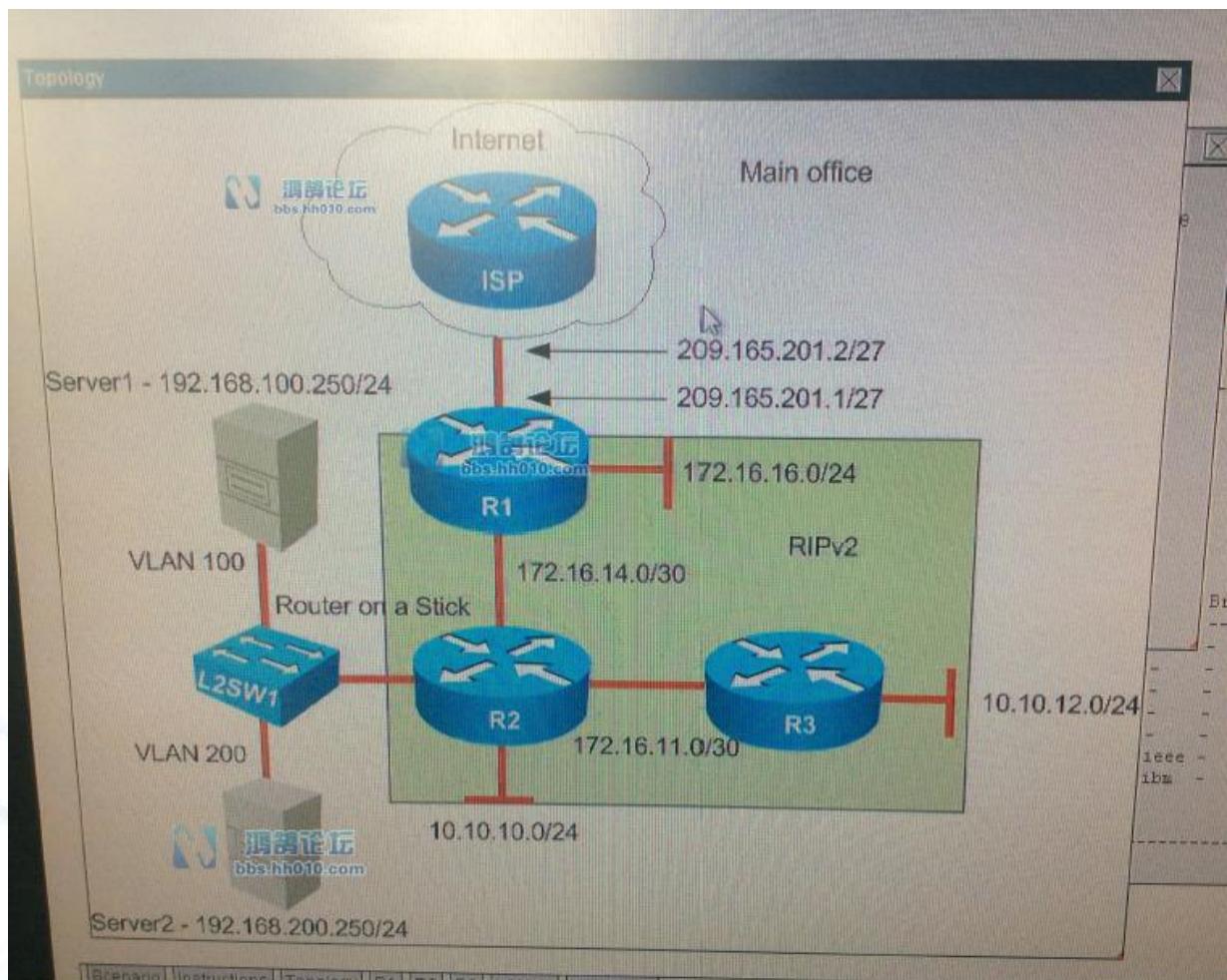
- A.NAT configurations on the interfaces are incorrectly configured.
- B.NAT translation statement incorrectly configured.
- C.Interesting traffic for NAT ACL is incorrectly configured.
- D.Only static NAT translation configured from the server, missing Dynamic NAT or Dynamic NAT overloading for internal networks.

Answer: A

Explanation/show commands:

```
R1
!
!
!
!
interface Loopback0
ip address 192.168.250.1 255.255.255.255
!
interface Ethernet0/0
description ***Link to ISP***
ip address 209.165.200.225 255.255.255.224
ip nat inside
ip virtual-reassembly in
!
interface Ethernet0/1
description ***Link to Server1 segment***
ip address 172.16.200.1 255.255.255.0
ip nat outside
ip virtual-reassembly in
!
interface Ethernet0/2
description ***Link to R2***
ip address 192.168.10.1 255.255.255.252
ip nat outside
ip virtual-reassembly in
!
```

4 RIPV2



- Router R1 connects the main office to internet, and routers R2 and R3 are internal routers
- NAT is enabled on Router R1
- The routing protocol that is enabled between R1, R2 and R3 is RIPv2
- R1 sends default route into RIPv2 for internal routers to forward internet traffic to R1
- Server1 and Server 2 are placed in VLAN 100 and 200 respectively, and are still running on stick

Configuration with router R2.

You have console access on R1, R2, R3 and L2SW1 devices.

Use only show commands to troubleshoot the issues.

1. Server1 and Server2 are unable to communicate with the rest of the network. Your initial check with system administrators shows that IP address settings are correctly configured on the server side. What could be an issue?

- A. The VLAN encapsulation is misconfigured on the router subinterfaces.
- B. The Router is missing subinterface configuration.
- C. The Trunk is not configured on the L2SW1 switch.
- D. The IP address is misconfigured on the primary router interface.

Answer: A

Explanation/show command:

```
R2
!
interface Ethernet0/1.100
description ***Link to Server1 Segment***
encapsulation dot1Q 200
ip address 192.168.100.1 255.255.255.0
!
interface Ethernet0/1.200
description ***Link to Server2 Segment***
encapsulation dot1Q 100
ip address 192.168.200.1 255.255.255.0
!
```

2. Users in the main office complain that they are unable to reach internet sites. You observe that internet traffic that is destined towards ISP router is not forwarded correctly on Router R1. What could be an issue?

Ping to Internet server shows the following results from R1:

```
R1#ping 209.165.200.225
```

Type escape sequence to abort.

Sending 5,100-byte ICMP Echos to 209.165.200.225, timeout is 2 seconds:

```
.....
```

Success rate is 0 percent (0/5)

- A. The next hop router address for the default route is incorrectly configured.
- B. Default route pointing to ISP router is not configured on Router R1.
- C. Default route pointing to ISP router is configured with AD of 225.

D.Router R1 configured as DHCP client is not receiving default route via DHCP from ISP router.

Answer: B

Explanation/show command:

```
172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks
R      172.16.11.0/30 [ 120/1] via 172.16.14.2, 00:00:20, Ethernet0/2
C      172.16.14.0/30 is directly connected, Ethernet0/2
L      172.16.14.1/32 is directly connected, Ethernet0/2
C      172.16.16.0/24 is directly connected, Ethernet0/1
L      172.16.16.1/32 is directly connected, Ethernet0/1
R      192.168.1.0/24 [ 120/1] via 172.16.14.2, 00:00:20, Ethernet0/2
R      192.168.100.0/24 [ 120/1] via 172.16.14.2, 00:00:20, Ethernet0/2
R      192.168.200.0/24 [ 120/1] via 172.16.14.2, 00:00:20, Ethernet0/2
209.165.201.0/24 is variably subnetted, 2 subnets, 2 masks
C      209.165.201.0/27 is directly connected, Ethernet0/0
L      209.165.201.1/32 is directly connected, Ethernet0/0
R1#
```



R1

```
interface Ethernet0/2
description ***Link to R2***
ip address 172.16.14.1 255.255.255.252
ip nat inside
ip virtual-reassembly in
!
interface Ethernet0/3
no ip address
shutdown
!
router rip
version 2
network 172.16.0.0
default-information originate
no auto-summary
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
ip nat inside source list LOCAL interface Ethernet0/0 overload
ip route 10.10.10.0 255.255.255.0 172.16.14.2 200
```



3.Examine R2 configuration,the traffic that is destined to R3 LAN network sourced from Router R2 is forwarded to R1 instead R3. What could be an issue?

R2#traceroute 10.10.12.1 source 10.10.10.1

Type escape sequence to abort.

Tracing the route to 10.10.12.1

VRF info: (vrf in name/id, vrf out name/id)

1 172.16.14.10 msec 1 msec 0 msec

2 172.16.14.1 !H !H *

R2#

A.RIPv2 enabled on R3, but R3 LAN network that is not advertised into RIPv2 domain.

B.RIPv2 routing updates are suppressed between R2 and R3 using passive interface feature.

C.RIPv2 not enabled on R3.

D.No issue that is identified; this behavior is normal since default route propagated into RIPv2 domain by Router R1.

Answer: C

Explanation/show command:

```
R3
interface Ethernet0/3
no ip address
shutdown
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
!
!
control-lane
!
!
!
!
line con 0
logging synchronous
line aux 0
```

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NO RIPv2 CONFIG!

4. What is the correct statement below after examining the R1 routing table?

A.Traffic that is destined to 10.10.10.0/24 from R1 LAN network uses static route instead RIPv2

Because the static route AD that is configured is less than the AD of RIPv2

B.Traffic that is destined to 10.10.10.0/24 from R1 LAN network uses RIPv2 instead static route

Because the static route AD that is configured is higher than the AD of RIPv2

C.Traffic that is destined to 10.10.10.0/24 from R1 LAN network uses static route instead RIPv2

But the traffic is forwarded to the ISP instead of the internal network.

D.Traffic that is destined to 10.10.10.0/24 from R1 LAN network uses RIPv2 instead static route

Because the static route AD that is configured is 255

Answer: B

Explanation/show command:

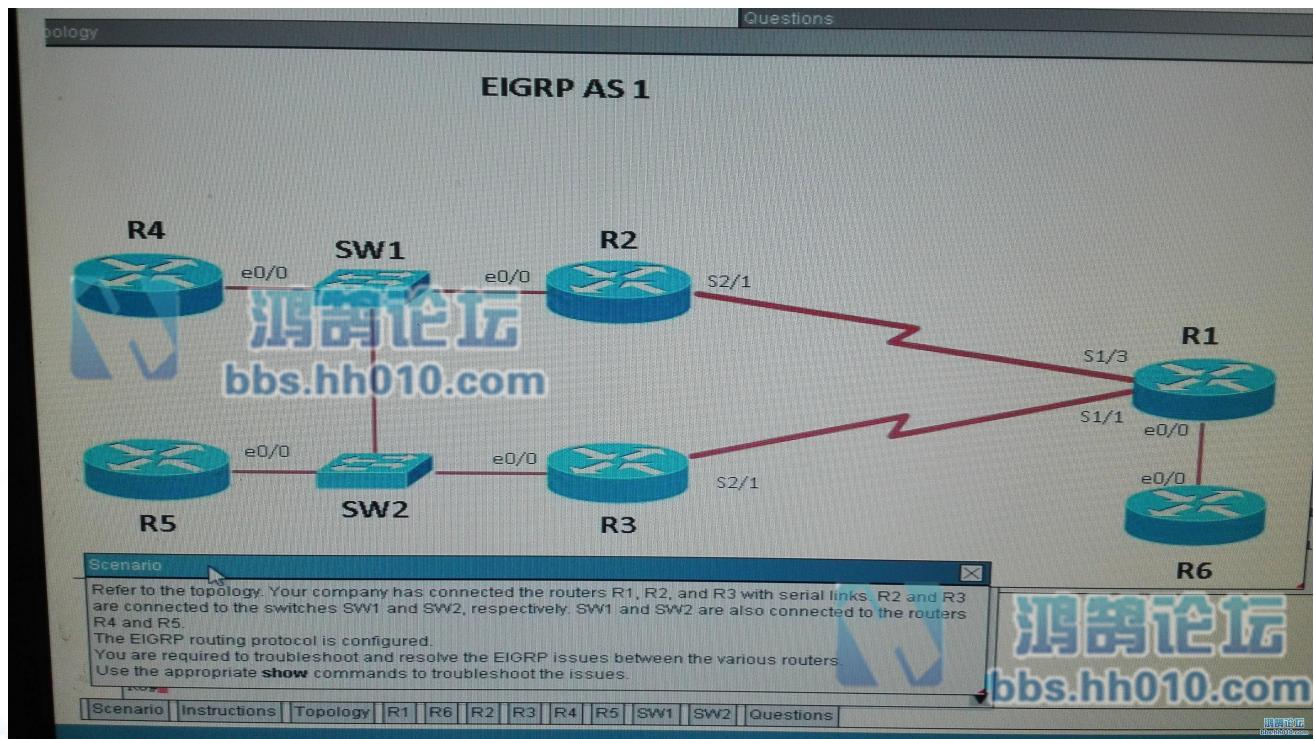
```
R1
!
ip route 10.10.10.0 255.255.255.0 172.16.14.2 200
!
```

4 EIGRP TS

Question

Refer to the topology. Your company has connected the routers R1, R2 and R3 with serial links. R2 and R3 are connected to the switches SW1 and SW2, respectively. SW1 and SW2 are also connected to the routers R4 and R5.

The EIGRP routing protocol is configured. You are required to troubleshoot and resolve the EIGRP issues between the various routers. Use the appropriate show commands to troubleshoot the issues.



上图为考试真实界面截图

Question 1

The loopback interfaces on R4 with the IP addresses of 10.4.4.4/32, 10.4.4.5/32 and 10.4.4.6/32 are not appearing in the routing table of R5. Why are the interfaces missing?

- A. The interfaces are shutdown, so they are not being advertised.
- B. R4 has been incorrectly configured to be in another AS, so it does not peer with R5.
- C. Automatic summarization is enabled, so only the 10.0.0.0 network is displayed.
- D. The loopback addresses haven't been advertised, and the network command is missing on R4.**

在考试中 `show run` 查到的是 R4 没有宣告它的环回地址,也就是选 D

The screenshot shows two Cisco routers, R4 and R5, in a Cisco Packet Tracer environment. Router R4's configuration includes:

```

R4
shutdown
!
interface Ethernet0/2
no ip address
shutdown
!
interface Ethernet0/3
no ip address
shutdown
!
router eigrp 1
network 192.168.123.0
ip forward-protocol nd
no ip http server
no ip http secure-server
control-plane
--- More (16) ---

```

Router R5's configuration includes:

```

R5
interface Ethernet0/2
no ip address
shutdown
!
interface Ethernet0/3
no ip address
shutdown
!
router eigrp 1
network 10.5.5.5 0.0.0.0
network 10.10.10.0 0.0.0.255
network 192.168.123.0
ip forward-protocol nd
no ip http server
no ip http secure-server
control-plane
--- More (16) ---

```

A 'Questions' window is open, listing four options for why the loopback interfaces on R4 are not appearing in the routing table of R5:

- The loopback interfaces on R4 with the IP addresses of 10.4.4.4/32, 10.4.4.5/32, and 10.4.4.6/32 are not appearing in the routing table of R5. Why are the interfaces missing?
- The interfaces are shutdown, so they are not being advertised.
- R4 has been incorrectly configured to be in another AS, so it does not peer with R5.
- Automatic summarization is enabled, so only the 10.0.0.0 network is displayed.
- The loopback addresses haven't been advertised, and the `network` command is missing on R4.

Question 2

Which path does traffic take from R1 to R5?

- A. The traffic goes through R2.
- B. The traffic goes through R3.
- C. The traffic is equally load-balanced over R2 and R3.**
- D. The traffic is unequally load-balanced over R2 and R3.

在考试中查看 到 R2, R3 这两条的路径都是等值的，所以选 C

R1#sh ip route

- ```

10.0.0.0/32 is subnetted, 5 subnets
C 10.1.1.1 is directly connected, Loopback0
D 10.2.2.2 [90/2297856] via 192.168.12.2, 00:17:44, Serial1/3
D 10.3.3.3 [90/2298880] via 192.168.13.3, 00:00:04, Serial1/1
D 10.5.5.5 [90/2300416] via 192.168.12.2, 00:17:44, Serial1/3
[90/2300416] via 192.168.13.3 00:17:44, Serial1/1
C 192.168.12.0/24 is directly connected, Serial1/3
C 192.168.13.0/24 is directly connected, Serial1/1
C 192.168.16.0/24 is directly connected, Ethernet0/0
D 192.168.123.0/24 [90/2172416] via 192.168.12.2, 00:17:44, Serial1/3
[90/2172416] via 192.168.13.3 00:17:44, Serial1/1

```

## Question 3

Router R6 does not form an EIGRP neighbor relationship correctly with router R1. What is the cause for this misconfiguration?

- A. The K values mismatch.**

- B. The AS does not match.
- C. The network command is missing.
- D. The passive-interface command is enabled.

通过 `show run` 可以看到 R6 的 K 值设定成 000111。R1 没有做设定是默认的 010100。所以两端因为 K 值不同没有形成邻居。

也可以通过 `show ip protocols` 来分别查看 R6 和 R1 的 K 值做对比。

**R6:**

```
int lo0
ip address 10.6.6.6 255.255.255.255
int e0/0
ip address 192.168.16.6 255.255.255.0
!
router eigrp 1
network 10.6.6.6 0.0.0.0
network 192.168.16.0 0.0.0.255
Metric weights 000111
```

**Question 4**

R1#ping 10.5.5.55 source 10.1.1.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.5.5.55, timeout is 2 seconds:

Packet sent with a source address of 10.1.1.1

.....

Success rate is 0 percent (0/5)

R1 为什么 ping 不通 R5?

- A. The network statement is missing on R5.
- B. The loopback interface is shut down on R5.
- C. The network statement is missing on R1.
- D. The IP address that is configured on the Lo1 interface on R5 is incorrect.

R5 没有把 10.5.5.55 宣告进 EIGRP, 选 A

```

R5
interface Loopback0
 ip address 10.5.5.5 255.255.255.255
!
interface Loopback1
 ip address 10.5.5.55 255.255.255.255
!
interface Ethernet0/0
 ip address 192.168.123.5 255.255.255.0
!
interface Ethernet0/1
 no ip address
 shutdown
!
interface Ethernet0/2
 no ip address
 shutdown
!
interface Ethernet0/3
 no ip address
 shutdown
!
router eigrp 1
 network 10.5.5.5 0.0.0.0
 network 10.10.10.0 0.0.0.255

```

**Questions**

- 1 Study the following output taken on R1:
- 2 R1# Ping 10.5.5.55 source 10.1.1.1
- 3 Type escape sequence to abort.
- 4 Sending 5, 100-byte ICMP Echos to 10.5.5.55, timeout is 2 seconds:  
Packet sent with a source address of 10.1.1.1  
.....  
Success rate is 0 percent (0/5)

Why are the pings failing?

A The network statement is missing on R5.  
 B The loopback interface is shut down on R5.  
 C The network statement is missing on R1.  
 D The IP address that is configured on the Lo1 interface on R5 is incorrect.

## 5 OSPFv3

You work as a network engineer for SASCOM Network Ltd company. On router HQ, a provider link has been enabled and you must configure an IPv6 default route on HQ and make sure that this route is advertised in IPv6 OSPF process. Also, you must troubleshoot another issue: the router HQ is not forming an IPv6 OSPF neighbor relationship with router BR.

**Topology Details**  
Two routers HQ and BR are connected via serial links.  
Router HQ has interface Ethernet0/1 connected to the provider cloud and interface Ethernet0/0 connected to RA1.  
Router BR has interface Ethernet0/0 connected to another router RA2.

**IPv6 Routing Details**  
All routers are running IPv6 OSPF routing with process ID number 100. Refer to the topology diagram for information about the OSPF areas. The Loopback0 IPv4 address is the OSPF router ID on each router.

**Configuration requirements**

- Configure IPv6 default route on router HQ with default gateway as 2001:DB8:B:B1B2::1.
- Verify by pinging provider test IPv6 address 2001:DB8:0:1111::1 after configuring default route on HQ.
- Make sure that the default route is advertised in IPv6 OSPF on router HQ. This default route should be advertised only when HQ has a default route in its routing table.
- Router HQ is not forming IPv6 OSPF neighbor with BR. You must troubleshoot and resolve this issue.

**Special Note:** To gain the maximum number of points, you must complete the necessary configurations and fix IPv6 OSPF neighbor issue with router BR. IPv6 OSPFv3 must be configured without using address families. Do not change the IPv6 OSPF process ID.



## 解题步骤：

1-开启 IPV6、创建默认路由

```
HQ >enable
```

```
HQ #conf t
```

```
HQ (config)#ipv6 unicast-routing
```

```
HQ (config)#ipv6 route ::/0 2001:DB8:B:B1B2::1
```

```
HQ (config)#end
```

2-ping provider 检查默认路由

```
HQ # ping 2001:DB8:0:1111::1 (To provider)
```

!!!!!!

3-宣告默认路由进 OSPFv3

```
HQ #conf t
```

```
HQ (config)#ipv6 router ospf 100
```

```
HQ(config-rtr)#Default-information originate
```

```
HQ(config-rtr)#end
```

4-修改 area ID，建立邻居关系

```
HQ #conf t
```

```
HQ (config)#interface s1/0
```

```
HQ(config-if)#Ipv6 ospf 100 area 0
```

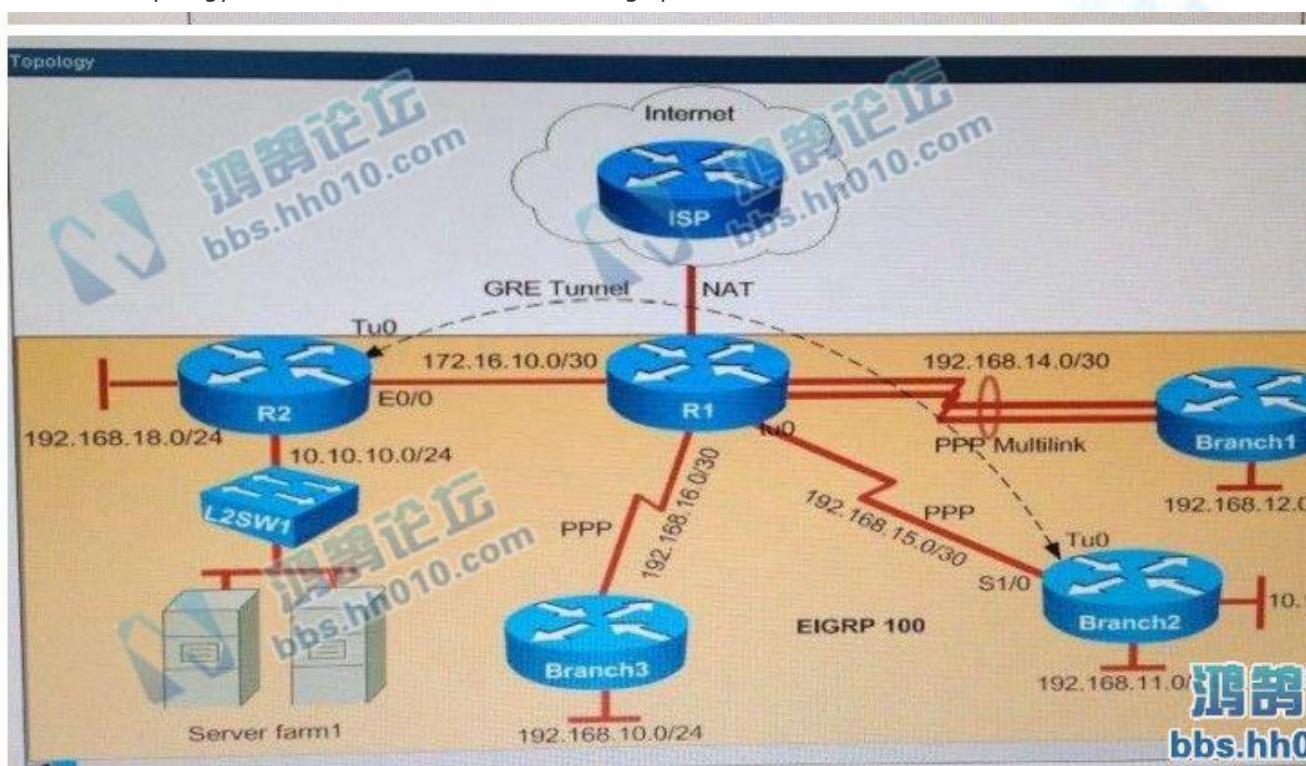
```
HQ(config-if)#end
```

5-保存

```
HQ #copy run start
```

## 6 GRE Tunnel

Refer to the topology below and answer the following questions.



**Question 1**

Why is the Branch2 network 10.1 0.20.0/24 unable to communicate with the Server farm1 network 10.1

0.10.0/24 over the GRE tunnel?

- A. The GRE tunnel destination is not configured on the R2 router.
- B. The GRE tunnel destination is not configured on the Branch2 router.
- C. The static route points to the tunnel0 interface that is misconfigured on the Branch2 router.
- D. The static route points to the tunnel0 interface that is misconfigured on the R2 router.

Answer: C

Explanation

The Branch2 network is communicating to the Server farm, which is connected to R2, via GRE Tunnel so we should check the GRE tunnel first to see if it is in "up/up" state with the "show ip interface brief" command on the two routers.

On Branch2:

```
Branch2#show ip interface brief
```

| Interface   | IP-Address   | OK? | Method | Status                | Protocol |
|-------------|--------------|-----|--------|-----------------------|----------|
| Ethernet0/0 | 10.10.20.1   | YES | manual | up                    | up       |
| Ethernet0/1 | 192.168.11.1 | YES | manual | up                    | up       |
| Ethernet0/2 | unassigned   | YES | unset  | administratively down | down     |
| Ethernet0/3 | unassigned   | YES | unset  | administratively down | down     |
| Serial1/0   | 192.168.15.2 | YES | manual | up                    | up       |
| Serial1/1   | unassigned   | YES | unset  | administratively down | down     |
| Serial1/2   | unassigned   | YES | unset  | administratively down | down     |
| Serial1/3   | unassigned   | YES | unset  | administratively down | down     |
| Tunnel0     | 192.168.24.2 | YES | manual | up                    | up       |

On R2:

```
R2#show ip interface brief
```

| Interface   | IP-Address   | OK? | Method | Status                | Protocol |
|-------------|--------------|-----|--------|-----------------------|----------|
| Ethernet0/0 | 172.16.10.2  | YES | manual | up                    | up       |
| Ethernet0/1 | 10.10.10.1   | YES | manual | up                    | up       |
| Ethernet0/2 | 192.168.18.1 | YES | manual | up                    | up       |
| Ethernet0/3 | unassigned   | YES | unset  | administratively down | down     |
| Tunnel0     | 192.168.24.1 | YES | manual | up                    | up       |

We see interfaces Tunnel0 at two ends are "up/up" which are good so we should check for the routing part on two routers with the "show running-config" command and pay attention to the static routing of each router. On Branch2 we see:

```
Branch2#show running-config
<output omitted>
ip route 10.10.10.0 255.255.255.0 192.168.24.10
```

The destination IP address for this static route is not correct. It should be 192.168.24.1 (Tunnel0's IP address of R2), not 192.168.24.10 -> Answer C is correct.

Note: You can use the "show ip route" command to check the routing configuration on each router but if the destination is not reachable (for example: we configure "ip rout

e 10.10.10.0 255.255.255.0 192.168.24.10" on Branch2, but if 192.168.24.10 is unknown then Branch2 router will not display this routing entry in its routing table.

Note: The IP address or configuration may be different in the exam.

### Question 2

Why has the Branch3 router lost connectivity with R1? Use only show commands to troubleshoot

because usage of the debug command is restricted on the Branch3 and R1 routers.

- A. A PPP chap hostname mismatch is noticed between Branch3 and R1.
- B. A PPP chap password mismatch is noticed between Branch3 and R1.
- C. PPP encapsulation is not configured on Branch3.
- D. The PPP chap hostname and PPP chap password commands are missing on the Branch3 router.

Answer: A

Explanation

First we should check Branch3 (and R1) with the "show ip interface brief" command to find any Layer1/Layer 2 issue.

```
Branch3# show ip interface brief
```

| Interface   | IP-Address   | OK? | Method | Status                | Protocol |
|-------------|--------------|-----|--------|-----------------------|----------|
| Ethernet0/0 | 192.168.10.1 | YES | manual | up                    | up       |
| Ethernet0/1 | unassigned   | YES | unset  | administratively down | down     |
| Ethernet0/2 | unassigned   | YES | unset  | administratively down | down     |
| Ethernet0/3 | unassigned   | YES | unset  | administratively down | down     |
| Serial1/0   | 192.168.16.2 | YES | manual | up                    |          |
| Serial1/1   | unassigned   | YES | unset  | administratively down | down     |
| Serial1/2   | unassigned   | YES | unset  | administratively down | down     |
| Serial1/3   | unassigned   | YES | unset  | administratively down | down     |

We see the interfaces connecting between them are in "up/down" states which indicate a Layer 2 issue so we should check the configuration of these interfaces carefully with the "show running-config" command and pay attention to these interfaces.

```
R1#show running-config
<output omitted>
interface Serial1/2
 ip address 192.168.16.1 255.255.255.252
 ip nat inside
 ip virtual-reassembly in
 encapsulation ppp
 ppp authentication chap
 serial restart-delay 0
```

and on Branch3:

```
Branch3# show running-config
<output omitted>
interface Serial1/0
 ip address 192.168.16.2 255.255.255.252
 encapsulation ppp
 ppp chap hostname Branch3
 ppp chap password 0 Branch3_Secret!
 serial restart-delay 0
```

We learn from above config is R1 is using CHAP to authenticate Branch3 router (via the "ppp authentication chap" command on R1). Branch3 router is sending CHAP host name "Branch\_3" and CHAP password "Branch3\_Secret!" to R1 to be authenticated. Therefore we should check if R1 has already been configured with such username and password or not with the "show running-config" command on R1:

```
R1#show running-config
<output omitted>
username Branch2 password 0 Branch2_Secret!
username Branch3 password 0 Branch3_Secret!
```

On R1 we see the configured username is "Branch3", not "Branch\_3" so the usernames here are mismatched and this is the problem -> Answer A is correct.

### Question 3

Which statement about the router configurations is correct?

- A. PPP PAP is authentication configured between Branch2 and R1.
- B. Tunnel keepalives are not configured for the tunnel0 interface on Branch2 and R2.
- C. The Branch2 LAN network 192.168.11 0/24 is not advertised into the EIGRP network.
- D. The Branch3 LAW network 192.168.10.0/24 is not advertised into the EIGRP network.
- E. PPP CHAP is authentication configured between Branch1 and R1.

Answer: D

Explanation

In this question we have to check each option to see if it is correct. When we check Branch3 router we notice that "network 192.168.10.0" command is missing under "router eigrp 100" -> Answer D is correct.

```
Branch3#show running-config
<output omitted>
!
router eigrp 100
 network 192.168.16.0
!
```

### Question 4

Why did Branch1 router lose WAN connectivity with R1 router?

- A. The IP address is misconfigured on PPP multilink interface on the Branch1 router.

- B. The PPP multilink group is misconfigured on the *f*ranch1 serial interfaces.
- C. The PPP multilink group is misconfigured on the R1 serial interfaces.
- D. The Branch1 serial interfaces are placed in a shutdown condition.

Answer: A

Explanation

This question clearly stated there is a WAN connectivity issue between R1 and Branch 1 so we should check both of them with the "show ip interface brief" command. On R 1:

```
R1#show ip interface brief
```

| Interface         | IP-Address          | OK? | Method | Status                | Protocol |
|-------------------|---------------------|-----|--------|-----------------------|----------|
| Ethernet0/0       | 172.16.10.1         | YES | manual | up                    | up       |
| Ethernet0/1       | 203.1.1.2           | YES | manual | up                    | up       |
| Ethernet0/2       | unassigned          | YES | unset  | administratively down | down     |
| Ethernet0/3       | unassigned          | YES | unset  | administratively down | down     |
| Serial1/0         | unassigned          | YES | unset  | up                    | up       |
| Serial1/1         | unassigned          | YES | unset  | up                    | up       |
| Serial1/2         | 192.168.16.1        | YES | manual | up                    | down     |
| Serial1/3         | 192.168.15.1        | YES | manual | up                    | down     |
| <u>Multilink1</u> | <u>192.168.14.1</u> | YES | manual | up                    | down     |
| NVI0              | unassigned          | NO  | unset  | up                    | up       |

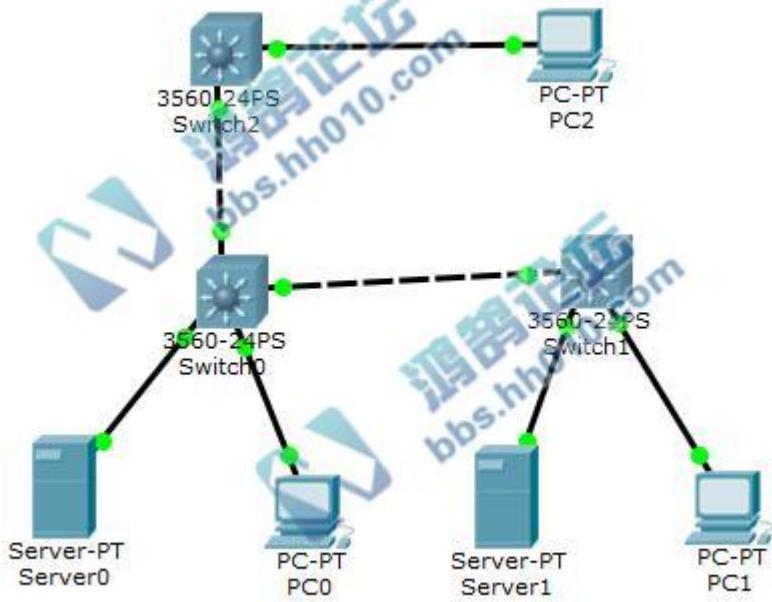
On Branch1:

```
Branch1#show ip interface brief
```

| Interface         | IP-Address          | OK? | Method | Status                | Protocol |
|-------------------|---------------------|-----|--------|-----------------------|----------|
| Ethernet0/0       | 192.168.12.1        | YES | manual | up                    | up       |
| Ethernet0/1       | unassigned          | YES | unset  | administratively down | down     |
| Ethernet0/2       | unassigned          | YES | unset  | administratively down | down     |
| Ethernet0/3       | unassigned          | YES | unset  | administratively down | down     |
| Serial1/0         | unassigned          | YES | unset  | up                    | up       |
| Serial1/1         | unassigned          | YES | unset  | up                    | up       |
| Serial1/2         | unassigned          | YES | unset  | administratively down | down     |
| Serial1/3         | unassigned          | YES | unset  | administratively down | down     |
| <u>Multilink1</u> | <u>192.168.41.2</u> | YES | manual | up                    | up       |

We can see that although the Multilink1 interfaces are in "up/up" state but they are not in the same subnet. According to the IP address scheme shown on the topology we can deduce the Multilink interface on Branch1 has been misconfigured, it should be 192.168.14.2 instead.

## 7 VLAN



题目拓扑如上图，需要按照题目要求配置 trunk 端口、本征 vlan，配置 access 端口并划分到 vlan。

本题的具体题目要求还有待完善，目前只给出了考试需要用到的命令，具体端口号需要根据题目改动。

本题需要的主要命令。

#### 1-配置 access 端口划分 vlan

**Switch>enable**

**Switch#configure terminal**

**Switch(config)#Interface fa/b**

**Switch(config-if)#Switchport mode access**

**Switch(config-if)#Switchport access vlan X**

**Switch(config-if)#end**

#### 2- 配置 trunk 端口

**Switch#configure terminal**

**Switch(config)#Interface f c/d**

**Switch(config-if)#switchport trunk encapsulation dot1q**

**Switch(config-if)#Switchport mode trunk**

**Switch(config-if)#end**

### 3-trunk 端口下配置本征 vlan

```
Switch#configure terminal
```

```
Switch(config)#interface f e/f
```

```
Switch(config-if)#switchport trunk native vlan Y
```

```
Switch(config-if)#end
```

### 4 配置完后保存

```
Switch# copy run start
```

## 8 ACL-1

An administrator is trying to ping and telnet from Switch to Router with the results shown below:

```
Switch>
```

```
Switch> ping 10.4.4.3
```

Type escape sequence to abort.

```
Sending 5, 100-byte ICMP Echos to 10.4.4.3,timeout is 2 seconds:
```

```
.U.U.U
```

Success rate is 0 percent (0/5)

```
Switch>
```

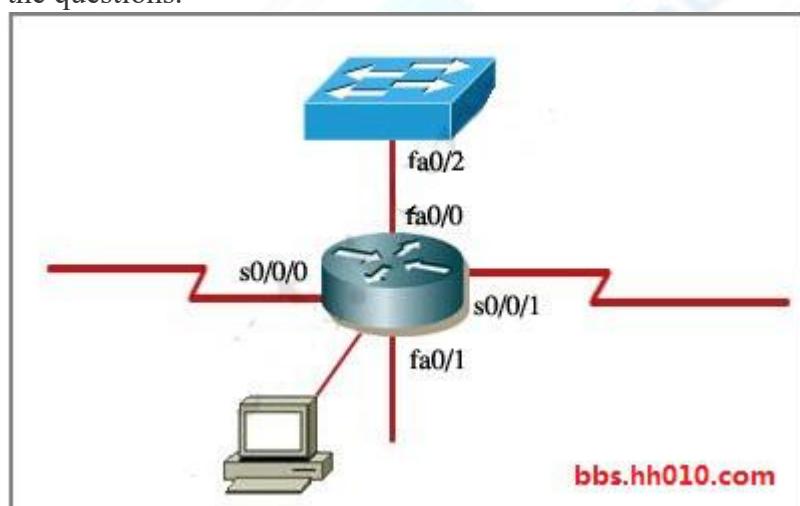
```
Switch> telnet 10.4.4.3
```

Trying 10.4.4.3 ...

% Destination unreachable; gateway or host down

```
Switch>
```

Click the console connected to Router and issue the appropriate commands to answer the questions.



注意：此题对应的 PTK 文件，因为部分命令模拟器不支持，所以配置和题库不一样，PKT 中 ACL 条目

不够，路由器配置以 PDF 题库为准。

**Router>enable** (需要输入密码: cisco)

**Router#show running-config**

(命令显示不全, 多按几次空格键即可)

```
<output omitted>

interface Loopback1
 ip address 172.16.4.1 255.255.255.0
!
interface Loopback2
 ip address 10.145.145.1 255.255.255.0
 ipv6 address 2001:410:2:3::/64 eui-64
!
interface FastEthernet0/0
 ip address 10.4.4.3 255.255.255.0
 ip access-group 106 in
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 bandwidth 64
 no ip address
 ip access-group 102 out
 encapsulation frame-relay
 ip ospf authentication
 ip ospf authentication-key san-fran
!
interface Serial0/0/0.1 point-to-point
 ip address 10.140.3.2 255.255.255.0
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 frame-relay interface-dlci 120
!
interface Serial0/0/1
 bandwidth 64
 ip address 10.45.45.1 255.255.255.0
 ip access-group 102 in
 ip authentication mode eigrp 100 md5
 ip authentication key-chain eigrp 100 icndchain
 ip ospf authentication
 ip ospf authentication-key san-fran
 ipv6 address 2001:410:2:10::/64 eui-64
!
```

```
router eigrp 100
network 10.0.0.0
network 172.16.0.0
network 192.168.2.0
no auto-summary
!
router ospf 100
log-adjacency-changes
network 10.4.4.3 0.0.0.0 area 0
network 10.45.45.1 0.0.0.0 area 0
network 10.140.3.2 0.0.0.0 area 0
network 192.168.2.62 0.0.0.0 area 0
!
router rip
version 2
network 10.0.0.0
network 172.16.0.0
!
ip default-gateway 10.1.1.2
!
!
ip http server
no ip http secure-server
!
```

```
access-list 102 permit tcp any any eq ftp
access-list 102 permit tcp any any eq ftp-data
access-list 102 deny tcp any any eq telnet
access-list 102 deny icmp any any echo-reply
access-list 102 permit ip any any

access-list 104 permit tcp any any eq ftp
access-list 104 permit tcp any any eq ftp-data
access-list 104 deny tcp any any eq telnet
access-list 104 permit icmp any any echo
access-list 104 deny icmp any any echo-reply
access-list 104 permit ip any any

access-list 106 permit tcp any any eq ftp
access-list 106 permit tcp any any eq ftp-data
access-list 106 deny tcp any any eq telnet
access-list 106 permit icmp any any echo-reply
access-list 110 permit udp any any eq domain
access-list 110 permit udp any eq domain any
access-list 110 permit tcp any any eq domain
access-list 110 permit tcp any eq domain any
access-list 110 permit tcp any any

access-list 114 permit ip 10.4.4.0 0.0.0.255 any

access-list 115 permit ip 0.0.0.0 255.255.255.0 any

access-list 122 deny tcp any any
access-list 122 deny icmp any any echo-reply
access-list 122 permit ip any any
!
bbs.hh010.com
<output omitted>
```

**Question 1:**

Which will fix the issue and allow ONLY ping to work while keeping telnet disabled?

- A – Correctly assign an IP address to interface fa0/1
- B – Change the ip access-group command on fa0/0 from “in” to “out”
- C – Remove *access-group 106 in* from interface fa0/0 and add *access-group 115 in*.
- D – Remove *access-group 102 out* from interface s0/0/0 and add *access-group 114 in*
- E – Remove *access-group 106 in* from interface fa0/0 and add *access-group 104 in*

**Answer:**E

**Explanation:**

问：哪一个修改能只允许 ping，保持拒绝 telnet？

我们来看一下 access list 104：

```
access-list 104 permit tcp any any eq ftp
access-list 104 permit tcp any any eq ftp-data
access-list 104 deny tcp any any eq telnet
access-list 104 permit icmp any any echo
access-list 104 deny icmp any any echo-reply
access-list 104 permit ip any any
```

题目没有问关于 FTP 的流量，所以不用关心第一条和第二条。第三条拒绝了所有 telent，第四条允许所有 ping 请求包，第五条拒绝所有 ping 回应包。要注意 access list 104 应用的 in 方向，路由器回应 ping 的包是 out 方向，所有第五条不会影响 ping 路由器的 ICMP 流量，所以答案选 E。

**Question 2:**

What would be the effect of issuing the command **ip access-group 114 in** to the fa0/0 interface?

- A – Attempts to telnet to the router would fail
- B – It would allow all traffic from the 10.4.4.0 network
- C – IP traffic would be passed through the interface but TCP and UDP traffic would not
- D – Routing protocol updates for the 10.4.4.0 network would not be accepted from the fa0/0 interface

**Answer:** B

**Explanation:**

问：把 ip access-group 114 in 设置在 F0/0端口，会有什么影响？

```
access-list 114: access-list 114 permit ip 10.4.4.0 0.0.0.255 any
```

允许来自10.4.4.0/24 网段的所有流量

### Question 3:

What would be the effect of issuing the command **ip access-group 115 in** on the s0/0/1 interface?

- A – No host could connect to Router through s0/0/1
- B – Telnet and ping would work but routing updates would fail.
- C – FTP, FTP-DATA, echo, and www would work but telnet would fail
- D – Only traffic from the 10.4.4.0 network would pass through the interface

**Answer:** A

### Explanation:

问：把命令 **ip access-group 115 in** 设置在 **S0/0/1**端口，会有什么影响？

首先 S0/0/1端口已经配置了 ip access-group 102 in

```
interface Serial0/0/1
bandwidth 64
ip address 10.45.45.1 255.255.255.0
ip access-group 102 in
ip authentication mode eigrp 100 md5
ip authentication key-chain eigrp 100 icndchain
ip ospf authentication
ip ospf authentication-key san-fran
ipv6 address 2001:410:2:10::/64 eui-64
```

因为一个端口在一个方向只能设置一个 ACL，所以当我们设置 ip access-group 115 in，原先的 ip access-group 102 in 就被覆盖了。

```
access-list 115: access-list 114 permit ip 0.0.0.0 255.255.255.0 any
```

允许来自 x. x. x. 0网络的流量。

x. x. x. 0看上去像一个网络地址，所以选 A，因为网络地址不能作为 host 的 IP 地址。

但是如果掩码小于24位，x. x. x. 0也可能不是网络地址，比如10.45.44.0/16，这样看来 A 也不是非常准确。BCD 是肯定不对，排除法，考试还要选 A。

