Which two methods use IPsec to provide secure connectivity from the branch office to the headquarters office? (Choose two.)

A. DMVPN

B. MPLS VPN

C. Virtual Tunnel Interface (VTI)

D. SSL VPN

E. PPPoE

Answer: A, C

Even though you might not be responsible for configuring VPN tunnels (after all, it is often the responsibility of the security group staff to do so), you might have to build routing around them. Therefore, if you want the Internet connection to use the IPsec VPN and become the main link back to headquarters, additional configuration will be needed to support dynamic routing protocols.

There are four options to route dynamic routing protocols through an IPsec tunnel:

- Point-to-point generic routing encapsulation (P2P GRE)
- Virtual tunnel interface (VTI)
- Dynamic multipoint VPN (DMVPN)
- Group encrypted transport VPN (GET VPN)

What is a key benefit of using a GRE tunnel to provide connectivity between branch offices and headquarters?

A. authentication, integrity checking, and confidentiality

B. less overhead

C. dynamic routing over the tunnel

D. granular QoS support

E. open standard

F. scalability

Answer: C

GRE is a tunneling protocol developed by Cisco. It is capable of encapsulating a wide variety of network layer protocols packets inside IP tunnels. This creates virtual point-to-point links. It is a common option to use GRE to pass dynamic routing protocol traffic across an IPsec tunnel.

It is worth mentioning, though, that GRE tunnels do not provide encryption services. GRE is just an encapsulation protocol. It does not offer other services such as encryption. By default, the traffic leaves in clear text.

Point-to-point GRE encapsulates routing protocols in GRE first, and then the GRE packets are encapsulated in IPsec and encrypted. The routing protocols will be associated with tunnel interfaces, which will use the physical interface of the router to send GRE traffic that will then have to match the parameters of the crypto map and therefore be encrypted by IPsec.

Which DSL encapsulation method requires client software running on the end-user PC that is directly connected to a DSL modem?

A. PPPoA

B. PPPoE

C. PPP

D. L2TP

E. ATM

Answer: B

More on: Link1

What is the purpose of configuring the router as a PPPoE client?

A. to provide VPN access over L2TP

B. to enable PPP session from the router to the termination device at the headend for metro Ethernet connectivity

C. for DSL connectivity and removing the need for the end-user PC to run the PPPoE client software

D. for connecting the router to a cable modem, which bridges the Ethernet frames from the router to the cable modem termination system

Answer: C

More on: Link1

What is the international standard for transmitting data over a cable system?

A. PPPoE

B. DOCSIS

C. CMTS

D. AAL5

Answer: B

More on: Link1

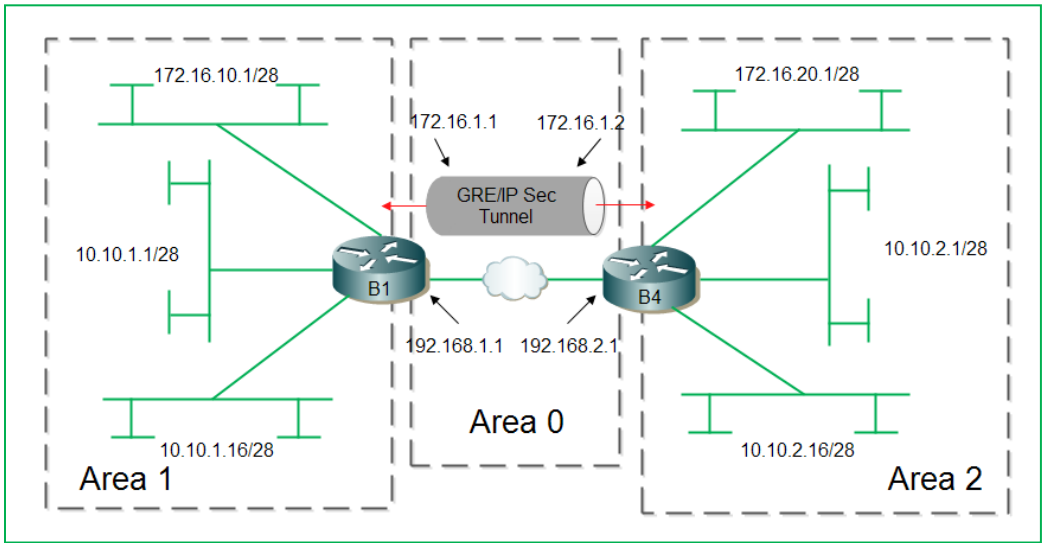
Under which circumstance will a branch ISR router contain interface vlan configurations?

A. performing inter-VLAN routing
B. performing 802.1Q trunking
C. performing ISL trunking
D. Ethernet Switch Module installed
E. ADSL WIC installed
F. running Call Manager Express

Answer: D

More on: Link1

Refer to the exhibit. A new TAC engineer came to you for advice. A GRE over IPsec tunnel was configured, but the tunnel is not coming up. What did the TAC engineer configure incorrectly?



Router B1 Configuration	**Router B1 Configuration (con't)**
crypto ipsec transform-set 10 esp-sha-hmec esp-3des crypto map tunnel 1 ipsec-isakmp set transform-set 10 set peer 192.168.2.1 match address 102 crypto isakmp policy 1 authentication pre-share group 2 crypto isakmp key***** address 192.168.2.1 access-list 102 permit gre host 192.168.1.1 host 192.168.2.1 access-list 102 permit udp host 192.168.1.1 eq isakmp host 192.168.2.1 deny any any log	interface F0/0 ip address 192.168.1.1 255.255.255.0 interface Tunnel0 ip address 172.16.1.1 255.255.255.0 crypto map tunnel tunnel source F0/0 tunnel destination 172.16.1.2 tunnel path-mtu-discovery ip ospf mtu-ignore router ospf 200 network 10.10.1.1 0.0.0.224 area 1 network 172.16.10.1 0.0.0.240 area 1 network 192.168.1.0 0.0.0.255 area 0

A. The crypto map is not configured correctly.

B. The crypto ACL is not configured correctly.

C. The crypto map is not applied to the correct interface.

D. The OSPF network is not configured correctly.

Answer: B

Configured ACL is as follows:

```
access-list 102 permit gre host 192.168.1.1 host 192.168.2.1
access-list 102 permit udp host 192.168.1.1 eq isakmp host 192.168.2.1
deny any any log
```

As we can see first statement of ACL No.102 is what we need to be properly configured. Second statement permits UDP port 500. (Link4)

Needed ACL statement is (Link3).

```
access-list 102 permit gre host 192.168.1.1 host 192.168.2.1
access-list 102 permit udp host 192.168.1.1 eq isakmp host 192.168.2.1
```

Interface configuration command ***ip ospf mtu-ignore*** is used to solve problems caused by MTU mismatch between OSPF neighbors. (Link1)

The ***tunnel path-mtu-discovery*** command helps the GRE interface set its IP MTU dynamically, rather than statically with the ***ip mtu*** command. It is actually recommended that both commands are used. The ***ip mtu*** command is used to provide room for the GRE and IPsec overhead relative to the local physical outgoing interface IP MTU. The ***tunnel path-mtu-discovery*** command allows the GRE tunnel IP MTU to be further reduced if there is a lower IP MTU link in the path between the IPsec peers. (Link2)

Proper configuration is as follows:

Router B1 Configuration

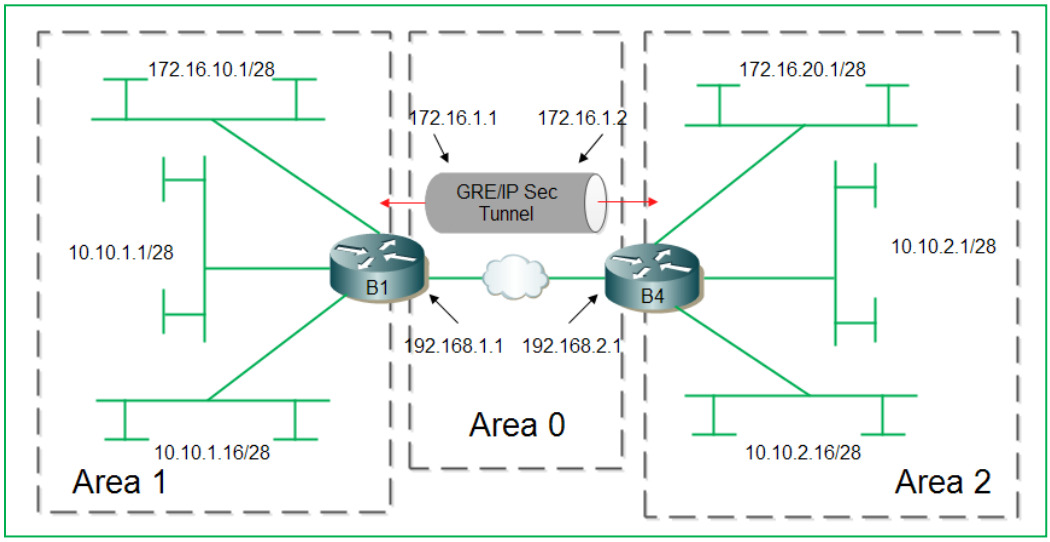
```
crypto ipsec transform-set 10 esp-sha-hmec esp-3des
crypto map tunnel 1 ipsec-isakmp
  set transform-set 10
  set peer 192.168.2.1
  match address 102
crypto isakmp policy 1
  authentication pre-share
  group 2
crypto isakmp key***** address 192.168.2.1
access-list 102 permit gre host 192.168.1.1 host 192.168.2.1
access-list 102 permit udp host 192.168.1.1 eq isakmp host 192.168.2.1
```

Router B1 Configuration (con't)

```
interface F0/0
  ip address 192.168.1.1 255.255.255.0
interface Tunnel0
  ip address 172.16.1.1 255.255.255.0
  crypto map tunnel
  tunnel source F0/0
  tunnel destination 192.168.2.1
  tunnel path-mtu-discovery
  ip ospf mtu-ignore
router ospf 200
  network 10.10.1.1 0.0.0.224 area 1
  network 172.16.10.1 0.0.0.240 area 1
  network 192.168.1.0 0.0.0.255 area 0
```

More on: Link1; Link2; Link3; Link4

Refer to the exhibit. A new TAC engineer came to you for advice. A GRE over IPsec tunnel was configured, but the tunnel is not coming up. What did the TAC engineer configure incorrectly?



Router B1 Configuration	**Router B1 Configuration (con't)**
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A. The crypto isakmp configuration is not correct.

B. The crypto map configuration is not correct.

C. The interface tunnel configuration is not correct.

D. The network configuration is not correct; network 172.16.1.0 is missing.

Answer: A

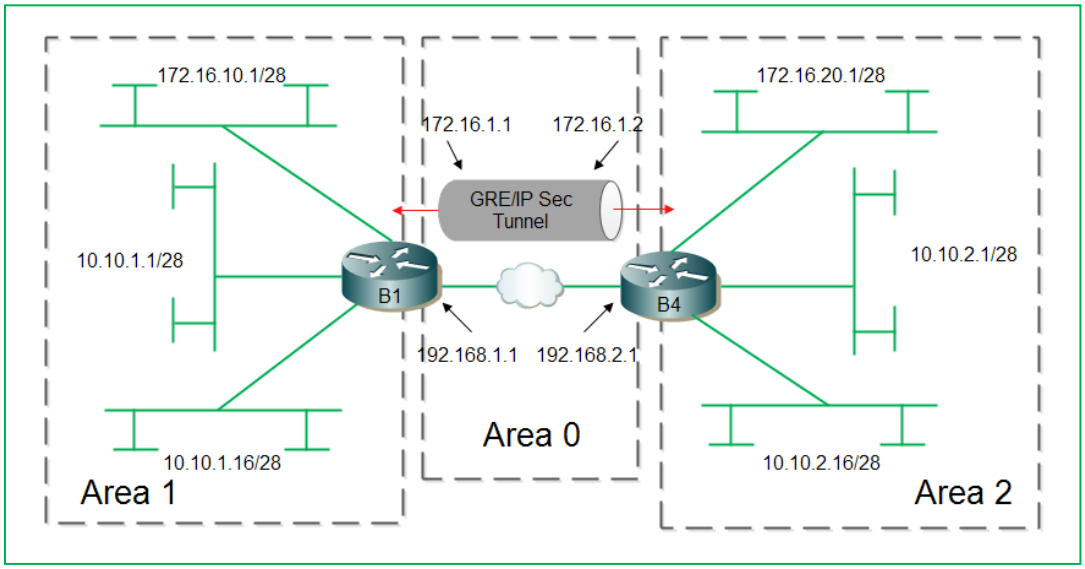
Proper configuration is as follows:

Router B1 Configuration	**Router B1 Configuration (con't)**

crypto ipsec transform-set 10 esp-sha-hmec esp-3des
crypto map tunnel 1 ipsec-isakmp
  set transform-set 10
  set peer 192.168.2.1
  match address 102
crypto isakmp policy 1
  authentication pre-share
  group 2
crypto isakmp key***** address 192.168.2.1
access-list 102 permit gre host 192.168.1.1 host 192.168.2.1
access-list 102 permit esp host 192.168.1.1 host 192.168.2.1
access-list 102 permit udp host 192.168.1.1 eq isakmp host 192.168.2.1
	interface F0/0
	  ip address 192.168.1.1 255.255.255.0
	interface Tunnel0
	  ip address 172.16.1.1 255.255.255.0
	  crypto map tunnel
	  tunnel source F0/0
	  tunnel destination 192.168.2.1
	  tunnel path-mtu-discovery
	  ip ospf mtu-ignore
	router ospf 200
	  network 10.10.1.1 0.0.0.224 area 1
	  network 172.16.10.1 0.0.0.240 area 1
	  network 192.168.1.0 0.0.0.255 area 0

More on: Link1

Refer to the exhibit. A new TAC engineer came to you for advice. A GRE over IPsec tunnel was configured, but the tunnel is not coming up. What did the TAC engineer configure incorrectly?



Router B1 Configuration	**Router B1 Configuration (con't)**
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A. configuration is not correct.

B. The crypto map configuration is not correct.

C. The network 172.16.1.0 is not included in the OSPF process.

D. The interface tunnel configuration is not correct.

Answer: D

Proper configuration is as follows:

Router B1 Configuration

```
crypto ipsec transform-set 10 esp-sha-hmec esp-3des
crypto map tunnel 1 ipsec-isakmp
  set transform-set 10
  set peer 192.168.2.1
  match address 102
crypto isakmp policy 1
  authentication pre-share
  group 2
crypto isakmp key***** address 192.168.2.1
access-list 102 permit gre host 192.168.1.1 host 192.168.2.1
access-list 102 permit esp host 192.168.1.1 host 192.168.2.1
access-list 102 permit udp host 192.168.1.1 eq isakmp host 192.168.2.1
```

Router B1 Configuration (con't)

```
interface F0/0
  ip address 192.168.1.1 255.255.255.0
interface Tunnel0
  ip address 172.16.1.1 255.255.255.0
  crypto map tunnel
  tunnel source F0/0
  tunnel destination  192.168.2.1
  tunnel path-mtu-discovery
  ip ospf mtu-ignore
router ospf 200
  network 10.10.1.1 0.0.0.224 area 1
  network 172.16.10.1 0.0.0.240 area 1
  network 192.168.1.0 0.0.0.255 area 0
```

More on: Link1