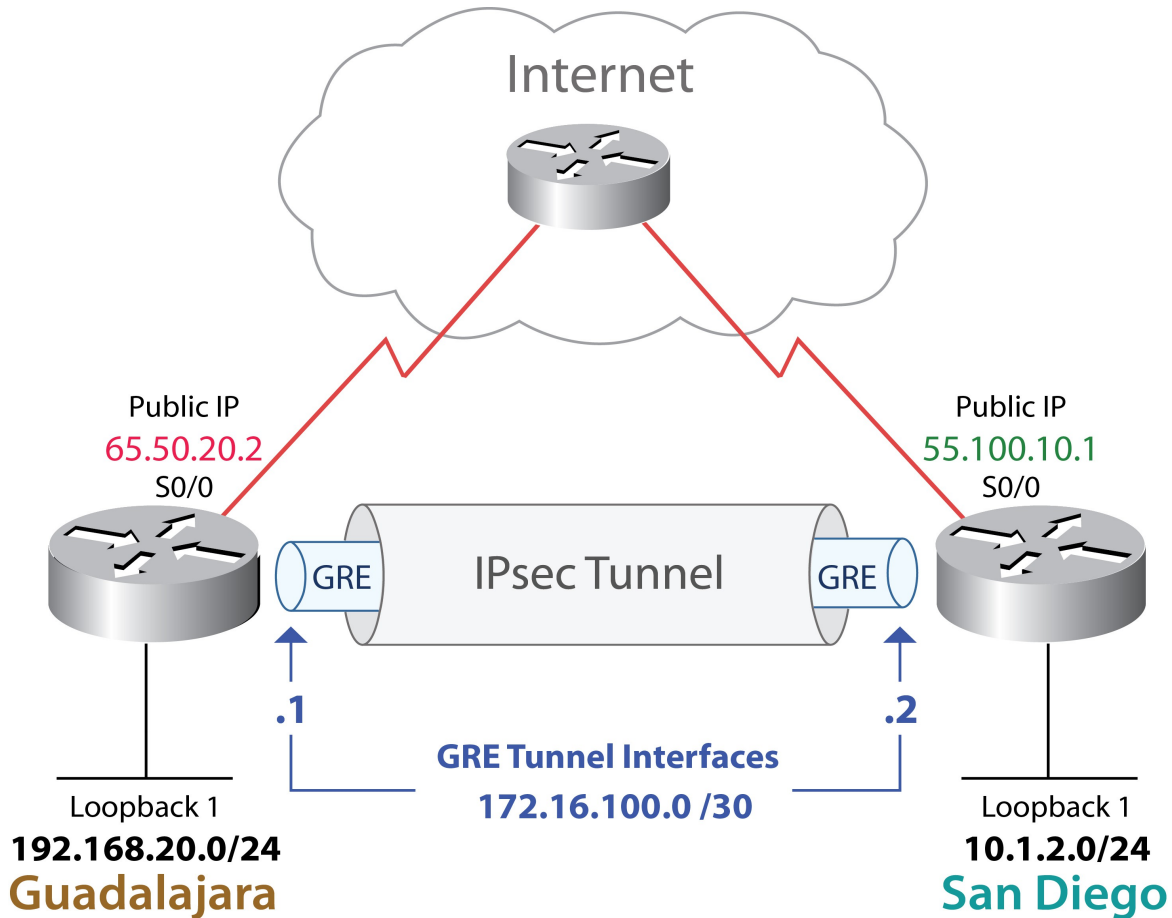


GRE over IPsec with EIRGP Routing

(By Angel Cool; Monday, April 8, 2013)



Topology Layout

Introduction

We'll configure a GRE tunnel over IPsec to allow dynamic routing with EIGRP between Sand Diego and Guadalajara. It is necessary to encrypt all data when using the Internet as a point-to-point connection between two remote locations; however, IPsec does not allow dynamic routing. If dynamic routing is desired, GRE tunnels must also be used.

Configuration Steps

1. Make sure reachability exists between the locations:

- (a) Ping San Diego

```
Guadalajara#ping 55.100.10.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 55.100.10.1, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 16/16/16 ms
```

(b) Ping Guadalajara

```
SanDiego#ping 65.50.20.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 65.50.20.2, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 16/16/16 ms
```

2. Crypto configuration

(a) San Diego

```
crypto isakmp policy 1
  authentication pre-share
```

```
crypto isakmp key MyPassword address 65.50.20.2
```

```
crypto ipsec transform-set MySet esp-3des esp-sha-hmac
```

```
crypto map MyMap 10 ipsec-isakmp
  set peer 65.50.20.2
  set transform-set MySet
  match address 101
```

```
access-list 101 permit gre host 55.100.10.1 host 65.50.20.2
```

```
interface s0/0
  crypto map MyMap
```

(b) Guadalajara

```
crypto isakmp policy 1
  authentication pre-share
```

```
crypto isakmp key MyPassword address 55.100.10.1
```

```
crypto ipsec transform-set MySet esp-3des esp-sha-hmac
```

```
crypto map MyMap 10 ipsec-isakmp
  set peer 55.100.10.1
  set transform-set MySet
  match address 101
```

```
access-list 101 permit gre host 65.50.20.2 host 55.100.10.1
```

```
interface s0/0
  crypto map MyMap
```

3. Configure GRE tunnels and loopback interfaces (to emulate LANs):

(a) San Diego

```
interface Loopback0
  ip address 10.1.2.1 255.255.255.0
```

```
interface Tunnel0
ip address 172.16.100.2 255.255.255.252
tunnel source s0/0
tunnel destination 65.50.20.2
```

(b) Guadalajara

```
interface Loopback0
ip address 192.168.20.1 255.255.255.0

interface Tunnel0
ip address 172.16.100.1 255.255.255.252
tunnel source s0/0
tunnel destination 55.100.10.1
```

4. Configure EIGRP

(a) San Diego

```
router eigrp 1
network 10.0.0.0
network 172.16.0.0
no auto-summary
```

(b) Guadalajara

```
router eigrp 1
network 172.16.0.0
network 192.168.20.0
no auto-summary
```

5. Verification

(a) San Diego

```
SanDiego#ping 192.168.20.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.20.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 28/30/32 ms
```

(b) Guadalajara

```
Guadalajara#ping 10.1.2.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 55.100.10.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 16/16/16 ms
```

Conclusion

San Diego and Guadalajara are able to exchange routes dynamically using the Internet as a point-to-point encrypted link. As a final note, the router (access lists) should permit inbound esp, ahp and UDP isakmp to allow support for VPN.

Comments or remarks:

<http://www.angelcool.net/sphblog/comments.php?y=13&m=04&entry=entry130408-185559>