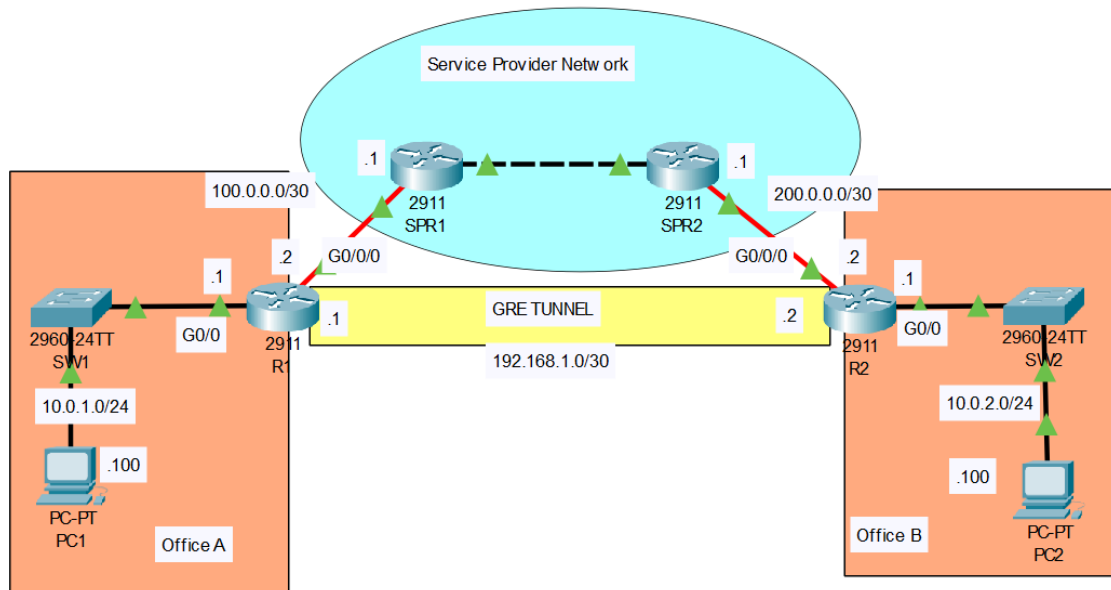


Student: Mono

Lab: Jeremy IT's Lab

Topic: GRE



1. Configure a GRE tunnel to connect R1 and R2.
2. Configure OSPF on the tunnel interfaces of R1 and R2, to allow PC1 and PC2 to communicate.

1.

Int Tunnel

Tunnel source

Tunnel destination

Int Tunnel ip address itself for the tunnel

R1

```
R1>
R1>en
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int ?
    Dialer          Dialer interface
    Dot11Radio       Dot11 interface
    Ethernet         IEEE 802.3
    FastEthernet     FastEthernet IEEE 802.3
    GigabitEthernet  GigabitEthernet IEEE 802.3z
    Loopback         Loopback interface
    Port-channel     Ethernet Channel of interfaces
    Serial           Serial
    Tunnel           Tunnel interface
    Virtual-Template Virtual Template interface
    Vlan             Catalyst Vlans
    range            interface range command
R1(config)#int tunnel ?
    <0-2147483647> Tunnel interface number
R1(config)#int tunnel 0

R1(config-if)#
%LINK-5-CHANGED: Interface Tunnel0, changed state to up

R1(config-if)#tunnel ?
    destination      destination of tunnel
    mode             tunnel encapsulation method
    source           source of tunnel packets
R1(config-if)#tunnel source ?
    Ethernet         IEEE 802.3
    FastEthernet     FastEthernet IEEE 802.3
    GigabitEthernet  GigabitEthernet IEEE 802.3z
    Loopback         Loopback interface
    Serial           Serial
R1(config-if)#tunnel source g0/0/0
R1(config-if)#tunnel destination ?
    A.B.C.D ip address
R1(config-if)#tunnel destination 200.0.0.2
R1(config-if)#ip add 192.168.1.1 255.255.255.252
R1(config-if)#
```

Verify – R1

```
R1(config)#do show ip int bri
Interface          IP-Address      OK? Method Status          Protocol
GigabitEthernet0/0 10.0.1.1        YES NVRAM    up              up
GigabitEthernet0/1 unassigned      YES NVRAM    administratively down down
GigabitEthernet0/2 unassigned      YES NVRAM    administratively down down
GigabitEthernet0/0/0 100.0.0.2      YES manual    up              up
Tunnel0            192.168.1.1    YES manual    up              down
Vlan1              unassigned      YES unset    administratively down down
```

Note: The protocol of tunnel 0 is down!

R2 – Config like R1

```
R2>en
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int tunnel 0

R2(config-if)#
%LINK-S-CHANGED: Interface Tunnel0, changed state to up

R2(config-if)#tunnel source g0/0/0
R2(config-if)#tunnel destination 100.0.0.2
R2(config-if)#
R2(config-if)#ip address 192.168.1.2 255.255.255.252
R2(config-if)#
R2(config-if)#do show ip int bri
Interface                IP-Address      OK? Method Status        Protocol
GigabitEthernet0/0       10.0.2.1        YES NVRAM    up            up
GigabitEthernet0/1       unassigned      YES NVRAM    administrativ down down
GigabitEthernet0/2       unassigned      YES NVRAM    administrativ down down
GigabitEthernet0/0/0     200.0.0.2       YES manual  up            up
Tunnel0                  192.168.1.2     YES manual  up            down
Vlan1                    unassigned      YES unset   administrativ down down
R2(config-if)#
```

After checking both ip routing tables of R1 and R2, there are no routes for them to reach each other. Therefore, configuring default routes for them is necessary!

R1

```
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    10.0.1.0/24 is directly connected, GigabitEthernet0/0
L    10.0.1.1/32 is directly connected, GigabitEthernet0/0
100.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    100.0.0.0/30 is directly connected, GigabitEthernet0/0/0
L    100.0.0.2/32 is directly connected, GigabitEthernet0/0/0
```

R2

```
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    10.0.2.0/24 is directly connected, GigabitEthernet0/0
L    10.0.2.1/32 is directly connected, GigabitEthernet0/0
200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    200.0.0.0/30 is directly connected, GigabitEthernet0/0/0
L    200.0.0.2/32 is directly connected, GigabitEthernet0/0/0
```

Config default routing!

```
R1(config)#ip route 0.0.0.0 0.0.0.0 100.0.0.1
```

```
R2(config)#ip route 0.0.0.0 0.0.0.0 200.0.0.1
```

Verify

R1

```

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    10.0.1.0/24 is directly connected, GigabitEthernet0/0
L    10.0.1.1/32 is directly connected, GigabitEthernet0/0
    100.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    100.0.0.0/30 is directly connected, GigabitEthernet0/0/0
L    100.0.0.2/32 is directly connected, GigabitEthernet0/0/0
    192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.1.0/30 is directly connected, Tunnel0
L    192.168.1.1/32 is directly connected, Tunnel0
S*  0.0.0.0/0 [1/0] via 100.0.0.1

```

R2

```

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    10.0.2.0/24 is directly connected, GigabitEthernet0/0
L    10.0.2.1/32 is directly connected, GigabitEthernet0/0
    192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.1.0/30 is directly connected, Tunnel0
L    192.168.1.2/32 is directly connected, Tunnel0
    200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    200.0.0.0/30 is directly connected, GigabitEthernet0/0/0
L    200.0.0.2/32 is directly connected, GigabitEthernet0/0/0
S*  0.0.0.0/0 [1/0] via 200.0.0.1

```

After I configured the default routes for R1 and R2, the routes of the tunnels showed up!

Now, R1 and R2 can ping each other using ip addresses of the tunnels.

2.

However, PC1 cannot ping PC2, vice versa because there are no routes to reach from the PCs' networks. That is why I need to configure OSPF on the tunnel interfaces of R1 and R2.

```

R1>en
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#network 192.168.1.1 0.0.0.0 area 0
R1(config-router)#network 10.0.1.1 0.0.0.0 area 0
R1(config-router)#passive int g0/0
      ^
% Invalid input detected at '^' marker.

R1(config-router)#passive-int g0/0
R1(config-router)#

```

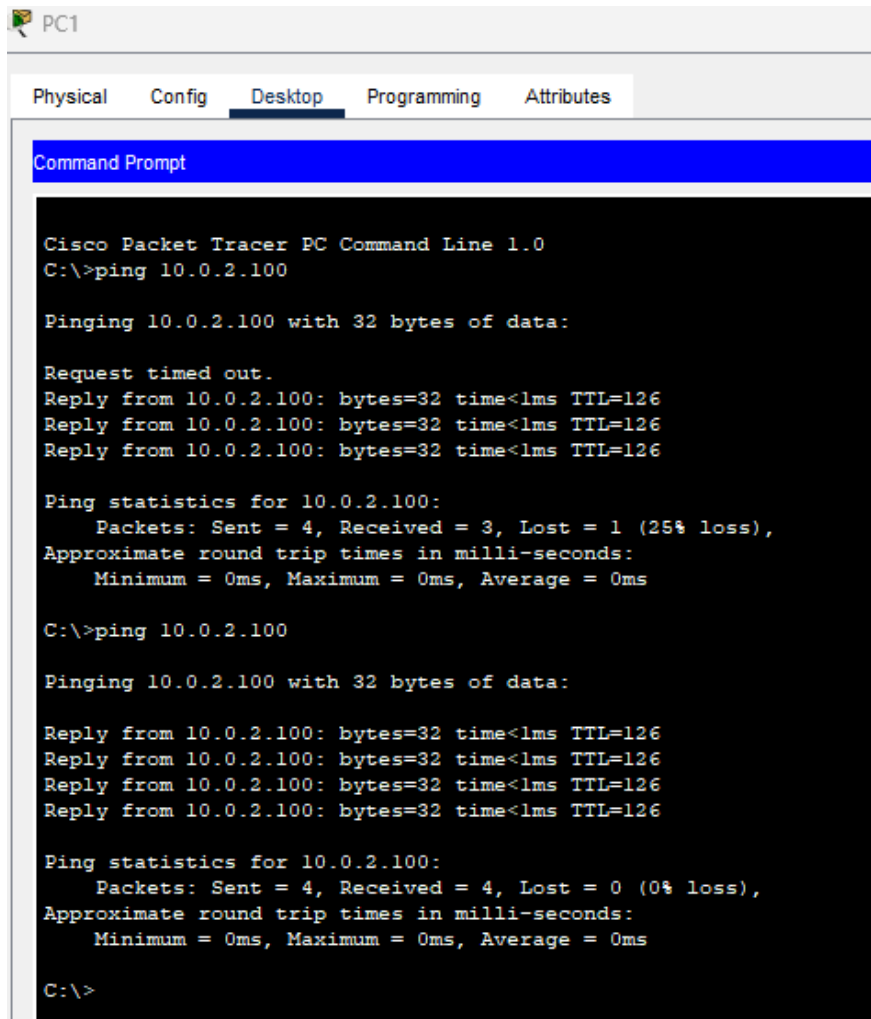
```

R2>en
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#network ?
  A.B.C.D Network number
R2(config-router)#network 192.168.1.2 ?
  A.B.C.D OSPF wild card bits
R2(config-router)#network 192.168.1.2 0.0.0.0 ?
  area Set the OSPF area ID
R2(config-router)#network 192.168.1.2 0.0.0.0 area 0

R2(config-router)#network 10.0.2.1 0.0.0.0 area 0
R2(config-router)#pass
R2(config-router)#passive-interface g0/0
R2(config-router)#exit
R2(config)#
R2(config)#exit

```

Verify



```

PC1

Physical  Config  Desktop  Programming  Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.2.100

Pinging 10.0.2.100 with 32 bytes of data:

Request timed out.
Reply from 10.0.2.100: bytes=32 time<1ms TTL=126
Reply from 10.0.2.100: bytes=32 time<1ms TTL=126
Reply from 10.0.2.100: bytes=32 time<1ms TTL=126

Ping statistics for 10.0.2.100:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.2.100

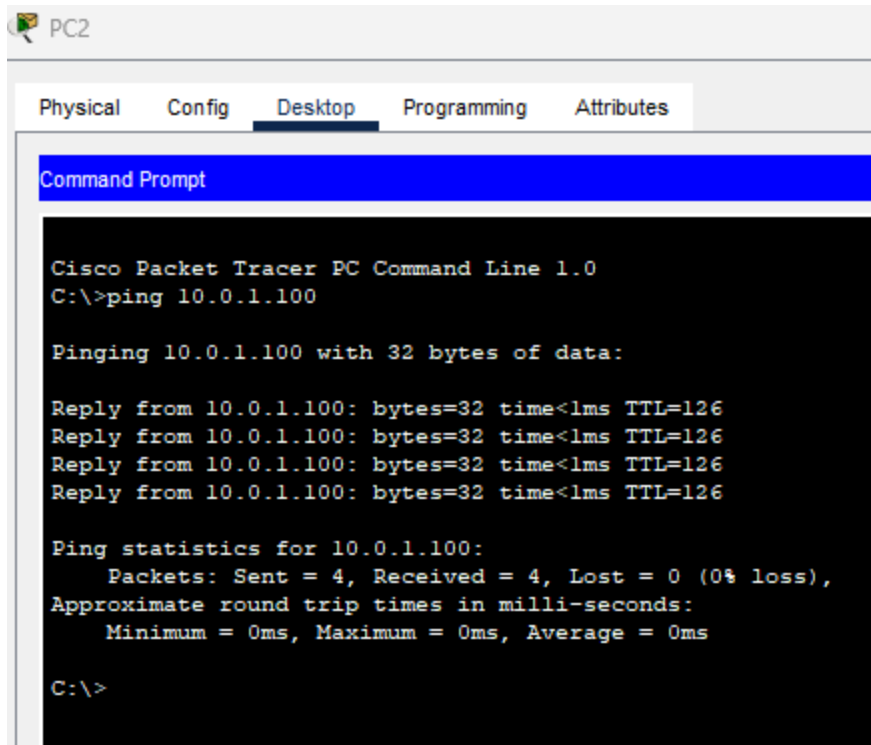
Pinging 10.0.2.100 with 32 bytes of data:

Reply from 10.0.2.100: bytes=32 time<1ms TTL=126
Reply from 10.0.2.100: bytes=32 time<1ms TTL=126
Reply from 10.0.2.100: bytes=32 time<1ms TTL=126
Reply from 10.0.2.100: bytes=32 time<1ms TTL=126

Ping statistics for 10.0.2.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>

```



The screenshot shows the 'PC2' window in Cisco Packet Tracer. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of a ping command to 10.0.1.100, which is successful. The output includes details about the data size (32 bytes), time (less than 1ms), and TTL (126). Ping statistics show 4 packets sent, 4 received, and 0% loss.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.1.100

Pinging 10.0.1.100 with 32 bytes of data:

Reply from 10.0.1.100: bytes=32 time<1ms TTL=126
Reply from 10.0.1.100: bytes=32 time<1ms TTL=126
Reply from 10.0.1.100: bytes=32 time<1ms TTL=126
Reply from 10.0.1.100: bytes=32 time<1ms TTL=126

Ping statistics for 10.0.1.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Another option, I can configure specific static routes for PC1 and PC2 reaching each other.