Static Routing

LAB 5

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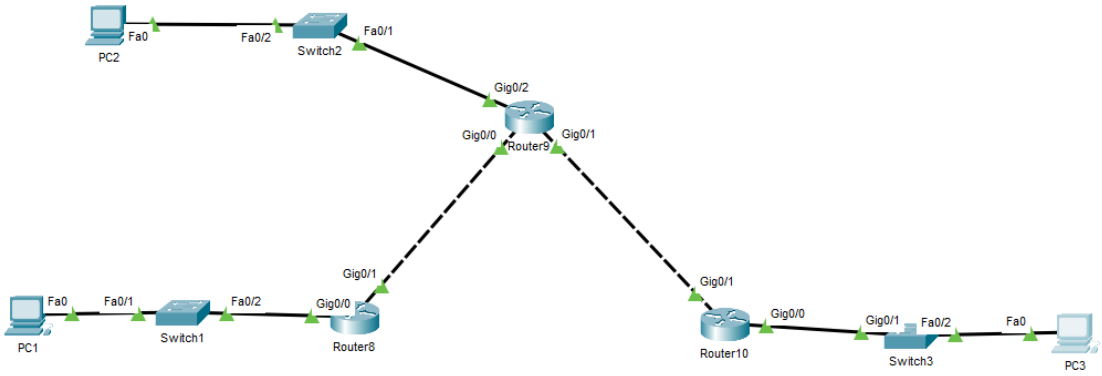


Figure 1 Network Topology

Q1: how many networks are there in total?

- 5

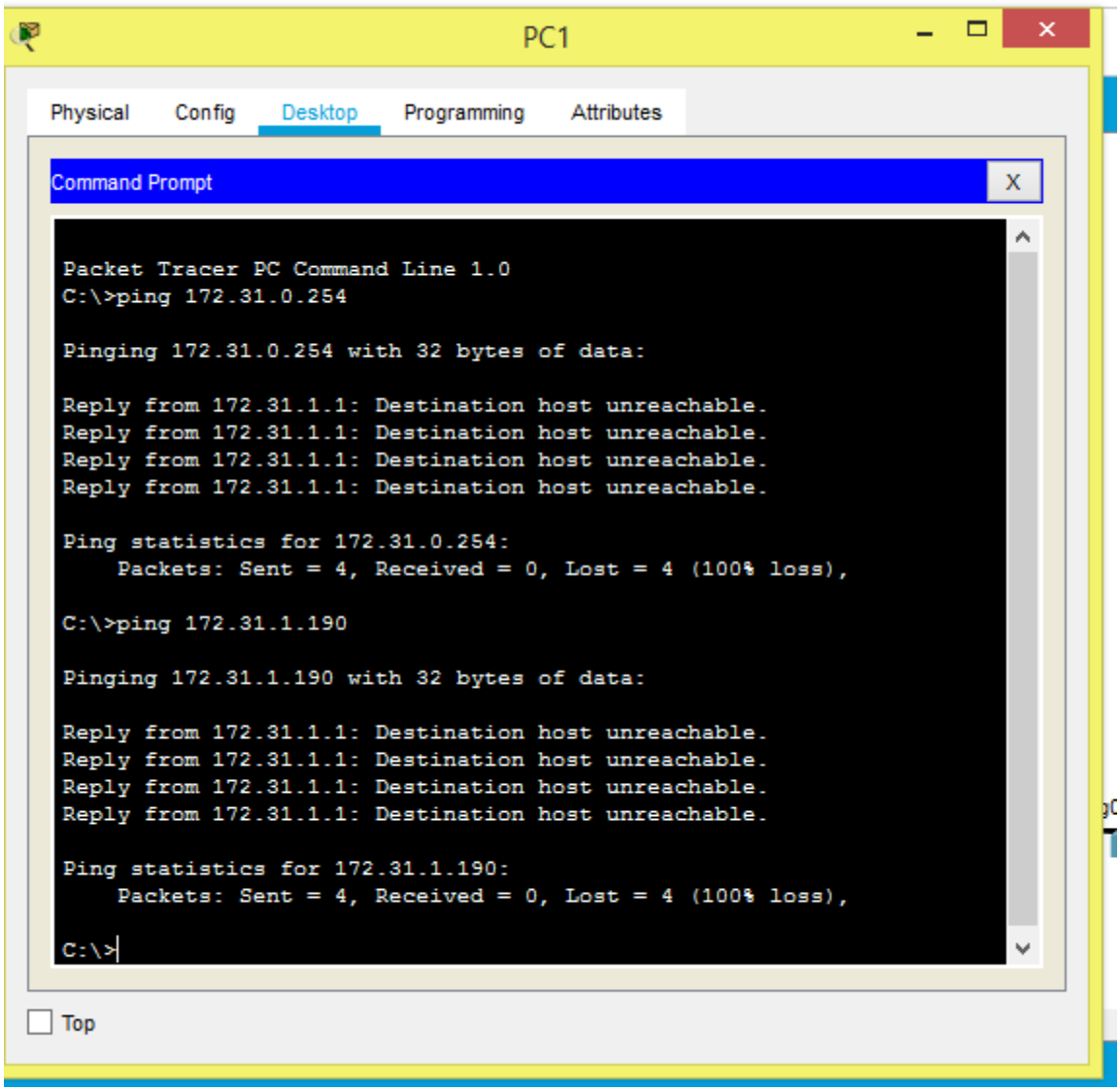
Q2: HOW MANY NETWORKS ARE DIRECTLY CONNECTED TO R1, R2, AND R3?

For R1 → 2 networks

For R2→3 networks

For R3 → 2 networks

Q3: TEST CONNECTIVITY TO THE R2 AND R3 LANS BY PINGING PC2 AND PC3 FROM PC1. SAVE SCREENSHOTS



In both cases, destination is not reachable.

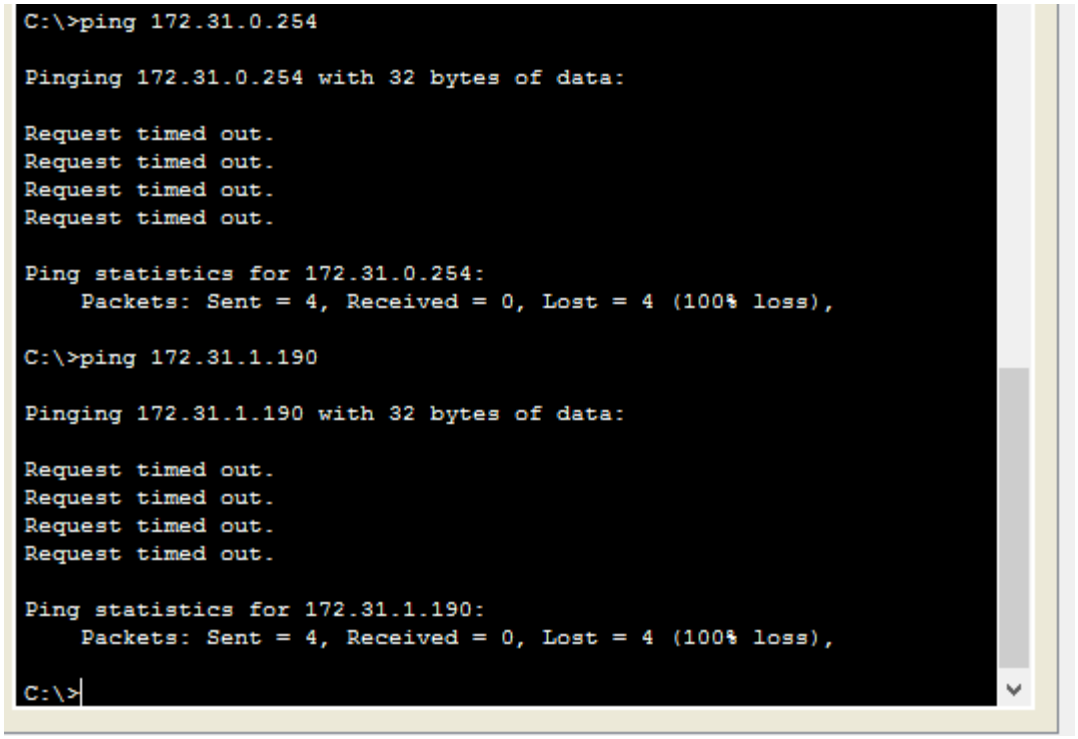
WHY WERE YOU UNSUCCESSFUL?

They belong to different lans .

Q5: HOW MANY STATIC ROUTES ARE REQUIRED BY EACH ROUTER TO REACH NETWORKS THAT ARE NOT DIRECTLY CONNECTED?

If we start by R1 → 3, R2→2 , R3→1

Q6: TEST CONNECTIVITY TO THE R2 LAN AND PING THE IP ADDRESSES OF PC2 AND PC3. WHY WERE YOU UNSUCCESSFUL? SAVE SCREENSHOTS



I think because R2 and R3 does not know how to reply to R1

Q7 : HOW MANY INTERFACES ON R1 , R2 AND R3 ARE CONFIGURED WITH IP ADDRESSES AND IN THE “UP” AND “UP” STATE? SAVE SCREENSHOTS

R1→2

R2→3

R3→2

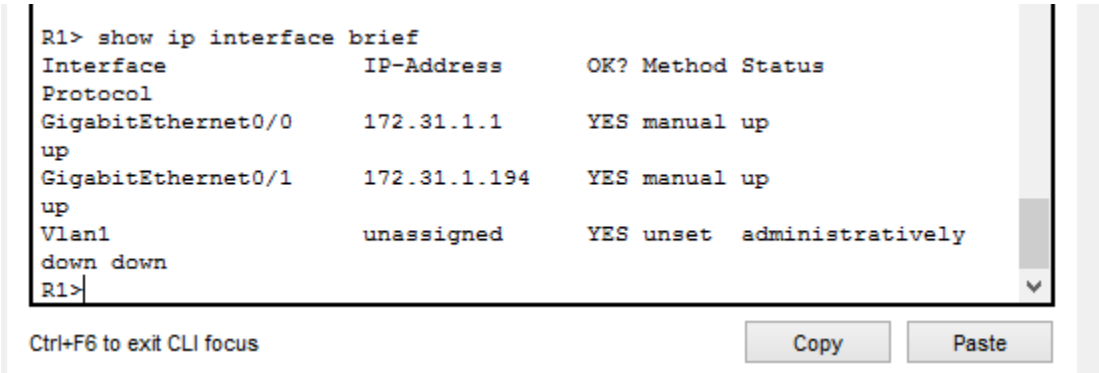


Figure 2 R1

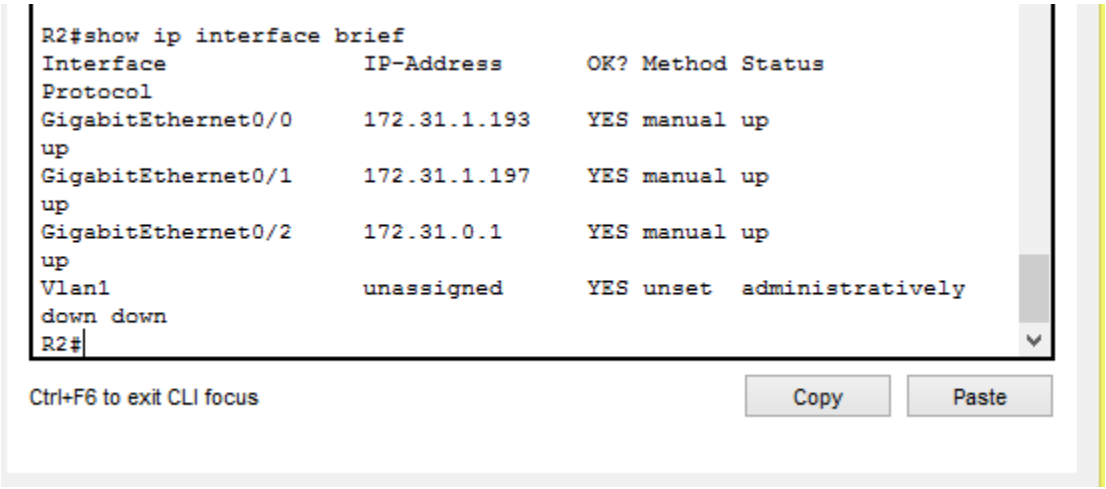


Figure 3 R2

```
Router#show ip interface brief
Interface              IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0     172.31.1.129    YES manual up
up
GigabitEthernet0/1     172.31.1.198    YES manual up
up
GigabitEthernet0/2     unassigned      YES unset  administratively
down down
Vlan1                  unassigned      YES unset  administratively
down down
Router#
```

Ctrl+F6 to exit CLI focus Copy Paste

Figure 4 R3

Q8: WHAT PART OF THE INTERFACE CONFIGURATION IS NOT DISPLAYED IN THE COMMAND OUTPUT?

the SUBNET MASK

```
     172.31.0.0/16 is variably subnetted, 7 subnets, 5 masks
S       172.31.0.0/24 [1/0] via 172.31.1.193
C       172.31.1.0/25 is directly connected, GigabitEthernet0/0
L       172.31.1.1/32 is directly connected, GigabitEthernet0/0
S       172.31.1.128/26 [1/0] via 172.31.1.193
C       172.31.1.192/30 is directly connected, GigabitEthernet0/1
L       172.31.1.194/32 is directly connected, GigabitEthernet0/1
S       172.31.1.196/30 [1/0] via 172.31.1.193

R1>
```

Ctrl+F6 to exit CLI focus

Figure 5 R1 show ip route

```
     172.31.0.0/16 is variably subnetted, 8 subnets, 5 masks
C       172.31.0.0/24 is directly connected, GigabitEthernet0/2
L       172.31.0.1/32 is directly connected, GigabitEthernet0/2
S       172.31.1.0/25 [1/0] via 172.31.1.194
S       172.31.1.128/26 [1/0] via 172.31.1.198
C       172.31.1.192/30 is directly connected, GigabitEthernet0/0
L       172.31.1.193/32 is directly connected, GigabitEthernet0/0
C       172.31.1.196/30 is directly connected, GigabitEthernet0/1
L       172.31.1.197/32 is directly connected, GigabitEthernet0/1

R2>
```

Figure 6 R2 show route

```
Router>show ip route
Codes: L - local, 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, E - EGP
       i - IS-IS, 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 172.31.1.197 to network 0.0.0.0

     172.31.0.0/16 is variably subnetted, 4 subnets, 3 masks
C       172.31.1.128/26 is directly connected, GigabitEthernet0/0
L       172.31.1.129/32 is directly connected, GigabitEthernet0/0
C       172.31.1.196/30 is directly connected, GigabitEthernet0/1
L       172.31.1.198/32 is directly connected, GigabitEthernet0/1
S*   0.0.0.0/0 [1/0] via 172.31.1.197

Router>
```

Figure 7 R3 show route

Q9: HOW MANY CONNECTED ROUTES (USES THE C CODE) DO YOU SEE ON EACH ROUTER?

R1→2

R2→3

R3→2

Q10: DOES THIS NUMBER MATCH THE NUMBER OF C AND D ROUTES SHOWN IN THE ROUTING TABLE?

Yes •

Q11: FROM THE COMMAND LINE ON PC1, PING PC2 AND PC3.

successful

```
C:\>ping 172.31.1.190

Pinging 172.31.1.190 with 32 bytes of data:

Reply from 172.31.1.190: bytes=32 time<1ms TTL=125
Reply from 172.31.1.190: bytes=32 time=11ms TTL=125
Reply from 172.31.1.190: bytes=32 time=11ms TTL=125
Reply from 172.31.1.190: bytes=32 time=13ms TTL=125

Ping statistics for 172.31.1.190:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 8ms

C:\>ping 172.31.0.254

Pinging 172.31.0.254 with 32 bytes of data:

Reply from 172.31.0.254: bytes=32 time<1ms TTL=126
Reply from 172.31.0.254: bytes=32 time=10ms TTL=126
Reply from 172.31.0.254: bytes=32 time=1ms TTL=126
Reply from 172.31.0.254: bytes=32 time=10ms TTL=126

Ping statistics for 172.31.0.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 5ms

C:\>
```

Q12: FROM THE COMMAND LINE ON R1, PING PC3.