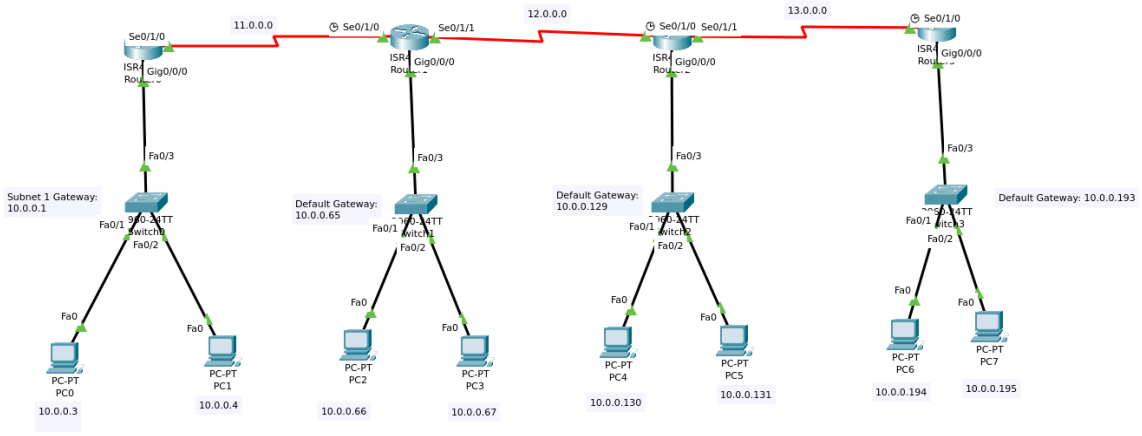
Q2) Static IP Routing in Cisco Packet Tracer

For this question, we will be using the same subnet networks done in Q3. but by using a single router for each subnet, instead of a single router as a whole.

Subnet and IP information:



SUBNET MASK = 255.255.255.192
SUBNET 1: 10.0.0.0
Default Gateway: 10.0.0.1
PC0: 10.0.0.2
PC1: 10.0.0.3

SUBNET 2:
Subnet IP: 10.0.0.64
Default Gateway: 10.0.0.65
PC2: 10.0.0.66
PC3: 10.0.0.67

SUBNET 3:
Subnet IP: 10.0.0.128
Default Gateway: 10.0.0.129
PC4: 10.0.0.130
PC5: 10.0.0.131

SUBNET 4:
Subnet IP: 10.0.0.192
Default Gateway: 10.0.0.193
PC6: 10.0.0.194
PC7: 10.0.0.195

All the routers are connected with each other through Serial ports.

IP for each serial network:
11.0.0.0
12.0.0.0
13.0.0.0

Assigning Static Routing in Router3 (Subnet 4):

IOS Command Line Interface

```
Router(config)#
Router(config)#ip route 10.0.0.128 255.255.255.192 13.0.0.1
Router(config)#ip route 12.0.0.0 255.0.0.0 13.0.0.1
Router(config)#ip route 10.0.0.64 255.255.255.192 13.0.0.1
Router(config)#ip route 11.0.0.0 255.0.0.0 13.0.0.1
Router(config)#ip route 10.0.0.0 255.255.255.192 13.0.0.1
Router(config)#
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#do show ip route
          ^
% Invalid input detected at '^' marker.

Router#enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#do 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 not set

     10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
S       10.0.0.0/26 [1/0] via 13.0.0.1
S       10.0.0.64/26 [1/0] via 13.0.0.1
S       10.0.0.128/26 [1/0] via 13.0.0.1
C       10.0.0.192/26 is directly connected, GigabitEthernet0/0/0
L       10.0.0.193/32 is directly connected, GigabitEthernet0/0/0
S    11.0.0.0/8 [1/0] via 13.0.0.1
S    12.0.0.0/8 [1/0] via 13.0.0.1
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       13.0.0.0/8 is directly connected, Serial0/1/0
L       13.0.0.2/32 is directly connected, Serial0/1/0

Router(config)#
```

Router 2(Subnet 3):

IOS Command Line Interface

```
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip route 10.0.0.192 255.255.255.192 13.0.0.2
Router(config)#ip route 10.0.0.64 255.255.255.192 12.0.0.1
Router(config)#ip route 11.0.0.0 255.0.0.0 12.0.0.1
Router(config)#ip route 10.0.0.0 255.255.255.192 12.0.0.1
Router(config)#
Router(config)#do 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 not set

     10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
S       10.0.0.0/26 [1/0] via 12.0.0.1
S       10.0.0.64/26 [1/0] via 12.0.0.1
C       10.0.0.128/26 is directly connected, GigabitEthernet0/0/0
L       10.0.0.129/32 is directly connected, GigabitEthernet0/0/0
S       10.0.0.192/26 [1/0] via 13.0.0.2
S    11.0.0.0/8 [1/0] via 12.0.0.1
     12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       12.0.0.0/8 is directly connected, Serial0/1/0
L       12.0.0.2/32 is directly connected, Serial0/1/0
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       13.0.0.0/8 is directly connected, Serial0/1/1
L       13.0.0.1/32 is directly connected, Serial0/1/1

Router(config)#
```

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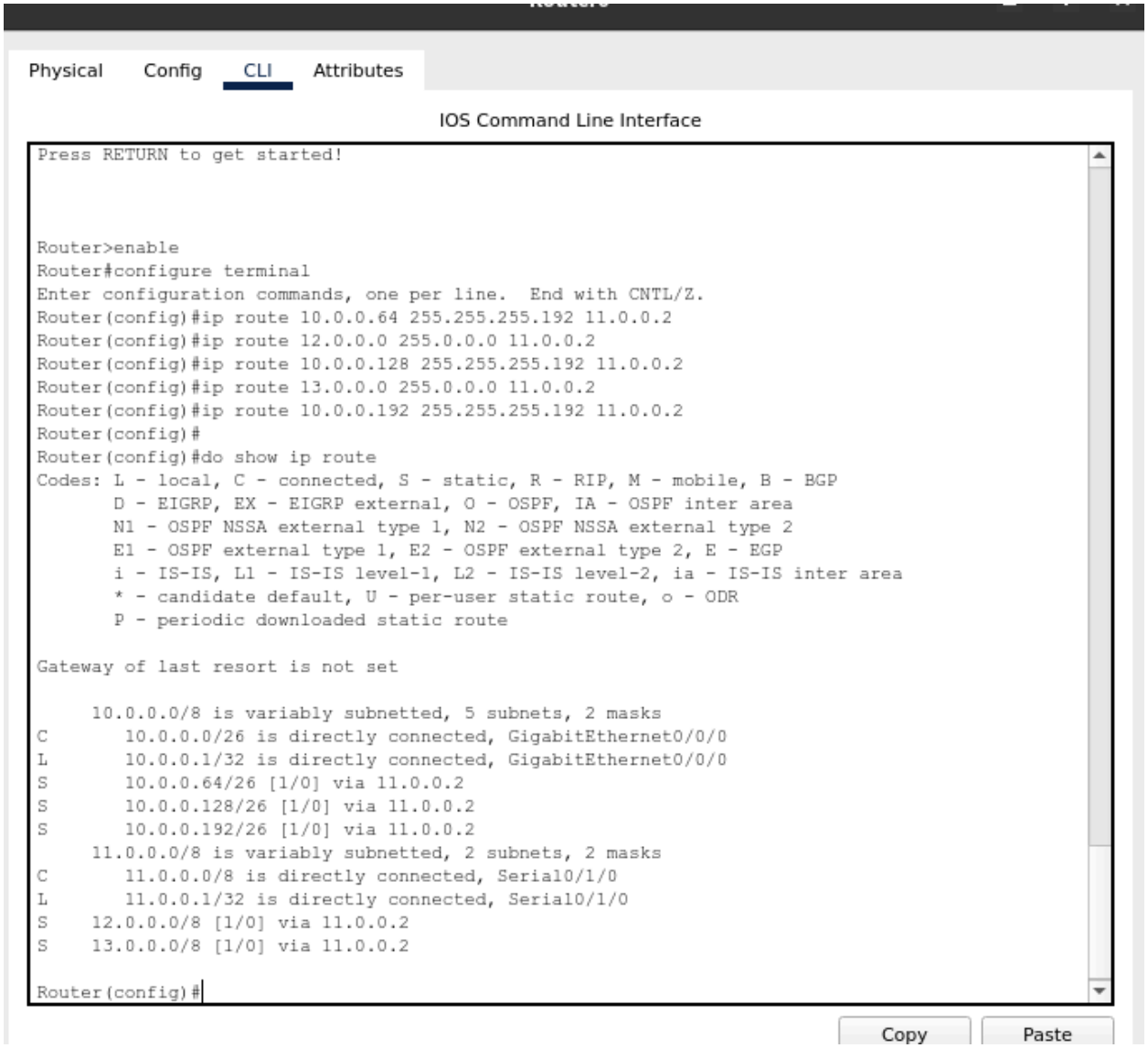
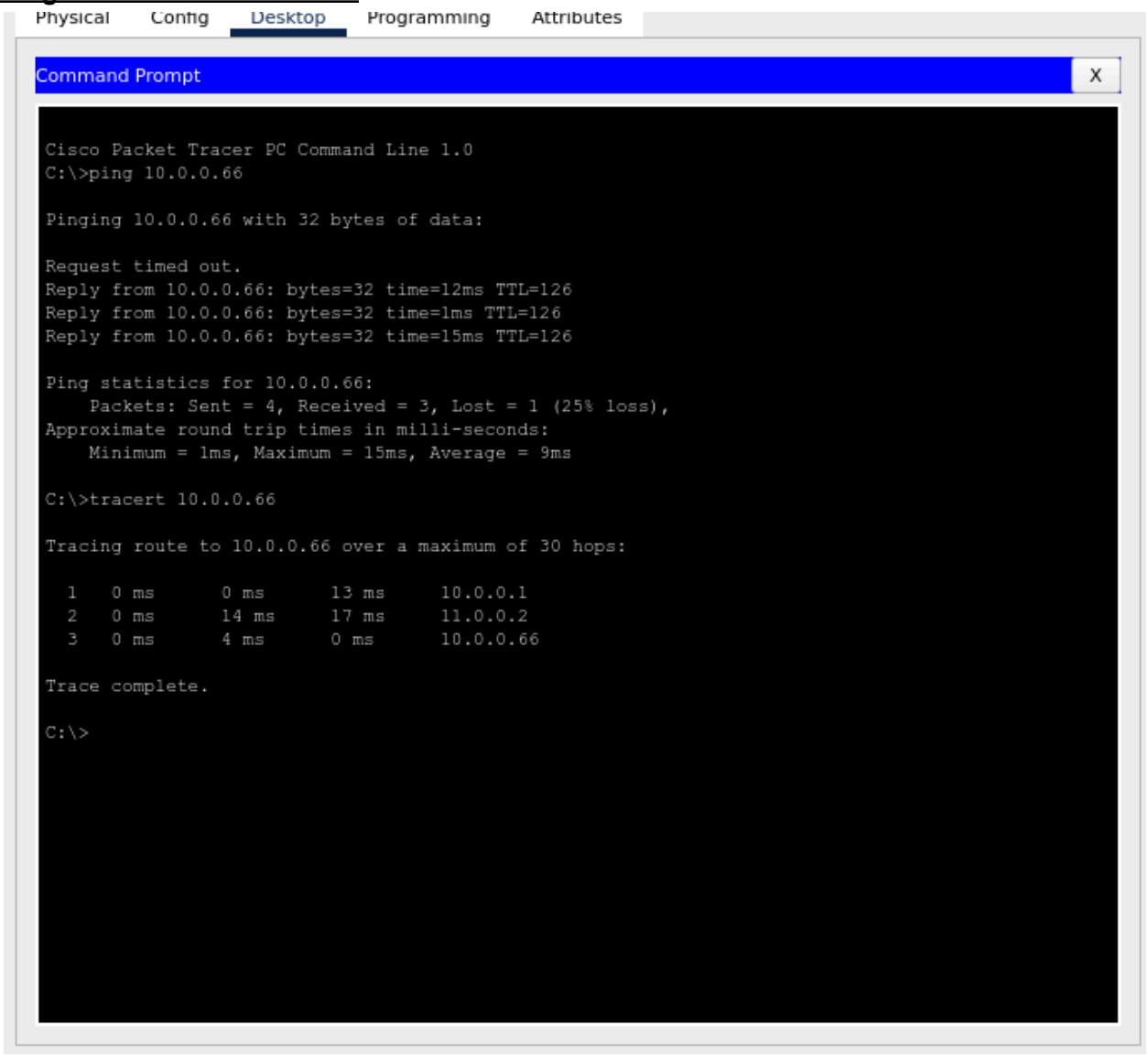
Router1 (Subnet 2):

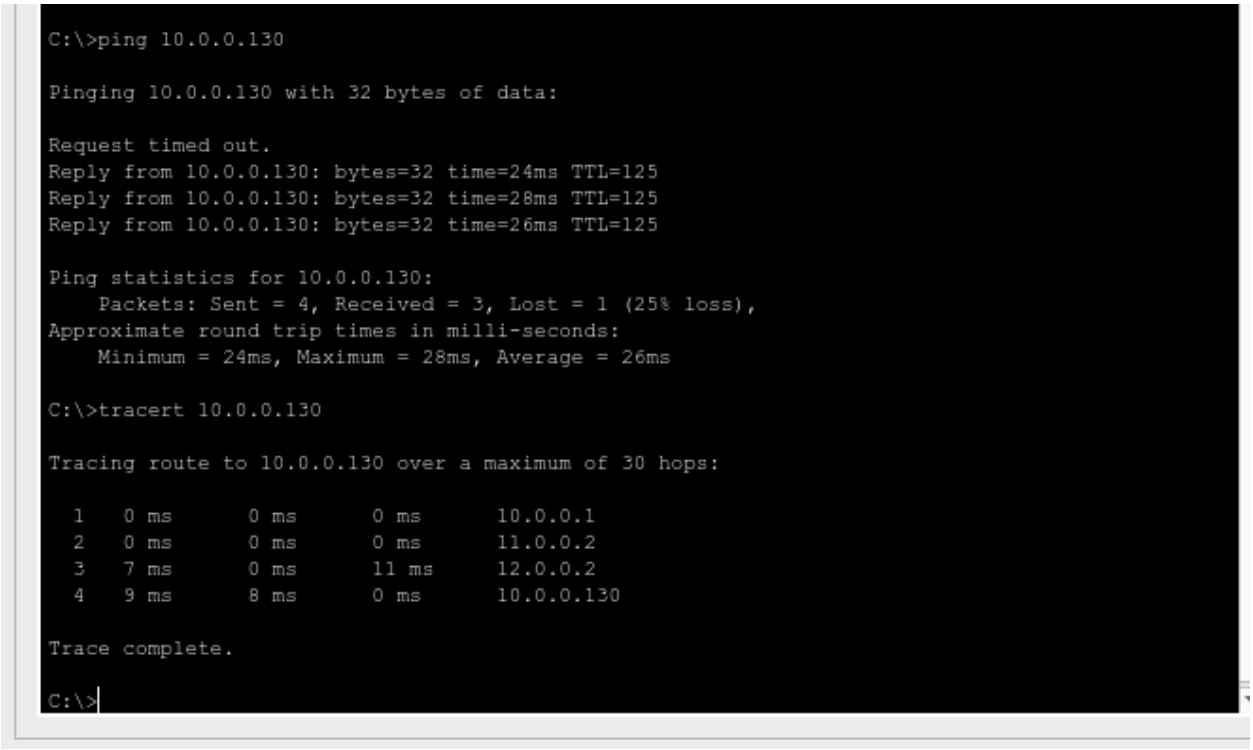
Router0 (Subnet 1):



Ping 10.0.0.66 from 10.0.0.2:

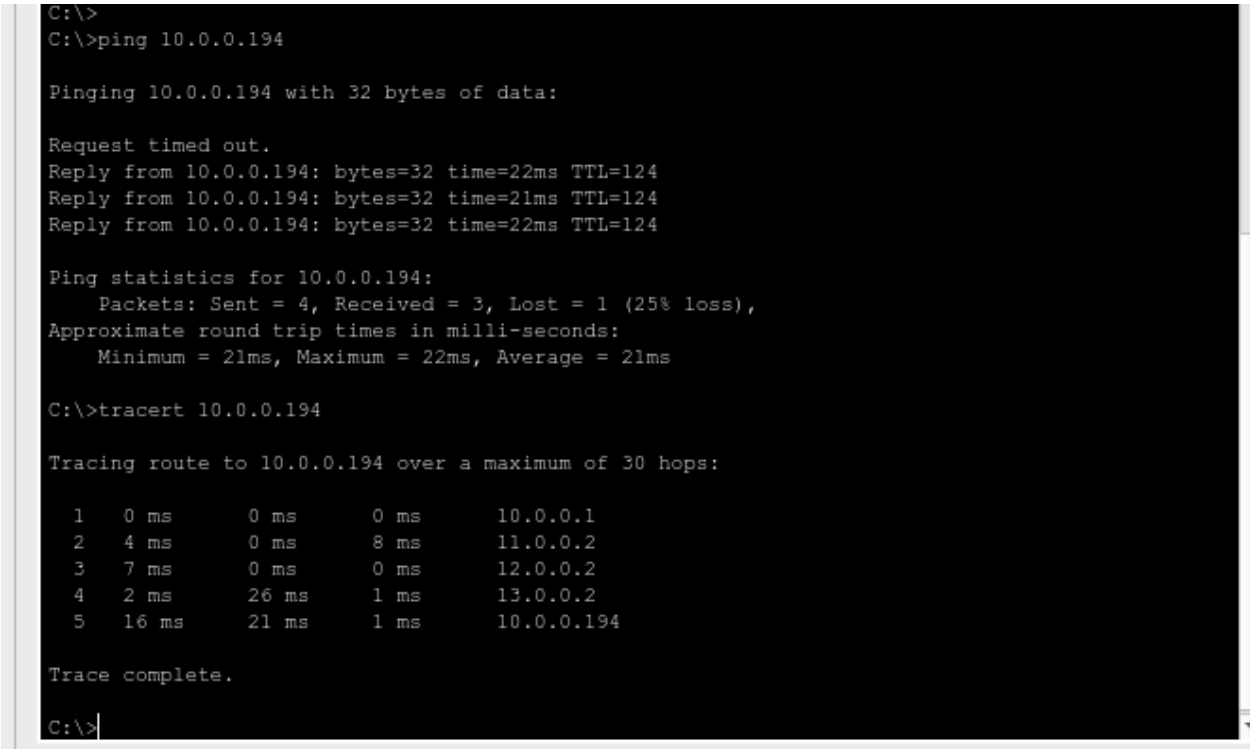


Ping 10.0.0.130 from 10.0.0.2:



```
C:\>ping 10.0.0.130

Pinging 10.0.0.130 with 32 bytes of data:

Request timed out.
Reply from 10.0.0.130: bytes=32 time=24ms TTL=125
Reply from 10.0.0.130: bytes=32 time=28ms TTL=125
Reply from 10.0.0.130: bytes=32 time=26ms TTL=125

Ping statistics for 10.0.0.130:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 24ms, Maximum = 28ms, Average = 26ms

C:\>tracert 10.0.0.130

Tracing route to 10.0.0.130 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      10.0.0.1
  2    0 ms      0 ms      0 ms      11.0.0.2
  3    7 ms      0 ms     11 ms      12.0.0.2
  4    9 ms      8 ms      0 ms      10.0.0.130

Trace complete.

C:\>
```

Ping 10.0.0.194 from 10.0.0.2:



```
C:\>
C:\>ping 10.0.0.194

Pinging 10.0.0.194 with 32 bytes of data:

Request timed out.
Reply from 10.0.0.194: bytes=32 time=22ms TTL=124
Reply from 10.0.0.194: bytes=32 time=21ms TTL=124
Reply from 10.0.0.194: bytes=32 time=22ms TTL=124

Ping statistics for 10.0.0.194:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 21ms, Maximum = 22ms, Average = 21ms

C:\>tracert 10.0.0.194

Tracing route to 10.0.0.194 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      10.0.0.1
  2    4 ms      0 ms      8 ms      11.0.0.2
  3    7 ms      0 ms      0 ms      12.0.0.2
  4    2 ms     26 ms      1 ms      13.0.0.2
  5   16 ms     21 ms      1 ms      10.0.0.194

Trace complete.

C:\>
```