LINUX NETWORKING MODULE 6 ASSESSMENT SOLUTION

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3. Given a network address of 10.0.0.0/24, divide it into 4 equal subnets. Calculate the new subnet mask. Determine the valid host range for each subnet. Assign IP addresses to devices in Packet Tracer and verify connectivity

Given Network: 10.0.0.0/24

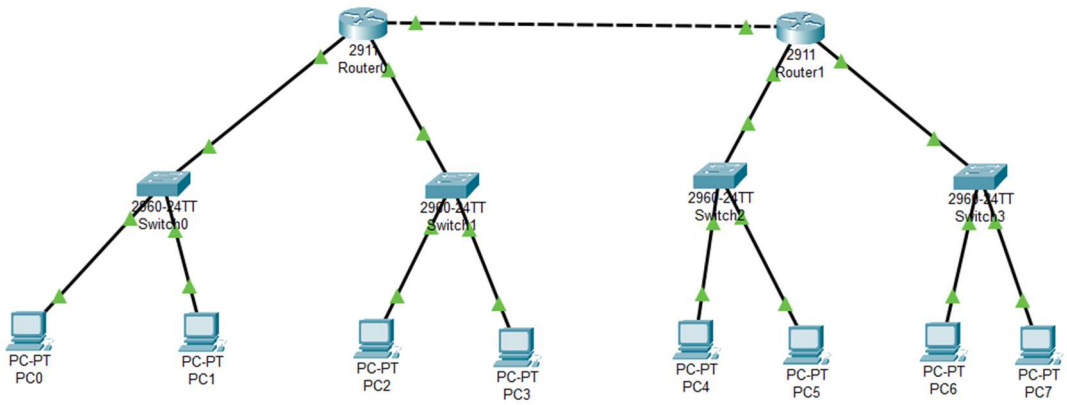
- CIDR Notation: /24 (Subnet Mask: 255.255.255.0)
- Total Addresses in /24: 2^8 = 256

Dividing into 4 Equal Subnets:

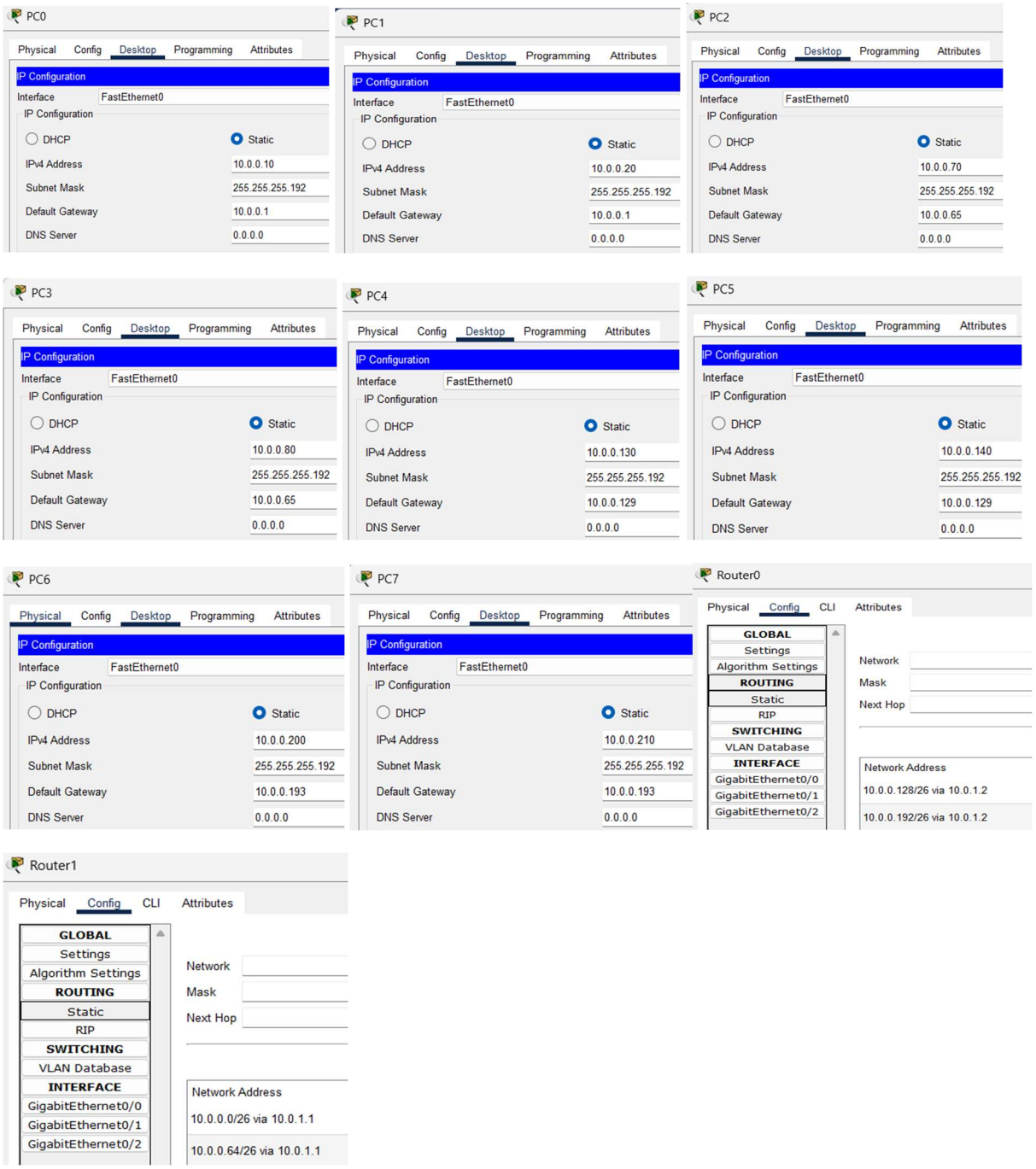
- New Subnet Mask: /26 (255.255.255.192)
- Each Subnet has:
    - 64 total IPs (2^ (32-26) = 64)
    - 62 usable host IPs (Subtracting Network & Broadcast IPs)

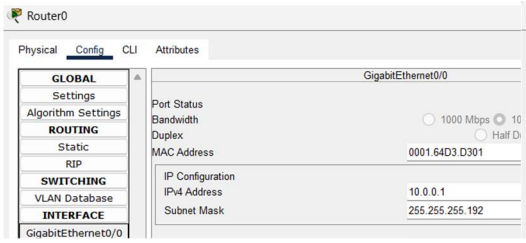
Subnet	Network Address	Usable IP Range	Broadcast Address
Subnet 1	10.0.0.0/26	10.0.0.1 - 10.0.0.62	10.0.0.63
Subnet 2	10.0.0.64/26	10.0.0.65 - 10.0.0.126	10.0.0.127
Subnet 3	10.0.0.128/26	10.0.0.129 - 10.0.0.190	10.0.0.191
Subnet 4	10.0.0.192/26	10.0.0.193 - 10.0.0.254	10.0.0.255

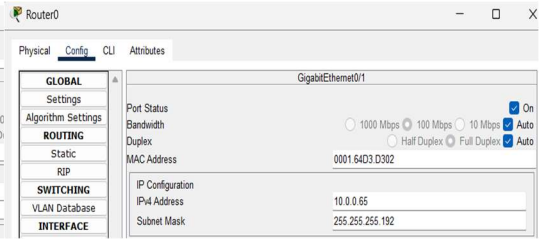
Topology:

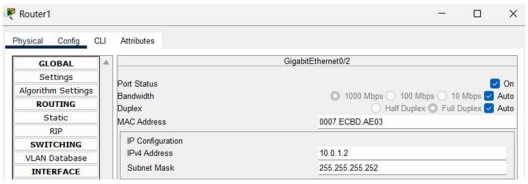


PC NAME	ASSIGNED IP	SUBNET MASK	DEFAULT GATEWAY	SUBNET
PC0	10.0.0.10	255.255.255.192	10.0.0.1	10.0.0.0/26
PC1	10.0.0.20	255.255.255.192	10.0.0.1	10.0.0.0/26
PC2	10.0.0.70	255.255.255.192	10.0.0.65	10.0.0.64/26
PC3	10.0.0.80	255.255.255.192	10.0.0.65	10.0.0.64/26
PC4	10.0.0.130	255.255.255.192	10.0.0.129	10.0.0.128/26
PC5	10.0.0.140	255.255.255.192	10.0.0.129	10.0.0.128/26
PC6	10.0.0.200	255.255.255.192	10.0.0.193	10.0.0.192/26
PC7	10.0.0.210	255.255.255.192	10.0.0.193	10.0.0.192/26



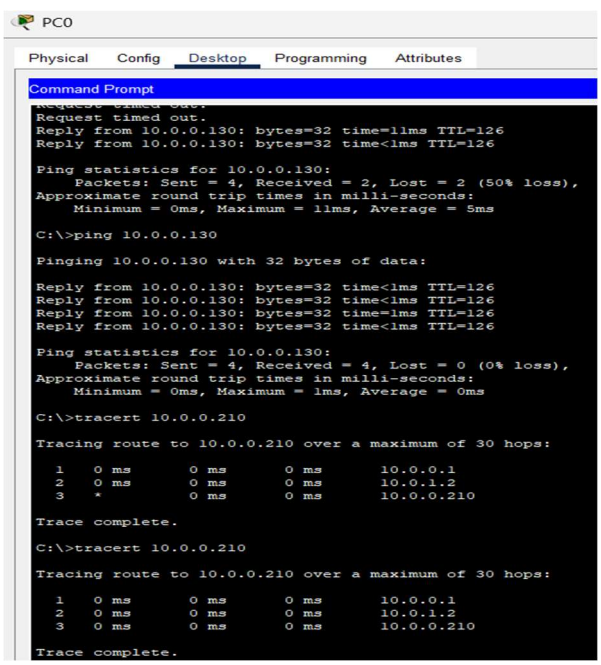


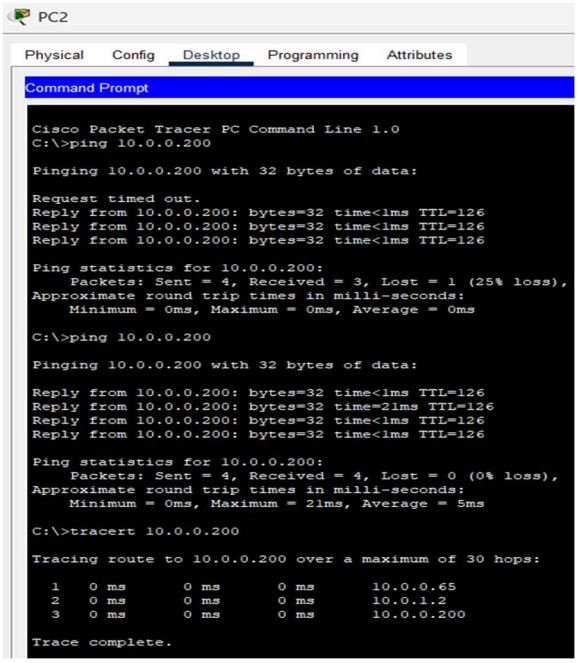


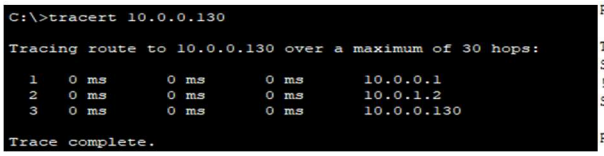


Ping Tests and Tracert Test:

- From PC0, ping PC4: ping 10.0.0.130 and Traceroute to PC4: tracert 10.0.0.130
- From PC2, ping PC6 : ping 10.0.0.200 and Traceroute to PC6: tracert 10.0.0.200
- From PC0, trace the route to PC7 : tracert 10.0.0.210
- Ping from Router1 to Router2 : ping 10.0.0.65, Router2 to Router1 : ping 10.0.0.1







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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       10.0.1.2
  3    0 ms       0 ms       0 ms       10.0.0.130

Trace complete.
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```
Router#ping 10.0.0.65

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.65, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 14/21/48 ms

Router#
```

```
Router>ping 10.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms
```