

## 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

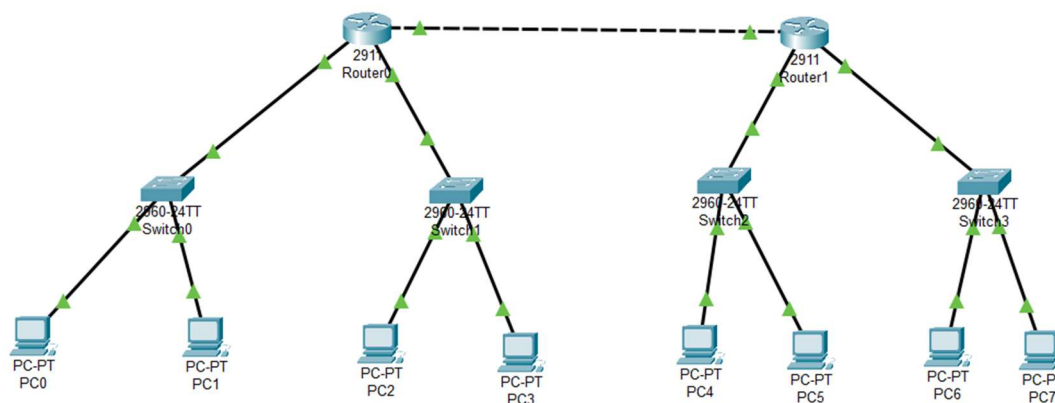
- CIDR Notation: /24 (Subnet Mask: 255.255.255.0)
- Total Addresses in /24:  $2^8 = 256$

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

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.10

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.1

DNS Server 0.0.0.0

PC1

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.20

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.1

DNS Server 0.0.0.0

PC2

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.70

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.65

DNS Server 0.0.0.0

PC3

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.80

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.65

DNS Server 0.0.0.0

PC4

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.130

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.129

DNS Server 0.0.0.0

PC5

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.140

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.129

DNS Server 0.0.0.0

PC6

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.200

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.193

DNS Server 0.0.0.0

PC7

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.210

Subnet Mask 255.255.255.192

Default Gateway 10.0.0.193

DNS Server 0.0.0.0

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

Network

Mask

Next Hop

Network Address

10.0.0.128/26 via 10.0.1.2

10.0.0.192/26 via 10.0.1.2

Router1

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

Network

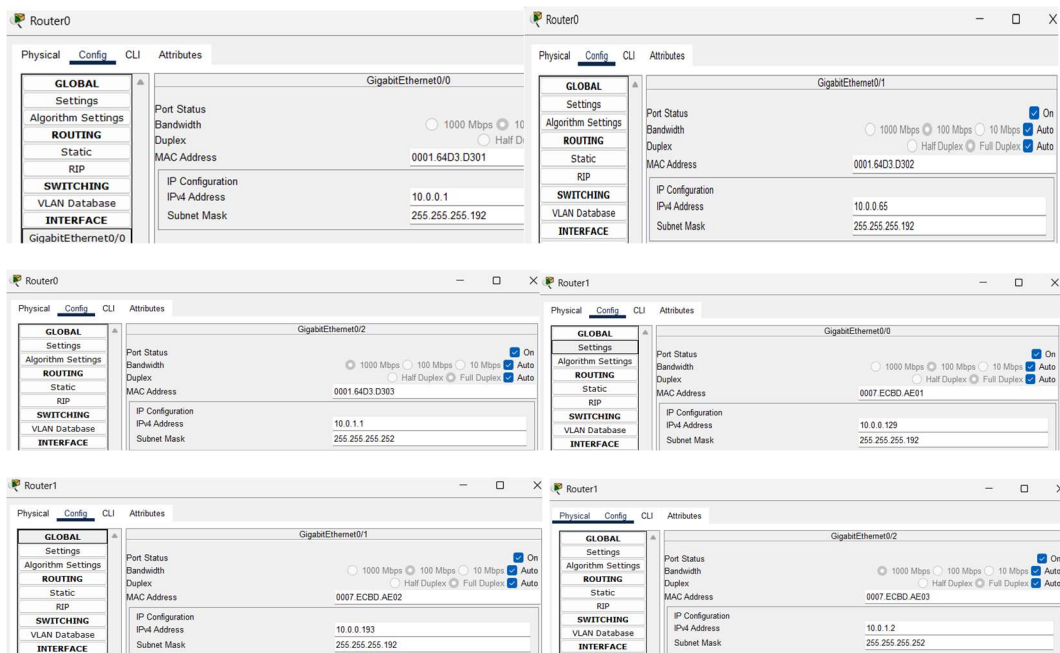
Mask

Next Hop

Network Address

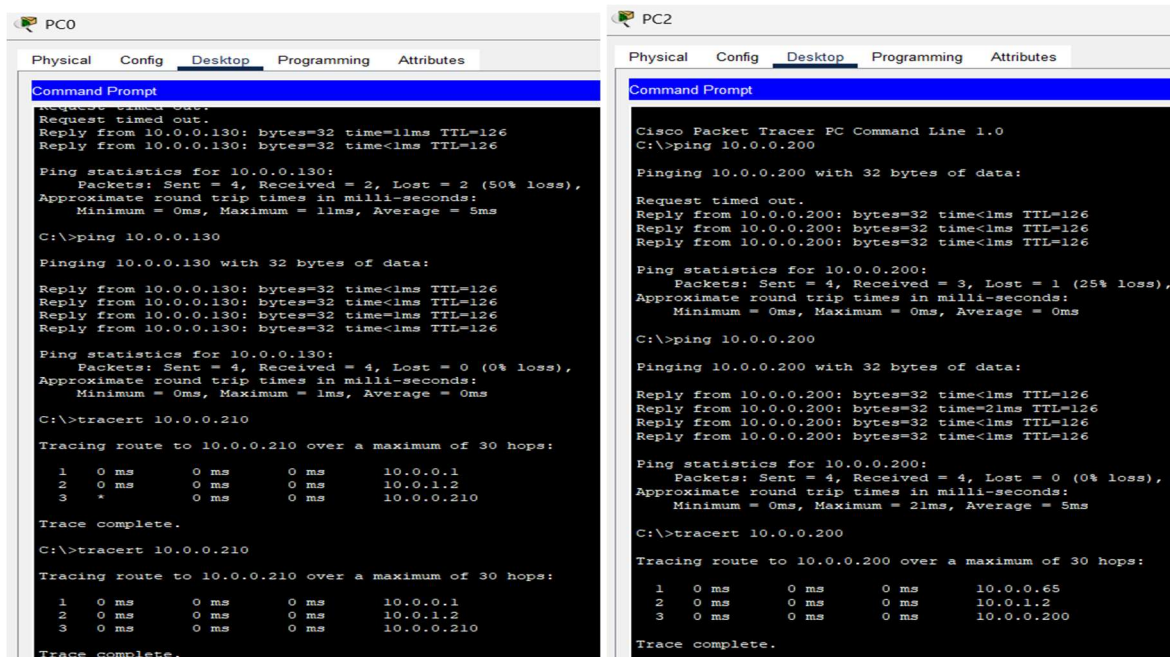
10.0.0.0/26 via 10.0.1.1

10.0.0.64/26 via 10.0.1.1



## 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



```
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.
```

```
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
```