

Practical No 1

Aim: Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: ping, traceroute, netstat, arp, ipconfig, Getmac, hostname, NSLookUp, pathping, SystemInfo

a.] ipconfig

Displays all current TCP/IP network configuration values. and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, ipconfig displays internal protocol version 4 (IPV4) and IPv6 addresses, subnet mask, and default gateway for all adapters.

b.] ipconfig/all

Displays the full TCP/IP configuration for all adapter... Adapters can represent physical interfaces, such as installed network adapters, or logical interfaces such as dial-up connections.

c.] getmac

Returns the media access control (MAC) address and list of network protocols associated with each address for all network cards in each computer, either locally or across a network.

d.] ping youtube.com ping 192.168.21.104

Ping is a very universal command between all the operating systems. It can be used to test if you can reach your target and how much time it will take. To do it Ping sends Internet Control Message Protocol (ICMP) packets to the destination. Then it waits for the echo reply.

e.] netstat

The netstat command displays the contents of various network-related data structures for active connections. It displays the status of TCP and UDP and points in table format, routing table information, and interface information.

g.] tracert google.com tracert amazon.com

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The tracert command is a command Prompt that's used to show several details about the path. that a packet takes from the computer on device you're on to Lowwhatever destination you specify

h.] pathping youtube.com

It provides information about network latency and network loss at intermediate hops between a source and destination This command sends multiple echo Request massages to each router between source and destination, over a period of time, and then computes result based on packets returned from each router

i.] nslookup youtube.com

The nslookup command queries internet domain name servers in two modes. Interictive mode allows you to query name servers for information about various hosts and domains, or to print a list of the host in a domain. In noniteractive mode, the names and requested information are printed your specified host or domain.

j.] arp -a

The arp command displays and modifies the Internet- to-adapter address translation tables used by the Address in Networks and communication management. The arp command displays the current ARP entry for the host specified by hostname variable.

arp-a displays the mac addresses of recently resolved ip addresses.

k.] arp -d

This command is used when you want to delete fane entry from ARP table for particular interface.

l.] arp -a -v

Displays current entries in verbose mode. All invalid enteries and entries on look-back interface will be shown.

ipconfig ipconfig/all

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```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.2364]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

  Connection-specific DNS Suffix  . : gnkc.local
  Link-local IPv6 Address . . . . . : fe80::b768:2e52:25d6:3616%13
  IPv4 Address . . . . . : 192.168.21.103
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.21.1

Ethernet adapter VirtualBox Host-Only Network:

  Connection-specific DNS Suffix  . :
  Link-local IPv6 Address . . . . . : fe80::ef65:3784:5476:21eb%4
  IPv4 Address . . . . . : 192.168.56.1
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . :

Administrator: Command Prompt
C:\Windows\system32>ipconfig/all

Windows IP Configuration

Host Name . . . . . : DESKTOP-V537FLT
Primary Dns Suffix  . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : gnkc.local

Ethernet adapter Ethernet:

  Connection-specific DNS Suffix  . : gnkc.local
  Description . . . . . : Realtek PCIe GbE Family Controller
  Physical Address. . . . . : F4-6B-8C-8E-5F-BB
  DHCP Enabled. . . . . : Yes
  Autoconfiguration Enabled . . . . . : Yes
  Link-local IPv6 Address . . . . . : fe80::b768:2e52:25d6:3616%13(Preferred)
  IPv4 Address . . . . . : 192.168.21.103(Preferred)
  Subnet Mask . . . . . : 255.255.255.0
  Lease Obtained. . . . . : Tuesday, January 3, 2023 10:49:18 AM
  Lease Expires . . . . . : Saturday, January 14, 2023 9:42:19 AM
  Default Gateway . . . . . : 192.168.21.1
  DHCP Server . . . . . : 192.168.10.21
  DHCPv6 IAID . . . . . : 116681612
  DHCPv6 Client DUID. . . . . : 00-01-00-01-2A-BF-10-3B-F4-6B-8C-8E-5F-BB
  DNS Servers . . . . . : 192.168.10.21

  DNS Servers . . . . . : 192.168.10.21
  NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter VirtualBox Host-Only Network:

  Connection-specific DNS Suffix  . :
  Description . . . . . : VirtualBox Host-Only Ethernet Adapter
  Physical Address. . . . . : 0A-00-27-00-00-04
  DHCP Enabled. . . . . : No
  Autoconfiguration Enabled . . . . . : Yes
  Link-local IPv6 Address . . . . . : fe80::ef65:3784:5476:21eb%4(Preferred)
  IPv4 Address . . . . . : 192.168.56.1(Preferred)
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . :
  DHCPv6 IAID . . . . . : 403308583
  DHCPv6 Client DUID. . . . . : 00-01-00-01-2A-BF-10-3B-F4-6B-8C-8E-5F-BB
  DNS Servers . . . . . : fec0:0:0:ffff::1%1
                           fec0:0:0:ffff::2%1
                           fec0:0:0:ffff::3%1
  NetBIOS over Tcpip. . . . . : Enabled
```

getmac

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```
Administrator: Command Prompt
C:\Windows\system32>getmac

Physical Address      Transport Name
=====
F4-6B-8C-8E-5F-BB    \Device\Tcpip_{B31018E7-9F52-4AE8-8C2B-1D1EA66D3959}
0A-00-27-00-00-04    \Device\Tcpip_{17A16C33-0066-4F8D-8B13-E5360D58324B}

C:\Windows\system32>ping youtube.com

Pinging youtube.com [142.250.77.46] with 32 bytes of data:
Reply from 142.250.77.46: bytes=32 time=2ms TTL=118
Reply from 142.250.77.46: bytes=32 time=4ms TTL=118
Reply from 142.250.77.46: bytes=32 time=3ms TTL=118
Reply from 142.250.77.46: bytes=32 time=4ms TTL=118

Ping statistics for 142.250.77.46:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 4ms, Average = 3ms

C:\Windows\system32>ping 192.168.21.104

Pinging 192.168.21.104 with 32 bytes of data:
Reply from 192.168.21.104: bytes=32 time=5ms TTL=128
Reply from 192.168.21.104: bytes=32 time=3ms TTL=128
Reply from 192.168.21.104: bytes=32 time=3ms TTL=128
Reply from 192.168.21.104: bytes=32 time=4ms TTL=128

          0/ 100 =  0%   |
 1     0ms     0/ 100 =  0%     0/ 100 =  0% DESKTOP-L87DEAI.gnkc.local [192.168.21.104]

Trace complete.

Activate Windows
Go to Settings to activate Windows.
```

```
C:\Windows\system32>nslookup
Default Server:  GNSRVD.C.gnkc.local
Address:  192.168.10.21

> youtube.com
Server:  GNSRVD.C.gnkc.local
Address:  192.168.10.21

Non-authoritative answer:
Name:      youtube.com
Addresses:  2404:6800:4009:826::200e
           142.250.183.206

>
```

```
Administrator: Command Prompt
C:\Windows\system32>arp -a

Interface: 192.168.56.1 --- 0x4
Internet Address      Physical Address      Type
192.168.56.255        ff-ff-ff-ff-ff-ff    static
224.0.0.22             01-00-5e-00-00-16  static
224.0.0.251             01-00-5e-00-00-fb  static
224.0.0.252             01-00-5e-00-00-fc  static
239.192.152.143        01-00-5e-40-98-8f  static
239.255.102.18          01-00-5e-7f-66-12  static
239.255.255.250        01-00-5e-7f-ff-fa  static

Interface: 192.168.21.103 --- 0xd
Internet Address      Physical Address      Type
192.168.21.1           f0-7d-68-f0-74-7b  dynamic
192.168.21.11          00-01-6c-d3-ce-94  dynamic
192.168.21.21          f4-6b-8c-8e-64-2c  dynamic
192.168.21.24          6c-4b-90-1c-d0-80  dynamic
192.168.21.25          6c-4b-90-1f-ba-56  dynamic
192.168.21.28          6c-4b-90-1f-94-78  dynamic
192.168.21.29          6c-4b-90-1f-94-7a  dynamic
192.168.21.31          6c-4b-90-1c-1d-98  dynamic
192.168.21.32          6c-4b-90-1f-94-4a  dynamic
192.168.21.33          00-01-6c-d3-c7-44  dynamic
192.168.21.37          6c-4b-90-1f-b0-b7  dynamic
192.168.21.38          6c-4b-90-1f-ba-88  dynamic
192.168.21.40          6c-4b-90-1f-ba-f3  dynamic
192.168.21.42          f4-6b-8c-8e-60-38  dynamic

Administrator: Command Prompt
192.168.21.42          f4-6b-8c-8e-60-38  dynamic
192.168.21.43          44-8a-5b-77-6d-e0  dynamic
192.168.21.67          6c-4b-90-1f-94-11  dynamic
192.168.21.70          00-01-6c-d4-59-e1  dynamic
192.168.21.72          f4-6b-8c-8e-5c-cc  dynamic
192.168.21.74          f4-6b-8c-8e-5e-3e  dynamic
192.168.21.75          00-01-6c-d4-4d-bd  dynamic
192.168.21.78          f4-6b-8c-8e-5e-f2  dynamic
192.168.21.87          f4-6b-8c-8e-5e-d1  dynamic
192.168.21.88          00-01-6c-d3-cc-bd  dynamic
192.168.21.90          00-01-6c-d6-0c-9d  dynamic
192.168.21.92          00-01-6c-d3-d0-75  dynamic
192.168.21.102         f4-6b-8c-8e-5f-4e  dynamic
192.168.21.104         f4-6b-8c-8e-5f-d0  dynamic
192.168.21.121         48-2a-e3-3e-bb-ea  dynamic
192.168.21.159         00-01-6c-d4-4e-ac  dynamic
192.168.21.163         6c-4b-90-1f-ba-d9  dynamic
192.168.21.185         6c-4b-90-1f-94-5b  dynamic
192.168.21.255         ff-ff-ff-ff-ff-ff  static
224.0.0.22             01-00-5e-00-00-16  static
224.0.0.251             01-00-5e-00-00-fb  static
224.0.0.252             01-00-5e-00-00-fc  static
239.192.152.143        01-00-5e-40-98-8f  static
239.255.102.18          01-00-5e-7f-66-12  static
239.255.255.250        01-00-5e-7f-ff-fa  static
255.255.255.255        ff-ff-ff-ff-ff-ff  static
```

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```
Administrator: Command Prompt
C:\Windows\system32>arp -d

C:\Windows\system32>arp -a

Interface: 192.168.56.1 --- 0x4
 Internet Address Physical Address Type
 224.0.0.22      01-00-5e-00-00-16 static
 239.192.152.143 01-00-5e-40-98-8f static
 239.255.255.250 01-00-5e-7f-ff-fa static

Interface: 192.168.21.103 --- 0xd
 Internet Address Physical Address Type
 224.0.0.22      01-00-5e-00-00-16 static
 239.192.152.143 01-00-5e-40-98-8f static
 239.255.255.250 01-00-5e-7f-ff-fa static

C:\Windows\system32>arp -a -v

Interface: 127.0.0.1 --- 0x1
 Internet Address Physical Address Type
 224.0.0.22      01-00-5e-00-00-16 static
 239.192.152.143 01-00-5e-40-98-8f static

Interface: 192.168.56.1 --- 0x4
 Internet Address Physical Address Type
 224.0.0.22      01-00-5e-00-00-16 static
 239.192.152.143 01-00-5e-40-98-8f static
 239.255.255.250 01-00-5e-7f-ff-fa static

Interface: 192.168.21.103 --- 0xd
 Internet Address Physical Address Type
 192.168.21.1     f0-7d-68-f0-74-7b dynamic
 192.168.21.11    00-00-00-00-00-00 invalid
 192.168.21.13    00-00-00-00-00-00 invalid
 192.168.21.17    00-00-00-00-00-00 invalid
 192.168.21.21    00-00-00-00-00-00 invalid
 192.168.21.22    00-00-00-00-00-00 invalid
 192.168.21.24    00-00-00-00-00-00 invalid
 192.168.21.25    00-00-00-00-00-00 invalid
 192.168.21.27    00-00-00-00-00-00 invalid
 192.168.21.28    00-00-00-00-00-00 invalid
 192.168.21.29    00-00-00-00-00-00 invalid
 192.168.21.31    00-00-00-00-00-00 invalid
```

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Administrator: Command Prompt		
192.168.21.31	00-00-00-00-00-00	invalid
192.168.21.32	00-00-00-00-00-00	invalid
192.168.21.33	00-00-00-00-00-00	invalid
192.168.21.34	00-00-00-00-00-00	invalid
192.168.21.35	00-00-00-00-00-00	invalid
192.168.21.37	00-00-00-00-00-00	invalid
192.168.21.38	00-00-00-00-00-00	invalid
192.168.21.39	00-00-00-00-00-00	invalid
192.168.21.40	00-00-00-00-00-00	invalid
192.168.21.42	00-00-00-00-00-00	invalid
192.168.21.43	00-00-00-00-00-00	invalid
192.168.21.44	00-00-00-00-00-00	invalid
192.168.21.45	00-00-00-00-00-00	invalid
192.168.21.46	00-00-00-00-00-00	invalid
192.168.21.47	00-00-00-00-00-00	invalid
192.168.21.48	00-00-00-00-00-00	invalid
192.168.21.49	00-00-00-00-00-00	invalid
192.168.21.50	00-00-00-00-00-00	invalid
192.168.21.51	00-00-00-00-00-00	invalid
192.168.21.52	00-00-00-00-00-00	invalid
192.168.21.53	00-00-00-00-00-00	invalid
192.168.21.55	00-00-00-00-00-00	invalid
192.168.21.57	00-00-00-00-00-00	invalid
192.168.21.58	00-00-00-00-00-00	invalid
192.168.21.59	00-00-00-00-00-00	invalid
192.168.21.63	00-00-00-00-00-00	invalid
192.168.21.64	00-00-00-00-00-00	invalid
192.168.21.65	00-00-00-00-00-00	invalid
Activate Windows Go to Settings to activate Windows.		
192.168.21.65	00-00-00-00-00-00	invalid
192.168.21.67	00-00-00-00-00-00	invalid
192.168.21.70	00-00-00-00-00-00	invalid
192.168.21.71	00-00-00-00-00-00	invalid
192.168.21.72	00-00-00-00-00-00	invalid
192.168.21.74	00-00-00-00-00-00	invalid
192.168.21.75	00-00-00-00-00-00	invalid
192.168.21.78	00-00-00-00-00-00	invalid
192.168.21.80	00-00-00-00-00-00	invalid
192.168.21.82	00-00-00-00-00-00	invalid
192.168.21.84	00-00-00-00-00-00	invalid
192.168.21.86	00-00-00-00-00-00	invalid
192.168.21.87	00-00-00-00-00-00	invalid
192.168.21.88	00-00-00-00-00-00	invalid
192.168.21.90	00-00-00-00-00-00	invalid
192.168.21.92	00-00-00-00-00-00	invalid
192.168.21.95	00-00-00-00-00-00	invalid
192.168.21.98	00-00-00-00-00-00	invalid
192.168.21.100	00-00-00-00-00-00	invalid
192.168.21.101	00-00-00-00-00-00	invalid
192.168.21.102	00-00-00-00-00-00	invalid
192.168.21.104	00-00-00-00-00-00	invalid
192.168.21.108	00-00-00-00-00-00	invalid
192.168.21.109	00-00-00-00-00-00	invalid
192.168.21.112	00-00-00-00-00-00	invalid
192.168.21.113	00-00-00-00-00-00	invalid
192.168.21.121	00-00-00-00-00-00	invalid
192.168.21.123	00-00-00-00-00-00	invalid

192.168.21.123	00-00-00-00-00-00	invalid
192.168.21.125	00-00-00-00-00-00	invalid
192.168.21.134	00-00-00-00-00-00	invalid
192.168.21.135	00-00-00-00-00-00	invalid
192.168.21.136	00-00-00-00-00-00	invalid
192.168.21.137	00-00-00-00-00-00	invalid
192.168.21.138	00-00-00-00-00-00	invalid
192.168.21.140	00-00-00-00-00-00	invalid
192.168.21.141	00-00-00-00-00-00	invalid
192.168.21.146	00-00-00-00-00-00	invalid
192.168.21.159	00-00-00-00-00-00	invalid
192.168.21.160	00-00-00-00-00-00	invalid
192.168.21.161	00-00-00-00-00-00	invalid
192.168.21.163	00-00-00-00-00-00	invalid
192.168.21.164	00-00-00-00-00-00	invalid
192.168.21.165	00-00-00-00-00-00	invalid
192.168.21.166	00-00-00-00-00-00	invalid
192.168.21.185	00-00-00-00-00-00	invalid
224.0.0.22	01-00-5e-00-00-16	static
239.192.152.143	01-00-5e-40-98-8f	static
239.255.255.250	01-00-5e-7f-ff-fa	static

C:\Windows\system32>

```
Ping statistics for 192.168.21.104:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 3ms, Maximum = 5ms, Average = 3ms
```

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```
C:\Windows\system32>netstat  
Active Connections  
  
Proto Local Address          Foreign Address        State  
TCP   127.0.0.1:4369        DESKTOP-V537FLT:49674 ESTABLISHED  
TCP   127.0.0.1:49674        DESKTOP-V537FLT:4369 ESTABLISHED  
TCP   127.0.0.1:49677        DESKTOP-V537FLT:49678 ESTABLISHED  
TCP   127.0.0.1:49678        DESKTOP-V537FLT:49677 ESTABLISHED  
TCP   192.168.21.103:57003  20.198.162.78:https  ESTABLISHED  
TCP   192.168.21.103:57052  a23-64-122-81:https CLOSE_WAIT  
TCP   192.168.21.103:57058  153-86-87-183:https  CLOSE_WAIT  
TCP   192.168.21.103:57060  a23-7-234-76:https  ESTABLISHED  
TCP   [fe80::ef65:3784:5476:21eb%4]:1521  DESKTOP-V537FLT:49683 ESTABLISHED  
TCP   [fe80::ef65:3784:5476:21eb%4]:49683  DESKTOP-V537FLT:1521 ESTABLISHED
```

```
C:\Windows\system32>netstat -n  
'netstat -n' is not recognized as an internal or external command,  
operable program or batch file.
```

```
Administrator: Command Prompt  
C:\Windows\system32>netstat -n  
  
Active Connections  
  
Proto Local Address          Foreign Address        State  
TCP   127.0.0.1:4369        127.0.0.1:49674 ESTABLISHED  
TCP   127.0.0.1:49674        127.0.0.1:4369 ESTABLISHED  
TCP   127.0.0.1:49677        127.0.0.1:49678 ESTABLISHED  
TCP   127.0.0.1:49678        127.0.0.1:49677 ESTABLISHED  
TCP   192.168.21.103:57003  20.198.162.78:443 ESTABLISHED  
TCP   192.168.21.103:57052  23.64.122.81:443 CLOSE_WAIT  
TCP   192.168.21.103:57058  183.87.86.153:443 CLOSE_WAIT  
TCP   192.168.21.103:57060  23.7.234.76:443 ESTABLISHED  
TCP   [fe80::ef65:3784:5476:21eb%4]:1521  [fe80::ef65:3784:5476:21eb%4]:49683 ESTABLISHED  
TCP   [fe80::ef65:3784:5476:21eb%4]:49683  [fe80::ef65:3784:5476:21eb%4]:1521 ESTABLISHED
```

```
C:\Windows\system32>tracert google.com  
  
Tracing route to google.com [142.250.183.14]  
over a maximum of 30 hops:  
  
 1    2 ms      1 ms      1 ms  192.168.21.1  
 2    <1 ms     <1 ms     <1 ms  172.16.8.1  
 3    1 ms      1 ms      1 ms  103.27.48.81.balajibroadband.com [103.27.48.81]  
 4    7 ms      9 ms      9 ms  103.133.51.9.sukaininfoway.com [103.133.51.9]  
 5    3 ms      2 ms      1 ms  142.250.165.194  
 6    2 ms      2 ms      1 ms  142.251.76.33  
 7    2 ms      2 ms      2 ms  142.250.214.107  
 8    2 ms      2 ms      2 ms  bom07s30-in-f14.1e100.net [142.250.183.14]  
  
Trace complete.
```

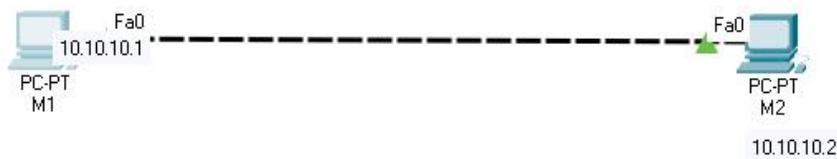
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PRACTICAL 2

Aim: Using Packet Tracer, create a basic network of two computers using appropriate network wire through Static IP address allocation and verify connectivity

Theory:

We use the following network to verify the connectivity using Cisco packet tracer



Now we set the ip address of the devices as follows :

Host name	ip Address
PC0	10.10.10.1
PC1	10.10.10.2

In order to check the connectivity we send a ping command from PC0 to PC1 as follows

```
Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Link-local IPv6 Address .....: FE80::290:21FF:FEF3:7B11
IPv6 Address.....: :::
IPv4 Address.....: 10.10.10.1
Subnet Mask.....: 255.0.0.0
Default Gateway.....: :::
                           0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address .....: :::
IPv6 Address.....: :::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: :::
                           0.0.0.0
```

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```
C:\>ipconfig /all

FastEthernet0 Connection:(default port)

  Connection-specific DNS Suffix...:
  Physical Address.....: 0090.21E3.7B11
  Link-local IPv6 Address....: FE80::290:21FF:FE00:7B11
  IPv6 Address.....: :::
  IPv4 Address.....: 10.10.10.1
  Subnet Mask.....: 255.0.0.0
  Default Gateway.....: :::
                  0.0.0.0
  DHCP Servers.....: 0.0.0.0
  DHCPv6 IAID.....: 
  DHCPv6 Client DUID.....: 00-01-00-01-56-A5-0A-79-00-90-21-E3-7B-11
  DNS Servers.....: :::
                  0.0.0.0

Bluetooth Connection:

  Connection-specific DNS Suffix...:
  Physical Address.....: 0090.2B62.2E62
  Link-local IPv6 Address....: :::
  IPv6 Address.....: :::
  IPv4 Address.....: 0.0.0.0
  Subnet Mask.....: 0.0.0.0
  Default Gateway.....: :::
                  0.0.0.0
  DHCP Servers.....: 0.0.0.0
  DHCPv6 IAID.....: 
  DHCPv6 Client DUID.....: 00-01-00-01-56-A5-0A-79-00-90-21-E3-7B-11
  DNS Servers.....: :::
                  0.0.0.0
```

```
C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.10.2:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

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```
Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: FE80::260:3EFF:FE81:7192
IPv6 Address...:::
IPv4 Address.....: 10.10.10.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: :::
                           0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: :::
IPv6 Address...:::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: :::
                           0.0.0.0
```

```
C:\>ipconfig /all

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Physical Address.....: 0060.3E81.7192
Link-local IPv6 Address.....: FE80::260:3EFF:FE81:7192
IPv6 Address...:::
IPv4 Address.....: 10.10.10.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: :::
                           0.0.0.0
DHCP Servers.....: 0.0.0.0
DHCPv6 IAID.....: :
DHCPv6 Client DUID.....: 00-01-00-01-71-1C-34-70-00-60-3E-81-71-92
DNS Servers.....: :::
                           0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix...:
Physical Address.....: 0060.2F04.876C
Link-local IPv6 Address...:::
IPv6 Address...:::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: :::
                           0.0.0.0
DHCP Servers.....: 0.0.0.0
DHCPv6 IAID.....: :
DHCPv6 Client DUID.....: 00-01-00-01-71-1C-34-70-00-60-3E-81-71-92
DNS Servers.....: :::
                           0.0.0.0
```

```
C:\>ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:

Reply from 10.10.10.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

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PRACITCAL NO-3

Aim: Using Packet Tracer, create a basic network of one server and two computers using appropriate network wire. Use Dynamic IP address allocation and show connectivity.

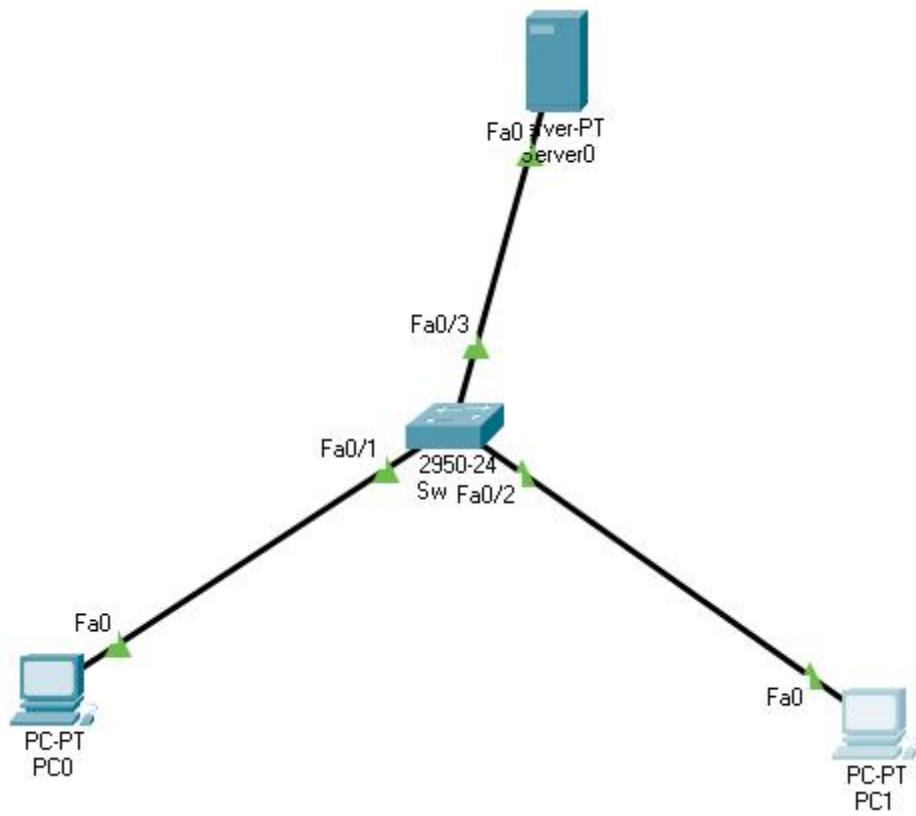
Theory:

DHCP (Dynamic Host Configuration Protocol) is a network management protocol that allows devices to obtain IP addresses and other network configuration information **automatically**.

When a device joins a network, it can use DHCP to request an IP address from a DHCP server, which then assigns an available IP address to the device. DHCP can also provide other configuration information, such as the subnet mask, default gateway, and DNS server addresses.

DHCP makes it easier to manage IP addresses in a network environment by automating the process of assigning IP addresses to devices. Without DHCP, network administrators would need to manually assign IP addresses to each device on the network, which can be time-consuming and error-prone.

We use the following topology :



Server0

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

DHCP Static

IPv4 Address: 10.10.10.1

Subnet Mask: 255.0.0.0

Default Gateway: 10.10.10.10

DNS Server: 10.10.10.11

IPv6 Configuration

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: On Off

Pool Name: serverPool

Default Gateway: 10.10.10.10

DNS Server: 10.10.10.11

Start IP Address: 10.10.10.10.10.10.2

Subnet Mask: 255.0.0.0

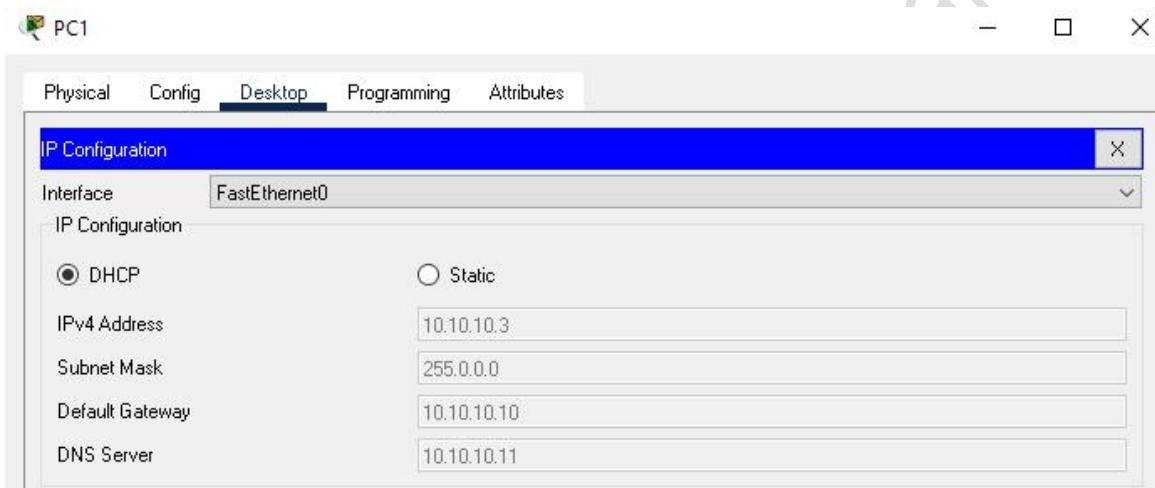
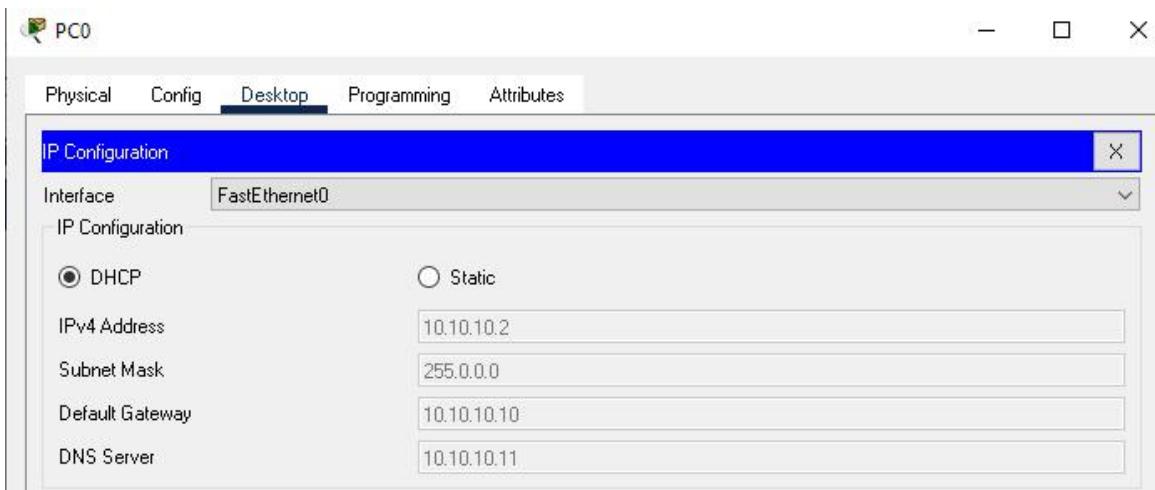
Maximum Number of Users: 512

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	10.10.10.1	10.10.10.1	10.10.10.2	255.0.0.0	512	0.0.0.0	0.0.0.0



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: FE80::207:ECFF:FE28:39D1
IPv6 Address.....: :::
IPv4 Address.....: 10.10.10.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: :::
                           10.10.10.10

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: :::
IPv6 Address.....: :::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: :::
                           0.0.0.0

C:\>ping
Packet Tracer PC Ping

Usage: ping [-n count | -v TOS | -t ] target

C:\>ping 10.10.10.3

Pinging 10.10.10.3 with 32 bytes of data:

Reply from 10.10.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: FE80::20A:41FF:FEDE:4511
IPv6 Address.....: :::
IPv4 Address.....: 10.10.10.3
Subnet Mask.....: 255.0.0.0
Default Gateway.....: :::
                           10.10.10.10

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: :::
IPv6 Address.....: :::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: :::
                           0.0.0.0

C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2: bytes=32 time<lms TTL=128

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

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Practical No.-4

Aim: Using Packet Tracer, create a basic network of one server and two computers and two mobile / movable devices using appropriate network wire. And verify the Connectivity.

Theory:

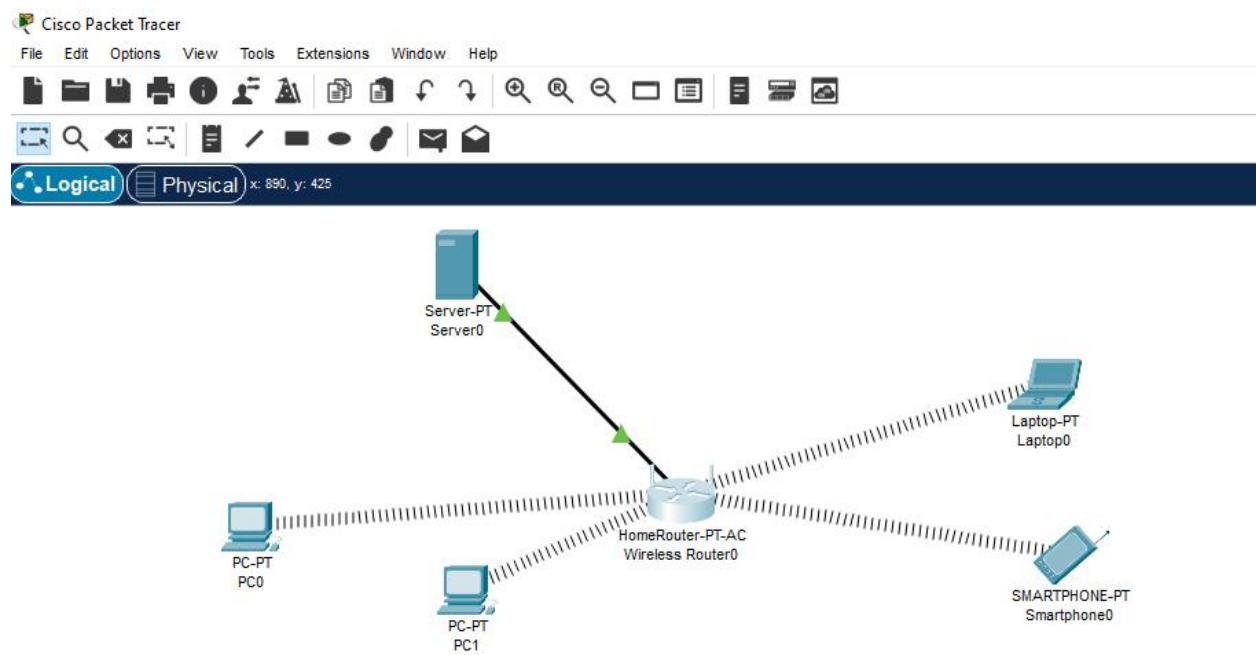
A wireless access point (WAP) is a networking device that enables wireless devices to connect to a wired network. It acts as a central hub for wireless devices, allowing them to communicate with each other and with devices on the wired network.

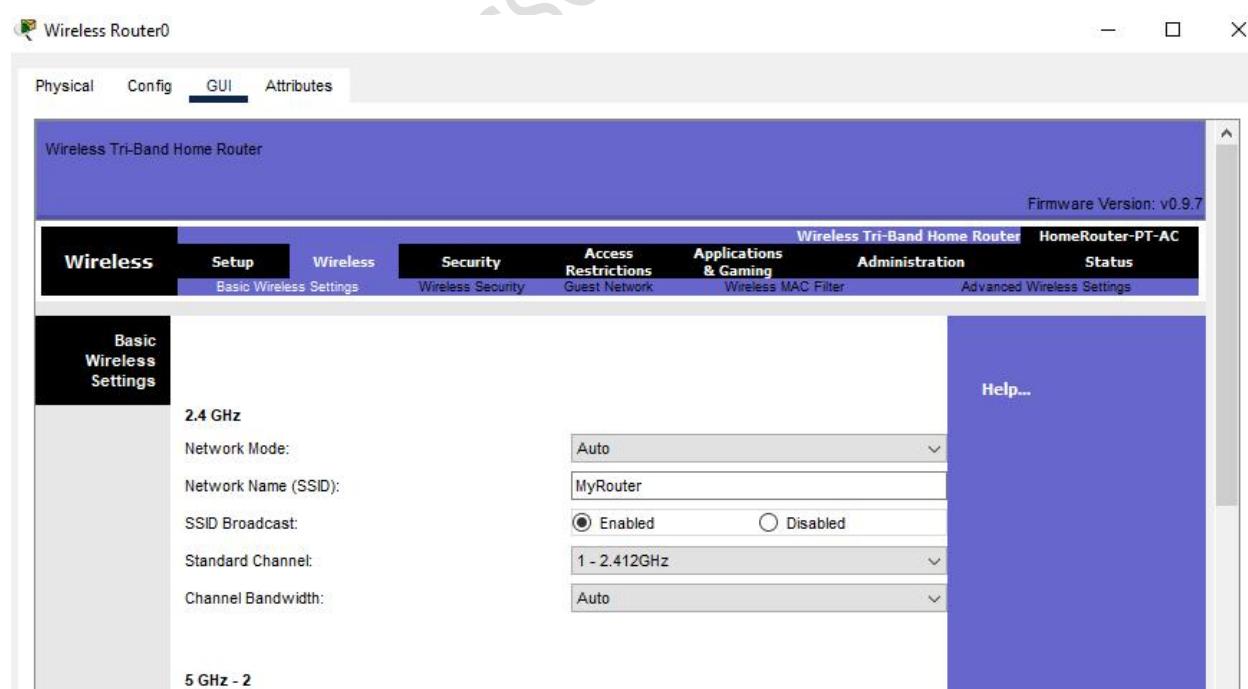
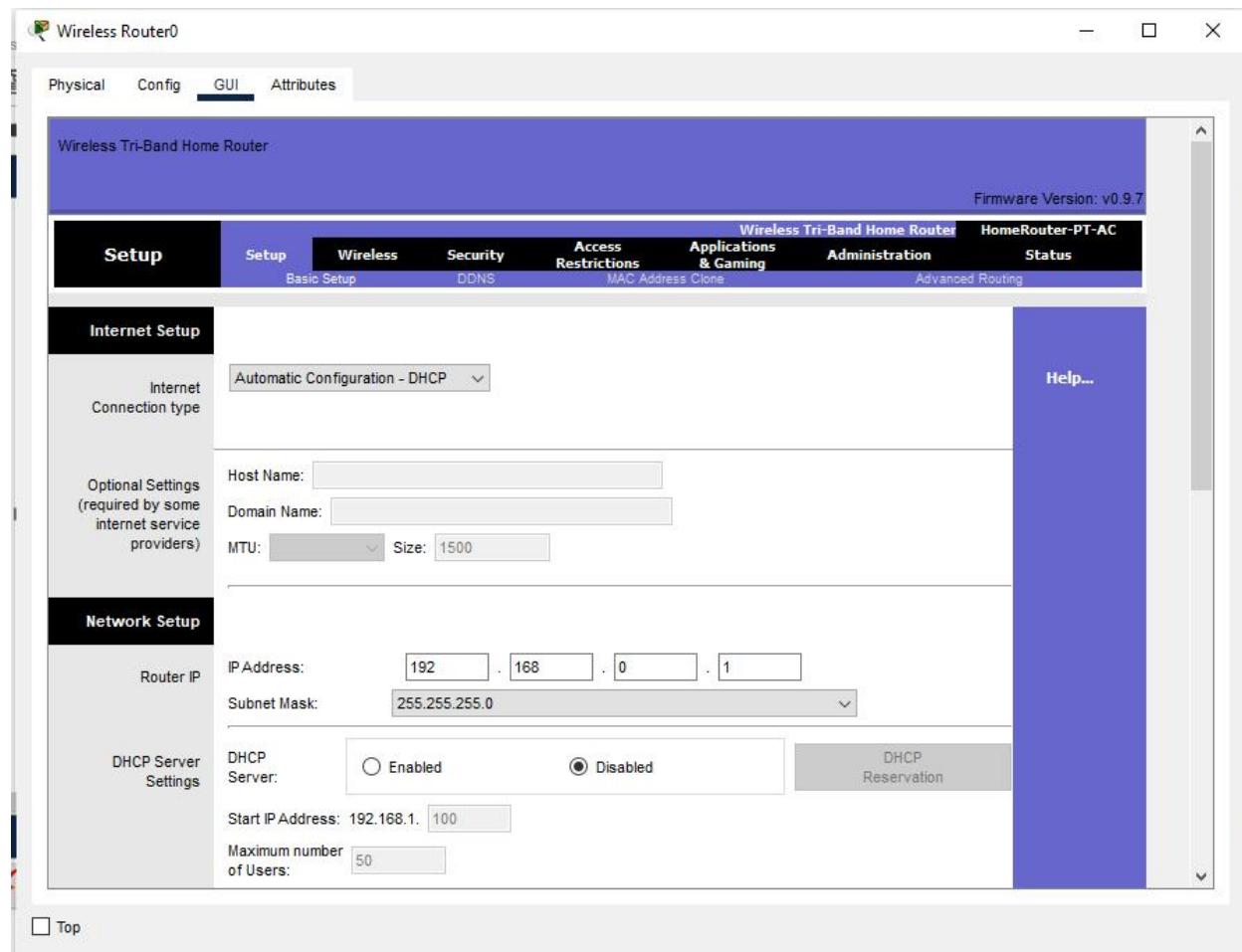
A wireless access point typically connects to a wired network, such as a local area network (LAN), and broadcasts a wireless signal using radio waves. Wireless devices, such as laptops, smartphones, and tablets, can connect to the WAP and access the network resources that are available on the wired network.

Wireless access points are commonly used in homes, offices, and public places such as airports and cafes to provide wireless connectivity to users. They can be standalone devices or built into other networking equipment such as routers or switches.

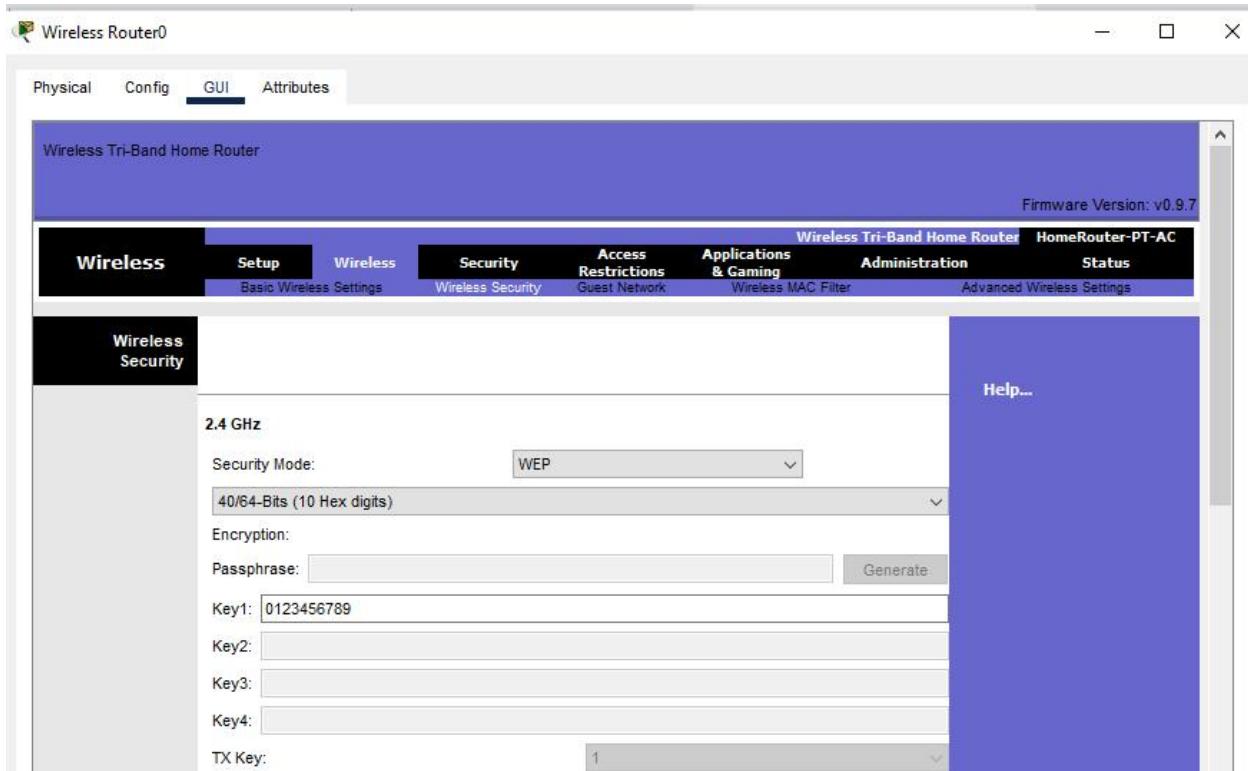
We use the following topology:

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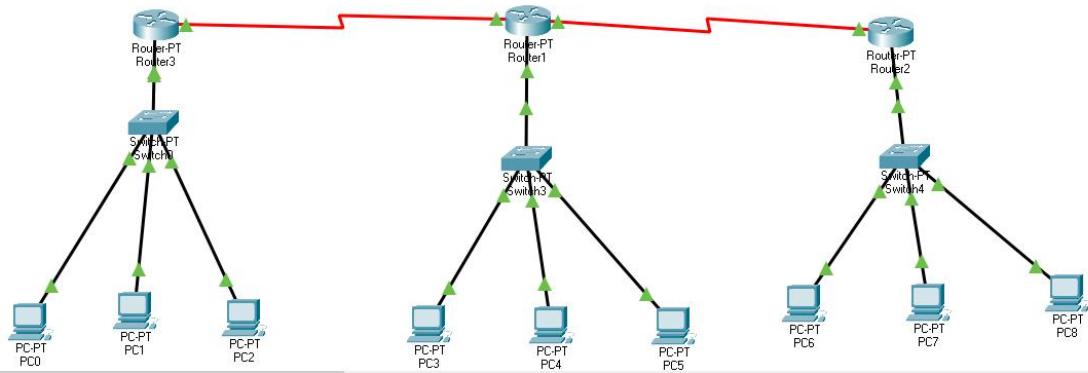


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PRACTICAL NO:5

Aim: Using Packet Tracer to create a network with three routers with RIPv1 and each router associated network will have minimum three PC and show the connectivity.

We use the following topology for the present case

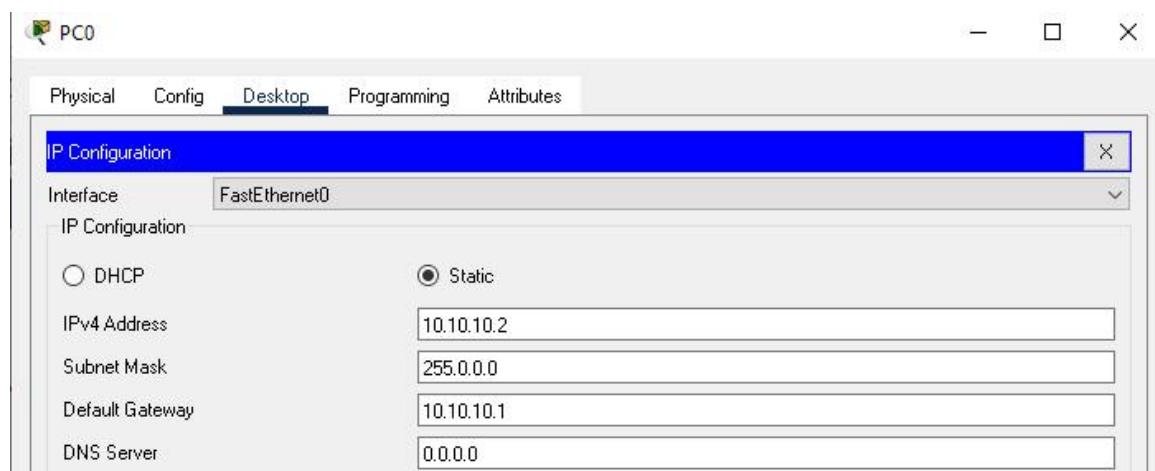


We will be configuring the above network using the following IP addresses:

HOST	INTERFACE	IP ADDRESS	NETWORK ADDRESS	DEFAULT GATEWAY
ROUTER3	G0/0	10.10.10.1	10.0.0.0	
	S0/1/0	40.40.40.1	40.0.0.0	
ROUTER1	G0/0	20.20.20.1	20.0.0.0	
	S0/1/0	40.40.40.2	40.0.0.0	
	S0/1/1	50.50.50.1	50.0.0.0	
ROUTER2	G0/0	30.30.30.1	30.0.0.0	
	S0/1/0	50.50.50.2	50.0.0.0	
PC0	FastEthernet0	10.10.10.2	10.0.0.0	10.10.10.1
PC1	FastEthernet0	10.10.10.3	10.0.0.0	10.10.10.1
PC2	FastEthernet0	10.10.10.4	10.0.0.0	10.10.10.1
PC3	FastEthernet0	20.20.20.2	20.0.0.0	20.20.20.1
PC4	FastEthernet0	20.20.20.3	20.0.0.0	20.20.20.1
PC5	FastEthernet0	20.20.20.4	20.0.0.0	20.20.20.1
PC6	FastEthernet0	30.30.30.2	30.0.0.0	30.30.30.1
PC7	FastEthernet0	30.30.30.3	30.0.0.0	30.30.30.1
PC8	FastEthernet0	30.30.30.4	30.0.0.0	30.30.30.1

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PC CONFIGURATION:



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PC3 Configuration:

Setting	Value
Interface	FastEthernet0
IP Configuration	Static
IPv4 Address	20.20.20.2
Subnet Mask	255.0.0.0
Default Gateway	20.20.20.1
DNS Server	0.0.0.0

PC6 Configuration:

Setting	Value
Interface	FastEthernet0
IP Configuration	Static
IPv4 Address	30.30.30.2
Subnet Mask	255.0.0.0
Default Gateway	30.30.30.1
DNS Server	0.0.0.0

ROUTER CONFIGURATION WITH PC:

Router3 Configuration:

GLOBAL

- Settings
- Algorithm Settings

ROUTING

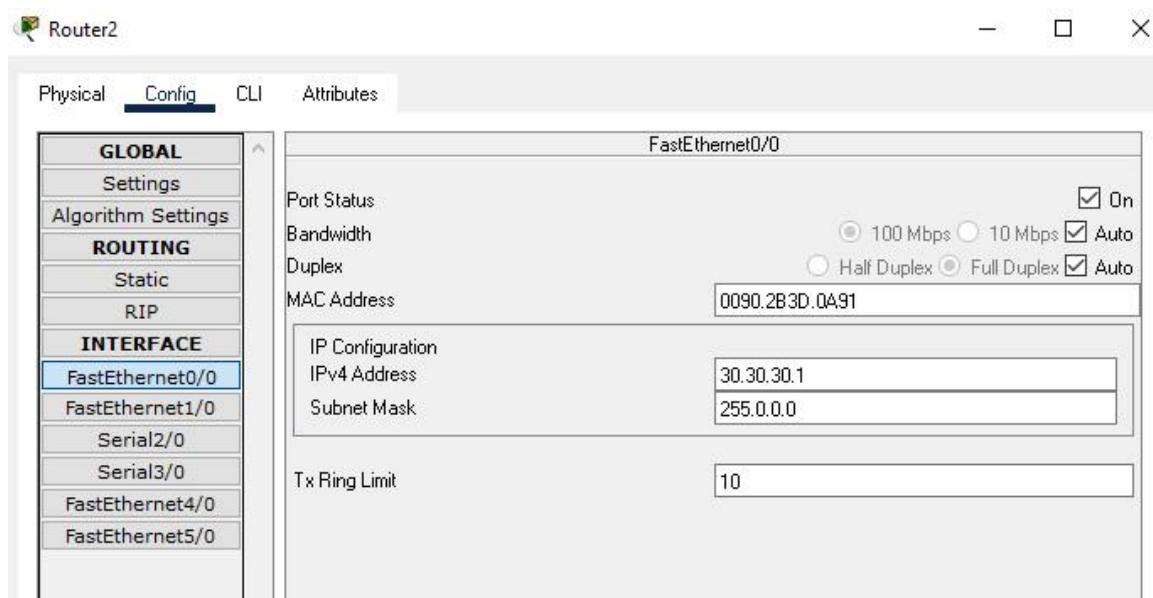
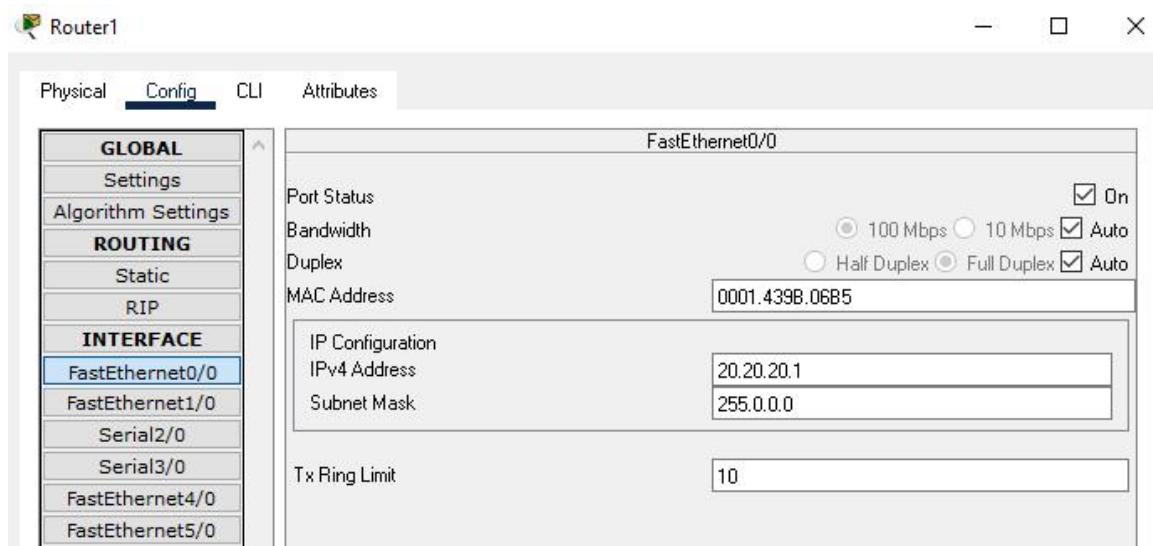
- Static
- RIP

INTERFACE

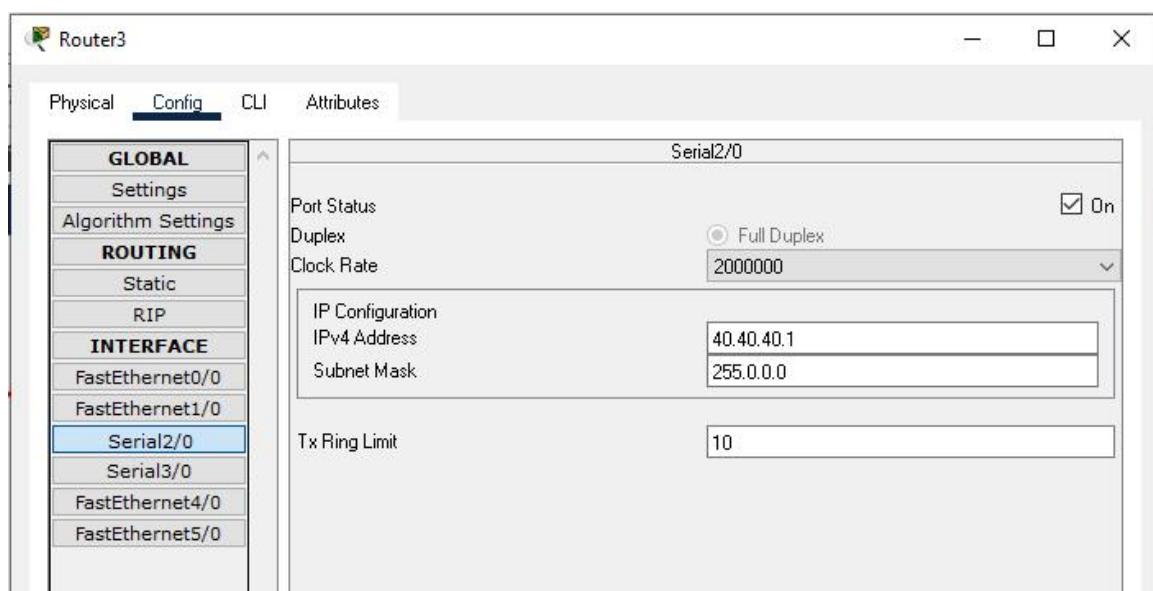
- FastEthernet0/0
- FastEthernet1/0
- Serial2/0
- Serial3/0
- FastEthernet4/0
- FastEthernet5/0

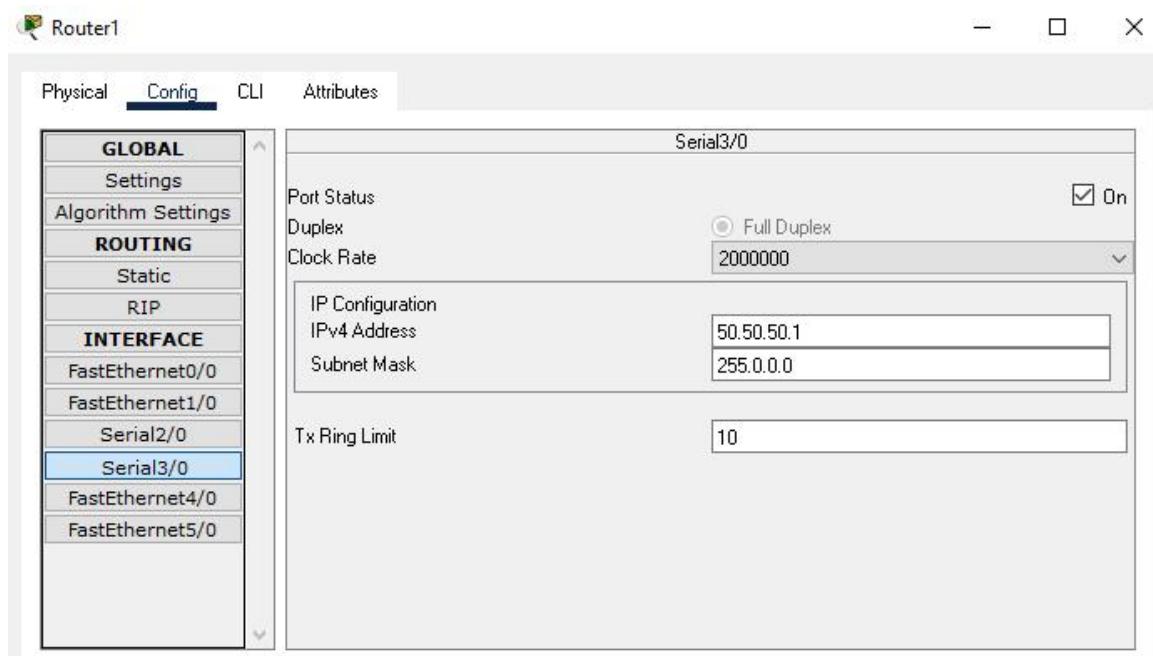
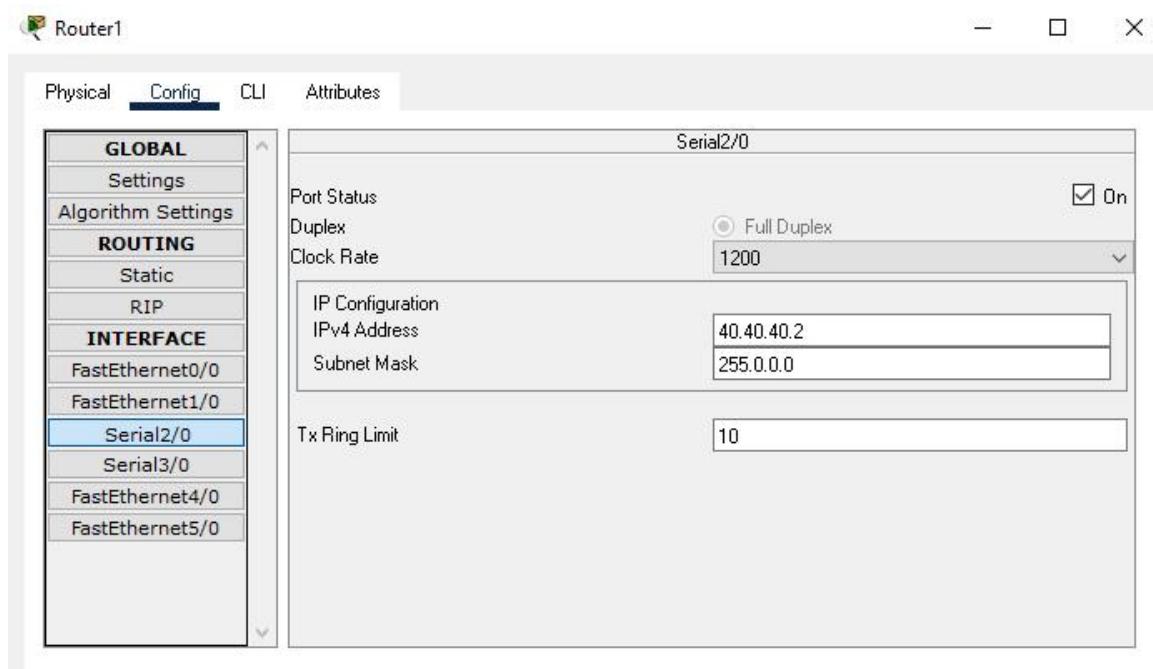
FastEthernet0/0 Configuration:

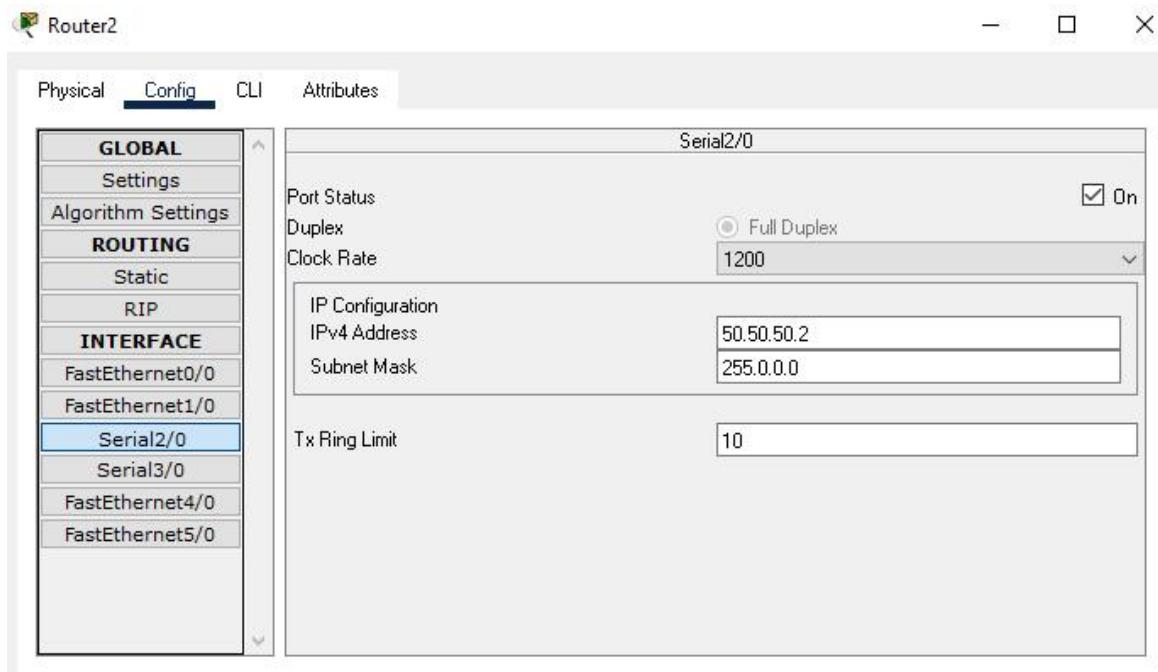
Setting	Value
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="radio"/> 100 Mbps
Duplex	<input checked="" type="radio"/> Full Duplex
MAC Address	000A.4159.C209
IP Configuration	IPv4 Address: 10.10.10.1
	Subnet Mask: 255.0.0.0
Tx Ring Limit	10



ROUTER CONFIGURATION WITH ROUTER:







RIP CONFIGURATION FOR ALL ROUTER:



PDU:

PDU List Window											
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Successful	PC0	PC3	ICMP	Blue	0.000	N	0	(edit)		
●	Successful	PC1	PC6	ICMP	Green	0.000	N	1	(edit)		
●	Successful	PC0	PC5	ICMP	Purple	0.000	N	0	(edit)		
●	Successful	PC2	PC7	ICMP	Yellow	0.000	N	1	(edit)		

CLI:

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```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
ip address 10.10.10.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#ip address 40.40.40.1 255.0.0.0
Router(config-if)#ip address 40.40.40.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 30.0.0.0
Router(config-router)#network 40.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
%SYS-5-CONFIG_I: Configured from console by console

Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console

Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

Router con0 is now available

Press RETURN to get started.

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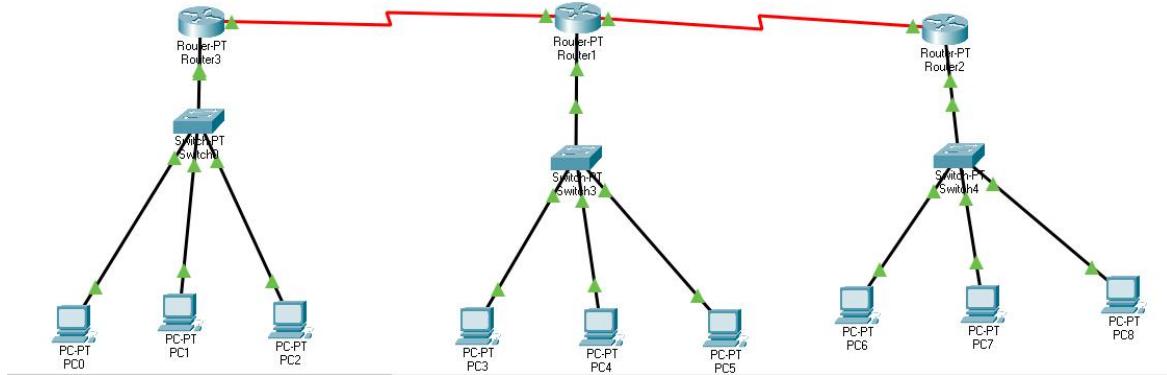
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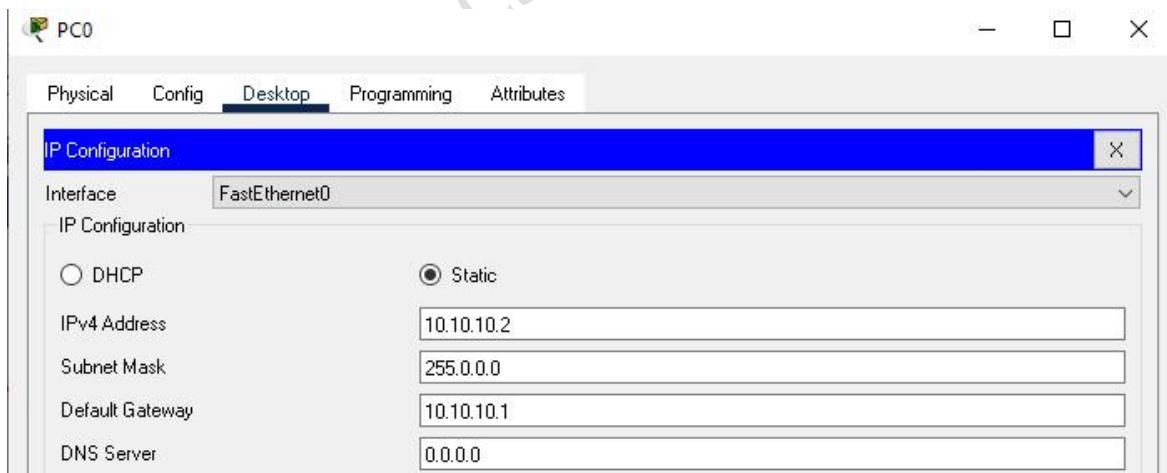
PRACTICAL NO:6

Aim: Using Packet Tracer to create a network with three routers with RIPv2 and each router associated network will have minimum three PC and show the connectivity.

We use the following topology for the present case



PC CONFIGURATION:



The image displays two windows from a network configuration application. Both windows have tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is selected.

PC3 Configuration:

- Interface: FastEthernet0
- IP Configuration:
 - IPv4 Address: 20.20.20.2
 - Subnet Mask: 255.0.0.0
 - Default Gateway: 20.20.20.1
 - DNS Server: 0.0.0.0

PC6 Configuration:

- Interface: FastEthernet0
- IP Configuration:
 - IPv4 Address: 30.30.30.2
 - Subnet Mask: 255.0.0.0
 - Default Gateway: 30.30.30.1
 - DNS Server: 0.0.0.0

ROUTER CONFIGURATION WITH PC:

The image shows the configuration interface for Router3. The left sidebar has sections for GLOBAL, Settings, Algorithm Settings, ROUTING, Static, RIP, and INTERFACE. The INTERFACE section is expanded, showing options for FastEthernet0/0, FastEthernet1/0, Serial2/0, Serial3/0, FastEthernet4/0, and FastEthernet5/0. The FastEthernet0/0 tab is selected.

FastEthernet0/0 Configuration:

- Port Status: On (checked)
- Bandwidth: 100 Mbps (selected)
- Duplex: Full Duplex (selected)
- MAC Address: 000A.4159.C209
- IP Configuration:
 - IPv4 Address: 10.10.10.1
 - Subnet Mask: 255.0.0.0
- Tx Ring Limit: 10

The image displays two separate windows of a network configuration interface, labeled Router1 and Router2.

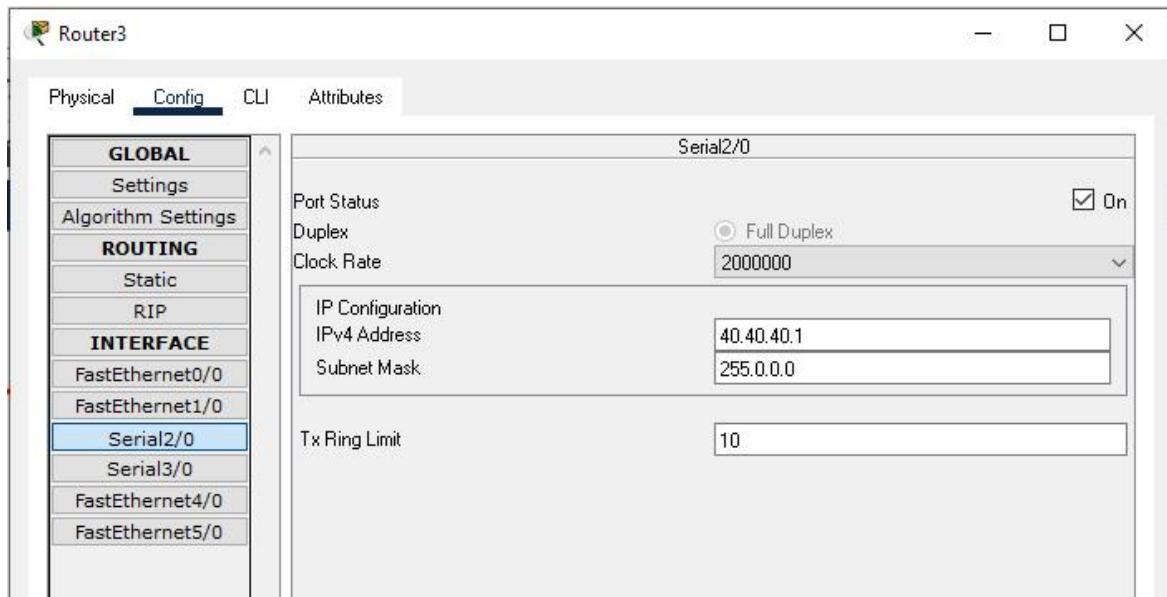
Router1 Configuration:

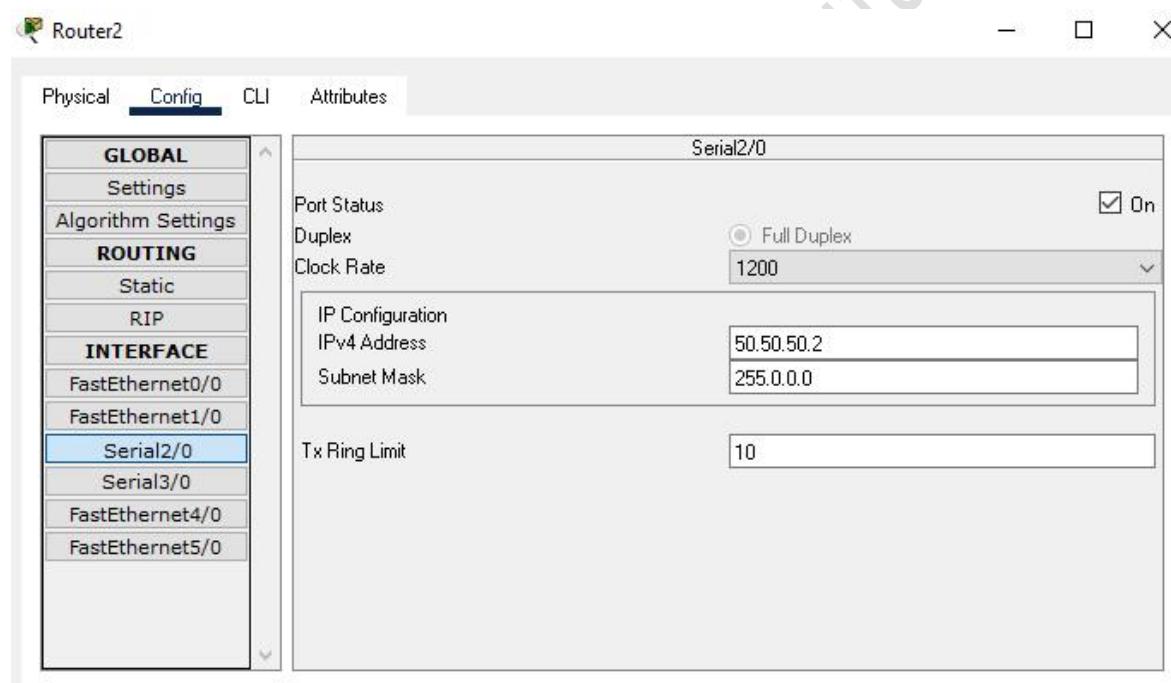
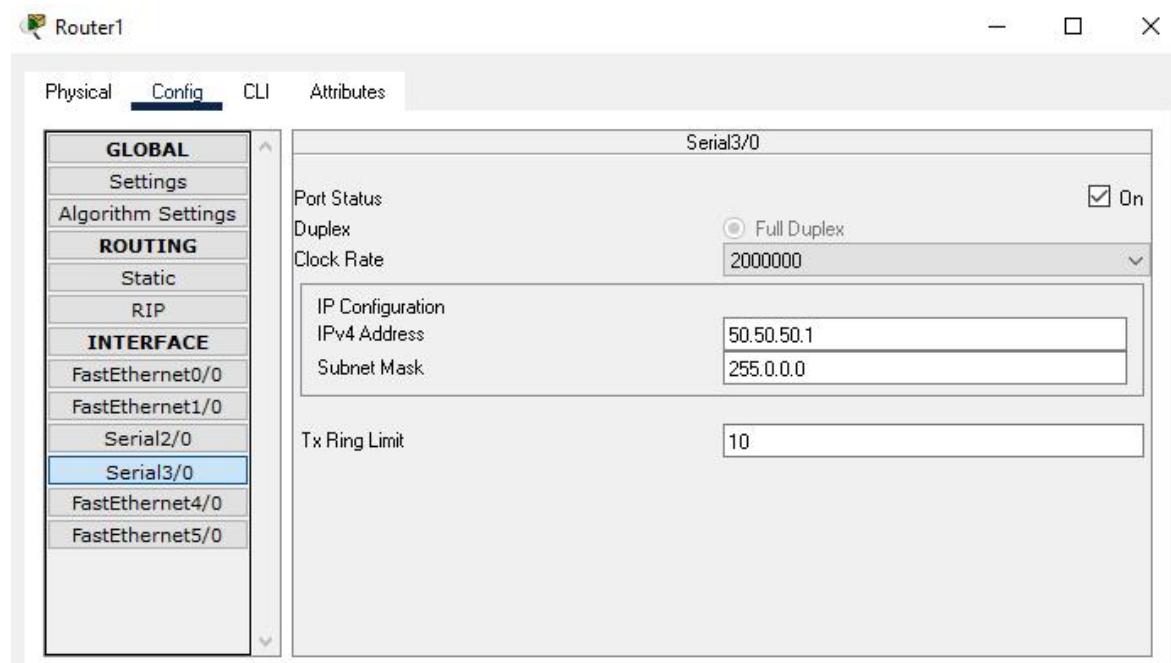
- Global Settings:** Port Status is On (checked), Bandwidth is set to 100 Mbps (radio button selected), Duplex is Full Duplex (radio button selected), and MAC Address is 0001.439B.06B5.
- IP Configuration:** IPv4 Address is 20.20.20.1 and Subnet Mask is 255.0.0.0.
- Tx Ring Limit:** The value is 10.

Router2 Configuration:

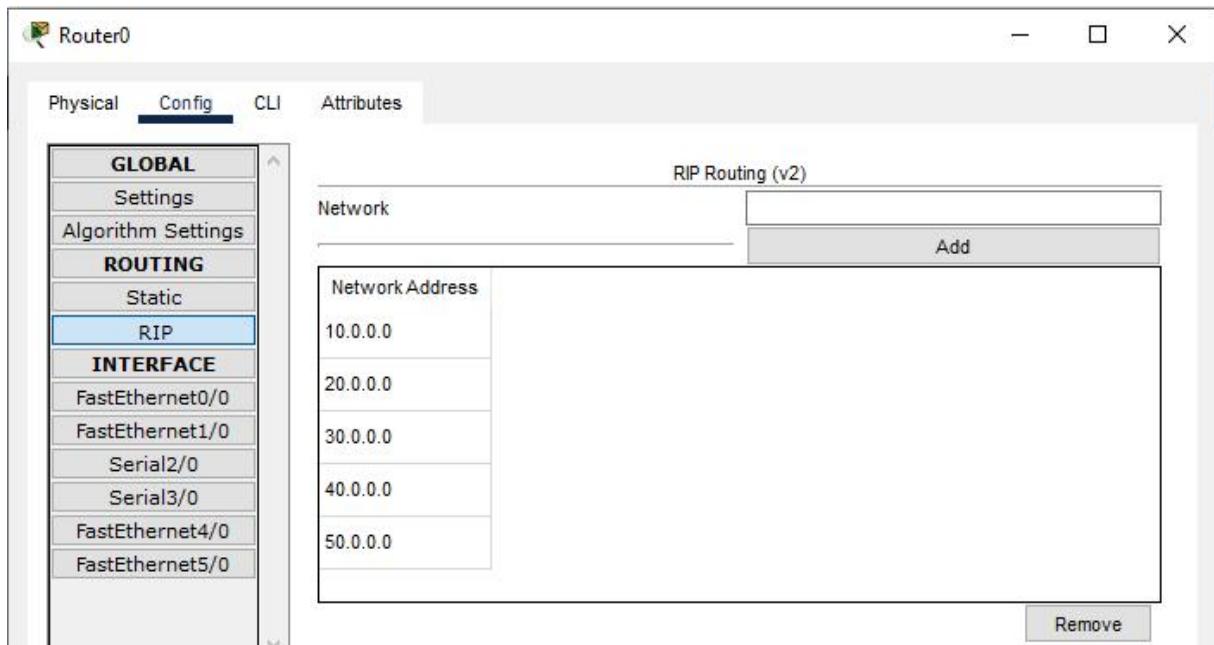
- Global Settings:** Port Status is On (checked), Bandwidth is set to 100 Mbps (radio button selected), Duplex is Full Duplex (radio button selected), and MAC Address is 0090.2B3D.0A91.
- IP Configuration:** IPv4 Address is 30.30.30.1 and Subnet Mask is 255.0.0.0.
- Tx Ring Limit:** The value is 10.

ROUTER CONFIGURATION WITH ROUTER:





RIP CONFIGURATION FOR ALL ROUTER:



PDU:

PDU List Window											
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Successful	PC1	PC7	ICMP	Blue	0.000	N	0	(edit)		
●	Successful	PC2	PC6	ICMP	Yellow	0.000	N	1	(edit)		
●	Successful	PC0	PC6	ICMP	Brown	0.000	N	2	(edit)		
●	Successful	PC2	PC8	ICMP	Purple	0.000	N	3	(edit)		

CLI:

The screenshot shows a software interface for a router named "Router1". The top menu has tabs: Physical, Config (selected), CLI (which is selected), and Attributes. The main panel is titled "IOS Command Line Interface". It displays the following configuration commands:

```
Router(config)#exit
Router(config)#interface Serial3/0
Router(config-if)#ip address 50.50.50.1 255.0.0.0
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#version 2
```

Network table:

HOST	INTERFACE	IP ADDRESS	NETWORK ADDRESS	DEFAULT GATEWAY
ROUTER3	G0/0	10.10.10.1	10.0.0.0	
	S0/1/0	40.40.40.1	40.0.0.0	
ROUTER1	G0/0	20.20.20.1	20.0.0.0	
	S0/1/0	40.40.40.2	40.0.0.0	
	S0/1/1	50.50.50.1	50.0.0.0	
ROUTER2	G0/0	30.30.30.1	30.0.0.0	
	S0/1/0	50.50.50.2	50.0.0.0	
PC0	FastEthernet0	10.10.10.2	10.0.0.0	10.10.10.1
PC1	FastEthernet0	10.10.10.3	10.0.0.0	10.10.10.1
PC2	FastEthernet0	10.10.10.4	10.0.0.0	10.10.10.1
PC3	FastEthernet0	20.20.20.2	20.0.0.0	20.20.20.1
PC4	FastEthernet0	20.20.20.3	20.0.0.0	20.20.20.1
PC5	FastEthernet0	20.20.20.4	20.0.0.0	20.20.20.1
PC6	FastEthernet0	30.30.30.2	30.0.0.0	30.30.30.1
PC7	FastEthernet0	30.30.30.3	30.0.0.0	30.30.30.1
PC8	FastEthernet0	30.30.30.4	30.0.0.0	30.30.30.1

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Practical No.-7

Aim: Using Packet Tracer, create a network with three routers with OSPF and each router associated network will have minimum three PC and show Connectivity .

- OSPF (Open Shortest Path First) is a routing protocol used in computer networks to determine the best path for data to travel from one network to another.
- OSPF is a link-state protocol, which means that routers share information about the state of their links with one another in order to calculate the most efficient path for data to take.
- OSPF is widely used in enterprise networks, especially in larger organizations, as it offers scalability, support for multiple paths to a destination, and faster convergence times compared to other routing protocols.
- OSPF is also compatible with a wide range of network topologies, including point-to-point, point-to-multipoint, and broadcast network.

Wildcard masks are commonly used in Cisco networking devices, including routers and switches, as well as in other network security applications to control access to resources and protect against unauthorized access.

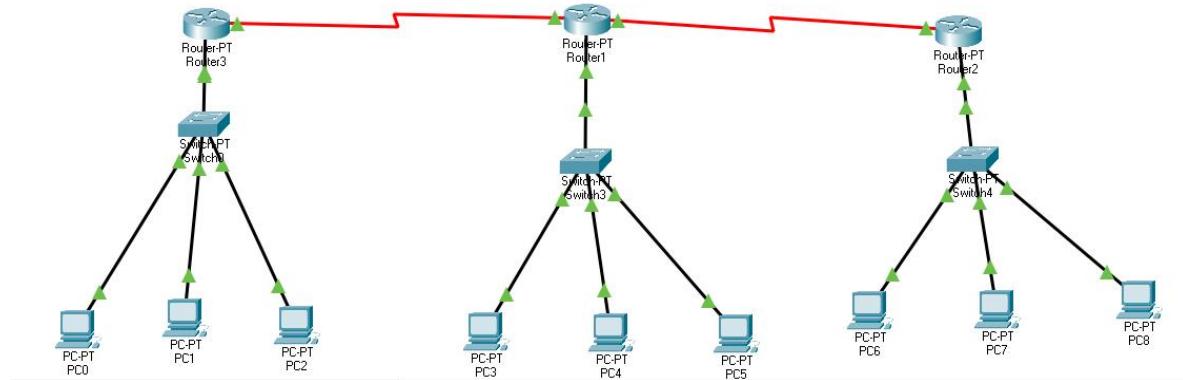
A wildcard mask is a pattern used in computer networking to specify a range of IP addresses or a subset of a network.

It is often used in conjunction with access control lists (ACLs) to define which network traffic is allowed or denied based on its source or destination IP address.

A 0 in the wildcard mask means that the corresponding bit in the IP address must match exactly, while a 1 means that the corresponding bit can be any value.

For example, if a network administrator wants to permit traffic only from the IP address range 192.168.0.0 to 192.168.255.255, they can define an ACL using the wildcard mask 0.0.255.255. This means that any IP address with a value of 192.168.x.x will be allowed through the ACL, as the first two octets are fixed and the last two can vary.

We use the following topology for the present case



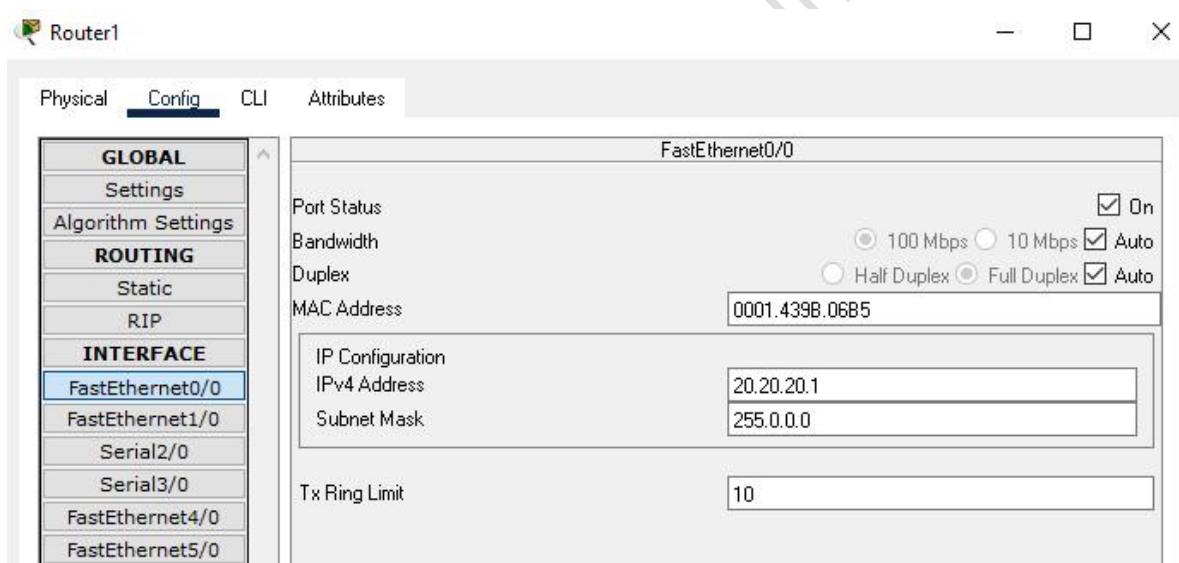
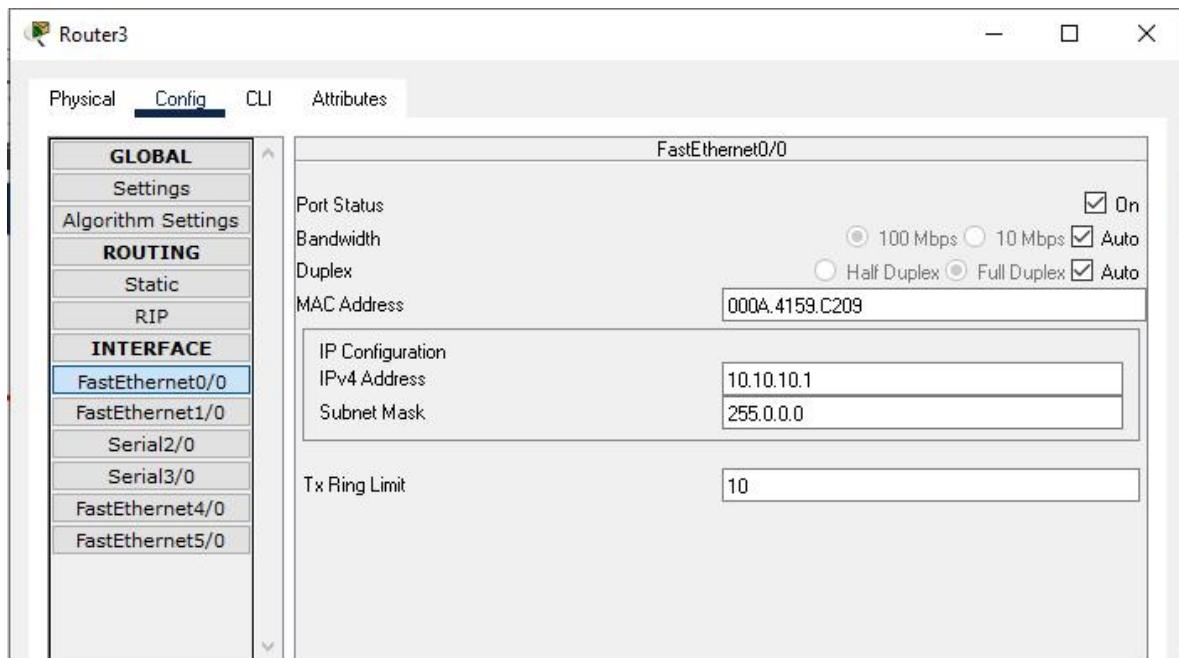
PC CONFIGURATION:

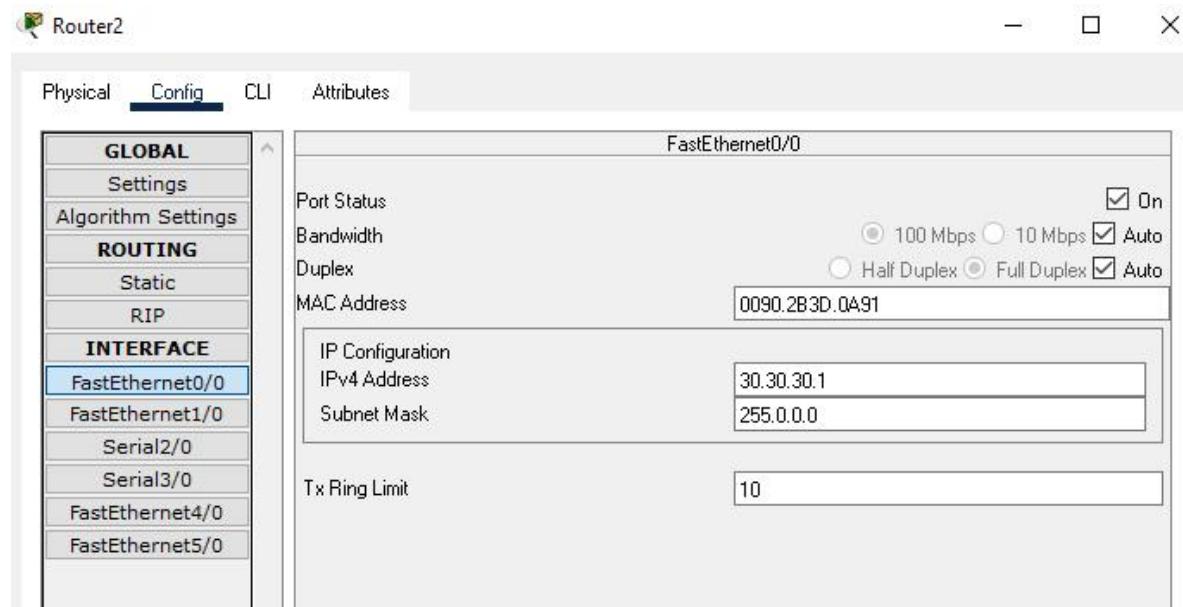
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The image displays three separate windows, each representing a different computer (PC0, PC3, and PC6) within a software application. Each window has a title bar with a minimize, maximize, and close button. The main menu bar for each window includes 'Physical', 'Config', 'Desktop' (which is underlined in blue, indicating it is the active tab), 'Programming', and 'Attributes'. Below the menu bar, there is a 'IP Configuration' dialog box. This dialog box contains a dropdown menu for 'Interface' set to 'FastEthernet0'. It also contains a section for 'IP Configuration' where the 'Static' radio button is selected over 'DHCP'. The configuration details are as follows:

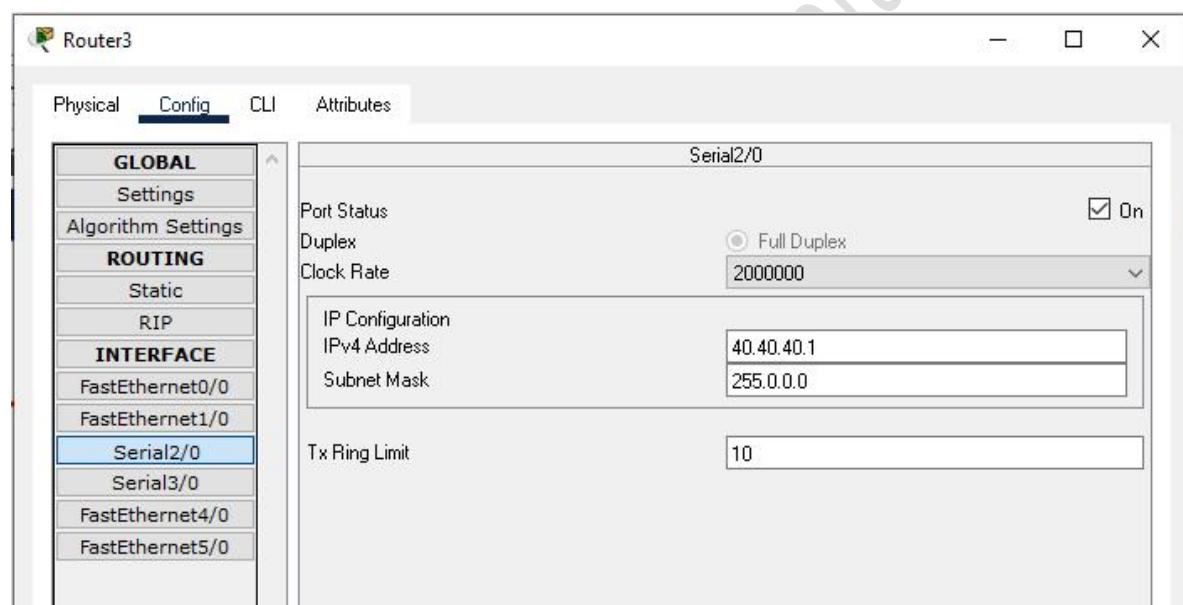
PC	IPv4 Address	Subnet Mask	Default Gateway	DNS Server
PC0	10.10.10.2	255.0.0.0	10.10.10.1	0.0.0.0
PC3	20.20.20.2	255.0.0.0	20.20.20.1	0.0.0.0
PC6	30.30.30.2	255.0.0.0	30.30.30.1	0.0.0.0

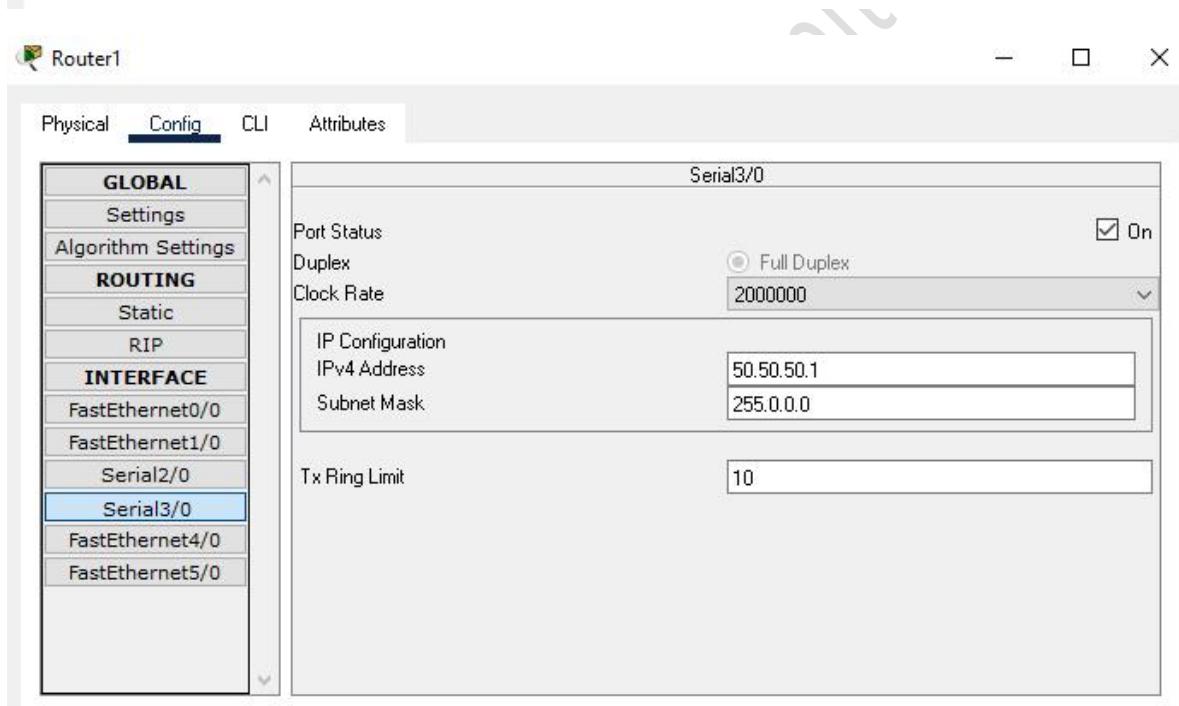
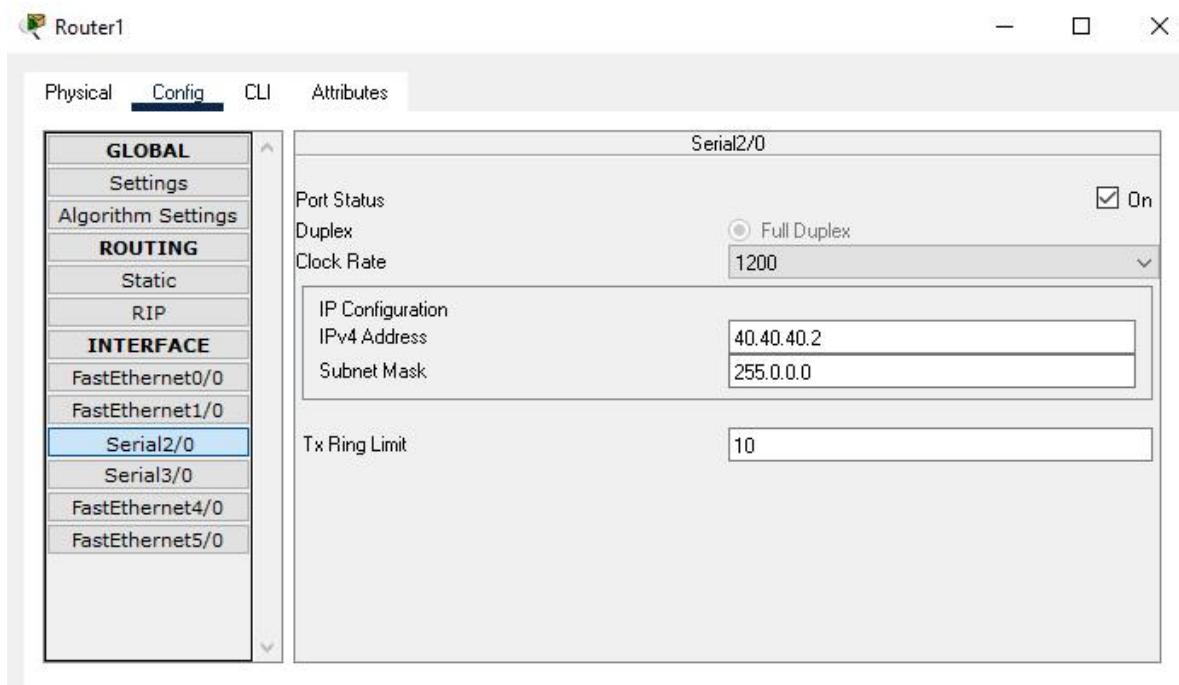
ROUTER CONFIGURATION WITH PC:



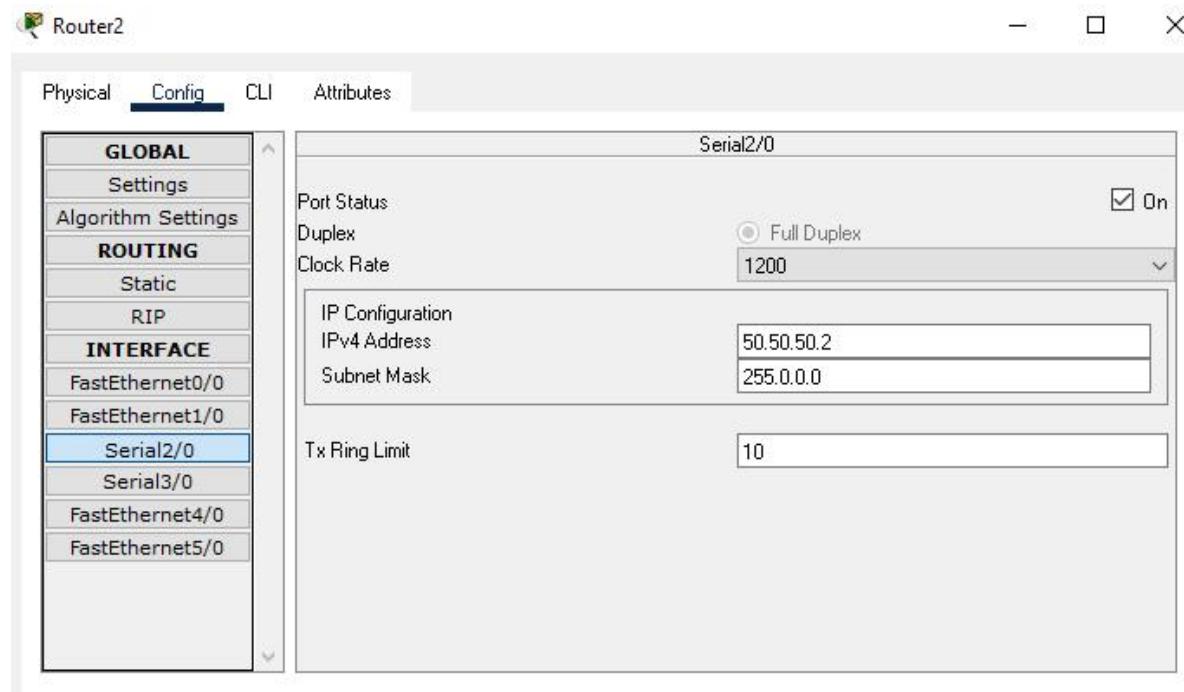


ROUTER CONFIGURATION WITH ROUTER:





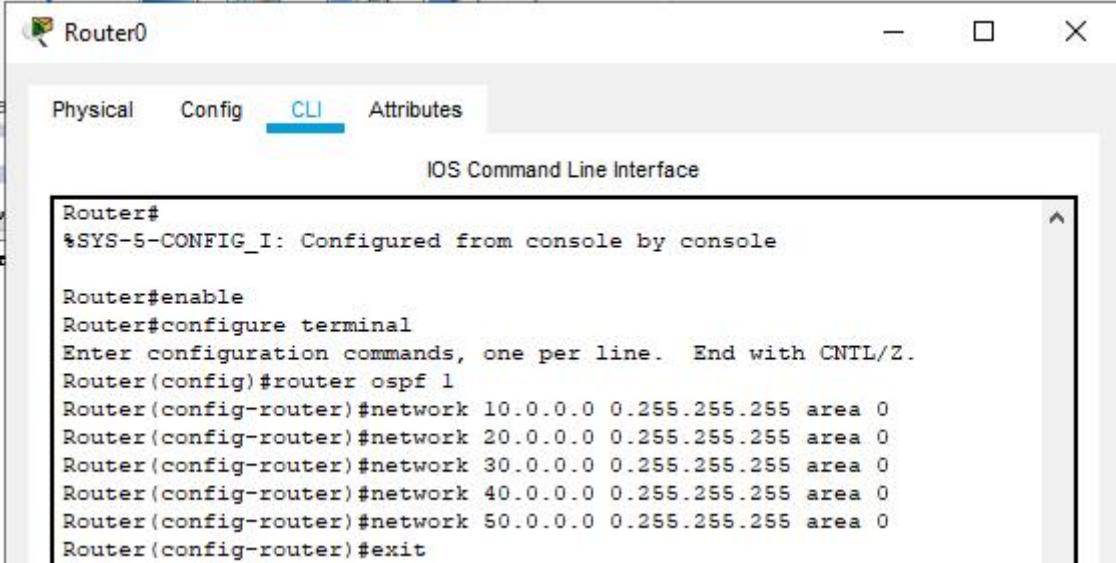
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PDU:

PDU List Window											
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Successful	PC1	PC7	ICMP	Blue	0.000	N	0	(edit)		
●	Successful	PC2	PC6	ICMP	Yellow	0.000	N	1	(edit)		
●	Successful	PC0	PC6	ICMP	Brown	0.000	N	2	(edit)		
●	Successful	PC2	PC8	ICMP	Purple	0.000	N	3	(edit)		

CLI:



The screenshot shows the Cisco IOS Command Line Interface (CLI) running on a router named 'Router0'. The 'CLI' tab is selected in the top navigation bar. The command-line window displays the configuration of OSPF area 0 on the router's interfaces.

```
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0
Router(config-router)#network 50.0.0.0 0.255.255.255 area 0
Router(config-router)#exit
```

Network table:

HOST	INTERFACE	IP ADDRESS	NETWORK ADDRESS	DEFAULT GATEWAY
ROUTER3	G0/0	10.10.10.1	10.0.0.0	
	S0/1/0	40.40.40.1	40.0.0.0	
ROUTER1	G0/0	20.20.20.1	20.0.0.0	
	S0/1/0	40.40.40.2	40.0.0.0	
	S0/1/1	50.50.50.1	50.0.0.0	
ROUTER2	G0/0	30.30.30.1	30.0.0.0	
	S0/1/0	50.50.50.2	50.0.0.0	
PC0	FastEthernet0	10.10.10.2	10.0.0.0	10.10.10.1
PC1	FastEthernet0	10.10.10.3	10.0.0.0	10.10.10.1
PC2	FastEthernet0	10.10.10.4	10.0.0.0	10.10.10.1
PC3	FastEthernet0	20.20.20.2	20.0.0.0	20.20.20.1
PC4	FastEthernet0	20.20.20.3	20.0.0.0	20.20.20.1
PC5	FastEthernet0	20.20.20.4	20.0.0.0	20.20.20.1
PC6	FastEthernet0	30.30.30.2	30.0.0.0	30.30.30.1
PC7	FastEthernet0	30.30.30.3	30.0.0.0	30.30.30.1
PC8	FastEthernet0	30.30.30.4	30.0.0.0	30.30.30.1

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PRACTICAL NO:8

Aim: Using Packet Tracer, create a network with three routers with BGP and each router associated network will have minimum three PC and show Connectivity.

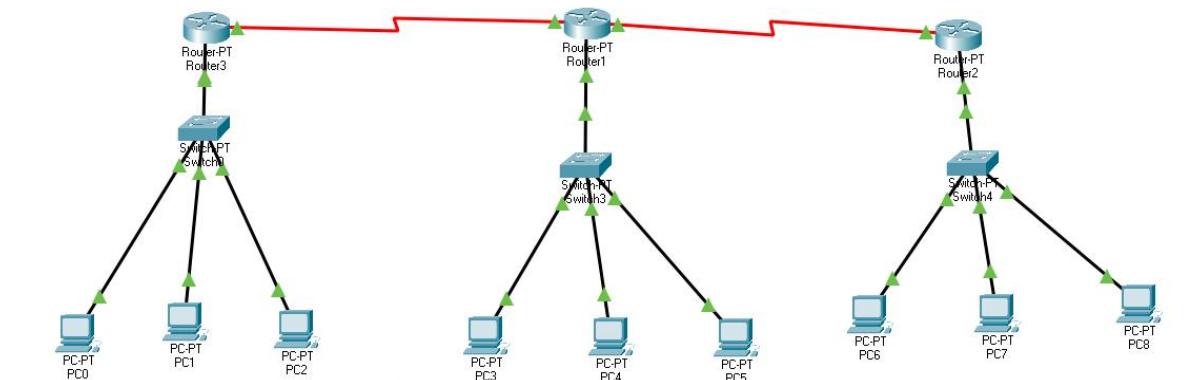
BGP (Border Gateway Protocol) is a routing protocol used to exchange routing information between routers in different autonomous systems (AS) in the Internet.

BGP is commonly used by Internet service providers (ISPs) to exchange routing information with other ISPs and to provide connectivity for their customers to the rest of the Internet.

BGP uses a hierarchical system of autonomous systems to minimize the number of routes that need to be exchanged between routers.

BGP routers maintain a database of known routes and exchange updates with their neighboring routers to keep their databases up to date.

We use the following topology for the present case

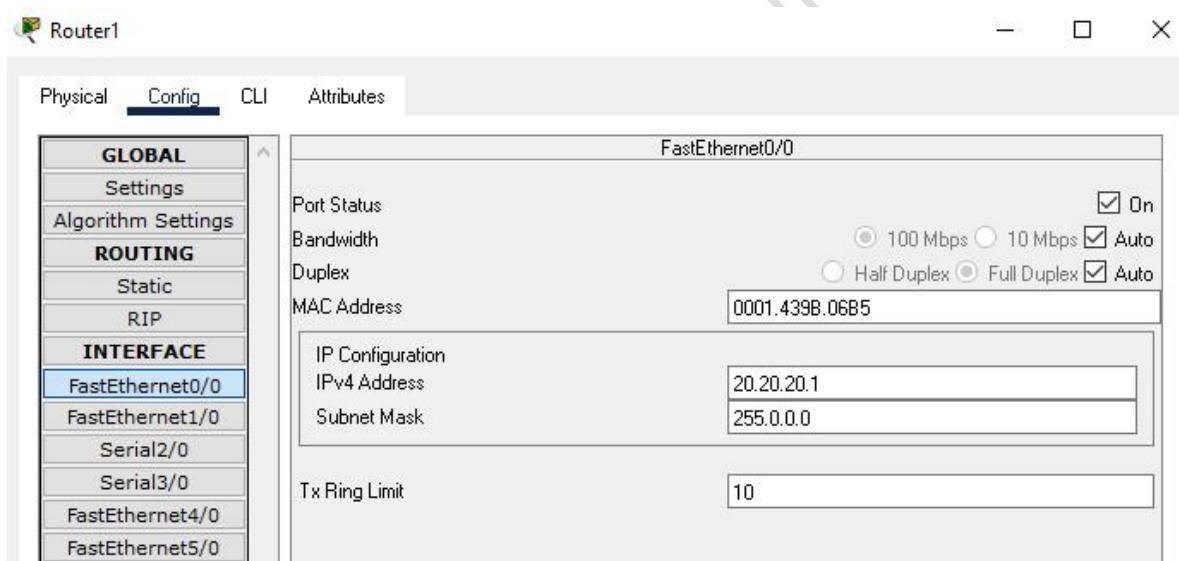
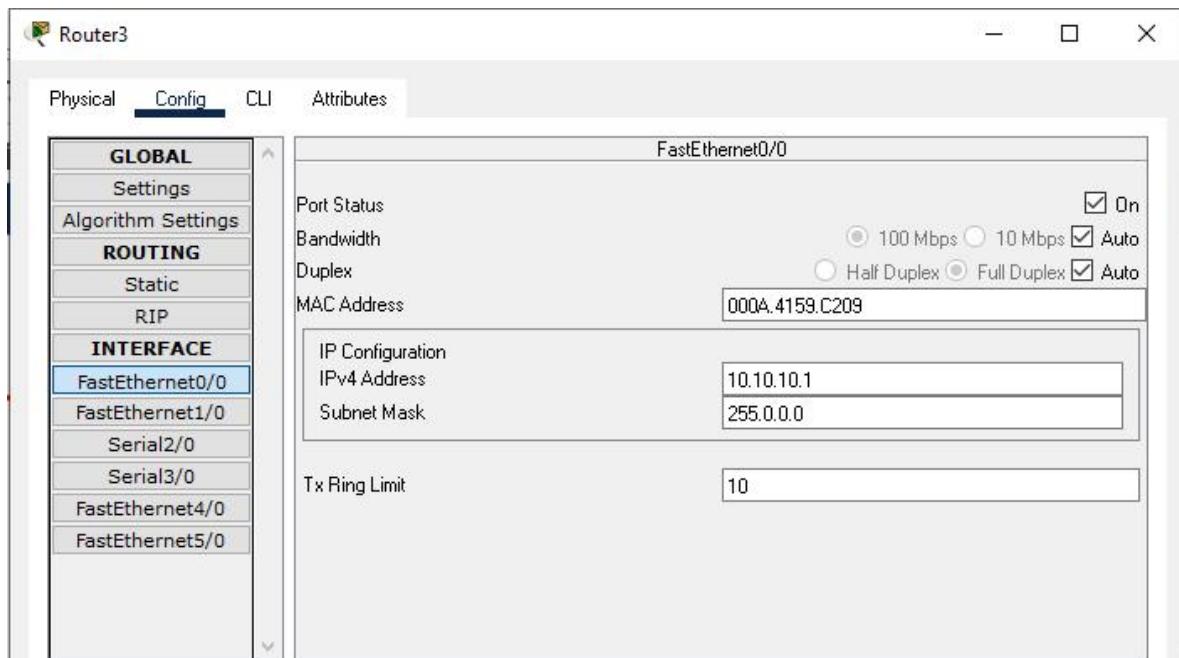


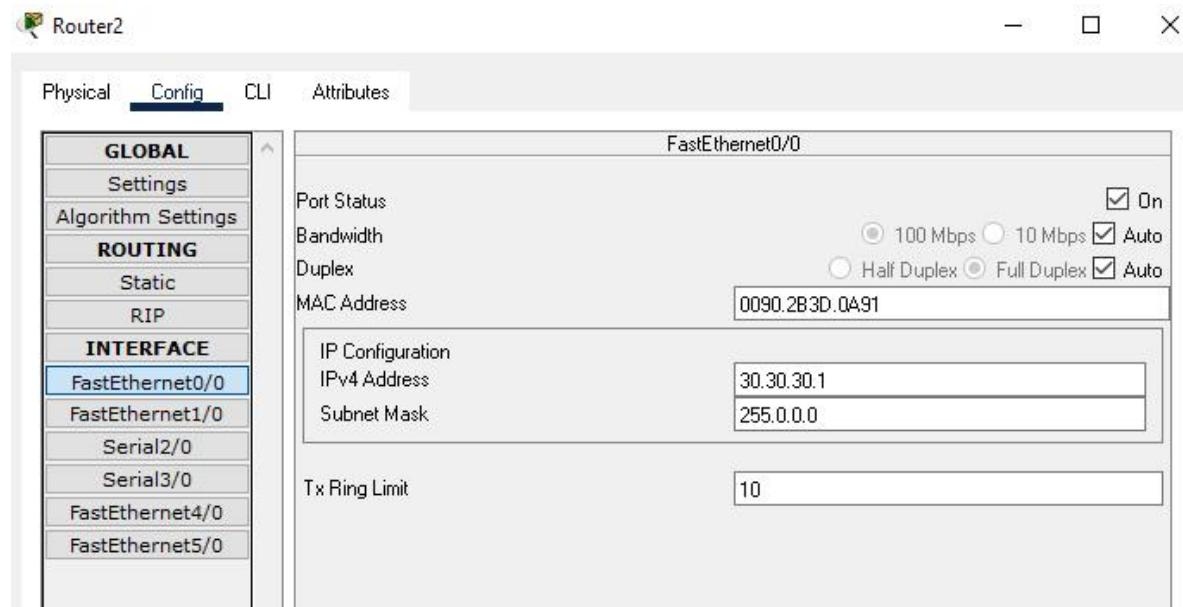
PC CONFIGURATION:

The image displays three separate windows from a network configuration application, each titled "IP Configuration".

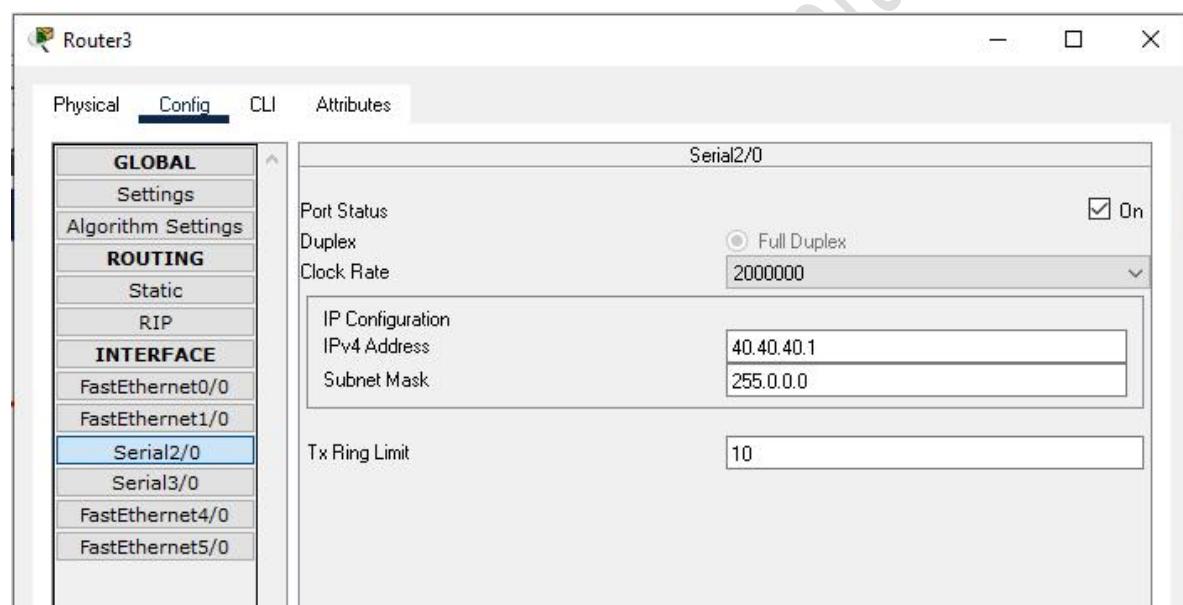
- PC0 Configuration:** The interface is set to "FastEthernet0". The "IPv4 Address" is 10.10.10.2, "Subnet Mask" is 255.0.0.0, "Default Gateway" is 10.10.10.1, and "DNS Server" is 0.0.0.0. The "Static" radio button is selected.
- PC3 Configuration:** The interface is set to "FastEthernet0". The "IPv4 Address" is 20.20.20.2, "Subnet Mask" is 255.0.0.0, "Default Gateway" is 20.20.20.1, and "DNS Server" is 0.0.0.0. The "Static" radio button is selected.
- PC6 Configuration:** The interface is set to "FastEthernet0". The "IPv4 Address" is 30.30.30.2, "Subnet Mask" is 255.0.0.0, "Default Gateway" is 30.30.30.1, and "DNS Server" is 0.0.0.0. The "Static" radio button is selected.

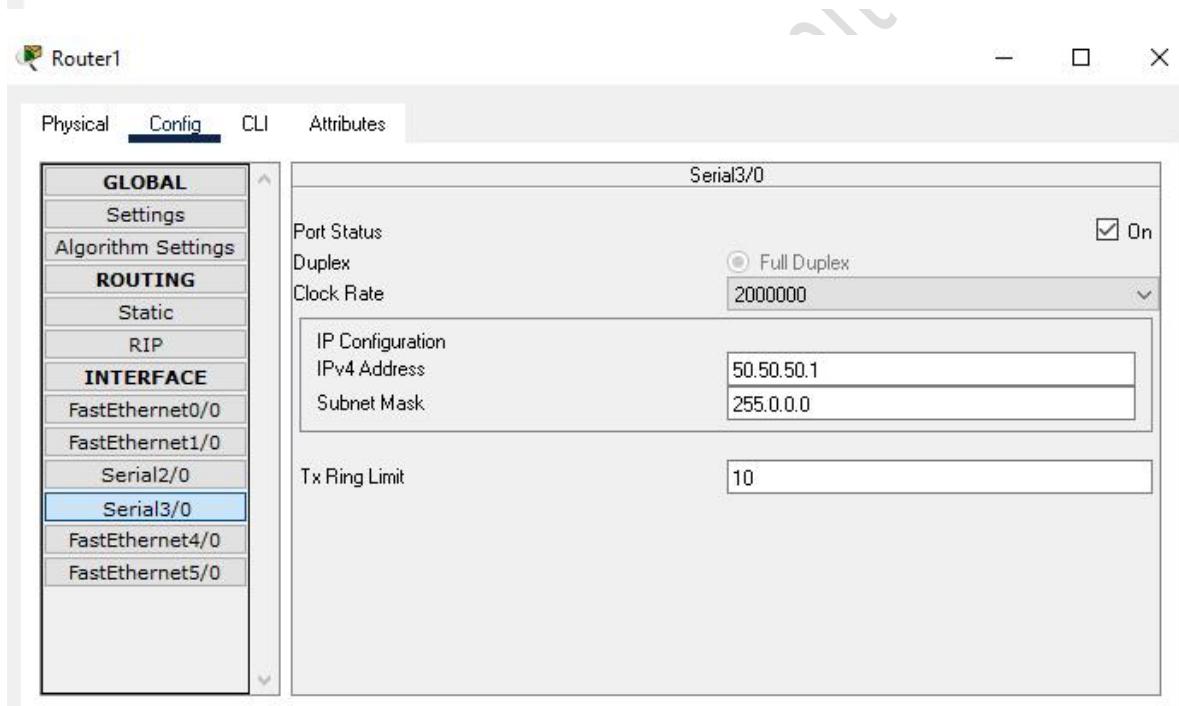
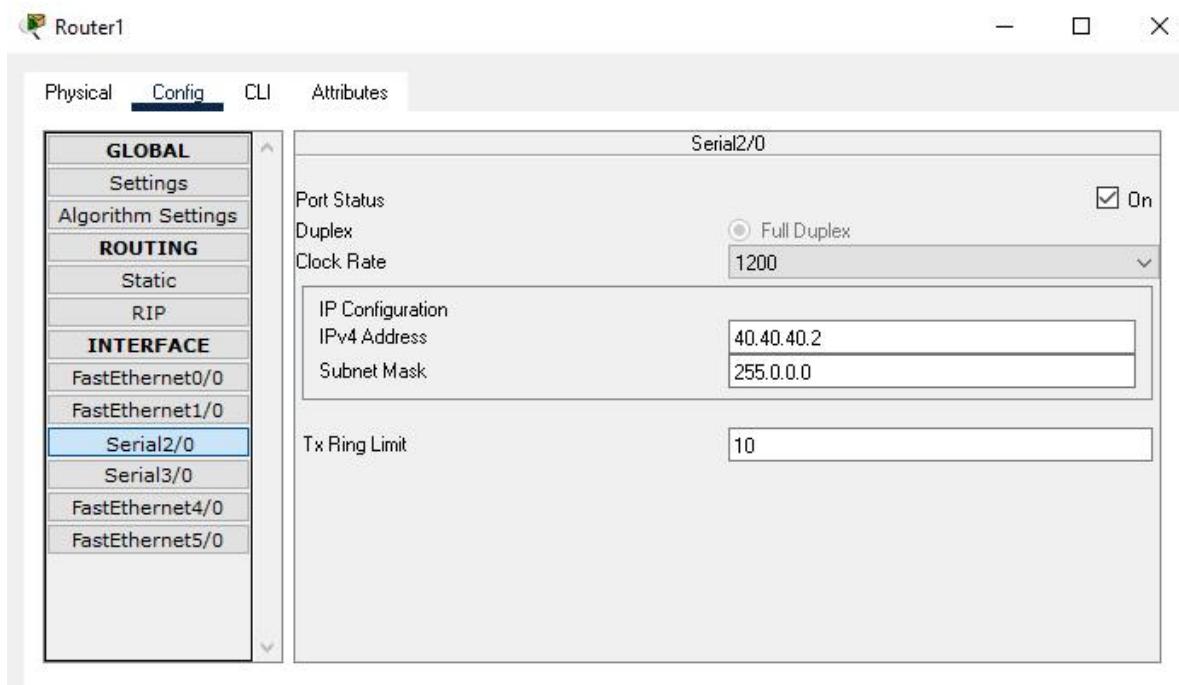
ROUTER CONFIGURATION WITH PC:

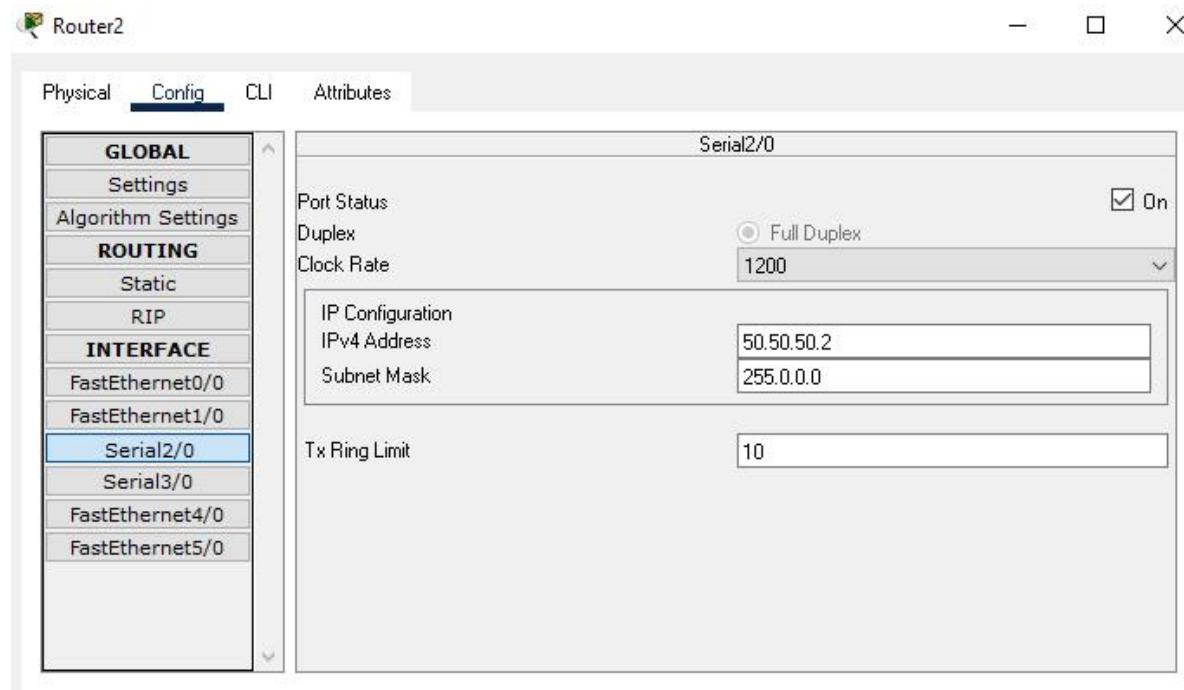




ROUTER CONFIGURATION WITH ROUTER:







PDU:

PDU List Window											
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Successful	PC1	PC7	ICMP	Blue	0.000	N	0	(edit)		
●	Successful	PC2	PC6	ICMP	Yellow	0.000	N	1	(edit)		
●	Successful	PC0	PC6	ICMP	Brown	0.000	N	2	(edit)		
●	Successful	PC2	PC8	ICMP	Purple	0.000	N	3	(edit)		

CLI:

The screenshot shows a terminal window titled "Router0". The top menu has tabs: Physical, Config, CLI (which is selected), and Attributes. The main area is titled "IOS Command Line Interface". It displays the following configuration commands:

```
Router(config)#router rip
Router(config-router)#router bgp 1000
Router(config-router)#network 10.0.0.0
Router(config-router)#neighbor 40.40.40.2 remote-as 2000
Router(config-router)#network 40.0.0.0
Router(config-router)#exit
Router(config)##%BGP-5-ADJCHANGE: neighbor 40.40.40.2 Up
```

The image shows two separate windows, each titled "Router1" and "Router2", representing Cisco routers. Both windows have tabs for "Physical", "Config", "CLI" (which is selected), and "Attributes". The "CLI" tab displays the IOS Command Line Interface.

Router1 Configuration:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#router bgp 2000
Router(config-router)#network 20.0.0.0
Router(config-router)#network 40.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#network 40.40.40.1 remote-as 1000
                                         ^
% Invalid input detected at '^' marker.

Router(config-router)#neighbor 40.40.40.1 remote-as 1000
Router(config-router)##%BGP-5-ADJCHANGE: neighbor 40.40.40.1 Up

Router(config-router)#neighbor 40.40.40.1 remote-as 1000
Router(config-router)#neighbor 50.50.50.2 remote-as 3000
Router(config-router)#exit
```

Router2 Configuration:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#router bgp 3000
Router(config-router)#network 30.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#neighbor 50.50.50.1
% Incomplete command.
Router(config-router)#neighbor 50.50.50.1 remote-as 2000
Router(config-router)##%BGP-5-ADJCHANGE: neighbor 50.50.50.1 Up

Router(config-router)#neighbor 50.50.50.1 remote-as 2000
Router(config-router)#exit
```

Network table:

HOST	INTERFACE	IP ADDRESS	NETWORK ADDRESS	DEFAULT GATEWAY
ROUTER3	G0/0	10.10.10.1	10.0.0.0	
	S0/1/0	40.40.40.1	40.0.0.0	
ROUTER1	G0/0	20.20.20.1	20.0.0.0	
	S0/1/0	40.40.40.2	40.0.0.0	
	S0/1/1	50.50.50.1	50.0.0.0	
ROUTER2	G0/0	30.30.30.1	30.0.0.0	
	S0/1/0	50.50.50.2	50.0.0.0	
PC0	FastEthernet0	10.10.10.2	10.0.0.0	10.10.10.1
PC1	FastEthernet0	10.10.10.3	10.0.0.0	10.10.10.1
PC2	FastEthernet0	10.10.10.4	10.0.0.0	10.10.10.1
PC3	FastEthernet0	20.20.20.2	20.0.0.0	20.20.20.1
PC4	FastEthernet0	20.20.20.3	20.0.0.0	20.20.20.1
PC5	FastEthernet0	20.20.20.4	20.0.0.0	20.20.20.1
PC6	FastEthernet0	30.30.30.2	30.0.0.0	30.30.30.1
PC7	FastEthernet0	30.30.30.3	30.0.0.0	30.30.30.1
PC8	FastEthernet0	30.30.30.4	30.0.0.0	30.30.30.1

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