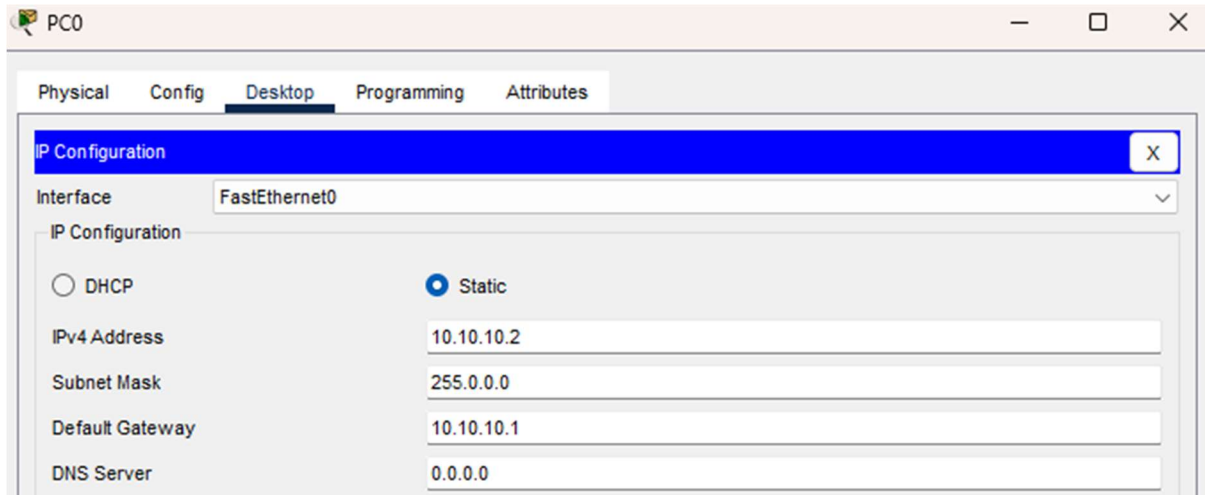


Implementation :-

We configure the above network using the following IP addresses :-

Host	Interface	IP address	Network Address	Wildcard Mask
Router0	G0/0	10.10.10.1	10.0.0.0	0.255.255.255
	S0/1/0	40.40.40.1	40.0.0.0	0.255.255.255
Router1	G0/0	20.20.20.1	20.0.0.0	0.255.255.255
	S0/1/0	40.40.40.2	40.0.0.0	0.255.255.255
	S0/1/1	50.50.50.1	50.0.0.0	0.255.255.255
Router2	G0/0	30.30.30.1	30.0.0.0	0.255.255.255
	S0/1/0	50.50.50.2	50.0.0.0	0.255.255.255
PC0	FastEthernet0	10.10.10.2	10.0.0.0	0.255.255.255
PC1	FastEthernet0	10.10.10.3	10.0.0.0	0.255.255.255
PC2	FastEthernet0	10.10.10.4	10.0.0.0	0.255.255.255
PC3	FastEthernet0	20.20.20.2	20.0.0.0	0.255.255.255
PC4	FastEthernet0	20.20.20.3	20.0.0.0	0.255.255.255
PC5	FastEthernet0	20.20.20.4	20.0.0.0	0.255.255.255
PC6	FastEthernet0	30.30.30.2	30.0.0.0	0.255.255.255
PC7	FastEthernet0	30.30.30.3	30.0.0.0	0.255.255.255
PC8	FastEthernet0	30.30.30.4	30.0.0.0	0.255.255.255

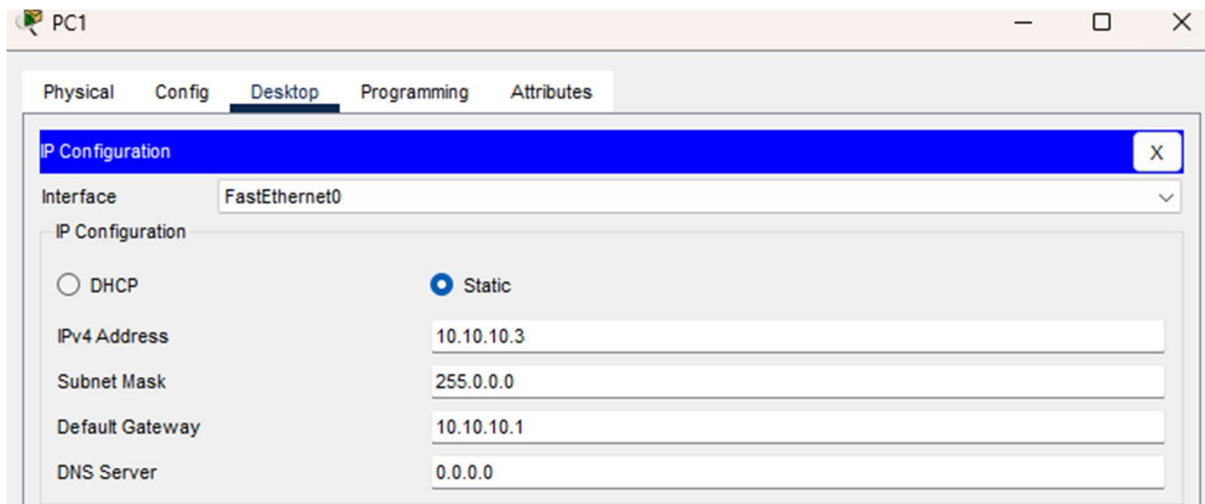
- **Configuring PC0:**



The screenshot shows the configuration window for PC0. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'Static' radio button is selected for IP configuration. The fields are filled with the following values:

Field	Value
Interface	FastEthernet0
IP Configuration	Static
IPv4 Address	10.10.10.2
Subnet Mask	255.0.0.0
Default Gateway	10.10.10.1
DNS Server	0.0.0.0

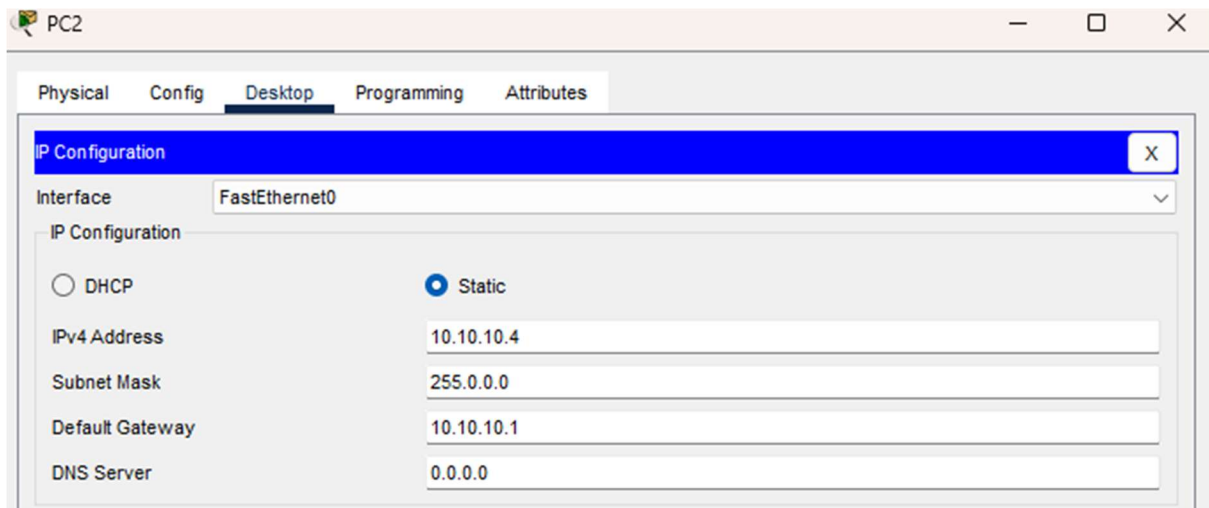
- **Configuring PC1:**



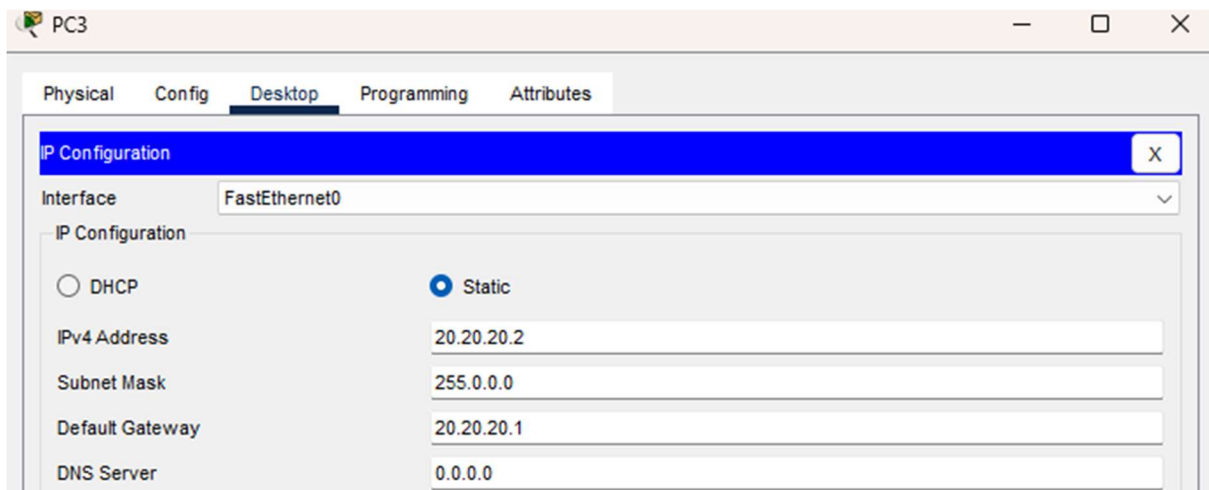
The screenshot shows the configuration window for PC1. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'Static' radio button is selected for IP configuration. The fields are filled with the following values:

Field	Value
Interface	FastEthernet0
IP Configuration	Static
IPv4 Address	10.10.10.3
Subnet Mask	255.0.0.0
Default Gateway	10.10.10.1
DNS Server	0.0.0.0

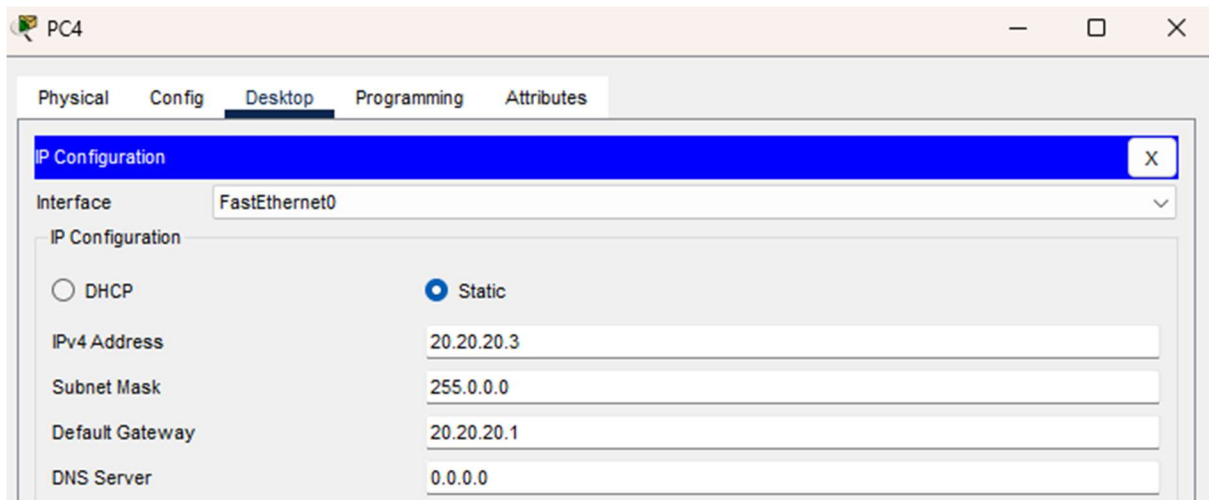
- **Configuring PC2:**



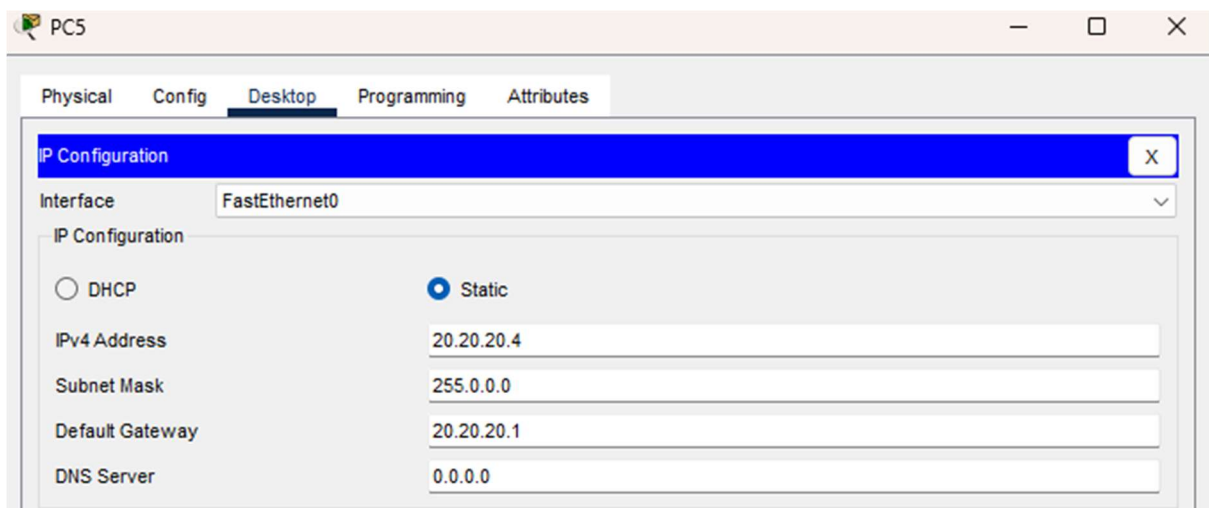
- **Configuring PC3:**



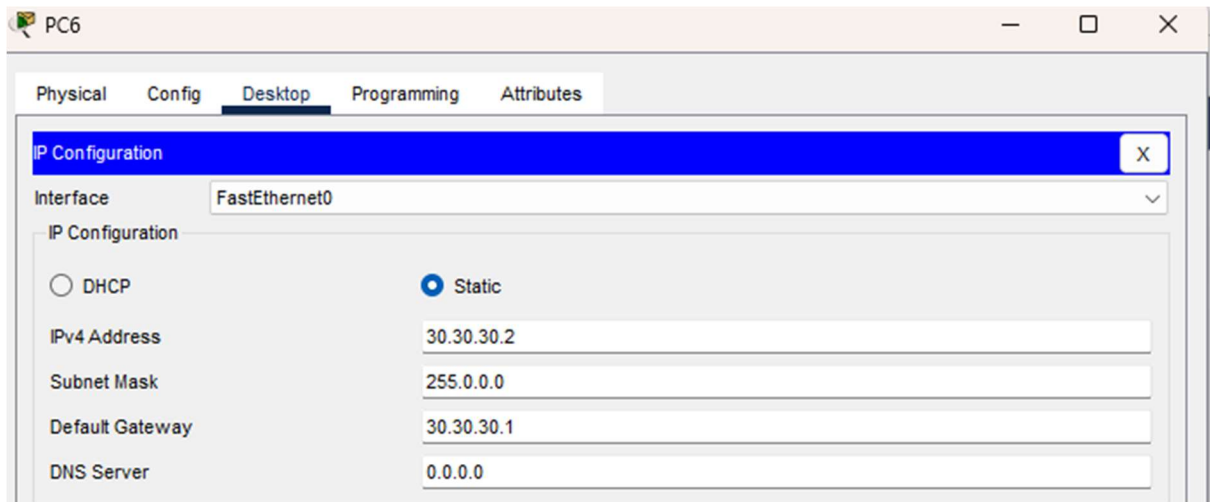
- **Configuring PC4:**



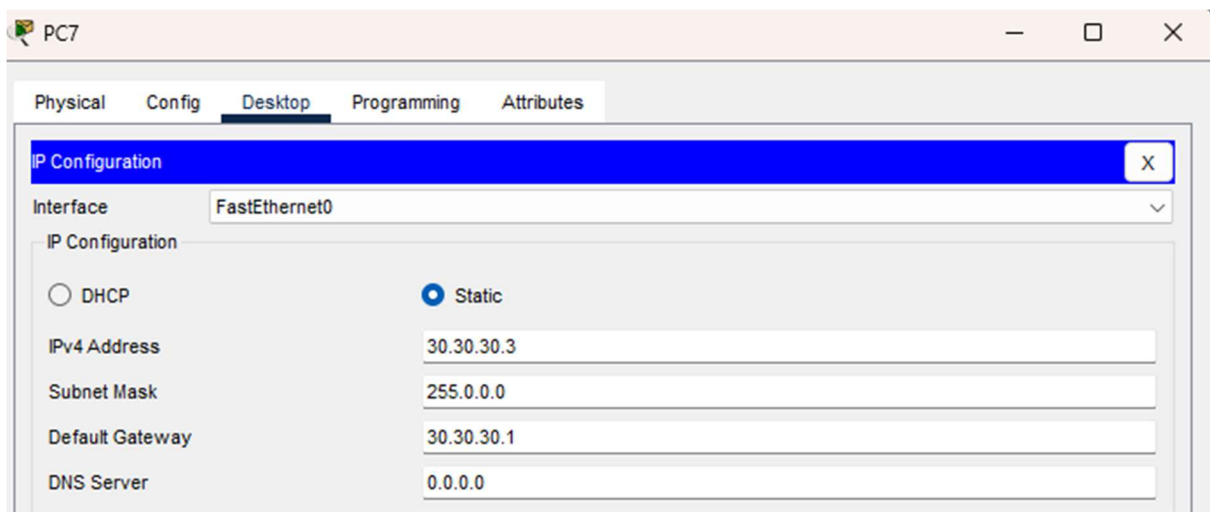
- **Configuring PC5:**



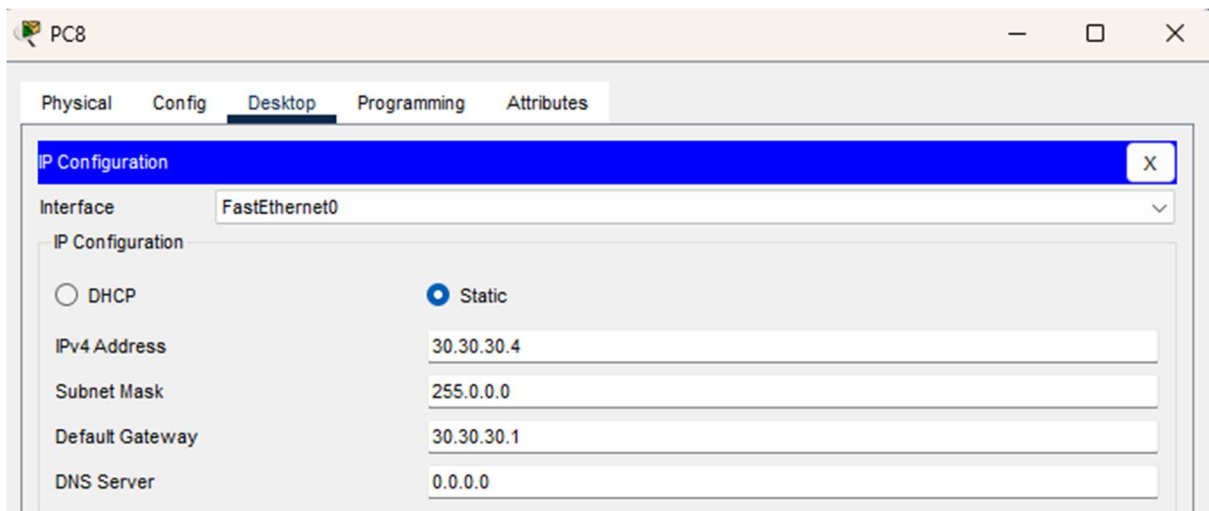
- **Configuring PC6:**



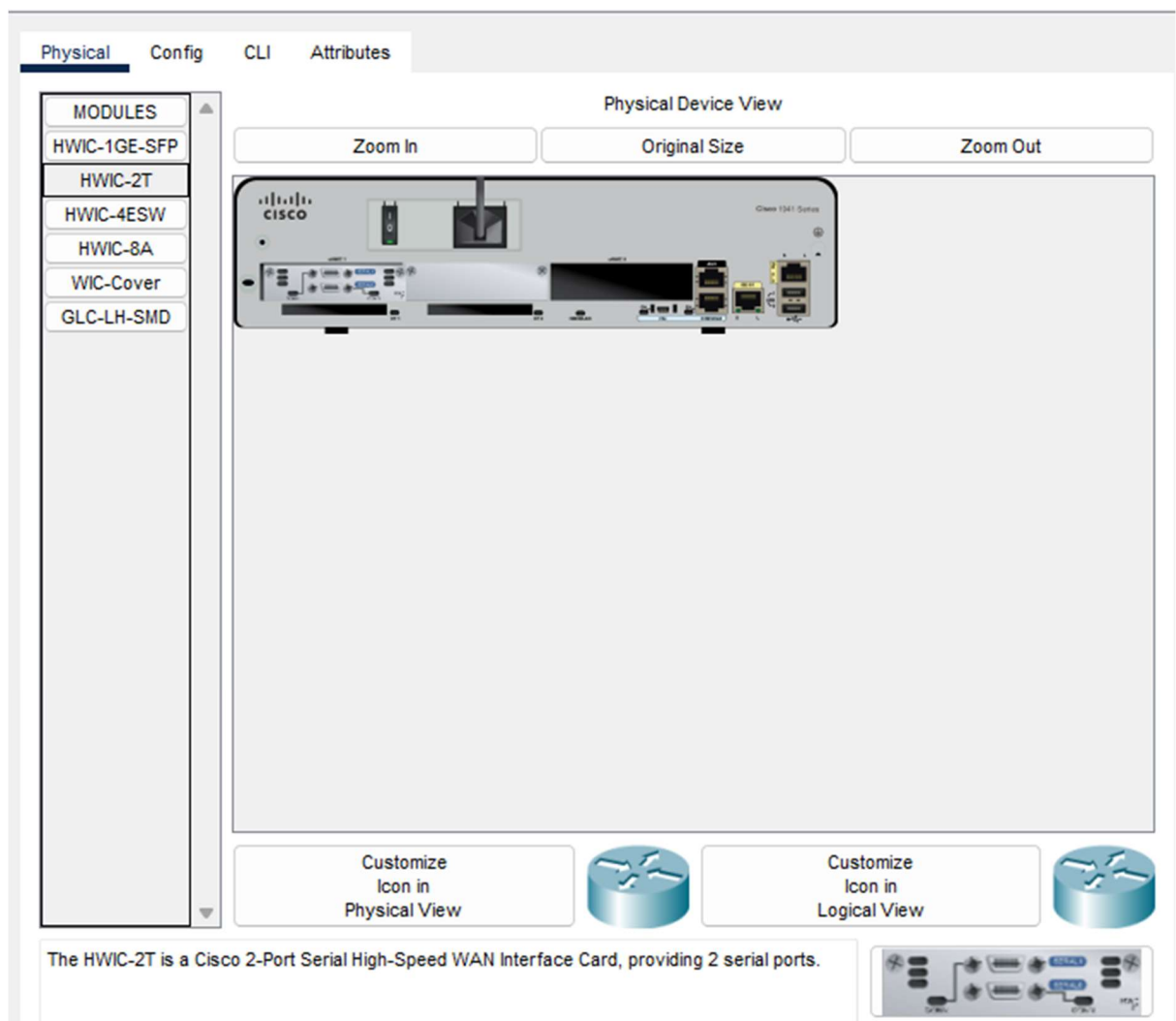
- **Configuring PC7:**



- **Configuring PC8:**



- **Set Serial Interface (HWIC-2T Port) For All Routers:-**



- Router0 Configuration With PC0,PC1,PC2:

The screenshot shows the configuration window for Router0. The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, and 'GigabitEthernet0/0' is selected. The main area displays the configuration for this interface:

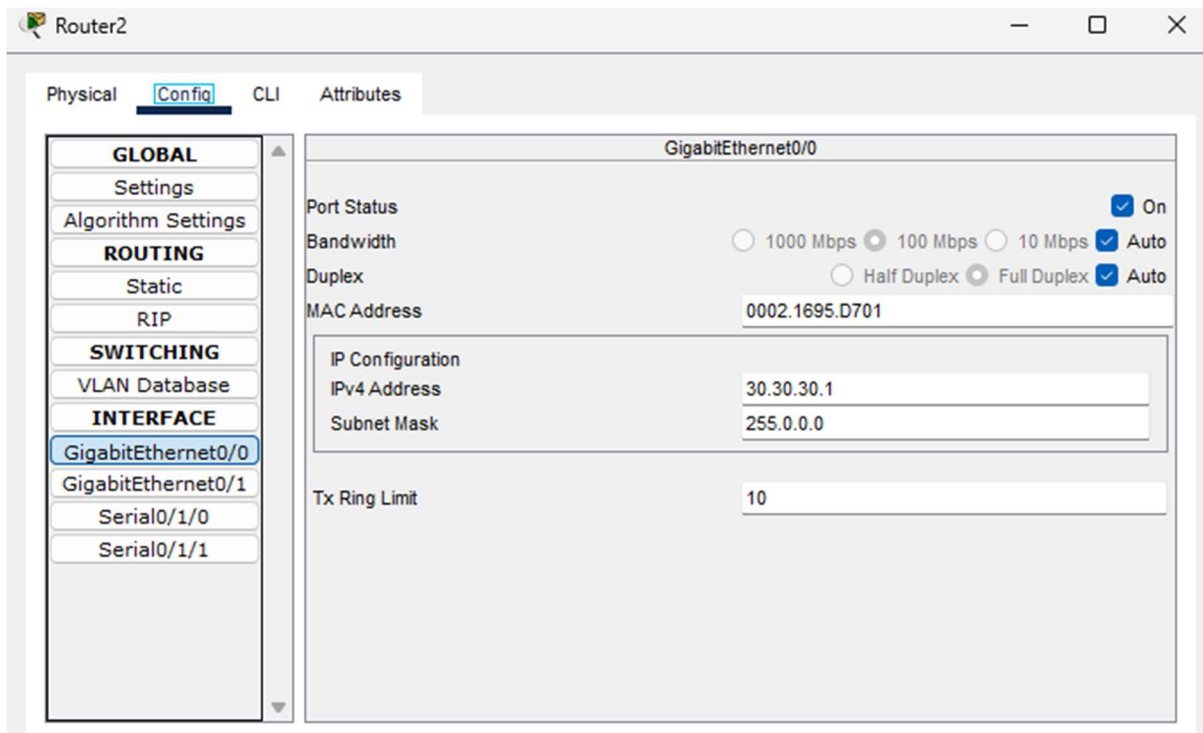
GigabitEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input type="radio"/> 1000 Mbps <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0030.F21C.0801
IP Configuration	
IPv4 Address	10.10.10.1
Subnet Mask	255.0.0.0
Tx Ring Limit	10

- Router1 Configuration With PC3,PC4,PC5:

The screenshot shows the configuration window for Router1. The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, and 'GigabitEthernet0/0' is selected. The main area displays the configuration for this interface:

GigabitEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input type="radio"/> 1000 Mbps <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0090.2176.C901
IP Configuration	
IPv4 Address	20.20.20.1
Subnet Mask	255.0.0.0
Tx Ring Limit	10

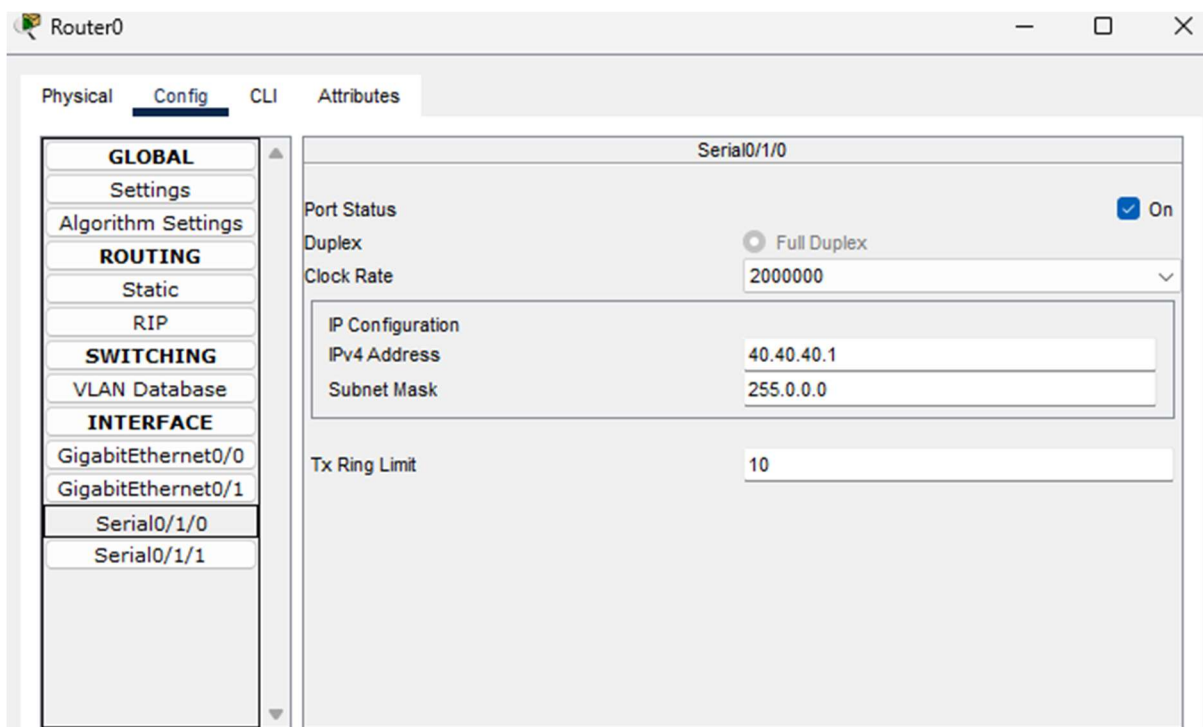
- Router2 Configuration With PC6,PC7,PC8:



The image shows the configuration window for Router2. The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, and 'GigabitEthernet0/0' is selected. The main area displays the configuration for this interface. The 'Port Status' is 'On'. The 'Bandwidth' is set to '100 Mbps'. The 'Duplex' is set to 'Full Duplex'. The 'MAC Address' is '0002.1695.D701'. The 'IP Configuration' section shows the 'IPv4 Address' as '30.30.30.1' and the 'Subnet Mask' as '255.0.0.0'. The 'Tx Ring Limit' is set to '10'.

GigabitEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input type="radio"/> 1000 Mbps <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0002.1695.D701
IP Configuration	
IPv4 Address	30.30.30.1
Subnet Mask	255.0.0.0
Tx Ring Limit	10

- Router0 Configuration With Router1:



The image shows the configuration window for Router0. The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, and 'Serial0/1/0' is selected. The main area displays the configuration for this interface. The 'Port Status' is 'On'. The 'Duplex' is set to 'Full Duplex'. The 'Clock Rate' is set to '2000000'. The 'IP Configuration' section shows the 'IPv4 Address' as '40.40.40.1' and the 'Subnet Mask' as '255.0.0.0'. The 'Tx Ring Limit' is set to '10'.

Serial0/1/0	
Port Status	<input checked="" type="checkbox"/> On
Duplex	<input checked="" type="radio"/> Full Duplex
Clock Rate	2000000
IP Configuration	
IPv4 Address	40.40.40.1
Subnet Mask	255.0.0.0
Tx Ring Limit	10

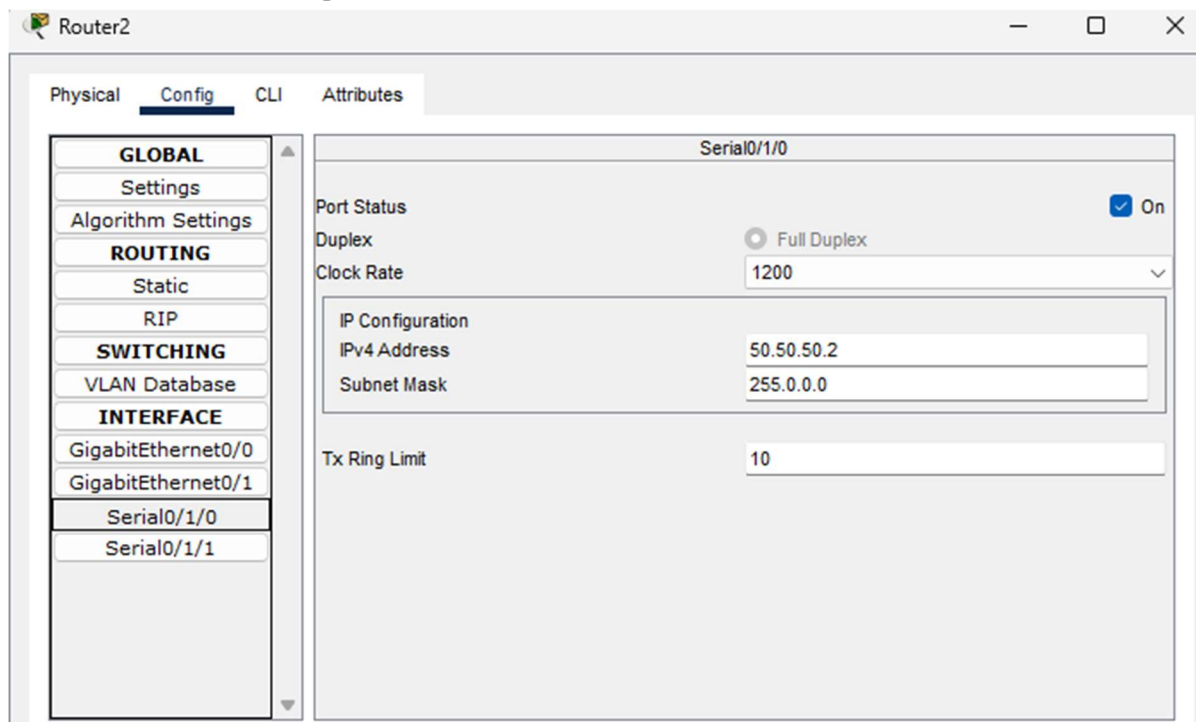
- Router1 Configuration With Router0:

The screenshot shows the configuration window for Router1, specifically for the Serial0/1/0 interface. The left sidebar contains a tree view with categories: GLOBAL, ROUTING, SWITCHING, and INTERFACE. Under INTERFACE, the following interfaces are listed: GigabitEthernet0/0, GigabitEthernet0/1, Serial0/1/0 (selected), and Serial0/1/1. The main configuration area for Serial0/1/0 includes: Port Status (checked On), Duplex (radio button for Full Duplex), Clock Rate (dropdown menu set to 1200), IP Configuration (IPv4 Address: 40.40.40.2, Subnet Mask: 255.0.0.0), and Tx Ring Limit (input field set to 10).

- Router1 Configuration With Router2:

The screenshot shows the configuration window for Router1, specifically for the Serial0/1/1 interface. The left sidebar is identical to the previous screenshot, with Serial0/1/1 now selected. The main configuration area for Serial0/1/1 includes: Port Status (checked On), Duplex (radio button for Full Duplex), Clock Rate (dropdown menu set to 2000000), IP Configuration (IPv4 Address: 50.50.50.1, Subnet Mask: 255.0.0.0), and Tx Ring Limit (input field set to 10).

- **Router2 Configuration With Router1:**



- **Configuring Router0 for OSPF (using the CLI mode)**

Router(config)#

Router(config)#router ospf 1

Router(config-router)#network 10.0.0.0 255. 255. 255.255 area 0

Router(config-router)# network 20.0.0.0 255. 255. 255.255 area 0

Router(config-router)# network 30.0.0.0 255. 255. 255.255 area 0

Router(config-router)# network 40.0.0.0 255. 255. 255.255 area 0

Router(config-router)# network 50.0.0.0 255. 255. 255.255 area 0

Router(config-router)#exit

- **Configuring Router1 for OSPF (using the CLI mode)**

```
Router(config)#
```

```
Router(config)#router ospf 1
```

```
Router(config-router)#network 10.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 20.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 30.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 40.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 50.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)#exit
```

- **Configuring Router2 for OSPF (using the CLI mode)**

```
Router(config)#
```

```
Router(config)#router ospf 1
```

```
Router(config-router)#network 10.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 20.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 30.0.0.0 255. 255. 255.255 area 0
```

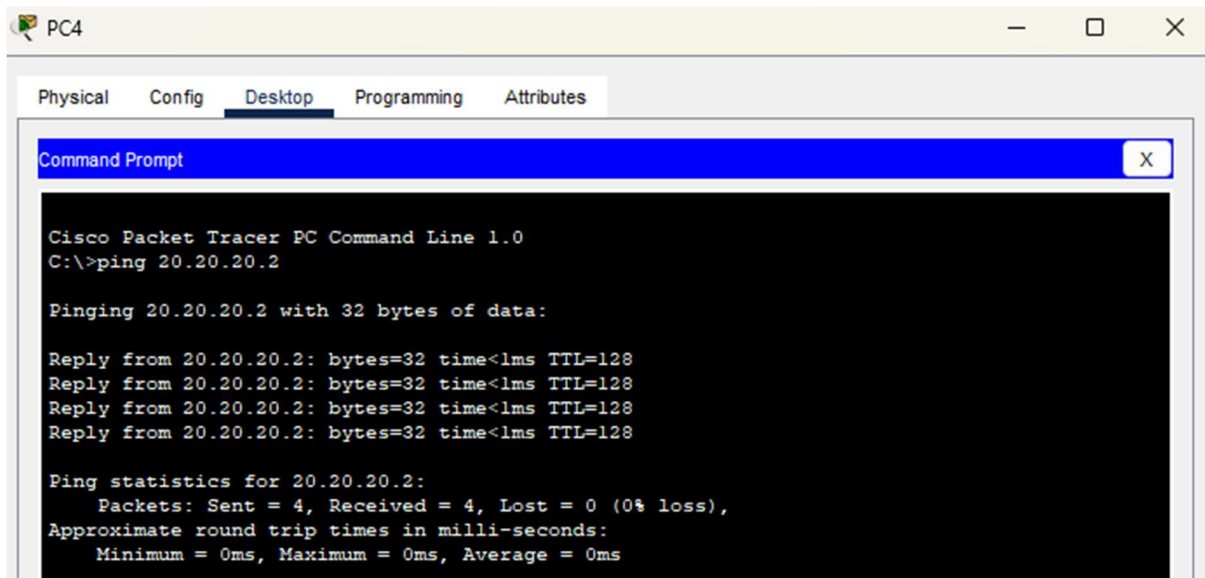
```
Router(config-router)# network 40.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)# network 50.0.0.0 255. 255. 255.255 area 0
```

```
Router(config-router)#exit
```

- **Checking the connectivity by using the ping command**

i) Pinging PC3 (IP address 20.20.20.2) from PC4



The screenshot shows the PC4 window with the 'Desktop' tab selected. A Command Prompt window is open, displaying the output of a ping command to 20.20.20.2. The output shows four successful replies with 0% loss and 0ms round trip times.

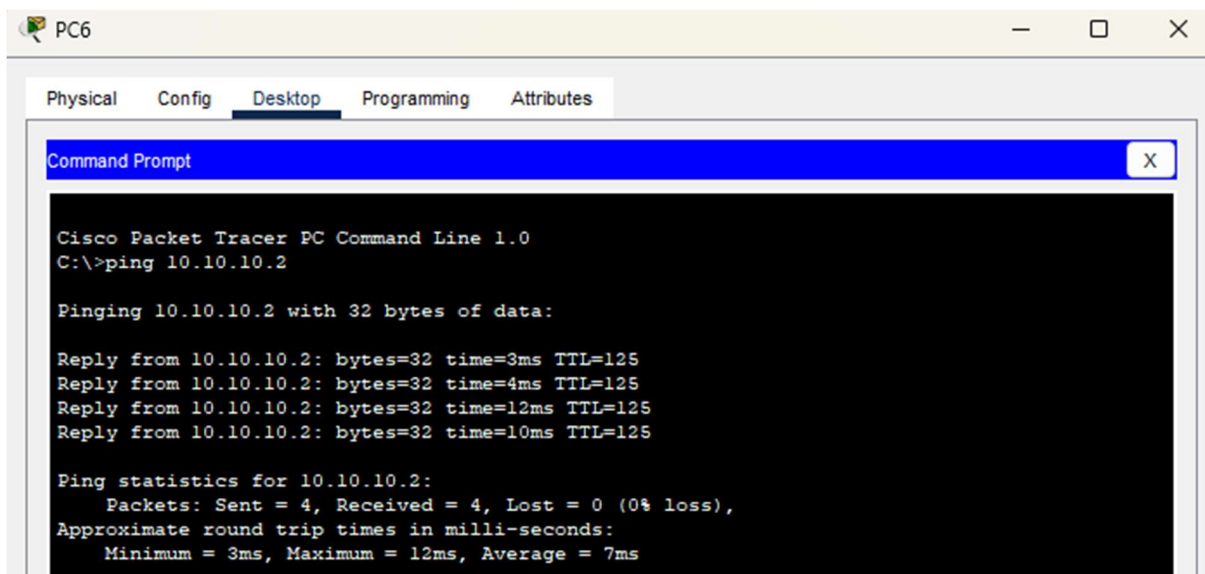
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 20.20.20.2

Pinging 20.20.20.2 with 32 bytes of data:

Reply from 20.20.20.2: bytes=32 time<1ms TTL=128
Reply from 20.20.20.2: bytes=32 time<1ms TTL=128
Reply from 20.20.20.2: bytes=32 time<1ms TTL=128
Reply from 20.20.20.2: bytes=32 time<1ms TTL=128

Ping statistics for 20.20.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

ii) Pinging PC0 (IP address 10.10.10.2) from PC6



The screenshot shows the PC6 window with the 'Desktop' tab selected. A Command Prompt window is open, displaying the output of a ping command to 10.10.10.2. The output shows four successful replies with 0% loss and round trip times ranging from 3ms to 12ms.

```
Cisco Packet Tracer PC Command Line 1.0
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=3ms TTL=125
Reply from 10.10.10.2: bytes=32 time=4ms TTL=125
Reply from 10.10.10.2: bytes=32 time=12ms TTL=125
Reply from 10.10.10.2: bytes=32 time=10ms TTL=125

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 12ms, Average = 7ms
```

Result:-

Hence the OSPF has been studied and verified through the given network.