

Practical No 1

Aim : Execute and observe the output of ping, traceroute/tracet, netsat, arp, ipconfig/ifconfig, getmac, nslookup, pathping, systeminfo.

1. ping

```
C:\Users\Admin>ping www.google.com

Pinging www.google.com [142.251.220.4] with 32 bytes of data:
Reply from 142.251.220.4: bytes=32 time=56ms TTL=119
Reply from 142.251.220.4: bytes=32 time=2ms TTL=119
Reply from 142.251.220.4: bytes=32 time=15ms TTL=119
Reply from 142.251.220.4: bytes=32 time=2ms TTL=119

Ping statistics for 142.251.220.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 56ms, Average = 18ms
```

2. tracet

```
C:\Users\Admin>tracert www.google.com

Tracing route to www.google.com [142.251.220.4]
over a maximum of 30 hops:

  0  1 ms    <1 ms    1 ms    192.168.90.1
  1  60 ms   64 ms    62 ms   157.119.201.178.fastfortechologies.com [157.119.201.178]
  2  *        *        *        Request timed out.
  3  34 ms   19 ms    13 ms   173.194.121.160
  4  55 ms   56 ms    58 ms   142.251.76.23
  5  41 ms   40 ms    41 ms   142.251.64.15
  6  11 ms   5 ms     3 ms    hkg07s49-in-f4.1e100.net [142.251.220.4]

Trace complete.
```

3. ipconfig

```
C:\Users\Admin>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::2857:fe8d:b6f2:8a67%13
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::174b:5f9f:b122:d1e6%19
    IPv4 Address. . . . . : 192.168.90.151
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.90.1
```

4. getmac

```
C:\Users\Admin>getmac

Physical Address      Transport Name
=====
1C-69-7A-EC-38-D9    \Device\Tcpip_{B9FCC27D-5912-424E-809A-E96D7FA39F0F}
F4-C8-8A-AD-78-07    Media disconnected
F4-C8-8A-AD-78-0B    Media disconnected
00-50-56-C0-00-01    \Device\Tcpip_{E5FE7916-AAD4-43DF-B6AF-1D4087BD51FD}
00-50-56-C0-00-08    \Device\Tcpip_{2A4D8760-DAF6-4680-B25E-3732C2E1D02F}
0A-00-27-00-00-0D    \Device\Tcpip_{68D5A48E-6044-49EC-BF54-E9BF431D4A55}

C:\Users\Admin>
```

5. hostname

```
C:\Users\Admin>hostname
DESKTOP-QI6H2EA
```

6. nslookup

```
C:\Users\Admin>nslookup www.goggle.com
Server:  UnKnown
Address: 192.168.90.1

*** UnKnown can't find www.goggle.com: Non-existent domain

C:\Users\Admin>nslookup www.google.com
Server:  UnKnown
Address: 192.168.90.1

Non-authoritative answer:
Name:    www.google.com
Addresses: 2404:6800:4009:80a::2004
          142.251.220.4
```

Practical No 2

Aim : Create a network with two PCs connected using a crossover cable using Cisco Packet Tracer

Step 1

Open Cisco Packet Tracer on your computer. From the device list at the bottom.



Step 2

select End Devices and drag two PCs onto your workspace. This is where you will build your small network.



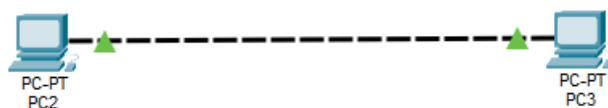
Step 3

Click on the Connections icon (lightning bolt symbol). Choose a Lightning Bolt Symbol cable.



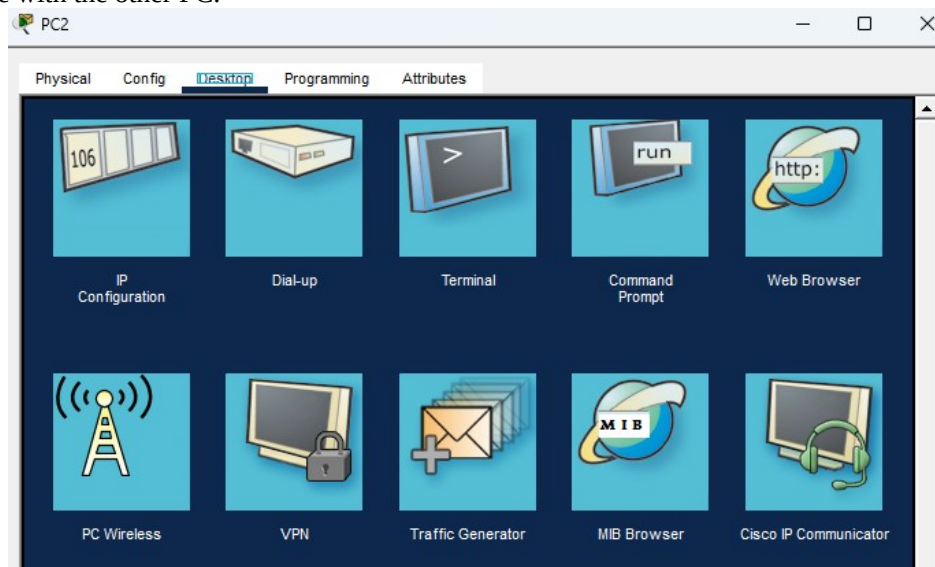
Step 4

Now connect PC1 port to PC2 port. This creates the physical link between the two PCs.



Step 5

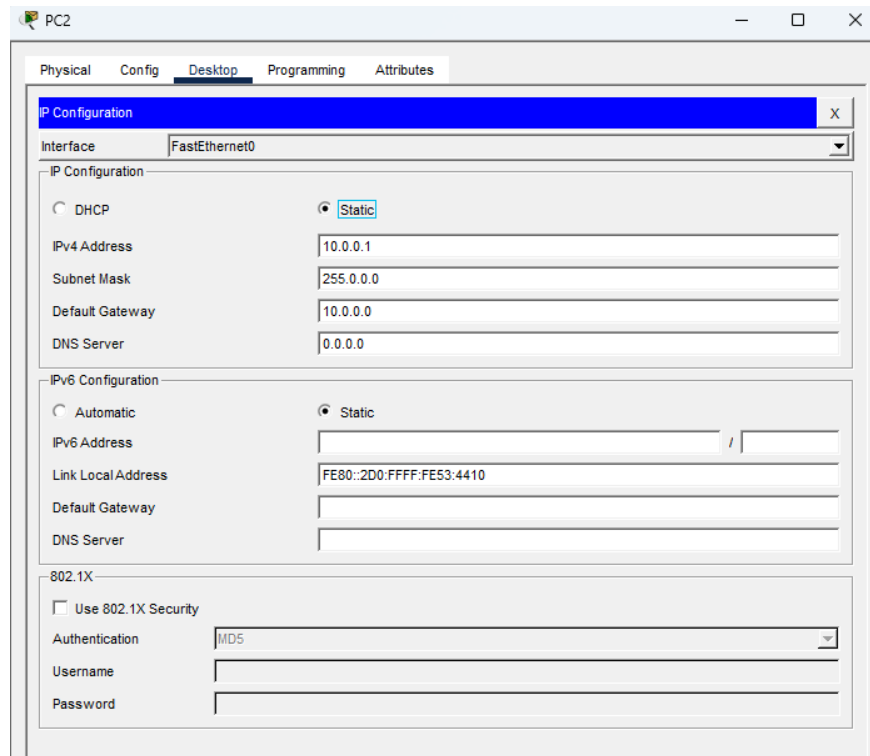
Click on PC1. Go to the Desktop tab and open IP Configuration. This is where you will set the PC's IP address so it can communicate with the other PC.



Step 6

In the IP configuration window of PC1, set:

- IP Address: 10.0.0.1
- Default Gateway: 10.0.0.0
- Subnet Mask: 255.0.0.0 This gives PC1 a unique address on the network.



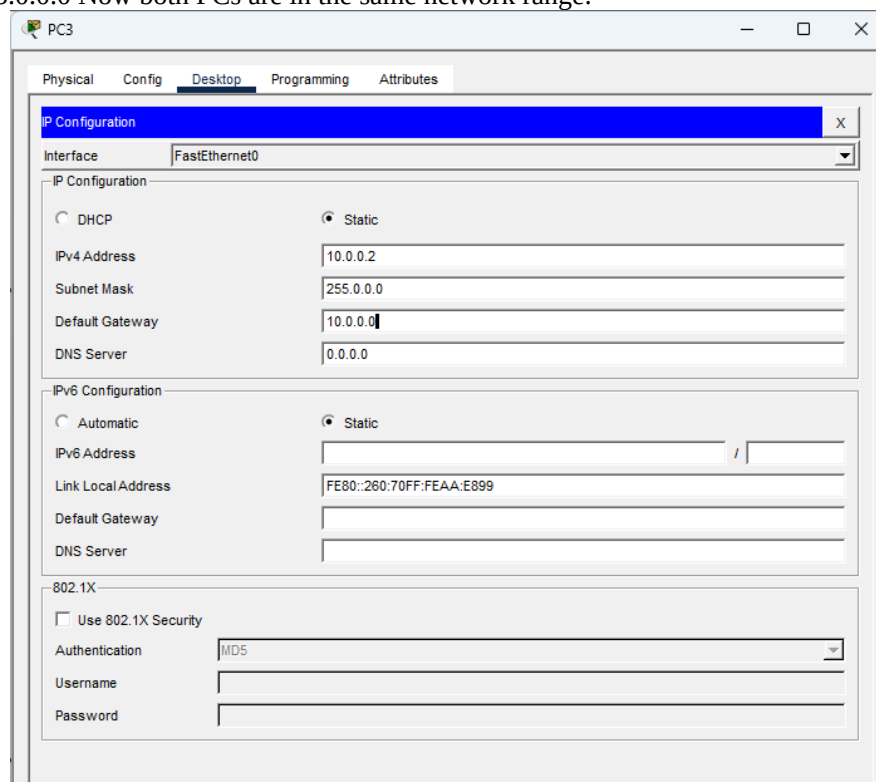
The screenshot shows the 'IP Configuration' window for PC2. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 10.0.0.1, Subnet Mask: 255.0.0.0, Default Gateway: 10.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are filled with: IPv6 Address: (empty), Link Local Address: FE80::2D0:FFFF:FE53:4410, Default Gateway: (empty), and DNS Server: (empty). Under '802.1X', the 'Use 802.1X Security' checkbox is unchecked. The 'Authentication' dropdown is set to 'MD5', and the 'Username' and 'Password' fields are empty.

Step 7

Now click on PC2. Go to the Desktop tab and open IP Configuration, just like you did for PC1.

In PC2's IP configuration, set:

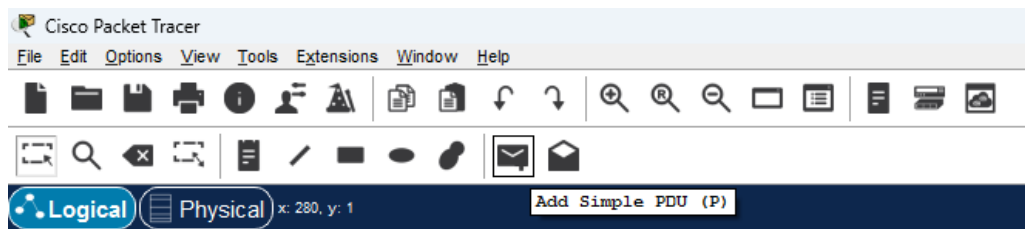
- IP Address: 10.0.0.2
- Default Gateway: 10.0.0.0
- Subnet Mask: 255.0.0.0 Now both PCs are in the same network range.



The screenshot shows the 'IP Configuration' window for PC3. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 10.0.0.2, Subnet Mask: 255.0.0.0, Default Gateway: 10.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are filled with: IPv6 Address: (empty), Link Local Address: FE80::260:70FF:FEAA:E899, Default Gateway: (empty), and DNS Server: (empty). Under '802.1X', the 'Use 802.1X Security' checkbox is unchecked. The 'Authentication' dropdown is set to 'MD5', and the 'Username' and 'Password' fields are empty.

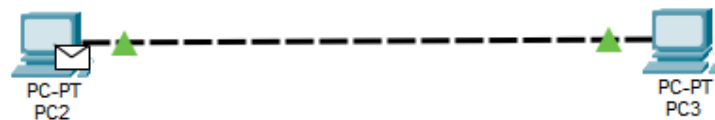
Step 8

Click on the Envelope icon (Add Simple PDU) from the right-side toolbar in Packet Tracer.



Step 9

Then click on PC1 and after that click on PC2. This sends a test message (PDU) from PC1 to PC2 to check if the connection is working.



Step 10

Check the result of the PDU test at the bottom of the Packet Tracer screen. If it shows “Successful”, it means the two PCs are connected properly and the network is working.

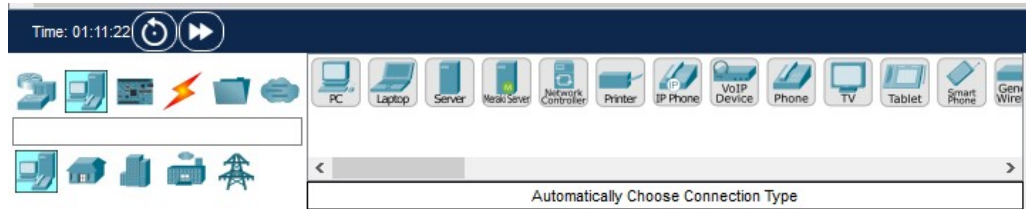
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	ICMP		0.000	N	0	(e...	

Practical No 3

Aim: Using Packet Tracer create a basic network of 1 server 2 PC's 1 switch using network wire use Dynamic IP address allocation and Show Connectivity

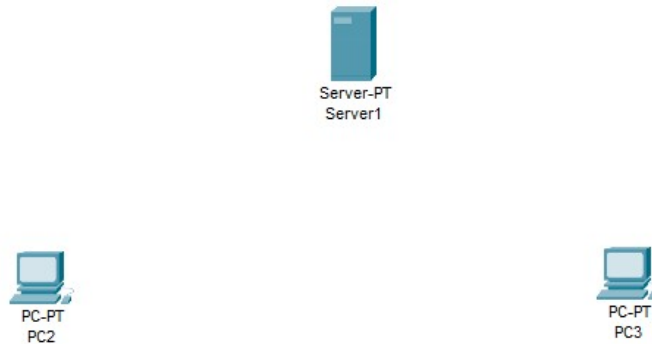
Step 1

Open Cisco Packet Tracer.



Step 2

Drag and drop 1 Server and 2 PCs (PC0 and PC1) from the End Devices section onto the workspace.



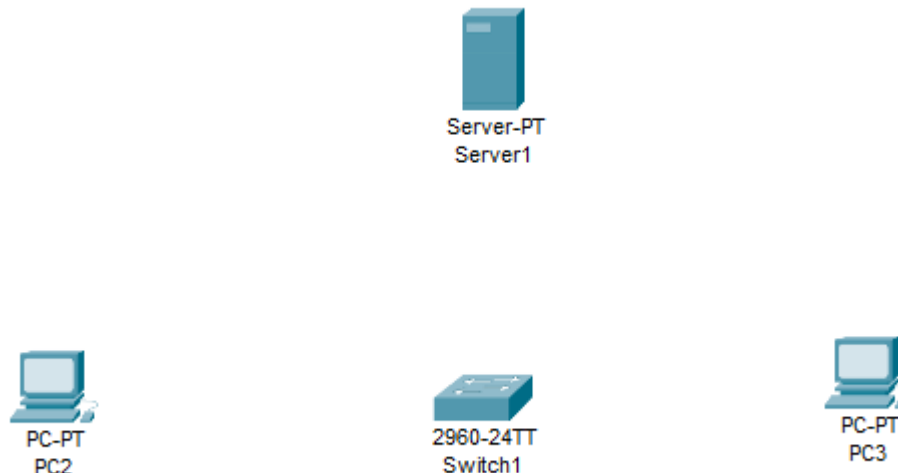
Step 3

Select a Switch (e.g., 2960) from the Switches section



Step 4

Drag it onto the workspace.



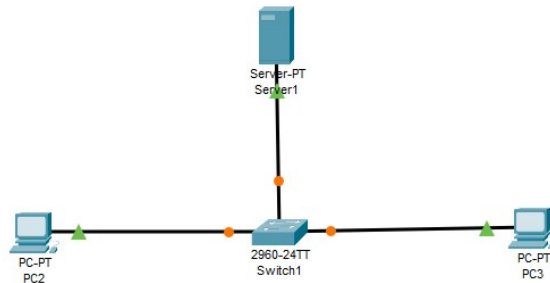
Step 5

Select the Connections (lightning symbol).



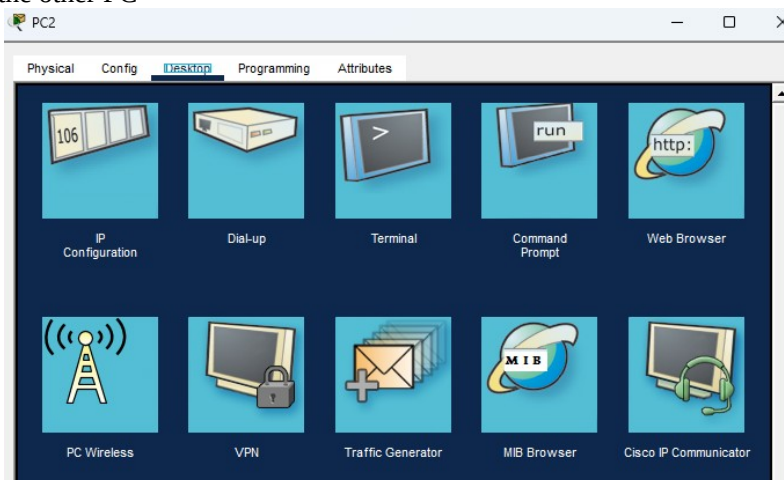
Step 6

Connect PC0 and PC1 to the Switch using cables (PC0 → Switch, PC1 → Switch), and also connect the Server to the Switch with a cable.



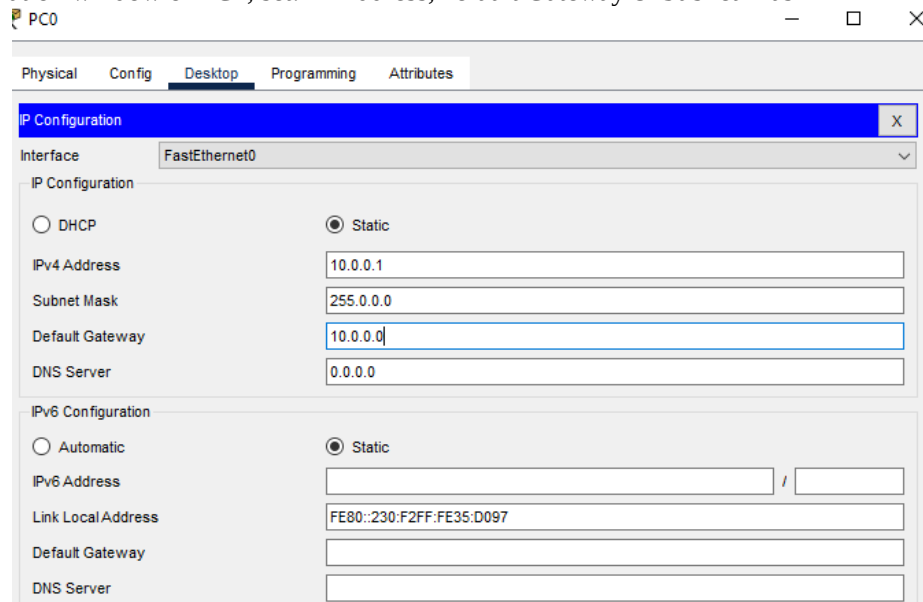
Step 7

Click on PC1. Go to the Desktop tab and open IP Configuration. This is where you will set the PC's IP address so it can communicate with the other PC



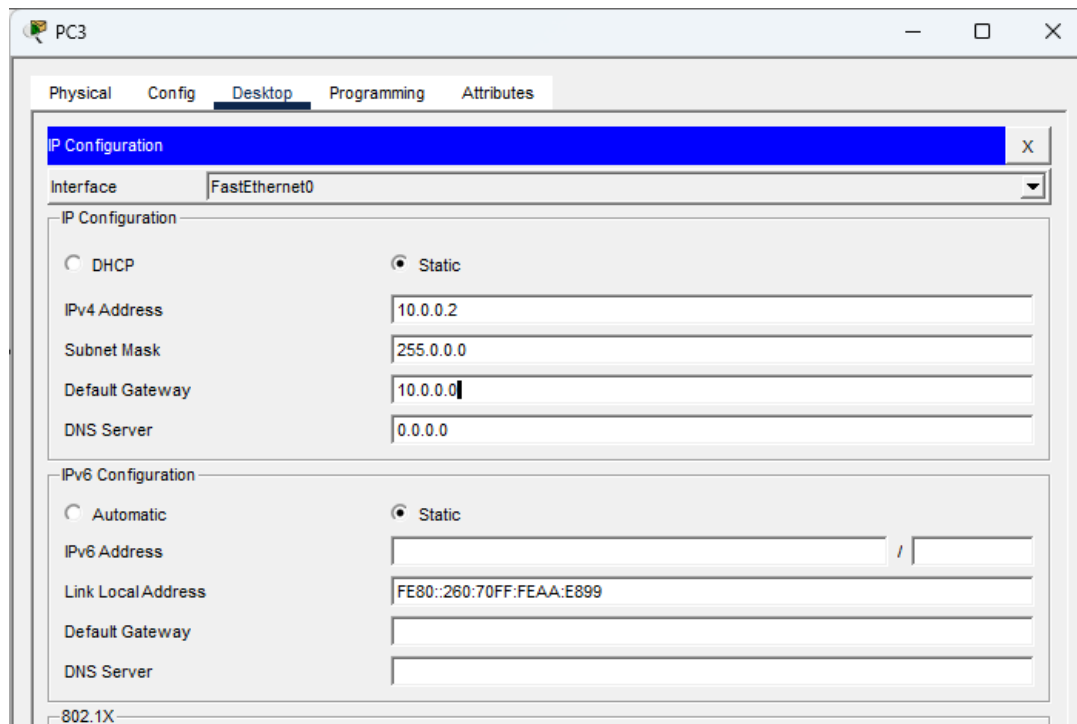
Step 8

In the IP configuration window of PC1, set: IP Address, Default Gateway & Subnet Mask



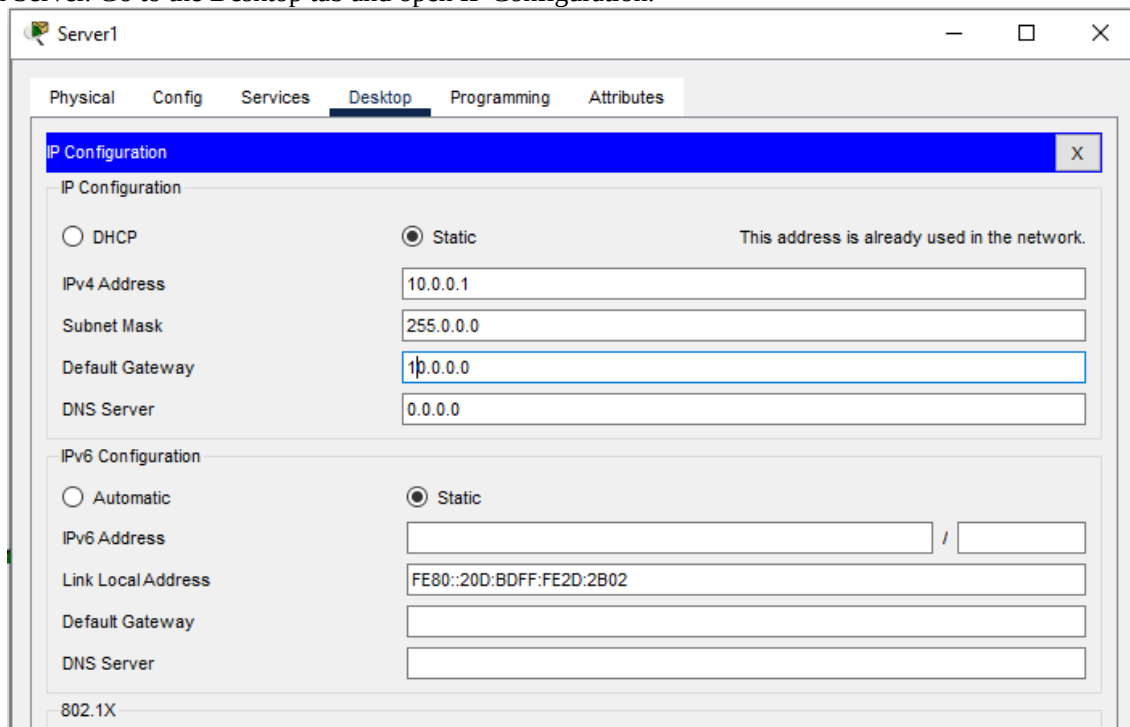
Step 9

Now click on PC2. Go to the Desktop tab and open IP Configuration, just like you did for PC1. In PC2's IP configuration, set: IP Address, Default Gateway & Subnet Mask



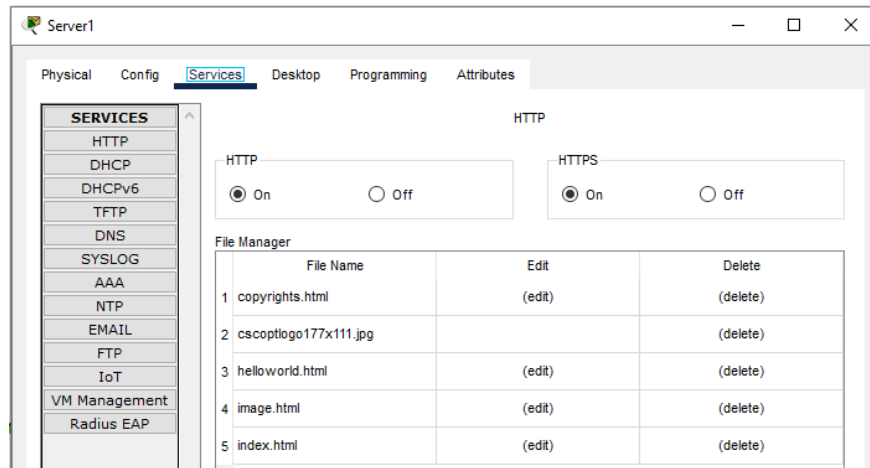
Step 10

Click on Server. Go to the Desktop tab and open IP Configuration.



Step 11

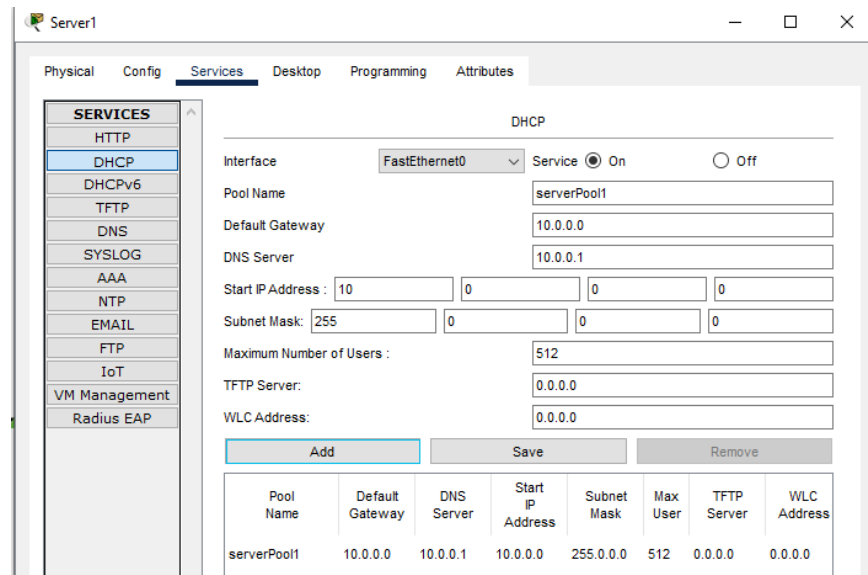
Go to Services → Select DHCP.
Turn DHCP ON.



Step 12

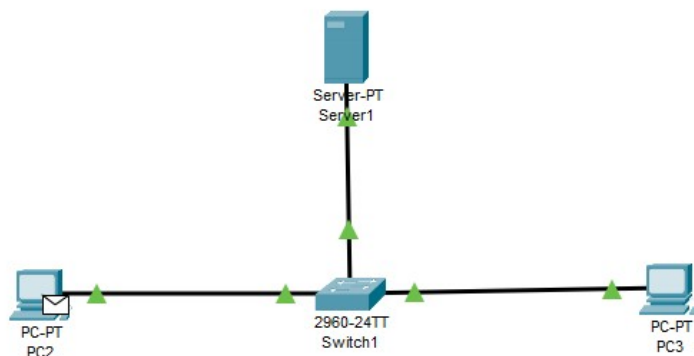
Add DHCP Pool:

- Pool Name: serverPool1
 - Default Gateway: 10.0.0.0
 - DNS Server: 10.0.0.1
 - Subnet: 255.0.0.0
- Click Add.



Step 13

Click on the Envelope icon from the right-side toolbar. Then click on PC1 → Server



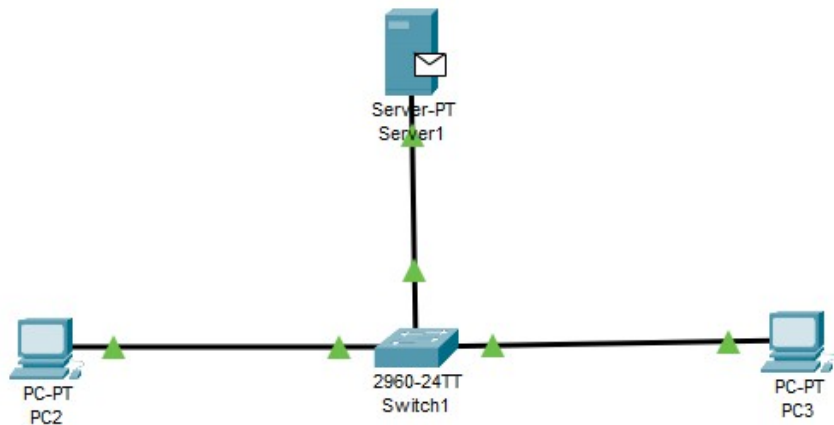
Step 14

If it shows “Successful”, it means the PC is properly connected to the switch.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC2	Server1	ICMP		0.000	N	0	(edit)	





Step 15

Click the envelope (PDU) icon again.
Select Server → Switch to send a test PDU.



Step 16

If it shows “Successful”, it means the Server is properly connected to the switch and the network is working.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC2	Server1	ICMP		0.000	N	0	(edit)	
	Successful	Server1	PC3	ICMP		0.000	N	1	(edit)	