PRACTICAL-1

AIM:

Demonstrate the simple network configuration with a router that connects two local area network (LAN) segments using cisco packet tracer.

THEORY:

ROUTER:

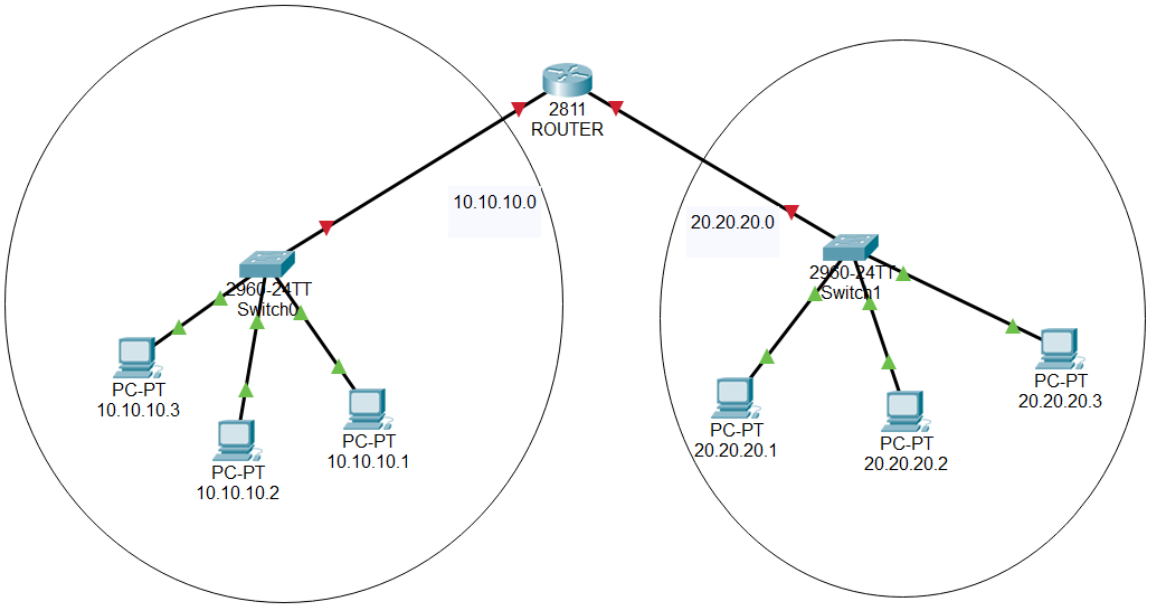
- A router is a networking device that forwards data packets between computer networks.
- The router is mainly a Network Layer device.
- Routers normally connect LANs and WANs together and have a dynamically updating routing table based on which they make decisions on routing the data packets
- Major Functions of Router are FORWARDING and ROUTING.
- When a data packet comes in on one of the lines, the router reads the network address information in the packet header to determine the ultimate destination. Then, using information in its routing table or routing policy, it directs the packet to the next network on its journey

LAN:

- LAN refers to LOCAL AREA NETWORK
- A local area network (LAN) is a collection of devices connected together in one physical location.
- A LAN comprises cables, access points, switches, routers, and other components that enable devices to connect to internal servers, web servers, and other LANs via wide area networks

PRACTICAL IMPLEMENTATION:

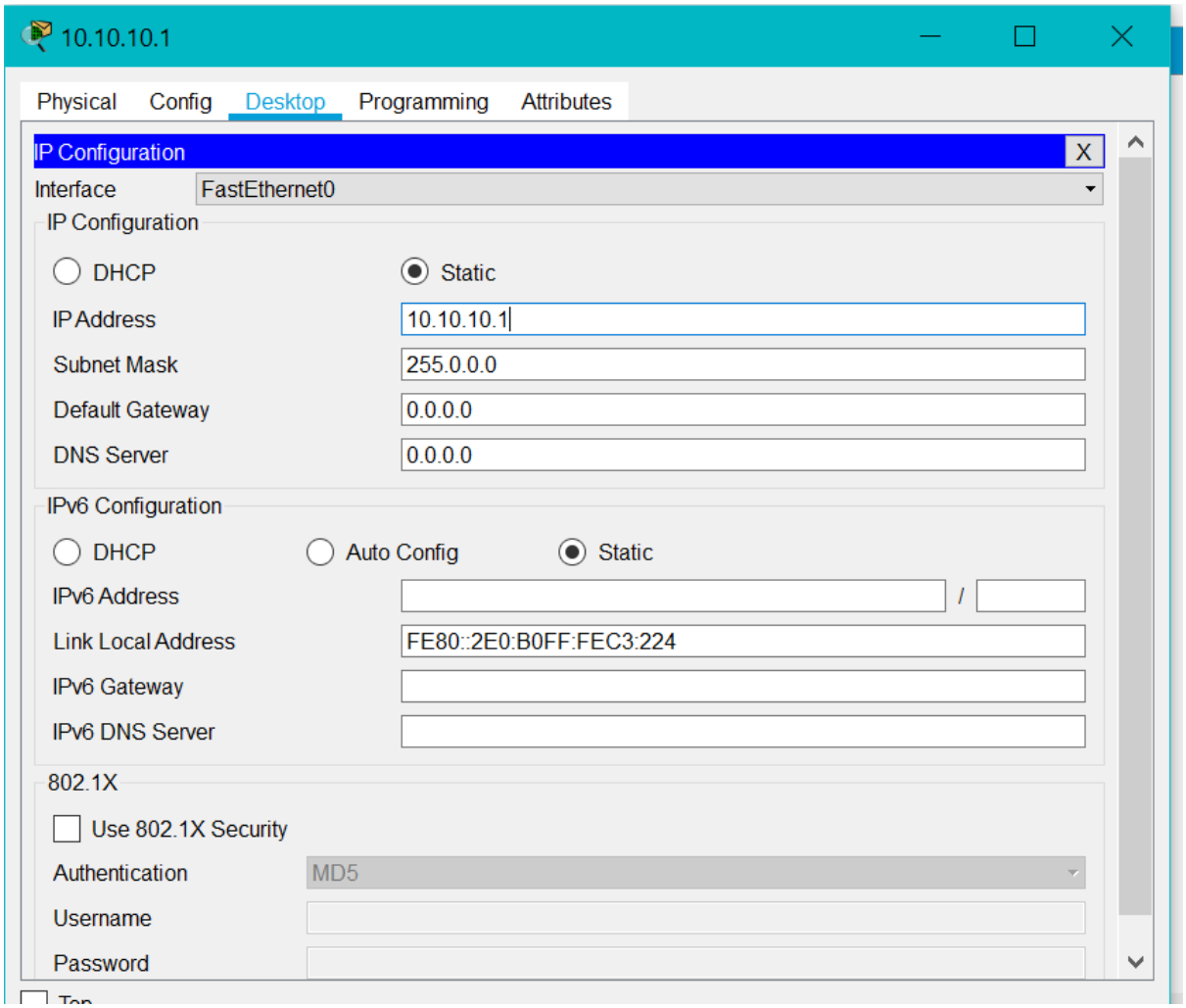
- As seen the picture, we have two separate networks.
- We will connect both the network via router.



- As seen in the picture, we have physically connected the LANs but still network connection is not established.

- We need to logically connect the two networks

- So, first we will assign IP address to all the PCs.



- As seen in the picture, IP address is assigned to PC-1.
- To assign IP address to PC, click on the pc.
- Go to Desktop and click on IP Configuration
- Then, Assign the IP address.
- Perform the same steps for other PCs.

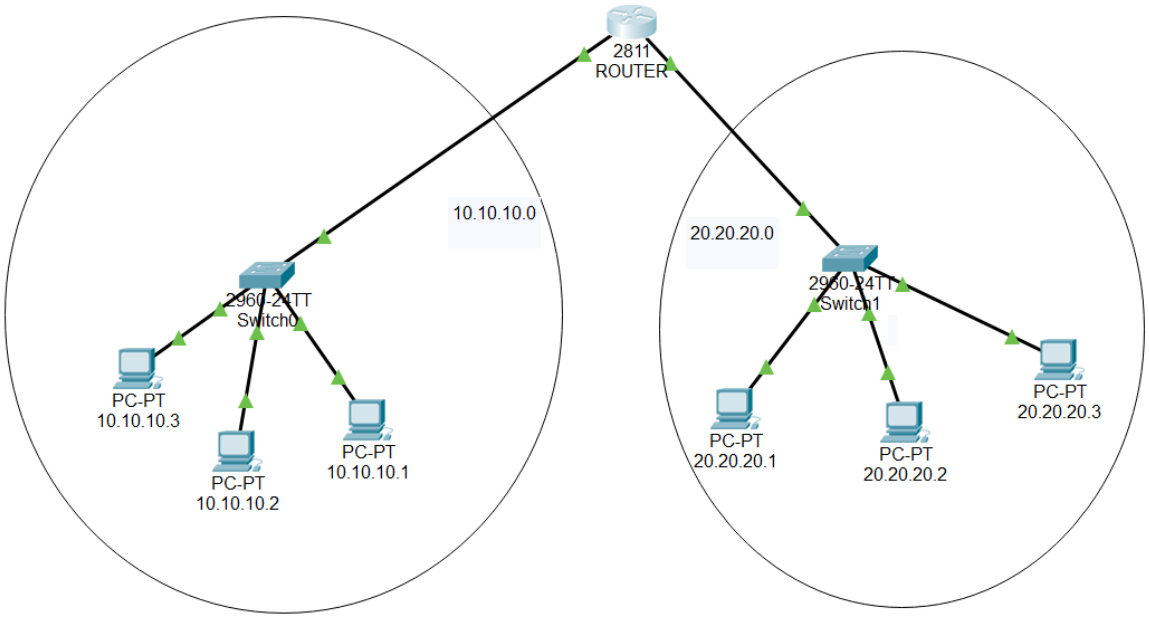
- Now, we will configure the router.

```
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)#interface FastEthernet1/0
%Invalid interface type and number
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 20.20.20.0 255.0.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

- To configure the router perform the following steps:

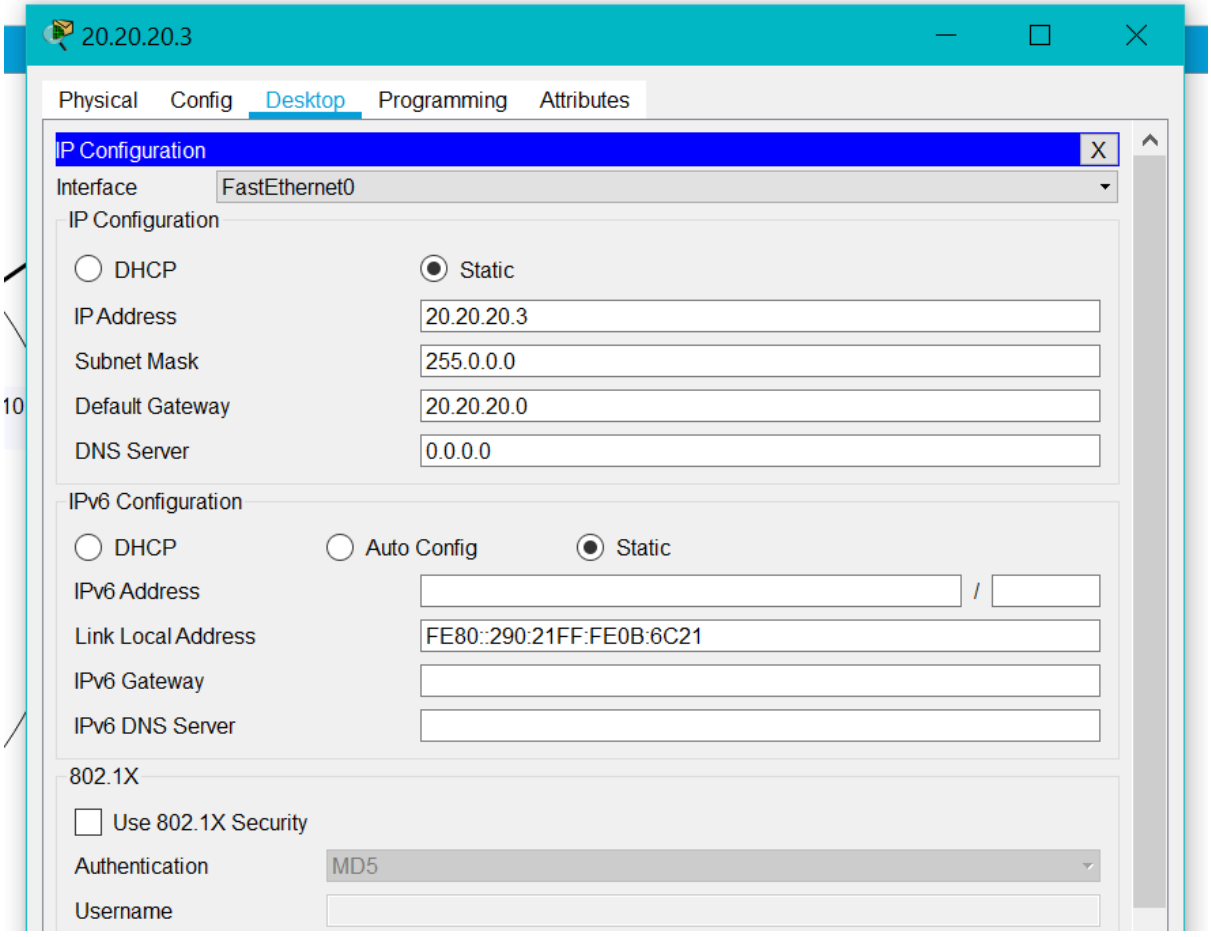
1. Press **RETURN** to start the session
2. Type **enable** to get to *privileged mode*
3. Type **config terminal** to access the configuration menu.
4. Type **interface fastethernet0/0** to access Ethernet0/0
5. Type **ip address xxx.xxx yy.y.yy** to assign an IP address and subnet mask to the interface.
6. Type **no shutdown** to open the interface up for business.

- Perform the same steps for other network.



- Now, we need to update default Gateway in every PC so that they can communicate to other LAN.

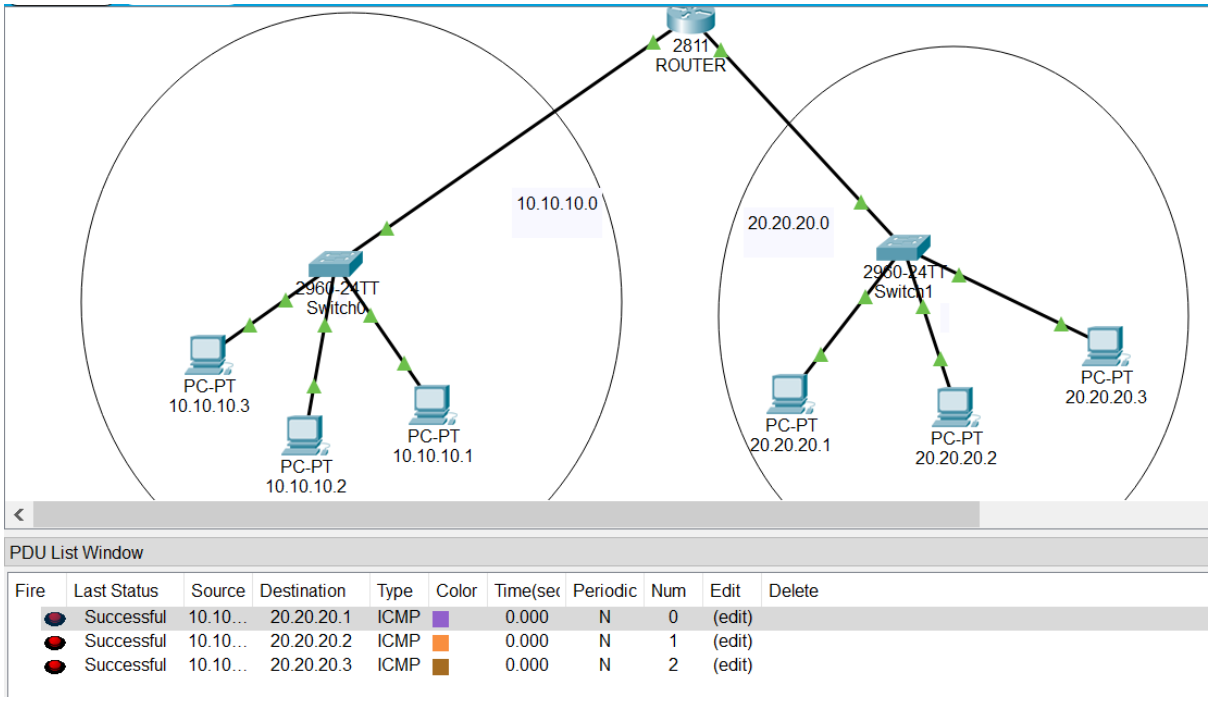
- To do so, click on PC, go to Desktop, click on IP configuration and update the default gateway with the IP address of the connected router.



NETWORK WORKING TEST:

To test the working of the network topology, we will perform two tests:

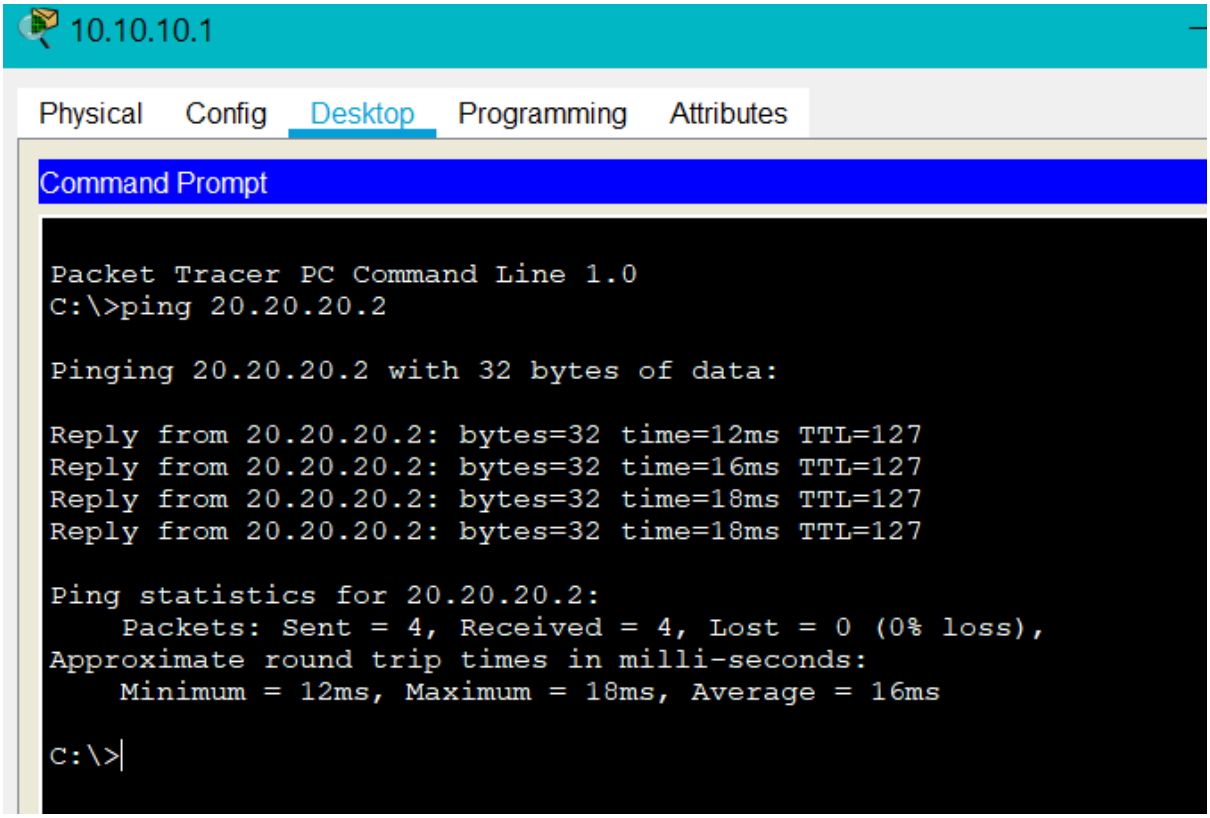
1. **We will send packet from one PC of LAN-1 to one PC of LAN-2:**



2. **PING Test:**

- We will open command prompt in PC-1 of LAN-1 and will ping PC-2 of LAN-2.

- If the connection is proper, then Reply will be successful.



CONCLUSION:

By performing the above practical, I learnt about router and it's working. I also learnt about LAN and how to connect two LANs via router to form a network topology and how to communicate between the networks.