PRACTICAL-3

AIM:

An organization is having 3 braches at 3 different locations. The founder of organization wants to configure the WAN connection amongst all the branches for better communication, file sharing and resource sharing. Demonstrate the static routing configuration for the given scenario using cisco packet tracer.

THEORY:

WAN:

- A wide area network (also known as WAN), is a large network of information that is not tied to a single location.

- WANs can facilitate communication, the sharing of information and much more between devices from around the world

- WANs are the largest forms of computer networks available to date.

STATIC ROUTING:

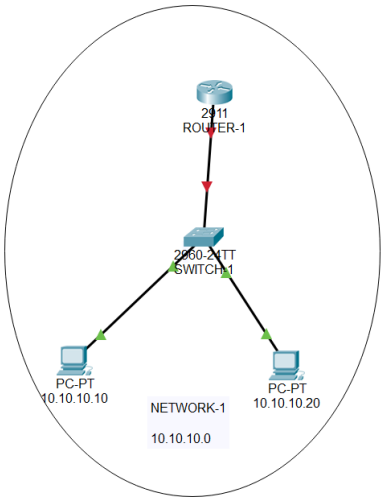
- Static routing is the manual configuration and selection of a network route, usually managed by the network administrator.

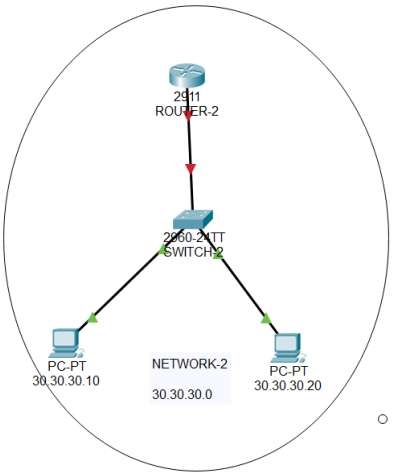
- It is employed in scenarios where the network parameters and environment are expected to remain constant.

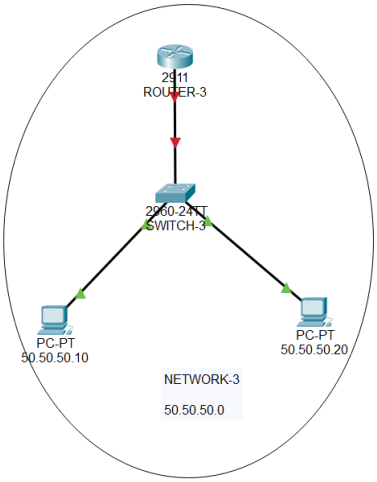
- Static routing is only optimal in a few situations.

PRACTICAL IMPLEMENTATION:

- As there are 3 different locations, so will form 3 individual networks.

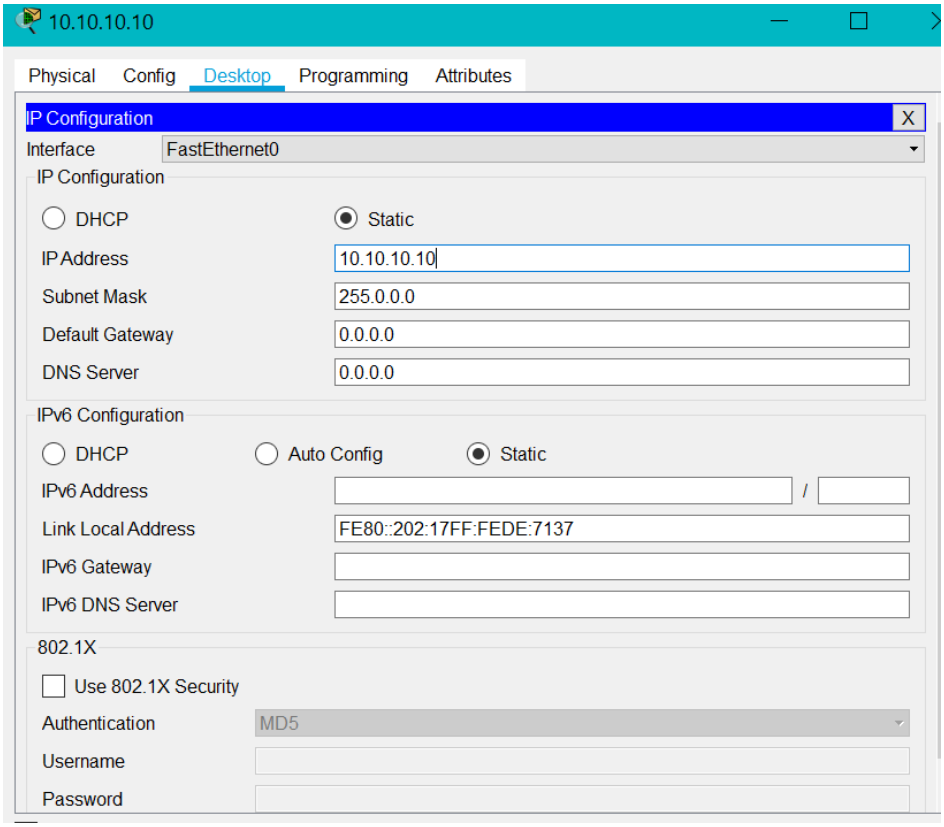






- Now, We will configure the IP address in all PCs.

- To configure IP address, go to PC -> Desktop -> IP configuration



❖ Perform the same steps for all the PCs.

❖ 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 GigabitEthernet0/0
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.

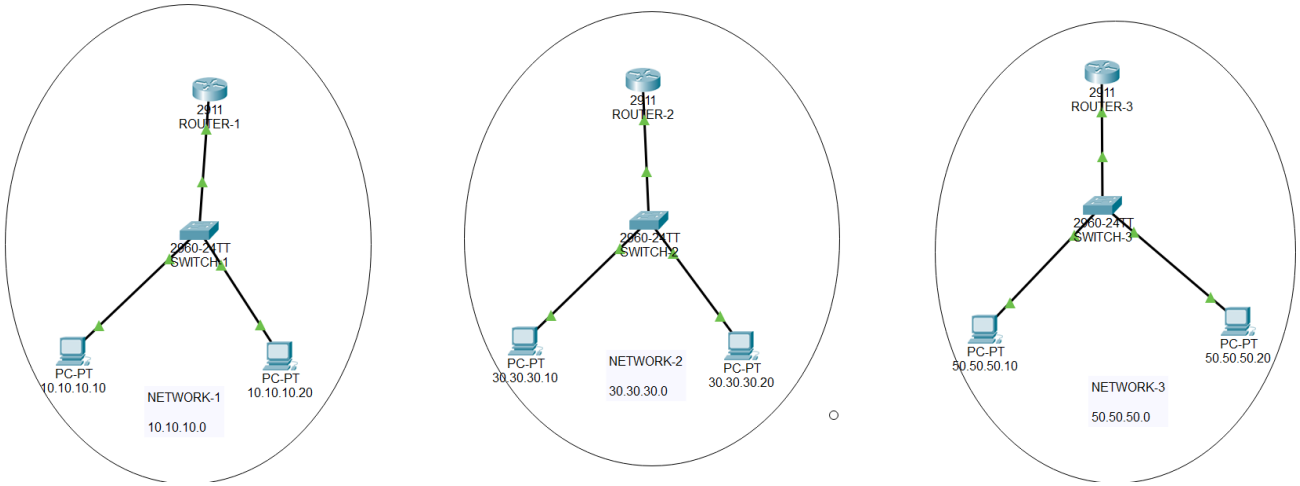
```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with
CNTL/Z.
Router(config)#
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 10.10.10.1 255.0.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0, changed state to up
```

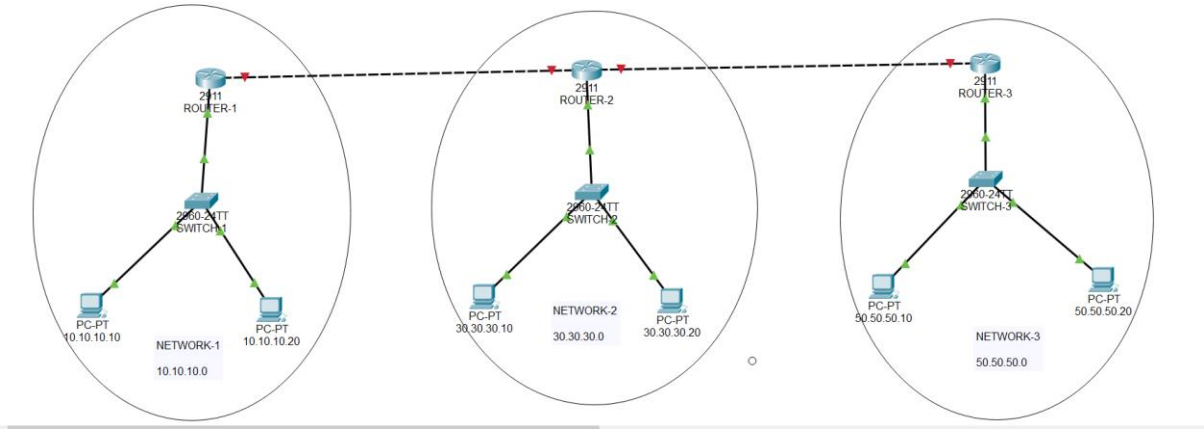
- Follow the same for all the routers.

- Assign default gateway to all the PCs.



❖ So, our 3 networks are established.

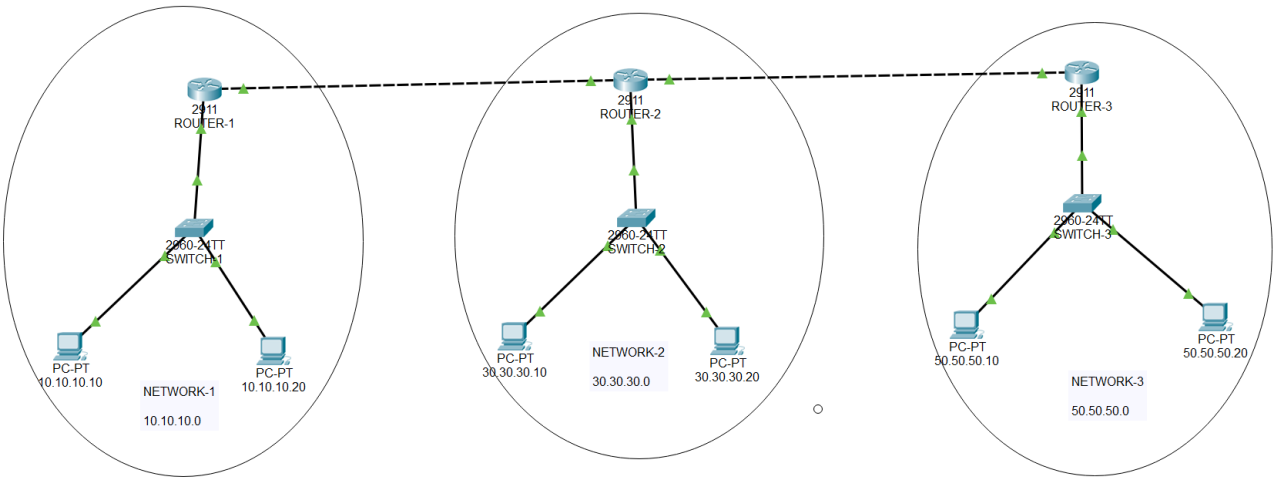
❖ Now, we will establish WAN connection so all the 3 networks can communicate with each other.



❖ As seen in the image, we will have to use static routing to establish WAN.

- We will establish a connection between all the routers.

- We will connect Router-1 and Router-2 with network 20.20.20.0 and Router-2 and Router-3 with network 40.40.40.0



- Upon successful setup, all the arrows will be green indicating an active connection.

- But still Routers can communicate with the networks directed connected to it but they cannot communicate with the networks not directly connected.
- So, we need to define routing table so that routers can communicate.\

❖ For that we will use static routing.

```
Router(config)#ip route 10.10.10.0 255.0.0.0 20.20.20.1
%Inconsistent address and mask
Router(config)#ip route 10.10.10.0 255.255.255.0
20.20.20.1
Router(config)#
Router(config)#
Router(config)#ip route 50.50.50.0 255.255.255.0
30.30.30.2
Router(config)#
```

❖ Perform the steps with all the routers.

❖ Thus, our WAN is established.

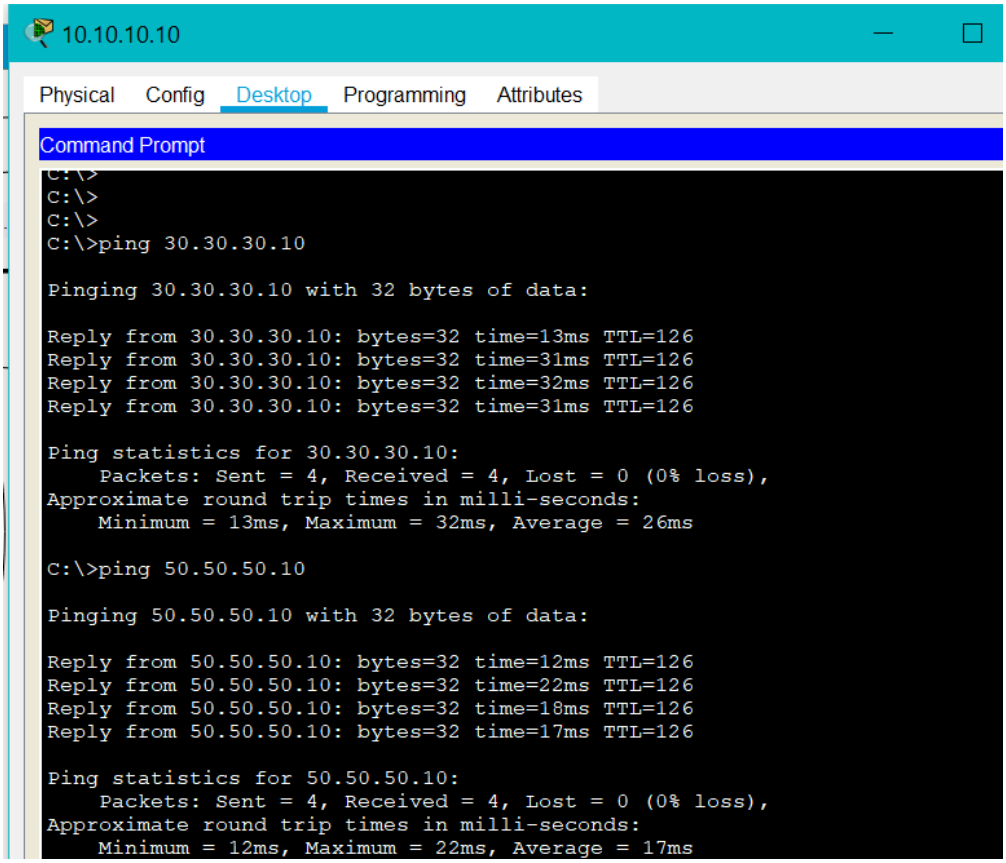
TESTING:

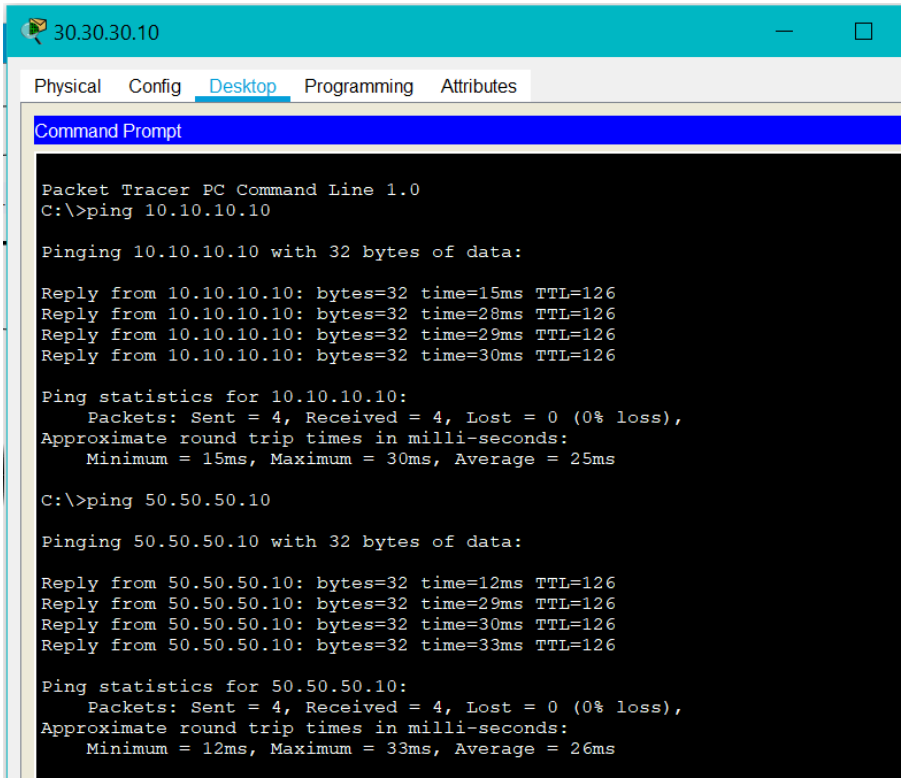
❖ To Test whether the WAN is established or not, we will do PING test.

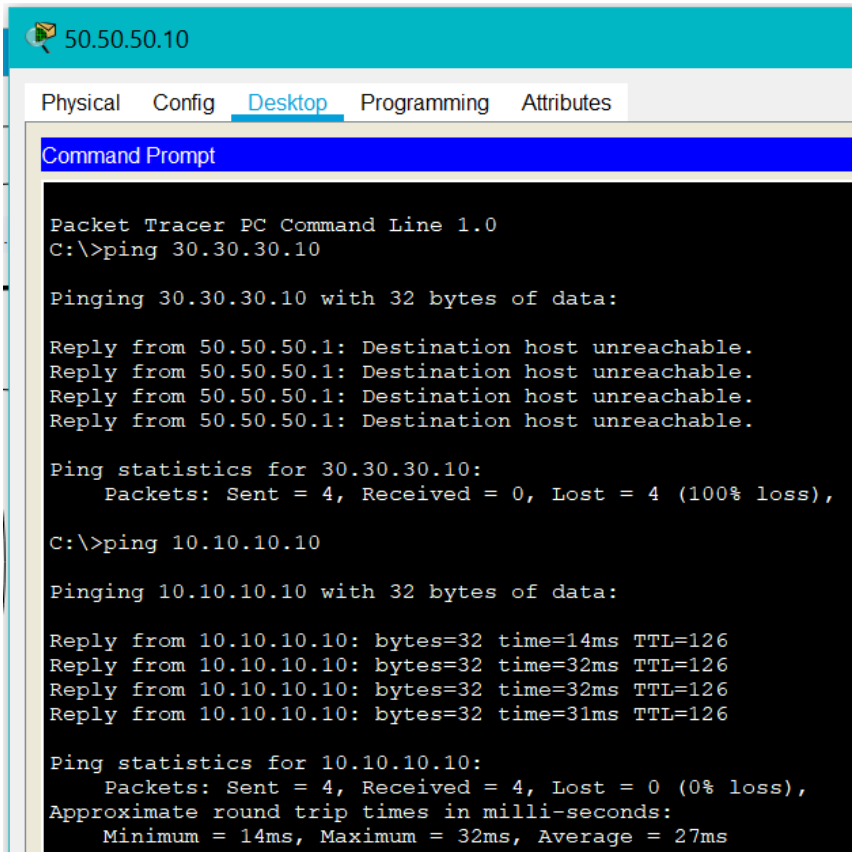
NOTE: ROUTER-1 and ROUTER-2 are connected via 20.20.20.0

ROUTER-2 and ROUTER-3 are connected via 40.40.40.0

ROUTER -1 and ROUTER-3 are connected via 60.60.60.0


10.10.10.10
Physical
Config
Desktop
Programming
Attributes
Command Prompt
C:\>
C:\>
C:\>
C:\>ping 30.30.30.10
Pinging 30.30.30.10 with 32 bytes of data:
Reply from 30.30.30.10: bytes=32 time=13ms TTL=126
Reply from 30.30.30.10: bytes=32 time=31ms TTL=126
Reply from 30.30.30.10: bytes=32 time=32ms TTL=126
Reply from 30.30.30.10: bytes=32 time=31ms TTL=126
Ping statistics for 30.30.30.10:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 13ms, Maximum = 32ms, Average = 26ms
C:\>ping 50.50.50.10
Pinging 50.50.50.10 with 32 bytes of data:
Reply from 50.50.50.10: bytes=32 time=12ms TTL=126
Reply from 50.50.50.10: bytes=32 time=22ms TTL=126
Reply from 50.50.50.10: bytes=32 time=18ms TTL=126
Reply from 50.50.50.10: bytes=32 time=17ms TTL=126
Ping statistics for 50.50.50.10:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 12ms, Maximum = 22ms, Average = 17ms


30.30.30.10
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 10.10.10.10
Pinging 10.10.10.10 with 32 bytes of data:
Reply from 10.10.10.10: bytes=32 time=15ms TTL=126
Reply from 10.10.10.10: bytes=32 time=28ms TTL=126
Reply from 10.10.10.10: bytes=32 time=29ms TTL=126
Reply from 10.10.10.10: bytes=32 time=30ms TTL=126
Ping statistics for 10.10.10.10:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 15ms, Maximum = 30ms, Average = 25ms
C:\>ping 50.50.50.10
Pinging 50.50.50.10 with 32 bytes of data:
Reply from 50.50.50.10: bytes=32 time=12ms TTL=126
Reply from 50.50.50.10: bytes=32 time=29ms TTL=126
Reply from 50.50.50.10: bytes=32 time=30ms TTL=126
Reply from 50.50.50.10: bytes=32 time=33ms TTL=126
Ping statistics for 50.50.50.10:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 12ms, Maximum = 33ms, Average = 26ms



CONCLUSION:

- By performing the above Practical, We got to learn about how to configure WAN and also, how WAN and static routing works.