VIVEKANANDA INSTITUTE OF PROFESSIONAL STUDIES - TECHNICAL CAMPUS
Grade A++ Accredited Institution by NAAC
NBA Accredited for MCA Programme; Recognized under Section 2(f) by UGC;
Affiliated to GGSIP University, Delhi; Recognized by Bar Council of India and AICTE
An ISO 9001:2015 Certified Institution
SCHOOL OF ENGINEERING & TECHNOLOGY

BTECH Programme: CSE-B
Course Title: Computer Networks Lab
Course Code: (CIC-355)

Submitted By:--
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Enrolment No:10417702722

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VISION OF INSTITUTE

To be an educational institute that empowers the field of engineering to build a sustainable future by providing quality education with innovative practices that supports people, planet and profit.

MISSION OF INSTITUTE

To groom the future engineers by providing value-based education and awakening students' curiosity, nurturing creativity and building
capabilities to enable them to make significant contributions to the world.

योगः कर्मसु कौशलम्
IN PURSUIT OF PERFECTION
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INDEX

S.No	EXP.	Date	Marks			Remark	Updated Marks	Faculty Signature
			Laboratory Assessment (15 Marks)	Class Participation (5 Marks)	Viva (5 Marks)			
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2	To implement the DHCP onto the Network Topology using Cisco Packet Tracer.							
3	To configure a single router in a network.							
4	To configure WAN between two routers using Router-PT.							
5	To configure static routing between three routers using Router-PT.							
6	To implement the Dynamic Routing Protocols: RIP, IGRP using Cisco Packet Tracker.							
7	To construct multiple router networks and implement the EIGRP Protocol.							
8	To implement the Network Address Resolution (NAT) using Cisco Packet Tracker.							

EXPERIMENT 1

AIM: Introduction to Networking Simulation Tools – Cisco Packet Tracer

Theory:

PROCEDURE:

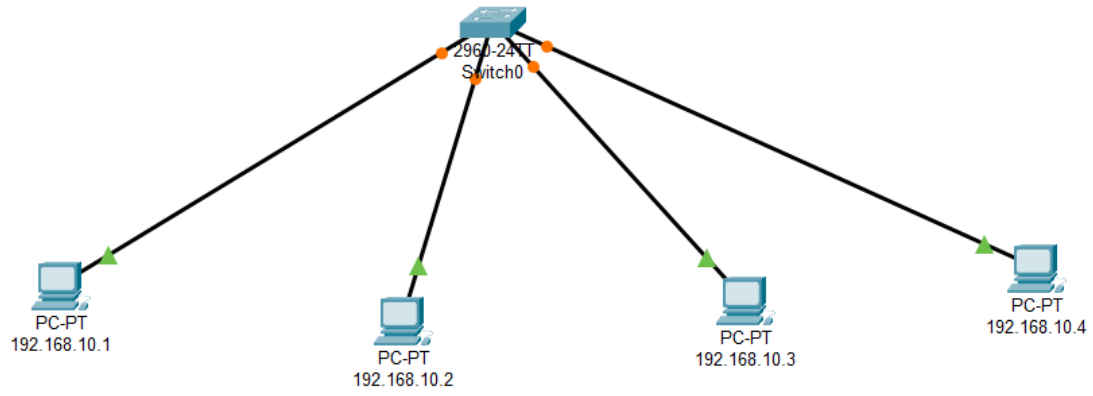
i) Open the Cisco Packet Tracer application and sign in with your account (initial boot step, only to be followed when opening the app first time ever in your machine)

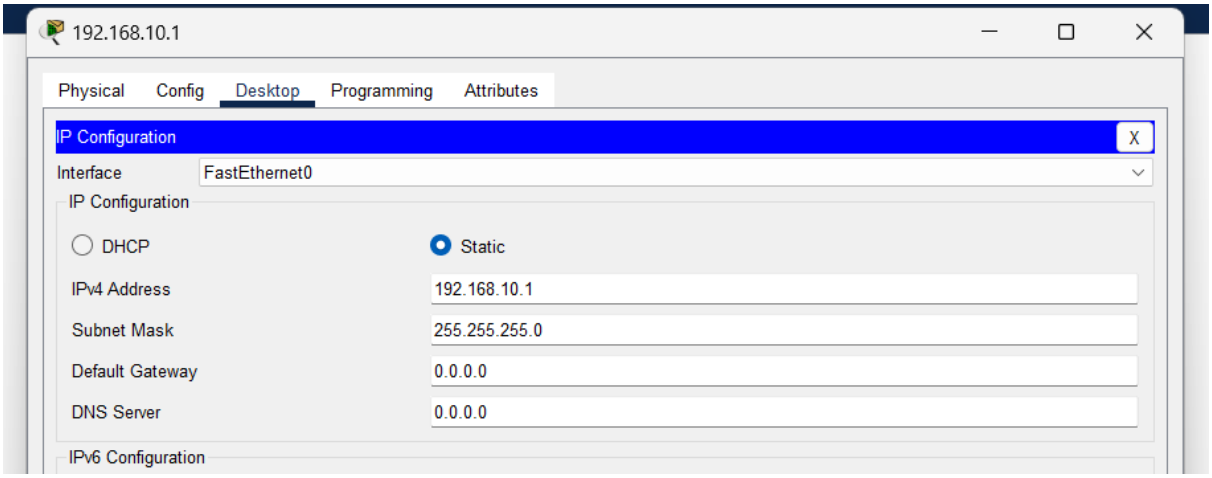
ii) For Star Topology:
   a. Place a switch (2960) on the screen.
   b. Place few PCs on the screen and connect them to the switch using copper straight through cable
   c. Double click on a PC → go to Desktop → select IP configuration → type in the IP address for that PC. Do this for all the PCs.
      Note that keep that IP address such that all the PCs are on the same network
   d. Rename all the PCs acc. to their IP addresses to prevent confusion if the network scales up in future.
   e. Go back to Desktop on any PC → run the command prompt and ping any IP address to check the connection.

iii) For Mesh Topology:
   a. Place PCs (5) on the screen and a switch (2960) for each PC.
   b. Connect each PC with respective switch with a copper straight through cable.
   c. Using copper cross over cable connect each switch with each other to make a mesh like structure
   d. Assign IP addresses to each PC and check their connection.

OUTPUT:

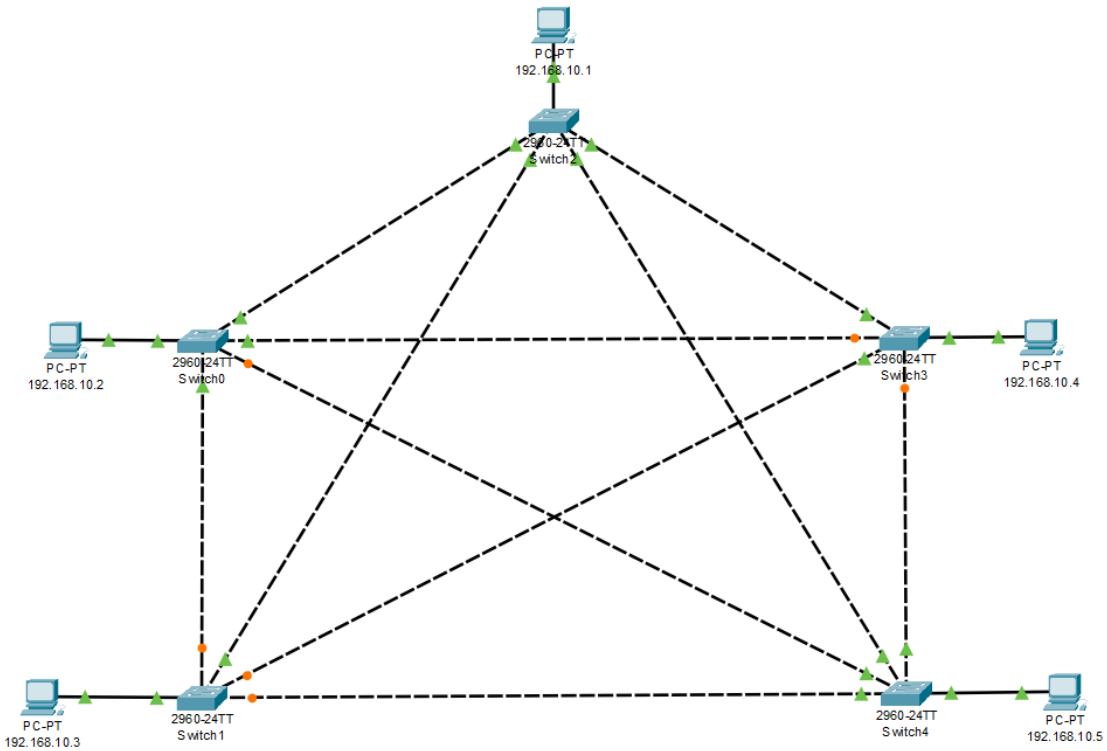
A) STAR TOPOLOGY

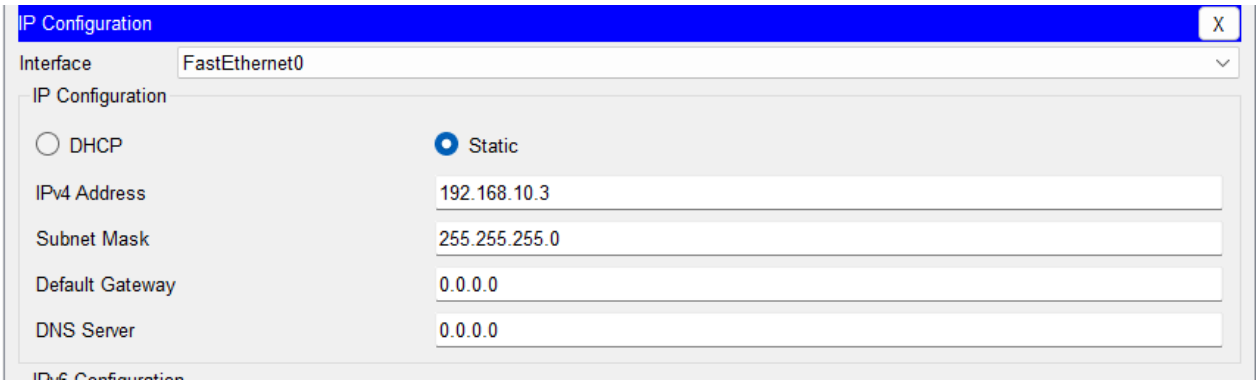




```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::201:64FF:FEB0:88D9
   IPv6 Address.....: ::
   IPv4 Address.....: 192.168.10.1
   Subnet Mask.....: 255.255.255.0
   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:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

B) MESH TOPOLOGY






```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::2D0:97FF:FEAD:C503
   IPv6 Address.....: ::
   IPv4 Address.....: 192.168.10.3
   Subnet Mask.....: 255.255.255.0
   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:\>ping 192.168.10.5

Pinging 192.168.10.5 with 32 bytes of data:

Reply from 192.168.10.5: bytes=32 time=1ms TTL=128
Reply from 192.168.10.5: bytes=32 time<1ms TTL=128
Reply from 192.168.10.5: bytes=32 time<1ms TTL=128
Reply from 192.168.10.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

LEARNING OUTCOMES:

EXPERIMENT 2

AIM: To implement the DHCP onto the Network Topology using Cisco Packet Tracer.

Theory:

PROCEDURE:

i) For Star Topology:

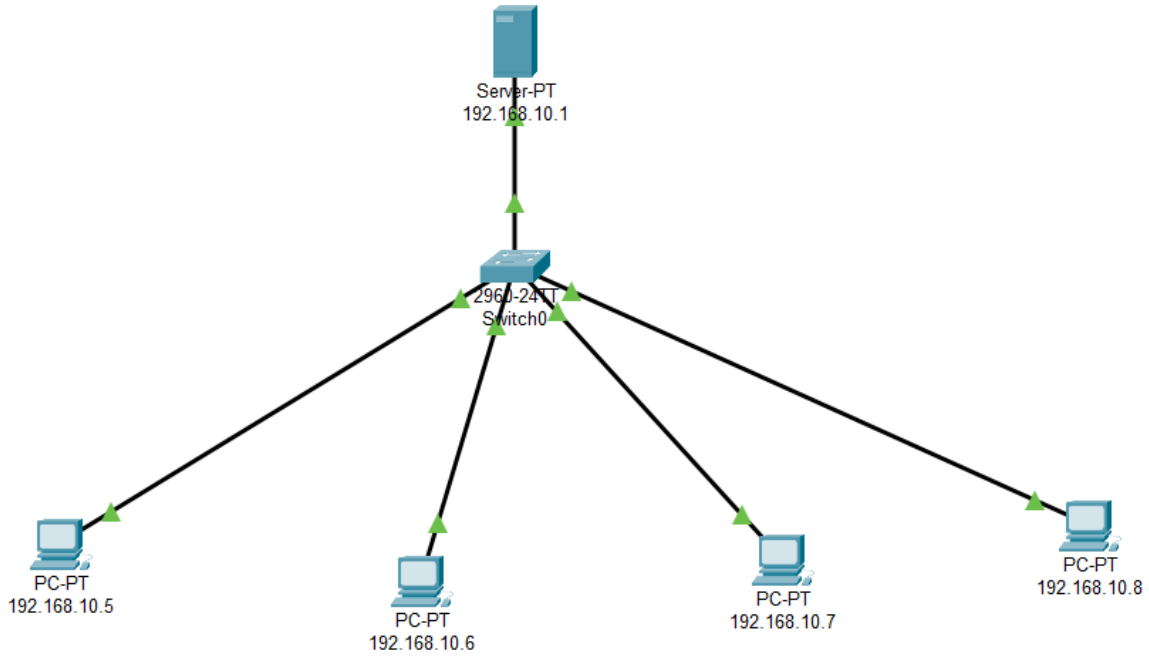
a. Make a star topology network. (for more details refer to exp 1)
b. Using copper straight through cable connect a server to the switch (2090).
c. Assign a static IP address to the server.
d. Double click the server → go to services → go to DHCP → turn on the DHCP service (start address and subnet mask fields get auto filled once you close the server window or simple ctrl+s it)
e. Go to each PC's IP configuration and set it to DHCP instead of static.
f. It sends a request to the server and if the server is configured properly then the IP address gets assigned to the PC without any issue.
g. Test the connection by pinging an IP address.

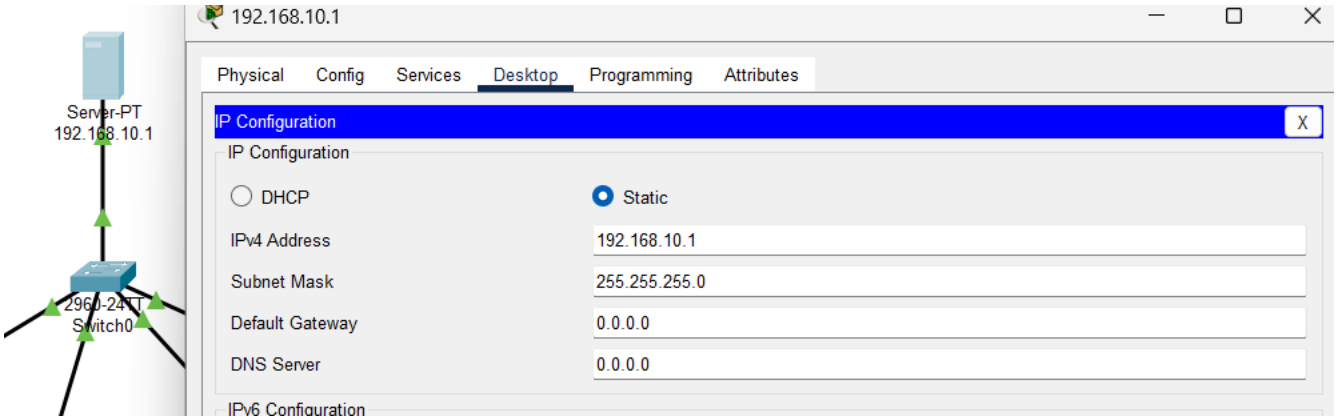
ii) For Mesh Topology:

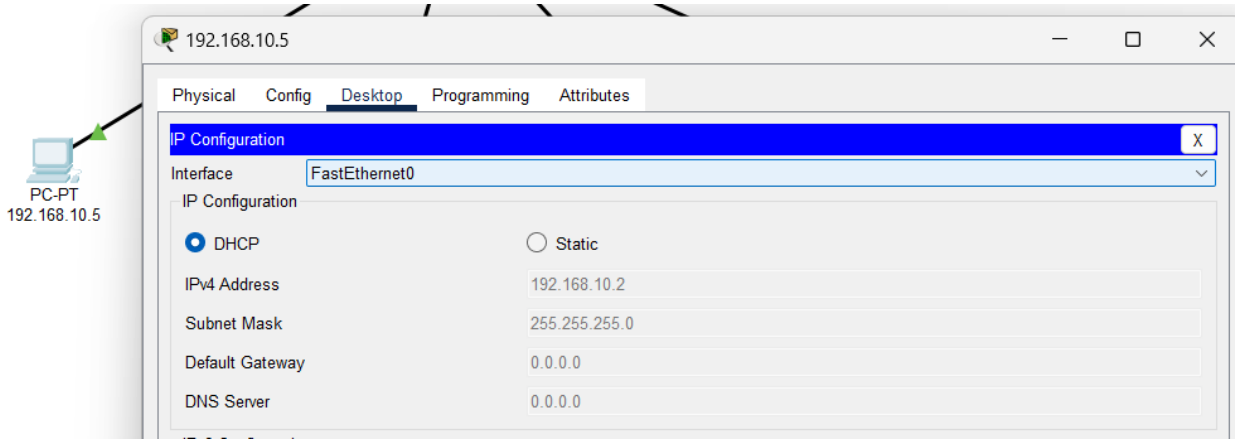
a. Make a Mesh Topology network. (for more details refer to exp 1)
b. Place a server and a switch on the screen.
c. Connect the server with the switch using copper straight through cable.
d. Using copper crossover cables connect the new switch with all the existing switches.
e. Assign a static IP address to the server.
f. Double click the server → go to services → go to DHCP → turn on the DHCP service (start address and subnet mask fields get auto filled once you close the server window or simple ctrl+s it)
g. Go to each PC's IP configuration and set it to DHCP instead of static.
h. It sends a request to the server and if the server is configured properly then the IP address gets assigned to the PC without any issue.
i. Test the connection by pinging an IP address.

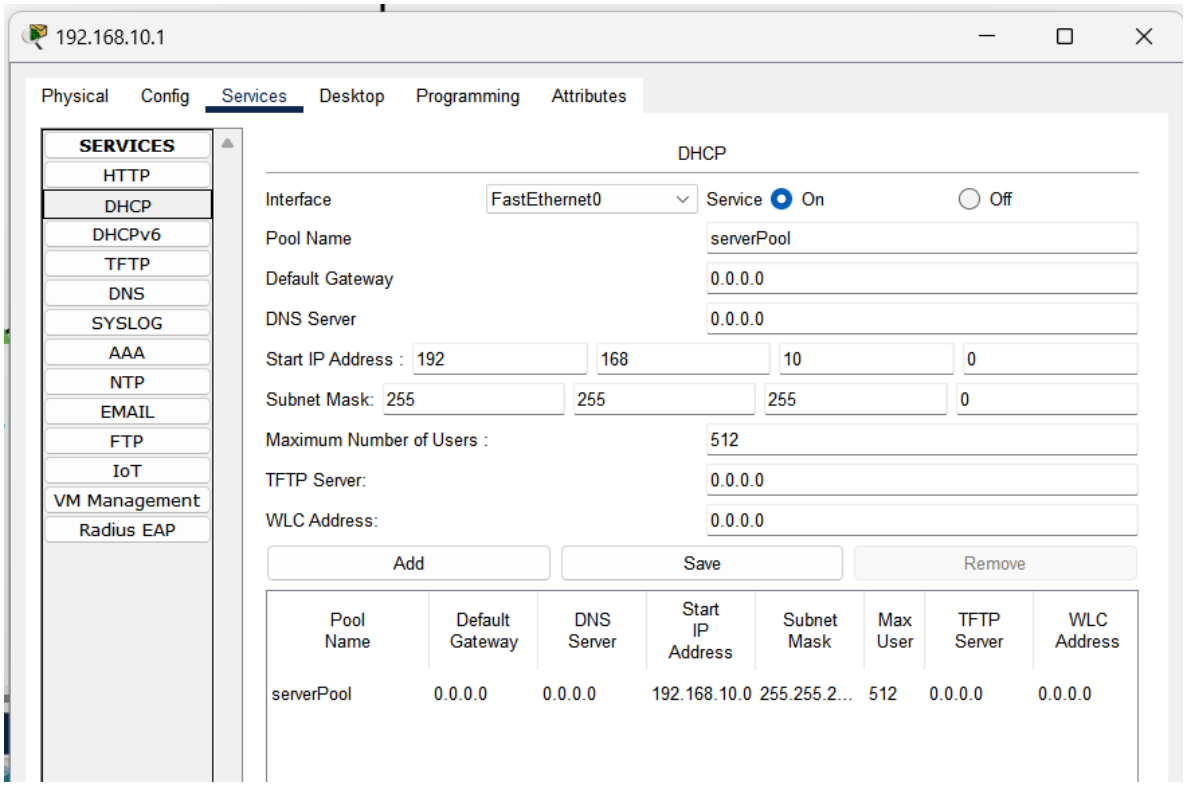
OUTPUT:

i) STAR TOPOLOGY

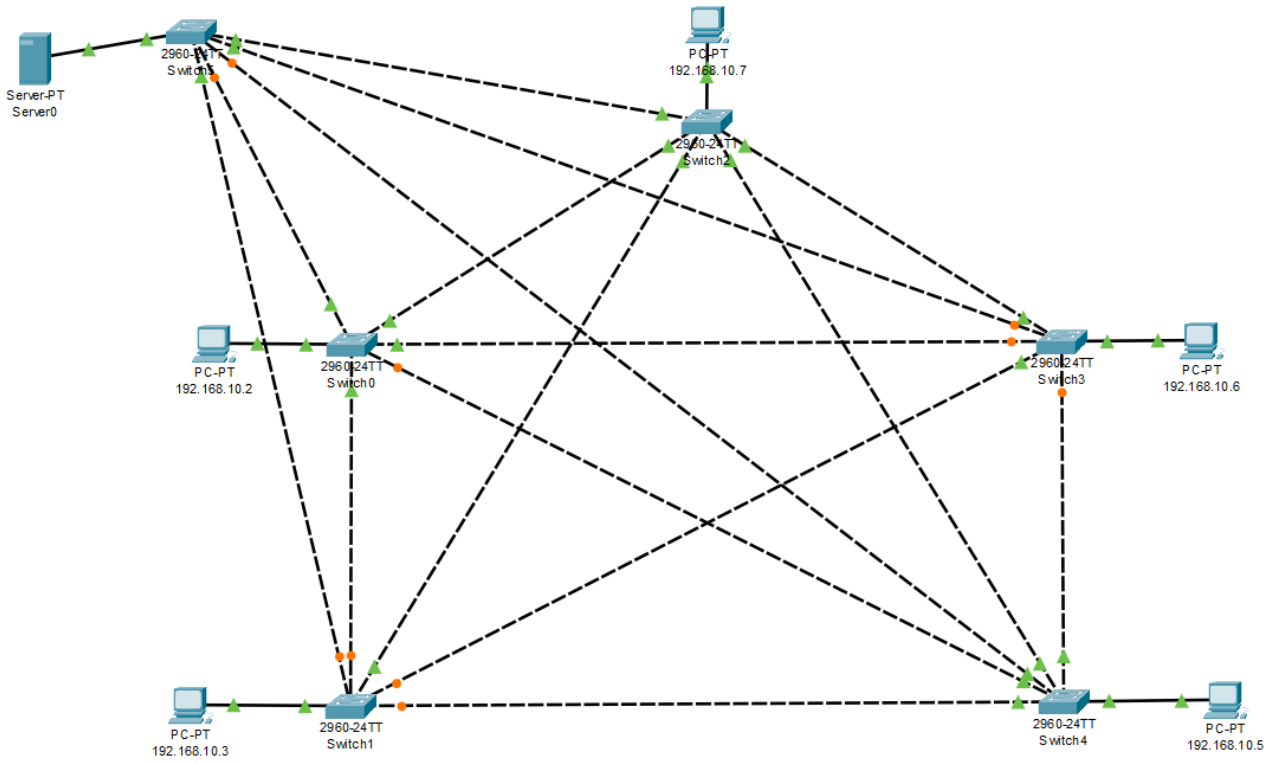


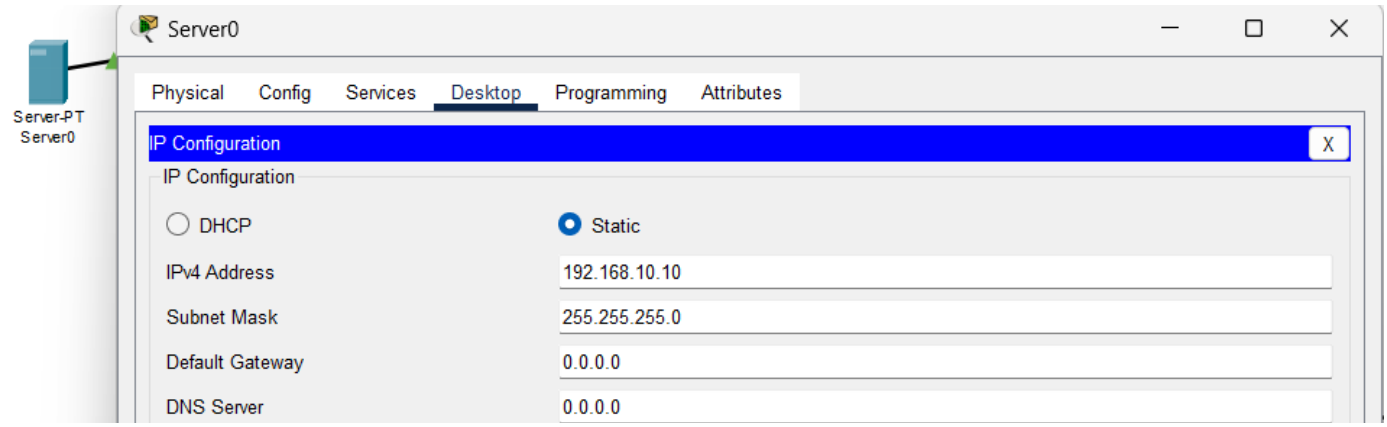


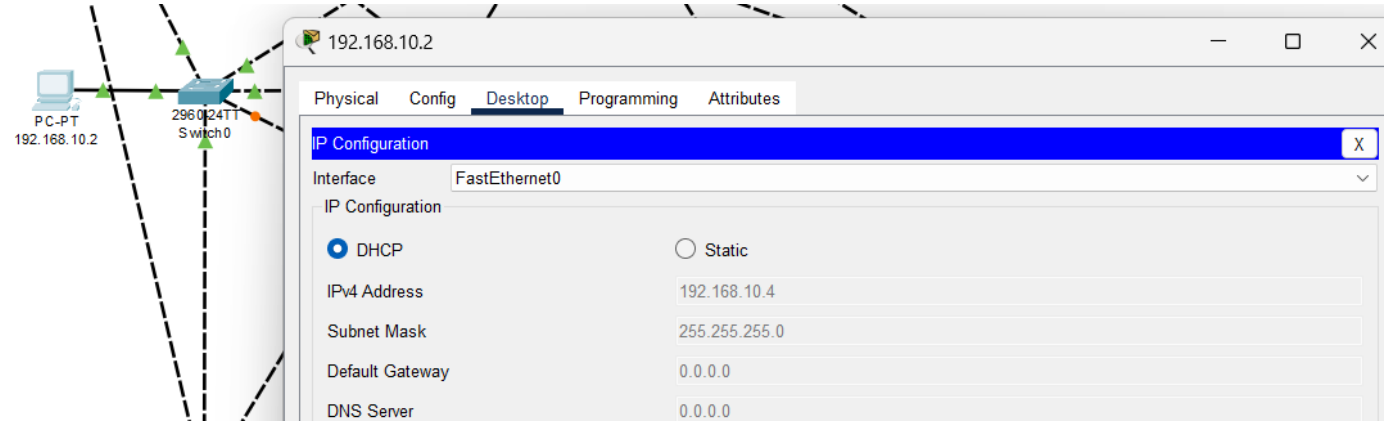


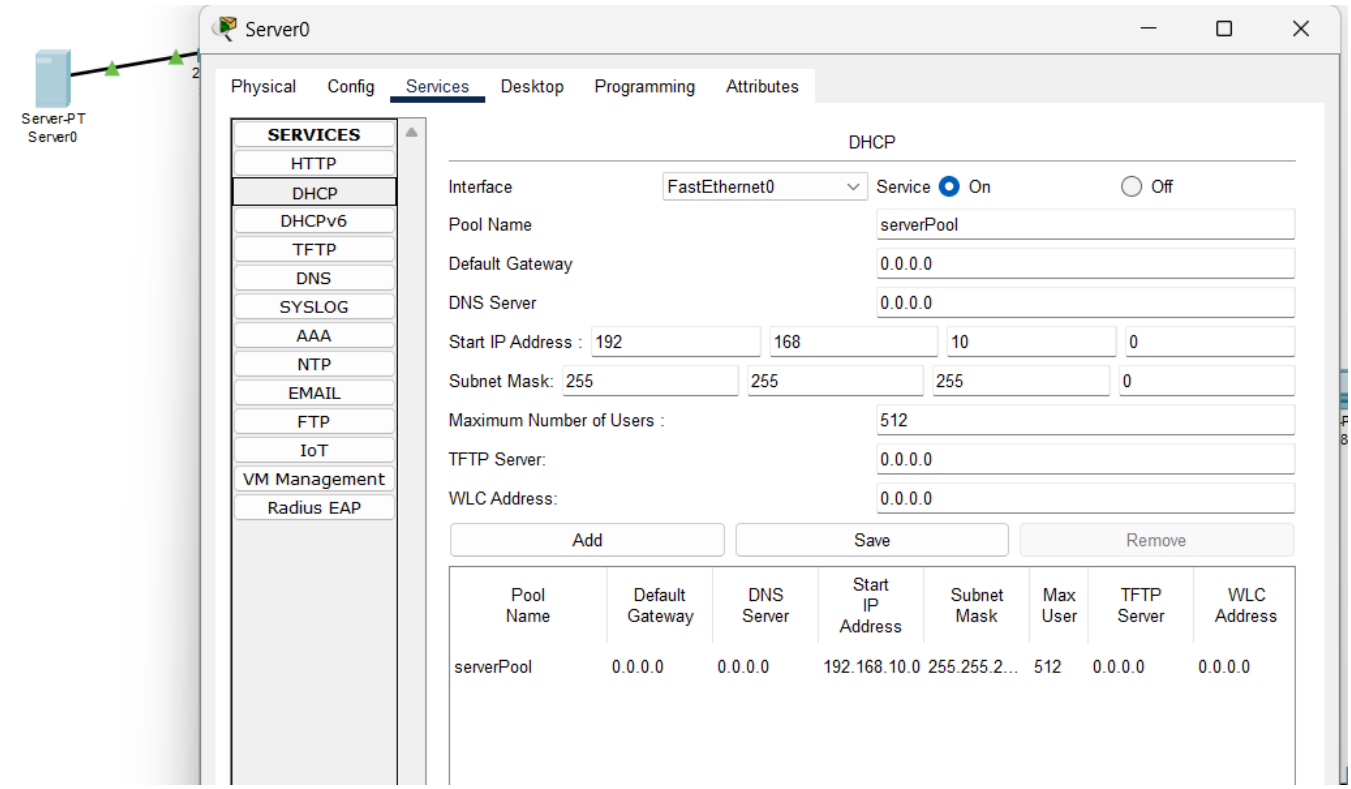


ii) MESH TOPOLOGY




Server0
Physical
Config
Services
Desktop
Programming
Attributes
Server-PT
Server0
IP Configuration
X
IP Configuration
DHCP
Static
IPv4 Address
192.168.10.10
Subnet Mask
255.255.255.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0


192.168.10.2
Physical
Config
Desktop
Programming
Attributes
PC-PT
192.168.10.2
2960-24TT
Switch0
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.10.4
Subnet Mask
255.255.255.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0


Server0
Physical
Config
Services
Desktop
Programming
Attributes
Server-PT
Server0
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
0.0.0.0
DNS Server
0.0.0.0
Start IP Address :
192
168
10
0
Subnet Mask:
255
255
255
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
0.0.0.0
0.0.0.0
192.168.10.0
255.255.2...
512
0.0.0.0
0.0.0.0

LEARNING OUTCOMES:

EXPERIMENT 3

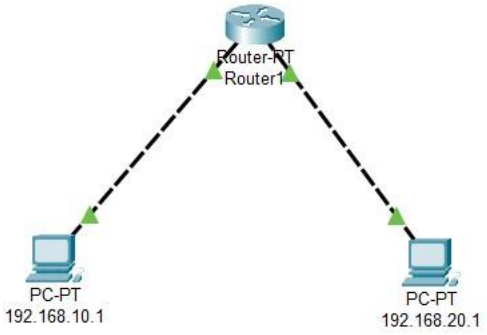
AIM: To configure a single router in a network.

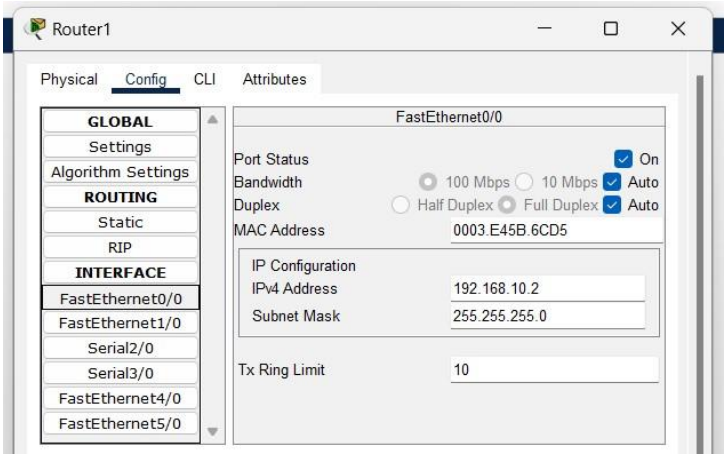
Theory:

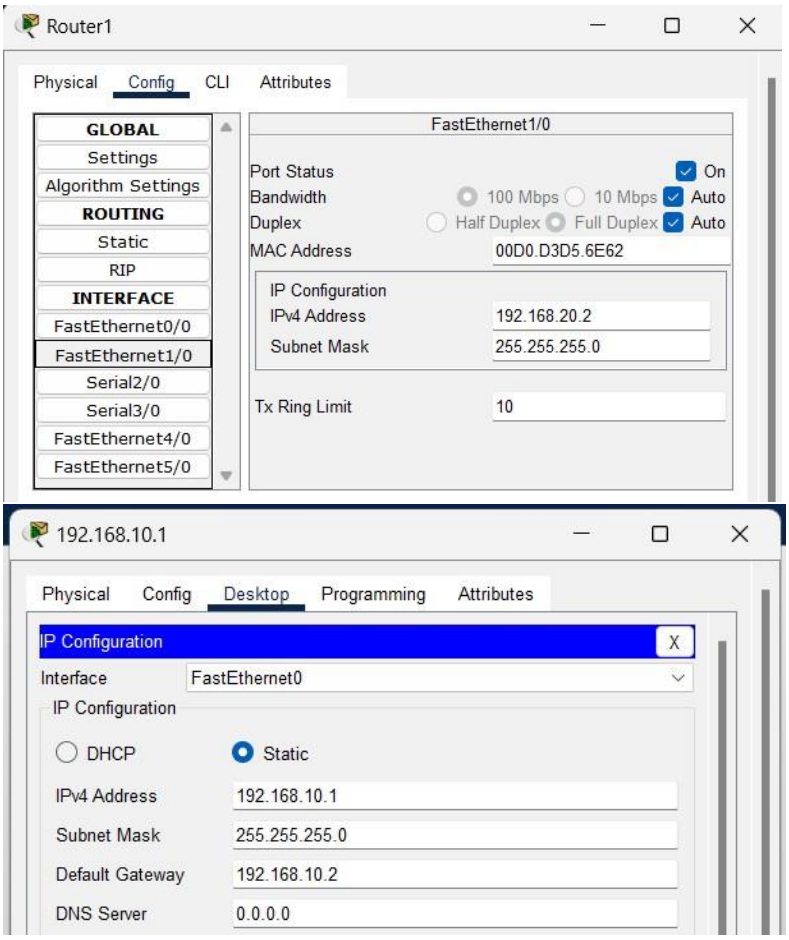
PROCEDURE:

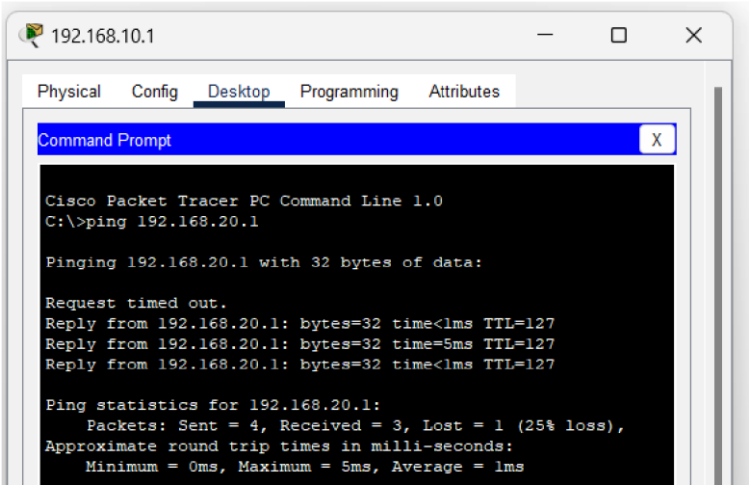
1. Place a Router-PT on the workspace and connect it to a switch using a copper straight-through cable.
2. Connect multiple PCs to the switch using copper straight-through cables.
3. Double-click the router, go to Config → Interface → FastEthernet0/1 (or FastEthernet0/0):
   a. Enable the interface by checking "On".
   b. Assign an IP address and subnet mask.
4. Repeat the process for other interfaces if needed (e.g., FastEthernet0/2).
5. Assign static IPs to each PC by double-clicking them, going to Desktop → IP Configuration, and entering the IP and subnet mask.
6. Test connectivity by using the Command Prompt on a PC and pinging other PCs.

OUTPUT:









LEARNING OUTCOMES:

EXPERIMENT 4

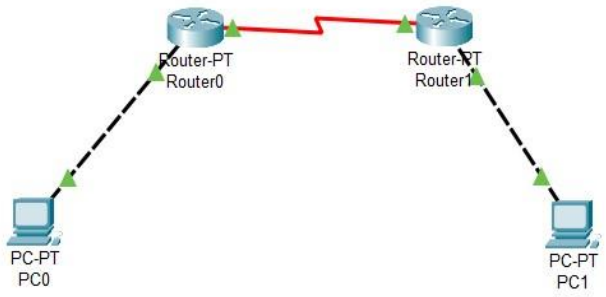
AIM: To configure WAN between two routers using Router-PT.

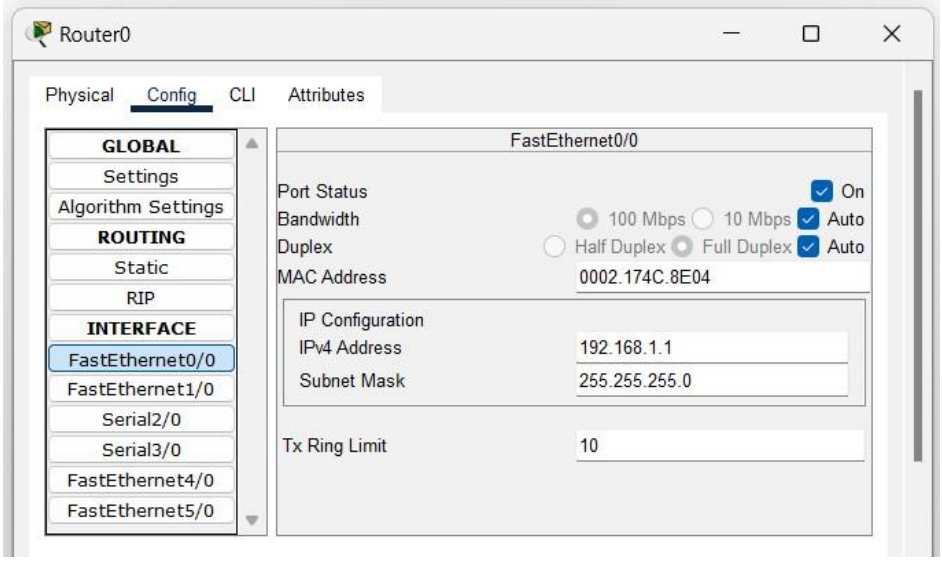
Theory:

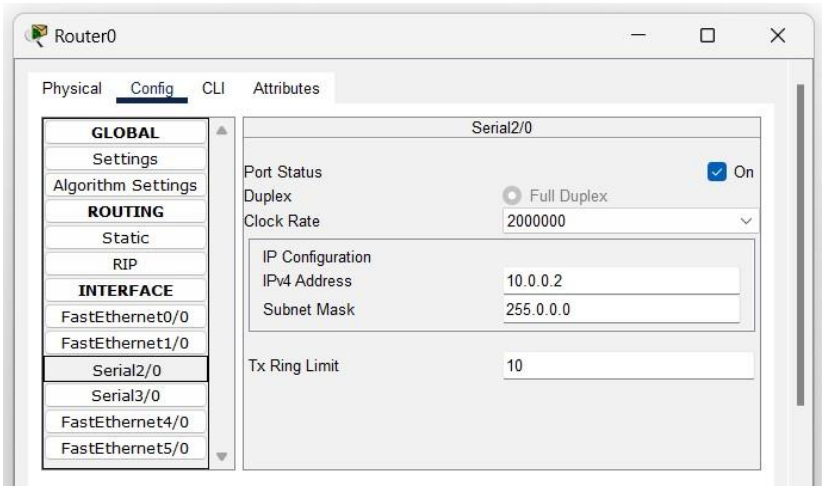
PROCEDURE:

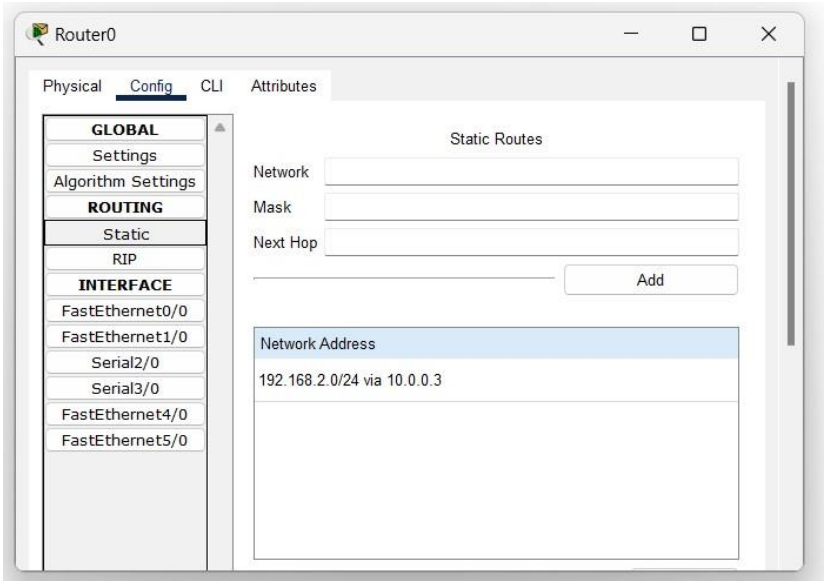
1. Place two Router-PT devices and connect them using a serial DCE cable.
2. Connect each router to its respective switch using a copper straight-through cable, and then connect PCs to the switches.
3. Double-click each router, go to Config → Interface → Serial0/0/0 (or Serial0/0/1): a.
   Enable the interface by checking "On".
   b. Assign an IP address and subnet mask. c. On one router, set the clock rate for the serial connection.
4. For LAN communication, configure the FastEthernet interfaces:
   a. Go to Config → Interface → FastEthernet0/1 and assign an IP address.
   b. Ensure the interface is enabled by checking "On".
5. On each router, go to Config → Routing and set static routes to allow communication between networks by entering the destination network, subnet mask, and next hop.
6. Test the WAN connection by pinging between PCs connected to different routers.

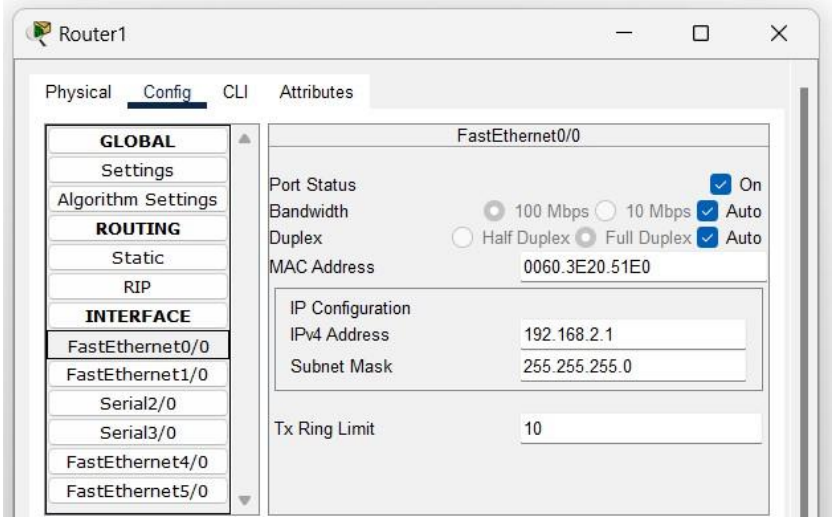
Output:

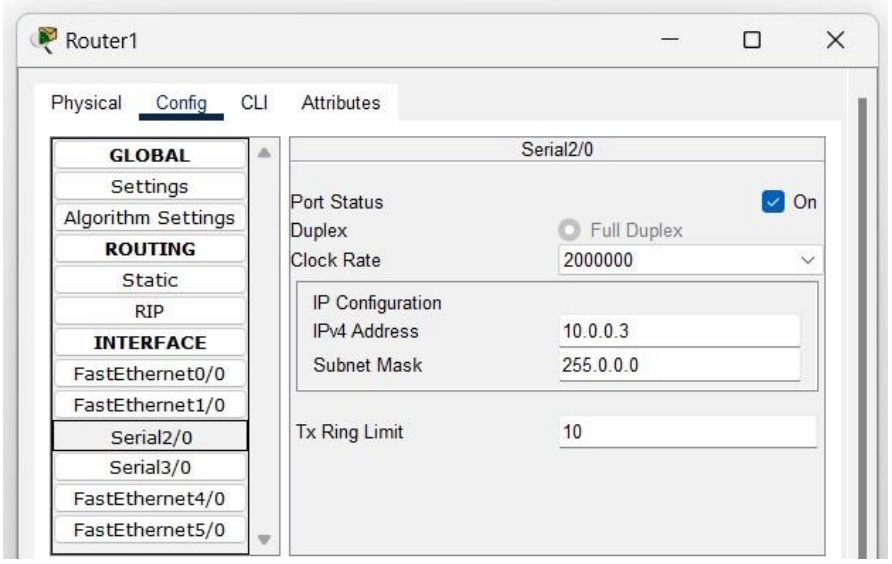


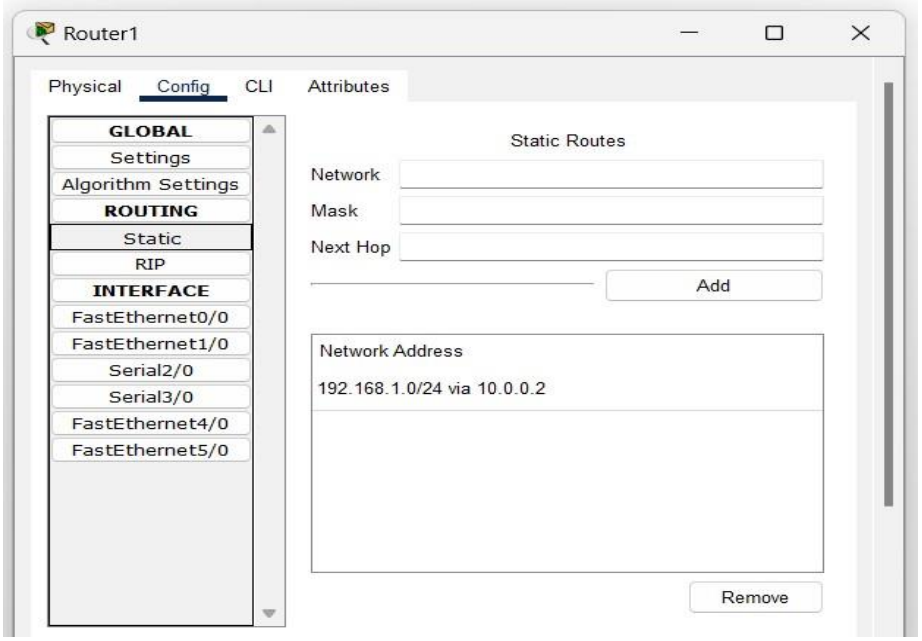


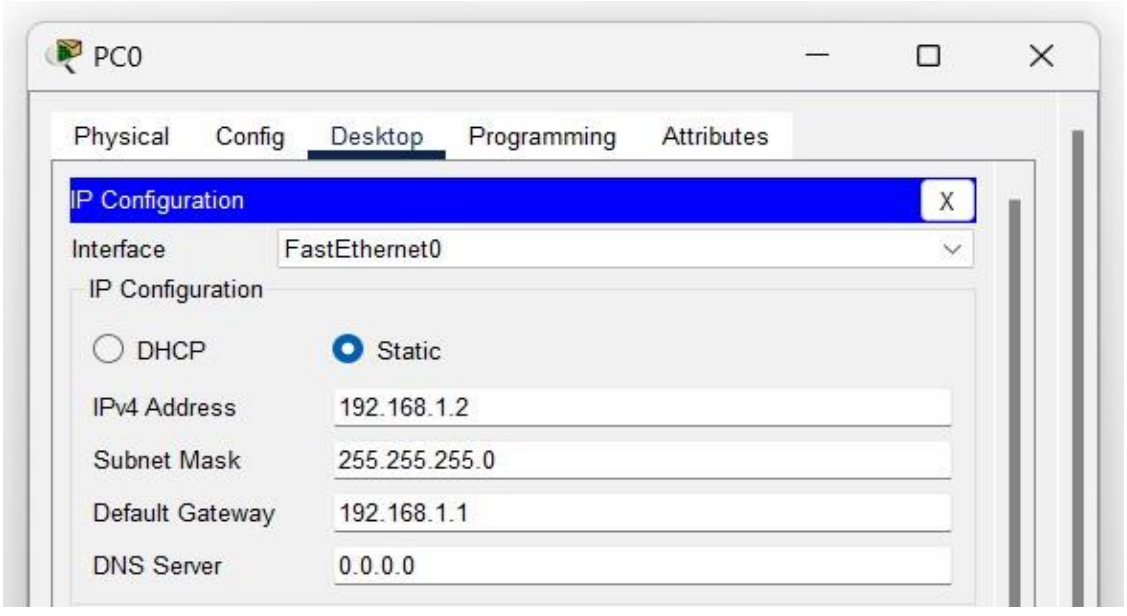

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10

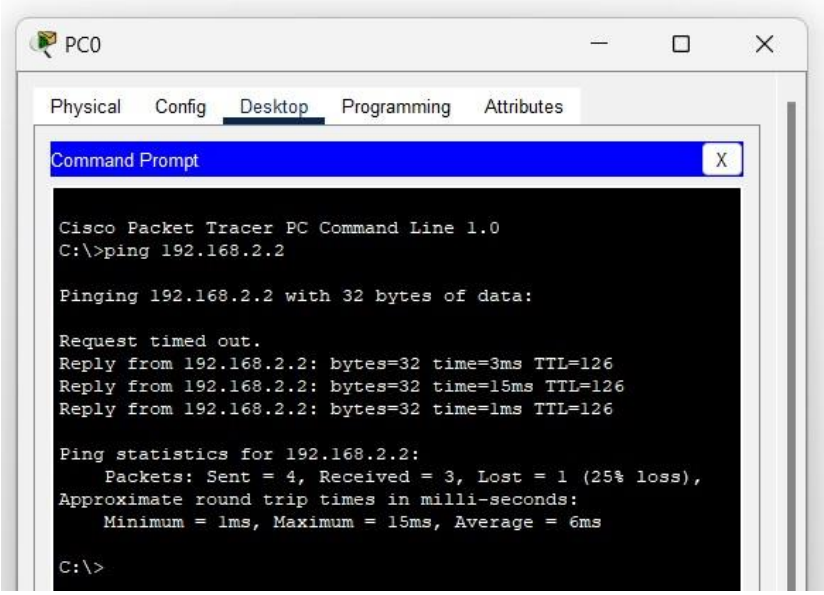

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Static Routes
Network
Mask
Next Hop
Add
Network Address
192.168.2.0/24 via 10.0.0.3


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0060.3E20.51E0
IP Configuration
IPv4 Address
192.168.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.0.0.3
Subnet Mask
255.0.0.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Static Routes
Network
Mask
Next Hop
Add
Network Address
192.168.1.0/24 via 10.0.0.2
Remove


PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.1
DNS Server
0.0.0.0



LEARNING OUTCOMES:

EXPERIMENT 5

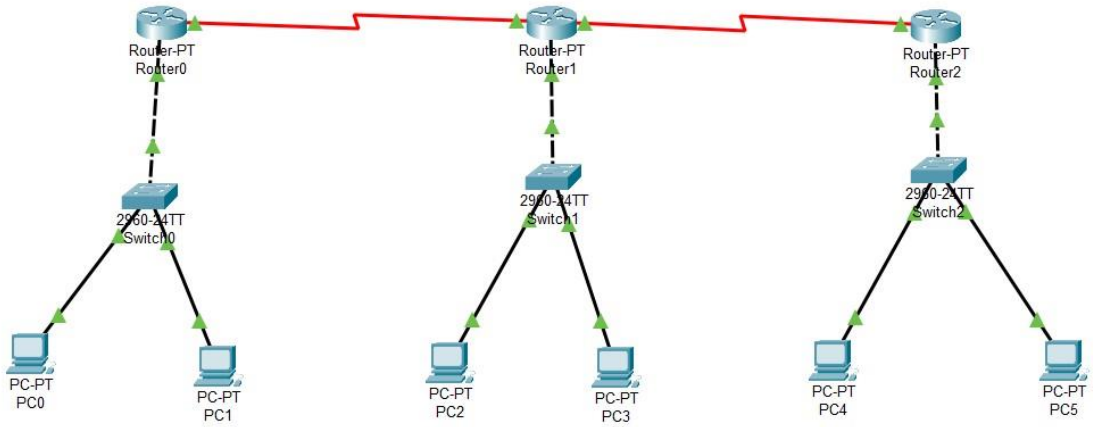
AIM: To configure static routing between three routers using Router-PT.

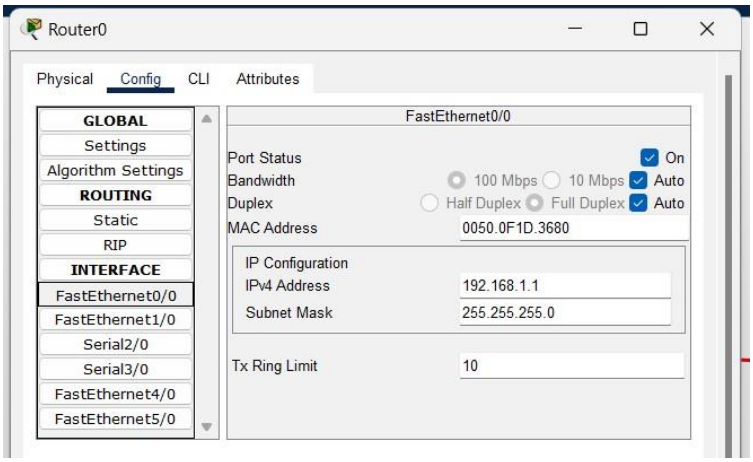
Theory:

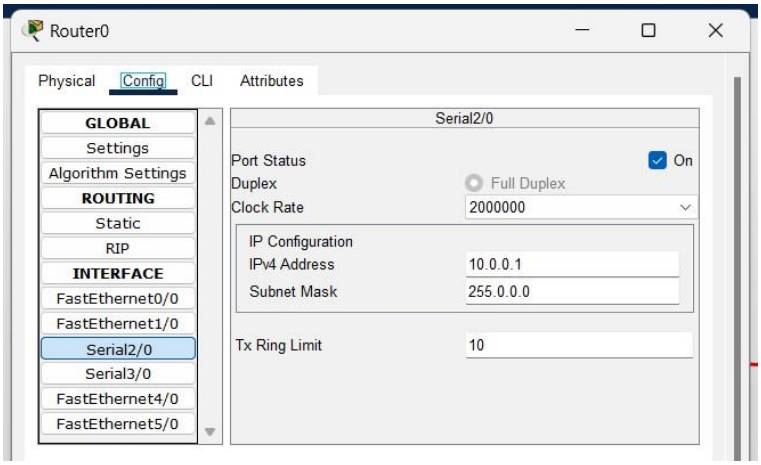
PROCEDURE:

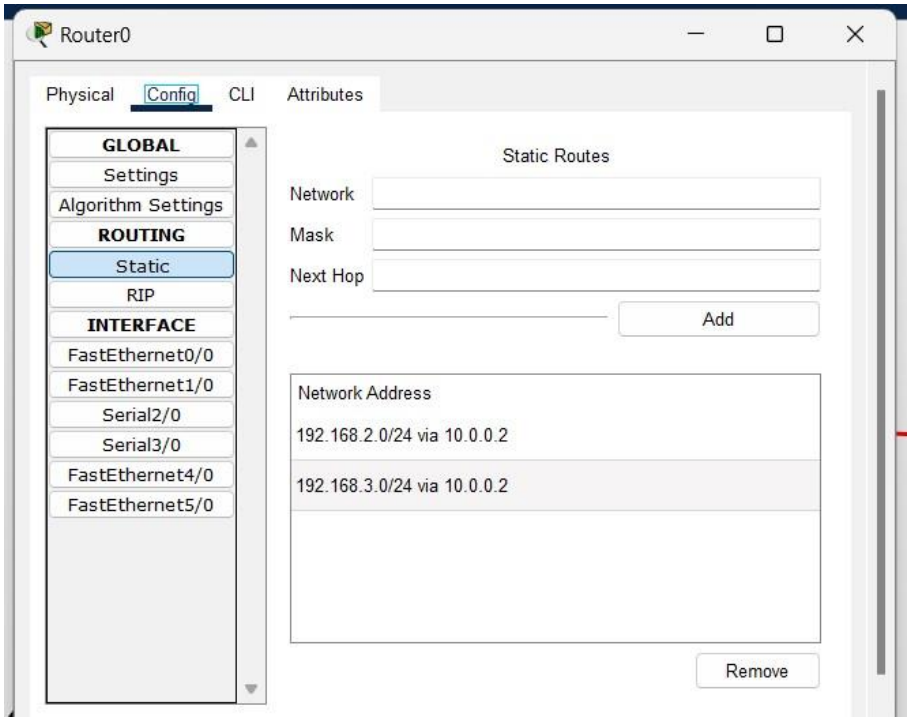
1. Place three Router-PT devices on the workspace and connect them using serial DCE cables.
2. Connect each router to its respective switch using copper straight-through cables, and connect PCs to each switch.
3. For each router, go to Config → Interface → Serial0/0/0 (or relevant interface) and assign IP addresses, subnet masks, and set the clock rate for one of the routers in each serial connection.
4. Configure the FastEthernet interfaces for LAN communication:
   a. Go to Config → Interface → FastEthernet0/1 on each router and assign an IP address.
   b. Ensure the interface is enabled by checking "On".
5. Configure static routes on each router by going to Config → Routing → Static and adding routes to other networks with the destination network, subnet mask, and next hop.
6. Assign static IPs to each PC and test the network by pinging across the devices connected to different routers.

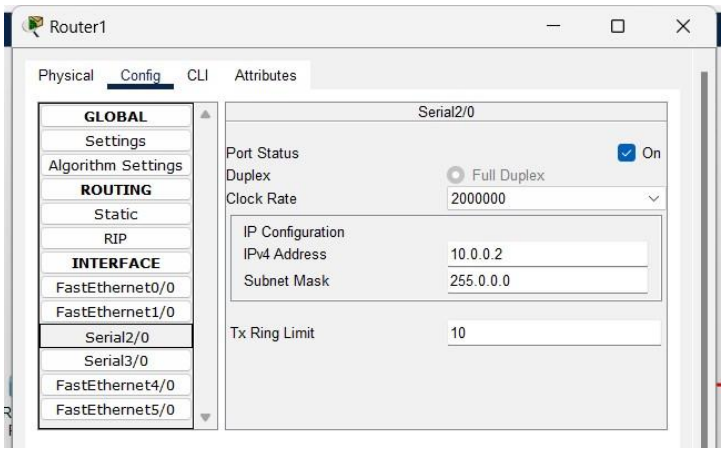
OUTPUT:

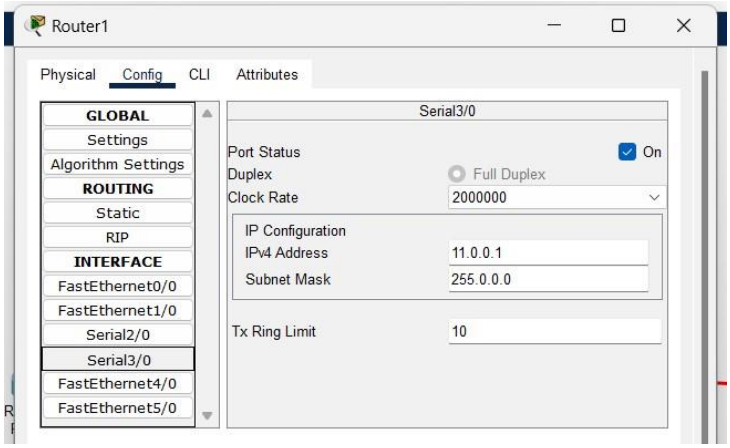


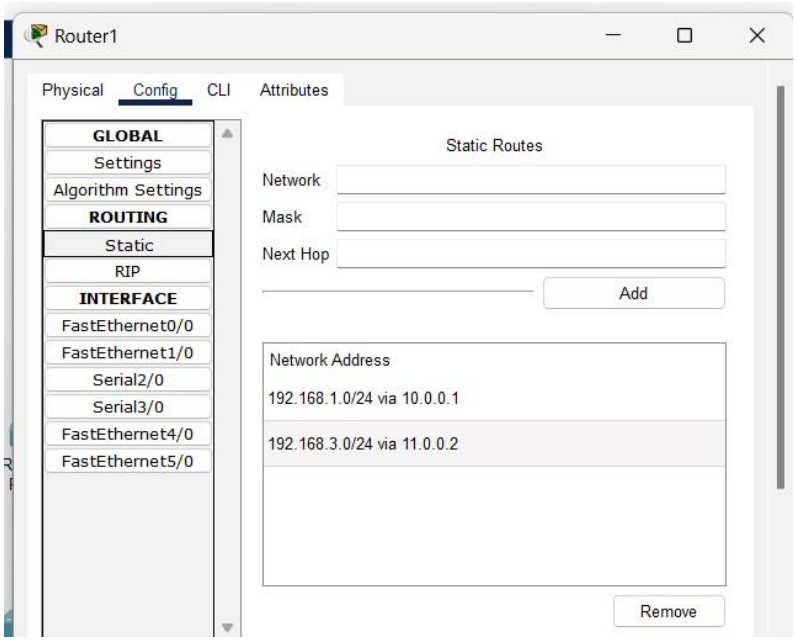

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0050.0F1D.3680
IP Configuration
IPv4 Address
192.168.1.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10

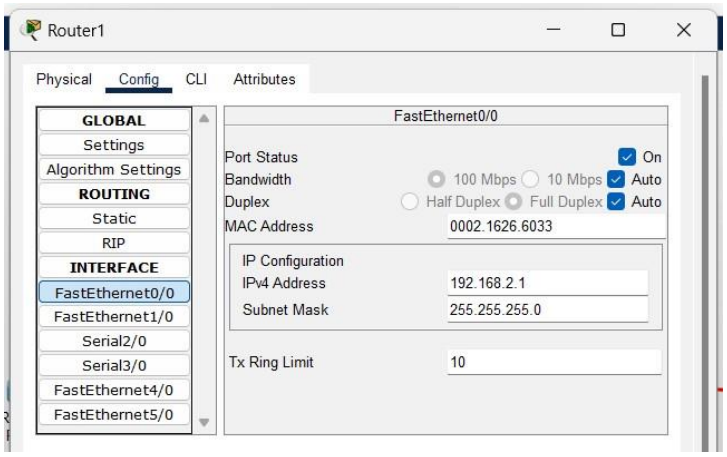

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10

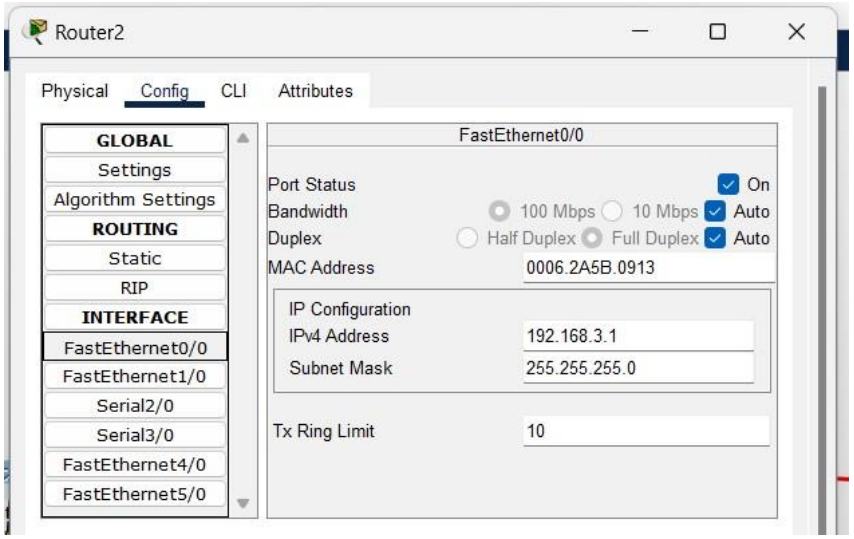

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Static Routes
Network
Mask
Next Hop
Add
Network Address
192.168.2.0/24 via 10.0.0.2
192.168.3.0/24 via 10.0.0.2
Remove

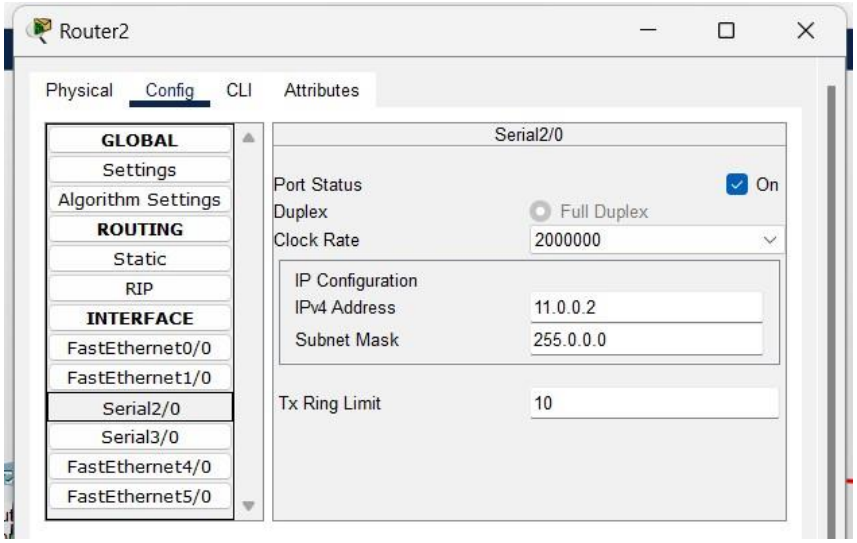

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10

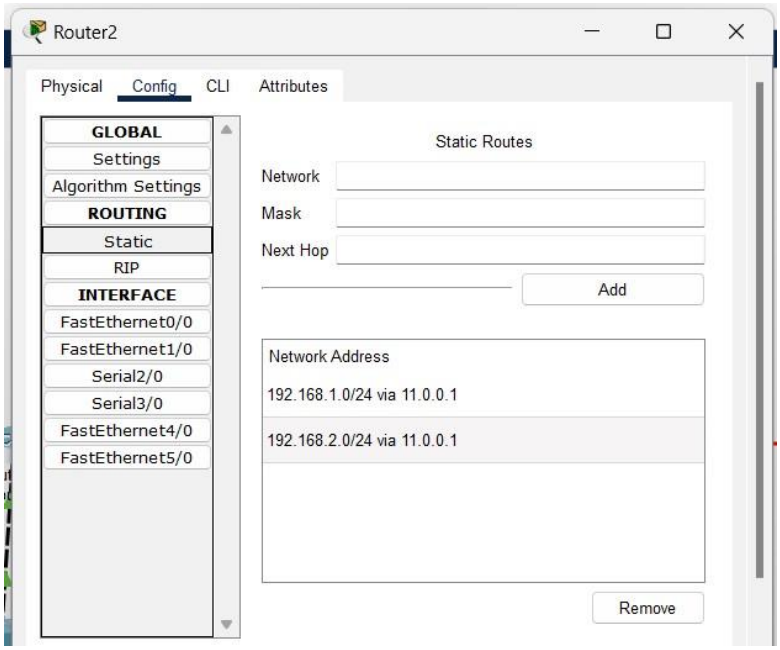

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial3/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
11.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10

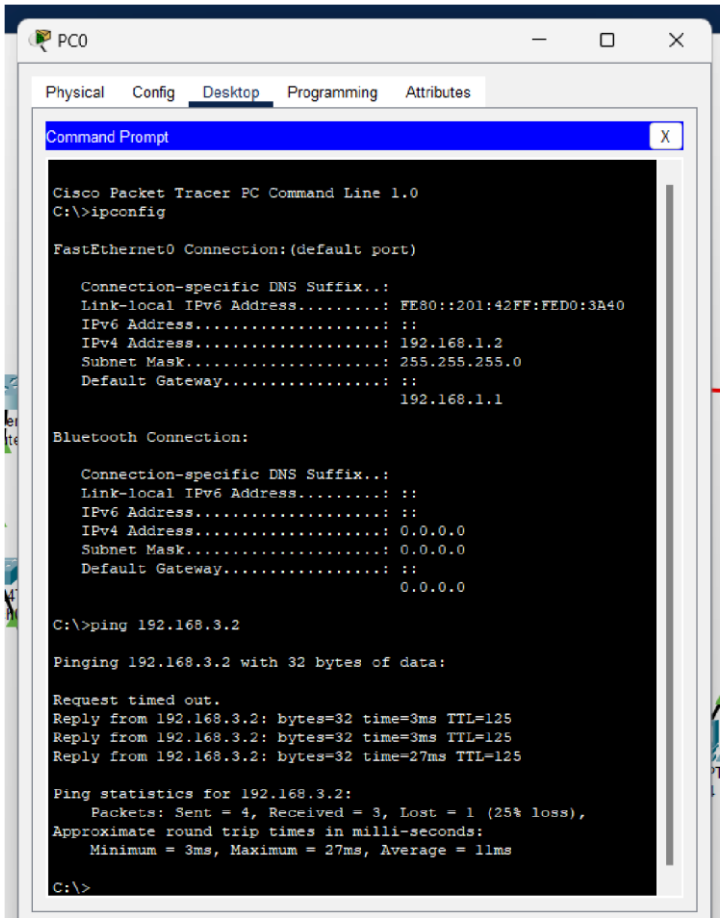

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Static Routes
Network
Mask
Next Hop
Add
Network Address
192.168.1.0/24 via 10.0.0.1
192.168.3.0/24 via 11.0.0.2
Remove


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.1626.6033
IP Configuration
IPv4 Address
192.168.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0006.2A5B.0913
IP Configuration
IPv4 Address
192.168.3.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
11.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10





LEARNING OUTCOMES:

EXPERIMENT 6

AIM: To implement the Dynamic Routing Protocols: RIP, IGRP using Cisco Packet Tracker.

Theory:

PROCEDURE:

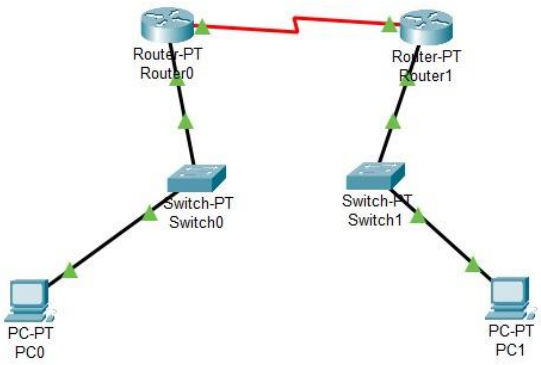
For RIP Implementation:

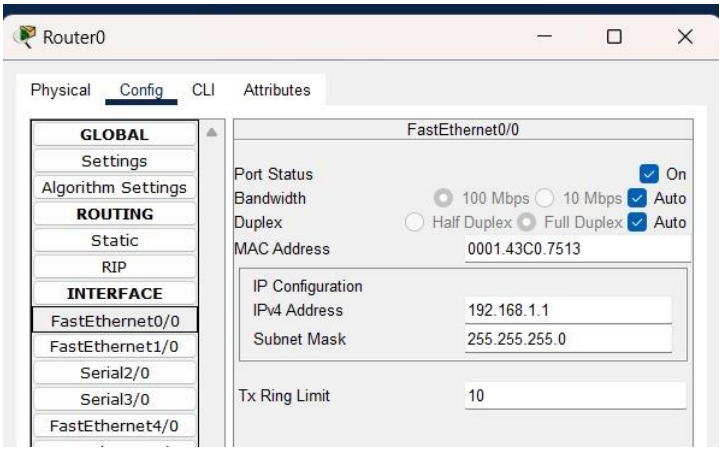
1. Open Cisco Packet Tracer and create a network topology with multiple routers.
2. Connect routers using appropriate cables (e.g., serial or Ethernet).
3. Click on each router and enter the CLI (Command-Line Interface).
4. Enter global configuration mode: enable then configure terminal.
5. Enable RIP on each router: router rip.
6. Define the version of RIP: version 2 (if using RIP v2).
7. Configure network statements for connected networks: network [network address].
8. Exit RIP configuration: exit.
9. Verify RIP routing table: show ip route.
10. Test the RIP configuration by pinging from one router to another.

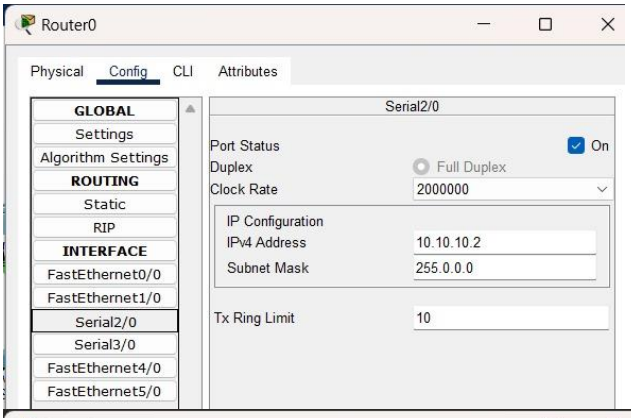
For IGRP Implementation:

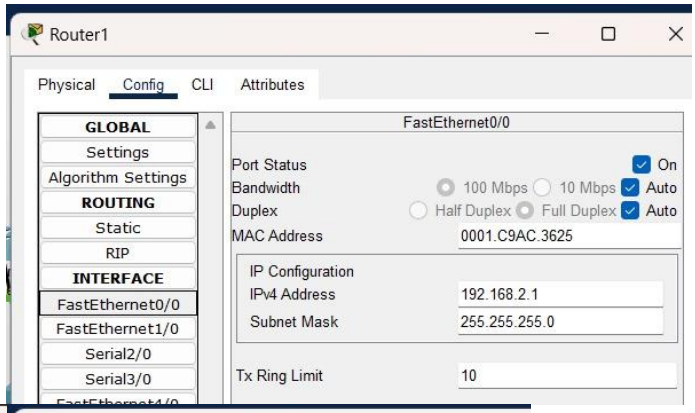
1. In Cisco Packet Tracer, add multiple routers and connect them.
2. Access the router's CLI by clicking on the router.
3. Enter global configuration mode: enable then configure terminal.
4. Enable IGRP: router igrp [AS number] (e.g., router igrp 100).
5. Define networks for IGRP: network [network address].
6. Exit IGRP configuration: exit.
7. Verify IGRP routing table: show ip route igrp.
8. Test IGRP by pinging from one router to another.
9. Monitor routing updates: show ip protocols.

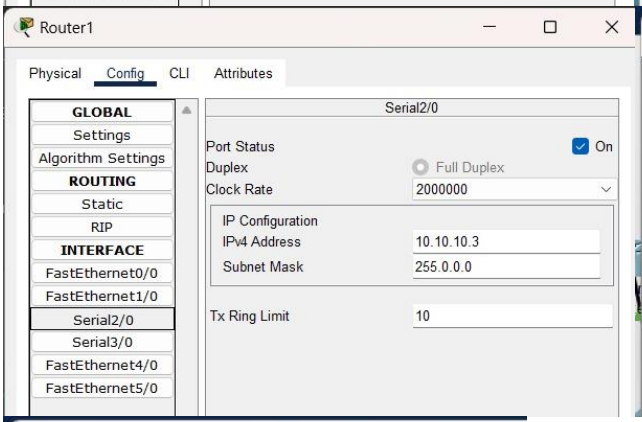
OUTPUT:

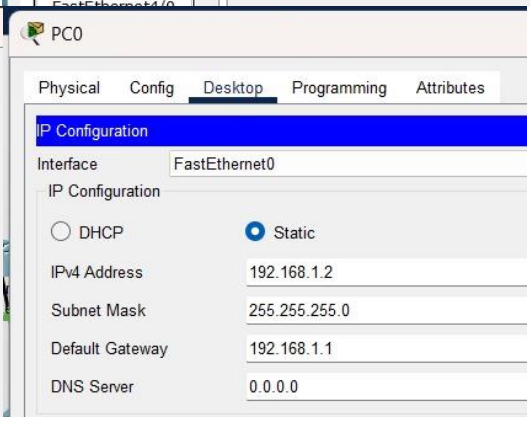

Router-PT
Router0
Router-PT
Router1
Switch-PT
Switch0
Switch-PT
Switch1
PC-PT
PC0
PC-PT
PC1

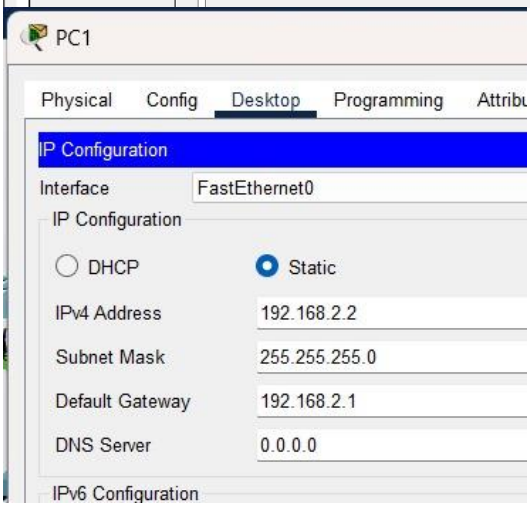

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.43C0.7513
IP Configuration
IPv4 Address
192.168.1.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.10.10.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.C9AC.3625
IP Configuration
IPv4 Address
192.168.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.10.10.3
Subnet Mask
255.0.0.0
Tx Ring Limit
10


PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.1
DNS Server
0.0.0.0


PC1
Physical
Config
Desktop
Programming
Attribu
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.2.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.1
DNS Server
0.0.0.0
IPv6 Configuration

LEARNING OUTCOMES:

EXPERIMENT 7

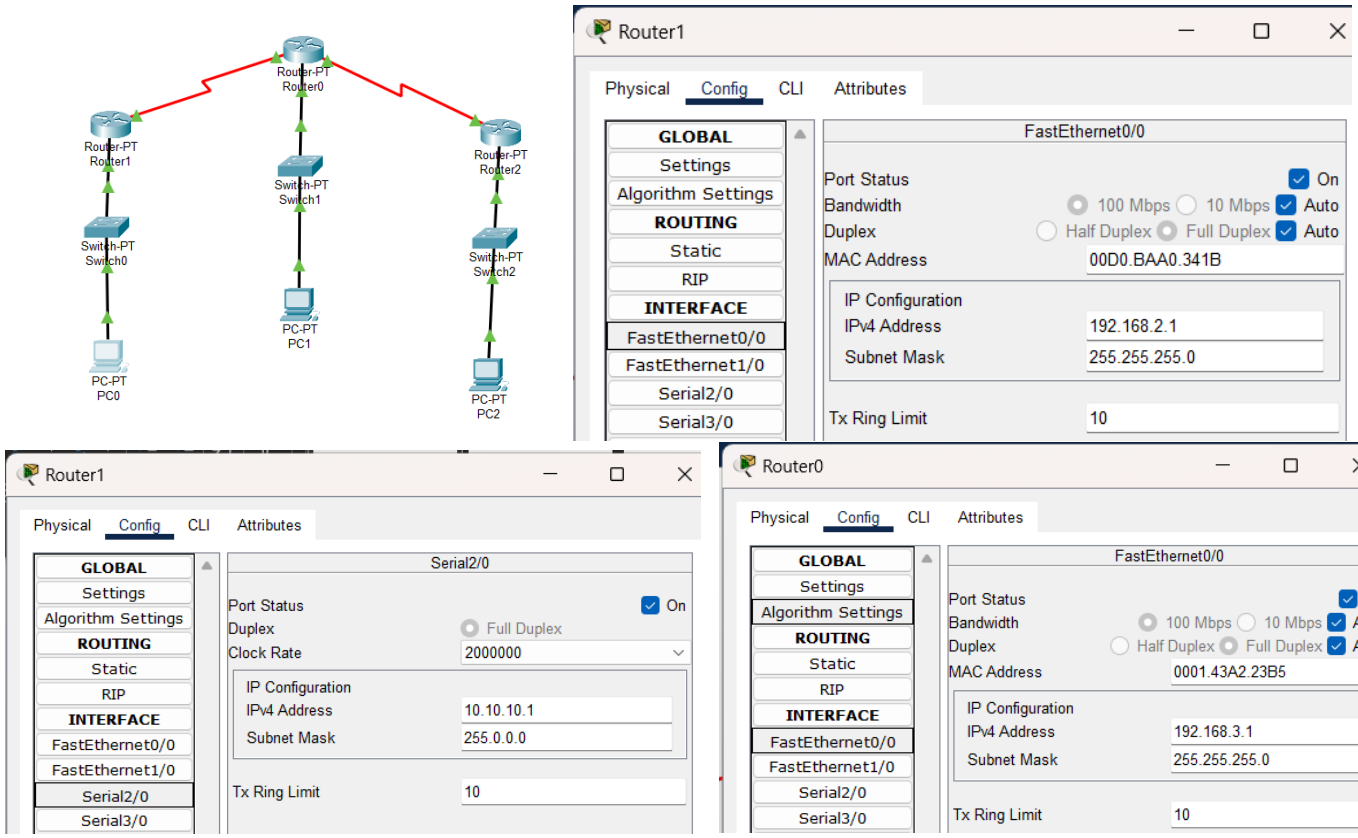
AIM: To construct multiple router networks and implement the EIGRP Protocol.

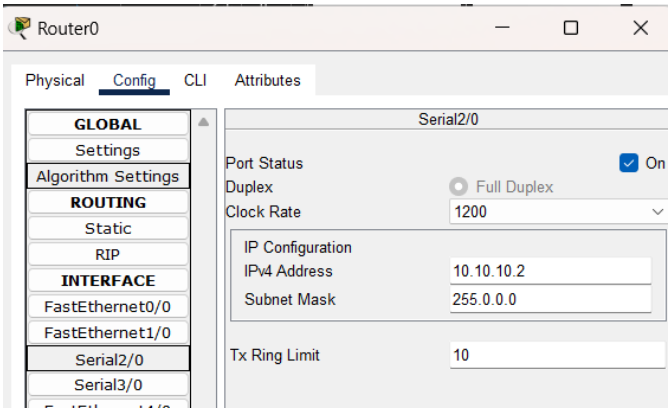
Theory:

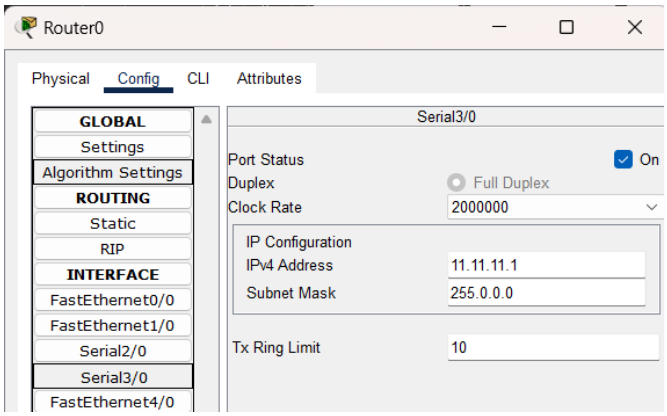
PROCEDURE:

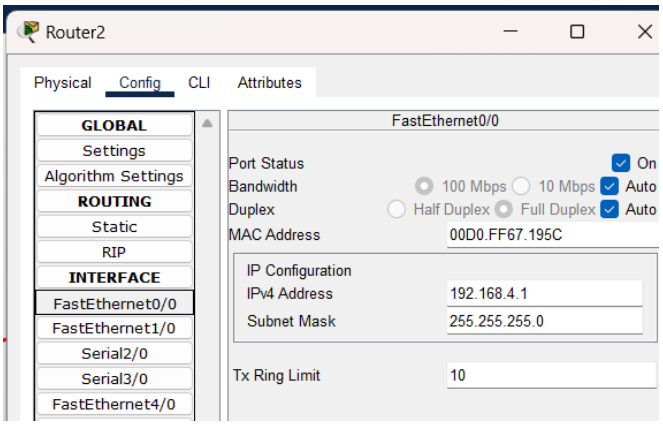
1. Place multiple routers (e.g., Router-PT1, Router-PT2) and connect them using serial or Ethernet cables.
2. On each router, configure interfaces with IP addresses and subnet masks (e.g., Router-PT1: 192.168.1.1/24, Router-PT2: 192.168.2.1/24).
3. On each router, enter global config mode: `configure terminal`.
4. Enable EIGRP on each router with the command: `router eigrp <AS_number>`.
5. Define the networks to participate in EIGRP by using `network <network_address> <wildcard_mask>`.
6. On each router, verify EIGRP configuration with `show ip eigrp neighbors` and `show ip route`.
7. Test inter-router connectivity by pinging between devices on different networks.
8. Optionally, configure EIGRP settings like passive interfaces, delay, or bandwidth for optimization.

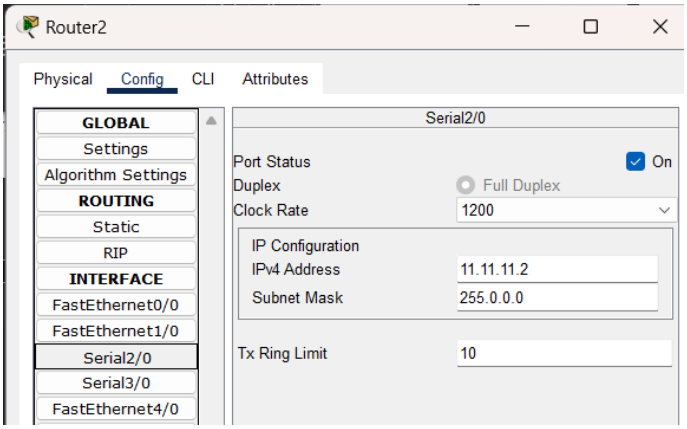
OUTPUT:











LEARNING OUTCOMES:

EXPERIMENT 8

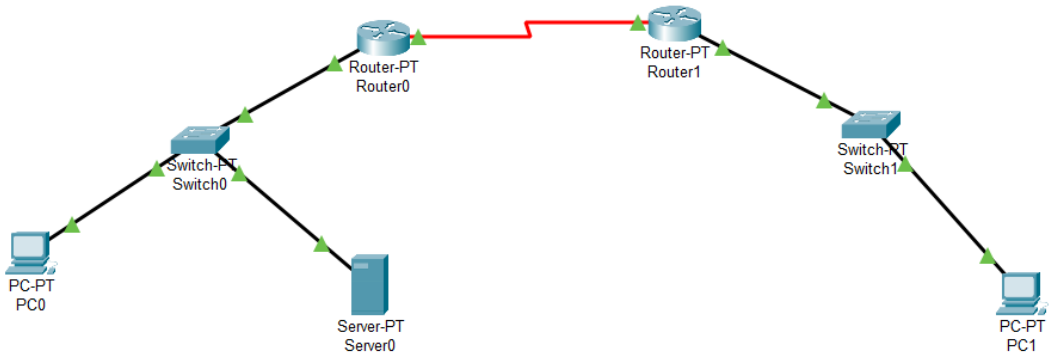
AIM: To implement the Network Address Resolution (NAT) using Cisco Packet Tracker.

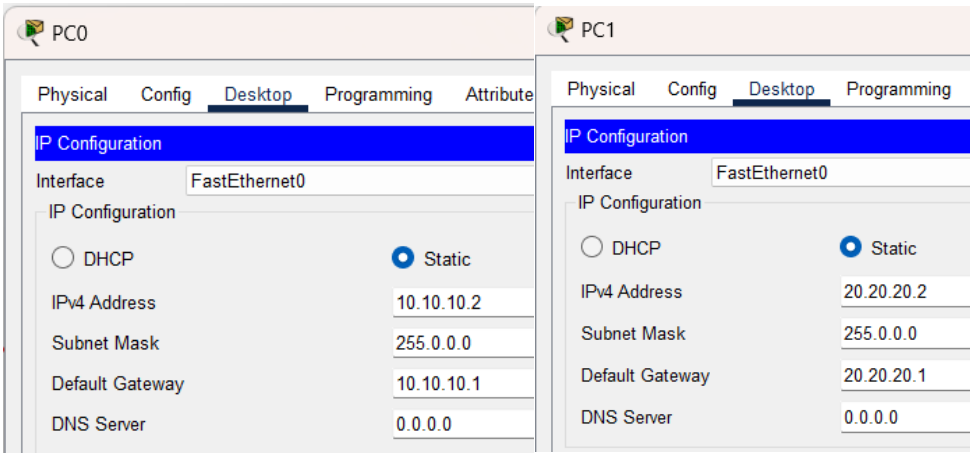
Theory:

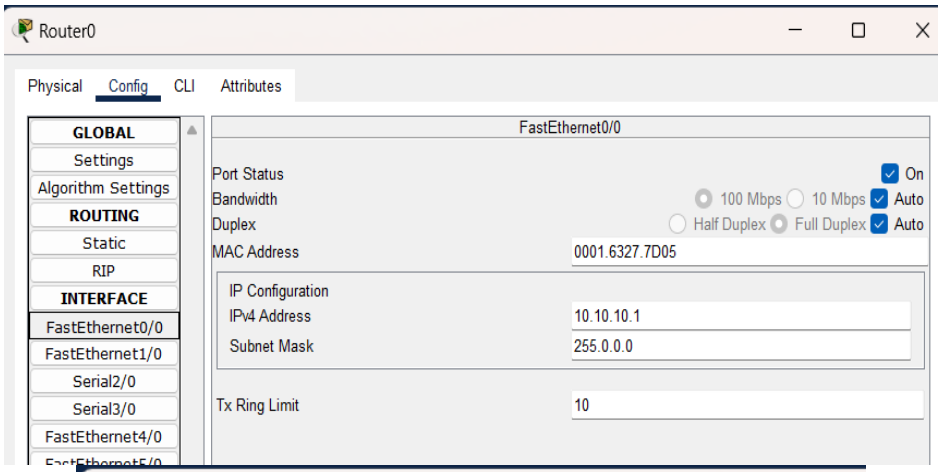
PROCEDURE:

1. Place a router and switch, then connect PCs to the switch with copper straight-through cables.
2. On the router, configure **FastEthernet0/1** (inside) and **FastEthernet0/0** (outside) interfaces with IP addresses and subnet masks.
3. On the router CLI, enter global config mode: configure terminal and set interfaces with ip nat inside and ip nat outside.
4. Define a NAT pool with ip nat pool NAT_POOL 203.0.113.2 203.0.113.10 netmask 255.255.255.248.
5. Create an access list with access-list 1 permit 192.168.1.0 0.0.0.255 to match internal IPs.
6. Enable NAT with ip nat inside source list 1 pool NAT_POOL.
7. Assign static IPs to PCs (e.g., 192.168.1.x/255.255.255.0) and set the default gateway to 192.168.1.1.
8. Test connectivity by pinging between PCs and verify NAT with show ip nat translations on the router.

OUTPUT:






Router0
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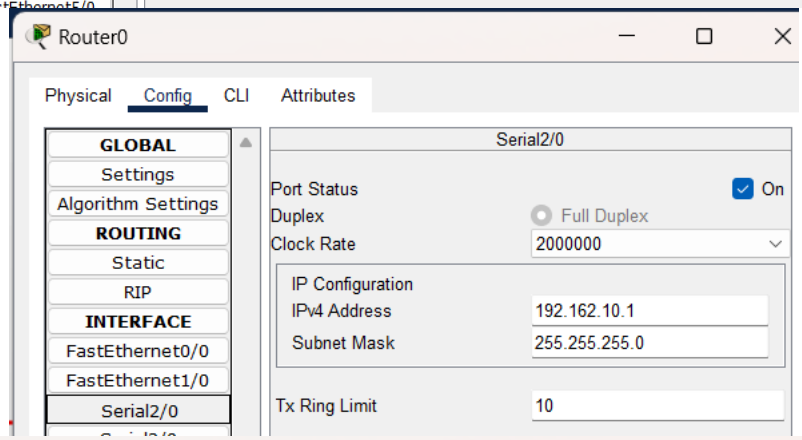
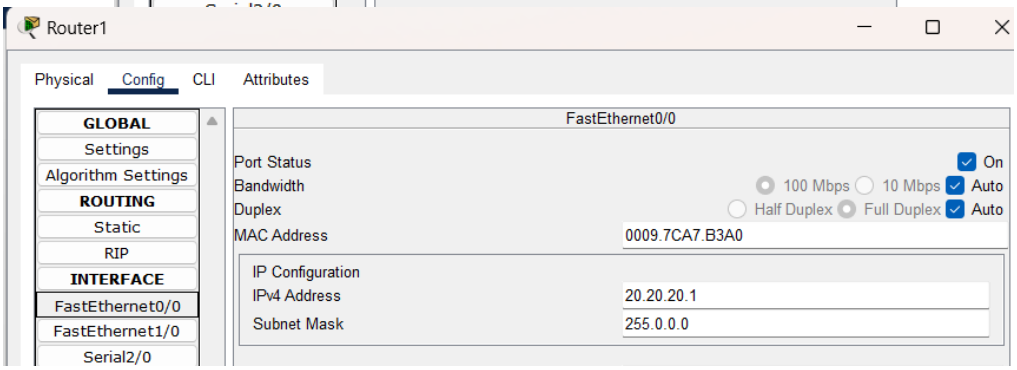
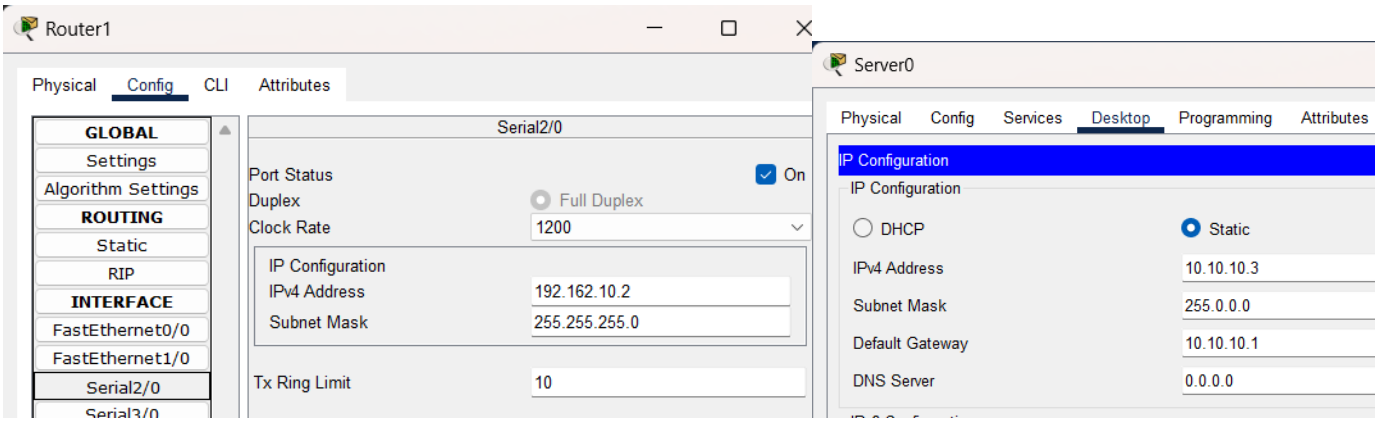
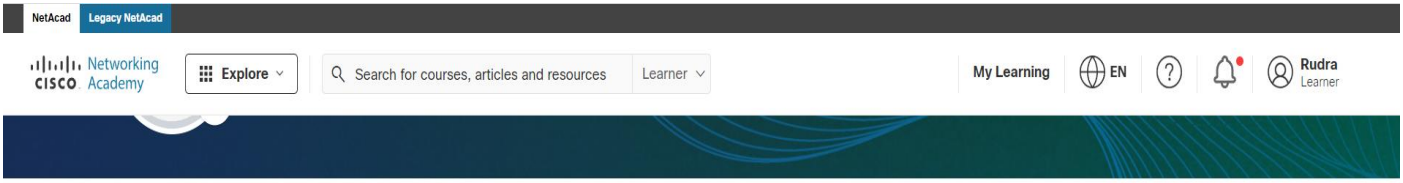
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.6327.7D05
IP Configuration
IPv4 Address
10.10.10.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10

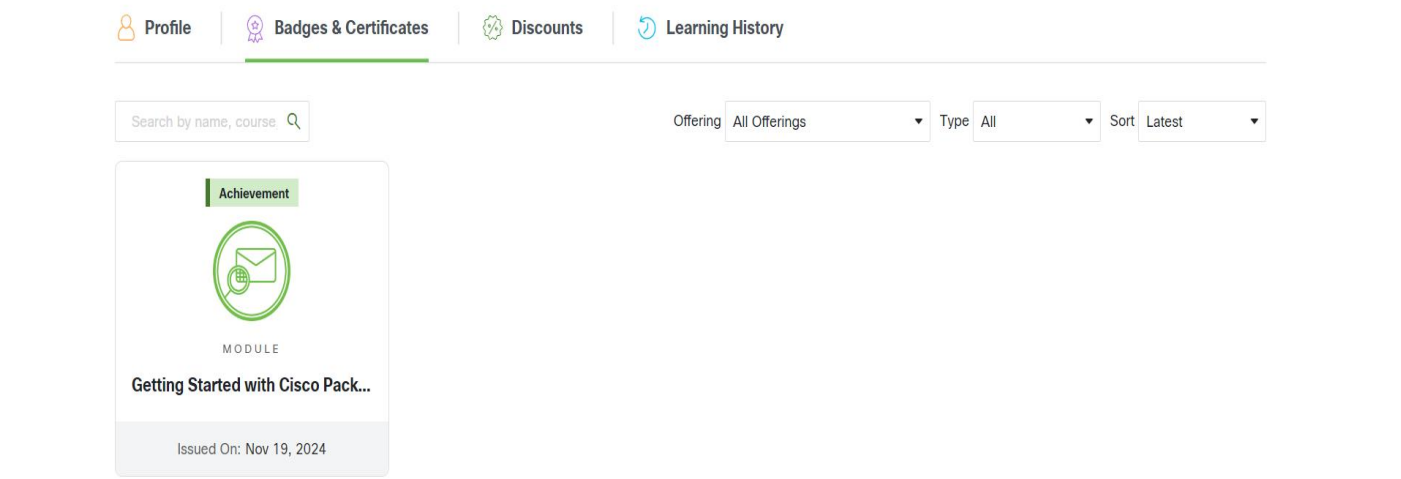

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.162.10.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0009.7CA7.B3A0
IP Configuration
IPv4 Address
20.20.20.1
Subnet Mask
255.0.0.0


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
1200
IP Configuration
IPv4 Address
192.162.10.2
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Server0
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
IP Configuration
DHCP
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

LEARNING OUTCOMES-


NetAcad
Legacy NetAcad
Networking Academy
Explore
Search for courses, articles and resources
Learner
My Learning
EN
Rudra
Learner


Profile
Badges & Certificates
Discounts
Learning History
Search by name, course
Offering
All Offerings
Type
All
Sort
Latest
Achievement
MODULE
Getting Started with Cisco Pack...
Issued On: Nov 19, 2024


Getting Started with Cisco Packet Tracer
Getting Started with Cisco Packet Tracer
Your on-ramp to Cisco Packet Tracer. Get familiar with the simulation environment and download the latest version.
ISSUED DATE
Nov 19, 2024
TOTAL HOURS
2
ACADEMY
Networking Academy
SKILLS YOU LEARN
Getting Started with Cisco Packet Tracer