



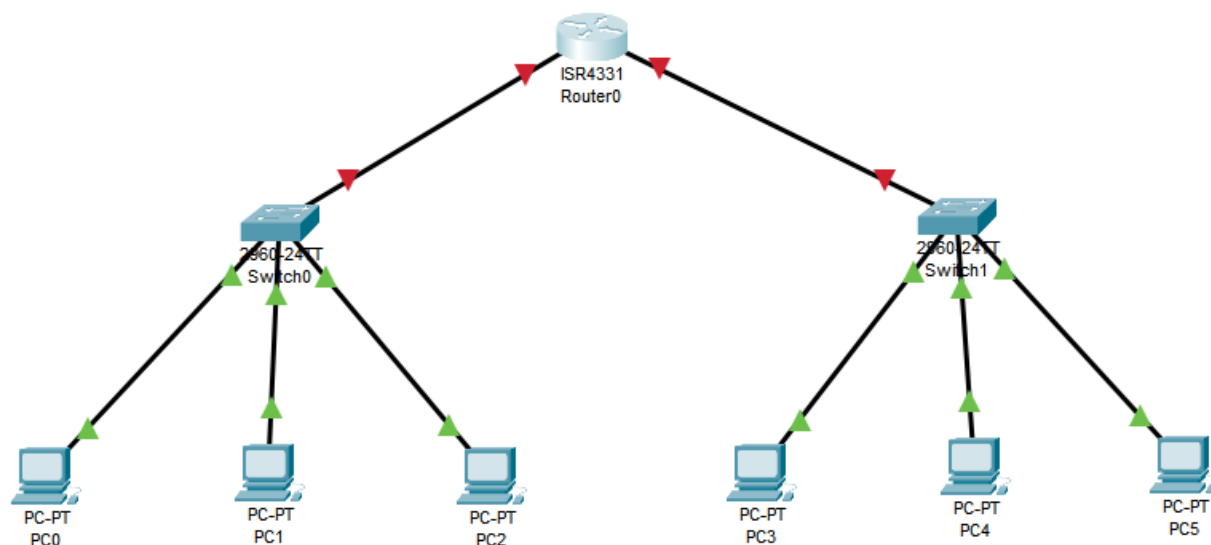
Experiment No. 2

Aim: Build a simple network topology and configure it for static routing protocol using packet tracer. Setup a network and configure IP addressing, subnetting, masking

Resource required: Cisco Packet Tracer software, 2 or 3 Routers, 2 Switches, 4 PCs (2 per LAN), Ethernet cables (Copper straight-through), Serial cable (for router-to-router connection)

Theory: 1. Connect Devices

- Connect PC0, PC1 and PC2 to Switch0, which connects to Router0 G0/0
- Connect PC3, PC4 and PC5 to Switch1, which connects to Router0 G0/1



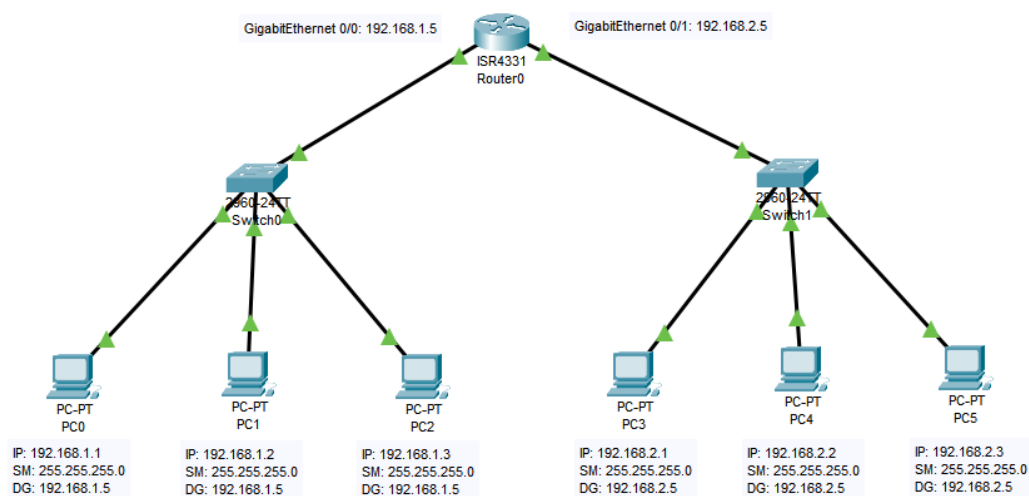
2. Assign IPs to PCs

Go to each PC > Desktop > IP Configuration:



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3. Configure Routers

Router0 Configuration: Assign IP address and Check the Status as ON

Router0

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0/0

GigabitEthernet0/0/1

GigabitEthernet0/0/2

GigabitEthernet0/0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00D0.97A1.3001

IP Configuration

IP Address 192.168.1.5

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-if)#ip address 192.168.1.5 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0,
changed state to up
```

☐ Top



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Now assign IP address of Router to defined each PC Default Gateway

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.5

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::2E0:F7FF:FE85:5583

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

☐ Top

Testing Connectivity

1. From **PC0**, open the Command Prompt.
2. Type:
ping 192.168.2.1
3. If successful, the ping confirms that static routing is properly configured.



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```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time<1ms TTL=127
Reply from 192.168.2.1: bytes=32 time=17ms TTL=127
Reply from 192.168.2.1: bytes=32 time=13ms TTL=127
Reply from 192.168.2.1: bytes=32 time=10ms TTL=127

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 17ms, Average = 10ms

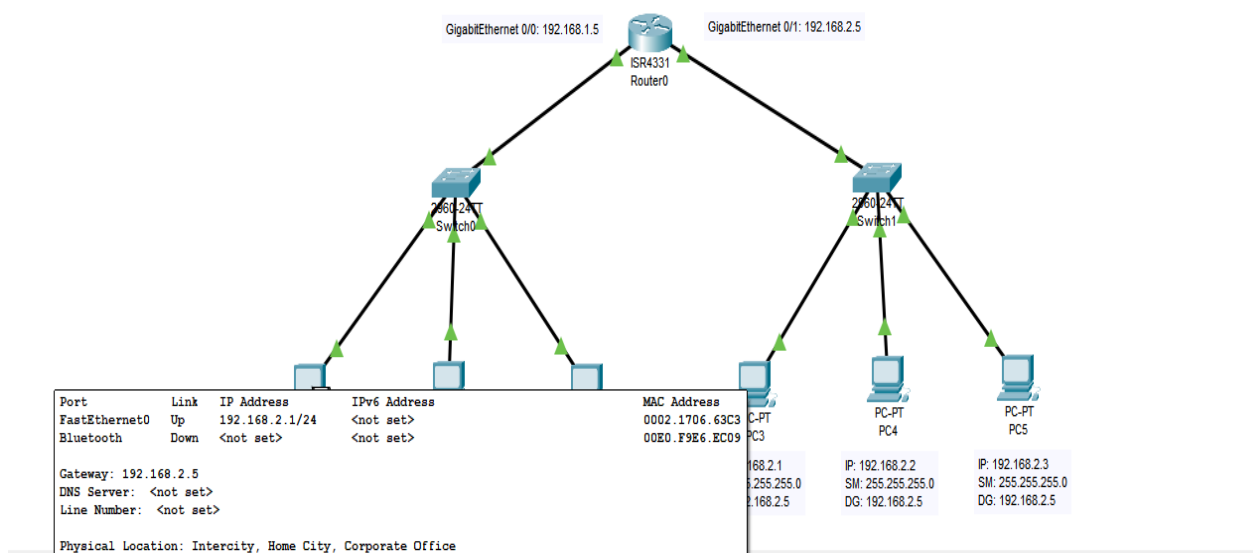
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=1ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time=3ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms
```

Now transfer the packet and from 1 PC to another PC





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Now view the Simulation of the Packet Transfer:

The screenshot displays the Cisco Packet Tracer interface during a packet transfer simulation. The network topology consists of a central Router0 (ISR4331) connected to two switches, Switch0 and Switch1 (26024T). Switch0 is connected to three PCs (PC0, PC1, PC2) and Router0. Switch1 is connected to three PCs (PC3, PC4, PC5) and Router0. The IP addresses for the PCs are as follows:

- PC0: IP: 192.168.1.1, SM: 255.255.255.0, DG: 192.168.1.5
- PC1: IP: 192.168.1.2, SM: 255.255.255.0, DG: 192.168.1.5
- PC2: IP: 192.168.1.3, SM: 255.255.255.0, DG: 192.168.1.5
- PC3: IP: 192.168.2.1, SM: 255.255.255.0, DG: 192.168.2.5
- PC4: IP: 192.168.2.2, SM: 255.255.255.0, DG: 192.168.2.5
- PC5: IP: 192.168.2.3, SM: 255.255.255.0, DG: 192.168.2.5

The Event List panel on the right shows the following events:

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Switch1	ICMP
Visible	0.004	Switch1	PC3	ICMP

The Simulation panel at the bottom right shows the packet transfer status:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Ed
	In Progress	PC0	PC3	ICMP		0.000	N	0	



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Conclusion: In this practical, we successfully designed and configured a **simple two-router network** using **Cisco Packet Tracer**. We:

- Applied **subnetting** and allocated IP addresses.
- Set up interfaces with correct IPs and masks.
- Configured **static routing** on both routers to enable inter-network communication.
- Verified connectivity with successful ping tests.

This practical demonstrates the fundamental principles of **manual/static routing** and reinforces the understanding of network addressing and router configuration.