Practical - 10

Internetworking with Routers & Wireless Networks

AIM:

1) Design & configure (configure a simple internetwork using a router and pcs (wired)

2) Design & configure a internetwork using a wireless router, DHCP server & internet cloud

Part A: Wired Internetwork with Router

Procedure

1. Router configuration (Router 1)

```
Router > enable
Router # config t
Router (config) # interface FastEthernet 0/0
Router (config-if) # ip address 192.168.10.1
                                255.255.255.0
Router (config-if) # no shutdown
Router (config-if) # interface FastEthernet 0/1
Router (config-if) # ip address 192.168.20.1
                                255.255.255.0
Router (config-if) # no shutdown
```

2. PC configuration

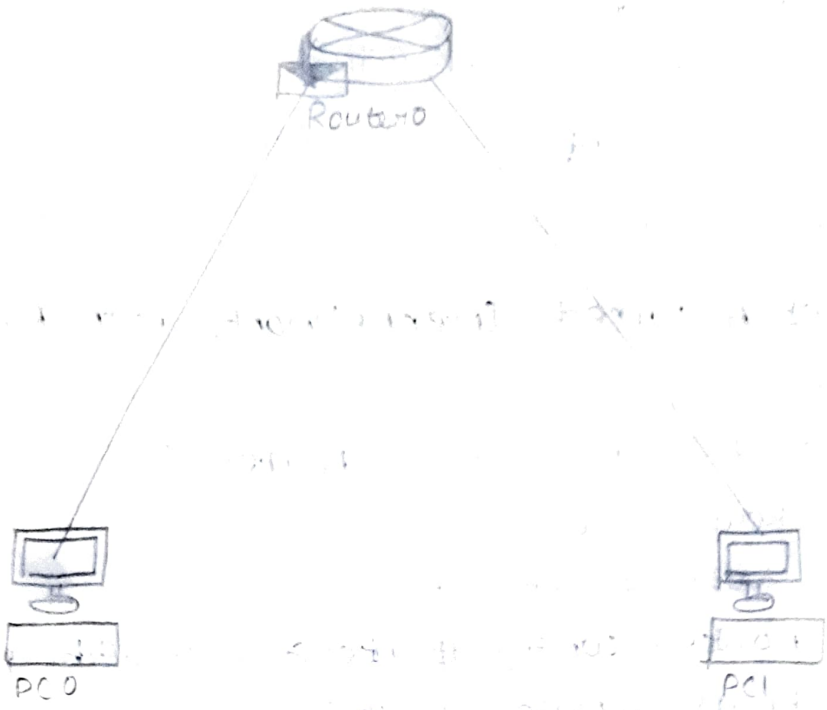
PC0: IP: 192.168.10.2, Subnet: 255.255.255.0,
Gateway: 192.168.10.1

PC1: IP: 192.168.20.2, Subnet: 255.255.255.0,
Gateway: 192.168.20.1

3. Connect PCs to Router using copper Straight through cables:

PC0 → FastEthernet 0/0 of Router1

PC1 → FastEthernet 0/1 of Router1

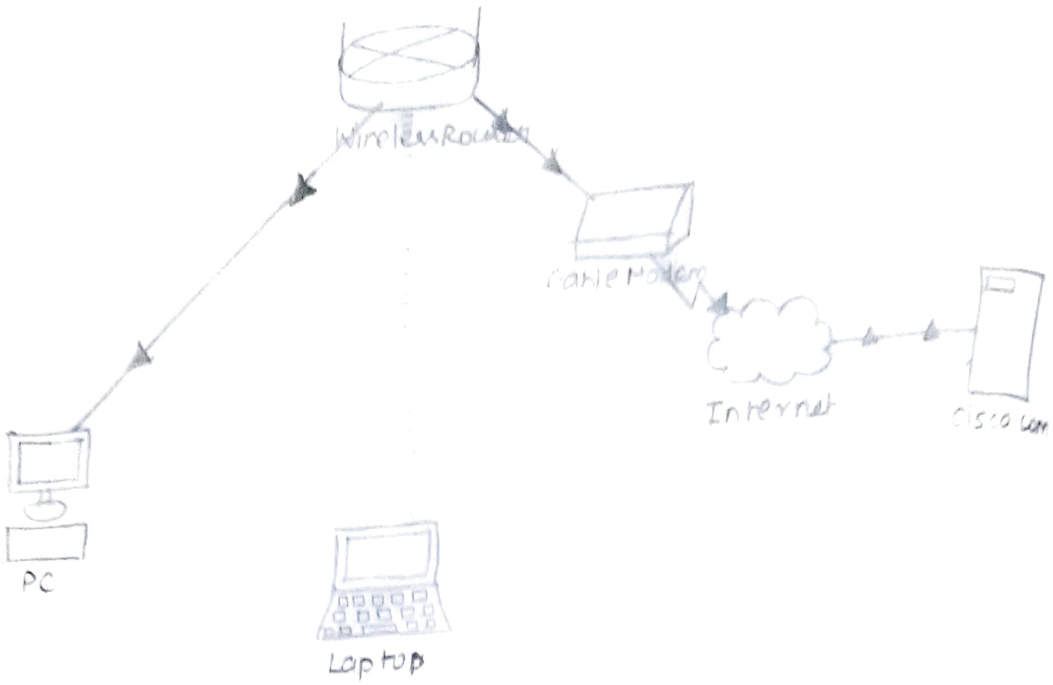

Router0
PC0
PC1

9/10

Result:

PC0 can successfully ping PC1 using a simple PDU

Network connectivity verified


Wireless Router
Cable Modem
Internet
Cisco.com
PC
Laptop

Part B: Wireless Network with DHCP & Internet

Procedure:

1. Build Topology : PC, Wireless Router, Cable Modem, Internet Cloud, cisco.com server.

2. Configure Wireless Router

LAN IP: 192.168.0.1, DHCP enabled, DNS: 208.67.220.220

SSID: Home Network.

3. Configure Laptop

Replace Ethernet module with wireless WPC300N

Connect to SSID Home Network

4. Configure PC.

Enable DHCP to obtain IP automatically

5. Configure cisco.com Server

DHCP Pool: 208.67.220.1 - 208.67.220.50

DNS: 208.67.220.220

IP: 208.67.220.220, Subnet: 255.255.255.0

6. Verify Connectivity

Refresh IP on PC (ipconfig/release → ipconfig/renew)

Ping cisco.com → 4 replies received.

Student Observation Questions.

1) Key features of configuring wireless Router & DHCP Server:

Provides wireless connectivity, assigns IPs dynamically and manages network settings

2) Significance of DHCP server in internetworking

Automatically assigns IP addresses to devices, reducing manual configuration errors.

3) Design an inter network using switch, routers & ethernet cables.

Connect PCs to a switch, switch to router configure IPs and gateways for each device.

Result:

* PC successfully receives IP from DHCP and accesses cisco.com via wireless network
* Connectivity verified