Internetworking with routers in CISCO

Packet tracer simulator

Aim: To

10) Internetworking with routers in CISCO PACKET TRACER
Simulator.

Design and configure a simple internetwork using a router

In this network a router and 2 PCs are used

Computers are connected with a routers using a copper
straight - through cable. After forming the network, to
check network connectivity a simple PDU is
transferred from PC0 to PC1.

C) Procedure :

Step 1 (Configuring Router):

1. Select the router and open it

2. Press ENTER to start configuring Router

3. Type enable to activate the privileged mode.

Step -2 (configuring PCs):

1. Assign IP Addresses to every PC in the network.

2. Select the PC, Go to the desktop and select IP

3. Assign the default gateway of PC0 as 192.168.10.1

4. Assign the default gateway of PC1 as 192.168.20.1

Step -3 (connecting PCs with Router):

1. Connect fast Ethernet 0 port of PC0 with fast ethernet 0/0
port of Router using a Copper straight - through cable.
Connect fast Ethernet 0 port of PC1 with fast
port of Router using a copper
cable.

Router Configuration Table

Device Name	IP address Fast Ethernet 0/0	Subnet Mask	IP Address Fast Ethernet 0/1	Subnet Mask
Router 1	192.168.10.1	255.255.255.0	192.168.20.1	255.255.255.0

PC configuration Table :

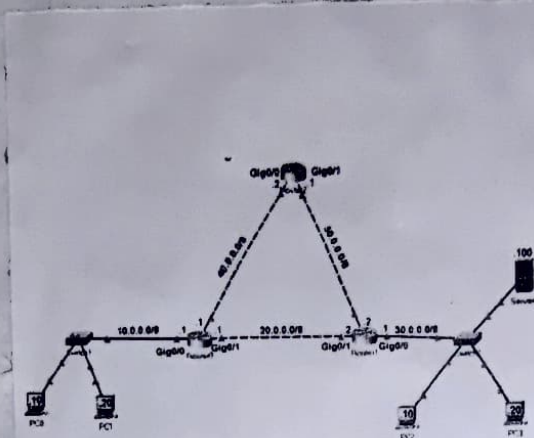| Device Name	IP address	Subnet Mask	Gateway
PC0	192.168.10.2	255.255.255.0	192.168.10.1
PC1	192.168.20.2	255.255.255.0	192.168.20.1

Designed Network Topology.

simulated of Designed Network Topology

sending a PDU from PC0 to PC1 :
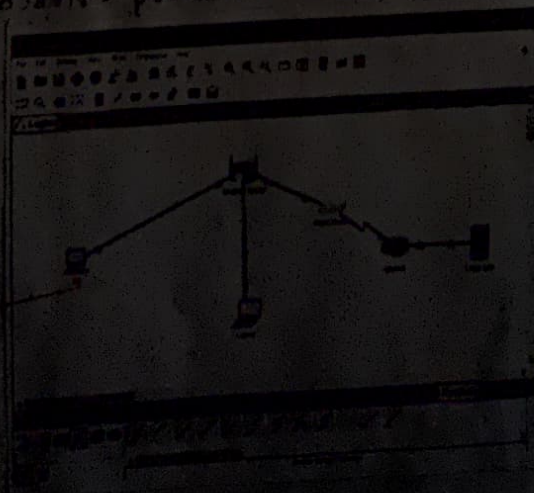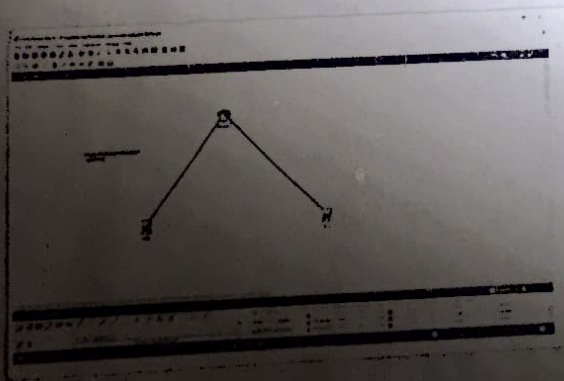
Acknowledgement from PCI to PC2 :

Initial IP configuration

Device	Interface	IP Configuration	Connected with
PC0	Fast Ethernet	10.0.0.2/8	Router0's Fa0/1
Router0	Fa0/1	10.0.0.1/8	PC0's Fast Ethernet
Router0	S0/0/1	192.168.1.254/30	Router2's S0/0/1
Router0	S0/0/0	192.168.1.249/30	Router1's S0/0/0
Router1	S0/0/0	192.168.1.250/30	Router0's S0/0/0
Router1	S0/0/1	192.168.1.246/30	Router2's S0/0/0
Router2	S0/0/0	192.168.1.245/30	Router1's S0/0/1
Router2	S0/0/1	192.168.1.253/30	Router0's S0/0/1
Router2	Fa0/1	20.0.0.1/30	PC1's Fast Ethernet
PC1	Fast Ethernet	20.0.0.2/30	Router2's Fa0/1

Result:

The network was successfully interconnected using routers in CISCO Packet Tracer, enabling communication between different networks.

Design and configure an internetwork, using wireless routes, DHCP Server and internet cloud.

Aim:

Design and configure an internetwork using wireless router, DHCP server and internet cloud.

Addressing Table:

Device	Interface	IP Address	Subnet Mask	Default Gateway
PC	Ethernet0	DHCP		192.168.0.1
wireless Router	LAN	192.168.0.1	255.255.255.0	
wireless Router	Internet	DHCP		
cisco.com	Ethernet0	208.67.220.220	255.255.255.0	
laptop	Ethernet	DHCP		

Objectives:

Part 1 : Build a simple network in the logical topology workspace

Part 2 : Configure the Network Devices

Part 3 : Test connectivity between Network services

Part 4 : Save the file and close Packet Tracer.

Part 1 :

Step 1 : Launch Packet Tracer

Step 2 : Build the topology

a) Add network devices to the workspace

b) change display names of the network devices

c) Add the physical cabling between devices on the workspace

Part 2 :

step 1 : Configure the wireless router
a) create the wireless network on the wireless router.

b) click on the save setting tab.

Step x : b configure c laptop

a) configure the laptop to access the wireless network.

Step 3 : configure the PC

a) configure the PC for the wired network

Step 4 : configure the Internet cloud.

a) Install network modules if necessary

b) Identify the form and no parts

c) Identify the type of provider.

Step 5 : configure the cisco.com server.

a) configure the cisco.com server as a DHCP server.

b) configure the cisco.com server as a DNS server

other provide our domains o name o dam IPv4 address resolution.

c) configure the cisco.com server Global settings

d) configure the cisco.com server FastEthernet Interface settings
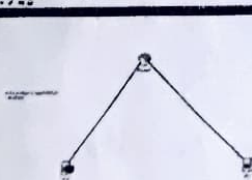

```
Router>enable
Router#show ip route static
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
S    30.0.0.0/8 [10/0] via 20.0.0.2
S    30.0.0.100/32 [10/0] via 40.0.0.2   The main route
S    50.0.0.0/8 [10/0] via 40.0.0.2       that we want to delete.
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#no ip route 30.0.0.100 255.255.255.255 40.0.0.2
Router(config)#exit   Deleting the main route
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip route static
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
S    30.0.0.0/8 [10/0] via 20.0.0.2
S    30.0.0.100/32 [20/0] via 20.0.0.2   As soon as we remove the
S    50.0.0.0/8 [10/0] via 40.0.0.2      main route, the router changes
                                          the backup route to the main route
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#no ip route 30.0.0.100 255.255.255.255 20.0.0.2
Router(config)#exit   Deleting the new main route
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip route static
S    50.0.0.0/8 [10/0] via 20.0.0.2   All routes to
S    50.0.0.0/8 [10/0] via 40.0.0.2   host 30.0.0.100/8
                                      have been removed
Router#
```

Part 3 : verify connectivity

Step 1 : Refresh the IPv4 setting on the PC

a) verify that the PC is receiving IPv4 configuration information from DHCP.

b) Test connectivity to the cisco.com server from PC.

```
Command Prompt

Packet Tracer PC Command Line 1.0
PC>ipconfig

FastEthernet0 Connection:(default port)
Link-local IPv6 Address.........: FE80:1260:9GF
IP Address.....................: 20.0.0.2
Subnet Mask....................: 255.0.0.0
Default Gateway................: 20.0.0.1

PC>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Request timed out.
Reply from 10.0.0.2: bytes=32 time=3ms TTL=126
Reply from 10.0.0.2: bytes=32 time=3ms TTL=126
Reply from 10.0.0.2: bytes=32 time=3ms TTL=126

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 3ms, Average = 3ms

PC>
```

Student observation:

1. Write down the key features of configuring wireless router and DHCP server.

   Wireless router configuration, includes in setting SSID, security key, IP range, and enabling DHCP for automatic IP assignment.

2. What is the significance of DHCP server in internetworking.

   DHCP server simplifies internetworking by automatically assigning IP addresses reducing manual configuration.

3. Design and configure an inter-network in your lab using switch, router and Ethernet cable.

   A network was designed using a router, switch, and PCs connected via Ethernet cables each device configured with unique IP addresses for communication.

Result:

   The internetwork was successfully designed and configured using a wireless router, DHCP server and internet cloud.