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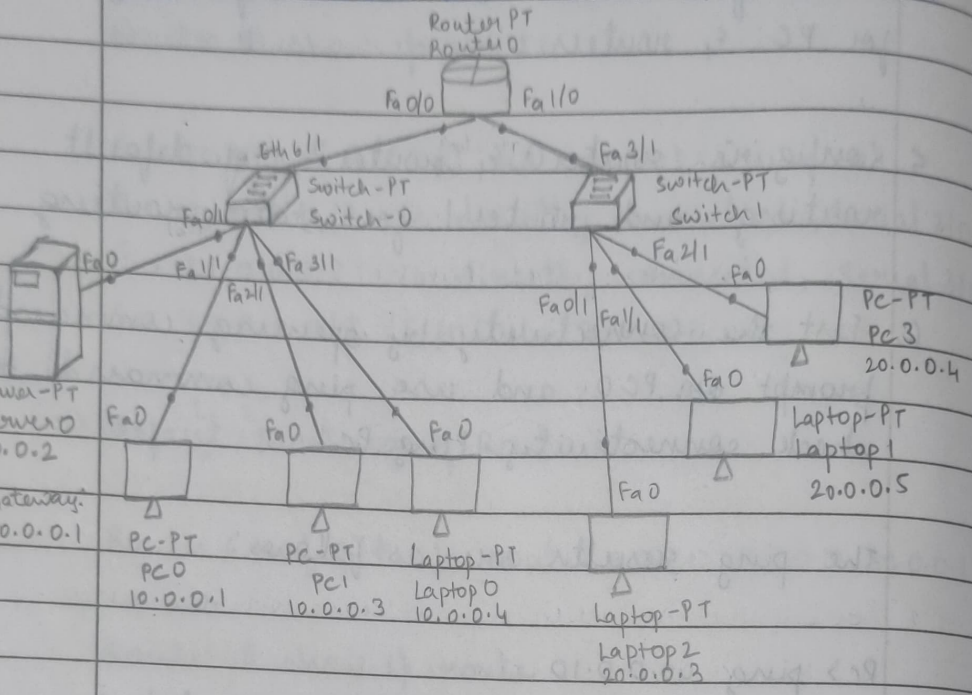
Experiment-4

Q. Configure DHCP within a LAN and outside LAN

Aim: Demonstrate DHCP within & outside LAN



Topology:

1. Switch0 connected to Router0 interface Fa 0/0 using copper straight-through cable from Eth 6/1.

2. PC0, PC1, PC2 connected to switch0 via copper straight-through with IP address - 10.0.0.1, 10.0.0.3, 10.0.0.4 resp

3. Server0 connected to switch 0 with ip address 10.0.0.2.

4. PC3, PC4, PC5 connected to switch1 with ip address 20.0.0.4, 20.0.0.5, 20.0.0.3 resp.

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5. switch1 connected to router0 interface Fa1/0 using copper straight through cable from Fa3/1.

Procedure:

1. Open cisco packet tracer and drag the following components:
   - Router: Place 1 router in the middle.
   - Switch: Connect two switches to Router0
   - Pc: Take 3 PCs and connect it to switch0 & another 3 PCs to switch1
   - Server: Place one server & connect it to the switch1 via ~~copple~~ → copper straight-through cable.

2. Configure server0 by clicking on the server & click IP configurations.
   set IP address as 10.0.0.2,
   Subnet mask as 255.0.0.0,
   Def gateway as 10.0.0.1

3. In DHCP services, config switch0 with
   Pool Name - switch1
   Start ip address - 10.0.0.0
   Def gateway - 0.0.0.0
   Subnet Mask - 255.0.0.0

4. In DHCP services add switch1 config with
   Pool Name - switch2
   start ip address - 10.0.0.3
   Def gateway - 10.0.0.1
   Subnet Mask - 255.0.0.0

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5. Set the ip configuration of all PC's to DHCP due to which each PC attains its ip address, subnet mask & default Gateway.

6. Configure Router0 by clicking on the router and selecting CLI
Assign IP addresses to the router interfaces
Router> enable
Router # config terminal
Router (config) # interface fa 0/0
Router (config) # ip address 10.0.0.1 255.0.0.0
Router (config) # ip helper-address 10.0.0.2
Router (config) # no shut

Router (config) # interface fa 1/0
Router (config) # ip address 20.0.0.1 255.0.0.0
Router (config) # ip helper-address 10.0.0.2
Router (config) # no shut
Router # exit

Observation:

If config & cabling are correct, you will receive successful ping replies b/w two PCs

PC> ping 10.0.0.3
Pinging 10.0.0.3 with 32 bytes of data

Reply from 10.0.0.3: bytes=32 time=1ms TTL=120
Reply from 10.0.0.3: bytes=32 time=0ms TTL=120
Reply from 10.0.0.3: bytes=32 time=0ms TTL=120
Reply from 10.0.0.3: bytes=32 time=2ms TTL=120

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Ping statistics for 10.0.0.3:
Packets: sent=4, received=4, loss=0 (0% loss)
Approx round trip times in milliseconds:
Minimum=0ms, Maximum=2ms, Avg=0ms.

Within a LAN: Placing the DHCP server in the same subnet as clients to ensure broadcasts reach the server directly. Dynamic ip's are given to the systems connected in same network. When we have to dynamically assign ip address to another network we do it using a router & a server
If the connections are successful the ip addresses are assigned within the ~~server~~ LAN & outside the ~~server~~ LAN

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