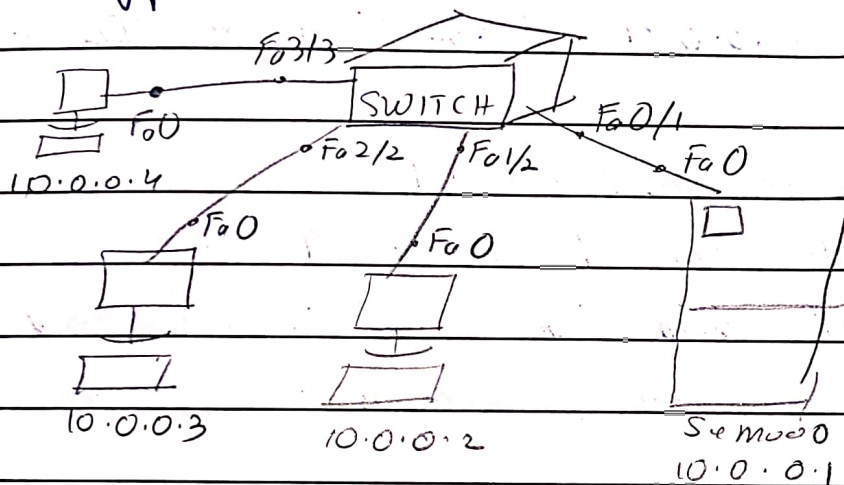


Lap 4

Aim: Configure DHCP within a LAN & outside LAN

① Within a LAN

Topology



Procedure

- Create a LAN network (10.0.0.0) by selecting 3 PC's a server and connect them to a switch.
- Set the server's IP address to 10.0.0.1 & set the default gateway to 10.0.0.20
- Set the server to DHCP mode
(services → DHCP → service ON)
- Put down the gateway & the start IP address (10.0.0.2)
- Change all the other PC's IP configuration to DHCP.

Result

PC> ping 10.0.0.4

Pinging 10.0.0.4 with 32 bytes of data:

Reply from 10.0.0.4 bytes=32 time=1ms TTL=128

Reply from 10.0.0.4 bytes=32 time=0ms TTL=128

Reply from 10.0.0.4 bytes=32 time=0ms TTL=128

Reply from 10.0.0.4 bytes=32 Time=0ms TTL=128

Ping statistics for 10.0.0.4

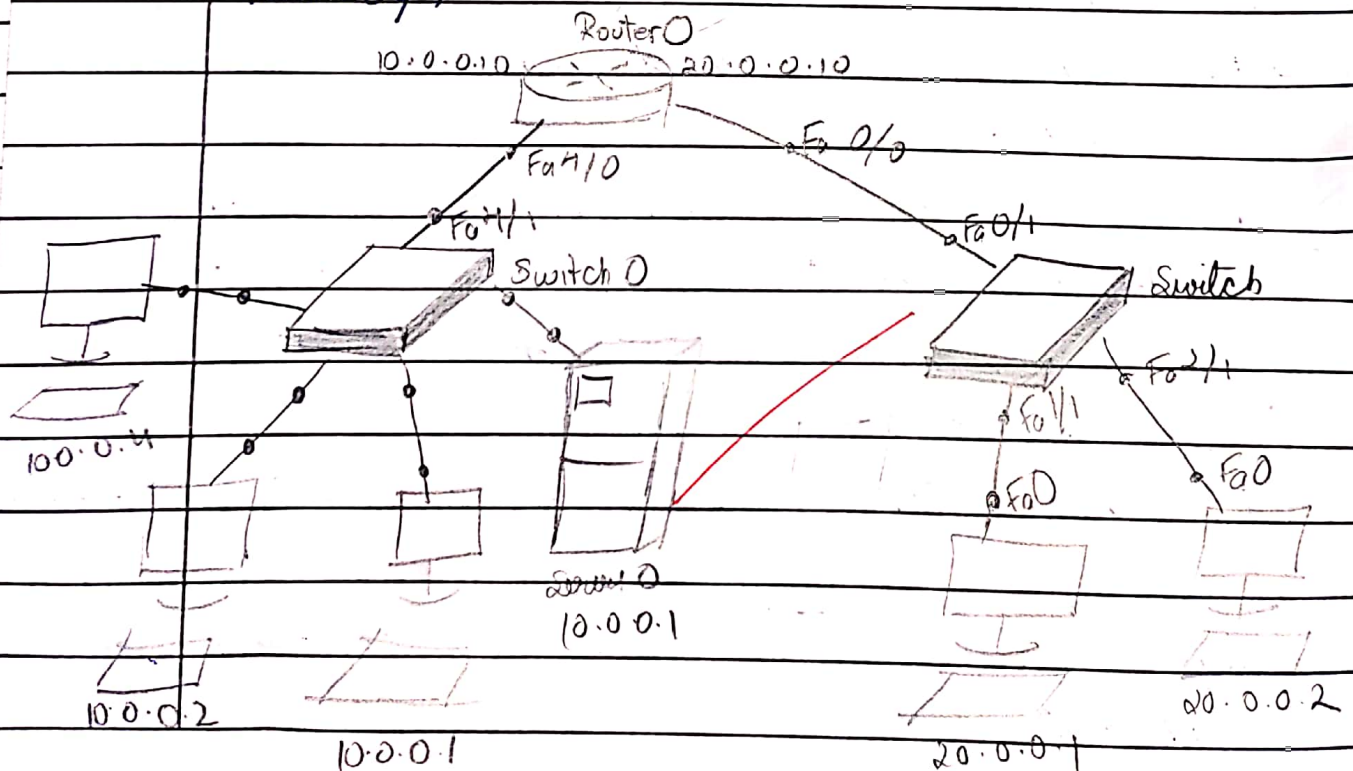
Packets : sent = 4, Received = 4, Lost = 0 (0% loss)

Approximate round trip times in milliseconds

Minimum = 0ms, Maximum = 1ms, Average = 0ms

② Outside of LAN

Topology :



Procedure :

- Follow the same steps as in case of inside LAN, by creating a 10.0.0.0 network with the server IP address - 10.0.0.1 and the gateway 10.0.0.10
- Create another network with 2 PC's and a switch and connect the 2 networks using a Router.
- Configure the router to connect the 2 networks through the gateway
 - > enable
 - > config t
 - > interface fa 4/0
 - > ip address 10.0.0.20 255.0.0.0
 - > no shut
 - > exit
 - > interface fa 0/0
 - > ip address 20.0.0.20 255.0.0.0
 - > no shut
 - > exit
- Go to the services of server 0 and set another DHCP Pool gateway (default) to 20.0.0.10 and then in the CLI commands of Router set the server as a ip-address-helper.

The following are the 2 pools

| Pool/Name | Default Gateway | DNS Server | Start IP address | Subnet Mask | Mask used |
|-------------|-----------------|------------|------------------|-------------|-----------|
| Server Pool | 10.0.0.10 | 0.0.0.0 | 10.0.0.2 | 255.0.0.0 | 5/2 |
| server Pool | 20.0.0.10 | 0.0.0.0 | 20.0.0.1 | 255.0.0.0 | 5/2 |

> config t

> ~~int~~ interface fa 0/0

> ip helper address <server ip-address>

> no shut

exit

Ping from 10.0.0.2 to 20.0.0.2

Result

PC > Ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data

Request timed out

Reply from 20.0.0.2: bytes=32 time=0ms TTL=127

Reply from 20.0.0.2: bytes=32 time=4ms TTL=127

Reply from 20.0.0.2: bytes=32 time=1ms TTL=127

Ping statistics for 20.0.0.2

Packets: Sent = 4 Received = 3 Lost = 1 (25% loss)

Approx times (in milliseconds)

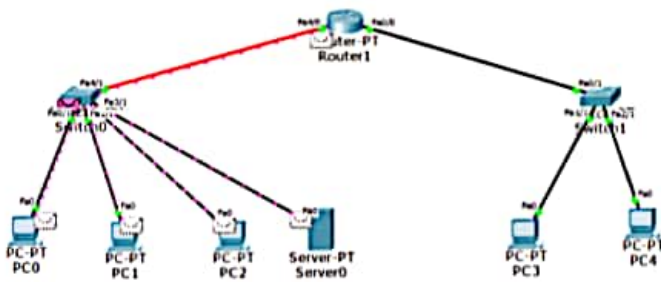
Minimum=0ms, Maximum=4ms, Average=1ms

Observation

- The DHCP helps manage allocation of IP addresses to end users.
- The device wanting to access a network gets an IP address allocated dynamically to it by the user.
- The allocated IP address is taken back, when shutdown.
- If the requesting device is outside the LAN (case 2), then the server's IP address must be assigned to the router as the "address helper" so that it can automatically configure that device's IP address.
- When ~~playing~~ outside the current network at first it shows "Request timed out" as the router takes time to find the correct.
- We assign another server pool to the server's services so that the server knows the gateway to target and the starting IP address to assign to the devices of a different network.



FOI



Simulation Panel

Event List

| Vis. | Time(sec) | Last De | At Des | Type | Info |
|------|-----------|---------|----------|------|------|
| | 6.984 | Switch0 | PC1 | STP | |
| | 6.984 | Switch0 | Serve... | STP | |
| | 6.984 | Switch0 | Rout... | STP | |
| | 6.984 | Switch0 | PC2 | STP | |
| | 6.984 | Switch0 | PC0 | STP | |

Reset Simulation ☒ Constant Delay

Captured to: 6.984 s

Play Controls

Back

Auto Capture / Play

Capture / Forward

Event List Filters - Visible Events

ACL Filter; ARP; BGP; CDP; DHCP; DHCPv6; DNS; DTP; EIGRP; EIGRPv6; FTP; H.323; HSRP; HSRPv6; HTTP; HTTPS; ICMP; ICMPv6; IPsec; ISAKMP; LACP; NBP; NETFLOW; NTP; OSPF; OSPFv6; PAgP; POP3; RADIUS; RIP; RIPng; RTP; SCCP; SMTP; SNMP; SSH; STP; SYSLOG; TACACS; TCP; TFTP; Telnet; UDP; VTP

Edit Filters

Show All/None

Command Prompt

Packet Tracer PC Command Line 1.0

PC>ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

Request timed out.

Reply from 20.0.0.2: bytes=32 time=0ms TTL=127

Reply from 20.0.0.2: bytes=32 time=0ms TTL=127

Reply from 20.0.0.2: bytes=32 time=0ms TTL=127

Ping statistics for 20.0.0.2:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>|