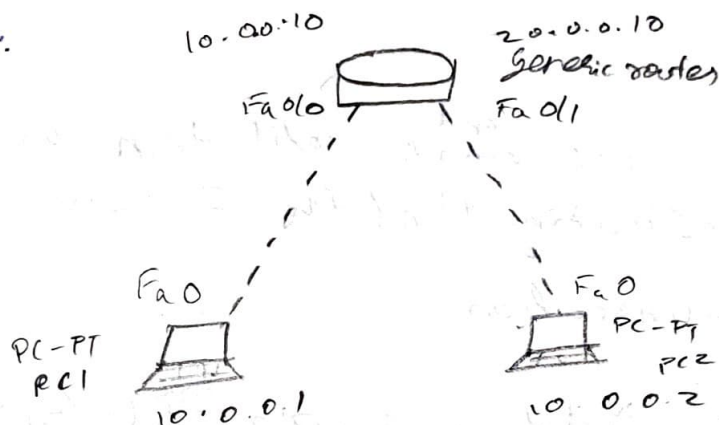


Router & PC Experiment

Aim: Configuring IP addresses to router in Packet Tracer to learn more about ping responses such as reply, request timed out, destination unreachable etc

Topology:



Procedure:

- Place a generic router & 2 generic PC's in the workspace
- It can be found in the bottom-left corner
- Connect the router & PCs using copper cross over
- ~~Set it from connections~~
- Configure IP address for each PC & in the configuration tab of settings set gateway for both PCs to router
- Click on Generic router & go to CLI Tab
- Enable following commands to setup a connection between PCs & generic router through gateway
10.0.0.10
- No
enable
conf t
interface FastEthernet 0/0
ip address 10.0.0.10 255.0.0.0

no shut
exit

- Now to set up connection between PCs & the router through gateway 20.0.0.10

- interface fastEthernet 1/0

IP address 20.0.0.10 255.0.0.0

no shut

exit

- The lights which were ~~ambers~~^{red} until then will turn green now, indicating that the 2 devices are ready for communication

Simulation mode: Add a simple PDU by selecting the PC & click on auto capture from right panel

Real time mode: Select the PC you want to send the packet & open its command prompt from desktop tab - Specify destination PC by specifying the destⁿ address. A response is sent from destⁿ PC to source PC.

Result:

Ping 20.0.0.1

~~Pinging 20.0.0.1 with 32 bytes of data:
Request timed out~~

~~Reply from 20.0.0.1: bytes=32 time: 1ms TTL=127~~

"	"	"	"	"	"	"
"	"	"	"	"	"	"
"	"	"	"	"	"	"

Ping statistics for 20.0.0.1:

Packets: sent = 4, received = 3, lost = 1 (25% lost)

Pinging 20.0.0.1 with 32 bytes of data

Reply from 20.0.0.1: bytes = 32 time: 1ms TTL = 127

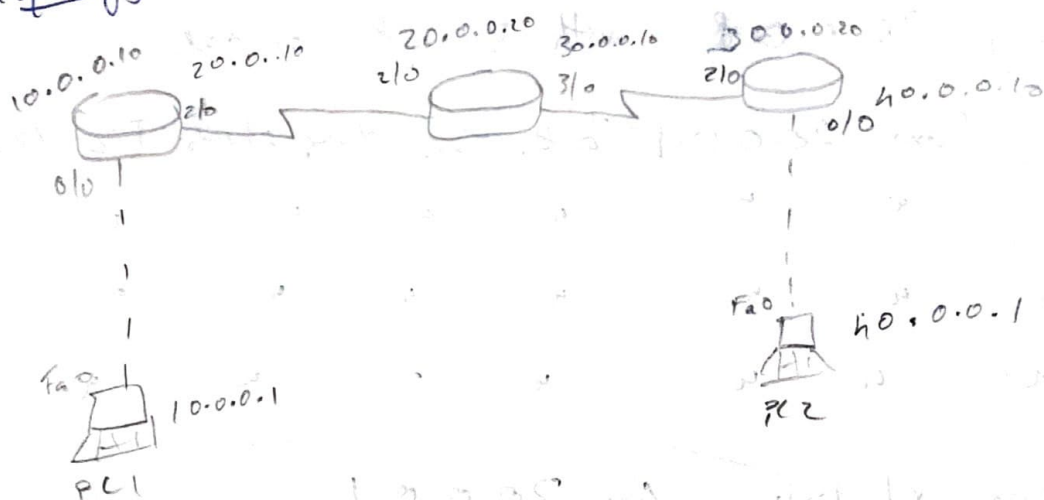
n	"	"	"	"	"	"
"	"	"	"	"	"	"
"	"	"	"	"	"	"

~~Ping statistics for 20.0.0.1~~

~~Packets sent = 4, received = 4, lost = 0 (0% lost)~~

With multiple routers

Topology



Procedure - PC to Router connected

- open each router → CLI → Set the IP address for each ports
- To teach each router about the networks not connected directly.
- Click on router → CLI → use the following code
after setting the interface serial port
`<# IP route Destination network address subnet mask next hop address>`
- In CLI use the command show ip route & make sure the each router knows all the networks.

Simulation mode:

- 1) Select simple PDU, select source & destination PC
- 2) Click auto capture

Runtime:

- 1) Click on a PC → Desktop → Command prompt
- 2) Ping to all the IP addresses of ports individually

Observation

- In Simulation mode - once source & destⁿ are selected PDU travels from PC to router & hops to the ~~rest~~ consecutive routers & finally to the destⁿ PC
- Upon clicking a PDU, it gives PDU info specifying layers & their addresses and statuses
- PDU is downloaded at each router sent to the next device & finally to destⁿ PC
- Pinging is done individually, if there's an error in the connection it can be resolved at that level
- First ping to destⁿ PC has a delay & packet loss since the connection was used for first time
The second Ping has no packet loss. (Request timed out)

Learning

- Connection type is toggled for layer 1 to 3 so copper crossover is used
- ~~Destination unreachable~~ is the response we get when the router doesn't know the IP address of other networks connected indirectly through ~~other~~ other routers.
- 1a | 11 | 22
• Indirect connections are labelled as S i.e. Static route