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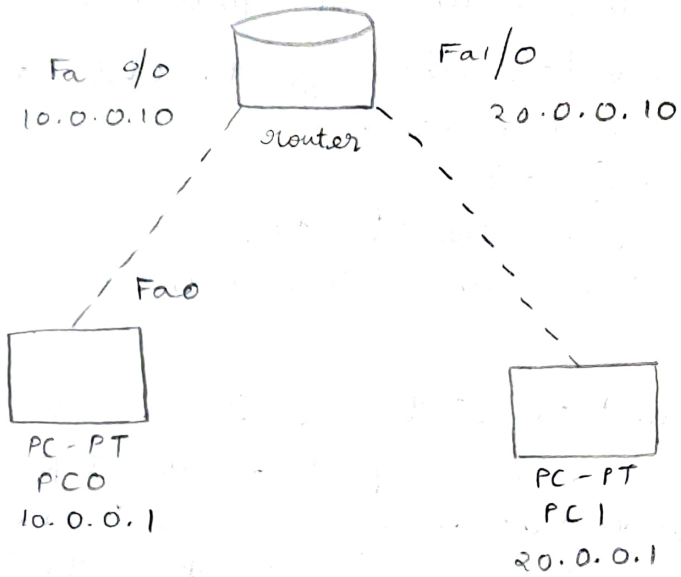
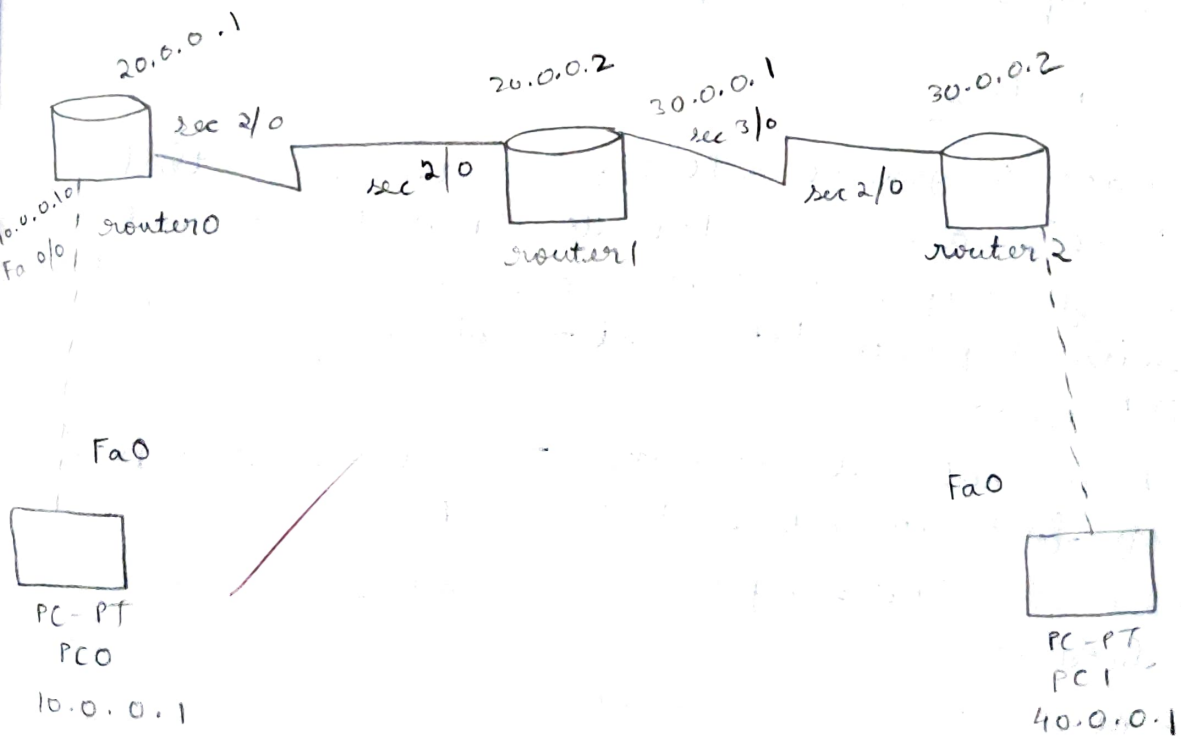
AIM:- Configuring IP address to routers in packet tracer. Explore the following messages: PING, response, destination unreachable, request timed out, reply.

Topology :-

One - router :-



Three Router :-



Procedure :-

One Router :-

→ Place 2 generic PC, a generic router and notes with IP address and connect using copper cross over

→ Click on both PC's and set IP addresses as 10.0.0.1 and 10.0.0.2 with gateway for each as 10.0.0.10 and 10.0.0.20.

→ Click on router, then go to CLI and execute following commands.

→ Enable → config - t
→ interface fast ethernet 0/0
→ ip address 10.0.0.10 255.0.0.0
→ no shut

Now connection between PC_0 and router turns green and repeat above steps for PC_1 until connection turns green. Route table can be seen by using "show ip route" command

→ Now ping a PC by selecting one of the PC → desktop → command prompt.

Three Routers

→ Place 2 generic 2 PC's, 3 routers such that 2 PC's are connected to 1st and 3rd router using copper cross and 3 routers are connected with sequence 1st → 2nd → 3rd using serial DCE cable.

→ Place notes to indicate IP addresses and ports of fast ethernet and serial ports

→ Set IP address, gateway, subnet mask for both PC's.

→ Now configure routers
* Click → no
* Enable
* Config t

* interface fastethernet 0/0.
* ip address 10.0.0.10 255.0.0.0
* no shut

By this first PC and left half of router connection is established.

* config t → interface serial 2/0 →
  ip address 20.0.0.1 255.0.0.0 → no shut

Now right side connection is established for 1st router.

→ Do the same steps for router 2 and three with corred IP addresses and port selection to establish connection on both sides of each of the routers successfully.

→ After all connections green lights are shown as a result of successful completion, now if we ping we get "destination unreachable".

→ If we ping to the other router 1 we get "request timed out" as routers are not trained for indirect LAN's.

* Train router 1 by :-
  ip route 30.0.0.0 255.0.0.0 20.0.0.2
  ip route 40.0.0.0 255.0.0.0 20.0.0.2

* Train router 2 by :-
  ip route 10.0.0.0 255.0.0.0 20.0.0.1
  ip route 40.0.0.0 255.0.0.0 30.0.0.2

* Train router 3 by :-
  ip route 10.0.0.0 255.0.0.0 30.0.0.1
  ip route 20.0.0.0 255.0.0.0 30.0.0.1

→ Now pinging from PC0 to PC1 is successful.

Observations

One - router :

Pinging output for first time

Ping 20.0.0.1

request timed out.
Reply from 20.0.0.1 : bytes = 32
Reply from 20.0.0.1 : bytes = 32
Reply from 20.0.0.1 : bytes = 32

Ping statistics for 20.0.0.1 : packets sent = 4, received = 3, lost = 1

But when PC0 pings PC1 again or if reverse ping happens, we get reply all 4 times

3 routers :-

* Output when PC0 is pinged by PC1 or vice versa before routers are trained of unknown IP's

Ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data
Reply from 10.0.0.10 : destination host unreachable.
Reply from 10.0.0.10 : destination host unreachable.
Reply from 10.0.0.10 : Destination host unreachable.
Reply from 10.0.0.10 : destination host unreachable.

PING statistics 40.0.0.1
Packets sent = 4, received = 0, lost = 4

* PING 20.0.0.2
request timed out
request timed out
request timed out
request timed out

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Pinging statistics 20.0.0.2
Packets sent = 4, received = 0, lost = 4

* When routers are trained
PING 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data
Request timed out
Reply from 40.0.0.1 : bytes = 32 times = 2 ms
Reply from 40.0.0.1 : bytes = 32 times = 2 ms
Reply from 40.0.0.1 : bytes = 32 time = 2 ms

Pinging statistics for 40.0.0.1 packets sent = 4,