

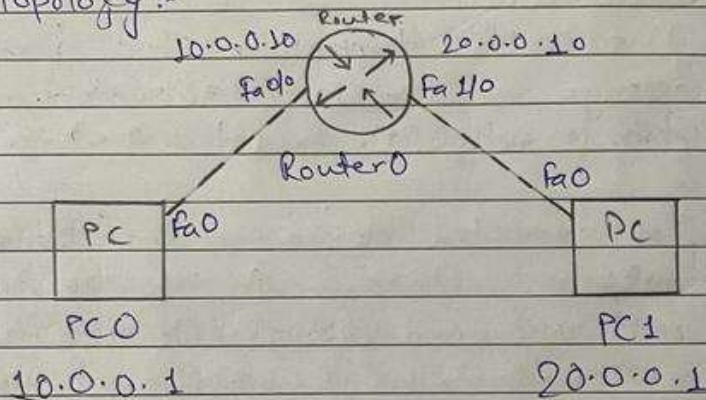
## Experiment : 2

### Router

#### IP Address to Routers

Aim: Configuring IP address to routers in packet tracer. Explore the following messages: ping responses, destination unreachable, request timed out, reply.

#### Topology :-



#### Procedure:-

- Select the end devices and change their ip address and gateway.
- Select router as connecting devices.
- Select Copper-Cross-Over as connection wire bet<sup>n</sup> end devices and router.
- Connect fastethernet to router
- ~~Ping using command prompt in~~
- Set Command Line Interface (CLI) of routers  
Router > enable  
Router # config t  
Router(Config) # interface fastethernet 0/0  
Router(Config-if) # ip address 10.0.0.10 255.0.0.0

Router (conf) -if) # no shut.  
exit.

- In same process connect both end devices with router.
- Ping using command prompt using one device.

Result:

PC > 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=17ms TTL=127

Reply from 20.0.0.1: bytes=32 time=0ms TTL=127

Reply from 20.0.0.1: bytes=32 time=0ms TTL=127

Ping statistics for 20.0.0.1:

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

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 17ms, Average = 5ms

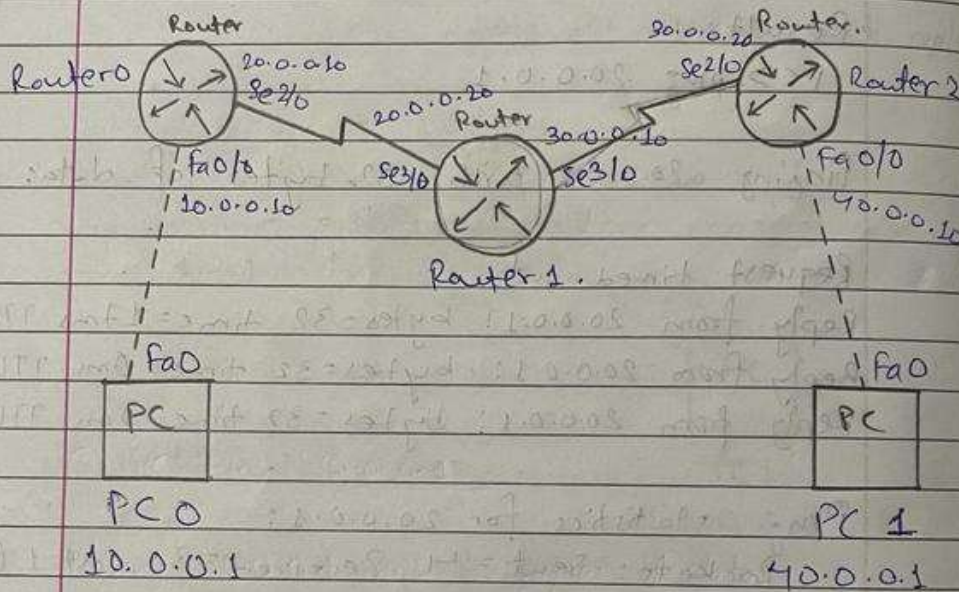
Observation:

- PC0 is in network 10.0.0.0 and PC1 is in network 20.0.0.0
- We use router to connect them when ping message is sent from 10.0.0.1 to 20.0.0.1.
- The message reaches the destination through router.
- When a message is sent, the router captures it and sends to the destination PC which is in another network.



Aim: To configure IP address to routers and in packet tracer and get ping responses, destination host unreachable.

Topology:



Procedure:

- Select the end devices and change their ip address and gateway.
- Select corresponding routers as connecting device.
- Select Copper cross-over as connection wire between end device and router. Connect routers with each other using serial-DCE.
- Configure IP address to routers by giving command in CLI.
- After all IPs are set, ping PC to get destination host unreachable message.
- Route the IPs to the adjacent IPs using following command:-

for Router 0:- router (config) # ip route 30.0.0.0 255.0.0.0  
20.0.0.20  
router (config) # ip route 40.0.0.0 255.0.0.0 20.0.0.20

for Router 1:-  
router (config) # ip route 10.0.0.0 255.0.0.0 20.0.0.20  
router (config) # ip route 40.0.0.0 255.0.0.0 30.0.0.20

for Router 2:-  
router (config) # ip route 10.0.0.0 255.0.0.0 30.0.0.10  
router (config) # ip route 20.0.0.0 255.0.0.0 30.0.0.10

• After this is done, ping PC to get reply message.

### Result:

① Destination host unreachable. ②

PC > 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 for 40.0.0.1:

Packets: sent=4, Received=0, lost=4 (100% loss),



② PC > ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=5ms TTL=123

Reply from 10.0.0.1: bytes=32 time=10ms TTL=123

Reply from 10.0.0.1: bytes=32 time=10ms TTL=123

Reply from 10.0.0.1: bytes=32 time=9ms TTL=123

Ping statistics for 10.0.0.1:

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

Approximate round trip times in milli-seconds:

Minimum = 5ms, Maximum = 10ms, Average = 8ms

③ PC > ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Reply from 40.0.0.1: bytes=32 time=11ms TTL=125

Reply from 40.0.0.1: bytes=32 time=4ms TTL=123

Reply from 40.0.0.1: bytes=32 time=16ms TTL=123

Reply from 40.0.0.1: bytes=32 time=12ms TTL=123

Ping statistics for 40.0.0.1:

Packets: ~~received~~ Sent=4, Received=4,

Lost=0 (0% loss)

Approximate round trip times in milli-seconds:

Minimum=4ms, Maximum=16ms, Average=10ms

### Observation:

- PC0 is in network 10.0.0.0 and PC1 is in network 40.0.0.0. There are 3 routers in between which initially directly connects 10.0.0.0, 20.0.0.0, 30.0.0.0 and 40.0.0.0. Hence when a ping message is sent from 10.0.0.1 to 40.0.0.1, it doesn't reach the destination. Instead it only reaches the first router and gives destination host unreachable message.

After letting the routers know about other adjacent networks, (next hop) we send a ping message from 40.0.0.1 to 10.0.0.1 to get desired result. The ping message reaches the destination.