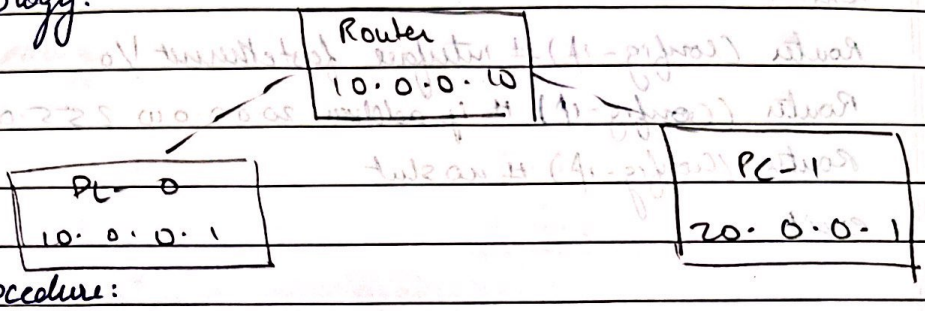
Experiment-2

Network connection using single router.

Aim:

Configuring IP address to router, explore ping responses, destination unreachable, request timed out and reply.

Topology:



Procedure:

- Connect two end devices to a router through copper cross-over cable.
- Assign IP address to end devices.
- Configure gateways in router through CLI using following commands.
  - i) Enable
  - ii) config t
  - iii) interface <port>
  - iv) ip address <ip address> <subnet mask>
  - v) no shut
  - vi) exit
- Ping from one end used to another.

Observation.

Router is a device used to connect multiple networks. Router is capable of transforming packets from one another. End devices sends data packets to route. The destination IP address is noted by the router.

For router CLI

```
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 (config-if) # no shut
exit
Router (config-if) # interface fastethernet 1/0
Router (config-if) # ip address 20.0.0.10 255.0.0.0
Router (config-if) # no shut
exit
```

Result:

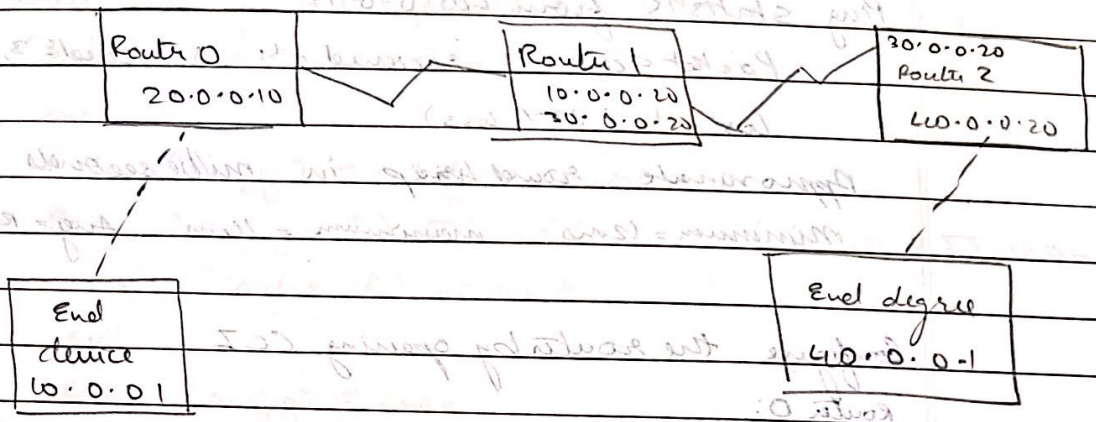
```
Pinging 20.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.1 bytes=32 time=1ms TTL=127
Reply from 20.0.0.1 bytes=32 time=1ms TTL=127
Reply from 20.0.0.1 bytes=32 time=1ms TTL=127

Ping statistics for 20.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss)
Approximate round trip times in milli seconds:
    Minimum = 0ms, Maximum = 1ms, Avg = 0ms
```

Network connection with Multiple Router

Aim:

Configuring IP address of multiple router, exploring ping responses, destination unreachable, request timed out and reply.

Topology



Procedure:

- Add two end devices and three routers to work space.
- Connect routers through serial DTE cable and end devices to route through copper cross-over cable.
- Assign IP address to end devices and gateways
- Configure gateways through CLI using following command
  - (i) Enable
  - (ii) Config t
  - (iii) interface <port>
  - (iv) ip address <ip address> <subnet mask>
  - (v) no shut.
  - (vi) exit

Using command ip route <destination ip> <routing ip> set path for each router.

Ping from one end device to another

Result:

Pinging 40.0.0.1 : with length 32 byte of data.

Request time out.

Reply from 40.0.0.1 byte = 32 time = 12ms TTL = 127

Reply from 40.0.0.1 byte = 32 time = 12ms TTL = 127

Reply from 40.0.0.1 byte = 32 time = 12ms TTL = 127

Ping statistic from 40.0.0.1:

Packet Sent = 4, received = 4, received = 3,

lost = 1 (25% loss)

Approximate round trip in milliseconds

Minimum = 12ms maximum = 14ms Avg = 12ms.

Configure the router by opening CLI

Router 0:

router > enable

Router # config t

Router (config) # interface fastethernet 0/0

Router (config-if) # ip address 40.0.0.10 255.0.0.0

Router (config-if) no shut

exit

Router (config) # interface serial 2/0

Router (config) # ip address 20.0.0.10 255.0.0.0

Router (config-if) # no shut

exit

Router 1:

Router > enable

Router # Config t

Router (config) # interface serial 2/0

Router (config-if) # ip address 20.0.0.20 255.0.0.0

Router (config-if) # no shut.

exit

Router (config) # interface serial 3/0

Router (config-if) # ip address 30.0.0.20 255.0.0.0

Router (config-if) # no shut.

exit

Router (config) # interface serial 3/0

Router (config-if) # ip address 30.0.0.20 255.0.0.0

Router (config-if) no shut

exit

Router (config) # exit

Router 2:

Router > enable.

Router # config t

Router (config) # interface serial 2/0

Router (config-if) # ip-address 30.0.0.20 255.0.0.0

Router (config-if) # no shut

exit

Router (config-if) # interface fast ethernet 0/0

Router (config-if) # ip address 40.0.0.10 255.0.0.0

Router (config-if) # no shut

exit.

Observation:

Determination host unreachable we need to fix route for packet to be routed to different networks. Unless route is defined packet will not reach destination.

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.

Request timed out.

On successful transmission from source to destination an acknowledgement is sent from destination host to source in the form of ICMP packets. It may be due to packet loss, physical issue is transmission or incorrect gateway assignment.