Date : 04/6/23

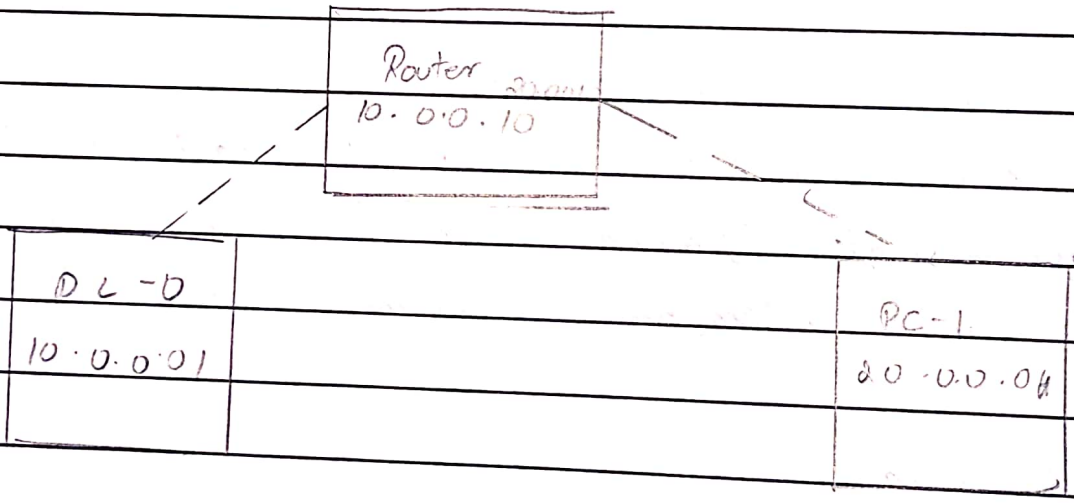
EXP - 2

Network Connection Using Single Router

Aim:

Configuring IP address to routers, explore ping response, destination unreachable, request timed out and reply.

Topology:



Procedure:

1. Connect Two end devices to a router through copper cross-over cable
2. Assign IP address to end devices.
3. Configure getaways in router through CLI using the following commands:

Date :

ⓐ Enable
ⓑ config t
ⓒ interface <port>
ⓓ ip address <ip address> <subnet mask>
ⓔ no shut
ⓕ exit

④ Set the respective gateways in the end devices
⑤ Ping from one end user to another.

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

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

Observation :

Router is a device used to connect multiple networks. Router is capable of transforming packets

from one network to another.
End device sends data packet to router. The destination IP address is noted by the router. The packet is redirected towards the concerned network by the router.

Eg: For Router 0 CLI

```
Root> 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
Rotter (config-if) # ip address 20.0.0.10 255.0.0.0
Router (config-if) # no shut
exit
```

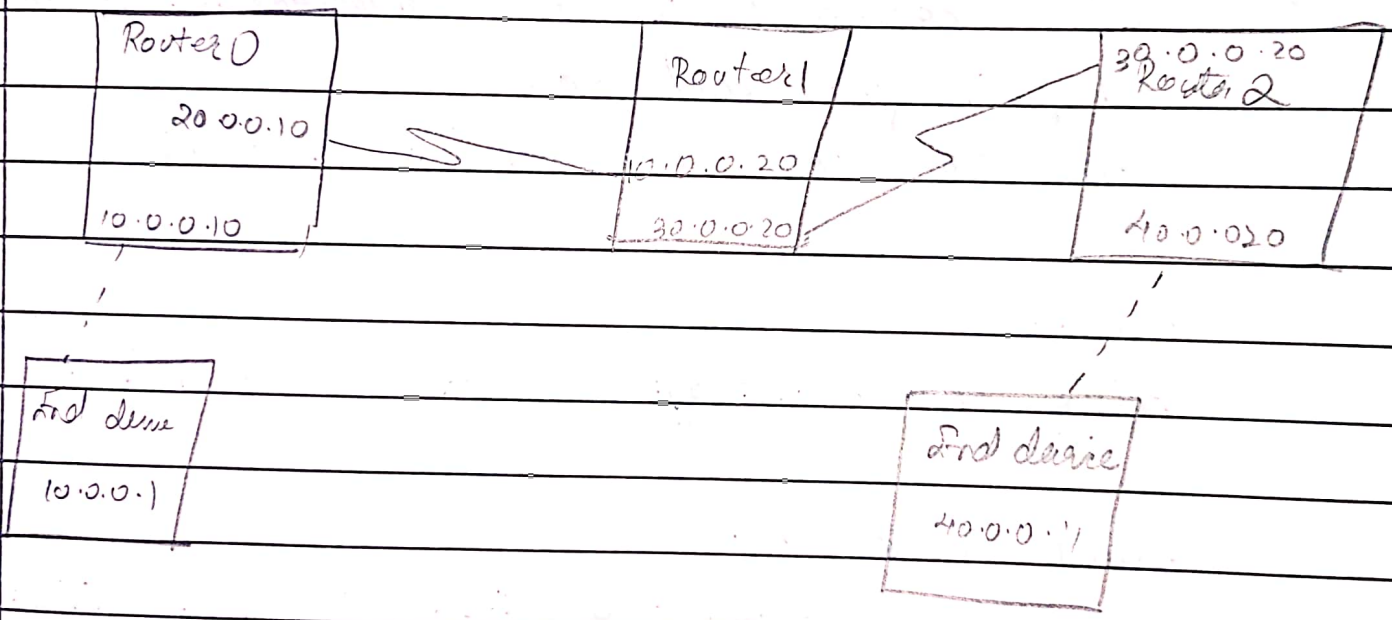
Exp - 2

Network with multiple routers

Aim:

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

Topology:



Procedure:

① Add two end devices and three routers to work space.

② Connect routers through serial DTE cable and end devices to routers through copper cross-over cable.

③ Assign IP addresses to end devices and gateways

④ Configure gateways through CLI using following

commands

ⓐ Enable

ⓑ config t

ⓒ interface <port>

ⓓ ip address <ip address> <subnet mask>

ⓔ no shut

ⓕ exit

⑤ Using command ip route <destination ip> <routing ip> set path for each router

⑥ Ping from one end devices to another.

Result:

Pinging 40.0.0.1 : with 32 bytes of data :

Request timed out :

Reply from 40.0.0.1 : bytes = 32 time = 12ms TTL = 127

Reply from 40.0.0.1 : bytes = 32 time = 12ms TTL = 127

Reply from 40.0.0.1 : bytes = 32 time = 14ms TTL = 127

Ping statistics from 40.0.0.1:

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

Approximate round trip times in milli seconds

Minimum = 12ms Maximum = 14 ms Average = 8 ms

Date :

Configure the routers by opening CLI

Router 0 :

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) # interface serial 2/0
Router (config) # ip address 20.0.0.10 255.0.0.0
Router (config-if) # no shut
exit
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) # exit

Observation

Destination host Unreachable

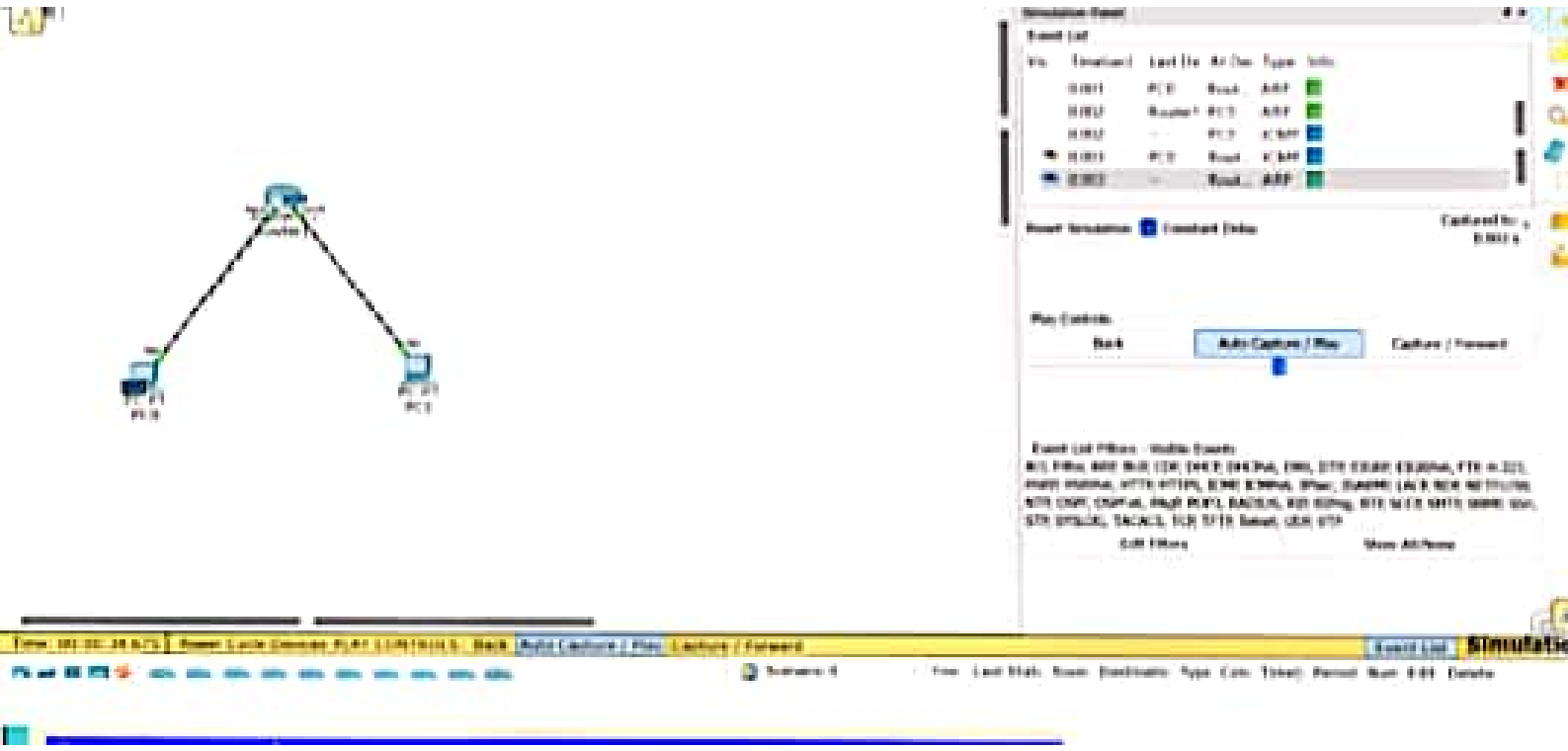
For each router, we need to define a route for packets to be moved to different networks. Unless route is defined, packet will not reach destination. Following result is obtained when gateway isn't set.

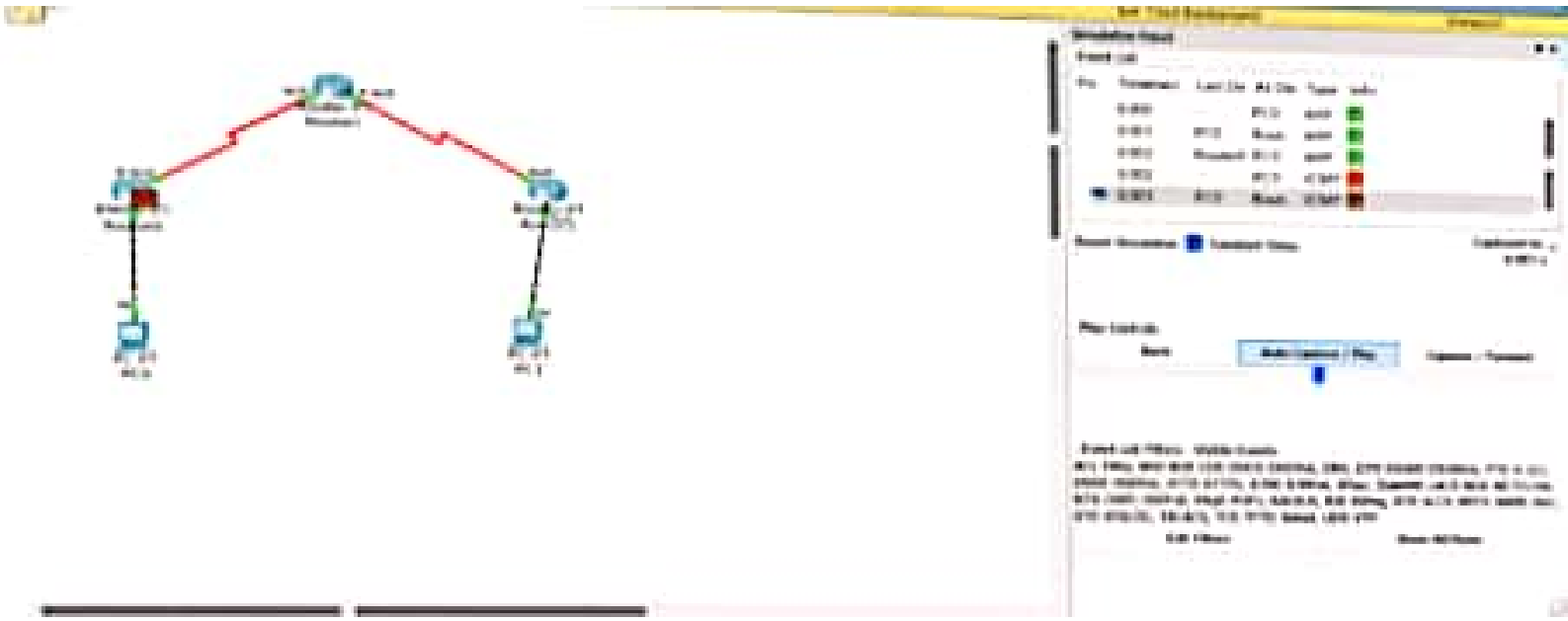
Reply from 10.0.0.10 : Destination host unreachable
Reply from 10.0.0.10 : Destination host unreachable
Reply from 10.0.0.10 : Destination host unreachable
Reply from 10.0.0.10 : Destination host unreachable

The above message signifies gateway 10.0.0.10 does not know where to redirect the packet to.

Request timed out :

On successful transmission from source to destn an acknowledgement is sent from the destination host to source host & in the form of ICMP packets. If the acknowledgement ICMP message does not reach source a 'Request timed out' message is shown. It may be due to packet loss, physical issue in transmission or incorrect gateway assignment





```
Packet Tracer PC Command Line 1.0
PC>40.0.0.1
Invalid Command.

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=6ms TTL=125
Reply from 40.0.0.1: bytes=32 time=9ms TTL=125
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 11ms, Average = 6ms

PC>
```