

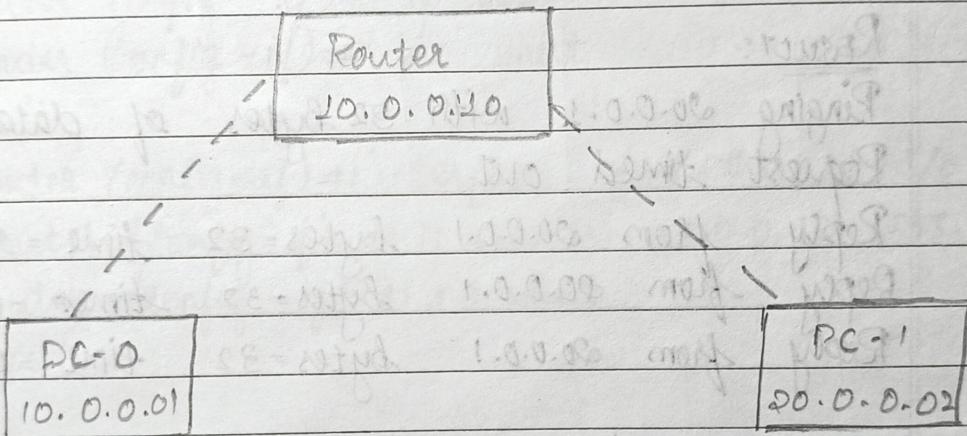
EXP - 2

Network Connection using single Router

Aim:

Configuring IP address to routers, 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 gateway in router through CLI using the following commands.

- ④ Enable
 - ⑤ Configt
 - ⑥ interface <port>
 - ⑦ ip address <ip address><subnet mask>
 - ⑧ no shut
 - ⑨ exit
- ⑩ Set the respective gateways in the end devices
- ⑪ 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=128
 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 milliseconds
 Minimum = 0ms, Maximum = 1 ms, Average = 0ms

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.

For Router 0 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 shutdown

exit

Router (config-if) # interface fastethernet 1/0

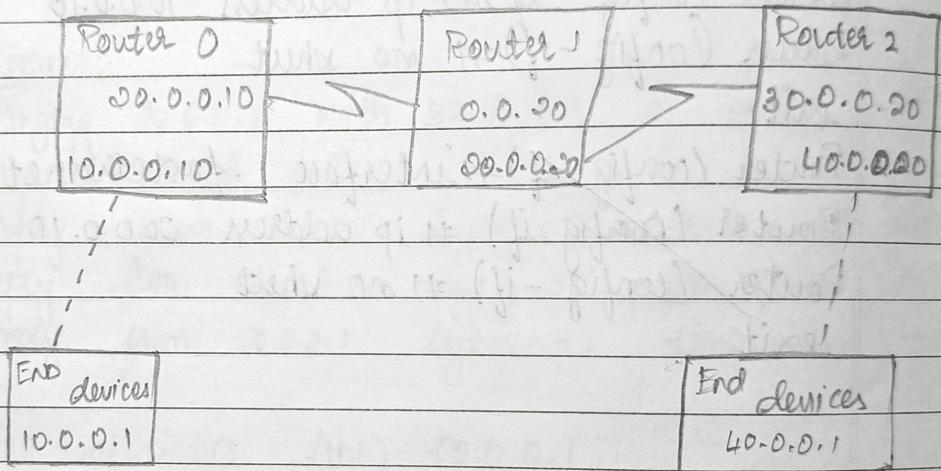
Router (config-if) # ip address 10.0.0.10 255.0.0.0

Router (config-if) # no shutdown

exit

Network with multiple routersAim:

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

TOPIC DAY :-PROCEDURE :-

- Add two end devices and three routers to work spaces.
- Connect router through serial DTE cable and end devices to routers through copper cross-over cable.
- Assign IP addresses to end device and gateways.
- Configure gateways through CLI using following

commands :

- (1) Enable
- (2) configt
- (3) interface <port>
- (4) ip address <ip address> <subnet mask>
- (5) no shut
- (6) 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 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 = 10ms Maximum = 16ms Average = 12ms

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 shutdown

exit

Router (config) # interface serial 2/0

Router (config) # ip address 20.0.0.10 255.0.0.0

Router (config-if) # no shutdown

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 shutdown

exit

Router (config) # interface serial 3/0

Router (config-if) # ip address 30.0.0.20 255.0.0.0

Router (config-if) # no shutdown

exit

Router (config) # exit

Router 2

Router > enable

Router # config #

Router (config) # interface serial 0/0

Router (config-if) # ip address 30.0.0.20 255.0.0.0

Router (config-if) # no shutdown

exit

Router (config) # interface fastethernet 0/0

Router (config-if) # ip address 40.0.0.10 255.0.0.0

Router (config-if) # no shutdown

exit

Router (config) exit

OBSERVATION

Destination host unreachable

For each route, we need to design 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 next.~~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 destination and acknowledgment is sent from destination host to source host in the form of ICMP packets. If the acknowledgment ICMP message from 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.