Lab-3-Routers

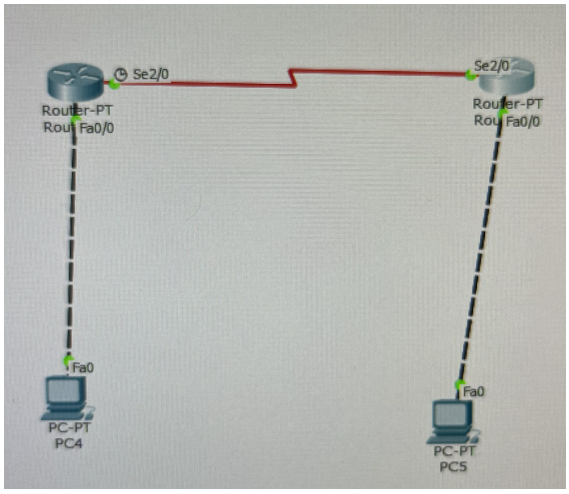
Title: Packet Tracer using Routers Topology

Aim:

Create a topology and simulate sending a simple PDU from source to destination using two routers as connecting devices and demonstrate ping messages.

Topology

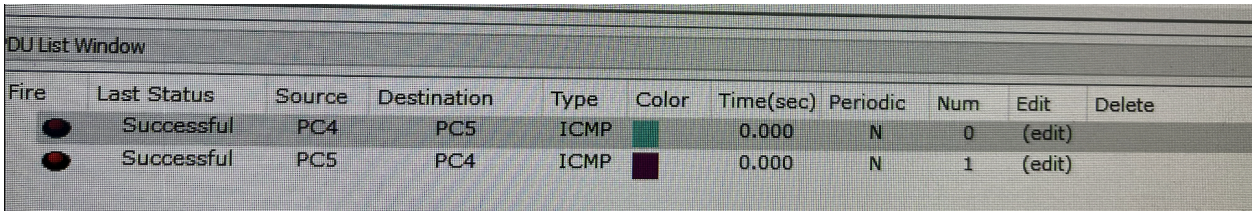
Router:



IP addresses and gateways:

PC1: IP Address: 10.0.0.1
Gateway Address: 10.0.0.2
PC2: IP Address: 30.0.0.1
Gateway Address: 30.0.0.2
R1: FastEthernet IP Address 0/0: 10.0.0.2
Serial IP Address 2/0: 20.0.0.1
R1: FastEthernet IP Address 0/0: 30.0.0.2
Serial IP Address 2/0: 20.0.0.2

Toggle the PDU List Window



Procedure for Router:

- Select the end devices and change their IP addresses suitably.
- Select the Router as the connecting device.
- Use copper cross-over cables to connect the PCs and the router.
- Use serial DCE cable to connect the routers.
- Connect the FastEthernet ports of each device to the router's ports
- Select the message and first click on the source device and then the destination device.

Procedure for PCs:

- Select the end devices and change their IP addresses suitably.
- Set their gateway addresses.
- Select the Router as the connecting device.
- Use copper cross-over cables to connect the PCs and the router.
- Connect the FastEthernet ports of each device to the router's ports
- Select the message and first click on the source device and then the destination device.

Commands used:

Setting IP address of Router1:

Enable
Configure t
Hostname R1
Interface fa 0/0
Ip address 10.0.0.2 255.0.0.0
No shutdown
Exit
Interface serial 2/0
Ip address 20.0.0.1 255.0.0.0
No shutdown

Setting IP address of Router2:

Enable
Configure t
Hostname R2
Interface fa 0/0
Ip address 30.0.0.2 255.0.0.0
No shutdown
Exit
Interface serial 2/0
Ip address 20.0.0.2 255.0.0.0
No shutdown

```
Press RETURN to get started!


Router>enable
Router#configure t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#interface fa 0/0
R1(config-if)#ip address 10.0.0.2 255.0.0.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

R1(config-if)#exit
R1(config)#interface Serial2/0
R1(config-if)#ip address 20.0.0.1 255.0.0.0
R1(config-if)#
R1(config-if)#exit
R1(config)#interface Serial2/0
R1(config-if)#no shutdown
```

Setting IP route of Router1:

Show ip route (shows all the connections)

IP route 30.0.0.0 255.0.0.0 20.0.0.2

Setting IP route of Router2:

Show ip route (shows all the connections)

IP route 10.0.0.0 255.0.0.0 20.0.0.1

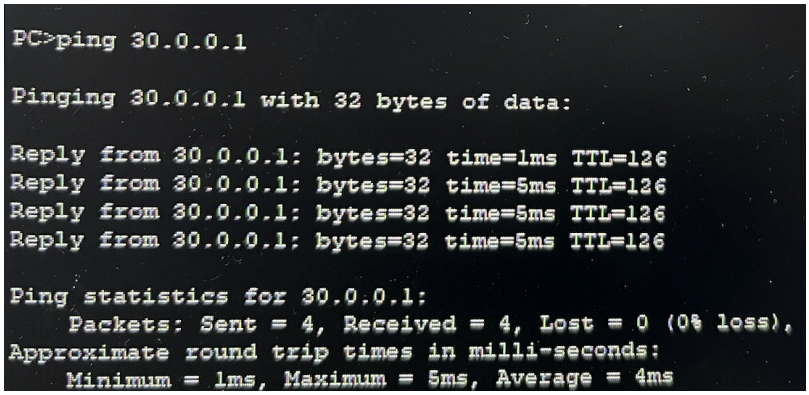
```
R1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter are
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    20.0.0.0/8 is directly connected, Serial2/0
S    30.0.0.0/8 [1/0] via 20.0.0.2
```

To ping a message from PC to another:

Ping 30.0.0.1



Observations:

1. Trying to send a simple PDU before setting the IP address will lead to Destination Unreachable Error.
2. If there is an error in the Gateway address then there will be a request timed out error.