

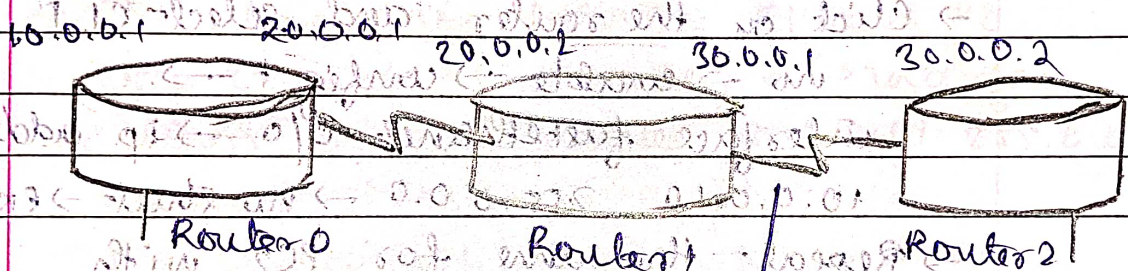
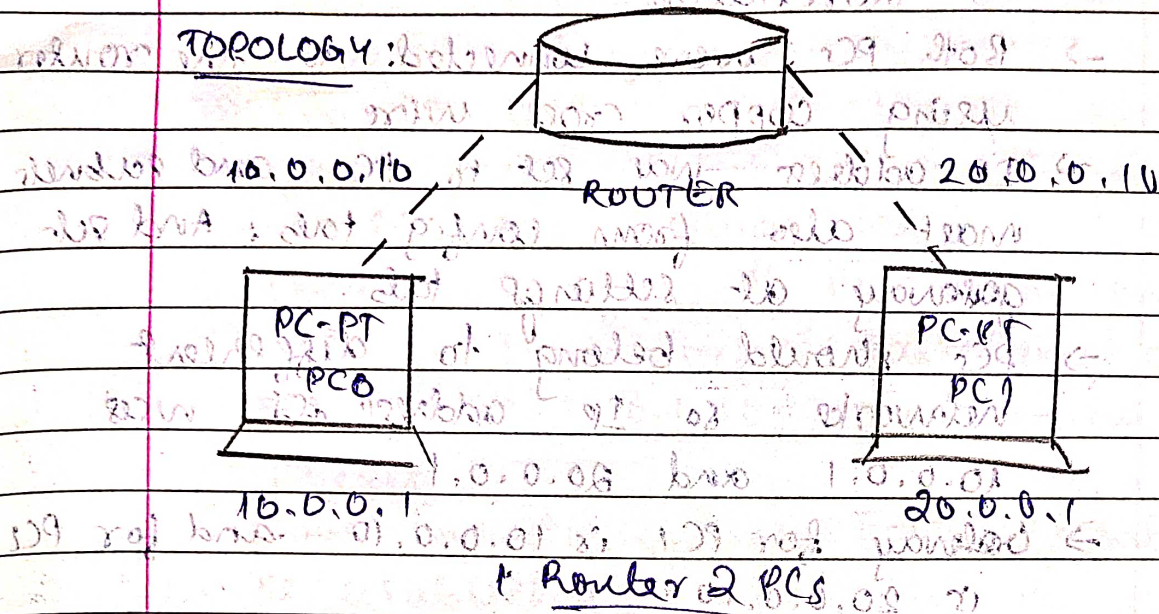
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week-3

## Lab-2

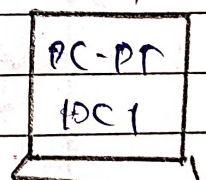
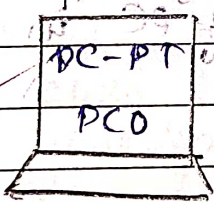
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AIM :- Configuring IP addresses to routers in Packet Tracer. Explore the following messages: Ping responses, Destination unreachable, Request time out reply.

### TOPOLOGY:



Serial DCE cable  
Copper wires



10.0.0.1

40.0.0.1

### 3 Routers & PCs



## PROCEDURE:

### Using single router and 2 PCs

- A generic router and 2 PCs are added to workstation
- Both PCs were connected to the router using copper cross wire
- IP address was set to PCs and subnet mask also from config tab. And set gateway at settings tab.
- PCs should belong to different networks so IP address set was 10.0.0.1 and 20.0.0.1
- Gateway for PC1 is 10.0.0.10 and for PC2 is 20.0.0.10
- Click on the router and select CLI.  
no → enable → config t →  
interface fastethernet 0/0 → ip address 10.0.0.10 255.0.0.0 → no shut → exit
- Repeat the same for PC2 with  
→ ip address 20.0.0.10 255.0.0.0
- The connection between both PCs and router must get green.
- Ping PC2 from PC1 by specifying all the IP address of PC in command prompt of PC1.

### Using 2 PC and 3 routers

- 3 generic routers and 2 PCs are placed into the workstation
- Connect PC1 to router1 using copper crossover wire. 3 routers



are connected using a serial DCE cable.

All connections in this are initially shown

as follows:

→ Routers are connected through serial ports which PC are connected to routers through fastethernet.

→ The IP address, subnet mask, and gateway is set for each PC in their config and settings tab.

→ Open CLI of router R1 → no → enable  
 → config t → interface fastethernet 0/0  
 → ip address 10.0.0.10 255.0.0.0 → no shut  
 → exit

Now connection between PC1 and router R1 established.

→ For connection between R1 and R2

Open CLI of R1 → config t → interface  
 serial 2/0 → ip address 10.0.0.10 255.0.0.0  
 no shut → exit

→ For connection between R2 and R3

similar steps with R2

→ ip address 20.0.0.2 255.0.0.0  
 config t → interface <sup>serial</sup> 3/0 → ip address  
 20.0.0.2 255.0.0.0 → no shut → exit

→ For connection between R3 and PC2

Open CLI → no → enable → config t →  
 interface serial 2/0 → ip address  
 30.0.0.2 255.0.0.0 → no shut

config t → interface fastethernet 2/0  
 → ip address 10.0.0.10 255.0.0.0 →

no shut → exit

→ All connections are now established

→ All connections are now established



→ Ping PC1 from PC0  
Destination unreachable

→ when router 20.0.0.2 is pinged by PC0 the reply is given as request is not turned out.

Traceroute router 1 by

→ ip route 30.0.0.0 255.0.0.0 20.0.0.2  
ip route 40.0.0.0 255.0.0.0 20.0.0.2

→ Router 2

ip route 10.0.0.0 255.0.0.0 20.0.0.1  
ip route 40.0.0.0 255.0.0.0 30.0.0.2

→ Router R3

ip route 10.0.0.0 255.0.0.0 20.0.0.1  
ip route 20.0.0.0 255.0.0.0 30.0.0.1

→ Now PC1 is pinged from PC0 and all replies are seen.

→ Check routing table using the 'show ip route' command in CLI of a particular router.

### OBSERVATION

Router

→ When PC0 pings PC1 first we get request turned out for first packet.

result:

Ping 20.0.0.1

Pinging 20.0.0.1 with 32 byte of data

request turned out  
reply from 20.0.0.1 bytes = 32 time = 0ms TTL = 12



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:-

Packet sent 4, received 3 lost=1 (25%)

If we ping PC1 again from PC0 we get all packets without loss.

Reverse pinging also doesn't result in any loss.

3 Router:

Before training routers

Ping 20.0.0.1 (From PC0)

Pinging 20.0.0.1 with 32 bytes of data:

reply from 20.0.0.1 Destination host unreachable

reply from 20.0.0.1 Destination host unreachable

reply from 20.0.0.1 Destination host unreachable

We get reply as request turned out with all 4 packets not received (100% loss).

After training

Ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data request turned out

reply from 40.0.0.1 bytes=32 time=2ms TTL=127

reply from 40.0.0.1 bytes=32 time=2ms TTL=127

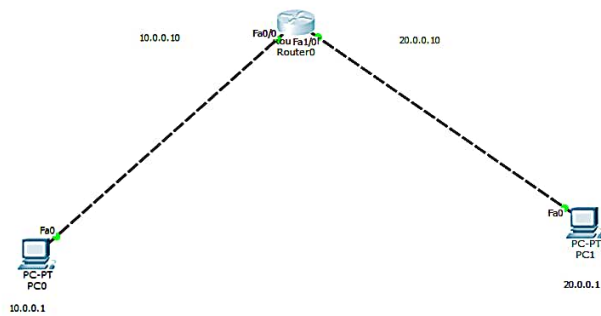
reply from 40.0.0.1 bytes=32 time=2ms TTL=127

Ping statistics:

Packets sent = 4, received = 3 loss = 1 (25% loss)

2

1/12/22



Router0

Physical Config CLI

### IOS Command Line Interface

```
Router(config-if)#no shut
Router(config-if)#
%LINE-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
exit
Router(config)#show ip route
Router#
% Invalid input detected at '^' marker.

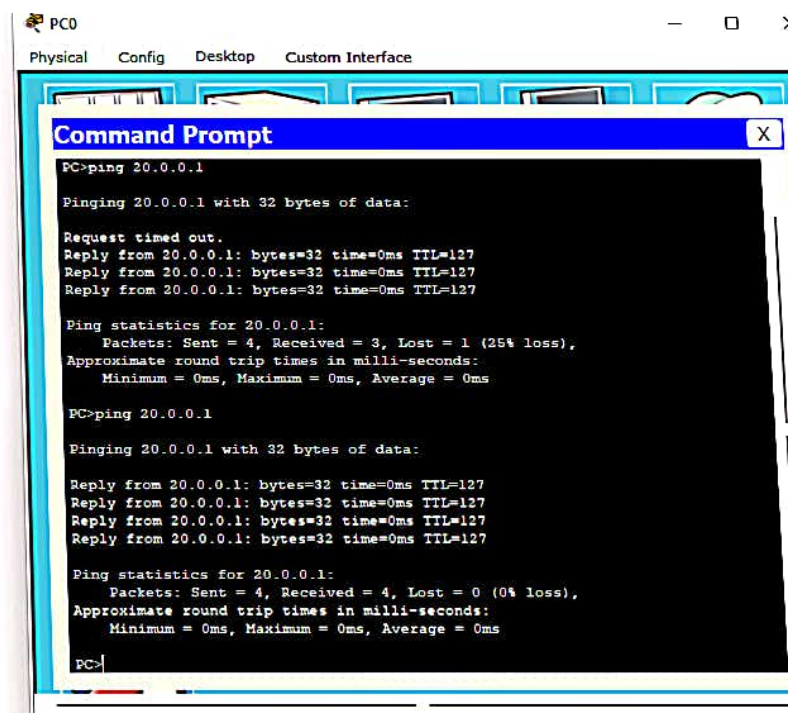
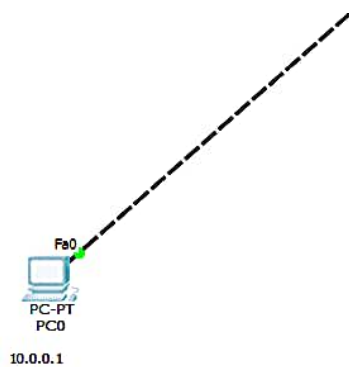
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 area
       * - 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, FastEthernet1/0
Router#
```

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```
.
Processor board ID FT0123 (0123)
VT200S processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 10.0.0.10 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
exit
Router(config)#interface fastethernet1/0
Router(config-if)#ip address 20.0.0.10 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
exit
Router(config)#show ip route
      ^
% Invalid input detected at '^' marker.

Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 area
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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, FastEthernet1/0
Router#
```

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