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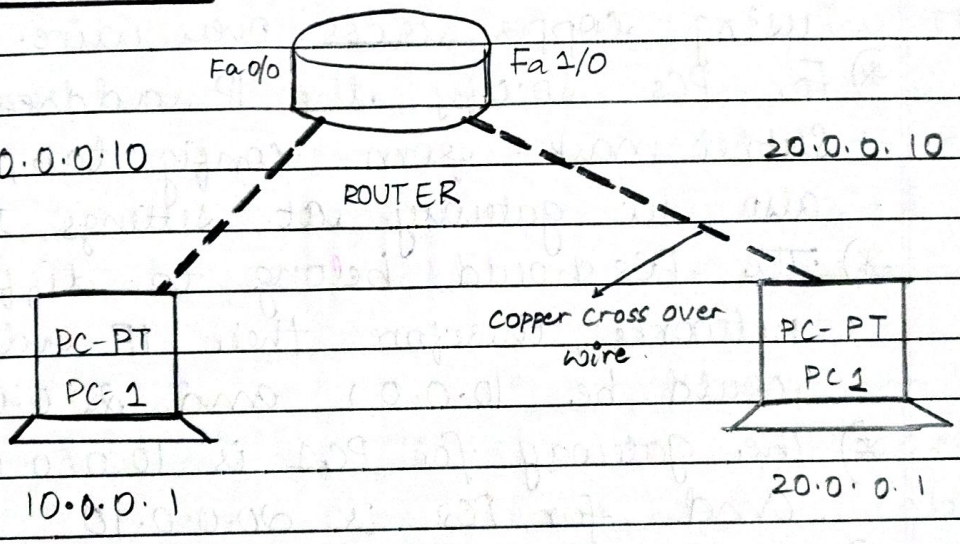
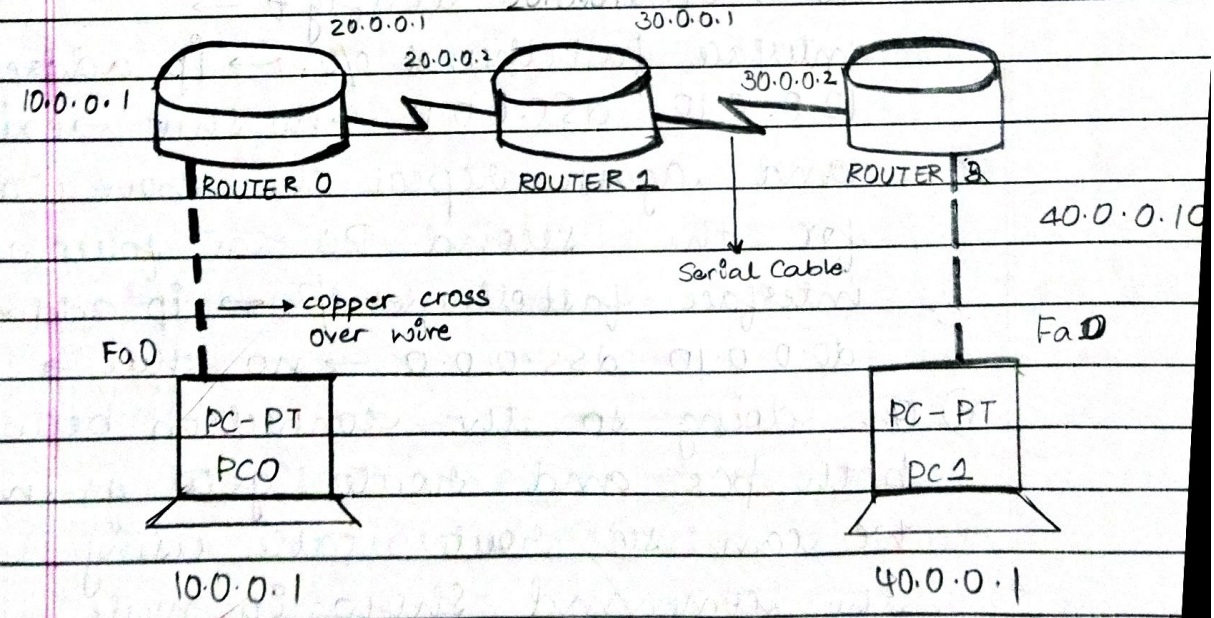
# LAB-3

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

**TOPOLOGY :-**




1 ROUTER 2 PCS.




3 ROUTERS 2 PCs

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PROCEDURE:-

→ using Single router and 2 PC's.

*) Add one generic router and 2 PCs into the workstation
*) Connect both the PCs to the router using copper cross over wire.
*) For PCs specify the IP address and Subnet mask from config tab, and also set gateway at settings tab.
*) The PCs should belong to different networks, therefore their IP address could be. 10.0.0.1 and 20.0.0.1
*) The 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 and again repeat the above comman for the second PC as follows:- interface fastethernet 1/0 → ip address 20.0.0.10 255.0.0.0 → no shut → exit
*) On doing so the connection between both PCs and router gets green we can see router table using the command show ip route.
*) Now we can ping PC2 from PC1 by specifying all the IP address of PC in the command prompt of PC1.

→ Using 2 PC and 3 routers.

*) Place three generic routers and 3 PCs into the workstation. connect PC1 to router R1 using copper cross over wire. Routers R1, R2 and R3 are connected to each other using Serial DCE cable. All connections in this network are initially shown red.

*) Routers ~~are~~ are connected to each other through Serial ports and Routers and PCs are connected through fast ethernet.

*) The IP address, subnet mask and gateway is ~~attached~~ set for each PC in their config and settings tab.

*) The CLI of router R1 is oppened → no → enable → config t → interface fast ethernet 0/0 → ip address 10.0.0.10 255.0.0.0 → no Shut → exit.
By doing this we establish the connection b/w the PC1 and Router R1

*) For connection b/w Router R2 and R1.
Open CLI of R1 → config t → interface Serial 0/0 → ip address 10.0.0.10 255.0.0.0 no Shut → exit ⇒ connection established

*) For connection b/w Router R2 and R3
Open CLI of R2 → config t → interface Serial 2/0 → ip address 20.0.0.2 255.0.0.0 → no Shut → exit
config t → interface serial 3/0 → ip address 30.0.0.1 255.0.0.0 → no Shut → exit

*) For connection b/w 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 0/0 → ip address 40.0.0.10 255.0.0.0 → no shut → exit.

*) Now all connections are established.

*) Ping PC1 from PC0 ⇒ we get a reply as Destination unreachable.

*) When the router 20.0.0.2 is pinged by PC0 the reply is given as request timed out

TRAINING:-

→ Router R1.
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 R2
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 30.0.0.1
ip route 20.0.0.0 255.0.0.0 30.0.0.1

*) Now we can ping PC1 from PC0 and all replies are seen.

*) We can check the routing table using the 'show ip route' command in the CLI of a particular router.

## OBSERVATION

→ **1 Router:-**

When PC0 pings PC1 for first time we get:- the first packet as request timed out.

result:-

```
ping 20.0.0.1
pinging 20.0.0.1 with 32 bytes of data
request timed out
reply from 20.0.0.1 : bytes=32 time=0ms 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 statastics :-
packet sent 4 , received 3 lost = 1 (25%).
```

Now if we ping PC1 again from PC0 we get all 4 packets without any loss.
Now reverse pinging of PC0 from PC1 will also not lead to any loss, all packets are acknowledged.

→ **3 Routers:-**

Before traening Routers, if we ping PC1 from PC0 we get as follows:-

```
ping 40.0.0.1
pinging 40.0.0.1 with 32 bytes of data:
reply from 40.0.0.1 : Destination host unreachabl
reply from 40.0.0.1 : Destination host unreachabl
reply from 40.0.0.1 : Destination host unreachabl
```

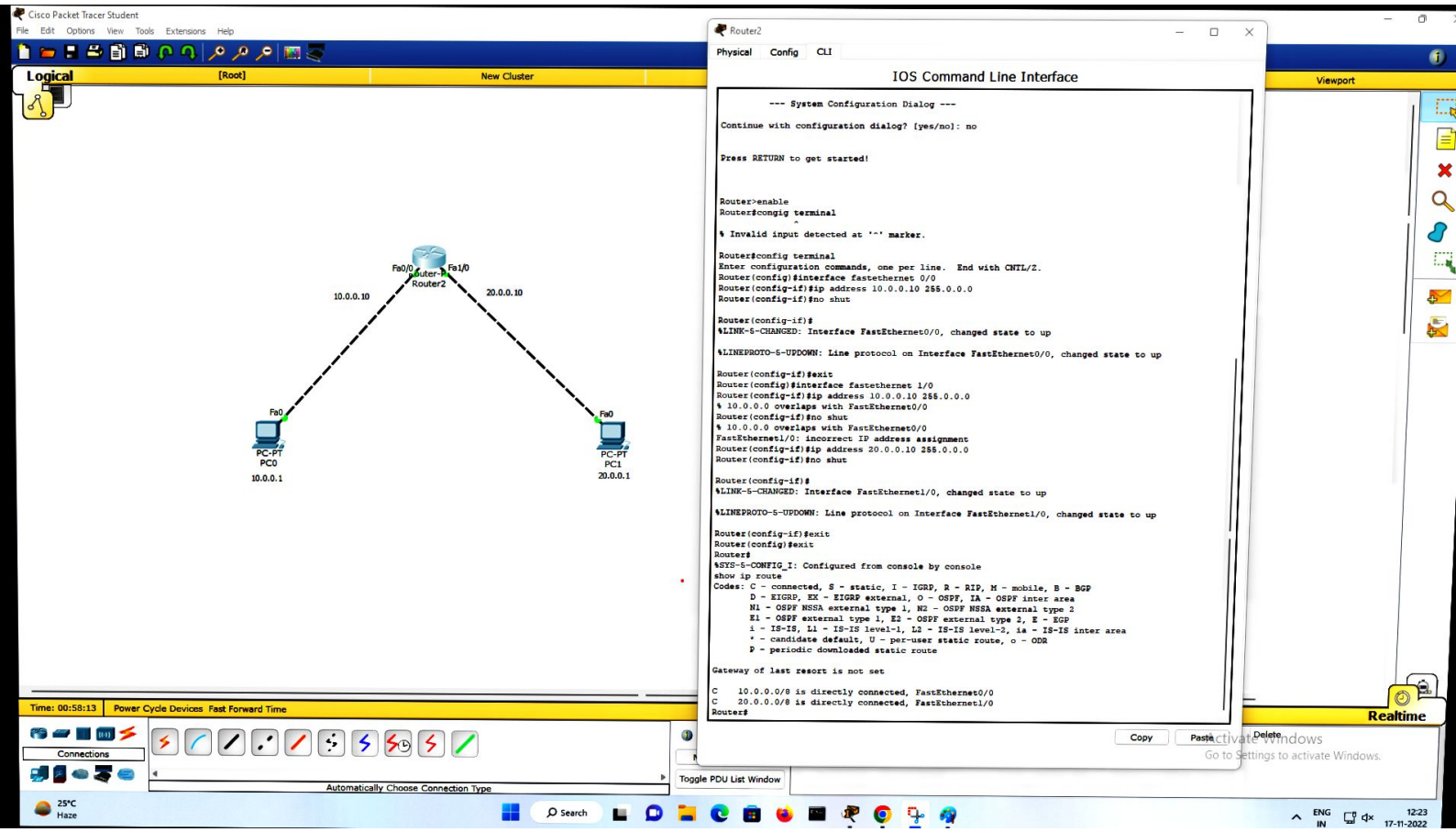
If we ping PC0 to any router we get the reply as request timed out. and all the 4 packets sent are not received with (100% loss).

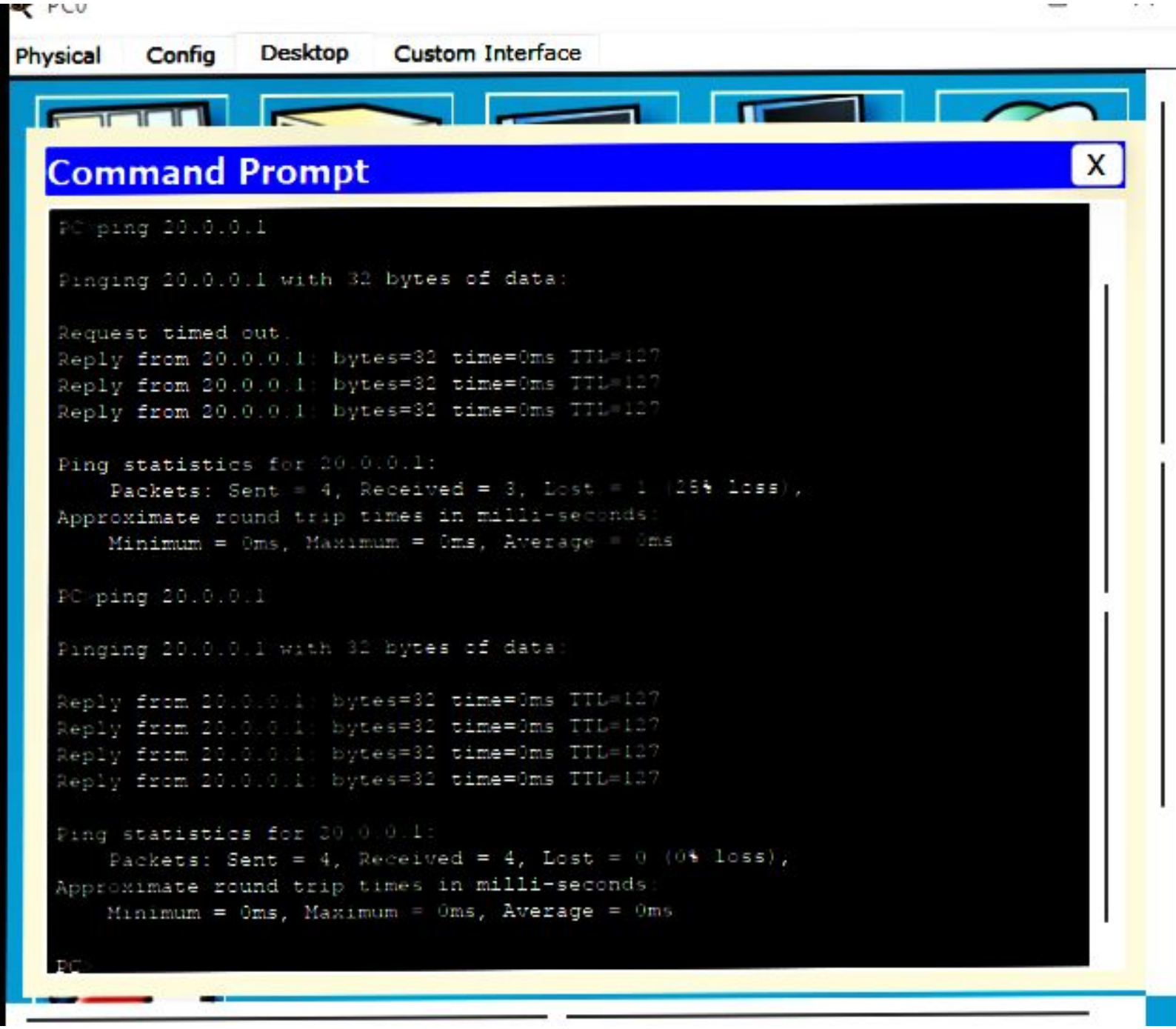
After training:-

ping 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data.
request timed out
reply from 40.0.0.1 : bytes=32 Time=2ms TTL=125
reply from 40.0.0.1 : bytes=32 Time=2ms TTL=125
reply from 40.0.0.1 : bytes=32 Time=2ms TTL=125
reply from 40.0.0.1 : bytes=32 Time=2ms TTL=125

Pinging statics:-
packets sent= 4 , received = 3 loss 1 (25% loss).

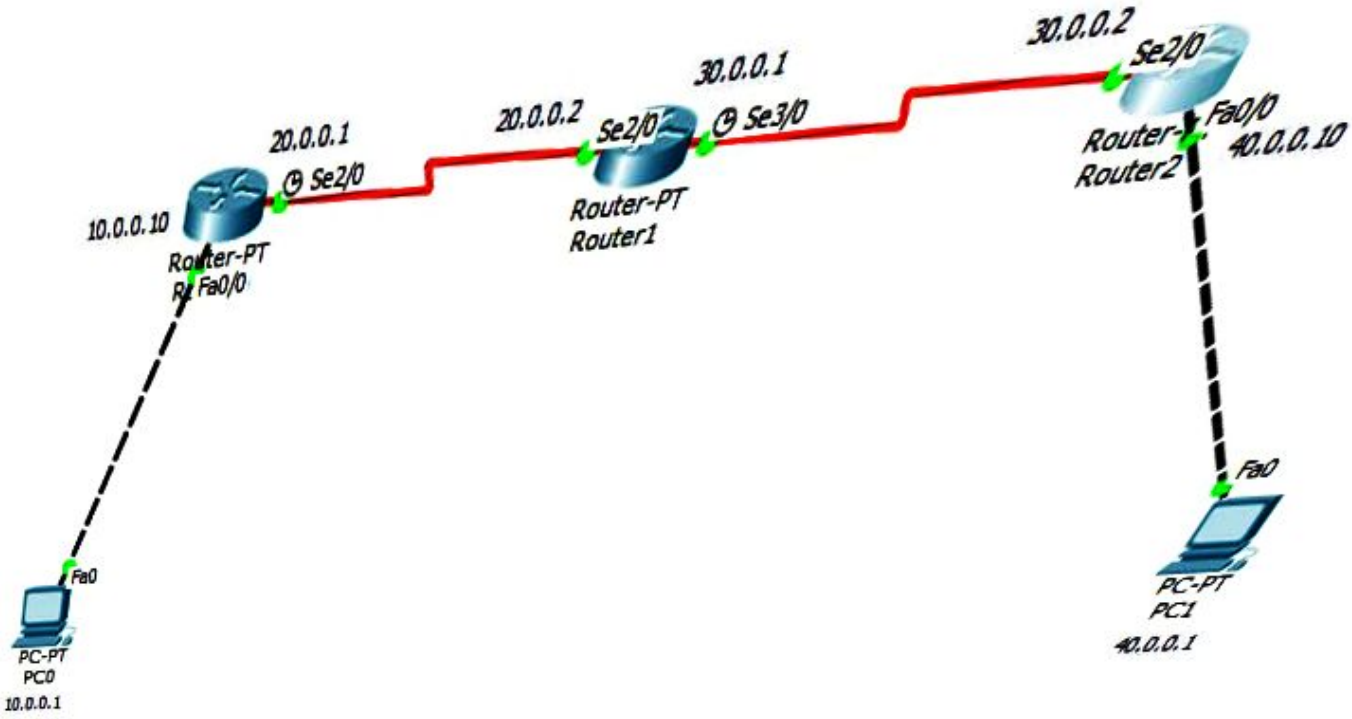
24/11/22


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Viewport
Router2
Physical
Config
CLI
IOS Command Line Interface
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no
Press RETURN to get started!
Router>enable
Router#congig terminal
% Invalid input detected at '^' marker.
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fastethernet 0/0
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
Router(config-if)#exit
Router(config)#interface fastethernet 1/0
Router(config-if)#ip address 10.0.0.10 255.0.0.0
% 10.0.0.0 overlaps with FastEthernet0/0
Router(config-if)#no shut
% 10.0.0.0 overlaps with FastEthernet0/0
FastEthernet1/0: incorrect IP address assignment
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
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
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#
Copy
Paste
Fa0/0
Router-P
Router2
Fa1/0
10.0.0.10
20.0.0.10
Fa0
PC-PT
PC0
10.0.0.1
Fa0
PC-PT
PC1
20.0.0.1
Time: 00:58:13
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Toggle PDU List Window
Delete
Activate Windows
Go to Settings to activate Windows.
25°C
Haze
Search
ENG
IN
12:23
17-11-2022


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
PC ping 20.0.0.1
Pinging 20.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.1: bytes=32 time=0ms 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 for 20.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC ping 20.0.0.1
Pinging 20.0.0.1 with 32 bytes of data:
Reply from 20.0.0.1: bytes=32 time=0ms 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
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Ping statistics for 20.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC

```
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Reply from 10.0.0.10: Destination host unreachable.
Reply from 10.0.0.10: Destination host unreachable.
Request timed out.
Reply from 10.0.0.10: Destination host unreachable.

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 20.0.0.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Request timed out.
Reply from 40.0.0.1: bytes=32 time=7ms TTL=125
Reply from 40.0.0.1: bytes=32 time=9ms TTL=125
Reply from 40.0.0.1: bytes=32 time=8ms TTL=125

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 7ms, Maximum = 9ms, Average = 8ms

PC>
```

```
Continue with configuration dialog? [yes/no]: no


Press RETURN to get started!



Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#interface serial2/0
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, cinterface serial2/0
Router(config-if)#exit
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 40.0.0.10 255.0.0.0
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

Router(config-if)#exit
Router(config)#ip route 10.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 20.0.0.0 255.0.0.0 30.0.0.1
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

S    10.0.0.0/8 [1/0] via 30.0.0.1
S    20.0.0.0/8 [1/0] via 30.0.0.1
C    30.0.0.0/8 is directly connected, Serial2/0
C    40.0.0.0/8 is directly connected, FastEthernet0/0
Router#
```


30.0.0.2
Se2/0
30.0.0.1
20.0.0.2
Se2/0
Se3/0
Fa0/0
20.0.0.1
Se2/0
40.0.0.10
Router-
Router2
10.0.0.10
Router-PT
Router1
Router-PT
Fa0/0
Fa0
Fa0
PC-PT
PC1
40.0.0.1
PC-PT
PC0
10.0.0.1