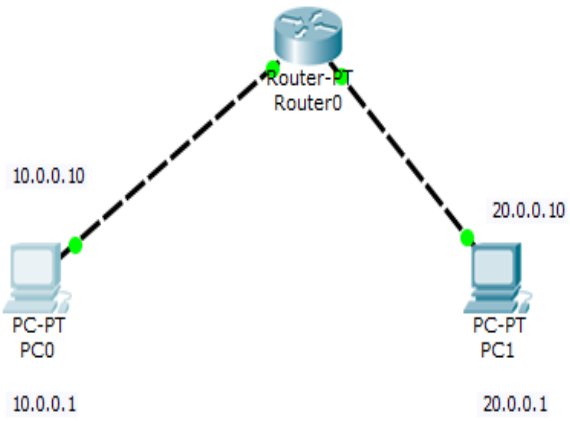
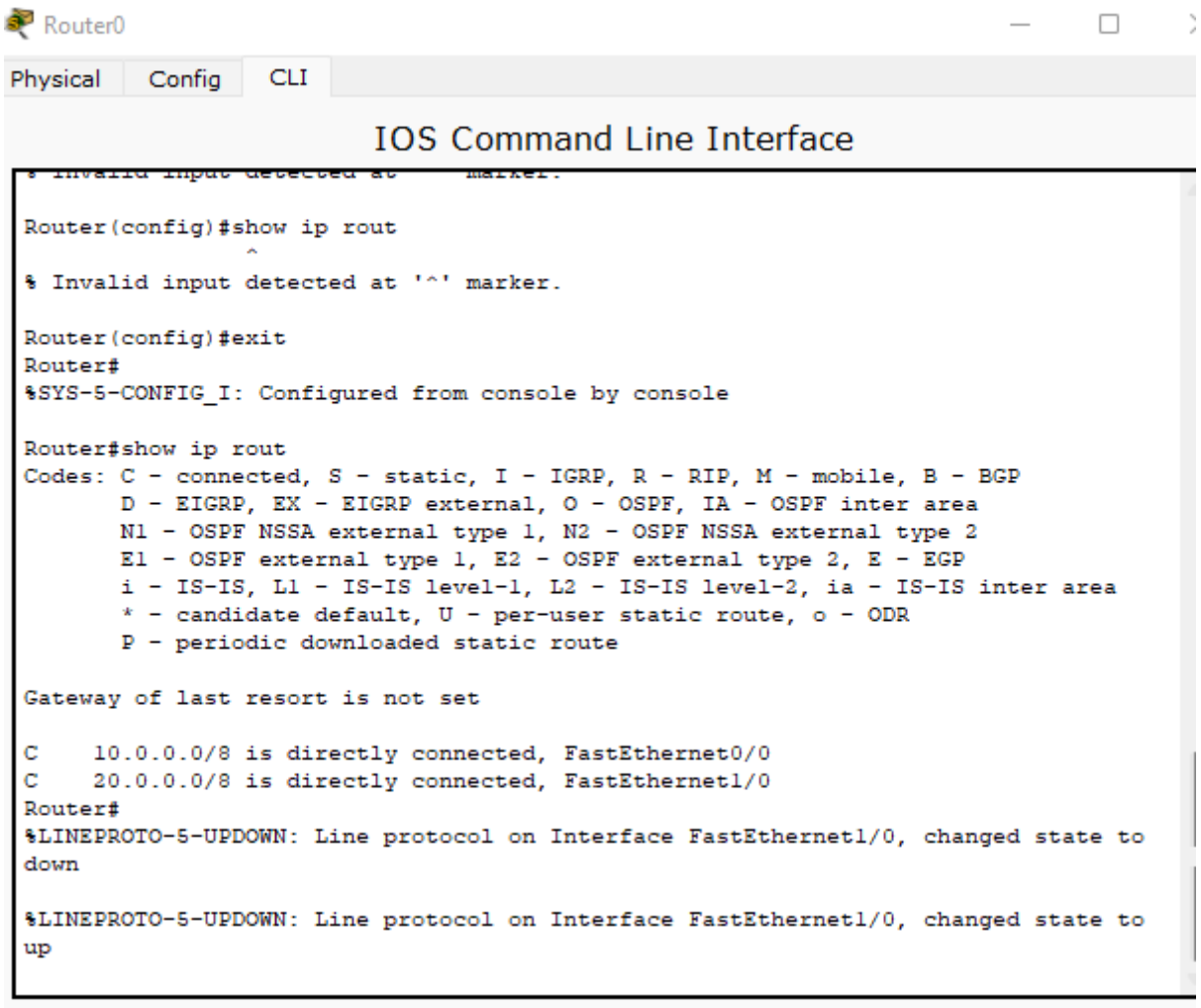


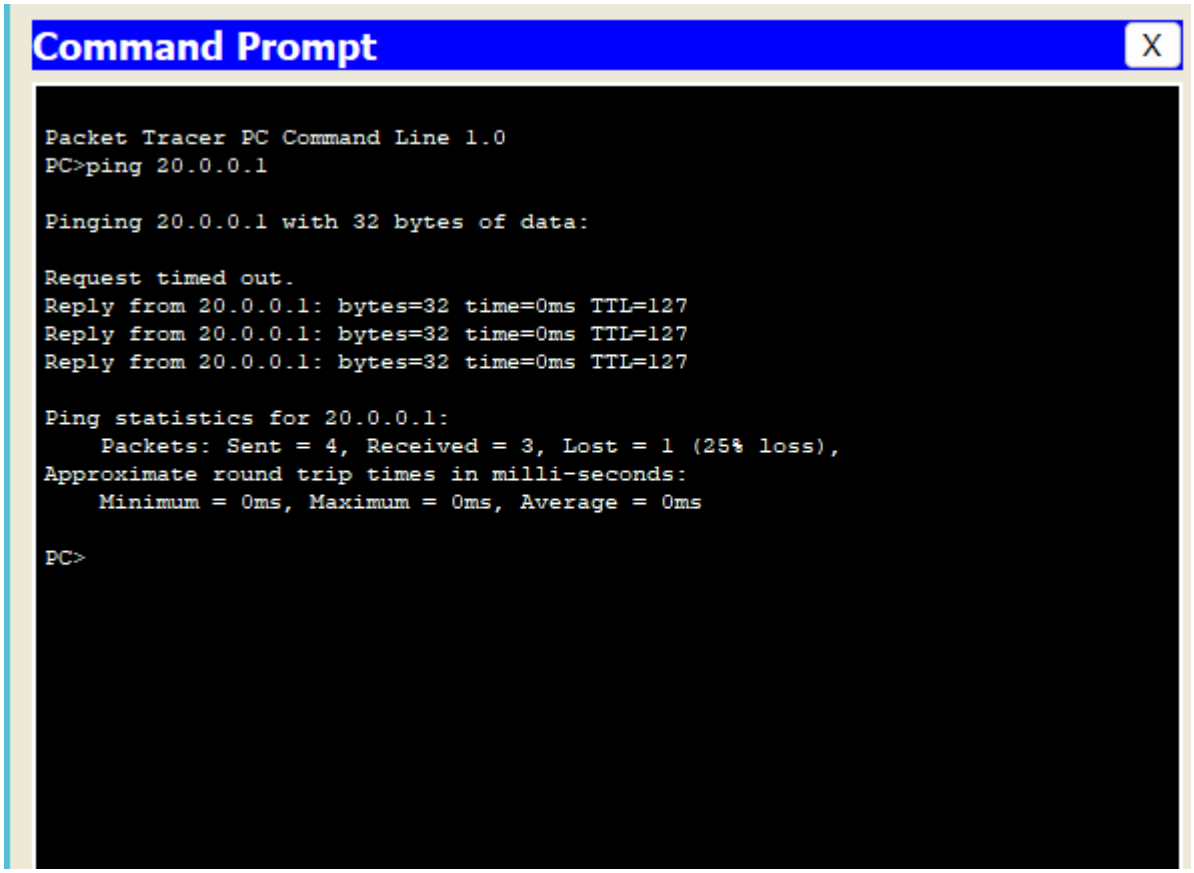
Router0

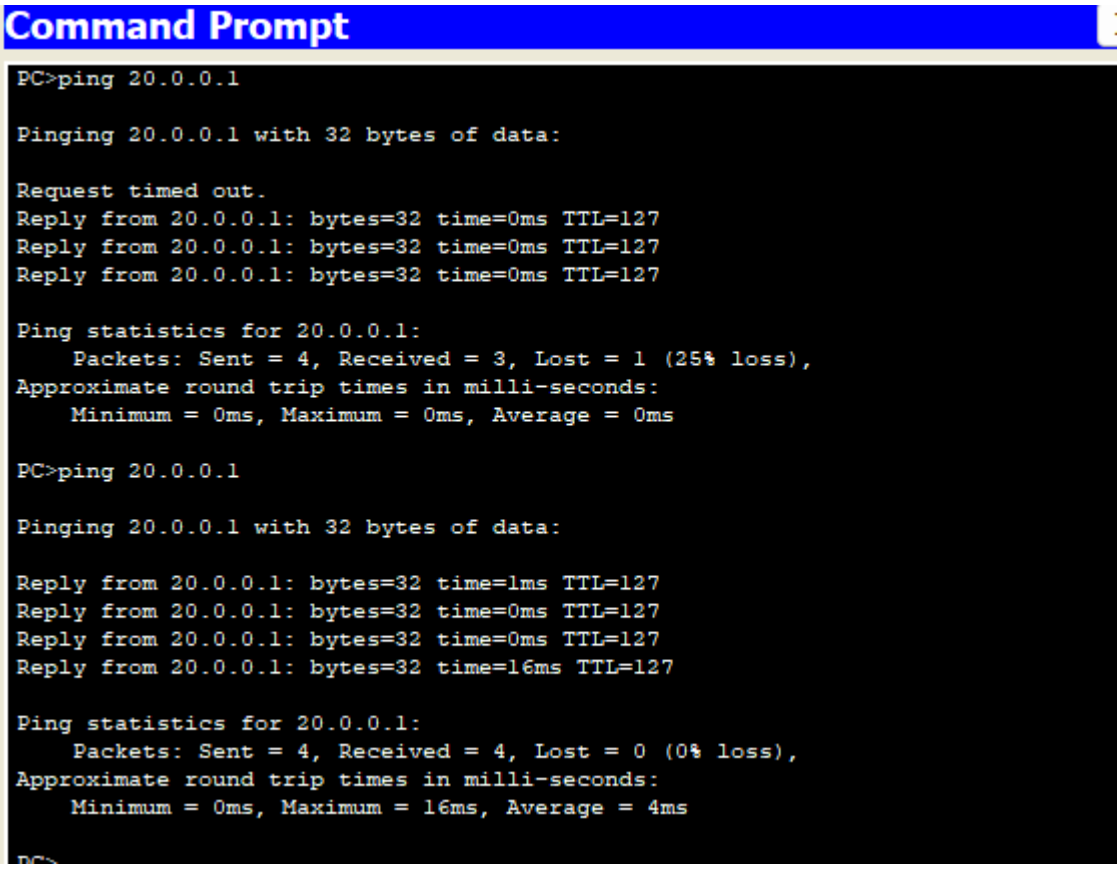
Physical | Config | CLI

IOS Command Line Interface

```
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 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
exit
Router(config)#interface fastethernet 1/0
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
```


Router0
Physical
Config
CLI
IOS Command Line Interface
% Invalid input detected at '^' marker.
Router(config)#show ip rout
% Invalid input detected at '^' marker.
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip rout
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#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up


Command Prompt
X
Packet Tracer PC Command Line 1.0
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>

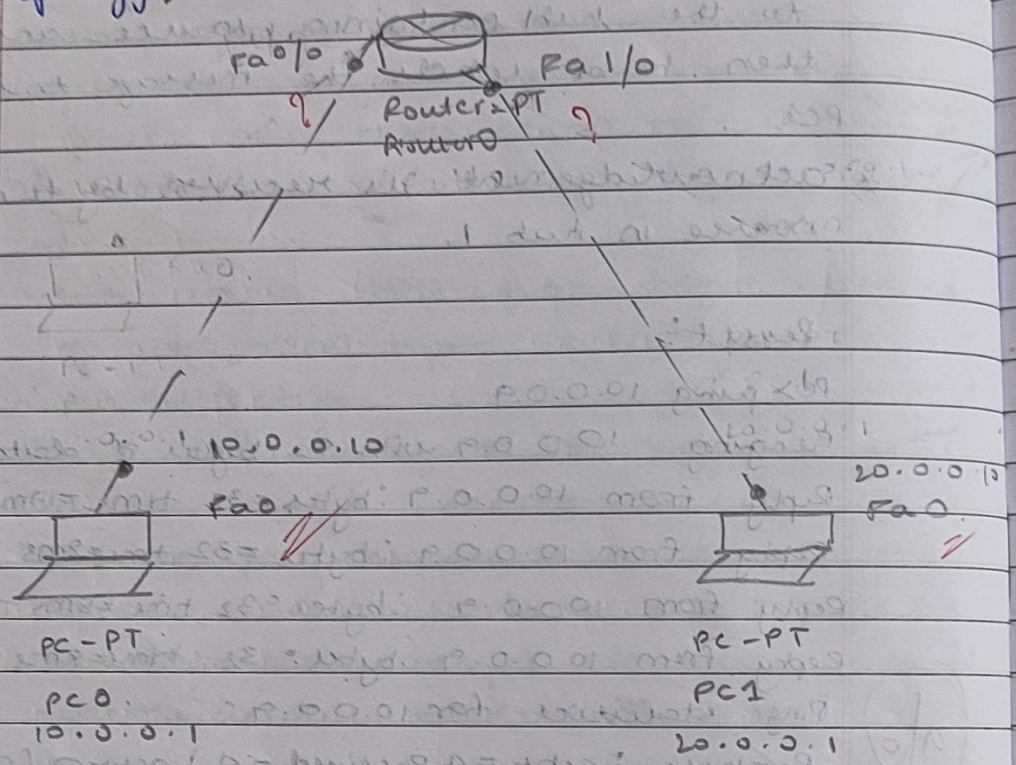

Command Prompt
PC>ping 20.0.0.1
Pinging 20.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Ping statistics for 20.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 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=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
Reply from 20.0.0.1: bytes=32 time=16ms 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 = 16ms, Average = 4ms
PC>

22/6/23
Thursday

Experiment 2

Aim:- Configure IP address to router. Explore following messages: ping response, destination unreachable, request timed out, reply.

Topology:-



Procedure:-

*) add a router and 2 PC's in the workspace
*) add labels of IP addresses to each of the devices.
*) add IP address of PC1 as 10.0.0.1 in config and set gateway to 10.0.0.10 in the global setting option.
*) similarly set IP of PC2 to 20.0.0.1 and

gateway as 20.0.0.10

*) Next select a copper cross over connection to connect the PC's to the router

*) The ip address of end devices PC's are set by clicking config → fastethernet → IP address global settings → gateway.

*) Set up the interface of router from following commands: enable no and press enter for the router. Once Router> appears start:

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
Router(config-if)# exit

similarly to set interface of router with PC1 press 'x' key and change. set
#interface fastethernet 1/0
#IP address 20.0.0.10 255.0.0.0.
[to remove IP address no IP can be used]
#no shut
#exit

show IP rout can be used to see the IP rout configuration.

Observation:

*) after following the procedures specified select one end device PC0.

*) click on PC0 select desktop → command prompt

*) give a command to ping PC1 i.e.,
PC> ping 20.0.0.1

the first output will be received as Request timed out.

* Therefore the command should be given again.

PC>ping 20.0.0.1

PC0 pings PC1 through the router.

* Interface set of router with 2 different end devices helps it to receive message from PC0 and then send it to PC1 with IP address gateway address 20.0.0.10 and IP address 20.0.0.1.

* When PC0 sends message the message is first received by router then sent to PC1.

Result:

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:

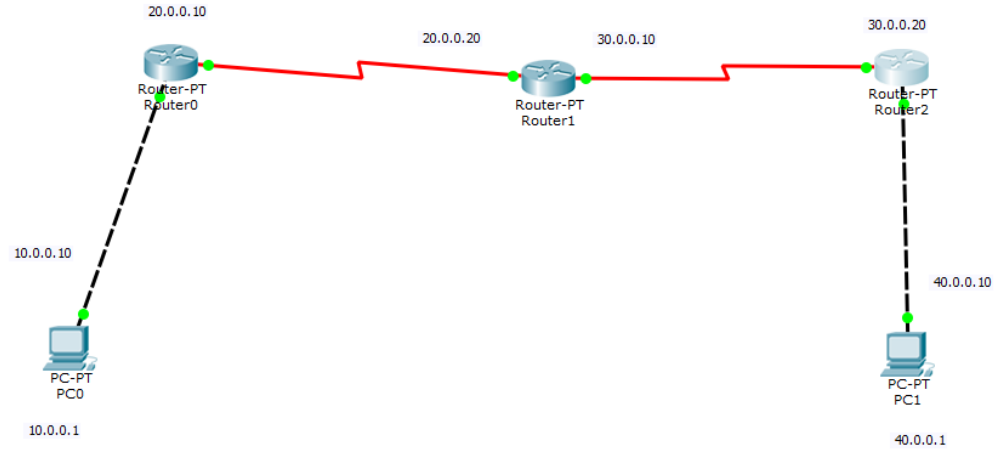
Reply from 20.0.0.1: bytes=32 time=2ms TTL=127

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

Bafna Gold
Date: Page:

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 = 2ms, Average = 0ms

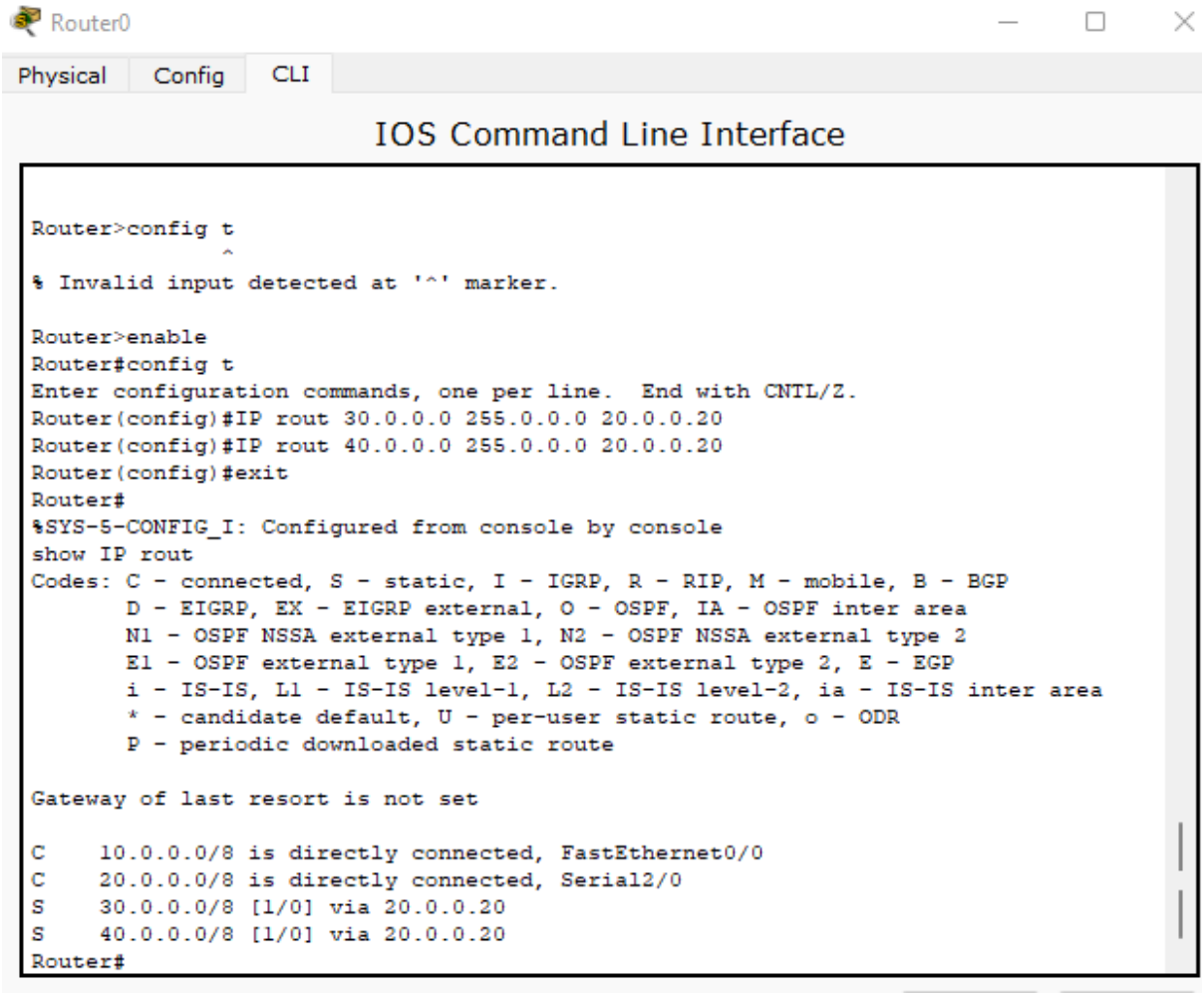


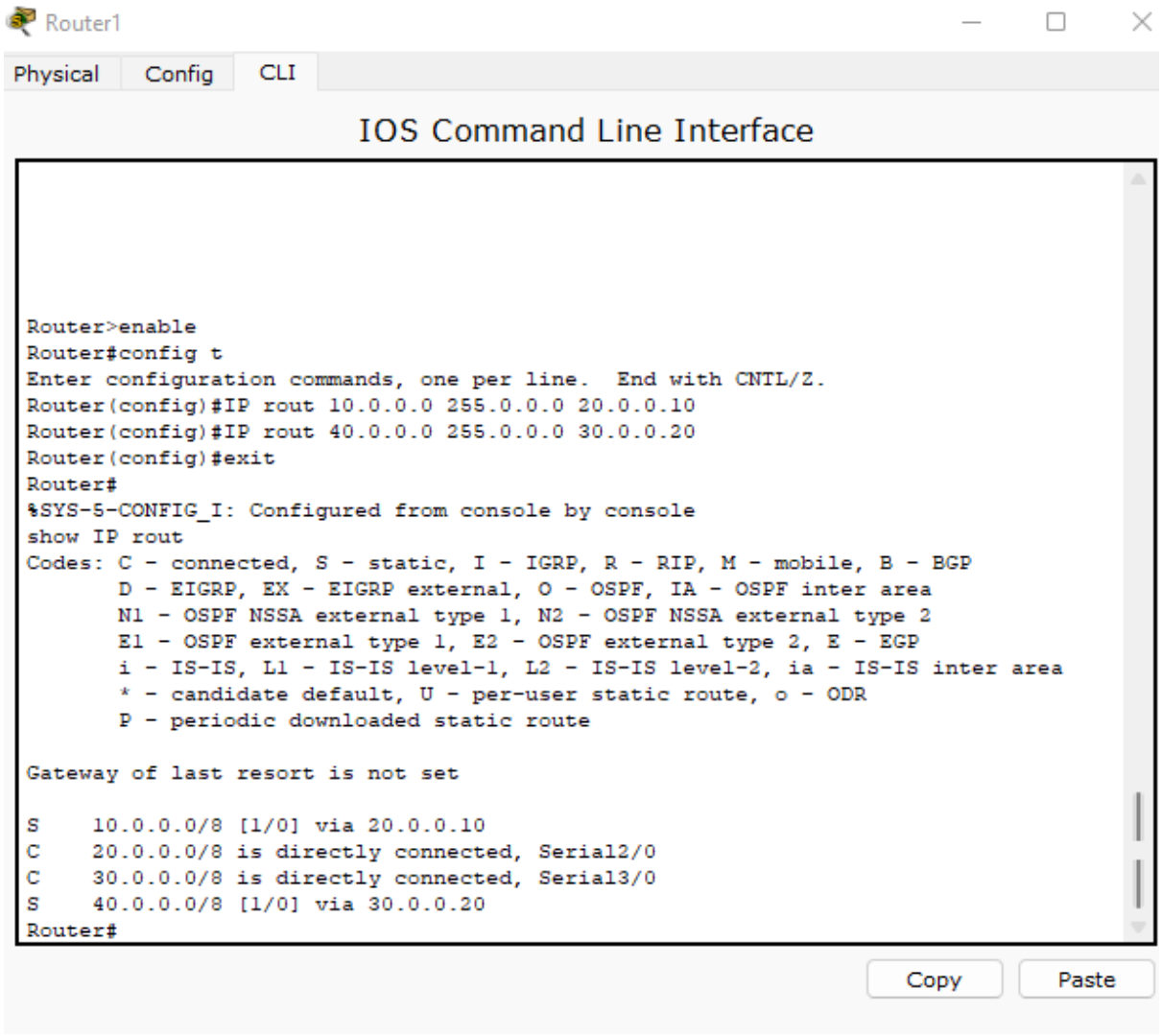
Router1

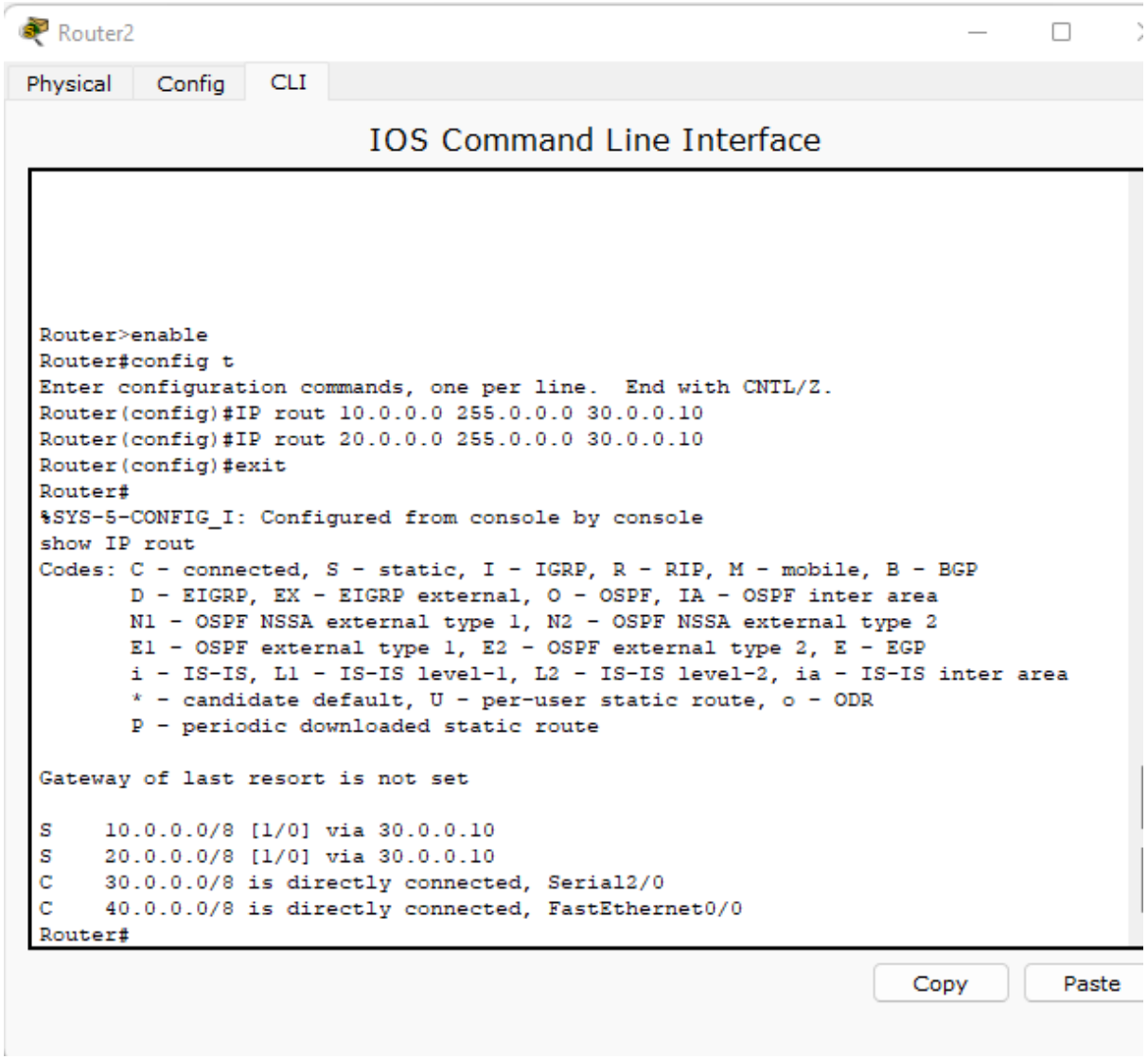
Physical | Config | CLI

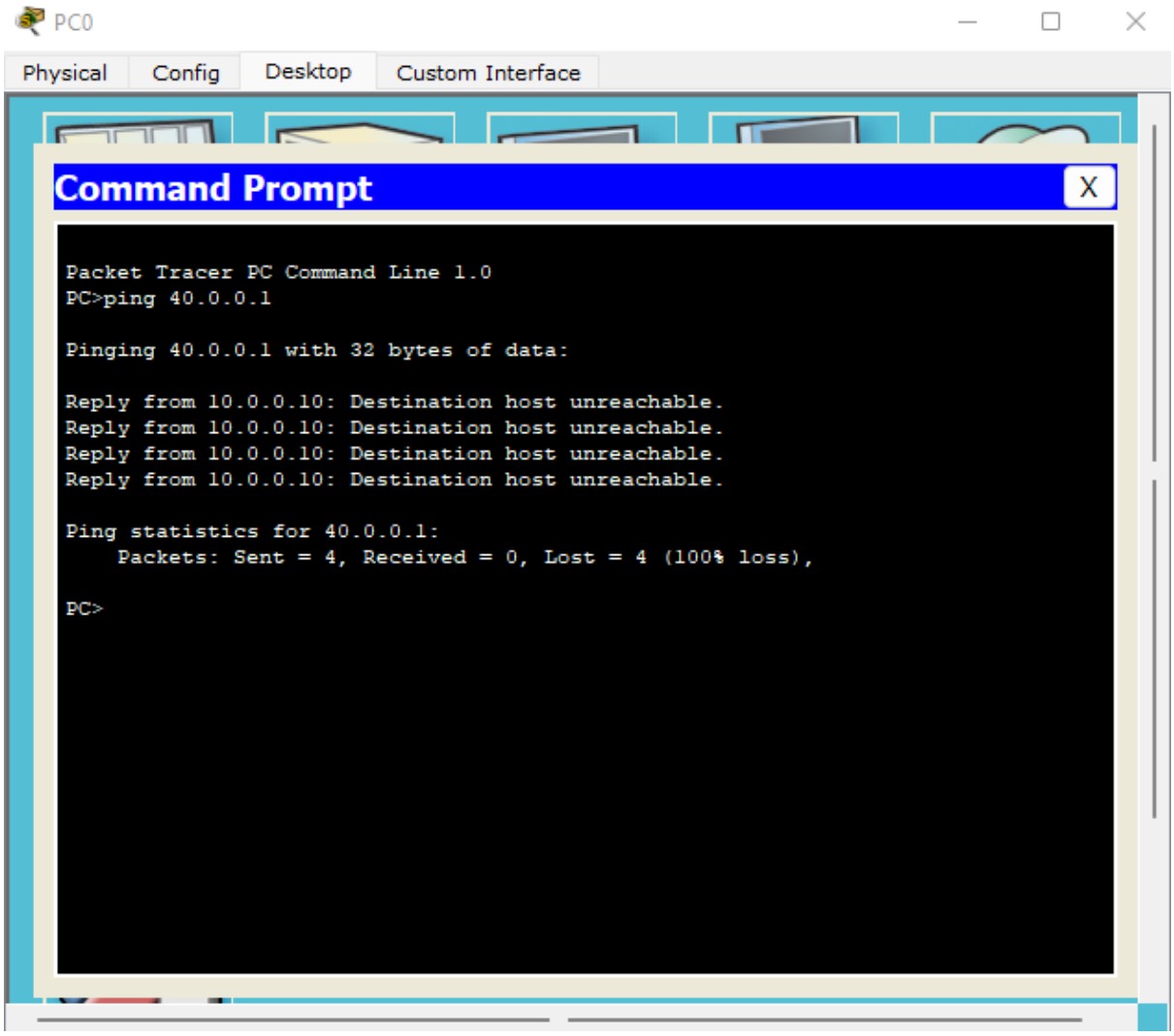
IOS Command Line Interface

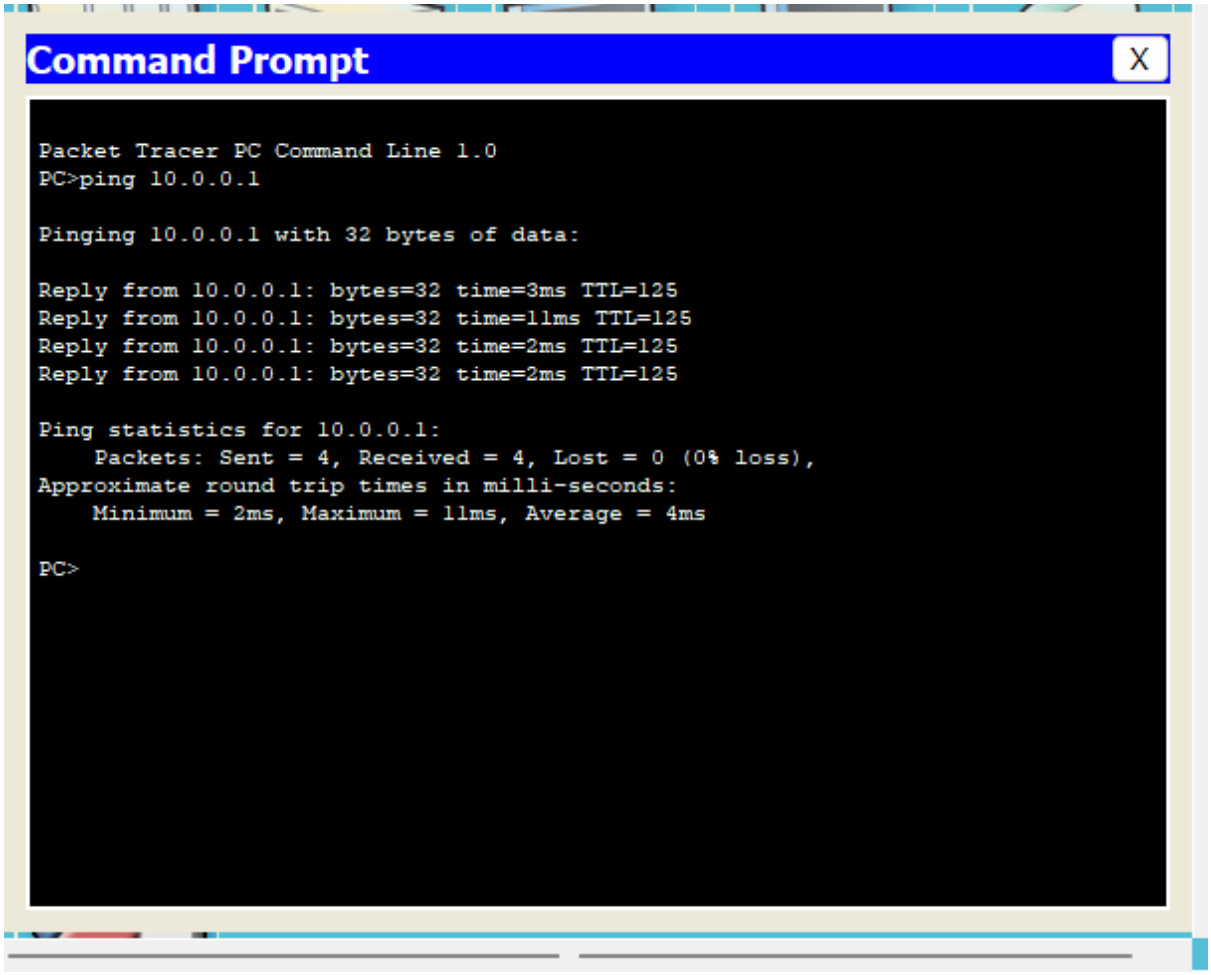
```
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
exit
Router(config)#interface serial 3/0
Router(config-if)#IP address 30.0.0.10 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#exit
Router(config)#show IP rout
                  ^
% Invalid input detected at '^' marker.

Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
show IP rout
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    20.0.0.0/8 is directly connected, Serial2/0
Router#
```


Router0
Physical
Config
CLI
IOS Command Line Interface
Router>config t
^
% Invalid input detected at '^' marker.
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#IP rout 30.0.0.0 255.0.0.0 20.0.0.20
Router(config)#IP rout 40.0.0.0 255.0.0.0 20.0.0.20
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
show IP rout
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, Serial2/0
S 30.0.0.0/8 [1/0] via 20.0.0.20
S 40.0.0.0/8 [1/0] via 20.0.0.20
Router#


Router1
Physical
Config
CLI
IOS Command Line Interface
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#IP rout 10.0.0.0 255.0.0.0 20.0.0.10
Router(config)#IP rout 40.0.0.0 255.0.0.0 30.0.0.20
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
show IP rout
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 20.0.0.10
C 20.0.0.0/8 is directly connected, Serial2/0
C 30.0.0.0/8 is directly connected, Serial3/0
S 40.0.0.0/8 [1/0] via 30.0.0.20
Router#
Copy
Paste

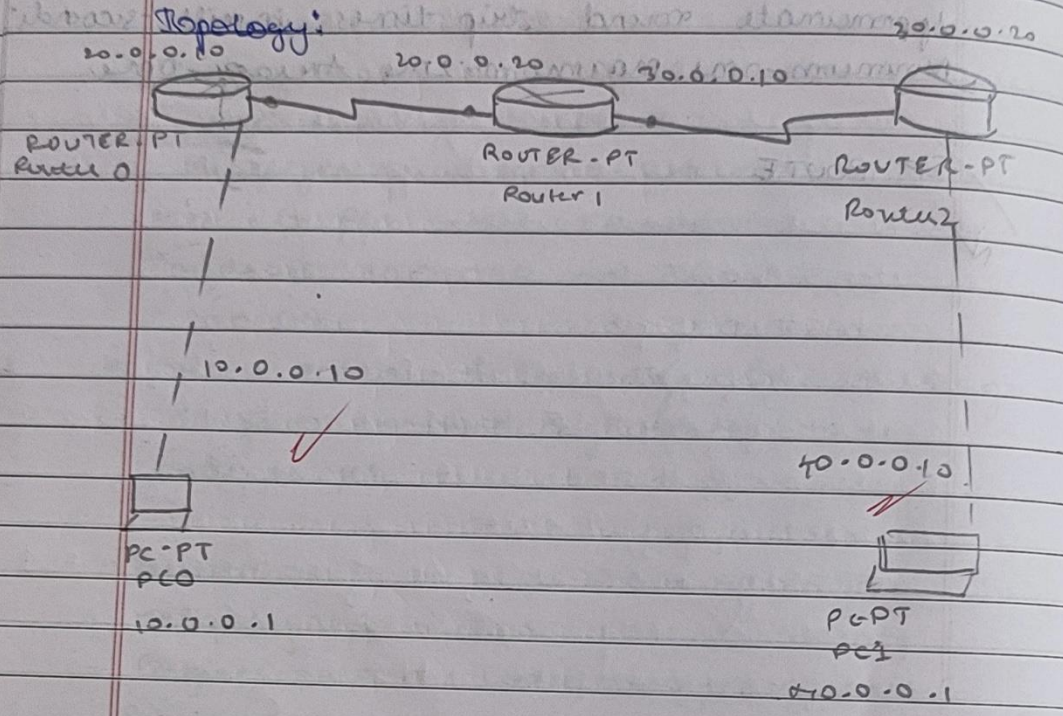

Router2
Physical
Config
CLI
IOS Command Line Interface
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#IP rout 10.0.0.0 255.0.0.0 30.0.0.10
Router(config)#IP rout 20.0.0.0 255.0.0.0 30.0.0.10
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
show IP rout
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 30.0.0.10
S 20.0.0.0/8 [1/0] via 30.0.0.10
C 30.0.0.0/8 is directly connected, Serial2/0
C 40.0.0.0/8 is directly connected, FastEthernet0/0
Router#
Copy
Paste


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
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.
Reply from 10.0.0.10: Destination host unreachable.
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>


Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.1
Pinging 10.0.0.1 with 32 bytes of data:
Reply from 10.0.0.1: bytes=32 time=3ms TTL=125
Reply from 10.0.0.1: bytes=32 time=11ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Ping statistics for 10.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 11ms, Average = 4ms
PC>

Aim: configure IP address to routers, Explore following messages: ping response, destination unreachable, request timed out, reply.

Topology:



Procedure:

1) Add three generic routers to the workspace, add 2 end devices to the workspace.
2) Table the IP address and gateway address of end devices and routers.
3) Select one end device PC0
   Config → fast ethernet → IP address set IP address as 10.0.0.1
   Config → global settings → gateway set gateway to 10.0.0.10.
4) Select another end device PC1 set IP address

as 10.0.0.1 and gateway as 10.0.0.10 using similar steps.

*) connect PC0 to router0 using copper cross over from fastethernet of PC0 to fastethernet 0/0.

*) connect router0 to router1 use using serial cable from serial 2/0 of router0 to serial 2/0 of router1.

*) connect router1 to router 2 using serial cable using serial 3/0 of router1 and serial 2/0 of router 2

*) another end device PC1 is connected to router using copper cross over connection from fastethernet of PC1 to fastethernet 0/0 of router 2.

*) Interface of routers are set by following commands: select a Router → CLI.

for Router 0 ; press no and enter.

Router>enable
Router#config t
Router(config)#interface fastethernet 0/0
Router(config)#IP address 10.0.0.10 255.0.0.0
Router(config if)# no shut
Router(config if)# exit
Router(config)# interface serial 2/0
Router(config if) # IP address 20.0.0.10 255.0.0.0
Router(config if) # no shut
Router(config)# exit
Show IP route
similarly for Router1 ; enter no and press enter
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
Router(config-if)#exit
Router(config-if)#interface serial2/0
Router(config-if)#IP address 30.0.0.10 255.0.0.0
Router(config-if)#no shut
Router(config-if)#exit
similarly for router 2
type no press enter, press enter
Rater > enable.
Router# config t
Router(config)# interface serial 2/0
Router(config-if)#IP address 30.0.0.20 255.0.0.0
Router(config-if)# no shut
Router(config-if)#exit
Router(config-if)# interface fastethernet 0/0
Router(config-if)#IP address 40.0.0.10 255.0.0.0
Router(config-if)# no shut
Router(config-if)#exit.
show IP rout

* now select PC0 and device.
desktop → command prompt
PC> ping 40.0.0.1
will be unable to ping before to configure routers :-
select Router0 → CLI
Router# config t
Router(config-if)# IP rout 30.0.0.0 255.0.0.0 20.0.0.20
Router(config-if)#IP rout 40.0.0.0 255.0.0.0 20.0.0.20
Router(config-if)#exit.
Show IP rout.

similarly for Router1
Router#config t
Router(config-if)#IP rout 10.0.0.0 255.0.0.0 20.0.0.10
Router(config-if)#IP rout 40.0.0.0 255.0.0.0 30.0.0.20
Router(config-if)#exit
show IP rout
similarly for Router2
Router# config t
Router(config - if)# IP rout 10.0.0.0 255.0.0.0 30.0.0.10
Router(config - if)# IP rout 20.0.0.0 255.0.0.0 30.0.0.10
Router(config - if)#exit
show IP root.

*) select end device PC1 → desktop → commandprompt PC> ping 10.0.0.1
the device will be pinged.

Observation:

*) a selected end device will not be able to ping the destination before the router is configured.
*) destination is pinged after the procedure is completed.

IP ROUTE TAF
for Router0
show IP rout
codes: C - connected, S - static, I - IGRP, R - RIP
M - Mobile, B - BGP
D - EIGRP, EX - EIGRT external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type1, N2 - OSPF NSSA external type2

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

from where PC?

PING OUTPUT

case1 (when it is unreachable)

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
Reply from 10.0.0.10: Destination host unreachable
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),

RESULT

PC > ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:
Reply from 10.0.0.1: bytes=32 time=3ms TTL=125
Reply from 10.0.0.1: bytes=32 time=1ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Ping statistics for 10.0.0.1:
Packets: sent = 4, Received = 4, Lost = 0 (0% Loss),
Approximate round trip times in milli-seconds:

Bafna Gold

Date: Page:

Minimum = 2ms, Maximum = 11ms, Average = 4ms

10/10

23/6/23