

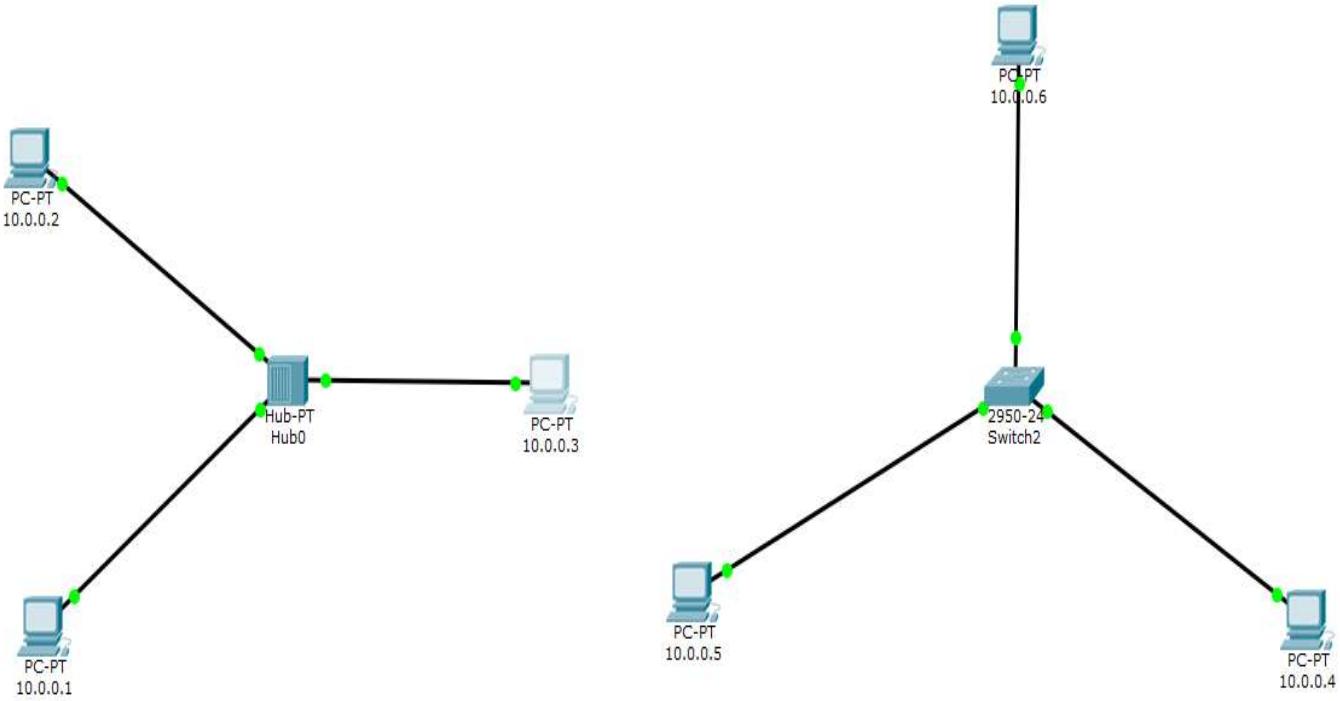
COMPUTER NETWORKS LAB

USN: 1BM21CS179

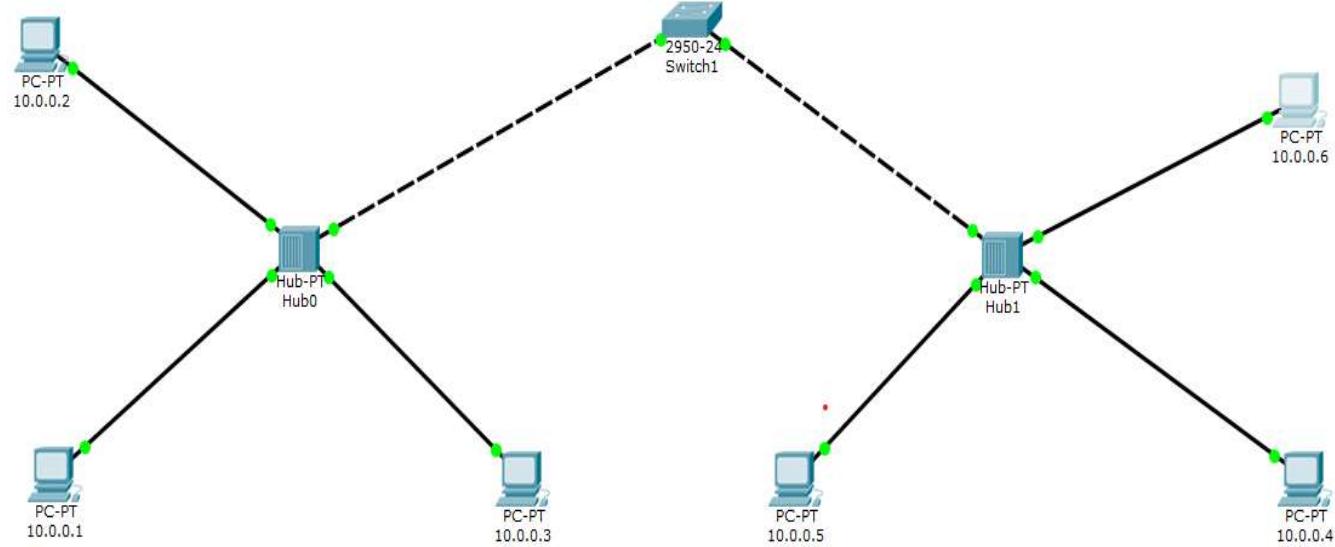
WEEK 1: (16-6-2023)

Create a topology consisting of 3 or devices connected with the help of a hub and switch. Simulate sending a simple PDU from source to destination.

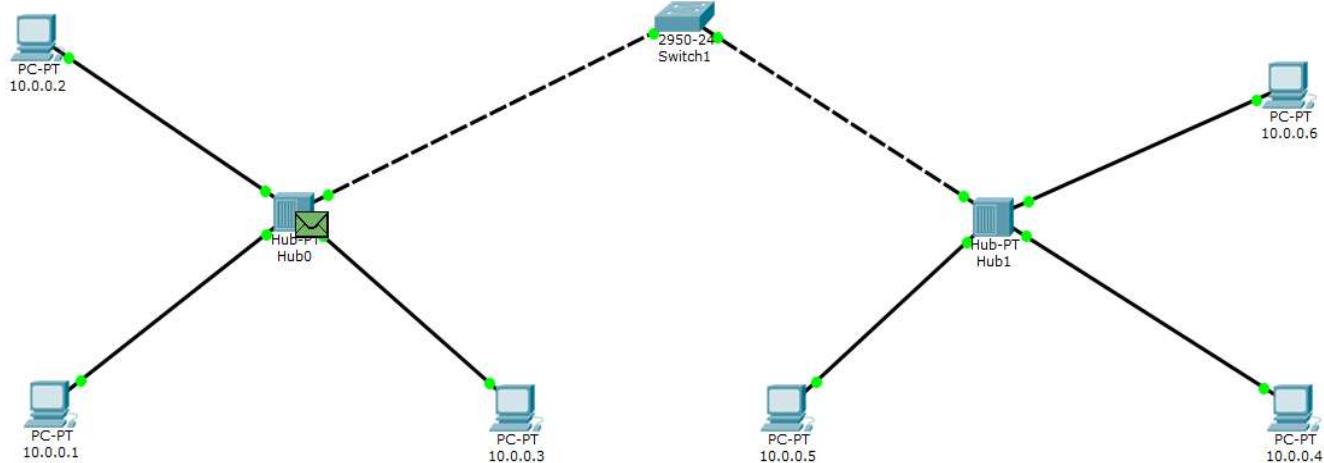
Topology-1: (Hub and Switch)

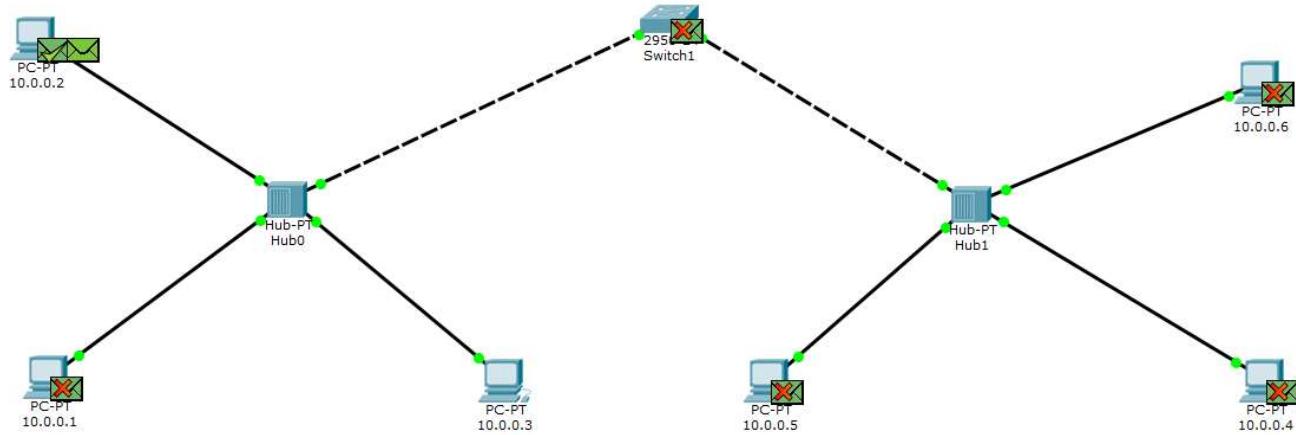


Topology-2 (Hybrid Topology):



Output:





Ping message:

Physical Config Desktop Custom Interface

Command Prompt

```

Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=4ms TTL=128
Reply from 10.0.0.3: bytes=32 time=4ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 4ms, Average = 2ms

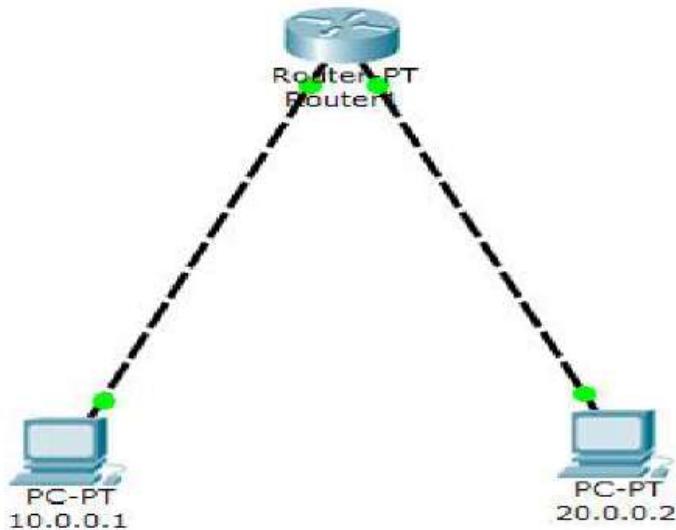
PC>

```

WEEK 2: (23-6-2023)

Configure IP address to routers in packet tracer. Explore the following messages: ping responses, destination unreachable, request timed out, reply.

Topology-1:



Configuration Commands in CLI of Router:

Physical Config CLI

IOS Command Line Interface

```
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 ---

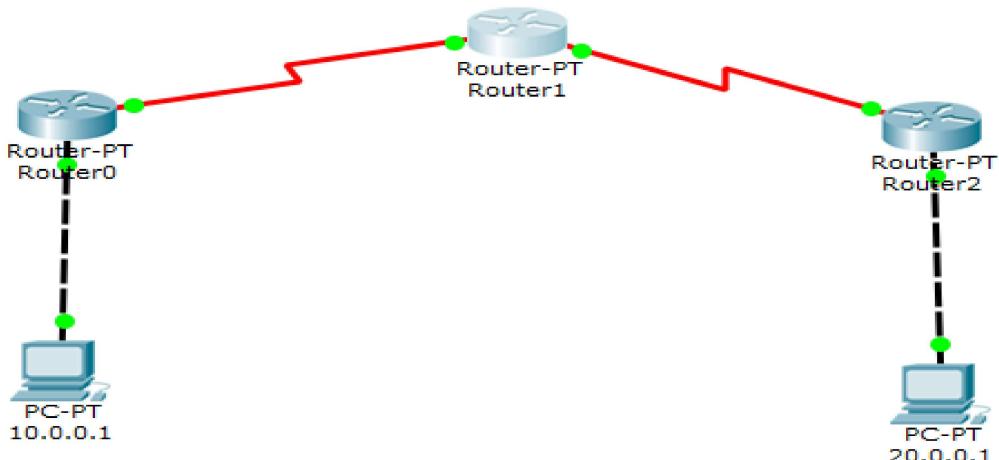
Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Fa0/0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#no shutdown

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
```

Topology-2:



For Router 1:

```
--- System Configuration Dialog ---  
Continue with configuration dialog? [yes/no]: no  
  
Press RETURN to get started!  
  
Router>enable  
Router#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#interface Se2/0  
Router(config-if)#  
Router(config-if)#ip address 30.0.0.2 255.0.0.0  
Router(config-if)#no shutdown  
  
Router(config-if)#  
%LINK-5-CHANGED: Interface Serial2/0, changed state to up  
  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up  
  
Router(config-if)#exit  
Router(config)#interface Se3/0  
Router(config-if)#ip address 40.0.0.2 255.0.0.0  
Router(config-if)#no shutdown  
  
Router(config-if)#  
%LINK-5-CHANGED: Interface Serial3/0, changed state to up  
exit  
Router(config)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
```

For Router 2:

```
--- System Configuration Dialog ---  
Continue with configuration dialog? [yes/no]: no  
  
Press RETURN to get started!  
  
Router>enable  
Router#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#interface FastEthernet0/0  
Router(config-if)#ip address 10.0.0.2 255.0.0.0  
Router(config-if)#no shutdown  
  
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)#
```

Output:

The screenshot shows a Cisco Packet Tracer interface with a "Command Prompt" window open. The window title is "Command Prompt". The command line shows several ping attempts from 20.1.0.0 to 20.1.1.0, 10.1.1.0, and 10.1.1.1, all resulting in destination host unreachable errors due to a loopback configuration.

```
Packet Tracer PC Command Line 1.0
PC>ping 20.1.0.0

Pinging 20.1.0.0 with 32 bytes of data:

Reply from 10.1.1.0: Destination host unreachable.

Ping statistics for 20.1.0.0:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 20.1.0.0

Pinging 20.1.0.0 with 32 bytes of data:

Reply from 10.1.1.0: Destination host unreachable.

Ping statistics for 20.1.0.0:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 10.1.1.0

Pinging 10.1.1.0 with 32 bytes of data:
```

10.1.0.0

Physical Config Desktop Custom Interface

Command Prompt X

```
PC>ping 10.1.1.0

Pinging 10.1.1.0 with 32 bytes of data:

Reply from 10.1.1.0: bytes=32 time=0ms TTL=255

Ping statistics for 10.1.1.0:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 30.1.1.0

Pinging 30.1.1.0 with 32 bytes of data:

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

Ping statistics for 30.1.1.0:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 30.1.0.0
```

10.1.0.0

Physical Config Desktop Custom Interface

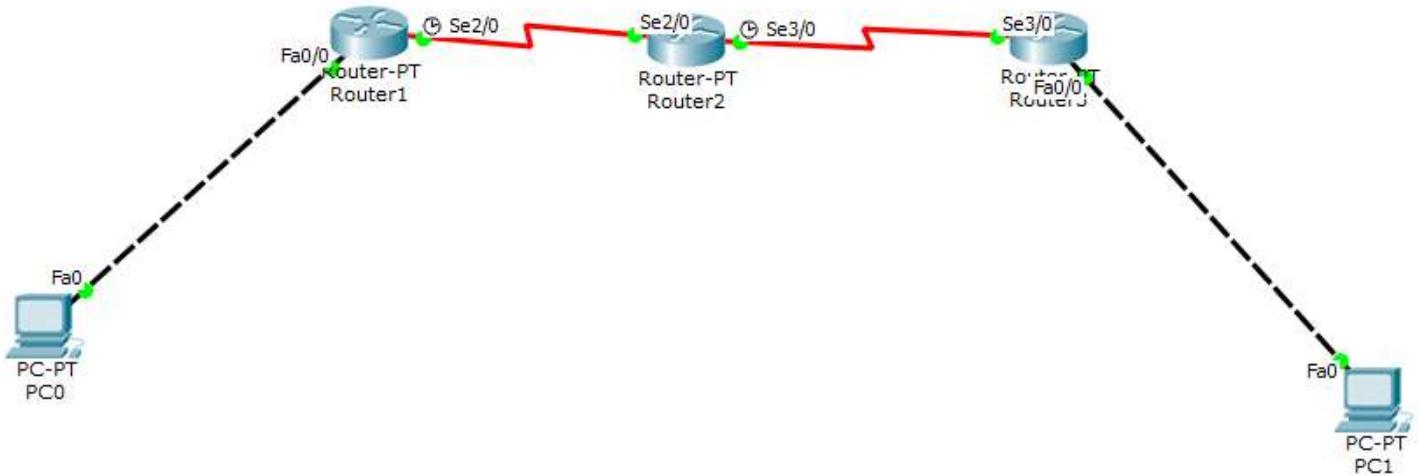
Command Prompt

```
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),  
PC>ping 30.1.0.0  
  
Pinging 30.1.0.0 with 32 bytes of data:  
  
Reply from 30.1.0.0: bytes=32 time=0ms TTL=255  
  
Ping statistics for 30.1.0.0:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 0ms, Average = 0ms  
  
PC>ping 40.1.0.0  
  
Pinging 40.1.0.0 with 32 bytes of data:  
  
Reply from 10.1.1.0: Destination host unreachable.  
Request timed out.  
Reply from 10.1.1.0: Destination host unreachable.  
Reply from 10.1.1.0: Destination host unreachable.  
  
Ping statistics for 40.1.0.0:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),  
PC>
```

WEEK-3: (30-06-23)

Configure default route,static route to the Router.

TOPOLOGY:



For static routing of (Router 1):

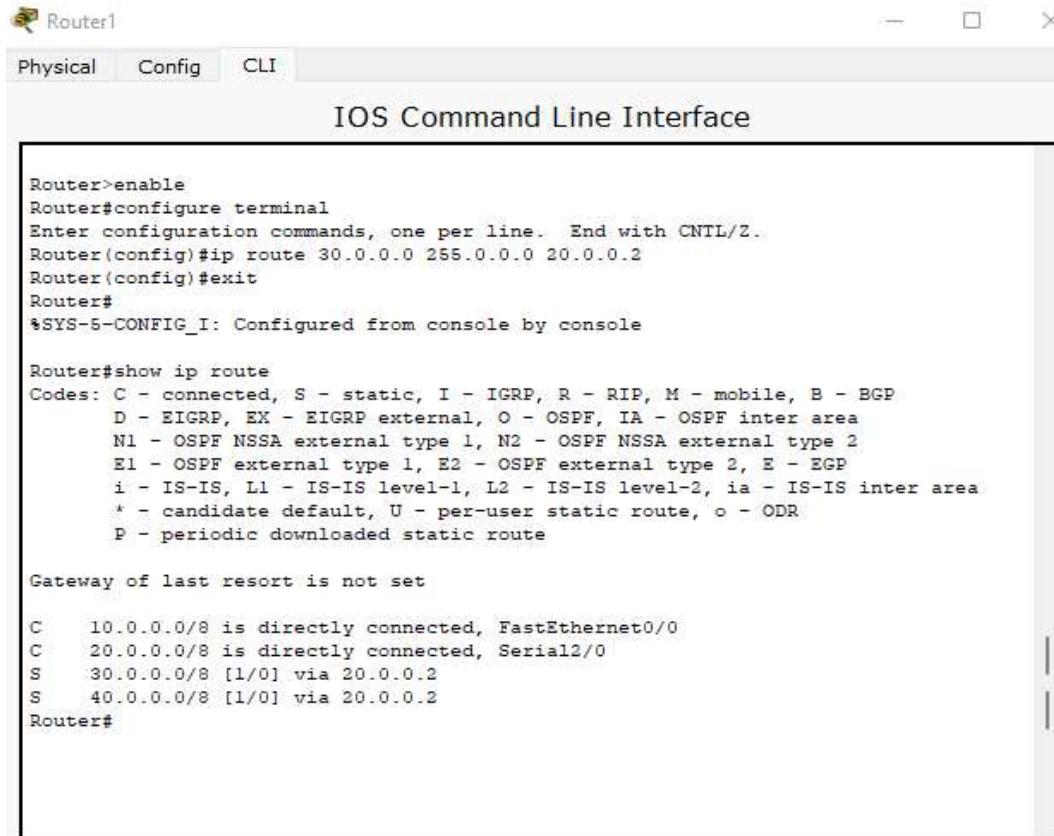
```
Router>enable  
Router #configure terminal  
Router(config)#ip route 30.0.0.0 255.0.0.0 20.0.0.2  
Router(config)#ip route 40.0.0.0 255.0.0.0 20.0.0.2  
Router(config)#exit
```

For default routing of (Router 1):

```
Router>enable  
Router #configure terminal  
Router(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.2  
Router(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.2  
Router(config)#exit
```

After static routing of all 3 routers:

Router 1:



The image shows a screenshot of the Cisco IOS Command Line Interface (CLI) running on Router1. The window title is "Router1". Below the title bar are three tabs: "Physical", "Config", and "CLI", with "CLI" being the active tab. The main area of the window displays the following command-line session:

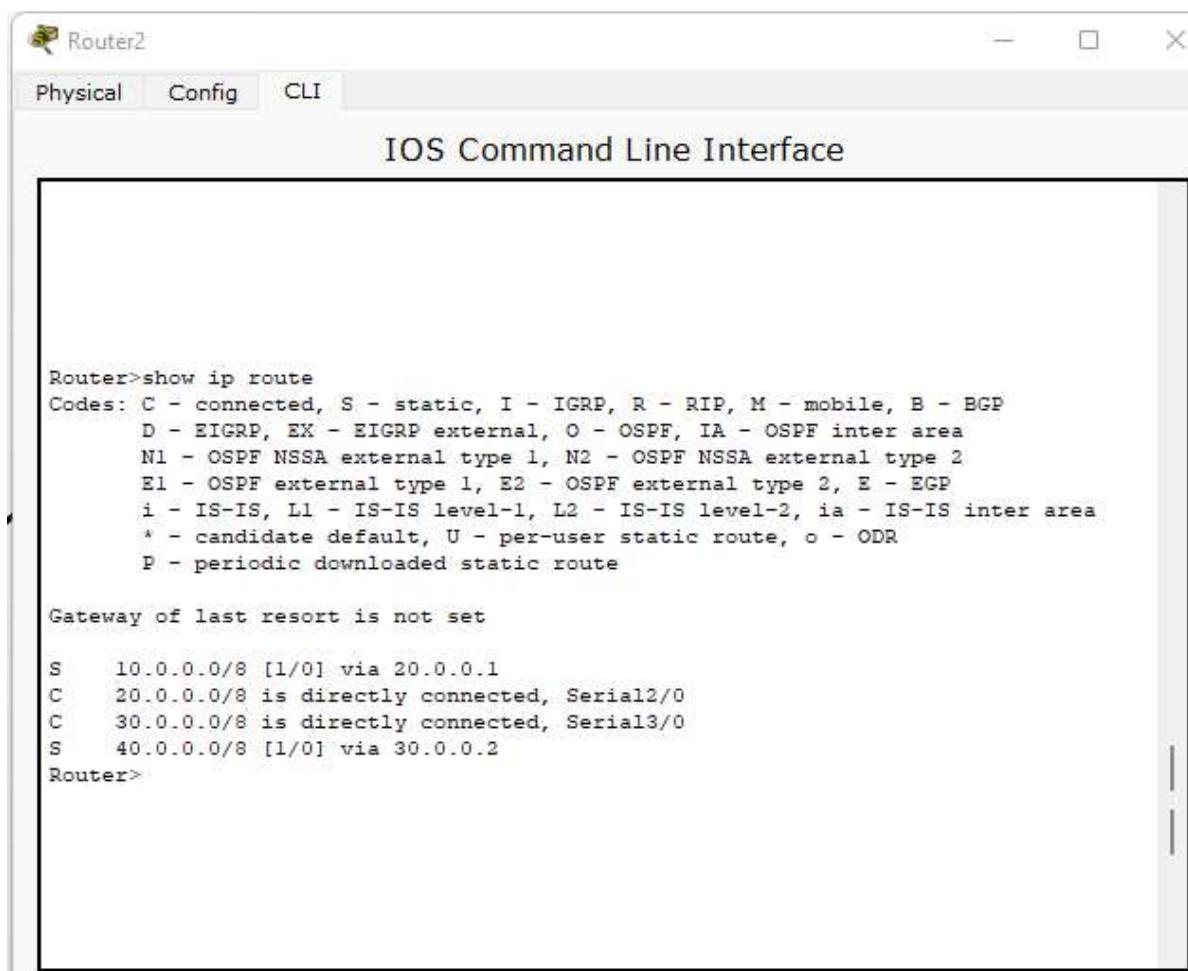
```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 30.0.0.0 255.0.0.0 20.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

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, Serial2/0
S    30.0.0.0/8 [1/0] via 20.0.0.2
S    40.0.0.0/8 [1/0] via 20.0.0.2
Router#
```

Router 2:



The image shows a screenshot of a computer interface titled "Router2". At the top, there are three tabs: "Physical", "Config", and "CLI". The "CLI" tab is selected, and the title bar displays "IOS Command Line Interface". The main window contains the output of the command "show ip route".

```
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 20.0.0.1
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 30.0.0.2
Router>
```

Router 3:



Router3

Physical Config CLI

IOS Command Line Interface

```
S 10.0.0.0/8 [1/0] via 30.0.0.1
C 30.0.0.0/8 is directly connected, Serial3/0
C 40.0.0.0/8 is directly connected, FastEthernet0/0
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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, Serial3/0
C 40.0.0.0/8 is directly connected, FastEthernet0/0
Router#
```

Ping message:

```
PC>ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

Reply from 20.0.0.2: bytes=32 time=1ms TTL=254
Reply from 20.0.0.2: bytes=32 time=5ms TTL=254
Reply from 20.0.0.2: bytes=32 time=1ms TTL=254
Reply from 20.0.0.2: bytes=32 time=5ms TTL=254

Ping statistics for 20.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 5ms, Average = 3ms

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=9ms 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>ping 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data:

Reply from 40.0.0.2: bytes=32 time=9ms TTL=253
Reply from 40.0.0.2: bytes=32 time=9ms TTL=253
Reply from 40.0.0.2: bytes=32 time=9ms TTL=253
Reply from 40.0.0.2: bytes=32 time=7ms TTL=253

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 7ms, Maximum = 9ms, Average = 8ms

PC>ping 30.0.0.1

Pinging 30.0.0.1 with 32 bytes of data:

Reply from 30.0.0.1: bytes=32 time=5ms TTL=254
Reply from 30.0.0.1: bytes=32 time=4ms TTL=254
Reply from 30.0.0.1: bytes=32 time=4ms TTL=254
Reply from 30.0.0.1: bytes=32 time=2ms TTL=254

Ping statistics for 30.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 5ms, Average = 3ms
```