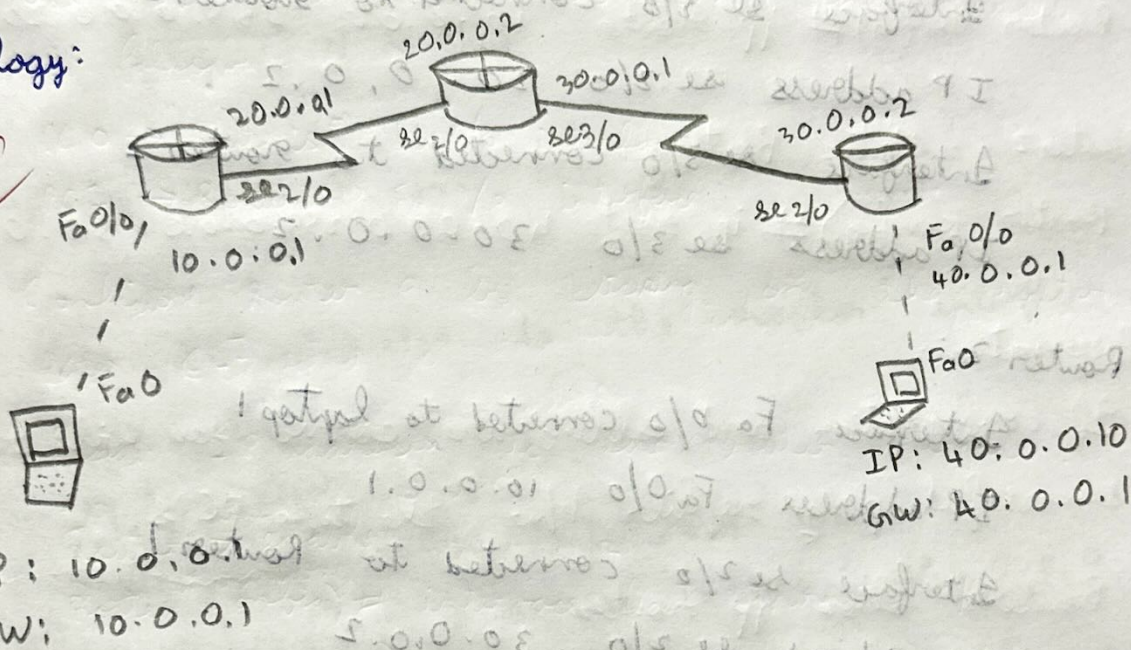23-Oct-2024

Lab 3 : Configure default route, static route to the Router

Static routing and Default routing demonstrated, using 3 routers

Aim: Demonstrate static and Default routing using 3 routers

Topology:

Laptop 0: Connected to router 0's interface
Fa 0/0 using a cross cross over cable
  IP: 10.0.0.10
  GW: 10.0.0.1

Laptop 2: Connected to router 2's interface
Fa 0/0 using a cross over cable
  IP: 40.0.0.10
  GW: 40.0.0.1

Router 0:
    Interface Fa0/0 connected to Laptop 0
    IP address Fa0/0 10.0.0.1
    Interface se 2/0 connected to router 1
    IP address se 2/0 : 20.0.0.1

Router 1:
    Interface se 2/0 connected to router 0
    IP address se 2/0 20.0.0.2
    Interface se 3/0 connected to router 2
    IP address se 3/0 30.0.0.2

Router 2:
    Interface Fa0/0 connected to laptop 1
    IP address Fa0/0 10.0.0.1
    Interface se 2/0 connected to Router 1
    IP address se 2/0 30.0.0.2

Procedure
open Cisco packet trace and drag the following components

Routers: Place 3 routers in the middle.
   PC: Place 2 PC's on either side of the router

Use crossover cables to join the following

PC0 → Router 2 Fo0/0 interface
PC1 → Router 2 Fa0/0 interface

• Configure Router 0 by clicking on the router and enter CLI
Assign IP addresses to the router interfaces:

Router > enable
Router # configure terminal
Router # (config) # interface serial 2/0
Router (config-if) # ip address 20.0.0.2 255.0.0.0
Router (config-if) # no shut
Router (config) # interface serial 3/0
Router (config-if) # ip address 30.0.0.1 255.0.0.0
Router (config-if) # no shut

• Configure Router 1 in the following manner
enter CLI
Assign IP addresses to the router interface

Router > enable
Router # configure terminal
Router (config) # interface faitethernet 0/0
Router (config-if) # ip address 10.0.0.1 255.0.0.0
Router (config-if) # no shut

Router (config) # interface serial 2/0
Router (config-if) # ip address 20.0.0.1 255.0.0.0
Router (config-if) # no shut

• Configure the two PC's

PC0:
click on PC0 and set IP address to 10.0.0.10, and subnet mask to 255.0.0.0 and default gateway 10.0.0.1

PC1:
click on PC1 and set up IP address to 40.0.0.10 and subnet mask to 255.0.0.0 and default gateway 40.0.0.1

Router 1 - Default Routing:

Router (config) # ip route 0.0.0.0 0.0.0.0 20.0.0.2

Router 2 Default Routing:

Router (config) # ip route 0.0.0.0 0.0.0.0 30.0.0.2

Router 1 - static Routing:

Router (config) # ip route 10.0.0.0 255.0.0.0 20.0.0.1

Router 2 - static Routing

Router (config) # ip route 40.0.0.0 255.0.0.0 30.0.0.2

Observation:

- If configuration and cabling are correct you will recieve successful ping replies b/w the two PC's

- Router's show ip routes
  Gateway of last report is 20.0.0.2 to network 0.0.0.0

- The ping results are as follows:

  PC > ping 40.0.0.10

  Pinging 40.0.0.10 with 32 bytes of data

  Reply from 40.0.0.10 : bytes =32 time = 6ms TTL =125
  Reply from 40.0.0.10 bytes =32 time= 6 ms TTL=125
  Reply from 40.0.0.10 bytes=32 time = 10 ms TTL=125
  Reply from 40.0.0.10 bytes =32 time = 9 ms TTL=125

Ping statistics from 40.0.0.10

Packets: sent = 4, received = 4, Lost = 0

(0% loss)

Approximate round trip time is milliseconds:

Minimum = 6ms, Maximum = 10ms, Average = 7ms

Router > show ip route [Router 1]
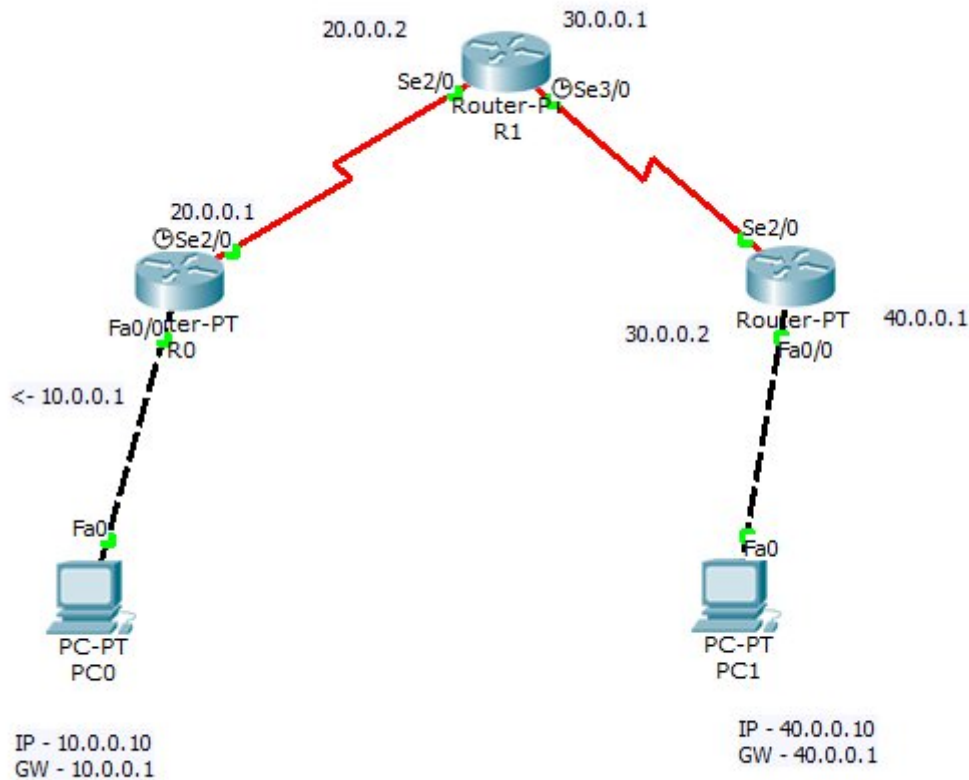
S   10.0.0.0/8 [1/0] via 20.0.0.1

C   20.0.0.0/8 is directly connected, serial 2/0

C   30.0.0.0/8 is directly connected, serial 3/6

S   40.0.0.0/8 [1/0] via 30.0.0.2

3) Configure default route, static route to the Router


```
R1                                                    —    □    ✕

Physical   Config   CLI

                  IOS Command Line Interface

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    20.0.0.0/8 is directly connected, Serial2/0
C    30.0.0.0/8 is directly connected, Serial3/0
Router>config terminal;

                                          Copy          Paste
```
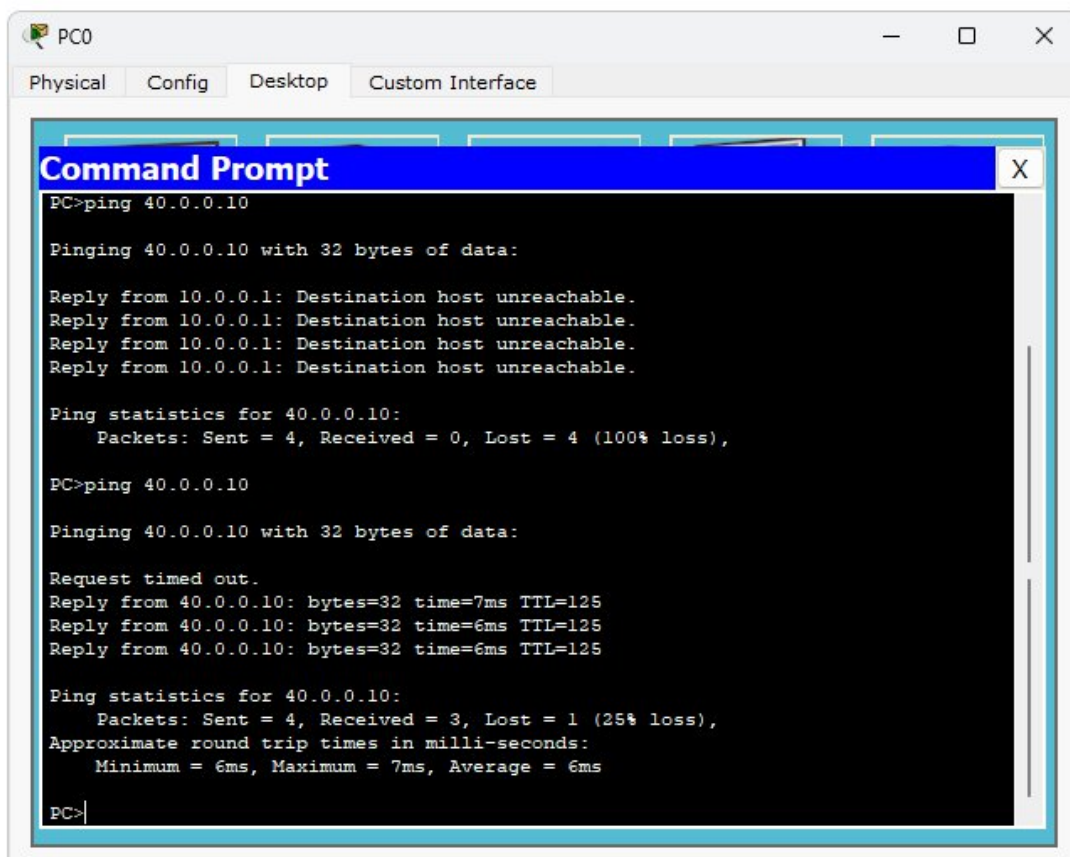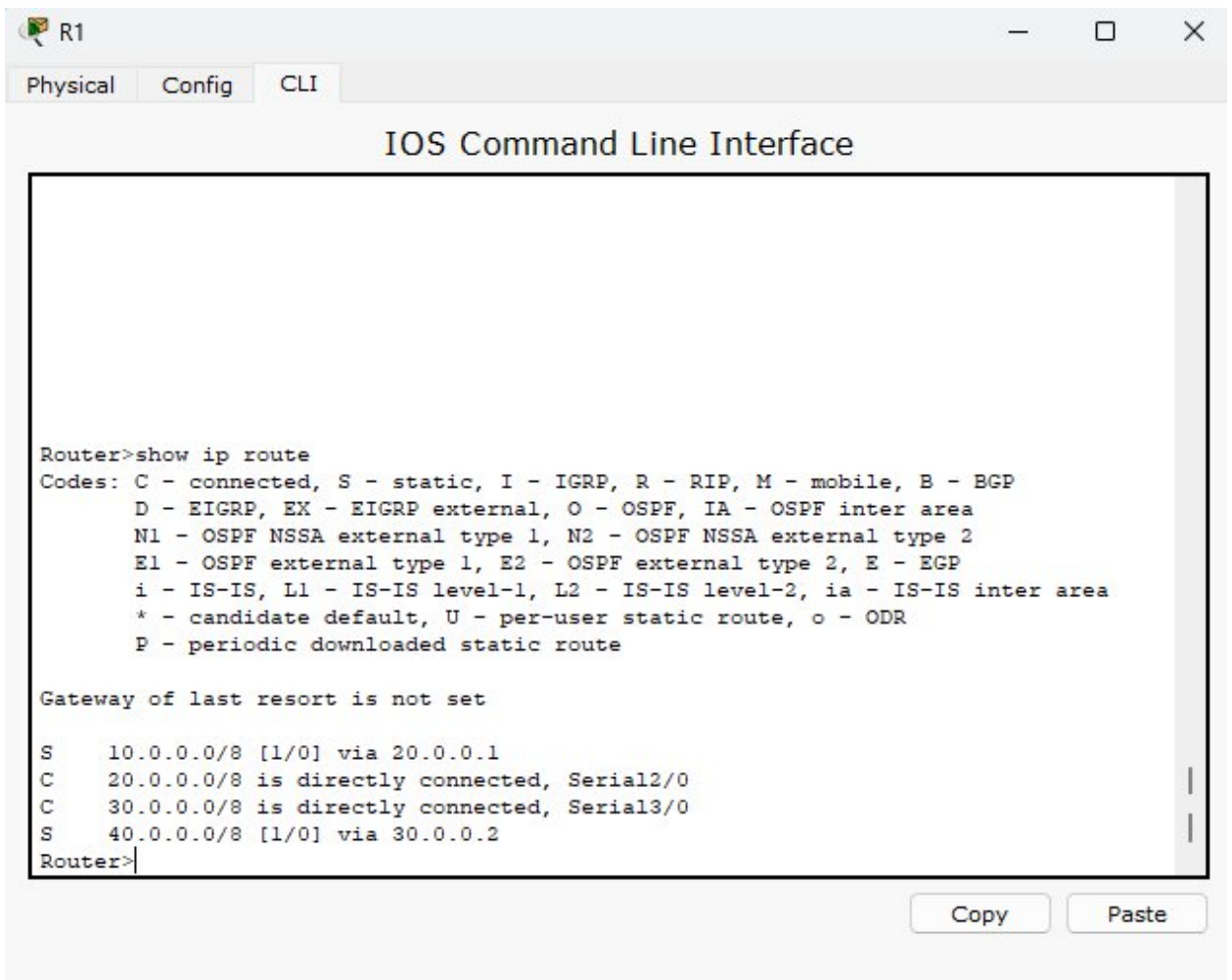
R1

Physical   Config   **CLI**

IOS Command Line Interface

```
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>
```

Copy   Paste

PC0

Physical   Config   Desktop   Custom Interface

Command Prompt   X

```
PC>ping 40.0.0.10

Pinging 40.0.0.10 with 32 bytes of data:

Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.

Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 40.0.0.10

Pinging 40.0.0.10 with 32 bytes of data:

Request timed out.
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125
Reply from 40.0.0.10: bytes=32 time=6ms TTL=125
Reply from 40.0.0.10: bytes=32 time=6ms TTL=125

Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 6ms, Maximum = 7ms, Average = 6ms

PC>
```

```
PC>ping 40.0.0.10

Pinging 40.0.0.10 with 32 bytes of data:

Reply from 40.0.0.10: bytes=32 time=8ms TTL=125
Reply from 40.0.0.10: bytes=32 time=8ms TTL=125
Reply from 40.0.0.10: bytes=32 time=9ms TTL=125
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125

Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 7ms, Maximum = 9ms, Average = 8ms

PC>
```