Computer Networks

Week 3 16/10/24

Routers Configuration and messages

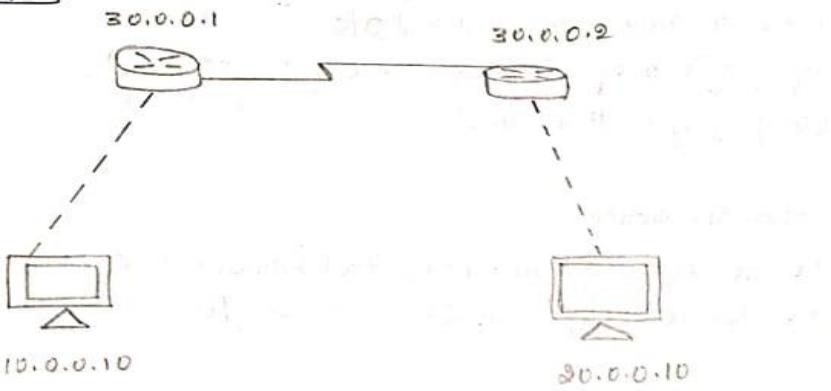
Configure IP address to routers in packet tracer.Explore the following messages : ping responses,destination unreachable, request timed out and reply.

Exp.: 2b LAB-3 : 16/10/24

Q] Configure IP address to routers on packet tracer. Explore: Ping responses, destination unreachable, request timed out & reply.

Aim: To connect two routers and observe the responses.

Topology :-



Procedure :

1) Select two generic routers - PT from device type selection and place it on workbench
2) Select two end devices (PC's) & and place on workbench.
3) Assign IP addresses 10.0.0.10 to 1st PC and 20.0.0.10 to other and set gateway 10.0.0.1 and 20.0.0.1 respectively.
4) Connect PC in 10.0.0.1 IP to router 30.0.0.1 & 20.0.0.1 to 30.0.0.2 router using copper cross over cable
5) Connect 2 routers using Serial DCE cable

Router (IP 30.0.0.1) CLI:

Router > enable
Router # config terminal
Router (config) # interface fastethernet 0/0
Router (config-if) # ip address 10.0.0.1 255.0.0.0
Router (config-if) # no shutdown.

exit

Router (config) # interface serial 2/0
Router (config-if) # ip address 30.0.0.1 255.0.0.0
Router (config-if) # no shut

Router # show ip route

10.0.0.0/8 is directly connected, Fast ethernet 0/0
30.0.0.0/8 is directly connected, Serial 2/0

Ping:

ping 20.0.0.10
Packets: Sent = 4, Received = 0, Lost = 4

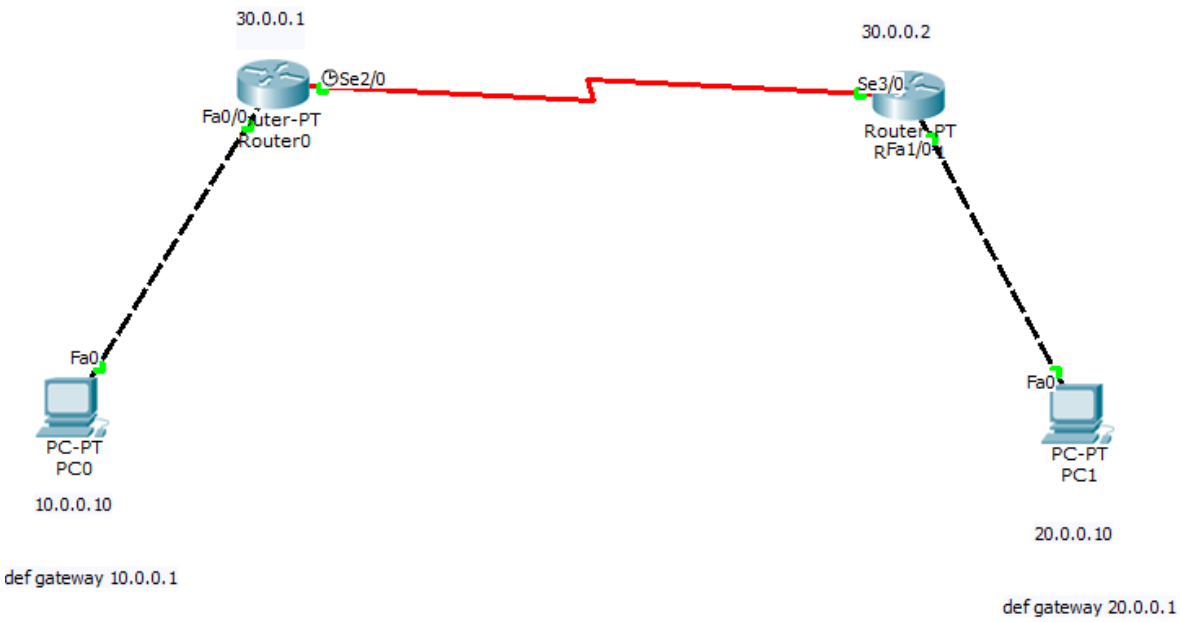
ping 30.0.0.1
Packets: Sent = 4 Received = 4, lost = 0

ping 30.0.0.2
Packets: Sent = 4 Received = 0, Lost = 4

Observation:

two routers are successfully connected with nodes through proper cable.
Both routers configured.
Routers not able to communicate with there nodes.

Topology :

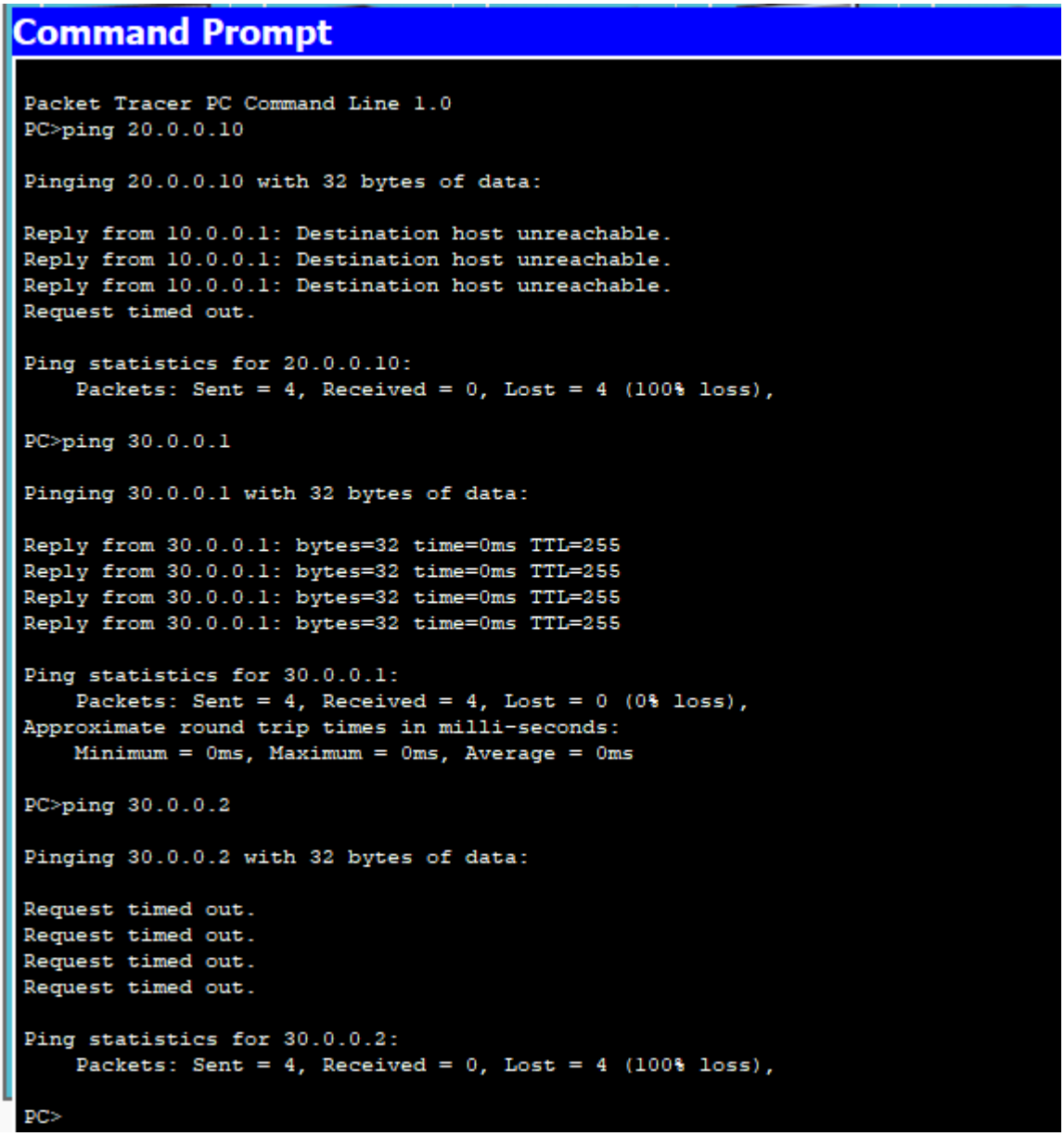



```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - 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    30.0.0.0/8 is directly connected, Serial2/0
Router#
```

Copy Paste


Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.10
Pinging 20.0.0.10 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.
Request timed out.
Ping statistics for 20.0.0.10:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
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=0ms TTL=255
Reply from 30.0.0.1: bytes=32 time=0ms TTL=255
Reply from 30.0.0.1: bytes=32 time=0ms TTL=255
Reply from 30.0.0.1: bytes=32 time=0ms TTL=255
Ping statistics for 30.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>ping 30.0.0.2
Pinging 30.0.0.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 30.0.0.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>

Configure default route,static route to router.

Experiment 3a : 16/10/24

3] Configure default route, static route to router.

→ Same as previous experiment.

Procedure :

CLI :

Router(config)# ip route 20.0.0.0 255.0.0.0 30.0.0.2

Router # show ip route

10.0.0.0/8 is directly connected, FastEthernet 0/0

20.0.0.0/8 [1/0] via 30.0.0.2

30.0.0.0/8 is directly connected.

Ping :

ping 20.0.0.10

Packets : Sent = 4, Received = 4, lost = 0

ping 30.0.0.1

packets : Sent = 4, Received = 4, lost = 0

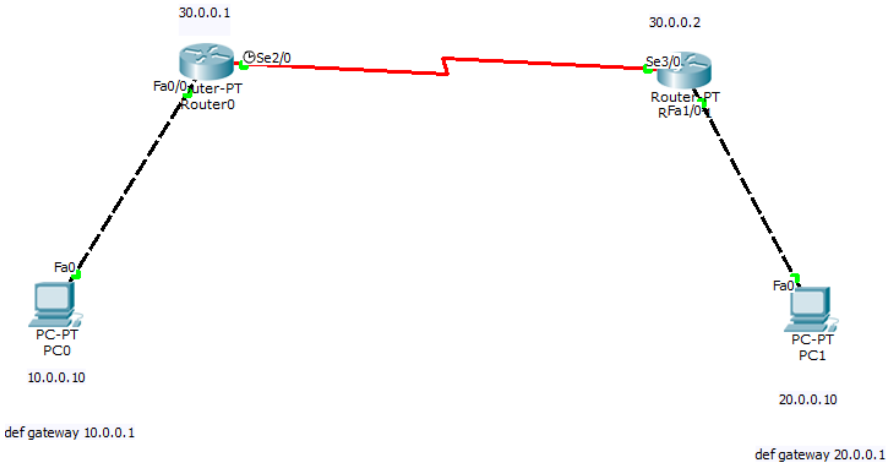
ping 30.0.0.2

packets : Sent = 4, Received = 4, lost = 0

Observation :

Routers can successfully communicate with their nodes.

Topology :




```
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 10.0.0.0 255.0.0.0 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
C    20.0.0.0/8 is directly connected, FastEthernet1/0
C    30.0.0.0/8 is directly connected, Serial3/0
Router#
```

```
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
S    20.0.0.0/8 [1/0] via 30.0.0.2
C    30.0.0.0/8 is directly connected, Serial2/0
Router#
```

```
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=0ms TTL=255
Reply from 30.0.0.1: bytes=32 time=0ms TTL=255
Reply from 30.0.0.1: bytes=32 time=0ms TTL=255
Reply from 30.0.0.1: bytes=32 time=0ms TTL=255

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

PC>30.0.0.2
Invalid Command.

PC>ping 30.0.0.2

Pinging 30.0.0.2 with 32 bytes of data:

Reply from 30.0.0.2: bytes=32 time=8ms TTL=254
Reply from 30.0.0.2: bytes=32 time=5ms TTL=254
Reply from 30.0.0.2: bytes=32 time=3ms TTL=254
Reply from 30.0.0.2: bytes=32 time=3ms TTL=254

Ping statistics for 30.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 8ms, Average = 4ms

PC>ping 20.0.0.10

Pinging 20.0.0.10 with 32 bytes of data:

Reply from 20.0.0.10: bytes=32 time=6ms TTL=126
Reply from 20.0.0.10: bytes=32 time=3ms TTL=126
Reply from 20.0.0.10: bytes=32 time=4ms TTL=126
Reply from 20.0.0.10: bytes=32 time=3ms TTL=126

Ping statistics for 20.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 6ms, Average = 4ms
```