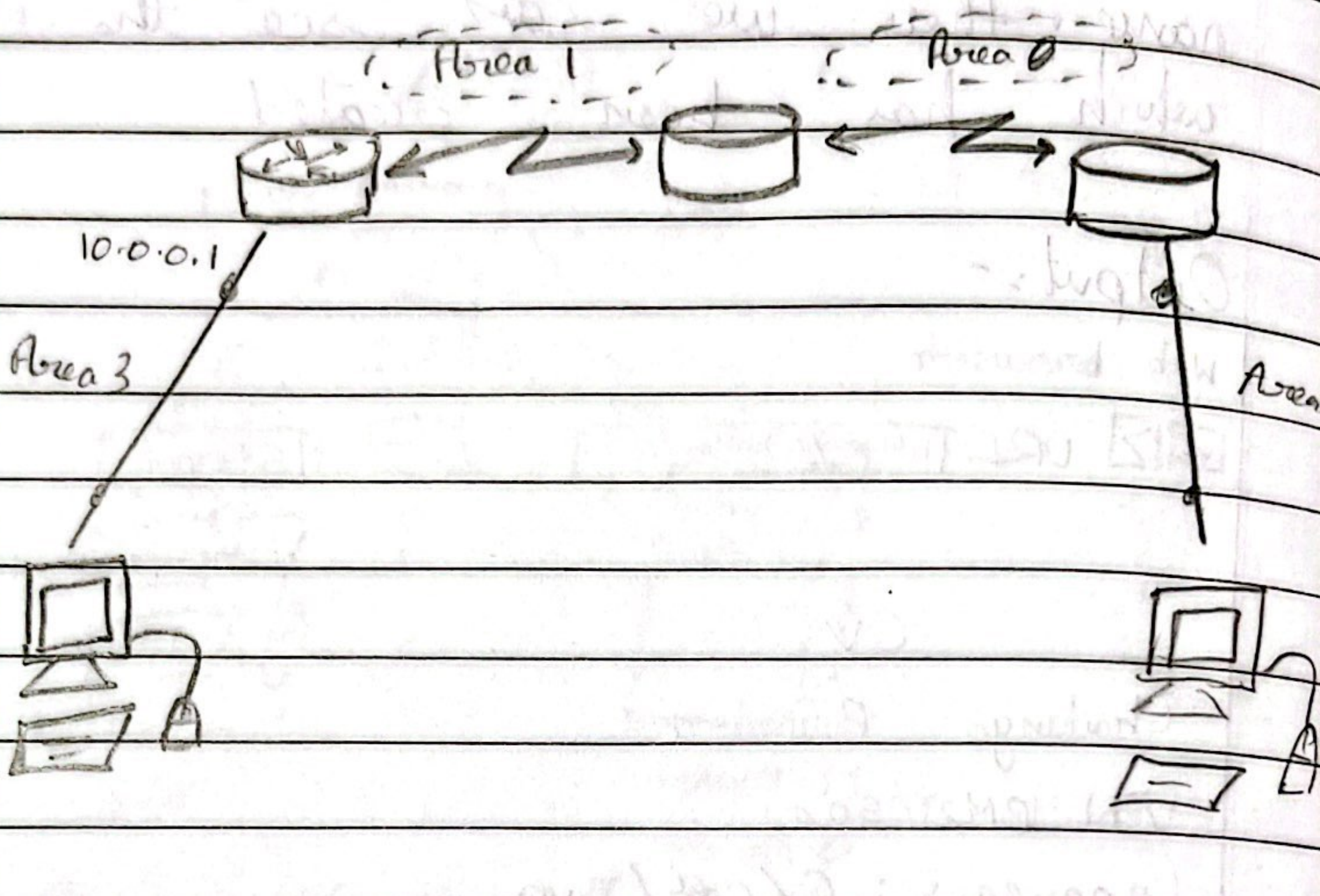
Topology



Procedure

1) Configure the PC with IP address and and gateway according to the topology
2) Configure the router accordingly with the IP addresses given
3) Encapsulation PPP and clock rate need to be set as done in RIP protocol experiment

In Router R1

```
R1 (config)# router
R1 (config-if)# interface loopback 0
R1 (config-if) # ip add 172.16.1.252 255.255.255.0
R1 (config-if) # no shutdown
```

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~~R2(config-if)# router~~
In Router R2
R2(config)# router ospf 1
R2 (config-router)# router-id 2.2.2.2
R2 (config-router)# network 20.0.0.0 0.255.255.255
area 1
R2(config-router)# network 30.0.0.0 0.255.255.255
area 0

In router R3
R3 (config)# router ostp 1
R3 (config-router)# router-id 3.3.3.3
R3 (config-router)# network 30.0.0.0 0.255.255.255
area 0
R3(config-router)# ~~area~~ network 40.0.0.0 0.255.255.255
area 2
R3(config-router)# exit

Set interface loopback

R1(config-if)# interface loopback 0
R1(config-if)# ip address 172.16.1.252
255.255.255.0
R1(config-if)# no shutdown

R2(config-if)# interface loopback 0
R2(config-if)# ip address 172.16.1.252
255.255.255.0
R2(config-if)# no shutdown

R3(config-if)# interface loopback 0
R3(config-if)# ip address 172.16.1E.254
255.255.255.0

R3(config-if)# no shutdown

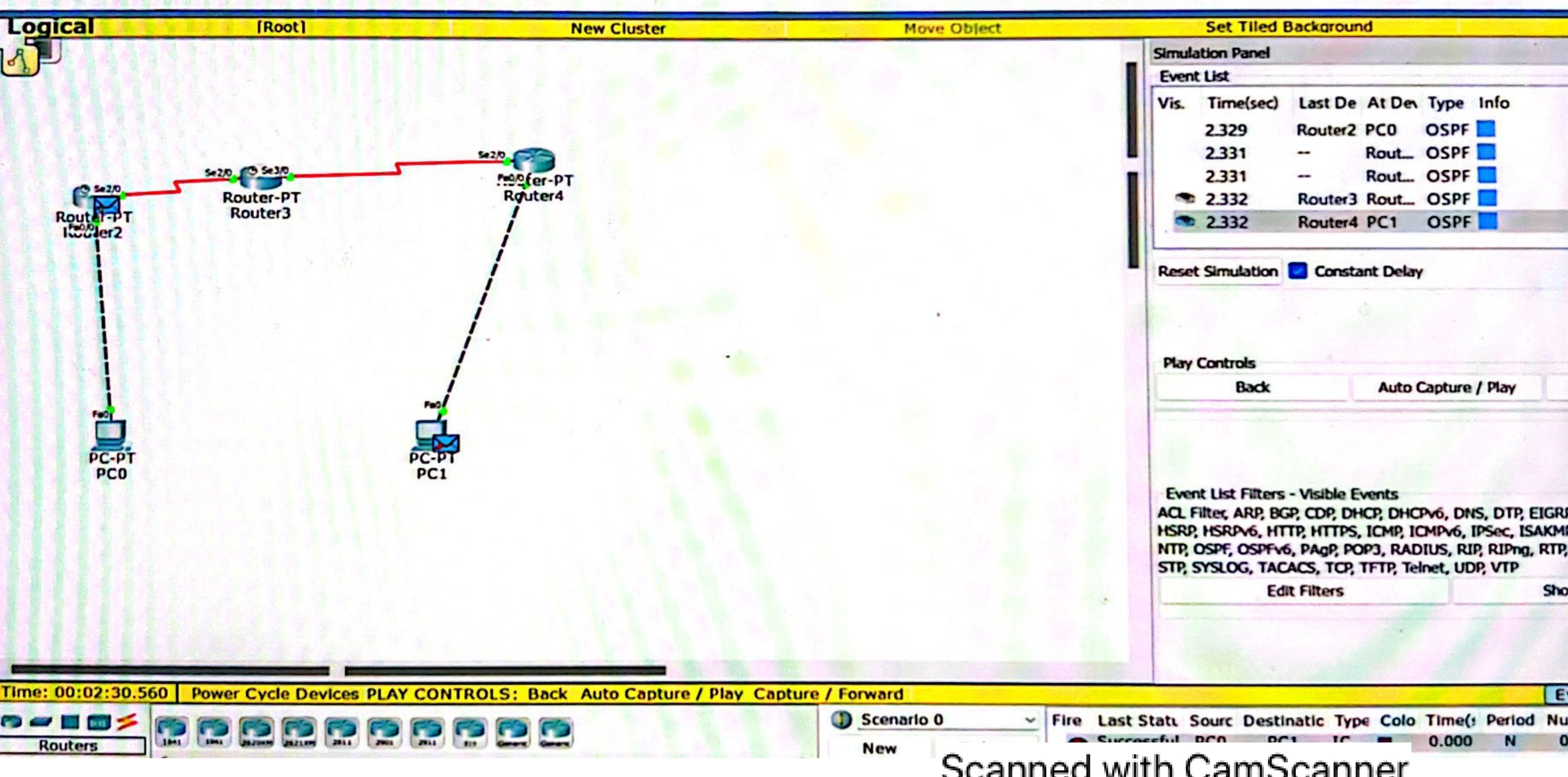
.) In router R1
R1(config)# router ospf 1
R2(config-router)# area 1 virtual
1.1.1.1
R2(config-router)# exit

.) After this show IP route, it show
show all #.

Ping output :-
Packet tracer PC command line 10
PC1 Ping 40.0.0.10
Pinging 40.0.0.10 with 32 bytes of da
Request timed out
Reply from 40.0.0.10 bytes = 32 time = 11ms
Reply from 40.0.0.10 bytes = 32 time = 11ms
Reply from 40.0.0.10 bytes = 32 time = 8ms T

Ping statistics for 40.0.0.10
Packets sent = 4 received = 3 lost = 1
Approx round trip time in milliseconds
Minimum = 28ms, Maximum = 11ms Average = 10

Observation :-
OSPF is a state routing protocol that used to find the best possible path b/w router and destination router using its own SPF algorithm
After we make the vertical link b/w the area which is not connected to the backbone area, we can ping messages successfully



Command Prompt

```
Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25%
loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 11ms, Average = 5ms

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=9ms TTL=125
Reply from 40.0.0.10: bytes=32 time=10ms TTL=125
Reply from 40.0.0.10: bytes=32 time=2ms TTL=125
Reply from 40.0.0.10: bytes=32 time=2ms 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 = 2ms, Maximum = 10ms, Average = 5ms

PC>
```