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Roll No: CB.EN.P2CYS22004

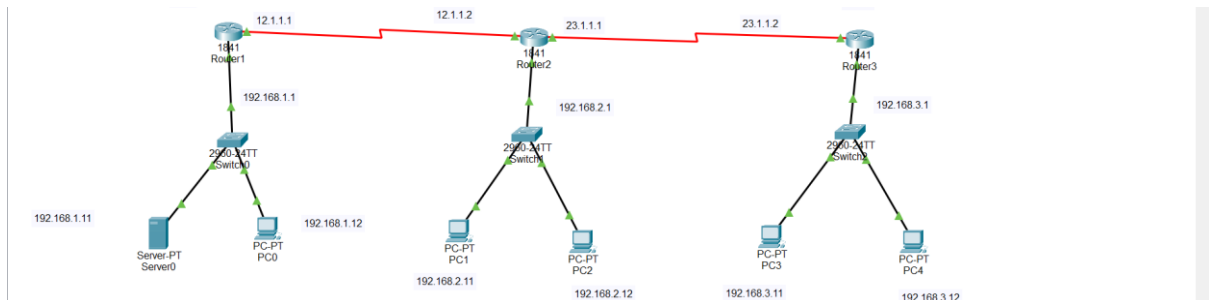
IP LAB -8

Date:24-11-2022

AIM: To configure OSPF and BGP using Cisco packet tracer simulation tool.

TOOLS: Cisco packet tracer

1)OSPF



```
Router0
Physical Config CLI Attributes
IOS Co

!
spanning-tree mode pvst
!
!
!
!
!
!
!
interface FastEthernet0/0
ip address 192.168.1.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/1/0
ip address 12.1.1.1 255.0.0.0
ip access-group 125 in
!
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
log-adjacency-changes
network 12.1.1.0 0.0.0.3 area 0
network 192.168.1.0 0.0.0.255 area 0
!
router rip
!
ip classless
!
ip flow-export version 9
!
--More--
```

Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/1/0
ip address 12.1.1.2 255.0.0.0
clock rate 2000000
!
interface Serial0/1/1
ip address 23.1.1.1 255.0.0.0
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
log-adjacency-changes
network 12.1.1.0 0.0.0.3 area 0
network 192.168.2.0 0.0.0.255 area 2
network 23.1.1.0 0.0.0.3 area 1
!
router rip
!
ip classless
--More--
```

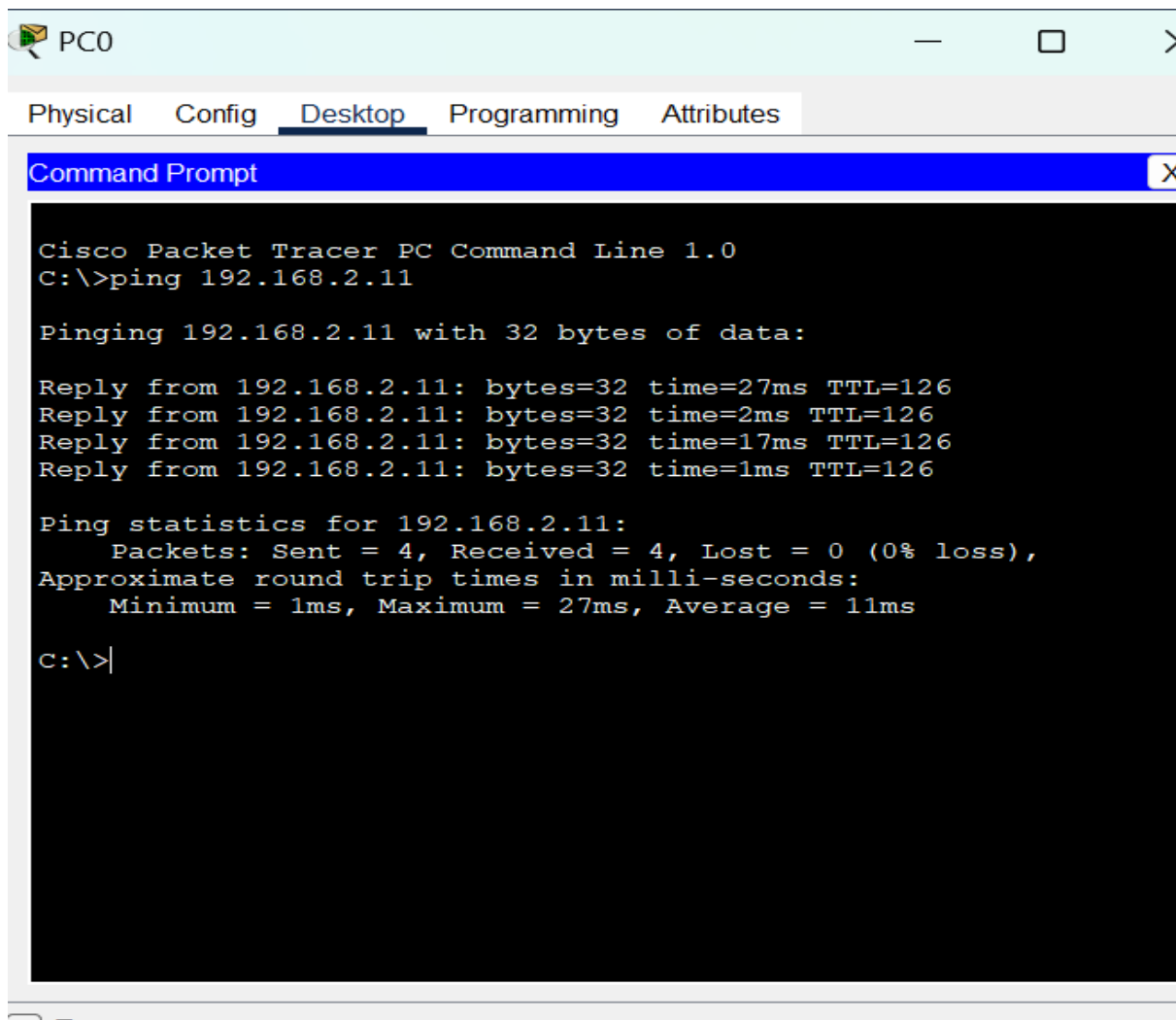
Copy Paste

☐ Top

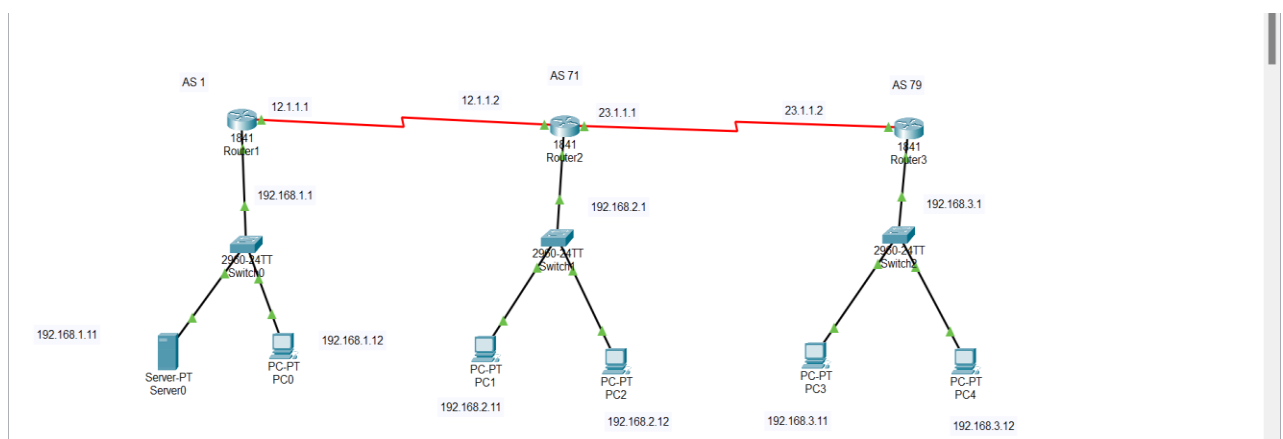
Router2

Physical Config CLI Attributes

```
!
!
!
!
!
interface FastEthernet0/0
ip address 192.168.3.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/1/0
ip address 23.1.1.2 255.0.0.0
clock rate 2000000
!
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
log-adjacency-changes
network 23.1.1.0 0.0.0.3 area 1
network 192.168.3.0 0.0.0.255 area 1
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
--More--
```



2)BGP



Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
!
interface Serial0/0/0
ip address 12.1.1.1 255.0.0.0
!
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router bgp 1
bgp log-neighbor-changes
no synchronization
neighbor 12.1.1.2 remote-as 71
network 192.0.0.0 mask 255.0.0.0
network 192.168.1.0
!
ip classless
!
ip flow-export version 9
!
!
--More--
```

Copy Paste

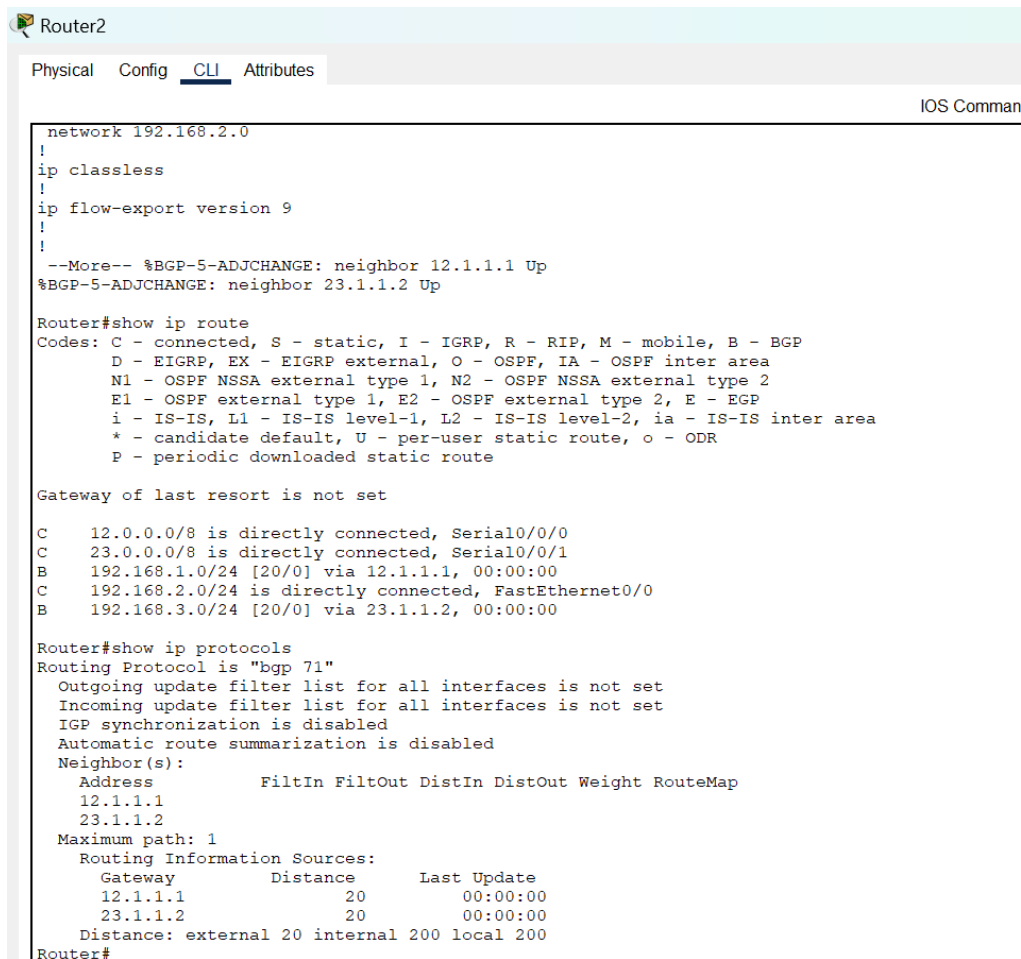
Router2

Physical Config CLI Attributes

```
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
ip address 192.168.2.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
ip address 12.1.1.2 255.0.0.0
clock rate 2000000
!
interface Serial0/0/1
ip address 23.1.1.1 255.0.0.0
!
interface Vlan1
no ip address
shutdown
!
router bgp 71
bgp log-neighbor-changes
no synchronization
neighbor 12.1.1.1 remote-as 1
neighbor 23.1.1.2 remote-as 79
network 192.168.2.0
!
!
!
```



Router 2: show ip route, show ip protocols, show ip bgp summary, show ip bgp neighbors



```
Router2
Physical Config CLI Attributes
IOS Command Line Interface

12.1.1.1          20          00:00:00
23.1.1.2          20          00:00:00
Distance: external 20 internal 200 local 200
Router#show ip bgp summary
BGP router identifier 192.168.2.1, local AS number 71
BGP table version is 6, main routing table version 6
3 network entries using 396 bytes of memory
3 path entries using 156 bytes of memory
2/2 BGP path/bestpath attribute entries using 368 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1024 total bytes of memory
BGP activity 3/0 prefixes, 3/0 paths, scan interval 60 secs

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ OutQ Up/Down  State/PfxRcd
12.1.1.1      4       1      15      13       6    0    0 00:06:27      4
23.1.1.2      4      79      13      11       6    0    0 00:06:27      4

Router#show ip bgp neighbors
BGP neighbor is 12.1.1.1, remote AS 1, external link
BGP version 4, remote router ID 192.168.1.1
BGP state = Established, up for 00:06:47
Last read 00:06:47, last write 00:06:47, hold time is 180, keepalive interval is 60 seconds
Neighbor capabilities:
  Route refresh: advertised and received(new)
  Address family IPv4 Unicast: advertised and received
Message statistics:
  InQ depth is 0
  OutQ depth is 0

      Sent      Rcvd
Opens:          2          2
Notifications:  0          0
Updates:         4          2
Keepalives:     11         11
Route Refresh:  0          0
Total:          17         15
Default minimum time between advertisements runs is 30 seconds

For address family: IPv4 Unicast
BGP table version 6, neighbor version 6/0
--
```

Router 3: show ip route,show ip protocols,show ip bgp summary,show ip bgp neighbors

```
Router3
Physical Config CLI Attributes
IOS C

network 192.168.3.0
!
ip classless
!
ip flow-export version 9
!
!
!
--More-- %BGP-5-ADJCHANGE: neighbor 23.1.1.1 Up
!
!
!

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    23.0.0.0/8 is directly connected, Serial0/0/0
B    192.168.1.0/24 [20/0] via 23.1.1.1, 00:00:00
B    192.168.2.0/24 [20/0] via 23.1.1.1, 00:00:00
C    192.168.3.0/24 is directly connected, FastEthernet0/0

Router#show ip protocols
Routing Protocol is "bgp 79"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  IGP synchronization is disabled
  Automatic route summarization is disabled
  Neighbor(s):
    Address          FiltIn FiltOut DistIn DistOut Weight RouteMap
    23.1.1.1
  Maximum path: 1
  Routing Information Sources:
    Gateway          Distance    Last Update
    23.1.1.1          20          00:00:00
  Distance: external 20 internal 200 local 200
Router#
```

Router3

Physical Config CLI Attributes

IO

```

Routing Information Sources:
  Gateway         Distance      Last Update
  23.1.1.1         20            00:00:00
Distance: external 20 internal 200 local 200
Router#show ip bgp summary
BGP router identifier 192.168.3.1, local AS number 79
BGP table version is 6, main routing table version 6
3 network entries using 396 bytes of memory
3 path entries using 156 bytes of memory
2/2 BGP path/bestpath attribute entries using 368 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1024 total bytes of memory
BGP activity 3/0 prefixes, 3/0 paths, scan interval 60 secs

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down State/PfxRcd
23.1.1.1         4    71     17     13        6    0    0 00:08:00      4

Router#show ip bgp neighbors
BGP neighbor is 23.1.1.1, remote AS 71, external link
  BGP version 4, remote router ID 192.168.2.1
  BGP state = Established, up for 00:08:13
  Last read 00:08:13, last write 00:08:13, hold time is 180, keepalive interval is 60
  Neighbor capabilities:
    Route refresh: advertised and received(new)
    Address family IPv4 Unicast: advertised and received
  Message statistics:
    InQ depth is 0
    OutQ depth is 0

              Sent          Rcvd
Opens:          2            2
Notifications:  0            0
Updates:         2            4
Keepalives:     11           11
Route Refresh:   0            0
Total:          15           17
Default minimum time between advertisements runs is 30 seconds

For address family: IPv4 Unicast
BGP table version 6, neighbor version 6/0
--More--

```

Router 1: show ip route,show ip protocols,show ip bgp summary,show ip bgp neighbors

Router1

Physical Config CLI Attributes

IOS Command Line Ir

```

--More--
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%BGP-5-ADJCHANGE: neighbor 12.1.1.2 Down Interface flap
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
%BGP-5-ADJCHANGE: neighbor 12.1.1.2 Up
!

Router#xit
Translating "xit"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

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    12.0.0.0/8 is directly connected, Serial0/0/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
B    192.168.2.0/24 [20/0] via 12.1.1.2, 00:00:00
B    192.168.3.0/24 [20/0] via 12.1.1.2, 00:00:00

Router#show ip protocols
Routing Protocol is "bgp 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  IGP synchronization is disabled
  Automatic route summarization is disabled
  Neighbor(s):
    Address          FiltIn FiltOut DistIn DistOut Weight RouteMap
    12.1.1.2
  Maximum path: 1
  Routing Information Sources:
    Gateway         Distance      Last Update
    12.1.1.2         20            00:00:00
  Distance: external 20 internal 200 local 200
Router#

```

Router1

Physical Config CLI Attributes

IOS Command Line Interface

```

Routing Information Sources:
  Gateway         Distance      Last Update
  12.1.1.2         20           00:00:00
  Distance: external 20 internal 200 local 200
Router#show ip bgp summary
BGP router identifier 192.168.1.1, local AS number 1
BGP table version is 6, main routing table version 6
3 network entries using 396 bytes of memory
3 path entries using 156 bytes of memory
2/2 BGP path/bestpath attribute entries using 368 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1024 total bytes of memory
BGP activity 3/0 prefixes, 3/0 paths, scan interval 60 secs

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ  OutQ Up/Down  State/PfxRcd
12.1.1.2         4    71     19      15        6     0    0 00:08:52      4

Router#show ip bgp neighbors
BGP neighbor is 12.1.1.2, remote AS 71, external link
BGP version 4, remote router ID 192.168.2.1
BGP state = Established, up for 00:09:10
Last read 00:09:10, last write 00:09:10, hold time is 180, keepalive interval is 60 seconds
Neighbor capabilities:
  Route refresh: advertised and received(new)
  Address family IPv4 Unicast: advertised and received
Message statistics:
  InQ depth is 0
  OutQ depth is 0

              Sent          Rcvd
Opens:          2            2
Notifications:  0            0
Updates:        2            4
Keepalives:    14           14
Route Refresh:  0            0
Total:         18           20
Default minimum time between advertisements runs is 30 seconds

For address family: IPv4 Unicast
BGP table version 6, neighbor version 6/0
--More--

```

Ping from PC1 to PC0

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: FE80::210:11FF:FE3E:8CE6
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 192.168.2.11
    Subnet Mask . . . . .: 255.255.255.0
    Default Gateway . . . . .: ::
                                   192.168.2.1

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: ::
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 0.0.0.0
    Subnet Mask . . . . .: 0.0.0.0
    Default Gateway . . . . .: ::
                                   0.0.0.0

C:\>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:

Reply from 192.168.1.12: bytes=32 time=1ms TTL=126
Reply from 192.168.1.12: bytes=32 time=1ms TTL=126
Reply from 192.168.1.12: bytes=32 time=2ms TTL=126
Reply from 192.168.1.12: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>show ip route
Invalid Command.

C:\>

```