

PRACTICAL LAB: ACCESS LIST CONFIGURATION



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Practical Lab: Access List Configuration - JA

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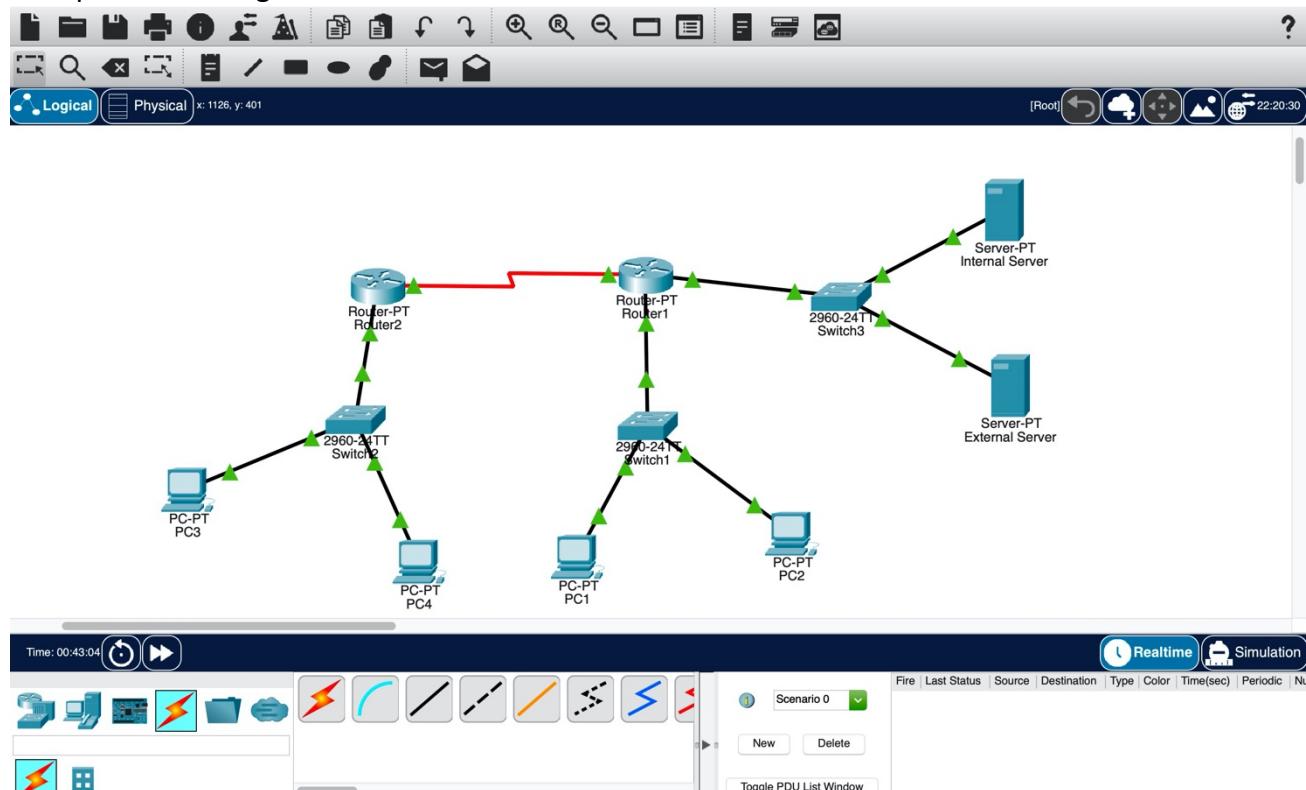
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1 Introduction

For this practical we will be using *Cisco Packet Tracer (student edition)*, a tool provided by Cisco to build and test Cisco networks. In this lab we are going to configure a network with static routes, and then configure access lists.

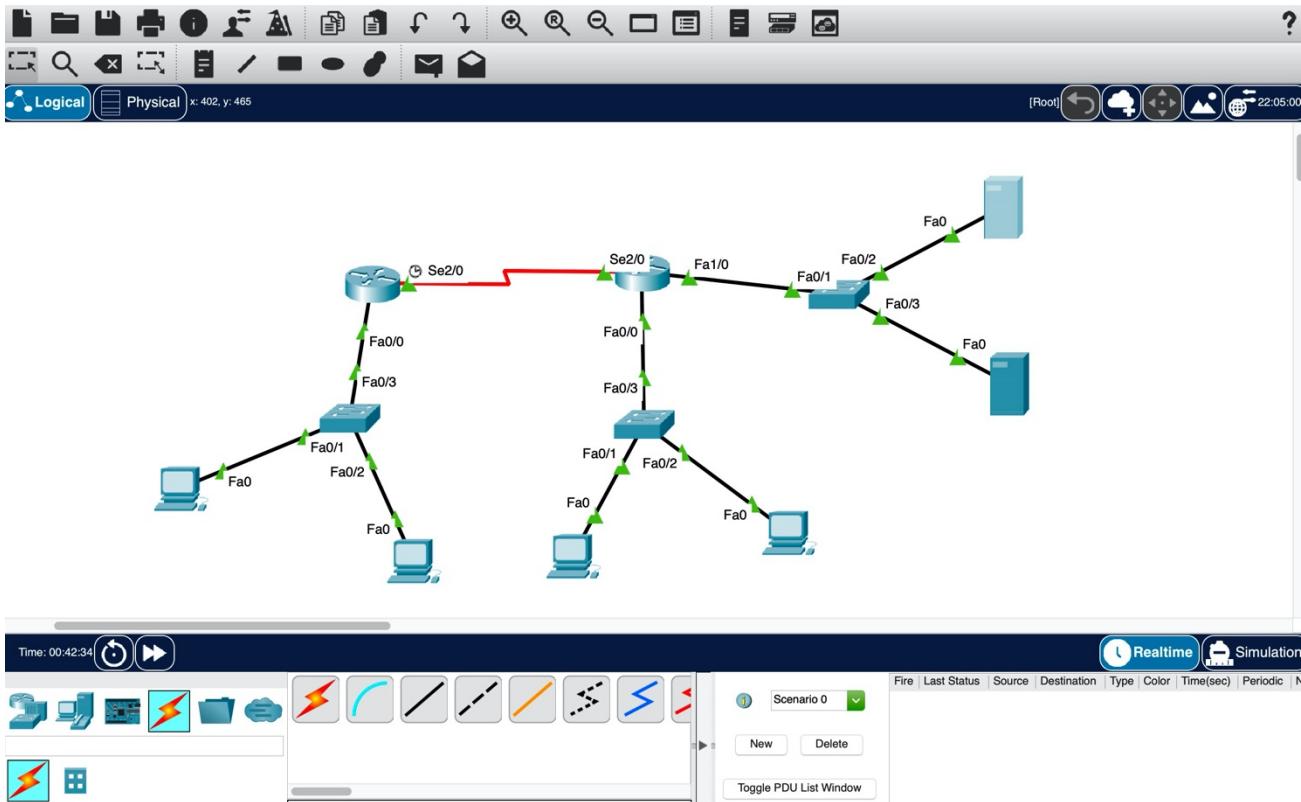
2 Setting Up Devices

Set up the following devices. Name and device view:



Cable connection view:

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3 Configure Devices

Configure the devices as given below. You may wish to refer to the Practical Labs: ‘Direct and Static Router Configuration’, or ‘Static router Configuration 2’, or ‘Static router Configuration 3’ as a reminder of how to configure the devices.

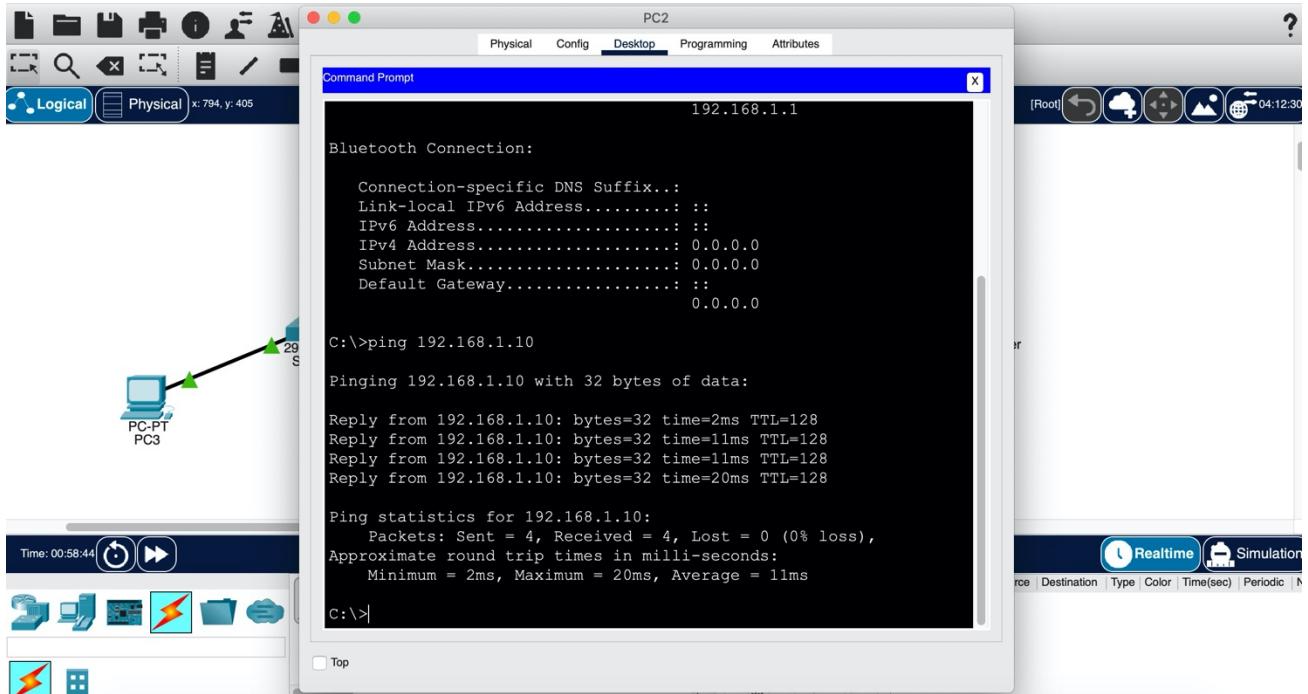
Device	Interface	IP Addresses	Subnet Mask	Default Gateway
PC1	N/A	192.168.1.10	255.255.255.0	192.168.1.1
PC2	N/A	192.168.1.20	255.255.255.0	192.168.1.1
PC3	N/A	192.168.2.30	255.255.255.0	192.168.2.1
PC4	N/A	192.168.2.40	255.255.255.0	192.168.2.1
Router1	Fa0/0	192.168.1.1	255.255.255.0	N/A
	Fa1/0	10.0.0.1	255.0.0.0	N/A
	Serial2/0	192.168.3.1	255.255.255.0	N/A
Router2	Fa0/0	192.168.2.1	255.255.255.0	N/A
	Serial2/0	192.168.3.2	255.255.255.0	N/A

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Internal Server	N/A	10.0.0.100	255.0.0.0	10.0.0.1
External Server	N/A	10.0.0.200	255.0.0.0	10.0.0.1

4 Test Connectivity.

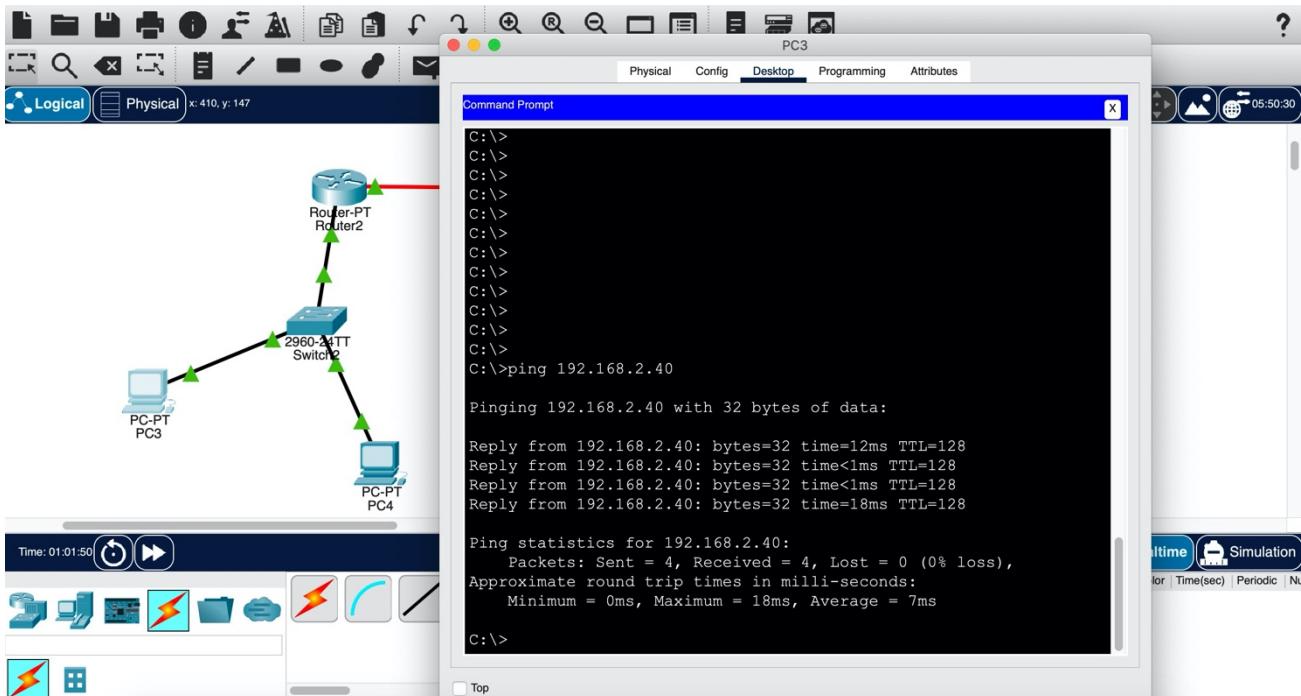
Try pinging PC1 from PC2



This should work fine as above.

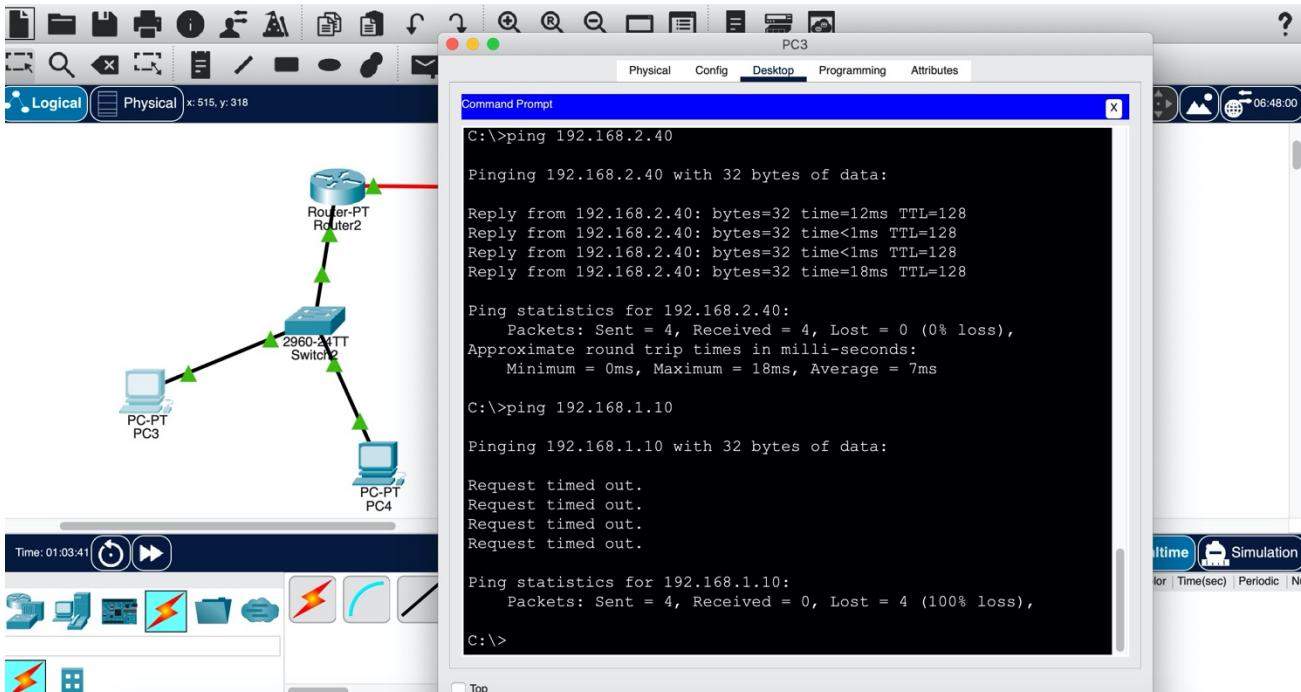
Now try pinging PC4 from PC3

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Again, this should work fine as above.

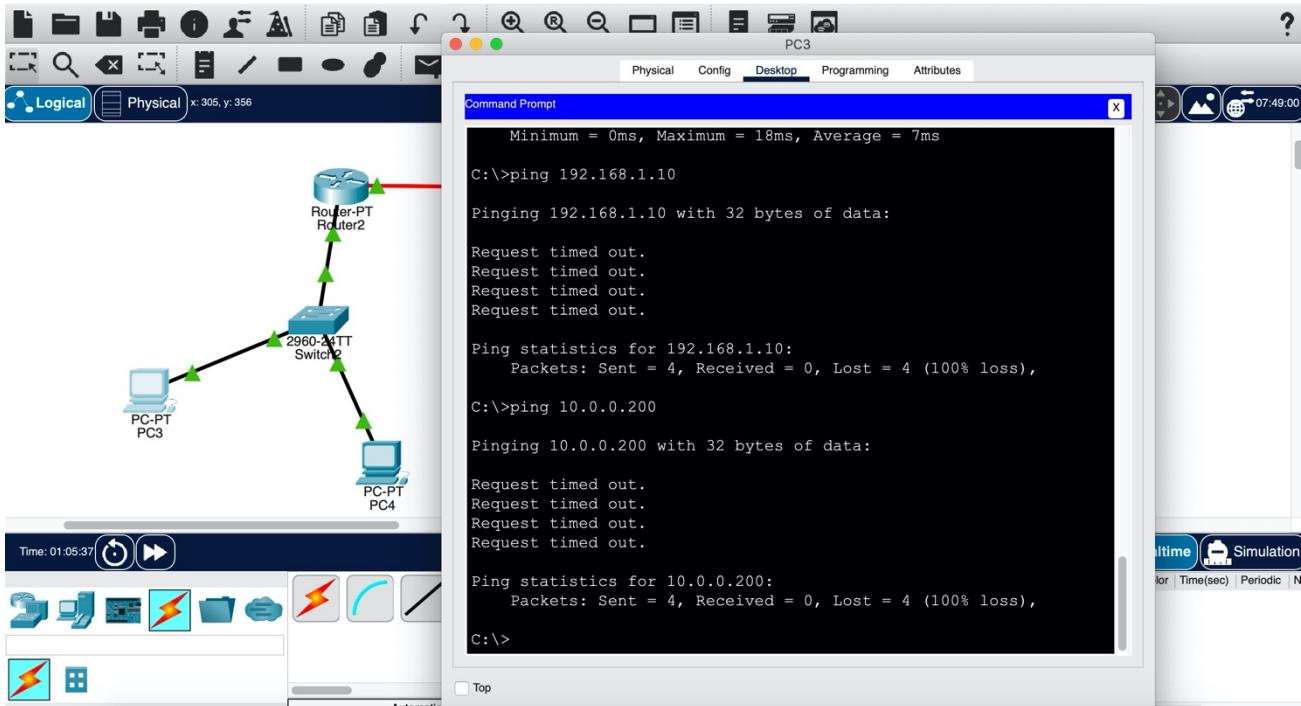
Now try pinging PC1 from PC3



This will not work if you have not configured the static routes between the routers yet (like the case above), so we will need to do this.

For the same reasoning, we cannot ping the external server from PC3 for instance, as seen below:

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5 Configure Static Routes

For Router 1 we need the following:

- Router(config) #ip route 192.168.2.0 255.255.255.0 192.168.3.2

And for Router 2 we need:

- Router(config) #ip route 192.168.1.0 255.255.255.0 192.168.3.1
- Router(config) #ip route 10.0.0.0 255.255.255.0 192.168.3.1

Once you have done this, use show ip route, and you can see that the static routes are configured correctly.

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```
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, FastEthernet1/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
S    192.168.2.0/24 [1/0] via 192.168.3.2
C    192.168.3.0/24 is directly connected, Serial2/0

Router>
```

Command+F6 to exit CLI focus

Top


```
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

      10.0.0.0/24 is subnetted, 1 subnets
S    10.0.0.0 [1/0] via 192.168.3.1
S    192.168.1.0/24 [1/0] via 192.168.3.1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
C    192.168.3.0/24 is directly connected, Serial2/0

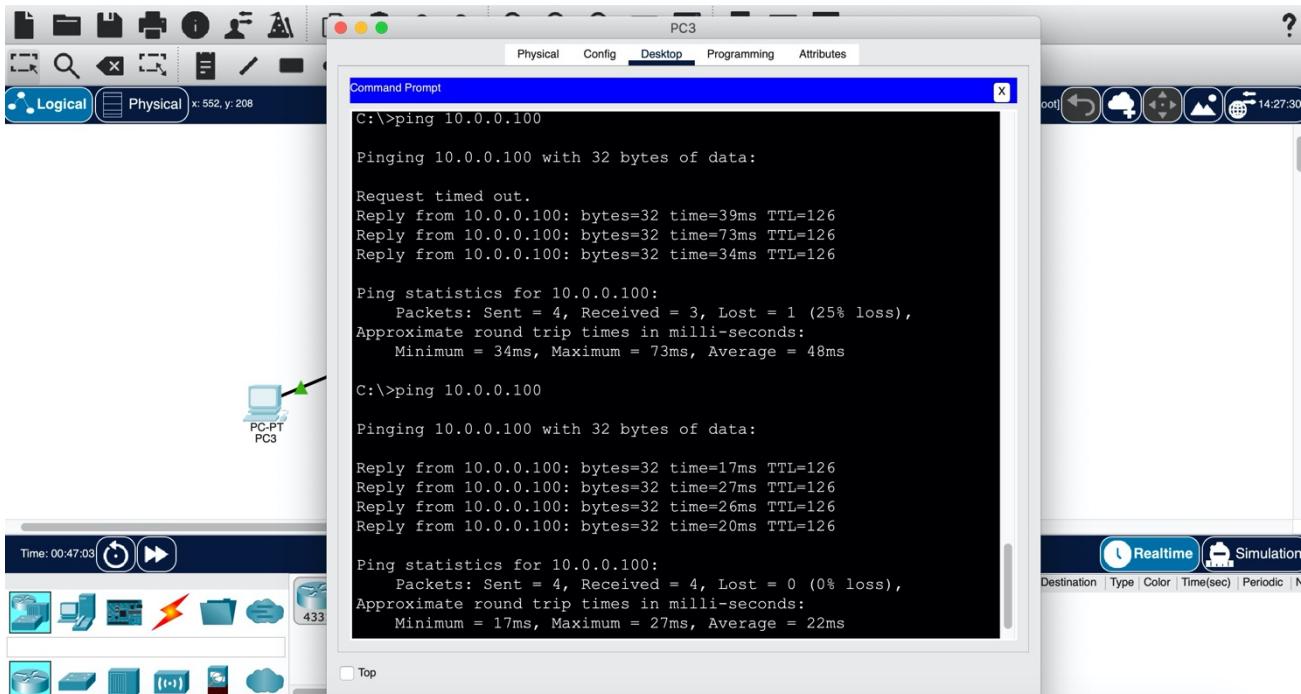
Router>
```

Command+F6 to exit CLI focus

Top

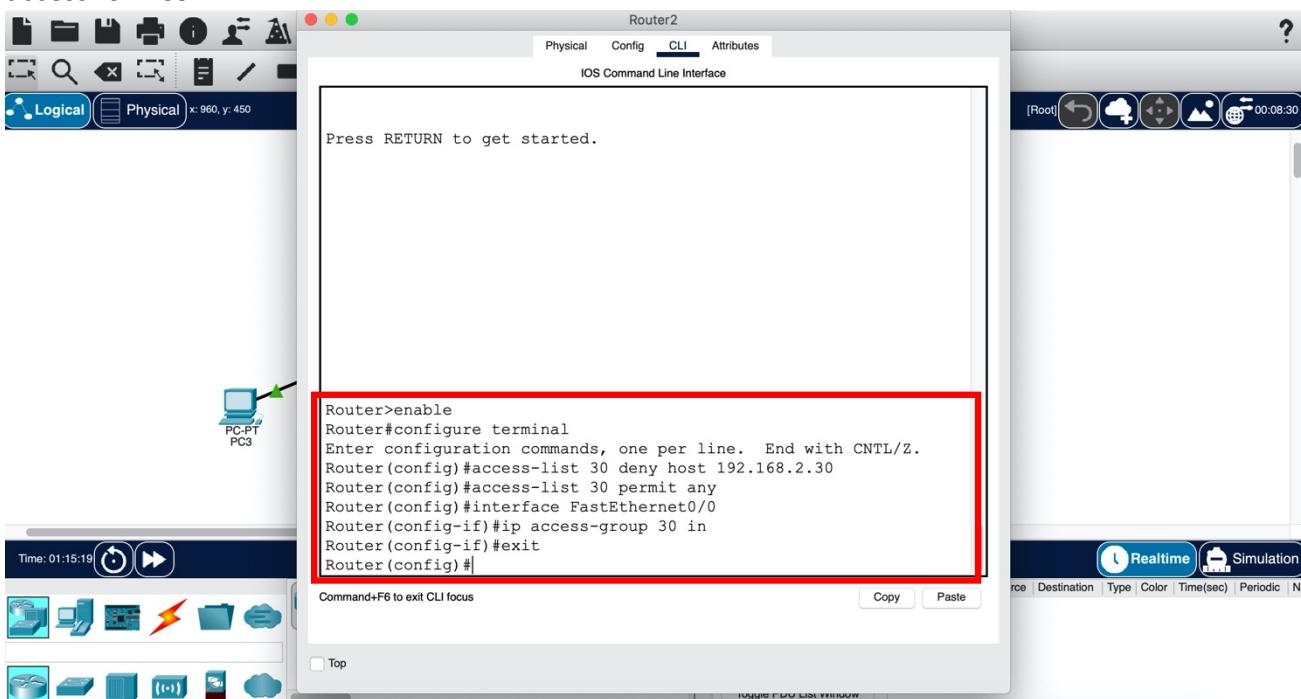
Once static routes are configured, you should be able to ping the whole network. For example, pinging the internal server from PC3 in the below image. Test this yourself.

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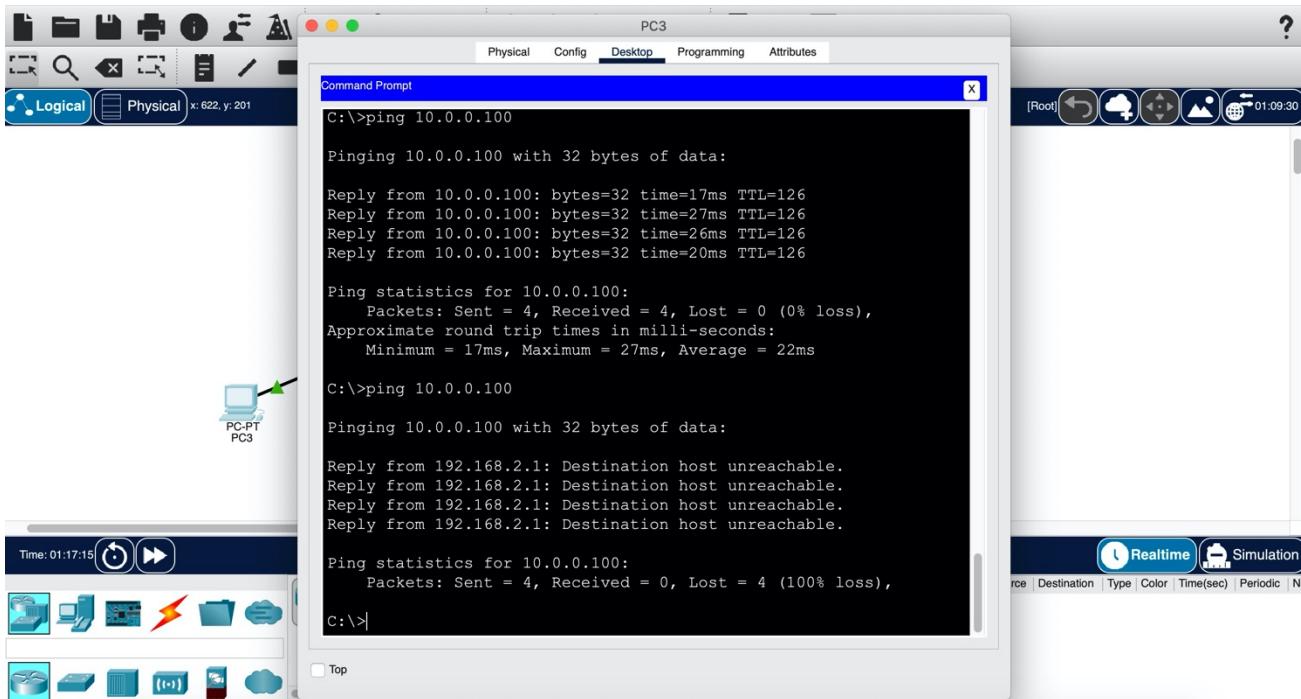
6 Configure Standard Access Lists

Here we will remove access for an individual PC. Configure the following on Router 2 to remove access for PC3.

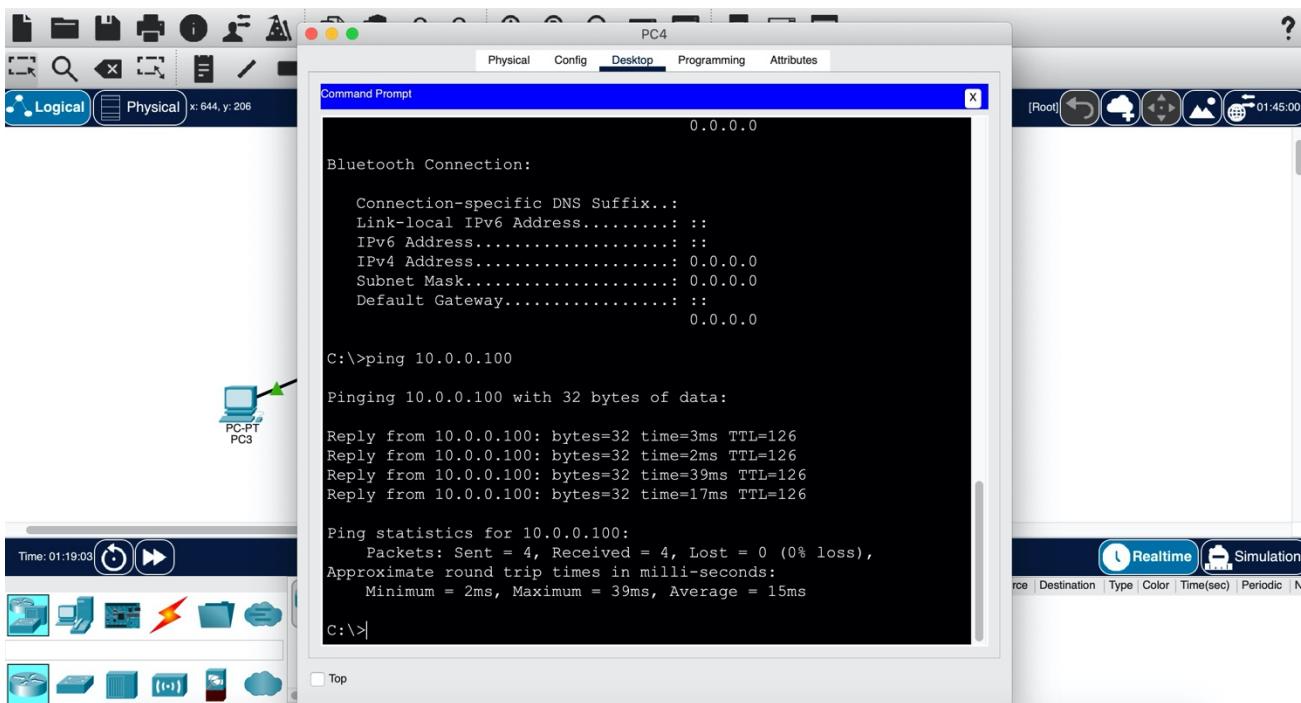


Now try pinging the internal server again from PC3. It should now state destination host unreachable as seen below.

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However, if you ping the internal server from PC4 that is in the same network, this time it works, as access has not been removed for PC4.

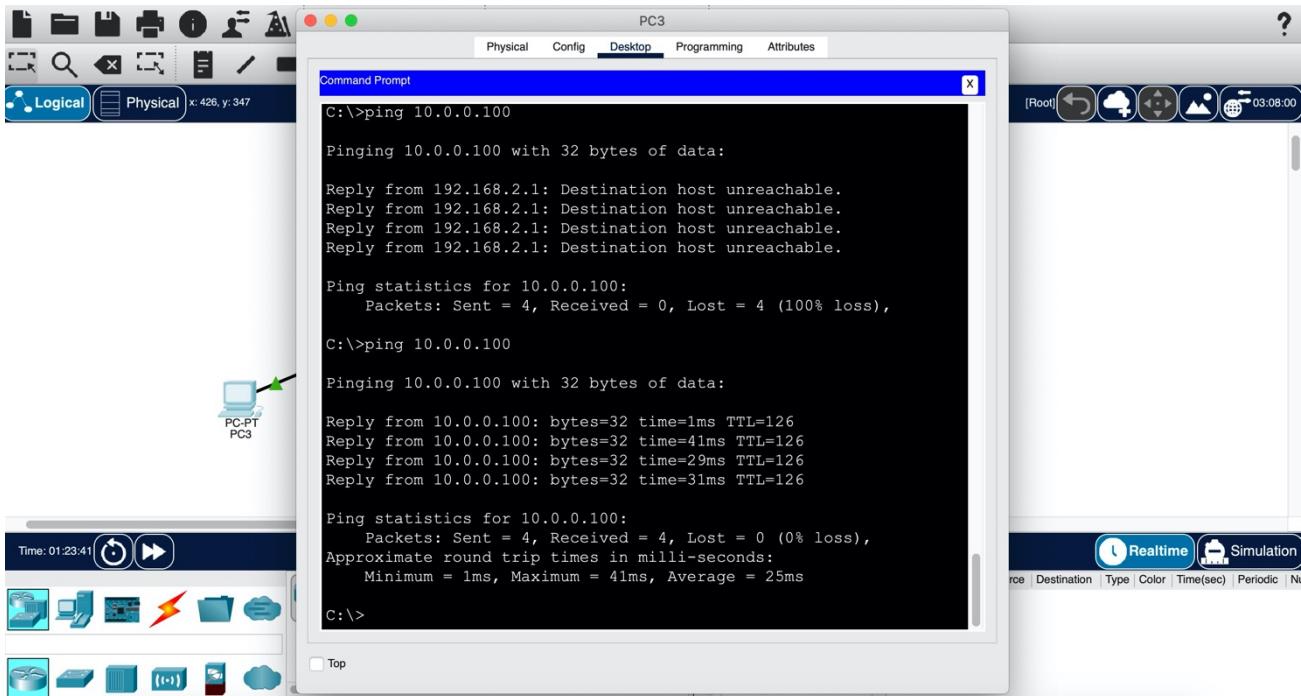


To remove the access list controls from the router, do the following on Router 2:

- Router(config)#no access-list 30

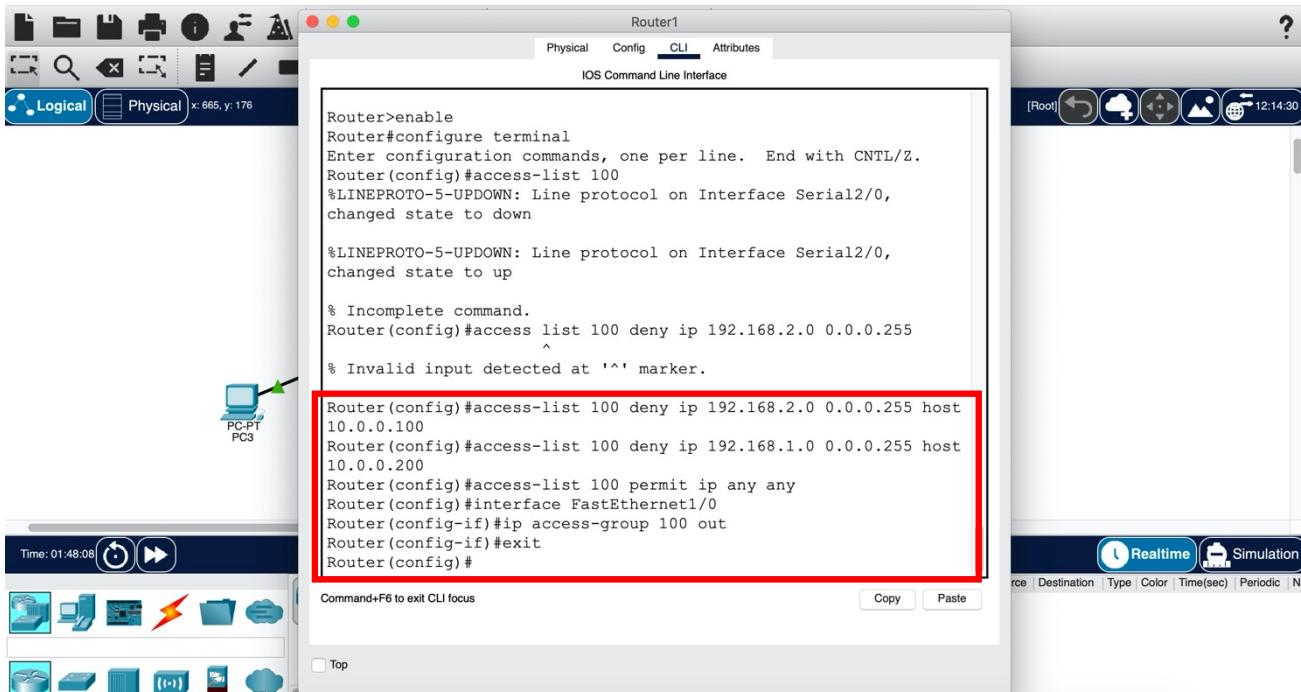
Now try and ping the internal server from PC3 again. You should see the following and that access list controls have been removed:

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7 Configure Extended Access Lists

Here we will remove access for a portion of the network. Configure the following on Router 1 so that the internal server is only accessible by 192.168.1.0/24 and that the external server is only accessible by 192.168.2.0/24.



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Now try pinging both servers from PC1. You should see the below that you receive a response from the internal sever (10.0.0.100), but destination host is unreachable for the external server (10.0.0.200).

The screenshot shows the NetworkMiner interface with a Command Prompt window open on PC1. The window displays ping results:

```
C:\>ping 10.0.0.100
Pinging 10.0.0.100 with 32 bytes of data:
Reply from 10.0.0.100: bytes=32 time=1ms TTL=127
Reply from 10.0.0.100: bytes=32 time=1ms TTL=127
Reply from 10.0.0.100: bytes=32 time<1ms TTL=127
Reply from 10.0.0.100: bytes=32 time<1ms TTL=127

Ping statistics for 10.0.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 10.0.0.200
Pinging 10.0.0.200 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 10.0.0.200:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Now try pinging both servers from PC3. You should see the below that you do not receive a response from the internal sever (10.0.0.100) but instead that the destination host in unreachable, but you do receive a response from the external server (10.0.0.200).

The screenshot shows the NetworkMiner interface with a Command Prompt window open on PC3. The window displays ping results:

```
C:\>ping 10.0.0.100
Pinging 10.0.0.100 with 32 bytes of data:
Reply from 192.168.3.1: Destination host unreachable.

Ping statistics for 10.0.0.100:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 10.0.0.200
Pinging 10.0.0.200 with 32 bytes of data:
Reply from 10.0.0.200: bytes=32 time=1ms TTL=126
Reply from 10.0.0.200: bytes=32 time=37ms TTL=126
Reply from 10.0.0.200: bytes=32 time=16ms TTL=126
Reply from 10.0.0.200: bytes=32 time=49ms TTL=126

Ping statistics for 10.0.0.200:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 49ms, Average = 25ms
```