

Karthick VM

Batch – CIS 1.3

Milestone Practical Assessment Networking

## Scenario:

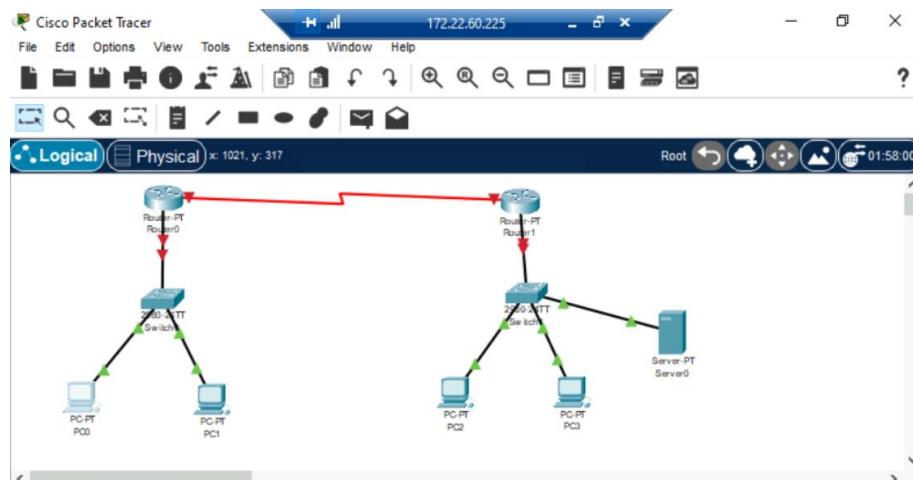
LTIM Solutions is an IT services company with departments like HR, Finance, Sales, and IT Support located in different buildings. The company's infrastructure includes routers, switches, and end devices such as PCs and servers. The management has decided to implement segmentation and dynamic routing using EIGRP for ease of communication and access control to improve security. As the Network Administrator, your task is to implement the network infrastructure and configure routing and access control measures. The company has two core routers, and the routers will be connected to departmental switches and end devices. You need to use the EIGRP routing protocol to share routing information dynamically across departments.

Use the following assumptions:

- Router names: -Core1, -Core2
  - No authentication is required for EIGRP
  - Telnet access should be secured with a password
  - Certain access restrictions must be implemented using ACLs

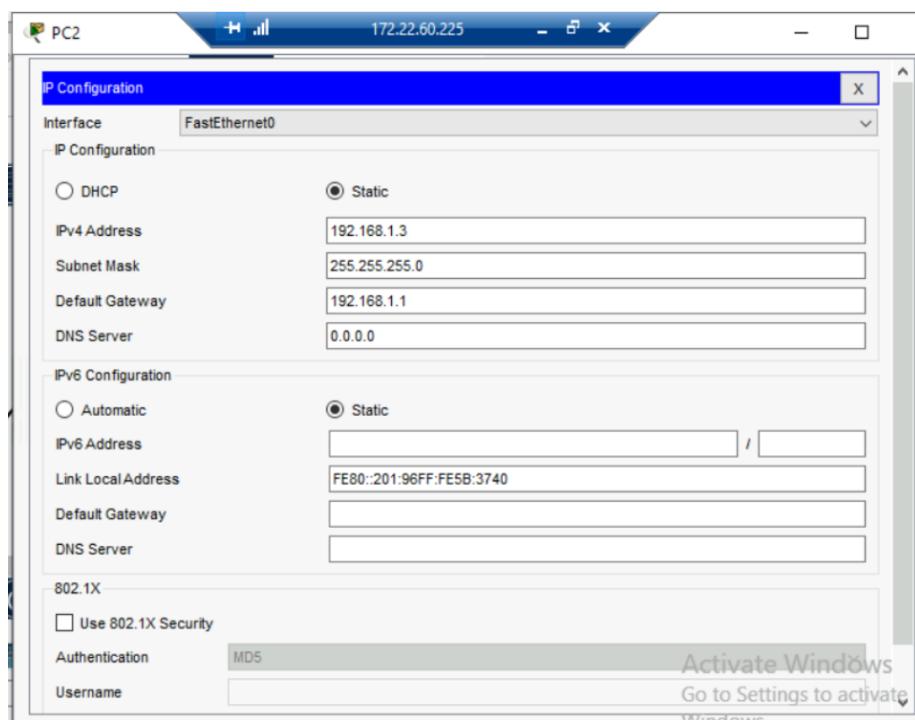
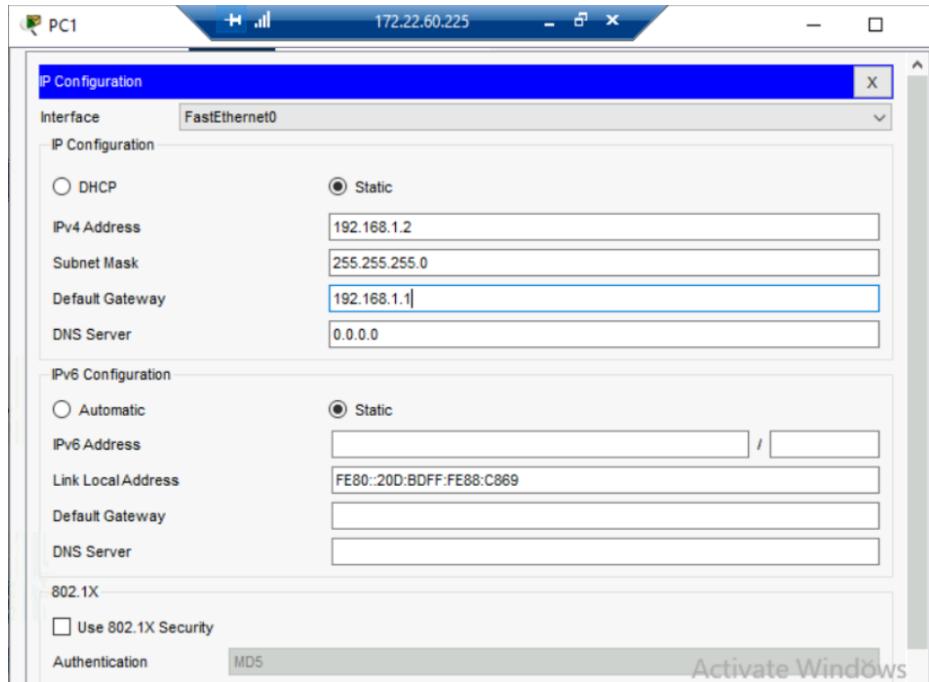
## Task 1: Network Setup and Security

- Design a topology with at least 2 routers, 2 switches, 4 PCs (PC1 to PC4), and 1 Server.

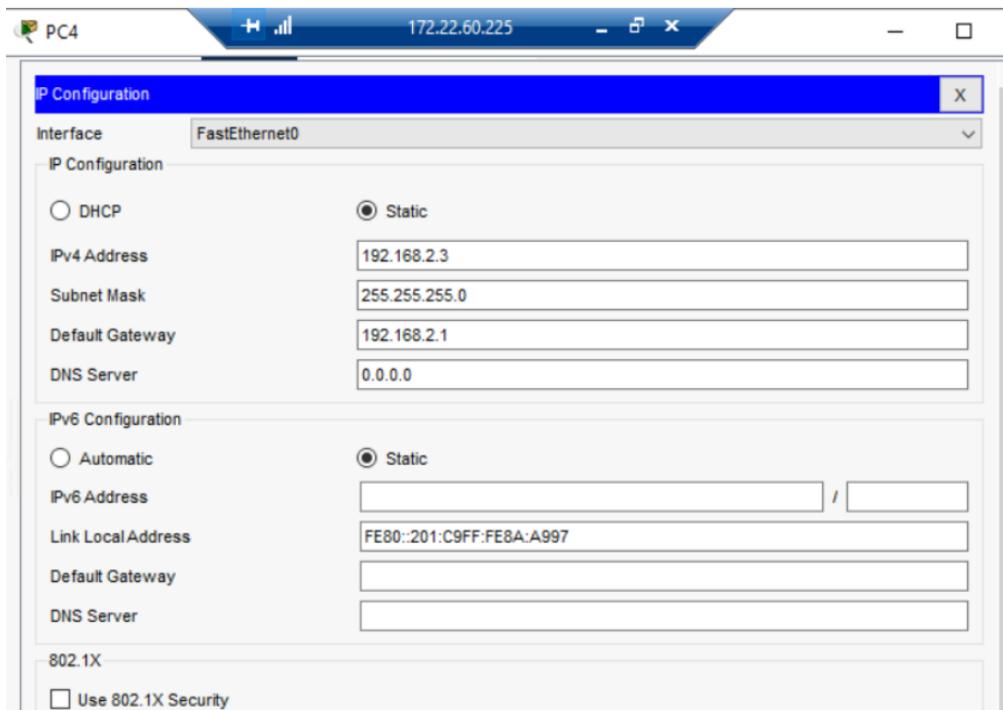
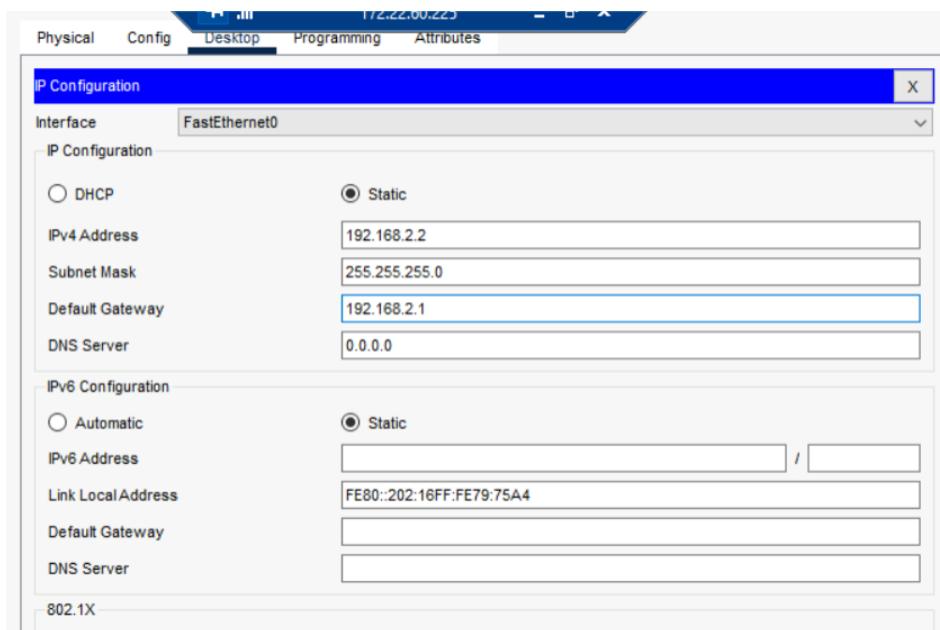


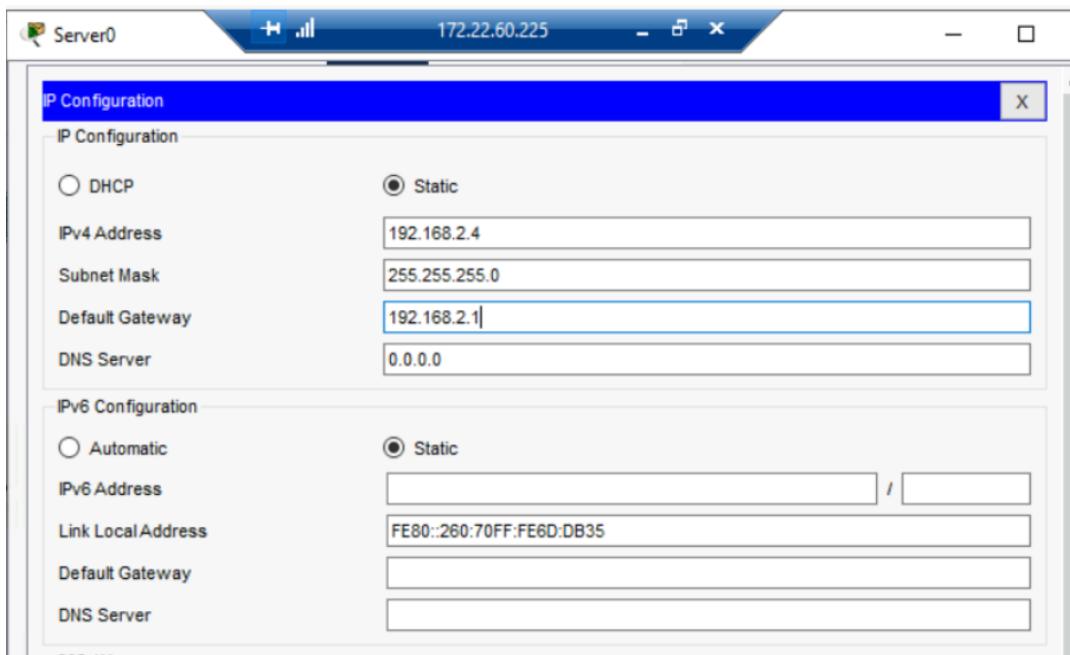
- Assign IP addresses to all interfaces including hosts and routers (use private IP addressing, e.g., 192.168.X.0/24).

- Assigning ip address to PC 1 and 2 In Router – Karthick\_Core1



- Assigning ip address to PC 3 and 4, Server In Router – Karthick\_Core2





- Assigning ip Address to Router – Karthick\_Core1

```
Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Karthick-Core1
Karthick-Core1(config)#int fa0/0
Karthick-Core1(config-if)#no shutdown

Karthick-Core1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Karthick-Core1(config-if)#ip address 192.168.1.1 255.255.255.0
Karthick-Core1(config-if)#exit
Karthick-Core1(config)#int se2/0
Karthick-Core1(config-if)#ip address 192.168.3.1 255.255.255.0
Karthick-Core1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Karthick-Core1(config-if)#exit
Karthick-Core1(config)#

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```

- Assigning ip Address to Router – Karthick\_Core2

Router1 172.22.60.225 - ×

IOS Command Line Interface

```
Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Karthick-Core2
Karthick-Core2(config)#int fa0/0
Karthick-Core2(config-if)#no shutdown

Karthick-Core2(config-if)#
*LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

*LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

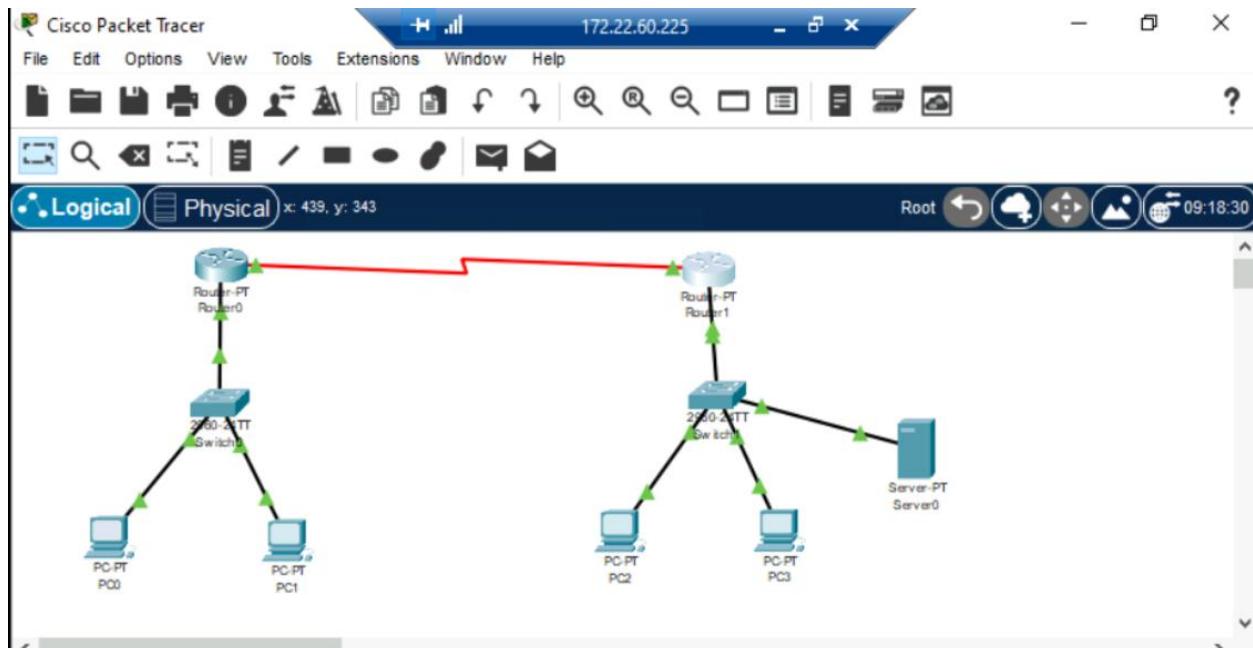
Karthick-Core2(config-if)#ip address 192.168.2.1 255.255.255.0
Karthick-Core2(config-if)#exit
Karthick-Core2(config)#int se2/0
Karthick-Core2(config-if)#ip address 192.168.3.2 255.255.255.0
Karthick-Core2(config-if)#no shutdown

Karthick-Core2(config-if)#
*LINK-5-CHANGED: Interface Serial2/0, changed state to up

Karthick-Core2(config-if)#exit
Karthick-Core2(config)#

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- Connection after Assigning ip and do configuration on ports.



- Configure Telnet access on both routers with the following:
  - o Set a hostname as per router name.
  - o Set enable secret as Sarat@123.
  - o Set line vty password as Sarat@123.

- Router – Karthick\_Core1 → Set Password

```
Karthick-Core1(config)#  
Karthick-Core1(config)#  
Karthick-Core1(config)#enable secret sarat@123  
Karthick-Core1(config)#line vty 0 4  
Karthick-Core1(config-line)#pass  
Karthick-Core1(config-line)#password sarat@123  
Karthick-Core1(config-line)#login  
Karthick-Core1(config-line)#exit  
Karthick-Core1(config)#
```

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- Router – Karthick\_Core2

```
Karthick-Core2(config)#enable secret sarat@123  
Karthick-Core2(config)#line vty 0 4  
Karthick-Core2(config-line)#password sarat@123  
Karthick-Core2(config-line)#login  
Karthick-Core2(config-line)#exit  
Karthick-Core2(config)#
```

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## Task 2: EIGRP Configuration and Connectivity Test

- Configure EIGRP on both routers.
  - Advertise all connected networks.
  - Disable auto-summary.
    - Router – Karthick\_Core2 → Set eigrp protocol , advertise and disabled auto summary.

```
Karthick-Core2(config)#  
Karthick-Core2(config)#  
Karthick-Core2(config)#  
Karthick-Core2(config)#router ei  
Karthick-Core2(config)#router eigrp 100  
Karthick-Core2(config-router)#network 192.168.2.0  
Karthick-Core2(config-router)#network 192.168.3.0  
Karthick-Core2(config-router)#no auto-summary  
Karthick-Core2(config-router)#exit  
Karthick-Core2(config)#[
```

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- Router – Karthick\_Core1 → Set eigrp protocol , advertise and disabled auto summary.

```
Karthick-Core1(config)#  
Karthick-Core1(config)#  
Karthick-Core1(config)#  
Karthick-Core1(config)#router ei  
Karthick-Core1(config)#router eigrp  
* Incomplete command.  
Karthick-Core1(config)#router eigrp 100  
Karthick-Core1(config-router)#network 192.168.1.0  
Karthick-Core1(config-router)#network 192.168.3.0  
Karthick-Core1(config-router)#  
%DUAL-5-NBRCHANGE: IP-EIGRP 100: Neighbor 192.168.3.2 (Serial2/0) is up: new adjacency  
  
Karthick-Core1(config-router)#no auto-  
Karthick-Core1(config-router)#no auto-summary  
Karthick-Core1(config-router)#  
%DUAL-5-NBRCHANGE: IP-EIGRP 100: Neighbor 192.168.3.2 (Serial2/0) resync: summary  
configured  
  
Karthick-Core1(config-router)#exit  
Karthick-Core1(config)#[
```

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- After configuring, verify the routing table using show ip route.

- Here the D in the route table signifies the eigrp protocol connection established between the routers.

```
Karthick-Core2#
Karthick-Core2#
Karthick-Core2#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

D    192.168.1.0/24 [90/20514560] via 192.168.3.1, 00:01:27, Serial2/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
C    192.168.3.0/24 is directly connected, Serial2/0

Karthick-Core2#
```

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```
Karthick-Core1(config)#do 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    192.168.1.0/24 is directly connected, FastEthernet0/0
D    192.168.2.0/24 [90/20514560] via 192.168.3.2, 00:00:44, Serial2/0
C    192.168.3.0/24 is directly connected, Serial2/0

Karthick-Core1(config)#
```

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- Ping from PC4 to Server to ensure successful communication.

The screenshot shows a Cisco Packet Tracer Command Line window titled "Command Prompt". The window title bar also displays "PC4" and the IP address "172.22.60.225". The command entered was "ping 192.168.2.4", and the output shows four successful replies from the target host. Below the replies, ping statistics are displayed, indicating 0% loss and 0ms average round trip time. The prompt "C:\>" is visible at the bottom of the window.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.4

Pinging 192.168.2.4 with 32 bytes of data:

Reply from 192.168.2.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

### Task 3: Implement ACL for Telnet Restriction

- Create and apply an ACL such that PC4 is denied Telnet access to Core1 Router

```
Karthick-Core1(config)#access-list 100 deny ip 192.168.2.3 0.0.0.255 192.168.3.1
0.0.0.255
Karthick-Core1(config)#access-list 100 permit any any
^
% Invalid input detected at '^' marker.

Karthick-Core1(config)#access-list 100 permit ip any any
Karthick-Core1(config)#int se2/0
Karthick-Core1(config-if)#ip acce
Karthick-Core1(config-if)#ip access-group 100 in
Karthick-Core1(config-if)#exit
Karthick-Core1(config)#

```

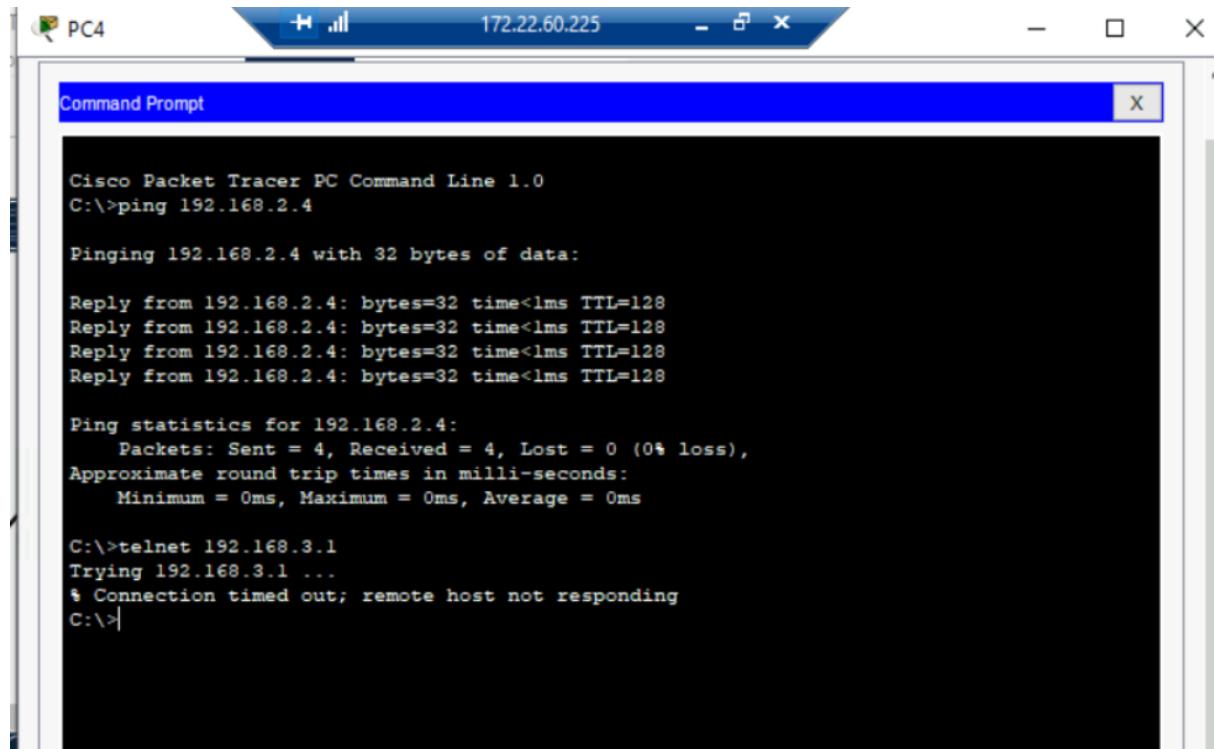
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Windows.

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- Demonstrate the restriction by:
  - o Showing a failed Telnet attempt from PC4 to Core1.

- After applying acl in router Karthick\_Core1,when the PC4 tries to access the Router i.e 192.168.3.1 it shows not responding error. Hence we can say that the implementation of ACL is Successful.



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The title bar also displays "PC4" and the IP address "172.22.60.225". The window content is as follows:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.4

Pinging 192.168.2.4 with 32 bytes of data:
Reply from 192.168.2.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>telnet 192.168.3.1
Trying 192.168.3.1 ...
% Connection timed out; remote host not responding
C:\>
```

- o Showing a successful Telnet attempt from PC2 to Core1.
- When we try the access of router 1 i.e 192.168.3.1 from PC2 , the connection is established Successfully.

The screenshot shows a Cisco Packet Tracer window titled "PC2" with the IP address 172.22.60.225. The "Desktop" tab is selected. A "Command Prompt" window is open, showing the following terminal session:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.168.3.1
Trying 192.168.3.1 ...Open

User Access Verification

Password:
Karthick-Corel>en
Password:
Karthick-Corel#sh run
Building configuration...

Current configuration : 1013 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Karthick-Corel
!
!
!
enable secret 5 $1$mERr$WUN1XpAtE5nhdqdz5vEza.
!
!
```

A watermark in the bottom right corner of the command prompt window reads "Activate Windows Go to Settings to activate Windows."