

Karthick VM

Batch – CIS 1.3

Milestone Practical Assessment Networking

Scenario:

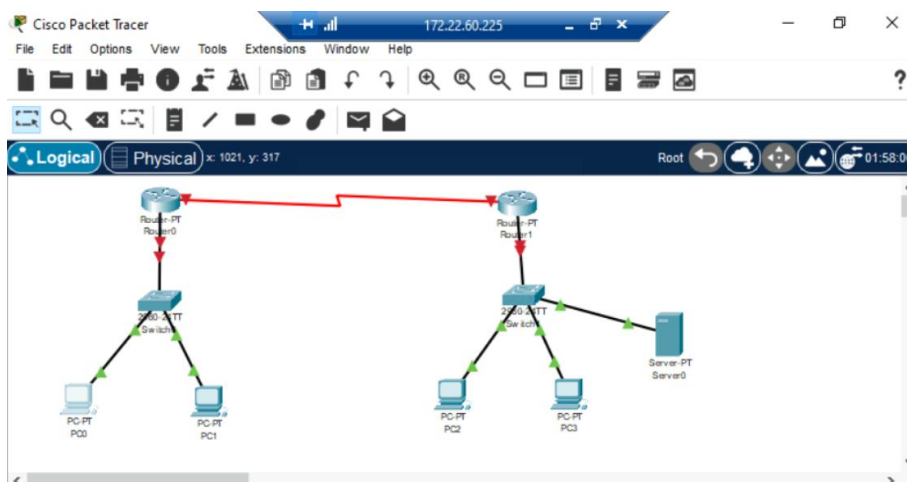
LTIM Solutions is an IT services company with departments like HR, Finance, Sales, and IT Support located in different buildings. The company's infrastructure includes routers, switches, and end devices such as PCs and servers. The management has decided to implement segmentation and dynamic routing 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

PC1 172.22.60.225

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::20D:B0FF:FE88:C869

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Activate Windows

PC2 172.22.60.225

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:96FF:FE5B:3740

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

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Go to Settings to activate Windows

- Assigning ip address to PC 3 and 4, Server In Router – Karthick_Core2

Physical Config Desktop Programming Attributes

172.22.60.223

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.2.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::202:16FF:FE79:75A4

Default Gateway:

DNS Server:

802.1X

PC4 172.22.60.225

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.2.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:C9FF:FE8A:A997

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Server0 172.22.60.225

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.2.4

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:70FF:FE6D:DB35

Default Gateway:

DNS Server:

- Assigning ip Address to Router – Karthick_Core1

Router0 172.22.60.225

IOS Command Line Interface

```

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

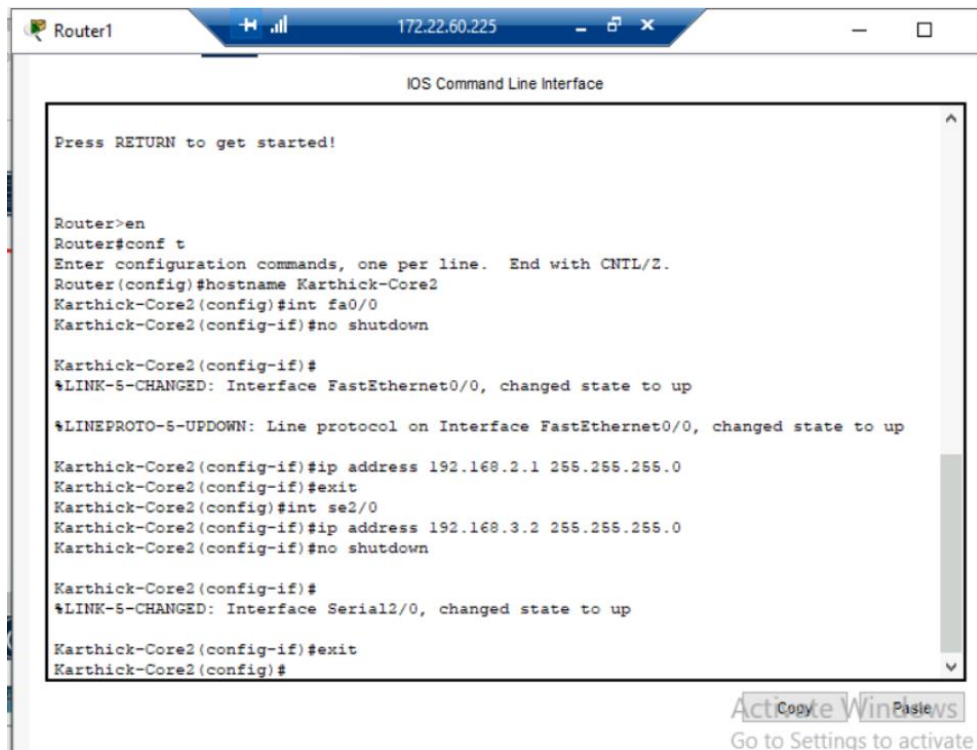
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

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

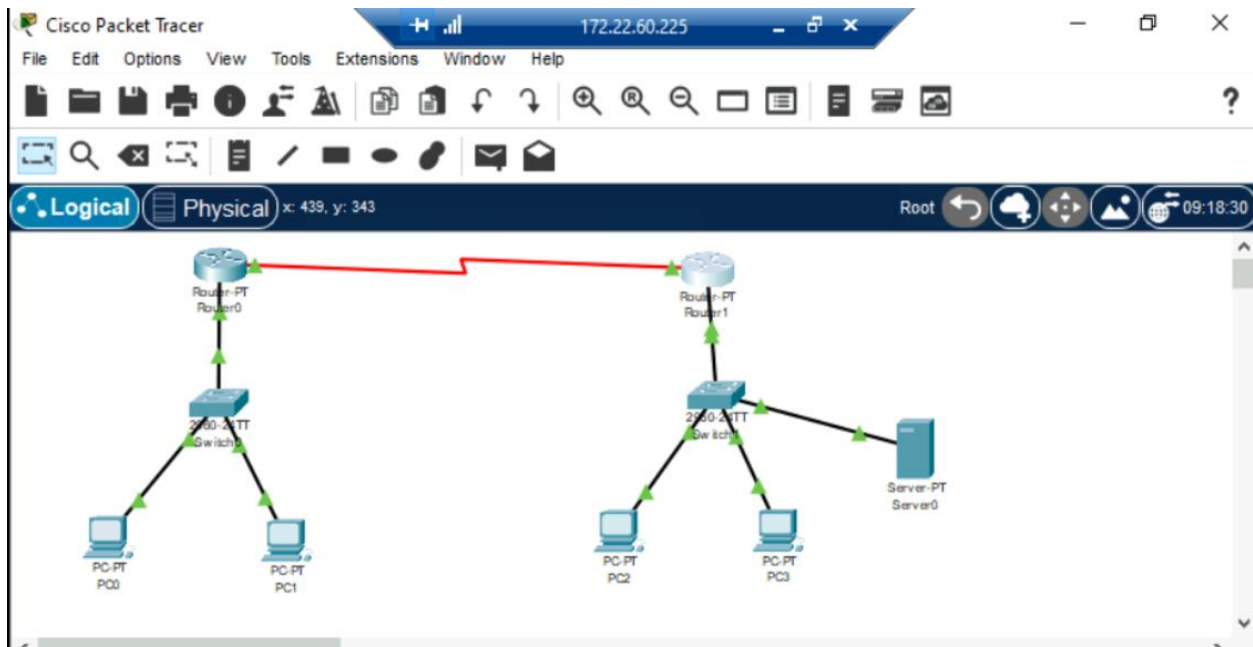
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

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)#
```

- 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)#
```

Copy Paste

- 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.
 - o Advertise all connected networks.
 - o 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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Go to Settings to activate Windows.

- 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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Go to Settings to activate Windows.

- 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

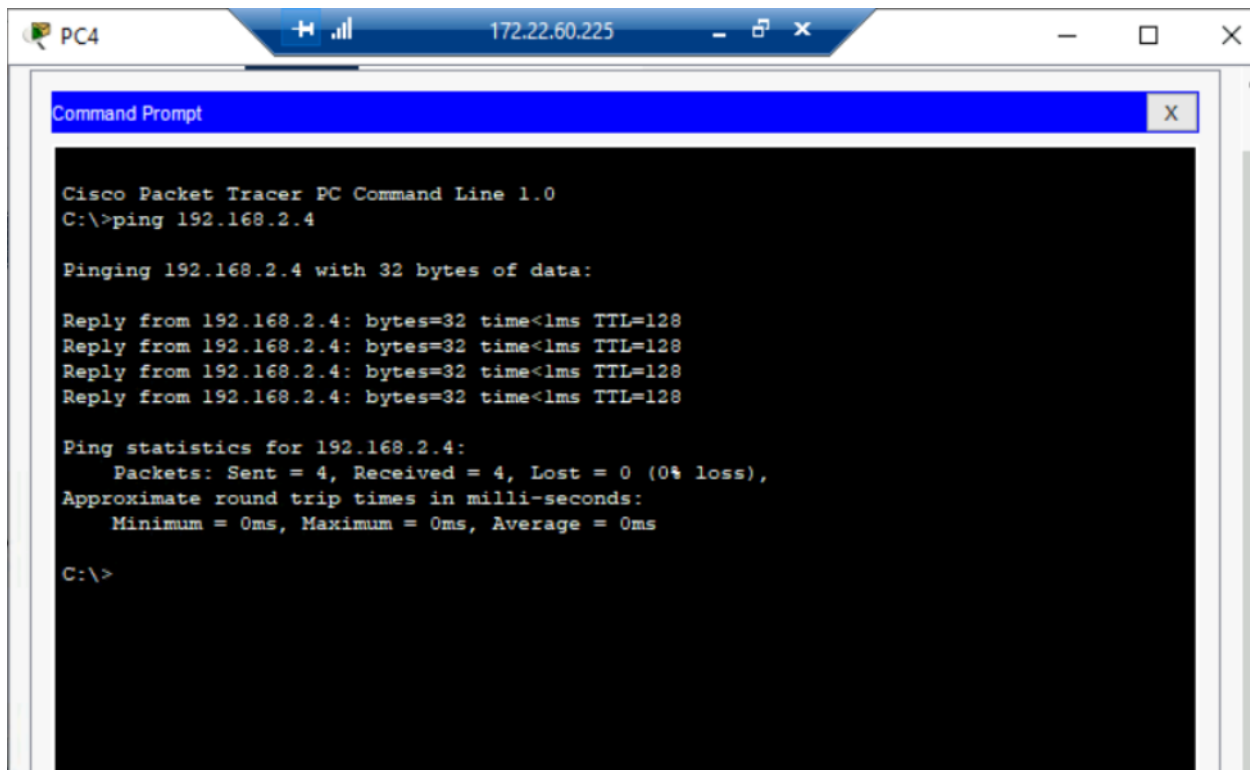
Gateway of last resort is not set

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)#
```

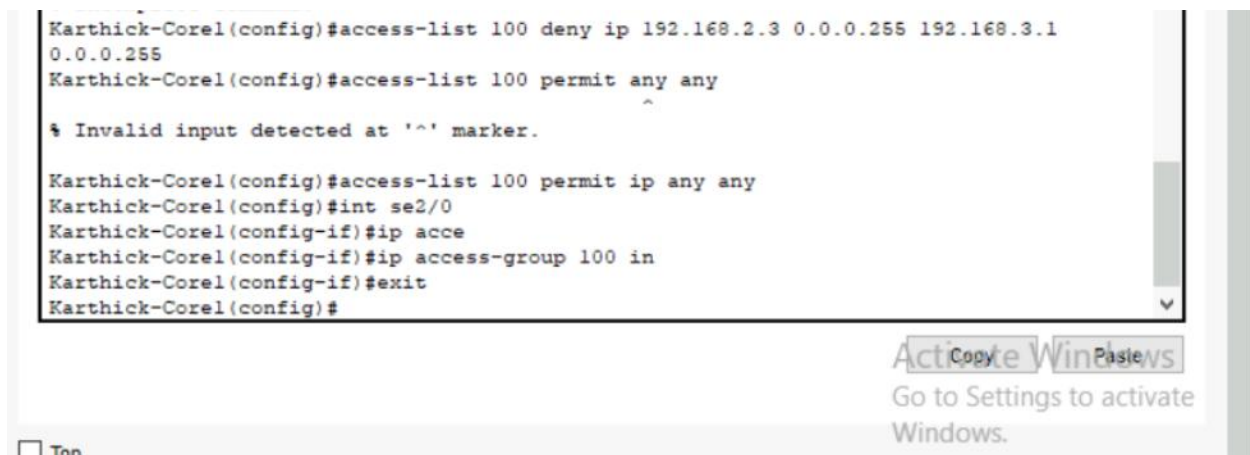
Activate Windows
Go to Settings to activate

- Ping from PC4 to Server to ensure successful communication.

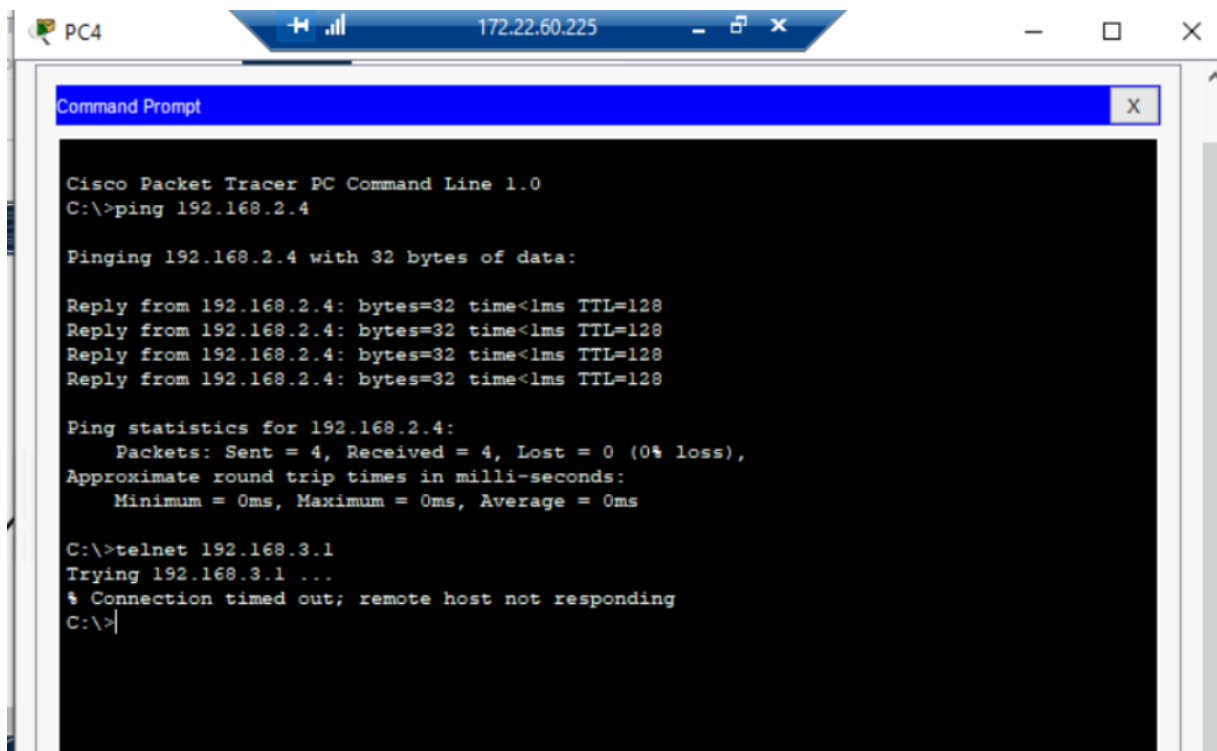


Task 3: Implement ACL for Telnet Restriction

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



- 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.



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

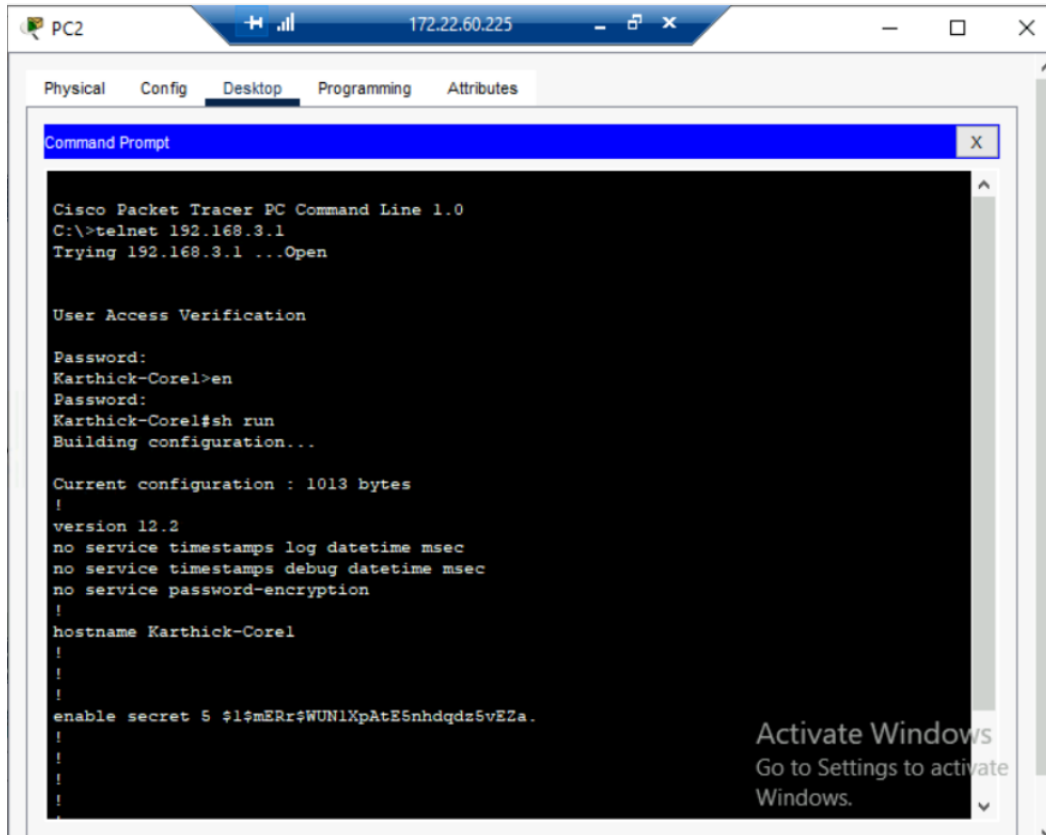
Pinging 192.168.2.4 with 32 bytes of data:

Reply from 192.168.2.4: bytes=32 time<1ms TTL=128
Reply from 192.168.2.4: bytes=32 time<1ms TTL=128
Reply from 192.168.2.4: bytes=32 time<1ms TTL=128
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 PC Command Line window for PC2. The window title is "PC2" and the IP address is "172.22.60.225". The "Desktop" tab is selected. The command prompt shows the following text:

```
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-Core1>en
Password:
Karthick-Core1#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-Core1
!
!
enable secret 5 $1$mERr$WUN1XpAtESnhdqdz5vEZa.
!
!
```

An "Activate Windows" watermark is visible in the bottom right corner of the command prompt window.