

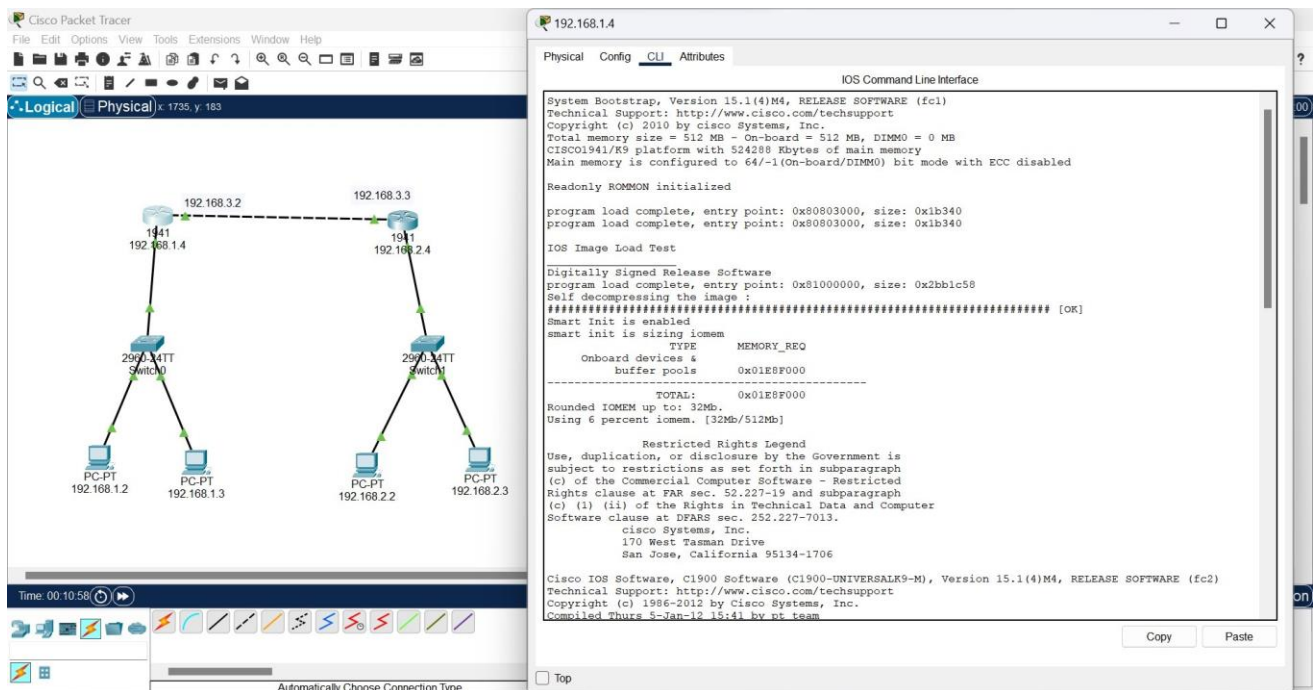
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### Lab Practical #10:

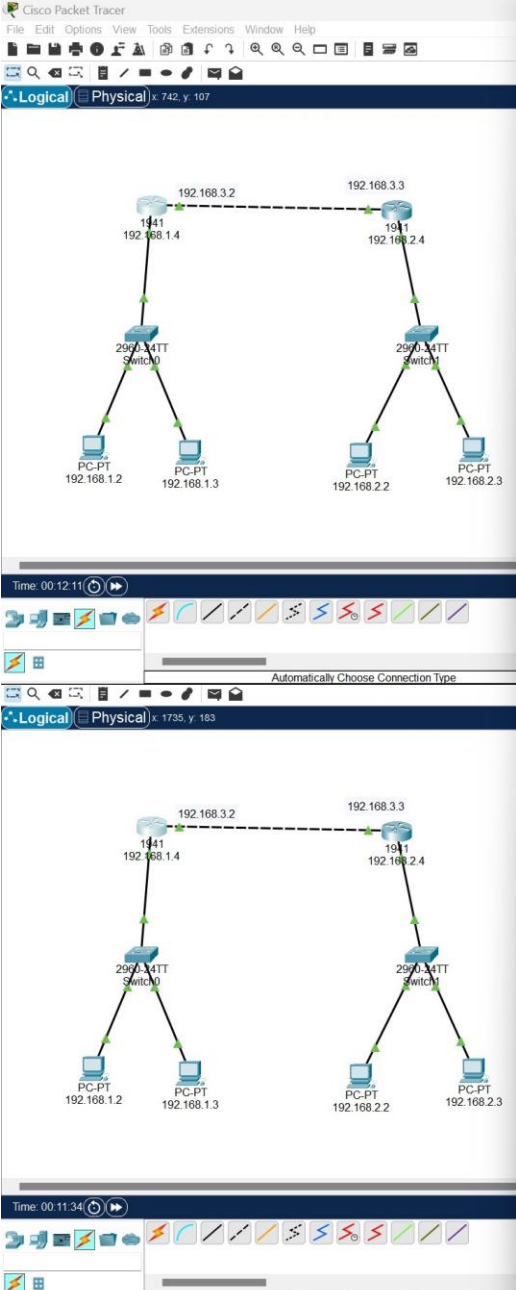
Study the concept of routing using packet tracer. (Static Routing)

### Practical Assignment #10:

1. Connect the two different networks based on the calculated IP addresses and subnet using a packet tracer.



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The diagram shows a network topology with two routers (R1 and R2) connected via their Serial interfaces (S0/0/0 and S0/0/1). R1 has IP 192.168.1.4 and R2 has IP 192.168.2.4. Both routers are connected to two switches (S1 and S2) via their GigabitEthernet interfaces (G0/0/0 and G0/0/1). S1 is connected to two PCs (PC-PT 192.168.1.2 and PC-PT 192.168.1.3). S2 is connected to two PCs (PC-PT 192.168.2.2 and PC-PT 192.168.2.3). The routers are also connected to each other via their GigabitEthernet interfaces (G0/0/0 and G0/0/1).

192.168.1.4

Physical Config CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0

GigabitEthernet0/1

Static Routes

Network:

Mask:

Next Hop:

Add

Network Address

192.168.2.0/24 via 192.168.3.3

Remove

Equivalent IOS Commands

```
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.3
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.3
Router(config)#
Router(config)#
Router(config)#
Router(config)#
```

Top

IOS Command Line Interface

DRAM configuration is 64 bits wide with parity disabled.  
255K bytes of non-volatile configuration memory.  
249956K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

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

Press RETURN to get started!

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.1.4 255.255.255.0
Router(config-if)#ip address 192.168.1.4 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip address 192.168.3.2 255.255.255.0
Router(config-if)#ip address 192.168.3.2 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.3
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.3
Router(config)#
Router(config)#
```

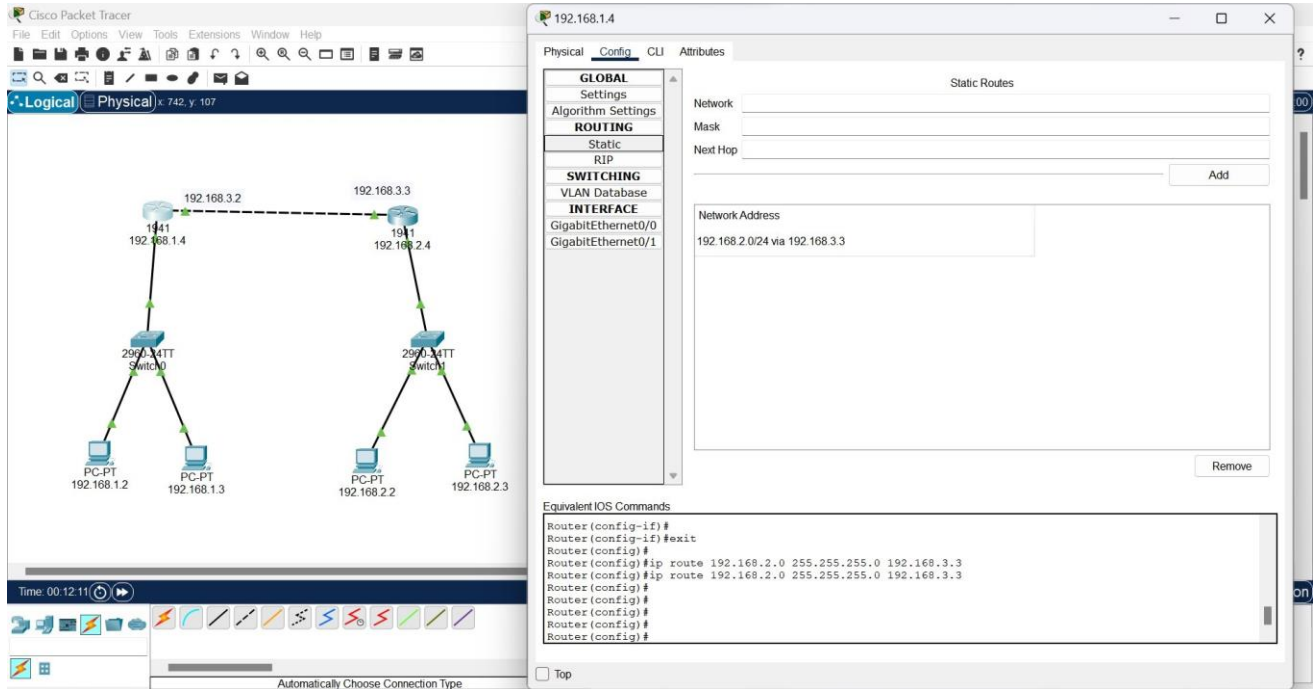
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Top

2 | Enrollment No: - 23010101607

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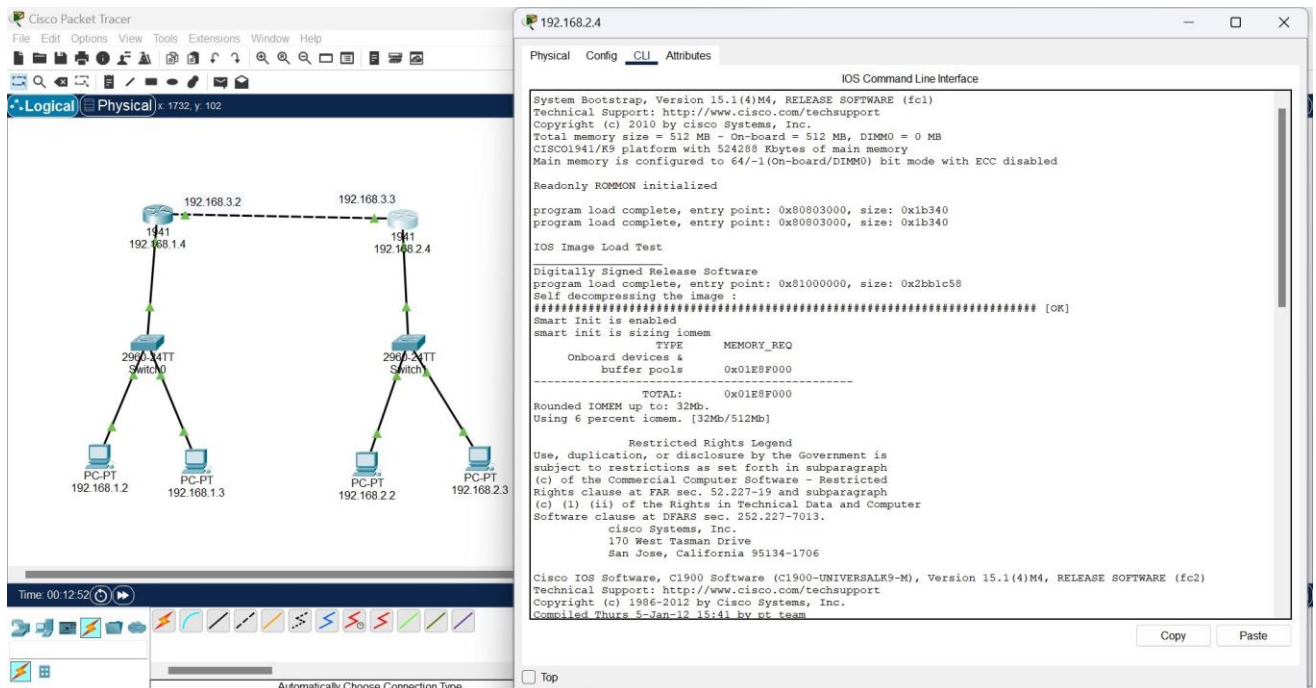


**Network Diagram:** Two routers (1941) are connected via their Serial interfaces (192.168.3.2 and 192.168.3.3). Each router is connected to a 2950 switch, which is then connected to two PCs. The left switch (2950-04TT Switch0) has PCs with IP addresses 192.168.1.2 and 192.168.1.3. The right switch (2950-04TT Switch1) has PCs with IP addresses 192.168.2.2 and 192.168.2.3.

**Configuration for Router 192.168.1.4:**

```

Router(config)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.3
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.3
Router(config)#
Router(config)#
Router(config)#
Router(config)#
  
```



**Network Diagram:** Same as the first screenshot, showing the network topology with two routers and two switches connected to PCs.

**Boot Logs for Router 192.168.2.4:**

```

System Bootstrap, Version 15.1(4)M4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2010 by Cisco Systems, Inc.
Total memory size = 512 MB - On-board = 512 MB, DIMM0 = 0 MB
CISCO1941/K9 platform with 524288 Kbytes of main memory
Main memory is configured to 64/-1(On-board/DIMM0) bit mode with ECC disabled

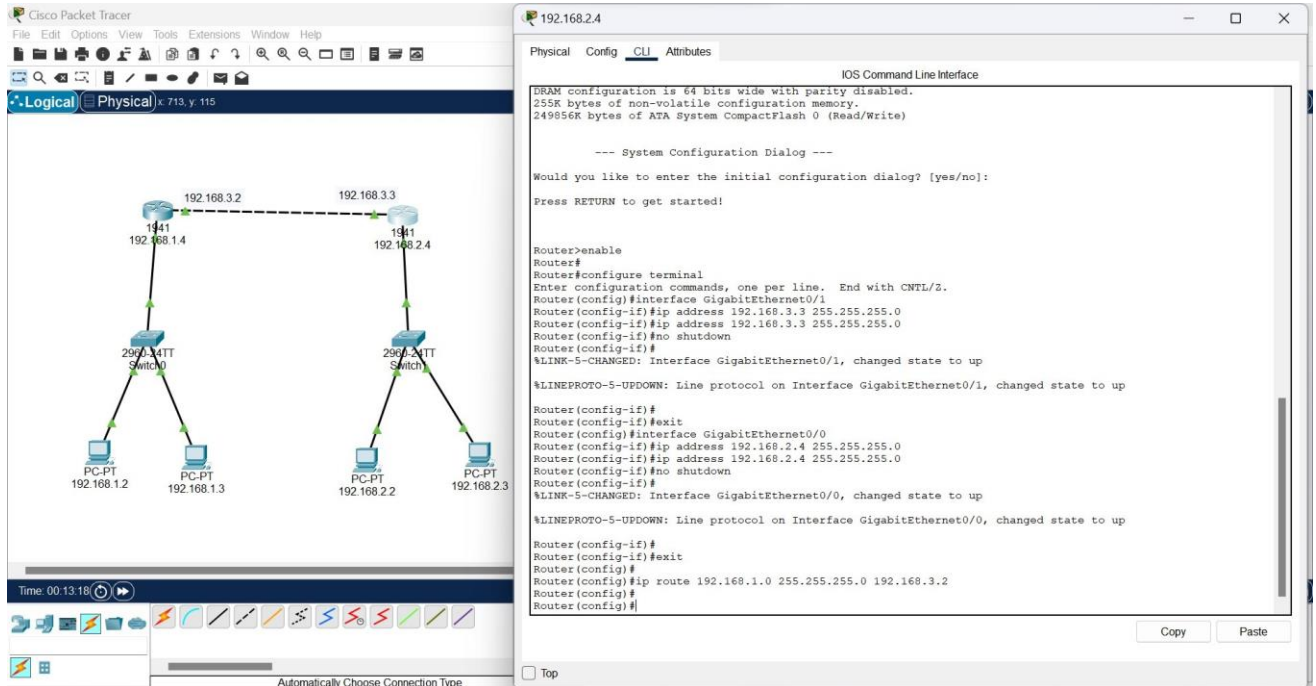
Readonly ROMMON initialized
program load complete, entry point: 0x80803000, size: 0xb340
program load complete, entry point: 0x80803000, size: 0xb340

IOS Image Load Test
Digitally Signed Release Software
program load complete, entry point: 0x81000000, size: 0x2bb1c50
Self decompressing the image :
##### [OK]
Smart init is enabled
Smart init is sizing iomem
          TYPE      MEMORY_REQ
Onboard devices &  buffer pools  0x01E8F000
-----
TOTAL:                0x01E8F000
Rounded IOMEM up to: 32Mb.
Using 6 percent iomem. [32Mb/512Mb]

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(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.
        cisco Systems, Inc.
        170 West Tasman Drive
        San Jose, California 95134-1706

Cisco IOS Software, C1900 Software (C1900-UNIVERSALK9-M), Version 15.1(4)M4, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Thu Sep 5-Jan-12 15:41 by pt team
  
```

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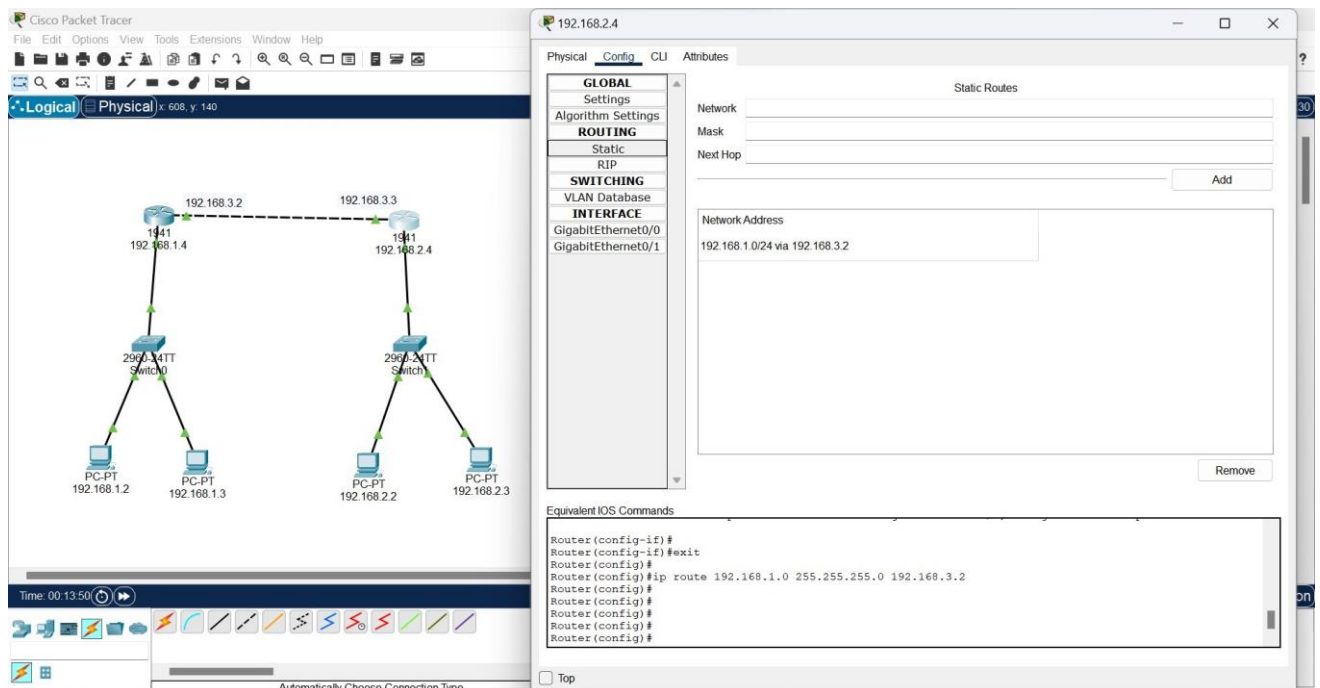


The screenshot shows a network diagram with two routers connected via their serial interfaces (192.168.3.2 and 192.168.3.3). Each router is connected to two switches, which are in turn connected to four PCs each. The IP addresses for the PCs are 192.168.1.2, 192.168.1.3, 192.168.2.2, and 192.168.2.3.

The CLI window for Router 192.168.2.4 shows the following configuration commands:

```

Router>enable
Router#configure terminal
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip address 192.168.3.3 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.2.4 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.3.2
Router(config)#
  
```



The screenshot shows the same network diagram as above. The CLI window for Router 192.168.2.4 shows the configuration of static routes.

The Static Routes configuration window shows the following settings:

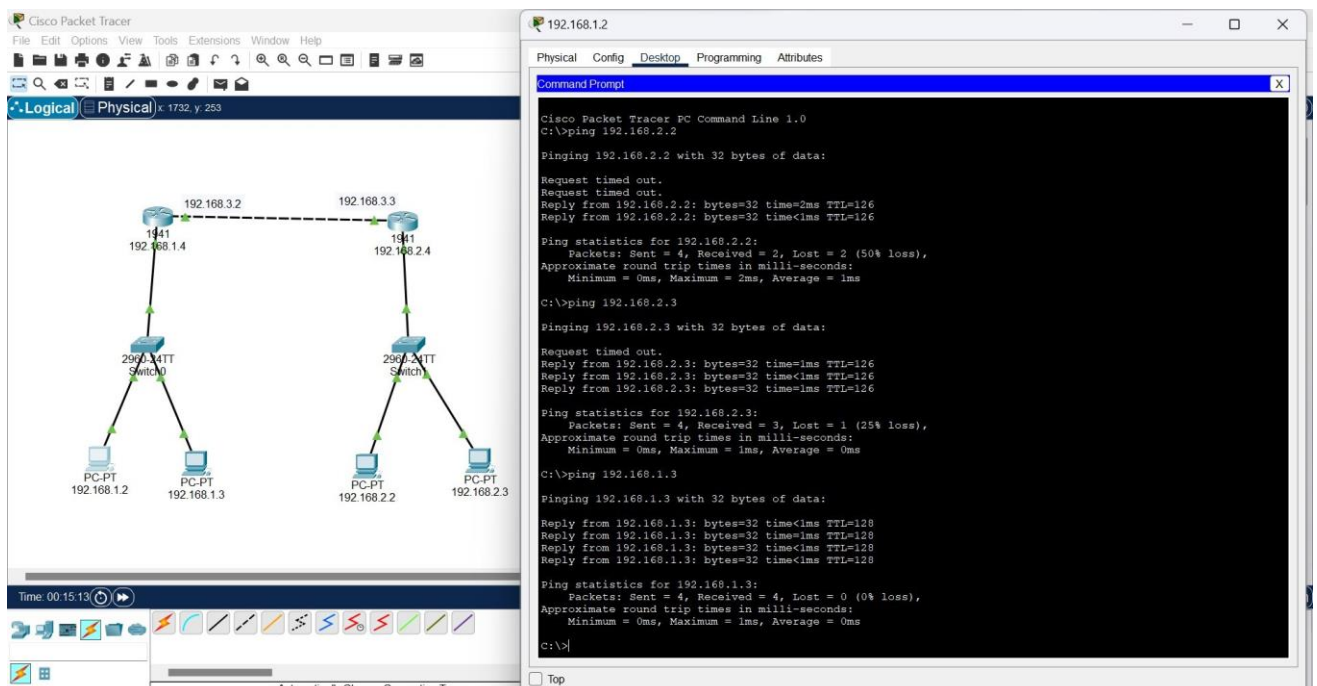
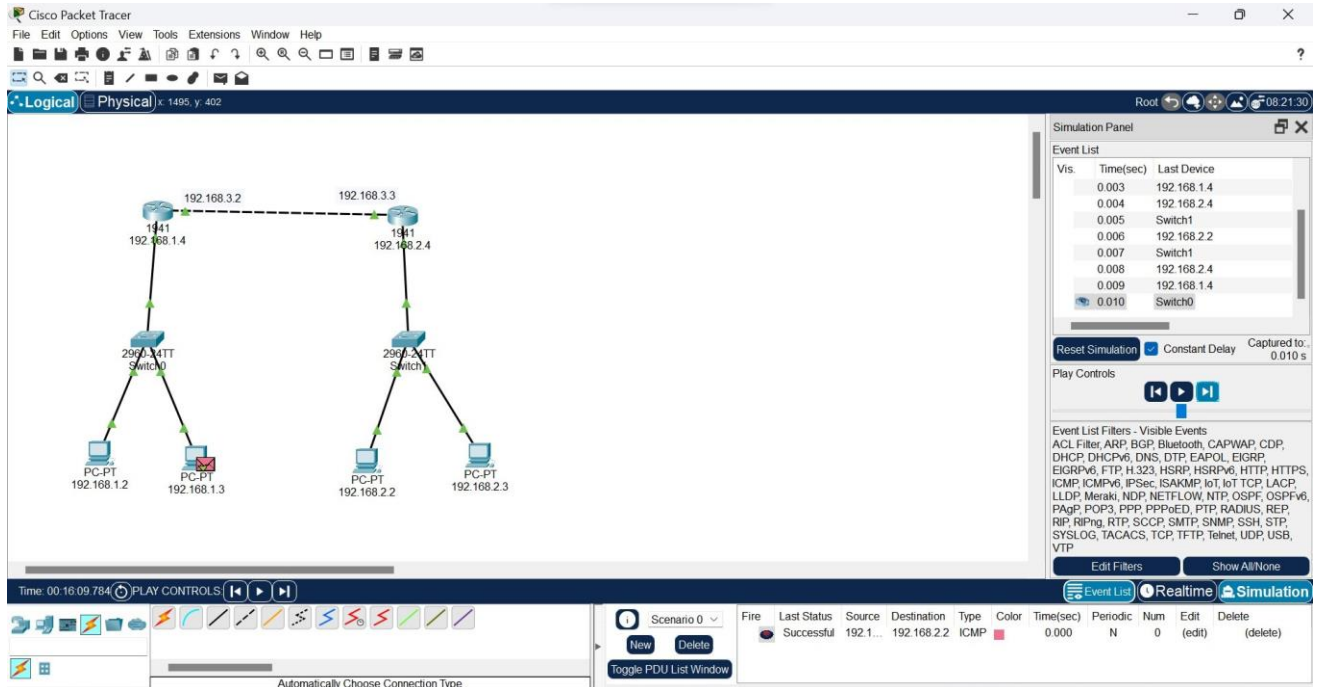
- Network: 192.168.1.0/24
- Mask: 255.255.255.0
- Next Hop: 192.168.3.2

The Equivalent IOS Commands window shows the following commands:

```

Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.3.2
Router(config)#
Router(config)#
Router(config)#
Router(config)#
  
```

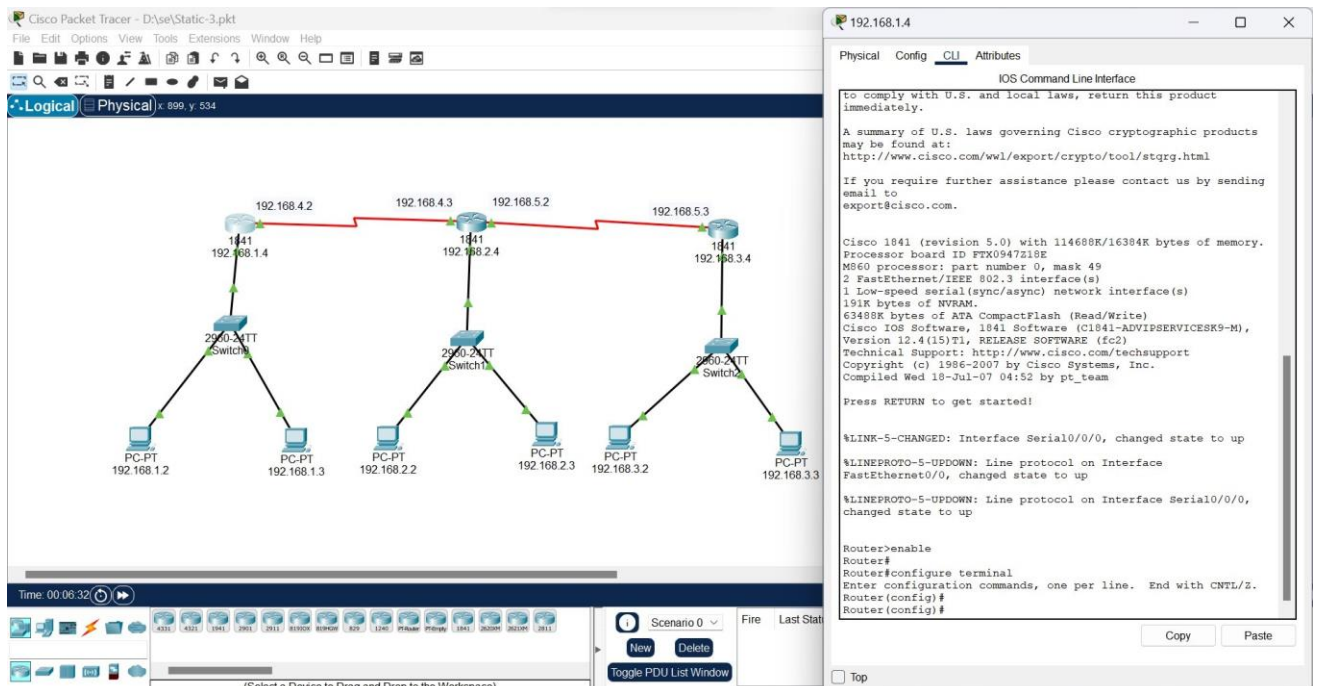
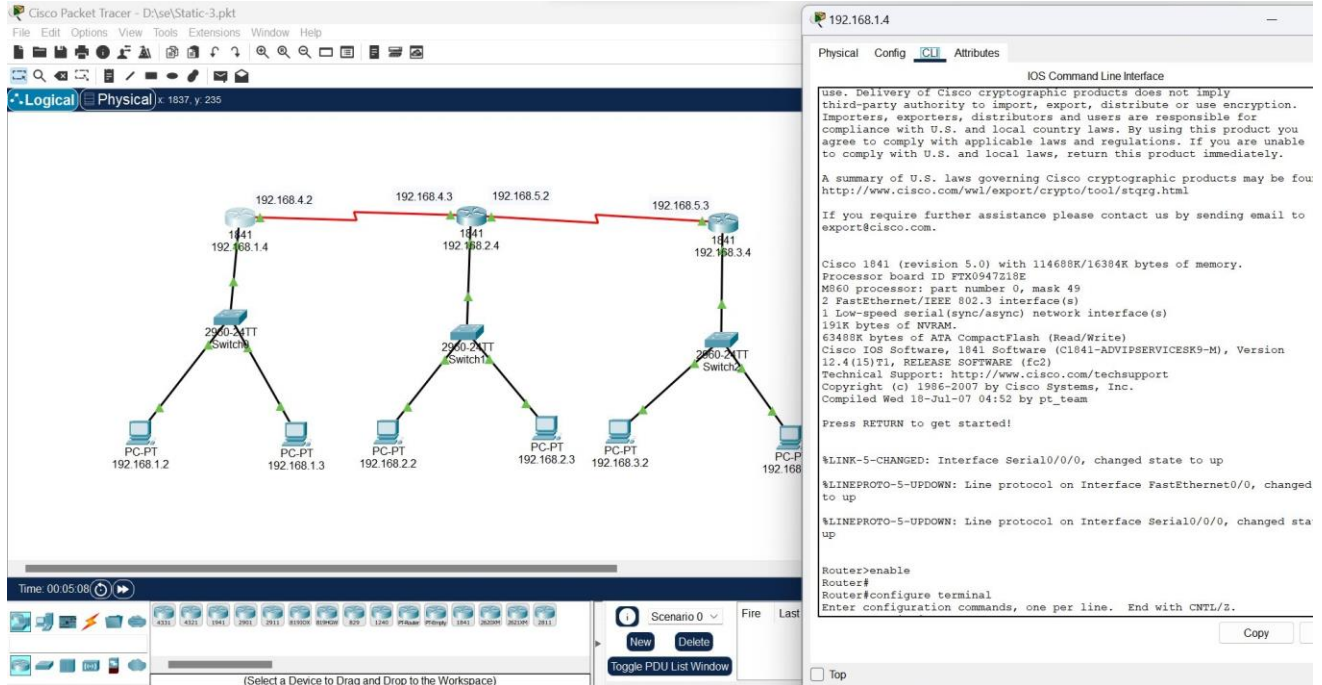
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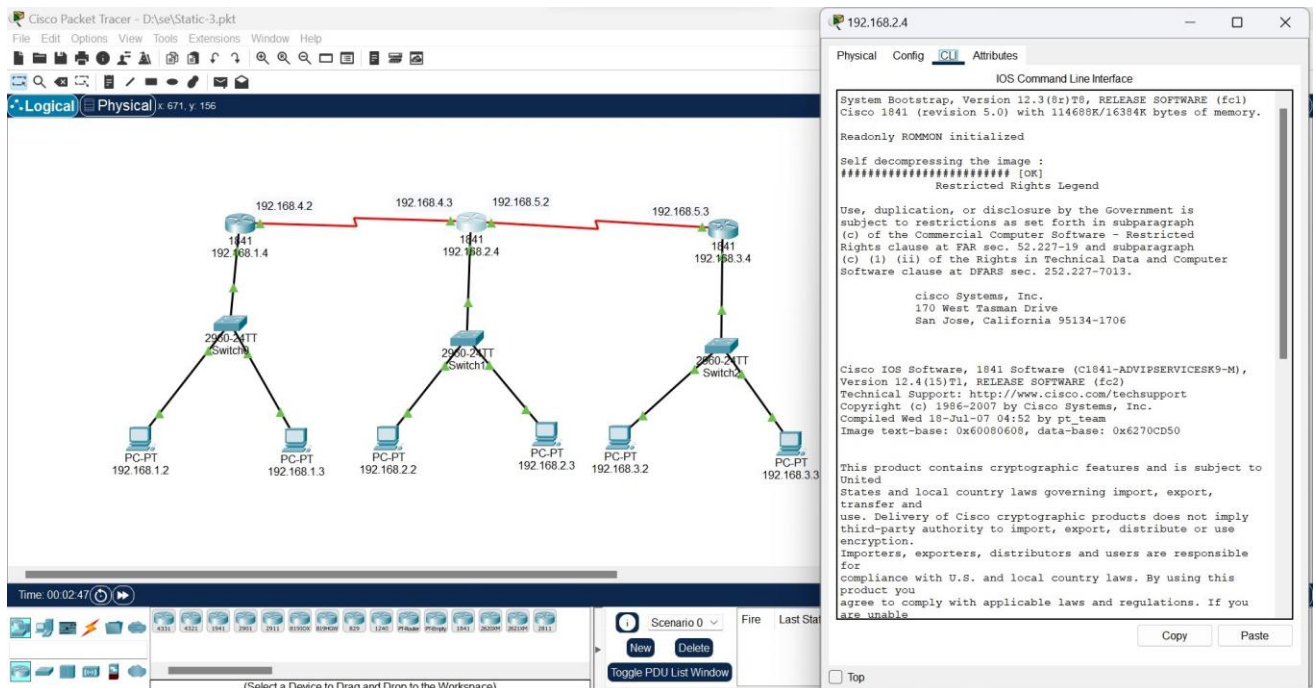
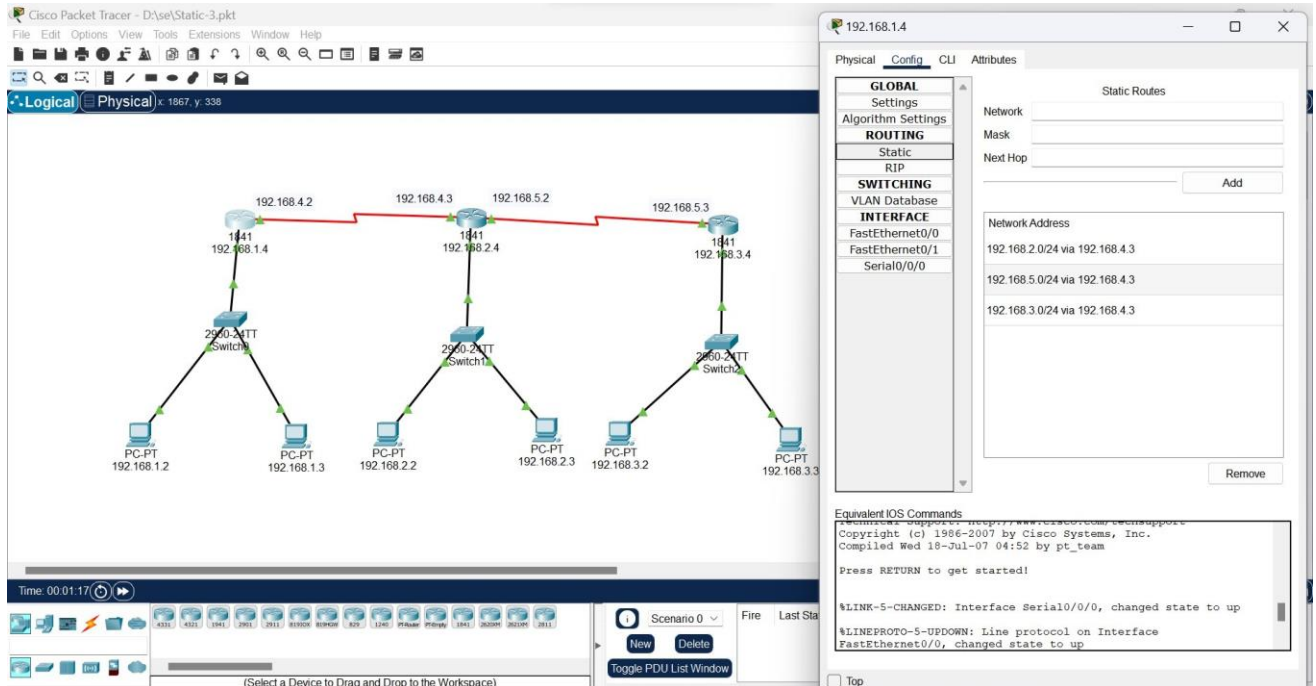


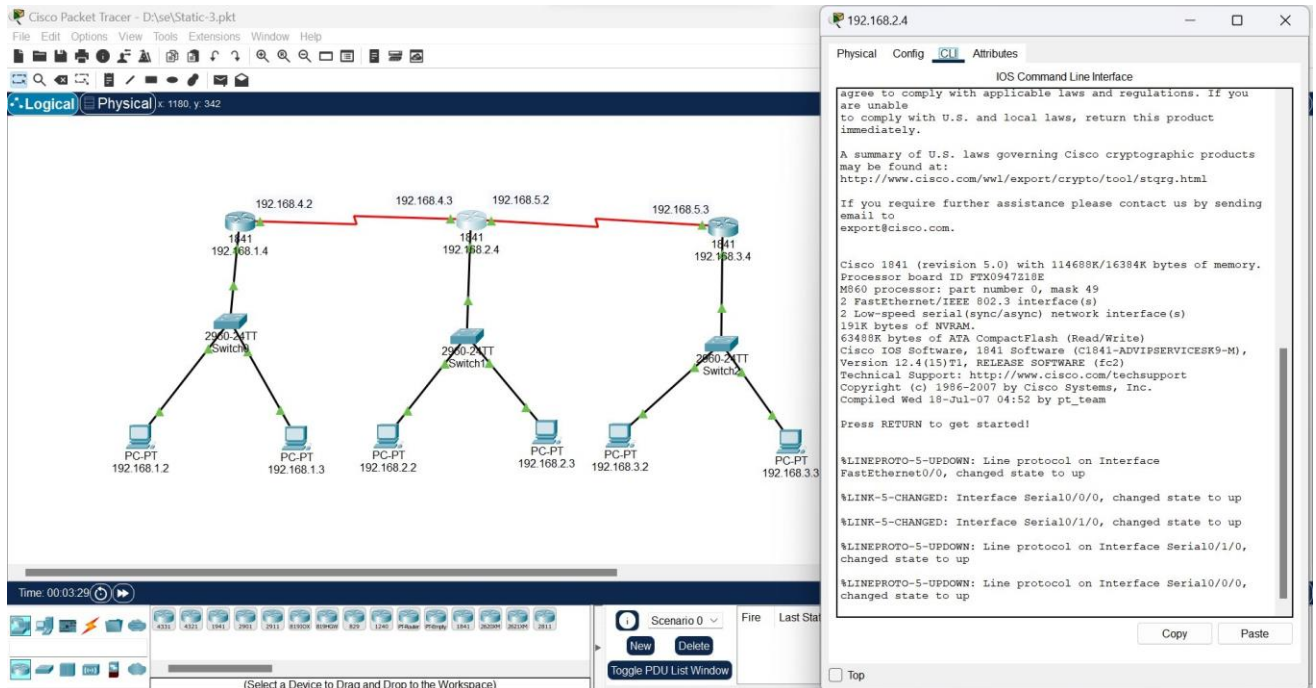


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- Connect the three different networks based on the calculated IP addresses and subnet using a packet tracer.

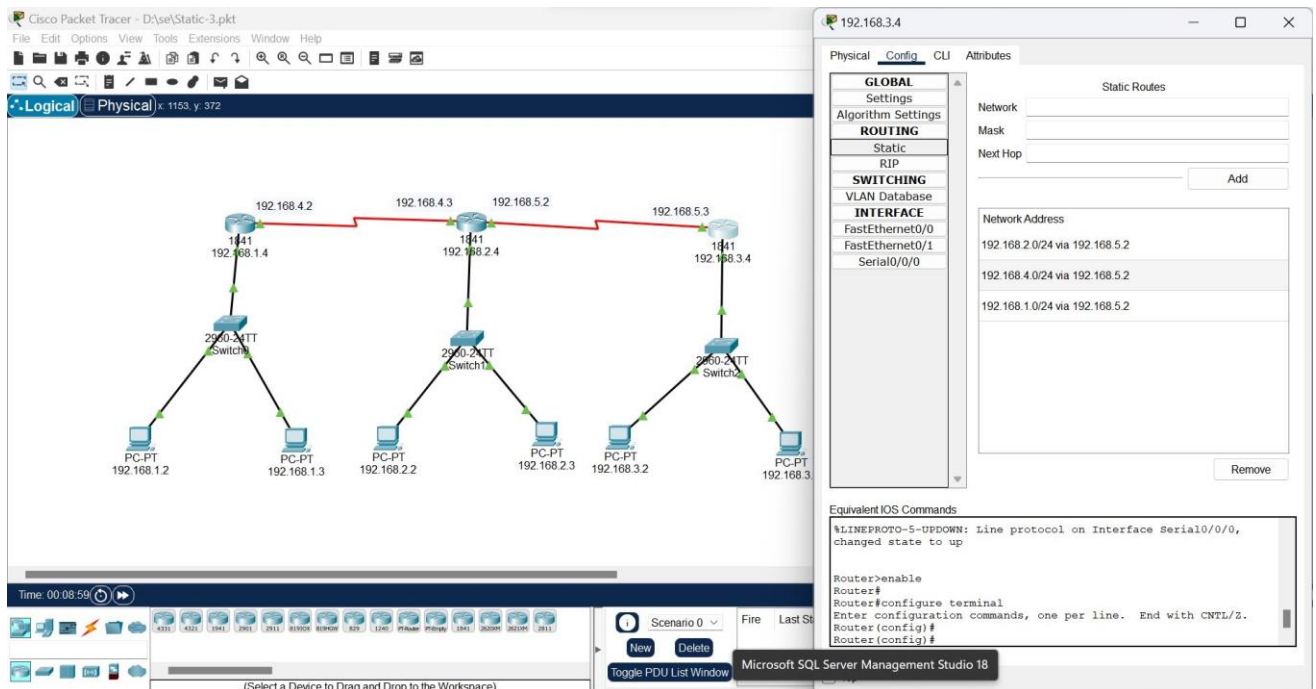






**Network Diagram:** A topology with three routers (192.168.4.2, 192.168.4.3, 192.168.5.2) connected in a line. Each router is connected to two switches (2960-24TT), which are in turn connected to six PCs (192.168.1.2 to 192.168.3.3).

**CLI Window (192.168.2.4):** Shows the IOS Command Line Interface with various system messages and hardware information.



**Network Diagram:** Same topology as the first screenshot.

**Configuration Window (192.168.3.4):** Shows the configuration for the router, including the 'ROUTING' section where static routes are being added.

Network	Mask	Next Hop
192.168.2.0/24	255.255.252.0	192.168.5.2
192.168.4.0/24	255.255.252.0	192.168.5.2
192.168.1.0/24	255.255.252.0	192.168.5.2

**Equivalent IOS Commands:**

```

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
  
```



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