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Course & Section: BSCpE III - GF

Score: \_\_\_\_\_

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## Static Routing

### Objectives

Upon completion of this laboratory exercise, the student will be able to

- Cable a network according to the Topology Diagram.
- Configure and activate Serial and Ethernet interfaces.
- Configure a static route using an intermediate address.
- Test Connectivity between the PC's

### Equipment

PC  
Packet Tracer

### Introduction

Static routing is the most secure way of routing. It reduces overhead from network resources. In this type of routing we manually add routes in routing table. It is useful where numbers of route are limited. In this article we will explain static routing with examples. Like other routing methods static routing also has its pros and cons.

#### Advantage of static routing

- It is easy to implement.
- It is most secure way of routing, since no information is shared with other routers.
- It puts no overhead on resources such as CPU or memory.

#### Disadvantage of static routing

- It is suitable only for small network.
- If a link fails it cannot reroute the traffic.

## Laboratory Activity #4 Static Routing

### Configuring Static Routes

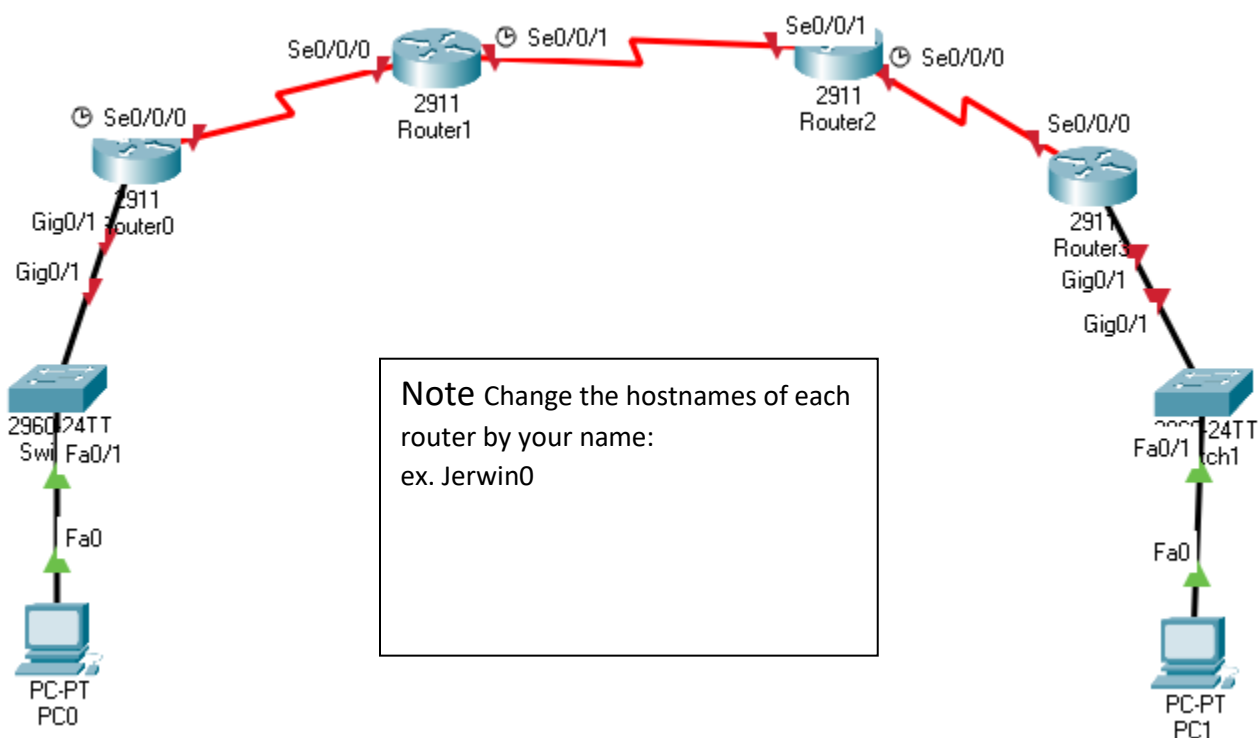



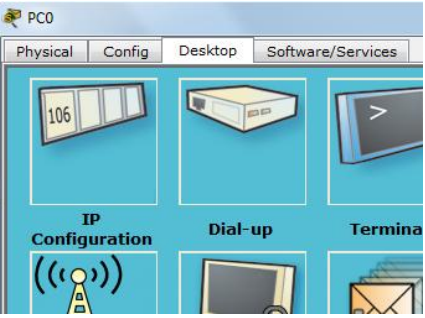
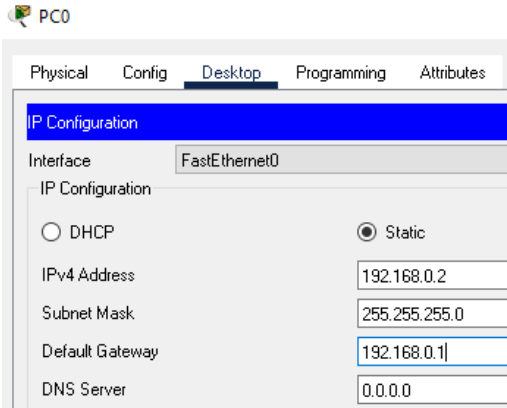
Figure 1. Topology for Activity #4

Table 1. Addressing table for the topology

DEVICE	CONNECTED FROM	CONNECTED TO	IP ADDRESS	SUBNET MASK
PC0	FastEthernet0	Switch0's FastEthernet0/1	192.168.0.2	255.255.255.0
SWITCH0	FastEthernet0/1	PC0's FastEthernet0	-	-
SWITCH0	GigabitEthernet0/1	Router0's GigabitEthernet0/1	-	-
ROUTER0	GigabitEthernet0/1	Switch0's GigabitEthernet0/1	192.168.0.1	255.255.255.0
ROUTER0	Serial 0/0/0	Router1's Serial 0/0/0	200.0.0.1	255.255.255.0
ROUTER1	Serial 0/0/0	Router0's Serial 0/0/0	200.0.0.2	255.255.255.0
ROUTER1	Serial 0/0/1	Router2's Serial 0/0/1	200.0.1.1	255.255.255.0
ROUTER2	Serial 0/0/1	Router1's Serial 0/0/1	200.0.1.2	255.255.255.0
ROUTER2	Serial 0/0/0	Router3's Serial 0/0/0	200.0.2.1	255.255.255.0
ROUTER3	Serial 0/0/0	Router2's Serial 0/0/0	200.0.2.2	255.255.255.0
ROUTER3	GigabitEthernet0/1	Switch1's GigabitEthernet0/1	192.168.1.1	255.255.255.0
SWITCH1	GigabitEthernet0/1	Router3's GigabitEthernet0/1	-	-
SWITCH1	FastEthernet0/1	PC0's FastEthernet0	-	-
PC1	FastEthernet0	Switch1's FastEthernet0	192.168.1.2	255.255.255.0

## Laboratory Activity #4 Static Routing


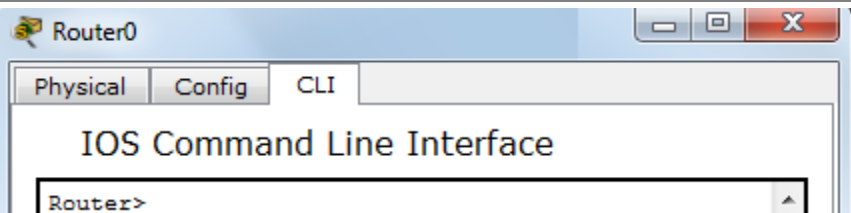
### Assign IP address on a PC

	Image	Direction
Step 1		Double Click the PC
Step 2		Select the Desktop Tab and Click the IP Configuration
Step 3		<p>Assign the IP address, Subnet Mask and Default Gateway of the PC0, based on Table 1.</p> <p><b>PC0</b>  IPv4 address: 192.168.0.2  Subnet Mast: 255.255.255.0  Default Gateway: 192.168.0.1</p> <p><b>PC1</b>  IPv4 address: 192.168.1.2  Subnet Mast: 255.255.255.0  Default Gateway: 192.168.1.1</p>
Step 4		Repeat Steps 1-3 for PC1

## Laboratory Activity #4 Static Routing

### Assign IP address to interfaces of routers

#### Router 0

	Image	Direction/Description
Step 1		Double Click the Router
Step 2		Click the tab CLI and enter the User Exec Mode
Step 3	Router>enable Router#configure terminal	Type the following Commands to enter Global Configuration Mode
Step 4	Router(config)#interface gigabitEthernet 0/1 Router(config-if)#ip address 192.168.0.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit  NOTE:  If ever you wrongly configured something wrong just put add <b>no</b> at the command  Ex. no ip address 192.168.0.1 255.255.255.0	Type the following Commands to Assign IP address.  <b>interface fastEthernet 0/0</b> command is used to enter in interface mode. <b>ip address 10.0.0.1 255.0.0.0</b> command will assign IP address to interface. <b>no shutdown</b> command will bring the interface up. <b>exit</b> command is used to return in global configuration mode.
Step 5	Router#configure terminal Router(config)#interface serial 0/0/0 Router(config-if)#ip address 200.0.0.1 255.255.255.0 Router(config-if)#clock rate 64000 Router(config-if)#no shutdown Router(config-if)#exit	<b>Router#configure terminal</b> Command is used to enter in global configuration mode. <b>Router(config)#interface serial 0/0/0</b> Command is used to enter in interface mode. <b>Router(config-if)#ip address 192.168.0.253</b>

### Laboratory Activity #4 Static Routing

	<p>Note: Only on DCE Serial Interface we assign a clock rate. We don't assign clock rate on DTE.</p> <pre>Router1#show controller se0/0/1 Interface Serial0/0/1 Hardware is PowerQUICC MPC860 DCE V.35, clock rate 2000000</pre> <p>Note: You can use <b>show controller command</b> to check if the interface is DCE or DTE</p>	<p><b>255.255.255.252</b> Command assigns IP address to interface. <b>Router(config-if)#clock rate 64000</b> In real life environment these parameters control the data flow between serial links and need to be set at service providers end. <b>Router(config-if)#no shutdown</b> Command brings interface up. <b>Router(config-if)#exit</b> Command is used to return in global configuration mode.</p>
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#### Router 1

	Image	Direction/Description
Step 1	<pre>Router&gt;enable Router#configure terminal Router(config)#interface serial 0/0/1 Router(config-if)#ip address 200.0.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#interface serial 0/0/1 Router(config-if)#ip address 200.0.1.1 255.255.255.0 Router(config-if)#clock rate 64000 Router(config-if)#no shutdown Router(config-if)#exit</pre>	Follow the steps 1 & 2, on Assigning IP address in Router 0, and perform the following commands on the left.

#### Router 2

	Image	Direction/Description
Step 1	<pre>Router&gt;enable Router#configure terminal Router(config)#interface serial 0/0/1 Router(config-if)#ip address 200.0.1.2 255.255.255.0</pre>	Follow the steps 1 & 2, on Assigning IP address in Router 0, and perform the following commands on the left.

### Laboratory Activity #4 Static Routing

	Router(config-if)#no shutdown Router(config-if)#exit Router(config)#interface serial 0/0/0 Router(config-if)#ip address 200.0.2.1 255.255.255.252 Router(config-if)#clock rate 64000 Router(config-if)#no shutdown Router(config-if)#exit	
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#### Router 3

	Image	Direction/Description
Step 1	Router>enable Router#configure terminal Router(config)#interface serial 0/0/0 Router(config-if)#ip address 200.0.2.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit  Router(config)#interface gigabitEthernet 0/1 Router(config-if)#ip address 192.168.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	Follow the steps 1 & 2, on Assigning IP address in Router 0, and perform the following commands on the left.

### Checking the status of the routers interface

After assigning all the ip address to the interfaces. The next step is to check the status of the interfaces on each router with the command **show ip interface brief**.

As you can on the output below, the Status and Protocol of interface FastEthernet0/0 and Serial 0/0/0 are “up” this means the interface are working properly.

Do this to all routers and make sure the interfaces are “up”.

```
Router0#  
Router0#show ip int brief  
Interface                IP-Address      OK? Method Status      Protocol  
GigabitEthernet0/0       unassigned      YES unset    administratively down down  
GigabitEthernet0/1       192.168.0.1     YES manual    up          up  
GigabitEthernet0/2       unassigned      YES unset    administratively down down  
Serial0/0/0              200.0.0.1       YES manual    up          up
```

## Laboratory Activity #4 Static Routing

```
Router1#
Router1#show ip int brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	administratively down	down
GigabitEthernet0/1	unassigned	YES	unset	administratively down	down
GigabitEthernet0/2	unassigned	YES	unset	administratively down	down
Serial0/0/0	200.0.0.2	YES	manual	up	up
Serial0/0/1	200.0.1.1	YES	manual	up	up

```
Router2#
Router2#show ip int brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	administratively down	down
GigabitEthernet0/1	unassigned	YES	unset	administratively down	down
GigabitEthernet0/2	unassigned	YES	unset	administratively down	down
Serial0/0/0	200.0.2.1	YES	manual	up	up
Serial0/0/1	200.0.1.2	YES	manual	up	up

```
Router3#
Router3#show ip int brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	administratively down	down
GigabitEthernet0/1	192.168.1.1	YES	manual	up	up
GigabitEthernet0/2	unassigned	YES	unset	administratively down	down
Serial0/0/0	200.0.2.2	YES	manual	up	up
Serial0/0/1	unassigned	YES	unset	administratively down	down

## Configuring Static Route

To configure static routes with a next-hop specified, use the following syntax:

```
Router(config)# ip route network-address subnet-mask ip-address
```

*network-address*—Destination network address of the remote network to be added to the routing table.

*subnet-mask*—Subnet mask of the remote network to be added to the routing table.

The subnet mask can be modified to summarize a group of networks.

*ip-address*—Commonly referred to as the next-hop router's IP address.

### Router0

On the R0 router, configure a static route to the 192.168.1.0 network using the Serial 0/0/0 interface of R1 as the next-hop address.

```
Router(config)#ip route 192.168.1.0 255.255.255.0 200.0.0.2
```

This command instructs router that when you receive a packet for 192.168.1.0 network give it to 200.0.0.2. Network 192.168.0.0 is directly connected so we do not need to configure it here.

### Router1

On the R1 router, configure a static route to the 192.168.0.0 network using the Serial 0/0/0 interface of R0 as the next-hop address. We also need to configure a static route to the 192.168.1.0 network using the Serial 0/0/1 interface of R2 as the next-hop address.

```
Router(config)#ip route 192.168.0.0 255.255.255.0 200.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 200.0.1.2
```

### *Laboratory Activity #4 Static Routing*

On this router both networks are reachable via other routers so we need to configure route for both networks 192.168.0.0 and 192.168.1.0

#### *Router2*

On the R2 router, configure a static route to the 192.168.0.0 network using the Serial 0/0/1 interface of R1 as the next-hop address. We also need to configure a static route to the 192.168.1.0 network using the Serial 0/0/0 interface of R3 as the next-hop address.

```
Router(config)#ip route 192.168.0.0 255.255.255.0 200.0.1.1
Router(config)#ip route 192.168.1.0 255.255.255.0 200.0.2.2
```

Same as Router1 again we need configure route for both networks on this router.

#### *Router3*

On the R3 router, configure a static route to the 192.168.0.0 network using the Serial 0/0/0 interface of R2 as the next-hop address.

```
Router(config)#ip route 192.168.0.0 255.255.255.0 200.0.2.1
```

Network 192.168.1.0 is directly connected so we only need to configure network 10.0.0.0 on this router.

#### NOTE:

If ever you wrongly configured something wrong just put add **no** at the command

Ex. `no ip route 192.168.0.0 255.255.255.0 200.0.0.1`

### Checking static routers

After configuring all the static routes on the router. The next step is to check if the static routes are configured you can use the command **show ip route**.

**C**-stands for connected networks to the router.

**L**-stands for local interfaces in the network

**S**-stand for statically configured routes



## Laboratory Activity #4 Static Routing

```
Router0#show ip route
Codes: L - local, C - connected, S - static, 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

```
      192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.0.0/24 is directly connected, GigabitEthernet0/1
L       192.168.0.1/32 is directly connected, GigabitEthernet0/1
S       192.168.1.0/24 [1/0] via 200.0.0.2
      200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.0.0.0/24 is directly connected, Serial0/0/0
L       200.0.0.1/32 is directly connected, Serial0/0/0
```

```
Router1#show ip route
Codes: L - local, C - connected, S - static, 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

```
S       192.168.0.0/24 [1/0] via 200.0.0.1
S       192.168.1.0/24 [1/0] via 200.0.1.2
      200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.0.0.0/24 is directly connected, Serial0/0/0
L       200.0.0.2/32 is directly connected, Serial0/0/0
      200.0.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.0.1.0/24 is directly connected, Serial0/0/1
L       200.0.1.1/32 is directly connected, Serial0/0/1
```

```
Router2#show ip route
Codes: L - local, C - connected, S - static, 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

```
S       192.168.0.0/24 [1/0] via 200.0.1.1
S       192.168.1.0/24 [1/0] via 200.0.2.2
      200.0.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.0.1.0/24 is directly connected, Serial0/0/1
L       200.0.1.2/32 is directly connected, Serial0/0/1
      200.0.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.0.2.0/24 is directly connected, Serial0/0/0
L       200.0.2.1/32 is directly connected, Serial0/0/0
```

## Laboratory Activity #4 Static Routing

```
Router3#show ip route
```


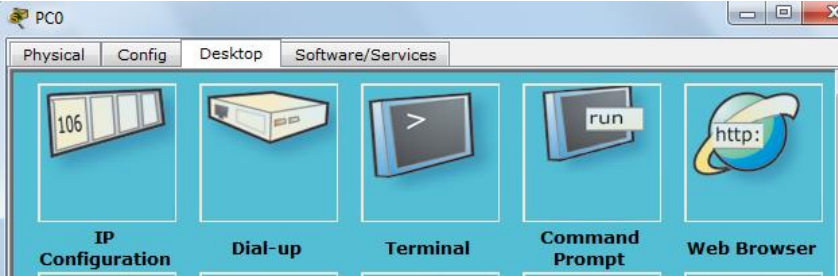
```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - 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
```

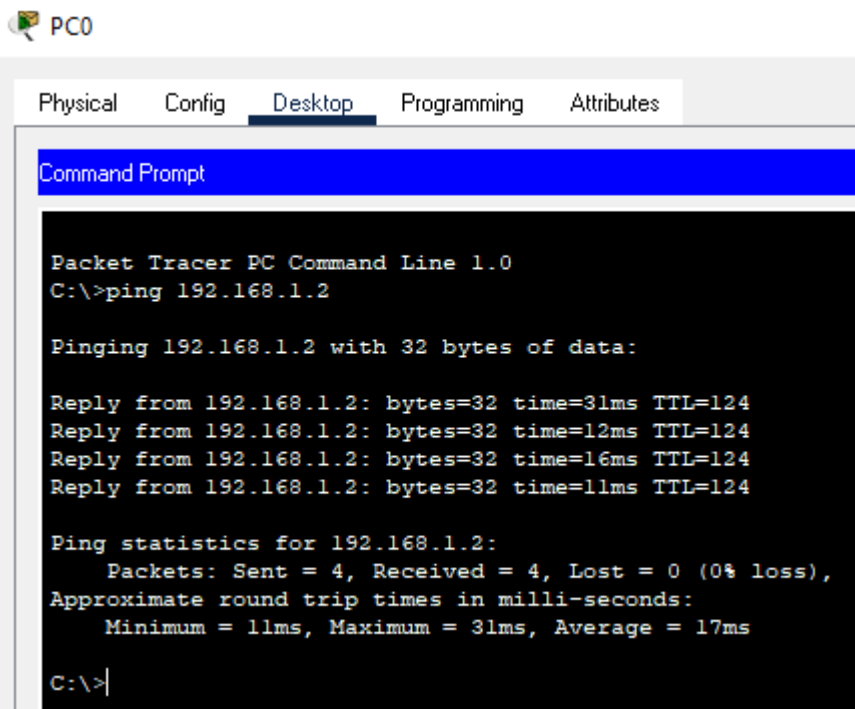
```
S    192.168.0.0/24 [1/0] via 200.0.2.1
    192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.1.0/24 is directly connected, GigabitEthernet0/1
L    192.168.1.1/32 is directly connected, GigabitEthernet0/1
    200.0.2.0/24 is variably subnetted, 2 subnets, 2 masks
C    200.0.2.0/24 is directly connected, Serial0/0/0
L    200.0.2.2/32 is directly connected, Serial0/0/0
```

## Verifying Connections

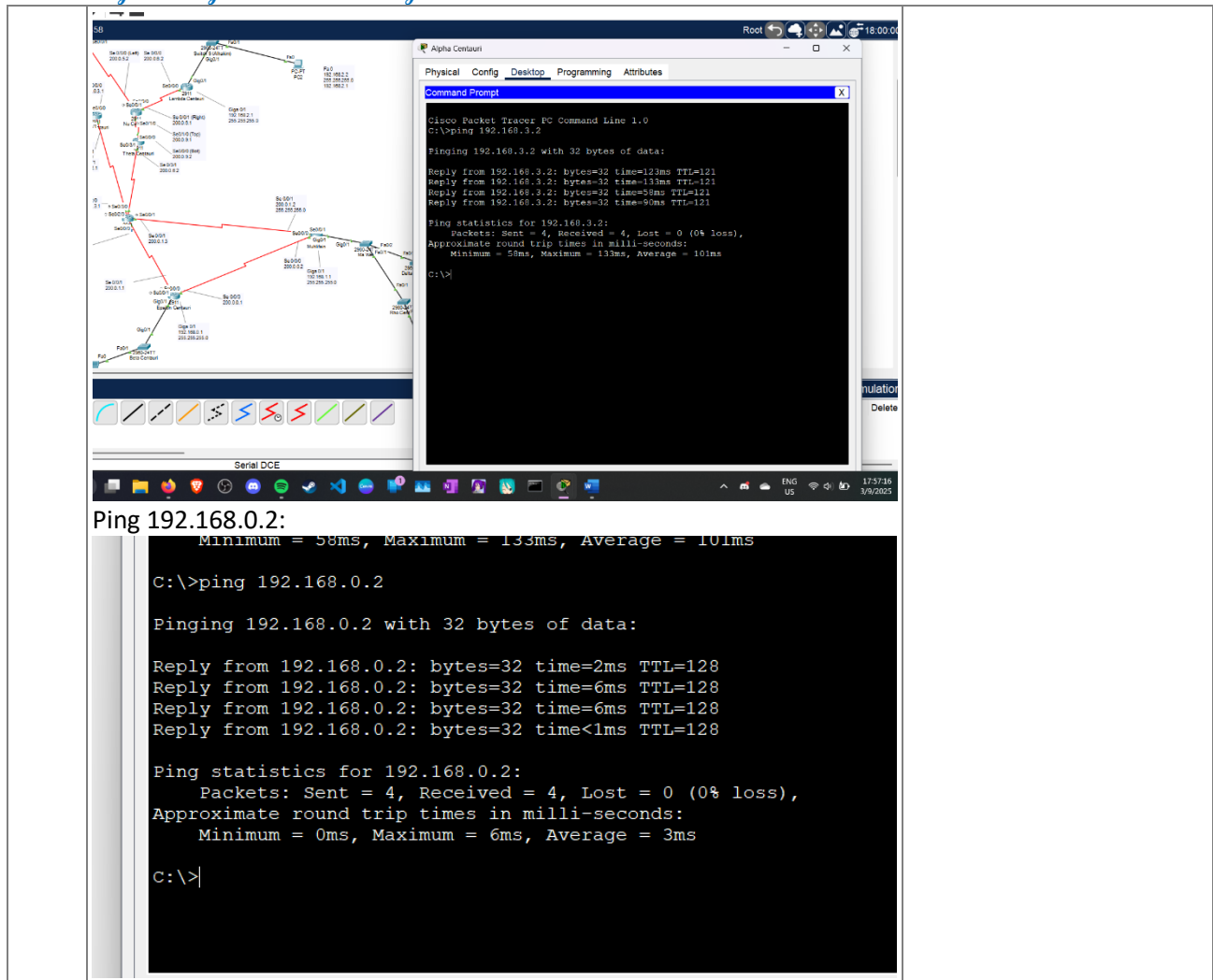
To verify the result we can use *ping* command. Access the command prompt of PC0 and use *ping* command to test the connectivity from PC1.

	Image	Direction
Step 1		Double Click the PC
Step 2		Select the Desktop Tab and Click the Command Prompt
Step 3		Type ping 192.168.1.2

### Laboratory Activity #4 Static Routing

	 <p>The screenshot shows the Packet Tracer interface for PC0. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The text in the window is as follows:</p> <pre> Packet Tracer PC Command Line 1.0 C:\&gt;ping 192.168.1.2  Pinging 192.168.1.2 with 32 bytes of data:  Reply from 192.168.1.2: bytes=32 time=31ms TTL=124 Reply from 192.168.1.2: bytes=32 time=12ms TTL=124 Reply from 192.168.1.2: bytes=32 time=16ms TTL=124 Reply from 192.168.1.2: bytes=32 time=11ms TTL=124  Ping statistics for 192.168.1.2:     Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),     Approximate round trip times in milli-seconds:         Minimum = 11ms, Maximum = 31ms, Average = 17ms  C:\&gt; </pre>	
<p>Step 4</p>		<p>Repeat Steps 1-3 for PC1 and use the address 192.168.0.2</p>

## Laboratory Activity #4 Static Routing



The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a complex topology with multiple routers and hosts. A red line highlights a specific path through the network. On the right, a 'Command Prompt' window is open, showing the results of a ping command. The window title is 'Alpha Centauri' and it has tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The command prompt shows the following output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time=123ms TTL=121
Reply from 192.168.3.2: bytes=32 time=13ms TTL=121
Reply from 192.168.3.2: bytes=32 time=58ms TTL=121
Reply from 192.168.3.2: bytes=32 time=90ms TTL=121

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 58ms, Maximum = 133ms, Average = 101ms
C:\>
```

Below the command prompt, the text 'Ping 192.168.0.2:' is followed by the same output as above, but with the destination IP address changed to 192.168.0.2.

```
Ping 192.168.0.2:
Minimum = 58ms, Maximum = 133ms, Average = 101ms

C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time=2ms TTL=128
Reply from 192.168.0.2: bytes=32 time=6ms TTL=128
Reply from 192.168.0.2: bytes=32 time=6ms TTL=128
Reply from 192.168.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 3ms
C:\>
```

### Default Static Route

A default static route is a route that matches all packets. A default route identifies the gateway IP address to which the router sends all IP packets that it does not have a learned or static route for. A default static route is simply a static route with 0.0.0.0/0 as the destination IPv4 address. Configuring a default static route creates a Gateway of Last Resort.

Default static routes are used:

- When no other routes in the routing table match the packet destination IP address. In other words, when a more specific match does not exist. A common use is when connecting a company's edge router to the ISP network.
- When a router has only one other router to which it is connected. This condition is known as a stub router.

## Laboratory Activity #4 Static Routing

### Configuring Default Static Route

Since R0 and R3 are considered to be stub router, we can configure a default static route for all packets leaving the router.

**To configure default static routes with a next-hop specified, use the following syntax:**

```
Router(config)# ip route 0.0.0.0 0.0.0.0 ip-address
```

*network-address(0.0.0.0) and subnet-mask(0.0.0.0):* if both network address and subnet mask are both 0.0.0.0 it means that “packets from any IP address with any subnet mask are sent the next hop address”

*ip-address*—Commonly referred to as the next-hop router’s IP address

#### Router0

On the R0 router, configure a default static route with network address of 0.0.0.0 and subnet mask of 0.0.0.0 using the Serial 0/0/0 interface of R1 as the next-hop address.

```
Router(config)#ip route 0.0.0.0 0.0.0.0 200.0.0.2
```

#### Router3

On the R3 router, configure a default static route with network address of 0.0.0.0 and subnet mask of 0.0.0.0 using the Serial 0/0/0 interface of R2 as the next-hop address.

```
Router(config)#ip route 0.0.0.0 0.0.0.0 200.0.2.1
```

### Checking default static routers

After configuring all the static routes on the router. The next step is to check if the static routes are configured you can use the command **show ip route**.

**\*S**-stand for default statically configured routes

#### *Laboratory Activity #4 Static Routing*

```
Router(config)#do show ip route
Codes: L - local, C - connected, S - static, 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 200.0.0.2 to network 0.0.0.0

    192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.0.0/24 is directly connected, GigabitEthernet0/1
L       192.168.0.1/32 is directly connected, GigabitEthernet0/1
S       192.168.1.0/24 [1/0] via 200.0.0.2
    200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.0.0.0/24 is directly connected, Serial0/0/0
L       200.0.0.1/32 is directly connected, Serial0/0/0
S*     0.0.0.0/0 [1/0] via 200.0.0.2
```

Conclusion: (discuss what you learn in this activity)

During this lab, I built a network topology inspired by the Centaurus constellation and learned how to cable devices according to a specified diagram. Although it was challenging at first, I enjoyed the hands-on experience of configuring and activating both Serial and Ethernet interfaces on multiple routers. By using intermediate addresses to set up static routes, I came to appreciate how each router needs proper path information to forward packets successfully. Finally, testing connectivity between PCs with tools like ping helped verify that my configuration was correct and that end-to-end communication worked as intended.

Overall, this exercise reinforced the importance of systematic planning, accurate IP addressing, and clear routing instructions. I also gained confidence in troubleshooting issues such as missing routes or misconfigured interfaces that can disrupt network communication. By walking through each objective step by step, I now have a stronger foundation in router setup, static routing, and basic network verification techniques, all of which are crucial for designing and maintaining reliable networks.







## Laboratory Activity #4 Static Routing

Cisco Packet Tracer - C:\Users\deyb\Cisco Packet Tracer 8.2.2\saves\Week 4\ Assignment.pkt

File Edit Options View Tools Extensions Window Help

Logical Physical x: 130, y: 186

Cisco Packet Tracer - C:\Users\deyb\Cisco Packet Tracer 8.2.2\saves\Week 4\ Assignment.pkt

File Edit Options View Tools Extensions Window Help

Logical Physical x: 384, y: 562

Time: 00:30:59

Realtime Simulation

Scenario 0

New Delete

Toggle PDU List Window

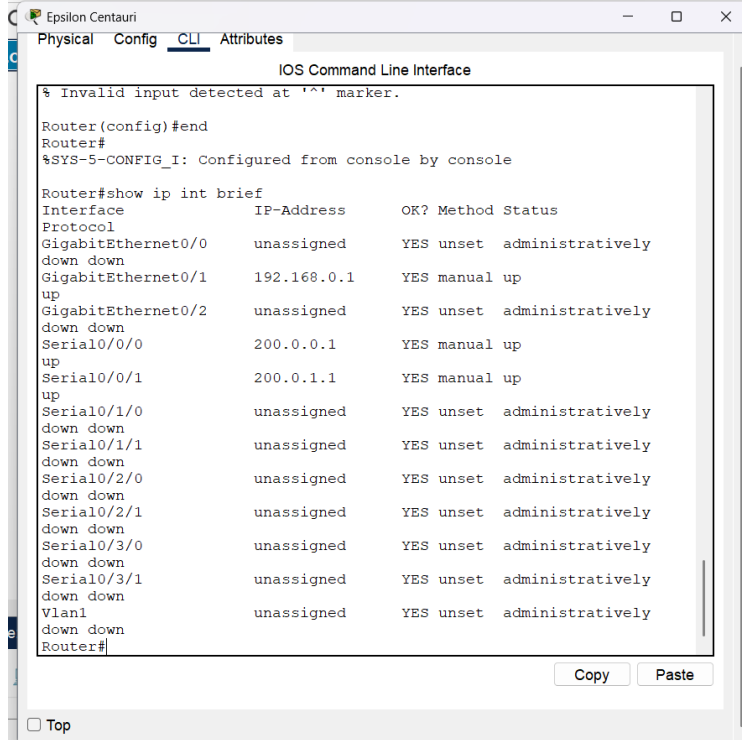
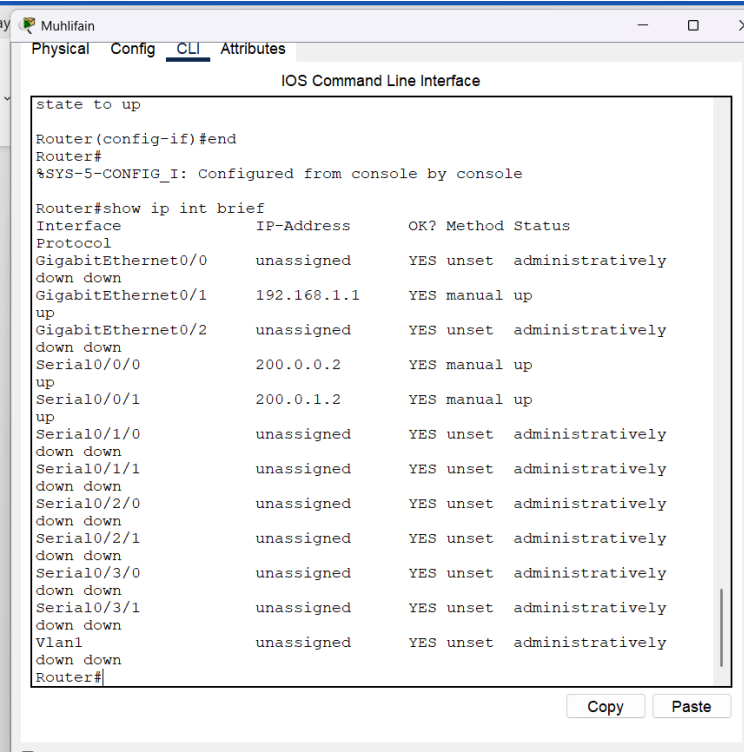
Serial DCE

Source Destination Type Color Time(sec) Periodic Num Edit Delete

ENG US 17:59:12 3/9/2025

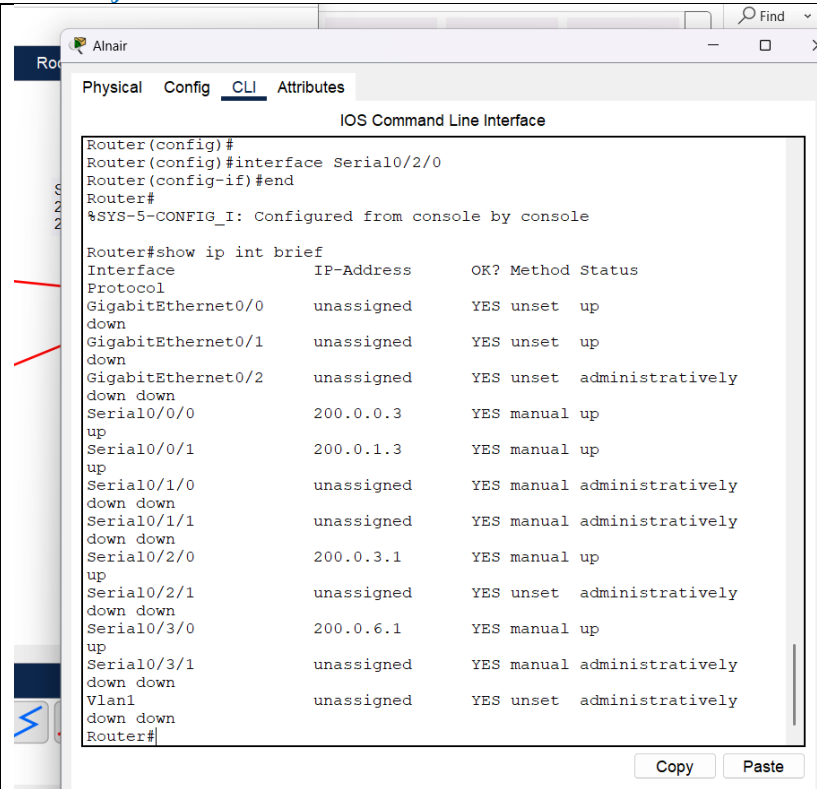
b. IP address configuration of each in interface (use show ip int brief) on each router

## Laboratory Activity #4 Static Routing

Epison Centauri	 <p>Physical Config CLI Attributes</p> <p>IOS Command Line Interface</p> <pre>% Invalid input detected at '^' marker.  Router(config)#end Router# %SYS-5-CONFIG_I: Configured from console by console  Router#show ip int brief Interface              IP-Address      OK? Method Status Protocol GigabitEthernet0/0     unassigned      YES unset  administratively down down GigabitEthernet0/1     192.168.0.1     YES manual  up up GigabitEthernet0/2     unassigned      YES unset  administratively down down Serial0/0/0            200.0.0.1       YES manual  up up Serial0/0/1            200.0.1.1       YES manual  up up Serial0/1/0            unassigned      YES unset  administratively down down Serial0/1/1            unassigned      YES unset  administratively down down Serial0/2/0            unassigned      YES unset  administratively down down Serial0/2/1            unassigned      YES unset  administratively down down Serial0/3/0            unassigned      YES unset  administratively down down Serial0/3/1            unassigned      YES unset  administratively down down Vlan1                  unassigned      YES unset  administratively down down Router#</pre> <p>Copy Paste</p> <p><input type="checkbox"/> Top</p>
Muhlifain Centauri	 <p>Physical Config CLI Attributes</p> <p>IOS Command Line Interface</p> <pre>state to up  Router(config-if)#end Router# %SYS-5-CONFIG_I: Configured from console by console  Router#show ip int brief Interface              IP-Address      OK? Method Status Protocol GigabitEthernet0/0     unassigned      YES unset  administratively down down GigabitEthernet0/1     192.168.1.1     YES manual  up up GigabitEthernet0/2     unassigned      YES unset  administratively down down Serial0/0/0            200.0.0.2       YES manual  up up Serial0/0/1            200.0.1.2       YES manual  up up Serial0/1/0            unassigned      YES unset  administratively down down Serial0/1/1            unassigned      YES unset  administratively down down Serial0/2/0            unassigned      YES unset  administratively down down Serial0/2/1            unassigned      YES unset  administratively down down Serial0/3/0            unassigned      YES unset  administratively down down Serial0/3/1            unassigned      YES unset  administratively down down Vlan1                  unassigned      YES unset  administratively down down Router#</pre> <p>Copy Paste</p> <p><input type="checkbox"/> Top</p>

## Laboratory Activity #4 Static Routing

### Alnair Centauri

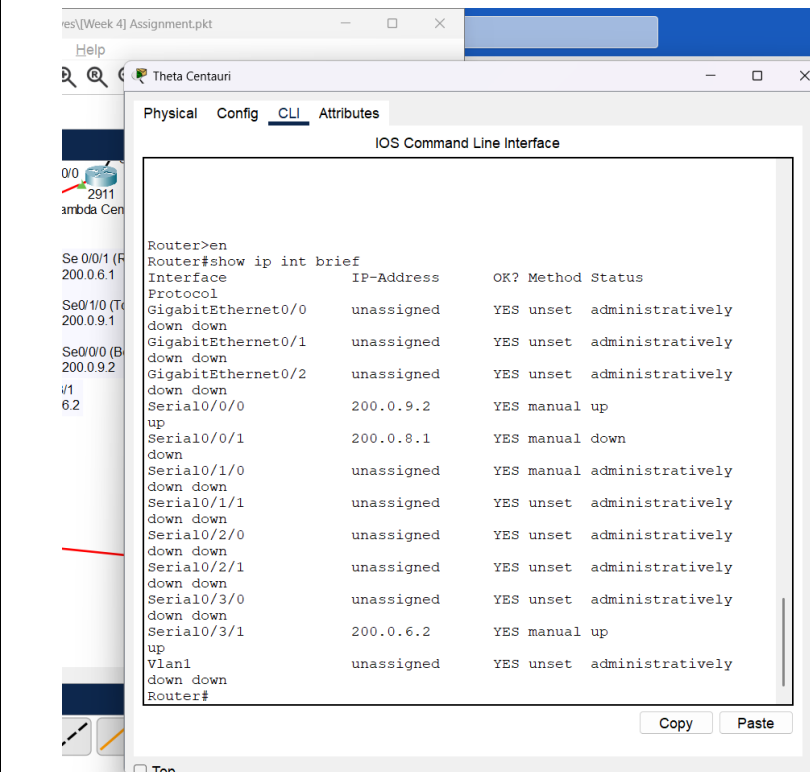


The screenshot shows the Alnair Centauri router configuration window. The 'CLI' tab is selected, displaying the IOS Command Line Interface. The configuration shows the following commands and output:

```
Router(config)#
Router(config)#interface Serial0/2/0
Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip int brief
Interface          IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0 unassigned      YES unset  up
down
GigabitEthernet0/1 unassigned      YES unset  up
down
GigabitEthernet0/2 unassigned      YES unset  administratively
down down
Serial0/0/0        200.0.0.3       YES manual  up
up
Serial0/0/1        200.0.1.3       YES manual  up
up
Serial0/1/0        unassigned      YES manual  administratively
down down
Serial0/1/1        unassigned      YES manual  administratively
down down
Serial0/2/0        200.0.3.1       YES manual  up
up
Serial0/2/1        unassigned      YES unset  administratively
down down
Serial0/3/0        200.0.6.1       YES manual  up
up
Serial0/3/1        unassigned      YES manual  administratively
down down
Vlan1              unassigned      YES unset  administratively
down down
Router#
```

### Theta Centauri



The screenshot shows the Theta Centauri router configuration window. The 'CLI' tab is selected, displaying the IOS Command Line Interface. The configuration shows the following commands and output:

```
Router>en
Router#show ip int brief
Interface          IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0 unassigned      YES unset  administratively
down down
GigabitEthernet0/1 unassigned      YES unset  administratively
down down
GigabitEthernet0/2 unassigned      YES unset  administratively
down down
Serial0/0/0        200.0.9.2       YES manual  up
up
Serial0/0/1        200.0.8.1       YES manual  down
down
Serial0/1/0        unassigned      YES manual  administratively
down down
Serial0/1/1        unassigned      YES unset  administratively
down down
Serial0/2/0        unassigned      YES unset  administratively
down down
Serial0/2/1        unassigned      YES unset  administratively
down down
Serial0/3/0        unassigned      YES unset  administratively
down down
Serial0/3/1        200.0.6.2       YES manual  up
up
Vlan1              unassigned      YES unset  administratively
down down
Router#
```

## Laboratory Activity #4 Static Routing

**Nu Centauri**

**Nu Centauri**

Physical Config **CLI** Attributes

IOS Command Line Interface

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

Router>en
Router#show ip int brief
Interface                                IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0                      unassigned      YES unset  administratively
down down
GigabitEthernet0/1                      unassigned      YES unset  administratively
down down
GigabitEthernet0/2                      unassigned      YES unset  administratively
down down
Serial0/0/0                             200.0.5.2       YES manual  up
up
Serial0/0/1                             200.0.6.1       YES manual  up
Serial0/1/0                             200.0.9.1       YES manual  up
Serial0/1/1                             unassigned      YES unset  administratively
down down
Serial0/2/0                             unassigned      YES unset  administratively
down down
Serial0/2/1                             unassigned      YES unset  administratively
down down
Serial0/3/0                             unassigned      YES unset  administratively
down down
Serial0/3/1                             unassigned      YES unset  administratively
down down
Vlan1                                    unassigned      YES unset  administratively
down down
Router#
```

Copy Paste

**Lambda Centauri**

**Lambda Centauri**

Physical Config **CLI** Attributes

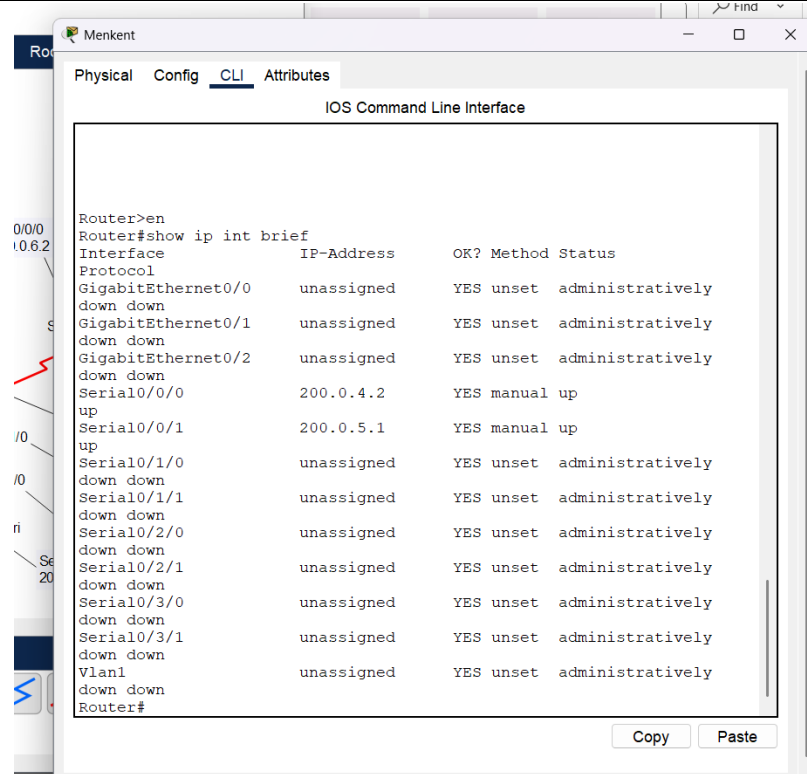
IOS Command Line Interface

```
Router>
Router>en
Router#show ip int brief
Interface                                IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0                      unassigned      YES unset  administratively
down down
GigabitEthernet0/1                      192.168.2.1     YES manual  up
up
GigabitEthernet0/2                      unassigned      YES unset  administratively
down down
Serial0/0/0                             200.0.6.2       YES manual  up
up
Serial0/0/1                             unassigned      YES unset  administratively
down down
Serial0/1/0                             unassigned      YES unset  administratively
down down
Serial0/1/1                             unassigned      YES unset  administratively
down down
Serial0/2/0                             unassigned      YES unset  administratively
down down
Serial0/2/1                             unassigned      YES unset  administratively
down down
Serial0/3/0                             unassigned      YES unset  administratively
down down
Serial0/3/1                             unassigned      YES unset  administratively
down down
Vlan1                                    unassigned      YES unset  administratively
down down
Router#
```

Copy Paste

## Laboratory Activity #4 Static Routing

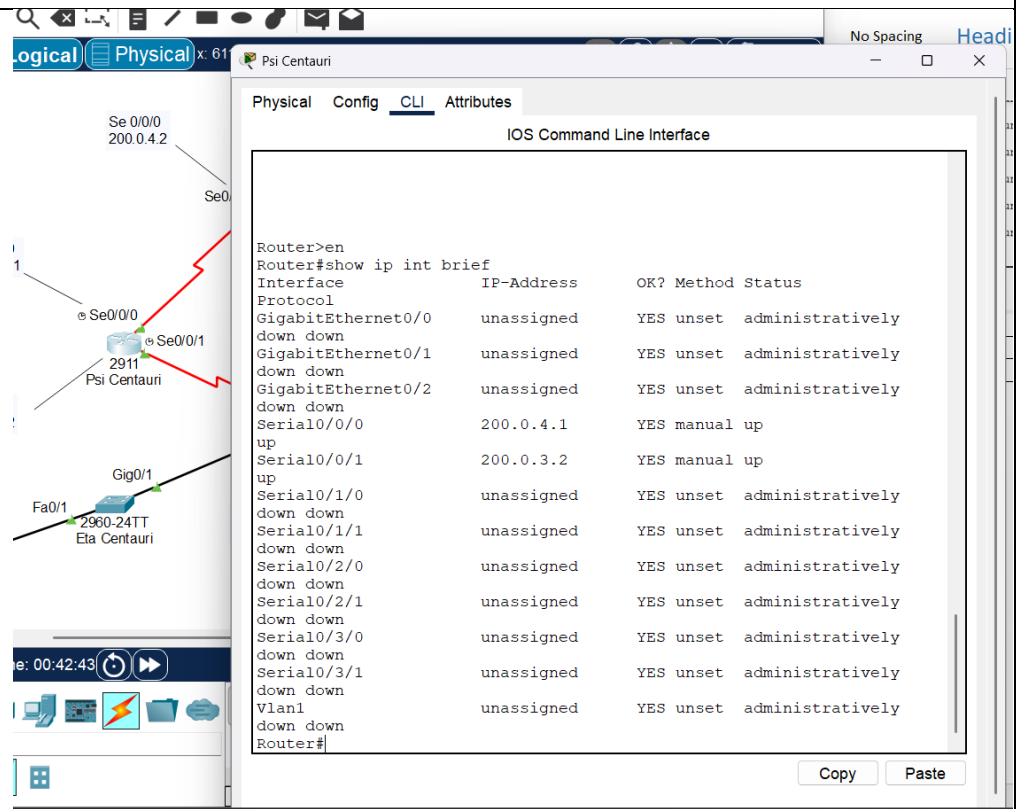
Menkent  
Centauri



```

Router>en
Router#show ip int brief
Interface                                IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0                      unassigned      YES unset  administratively
down down
GigabitEthernet0/1                      unassigned      YES unset  administratively
down down
GigabitEthernet0/2                      unassigned      YES unset  administratively
down down
Serial0/0/0                             200.0.4.2       YES manual  up
up
Serial0/0/1                             200.0.5.1       YES manual  up
up
Serial0/1/0                             unassigned      YES unset  administratively
down down
Serial0/1/1                             unassigned      YES unset  administratively
down down
Serial0/2/0                             unassigned      YES unset  administratively
down down
Serial0/2/1                             unassigned      YES unset  administratively
down down
Serial0/3/0                             unassigned      YES unset  administratively
down down
Serial0/3/1                             unassigned      YES unset  administratively
down down
Vlan1                                    unassigned      YES unset  administratively
down down
Router#
  
```

Psi Centauri



```

Router>en
Router#show ip int brief
Interface                                IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0                      unassigned      YES unset  administratively
down down
GigabitEthernet0/1                      unassigned      YES unset  administratively
down down
GigabitEthernet0/2                      unassigned      YES unset  administratively
down down
Serial0/0/0                             200.0.4.1       YES manual  up
up
Serial0/0/1                             200.0.3.2       YES manual  up
up
Serial0/1/0                             unassigned      YES unset  administratively
down down
Serial0/1/1                             unassigned      YES unset  administratively
down down
Serial0/2/0                             unassigned      YES unset  administratively
down down
Serial0/2/1                             unassigned      YES unset  administratively
down down
Serial0/3/0                             unassigned      YES unset  administratively
down down
Serial0/3/1                             unassigned      YES unset  administratively
down down
Vlan1                                    unassigned      YES unset  administratively
down down
Router#
  
```

## Laboratory Activity #4 Static Routing

Phi Centauri

Phi Centauri

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>en
Router#show ip int brief
Interface          IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0  unassigned      YES unset  administratively
down down
GigabitEthernet0/1  192.168.3.1     YES manual  up
up
GigabitEthernet0/2  unassigned      YES unset  administratively
down down
Serial0/0/0         200.0.3.1       YES manual  up
up
Serial0/0/1         unassigned      YES manual  administratively
down down
Serial0/1/0         unassigned      YES manual  administratively
down down
Serial0/1/1         unassigned      YES unset  administratively
down down
Serial0/2/0         unassigned      YES unset  administratively
down down
Serial0/2/1         200.0.2.1       YES manual  up
up
Serial0/3/0         unassigned      YES unset  administratively
down down
Serial0/3/1         unassigned      YES unset  administratively
down down
Vlan1               unassigned      YES unset  administratively
down down
Router#
```

Copy Paste

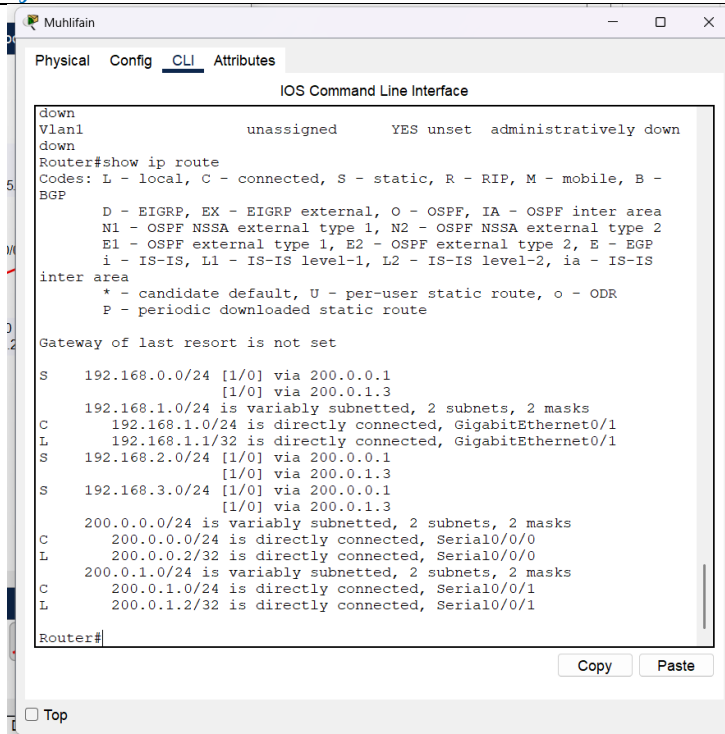
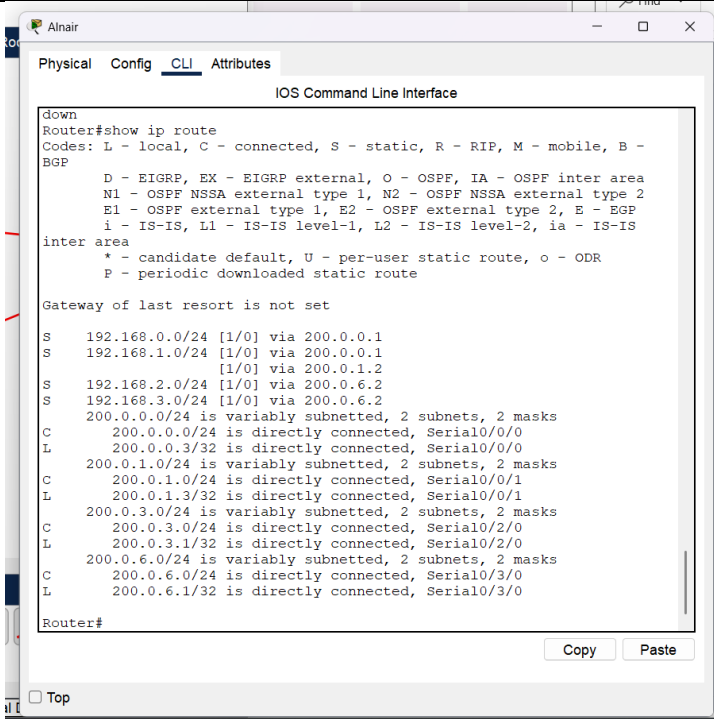
☐ Top

### Laboratory Activity #4 Static Routing

- c. Show each static routing configuration (use show ip route) on each router

<p>Epison Centauri</p>	<div data-bbox="584 210 1518 1123"><p>Epsilon Centauri</p><p>Physical Config <u>CLI</u> Attributes</p><p>IOS Command Line Interface</p><pre>down Serial0/3/1          unassigned      YES unset  administratively down down Vlan1                unassigned      YES unset  administratively down down Router#show ip route Codes: L - local, C - connected, S - static, 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      192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks C       192.168.0.0/24 is directly connected, GigabitEthernet0/1 L       192.168.0.1/32 is directly connected, GigabitEthernet0/1 S       192.168.1.0/24 [1/0] via 200.0.1.3            [1/0] via 200.0.0.2 S       192.168.2.0/24 [1/0] via 200.0.1.3 S       192.168.3.0/24 [1/0] via 200.0.1.3     200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks C       200.0.0.0/24 is directly connected, Serial0/0/0 L       200.0.0.1/32 is directly connected, Serial0/0/0     200.0.1.0/24 is variably subnetted, 2 subnets, 2 masks C       200.0.1.0/24 is directly connected, Serial0/0/1 L       200.0.1.1/32 is directly connected, Serial0/0/1  Router#</pre><p>Copy Paste</p></div>
------------------------	--

## Laboratory Activity #4 Static Routing

<p>Muhlifain Centauri</p>	
<p>Alnair Centauri</p>	





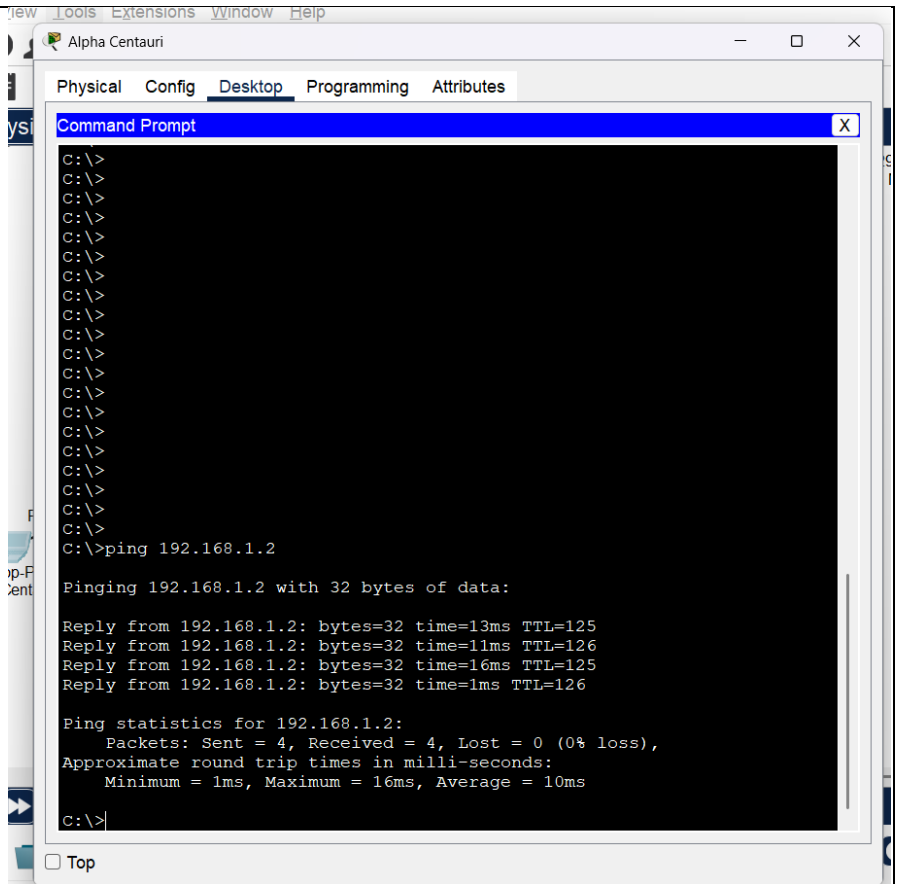




### Laboratory Activity #4 Static Routing

d. Show the ping / "success" connection between PC's

Laptop-PT (Alpha Centauri) & PC-PT (Sigma Centauri)



The screenshot shows a Command Prompt window titled "Alpha Centauri" with tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a black command prompt with white text. The user has entered the command 'ping 192.168.1.2'. The output shows four successful replies from 192.168.1.2 with varying times and TTL values. Ping statistics are also displayed, showing 0% loss and an average round trip time of 10ms.

```
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=13ms TTL=125
Reply from 192.168.1.2: bytes=32 time=11ms TTL=126
Reply from 192.168.1.2: bytes=32 time=16ms TTL=125
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 16ms, Average = 10ms

C:\>
```



## Laboratory Activity #4 Static Routing

Laptop-PT (Alpha Centauri) & Laptop-PT (Ke Kwan)

The screenshot displays a network simulation environment. On the left, a topology diagram shows a network of devices connected by links. A red lightning bolt icon indicates a connection or error. The diagram includes labels for interfaces and IP addresses, such as 'Se0/0/0', '291', '200.0.6', '200.0.9', and '200.0.1.3'. A red line highlights a specific path or connection.

On the right, a 'Command Prompt' window is open, showing the output of a ping command. The window title is 'Alpha Centauri'. The command prompt shows the following output:

```
C:\>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time=110ms TTL=121
Reply from 192.168.3.2: bytes=32 time=117ms TTL=121
Reply from 192.168.3.2: bytes=32 time=99ms TTL=121
Reply from 192.168.3.2: bytes=32 time=14ms TTL=121

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 14ms, Maximum = 117ms, Average = 85ms

C:\>
```

At the bottom of the window, there are buttons for 'New', 'Delete', and 'Toggle PDU List Window'.